UNODC
Oficina de las Naciones Unidas contra la Droga y el Delito

UNODC Research

1 RESUMEN
CONCLUSIONES Y CONSECUENCIAS EN MATERIA DE POLÍTICAS

INFORME MUNDIAL SOBRE LAS DROGAS

WORLD DRUG REPORT 2019

PREFACIO

Las conclusiones del *Informe Mundial sobre las Drogas* de este año completan y complican aún más el panorama mundial de los desafíos relacionados con las drogas, subrayando así la necesidad de ampliar la cooperación internacional para promover respuestas equilibradas e integradas en materia de salud y justicia penal a la oferta y la demanda de drogas.

La disponibilidad de datos más precisos obtenidos de una investigación más rigurosa realizada en la India y Nigeria, dos de los diez países más poblados del mundo, en la actualidad se sabe que el número de consumidores de opioides y personas con trastornos por consumo de drogas es mucho mayor de lo que se había calculado. En el mundo hay unos 35 millones de personas que padecen trastornos por consumo de drogas y necesitan tratamiento, cifra superior a la estimación anterior de 30,5 millones de personas. También ha aumentado el número de víctimas: 585.000 personas perdieron la vida en 2017 a consecuencia del consumo de drogas.

La prevención y el tratamiento siguen siendo insuficientes para atender las necesidades que existen en muchas partes del mundo. Esa es la situación imperante en particular en los establecimientos penitenciarios, donde los reclusos son especialmente vulnerables al consumo de drogas y corren mayor riesgo de contraer el VIH y la hepatitis C. Este déficit constituye un importante obstáculo para lograr los Objetivos de Desarrollo Sostenible y cumplir el compromiso de la comunidad internacional de no dejar a nadie atrás.

Los opioides sintéticos siguen representando una grave amenaza para la salud, en un contexto marcado por el número creciente de muertes por sobredosis en América del Norte y la expansión del tráfico de fentanilo y sus análogos en Europa y otras regiones. La crisis de los opioides que ha ocupado muchos menos titulares pero que requiere igualmente atención internacional urgente es el uso con fines no médicos del analgésico tramadol, particularmente en África. La cantidad de tramadol incautada en el mundo alcanzó la cifra récord de 125 toneladas en 2017; los pocos datos disponibles indican que el tramadol que se utiliza con fines no médicos en África se fabrica de manera ilícita en Asia Meridional y desde allí se introduce en la región, así como en algunas partes del Oriente Medio.

La respuesta al uso indebido del tramadol pone de manifiesto las dificultades que tienen los países para encontrar un punto de equilibrio entre permitir el necesario acceso a ese fármaco con fines médicos y atajar su uso indebido (con recursos limitados y unos sistemas de atención de la salud desbordados) y al mismo tiempo combatir la delincuencia organizada y el tráfico.

La producción de opio y la fabricación de cocaína se mantienen en niveles récord. Las cantidades incautadas también son más altas que nunca; por ejemplo, la cantidad de cocaína incautada aumentó en un 74 % en el último decenio, mientras que la fabricación se incrementó en un 50 % en ese mismo período, lo cual indica que la actuación de los organismos encargados de hacer cumplir la ley se ha vuelto más eficaz y que el refuerzo de la cooperación internacional podría estar contribuyendo a elevar las tasas de incautación.

El *Informe Mundial sobre las Drogas 2019* también se hace eco de la disminución del tráfico de opiáceos desde el Afganistán a lo largo de la ruta “septentrional” que atraviesa Asia Central con destino a la Federación de Rusia. En 2008, alrededor del 10 % de la morfina y la heroína incautadas en todo el mundo se había incautado en países situados a lo largo de la ruta septentrional; en 2017, esa proporción

se redujo al 1 %. Esto podría deberse en parte a un cambio en la demanda de los mercados de destino en favor de las drogas sintéticas. También ha podido contribuir el hecho de que las respuestas regionales se hayan vuelto más eficaces.

Los países de Asia Central, con el apoyo de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC), han destinado considerables recursos al fortalecimiento de la cooperación regional mediante programas nacionales, regionales y mundiales integrados de la UNODC, así como mediante plataformas como el Centro Regional de Información y Coordinación de Asia Central, la Iniciativa Afganistán-Kirguistán-Tayikistán y la Iniciativa Triangular y su célula de planificación conjunta. Es necesario seguir investigando, entre otros fines para extraer enseñanzas y definir mejores prácticas que puedan informar las medidas que se adopten en el futuro.

La cooperación internacional también ha logrado frenar la profusión de nuevas sustancias psicoactivas. En los últimos años, la Comisión de Estupefacientes, con sede en Viena, ha actuado con rapidez para someter a fiscalización las nuevas sustancias psicoactivas más nocivas, y el sistema de alerta temprana sobre nuevas sustancias psicoactivas de la UNODC ha ayudado a la comunidad internacional a mantenerse al día de las novedades que se han ido produciendo.

La clave del éxito sigue residiendo en la voluntad política y la disponibilidad de financiación adecuada. Los esfuerzos desplegados por Colombia para reducir la producción de cocaína tras el acuerdo de paz alcanzado en 2016 con las Fuerzas Armadas Revolucionarias de Colombia (FARC) son un ejemplo de ello. Las iniciativas de desarrollo alternativo han permitido que los campesinos de algunas de las regiones centrales del país que anteriormente se hallaban bajo el control de las FARC abandonen el cultivo de arbusto de coca y se incorporen a la economía lícita. El resultado ha sido una reducción drástica de la producción de cocaína. Sin embargo, en otras zonas controladas anteriormente por las FARC se han instalado grupos delictivos que han ocupado el vacío dejado y han expandido el cultivo. El desarrollo alternativo únicamente puede prosperar si se le presta atención constante y se integra en objetivos de desarrollo más amplios.

Los éxitos que se señalan entre los numerosos e ingentes problemas que siguen teniendo los países para hacer frente a la oferta y la demanda de las drogas ponen de relieve que la cooperación internacional funciona. El reto que tenemos ante nosotros es lograr que esta cooperación funcione para más personas.

La cooperación internacional se basa en acuerdos marco. Prácticamente todos los países han reafirmado su determinación de adoptar decisiones equilibradas y basadas en los derechos y fundamentadas en los tratados de fiscalización internacional de drogas. La reafirmación más reciente de ese compromiso es la Declaración Ministerial sobre el Fortalecimiento de Nuestras Medidas a Nivel Nacional, Regional e Internacional para Acelerar el Cumplimiento de Nuestros Compromisos Conjuntos a fin de Abordar y Contrarrestar el Problema Mundial de las Drogas, aprobada en la serie de sesiones a nivel ministerial del 62º período de sesiones de la Comisión de Estupefacientes.

La UNODC ayuda a los países a llevar a la práctica sus compromisos mediante la aplicación de las normas internacionales sobre prevención y tratamiento de los trastornos por consumo de drogas y el VIH, así como las normas y reglas en materia de administración de justicia y tratamiento de reclusos. Prestamos asistencia técnica a la medida a través de nuestras oficinas extrasede y nuestros programas mundiales, y

mediante los instrumentos que ponemos a disposición de quienes los necesiten y la labor de investigación que llevamos a cabo.

Espero que el *Informe Mundial sobre las Drogas 2019* arroje más luz sobre el problema mundial de las drogas e informe las respuestas de la comunidad internacional. Si trabajamos juntos y centramos nuestra atención y nuestros recursos podremos contribuir a que las personas reciban los servicios que necesitan sin discriminación, promover la seguridad, someter a los delincuentes a la acción de la justicia, salvaguardar la salud y lograr los Objetivos de Desarrollo Sostenible.

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AGRADECIMIENTOS

El *Informe Mundial sobre las Drogas 2019* fue elaborado por la Subdivisión de Investigación y Análisis de Tendencias, División de Análisis de Políticas y Asuntos Públicos, de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC), bajo la supervisión de Jean-Luc Lemahieu, Director de la División, y Angela Me, Jefa de la Subdivisión de Investigación y Análisis de Tendencias.

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La elaboración del *Informe Mundial sobre las Drogas 2019* ha sido posible gracias a los conocimientos especializados y las valiosas aportaciones de la Junta Internacional de Fiscalización de Estupefacientes (JIFE) y de los colegas de todas las divisiones de la UNODC. La Subdivisión de Investigación y Análisis de Tendencias agradece la importante contribución que han realizado sus colegas de la Sección de Laboratorio y Asuntos Científicos y de la Dependencia de Desarrollo y Gestión de Programas.

La Subdivisión de Investigación y Análisis de Tendencias agradece las inestimables aportaciones y el valioso asesoramiento recibidos del Comité Consultivo Científico del *Informe Mundial sobre las Drogas*:

Jonathan Caulkins

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Las investigaciones y la elaboración de las estimaciones conjuntas de la UNODC, el ONUSIDA, la OMS y el Banco Mundial del número de personas que se inyectan drogas fueron financiados en parte por la Sección de Lucha contra el VIH/Sida de la Subdivisión de Salud y Prevención del Uso Indebido de Drogas de la División de Operaciones de la UNODC.

NOTAS EXPLICATIVAS

Los límites geográficos, así como los nombres y las denominaciones que figuran en los mapas, no implican la aprobación o aceptación oficial por parte de las Naciones Unidas. Una línea de puntos representa aproximadamente la línea de control en Jammu y Cachemira acordada por la India y el Pakistán. Las partes todavía no han llegado a un acuerdo definitivo sobre el estatuto de Jammu y Cachemira. Los límites geográficos que son objeto de controversia (China/India) se representan con un sombreado con entramado de líneas debido a la dificultad para mostrarlos con suficiente detalle.

Las denominaciones empleadas en el *Informe Mundial sobre las Drogas* y la forma en que aparecen presentados los datos que contiene no implican, por parte de la Secretaría de las Naciones Unidas, juicio alguno sobre la condición jurídica de ninguno de los países, territorios, ciudades o zonas geográficas citados, ni de sus autoridades, como tampoco respecto del trazado de sus fronteras o límites.

Los países y zonas geográficas se designan por los nombres que eran de uso oficial en el momento en que se recopilaron los correspondientes datos.

Toda referencia a Kosovo en el *Informe Mundial sobre las Drogas*, de haberla, deberá entenderse de conformidad con la resolución 1244 (1999) del Consejo de Seguridad.

Puesto que existe cierta ambigüedad científica y jurídica en las distinciones entre “uso” (o “consumo”), “uso indebido” y “abuso” de drogas, en el *Informe Mundial sobre las Drogas* se utilizan indistintamente los términos neutros “uso de drogas” o “consumo de drogas”. El término “uso indebido” solo se emplea para designar el consumo con fines no médicos de fármacos sujetos a prescripción médica.

El uso de los términos “droga” y “uso de drogas” (o “consumo de drogas”) en el *Informe Mundial sobre las Drogas* se refiere a las sustancias sometidas a fiscalización de conformidad con los tratados de fiscalización internacional de drogas.

A menos que se indique otra cosa, todos los análisis contenidos en el *Informe Mundial sobre las Drogas* se basan en los datos oficiales presentados por los Estados Miembros a la UNODC a través del cuestionario para los informes anuales.

Los datos demográficos que figuran en el *Informe Mundial sobre las Drogas* proceden de la publicación *World Population Prospects: The 2017 Revision* (División de Población del Departamento de Asuntos Económicos y Sociales de las Naciones Unidas).

Salvo indicación en contrario, por “dólares” se entenderá dólares de los Estados Unidos.

Salvo indicación en contrario, por “toneladas” se entenderá toneladas métricas.

En el presente fascículo se han utilizado las siguientes siglas y acrónimos:

AVAD	años de vida ajustados en función de la discapacidad
CBD	cannabidiol
DMT	dimetiltriptamina
FARC	Fuerzas Armadas Revolucionarias de Colombia
LSD	dietilamida del ácido lisérgico
NSP	nuevas sustancias psicoactivas

ONUSIDA	Programa Conjunto de las Naciones Unidas sobre el VIH/Sida
PCP	fenciclidina
THC	tetrahidrocannabinol
UNODC	Oficina de las Naciones Unidas contra la Droga y el Delito
VIH	virus de la inmunodeficiencia humana

RESUMEN

TENDENCIAS MÁS RECIENTES

La mejora de los datos permite comprender con mayor precisión la magnitud del consumo de drogas a nivel mundial

El número de personas que consumen drogas ha aumentado en un 30 % con respecto a 2009

En 2017, unos 271 millones de personas, es decir, el 5,5 % de la población mundial de 15 a 64 años de edad, había consumido drogas en el año anterior. Aunque las estimaciones correspondientes a 2016 son muy similares, una perspectiva a más largo plazo revela que el número de personas que consumen drogas en la actualidad ha aumentado en un 30 % con respecto a 2009, en que 210 millones de personas habían consumido drogas en el año anterior.

Si bien ese aumento se debe en parte al crecimiento del 10 % experimentado por la población mundial en la franja etaria de los 15 a los 64 años, los datos actuales muestran un aumento de la prevalencia del consumo de opioides en África, Asia, Europa y América del Norte, y del consumo de cannabis en América del Norte, América del Sur y Asia. La droga que más se consume en todo el mundo sigue siendo el cannabis (se estima que 188 millones de personas consumieron cannabis en el año anterior). En los últimos diez años la prevalencia del consumo del cannabis se ha mantenido mayormente estable a nivel mundial, pese a la tendencia al alza registrada en América y en Asia.

Nuevos estudios realizados en la India y en Nigeria ofrecen una nueva visión del consumo mundial de drogas: el número de consumidores de opioides y el número de personas que padecen trastornos por consumo de drogas en todo el mundo son mucho más elevados de lo que se creía

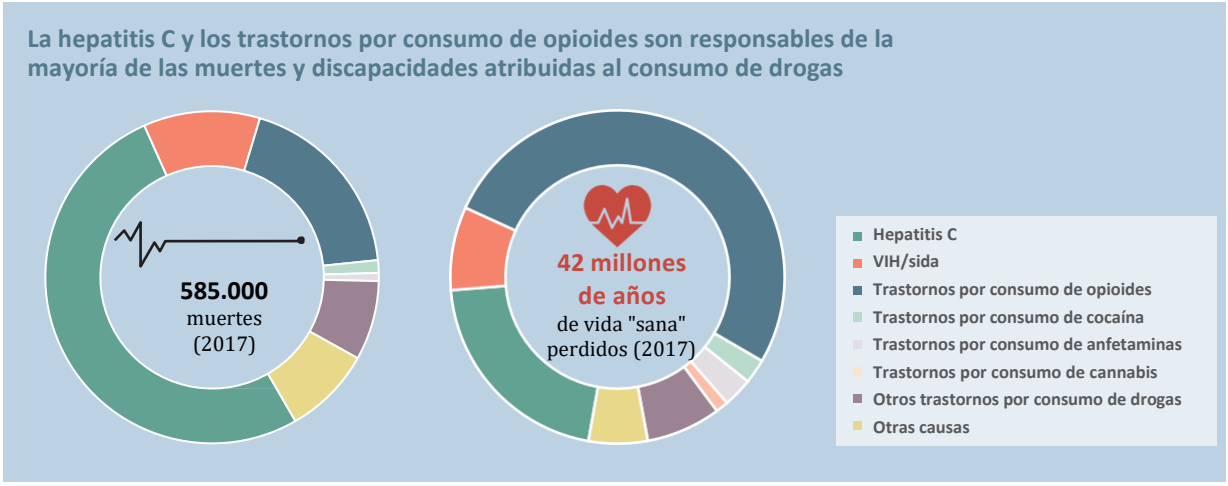
En 2017, unos 53,4 millones de personas en todo el mundo habían consumido opioides en el año anterior, un 56 % más que en 2016. De esas personas, 29,2 millones habían consumido opiáceos como la heroína y el opio, lo que supone un aumento del 50 % con respecto a las estimaciones correspondientes a 2016, que fueron de 19,4 millones.

El aumento de las estimaciones en 2017 obedece a que se conoce mejor la magnitud del consumo de drogas gracias a los nuevos estudios realizados en dos países muy poblados, la India y Nigeria. En Asia, el número de consumidores de opioides en el último año se calcula ahora en 29,5 millones, lo que supone un aumento con respecto a las estimaciones anteriores de 13,6 millones. En África, los datos obtenidos de un estudio realizado en Nigeria dieron lugar a una revisión al alza de las estimaciones del número de consumidores de opioides en el último año, que aumentaron de 2,2 millones a 6,1 millones de consumidores.

En general, América del Norte, donde un 4,0 % de la población consume opioides, sigue siendo la subregión con mayor prevalencia anual del consumo de esas sustancias. La mayor prevalencia anual del consumo de opiáceos (opio, morfina y heroína), el 1,6 % de la población, se concentra en las subregiones

del Cercano Oriente y el Oriente Medio y Asia Sudoriental. No obstante, desde el punto de vista del número de consumidores, el 35 % de los consumidores de opioides y casi la mitad de los consumidores de opiáceos de todo el mundo residen en Asia Meridional.

A la luz de la nueva información procedente de la India y Nigeria, el número de personas que se cree que padecen trastornos por consumo de drogas se estima en la actualidad en 35,3 millones. Esa cifra es un 15 % mayor que las estimaciones anteriores de 30,5 millones. El término “personas con trastornos por consumo de drogas” designa a las personas que hacen un consumo nocivo hasta el extremo de experimentar dependencia de las drogas o necesitar tratamiento.



Fuentes: Institute for Health Metrics and Evaluation, “Global Burden of Disease Study 2017”, Global Health Data Exchange.

La producción y las incautaciones de cocaína alcanzan cifras récord

La producción de cocaína alcanza un nivel sin precedentes durante el proceso de transición en Colombia

La fabricación ilícita mundial de cocaína alcanzó un máximo histórico de 1.976 toneladas (estimación basada en un grado de pureza del 100 %) en 2017, lo cual supuso un aumento del 25 % con respecto al año anterior. Esto se debió principalmente al aumento de la fabricación de cocaína en Colombia, donde, según las estimaciones, se produjo aproximadamente el 70 % de la cocaína mundial. En 2017 Colombia experimentó una expansión del 17 % de la superficie dedicada al cultivo de arbusto de coca y un aumento del 31 % de la producción de coca, lo cual obedeció principalmente al pronunciado aumento de las zonas productivas dedicadas al cultivo de arbusto de coca.

El acuerdo de paz firmado por el Gobierno de Colombia y las Fuerzas Armadas Revolucionarias de Colombia (FARC) ha contribuido a reducir drásticamente la producción de cocaína en algunas zonas del centro del país, donde los campesinos de algunas zonas anteriormente controladas por las FARC han abandonado el cultivo. No obstante, en otras de las zonas anteriormente controladas por las FARC se han instalado grupos delictivos organizados que han retomado y ampliado el cultivo.

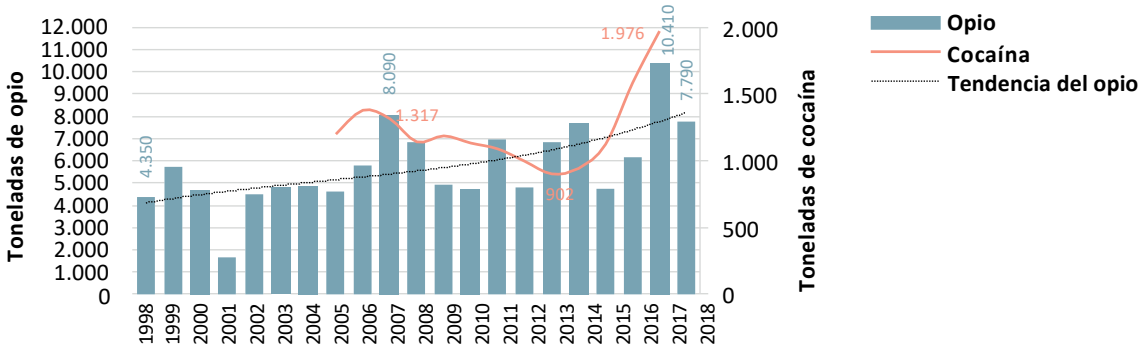
En 2016 se registró en Colombia una tercera dinámica consistente en que se dedicaron al cultivo de arbusto de coca zonas completamente nuevas, lo que se reflejó en los datos de producción correspondientes a 2017. A menudo esas zonas se encuentran alejadas de los principales núcleos urbanos, por lo que a las autoridades centrales les resulta difícil ofrecer incentivos a los campesinos para que abandonen el cultivo. Asimismo, la reducción de las medidas de erradicación podría haber alimentado la idea de que el cultivo es una actividad relativamente libre de riesgos.

Las incautaciones sin precedentes contribuyen a atajar la oferta de cocaína

La cantidad de cocaína incautada en todo el mundo aumentó a 1.275 toneladas en 2017, que es la mayor cantidad que se haya registrado nunca y que supone un aumento del 13 % con respecto al año anterior. En el último decenio las incautaciones de cocaína han aumentado en un 74 %, pero la producción solo lo ha hecho en un 50 %.

En general, las incautaciones indican que la cantidad de cocaína disponible para el consumo ha aumentado más lentamente que la fabricación. De esto se desprende que, a nivel mundial, la actuación de las fuerzas del orden y la cooperación internacional se han vuelto probablemente más eficaces y que se está incautando una proporción de productos de la cocaína mayor que en años anteriores.

Producción mundial de opio y fabricación de cocaína[a], 1998–2018



Fuentes: UNODC, estudios sobre la coca y la adormidera en varios países; respuestas al cuestionario para los informes anuales; y Estados Unidos de América, Departamento de Estado, *International Narcotics Control Strategy Report*, varios años.

[a] *Corresponde a un nivel hipotético de fabricación de cocaína de una pureza del 100 %; el nivel de fabricación de cocaína efectivo, no ajustado en función de la pureza, es considerablemente más alto.*

El grueso de las incautaciones de cocaína se sitúa en América, donde en 2017 se concentró casi el 90 % del total mundial. Las incautaciones próximas al lugar de fabricación son cuantiosas; solamente en Colombia se incautó el 38 % del total mundial en 2017.

El consumo de cocaína va en aumento en América del Norte y en Europa Occidental y Central

Según las estimaciones, 18,1 millones de personas consumieron cocaína en el último año; los mayores índices se registraron en América del Norte (2,1 %) y Oceanía (1,6 %). Entre 2006 y 2012 se produjo una

disminución del consumo de cocaína en América del Norte, pero todo parece indicar que ha vuelto a aumentar, al igual que en Europa Occidental y Central, Oceanía y algunos países de América del Sur. En algunas partes de Asia y África Occidental se han comunicado incautaciones de cantidades de cocaína cada vez mayores, lo que indica que podría aumentar el consumo de cocaína, especialmente entre los habitantes adinerados de las ciudades en algunas subregiones en las que anteriormente el consumo era bajo.

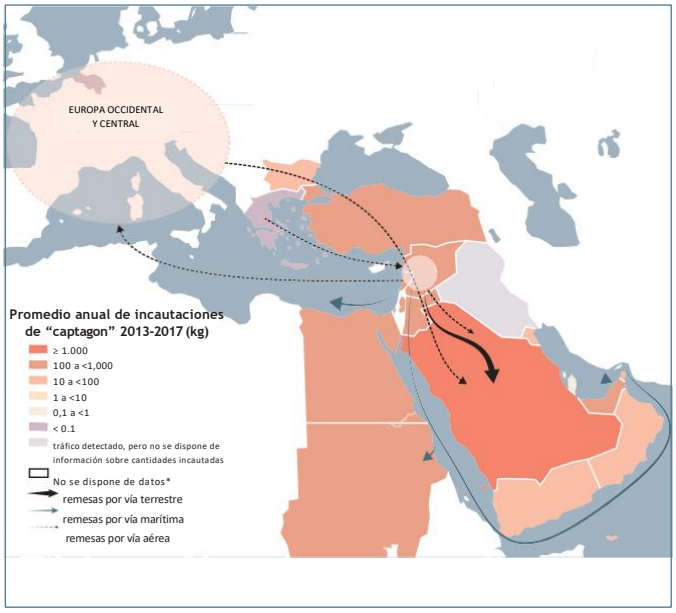
Aumenta la preocupación por el consumo de metanfetamina en varias regiones

Asia Sudoriental despunta como el mercado de la metanfetamina que más rápido está creciendo en el mundo

Las cantidades de metanfetamina incautadas en Asia Oriental y Sudoriental se octuplicaron con creces entre 2007 y 2017 hasta alcanzar la cifra de 82 toneladas, que representa el 45 % de las incautaciones mundiales. Los datos preliminares correspondientes a 2018 apuntan a un nuevo aumento pronunciado que sitúa las incautaciones en unas 116 toneladas. A juzgar por las cifras de 2018, Tailandia podría haber superado a China en lo que respecta a las incautaciones de metanfetamina, especialmente en forma de comprimidos. En 2018 se comunicó la incautación de unos 745 millones de comprimidos de metanfetamina en Asia Oriental y Sudoriental, de los cuales 515 millones se incautaron en Tailandia. La fabricación y el tráfico de metanfetamina han experimentado recientemente un desplazamiento geográfico, de China a otros países de la subregión.

La información sobre el consumo de metanfetamina en Asia Sudoriental es escasa. La mayoría de los países de Asia Sudoriental comunican que la metanfetamina es la droga que más preocupación suscita en lo que al tratamiento se refiere. En los países de la subregión sobre los que se dispone de datos recientes, la prevalencia anual del consumo de metanfetamina oscila entre el 0,5 % y el 1,1 %, porcentaje bastante elevado en comparación con el promedio mundial. También hay indicios de un aumento del consumo de metanfetamina cristalina en Asia Sudoriental.

Incautaciones comunicadas y rutas de tráfico de comprimidos de “captagon”, 2013–2017



Fuentes: UNODC, datos de los cuestionarios para los informes anuales; Junta Internacional de Fiscalización de Estupefacientes (JIFE); informes de las reuniones de jefes de los organismos nacionales encargados de combatir el tráfico ilícito de drogas (HONLEA); Oficina de Asuntos Internacionales de Narcóticos y Aplicación de la Ley, *International Narcotics Control Strategy Reports*; EMCDDA, *Captagon: understanding today’s illicit market,* EMCDDA Papers, octubre de 2018; República Francesa, Ministerio de Acción y Cuentas Públicas, Aduanas e Impuestos Indirectos, *Premières saisies de captagon en France - 750 000 comprimés à Roissy*, 30 de mayo de 2017.

Los límites geográficos que figuran en el mapa no implican la aprobación o aceptación oficial por parte de las Naciones Unidas. Aún no se ha determinado la frontera definitiva entre la República del Sudán y la República de Sudán del Sur.

** No se muestran las fronteras entre países o territorios adyacentes sobre los que no se dispone de datos.*

La probabilidad de daños por consumo de metanfetamina va en aumento en América del Norte

América del Norte es la subregión con mayor prevalencia del consumo de anfetaminas (anfetamina y metanfetamina), el 2,1 % de la población de 15 a 64 años. Si bien el consumo con fines no médicos de fármacos estimulantes es más prevalente en América del Norte, un número considerable de personas también consume metanfetamina.

Las personas que consumen metanfetamina tienden a hacerlo con más frecuencia e intensidad que quienes hacen un uso indebido de los fármacos estimulantes, y las consecuencias que sufren pueden llegar a ser más graves. Por ejemplo, el número de muertes por sobredosis que se atribuyen al consumo de psicoestimulantes, incluida la metanfetamina, se ha incrementado notablemente en los Estados Unidos, de 1.300 casos en 2007 a más de 10.000 en 2017; la intervención de los opioides sintéticos (fentanilo y sus análogos) en esas muertes es el principal factor que ha dado lugar a ese aumento.

Auge de los mercados de los opioides sintéticos pese a las consecuencias adversas para la salud conexas

La crisis de las sobredosis por opioides sintéticos en América del Norte alcanzó nuevas cotas en 2017

América del Norte ha presenciado un aumento del número de muertes por sobredosis provocadas por el consumo de opioides. En 2017 se registraron en los Estados Unidos más de 47.000 muertes por sobredosis de opioides, lo que constituye un aumento del 13 % con respecto al año anterior. Esas muertes se atribuyeron principalmente a los opioides sintéticos, como el fentanilo y sus análogos, que intervinieron en un 50 % más de las muertes con respecto a 2016. En el Canadá se comunicaron casi 4.000 muertes relacionadas con los opioides en 2017, un aumento del 33 % con respecto a las 3.000 muertes por sobredosis comunicadas en 2016. El fentanilo o sus análogos intervinieron en el 69 % de las muertes registradas en 2017, frente al 50 % en 2016.

Aumenta el tráfico de fentanilo y sus análogos y se expande más allá de América del Norte

América del Norte es el principal mercado del fentanilo y sus análogos, pero los datos relativos a las incautaciones indican que el tráfico de esas sustancias se ha expandido por todo el mundo. Si bien solo cuatro países comunicaron incautaciones de fentanilo a la UNODC en 2013, en 2016 lo hicieron 12 y en 2017, 16.

El mercado europeo del fentanilo y sus análogos es pequeño, pero va en aumento. La mayoría de los países europeos han comunicado incautaciones o consumo. En Europa Occidental y Central, las incautaciones han aumentado de 1 kg en 2013 a 5 kg en 2016 y a 17 kg en 2017. Esas sustancias suelen venderse en Internet, a veces como sustitutos “legales” de los opioides fiscalizados.

Tramadol: la otra crisis de los opioides en los países de ingresos bajos y medianos

África Occidental y Central y África Septentrional están experimentando una crisis provocada por otro opioide sintético, el tramadol, que se ha utilizado como analgésico durante décadas. La escasa información de que se dispone sobre la oferta de tramadol con fines no médicos apunta a que el tramadol se fabrica (ilícitamente) en Asia Meridional y desde allí se introduce en los países africanos y algunas zonas del Oriente Medio.

Las incautaciones mundiales de tramadol pasaron de menos de 10 kg en 2010 a casi 9 toneladas en 2013, y en 2017 alcanzaron un máximo histórico de 125 toneladas. Los nuevos datos procedentes de Nigeria parecen indicar que el problema es mayor de lo que se suponía. El estudio nacional sobre drogas realizado en ese país en 2017 muestra que el 4,7 % de la población de 15 a 64 años comunicó haber consumido opioides sujetos a prescripción médica con fines no médicos en el año anterior; el tramadol era, con diferencia, el opioide del que más comúnmente se hacía un uso indebido.

Rápido aumento del número de nuevas sustancias psicoactivas (opioides sintéticos) que aparecen en los mercados

El número de nuevas sustancias psicoactivas que son opioides sintéticos, mayormente análogos del fentanilo, de las que hay constancia en el mercado ha venido aumentando a un ritmo sin precedentes: de tan solo 1 sustancia en 2009 se pasó a 15 en 2015 y a 46 en 2017, mientras que el número total de nuevas sustancias psicoactivas presentes en el mercado se estabilizó en torno a 500 sustancias por año en el período 2015–2017.

De las nuevas sustancias psicoactivas que se comunican por primera vez, los opioides sintéticos se han convertido en el segundo grupo más importante después de los estimulantes. El 29 % de las nuevas sustancias psicoactivas que se identificaron por primera vez en 2017 pertenecía a ese grupo.

La heroína sigue llegando al mercado pese al declive de la producción de opio y al aumento de las incautaciones

Una sequía provoca una reducción del cultivo y la producción de opio en el Afganistán en 2018

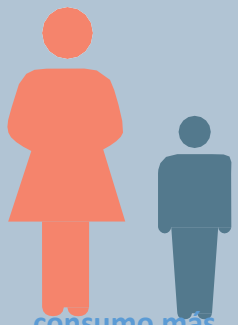
El Afganistán volvió a ser el país responsable de la gran mayoría del cultivo ilícito mundial de adormidera y la producción mundial de opio en 2018. Las 263.000 hectáreas cultivadas en el Afganistán

en 2018 eclipsan el cultivo en los países que le siguen más de cerca: Myanmar (37.300 ha en 2018) y México (30.600 ha en 2016/17).

En general, la superficie total cultivada se redujo en aproximadamente el 17 % en 2018 a 346.000 hectáreas, mayormente a consecuencia de la sequía que afectó al Afganistán. Asimismo, los precios del opio se desplomaron rápidamente en ese país entre 2016 y 2018, probablemente a causa de la sobreproducción de los años anteriores, lo que hizo que ese cultivo fuese menos lucrativo para los campesinos. No obstante, la extensión actual de la superficie cultivada es más de un 60 % mayor de lo que era hace diez años y la estimación de la superficie de cultivo en el Afganistán correspondiente a 2018 es la segunda mayor de la historia.

Uso no médico de tranquilizantes (benzodiazepinas)

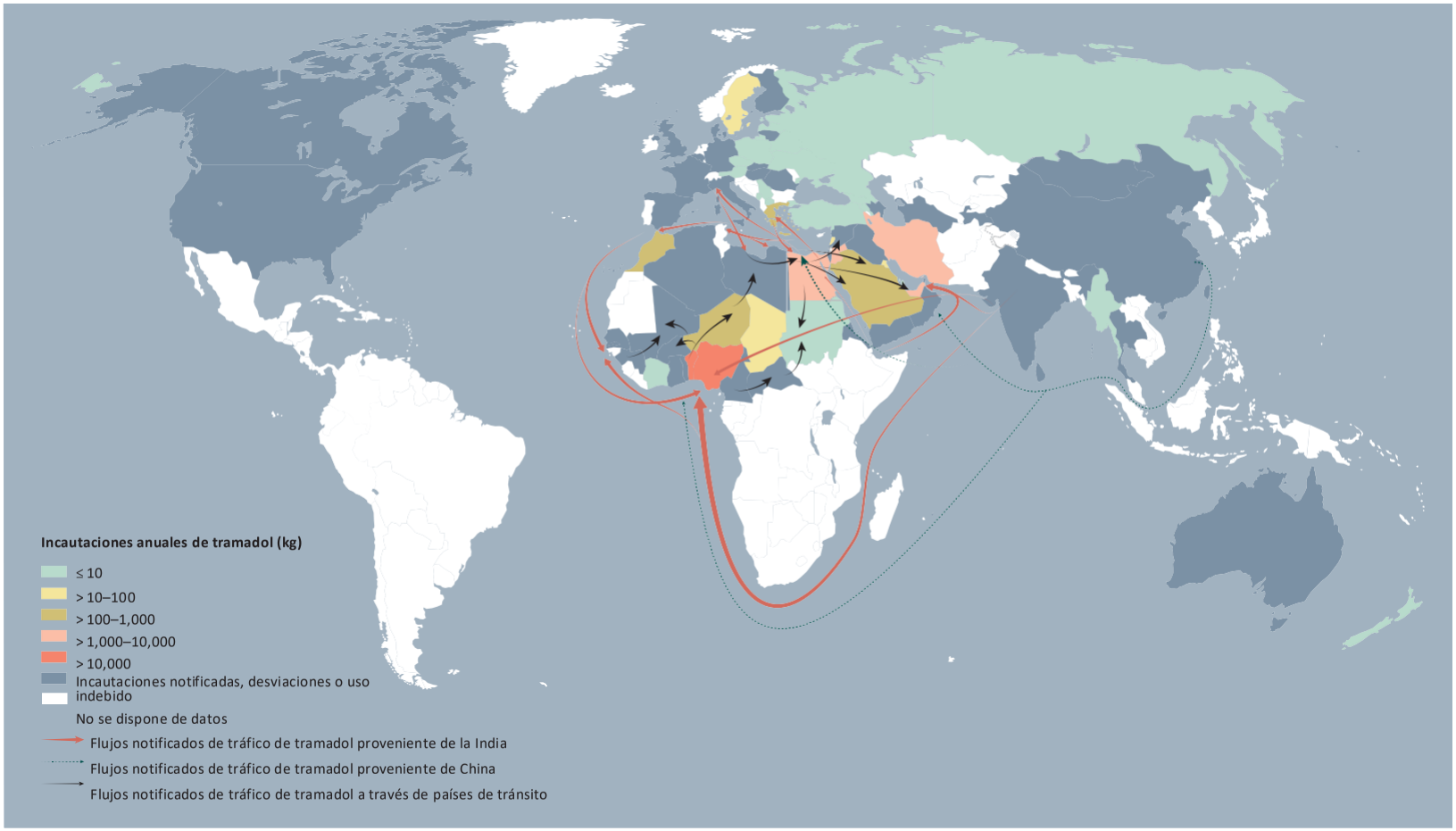
ocupan el 1er lugar de las 3 sustancias que más se consumen en 40 países



consumo más elevado entre las mujeres

principal sustancia en hábitos de policonsumo, especialmente entre los consumidores de opioides

Incautaciones notificadas, desviación y rutas de tráfico de tramadol (con arreglo a las incautaciones notificadas), 2013–2017



Fuentes: UNODC, datos del cuestionario para los informes anuales, *Informe de la Junta Internacional de Fiscalización de Estupefacientes correspondiente a 2018* (y años anteriores); informes de las reuniones de jefes de los organismos nacionales encargados de combatir el tráfico ilícito de drogas (HONLEA) correspondientes a 2018 (y años anteriores); Organización Mundial de la Salud, Comité de Expertos en Farmacodependencia, 36ª reunión, Ginebra, 16 a 20 de junio de 2014; Oficina de Asuntos Internacionales de Narcóticos y Aplicación de la Ley, *International Narcotics Control Strategy Report 2019* (y años anteriores).

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La producción mundial de opio se vio aún más afectada que el cultivo por la sequía del Afganistán, donde se produjo el 82 % del opio mundial en 2018. Tras registrarse una tendencia al alza en los dos últimos decenios, la producción mundial disminuyó en un 25 % de 2017 a 2018 hasta situarse en unas 7.790 toneladas. Pese a esa caída, la cantidad de opio producida fue la tercera más grande registrada desde que la UNODC comenzara a vigilar sistemáticamente la producción de opio en la década de 1990.

Las incautaciones de opiáceos aumentan a niveles sin precedentes

Las cantidades de opiáceos incautados en todo el mundo volvieron a alcanzar un máximo histórico en 2017. Se incautaron unas 693 toneladas de opio, un 5 % más que en el año anterior. Se incautaron además 103 toneladas de heroína y 87 toneladas de morfina, un 13 % y un 33 % más que en 2016, respectivamente. Si esas incautaciones se expresaran en la cantidad equivalente común de heroína, las incautaciones de heroína superarían a las de morfina y opio.

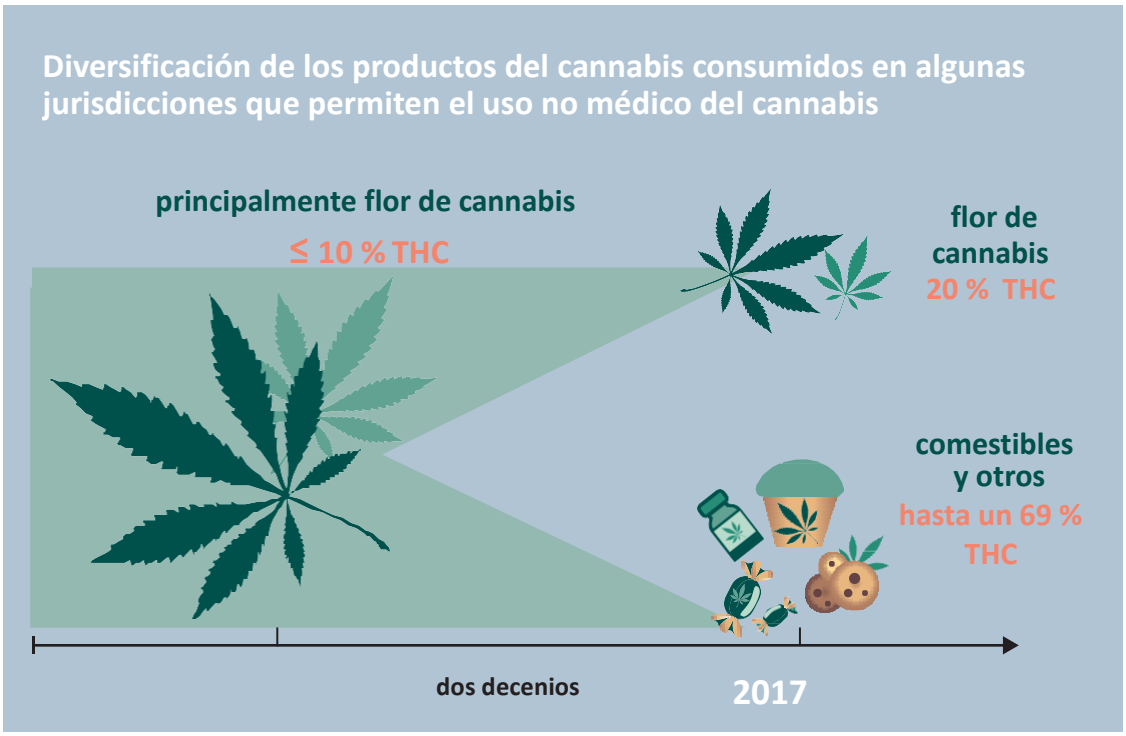
Aproximadamente el 86 % de todos los opiáceos incautados en 2017 se incautaron en Asia, que es la región en la que se concentra el 90 % de la producción ilícita mundial de opio.

Las incautaciones mundiales de heroína han aumentado a un ritmo más elevado que la producción, lo que hace pensar en una probable mejora de la eficiencia de la actuación de los organismos encargados de hacer cumplir la ley y de la cooperación internacional.

El mercado del cannabis en transición debido a los cambios en su condición jurídica en algunos países

La incautación de hierba de cannabis parece haber perdido prioridad en América del Norte pese a que sigue existiendo un mercado ilícito

La gran mayoría de las incautaciones de hierba de cannabis siguen concentrándose en América. América del Sur fue responsable del 38 % del total mundial en 2017 y América del Norte, del 21 %. No obstante, en años anteriores América del Norte había ocupado la primera posición. Las incautaciones de cannabis en América del Norte vienen decayendo desde hace tiempo y en la actualidad se sitúan un 77 % por debajo del nivel alcanzado en 2010. Esto se refleja en los datos sobre incautaciones mundiales, que son un 20 % inferiores a los correspondientes a 2016.



Basado en Orens *et. al.*, "Market size and demand for marijuana in Colorado".

La disminución de las incautaciones en América del Norte ha ido acompañada de un aumento del uso no médico del cannabis en el contexto de las medidas adoptadas en algunas jurisdicciones para legalizarlo.

Pese al objetivo de impedir que los delincuentes obtengan beneficios del comercio ilícito de cannabis, en muchos de los estados que han legalizado el uso no médico del cannabis han subsistido algunos mercados ilícitos. Esto es especialmente patente en los estados de Colorado y Washington, que figuraban entre las primeras jurisdicciones que adoptaron esas medidas en 2012. En California, los intentos iniciales de autorizar la venta de cannabis en 2018 se tradujeron en un aumento de los precios con respecto al mercado ilícito, por lo que no se logró atraer a los consumidores y apartarlos del mercado ilícito.

Aumento de la intensidad del consumo de cannabis en el contexto de su legalización

El número de personas que consumen cannabis en América del Norte es mayor que en la década anterior, pero el aumento ha sido aún más pronunciado en lo que respecta al consumo habitual (no médico) de esa sustancia. Por ejemplo, en los Estados Unidos el número de personas que consumieron cannabis en el año anterior aumentó en aproximadamente un 60 % entre 2007 y 2017, mientras que el número de personas que lo consumen a diario o casi a diario se duplicó con creces en ese mismo período. El mayor porcentaje del cannabis consumido corresponde a ese grupo de consumidores habituales.

Los productos de la planta de cannabis se han diversificado y su potencia ha ido en aumento desde su legalización

En Colorado, si bien la potencia (nivel de tetrahidrocannabinol (THC)) de la flor de cannabis ha seguido siendo menor que la de los concentrados de cannabis (20 % frente a 69 %, en 2017), la potencia de ambos tipos de producto aumento en aproximadamente un 20 % en el período 2014–2017.

El mercado de los concentrados de cannabis también ha evolucionado rápidamente y en la actualidad hay disponible una amplia gama de productos, cada uno de ellos con diversos niveles de THC, si bien la proporción de concentrados de cannabis analizados que contienen más de un 75 % de THC se ha quintuplicado en los últimos años. También ha aumentado en Colorado la demanda de productos no derivados de la flor de cannabis, como los cartuchos de aceite para vaporizadores, los concentrados tipo *wax* o *shatter* y los productos comestibles con infusión de cannabis.

MEDIDAS DE CUMPLIMIENTO DE LA LEY

Las autoridades están abriéndose camino en mercados de drogas de difícil acceso

El control de los "euforizantes legales" contribuye a acabar con los mercados de drogas emergentes

El mercado de las nuevas sustancias psicoactivas es variado y dinámico debido a la frecuencia con que se sintetizan nuevas sustancias que se venden a menudo como "euforizantes legales", bien como sustitutas de sustancias sujetas a fiscalización o bien mezcladas con ellas. Pese a ello, muy pocas de esas sustancias se han hecho un sitio a largo plazo en el mercado.

Existen indicios de que los cambios jurídicos dirigidos a someter a fiscalización de las nuevas sustancias psicoactivas podrían haber servido para disuadir a la población general de consumirlas, pese a su arraigo en algunas subpoblaciones reducidas. El consumo de "sales de baño" (mayormente catinonas sintéticas) disminuyó de manera generalizada entre la juventud de los Estados Unidos después de que la venta de esos estimulantes se prohibiera en 2011. En el Reino Unido, asimismo, el consumo de mefedrona, otra catinona, disminuyó drásticamente en los años posteriores a su fiscalización a nivel nacional en 2010.

Caída inicial de las ventas de drogas en la web oscura tras el cierre de AlphaBay

A mediados de 2017, los organismos encargados de hacer cumplir la ley cerraron AlphaBay, uno de los principales mercados mundiales de drogas en la web oscura. También se infiltraron en otro mercado destacado, Hansa, y lo mantuvieron activo para recabar datos antes de desmantelarlo. Más recientemente, en abril de 2019, se llevaron a cabo amplias operaciones encubiertas que llevaron al cierre de Wall Street Market, que en ese momento era el segundo mayor mercado de la web oscura después de Dream Market, que a su vez anunció que cerraría al final de ese mismo mes.

Algunas de las personas que compraban drogas en la web oscura cambiaron de comportamiento tras los cierres: en enero de 2018, el 15 % de los clientes afirmaron que recurrían a la web oscura con menos frecuencia y el 9 %, que habían dejado de usarla por completo. Las encuestas en línea apuntan a una posible disminución de la proporción de usuarios que adquirieron drogas en la web oscura en 2018, concretamente en América del Norte, Oceanía y América Latina.

El tráfico de alucinógenos está más concentrado geográficamente que el de otro tipo de drogas

Asia Oriental y Sudoriental continua proporcionando los mayores mercados para la ketamina

El 87 % del volumen total de alucinógenos incautados en los últimos años corresponde a la ketamina, sustancia no sometida a fiscalización internacional. Cabría señalar, no obstante, que la dosis habitual de ketamina es mucho mayor que la dosis habitual de dietilamida del ácido lisérgico (LSD). Si el cálculo se basara en las dosis, en lugar del peso, el LSD representaría el 95 % de los alucinógenos incautados en los últimos 20 años.

En el período 2013–2017, las autoridades de Asia, mayormente Asia Oriental y Sudoriental, comunicaron el 96 % de la cantidad total de ketamina incautada en todo el mundo. No obstante, el tráfico de ketamina parecería estar extendiéndose a otras regiones, entre ellas Europa, América y Oceanía.

Las incautaciones de LSD y otros alucinógenos se concentran principalmente en América del Norte

Aproximadamente el 88 % de las incautaciones de alucinógenos, con excepción de la ketamina, se realizaron en América en el período 2015–2017. Esas operaciones fueron llevadas a cabo mayormente por las autoridades encargadas de hacer cumplir la ley de los Estados Unidos.

Si se tiene en cuenta el peso, la sustancia de ese grupo que con más frecuencia se incauta a nivel mundial fue la fenciclidina (PCP), también conocida por el nombre coloquial "polvo de ángel", que representó el 44 % del total de los alucinógenos incautados entre 2011 y 2017. No obstante, la dimetiltriptamina (DMT) comenzó a dominar las incautaciones mundiales de alucinógenos (con excepción de la ketamina) en 2016 y 2017.

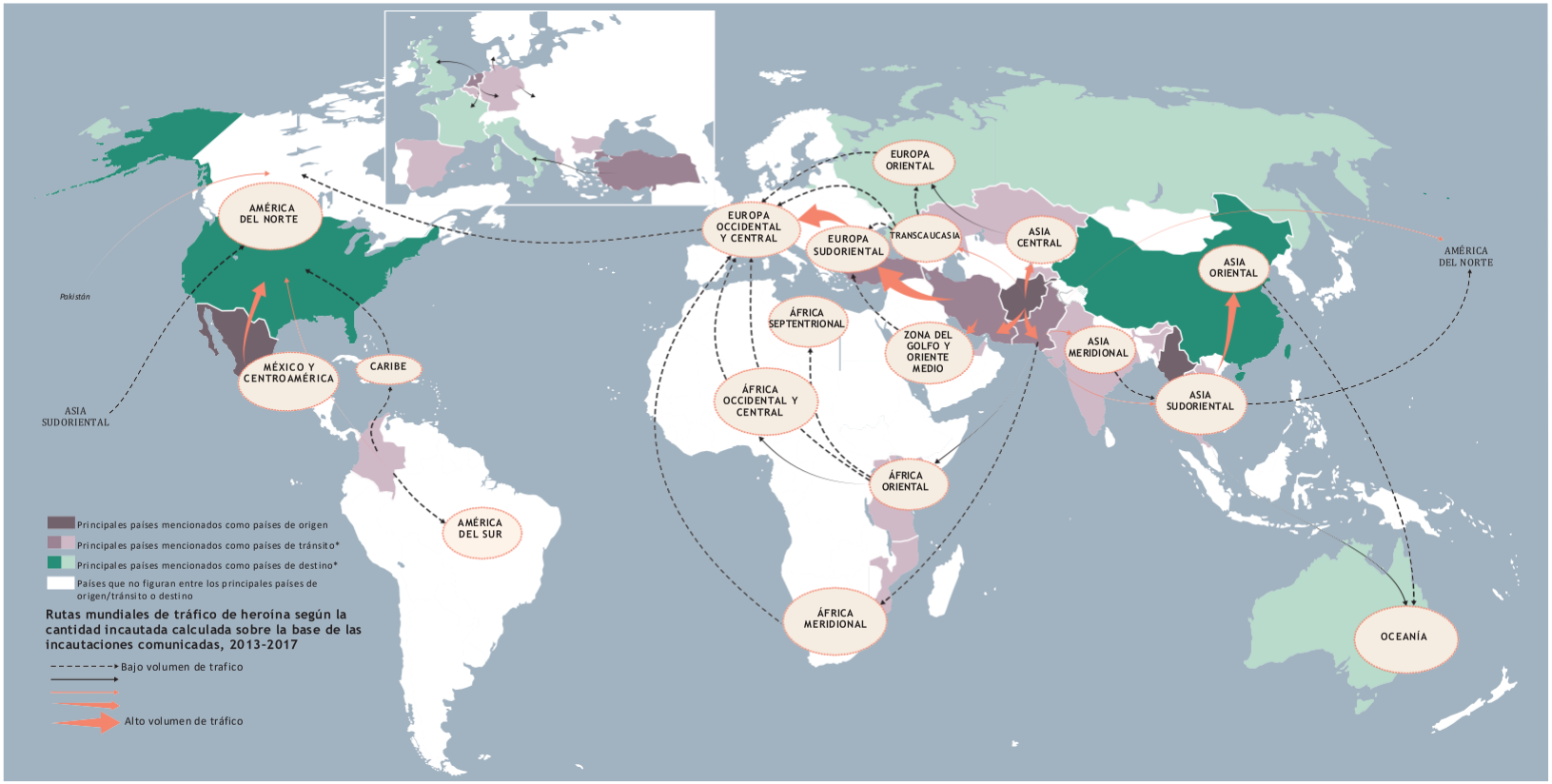
Los mercados de la heroína y la cocaína se sustentan en complejas redes mundiales de contrabando

La ruta de los Balcanes sigue siendo la vía de tráfico de heroína más transitada del mundo

La ruta de tráfico de heroína más transitada del mundo sigue siendo la ruta de los Balcanes, por la que se transporta la droga desde el Afganistán hasta diversos destinos de Europa Occidental y Central, pasando por la República Islámica del Irán, Turquía y los países de los Balcanes. Las incautaciones realizadas por los países que atraviesa la ruta de los Balcanes representan el 47 % de las cantidades globales de heroína y morfina incautadas fuera del Afganistán en 2017.

La heroína procedente del Afganistán se transporta también por otras rutas que atraviesan el Pakistán con destino a Asia Meridional o África (ruta meridional), o a los mercados de la Federación de Rusia atravesando Asia Central (ruta septentrional). No obstante, esas rutas parecerían ser menos importantes, y esa importancia sigue disminuyendo, como en el caso de la ruta septentrional. Por ejemplo, en 2008, el 10 % de las incautaciones mundiales de heroína y morfina se realizaron en los países que se encontraban en la ruta septentrional; en 2017, ese porcentaje se había reducido al 1 %.

Principales rutas de tráfico de heroína según las incautaciones comunicadas, 2013–2017



Fuentes: UNODC, respuestas al cuestionario para los informes anuales y base de datos sobre incautaciones de drogas.

**Los tonos más oscuros indican un país de tránsito o destino en que se incautan mayores cantidades de heroína.*

El tamaño de la ruta se basa en la cantidad total incautada en esa ruta, según la información sobre rutas de tráfico proporcionada por los Estados Miembros en el cuestionario para los informes anuales, la base de datos sobre incautaciones y otros documentos oficiales en el período 2013–2017. Las rutas se determinan teniendo en cuenta los países de partida/tránsito y destino que se indican en esas fuentes. Como tales, deben considerarse una indicación aproximada de las rutas de tráfico existentes, pudiendo haber varias rutas secundarias que no hayan quedado reflejadas. Las flechas representan la dirección del tráfico: el origen de la flecha indica bien el punto de partida, bien el de última proveniencia; la punta de la flecha indica bien la zona de consumo, bien el próximo punto de destino del tráfico. Por consiguiente, el origen del tráfico no refleja el país en que se produjo la sustancia.

Los principales países que se mencionan como países de tránsito o destino se determinaron en función del número de veces en que otros Estados Miembros los identificaron como punto de partida/tránsito o destino de las incautaciones y la cantidad media anual que representaron esas incautaciones en el período 2013–2017. En la sección "Metodología" del presente informe se puede consultar información más detallada al respecto.

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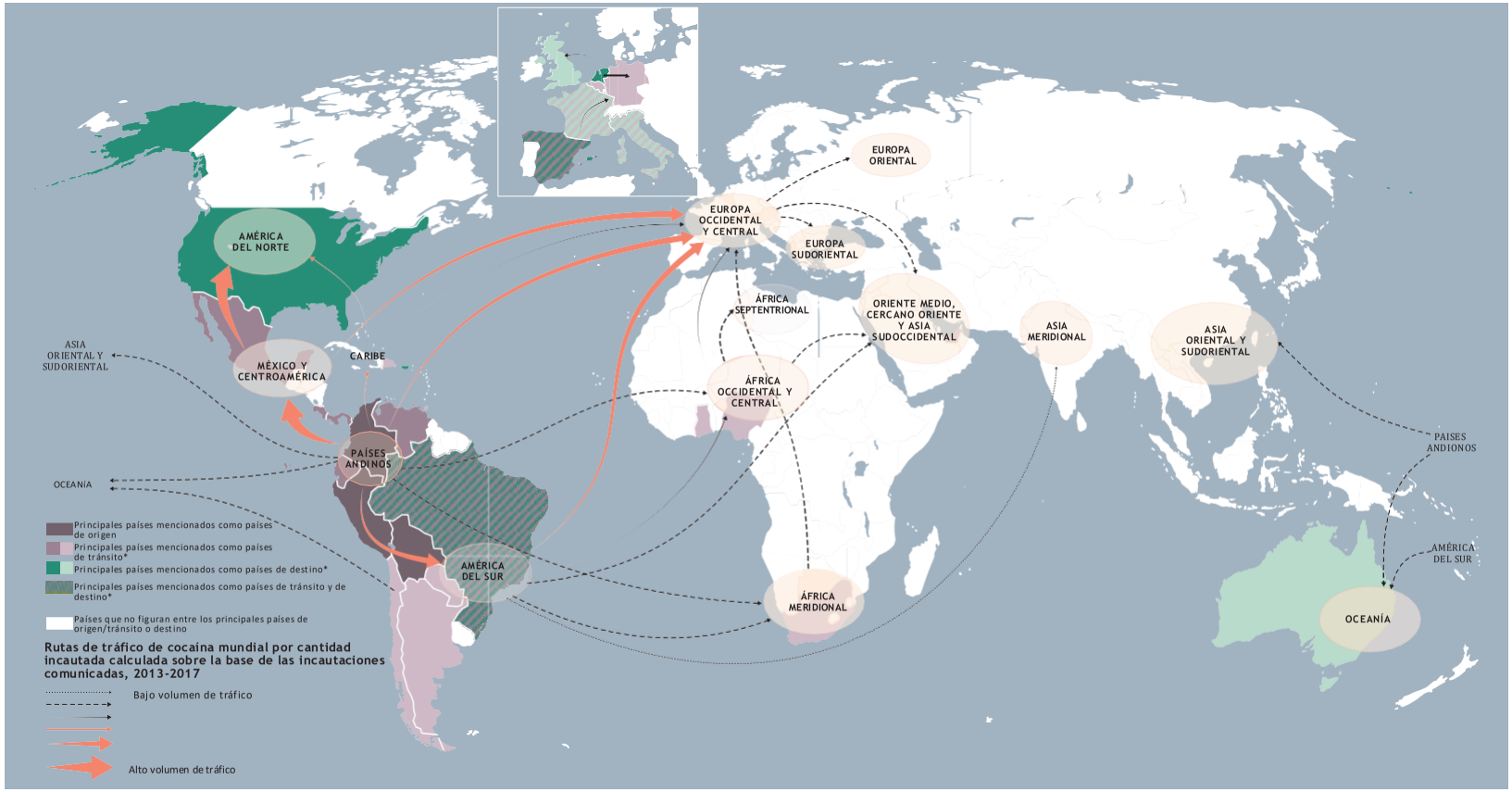
Principales rutas de tráfico de cocaína según las incautaciones comunicadas, 2013–2017



Fuentes: UNODC.

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La mayor parte de la heroína con que se trafica en América se origina en esa misma región

La cantidad de heroína incautada en América ha seguido una clara tendencia al alza en el último decenio. La mayor parte de ese tráfico tiene lugar en América del Norte, por lo general desde México a los Estados Unidos, aunque la heroína encontrada en el Canadá procede del Afganistán.

Un análisis de las incautaciones en los mercados mayoristas de la heroína en los Estados Unidos ha puesto de manifiesto que cada vez predomina más la heroína procedente de México. Aproximadamente el 80 % de las muestras de heroína analizadas en 2016 provenían de México.

El tráfico de cocaína se ha venido expandiendo desde la década de 1980 hasta convertirse en un fenómeno mundial

Unos 143 países de todas las regiones comunicaron incautaciones de cocaína en el período 2013–2017, frente a 99 países en el período 1983–1987.

La mayor parte de la cocaína con que se trafica en los países andinos de América del Sur está destinada a los principales mercados de consumo de América del Norte y Europa Occidental y Central. Las incautaciones efectuadas en América del Norte se han duplicado con creces en los últimos años, de 94 toneladas en 2013 a 238 en 2017.

El segundo mayor flujo de tráfico de cocaína en todo el mundo es el que procede de los países andinos con destino a Europa Occidental. La cantidad de cocaína incautada en Europa Occidental y Central también ha aumentado en más del doble en los últimos cinco años, de 65 toneladas en 2013 a 141 toneladas en 2017.

La relación entre la producción lícita y los mercados ilícitos sigue sin estar del todo clara en algunos casos

Es probable que los mercados del fentanilo y el tramadol se sustenten en la oferta ilícita

Los datos que pueden ayudar a aclarar si los fármacos opioides se desvían del mercado lícito al ilícito o si se producen ilícitamente en el lugar de origen son escasos, aunque la situación varía en función de la sustancia o la región.

En el caso del fentanilo, por ejemplo, la mayor parte de la sustancia que se encuentra en el mercado ilícito procede de la fabricación ilícita, aunque en los Estados Unidos se ha notificado la desviación de pequeñas cantidades de fentanilo.

El amplio mercado del tramadol destinado al consumo con fines no médicos en África Septentrional y en el Oriente Medio y el Cercano Oriente también parece abastecerse de tramadol fabricado específicamente para el mercado ilegal y vendido exclusivamente en este, pero la información disponible sigue siendo escasa.

Es probable que el mercado ilícito de otros fármacos opioides se abastezca de fuentes lícitas, si bien también se dan casos de fabricación ilícita

Fuera de América del Norte, donde la desviación del mercado lícito al ilícito de fármacos opioides como la codeína y la oxicodona es evidente, no se tiene constancia de la desviación de grandes cantidades de esas sustancias. Eso podría deberse a que no se comunica suficiente información o a la escasa capacidad de las autoridades encargadas de hacer cumplir la ley para detectar las desviaciones.

Existen lagunas en los conocimientos sobre la cadena de abastecimiento de la codeína, sustancia que se consume con fines no médicos en muchas subregiones. El hecho de que la mayor parte de la codeína incautada se fabrica lícitamente y la falta de pruebas de la existencia de laboratorios ilícitos que fabriquen codeína hacen pensar que el consumo no médico de la codeína se nutre mayormente de la cadena de abastecimiento legal.

No obstante, no está claro cómo y en qué etapa de la cadena el suministro de codeína con fines médicos se desvía para su uso con fines no médicos. Podría tratarse de una suma de diversas situaciones: algunos preparados de codeína podrían obtenerse fácilmente en las farmacias u otro tipo de puntos de distribución, y parte de la desviación podría tener lugar antes de que los fármacos lleguen al mercado minorista, lo que daría lugar a la desviación del suministro lícito al mercado ilícito.

CONSECUENCIAS PARA LA SALUD

Las consecuencias adversas para la salud asociadas al consumo de drogas siguen siendo considerables

Más de 11 millones de personas se inyectan drogas en todo el mundo

Las personas que se inyectan drogas sufren múltiples consecuencias negativas para la salud. Están expuestas a un riesgo mayor de sobredosis mortal y se ven afectadas de manera desproporcionada por enfermedades infecciones de transmisión sanguínea como el VIH y la hepatitis C. En 2017 el total de personas que se inyectaban drogas en todo el mundo ascendía a 11,3 millones.

Una proporción considerable del número de personas que se inyectan drogas en todo el mundo se concentra en un pequeño grupo de países. Aproximadamente el 43 % de esas personas reside en solo tres países: China, la Federación de Rusia y los Estados Unidos.

La prevalencia de la infección por el VIH entre las personas que se inyectan drogas varía considerablemente de una región a otra

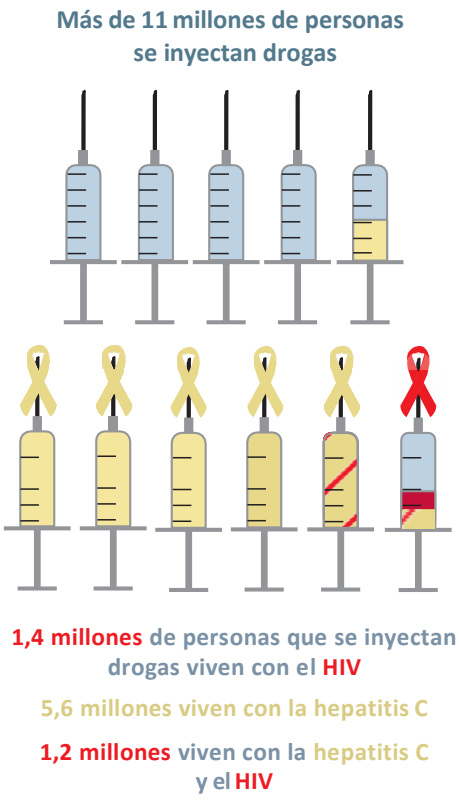
Aproximadamente una de cada ocho personas que se inyectan drogas vive con el VIH, es decir, 1,4 millones de personas. Según las estimaciones del ONUSIDA, la probabilidad de que los consumidores de drogas por inyección se contagien del VIH es 22 mayor que la de la población general.

Hasta la fecha, la prevalencia del VIH en las personas que se inyectan drogas es más elevada, con diferencia, en Asia Sudoriental y en Europa Oriental y Sudoriental, cuyos índices superan en 2,3 y 1,8 veces el promedio mundial, respectivamente. La proporción de consumidores de drogas por inyección en ambas subregiones es también superior a la media.

Las medidas de contención de la epidemia de hepatitis C entre las personas que se inyectan drogas han sido lentas

La prevalencia de la hepatitis C en las personas que se inyectan drogas es muy elevada: casi la mitad de esas personas, unos 5,6 millones, viven con la hepatitis C.

Desde hace poco está disponible un tratamiento de la hepatitis C altamente efectivo en forma de antivirales de acción directa que podría transformar la atención de las personas que se inyectan drogas que viven con la hepatitis C y sus perspectivas. No obstante, pese a que esos nuevos fármacos ofrecen oportunidades para reducir la elevada carga de morbilidad de la hepatitis C en las personas que se inyectan drogas, los avances que se han hecho con miras a mejorar la prestación de servicios de prevención y tratamiento a las personas que consumen drogas por inyección han sido lentos.



El elevado número de muertes y años de vida sana perdidos atribuibles al consumo de drogas sigue siendo inaceptable

Se estima que unas 585.000 personas murieron a consecuencia del consumo de drogas en 2017. Más de la mitad de esas muertes se debieron a una hepatitis C no tratada que degeneró en cáncer de hígado o cirrosis, casi un tercio de las muertes atribuibles a trastornos por consumo de drogas. La mayor parte (dos tercios) de las muertes que se atribuyen a trastornos por consumo de drogas estaban relacionadas con el consumo de opioides.

Unos 42 millones de años de vida sana se perdieron (muertes prematuras y años vividos con discapacidad) a consecuencia del consumo de drogas, mayormente de los trastornos por consumo de drogas, en particular el consumo de opioides.

La mayor carga de morbilidad se encuentra en Asia Oriental y Sudoriental, América del Norte y América del Sur, lo que es reflejo del alto número de consumidores de opioides y de personas que se inyectan drogas que hay en esas subregiones.

La demanda de tratamiento por trastornos por consumo de cannabis va en aumento en la mayoría de las regiones

Todas las regiones –a excepción de África, donde la proporción es más alta que en otras regiones–, han registrado un aumento de la proporción de personas que se someten a tratamiento por trastornos por consumo de cannabis como principal droga objeto de abuso. Los opioides (predominantemente la heroína) siguen siendo el principal tipo de droga por el que se recibe tratamiento en Europa (en particular Europa Oriental y Sudoriental) y Asia. En Europa, la avanzada edad de la cohorte de consumidores de opioides, muchos de los cuales están en contacto con los servicios de tratamiento de la drogodependencia, sigue constituyendo un problema de salud.

Cada vez más consumidores de cocaína solicitan tratamiento en Europa, frecuentemente por policonsumo de drogas

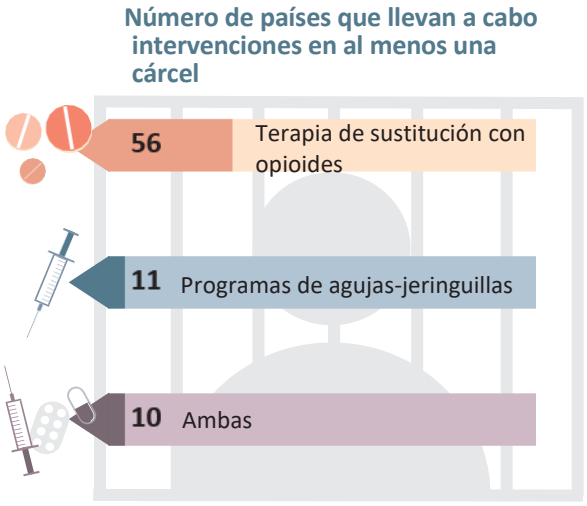
El número de personas que reciben tratamiento por primera vez por trastornos por consumo de cocaína ha aumentado en los últimos dos años en los países de la Unión Europea. Tres cuartas partes de las personas que accedieron a los servicios especializados en tratamiento de la drogodependencia por primera vez se concentran en solo tres países: España, Italia y el Reino Unido.

Un tercio de todos los consumidores de cocaína que se someten a tratamiento de la drogodependencia en la Unión Europea lo hace solo por trastornos por consumo de cocaína. El resto comunicaron también el consumo de sustancias secundarias, sobre todo alcohol y cannabis. Muchos de los consumidores de cocaína *crack* que se sometieron a tratamiento especificaron que también consumían heroína como droga secundaria.

Los hábitos de consumo de drogas y las necesidades de tratamiento varían en función del género

El consumo no médico de tranquilizantes y sedantes afecta de manera desproporcionada a las mujeres

Todas las regiones comunicaron el consumo no médico de sedantes y tranquilizantes en 2017. El abuso de ese tipo de sustancias afectaba en particular a las mujeres.



En los países de América del Sur y Centroamérica, el consumo no médico de tranquilizantes en el último año afecta a más del 2 % de la población general y el número de mujeres afectadas es mayor que el de hombres.

Catorce países de Europa Occidental y Central comunicaron también el consumo de tranquilizantes con fines no médicos en 2017, y en todos ellos la tasa de consumo era mayor entre las mujeres que entre los hombres. Además, en 8 de esos 14 países, la prevalencia del consumo no médico de tranquilizantes era mayor que la del consumo de cannabis.

Cuando las mujeres consumen drogas, ese hábito tiende a desembocar en trastornos por consumo de drogas en un período más breve que en el caso de los hombres. No obstante, las mujeres pueden ser reticentes a solicitar tratamiento, especialmente si están embarazadas y temen las consecuencias legales y el estigma social. Si son madres o cuidadoras, el cuidado de los hijos puede ser un obstáculo, por ejemplo.

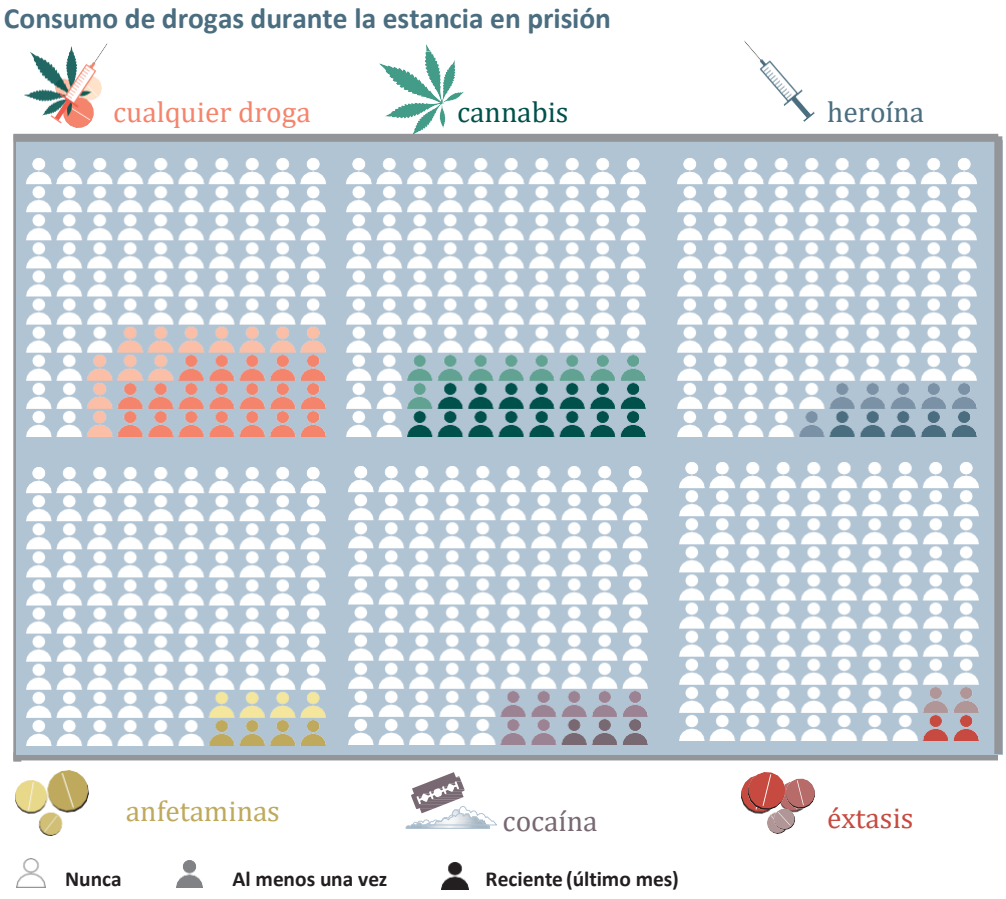
Los reclusos son vulnerables al abuso de drogas, pero no están suficientemente atendidos por los programas de tratamiento

Las personas que tienen un historial de consumo de drogas o de trastornos por consumo de drogas constituyen una parte considerable de la población reclusa de algunos países

Un elevado porcentaje de las personas recluidas en centros penitenciarios consume drogas y padece trastornos por consumo de drogas. Según los estudios realizados en algunos países de ingresos altos, los

trastornos por consumo de drogas prevalecen más en las reclusas que en los reclusos; se calcula que el 51 % de las mujeres, frente al 30 % de los hombres, ha padecido trastornos por consumo de drogas en el año anterior a su ingreso en prisión, porcentaje mucho mayor que en la población general.

La información procedente de los países de ingresos bajos y medianos es escasa, pero hay estudios que indican que casi la mitad de los reclusos de esos países ya habían consumido drogas con anterioridad a su ingreso en prisión. Si bien el cannabis era la droga más consumida, aproximadamente uno de cada diez reclusos había consumido opioides y uno de cada diez tenía antecedentes de consumo de drogas por inyección.



En muchas cárceles se ha constatado la existencia de consumo de drogas, incluido consumo por inyección

Según las estimaciones, aproximadamente una de cada tres personas encarceladas en todo el mundo ha consumido drogas al menos una vez durante su estancia en prisión. Una de cada cinco comunicó que había consumido drogas en el último mes. El cannabis es la droga más popular, pero el consumo actual (en el último mes) de heroína está más extendido que el de anfetaminas, cocaína o éxtasis.

Las personas que se inyectan drogas en la cárcel se enfrentan a un riesgo de transmisión del VIH y la hepatitis C especialmente elevado debido a la alta prevalencia del VIH y la hepatitis C en la población reclusa en general, y debido a que muchos centros no disponen de agujas y jeringuillas estériles, lo cual podría obligar a los reclusos a compartir el equipo de inyección con más frecuencia y con más personas. La prevalencia del consumo de drogas por inyección es mayor en Asia y el Pacífico, Europa Oriental y Asia Central, donde aproximadamente una de cada cinco personas encarceladas se había inyectado drogas al menos una vez durante su estancia en prisión.

Elevado nivel de infecciones por VIH y hepatitis C entre las personas que se inyectan drogas en las cárceles de algunos países

Si bien la prevalencia del VIH y la hepatitis C en la población penitenciaria general es mucho mayor que en la población general en la comunidad, los pocos datos disponibles indican que las tasas son considerablemente más elevadas entre las personas que se inyectan drogas en las cárceles (antes de su ingreso o durante su reclusión) que entre los reclusos que no se inyectan drogas.

Una revisión de los estudios disponibles llegó a la conclusión de que la prevalencia del VIH y la hepatitis C en las cárceles era seis y ocho veces mayor, respectivamente, en los reclusos que se inyectaban drogas que en los que no.

Importantes deficiencias en los servicios de prevención y tratamiento de enfermedades infecciones en las cárceles

Cincuenta y seis países comunicaron que habían ofrecido terapia de sustitución con opioides en al menos un centro penitenciario en 2017, mientras que 46 comunicaron que esa opción de tratamiento no estaba disponible en entornos penitenciarios. La disponibilidad de programas de distribución de agujas y jeringuillas era mucho menor en las cárceles: 11 países comunicaron que esos programas estaban disponibles en al menos un centro, pero 83 países confirmaron que no se ofrecían en ninguno. Si bien ambas intervenciones pueden ser especialmente eficaces para prevenir la propagación del VIH y la hepatitis C si se prestan conjuntamente, tan solo 10 países las ofrecían en al menos un centro penitenciario, si bien ambas no estaban necesariamente disponibles en los mismos centros.

La elevada prevalencia de la hepatitis C y el VIH en la población reclusa, especialmente las personas que se inyectan drogas, y las importantes consecuencias adversas asociadas a esas enfermedades infecciosas ponen de relieve la necesidad de pruebas médicas y acceso a tratamiento en los entornos penitenciarios. El número de países que comunicaron la disponibilidad de pruebas de detección y tratamiento en al menos un centro penitenciario era menor en lo que respecta a la hepatitis C (42 ofrecían pruebas de detección y 39 tratamiento) que al VIH (78 países tenían servicios de detección y 87 de tratamiento).

CONCLUSIONES Y CONSECUENCIAS EN MATERIA DE POLÍTICAS

Es necesario estrechar la cooperación internacional y concertar apoyos si se desea impedir que los desafíos que plantean las drogas en todo el mundo pongan en peligro los esfuerzos desplegados por lograr las metas de los Objetivos de Desarrollo Sostenible consistentes en garantizar una vida sana y promover la paz y la justicia. Los cambios en los hábitos mundiales de consumo de drogas, en los que se combinan las sustancias fiscalizadas (heroína, cocaína, anfetaminas y cannabis), las nuevas sustancias psicoactivas y el consumo de medicamentos con fines no médicos, han hecho que los desafíos sean cada vez más complejos. Hay alrededor de 35 millones de personas que padecen trastornos por consumo de drogas y 11 millones de personas se inyectan drogas, de las que 1,4 millones viven con el VIH y 5,6 millones viven con la hepatitis C.

De los datos sobre las consecuencias nocivas para la salud del consumo de drogas se desprende que la carga de morbilidad es más pesada de lo que se había calculado, puesto que ha ocasionado más de medio millón de muertos y se han perdido 42 millones de años de vida sana. El cultivo ilícito para la producción de drogas y la fabricación de drogas de origen vegetal registran sus máximos históricos. Pese a haber disminuido en 2017, la superficie dedicada al cultivo de adormidera y la producción mundial de opio se mantienen en niveles elevados, y el cultivo de arbusto de coca y la fabricación mundial de cocaína también han alcanzado niveles récord.

Un ámbito en el que la comunidad internacional ha cosechado cierto éxito es el de la lucha contra las nuevas sustancias psicoactivas, como pone de manifiesto la disminución del número de sustancias identificadas y notificadas por primera vez a la UNODC. Las nuevas sustancias psicoactivas no han arraigado en el mercado tanto como se temía hace algunos años, y la comunidad internacional ha reaccionado a tiempo para evaluar los daños causados por esas sustancias e incluir en las listas y cuadros de los tratados aquellas que requerían fiscalización internacional.

Ayudar a quienes lo necesitan

Las respuestas en materia de salud pública siguen siendo insuficientes. No hay tantas intervenciones de tratamiento eficaces, basadas en datos científicos y respetuosas con las obligaciones internacionales en materia de derechos humanos, ni son tan accesibles, como haría falta, y los Gobiernos nacionales y la comunidad internacional deben reforzar las intervenciones para suplir esa carencia.

Es necesario fortalecer los compromisos y aumentar los recursos, ante todo y sobre todo para ampliar la prevención del consumo de sustancias mediante intervenciones de eficacia comprobada y avaladas por las normas internacionales. Lo que determina si una persona es vulnerable a iniciarse en el consumo de drogas o a desarrollar trastornos a consecuencia de ello son varios factores de protección y de riesgo relacionados con la persona y su entorno (progenitores, familia, escuela, pares), además de la influencia del entorno físico y socioeconómico. Las intervenciones únicamente pueden surtir efecto si refuerzan las condiciones de protección y atenúan o previenen los factores que aumentan la vulnerabilidad, entre otras vías contribuyendo a que las personas jóvenes, sus familias, escuelas y comunidades se impliquen con carácter general y en sentido positivo.

Si se entienden las drogas como una afección crónica, recurrente, compleja y de múltiples facetas que requiere atenciones e intervenciones continuas de muchas disciplinas, se puede acabar con el estigma asociado al consumo de drogas. Este mismo criterio se puede seguir también para intensificar los esfuerzos desplegados a fin de lograr los siguientes objetivos:

1. Ampliar las intervenciones de tratamiento de los trastornos por consumo de drogas basadas en datos científicos que estén integradas dentro del sistema de salud de cada país, comprendan el acceso universal a los servicios, estén a disposición de las personas que las necesiten, sean accesibles en diferentes entornos, se basen en los principios de los derechos humanos y la ética y atiendan las diversas necesidades de las personas con trastornos por consumo de drogas.

2. Ampliar la prestación del conjunto integral de nueve intervenciones para la prevención y el tratamiento de la hepatitis C, el VIH y otras infecciones entre las personas que consumen o se inyectan drogas, que se basa en los principios de igualdad, exhaustividad, accesibilidad y sostenibilidad y comprende el acceso universal a los servicios.

3. Garantizar que las personas que consumen drogas tengan a su disposición intervenciones de urgencia en casos de intoxicación aguda por drogas y sobredosis y puedan acceder a ellas en hospitales y en entornos comunitarios; por cada sobredosis mortal hay al menos 20 casos de sobredosis no mortales.

4. Ampliar las intervenciones de prevención de las sobredosis, especialmente en el caso de los opioides, promoviendo el acceso a la naloxona e impartiendo formación en gestión de las sobredosis a los posibles responsables de la respuesta inicial, e implantar programas de prevención de las sobredosis en las numerosas subregiones donde aún no existen. Los opioides son los responsables de una gran parte de los años de vida ajustados en función de la discapacidad (AVAD) que se atribuyen a los trastornos por consumo de drogas.

Mitigar las concentraciones de alto riesgo

Un principio central de la Agenda 2030 para el Desarrollo Sostenible es “asegurar que nadie se quede atrás” y “llegar primero a los más rezagados”. Entre los grupos de población más afectados por el problema de las drogas se encuentran las personas recluidas en establecimientos penitenciarios. Este año, el *Informe Mundial sobre las Drogas* lleva a cabo un análisis en profundidad del consumo de drogas y sus consecuencias nocivas para la salud en entornos penitenciarios, del que se desprende que los reclusos corren más riesgos asociados a los trastornos por consumo de drogas y a los trastornos de salud mental, al VIH, a la hepatitis C y a la tuberculosis que la población general. La prevalencia de las enfermedades infecciosas como el VIH, la hepatitis C y la tuberculosis activa también es desproporcionadamente superior en la población reclusa, en particular entre quienes se inyectan drogas.

Una de las estrategias para mitigar los riesgos asociados al consumo de drogas y sus consecuencias nocivas para la salud consiste en promover alternativas al encarcelamiento, de acuerdo con los tratados de fiscalización internacional de drogas, ofreciendo a las personas que consumen drogas y padecen trastornos por consumo de drogas que entran en contacto con el sistema de justicia penal la opción de someterse voluntariamente a servicios comunitarios de tratamiento de la drogodependencia con base empírica.

Las personas recluidas en establecimientos penitenciarios tienen el mismo derecho a la salud y al bienestar que cualquier otra persona. Las Reglas Nelson Mandela hacen hincapié en que los servicios médicos que reciben los reclusos deben tener la misma calidad que los que se prestan en la comunidad exterior y en que debe garantizarse la continuidad del tratamiento y la atención cuando el recluso ingresa en el centro, es trasladado a otro y sale en libertad. La prestación del conjunto integral de 15 intervenciones fundamentales basadas en datos que son indispensables para la prevención y el tratamiento eficaces del VIH, la hepatitis C y la tuberculosis en los entornos penitenciarios debe ser un componente clave de los servicios de atención de la salud que reciben las personas que consumen drogas en esos entornos cerrados. También es importante tener en cuenta que la salud de los reclusos tiene repercusiones en la sociedad en su conjunto, especialmente en relación con las enfermedades infecciosas y las afecciones de la salud mental, puesto que casi todas las personas recluidas acaban volviendo a sus comunidades. Al mejorar la salud de las personas recluidas se mejora a su vez la salud pública y se reducen las desigualdades en materia de salud en la población general.

La paradoja mundial por exceso y por defecto

Los fármacos opioides son medicamentos esenciales para el tratamiento del dolor y otras afecciones. Sin embargo, una gran parte de la población mundial sigue sin tener apenas acceso a esos fármacos debido a barreras legislativas, reglamentarias, administrativas o de recursos humanos. Los tratados de fiscalización internacional de drogas siempre han tenido por objetivo garantizar la disponibilidad de las sustancias fiscalizadas para utilizarlas con fines médicos y científicos y, al mismo tiempo, prevenir su desviación y uso indebido. Para respetar el espíritu de los tratados de fiscalización internacional de drogas es preciso eliminar las barreras que limitan la disponibilidad de las sustancias fiscalizadas y el acceso a ellas con fines médicos. El hecho de disponer de marcos jurídicos y regulatorios y directrices clínicas basados en prácticas racionales de prescripción médica puede contribuir a aumentar el acceso a los medicamentos sujetos a prescripción médica, incluidos los fármacos opioides, así como a reducir el riesgo de que se desvíen.

Sin embargo, las prácticas irracionales de prescripción médica, la promoción injustificada y la disponibilidad incontrolada de medicamentos sujetos a prescripción médica tienen consecuencias negativas, y su uso con fines no médicos ha perjudicado la salud pública e individual en muchas subregiones del mundo. El uso con fines no médicos de medicamentos sujetos a prescripción médica, en particular de los fármacos opioides, plantea un dilema para los mecanismos nacionales e internacionales de fiscalización.

Como pone de manifiesto el análisis que se lleva a cabo en el presente informe, el uso de medicamentos sujetos a prescripción médica con fines no médicos es uno de los elementos más importantes de los hábitos generales del policonsumo de drogas y de las consecuencias nocivas para la salud del consumo de drogas. Las personas usan indebidamente los medicamentos sujetos a prescripción médica para automedicarse, especialmente cuando los sistemas de salud son precarios; para intensificar los efectos de la sustancia principal consumida; para superar los efectos secundarios de la droga principal, o para aliviar los efectos nocivos y la gravedad de los síntomas de la abstinencia.

Hace falta seguir investigando para comprender mejor la dinámica del uso con fines no médicos de medicamentos sujetos a prescripción médica si se desea acabar con su uso indebido de manera efectiva y garantizar al mismo tiempo la disponibilidad de los medicamentos esenciales y el acceso a ellos. El reto reside en encontrar el preciso equilibrio entre el legítimo acceso con fines médicos a los medicamentos sujetos a prescripción médica y el riesgo de que se desvíen. Un ejemplo de ello es el tramadol, el cual, pese a su gran demanda como medicamento, está insuficientemente regulado y se ha convertido en una fuente de lucro para los grupos delictivos que operan en África Central, Occidental y Septentrional, en el Cercano Oriente y el Oriente Medio y en algunas subregiones de Asia. El endurecimiento de los controles sobre el tramadol en los países abastecedores y en los países de destino ayuda a luchar contra el tráfico de medicamentos falsificados. Partiendo de esa premisa, en la India se aprobaron recientemente varias medidas para fiscalizar el tramadol de conformidad con la legislación sobre estupefacientes, y de ese modo se facultó oficialmente a las fuerzas del orden para combatir la fabricación ilícita y el contrabando de esa sustancia. Sin embargo, esas iniciativas nacionales dependen de la cooperación internacional, con arreglo al principio de la responsabilidad común y compartida.

El cumplimiento de la ley es una parte esencial de la solución

Donde hay vulnerabilidad, hay actividad delictiva. Es fundamental hacer frente a ambos elementos de manera equilibrada e integral mediante respuestas de justicia penal que se centren en la salud y se basen en los derechos. Los niveles récord de producción de cocaína y opiáceos de los últimos dos años, unidos a la expansión del mercado de las drogas sintéticas como el fentanilo y sus análogos fabricados ilícitamente, exigen mayores esfuerzos por parte de las fuerzas del orden. La cooperación internacional sigue siendo una herramienta crucial para combatir con éxito el tráfico de drogas. Por ejemplo, en China se aprobó en mayo de 2019 una ley que sometía a fiscalización la mayoría de los análogos del fentanilo conocidos actualmente en todo el mundo.

Sin embargo, dado que los traficantes de drogas pueden sustituir las drogas perdidas a coste de mayorista, no cabe esperar que las incautaciones de drogas por sí solas desestabilicen los mercados de las drogas salvo que sean de enorme envergadura. Si una incautación lleva a desmantelar una organización que tenía una cuota importante del volumen de producción y venta en el mercado, puede observarse una correlación entre las incautaciones y los cambios en los precios, así como repercusiones en el mercado de las drogas. Para atajar de manera efectiva la oferta de drogas, es necesario que los organismos encargados de hacer cumplir la ley sustituyan las cantidades de drogas incautadas por el

desmantelamiento de organizaciones dedicadas al tráfico de drogas y de grupos criminales organizados transnacionales como criterio para medir el éxito de sus actuaciones. Para ello hacen falta, a su vez, una mayor sofisticación, la acumulación de una masa crítica de conocimientos básicos y el intercambio de información operativa entre las fuerzas del orden y las unidades especializadas de las diferentes jurisdicciones. Asimismo, los grupos criminales organizados están cambiando su estructura de funcionamiento y en ocasiones tienden a operar mediante redes con vínculos menos definidos que son difíciles de interceptar, razón por la cual se debe reforzar la formación de los agentes del orden y la inversión en análisis a fin de comprender estas nuevas dinámicas y diseñar intervenciones eficaces de lucha antidroga. Estas acciones exigen una coordinación efectiva entre las instituciones nacionales, regionales e internacionales.

Es necesario vigilar de cerca los mercados del cannabis

Aunque todavía es demasiado pronto para valorar las repercusiones que acabará teniendo la legislación que autoriza el consumo de cannabis con fines no médicos en el Canadá, el Uruguay y en algunas jurisdicciones de los Estados Unidos de América, ya se aprecian algunas tendencias que merecen ser vigiladas de cerca. Uno de los objetivos declarados de la legalización era impedir que los grupos criminales organizados se lucraran con el cannabis; sin embargo, todavía existen pujantes mercados ilícitos de cannabis en muchos de los estados de los Estados Unidos que permiten el consumo de cannabis con fines no médicos, lo cual es especialmente evidente en los estados de Colorado y Washington, las dos primeras jurisdicciones del país que en 2012 adoptaron medidas por las que se permitía el consumo de cannabis con fines no médicos.

Otra de las consecuencias de esa legislación es que las sociedades mercantiles están sustituyendo rápidamente a los productores artesanales de cannabis. Teniendo presente que el mercado del consumo de cannabis con fines no médicos se está expandiendo a gran velocidad, es más probable que el lucro dicte y controle el rumbo de la industria del cannabis por encima de consideraciones de salud pública. Un ejemplo de ello es la comercialización y disponibilidad de una amplia gama de productos de la planta de cannabis con un contenido en THC muy superior al que se registró hace un par de decenios en los estados que permiten el consumo con fines no médicos.

También cabe señalar que, en los Estados Unidos, cada uno de los estados que ha legalizado el consumo de cannabis con fines no médicos lo había legalizado antes con fines médicos; con la excepción de un estado, las urnas han sido la principal vía de aceptación del consumo, primero con fines médicos y, posteriormente, con fines no médicos. El actual debate en torno a las políticas y su cobertura en los medios de comunicación parecen haber incidido en la percepción que se tiene del riesgo de sufrir daños derivados del consumo de cannabis, especialmente entre la juventud. Así lo pone de manifiesto el marcado aumento del consumo frecuente y excesivo de cannabis y, si bien los grandes consumidores y los consumidores habituales representan únicamente una pequeña parte de quienes consumen cannabis cada año, en ellos se concentra la mayor parte del consumo de productos de la planta de cannabis en el mercado. Las publicaciones científicas indican que las personas que pasan a consumir

cannabis diariamente tienen más probabilidades de desarrollar trastornos por consumo de cannabis, y se ha determinado que el consumo habitual y excesivo de cannabis con un alto contenido en THC es un factor de riesgo con consecuencias para la salud agudas y crónicas, incluidos problemas de salud mental y trastornos por consumo de cannabis.

La disponibilidad de cannabis con un contenido en THC relativamente más elevado se ha traducido en un aumento del número de personas que solicitan tratamiento por trastornos por consumo de cannabis en muchas subregiones. Junto con las estrategias de prevención con base empírica que comienzan en una edad temprana, es necesario que se comprendan mejor, especialmente por parte de la juventud, las consecuencias negativas para la salud de una iniciación temprana en el consumo de cannabis y del consumo frecuente y excesivo de cannabis a largo plazo con fines no médicos.

Asimismo, en el debate público se tiende a confundir o mezclar el consumo de cannabis con fines no médicos, incluido el consumo de la flor de cannabis y otros concentrados con altos niveles de THC, con el consumo con fines médicos de productos de la planta de cannabis como el THC y el CBD, a menudo en forma de preparados farmacéuticos, para tratar problemas de salud como el dolor crónico, los síntomas de la esclerosis múltiple y la espasticidad y las alteraciones del sueño asociadas a la fibromialgia y el dolor crónico. No debería confundirse el CBD, un cannabinoide que no es un agente psicoactivo y que a menudo se promociona como un producto para la salud y el bienestar, con el THC, un cannabinoide psicoactivo muy diferente. Sería útil que las políticas, la legislación y el debate público trataran con mayor claridad estas cuestiones tan diferentes.

La cambiante complejidad pone de relieve la necesidad de seguir investigando

La disponibilidad en 2019 de nuevos datos fiables sobre el alcance del consumo de drogas en dos países muy poblados, Nigeria y la India, ha mejorado enormemente las estimaciones regionales y mundiales sobre el consumo de drogas. A la luz de estos nuevos datos, las estimaciones del número mundial de consumidores de opioides se han revisado al alza: un 50 % más de lo que se pensaba anteriormente. Esto afecta a las medidas que se adoptan en todo el mundo para hacer frente a las consecuencias nocivas para la salud que se atribuyen al consumo de opioides y para ampliar los servicios que se prestan frente a la crisis mundial de los opioides. También nos recuerda que hay que seguir mejorando los datos y los análisis en todo momento en un contexto en el que las percepciones a menudo dominan el debate público. Los desafíos mundiales de las drogas son cambiantes y complejos y exigen disponer de información actualizada y más precisa que sustente las respuestas. Para ello es necesario ampliar la labor de reunión de datos, difusión, análisis e investigación. De este modo, los interesados nacionales e internacionales podrán abordar el problema de las drogas con precisión, orientar el debate sobre las políticas mundiales y llevar la agenda de cooperación internacional y el apoyo directo allá donde sea necesario.

Es preciso poner al día el sistema internacional de reunión de datos a fin de reflejar la dinámica del consumo de drogas y de la oferta de sustancias fiscalizadas. La vigilancia de los *modus operandi* de los

traficantes de drogas y de sus rutas de tráfico tiene que capturar las dinámicas y los sistemas de incentivos inherentes al tráfico de drogas. Es necesario entender, en particular, la complejidad y variabilidad del espectro de modalidades del tráfico de drogas. La dinámica de la reciente crisis de los opioides en América del Norte, que está saliendo a la luz, pone de relieve la necesidad de hacer frente al complejo tráfico de grandes cargamentos en contenedores y al contrabando de pequeños paquetes que contienen nuevas sustancias psicoactivas y opioides sintéticos (análogos del fentanilo) mediante el sistema postal. Algunos consumidores compran sus productos directamente en Internet o en la web oscura, lo cual plantea otros retos. Este panorama cambiante difiere enormemente de la situación imperante hace tan solo dos decenios, cuando el tráfico transfronterizo se limitada mayormente a drogas de origen vegetal.

Otro ejemplo de que la dinámica actual exige un nuevo enfoque es la disminución del tráfico de opiáceos por la ruta septentrional en un momento en que la producción de opiáceos afganos ha alcanzado sus cotas más altas. El hecho de que se hayan incautado menores cantidades de opiáceos a lo largo de la ruta septentrional puede atribuirse a un cambio en los incentivos y los riesgos del comercio que ha podido desplazar el tráfico a otras rutas. Entre las posibles razones que han de estudiarse figuran la caída de la demanda de opiáceos en la ruta septentrional y la sustitución de los opiáceos por otras drogas, como los opioides sintéticos; la cooperación regional, y la capacidad cada vez mayor de las autoridades nacionales de prevenir el tráfico de opiáceos.

A fin de controlar mejor la fabricación y el tráfico ilícitos de opioides sintéticos (fentanilo y sus análogos) y otras nuevas sustancias psicoactivas, también es necesario seguir reforzando la capacidad nacional de vigilancia e investigación, no solo para mejorar la capacidad forense, sino también para detectar y comunicar la aparición de sustancias psicoactivas.

La situación cambiante con respecto al consumo no médico de cannabis y la expansión del mercado del cannabis han servido para tomar conciencia de la necesidad de seguir investigando y disponer de más datos coherentes. En las jurisdicciones donde la legislación permite el consumo de cannabis con fines no médicos, todavía no se han documentado por completo los diferentes productos de la planta de cannabis, su potencia, sus efectos para la salud y su consumo, también con fines médicos, lo cual dificulta que los encargados de formular políticas, las empresas farmacéuticas y los posibles consumidores valoren la repercusión en la salud pública.

Si mejoran la calidad y la cobertura de los datos en que se basan los indicadores del consumo de drogas y sus consecuencias para la salud (especialmente las estimaciones de países densamente poblados), así como los indicadores de la oferta, se reforzarán los análisis y los datos expuestos en el *Informe Mundial sobre las Drogas* y se fundamentará mejor el debate sobre las políticas mundiales. Para ello es necesario promover la cooperación entre las diferentes partes interesadas internacionales y regionales en los ámbitos de la reunión de datos, la comunicación y la investigación. También es necesario fomentar iniciativas de creación de capacidad en los Estados Miembros para mejorar la calidad y la cobertura de los datos nacionales y realizar una labor de investigación operativa sobre los mercados de las drogas.

Prevalencia anual del consumo de cannabis, opioides y opiáceos, por región y a nivel mundial, 2017

Región o subregión	Cannabis						Opioides (opiáceos y fármacos opioides)						Opiáceos					
	Número (miles)			Prevalencia (%)			Número (miles)			Prevalencia (%)			Número (miles)			Prevalencia (%)		
	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior
África	**44.900**	**35.350**	**62.690**	**6,4**	**5,1**	**9,0**	**6.080**	**5.000**	**7.390**	**0,87**	**0,71**	**1,06**	**1.470**	**530**	**2.800**	**0,21**	**0,08**	**0,40**
África Meridional	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
África Occidental y Central	26.760	25.700	29.420	10,0	9,6	11,0	-	-	-	-	-	-	-	-	-	-	-	-
África Oriental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
África Septentrional	-	-	-	-	-	-	360	120	660	0,25	0,08	0,46	360	120	660	0,25	0,08	0,46
América	**56.590**	**55.600**	**58.330**	**8,4**	**8,3**	**8,7**	**13.600**	**11.980**	**16.320**	**2,03**	**1,79**	**2,43**	**2.690**	**1.970**	**3.480**	**0,40**	**0,29**	**0,52**
América del Norte	44.630	44.460	44.810	13,8	13,7	13,8	12.830	11.640	13.720	3,96	3,60	4,24	2.400	1.790	2.970	0,74	0,55	0,92
América del Sur	10.040	9.740	10.440	3,5	3,4	3,6	580	250	2.180	0,20	0,09	0,76	240	150	330	0,08	0,05	0,12
Caribe	1.040	580	2.090	3,6	2,0	7,2	-	-	-	-	-	-	-	-	-	-	-	-
Centroamérica	880	820	990	2,9	2,7	3,3	-	-	-	-	-	-	-	-	-	-	-	-
Asia	**54.210**	**41.140**	**64.840**	**1,8**	**1,4**	**2,2**	**29.460**	**26.280**	**31.910**	**0,98**	**0,88**	**1,06**	**21.730**	**18.970**	**24.570**	**0,72**	**0,63**	**0,82**
Asia Central y Transcaucasia	1.670	640	2.410	2,9	1,1	4,2	540	480	600	0,93	0,83	1,03	520	470	580	0,90	0,80	1,00
Asia Meridional	29.470	29.430	29.520	2,9	2,9	2,9	18.680	-	-	1,81	-	-	12.990	-	-	1,26	-	-
Asia Oriental y Sudoriental	13.570	4.160	21.740	0,8	0,3	1,4	3.280	2.330	4.010	0,20	0,15	0,25	3.280	2.330	4.010	0,20	0,14	0,25
Asia Sudoccidental/ Cercano Oriente y Oriente Medio	9.500	6.890	11.180	3,1	2,3	3,7	6.950	4.910	8.550	2,28	1,61	2,81	4.930	3.300	6.910	1,62	1,08	2,27
Europa	**29.490**	**28.810**	**30.210**	**5,4**	**5,3**	**5,6**	**3.570**	**3.330**	**3.830**	**0,66**	**0,61**	**0,70**	**3.220**	**3.010**	**3.600**	**0,59**	**0,55**	**0,66**
Europa Oriental y Sudoriental	5.880	5.530	6.220	2,6	2,5	2,8	1.730	1.660	1.810	0,77	0,74	0,80	1.490	1.410	1.570	0,66	0,63	0,70
Europa Occidental y Central	23.610	23.270	23.990	7,4	7,3	7,5	1.840	1.670	2.020	0,58	0,52	0,63	1.740	1.590	2.030	0,54	0,50	0,64
Oceanía	**2.840**	**2.790**	**2.950**	**10,9**	**10,7**	**11,3**	**650**	**570**	**730**	**2,48**	**2,18**	**2,79**	**40**	**40**	**70**	**0,16**	**0,14**	**0,28**
Australia y Nueva Zelandia	2.090	2.090	2.090	11,0	11,0	11,0	630	570	680	3,28	2,98	3,58	35	35	41	0,18	0,18	0,22
Melanesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micronesia	60	40	80	17,2	11,3	23,1	-	-	-	-	-	-	-	-	-	-	-	-
Polinesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ESTIMACIÓN MUNDIAL	**188.040**	**163.680**	**219.020**	**3,8**	**3,3**	**4,4**	**53.350**	**47.160**	**60.180**	**1,08**	**0,96**	**1,22**	**29.160**	**24.510**	**34.520**	**0,59**	**0,50**	**0,70**

Fuentes: Estimaciones de la UNODC basadas en los datos del cuestionario para los informes anuales y otras fuentes oficiales.

Prevalencia anual del consumo de cocaína[a], anfetaminas[b] y éxtasis, por región y a nivel mundial, 2017

Región o subregión	Cocaína[a]						Anfetaminas[b] y fármacos estimulantes						Éxtasis					
	Número (miles)			Prevalencia (%)			Número (miles)			Prevalencia (%)			Número (miles)			Prevalencia (%)		
	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior	Mejor estimación	Inferior	Superior
África	**1.300**	**160**	**2.570**	**0,19**	**0,02**	**0,37**	**3.680**	**900**	**6.600**	**0,53**	**0,13**	**0,94**	**1.800**	**100**	**7.880**	**0,26**	**0,01**	**1,13**
África Meridional	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
África Occidental y Central	250	1	633	0,09	0,00	0,24	-	-	-	-	-	-	-	-	-	-	-	-
África Oriental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
África Septentrional	-	-	-	-	-	-	500	340	610	0,34	0,23	0,42	-	-	-	-	-	-
América	**9.930**	**9.200**	**10.590**	**1,48**	**1,37**	**1,58**	**7.860**	**6.660**	**9.230**	**1,17**	**0,99**	**1,38**	**3.500**	**3.390**	**3.630**	**0,52**	**0,51**	**0,54**
Caribe	180	80	330	0,62	0,29	1,15	250	20	700	0,87	0,05	2,42	60	30	100	0,23	0,10	0,36
Centroamérica	200	100	310	0,66	0,34	1,02	60	30	100	0,21	0,09	0,31	50	20	100	0,17	0,07	0,33
América del Norte	6.800	6.660	6.950	2,10	2,06	2,15	6.840	5.990	7.690	2,11	1,85	2,38	2.870	2.870	2.870	0,89	0,89	0,89
América del Sur	2.740	2.360	3.000	0,95	0,82	1,04	710	630	740	0,25	0,22	0,26	510	470	550	0,18	0,16	0,19
Asia	**1.670**	**1.140**	**2.220**	**0,06**	**0,04**	**0,07**	**14.140**	**4.980**	**23.290**	**0,47**	**0,17**	**0,78**	**11.490**	**1.600**	**21.380**	**0,38**	**0,05**	**0,71**
Asia Central y Transcaucasia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asia Meridional	1.030	1.030	1.030	0,10	0,10	0,10	1.850	1.850	1.850	0,18	0,18	0,18	-	-	-	-	-	-
Asia Oriental y Sudoriental	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Asia Sudoccidental/ Cercano Oriente y Oriente Medio	70	30	130	0,02	0,01	0,04	-	-	-	-	-	-	-	-	-	-	-	-
Europa	**4.740**	**4.460**	**5.140**	**0,87**	**0,82**	**0,95**	**2.900**	**2.350**	**3.480**	**0,53**	**0,43**	**0,64**	**4.060**	**2.930**	**6.970**	**0,54**	**0,39**	**0,93**
Europa Occidental y Central	4.240	4.120	4.420	1,33	1,29	1,39	2.180	1.940	2.440	0,68	0,61	0,76	2.750	2.680	2.930	0,86	0,84	0,92
Europa Oriental y Sudoriental	500	340	720	0,22	0,15	0,32	710	410	1.040	0,32	0,18	0,46	1.310	250	4.040	0,31	0,06	0,95
Oceanía	**430**	**410**	**440**	**1,65**	**1,57**	**1,67**	**350**	**320**	**360**	**1,34**	**1,24**	**1,38**	**440**	**410**	**450**	**1,68**	**1,56**	**1,72**
Australia y Nueva Zelandia	420	410	420	2,20	2,15	2,23	250	250	250	1,34	1,34	1,34	410	400	430	2,17	2,12	2,23
Melanesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-	5	2	11	1,58	0,56	3,10	-	-	-	-	-	-
Polinesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ESTIMACIÓN MUNDIAL	**18.070**	**15.380**	**20.960**	**0,37**	**0,31**	**0,42**	**28.920**	**15.210**	**42.960**	**0,59**	**0,31**	**0,87**	**21.290**	**8.420**	**40.310**	**0,41**	**0,16**	**0,78**

Fuentes: Estimaciones de la UNODC basadas en los datos del cuestionario para los informes anuales y otras fuentes oficiales.

[a] *La cocaína comprende la sal de cocaína, la cocaína crack y otros tipos como la pasta de coca, la cocaína base, el "basuco", el "paco" y la "merla".*

[b] *Las anfetaminas comprenden la anfetamina y la metanfetamina.*

Número estimado y prevalencia (porcentaje) de las personas que se inyectan drogas, y de las personas de ese grupo que viven con el VIH, por región, 2017

Región o subregión	Personas que se inyectan drogas							VIH entre las personas que se inyectan drogas				
	Número estimado			Prevalencia (%)			Cobertura de datos de la población de 15 a 64 años de edad	Número estimado			Prevalencia (%) Mejor estimación	Cobertura de datos del número estimado de personas que se inyectan drogas
	Bajo	Mejor	Alto	Baja	Mejor	Alta		Bajo	Mejor	Alto		
África	**450.000**	**810.000**	**2.140.000**	**0,06**	**0,12**	**0,31**	**57,8 %**	**42.000**	**93.000**	**515.000**	**11,4**	**75,4 %**
América	**1.860.000**	**2.370.000**	**2.870.000**	**0,28**	**0,35**	**0,43**	**86,1 %**	**109.000**	**174.000**	**259.000**	**7,3**	**93,9 %**
América del Norte	1.560.000	1.790.000	2.020.000	0,48	0,55	0,62	100 %	94.000	124.000	159.000	6,9	100 %
América Latina y el Caribe	300.000	580.000	850.000	0,09	0,17	0,25	73,2 %	16.000	50.000	100.000	8,5	75,2 %
Asia	**4.130.000**	**5.430.000**	**6.900.000**	**0,14**	**0,18**	**0,23**	**95,0 %**	**449.000**	**667.000**	**925.000**	**12,3**	**98,0 %**
Asia Central y Transcaucasia	400.000	450.000	530.000	0,69	0,78	0,91	93,6 %	28.000	34.000	44.000	7,5	93,6 %
Asia Meridional	910.000	930.000	950.000	0,09	0,09	0,09	99,9 %	84.000	93.000	105.000	10,0	99,9 %
Asia Oriental y Sudoriental	2.210.000	3.210.000	4.200.000	0,14	0,20	0,26	95,1 %	181.000	320.000	482.000	10,0	98,7 %
Asia Sudoccidental	570.000	750.000	950.000	0,29	0,38	0,48	100 %	154.000	216.000	284.000	28,9	100 %
Cercano Oriente y Oriente Medio	40.000	90.000	270.000	0,03	0,08	0,25	39,0 %	1.800	3.200	10.400	3,8	55,6 %
Europa	**2.350.000**	**2.570.000**	**2.990.000**	**0,44**	**0,48**	**0,55**	**90,0 %**	**483.000**	**505.000**	**556.000**	**19,6**	**99,9 %**
Europa Occidental y Central	590.000	770.000	1.130.000	0,19	0,24	0,35	83,0 %	67.000	82.000	126.000	10,6	99,9 %
Europa Oriental y Sudoriental	1.760.000	1.800.000	1.860.000	0,80	0,82	0,84	100 %	416.000	423.000	431.000	23,5	100 %
Oceanía	**130.000**	**130.000**	**140.000**	**0,51**	**0,52**	**0,54**	**73,0 %**	**1.300**	**1.600**	**1.700**	**1,2**	**73,0 %**
Todo el mundo	**8.930.000**	**11.320.000**	**15.030.000**	**0,18**	**0,23**	**0,30**	**87,9 %**	**1.090.000**	**1.440.000**	**2.260.000**	**12,7**	**95,7 %**

Fuentes: Respuestas al cuestionario para los informes anuales; informes del Programa Conjunto de las Naciones Unidas sobre el VIH/Sida (ONUSIDA) relativos a los progresos en la lucha mundial contra el sida (varios años); el antiguo Grupo de Referencia de las Naciones Unidas sobre el VIH y el Consumo de Drogas por Inyección; artículos sometidos a arbitraje científico publicados e informes de los Gobiernos.

Nota: La prevalencia de las personas que se inyectan drogas se refiere a la población de 15 a 64 años de edad.

Opio/heroína

Cultivo ilícito de adormidera, 2007–2018 (hectáreas)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ASIA SUDOCCIDENTAL												
Afganistán (mejor estimación)	193.000	157.000	123.000	123.000	131.000	154.000	209.000	224.000	183.000	201.000	328.000	263.000
límite inferior[a]			102.000	104.000	109.000	125.000	173.000	196.000	163.000	182.000	301.000	242.000
límite superior[a]			137.000	145.000	155.000	189.000	238.000	247.000	202.000	221.000	355.000	283.000
ASIA SUDORIENTAL												
Myanmar (mejor estimación)[b]	27.700	28.500	31.700	38.100	43.600	51.000	57.800	57.600[c]	55.500[c]	..	41.000	37.300[c]
límite inferior[a]	22.500	17.900	20.500	17.300	29.700	38.249	45.710	41.400	42.800		30.200	29.700
límite superior[a]	32.600	37.000	42.800	58.100	59.600	64.357	69.918	87.300	69.600		51.900	47.200
República Democrática Popular Lao (mejor estimación)[b]	1.500	1.600	1.900	3.000	4.100	6.800	3.900	6.200	5.700	..	..	..
límite inferior[a]	1.230	710	1.100	1.900	2.500	3.100	1.900	3.500	3.900			
límite superior[a]	1.860	2.700	2.700	4.000	6.000	11.500	5.800	9.000	7.600			
CENTROAMÉRICA Y AMÉRICA DEL SUR												
Colombia (mejor estimación)	715	394	356	341	338	313	298	387	595	462	282	..
México (mejor estimación)[b, d, f, h]	6.900	15.000	19.500	14.000	12.000	10.500	11.000	17.000	26.100	25.200	30.600	..
límite inferior[a]									21.800	20.400	22.800	
límite superior[a]									30.400	30.000	38.400	

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
OTROS												
Otros países[e]	**5.885**	**10.509**	**9.479**	**12.221**	**16.462**	**12.282**	**13.293**	**11.522**	**10.597**	**68.139**	**14.589**	***45.471***
TOTAL (mejor estimación)	235.700	213.003	185.935	190.662	207.500	234.895	295.291	316.709	281.492	294.801	414.471	*345.771*
límite inferior			152.935	149.762	170.000	189.444	245.201	269.809	242.692	256.501	367.251	***307.751***[g]
límite superior			211.835	233.662	249.400	287.952	338.309	372.209	320.792	335.601	462.251	***385.551***[g]
TOTAL (mejor estimación, redondeada)	**235.700**	**213.000**	**185.900**	**190.700**	**207.500**	**234.900**	**295.300**	**316.700**	**281.500**	**294.800**	**414.500**	***345.800***[g]

Fuentes: Afganistán, República Democrática Popular Lao y Myanmar: sistema nacional de monitoreo de cultivos ilícitos con el apoyo de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC). Colombia: Gobierno de Colombia. México: hasta 2014, estimaciones derivadas de los estudios del Gobierno de los Estados Unidos de América (*International Narcotics Control Strategy Reports*); de 2015 en adelante, proyecto conjunto México/UNODC titulado "Monitoreo de Cultivos Ilícitos en el Territorio Mexicano".

Nota: Las cifras en cursiva son estimaciones preliminares y podrían ser revisadas cuando se disponga de información actualizada. Los dos puntos indican que no se dispone de datos. La sección sobre metodología de la versión en línea del Informe Mundial sobre las Drogas 2019 *contiene información sobre las metodologías de estimación y las definiciones.*

[a] *Límite del intervalo de confianza derivado estadísticamente.*

[b] *Puede incluir superficies que se erradicaron después de la fecha del estudio.*

[c] *Las estimaciones correspondientes a 2014, 2015 y 2018 incluyeron estimaciones relativas a los estados de Kayah y Chin a partir de imágenes satelitales. Por tanto, las estimaciones nacionales correspondientes esos años no son directamente comparables con las de otros años.*

[d] *Hasta 2014, las estimaciones correspondientes a México proceden del Departamento de Estado de los Estados Unidos. El Gobierno de México no valida las estimaciones proporcionadas por los Estados Unidos, porque no forman parte de sus cifras oficiales y no tiene información sobre la metodología utilizada para calcularlas.*

[e] *Incluye países con bajos niveles de cultivo (menos de 400 ha en al menos dos de los últimos tres años) y países con pruebas indirectas del cultivo ilícito (erradicación de adormidera) pero sin mediciones directas. Véase el cuadro titulado "Cultivo de adormidera y producción de opio en otros países y erradicación de adormidera, 2008–2018".*

Además, para 2016, 2017 y 2018, se incluyen en esta categoría las mejores estimaciones de los países sobre los que no se dispone de datos (República Democrática Popular Lao y Myanmar (2016) y México y Colombia (2018)).

A partir de 2008 se comenzó a utilizar una nueva metodología para estimar el cultivo de adormidera y la producción de opio/heroína en los países en que no existen datos sobre el cultivo ilícito de adormidera. En la sección sobre metodología de la versión en línea del Informe Mundial sobre las Drogas 2019 *figura una descripción detallada de esta metodología.*

[f] *Las cifras correspondientes a 2015, publicadas en el* Informe Mundial sobre las Drogas 2016 *(publicación de las Naciones Unidas, núm. de venta S.16.XI.7) se han revisado debido a un ajuste estadístico aplicado por la UNODC.*

[g] *Esas cifras se basan en el período de estimación de julio de 2014 a junio de 2015.*

Las estimaciones preliminares correspondientes a 2018 pueden variar a medida que se disponga de las estimaciones de más países.

[h] *Las cifras correspondientes a 2016 y 2017 se basan en los períodos de estimación de julio de 2015 a junio de 2016 y de junio de 2016 a julio de 2017, respectivamente.*

Producción potencial de opio secado al horno, 2007–2018 (toneladas)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ASIA SUDOCCIDENTAL												
Afganistán (mejor estimación)	7.400	5.900	4.000	3.600	5.800	3.700	5.500	6.400	3.300	4.800	9.000	6.400
límite inferior[a]				3.000	4.800	2.800	4.500	5.100	2.700	4.000	8.000	5.600
límite superior[a]				4.200	6.800	4.200	6.500	7.800	3.900	5.600	10.000	7.200
ASIA SUDORIENTAL												
Myanmar (mejor estimación)[b]	460	410	330	580	610	690	870	670[h]	647	..	550	520
límite inferior			213	350	420	520	630	481	500		395	410
límite superior			445	820	830	870	1.100	916	820		706	664
República Democrática Popular Lao (mejor estimación)[b, f]	9	10	11	18	25	41	23	92	..	..	..	..
límite inferior[g]	7	4	7	11	15	18	11	51	84			
límite superior[g]	11	16	16	24	36	69	35	133	176			
AMÉRICA LATINA												
Colombia (mejor estimación)	14	10	9	8	8	8	11	12	17	13	7	..
México (mejor estimación)[c, e]	150	325	425	300	250	220	225	360	*499*	*482*	*586*	..
límite inferior									*279*	*261*	*292*	
límite superior									*693*	*684*	*876*	
OTROS												
Otros países (mejor estimación)[d]	58	187	178	224	290	172	182	198	178	888	272	*870*

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TOTAL (mejor estimación)	8.091	6.841	4.953	4.730	6.983	4.831	6.810	7.732	4.771	6.184	10.415	*7.790*
límite inferior				3.894	5.783	3.738	5.558	6.202	3.758	4.973	8.920	*6.540*
límite superior				5.576	8.214	5.539	8.052	9.419	5.784	7.391	11.907	*9.070*
TOTAL (mejor estimación, redondeada)	**8.090**	**6.840**	**4.950**	**4.730**	**6.980**	**4.830**	**6.810**	**7.730**	**4.770**	**6.180**	**10.410**	***7.790***

Fuentes: Afganistán, República Democrática Popular Lao y Myanmar: sistema nacional de monitoreo de cultivos ilícitos con el apoyo de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC). Colombia: sistema nacional de monitoreo de cultivos ilícitos apoyado por la UNODC. Desde 2008 la producción se calculó en función de cifras regionales actualizadas sobre rendimiento y ratios de conversión del Departamento de Estado y la Administración para el Control de Drogas de los Estados Unidos de América. México: hasta 2014, las estimaciones se derivan de los estudios realizados por el Gobierno de los Estados Unidos de América; de 2015 en adelante, estimaciones de la UNODC.

Nota: Las cifras en cursiva son estimaciones preliminares y podrían ser revisadas cuando se disponga de información actualizada. Los dos puntos indican que no se dispone de datos. La sección sobre metodología de la versión en línea del Informe Mundial sobre las Drogas 2019 *contiene información sobre las metodologías de estimación y las definiciones.*

[a] *Límite del intervalo de confianza derivado estadísticamente.*

[b] *Basada en cifras del cultivo que pueden incluir superficies que se erradicaron después de la fecha del estudio.*

[c] *Hasta 2014, las estimaciones proceden del Departamento de Estado de los Estados Unidos. El Gobierno de México no valida las estimaciones proporcionadas por los Estados Unidos, porque no forman parte de sus cifras oficiales y no tiene información sobre la metodología utilizada para calcularlas.*

[d] *Incluye países con bajos niveles de cultivo y países con pruebas indirectas del cultivo ilícito (erradicación de adormidera) pero sin mediciones directas. Véase el cuadro titulado "Cultivo de adormidera y producción de opio en otros países y erradicación de adormidera, 2008–2018".*
Además, para 2016, 2017 y 2018, se incluyen en esta categoría las mejores estimaciones de los países sobre los que no se dispone de datos (República Democrática Popular Lao y Myanmar (2016) y México y Colombia (2018)).
A partir de 2008 se comenzó a utilizar una nueva metodología para estimar el cultivo de adormidera y la producción de opio/heroína en los países en que no existen datos sobre el cultivo ilícito de adormidera. Estas estimaciones son más altas que las cifras anteriores, pero el orden de magnitud es similar. En la sección sobre metodología de la versión en línea del Informe Mundial sobre las Drogas 2019 *figura una descripción detallada de esta metodología.*

[e] *Las cifras correspondientes a 2015, publicadas en el* Informe Mundial sobre las Drogas 2016 *(publicación de las Naciones Unidas, núm. de venta S.16.XI.7) se han revisado debido a un ajuste estadístico aplicado por la UNODC. El Gobierno de México no valida las estimaciones de la producción de opio. Las cifras de producción se presentarán una vez que se disponga de los datos sobre rendimiento del proyecto conjunto de México y la UNODC titulado "Monitoreo del cultivo ilícito en territorio mexicano". Las cifras relativas a la producción de opio estimadas por la UNODC para el período 2015–2017 se basan en: a) la superficie de cultivo, establecida por el proyecto conjunto del Gobierno de México y la UNODC, y b) los datos sobre rendimiento, basados en estudios de rendimiento llevados a cabo por los Estados Unidos en México durante el período 2001–2003. Las cifras de producción de opio consignadas para 2015–2017 son estimaciones preliminares y, por razones metodológicas, no son comparables con las cifras de producción del período 1998–2014.*

[f] *Debido a la realización tardía de las actividades de monitoreo en 2013, es posible que el estudio no haya detectado el cultivo ilícito de ese año en su totalidad.*

[g] *Límite del intervalo de confianza derivado estadísticamente, con la excepción de 2015. Las cifras correspondientes a 2015 representan estimaciones superiores e inferiores derivadas de forma independiente; se utilizó el punto medio para el cálculo del total mundial.*

[h] *Las estimaciones correspondientes a 2014, 2015 y 2018 incluyeron estimaciones sobre los estados de Kayah y Chin. Por tanto, las estimaciones nacionales correspondientes a esos años no son directamente comparables con las de otros años.*

Cultivo de adormidera y producción de opio en otros países y erradicación de adormidera, 2008–2018

País	Indicador	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Guatemala	Cultivo (hectáreas)					220	310	640	260	310	700	
Guatemala	Producción (toneladas)					4	6	14	6	6	15	
Pakistán	Cultivo (hectáreas)	1.909	1.779	1.721	362	382	493	217	372	130	90	
Pakistán	Producción (toneladas)	48	44	43	9	9	12	5	9	3	2	
Tailandia	Cultivo (hectáreas)	288	211	289	289	209	265			399		
Tailandia	Producción (toneladas)	5	3	5	6	3	4					
Afganistán	Erradicación (hectáreas)	5.480	5.351	2.316	3.810	9.672	7.348	2.692	3.760	355	750	406
Argelia	Erradicación (plantas)			868	340	204	2.721	7.470				
Argelia	Incautación de plantas de adormidera (kilogramos)	7.761	962	87	34	20,4	272,1			106		
Argentina	Incautación de plantas de adormidera (kilogramos)									0,2		
Armenia	Incautación de plantas de adormidera (kilogramos)							0,18	0,13	60		
Australia	Incautación de plantas de adormidera (kilogramos)									37	264	
Austria	Incautación de plantas de adormidera (kilogramos)	8,76	13,83		4,60	1,91	2,07	1,41		0,05	0,2	
Azerbaiyán	Erradicación (hectáreas)				2,26	0,21	0,40	0,45				
Azerbaiyán	Erradicación (plantas)				201	2.628	34	284			49.154	
Bangladesh	Erradicación (hectáreas)			8	22							

País	Indicador	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bangladesh	Incautación de plantas de adormidera (kilogramos)		145.021									
Belarús	Erradicación (hectáreas)			14	52	26				92	157	
Belarús	Incautación de plantas de adormidera (kilogramos)				59		81	51		94	119	
Canadá	Erradicación (hectáreas)			7	7							
Canadá	Erradicación (plantas)			60.000	60.000							
Canadá	Incautación de plantas de adormidera (kilogramos)			6.600	9,3		7,3			85,9		
Colombia	Erradicación (hectáreas)	381	546	712	294	320	514	813	613	450	397	
Chequia	Incautación de plantas de adormidera (kilogramos)								40			
China	Erradicación (hectáreas)									6		
Chipre	Incautación de plantas de adormidera (kilogramos)								6			
Ecuador	Erradicación (plantas)	74.555	115.580	128.653	22.100	2.170.900	1.797.966	2.023.385	183.573	1.207.147	279.074	
Ecuador	Incautación de plantas de adormidera (kilogramos)	7.456	11.558	12.865	2.210	185.490	75.765					
Egipto	Erradicación (hectáreas)	121	98	222	1		3		98	105	60	
España	Incautación de plantas de adormidera (kilogramos)			13		10	30	219		0,02	0,5	
Estado de Palestina	Incautación de plantas de adormidera (kilogramos)				4,2	5,8	1,2	17,8				

País	Indicador	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Federación de Rusia	Erradicación (hectáreas)		3,3		1,4	0,6	0,9	1,1	0,6	0,8	2,4	
Federación de Rusia	Erradicación (plantas)							645				
Federación de Rusia	Incautación de plantas de adormidera (kilogramos)	2.799	2.807	2.575	4.273	3.196	2.216	1.438	1.043	270	375	
Georgia	Incautación de plantas de adormidera (kilogramos)							8		9		
Grecia	Erradicación (plantas)					192	60	144	145	624	44	
Guatemala	Erradicación (hectáreas)	536	1.345	918	1.490	590	2.568	1.197	430	45	803	
Guatemala	Erradicación (plantas)									17.643.447	417.004.278	
Guatemala	Incautación de plantas de adormidera (kilogramos)	27.880.441	69.228.416	54.612.442			10.935.532	864.150				
Hungría	Incautación de plantas de adormidera (kilogramos)					1.502	2.152			1917		
India	Erradicación (hectáreas)	624	2.420	3.052	5.746	1.332	865	1.636	3.461	2.875	3.076	
India	Incautación de plantas de adormidera (kilogramos)							3.770				
Irán (República Islámica del)	Erradicación (hectáreas)			2		1	1	1		1	0,5	
Irán (República Islámica del)	Erradicación (plantas)					140.000	100.000	120.000		90.000	90.000	
Italia	Erradicación (plantas)			1.797	2.007	6.717						
Italia	Incautación de plantas de adormidera (kilogramos)					716	375	168	30	1.098		
Japón	Incautación de plantas de adormidera (kilogramos)	535	104	90	26	20	11					

País	Indicador	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Kazajstán	Erradicación (hectáreas)									0,2		
Kazajstán	Erradicación (plantas)				1.692			2.254	19.510	15.515		
Kazajstán	Incautación de plantas de adormidera (kilogramos)	68	127	105	90	30	2	8	298			
Kirguistán	Incautación de plantas de adormidera (kilogramos)	102	344	58	200	399	147	63	55			
Letonia	Incautación de plantas de adormidera (kilogramos)	23	31		1	12	7	9	43			
Líbano	Erradicación (hectáreas)		21	14	4		6	1				
Lituania	Incautación de plantas de adormidera (kilogramos)	45	16									
México	Erradicación (hectáreas)	13.095	14.753	15.491	16.389	15.726	14.662	21.644	26.426	22.437	29.692	
México	Incautación de plantas de adormidera (kilogramos)	7.263	7.964	9.335	10.101	9.572	10.209	14.812	17.948	16.401	20.187	
Myanmar	Erradicación (hectáreas)	4.820	4.087	8.267	7.058	23.718	12.288	15.188	13.450	7.561	3.533	2.605
Nepal	Erradicación (hectáreas)	21	35									
Nueva Zelandia	Incautación de plantas de adormidera (kilogramos)										0,2	
Omán	Erradicación (hectáreas)						6					
Pakistán	Erradicación (hectáreas)	0	105	68	1.053	592	568	1.010	605	1.470	169	
Pakistán	Incautación de plantas de adormidera (kilogramos)	81.675	25.550				4.650	5.976	4.576	1.023	4.789	
Perú	Erradicación (hectáreas)	23	32	21								

País	Indicador	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Polonia	Erradicación (hectáreas)		9									
Portugal	Incautación de plantas de adormidera (kilogramos)				164		1,6	9,4			0,4	
República de Corea	Erradicación (plantas)						25.369					
República de Corea	Incautación de plantas de adormidera (kilogramos)			3.855					8.013	9.771	10.040	
República de Moldova	Erradicación (plantas)				32.413	11.255						
República de Moldova	Incautación de plantas de adormidera (kilogramos)	79	26.075									
República Democrática Popular Lao	Erradicación (hectáreas)	575	651	579	662	707	397		809			
Tailandia	Erradicación (hectáreas)	285	201	278	208	205	264			319		
Tayikistán	Erradicación (plantas)				13	5.400	103					
Ucrania	Erradicación (hectáreas)	28		436			39		48	164		
Ucrania	Erradicación (plantas)			1.185.118		474.000	22.800.000					
Ucrania	Incautación de plantas de adormidera (kilogramos)	164.000		4.162		7,4		384	930			
Uzbekistán	Erradicación (hectáreas)				1		1	0,3	0,3	0,3	0,3	
Uzbekistán	Incautación de plantas de adormidera (kilogramos)	138	687	896	413	330	336	406	205	863	188	
Viet Nam	Erradicación (hectáreas)	99	31		38	35	25	19	18			

Fuentes: Cuestionario para los informes anuales de la Oficina de las Naciones Unidas contra la Droga y el Delito; informes de los Gobiernos; informes de órganos regionales; *International Narcotics Control Strategy Reports*, Estados Unidos de América.

Fabricación mundial de heroína a partir de la producción mundial ilícita de opio, 2007–2018 (toneladas)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Producción potencial total de opio	8.091	6.841	4.953	4.730	6.983	4.831	6.810	7.723	4.771	6.180	*10.420*	*7.790*
Producción potencial de opio no transformado en heroína	3.078	2.360	1.680	1.728	3.400	1.850	2.600	2.450	1.360	2.510	*1.100-1.400*	*1.225-1.525*
Producción potencial de opio transformado en heroína	5.012	4.481	3.273	3.002	3.583	2.981	4.210	5.273	3.411	3.670	*9.020-9.320*	*6.265-6.565*
Fabricación potencial total de heroína	686	600	427	383	467	377	555	542	327	388	*692-1042*	*487-737*

Notas: El cálculo muestra la cantidad potencial de heroína que se podría haber fabricado a partir del opio producido en un año determinado; no se tienen en cuenta las variaciones en las existencias de opio, que pueden aumentar o reducir la cantidad de heroína que entra en el mercado ese año. El Afganistán y Myanmar son los únicos países para los que se ha estimado la proporción de la producción potencial de opio que no fue transformado en heroína dentro del país. Para todos los demás países, a los efectos del presente cuadro, se supone que todo el opio producido se transforma en heroína.

La cantidad de heroína producida a partir de opio afgano se calcula usando dos parámetros que pueden variar: a) la cantidad de opio consumida como opio crudo en la región y b) la ratio de conversión en heroína. La estimación del primer parámetro se basa en los datos de consumo en el Afganistán y los países vecinos. Para el segundo parámetro, de 2005 a 2013 se utilizó una ratio de conversión de opio en morfina/heroína de 7:1, determinada sobre la base de entrevistas con "cocineros" afganos de morfina/heroína, un ejercicio de fabricación real de heroína realizado por dos "cocineros" de heroína afganos (analfabetos), documentado por el Bundeskriminalamt de Alemania en el Afganistán en 2003 (publicado en el Boletín de Estupefacientes*, vol. LVII, núm. 1 y 2, 2005, págs. 11 a 31), y estudios de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC) sobre el contenido de morfina del opio afgano (12,3 % en el período 2010–2012, lo que supone una disminución del 15 % con respecto al período 2000–2003). A partir de 2014 se utilizó un enfoque diferente de la conversión que refleja la información actualizada sobre el contenido de morfina, y un método diferente para tener en cuenta la pureza. En el enfoque revisado se utiliza una relación de 18,5 kilogramos de opio por 1 kilogramo de heroína base 100% pura (véase* Afghanistan Opium Survey 2014*, UNODC, noviembre de 2014). Esa cifra se traduce en una relación de entre 9,2 y 12,9 kilogramos (margen de variación: 9 a 14 kilogramos) de opio por 1 kilogramo de heroína de calidad para exportación con una pureza de entre el 50 % y el 70 %. Para más detalles, véase* Afghanistan Opium Survey 2017 – Challenges to sustainable development, peace and security *(UNODC, mayo de 2018).*

La cantidad de heroína producida en Myanmar en 2018 se calculó restando a la producción total de opio la estimación de opio no transformado para el consumo y utilizando un factor de conversión de 10:1. Se estimó que el opio no transformado en Myanmar alcanzó las 125 toneladas en 2018, sobre la base del total de opio no transformado en Asia Oriental (informe Transnational Organized Crime in East Asia and the Pacific*, 2013) y teniendo en cuenta los niveles relativos de cultivo de la República Democrática Popular Lao y Myanmar. Para más información, consúltese el capítulo sobre metodología (sección 4.3) del* Myanmar Opium Survey 2018 *(UNODC, enero de 2019).*

En el caso de países distintos del Afganistán, se utiliza una ratio "tradicional" de conversión de opio en heroína de 10:1. Las ratios se ajustarán cuando se disponga de mejor información. Las cifras en cursiva son estimaciones preliminares y podrían ser revisadas cuando se disponga de información actualizada.

Coca/cocaína

Cultivo ilícito mundial de arbusto de coca, 2007–2017 (hectáreas)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Estado Plurinacional de)	28.900	30.500	30.900	31.000	27.200	25.300	23.000	20.400	20.200	23.100	24.500
Colombia[a]	99.000	81.000	73.000	62.000	64.000	48.000	48.000	69.000	96.000	146.000	171.000
Perú[b]	53.700	56.100	59.900	61.200	64.400						
Perú[c]					62.500	60.400	49.800	42.900	40.300	43.900	49.900
Total	**181.600**	**167.600**	**163.800**	**154.200**	**155.600**[d]	**133.700**	**120.800**	**132.300**	**156.500**	**213.000**	**245.400**

Fuentes: Estado Plurinacional de Bolivia: sistema nacional de monitoreo de cultivos ilícitos apoyado por la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC). Colombia: sistema nacional de monitoreo de cultivos ilícitos apoyado por la UNODC. Perú: sistema nacional de monitoreo de cultivos ilícitos apoyado por la UNODC.

Nota: En el Informe Mundial sobre las Drogas 2012 *(publicación de las Naciones Unidas, núm. de venta S.12.XI.1, págs. 59 a 61) se presentaron diferentes conceptos de superficie y sus efectos en la comparabilidad. Continúan las actividades para mejorar la comparabilidad de las estimaciones entre distintos países; desde 2011 se calcula la superficie neta dedicada al cultivo de arbusto de coca en la fecha de referencia del 31 de diciembre en el Perú, además de Colombia. La estimación correspondiente al Estado Plurinacional de Bolivia representa la superficie dedicada al cultivo de coca obtenida por interpretación de imágenes de satélite.*

[a] *Superficie neta al 31 de diciembre.*

[b] *Las cifras representan la superficie dedicada al cultivo de coca interpretada a partir de imágenes de satélite.*

[c] *Superficie neta al 31 de diciembre, tras deducir la superficie de los cultivos erradicados después de la toma de las imágenes de satélite.*

[d] *La cifra mundial del cultivo de coca se calculó con la "superficie interpretada a partir de imágenes de satélite" en el caso del Perú en 2011.*

Erradicación de arbusto de coca comunicada, 2007–2017

	Método de erradicación	Unidad	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Estado Plurinacional de)	manual	hectáreas	5.484	6.341	8.200	10.509	11.044	11.407	11.144	11.020	6.577	7.237
Colombia	manual	hectáreas	96.003	60.565	43.804	35.201	30.456	22.121	11.703	13.473	17.642	52.001
	fumigación	hectáreas	133.496	104.772	101.940	103.302	100.549	47.052	55.532	36.494	0	0
Perú	manual	hectáreas	10.143	10.025	12.033	10.290	14.171	23.785	31.205	35.868	30.150	25.784
Ecuador	manual	hectáreas	12	6	3	14	..	..	..	..	..	..
		plantas	152.000	57.765	3.870	55.030	122.656	41.996	15.874	45.266	20.896	10.100

Fuentes: Cuestionario para los informes anuales de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC) e informes de los Gobiernos.

Nota: Los totales correspondientes a Bolivia (Estado Plurinacional de) y al Perú incluyen la erradicación voluntaria y forzosa. Por erradicación comunicada se entiende la suma de todas las superficies erradicadas en un año, incluida la erradicación repetida de los mismos campos. Los dos puntos indican que no se dispone de datos.

Fabricación potencial de cocaína 100 % pura, 2007–2017 (toneladas)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Estado Plurinacional de)	*104*	*113*	..	..	..	..	..	..	..	..	..
Colombia	683	471	488	424	384	333	290	442	646	1.053	1.379
Perú	*290*	*302*	..	..	..	..	..	..	..	..	..
Total sobre la base de las ratios de conversión "antiguas"[a]	**1.077**	**886**	**920**	**862**	**815**	**738**	**662**	**746**	**936**	**1.378**	**1.743**
Total sobre la base de las ratios de conversión "nuevas"[a]	***1.317***	***1.143***	***1.188***	***1.134***	***1.090***	***997***	***902***	***943***	***1.124***	***1.586***	***1.976***

Fuentes: Estado Plurinacional de Bolivia: cálculos propios basados en el estudio del rendimiento del cultivo de coca de la Oficina de las Naciones Unidas contra la Droga y el Delito (UNODC) (Yungas de La Paz) y estudios científicos de la Administración para el Control de Drogas de los Estados Unidos de América (Chapare). Colombia: UNODC/Gobierno de Colombia. Perú: cálculos propios basados en la ratio de conversión de hoja de coca en cocaína establecida en los estudios científicos de la Administración para el Control de Drogas. En el *Informe Mundial sobre las Drogas 2010* (publicación de las Naciones Unidas, núm. de venta S.10.XI.13, pág. 249), se puede consultar información detallada sobre la revisión en curso de las ratios de conversión y la eficiencia de los laboratorios de cocaína.

[a] *Conversión de las superficies dedicadas al cultivo de coca en hoja de coca y posteriormente en clorhidrato de cocaína, teniendo en cuenta el rendimiento, las cantidades de hoja de coca utilizadas con fines lícitos y la eficiencia de los laboratorios de cocaína.*

Notas: Debido a la falta de factores de conversión actualizados en Bolivia (Estado Plurinacional de) y en el Perú, no es posible facilitar estimaciones definitivas del nivel de producción de cocaína.

Con respecto a los datos publicados en el Informe Mundial sobre las Drogas 2016 *(publicación de las Naciones Unidas, núm. de venta S.16.XI.7), se han efectuado las siguientes modificaciones: a) se han revisado los datos correspondientes a Colombia (2005–2008) a fin de garantizar una aplicación sistemática de las revisiones de la metodología, que afectan a la forma en que se calcula la producción de coca, para toda la serie cronológica 2005–2015 (para más detalles, véanse* Colombia: Monitoreo de Cultivos de Coca 2014 *(UNODC, 2015) y* Colombia: Informe de Monitoreo de Territorios Afectados por Cultivos Ilícitos 2015, *anexo 3 (UNODC, 2016)) y b) se han revisado los totales de 2009–2012 basados en ratios de conversión "antiguas" y "nuevas" para rectificar inexactitudes de menor importancia en el procesamiento de los datos.*

Las cifras en cursiva están siendo revisadas. Los dos puntos indican que no se dispone de datos. La sección sobre metodología de la versión en línea del Informe Mundial sobre las Drogas 2019 *contiene información sobre las metodologías utilizadas en la estimación y las definiciones.*

Cannabis

Cultivo, producción y erradicación de cannabis, último año del que se dispone de datos en el período 2012–2017

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2012	Afganistán	resina	al aire libre	10.000			1.400		
2017	Albania	hierba	bajo techo					7.766	
2016	Albania	hierba	al aire libre					2.536.288	5.205
2017	Albania	hierba	al aire libre					66.927	500
2015	Alemania	hierba	bajo techo					135.925	786
2017	Alemania	hierba	bajo techo					85.226	573
2015	Alemania	hierba	al aire libre					9.136	127
2017	Alemania	hierba	al aire libre						95
2014	Argelia	resina	al aire libre					2.522	
2016	Armenia	hierba	al aire libre	0,50[a]	0,50	0,00		757	20
2017	Armenia	hierba	al aire libre	0,50[a]	0,50	0,00		2.547	21
2016	Australia	hierba	bajo techo					31.266	408
2017	Australia	hierba	bajo techo					78.310	433
2016	Australia	hierba	al aire libre					22.257	1.021
2017	Australia	hierba	al aire libre	1,00[a]	1,00	0,00		31.431	948
2015	Austria	hierba	al aire libre	3,00[a]	3,00	0,00			
2013	Azerbaiyán	hierba	al aire libre	23,95[a]	23,95	0,00	263,96	8.469	151
2014	Azerbaiyán	hierba	al aire libre	17,50[a]	17,50	0,00		14.889	195
2017	Azerbaiyán	hierba	al aire libre	0,25[a]		0,25		336.791	
2015	Bahamas	hierba	al aire libre					17.270	
2012	Bangladesh	hierba	al aire libre					39.848	
2013	Bangladesh	hierba	al aire libre					35.012	
2014	Bangladesh	hierba	al aire libre					35.988	
2015	Bangladesh	hierba	al aire libre					39.967	
2016	Bangladesh	hierba	al aire libre					47.104	
2016	Belarús	hierba	bajo techo						28
2017	Belarús	hierba	bajo techo						32
2016	Belarús	hierba	al aire libre		123,80				1.945
2017	Belarús	hierba	al aire libre		125,90				2.283
2015	Bélgica	hierba	bajo techo					345.518	1.164
2017	Bélgica	hierba	bajo techo					415.728	1.175
2015	Bélgica	hierba	al aire libre					4.885	93
2017	Bélgica	hierba	al aire libre					848	59
2015	Belice	hierba	al aire libre					50.897	

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2016	Bolivia (Estado Plurinacional de)	hierba	al aire libre		14,60				35
2017	Bolivia (Estado Plurinacional de)	hierba	al aire libre		14,00				52
2016	Bosnia y Herzegovina	hierba	bajo techo		39,00				
2017	Bosnia y Herzegovina	hierba	bajo techo					1	1
2016	Bosnia y Herzegovina	hierba	al aire libre		1.680,00				
2017	Bosnia y Herzegovina	hierba	al aire libre	0,02[a]	0,02	0,00		539	53
2014	Brasil	hierba	al aire libre		44,01			1.364.316	
2017	Brasil	hierba	al aire libre		117,51			1.910.451	604
2015	Bulgaria	hierba	bajo techo					323	
2015	Bulgaria	hierba	al aire libre				37,77	9.488	
2016	Colombia	hierba	al aire libre		135,00				
2017	Colombia	hierba	al aire libre		173,71				
2016	Costa Rica	hierba	bajo techo					678	5
2017	Costa Rica	hierba	bajo techo						2
2016	Costa Rica	hierba	al aire libre		17,59			2.122.244	201
2017	Costa Rica	hierba	al aire libre						215
2016	Côte d'Ivoire	hierba	al aire libre					5	
2017	Côte d'Ivoire	hierba	al aire libre		0,25				1
2016	Chequia	hierba	bajo techo					53.549	229
2017	Chequia	hierba	bajo techo					50.925	305
2016	Chequia	hierba	al aire libre					4.111	
2017	Chequia	hierba	al aire libre					3.467	
2016	Chile	hierba	bajo techo					26.988	2.740
2017	Chile	hierba	bajo techo					50.414	2.408
2016	Chile	hierba	al aire libre					58.950	264
2017	Chile	hierba	al aire libre					194.694	202
2016	China	hierba	al aire libre		9,80			1.390.000	
2016	China, RAE de Hong Kong	hierba	bajo techo					329	1
2015	Dinamarca	hierba	bajo techo/ al aire libre					14.560	97
2016	Dinamarca	hierba	bajo techo/ al aire libre					13.217	105
2017	Dinamarca	hierba	bajo techo/ al aire libre					34.801	65
2016	Ecuador	hierba	al aire libre					224	34
2017	Ecuador	hierba	al aire libre					397	10
2015	Egipto	hierba/resina	al aire libre		140,00				
2017	Egipto	hierba/resina	al aire libre		126,00				
2016	El Salvador	hierba	al aire libre			1,00		227	25

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2016	Eslovaquia	hierba	bajo techo					385	
2017	Eslovaquia	hierba	al aire libre	2,00[a]	2,00	0,00		2.299	31
2014	Eslovenia	hierba	bajo techo					9.223	118
2017	Eslovenia	hierba	bajo techo					10.259	78
2014	Eslovenia	hierba	al aire libre					1.844	
2015	España	hierba	bajo techo					244.772	108
2015	España	hierba	al aire libre					135.074	44
2016	Estados Unidos de América	hierba	bajo techo					406.125	1.865
2017	Estados Unidos de América	hierba	bajo techo					303.654	1.399
2016	Estados Unidos de América	hierba	al aire libre					4.940.596	5.513
2017	Estados Unidos de América	hierba	al aire libre					3.078.418	4.062
2014	Eswatini	hierba	al aire libre	1.500,00	1.069,50	430,50		3.000.000	210
2016	Federación de Rusia	hierba	bajo techo		0,66				788
2017	Federación de Rusia	hierba	bajo techo		0,87				1.990
2016	Federación de Rusia	hierba	al aire libre	7,61[a]	7,61	0,00	68,64		1.143
2017	Federación de Rusia	hierba	al aire libre	159,00[a]	159,00	0,00	30,07		5.379
2016	Filipinas	hierba	al aire libre		8,67			24.635.153	337
2017	Filipinas	hierba	al aire libre		4,82			221.035	27
2014	Francia	hierba	al aire libre					158.592	837
2017	Georgia	hierba	bajo techo		0,01			186	91
2017	Georgia	hierba	al aire libre	0,02[a]	0,02	0,00		93	19
2016	Grecia	hierba	bajo techo					16.554	
2017	Grecia	hierba	bajo techo					19.498	
2016	Grecia	hierba	al aire libre					39.151	
2017	Grecia	hierba	al aire libre					27.409	
2016	Guatemala	hierba	al aire libre		9,00			3.138.298	427
2017	Guatemala	hierba	al aire libre	3,50[a]	3,81		1,61	6.033.345	150
2015	Guyana	hierba	al aire libre	20,00	9,40	10,60	1.000,00	419.700	19
2016	Honduras	hierba	bajo techo					7	2
2016	Honduras	hierba	al aire libre					24.253	19
2017	Honduras	hierba	al aire libre	59,58[a]	59,59	0,00			
2016	Hungría	hierba	bajo techo					5.000	3
2016	Hungría	hierba	al aire libre					2.000	20
2016	India	hierba	al aire libre		3.414,74				
2017	India	hierba	al aire libre		3.445,90			6.687.376	
2016	Indonesia	hierba	al aire libre	482,00[a]	482,00	0,00			
2017	Indonesia	hierba	al aire libre	89,00[a]	89,00	0,00		738.020	14
2016	Irlanda	hierba	bajo techo					7.273	

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2017	Irlanda	hierba	bajo techo					9.046	50
2013	Islandia	hierba	bajo techo					6.652	323
2017	Italia	hierba	bajo techo					56.125	1.161
2017	Italia	hierba	al aire libre					209.510	401
2014	Italia	hierba	bajo techo					51.534	639
2014	Italia	hierba	al aire libre					70.125	1.134
2012	Jamaica	hierba	al aire libre					456	382
2016	Kazajstán	hierba	al aire libre	18,00[a]	18,00	0,00		170.000	202
2017	Kazajstán	hierba	al aire libre	12,30[a]	12,30	0,00		930.774	91
2016	Kenya	hierba	al aire libre	12,00				8.747	46
2017	Kenya	hierba	al aire libre		0,10			4.662	
2015	Kirguistán	hierba	al aire libre	5.014,00		5.014,00			
2016	Letonia	hierba	bajo techo					557	35
2017	Letonia	hierba	bajo techo					798	34
2016	Letonia	hierba	al aire libre					78	6
2017	Letonia	hierba	al aire libre					66	15
2015	Líbano	hierba	al aire libre	3.500,00		3.500,00			
2017	Líbano	hierba	al aire libre	40.772,00					
2016	Lituania	hierba	bajo techo						4
2017	Lituania	hierba	bajo techo						8
2017	Lituania	hierba	al aire libre						7
2015	Madagascar	hierba	al aire libre		11,00			21.325	
2017	Madagascar	hierba	al aire libre		9,00			57.708	
2013	Malta	hierba	bajo techo					27	
2016	Marruecos	planta	al aire libre	47.000,00	395,00	46.605,00			
2017	Marruecos	planta	al aire libre	47.500,00	523,00	46.977,00			
2016	Marruecos	hierba	al aire libre				35.652,83		
2017	Marruecos	hierba	al aire libre				35.702,90		
2016	Marruecos	resina	al aire libre				713,00		
2017	Marruecos	resina	al aire libre				714,06		
2016	México	hierba	al aire libre		5.478,42		6.574,1		38.432
2017	México	hierba	al aire libre		4.193,34		5.032,0		34.523
2013	Mongolia	hierba	al aire libre	15.000,00	4.000,00	11.000,00		4.000	4.000
2014	Myanmar	hierba	al aire libre	15,00	10,00	5,00			3
2014	Nicaragua	hierba	al aire libre		0,30		1.507,00	3.014	30
2016	Nigeria	hierba	al aire libre		718,78				65
2017	Nigeria	hierba	al aire libre		317,12				
2015	Noruega	hierba	bajo techo		0,04			4.000	30

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2016	Nueva Zelandia	hierba	bajo techo					18.903	607
2017	Nueva Zelandia	hierba	bajo techo					19.992	
2016	Nueva Zelandia	hierba	al aire libre					104.725	
2017	Nueva Zelandia	hierba	al aire libre					19.559	
2016	Países Bajos	hierba	bajo techo					994.068	5.856
2017	Países Bajos	hierba	bajo techo					883.163	5.538
2013	Panamá	hierba	bajo techo	0,50[a]	0,50	0,00		37	2
2013	Panamá	hierba	al aire libre	10,50[a]	10,50	0,00		78.633	2
2016	Paraguay	planta	al aire libre	1.298,50[a]	1.298,50	0,00		5.656.266	4
2017	Paraguay	planta	al aire libre		1.462,00			36.550.000	
2016	Paraguay	hierba	al aire libre				1.298,50		
2016	Paraguay	resina	al aire libre				1,15		
2016	Perú	hierba	al aire libre		87,83			1.429.749	
2017	Perú	hierba	al aire libre		61,30			4.671.387	47
2016	Polonia	hierba	bajo techo					146.755	1.403
2017	Polonia	hierba	bajo techo					448	10
2016	Polonia	hierba	bajo techo/ al aire libre					4.585	219
2017	Polonia	hierba	bajo techo/ al aire libre						54
2017	Portugal	hierba	bajo techo/ al aire libre					22.910	158
2017	República Centroafricana	hierba	al aire libre	130,00	60,00	55	10,00	250.000	22
2013	República de Corea	hierba	al aire libre					8.072	
2014	República de Moldova	hierba	al aire libre	100,00	59,00	41,00	10.000,00	200.548	
2017	República de Moldova	hierba	al aire libre	0,15	2,57			257.236	
2014	República de Moldova	hierba	bajo techo		41,00				
2014	República Dominicana	hierba	al aire libre	6,00[a]	6,00	0,00	0,21	111	8
2016	Rumania	hierba	bajo techo					1.433	41
2017	Rumania	hierba	bajo techo					1.875	46
2016	Rumania	hierba	al aire libre		6,99				42
2017	Rumania	hierba	al aire libre		1,90			4.905	32
2015	Serbia	hierba	al aire libre				0,05		
2013	Sierra Leona	hierba	al aire libre	190,00		190,00		190	3
2014	Sudán	hierba	al aire libre	8,00[a]	8,00	0,00	345,00		
2017	Sudán	hierba	al aire libre	1.250,00[a]	1.250,00	0,00	205,00		100
2014	Suecia	hierba	bajo techo					10.000	56
2015	Suecia	hierba	al aire libre				182,00		
2017	Suecia	hierba	al aire libre					5.100	44

Año	País	Producto	Al aire libre/ bajo techo	Superficie cultivada (hectáreas)	Superficie cultivada (hectáreas)	Superficie cosechable (hectáreas)	Producción (toneladas)	Plantas erradicadas	Lugares erradicados
2016	Suiza	hierba	bajo techo					11.386	83
2017	Suiza	hierba	bajo techo					71.750	
2016	Tailandia	hierba	al aire libre	1,00[a]	1,00	0,00	7,50		1
2012	Tayikistán	hierba	al aire libre					2.180.121	
2015	Trinidad y Tabago	hierba	al aire libre		0,31			375.925	58
2016	Ucrania	hierba	al aire libre	91,00[a]	91,00	0,00			
2017	Ucrania	hierba	al aire libre		166,90			4.600.000	
2012	Uganda	hierba	al aire libre	150,00	88,00	62,00			5
2016	Uruguay	hierba	bajo techo					661	
2017	Uruguay	hierba	bajo techo					1.926	
2016	Uzbekistán	hierba	al aire libre	0,20[a]	0,20	0,00			586
2017	Uzbekistán	hierba	al aire libre	0,20[a]	0,20	0,00			618
2015	Viet Nam	Hierba	Al aire libre		1,00				

Fuentes: Cuestionario para los informes anuales de la Oficina de las Naciones Unidas contra la Droga y el Delito; informes de los Gobiernos, y Estados Unidos de América, *International Narcotics Control Strategy Reports*.

[a] *Superficie identificada por las autoridades para la erradicación.*

GLOSARIO

Anfetaminas — Grupo de estimulantes de tipo anfetamínico que incluye la anfetamina y la metanfetamina.

Cocaína crack — Cocaína base obtenida del clorhidrato de cocaína mediante procesos de conversión que la hacen apta para fumar.

Consumidores de drogas problemáticos — Personas que consumen drogas con un alto grado de riesgo, por ejemplo, las que se inyectan drogas, las que las consumen diariamente o las que padecen trastornos por consumo de drogas (uso nocivo o drogodependencia) diagnosticados sobre la base de los criterios clínicos contenidos en el *Manual Diagnóstico y Estadístico de los Trastornos Mentales* (quinta edición) de la American Psychiatric Association, o en la *Clasificación Estadística Internacional de Enfermedades y Problemas de Salud Conexos* (décima revisión) de la OMS.

Dependencia — Concepto definido en la *Clasificación Estadística Internacional de Enfermedades y Problemas de Salud Conexos* (décima revisión) como un conjunto de fenómenos fisiológicos, cognitivos y del comportamiento que se desarrollan tras el consumo reiterado de sustancias y que suelen incluir un fuerte deseo de consumir la droga, dificultades para controlar su consumo, consumo persistente a pesar de las consecuencias nocivas, prioridad del consumo de la droga por encima de otras actividades y obligaciones, una mayor tolerancia y, en ocasiones, un estado físico de abstinencia.

Estimulantes de tipo anfetamínico — Grupo de sustancias integrado por estimulantes sintéticos sometidos a fiscalización con arreglo al Convenio sobre Sustancias Sicotrópicas de 1971 y que pertenecen al grupo de sustancias denominadas anfetaminas, que incluye la anfetamina, la metanfetamina, la metcatinona y las sustancias del grupo del éxtasis (3,4-metilendioximetanfetamina (MDMA) y sus análogos).

Fentanilos — Fentanilo y sus análogos.

Nuevas sustancias psicoactivas — Sustancias objeto de abuso, ya sea en su estado puro o en preparados, que no están sujetas a fiscalización con arreglo a la Convención Única de 1961 sobre Estupefacientes o el Convenio de 1971, pero que pueden entrañar un peligro para la salud pública. En este contexto, el término “nuevas” no se refiere forzosamente a nuevas invenciones, sino a sustancias que han empezado a circular recientemente.

Opiáceos — Subconjunto de los opioides integrado por los diversos productos derivados de la planta de adormidera, incluidos el opio, la morfina y la heroína.

Opioides — Término genérico que se aplica a los opiáceos y a sus análogos sintéticos (principalmente fármacos opioides o sujetos a prescripción médica) y los compuestos sintetizados en el organismo.

Pasta de coca (o base de coca) — Extracto de las hojas del arbusto de coca. La purificación de la pasta de coca produce cocaína (cocaína base y clorhidrato de cocaína).

Personas que sufren trastornos por consumo de drogas/personas con trastornos por consumo de drogas — Subconjunto de las personas que consumen drogas. El uso nocivo de sustancias y la dependencia son características de los trastornos por consumo de drogas. Las personas con trastornos por consumo de drogas necesitan tratamiento, atención sanitaria y social y rehabilitación.

Prevalencia anual — Número total de personas de un determinado grupo de edad que ha consumido una determinada droga por lo menos una vez en el último año, dividido por el número de personas de ese grupo de edad, expresado como porcentaje.

Prevención del consumo de drogas y tratamiento de los trastornos por consumo de drogas — El objetivo de la "prevención del consumo de drogas" es prevenir o retrasar el inicio del consumo de drogas, así como la progresión a trastornos por consumo de drogas. Una vez que la persona desarrolla un trastorno por consumo de drogas, esta precisa tratamiento, atención y rehabilitación.

Sal de cocaína — Clorhidrato de cocaína.

Trastornos por consumo de sustancias o drogas — Concepto definido en el *Manual Diagnóstico y Estadístico de los Trastornos Mentales* (quinta edición) como un conjunto de síntomas causado por el consumo reiterado de una sustancia a pesar de los problemas o las deficiencias que produce en la vida cotidiana. Según el número de síntomas detectados, el trastorno por consumo de sustancias puede ser leve, moderado o grave.

Uso de drogas/consumo de drogas — Uso de sustancias psicoactivas sometidas a fiscalización para fines no médicos y no científicos, a menos que se indique otra cosa.

Uso nocivo de sustancias — Concepto definido en la *Clasificación Estadística Internacional de Enfermedades y Problemas de Salud Conexos* (décima revisión) como un patrón de consumo que causa daño a la salud física o mental.

AGRUPACIONES REGIONALES

En el *Informe Mundial sobre las Drogas* se utilizan varias denominaciones regionales y subregionales. Esas denominaciones no revisten carácter oficial y se definen como sigue:

- África Oriental: Burundi, Comoras, Djibouti, Eritrea, Etiopía, Kenya, Madagascar, Mauricio, República Unida de Tanzanía, Rwanda, Seychelles, Somalia, Sudán del Sur, Uganda y Mayotte
- África Septentrional: Argelia, Egipto, Libia, Marruecos, Sudán y Túnez
- África Meridional: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, Sudáfrica, Zambia, Zimbabwe y Reunión
- África Occidental y Central: Benin, Burkina Faso, Cabo Verde, Camerún, Chad, Congo, Côte d'Ivoire, Gabón, Gambia, Ghana, Guinea, Guinea-Bissau, Guinea Ecuatorial, Liberia, Malí, Mauritania, Níger, Nigeria, República Centroafricana, República Democrática del Congo, Santo Tomé y Príncipe, Senegal, Sierra Leona, Togo y Santa Elena
- Caribe: Antigua y Barbuda, Bahamas, Barbados, Cuba, Dominica, Granada, Haití, Jamaica, República Dominicana, Saint Kitts y Nevis, San Vicente y las Granadinas, Santa Lucía, Trinidad y Tabago, Anguila, Aruba, Bonaire (Países Bajos), Curazao, Guadalupe, Islas Caimán, Islas Turcas y Caicos, Islas Vírgenes Británicas, Islas Vírgenes de los Estados Unidos, Martinica, Montserrat, Puerto Rico, Saba (Países Bajos), San Eustaquio (Países Bajos) y San Martín
- Centroamérica: Belice, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua y Panamá
- América del Norte: Canadá, Estados Unidos de América, México, Bermudas, Groenlandia y San Pedro y Miquelón
- América del Sur: Argentina, Bolivia (Estado Plurinacional de), Brasil, Chile, Colombia, Ecuador, Guyana, Paraguay, Perú, Suriname, Uruguay, Venezuela (República Bolivariana de) e Islas Malvinas (Falkland Islands)
- Asia Central y Transcaucasia: Armenia, Azerbaiyán, Georgia, Kazajstán, Kirguistán, Tayikistán, Turkmenistán y Uzbekistán
- Asia Oriental y Sudoriental: Brunei Darussalam, Camboya, China, Filipinas, Indonesia, Japón, Malasia, Mongolia, Myanmar, República de Corea, República Democrática Popular Lao, República Popular Democrática de Corea, Singapur, Tailandia, Timor-Leste, Viet Nam, Hong Kong (China), Macao (China) y Provincia China de Taiwán
- Asia Sudoccidental: Afganistán, Irán (República Islámica del) y Pakistán
- Cercano Oriente y Oriente Medio: Arabia Saudita, Bahrein, Emiratos Árabes Unidos, Estado de Palestina, Iraq, Israel, Jordania, Kuwait, Líbano, Omán, Qatar, República Árabe Siria y Yemen
- Asia Meridional: Bangladesh, Bhután, India, Maldivas, Nepal y Sri Lanka

- Europa Oriental: Belarús, Federación de Rusia, República de Moldova y Ucrania
- Europa Sudoriental: Albania, Bosnia y Herzegovina, Bulgaria, Croacia, Macedonia del Norte, Montenegro, Rumania, Serbia, Turquía y Kosovo
- Europa Occidental y Central: Alemania, Andorra, Austria, Bélgica, Chequia, Chipre, Dinamarca, Eslovaquia, Eslovenia, España, Estonia, Finlandia, Francia, Grecia, Hungría, Irlanda, Islandia, Italia, Letonia, Liechtenstein, Lituania, Luxemburgo, Malta, Mónaco, Noruega, Países Bajos, Polonia, Portugal, Reino Unido de Gran Bretaña e Irlanda del Norte, San Marino, Suecia, Suiza, Gibraltar, Islas Feroe y Santa Sede

Oceanía (integrada por cuatro subregiones):

- Australia y Nueva Zelandia: Australia y Nueva Zelandia
- Polinesia: Islas Cook, Niue, Samoa, Tonga, Tuvalu, Islas Wallis y Futuna, Polinesia Francesa y Tokelau
- Melanesia: Fiji, Islas Salomón, Papua Nueva Guinea, Vanuatu y Nueva Caledonia
- Micronesia: Islas Marshall, Kiribati, Micronesia (Estados Federados de), Nauru, Palau, Guam e Islas Marianas del Norte

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United Nations Office on Drugs and Crime

UNODC Research

2 GLOBAL OVERVIEW OF DRUG DEMAND AND SUPPLY

WORLD DRUG REPORT 2019

ISBN: 978-92-1-148314-7
eISBN: 978-92-1-004174-4
United Nations publication, Sales No. E.19.XI.9

Suggested citation:,
World Drug Report 2019 (United Nations publication, Sales No. E.19.XI.8).

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PREFACE

The findings of this year's *World Drug Report* fill in and further complicate the global picture of drug challenges, underscoring the need for broader international cooperation to advance balanced and integrated health and criminal justice responses to drug supply and demand.

With improved research and more precise data from India and Nigeria – both among the 10 most-populous countries in the world – we see that there are many more opioid users and people with drug use disorders than previously estimated. Globally, some 35 million people, up from an earlier estimate of 30.5 million, suffer from drug use disorders and require treatment services. The death toll is also higher: 585,000 people died as a result of drug use in 2017.

Prevention and treatment continue to fall far short of needs in many parts of the world. This is particularly true in prisons, where those incarcerated are especially vulnerable to drug use and face higher risks of HIV and hepatitis C transmission. This gap represents a major impediment to achieving the Sustainable Development Goals and fulfilling the international community's pledge to leave no one behind.

Synthetic opioids continue to pose a serious threat to health, with overdose deaths rising in North America and trafficking in fentanyl and its analogues expanding in Europe and elsewhere. The opioid crisis that has featured in far fewer headlines but that requires equally urgent international attention is the non-medical use of the painkiller tramadol, particularly in Africa. The amount of tramadol seized globally reached a record 125 tons in 2017; the limited data available indicate that the tramadol being used for non-medical purposes in Africa is being illicitly manufactured in South Asia and trafficked to the region, as well as to parts of the Middle East.

The response to the misuse of tramadol illustrates the difficulties faced by countries in balancing necessary access for medical purposes while curbing abuse – with limited resources and health-care systems that are already struggling to cope – and at the same time clamping down on organized crime and trafficking.

Opium production and cocaine manufacture remain at record levels. The amounts intercepted are also higher than ever, with the amount of cocaine seized up 74 per cent over the past decade, compared with a 50 per cent rise in manufacture during the same period. This suggests that law enforcement efforts have become more effective and that strengthened international cooperation may be helping to increase interception rates.

The *World Drug Report 2019* also registers a decline in opiate trafficking from Afghanistan along the "northern" route through Central Asia to the Russian Federation. In 2008, some 10 per cent of the morphine and heroin intercepted globally was seized in countries along the northern route; by 2017 it had fallen to 1 per cent. This may be due in part to a shift in demand to synthetics in destination markets. The increased effectiveness of regional responses may also play a role.

Countries in central Asia, with the support of the United Nations Office on Drugs and Crime (UNODC), have committed considerable resources to strengthening regional cooperation through integrated UNODC country, regional and global programmes, as well as through platforms such as the Central Asian Regional Information and Coordination Centre, the Afghanistan–Kyrgyzstan–Tajikistan Initiative and the Triangular Initiative and its Joint Planning Cell. More research is needed, including to identify lessons learned and best practices that could inform further action.

International cooperation has also succeeded in checking the growth in new psychoactive substances. The Vienna-based Commission on Narcotic Drugs has acted swiftly in recent years to schedule the most harmful new psychoactive substances, and the UNODC early warning advisory has helped to keep the international community abreast of developments.

Political will and adequate funding remain prerequisites for success. Efforts by Colombia to reduce cocaine production following the 2016 peace deal

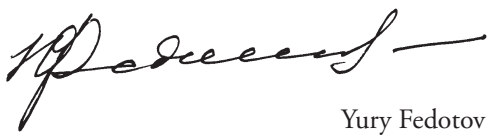
with the Revolutionary Armed Forces of Colombia (FARC) are a case in point. Alternative development initiatives have enabled farmers in central areas of the country previously under FARC control to abandon coca bush cultivation and join the licit economy. The result has been a drastic reduction in cocaine production. However, in other areas previously controlled by FARC, criminal groups have moved in to fill the vacuum and expand cultivation. Alternative development can succeed, but not without sustained attention and integration into broader development goals.

The successes identified amid the many, formidable problems that countries continue to face in grappling with drug supply and demand highlight that international cooperation works. The challenge before us is to make this cooperation work for more people.

International cooperation is based on agreed frameworks. Nearly every country in the world has reaffirmed its commitment to balanced, rights-based action based on the international drug control conventions. The most recent reaffirmation of that commitment is the Ministerial Declaration on Strengthening Our Actions at the National, Regional and International Levels to Accelerate the Implementation of Our Joint Commitments to Address and Counter the World Drug Problem, adopted at the ministerial segment of the sixty-second session of the Commission on Narcotic Drugs.

UNODC supports countries in putting their commitments into action through the application of international standards on the prevention and treatment of drug use disorders and HIV, as well as standards and norms on the administration of justice and the treatment of prisoners. We provide tailored technical assistance through our field offices and global programmes, and through toolkits and research.

I hope the *World Drug Report 2019* will shed further light on the world drug problem and inform international community responses. By working together and focusing attention and resources, we can help people get the services they need without discrimination, promote security and bring criminals to justice, safeguard health and achieve the Sustainable Development Goals.



Yury Fedotov
Executive Director
United Nations Office on Drugs and Crime

CONTENTS

Acknowledgements

The *World Drug Report 2019* was prepared by the Research and Trend Analysis Branch, Division for Policy Analysis and Public Affairs, United Nations Office on Drugs and Crime (UNODC), under the supervision of Jean-Luc Lemahieu, Director of the Division, and Angela Me, Chief of the Research and Trend Analysis Branch.

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The *World Drug Report 2019* benefited from the expertise of and invaluable contributions from UNODC colleagues in all divisions.

The Research and Trend Analysis Branch acknowledges the invaluable contributions and advice provided by the *World Drug Report* Scientific Advisory Committee:

Jonathan Caulkins
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The research and production of the joint UNODC/UNAIDS/WHO/World Bank estimates of the number of people who inject drugs were partly funded by the HIV/AIDS Section of the Drug Prevention and Health Branch of the Division for Operations of UNODC.

EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by cross-hatch owing to the difficulty of showing sufficient detail.

The designations employed and the presentation of the material in the *World Drug Report* do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the *World Drug Report*, if any, should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2017 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

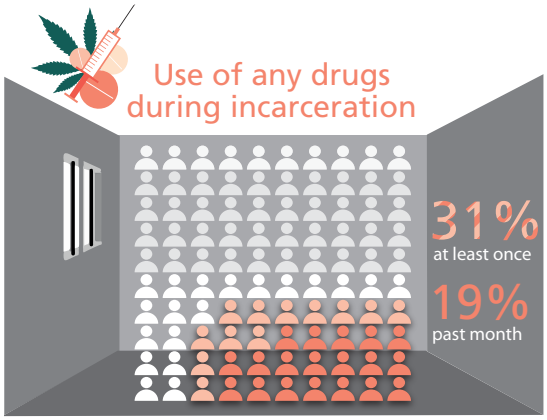
References to tons are to metric tons, unless otherwise stated.

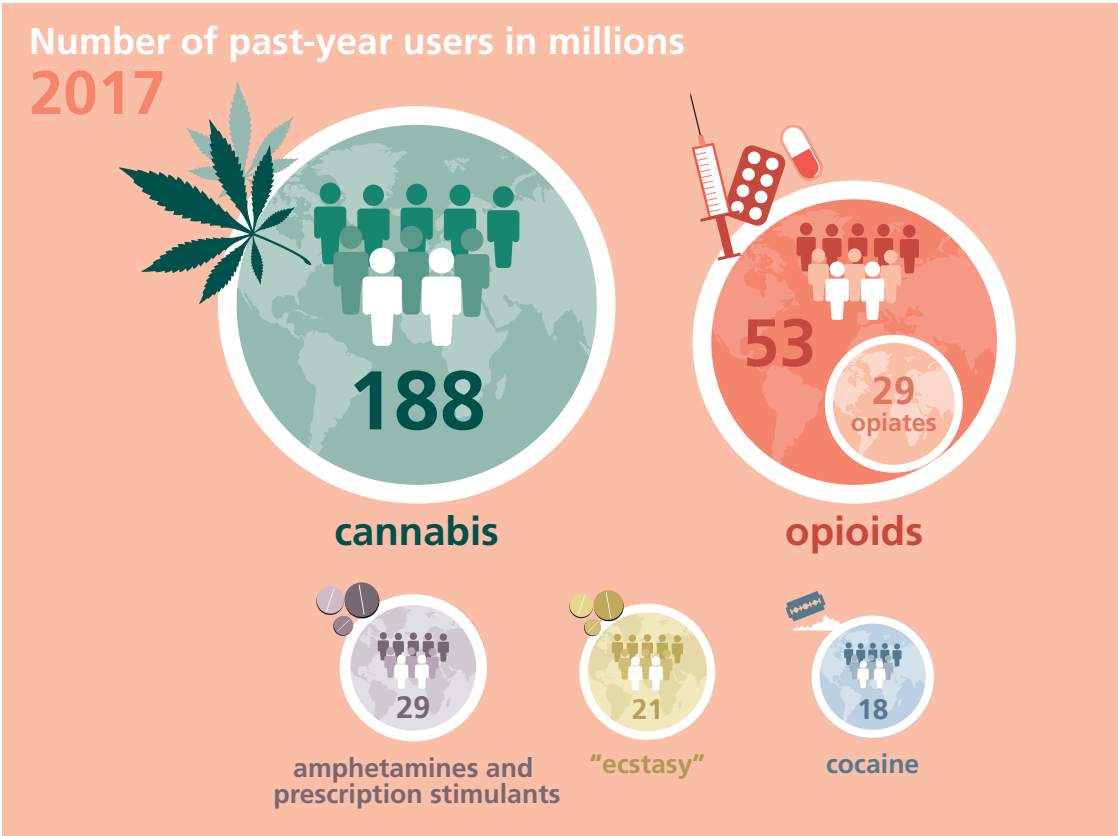
The following abbreviations have been used in the present booklet:

AIDS	acquired immunodeficiency syndrome
ATS	amphetamine-type stimulants
DALY	disability-adjusted life year
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
Europol	European Union Agency for Law Enforcement Cooperation
GBL	*gamma*-butyrolactone
GHB	*gamma*-hydroxybutyric acid
HIV	human immunodeficiency virus
LSD	lysergic acid diethylamide
NPS	new psychoactive substances
PWID	people who inject drugs
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNODC	United Office on Drugs and Crime
WHO	World Health Organization

SCOPE OF THE BOOKLET

This booklet constitutes the second chapter of the *World Drug Report 2019*. It provides a global overview of the extent of and trends in drug use, including drug use disorders, and its health consequences, and examines the global extent of deaths and years of "healthy" life lost attributable to drug use. The present booklet also examines drug use, infectious diseases and the provision of prevention and treatment services in prison settings. The final section of the booklet contains a global overview of the latest estimates of and trends in drug cultivation, production and trafficking of drugs, including on the Internet via the darknet.





DRUG DEMAND

Extent of drug use

More than a quarter of a billion people use drugs

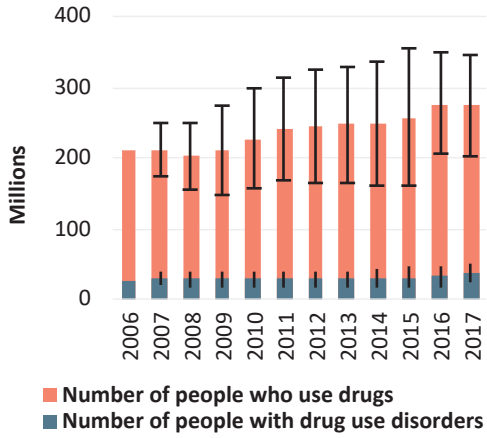
In 2017, an estimated 271 million people worldwide aged 15–64 had used drugs at least once in the previous year (range: 201 million to 341 million). This corresponds to 5.5 per cent of the global population aged 15–64 (range: 4.1 to 6.9 per cent), representing one in every 18 people.

In 2009, the past-year prevalence of drug use globally was estimated to be lower, at 4.8 per cent. Between 2009 and 2017, the estimated number of past-year users of any drug globally changed from 210 million to 271 million, or by 30 per cent, in part as a result of global population growth (the global population aged 15–64 increased by 10 per cent). Data show a higher prevalence over time of the use of opioids in Africa, Asia, Europe and North America, and in the use of cannabis in North America, South America and Asia. It should be noted, however, that any comparison of estimates over time should be undertaken with caution, given the wide uncertainty intervals of the estimates.

Over the last decade, there has been a diversification of the substances available on the drug markets. In addition to traditional plant-based substances – cannabis, cocaine and heroin – the last decade has witnessed the expansion of a dynamic market for synthetic drugs and the non-medical use of prescription medicines. More potent drugs are available and the increasing number of substances, and their potential combinations, poses a greater risk.

In recent years, hundreds of NPS have been synthesized. The majority are stimulants, followed by cannabinoids and an increasing number of opioids, with unpredictable and sometimes severe negative consequences, including death. The non-medical use of pharmaceutical opioids is of increasing concern. In North America, the use of synthetic opioids such as fentanyl (and fentanyl analogues) resulted in the continued dramatic increase in opioid overdose deaths in 2017. In other subregions, such as West and Central Africa and North Africa, based on seizures, the market for the non-medical use of tramadol has grown considerably. The first, large-scale national drug use survey conducted in Nigeria, in 2017, found a high prevalence of the non-medical use of prescription opioids (mainly tramadol), which was second only to the use of cannabis, with a past-year prevalence of 4.7 per cent.[1]

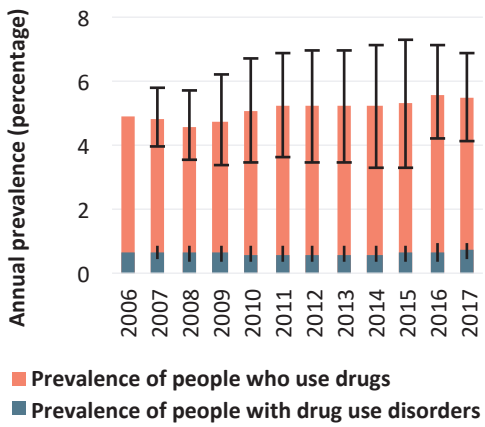
FIG. 1 Global trends in the estimated number of people who use drugs and those with drug use disorders, 2006–2017



Source: UNODC, responses to the annual report questionnaire.

Note: Estimates of people who use drugs are for adults (aged 15–64) who used drugs in the past year.

FIG. 2 Global trends in the estimated prevalence of drug use and drug use disorders, 2006–2017



Source: UNODC, responses to the annual report questionnaire.

Note: Estimated percentage of the annual prevalence of drug use is for adults (aged 15–64) who used drugs in the past year.

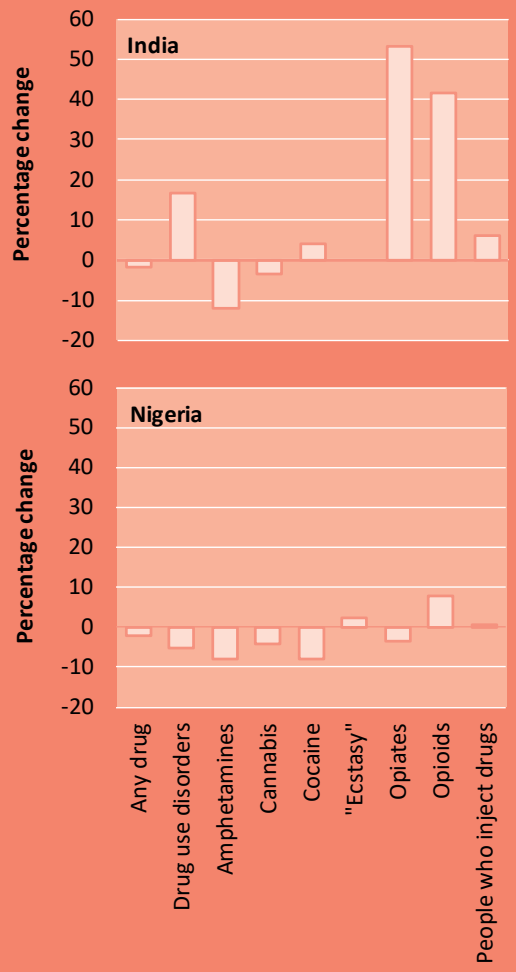
1 UNODC, *Drug Use in Nigeria 2018* (Vienna, 2019).

Recent drug use surveys in Nigeria and India: enhancing understanding of the extent of drug use in Africa and Asia and globally

National drug use surveys that were conducted in India in 2018[a] and Nigeria in 2017[b] have considerably improved understanding of the extent of drug use in these two highly populated countries. Because of their large populations, Nigeria and India exert a considerable influence over regional, as well as global, estimates of drug use. Nigeria is the most populous country in Africa, accounting for 38 per cent of the population aged 15–64 in West and Central Africa and 15 per cent of the population of Africa as a whole, while 86 per cent of the population in South Asia and 30 per cent of the population in Asia reside in India.

Survey findings from India have revealed a higher prevalence of the use of opioids and opiates in Asia than previously estimated for the region. At 1.0 per cent, the past-year prevalence of the use of opioids in Asia was higher in 2017 than in 2016, when it was 0.5 per cent, representing a change of 117 per cent in the number of past-year users from 13.6 million to 29.5 million. While, at 0.7 per cent, the prevalence of the use of opiates in Asia was also estimated to be higher in 2017 than in 2016, when it was 0.4 per cent, corresponding to a change in the number of past-year users from 11.2 million to 21.7 million. Likewise, in Africa, the past-year prevalence of the use of opioids was estimated to be higher in 2017 (0.9 per cent) than in 2016 (0.3 per cent), corresponding to a change in the number of past-year users from 2.2 million to 6.1 million, or of 178 per cent. The updated global estimates of the use of opioids and opiates reflect new information from five countries, but the main changes from previous global estimates result from the new surveys conducted in Nigeria and India.

Impact of new survey findings from India and Nigeria on global estimates of the number of past-year users, by drug type, and people who inject drugs



Note: The bars show the percentage change in the 2017 global estimates of past-year drug users compared with what the 2017 global estimates would have been had the surveys not been conducted.

Conversely, survey findings from India and Nigeria have led to lower regional estimates of the use of amphetamines in Africa and Asia, as well as globally. In Africa, the past-year prevalence was estimated to be lower in 2017 (0.5 per cent) than in 2016 (0.9 per cent), resulting in fewer past-year users in 2017 (3.7 million) than in 2016 (6.0 million), while in Asia the prevalence was estimated at 0.5 per cent in 2017 and 0.6 per cent in 2016, a change in the number of past-year users from 17.5 million in 2016 to 14.1 million in 2017. As for opioids and opiates, while updated information on the use of amphetamines was available for five countries, most of the change in the global estimates are the result of the surveys conducted in Nigeria and India.

Estimates for the past-year prevalence of cocaine use were also lower in Africa in 2017 (0.2 per cent) than in 2016 (0.5 per cent), with correspondingly fewer past-year users estimated in 2017 (1.3 million) compared with 2016 (3.2 million). Nigeria was the only country in Africa with new or updated information on the prevalence of the use of cocaine.

Prior to these surveys, there were no recent survey data available for Nigeria or India on the past-year prevalence of drug use and regional estimates for Africa and Asia were constructed on the basis of data available from other countries in those regions.

The survey conducted in India in 2018 involved interviews with more than 500,000 individuals across all 36 states and territories. A combination of two data collection approaches was employed: a household survey among a nationally representative sample of 473,569 individuals aged 10–75; and a respondent-driven sampling survey of 72,642 people with drug dependence, incorporating treatment multiplier methods. The survey also estimated the number of PWID as 850,000, which compares to a previous estimate of 177,000 in 2008 by the National AIDS Control Organization, based on mapping conducted in urbanized areas in 17 states.

The first comprehensive nationwide drug use survey conducted in Nigeria, in 2017, employed both a household survey of 38,850 respondents, incorporating network scale-up methods, and a high-risk drug user survey of 9,344 problem drug users using respondent-driven sampling and multiplier benchmark methods. The results of the survey highlighted a considerable level of past-year use of psychoactive substances. Cannabis was the most commonly use drug followed by opioids, mainly the non-medical use of prescription opioids (predominantly tramadol). The survey placed Nigeria among the countries with the highest prevalence of the non-medical use of opioids globally.

These two recent surveys, of high scientific quality, have led to major improvements in the data coverage of the populations in their respective regions. The new survey in India (in particular) and Nigeria have had a considerable influence on estimates of the extent of drug use globally. The impact is seen especially for opioids and opiates, which have also influenced global estimates of the number of people suffering from drug use disorders. New data from India has also impacted on global estimates of PWID.

[a] Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019.

[b] United Nations Office on Drugs and Crime (UNODC) and government of Nigeria, Drug Use in Nigeria 2018 (Vienna, 2019).

Some 35 million people suffer from drug use disorders

Among the estimated 271 million past-year users of any drug, some 35.0 million (range: 23.0 million to 47.0 million), or almost 13 per cent, are estimated to suffer from drug use disorders, meaning that their drug use is harmful to the point where they may experience drug dependence and/or require treatment. This corresponds to a prevalence of drug use disorders of 0.71 per cent (range: 0.47 to 0.95 per cent) globally among the population aged 15–64.

Between 2009 and 2016, the prevalence of drug use disorders remained essentially stable globally, with the number of people suffering from drug use disorders changing over that period in line with population growth. However, in 2017, the prevalence of drug use disorders (0.71 per cent) was higher than previously estimated (0.62 per cent in 2016), corresponding to a change in the estimated number of people suffering from drug use disorders from 30.5 million to 35.0 million. This higher prevalence is the result of the findings of drug use surveys conducted recently in two highly populated countries, Nigeria and India (see box). Given the wide uncertainty intervals of the estimates, comparisons over time should be undertaken with caution.

Cannabis remains by far the most commonly used drug

Worldwide, there were an estimated 188 million past-year users of cannabis in 2017, corresponding to 3.8 per cent of the global population aged 15–64. The annual prevalence of the use of cannabis is highest in North America (13.8 per cent), Oceania (10.9 per cent) and West and Central Africa (10.0 per cent).

In 2010, cannabis use, particularly among young people, was reported as stabilizing or declining in countries with established cannabis markets, such as in Western and Central Europe, North America and parts of Oceania (Australia and New Zealand), but that trend was offset by increasing consumption in many countries in Africa and Asia. While cannabis use in Western and Central Europe is still reported as stabilizing, it has increased considerably in the Americas, Africa and Asia.

Opioids present the greatest harm to the health of users

Opioids are a major concern in many countries because of the severe health consequences associated with their use. For example, in 2017, the use of opioids accounted for 110,000 (66 per cent) of the 167,000 deaths attributed to drug use disorders.[2] The opioid crisis continues in North America, reaching new highs in the number of opioid overdose deaths in the United States of America and Canada, with the increases largely attributed to the use of fentanyl and its analogues.

There were an estimated 53.4 million past-year users of opioids (both persons who use opiates and persons who use prescription opioids for non-medical purposes) globally in 2017. This corresponds to 1.1 per cent of the global population aged 15–64. The number of past-year users of opioids globally is 56 per cent higher than the previously estimated 34.3 million in 2016. The change is the result of an improvement in the understanding of the extent of drug use based on recent surveys conducted in Nigeria and India (see the box on the previous page). The subregions with the highest past-year prevalence of use of opioids were North America (4.0 per cent), Oceania (3.3 per cent for Australia and New Zealand), the Near and Middle East and South-West Asia (2.3 per cent) and South Asia (1.8 per cent).

While global estimates are not available, the non-medical use of pharmaceutical opioids is reported in many countries, for example, in West and North Africa and in the Near and Middle East (tramadol), and in North America (hydrocodone, oxycodone, codeine, tramadol and fentanyl). There are also signs of increasing non-medical use of pharmaceutical opioids in Western and Central Europe, as reflected in the increasing proportion of admissions to treatment for the use of those substances.

The results of the first large-scale nationwide drug use survey conducted in Nigeria in 2017, the most-populated country in Africa, highlighted a considerable level of past-year non-medical use of prescription opioids (mainly tramadol), with an annual prevalence of 6.0 per cent among men and 3.3 per cent among women.[3]

Among users of opioids, 29.2 million were past-year users of opiates (heroin and opium) in 2017, corresponding to 0.6 per cent of the global population aged 15–64; the number of past-year users of opiates globally is 50 per cent higher than the previously estimated 19.4 million in 2016 (the result of an improvement in the understanding of the extent of the use of opiates based on recent survey findings from India and Nigeria). The subregions with the highest prevalence of use of opiates are the Near and Middle East and South-West Asia (1.6 per cent), South Asia (1.3 per cent) and Central Asia and Transcaucasia (0.9 per cent).

Use of amphetamines, especially methamphetamine, is increasing in parts of Asia and North America

In 2017, there were an estimated 28.9 million past-year users of amphetamines, corresponding to 0.6 per cent of the global population aged 15–64, 15 per cent lower than the previously estimated 34.2 million in 2016 (the result of an improvement in the understanding of the use of amphetamines based on recent survey findings from Nigeria and India). The highest past-year prevalence among the population aged 15–64 was in North America (2.1 per cent) and Oceania (1.3 per cent).

The form of amphetamines used varies considerably from region to region. In North America, it is mainly the non-medical use of prescription stimulants and methamphetamine; crystalline methamphetamine in East and South-East Asia and Oceania (Australia); and amphetamine in Western and Central Europe and the Near and Middle East. Since 2010, there has been a relatively stable situation in use of amphetamines in most countries in Western and

2 Institute for Health Metrics and Evaluation, "Global Burden of Disease Study 2017", Global Health Data Exchange.

3 *Drug Use in Nigeria 2018*.

Central Europe, although data based on the analysis of wastewater have shown an increase in recent years. In North America, there are indications of an increase in methamphetamine use, while the use of methamphetamine, in particular crystalline methamphetamine, has continued to be reported as increasing in East and South-East Asia

Past-year use of "ecstasy" is estimated at 21.3 million people globally, corresponding to 0.4 per cent of the global population aged 15–64. Past-year use of "ecstasy" is relatively high in Oceania (2.2 per cent for Australia and New Zealand), West and Central Europe (0.9 per cent) and North America (0.9 per cent). The use of "ecstasy" is mainly associated with recreational nightlife settings, with higher levels of use among younger people. Between 2007 and 2012, most countries in Western and Central Europe reported stable or declining trends in the use of "ecstasy", but there have been indications of an overall resurgence in "ecstasy" use in recent years, owing to increasing availability of high-purity "ecstasy" in Western and Central Europe as well as in other subregions. The forms of "ecstasy" used have also diversified, as high-purity powder and crystalline forms of the drug have become available and are commonly used.

Indications of increasing cocaine use in North America and Western and Central Europe

Globally, an estimated 18.1 million people were past-year users of cocaine in 2017, corresponding to 0.4 per cent of the global population aged 15–64. Past-year use of cocaine is high in Oceania (2.2 per cent for Australia and New Zealand), North America (2.1 per cent), Western and Central Europe (1.3 per cent) and South America (1.0 per cent).

In 2010, stable trends were reported in the use of cocaine in Central America, South America and Europe, while decreasing use of cocaine was reported in North America. More recently, in Western and Central Europe, wastewater analysis and survey results in some countries suggest an increase in cocaine consumption in the subregion. In North America, following a decline in cocaine use between 2006 and 2012, there are signs of an increase; there have also been reported increases in cocaine use in some countries in South America. In addition, the use of cocaine base paste, previously confined to cocaine-manufacturing countries, has spread to countries further south in the subregion. In parts of Asia and West Africa, increasing amounts of cocaine have reportedly been seized, which indicates that cocaine use could potentially increase, especially among the affluent, urban segments of the population, in subregions where such use had previously been low.

Drug use among adolescents and young adults

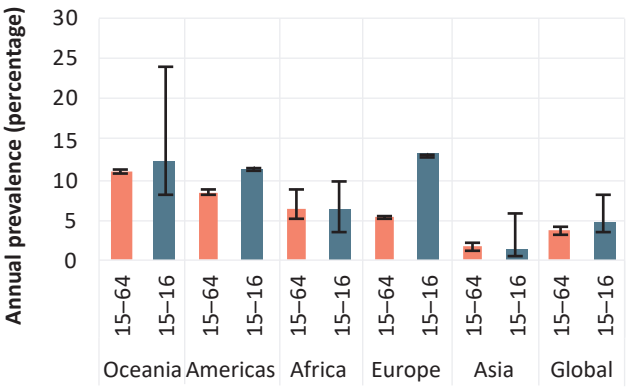
Adolescence and early adulthood are an important period of transition. It is a time of physical and psychological development, with changes occurring in the brain, and of cognitive and emotional development. For some, it is also a time of vulnerability to the use of drugs. Adolescence (12–17 years of age) is the critical risk period for the initiation of substance use. Within the population aged 15–64, peak levels of drug use are seen among those aged 18–25.[4] This is the situation observed in countries in most regions and for most drug types.

Research over the last 20 years has provided a more complete understanding about the individual and environmental factors that increase vulnerability to the initiation of the use of drugs. The progression to disorders is also better understood. Lack of knowledge about substances and the consequences of their use is among the main factors that increase an individual's vulnerability to drug use. Some of the other main vulnerability factors include: genetic predisposition, personality traits (e.g., impulsivity, sensation-seeking), the presence of mental and behavioural disorders, family neglect and abuse, poor attachment to school and the community, social norms and environments conducive to substance use (including the influence of media), and growing up in marginalized and deprived communities. Conversely, psychological and emotional well-being, personal and social competence, a strong attachment to caring and effective parents and attachment to schools and communities that are well resourced and well organized are all factors that contribute to individuals being less vulnerable to substance use.[5]

4 *World Drug Report 2018: Drugs and Age – Drugs and Associated Issues among Young People and Older People* (United Nations publication, Sales No. E.18.XI.9 (Booklet 4)), p. 11.

5 UNODC and WHO, *International Standards on Drug Use*

FIG. 3 Estimates of cannabis use among young people and among the general population, 2017



Source: UNODC, responses to the annual report questionnaire; and other government reports.

Note: The estimates of the annual prevalence of use among people aged 15–16 is based on school surveys in most countries and may not be representative of all those aged 15–16.

Cannabis is the most widely used drug among young people. Globally, it is estimated that there were 12.6 million past-year users of any drug among students aged 15–16 in 2017, with an estimated 11.3 million past-year users of cannabis. This corresponds to an annual prevalence of cannabis use of 4.7 per cent among this age group, a rate that is higher than the rate of prevalence of cannabis use among the general population aged 15–64 (3.8 per cent). Past-year use of cannabis among young people aged 15–16 is high in Europe (13.2 per cent), Oceania (12.4 per cent) and the Americas (11.4 per cent). The risk of developing dependence on cannabis among those who have ever used the drug (even once) has been estimated at 9 per cent by studies in the United States.[6] That rate rose to one in six (17 per cent) among lifetime users who started using cannabis in adolescence, according to studies from the United States, New Zealand and Australia.[7]

In Europe, where there is a high prevalence of cannabis use among young people, beliefs and attitudes towards its use may help explain that high prevalence. A survey among 13,128 people aged 15–24 from the 28 States members of the European Union was conducted in 2014 to assess perceptions of availability and attitudes towards use of drugs.[8] Cannabis was considered the least harmful drug and the easiest drug to obtain. While 63 per cent of those surveyed considered that the regular use of cannabis might pose a high risk to health, 25 per cent thought there was a medium risk and 11 per cent thought that there was a low risk or no risk to health (1 per cent did not know). More than half (58 per cent) of the respondents reported that it would be easy to obtain cannabis within 24 hours, and 29 per cent said it would be "very easy". Substances with a lower prevalence of use were considered to be a greater risk to health and far less accessible. Almost all respondents considered that the regular use of cocaine or "ecstasy" might pose a high risk to health (96 and 93 per cent, respectively). Fewer respondents said it would be easy to obtain cocaine (25 per cent), "ecstasy" (23 per cent) or heroin (13 per cent). In fact, only one in five said it would be impossible to obtain any of those substances within 24 hours.

A 2015 survey of 96,046 students aged 15–16 in 35 countries in Europe found that the lifetime prevalence of use of tranquillizers and sedatives without a prescription (6 per cent) and of NPS (4 per cent) were higher than the lifetime use of controlled substances other than cannabis. After cannabis (lifetime prevalence of 16 per cent), the most commonly used drugs were "ecstasy", amphetamine, cocaine and LSD or other hallucinogens (each with a lifetime prevalence of 2 per cent). Less commonly used drugs were methamphetamine, "crack" cocaine, heroin and GHB (each with a lifetime prevalence of 1 per cent).[9]

In the United States, two factors that have proved to be central in explaining differences and changes over time in the use of many drugs by young people

Prevention, 2nd ed. (forthcoming).

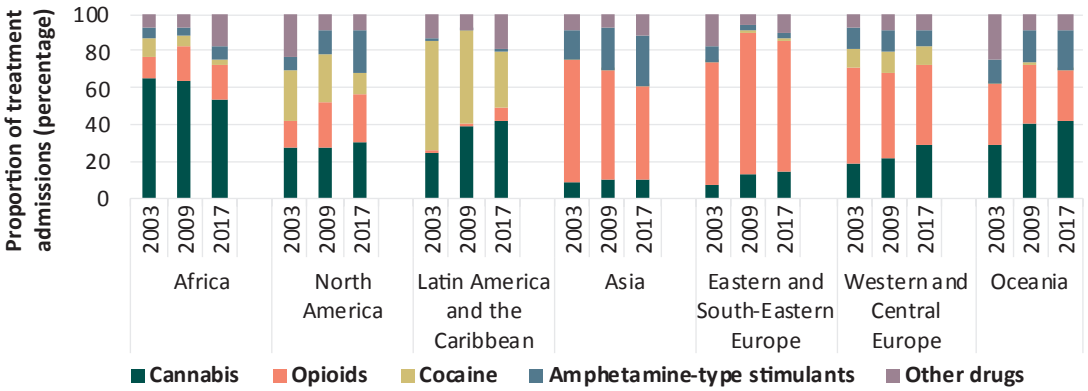
6 Catalina Lopez-Quintero and others, "Probability and predictors of transition from first use to dependence on nicotine, alcohol, cannabis, and cocaine: Results of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC)", *Drug and Alcohol Dependence,* vol. 115, Nos. 1 and 2 (May 2011), pp. 120-130.

7 James C. Anthony, "The epidemiology of cannabis dependence", in *Cannabis Dependence: Its Nature, Consequences and Treatment* (Cambridge, Cambridge University Press, 2006), pp. 58–105.

8 European Commission, *Young people and drugs*, Flash Eurobarometer series No. 401 (August 2014).

9 EMCDDA and European School Survey Project on Alcohol and Other Drugs, *ESPAD Report 2015: Results from the European School Survey Project on Alcohol and Other Drugs* (Luxembourg, Publications Office of the European Union, 2016).

FIG. 4 Trends in the primary drug of concern in drug treatment admissions, by region, 2003, 2009 and 2017



Source: UNODC, responses to the annual report questionnaire.

are the perceived risk of harm and personal disapproval. Trends in the perceived availability of certain drugs have also proved to be important in explaining changes in use levels.[10]

People in drug treatment

For people with drug use disorders, the availability of and access to treatment services remains limited at the global level, as only one in seven people with drug use disorders receive treatment each year. Information on those in treatment can provide useful insight into trends and geographical variations with respect to drug use disorders. However, that information reflects not only the level of demand for treatment (the number of people seeking help, or referred by the criminal justice system or by their families, for example) but also the extent of the availability of treatment services.

All regions except Africa have seen an increasing proportion of the treatment provided going to treatment for use of cannabis as the primary drug of concern. In Africa, although this proportion has been decreasing, treatment for cannabis use as the primary drug of concern remains prominent. On the basis of data from treatment sites across the six regions of South Africa, covering the period from July to December 2017 (the latest data available), between 29 and 56 per cent of those in treatment had cannabis as the primary drug of concern (admissions primarily for the use of alcohol have been excluded). For those under the age of 20, the proportion with cannabis as the primary drug of concern was much higher. Across all regions, between 43 and 83 per cent of people under the age of 20 reported cannabis as the primary drug of concern.[11]

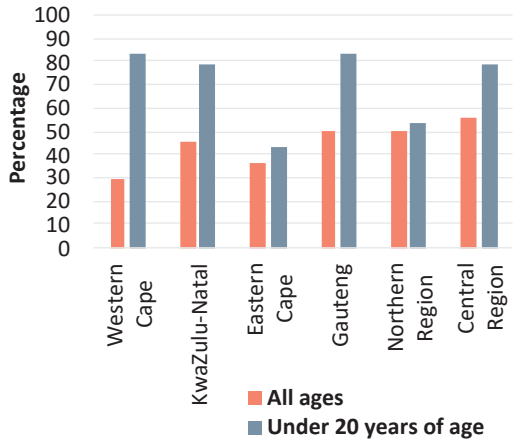
A literature review of studies on substance use in countries in West Africa consistently identified cannabis as the primary drug of concern in the majority of treatment admissions. Information on treatment admissions was available for 8 of the 16 countries included in the review, and in all those countries, cannabis was identified as the primary (controlled) substance of concern for the majority of those in drug treatment. In five of those eight countries, the proportion of treatment admissions for the use of cannabis was higher than of admissions for the use of alcohol. The proportions of drug treatment admissions primarily for the use of other substances were very low, typically less than 5 per cent.[12]

10 Richard A. Miech and others, *Monitoring the Future: National Survey Results on Drug Use, 1975–2017*, vol. 1, *Secondary School Students* (Ann Arbor, Michigan, University of Michigan Institute for Social Research, 2018).

11 Siphokazi Dada and others, *Monitoring Alcohol, Tobacco and Other Drug Use Trends in South Africa: Phase 43* (Cape Town, South African Community Epidemiology Network on Drug Use, October 2018).

12 UNODC, *Situation of Drug Use in ECOWAS Member States and Mauritania: A Review of the Literature (2006-2010)* (Vienna, 2017).

FIG. 5 Proportion of people in drug treatment with cannabis as the primary drug of concern, South Africa, July to December 2017



Source: Siphokazi Dada and others, *Monitoring Alcohol, Tobacco and Other Drug Use Trends in South Africa: Phase 43* (Cape Town, South African Community Epidemiology Network on Drug Use, October 2018).

Note: Treatment for the use of alcohol, which was included in the publication, has been excluded from this analysis.

To date, no medication has been found to be effective in the treatment of cannabis use disorders. Psychological and social interventions that are aimed at changing behaviour and providing support, such as cognitive behavioural therapy (in which irrational, negative thinking styles are challenged and the development of alternative coping skills is promoted) or motivational interviewing (in which a user's personal motivation to change their own behaviour is facilitated and engaged), are therefore the only type of treatment available.[13]

Opioids (predominantly heroin) remain the main drug for which people receive treatment in Europe (particularly in Eastern and South-Eastern Europe) and Asia. In Europe, the use of opioids (mostly heroin) was the main reason for entering specialized drug treatment in 2016, accounting for 37 per cent of treatment admissions. The most commonly used opioid in Europe is heroin, and the region has seen different waves of its use: the first affected many countries in Western Europe from the mid-1970s onward, and the second affected, in particular, countries in Central and Eastern Europe in the mid- to late 1990s. In recent years, an ageing cohort of opioid users, who are likely to have contact with treatment services, has been identified.[14] Pharmacological maintenance therapy, such as methadone and buprenorphine, which reduces the craving for and use of opioids is recommended by WHO and has become the mainstream treatment for opioid dependence in many countries.[15, 19]

In the Islamic Republic of Iran, at the clinic of the Iranian National Centre for Addiction Studies in Tehran, opioids and stimulants are the predominant drugs of concern among new treatment admissions. This reflects the high past-year prevalence of opioid use disorders (opium in particular), the most common type of drug use disorder in the country, estimated at 1.8 per cent among people aged 15–64 in 2011.[17] Although the past-year prevalence of ATS use disorders, at 0.35 per cent, was lower than the prevalence of cannabis use disorders, at 0.52 per cent, cannabis has only recently begun to appear as a drug of concern among new treatment admissions.[18]

There are currently no pharmacological interventions available to treat the use of stimulants, and behavioural interventions are the only available and effective treatment. Treatment for the use of ATS is more common in Asia (predominantly for the use of methamphetamine) and Oceania (based on data from Australia and New Zealand for methamphetamine). For a number of years now, East and

13 J. Schettino and others, *Treatment of Cannabis-related Disorders in Europe*, EMCDDA Insights Series, No. 17 (Luxembourg, Publications Office of the European Union, 2015).

14 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

15 UNODC and WHO, *International Standards for the Treatment of Drug Use Disorders: Draft for Field Testing* (Vienna, 2017).

16 WHO, *Guidelines for the Psychosocially Assisted Pharmacological Treatment of Opioid Dependence* (Geneva, 2009).

17 Determined according to the *Diagnostic and Statistical Manual of Mental Disorders, 4th ed.* (Washington, D. C., American Psychiatric Association), based on the 12 months prior to the interview.

18 Masoumeh Amin-Esmaeili and others, "Epidemiology of illicit drug use disorders in Iran: prevalence, correlates, comorbidity and service utilization results from the Iranian Mental Health Survey", *Addiction*, vol. 111, No. 10 (October 2016), pp. 1836–1847.

Approaches to drug treatment

In caring for those with drug use disorders, it is important to ensure that the most effective, efficient and ethical treatment services are in place. Even though the evidence shows that drug use disorders are best managed within a public health system, the inclusion of addiction treatment in the health-care system is difficult in some countries. In order to be effective, treatment services must meet the requirements of the individual according to the specific level of severity of their disorder. Effective treatment incorporates many components, including outreach services, screening and brief interventions, inpatient and outpatient treatment, evidence-based pharmacological treatment and psychosocial interventions, long-term residential treatment, rehabilitation, and recovery-support services.[a]

As part of the response to drug use, some countries in Asia have implemented compulsory drug detention centres in which people who use or are dependent on drugs are confined without their consent and in some cases without due process and clinical evaluation under the pretext of treatment or rehabilitation. This is in direct conflict with human rights obligations and contrary to medical ethics.[b] A recent analysis of compulsory treatment of drug use in seven countries in South-East Asia, based on the latest information available, found that, in 2014, 450,000 people were detained in 948 facilities in those seven countries. While the estimated total number of people held decreased by 4 per cent between 2012 and 2014, and in two countries there was a decline in the number of compulsory detention centres, in four countries the number of people detained increased.[c]

Evidence shows that the most effective response is the treatment of drug use disorders through evidence-based, voluntary treatment modalities.[d, e, f] In 2012, a joint statement on compulsory drug detention and rehabilitation centres was issued by 12 United Nations entities calling for Member States to close compulsory drug detention and rehabilitation centres and implement voluntary, evidence-informed and human rights-based health and social services in the community.[g]

a UNODC and WHO, *International Standards for the Treatment of Drug Use Disorders: Draft for Field Testing* (Vienna, 2017).

b UNODC and WHO, "Principles of drug dependence treatment", discussion paper, March, 2008.

c Karsten Lunze and others, "Compulsory treatment of drug use in Southeast Asian countries", *International Journal of Drug Policy*, vol. 59 (September 2018), pp. 10–15.

d Ibid.

e D. Werb and others, "The effectiveness of compulsory drug treatment: A systematic review", *International Journal on Drug Policy*, vol. 28 (February 2016), pp. 1–9.

f Thu Vuong and others, "Cost-effectiveness of center-based compulsory rehabilitation compared to community-based voluntary methadone maintenance treatment in Hai Phong City, Vietnam", *Drug and Alcohol Dependence*, vol. 168 (November 2016), pp. 147–155.

g International Labour Organization and others, "Joint Statement: compulsory drug detention and rehabilitation centres" (March, 2012).

South-East Asia and North America have been the main markets for methamphetamine.[19] People receiving treatment for the use of methamphetamine account for more than three quarters of those in treatment in Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, the Philippines, Singapore and Thailand. The provision of treatment in which cocaine is the primary drug of concern is seen mainly in the Americas, in particular in Latin America and the Caribbean.

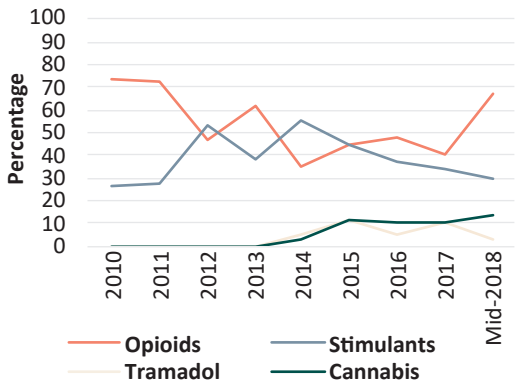
Treatment for drug use is not always tailored to the specific needs of women

Substance use by women tends to progress to drug use disorders in a shorter time period than by men (the "telescoping" effect discussed in the *World Drug Report 2018*).[20] Women may be afraid to get help or seek treatment for their drug use. This may be due, for example, to the fear of possible legal issues and

19 UNODC, "Methamphetamine continues to dominate synthetic drug markets", Global SMART Update, vol. 20 (September 2018).

20 Kathleen T. Brady and Carrie L. Randall, "Gender differences in substance use disorders", *Psychiatric Clinics of North America*, vol. 22, No. 2 (1999), pp. 241–252.

FIG. 6 Percentage of new admissions for treatment at the clinic of the Iranian National Centre for Addiction Studies, Tehran, by drug type, 2010–2018



Source: Iranian National Centre for Addiction Studies.

Note: Opioids include opium, opium concentrate and residue, heroin, morphine and methadone. It does not include tramadol. Clients are also admitted for dependency on other drugs, including alcohol, so the percentages do not add up to 100 in some years. In addition, some clients are dependent on more than one type of substance, leading to a total over 100 per cent in other years due to the recording of polydrug use.

social stigma if pregnant, the lack of childcare while in treatment, or because of other family responsibilities related to the role of women as mothers and caregivers.[21] Treatment services are not always made easily accessible to all those who need them, and particular attention is not always paid to special population groups (such as pregnant women) or marginalized, disadvantaged and vulnerable members of society, in particular those who are women, among others.[22, 23] In the past, research has traditionally used male participants and many drug use interventions are male-oriented, so some treatment interventions may not be as effective for women as for men.[24, 25, 26, 27] As with men, effective treatment for women should be tailored to their individual needs.[28, 29]

Health consequences of drug use

The health consequences of drug use can include a range of negative outcomes such as drug use disorders, mental health disorders, HIV infection, liver cancer and cirrhosis associated with hepatitis, overdose and premature death. The greatest harms to health are those associated with the use of opioids as well as with injecting drug use because of the risk of acquiring HIV or hepatitis C through unsafe injecting practices. Consequently, this section focuses mainly on these aspects of drug use.

However, in recent decades recognition of co-occurring mental health disorders among people with substance use disorders has also been growing. Although substance use disorders commonly occur together with other mental illnesses, it is often unclear whether one was a cause of the other or if common underlying risk factors contributed to both disorders. The relevance of the comorbidity of substance use and mental health disorders is related not only to the high prevalence of that comorbidity but also to the difficulty of managing it and its association with poor outcomes such as a higher rate of psychiatric hospitalizations and a higher prevalence of suicide than among those without comorbid mental disorders.[30]

21 *Report of the International Narcotics Control Board for 2016* (E/INCB/2016/1).

22 *Report of the International Narcotics Control Board for 2017* (E/INCB/2017/1).

23 *International Standards for the Treatment of Drug Use Disorders*.

24 EMCDDA, "Women's voices: experiences and perceptions of women facing drug-related problems in Europe" (Luxembourg, Office for Official Publications of the European Communities, 2009).

25 National Institute on Drug Abuse "Substance use in women", Research Reports (Bethesda, Maryland, United States, 2018).

26 Sharon Arpa, "Women who use drugs: issues, needs, responses, challenges and implications for policy and practice" (Lisbon, EMCDDA, 2017).

27 UNODC, *Guidelines on Drug Prevention and Treatment for Girls and Women* (Vienna, 2016).

28 *International Standards for the Treatment of Drug Use Disorders*.

29 WHO, *Guidelines for the Identification and Management of Substance Use and Substance Use Disorders in Pregnancy* (Geneva, 2014).

30 Marta Torrens and others, *Comorbidity of Substance Use and Mental Disorders in Europe*, EMCDDA Insights Series, No. 19 (Luxembourg, Publications Office of the European Union, 2015).

The Global Burden of Disease Study 2017: mortality and morbidity attributable to the use of drugs

The Global Burden of Disease Study[31] provides an indication as to which substances and causes of injury and disease are responsible for the greatest negative health consequences from the use of drugs[32] in terms of deaths and years of "healthy" life lost: disability-adjusted life years (DALYs). DALYs measure the burden of disease from the combination of both the years of life lost as a result of premature death and years of life lived with disability (any form of impairment).

The Global Burden of Disease Study 2017 estimated that, globally, in 2017, there were 585,000 deaths and 42 million years of "healthy" life lost as a result of the use of drugs. Half of the DALYs were attributed to years of life lost owing to premature death and half to years lived with disability. Most of the burden of disease is among males, who contribute to 72 per cent of deaths and 70 per cent of DALYs.

Globally over the past three decades, the number of deaths and DALYs attributed to the use of drugs have approximately doubled, increasing by 134 per cent and 81 per cent, respectively. In 2017, more than half of those deaths (52 per cent) were the result of untreated hepatitis C leading to liver cancer and cirrhosis, 29 per cent were attributed to drug use disorders mostly related to the use of opioids (66 per cent of deaths from drug use disorders) and 11 per cent to HIV/AIDS. The largest increase in deaths in absolute numbers between 1990 and 2017 was associated with untreated hepatitis C. Deaths from drug use disorders have remained more stable, while deaths associated with HIV/AIDS have been on a gradual decline since their peak around 2005. Looking beyond deaths, a different picture of the harmful consequences of drug use emerges when looking at DALYs as whole. Between 1990 and 2017, the years of "healthy" life lost through premature death and disability are dominated by drug use disorders, especially from the use of opioids, which contributed to 79 per cent of the DALYs associated with drug use disorders and 52 per cent of total DALYs attributed to the use of drugs in 2017.

The greatest burden of disease is seen in East and South-East Asia, North America and South Asia. In those subregions, based on UNODC data, a large number of opioid users are observed (6 per cent, 24 per cent and 35 per cent of global opioid users, respectively), as are a large number of PWID (28 per cent, 16 per cent and 8 per cent of global PWID, respectively). In Africa, mortality and morbidity are more associated with HIV/AIDS and less with cirrhosis and cancer from untreated hepatitis C. Although data for Africa are limited, except for some countries in North Africa, injecting drug use has a low prevalence in the region, and because hepatitis C is a blood-borne infection that is highly prevalent among PWID, it has not had such an impact as in other regions.

Globally, the use of opioids is responsible for most of the years of "healthy" life lost in relation to drug use.[33] The relatively early loss of life resulting from opioid use disorders compared with the mortality linked to HIV or hepatitis C plays a role. However, most (78 per cent) of the years of "healthy" life lost attributed to the use of opioids result from years lived with disability, rather than the years of life lost resulting from premature death.[34]

More than 11 million people worldwide inject drugs

PWID experience multiple negative health consequences. They are at increased risk for fatal overdose[35] and disproportionately affected by blood-borne infectious diseases such as HIV and hepatitis C acquired through the sharing of contaminated needles and syringes. There is the potential for these infectious diseases to be spread beyond those who

31 "Global Burden of Disease Study 2017".

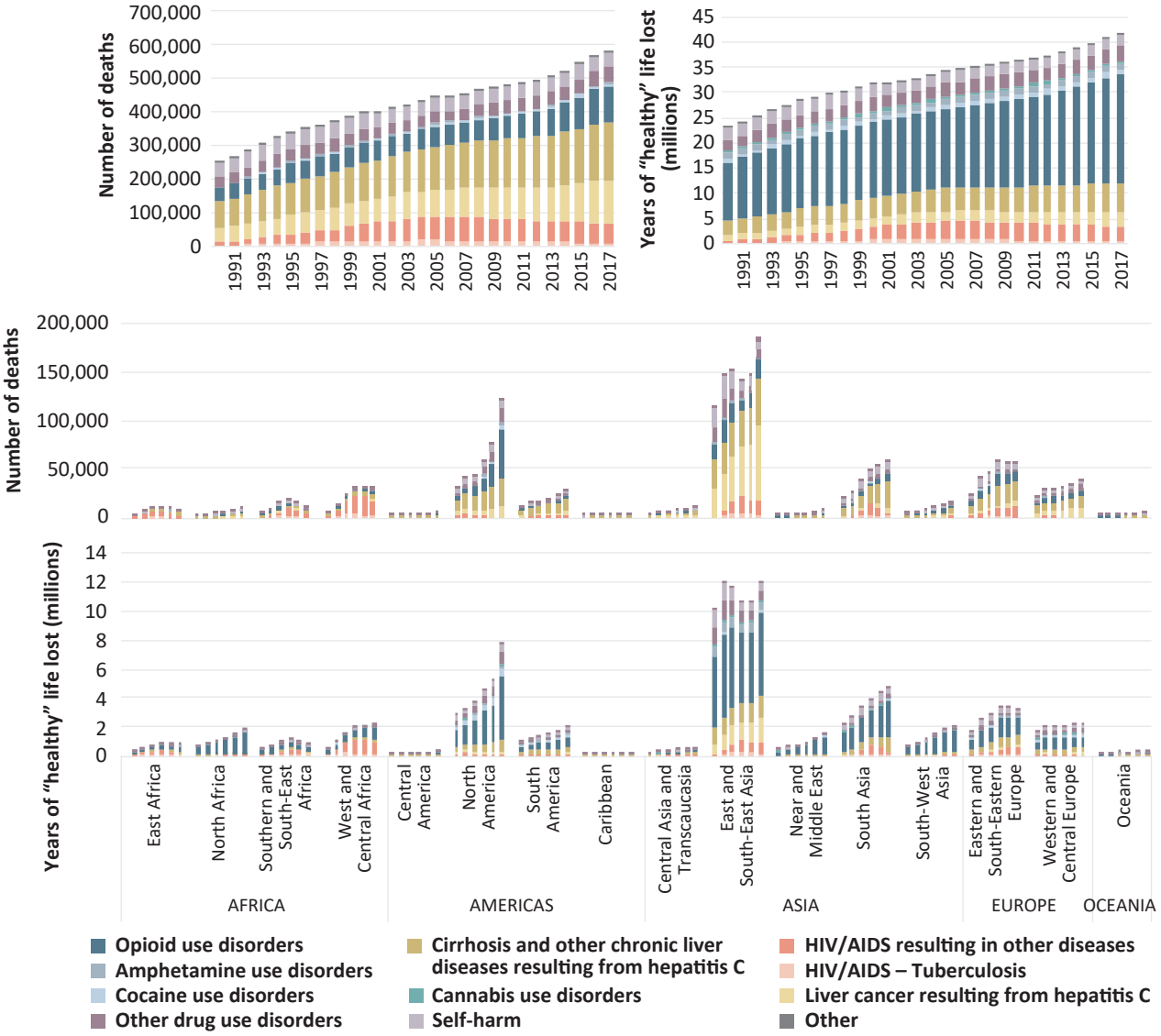
32 In the Study, the use of drugs is defined as dependency upon opioids, cannabis, cocaine or amphetamines, or a history of injecting drug use.

33 "Global Burden of Disease Study 2017".

34 Global Burden of Disease 2017 Disease and Injury Incidence and Prevalence Collaborators, "Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017", *The Lancet*, vol. 392, No. 10159 (November 2018), pp. 1789–1858.

35 Bradley M. Mathers and others, "Mortality among people who inject drugs: a systematic review and meta-analysis", *Bulletin of the World Health Organization*, vol. 91, No. 2 (2013), pp. 102–123.

FIG. 7 Deaths and years of "healthy" life lost (DALYs) attributable to the use of drugs, 1990–2017



Source: Institute for Health Metrics and Evaluation "Global Burden of Disease Study 2017", Global Health Data Exchange. Available at http://ghdx.healthdata.org/gbd-results-tool.

Note: Regional grouping are not those used by the Global Burden of Disease Study. Country estimates were aggregated to produce regional estimates based on the World Drug Report regional groupings. In the charts showing subregional data, the bars refer to the years 1990, 1995, 2000, 2005, 2010 and 2017.

inject drugs to the wider community through, for example, sexual transmission.

The joint UNODC/WHO/UNAIDS/World Bank estimate for the number of PWID worldwide in 2017 is 11.3 million (range: 8.9 million to 15.0 million), corresponding to 0.23 per cent (range: 0.18 to 0.30 per cent) of the population aged 15–64. This estimate is founded on the most recent and highest quality information available to UNODC. The estimated number of PWID for the preceding year, 2016, was 10.6 million (range: 8.3 million to 14.7 million), or 0.22 per cent (range: 0.17 to 0.30 per cent) of the population aged 15–64. However, given the large uncertainty range of the estimates,

this does not imply that there has been a change over time in the global number of PWID. While new or updated estimates of the prevalence of injecting drug use were available for 30 countries, the higher estimate for the global number of PWID largely reflects findings from a recent survey conducted in India (see the box on page 10 of the present booklet). Based on estimates of injecting drug use from 110 countries, the available data for 2017 cover 88 per cent of the global population aged 15–64.

The proportions of the populations aged 15–64 who inject drugs are relatively high in Eastern and South-Eastern-Europe and in Central Asia and Transcaucasia, with rates that are almost four times higher (3.6 and 3.4, respectively) than the global average. In terms of the actual numbers of PWID, most reside in East and South-East Asia (28 per cent of the global total), even though the prevalence of injecting drug use is relatively low in that subregion. A large number of PWID also reside in Eastern and South-Eastern Europe (16 per cent of the global total) and North America (16 per cent of the global total). Combined, those three subregions account for almost two thirds (60 per cent) of the global number of PWID.

A small number of countries account for a considerable proportion of the estimated number of PWID worldwide. When combined, three countries – China, the Russian Federation and the United States – account for 27 per cent of the global population aged 15–64 but are home to almost one half (43 per cent) of PWID worldwide.

Approximately one in eight people who inject drugs are living with HIV

PWID are disproportionately affected by HIV. UNAIDS estimates that, in 2017, PWID were 22 times more likely to be living with HIV than the general population and that PWID accounted for 9 per cent of new HIV infections globally, with the proportion increasing to more than one third of new HIV infections in Eastern Europe and Central Asia (39 per cent) and in the Middle East and North Africa (38 per cent).[36]

36 UNAIDS, *Miles to Go: Closing Gaps, Breaking Barriers, Righting Injustices* (Geneva, 2018).

Drugs and driving

The role of drugs in driver impairment and traffic accidents has become a cause for concern in many countries. For example, based on roadside surveys of 50,000 drivers in 13 countries in Europe, in which blood or oral fluid samples were analysed, it was found that drugs (mostly cannabis) were present in 1.9 per cent of the samples.[a] In 2017 in the United States, according to the National Survey on Drug Use and Health, 12.8 million people (5.0 per cent of those aged 16 and older) had driven under the influence of drugs in the previous year.[b] Research has found that the risk of a serious accident (where the driver was seriously injured or killed) can be up to three times higher when the driver is under the influence of cannabis, while driving under the influence of cocaine, opioids or benzodiazepines increases the risk by 2−10 times, the use of amphetamines or multiple drug use increases the risk by 5−30 times, and alcohol in combination with drugs increases the risk by a factor of 20−200.[c] An analysis of drivers fatally injured (who died at the scene of the crash) in the United States between 1998 and 2010 found that, overall, 26 per cent tested positive for drugs, most commonly stimulants (7.2 per cent) and cannabinols (7.1 per cent).[d] Although the risk of injury to and death of the impaired driver have been widely reported, the impact on others (passengers and pedestrians) has received less attention.

a Alain G. Verstraete and Sara-Ann Legrand, *Drug Use, Impaired Driving and Traffic Accidents*, 2nd ed., EMCDDA Insights Series, No. 16 (Luxembourg, Publications Office of the European Union, 2014).

b United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

c EMCDDA, *Driving Under the Influence of Drugs, Alcohol and Medicines in Europe: Findings from the DRUID Project* (Luxembourg, Publications Office of the European Union, 2012).

d Eduardo Romano and Robin A. Pollini, "Patterns of drug use in fatal crashes", *Addiction*, vol. 108, No. 8 (August 2013), pp. 1428–1438.

Monetary value of social costs of drug use

The monetary value of the social costs arising from drug use at the national level can be substantial. A 2014 study in Canada estimated the cost of drug use in terms of health-care costs, lost productivity costs, criminal justice costs and other direct costs (such as research, prevention and drug-testing programmes). Overall costs were highest for the use of opioids (3.5 billion Canadian dollars, which is the equivalent of 98 dollars per Canadian regardless of age) and were mostly associated with lost productivity costs, particularly related to premature death. It was not possible to distinguish between the harms associated with medical and non-medical opioid use, or use of diverted pharmaceutical opioids, or those manufactured illicitly. Costs attributed to the use of cannabis (2.8 billion Canadian dollars) were mostly associated with criminal justice, particularly policing. Although overall costs from the use of cocaine were lower (2.2 billion Canadian dollars), its use was associated with the highest criminal justice costs (1.9 billion Canadian dollars), mostly related to policing. Between 2007 and 2014, per-person costs associated with opioids increased by 0.9 per cent, but the largest increase was associated with cannabis use, which grew by 19 per cent from 67 to 79 Canadian dollars per person. The year of the study (2014) was at the beginning of the rise in opioid overdoses in Canada, and it can be expected that the costs of opioid use has increased, possibly substantially.[a]

[a] Canadian Substance Use Costs and Harms Scientific Working Group, *Canadian Substance Use Costs and Harms* (2007–2014) (Ottawa, Canadian Centre on Substance Use and Addiction, 2018).

The joint UNODC/WHO/UNAIDS/World Bank estimate for the prevalence of HIV among PWID worldwide in 2017 is 12.7 per cent, amounting to 1.4 million PWID living with HIV. Based on estimates of the prevalence of HIV among PWID from 121 countries, the available data cover 95 per cent of the number of estimated PWID globally.

The prevalence of HIV among PWID is highest by far in South-West Asia and in Eastern and South-Eastern Europe, with rates that are 2.3 and 1.8 times the global average, respectively. In all other regions and subregions, the prevalence of HIV among PWID is below the global average. A large number of PWID living with HIV reside in those two subregions (15 per cent and 29 per cent of the global total, respectively), as well as in East and South-East Asia (22 per cent of the global total), although the prevalence of injecting drug use and HIV among PWID in East and South-East Asia are both below the global averages. Combined, these three subregions account for 66 per cent of global PWID living with HIV.

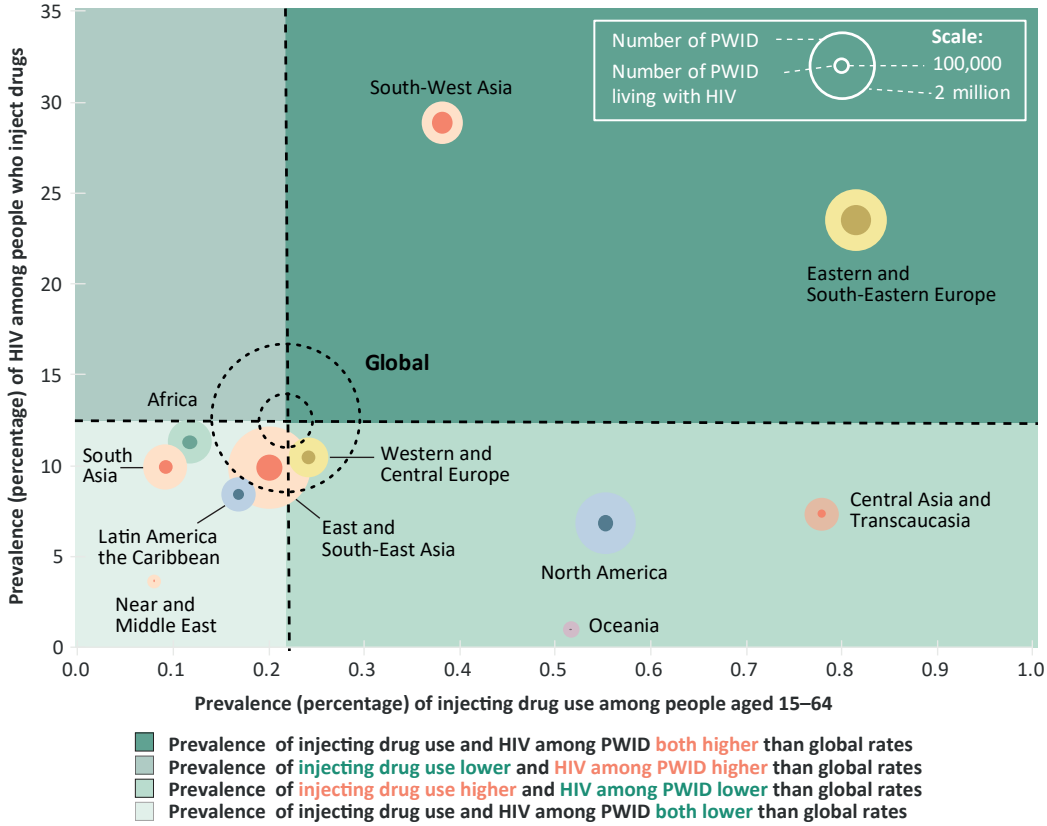
A small number of countries account for a large proportion of the number of PWID globally living with HIV. When combined, three countries (China, Pakistan and the Russian Federation) account for 33 per cent of PWID worldwide but are home to almost one half (47 per cent) of PWID living with HIV.

According to UNAIDS, among all those living with HIV (not only those who use drugs), reductions in deaths resulting from AIDS-related illness since their peak in 2004 have largely been driven by the scale-up of treatment. In 2017, three out of four people living with HIV globally knew their HIV status, and with the massive scale-up in access to treatment (an estimated 21.7 million people were accessing treatment at the end of 2017, five and a half times more than a decade ago), among those who know their status, 79 per cent were accessing antiretroviral therapy and 81 per cent of people accessing treatment had suppressed viral loads (preventing both AIDS-related illness and onward transmission of HIV).[37]

The Global Burden of Disease Study 2017 suggests that HIV/AIDS mortality associated with drug use has been declining. However, the extent to which the scale-up of HIV testing and treatment has reached those who use and inject drugs is less clear as data are sparse, in particular on access to treatment. A systematic review identified 34 countries with evidence of HIV-testing programmes for

37 Ibid.

FIG. 8 Regional patterns in injecting drug use and HIV among people who inject drugs, 2017



Source: UNODC, responses to the annual report questionnaire; progress reports of UNAIDS on the global AIDS response (various years); the former Reference Group to the United Nations on HIV and Injecting Drug Use; and published peer-reviewed articles and government reports.

Note: Regions and subregions are coloured: green (Africa), blue (Americas), orange (Asia), yellow (Europe) and pink (Oceania). Available data on PWID size estimations are more limited in their coverage of the populations aged 15–64 in the Near and Middle East (39 per cent), Africa (58 per cent) and Oceania (73 per cent). Information was available for only 1 of the 26 countries and territories in the Caribbean (Puerto Rico) and for 2 of the 25 in Oceania (Australia and New Zealand). Data on the prevalence of HIV among PWID are more limited in their coverage of the PWID populations in the Near and Middle East (56 per cent), Oceania (73 per cent), Latin America and the Caribbean (75 per cent) and Africa (75 per cent). Information was only available for 4 of the 26 countries and territories in the Caribbean (Aruba, Bahamas, Puerto Rico and Saint Lucia) and from 2 of the 25 in Oceania (Australia and New Zealand).

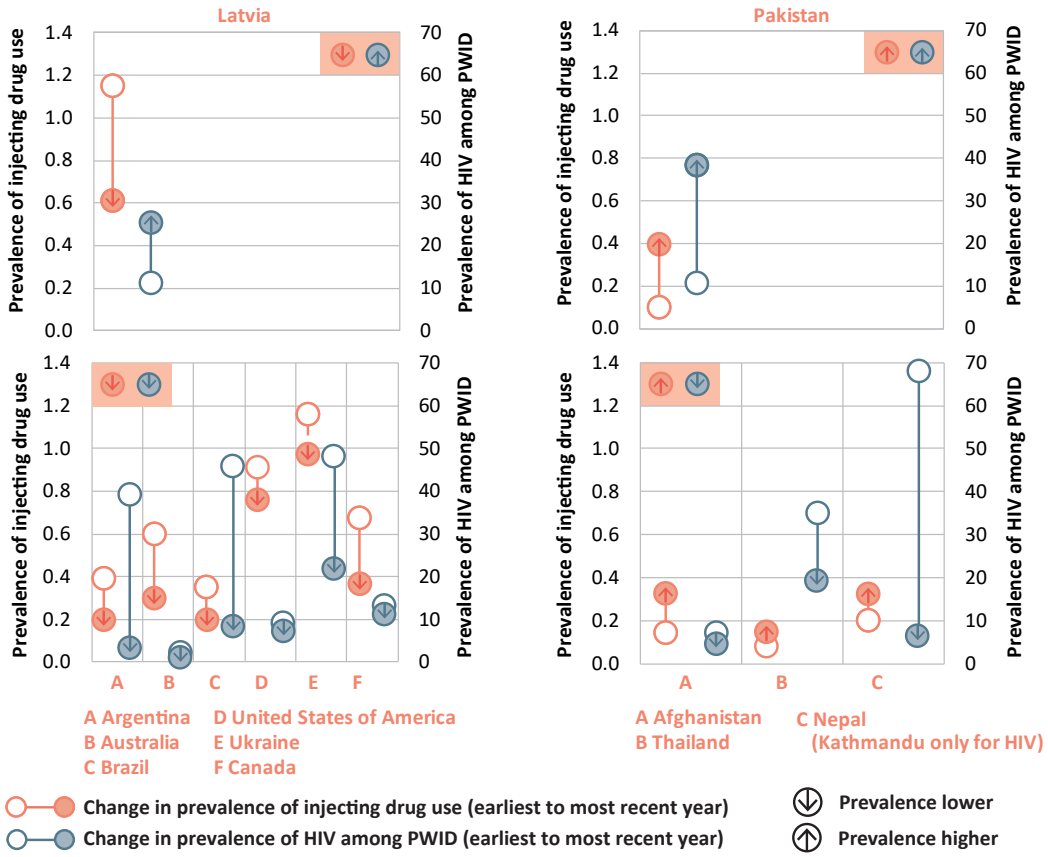
PWID in 2017 and 17 countries that confirmed no targeted HIV-testing existed (data were not identified for 125 countries). Further, data on access to antiretroviral therapy among PWID were not available for most (162) countries. Where data were available, coverage was typically low in comparison with the suggested targets set by WHO, UNODC and UNAIDS.[38] There were just seven countries with survey data on access to antiretroviral therapy, ranging from 5 per cent HIV-positive PWID receiving antiretroviral therapy in Malaysia to 67 per cent in the United States.[39]

Only two subregions, Eastern and South-Eastern Europe, and South-West Asia, have a prevalence of both injecting drug use and HIV among PWID that are greater than the global average. Despite

38 *WHO, UNODC, UNAIDS Technical Guide for Countries to Set Targets for Universal Access to HIV Prevention, Treatment and Care for Injecting Drug Users: 2012 Revision* (Geneva, WHO, 2012).

39 Sarah Larney and others, "Global, regional, and country-level coverage of interventions to prevent and manage HIV and hepatitis C among people who inject drugs: a systematic review", *The Lancet Global Health*, vol. 5, No. 12 (December 2017), pp. e1208–e1220.

FIG. 9 Long-term trends in injecting drug use and HIV among people who inject drugs, selected countries, various years covering the overall period 1992–2017



Source: UNODC, responses to the annual report questionnaire; progress reports of UNAIDS on the global AIDS response (various years); the former Reference Group to the United Nations on HIV and Injecting Drug Use; and published peer-reviewed articles and government reports. For details see the statistical annex published on the UNODC website. Available at www.unidc.org/wdr2019.

Note: Orange depicts changes in the prevalence (percentage) of injecting drug use (various age groups). Blue depicts changes in the prevalence (percentage) of HIV among PWID. The white circle is the estimate for the earliest year and the coloured circle is the estimate for the latest year.

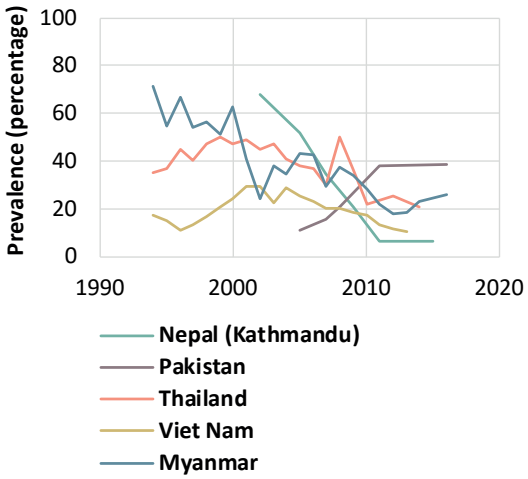
most subregions seeing a decline in mortality associated with HIV/AIDS attributable to the use of drugs, HIV/AIDS-related mortality resulting from the use of drugs continues to increase in those two subregions, in particular, Eastern and South-Eastern Europe.

Long-term trends in injecting drug use and HIV among people who inject drugs

It is challenging to determine the global trends for the prevalence of injecting drug use, or HIV among PWID, during the past few decades. Very few countries have comparable data for multiple years, and changes in annual global estimates often reflect the availability of new and better data rather than actual changes in the situation. In the past few years there have been improvements in survey methodologies and an increasing use of indirect methods.

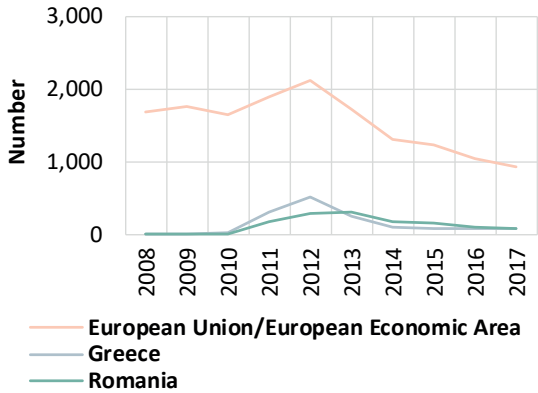
Focusing on a few countries where trends can be assessed by using comparable data over time, it can be noted that there are mixed trends. Some countries have reported a lower prevalence over time of both injecting drug use and HIV among PWID, while others have reported a higher prevalence of injecting drug use and/or HIV among PWID.

FIG. 10 HIV among people who inject drugs, selected countries, Asia, 1994–2017



Sources: Government of Nepal, Ministry of Health, National Centre for AIDS and STD Control, "Factsheet 7: HIV Surveillance in Nepal, 2017"; Pakistan, Ministry of Health, National AIDS Control Program, *HIV Second Generation Surveillance in Pakistan* (various years: National Report Round 1 (2005); Round II 2006–2007; Round III (2008); Round IV (2011–2012); Round V (2016–2017)) (Islamabad); Thailand, National AIDS Prevention and Alleviation Committee, *UNGASS Country Progress Report: Thailand – Reporting Period January 2008–December 2009*; Thailand, National AIDS Committee, *Thailand AIDS Response Progress Report: 2015*; Viet Nam, *Viet Nam AIDS Response Progress Report 2014: Following up the 2011 Political Declaration on HIV AIDS* (Hanoi, 2014); Myanmar, HIV Sentinel Sero-surveillance (HSS) Survey (1994–2016) and Integrated Biological and Behavioral Surveillance (IBBS) survey data (2014, 2017), National AIDS program, Ministry of Health and Sports.

FIG. 11 New cases of HIV diagnoses among people who inject drugs in Europe, 2008–2017



Source: European Centre for Disease Prevention and Control and WHO Regional Office for Europe, HIV/AIDS surveillance in Europe: 2018–2017 data (Copenhagen, 2018).

Note: Europe, for the purposes of this figure, includes countries of the European Union and European Economic Area, but not from Germany, which did not report data for 2017.

The limited country-level data show that, in some regions and countries, there has been a change in injecting behaviours and the spread of HIV in line with the scaling-up of science-based prevention and treatment interventions. While it is not always possible to link changes to service delivery, or to understand all the factors influencing the changes in prevalence, in many countries, the reported prevalence of injecting drug use and HIV among PWID is lower now than it was a decade or two ago. However, changes over time in a country are not always in the same direction, with peaks and troughs observed, and in some countries the prevalence of HIV among PWID remains at high levels.

Over the past decade, Europe has experienced a decline in the number of new cases of HIV among PWID. This decline is consistent with the scaling-up in the coverage of prevention measures and an overall long-term decline in injecting drug use.[40, 41] Although an increase in new cases of HIV among PWID was observed in 2011 and 2012 due to localized outbreaks in Greece and Romania, an overall downward trend in many countries in Europe has been observed.[42]

While favourable outcomes have been achieved in many countries, HIV among PWID remains a challenge in many parts of the world. Even in well-resourced, high-income countries, localized outbreaks of HIV among PWID in recent years have been documented in Europe and North America.[43, 44]

40 Lucas Wiessing and others, "Trends in HIV and hepatitis C virus infections among injecting drug users in Europe, 2005 to 2010", *Eurosurveillance*, vol. 16, No. 48 (2011).

41 EMCDDA, *European Drug Report 2017: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2017).

42 European Centre for Disease Prevention and Control and WHO Regional Office for Europe, *HIV/AIDS Surveillance in Europe: 2018– 2017 data* (Copenhagen, 2018).

43 Don C. Des Jarlais and others, "Complacency is the new problem: comparative analysis of recent outbreaks of HIV among persons who inject drugs in Europe and North America", presentation at the twenty-second International AIDS Conference, Amsterdam, July 2018 (abstract THPEC189).

44 Don C. Des Jarlais and others, "HIV infection among persons who inject drugs: ending old epidemics and addressing new outbreaks", *AIDS*, vol. 30, No. 6 (2016), pp. 815–826.

Drug use and the sexual transmission of HIV

In the discussion on drug use and HIV, the traditional focus in the *World Drug Report* has been on the transmission of HIV associated with injecting drug use. There has been less emphasis on the role of drugs, whether injected or not, in the sexual transmission of HIV.

The use of drugs can play a role in reducing inhibitions towards and promoting risky sexual practices, such as a higher frequency of sexual activity, a greater number of casual sexual partners, unprotected sex or the inconsistent use of condoms, and the selling of sex for money or drugs. All of those practices can lead to an elevated risk for the sexual transmission of HIV among drug users and their sexual partners.

In particular, there seems to be an association between the use of stimulants and an increase in risky sexual behaviour for HIV. Stimulant use affects both the physiological and psychological aspects of sexual behaviour. For example, methamphetamine and amphetamine are often used to increase sexual desire and pleasure, prolong sexual performance, facilitate sexual experimentation and decrease sexual inhibition. The use of stimulants before or during sex is more common among certain groups of drug users, for example, men who have sex with men.[a, b]

Men who have sex with men constitute a subpopulation that is particularly affected by the global epidemic of HIV, accounting for 18 per cent of new HIV infections globally and with a risk of acquiring HIV some 28 times higher than heterosexual men.[c, d] A systematic review undertaken in 2005 examining the use of "club drugs" as a risk factor for acquiring HIV among men who have sex with men found that the use of ATS, particularly methamphetamine, was associated with engagement in risky sexual behaviours and an increased incidence of HIV.[e] A more recent review (based on eight studies from the United States) also found that methamphetamine use was consistently associated with risky sexual behaviours among men who have sex with men.[f] A study conducted in 47 cities in the United States followed 4,684 HIV-negative men who have sex with men over a period of 36 months. The study excluded men who have sex with men who reported current injecting drug use. Over 60 per cent reported recreational drug use on entering the study. A high number of new HIV-positive cases were reported over the follow-up period, with 338 men who have sex with men contracting the virus. Use of amphetamines and amyl nitrates ("poppers") was linked to significantly higher risks of acquiring HIV.[g]

"Chemsex" is a term used to describe the use of specific drugs (typically stimulants such as mephedrone, methamphetamine, GHB/GBL) before or during planned sex to facilitate, and prolong, sustain or intensify the experience and reduce inhibitions. Such behaviour can have an impact on risk behaviours for the spread of HIV among the relatively small proportion of men who have sex with men who engage in this practice. A systematic review highlighted that men who have sex with men who are HIV-positive are more likely to engage in "chemsex" and are more likely to engage in high-risk sexual practices, including unprotected sex, than men who have sex with men who do not combine drug use with sex.[h]

The selling of sex in exchange for money or drugs has been reported and has been associated with several HIV-risk behaviours.[i] For example, a study examining sex-for-"crack" cocaine exchanges and associated effects on sexual risk outcomes among female sex workers in Vancouver, Canada, found that half reported exchanging sex for "crack" cocaine and this was significantly associated with servicing a greater number of clients (more than 10 per week).[j] A study among sex workers in Mexico found that those who reported lifetime methamphetamine use were less likely to use condoms.[k] Another study among sex workers in Vancouver found that more frequent drug use was strongly associated with being offered or accepting more money for sex without a condom, suggesting that clients looking for unprotected sex may seek out sex workers who are particularly vulnerable to coercion, including women who are experiencing acute withdrawal and the immediate need to use drugs.[l]

a Claire Edmundson and others, "Sexualised drug use in the United Kingdom (UK): A review of the literature", I*nternational Journal of Drug Policy*, vol. 55 (May 2018), pp. 131–148.

b Monica Desai and others, "Sexualised drug use: LGTB communities and beyond", *International Journal of Drug Policy*, vol. 55 (May 2018), pp. 128–130.

c UNAIDS, *Miles to Go: Closing Gaps, Breaking Barriers, Righting Injustices* (Geneva, 2018).

d UNAIDS, *UNAIDS Data 2018* (Geneva, 2018).

e Lydia N. Drumright, Thomas L. Patterson and Steffanie A. Strathdee, "Club drugs as causal risk factors for HIV acquisition among men who have sex with men: a review", *Substance Use and Misuse*, vol. 41, Nos. 10–12 (2006), pp. 1551–1601.

f H. Waverly Vosburgh and others, "A review of the literature on event-level substance use and sexual risk behavior among men who have sex with men", *AIDS and Behavior*, vol. 16, No. 6 (August 2012), pp 1394–1410.

g Marta-Louise Ackers and others, "High and persistent HIV seroincidence in men who have sex with men across 47 U.S. cities", *PLoS ONE*, vol. 7, No. 4 (April 2012), pp. 1–7.

h Steven Maxwell, Maryam Shahmanes and Mitzy Gafo, "Chemsex behaviours among men who have sex with men: a systematic review of the literature", *International Journal of Drug Policy*, vol. 63 (January 2019), pp. 74–89.

i UNODC, *Systematic Literature Review on Stimulant Use and HIV (A): Part 3/5 – Cocaine and Crack-Cocaine Risk and Transmission* (Vienna, 2017).

j Putu Duff and others, "Sex-for-crack exchanges: associations with risky sexual and drug use niches in an urban Canadian city", *Harm Reduction Journal*, vol. 10, No. 29 (November 2013), pp. 1–8.

k Fátima A Muñoz and others, "Condom access: associations with consistent condom use among female sex workers in two northern border cities of Mexico", *AIDS Education and Prevention*, vol. 22, No. 5 (October 2010), pp 455–465.

l Kathleen N. Deering and others, "Client demands for unsafe sex: the socioeconomic risk environment for HIV among street and off-street sex workers", *Journal of Acquired Immune Deficiency Syndromes*, vol. 63, No. 4 (August 2013), pp. 522–531.

Approximately half of the people who inject drugs worldwide are living with hepatitis C

Hepatitis C is a significant health concern among PWID and is a greater threat to health than HIV.[45, 46] The higher mortality associated with untreated hepatitis C reflects several factors. Because those living with hepatitis C can remain symptom-free for many years, the problem has remained a "hidden" epidemic until relatively recently, with most cases of infection going undiagnosed and therefore untreated.[47] According to WHO, mortality from hepatitis C is increasing because of poor access to treatment.[48] In addition, hepatitis C is more easily transmitted through injection than HIV.[49] The prevalence of hepatitis C among PWID is much higher, and almost four times as many PWID are living with hepatitis C as are living with HIV. The uptake of testing and treatment has been historically low among PWID. Only recently have highly effective treatment options become available in the form of direct-acting antivirals.

The joint UNODC/WHO/UNAIDS/World Bank estimate for the prevalence of hepatitis C among PWID worldwide in 2017 was 49.3 per cent, with an estimated 5.6 million PWID living with hepatitis C. This estimate is based on information on the prevalence of hepatitis C among PWID from 102 countries, covering 94 per cent of the estimated global PWID population. In comparison, the prevalence of hepatitis C infection among the general population (for all ages) worldwide in 2015 was estimated as 1.0 per cent (range: 0.8–1.1 per cent).[50]

For PWID who are living with HIV, the HIV virus affects the transmission and natural history of hepatitis C infection. Hepatitis C is more readily transmitted in the presence of HIV infection. People living with HIV have higher hepatitis C viral loads and experience more rapid hepatitis C disease progression than those without HIV. Hepatitis C co-infection may also complicate treatment for HIV. A systematic review found a sixfold increase in the likelihood of hepatitis C infection in HIV-positive PWID compared with HIV-negative PWID population groups. For PWID living with HIV, co-infection with hepatitis C is highly prevalent, estimated at 82.4 per cent.[51]

45 Louisa Degenhardt and others, "Estimating the burden of disease attributable to injecting drug use as a risk factor for HIV, hepatitis C, and hepatitis B: findings from the Global Burden of Disease Study 2013", *The Lancet Infectious Diseases*, vol. 16, No. 12 (2016), pp. 1385–1398.

46 "Global Burden of Disease Data".

47 Matthew Hickman and Natasha K. Martin, eds., *Hepatitis C Among Drug Users in Europe: Epidemiology, Treatment and Prevention*, EMCDDA Insights Series, No. 23 (Luxembourg, Publications Office of the European Union, 2016).

48 WHO, "Combating hepatitis B and C to reach elimination by 2030", Advocacy Brief (Geneva, May 2016).

49 Elijah Paintsil and others, "Survival of hepatitis C virus in syringes: implication for transmission among injection drug users", *The Journal of Infectious Diseases*, vol. 202, No. 7 (October 2010), pp. 984–990.

50 WHO, *Global Hepatitis Report 2017 (*Geneva, 2017*)*.

51 Lucy Platt and others, "Prevalence and burden of HCV co-infection in people living with HIV: a global systematic

In 2016, the World Health Assembly endorsed the global health sector strategy on viral hepatitis, with a focus on hepatitis C, calling for the elimination of viral hepatitis as a public health threat by 2030, setting a target of reducing new hepatitis C infections by 90 per cent and mortality associated with hepatitis C by 65 per cent.[52] Addressing the burden of disease from hepatitis C among PWID is critical to achieving that goal, as injecting drug use accounted for 23 per cent of new hepatitis C infections globally in 2015. In 2015, 31.5 per cent of all deaths from hepatitis C were estimated to be attributable to lifetime injecting drug use.[53] In addition, according to estimates contained in the Global Burden of Disease Study 2017, hepatitis C accounted for 52 per cent of the deaths and 21 per cent of the DALYs attributed to the use of drugs in 2017, and the number of both deaths and DALYs continues to increase.[54]

While knowing infection status is important for prevention and treatment, globally, in 2016, according to WHO, an estimated 80 per cent of all people living with hepatitis C (not only those who use drugs) had not been diagnosed, a situation that leads them not to seek treatment or take measures to avoid transmitting the virus to others.[55] Treatment uptake has also been low, with an estimated 7.4 per cent of those diagnosed with hepatitis C infection receiving treatment in 2015.[56] At the global level, there is limited information on the levels of diagnosis and treatment uptake among PWID. In Europe, for example, testing and treatment rates among PWID have been historically low.[57] In a study of more than 3,000 PWID in five cities in the United States, 72 per cent of those tested and found to be living with hepatitis C were not aware that they had the virus.[58]

The uptake of testing and treatment for hepatitis C has historically been low among PWID owing to a number of barriers relating to the patient, the health-care provider and the overall health-care system.[59] In the past, the medications (based on interferon and ribavirin) used for the treatment of hepatitis C had limited effectiveness. They were poorly tolerated and were associated with severe adverse effects. The duration of treatment was long (24 to 48 weeks) and resulted in cure rates of between 40 and 65 per cent. The inability of PWID to access treatment services can sometimes be a result of stigmatization and discrimination by service providers.[60]

What has changed is that highly effective treatment for hepatitis C has recently become available in the form of direct-acting antivirals, which have made a critical difference, potentially transforming the management and outlook for PWID living with hepatitis C.[61] Although some services remain reluctant to treat PWID over concerns about their adherence to treatment, the increased risk of side effects and the risk of reinfection through continued injecting drug use,[62] the use of direct-acting antiviral medications are likely to overcome at least some of the barriers that were traditionally faced by PWID in accessing treatment.[63]

Of particular concern are the restricted use and high prices of new direct-acting antiviral drugs. The high prices of direct-acting antivirals pose a major barrier to the scale-up of their use and has resulted in the "rationing" of treatment (for example, limiting treatment to those with mild-to-severe fibrosis). The prices of direct-acting antivirals have been greatly reduced since 2015 as generic medications have been introduced, particularly in low- and middle-income

review and meta-analysis", *The Lancet Infectious Diseases*, vol. 16, No. 7 (2016), pp. 797–808.

52 WHO, *Global Health Sector Strategy on Viral Hepatitis 2016 – 2021: Towards Ending Viral Hepatitis* (Geneva, 2016).

53 *Global Hepatitis Report 2017*.

54 "Global Burden of Disease Data".

55 WHO, *Progress Report on Access to Hepatitis C Treatment: Focus on Overcoming Barriers in Low- and Middle-income Countries* (Geneva, 2018).

56 *Global Hepatitis Report 2017*.

57 *Hepatitis C Among Drug Users in Europe*.

58 Holly Hagan and others, "Self-reported hepatitis C virus antibody status and risk behavior in young injectors", *Public Health Reports*, vol. 121, No. 6 (2006), pp. 710–719.

59 Philip Bruggmann, "Accessing hepatitis C patients who are difficult to reach: it is time to overcome barriers", *Journal of Viral Hepatitis*, vol. 19, No. 12 (December 2012), pp. 829–835.

60 *Global Hepatitis Report 2017*.

61 Philip Bruggmann and Jason Grebely, "Prevention, treatment and care of hepatitis C virus infection among people who inject drugs", *International Journal of Drug Policy*, vol. 26, Suppl. 1 (February 2015), pp. S22–S26.

62 Philip Bruggmann and Alain H. Litwin, "Models of Care for the Management of Hepatitis C Virus Among People Who Inject Drugs: One Size Does Not Fit All", *Clinical Infectious Diseases*, vol. 57, Suppl. 2 (August 2013), pp. S56–S61.

63 *Hepatitis C Among Drug Users in Europe*.

countries. However, very few high-income countries are currently able to procure the generic versions of direct-acting antivirals, and prices remain high. Access to direct-acting antivirals appears to be particularly poor among PWID.[64]

Despite the opportunity afforded by new medications to addressing the high burden of hepatitis C among PWID, progress in preventing and treating this disease has been slow. In Europe, for example, unrestricted access to treatment remains rare owing to the high costs of the new medications. As of October 2017, one in every two European countries had set out its approach towards hepatitis prevention and care in a policy document. However, clinical guidelines in nine countries included criteria that restrict access to hepatitis C treatment for PWID (for example, requiring abstinence from drug use for 3–12 months).[65] By contrast, some countries have taken important steps to scale up treatment. In France, for example, the national viral hepatitis elimination plan includes provisions for reimbursing the entire cost of hepatitis C tests and direct-acting antiviral therapy under the national health insurance scheme, and specific efforts have been made to reach PWID.[66] In line with the global health sector strategy on viral hepatitis, an action plan was developed for Europe in 2017 and endorsed by the 53 States members of the WHO European region. The action plan contains intermediate European targets for 2020, including specific targets for PWID as one of the populations most affected by and at risk of hepatitis C infection.[67]

Hepatitis B infection also places people at risk of death and disability from liver cirrhosis and liver cancer, although the burden of disease is relatively small compared with that of hepatitis C and HIV. The joint UNODC/WHO/UNAIDS/World Bank global estimate for 2017 for the prevalence of hepatitis B[68] among PWID is 8.6 per cent; in other words, an estimated 0.98 million PWID are living with active hepatitis B infection.

Opioids are the leading cause of mortality in some countries

Determining the extent of deaths attributed to the use of drugs is complicated. The definition of drug-related deaths can vary from country to country. In the absence of information surrounding the circumstances of the death or the environment in which the death occurred, ascertaining the cause of death can be complicated in cases where drug use is suspected of playing a part. Countries may be experiencing large increases in the number of deaths attributable to the use of drugs, but authorities may not be aware of this.

According to the Global Burden of Disease Study 2017, deaths attributed to the use of opioids is highest, and has shown the greatest increase, in North America. Canada and the United States continue to experience an opioid crisis, particularly related to the use of fentanyl and its analogues. The overdose mortality rates in the United States and Canada are high, and those countries are making considerable efforts to monitor the situation. In both countries, overdose deaths are not uniformly distributed throughout the country, but are concentrated in specific regions. In Canada, the highest rates are seen in the western provinces of Alberta and British Columbia. In the United States, the highest rates are seen in north-eastern and mid-western states.

Overdose deaths continued to rise in the United States in 2017, reaching a record number of 70,237 deaths, an increase of 10.4 per cent from 2016. Opioids accounted for 68 per cent of those overdose deaths, with 47,600 deaths in 2017. The increase in overdose deaths over the past five years closely corresponds with the increase in deaths from synthetic opioids other than methadone (a group consisting predominantly of fentanyl and its analogues). The rate of overdose deaths involving synthetic opioids other than methadone increased on average by 8 per cent per year from 1999 to 2013, but by 71 per cent per year from 2013 to 2017. There were 28,466 overdoses involving synthetic opioids other than methadone in 2017, an increase of 47 per cent from 19,413 in 2016.[69]

64 *Progress Report on Access to Hepatitis C Treatment.*

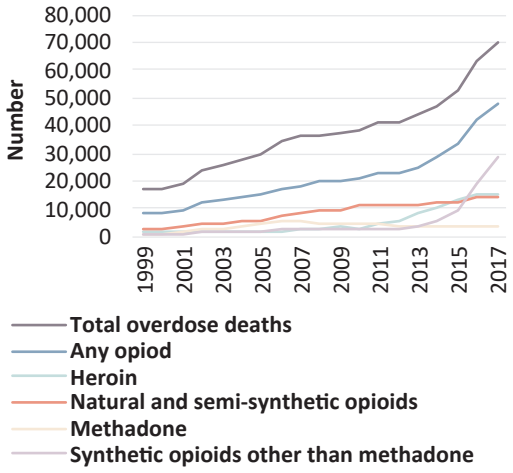
65 *European Drug Report 2018.*

66 *Progress Report on Access to Hepatitis C Treatment.*

67 WHO Regional Office for Europe, Action plan for the health sector response to viral hepatitis in the WHO European Region (Copenhagen, 2017).

68 The prevalence estimate for hepatitis B is intended to refer to active infection (HBsAg), rather than anti-HBc, which indicates previous exposure. However, it is not always possible to differentiate that in the data reported to UNODC.

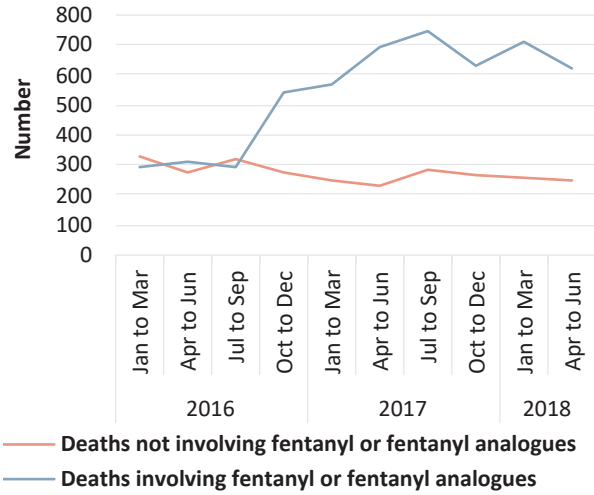
FIG. 12 Overdose deaths, by opioid category in the United States of America, 1999–2017



Source: Holly Hedegaard, Arialdi M. Miniño and Margaret Warner, "Drug overdose deaths in the United States, 1999–2017", NCHS Data Brief, No. 329 (Hyattsville, Maryland, United States, National Center for Health Statistics, November 2018).

Note: Deaths are classified using the International Classification of Diseases, 10th ed. Drug-poisoning (overdose) deaths are identified using underlying cause-of-death codes X40-X44 (accidental poisoning), X60-X64 (intentional self-poisoning), X85 (assault, including homicide) and Y10-Y14 (poisoning, undetermined intent). Drug overdose deaths involving selected drug categories are identified by specific multiple-cause-of-death codes: heroin, T40.1; natural and semi-synthetic opioids, T40.2; methadone, T40.3; and synthetic opioids other than methadone, T40.4.

FIG. 13 Accidental opioid-related overdose deaths in Canada, involving and not involving fentanyl or fentanyl analogues, by quarter, January 2016–June 2018



Source: Canada, Special Advisory Committee on the Epidemic of Opioid Overdoses, "National report: apparent opioid-related deaths in Canada", 12 December 2018.

In Canada, there were 3,998 opioid-related deaths in 2017 (of which 93 per cent were accidental overdoses; 5 per cent were suicide; and 3 per cent were undetermined). This was an increase of 33 per cent from the 3,014 opioid-related deaths in 2016.

Most of the opioid-related deaths in 2017 occurred among males (76 per cent), with those aged 30–39 accounting for the highest proportion (27 per cent). According to the Public Health Agency of Canada, fentanyl and its analogues have fuelled the rise in opioid-related deaths.[70] Fentanyl or fentanyl analogues were either detected and/or directly contributed to 69 per cent of those deaths in 2017, compared with 50 per cent in 2016.[71] In 2016 and 2017, the highest mortality rate and the largest number of overdose deaths (one third or more of the total) were in British Columbia. In British Columbia, overdose deaths reached 1,489 in 2018 (for all drug types), with more fatal overdoses occurring during the days immediately following income assistance payments (average of 5.2 overdose deaths per day) than for all other days of the month (average of 3.9 overdose deaths per day). The proportion of all overdose deaths in 2018 in which fentanyl was detected, either alone or in combination with other drugs, was 85 per cent.[72] Life expectancy at birth for people in British Columbia increased by 3 years

69 Holly Hedegaard, Arialdi M. Miniño and Margaret Warner, "Drug overdose deaths in the United States, 1999–2017", NCHS Data Brief, No. 329 (Hyattsville, Maryland, United States, National Center for Health Statistics, November 2018).

70 Lisa Belzak and Halverson Jessica, "Evidence synthesis: the opioid crisis in Canada – a national perspective", *Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice*, vol. 38, No. 6 (June 2018), pp. 224–233.

71 Canada, Special Advisory Committee on the Epidemic of Opioid Overdoses, "National report: apparent opioid-related deaths in Canada", 12 December 2018.

72 Canada, British Colombia Coroners' Service, "Illicit drug overdose deaths in B.C. January 1, 2008–December 31, 2018" (Burnaby, British Columbia, Office of the Chief Coroner, 7 February 2019). Available from www2.gov.bc.ca/gov/content/life-events/death/coroners-service/statistical-reports.

between 2001 and 2014 but decreased by 0.38 years from 2014 to 2016. The opioid overdose crisis has been determined to be an important contributor to that loss.[73]

In other regions, while opioids still cause the largest numbers of deaths, fentanyl and its analogues are not so prominent. In Europe, heroin or its metabolites, often in combination with other substances, are present in the majority of fatal overdoses, with the most recent data showing an increase in the number of heroin-related deaths.[74] Within the United Kingdom of Great Britain and Northern Ireland (which accounts for one third of all overdose deaths in Europe), there were 1,164 deaths involving heroin and morphine (46 per cent of all deaths from drug use) in England and Wales in 2017.[75] Deaths involving heroin and morphine increased from 579 in 2012 to 1,209 in 2016; the increase following the "heroin drought" that occurred in 2010 and 2011. That "drought" was followed by an increased purity of heroin, thought to be a factor in the increased number of overdoses. There were 75 deaths from fentanyl and its analogues in 2017. In Australia in 2016, there were 1,045 opioid-induced deaths, mostly attributed to the use of morphine, codeine, oxycodone and heroin, with little evidence of deaths attributed to the use of fentanyl occurring in large numbers in Australia.[76] The use of benzodiazepines was reported as having contributed to almost half (45 per cent) of the opioid-induced deaths, and antidepressants contributed to almost one in five deaths (23 per cent). There were 105 deaths from the use of amphetamine in 2016, although this is the highest rate since monitoring began, and there were fewer than 20 cocaine-induced deaths.

73 Xibiao Ye and others, "At a glance: impact of drug overdose-related deaths on life expectancy at birth in British Columbia", *Health Promotion and Chronic Disease Prevention in Canada*, vol. 38, No. 6 (June 2018), pp. 248–251.

74 *European Drug Report 2018*.

75 United Kingdom, Office for National Statistics, "Deaths related to drug poisoning in England and Wales: 2017 registrations", Statistical Bulletin (Newport, 6 August 2018).

76 Amanda Roxburgh and others, "Opioid-, amphetamine-, and cocaine-induced deaths in Australia" (Sydney, National Drug and Alcohol Research Centre, University of New South Wales, 2018).

Drug use, infectious diseases and the provision of prevention and treatment services in prison settings

There were an estimated 10.7 million people held in prisons[77] worldwide on any given day in 2017, either as pretrial detainees or remand prisoners or those who had been convicted and sentenced.[78] However, because of the movement of people in and out of prisons, the number of people who spend at least some time in prison each year is actually higher, although by how much has not been clearly determined.[79]

Prison populations are associated with substantially higher levels of infectious diseases than the surrounding communities. According to a systematic review, covering data published between 2005 and 2015, the prevalence of infectious diseases among the general prison population at the global level was estimated as follows: 3·8 per cent with HIV (based on 204 studies from 74 countries), 15·1 per cent with hepatitis C (based on 171 studies from 46 countries) and 2·8 per cent with active tuberculosis (based on 46 studies from 25 countries).[80] Many of those who enter prison have a history of drug use or drug use disorders.[81, 82] Overrepresentation of PWID among prison populations contributes to HIV prevalence in prison, particularly in countries where the HIV epidemic in communities is largely

77 Persons held in prisons or penal or correctional institutions.

78 Based on data from 224 countries and territories for 2017 (or latest year available) compiled from the United Nations Survey on Crime Trends and the Operations of Criminal Justice Systems (various years); and Roy Walmsley, "World prison population list", 12th ed. (London, Institute for Criminal Policy Research, 2018).

79 Stuart A. Kinner and Jesse T. Young, "Understanding and improving the health of people who experience incarceration: an overview and synthesis", *Epidemiologic Reviews*, vol. 40, No. 1 (June 2018), pp. 4–11.

80 Kate Dolan and others, "Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees", *The Lancet*, vol. 388, No. 10049 (2016), pp. 1089–1102.

81 Seena Fazel, Isabel A. Yoon and Adrian J. Hayes, "Substance use disorders in prisoners: an updated systematic review and meta-regression analysis in recently incarcerated men and women", *Addiction*, vol. 112, No. 10 (October 2017), pp. 1725–1739.

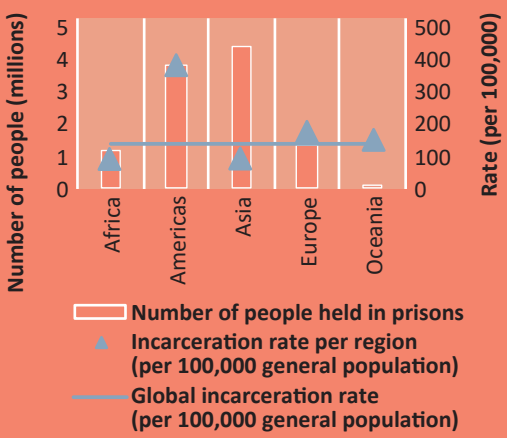
82 Adrian P. Mundt and others, "Substance use during imprisonment in low- and middle-income countries", *Epidemiologic Reviews*, vol. 40, No.1 (June 2018), pp. 70–81.

Prison populations: numbers and rates of incarceration

The numbers of people imprisoned, and the rates of incarceration, vary considerably between regions. More than one third of the global prison population of 10.7 million is held in Asia (41 per cent) and a similar proportion in the Americas (35 per cent). The Americas have by far the highest rate of incarceration, at almost three times the global rate of 142 per 100,000 population, while Africa and Asia have the lowest incarceration rates (both at approximately two thirds that global rate). Over 90 per cent of those held in prisons are male, and the proportion of all prisoners who are children (under 18 years of age) is estimated to be 1.0 per cent.[a]

Although the number of women in prison is much lower than the number of men, a higher proportion of women (35 per cent) than men (19 per cent) are in prison for drug-related offences.[b]

Number of people held in prisons, and incarceration rate, by region, 2017



Sources: United Nations Survey on Crime Trends and Operations of Criminal Justice Systems (various years); and Roy Walmsley, World Prison Population List",12th ed. (London, Institute for Criminal Policy Research, 2018).

Note: Based on data from 224 countries and territories for 2017 (or latest year available).

a Note by the Secretariat entitled "World crime trends and emerging issues and responses in the field of crime prevention and criminal justice" (E/CN.15/2014/5).

b According to reports from 50 Member States (UNODC, special data collections on persons held in prisons (2010–2014)).

driven by injecting drug use.[83] Drug users, in particular those who inject drugs, are placed in a high-risk environment where there are elevated levels of infectious diseases and where there is often an absence of prevention and treatment services for drug dependency and infectious diseases.[84]

This section presents recent evidence on drug use and drug use disorders prior to incarceration, drug use (including injecting drug use) while incarcerated, the prevalence of infectious diseases among PWID, and the global response in terms of the provision of needle-syringe programmes, opioid substitution therapy and testing and treatment for HIV, hepatitis C and active tuberculosis in prison settings. The evidence comes from a number of recent global systematic reviews. While most of the evidence is based on studies from developed countries, some studies from low- and middle-income countries are included. For more details on these systematic reviews, see the table on pages 40–41.

People with a history of drug use or drug use disorders form a substantial part of the prison population in some countries

Although the data are limited, there is some evidence that, in some high-income countries, people with drug use disorders form a large part of the prison population. Drug use disorders are highly prevalent among those entering prison, with a rate that is higher for women than for men. A systematic review identified studies on the past-year prevalence of drug use disorders[85] on admission to prison.[86] The

83 Kate Dolan and others, "People who inject drugs in prison: HIV prevalence, transmission and prevention", *International Journal of Drug Policy*, vol. 26, Suppl No. 1 (2015), pp. S12–S15.

84 Adeeba Kamarulzaman and others, "Prevention of transmission of HIV, hepatitis B virus, hepatitis C virus, and tuberculosis in prisoners", *The Lancet*, vol. 388, No. 10049 (2016), pp. 1115–1126.

85 Substance abuse and/or dependence based on clinical examination or by interviews using validated diagnostic instruments (*Diagnostic and Statistical Manual of Mental Disorders*, 3rd and 4th eds. (Washington, D. C., American Psychiatric Association, various years) and *International Classification of Diseases* 9th and 10th eds. (Geneva, World Health Organization, various years)), with diagnostics based on the preceding 12 months from the time when participants were interviewed/examined.

86 Fazel, Yoon and Hayes, "Substance use disorders in prisoners".

past-year prevalence of drug use disorders among those entering prison was 30 per cent for men (95 per cent confidence interval: 22–38 per cent) and 51 per cent for women (95 per cent confidence interval: 43–58 per cent). This contrasts with, for example, the past-year prevalence of drug use disorders in high-income countries of 2.9 per cent among the general population (those aged 12 and older) in the United States in 2015 and 0.9 per cent among the general population (those aged 16–85) in Australia in 2007.[87, 88] There was evidence of increasing drug use disorders among females on entry to prison over the previous three decades, with the rate increasing from 46 per cent (95 per cent confidence interval: 33–58 per cent) prior to the year 2000, to 54 per cent (95 per cent confidence interval: 47–62 per cent) from the year 2000 onwards. Data on the past-year prevalence of drug use disorders prior to imprisonment from low- and middle-income countries were found to be very sparse, with only two studies identified, both from South America. Both studies were excluded from the overall analysis to provide an estimate for the past-year prevalence of drug use disorders prior to imprisonment for high-income countries only. However, the past-year prevalence of drug use disorders on admission to prison from the two low- and middle-income country studies was at least 30 per cent.

A separate systemic review of studies from low- and middle-income countries demonstrated that many people who were incarcerated had a history of drug use prior to entering prison. The systematic review found that almost half (48 per cent) had used drugs at least once prior to incarceration (95 per cent confidence interval: 41–55 per cent).[89] While cannabis use was most common, the use of other drugs prior to incarceration was also reported: lifetime use of opiates was reported by 10.4 per cent (95 per cent confidence interval: 7–14 per cent); and a history of injecting drug use was reported by 9.5 per cent (95 per cent confidence interval: 7–13 per cent).

87 United States, Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality "Behavioral health barometer: United States, volume 4 – indicators as measured through the 2015 National Survey on Drug Use and Health and National Survey of Substance Abuse Treatment Services", HHS Publication No. SMA–17–BaroUS–16. (Rockville, Maryland, 2017).

88 Tim Slade and others, *The Mental Health of Australians 2: Report on the 2007 National Survey of Mental Health and Wellbeing* (Canberra, Department of Health and Ageing, 2009).

89 Mundt and others, "Substance use during imprisonment in low- and middle-income countries".

The use of drugs, including heroin, and injecting drug use have been documented in many prisons

Based on a total of 149 studies in 62 countries, an estimated one in three people held in prisons worldwide report that they have used drugs at least once while incarcerated (median and mean = 31 per cent), with one in five reporting past-month use (median and mean = 19 per cent). As in community settings, cannabis is the most popular drug. The past-month use of heroin (median = 2.2 per cent and mean = 4.9 per cent) is greater than of amphetamines, cocaine or "ecstasy".

Injecting drug use in prisons represents an especially high risk for the transmission of HIV and hepatitis C because of the high prevalence of HIV and hepatitis C in prison populations and because of the lack of availability of needles and syringes in most prison settings, which may prompt prisoners to share injecting equipment more often and among more people.[88, 91, 92] A systematic review identified studies on the lifetime prevalence of injecting drug use in prison.[93] A global estimate was not determined. However, the regions (the groupings are those as used by the authors) with the highest prevalence of injecting while incarcerated were Asia and the Pacific, Eastern Europe and Central Asia, where approximately one in five people held in prison have injected drugs at least once while incarcerated. By contrast, low levels of injecting drug use were found in prison in East, Southern, West and Central Africa, reflecting the low prevalence of injecting drug use among the general population in many countries in those subregions.

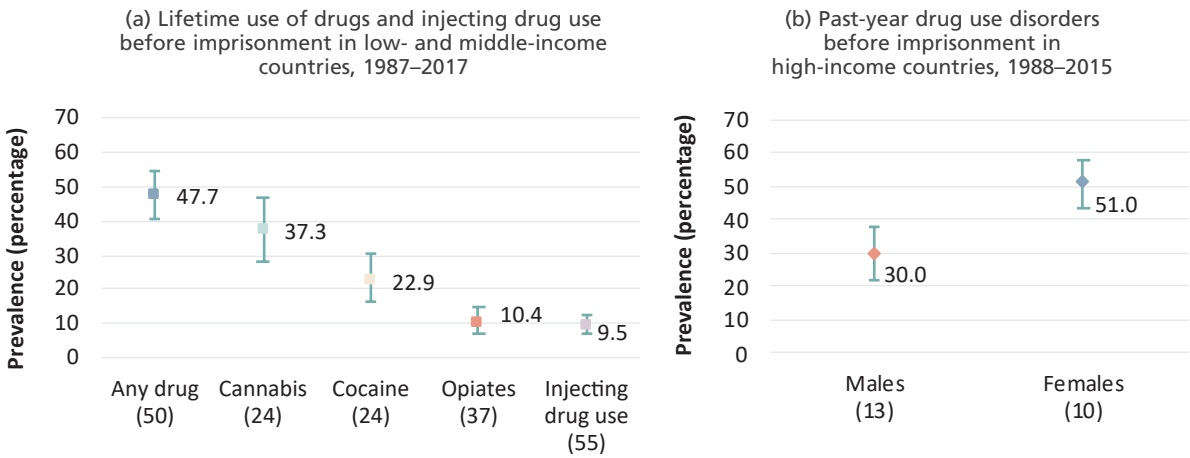
90 Dolan and others, "Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees".

91 Ralf Jürgens, Andrew Ball and Annette Verster, "Interventions to reduce HIV transmission related to injecting drug use in prison", *The Lancet Infectious Diseases*, vol. 9, No. 1 (January 2009), pp. 57–66.

92 Dolan and others, "People who inject drugs in prison".

93 Babak Moazen and others, "Prevalence of drug injection, sexual activity, tattooing, and piercing among prison inmates", *Epidemiologic Reviews*, vol. 40, No. 1 (June 2018), pp. 58–69.

FIG. 14 Drug use disorders and drug use prior to imprisonment



Sources: Seena Fazel, Isabel A. Yoon and Adrian J. Hayes, "Substance use disorders in prisoners: an updated systematic review and meta-regression analysis in recently incarcerated men and women", *Addiction*, vol. 112, No. 10 (October 2017), pp. 1725–1739; and Adrian P. Mundt and others, "Substance use during imprisonment in low- and middle-income countries", *Epidemiologic Reviews*, vol. 40, No.1, (June 2018), pp. 70–81.

Notes: Symbols represent pooled prevalence estimates, with vertical lines depicting 95 per cent confidence intervals. Data are not consistent across studies. The numbers within brackets on the horizontal axis represent the number of studies.

Two thirds of the world's prison population are incarcerated in low- and middle-income countries.[94] A systematic review of studies on the prevalence of drug use among people imprisoned in low- and middle-income countries estimated that one in four people in prison used drugs while incarcerated.[95] This was higher than for alcohol, which is estimated to be used by approximately one in six people during incarceration. Cannabis use during imprisonment was reported by 17 per cent and the use of opiates by 6 per cent. The prevalence of injecting drug use during imprisonment in low- and middle-income countries in Europe (6.5 per cent, 95 per cent confidence interval: 1.5–14.6 per cent) was found to be significantly higher than in Africa (0.0 per cent, 95 per cent confidence interval: 0.0–0.2 per cent). A comparison of prevalence rates before imprisonment with rates during imprisonment showed that those in prison were much more likely to continue to use opiates than either cannabis or cocaine.

94 Walmsley, "World prison population list".

95 Mundt and others, "Substance use during imprisonment in low- and middle-income countries".

Evidence points to high levels of HIV and hepatitis C among people who inject drugs in prison in some countries

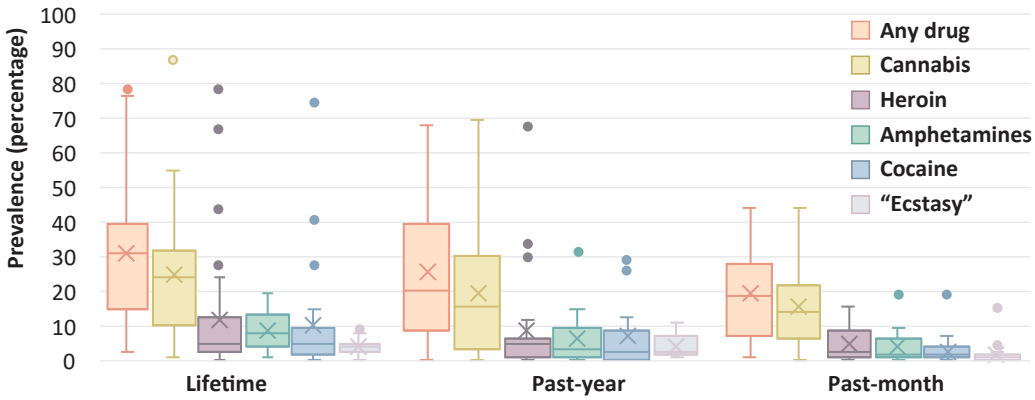
While the prevalence of HIV, hepatitis C and tuberculosis in the general prison population is much higher than in the general population outside prison settings,[96] the available data, although limited, point to rates that are substantially higher among people who inject drugs in prison (injected any drug before or during incarceration) compared with non-injecting prisoners. A systematic review identified studies on the prevalence of HIV and hepatitis C among PWID in prison.[97] Overall pooled prevalence estimates for HIV and hepatitis C among PWID in prison were not determined.[98] However, for the prevalence of HIV among PWID, the middle 50 per cent of the estimates ranged from 1.5 to 18 per

96 Dolan and others, "Global burden of HIV, viral hepatitis, and tuberculosis in prisoners and detainees".

97 Andrea L. Wirtz and others, "HIV and viral hepatitis among imprisoned key populations", *Epidemiologic Reviews*, vol. 40, No. 1 (June 2018), pp. 12–26.

98 A pooled analysis is a statistical technique for combining the results, in this case the prevalence from multiple epidemiological studies, to arrive at an overall estimate of the prevalence.

FIG. 15 Lifetime, past-year and past-month drug use while in prison, 2000–2017



Sources: UNODC, responses to annual report questionnaire; UNODC, *World Drug Report 2015* (Vienna 2015); EMCDDA, Statistical Bulletin (various years); and Adrian P. Mundt and others, "Substance use during imprisonment in low- and middle-income countries", *Epidemiologic Reviews*, vol. 40, No.1 (June 2018), pp. 70–81.

Note: Based on a total of 149 studies in 62 countries (number of countries by region: Africa, 7; Americas, 13; Asia, 11; Europe, 29; Oceania, 2). Data on lifetime, past-year and past-month use are not consistent for all studies. The shaded box depicts the central 50 per cent of the prevalence estimates (i.e., between the 25th and 75th percentiles). The horizontal line within the box represents the median prevalence. The cross represents the mean prevalence. The vertical line extending above and below the shaded box are drawn to the minimum and maximum prevalence, unless there are estimates that lie outside the range of 1.5 times the interquartile range (the difference between the 75th and 25th percentiles) beyond the shaded box. In this case, these prevalence estimates are considered unusually high and are marked with a dot, and the vertical line extends to the largest estimate that lies within the range 1.5 times the interquartile range from the shaded box.

cent, and for the prevalence of hepatitis C among PWID, the corresponding range was 41 to 75 per cent. PWID had 6.0 times the prevalence of HIV (95 per cent confidence interval: 3.8–9.4 per cent) and 8.1 times the prevalence of hepatitis C (95 per cent confidence interval: 6.4–10.4 per cent), compared with non-injecting prison populations.

In the same review, it was stated that the extent to which PWID acquire those diseases while they are incarcerated is not known; only one study could be located that provided an incidence estimate. However, there is evidence that a history of incarceration is associated with an increased risk of HIV and hepatitis C among PWID and could be an important driver of hepatitis C and HIV transmission among PWID.[99] Recent (in the past 3, 6 or 12 months, depending on the study) incarceration was associated with an 81 per cent increase in the risk of acquiring HIV and a 62 per cent increase in the risk of acquiring hepatitis C.[100] The enhanced risk arises not only during the time spent in the prison environment itself but also in periods of transition between prisons, and between prison and community settings, which can result in a return to drug use, loss of contact with health-care services, and disrupted or discontinued treatment.[101, 102]

Understanding the extent of tuberculosis in the general prison population is important, particularly for those, such as PWID, who are living with HIV, because tuberculosis is a leading cause of death among people living with HIV.[103, 104] Tuberculosis is spread from person to person through the air and is more easily transmitted among those in close proximity in conditions of overcrowding and poor

99 Jack Stone and others, "Incarceration history and risk of HIV and hepatitis C virus acquisition among people who inject drugs: a systematic review and meta-analysis", *The Lancet Infectious Diseases*, vol. 18, No. 12 (December 2018), pp. 1397–1409.

100 Based on data from 41 studies on PWID in community settings, published between 2000 and 2017.

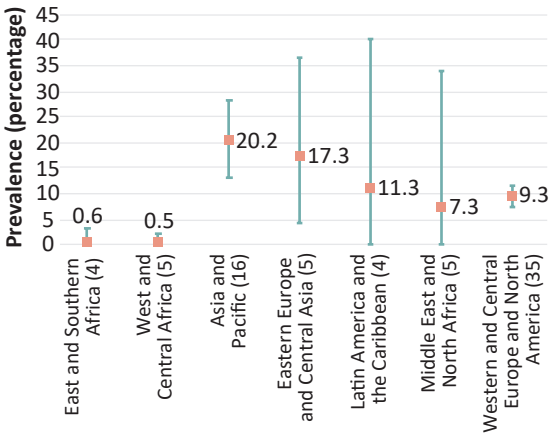
101 Josiah D. Rich and others, "Clinical care of incarcerated people with HIV, viral hepatitis, or tuberculosis", *The Lancet*, vol. 388, No. 10049 (2016), pp. 1103–1114.

102 Wirtz and others, "HIV and viral hepatitis among imprisoned key populations".

103 Candice K. Kwan and Joel D. Ernst, "HIV and tuberculosis: a deadly human syndemic", *Clinical Microbiology Reviews*, vol. 24, No. 2 (April 2011), pp. 351–376.

104 WHO, Global Tuberculosis Report 2016 (Geneva, 2016).

FIG. 16 Lifetime injecting drug use while in prison, by region, 2007–2017



Source: Babak Moazen and others, "Prevalence of drug injection, sexual activity, tattooing, and piercing among prison inmates", *Epidemiologic Reviews*, vol. 40, No. 1 (June 2018), pp 58–69.

Notes: Regional grouping are those used by the authors. Symbols represent pooled prevalence with vertical lines depicting 95 per cent confidence intervals. The numbers within brackets on the horizontal axis represent the number of studies.

ventilation, as often found in prison settings.[105, 106] Globally, an estimated 2.8 per cent of prisoners are living with active tuberculosis, a rate much higher than that among the general population, which is estimated at less than 0.2 per cent.[107]

Availability and coverage of services for HIV, hepatitis C and tuberculosis prevention and treatment for those incarcerated are limited in most prison settings

The core science-based interventions for the effective prevention of HIV and hepatitis C are needle-syringe programmes that provide sterile injecting equipment, and opioid substitution therapy to reduce dependency on opioids and hence decrease the frequency of injecting.[108] Testing and counselling are an important gateway into care, coupled with treatment to substantially reduce the viral load and the ongoing transmission of HIV and hepatitis C in prison.[109, 110, 111] Since tuberculosis is a leading cause of death among people living with HIV, testing and treatment for tuberculosis are critical, among PWID in particular, as they experience a much higher prevalence of HIV than non-injecting prisoners.

A recent systematic review of the literature, in combination with national surveys, assessed the availability and coverage of needle-syringe programmes, opioid substitution therapy and the provision of testing and treatment for HIV, hepatitis C and active tuberculosis in prison settings.[112, 113] A country was defined as providing the service if it was available in at least one prison. Data on the coverage of these services, that is to say, the proportion of prisons in the country that provide them, was found to be limited. Countries were grouped according to whether an intervention was provided in at least 50 per cent of prisons or in fewer than 50 per cent of prisons.

The study found that there are major gaps in the availability of needle-syringe programmes and opioid substitution therapy in prison, despite the high prevalence of the use of heroin and injecting drug use and the high burden of infectious diseases in many prisons, particularly among PWID. Even for those countries where a service was reported as

105 Masoud Dara and others, "Tuberculosis control in prisons: current situation and research gaps", *International Journal of Infectious Diseases*, vol. 32 (March 2015), pp. 111–117.

106 Iacopo Baussano and others, "Tuberculosis incidence in prisons: a systematic review", *PLOS Medicine*, vol. 7, No. 12 (December 2010), pp. 1–10.

107 WHO, Global Tuberculosis Report 2015 (Geneva, 2015).

108 UNODC, ILO, UNDP, WHO and UNAIDS, "HIV prevention, treatment and care in prisons and other closed settings: a comprehensive package of interventions", Policy brief (Vienna, 2013).

109 *Technical Guide for Countries to Set Targets for Universal Access to HIV Prevention, Treatment and Care for Injecting Drug Users: 2012 Revision*.

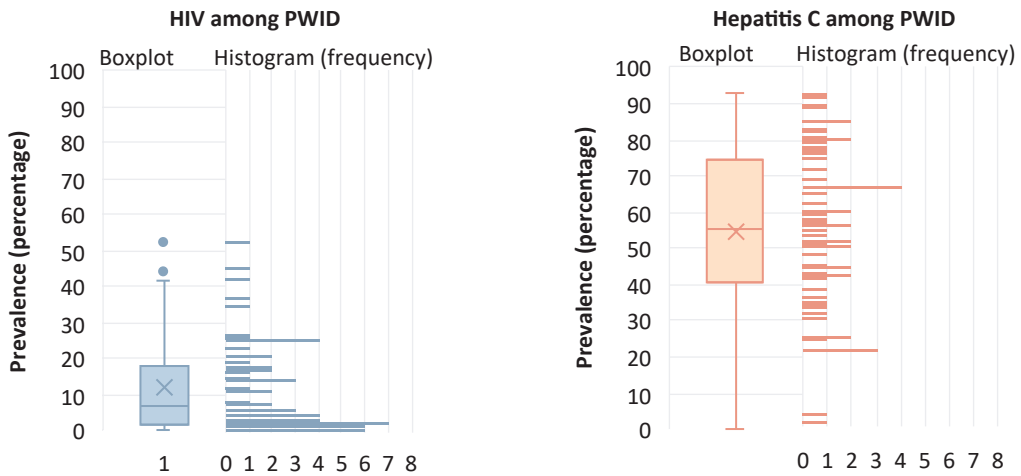
110 Katy M. E. Turner and others, "The impact of needle and syringe provision and opiate substitution therapy on the incidence of hepatitis C virus in injecting drug users: pooling of UK evidence", *Addiction*, vol. 106, No. 11 (November 2011), pp. 1978–1988.

111 Peter Vickerman and others, "Can needle and syringe programmes and opiate substitution therapy achieve substantial reductions in hepatitis C virus prevalence? Model projections for different epidemic settings", *Addiction*, vol. 107, No. 11 (November 2012), pp. 1984–1995.

112 Rebecca Bosworth, Babak Moazen and Kate Dolan, "HIV, viral hepatitis and TB in prison populations: a global systematic review and survey of infections and mortality, and provision of HIV services in prisons" (forthcoming).

113 Responses to the survey were received from 52 countries, with all regions represented.

FIG. 17 HIV and hepatitis C among people in prison who inject drugs,[a] 2005–2017



Source: Andrea L Wirtz and others, "HIV and viral hepatitis among imprisoned key populations", *Epidemiologic Reviews*, vol. 40, No. 1 (June 2018), pp. 12–26.

Notes: Based on 62 studies from 18 countries for HIV, and on 61 studies from 22 countries for hepatitis C. The shaded box depicts the central 50 per cent of the prevalence estimates (i.e., between the 25th and 75th percentiles). The horizontal line within the shaded box represents the median prevalence. The cross within the shaded box represents the mean prevalence. The vertical lines extending above and below the shaded box are drawn to the minimum and maximum prevalence, unless there are estimates that are outside the range of 1.5 times the interquartile range (the difference between the 75th and 25th percentiles) beyond the shaded box. In this case, these prevalence estimates are considered unusually high and are marked with a dot, and the vertical lines extend to the largest estimate that is within the range of 1.5 times the interquartile range from the shaded box.
a Injected any drug before or during incarceration.

available in prison, it does not necessarily mean that adequate coverage is being achieved or that the service provided is of a quality sufficient to obtain an effective gain in health outcomes.

The study identified evidence in 56 countries (in which 45 per cent of the global prison population are held) of the implementation of opioid substitution therapy in at least one prison, and it was confirmed not to be present in prison settings in 46 countries (in which 30 per cent of the global prison population are held). The proportion of prisons implementing opioid substitution therapy could be determined for 11 countries, with opioid substitution therapy in at least 50 per cent of prisons in 6 of those countries. Among the 46 countries where opioid substitution therapy was confirmed to be absent, there is evidence in 22 of them that such therapy is implemented in community settings.[114] Over the past two decades, there has been an increase in the number of countries implementing opioid substitution therapy in at least one prison, from 5 in 1996[115] to 29 in 2008[116] and 56 in 2017.

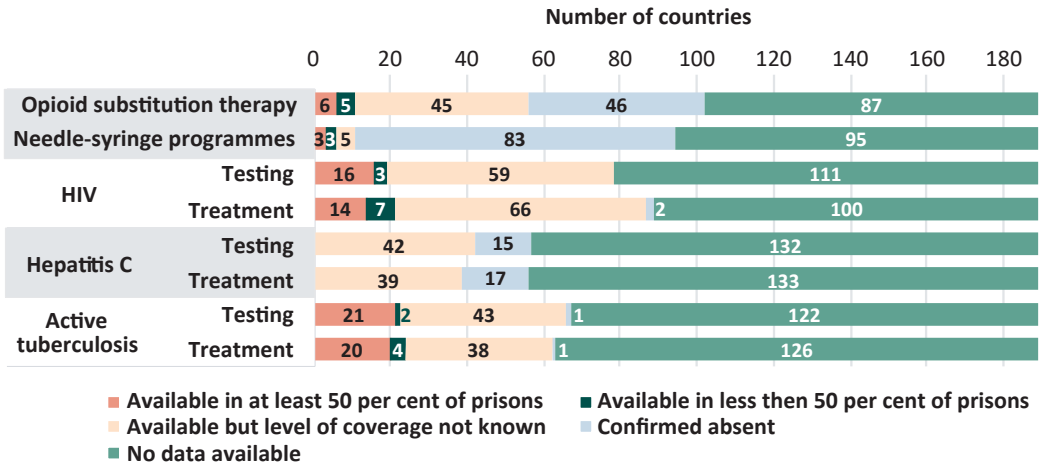
Needle-syringe programmes were found to be far less available in prison than opioid substitution therapy: 11 countries (in which 4 per cent of the global prison population are held) reported the availability of needle-syringe programmes in at least one prison, but such programmes were confirmed as absent in 83 countries (in which 68 per cent of the global prison population are held). The proportion of prisons implementing needle-syringe programmes could be determined for six countries, with such programmes being implemented in at least 50 per cent of prisons in three of those countries. Among the 83 countries where needle-syringe programmes were confirmed to be absent, there is evidence of the

114 Larney and others, "Global, regional, and country-level coverage of interventions to prevent and manage HIV and hepatitis C among people who inject drugs: a systematic review".

115 Kate Dolan and Alex Wodak, "An international review of methadone provision in prison", *Addiction Research*, vol. 4, No. 1 (1996), pp. 85–97.

116 Sarah Larney and Kate Dolan, "A literature review of international implementation of opioid substitution treatment in prisons: equivalence of care?", *European Addiction Research*, vol. 15, No. 2 (March 2009), pp. 107–112.

FIG. 18 Global availability, non-availability and coverage of core interventions for the prevention and treatment of HIV, hepatitis C and active tuberculosis in prison, 2013–2017



Source: Rebecca Bosworth, Babak Moazen and Kate Dolan, "HIV, viral hepatitis and TB in prison populations: a global systematic review and survey of infections and mortality, and provision of HIV services in prisons" (forthcoming).

Note: Total number of countries included is 189. A country was defined as providing the service if it was available in at least one prison.

provision of such programmes in community settings in 62 of them.[117]

The provision of opioid substitution therapy and needle-syringe programmes in combination can be particularly effective in preventing the spread of HIV and hepatitis C.[118, 119] There were 10 countries (in which 3.9 per cent of the global prison population are held) that provided both needle-syringe programmes and opioid substitution therapy in at least one prison, although not necessarily in the same prisons.

The prevalence of injecting drug use in prisons is highest in Asia and the Pacific, Eastern Europe and Central Asia, where approximately one in five prisoners are estimated to have injected drugs at least once while incarcerated.[120] However, none of the prisons in the 37 countries in the Asia and Pacific region provided needle-syringe programmes and only 9 countries implemented opioid substitution therapy. In Eastern Europe and Central Asia, 5 out of 16 countries provided needle-syringe programmes in at least one prison and 8 countries provided opioid substitution therapy, with 4 countries providing both services in at least one prison.

The high prevalence of hepatitis C in prison populations, especially among PWID, and the considerable burden of disease associated with untreated hepatitis C underscore the need for testing and access to treatment for hepatitis C in prison settings. However, fewer countries report the availability of testing and treatment for hepatitis C than for HIV or tuberculosis, with more countries confirming that testing and treatment for hepatitis C were absent. Highly effective direct-acting antiviral drugs are now available, offering new hope for treatment and reducing the burden of hepatitis C in prison settings. However, affordability has been a substantial barrier to the expansion of their use, and access to those medications is often restricted to individuals who are classified as high-priority

117 Larney and others, "Global, regional, and country-level coverage of interventions to prevent and manage HIV and hepatitis C among people who inject drugs".

118 Natasha K. Martin and others, "Combination interventions to prevent HCV transmission among people who inject drugs: modeling the impact of antiviral treatment, needle and syringe programs, and opiate substitution therapy", *Clinical Infectious Diseases*, vol. 57, Suppl. No. 2 (August 2013), pp. S39–S45.

119 Louisa Degenhardt and others, "Prevention of HIV infection for people who inject drugs: why individual, structural and combination approaches are needed", *The Lancet*, vol. 376, No. 9737 (July 2010), pp. 285–301.

120 Moazen and others, "Prevalence of drug injection, sexual activity, tattooing, and piercing among prison inmates".

candidates for treatment, such as those with cirrhosis, in both community and prison settings.[121, 122] Recent information on the coverage of direct-acting antivirals in prison settings is scarce.[123, 124, 125] In European countries, for example, while testing for infectious diseases is available in prison in most countries, treatment for hepatitis C of any kind is uncommon.[126] A systematic review of hepatitis C treatment provision in prison in Europe identified reports of the provision of direct-acting antivirals in prisons in three countries (France and Italy and Spain) with the possible improvements brought about by the introduction of direct-acting antivirals in prison settings yet to be reported on in peer-reviewed literature.[127]

HIV treatment not only improves health outcomes for the individual, it also reduces the viral load to the point where the risk of onward transmission is substantially decreased. Given the role of HIV in the development of active tuberculosis disease and the health implications of tuberculosis for those with HIV, addressing both infections in an integrated manner is important.[128] At the global level, treatment is provided (in at least one prison) for HIV and tuberculosis in 61 countries, although not necessarily at the same time or in the same location.

The availability of treatment services for drug use, including pharmacological and psychosocial treatment, and services for social rehabilitation and aftercare, remains much lower in prison than in the community.[129]

Entering, transferring and being released from prison have been recognized as periods of increased vulnerability. The immediate period after release from prison has been identified as a critical time, with a high risk of relapse to drug use, including injecting, and fatal drug overdose.[130, 131, 132] Continuity of care for those incarcerated is key to ensuring that the benefits of treatment for drug use disorders and infectious diseases that was started before or during imprisonment are not lost.[133] However, released prisoners are rarely able to access overdose prevention and management interventions or medications (such as naloxone or methadone) or treatment for substance use disorders, and are either not linked to HIV, hepatitis C or drug treatment services upon release, or are provided with only some of those services.[134]

121 Alison D. Marshall and others, "The removal of DAA restrictions in Europe: one step closer to eliminating HCV as a major public health threat", *Journal of Hepatology*, vol. 69, No. 5 (November 2018), pp. 1188–1196.

122 Rachel E. Simon and others, "Tackling the hepatitis C cost problem: a test case for tomorrow's cures", *Hepatology*, vol. 62, No. 5 (November 2015), pp. 1334–1336.

123 Karli R. Hochstatter and others, "The continuum of hepatitis C care for criminal justice involved adults in the DAA era: a retrospective cohort study demonstrating limited treatment uptake and inconsistent linkage to community-based care", *Health & Justice*, vol. 5, No. 10 (2017), pp. 1–10.

124 European Centre for Disease Prevention and Control and EMCDDA, *Public Health Guidance on Prevention and Control of Blood-borne Viruses in Prison Settings* (Stockholm, 2018).

125 European Centre for Disease Prevention and Control, *Systematic Review on the Prevention and Control of Blood-borne Viruses in Prison Settings* (Stockholm, 2018).

126 EMCDDA, *Health and Social Responses to Drug Problems: A European Guide* (Luxembourg: Publications Office of the European Union, 2017).

127 Hilde Vroling and others, "A systematic review on models of care effectiveness and barriers to hepatitis C treatment in prison settings in the EU/EEA", *Journal of Viral Hepatitis*, vol. 25, No. 12 (December 2018), pp. 1406–1422.

128 WHO, "WHO policy on collaborative TB/HIV activities: guidelines for national programmes and other stakeholders" (Geneva, 2012).

129 Report of the Executive Director on action taken by Member States to implement the Political Declaration and Plan of Action on International Cooperation towards an Integrated and Balanced Strategy to Counter the World Drug Problem (E/CN.7/2018/6).

130 Kamarulzaman and others, "Prevention of transmission of HIV, hepatitis B virus, hepatitis C virus, and tuberculosis in prisoners".

131 WHO Regional Office for Europe, "Preventing overdose deaths in the criminal-justice system", revised ed. (Copenhagen, 2014).

132 Wirtz and others, "HIV and viral hepatitis among imprisoned key populations".

133 WHO Regional Office for Europe, *Prisons and Health* (Copenhagen, 2014).

134 Leonard S. Rubenstein and others, "HIV, prisoners, and human rights", *The Lancet*, vol. 388, No. 10050 (2016), pp. 1202–1214.

TABLE 1 Study details of recent global systematic reviews on drug use, infectious diseases and the provision of prevention and treatment services in prison settings

Indicator	Past-year prevalence of drug use disorders prior to imprisonment
Source:	Seena Fazel, Isabel A. Yoon and Adrian J. Hayes, "Substance use disorders in prisoners: an updated systematic review and meta-regression analysis in recently incarcerated men and women", Addiction, vol. 112, No. 10 (October 2017), pp. 1725–1739.
Geographical coverage:	High-income countries (mostly the United States of America: 11 of 23 studies)
Time period:	1988–2015
Number of studies:	Men – 13 studies from 8 countries involving 5,750 prisoners Women – 10 studies from 4 countries involving 4,379 prisoners
Indicator	**Lifetime prevalence of drug use prior to imprisonment**
Source:	Adrian P. Mundt and others, "Substance use during imprisonment in low- and middle-income countries", Epidemiologic Reviews, vol. 40, No.1, (June 2018), pp. 70–81.
Geographical coverage:	Low- and middle-income countries
Time period:	1987–2017
Number of studies:	Any drug use – 50 studies from 21 countries Opiates – 37 studies from 22 countries Cannabis – 24 studies from 12 countries Cociane – 24 studies from 10 countries Injecting drug use – 55 studies from 27 countries
Indicator	**Lifetime prevalence of drug use within prison**
Source:	Adrian P. Mundt and others, "Substance use during imprisonment in low- and middle-income countries", Epidemiologic Reviews, vol. 40, No.1 (June 2018), pp. 70–81.
Geographical coverage:	Low- and middle-income countries
Time period:	1987–2017
Number of studies:	Any drug use – 26 studies from 14 countries Opiates – 26 studies from 14 countries Cannabis – 30 studies from 16 countries Cocaine – 20 studies from 8 countries Injecting drug use – 28 studies from 16 countries
Indicator	**Lifetime injecting drug use within prison**
Source:	Babak Moazen and others, Prevalence of drug injection, sexual activity, tattooing, and piercing among prison inmates, Epidemiologic Reviews, vol. 40, No. 1 (June 2018), pp 58-69.
Geographical coverage:	Global
Time period:	2007–2017
Number of studies:	71 studies from 36 countries

Indicator	Prevalence of HIV and hepatitis C among people who inject drugs in prisons
Source:	Andrea L Wirtz and others, "HIV and viral hepatitis among imprisoned key populations", Epidemiologic Reviews, vol. 40, No. 1 (June 2018), pp. 12–26.
Geographical coverage:	Mostly from middle- and high-income countries in Middle East and North Africa, and Asia and the Pacific
Time period:	2005–2017
Number of studies:	HIV – 62 studies from 18 countries Hepatitis C – 61 studies from 22 countries

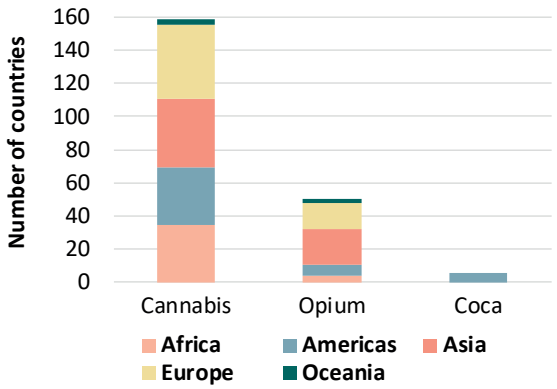
Indicator	Availability of needle-syringe programmes, opioid substitution therapy, and testing and treatment for infectious diseases
Source:	Rebecca Bosworth, Babak Moazen and Kate Dolan, "HIV, viral hepatitis and TB in prison populations: A global systematic review and survey of infections and mortality, and provision of HIV services in prisons" (forthcoming).
Geographical coverage:	Global – with all regions represented
Time period:	2013–2017
Number of studies:	Needle and syringe programmes (NSP) – 94 countries Opioid substitution therapy (OST) – 102 countries HIV – 78 countries (testing) and 89 countries (treatment) Hepatitis C – 57 countries (testing) and 56 countries (treatment) Active tuberculosis – 67 countries (testing) and 63 countries (treatment)

DRUG SUPPLY

Cannabis continues to be the most widely produced substance

Cannabis continues to be the most widely produced drug worldwide. Over the period 2010–2017, illicit cultivation of cannabis was reported, directly or indirectly, to UNODC by 159 countries located in all regions, covering 97 per cent of the global population. That is more than three times the 50 countries, most of them in Asia, reporting opium poppy cultivation and far more than the number of countries, all of them in the Americas, indicating that coca bush cultivation takes place on their territory.

FIG. 19 Number of countries reporting illicit drug cultivation,[a] 2010–2017



Source: UNODC, responses to the annual report questionnaire.

[a] *Countries reporting the cultivation, production and eradication of cannabis plants, opium poppy and coca bush, countries reporting seizures of cannabis plants, opium poppy plants and coca bush, and countries identified by other Member States as countries of origin of cannabis plants, opium poppy plants, opium and coca leaf.*

Cultivation of opium poppy declined in 2018, while cultivation of coca bush continued to increase

Despite a decline of roughly 17 per cent in 2018, to 346,000 ha, the global area under illicit opium poppy cultivation continues to be more than 60 per cent larger than it was a decade ago and significantly larger than the global area under coca bush cultivation.

The decline in the global area under opium poppy cultivation in 2018 was primarily a result of the decrease in opium cultivation in Afghanistan, which declined by 20 per cent across the country. However, with 263,000 ha, [135] Afghanistan again accounted for the largest area globally under illicit opium poppy cultivation in 2018. Although the decline in opium poppy cultivation in Afghanistan in 2018 was mainly the result of a drought, low opium prices may have led to a decrease in opium poppy cultivation in provinces not affected by the drought. Over the period 2016–2018, opium prices in Afghanistan fell rapidly, probably as a consequence of overproduction in previous years.

Contributing to the overall decline in global opium poppy cultivation, opium poppy cultivation in Myanmar, the second-largest producer of opium worldwide, continued to decrease. It fell by 12 per cent in 2018 to reach 37,300 ha. This was possibly prompted by an intensification of alternative development efforts in combination with falling opium prices, which resulted from a decrease in the demand for opium from Myanmar as drug use in East and South-East Asia shifted towards synthetic drugs, in particular methamphetamine.[136]

After Afghanistan and Myanmar, the largest area under opium poppy cultivation is found in Mexico (30,600 ha in the period July 2016 to June 2017).[137]

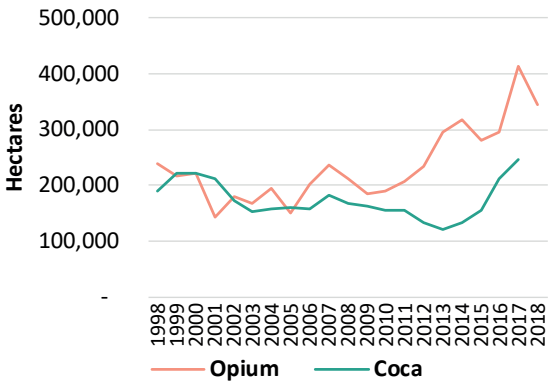
Having declined by 45 per cent over the period 2000–2013, global coca bush cultivation showed a clear upward trend over the period 2013–2017, increasing by more than 100 per cent. Increases were reported in all three Andean countries in 2016 and 2017, resulting in annual increases in global coca bush cultivation of 36 per cent from 2015 to 2016 and 15 per cent from 2016 to 2017, reaching an all-time high of 245,000 ha. About 70 per cent of the area under coca bush cultivation in 2017 was located in Colombia, 20 per cent in Peru and 10 per cent in the Plurinational State of Bolivia.

135 UNODC and Afghanistan, Ministry of Counter Narcotics, *Afghanistan Opium Survey 2018: Cultivation and Production* (November 2018).

136 UNODC and Myanmar, Central Committee for Drug Abuse Control, *Myanmar Opium Survey 2018: Cultivation, Production and Implications* (Bangkok, 2019).

137 UNODC, *México: Monitoreo de Cultivos de Amapola 2015–2016 y 2016–2017* (November 2018). At the time of drafting the present report, no data for 2018 were available for Mexico.

FIG. 20 Total area under opium and coca bush cultivation worldwide, 1998–2018



Sources: UNODC coca and opium surveys in various countries; responses to the annual report questionnaire; and United States of America, Department of State, *International Narcotics Control Strategy Report*, various years.

The declines and increases in coca bush cultivation over the past two decades have primarily been a consequence of changes in Colombia. Cultivation declined in Colombia over the period 2000–2013 in parallel with the implementation of a broad range of interventions, including aerial spraying, manual eradication and, particularly after 2007, alternative development. After 2012, the areas under coca cultivation that were fumigated and/or manually eradicated declined from some 130,000 ha to 18,300 ha in 2016 before increasing again to 53,600 ha in 2017. This decline in eradication went hand in hand with an intensification of law enforcement efforts against the manufacture of cocaine in Colombia.[138]

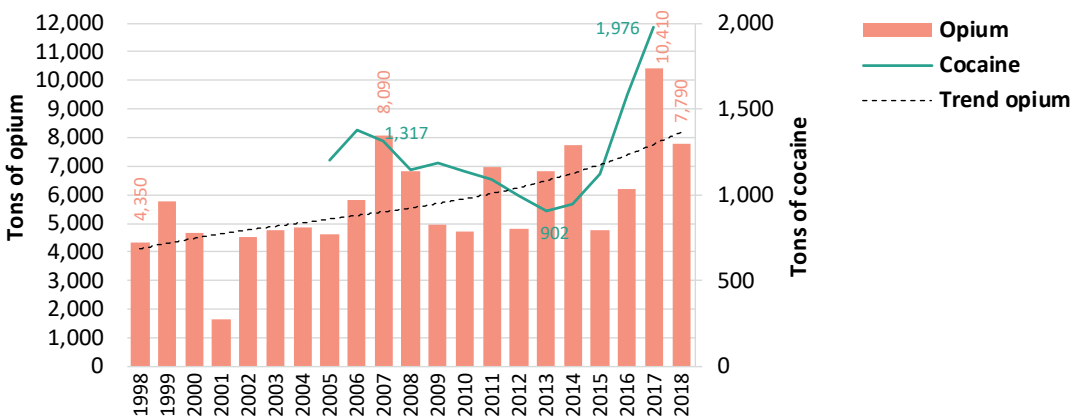
Global opium production declined in 2018 but remained at a high level

Global opium production has followed a long-term upward trend over the past two decades, although with significant annual fluctuations. In 2018, global opium production fell by 25 per cent compared with the previous year, to 7,790 tons, which is still the third-largest total since UNODC started systematically monitoring opium production, in the 1990s.

The three main opium-producing countries (Afghanistan, Mexico and Myanmar) are estimated to have been responsible for roughly 96 per cent of the estimated global total opium production in 2018, with Afghanistan alone accounting for 82 per cent of that total.

The global decline in global opium production in 2018 was mainly the result of a poor opium harvest in Afghanistan (which fell by 29 per cent compared

FIG. 21 Global opium production and cocaine[a] manufacture, 1998–2018



Sources: UNODC, Coca and opium surveys in various countries; responses to the annual report questionnaire; and United States of America, Department of State, *International Narcotics Control Strategy Report*, various years.

[a] *Expressed at a hypothetical manufacturing output level of 100 per cent pure cocaine; actual cocaine manufacturing output, unadjusted for purity, is significantly higher.*

138 A more detailed discussion on changes in coca cultivation can be found in Booklet 4 (*Stimulants*) of the present report.

with 2017, to 6,400 tons), reflecting a 20 per cent decrease in the size of the area under cultivation and an 11 per cent decrease in yield. A drought appears to have been an important factor in this decline, as it affected not only rain-fed land, but also irrigated areas as a result of restricted water availability following limited snowfall in the winter of 2017–2018.

In addition, opium production in Myanmar declined slightly, from 550 tons in 2017 to 520 tons in 2018, thus continuing the recent downward trend (a decrease of 20 per cent since 2015). This is possibly a consequence of a decrease in the demand for Myanmar-sourced opiates, which may be the result of the massive opium production in Afghanistan in 2017 as well as shifts towards the use of synthetic drugs in the drug markets of East and South-East Asia.[139]

Despite the decline in global opium production in 2018, there are no indications of a shortage in the supply of heroin to consumer markets.[140] Moreover, the prices of both opium and heroin continued to decline in 2018 in the main opium production areas of Afghanistan and Myanmar. Estimated opium production in 2018 would have been sufficient to manufacture 486–736 tons of heroin (expressed at export purity), once opium consumption is taken into account.

Cocaine manufacture has reached its highest level ever

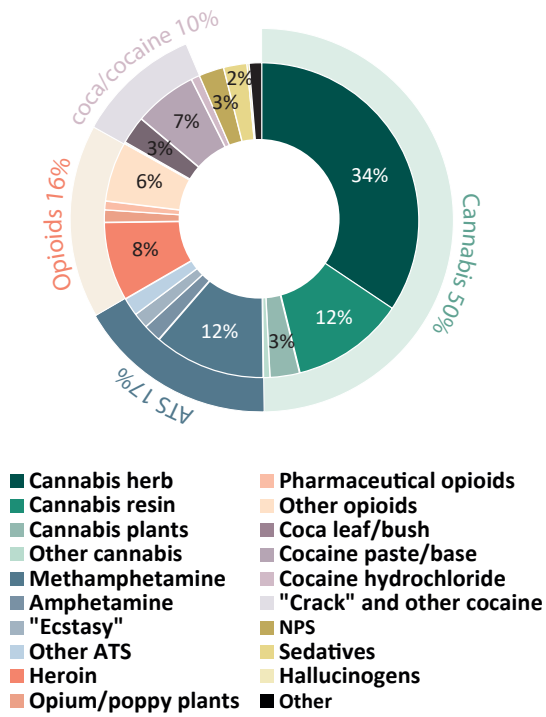
Global cocaine manufacture, which had fallen by 35 per cent over the period 2006–2013, more than doubled over the period 2013–2017 and increased by 25 per cent from 2016 to 2017, to reach 1,976 tons (expressed at a purity of 100 per cent). That record level was primarily the result of increases in Colombia, although cocaine manufacture also increased in Peru and in the Plurinational State of Bolivia.

In Colombia, cocaine manufacture more than quadrupled over the period 2013–2017. The amount of coca leaf produced in Colombia in 2017 increased more (32 per cent) than the area under coca cultivation (17 per cent), resulting in a 31 per cent increase in cocaine manufacture, to 1,379 tons, equivalent to about 70 per cent of global cocaine manufacture.

139 UNODC and Myanmar, Central Committee for Drug Abuse Control, *Myanmar Opium Survey 2018*.

140 UNODC has not received any reports of rising heroin prices or decreases in the purity of heroin in the main heroin consumer markets.

FIG. 22 Global distribution of number of drug seizure cases, 2016–2017, by drug type



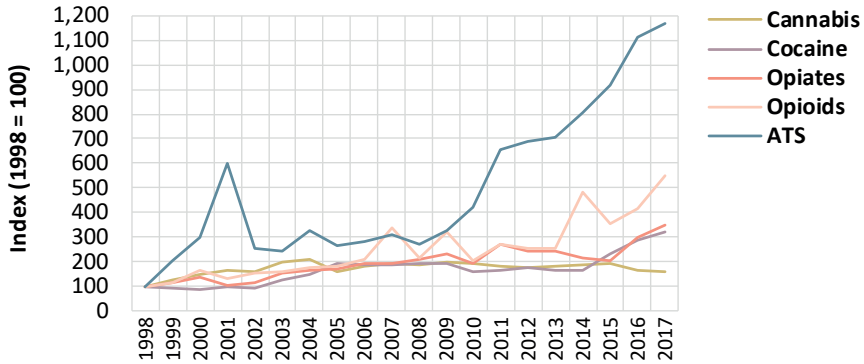
Source: UNODC, responses to the annual report questionnaire.

Note: The calculations are based on a breakdown of 5.3 million seizures cases reported to UNODC over the period 2016–2017 (2.54 million cases in 2016 and 2.73 million cases in 2017). Seizure case data is based on information from 70 countries for 2016 and 71 countries for 2017.

Quantities of drugs seized have increased, with synthetic drugs accounting for the largest growth

Global drug seizure cases continue to be dominated by cannabis, but most of the growth in the number of cases is accounted for by other drugs. A total of 71 Member States reported 2.5 million seizure cases to UNODC in 2016 and 2.7 million seizure cases in 2017, half of which were of cannabis, mostly in herbal form.

FIG. 23 Long-term trend in quantities of drugs seized (based on kilogram equivalents), 1998–2017



Source: UNODC, responses to the annual report questionnaire.

Note:
Cannabis: cannabis herb and cannabis resin
Opiates: opium expressed in heroin equivalents, plus morphine and heroin
Opioids: opiates plus pharmaceutical opioids and other opioids
Cocaine: cocaine hydrochloride, "crack" cocaine, cocaine base, paste and salts, coca paste/cocaine base
ATS: methamphetamine, amphetamine and "ecstasy"

The Office's most comprehensive data set is on the quantities of drugs seized, comprising data from 202 countries over the period 1998–2017 (an average of 155 countries per year). While the quantity of cannabis seized in that period grew by 60 per cent,[141] the quantity of opiates and of cocaine seized tripled, the quantity of opioids (opiates and synthetic opioids) seized quintupled and the quantity of ATS seized increased more than tenfold. The first seizures of synthetic NPS recorded in the UNODC database took place in 2001. Compared with the amounts reported seized in 2001, the quantities of synthetic NPS seized in 2017 were more than 400 times larger. All of this indicates that the most marked increase in the drugs seized over the past two decades has been in synthetic drugs, i.e., synthetic NPS, followed by ATS and synthetic opioids.

Opioids, cocaine and plant-based NPS account for the largest growth in the quantities of drugs seized over the past five years

Over the period 2013–2017, opioids accounted for the largest increase in the quantities of a drug seized: the quantities doubled over that period, reflecting, among other things, the current opioid crisis in North America. Cocaine accounted for the next-largest increase, which is a consequence of the rapid expansion of cocaine supply in recent years. That increase was followed by increases in the quantities of plant-based NPS. The overall quantities of plant-based and synthetic NPS seized rose by 78 per cent, the quantities of ATS seized rose by 65 per while the quantities of cannabis seized decreased by 12 per cent.

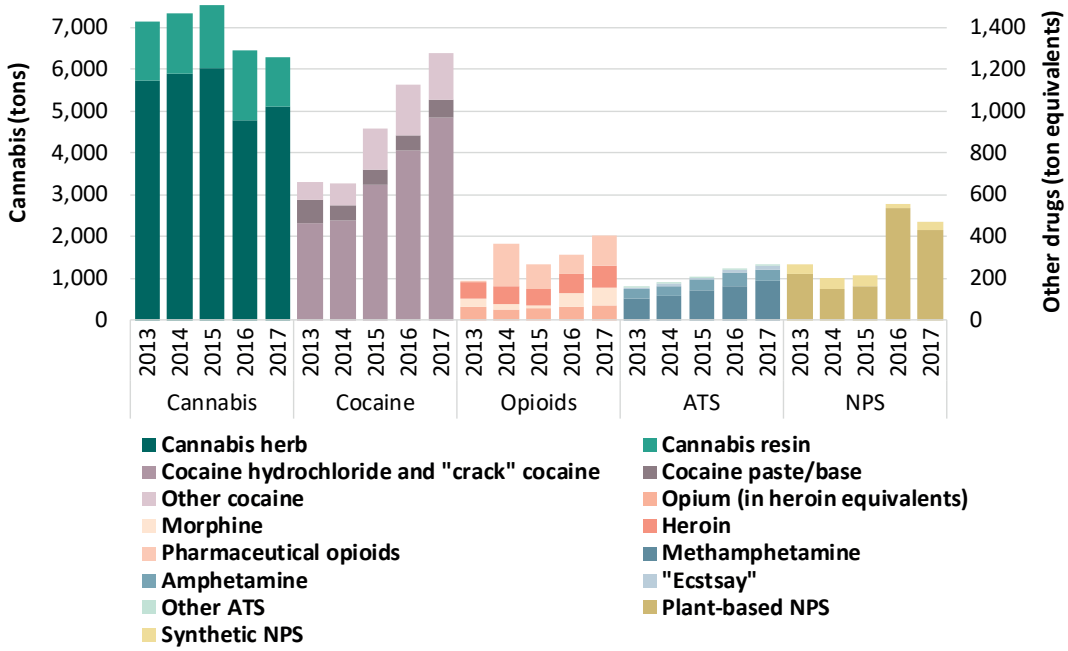
Cannabis is seized in the largest quantities globally, followed by coca and cocaine-related substances

The largest quantities of drugs seized at the global level in 2017 continued to be cannabis, followed by coca and cocaine-related substances, opioids, NPS and ATS (mostly methamphetamine). The quantities of cannabis herb seized were larger than those of cannabis resin and cannabis oil and, in contrast to the previous year, larger than those of cannabis plants. The largest quantities of cannabis herb seized in 2017 were reported, for the first time, by Paraguay, followed by the United States and Mexico. The largest quantities of cannabis resin seized were reported by Spain, followed by Pakistan and Morocco.

The quantities of cocaine HCl seized turned out to be not only larger than those of coca base, coca paste

141 This consisted of a 30 per cent increase in the amount of cannabis resin seized and a 70 per cent increase in the amount of cannabis herb seized.

FIG. 24 Short-term trends in quantities of drugs seized, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

and "crack" cocaine, but also larger than those of coca leaf and coca bush. The largest quantities of cocaine (cocaine HCl, "crack" cocaine, cocaine base and paste) intercepted in 2017 continued to be reported by Colombia, followed by the United States and Ecuador.

The largest quantities of opioids seized were of opium. However, when only opiates are considered and analysed in morphine equivalents,[142] heroin appears to have been the most trafficked opiate. For the second year in a row, the largest amounts of heroin and morphine seized in 2017 were reported by Afghanistan, followed by the Islamic Republic of Iran and Pakistan.

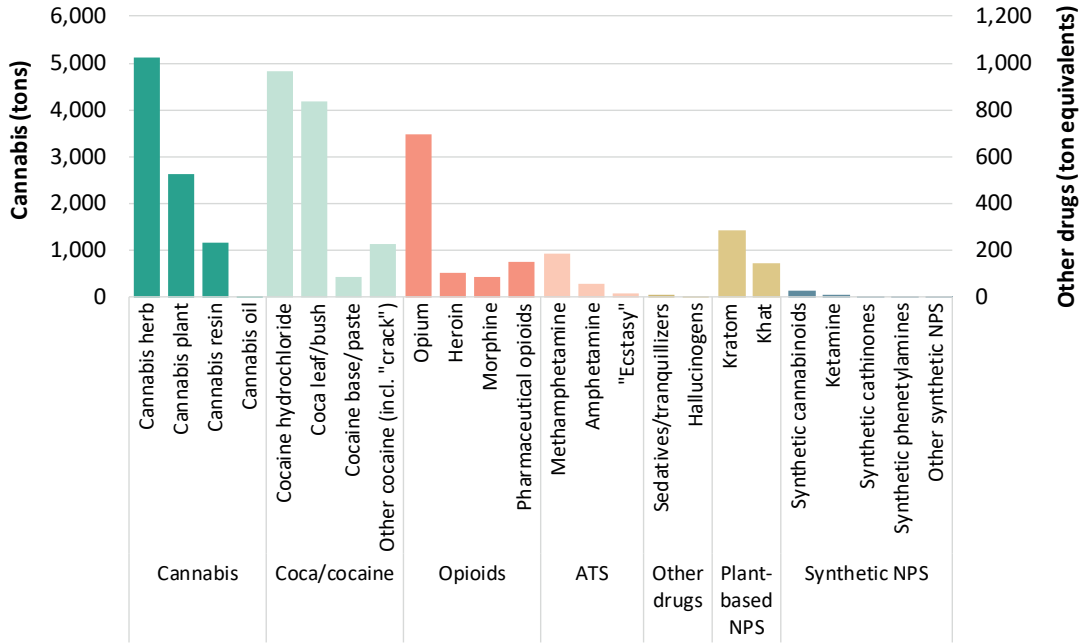
In the past few decades, the quantities of heroin seized tended to be larger than those of pharmaceutical opioids, but data show that the quantities of pharmaceutical opioids seized in 2017 were larger, for the third time since 2014. In terms of quantity, the largest seizures of synthetic opioids at the global level were again of tramadol, an opioid not under international control, followed by codeine and fentanyl. Nigeria reported seizing the largest quantities of synthetic opioids in 2017, followed by Egypt; in both countries,the majority of seizures were of tramadol. Given that far more doses can be obtained from fentanyl (and its analogues) than from any other opioid, that drug accounted for the most doses of pharmaceutical opioids seized in both 2016 and 2017.[143] Indeed, expressed in "daily defined doses for statistical purposes", almost 80 per cent of all the pharmaceutical opioids seized in 2017 were fentanyl (and its analogues).[144] As in the previous two years, most fentanyl (including its analogues) was seized in the United States, followed by Canada and Estonia.

142 Based on a conversion of 10 kg of opium being equivalent to 1 kg of morphine or heroin.

143 See the online methodological annex of the present report for detailed calculations on the quantities seized expressed in estimated number of doses.

144 Based on the "defined daily doses for statistical purposes" set out in *Narcotic Drugs: Estimated World Requirements for 2018–Statistics for 2016* (E/INCB/2017/2); and *Psychotropic Substances: Statistics for 2016–Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV of the Convention on Psychotropic Substances of 1971* (E/INCB/2017/3).

FIG. 25 Global quantities of drugs seized, 2017



Source: UNODC, responses to the annual report questionnaire, based on information from 124 countries.
Note: Quantities seized were not adjusted for purity or potency.

Reflecting data reported over the past two decades, the largest quantities of ATS seized in 2017 were of methamphetamine, followed by amphetamine and "ecstasy". The largest quantities of ATS seized in 2017 were reported by the United States, followed by Thailand, Mexico, China and Saudi Arabia.

Most of the sedatives and tranquillizers seized in 2017 were of methaqualone and were seized mostly in South Africa, India and Mozambique; this was followed by GHB, which was mostly seized in the United States, followed by Australia and Norway.

Dominated in the past by LSD, in 2017, seizures of hallucinogens were dominated by dimethyltryptamine (DMT). The largest quantities of DMT seized were reported by the United States, followed by the Netherlands, Italy and Canada.

The largest quantities of plant-based NPS seized in 2017 were, for the second year in a row, of kratom (*Mitragyna speciosa*), followed by khat and smaller quantities of the hallucinogen *Datura stramonium*, none of which are under international control. Most of the kratom was seized in Malaysia, followed by Thailand and Myanmar. Most of the khat was reported to have been seized in the United States, followed by the Netherlands and the United Republic of Tanzania.

The largest quantities of synthetic NPS seized in 2017 continued to be of synthetic cannabinoids, followed by ketamine, synthetic cathinones, tryptamines and phenetylamines. Most synthetic NPS were seized in the United States, followed by China and the Russian Federation. While seizures of synthetic NPS in the United States were dominated by synthetic cannabinoids, in China they were dominated by ketamine and in the Russian Federation by synthetic cathinones (mostly metamfepramone, also known as dimethylcathinone).

Seizures of new psychoactive substances may be stabilizing

Seizures of NPS, i.e., substances that mimic substances under international control but are not under international control themselves, have shown a clear upward trend over the last decade. A time-series of seizures of plant-based NPS reported to UNODC shows the growing importance of kratom in 2016

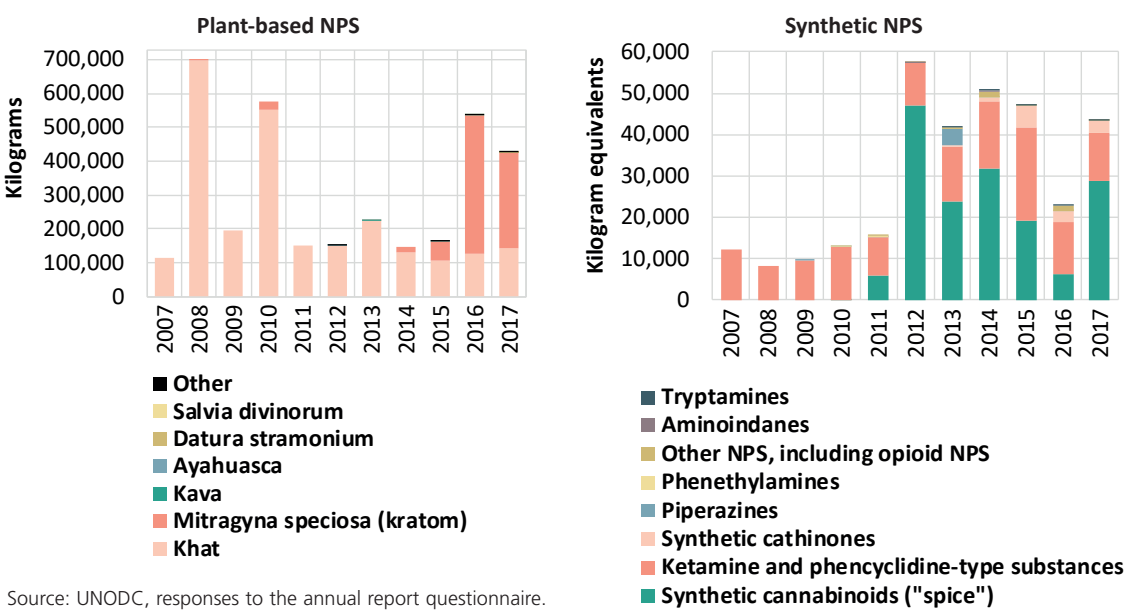
and 2017, while the amount of khat seized globally has remained largely stable in recent years. While khat was seized by 52 countries across all regions over the past decade, interceptions of kratom were reported by six countries, mostly in South-East Asia. This suggests that the khat market has a broader geographical reach than the kratom market, which is mainly concentrated in just one subregion, although smaller seizures of kratom made in South-East Asia also involved shipments intended for final destinations in North America (most notably the United States) and Oceania (notably Australia).[145] In May 2018, the Food and Drug Administration of the United States issued warnings to three distributors for illegally selling unapproved drug products containing kratom in that country.[146] In parallel, smaller quantities of kratom were also seized in Western and Central Europe.

The overall quantities of synthetic NPS seized showed a marked increase at the beginning of the second decade of the new millennium but, irrespective of the reported increase in 2017, have not grown notably since. This may reflect the fact that some of the most harmful NPS have been put under national and international control in recent years and are therefore produced and trafficked less than in the past and no longer form part of any NPS category.

A total of 66 countries across all regions reported seizures of synthetic NPS to UNODC over the period 2007–2017, rising from 15 countries in 2007 to 45 countries in 2017. Most of the quantities of synthetic NPS seized were reported in the Americas (mostly North America), followed by Asia (mostly East and South-East Asia) and Europe (Western and Central Europe and Eastern Europe). Data also indicate the dominance of synthetic cannabinoids within the seizures of synthetic NPS throughout the second decade of the new millennium. These were followed by ketamine and synthetic cathinones over the period 2014–2017. The quantities of piperazines, phenethylamines and tryptamines seized over the last decade have been smaller than of cannabinoids, ketamine and synthetic cathinones.

Following the decision by the Commission on Narcotic Drugs in March 2018 to schedule another six substances under the Single Convention on Narcotic

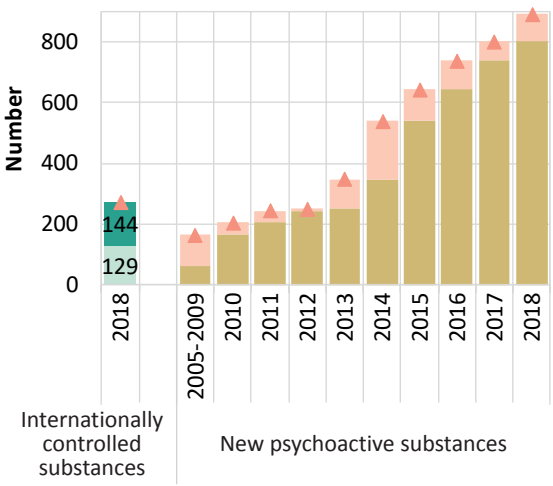
FIG. 26 Global quantities of NPS seized, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

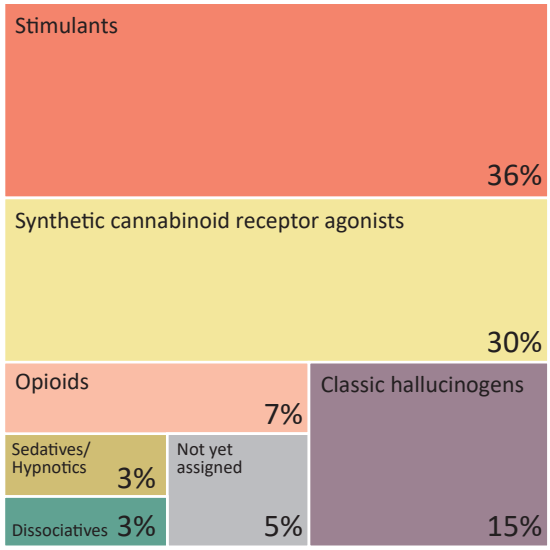
145 E/INCB/2017/1.
146 E/INCB/2018/1.

FIG. 27 Internationally controlled drugs in 2018 and identified new psychoactive substances at the global level, 2005–2018 (cumulative)



Source: UNODC early warning advisory on new psychoactive substances.

FIG. 28 Proportion of identified synthetic new psychoactive substances by effect group, as of December 2018 (N = 868)



Source: UNODC early warning advisory on new psychoactive substances.

Note: The total number of NPS amounted to 892 substances, including 868 synthetic NPS. The analysis of the pharmacological effects comprises NPS registered up to December 2018 (868 substances). Plant-based substances were excluded from the analysis as they usually contain a large number of different substances, some of which may not have been known and whose effects and interactions are not fully understood.

Drugs of 1961 as amended by the 1972 Protocol and a further six substances under the Convention on Psychotropic Substances of 1971, 273 psychoactive substances were under international control at the end of 2018. By comparison, the number of NPS identified by authorities worldwide and reported to the UNODC early warning advisory[147] is already three times higher, having reached a total of 892 substances in December 2018, up from 166 in 2009. It should be noted, however, that not all NPS identified may merit being put under international control, as taking such a step depends on the harm they can cause as well as their persistence on the market: some only emerge for a short period of time and then disappear from the market.

Data show that 36 per cent of the synthetic NPS substances identified over the period 2009–2018 had stimulant effects. Most of them were cathinones and phenethylamines. Thirty per cent of the synthetic NPS were synthetic cannabinoids receptor agonists and 15 per cent could be considered classic hallucinogens (mostly tryptamines).

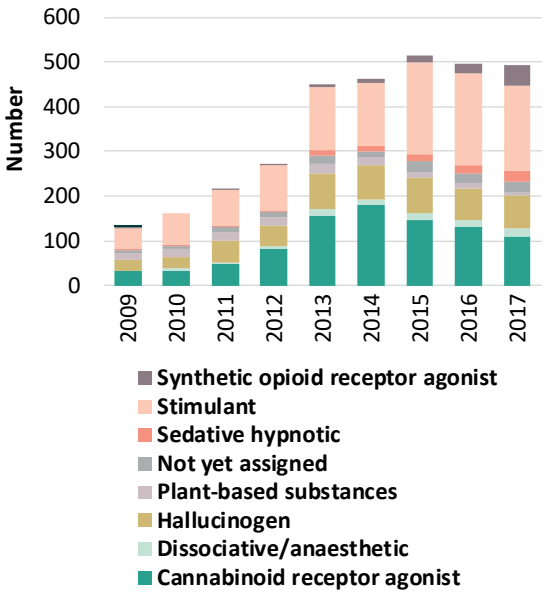
The main concern for the authorities in a number of countries, however, has been the emergence of new synthetic opioid receptor agonists (opioid NPS) in recent years, often fentanyl analogues. They prove to be particularly harmful, leading to growing numbers of NPS-related deaths, in particular in North America and, to a lesser extent, in Europe. Over the period 2009–2018, about 7 per cent of all identified NPS were opioid NPS.

The analysis of NPS identified[148] annually by the forensic laboratories of national authorities and reported to the UNODC early warning advisory suggests a proliferation of individual NPS up until

147 The UNODC early waring advisory on new psychoactive substances comprises data on the type of NPS identified in forensic laboratories by authorities worldwide.

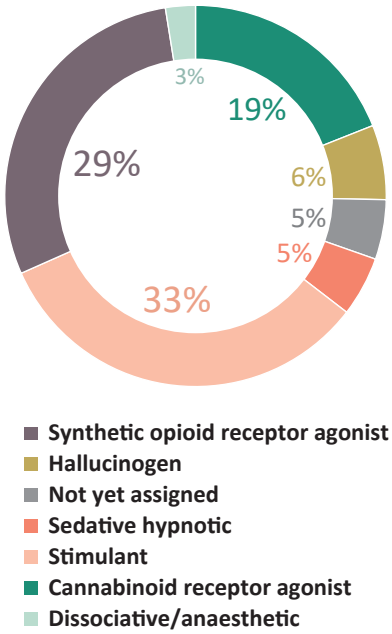
148 Substances emerging for the first time in a country.

FIG. 29 Synthetic new psychoactive substances reported annually to UNODC, 2009–2017, by psychoactive effect group



Source: UNODC early warning advisory on new psychoactive substances.

FIG. 30 Synthetic new psychoactive substances reported for the first time at the global level in 2017 (N = 78)



Source: UNODC early warning advisory on new psychoactive substances.

2015 and a subsequent trend towards a stabilization in the number of new substances arriving on the market, at a rate of about 500 NPS per year (492 in 2017). This needs to be seen in the context of the number of countries reporting to the early warning advisory increasing significantly, and thus of more comprehensive reporting.

While recent years have seen a decrease in the number of new synthetic cannabinoids arriving on the market, the number of NPS with stimulant effects has increased and, in relative terms, the number of newly emerging opioid NPS has risen sharply, from just 1 substance in 2009 to 15 in 2015, 22 in 2016 and 46 in 2017. Those increases are equivalent to an increase of less than 1 per cent of all identified NPS in 2009, 4 per cent in 2016 and 9 per cent in 2017.

Of the 78 NPS that emerged for the first time at the global level in 2017, synthetic opioid receptors agonists accounted for 29 per cent of the total, slightly less than the percentage of NPS with stimulant effects, which accounted for 33 per cent, but more than the percentage of cannabinoids receptor agonists (19 per cent).

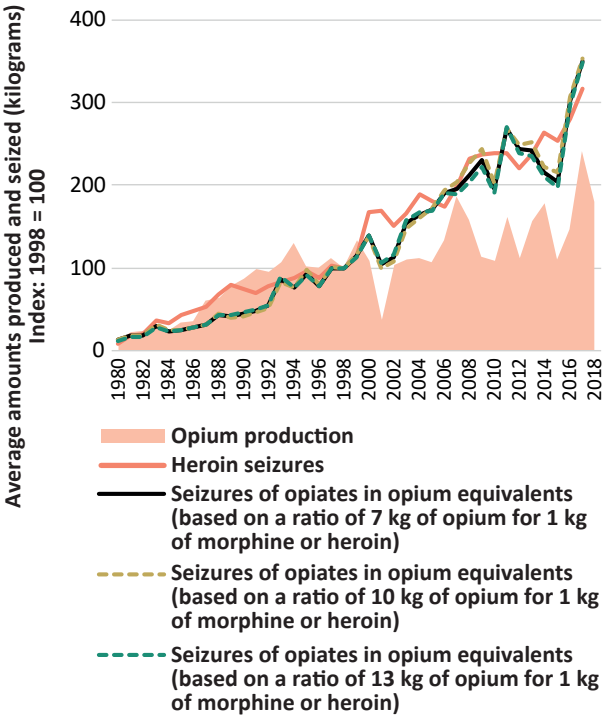
Interceptions of cocaine and opiates have increased

During the period 1998–2017, global opium production doubled, while the overall quantities of heroin and opiates seized (expressed in opium equivalents) more than tripled. The global manufacture of cocaine also doubled over that period, while the quantities of cocaine seized more than tripled. Such trends suggest an increase over time in the global interception of the amounts of both opiates and cocaine produced, although variations in purity may also partially explain the different trends.

Trafficking over the darknet does not yet involve major drug trafficking groups but remains a challenge for the authorities

Research to date has shown that most drug transactions on the darknet tend to amount to no more than $100, with few transactions exceeding

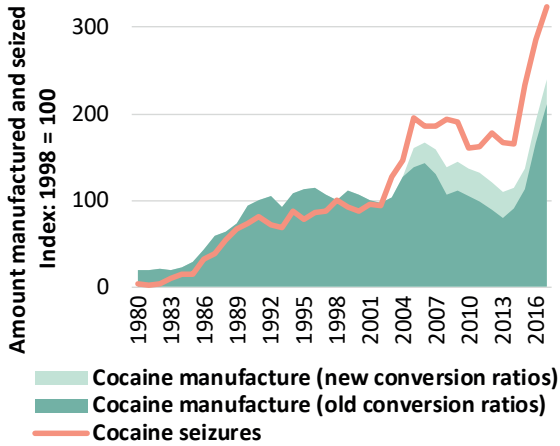
FIG. 31 Global opium production and global quantities of opium, morphine, heroin and opiates seized (in opium equivalents), 1980–2018



Sources: UNODC, annual report questionnaire for seizures and UNODC opium production estimates based on UNODC, opium poppy surveys, UNODC, annual report questionnaire and United States, Department of State, *International Narcotics Control Strategy Reports.*

Note: In general, a ratio of 10 kg of opium for 1 kg of morphine or heroin is used in the literature. However, UNODC analysis for Afghanistan, the world's largest opium-producing country, revealed a ratio of 7:1 in the second half of the 2000s, while new research has suggested a ratio of roughly 13:1 in recent years.

FIG. 32 Global cocaine manufacture and global quantities of cocaine seized, 1980–2018



Sources: UNODC, annual report questionnaire for seizures and UNODC cocaine manufacture estimates based on UNODC, coca cultivation surveys and United States, Department of State, *International Narcotics Control Strategy Reports.*

$1,000.[149] Europol also reports that darknet markets are still of limited importance to "top-tier" cybercriminals and organized criminal groups involved in large-scale drug trafficking activities, which may be because such groups use well-established logistics networks. In parallel, the frequent demise of darknet trading platforms in recent years, including the large number of exit scams,[150] may have reduced the attractiveness of darknet trafficking for some groups. In addition, unlike in operations in the "real world", the drug trafficking groups operating over the darknet are not in a position to effectively enforce drug deals by threatening their counterparts with violence.

Europol also reports that falsified pharmaceuticals are still mainly traded online over the surface web so as to reach a broader customer base than that reachable on the darknet.[151]

Law enforcement operations against major darknet markets seem to have had an impact

A number of national and international law enforcement operations aimed at taking down major darknet market platforms have been conducted in the past few years. Such operations have led to the closure of the first major darknet platform, Silk Road, in 2013; the international operation Onymous resulted in the closure of 33 darknet markets, including 9 major platforms such as Silk Road 2.0, Cloud 9 and Hydra, in November 2014; and the international operations Bayonet and GaveSac,

149 Kristy Kruithof and others, *Internet-facilitated Drugs Trade: An Analysis of the Size, Scope and the Role of the Netherlands*, Research Report Series, document No. RR-1607-WODC (Santa Monica, California, Rand Corporation, 2016), e-book.

150 EMCDDA and Europol, *Drugs and the Darknet: Perspectives for Enforcement, Research and Policy*, Joint publications series (Luxembourg, Publications Office of the European Union, 2017).

151 Europol, European Cybercrime Centre, *Internet Organised Crime Threat Assessment (IOCTA) 2018* (The Hague, 2018).

Darknet drug transactions: business model

The main characteristic and comparative advantage of darknet markets is their anonymity. Customers intending to buy drugs over the darknet typically access it through the onion router (TOR) in order to ensure that their identities remain concealed. Specialized darknet explorers, such as Grams, enable them to access their desired market platform, where goods are then typically paid for in cryptocurrencies, in particular bitcoins, which can be subsequently used to buy other goods and services, or exchanged for various national currencies. The delivery of drugs purchased on the darknet is generally carried out by public and private postal services without their knowledge, with parcels often being sent to anonymous post office boxes, including automated booths, or "packstations", for self-service collection. In jurisdictions with strong secrecy-of-correspondence laws, drugs are often dispatched in letters.

The main advantage of the darknet for both suppliers and customers is the anonymity of the transaction. It does not require physical contact and thus reduces the reticence of some customers to interact with drug dealers and removes the need for the customer to go to dangerous places to buy drugs. As darknet trafficking overcomes the need for sellers and buyers to be in the same location, organizations that traffic drugs over the darknet do not need the critical mass of customers necessary to sustain a localized market.

Darknet platforms bring anonymous suppliers and anonymous customers together. Drug purchasers also benefit from other customers' feedback about the quality of the drugs sold, which helps them evaluate the reliability of the supplier. Darknet platforms may also guarantee the payment of goods sold, typically by making use of escrow account systems, into which the customer must pay for the required goods into an escrow account but the finalization of the remuneration to the supplier is postponed until the goods have been received by the customer.

resulted in the shutdown of the then three largest darknet markets, AlphaBay, the Russian Anonymous Market place (RAMP) and Hansa in July 2017, which were estimated to have accounted at the time for 87 per cent of all darknet market activity.[152]

A further takedown of a major darknet market took place in late April 2019 when, following extensive undercover operations that lasted more than a year by law enforcement agencies in Germany, the Netherlands and the United States, in close cooperation with Europol, the Wall Street Market was dismantled and its main operators were arrested as they started to set a large exit scam in motion. Established in 2016, the Wall Street Market was considered the world's second-largest darknet market before its closure, and had some of the best security features at the time, such as a bitcoin multi-signature escrow system and a direct deposit escrow system, and an in-depth award and rating system for use by its customers. The market had more than 5,400 vendors, listing more than 63,000 illegal goods, including drugs, for sale and, reportedly, had more than 1.1 million customer accounts.[153]

Shortly before the takedown of Wall Street Market, another darknet market, Dream Market, founded in late 2013, which was considered the world's largest darknet market place following the takedown of AlphaBay in July 2017, announced that it would shut down on 30 April 2019. The reasons for the voluntary shutdown are, at the time of writing, not fully understood. One theory is that they might have been related to a number of cyberattacks on the market by competitors.

It has been argued that the takedown of major trading platforms in the past did not have long-lasting effects. Despite some short-term disruptions, customers and suppliers simply shifted to the next-largest trading platforms and overall drug sales

152 *Internet Organised Crime Threat Assessment (IOCTA) 2018.*

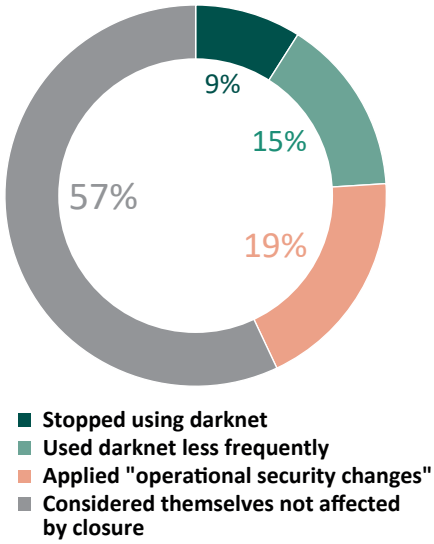
153 Germany, Federal Criminal Police Office (BKA), "Festnahme der mutmaßlichen Verantwortlichen des weltweit zweitgrößten illegalen Online-Markplatzes im Darknet „Wall Street Market" und Sicherstellung der Server des Marktplatzes", press release of 3 May 2019.

over the darknet continued increasing at a rapid pace.[154] However, results from the Global Drug Survey 2018, on the subject of the consequences of the 2017 shutdown of AlphaBay and Hansa, suggest that 15 per cent of users used darknet markets less frequently after the shutdown and 9 per cent stopped using the darknet for drug purchases.

After putting AlphaBay temporarily offline, the authorities allowed customers and vendors to move from AlphaBay to the Hansa platform which, at the time, was already run covertly by the Dutch National Police (assisted by authorities in Germany, Lithuania and other countries). This enabled the Dutch authorities to collect valuable information on high-value targets and delivery addresses that were subsequently shared with relevant law enforcement authorities worldwide, resulting in an effective decline in online drug transactions over the darknet. While some of the remaining vendors and customers migrated to the next-largest darknet drug market, Dream Market, the largest English-speaking platform (with listings rising by 20 per cent within three months), as well as to a number of smaller markets (with listings on smaller marketplaces rising three- to eightfold within three months), those remaining darknet markets as a group did not match the scale of AlphaBay, according to Europol.[155]

Several Europol member States have suggested that other consequences of those site closures include a growth in the number of single vendor shops, i.e., hidden service platforms set up by well-established vendors who are trusted and have a good reputation, allowing them to continue to do business with the clientele from the now-defunct markets. In addition, a growth in secondary, non-English darknet markets has been observed. Those markets cater, in general, to particular nationalities or language groups. [156] The delivery of drugs in letters, which may be screened when they cross borders but not within the country in which they were posted, may have also contributed to this phenomenon in countries with strict secrecy-of-correspondence laws. In parallel, some sophisticated open web marketplaces have also emerged, which are characterized by a high level of anonymity among all market participants and rapid replacements of arrested participants. Those marketplaces operate through the use of encrypted messages; existing postal services are used not only for drug deliveries but also for money transfers.

FIG. 33 Consequences of shutdown of AlphaBay and Hansa darknet markets, January 2018



Source: UNODC calculations based on Global Drug Survey 2018 data: detailed findings on drug cryptomarkets. Available from Dr. Monica Barratt, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Australia.

New research largely confirms existing knowledge of patterns of use of the darknet for drug purchases

Although research on darknet trafficking and purchases over the darknet is still limited and results are generally based on a few empirical studies, it is interesting to note that local studies tend to confirm existing results.

One study in 2017,[157] based on online interviews of drug users and the analysis of discussions in drug forums, involving 2,833 participants, mainly from Germany, revealed that drug users who purchase

154 See *Drugs and the Darknet.*

155 *Internet Organised Crime Threat Assessment (IOCTA) 2018.*

156 Ibid.

157 See Gerrit Kamphausen "Drogen online kaufen: quantitative and qualitative Daten aus einem deutsch-österreichischen Forschungsprojekt zu Drogen und organisierter Kriminalität", presented at Impuls 2018, Symposium for Innovative Drug Research, 19–21 September 2018.

Summary of previous research on drug trafficking over the darknet

Research conducted jointly by EMCDDA and Europol found that, as of August 2017, more than 60 per cent of all listings on the then five main darknet markets worldwide were related to the illicit selling of drugs, including drug-related chemicals and pharmaceuticals. Illicit sales of drugs alone accounted for almost half of all such listings. A 2018 update by Europol re-confirmed that the online trade in drugs continued to epitomize illicit trade on the darknet, accounting for the majority, if not the totality, of the listings on many darknet marketplaces.

Moreover, research has indicated substantial growth in drug sales over the darknet in recent years. Such transactions were found to have risen by around 50 per cent per year over the period October 2013 to January 2016. By comparison, the amounts of drugs reported seized globally increased by less than 4 per cent per year over the period 2013–2016.

However, analyses of the estimated value of transactions made over the darknet suggest that only modest drug sales have been made over the darknet to date. Joint Europol and EMCDDA research arrived at a figure of 172 million euros worldwide over the period 2011–2015, the equivalent of $44 million per year. Another study estimated monthly drug-related revenue of the then eight largest darknet markets to have amounted to $14–$25 million in early 2016; the equivalent of $170–$300 million per year, which amounts to 0.1–0.2 per cent of overall drug retail sales in the United States of America and the European Union combined. This structure does not appear to have changed in subsequent years. Indeed, Europol reported in 2018 that the proportion of drugs traded illicitly online remained small compared with the proportion traded through traditional distribution and trafficking networks.

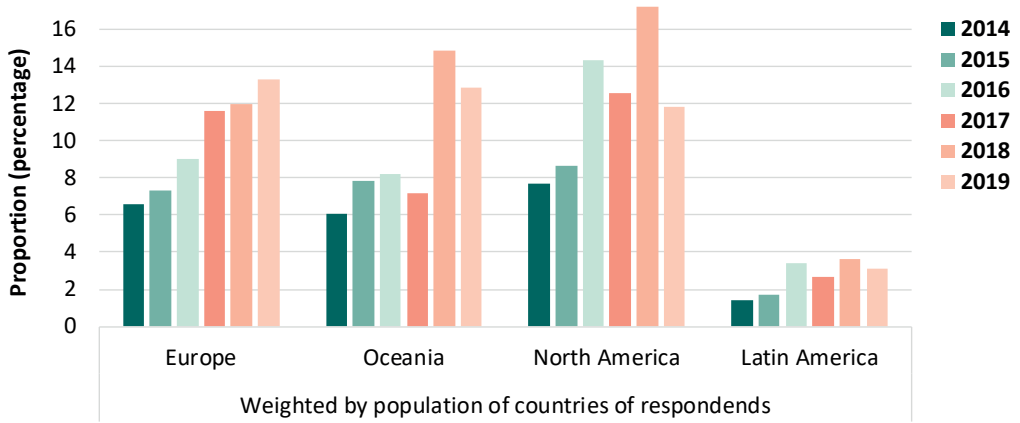
drugs over the darknet are quite young (median age: 24; range: 14–66), have a relatively high level of education and are socially well integrated. About 20 per cent of the drug users interviewed had some experience of online drug purchases, with a higher proportion among men (21 per cent) than among women (14 per cent). In Germany, the proportion of online purchases was highest for LSD (14 per cent), followed by cannabis and "ecstasy" (12 per cent each) and "speed" (amphetamine (9 per cent)). The study also suggested that purchases over the darknet are not yet frequent: almost 70 per cent of those who use the darknet for online purchases reported making just 1 to 5 drug purchases over the darknet, while only 11 per cent (in the case of cannabis) and about 5 per cent (in the case of "ecstasy", amphetamine and LSD) reported having made more than 20 purchases.

The main reasons for making drug purchases online were "greater choice" (55 per cent), "better quality" (54 per cent) and "lower price" (42 per cent). For 93 per cent of people purchasing drugs over the darknet, the rating given by others was very important in their decision to purchase drugs from certain vendors. To reduce the risk of detection, most used the onion router (74 per cent), bitcoin (66 per cent) and encrypted communication systems (48 per cent). By contrast, more sophisticated methods, such as multi-signature processes, encrypted log-in systems and bitcoin mixers were apparently not used frequently, at least not prior to 2017. Users also reported that their subjective level of security increased when using the darknet for drug purchases, in particular with regard to violence in drug markets (84 per cent), product quality and health risk (with 71 per cent perceiving that they obtained better-quality drugs), and the risk of apprehension by the police (with 38 per cent feeling more secure and 18 per cent less secure).

Purchases of drugs on the darknet are increasing in the long term, although they may have declined from 2018 to 2019

The Global Drug Survey, based on a non-representative convenience sample of about 100,000 self-selected persons per year from over 50 primarily developed countries, shows that the proportion of

FIG. 34 Proportion of surveyed Internet users using drugs (in the past year) who purchased drugs over the darknet, 2014–2019, selected regions and subregions



Source: UNODC calculations, based on Global Drug Survey 2019 data: detailed findings on drug cryptomarkets. Available from Dr. Monica Barratt, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Australia.

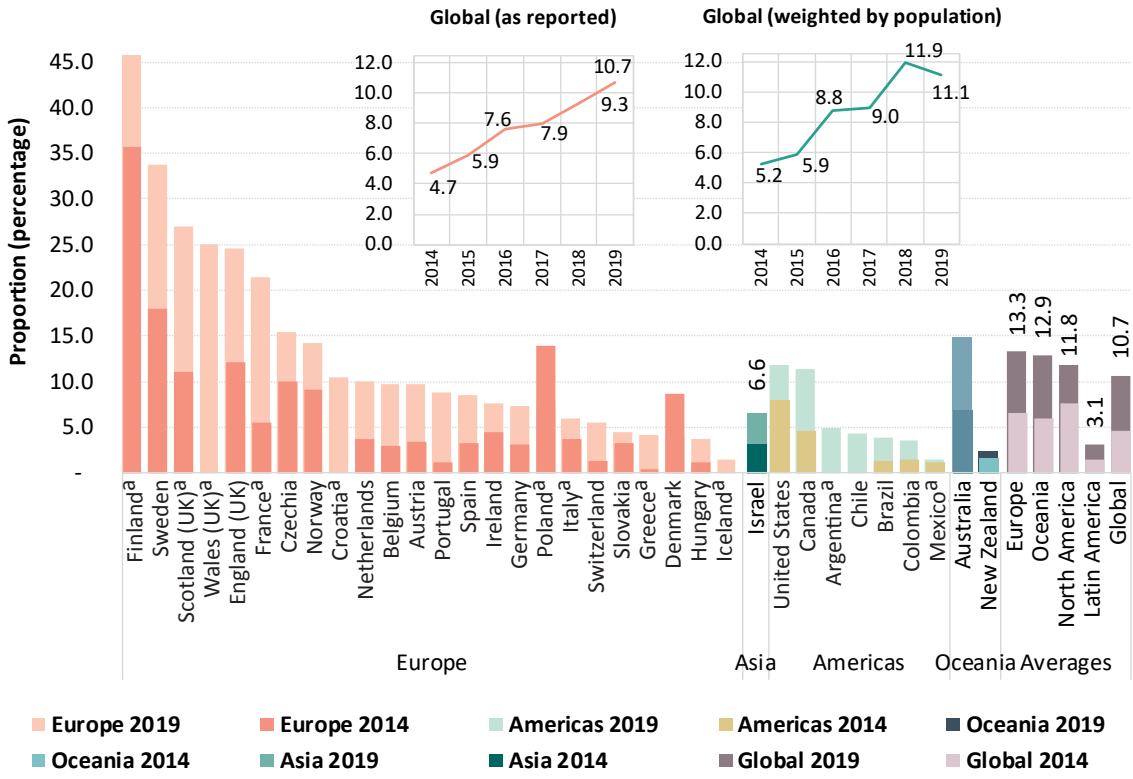
Note: For Europe, the average is based on information from respondents in 22 countries; in Oceania, the average is based on information from respondents in Australia and New Zealand; in North America, the average is based on information from respondents in Canada and the United States; and in Latin America, the average is based on information from respondents in Brazil, Chile, Colombia and Mexico.

Internet users using drugs who purchased drugs over the darknet doubled from 4.7 per cent in January 2014 to 10.7 per cent in January 2019, with increases found in all the subregions covered by the survey. Disaggregated data suggest, however, that the proportion of Internet users purchasing drugs over the darknet decreased between January 2018 and January 2019 in all subregions other than those in Europe. This may have been a consequence of the takedown of major darknet drug markets in July 2017. Once data are weighted by the size of each country, they also point to a decrease at the global level from 2018 to 2019.[158]

Data from the Global Drug Survey 2019 also suggest that the purchase of drugs over the darknet is still a very recent phenomenon, with nearly half (48 per cent) of people who reported purchasing drugs over the darknet in 2019 having started to use the darknet for such purposes in the previous two years and a further 29 per cent in the two preceding years.

158 UNODC calculations based on Global Drug Survey 2019 data. Available from Dr. Monica Barratt, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Australia.

FIG. 35 Proportion of surveyed Internet users using drugs (in the past year) who purchased drugs over the darknet, selected countries, 2014 and 2019



Source: UNODC calculations based on Global Drug Survey 2019 data: *detailed findings on drug cryptomarkets*. Available from Dr. Monica Barratt, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Australia.

Note: For Europe, the average is based on information from respondents in 22 countries; in Oceania, the average is based on information from respondents in Australia and New Zealand; in North America, the average is based on information from respondents in Canada and the United States; and in Latin America, the average based on information from respondents in Brazil, Chile, Colombia and Mexico.

[a] *Data from either 2019 or 2014 were not available and data from the nearest year were used as proxy.*

TABLE 2 Annual prevalence of the use of cannabis, opioids and opiates, by region and globally, 2017

Region or subregion	Cannabis						Opioids (opiates and pharmaceutical opioids)						Opiates					
	Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)		
	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper
Africa	**44,900**	**35,350**	**62,690**	**6.4**	**5.1**	**9.0**	**6,080**	**5,000**	**7,390**	**0.87**	**0.71**	**1.06**	**1,470**	**530**	**2,800**	**0.21**	**0.08**	**0.40**
East Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Africa	-	-	-	-	-	-	360	120	660	0.25	0.08	0.46	360	120	660	0.25	0.08	0.46
Southern Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West and Central Africa	26,760	25,700	29,420	10.0	9.6	11.0	-	-	-	-	-	-	-	-	-	-	-	-
Americas	**56,590**	**55,600**	**58,330**	**8.4**	**8.3**	**8.7**	**13,600**	**11,980**	**16,320**	**2.03**	**1.79**	**2.43**	**2,690**	**1,970**	**3,480**	**0.40**	**0.29**	**0.52**
Caribbean	1,040	580	2,090	3.6	2.0	7.2	-	-	-	-	-	-	-	-	-	-	-	-
Central America	880	820	990	2.9	2.7	3.3	-	-	-	-	-	-	-	-	-	-	-	-
North America	44,630	44,460	44,810	13.8	13.7	13.8	12,830	11,640	13,720	3.96	3.60	4.24	2,400	1,790	2,970	0.74	0.55	0.92
South America	10,040	9,740	10,440	3.5	3.4	3.6	580	250	2,180	0.20	0.09	0.76	240	150	330	0.08	0.05	0.12
Asia	**54,210**	**41,140**	**64,840**	**1.8**	**1.4**	**2.2**	**29,460**	**26,280**	**31,910**	**0.98**	**0.88**	**1.06**	**21,730**	**18,970**	**24,570**	**0.72**	**0.63**	**0.82**
Central Asia and Transcaucasia	1,670	640	2,410	2.9	1.1	4.2	540	480	600	0.93	0.83	1.03	520	470	580	0.90	0.80	1.00
East and South-East Asia	13,570	4,160	21,740	0.8	0.3	1.4	3,280	2,330	4,010	0.20	0.15	0.25	3,280	2,330	4,010	0.20	0.14	0.25
South-West Asia/ Near and Middle East	9,500	6,890	11,180	3.1	2.3	3.7	6,950	4,910	8,550	2.28	1.61	2.81	4,930	3,300	6,910	1.62	1.08	2.27
South Asia	29,470	29,430	29,520	2.9	2.9	2.9	18,680	-	-	1.81	-	-	12,990	-	-	1.26	-	-
Europe	**29,490**	**28,810**	**30,210**	**5.4**	**5.3**	**5.6**	**3,570**	**3,330**	**3,830**	**0.66**	**0.61**	**0.70**	**3,220**	**3,010**	**3,600**	**0.59**	**0.55**	**0.66**
Eastern and South-Eastern Europe	5,880	5,530	6,220	2.6	2.5	2.8	1,730	1,660	1,810	0.77	0.74	0.80	1,490	1,410	1,570	0.66	0.63	0.70
Western and Central Europe	23,610	23,270	23,990	7.4	7.3	7.5	1,840	1,670	2,020	0.58	0.52	0.63	1,740	1,590	2,030	0.54	0.50	0.64
Oceania	**2,840**	**2,790**	**2,950**	**10.9**	**10.7**	**11.3**	**650**	**570**	**730**	**2.48**	**2.18**	**2.79**	**40**	**40**	**70**	**0.16**	**0.14**	**0.28**
Australia and New Zealand	2,090	2,090	2,090	11.0	11.0	11.0	630	570	680	3.28	2.98	3.58	35	35	41	0.18	0.18	0.22
Melanesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micronesia	60	40	80	17.2	11.3	23.1	-	-	-	-	-	-	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GLOBAL ESTIMATE	**188,040**	**163,680**	**219,020**	**3.8**	**3.3**	**4.4**	**53,350**	**47,160**	**60,180**	**1.08**	**0.96**	**1.22**	**29,160**	**24,510**	**34,520**	**0.59**	**0.50**	**0.70**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

TABLE 3 Annual prevalence of the use of cocaine,[a] amphetamines[b] and "ecstasy", by region and globally, 2017

Region or subregion	Cocaine[a]						Amphetamines[b] and pharmaceutical stimulants						"Ecstasy"					
	Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)			Number (thousands)			Prevalence (percentage)		
	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper	Best estimate	Lower	Upper
Africa	**1,300**	**160**	**2,570**	**0.19**	**0.02**	**0.37**	**3,680**	**900**	**6,600**	**0.53**	**0.13**	**0.94**	**1,800**	**100**	**7,880**	**0.26**	**0.01**	**1.13**
East Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
North Africa	-	-	-	-	-	-	500	340	610	0.34	0.23	0.42	-	-	-	-	-	-
Southern Africa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West and Central Africa	250	1	633	0.09	0.00	0.24	-	-	-	-	-	-	-	-	-	-	-	-
Americas	**9,930**	**9,200**	**10,590**	**1.48**	**1.37**	**1.58**	**7,860**	**6,660**	**9,230**	**1.17**	**0.99**	**1.38**	**3,500**	**3,390**	**3,630**	**0.52**	**0.51**	**0.54**
Caribbean	180	80	330	0.62	0.29	1.15	250	20	700	0.87	0.05	2.42	60	30	100	0.23	0.10	0.36
Central America	200	100	310	0.66	0.34	1.02	60	30	100	0.21	0.09	0.31	50	20	100	0.17	0.07	0.33
North America	6,800	6,660	6,950	2.10	2.06	2.15	6,840	5,990	7,690	2.11	1.85	2.38	2,870	2,870	2,870	0.89	0.89	0.89
South America	2,740	2,360	3,000	0.95	0.82	1.04	710	630	740	0.25	0.22	0.26	510	470	550	0.18	0.16	0.19
Asia	**1,670**	**1,140**	**2,220**	**0.06**	**0.04**	**0.07**	**14,140**	**4,980**	**23,290**	**0.47**	**0.17**	**0.78**	**11,490**	**1,600**	**21,380**	**0.38**	**0.05**	**0.71**
Central Asia and Transcaucasia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
South-West Asia/Near and Middle East	70	30	130	0.02	0.01	0.04	-	-	-	-	-	-	-	-	-	-	-	-
South Asia	1,030	1,030	1,030	0.10	0.10	0.10	1,850	1,850	1,850	0.18	0.18	0.18	-	-	-	-	-	-
Europe	**4,740**	**4,460**	**5,140**	**0.87**	**0.82**	**0.95**	**2,900**	**2,350**	**3,480**	**0.53**	**0.43**	**0.64**	**4,060**	**2,930**	**6,970**	**0.54**	**0.39**	**0.93**
Eastern and South-Eastern Europe	500	340	720	0.22	0.15	0.32	710	410	1,040	0.32	0.18	0.46	1,310	250	4,040	0.31	0.06	0.95
Western and Central Europe	4,240	4,120	4,420	1.33	1.29	1.39	2,180	1,940	2,440	0.68	0.61	0.76	2,750	2,680	2,930	0.86	0.84	0.92
Oceania	**430**	**410**	**440**	**1.65**	**1.57**	**1.67**	**350**	**320**	**360**	**1.34**	**1.24**	**1.38**	**440**	**410**	**450**	**1.68**	**1.56**	**1.72**
Australia and New Zealand	420	410	420	2.20	2.15	2.23	250	250	250	1.34	1.34	1.34	410	400	430	2.17	2.12	2.23
Melanesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-	5	2	11	1.58	0.56	3.10	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GLOBAL ESTIMATE	**18,070**	**15,380**	**20,960**	**0.37**	**0.31**	**0.42**	**28,920**	**15,210**	**42,960**	**0.59**	**0.31**	**0.87**	**21,290**	**8,420**	**40,310**	**0.41**	**0.16**	**0.78**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

[a] *Cocaine includes cocaine salt, "crack" cocaine and other types such as coca paste, cocaine base, "basuco", "paco" and "merla".*
[b] *Amphetamines include both amphetamine and methamphetamine.*

TABLE 4 Estimated number and prevalence (percentage) of people who inject drugs and those living with HIV among this group, by region, 2017

Region or subregion	People who inject drugs							HIV among people who inject drugs				
	Estimated number			Prevalence (%)			Data coverage of population aged 15-64 years	Estimated number			Prevalence (%) Best estimate	Data coverage of estimated number of people who inject drugs
	Low	Best	High	Low	Best	High		Low	Best	High		
Africa	**450,000**	**810,000**	**2,140,000**	**0.06**	**0.12**	**0.31**	**57.8%**	**42,000**	**93,000**	**515,000**	**11.4**	**75.4%**
America	**1,860,000**	**2,370,000**	**2,870,000**	**0.28**	**0.35**	**0.43**	**86.1%**	**109,000**	**174,000**	**259,000**	**7.3**	**93.9%**
North America	1,560,000	1,790,000	2,020,000	0.48	0.55	0.62	100%	94,000	124,000	159,000	6.9	100%
Latin America and the Caribbean	300,000	580,000	850,000	0.09	0.17	0.25	73.2%	16,000	50,000	100,000	8.5	75.2%
Asia	**4,130,000**	**5,430,000**	**6,900,000**	**0.14**	**0.18**	**0.23**	**95.0%**	**449,000**	**667,000**	**925,000**	**12.3**	**98.0%**
Central Asia and Transcaucasia	400,000	450,000	530,000	0.69	0.78	0.91	93.6%	28,000	34,000	44,000	7.5	93.6%
East and South-East Asia	2,210,000	3,210,000	4,200,000	0.14	0.20	0.26	95.1%	181,000	320,000	482,000	10.0	98.7%
South-West Asia	570,000	750,000	950,000	0.29	0.38	0.48	100%	154,000	216,000	284,000	28.9	100%
Near and Middle East	40,000	90,000	270,000	0.03	0.08	0.25	39.0%	1,800	3,200	10,400	3.8	55.6%
South Asia	910,000	930,000	950,000	0.09	0.09	0.09	99.9%	84,000	93,000	105,000	10.0	99.9%
Europe	**2,350,000**	**2,570,000**	**2,990,000**	**0.44**	**0.48**	**0.55**	**90.0%**	**483,000**	**505,000**	**556,000**	**19.6**	**99.9%**
Eastern and South-Eastern Europe	1,760,000	1,800,000	1,860,000	0.80	0.82	0.84	100%	416,000	423,000	431,000	23.5	100%
Western and Central Europe	590,000	770,000	1,130,000	0.19	0.24	0.35	83.0%	67,000	82,000	126,000	10.6	99.9%
Oceania	**130,000**	**130,000**	**140,000**	**0.51**	**0.52**	**0.54**	**73.0%**	**1,300**	**1,600**	**1,700**	**1.2**	**73.0%**
Global	**8,930,000**	**11,320,000**	**15,030,000**	**0.18**	**0.23**	**0.30**	**87.9%**	**1,090,000**	**1,440,000**	**2,260,000**	**12.7**	**95.7%**

Source: Responses to the annual report questionnaire; progress reports of the Joint United Nations Programme on HIV/AIDS (UNAIDS) on the global AIDS response (various years); the former Reference Group to the United Nations on HIV and Injecting Drug Use; published peer-reviewed articles; and government reports.

Note: Prevalence of people who inject drugs is the percentage of the population aged 15–64 years.

TABLE 5 Illicit cultivation of opium poppy, 2007–2018 (hectares)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SOUTH-WEST ASIA												
Afghanistan (best estimate)	193,000	157,000	123,000	123,000	131,000	154,000	209,000	224,000	183,000	201,000	328,000	263,000
lower bound [a]			102,000	104,000	109,000	125,000	173,000	196,000	163,000	182,000	301,000	242,000
upper bound [a]			137,000	145,000	155,000	189,000	238,000	247,000	202,000	221,000	355,000	283,000
SOUTH-EAST ASIA												
Lao People's Democratic Republic (best estimate) [b]	1,500	1,600	1,900	3,000	4,100	6,800	3,900	6,200	5,700	..	..	..
lower bound [a]	1,230	710	1,100	1,900	2,500	3,100	1,900	3,500	3,900			
upper bound [a]	1,860	2,700	2,700	4,000	6,000	11,500	5,800	9,000	7,600			
Myanmar (best estimate) [b]	27,700	28,500	31,700	38,100	43,600	51,000	57,800	57,600[c]	55,500[c]	..	41,000	37,300[c]
lower bound [a]	22,500	17,900	20,500	17,300	29,700	38,249	45,710	41,400	42,800		30,200	29,700
upper bound [a]	32,600	37,000	42,800	58,100	59,600	64,357	69,918	87,300	69,600		51,900	47,200
SOUTH AND CENTRAL AMERICA												
Colombia (best estimate)	715	394	356	341	338	313	298	387	595	462	282	..
Mexico (best estimate) [b, d, f, h]	6,900	15,000	19,500	14,000	12,000	10,500	11,000	17,000	26,100	25,200	30,600	..
lower bound [a]									21,800	20,400	22,800	
upper bound [a]									30,400	30,000	38,400	

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
OTHER												
Other countries [e]	**5,885**	**10,509**	**9,479**	**12,221**	**16,462**	**12,282**	**13,293**	**11,522**	**10,597**	**68,139**	**14,589**	***45,471***
TOTAL (best estimate)	235,700	213,003	185,935	190,662	207,500	234,895	295,291	316,709	281,492	294,801	414,471	*345,771*
lower bound			**152,935**	**149,762**	**170,000**	**189,444**	**245,201**	**269,809**	**242,692**	**256,501**	**367,251**	***307,751[g]***
upper bound			**211,835**	**233,662**	**249,400**	**287,952**	**338,309**	**372,209**	**320,792**	**335,601**	**462,251**	***385,551[g]***
TOTAL (best estimate, rounded)	**235,700**	**213,000**	**185,900**	**190,700**	**207,500**	**234,900**	**295,300**	**316,700**	**281,500**	**294,800**	**414,500**	***345,800[g]***

Sources: Afghanistan, Lao People's Democratic Republic and Myanmar: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: Government of Colombia. Mexico: up to 2014, estimates derived from surveys by the Government of the United States of America (international narcotics control strategy reports); for 2015 and onwards, joint Mexico/UNODC project entitled "Monitoring of the illicit cultivation on Mexican territory".

Note: Figures in italics are preliminary and may be revised when updated information becomes available. Two dots indicate that data were unavailable. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

[a] *Bound of the statistically derived confidence interval.*
[b] *May include areas that were eradicated after the date of the area survey.*
[c] *Estimates for 2014, 2015 and 2018 included satellite image estimates for Kayah and Chin states. National estimates for these years are therefore not directly comparable with the other years.*
[d] *Up to 2014, the estimates for Mexico are sourced from the Department of State of the United States. The Government of Mexico does not validate the estimates provided by the United States as they are not part of its official figures and it does not have information on the methodology used to calculate them.*
[e] *Includes countries with low levels of cultivation (with less than 400 hectares in at least two of the last three years) and countries with indirect evidence of illicit cultivation (eradication of opium poppy) but no direct measurement. See table "Cultivation of opium poppy and production of opium in other countries, and eradication of opium poppy, 2008–2018".*
In addition, for 2016, 2017 and 2018, best estimates for countries for which data are not available (Lao People's Democratic Republic, Myanmar for 2016 and Mexico and Colombia for 2018) are included in this category.
Starting in 2008, a new methodology was introduced to estimate opium poppy cultivation and opium/heroin production in countries with no data on illicit cultivation of opium poppy. A detailed description of the estimation methodology is available in the online methodology section of the World Drug Report 2019.
[f] *The figures for 2015, as published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), have been revised owing to a statistical adjustment processed by UNODC. These figures are based on the estimation period July 2014–June 2015.*
[g] *Preliminary estimates for 2018; they may change as more country estimates will become available.*
[h] *The figures for 2016 and 2017 are based on the estimation periods July 2015–June 2016 and June 2016–July 2017 respectively.*

TABLE 6 Potential production of oven–dry opium, 2007–2018 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SOUTH-WEST ASIA												
Afghanistan (best estimate)	7,400	5,900	4,000	3,600	5,800	3,700	5,500	6,400	3,300	4,800	9,000	6,400
lower bound [a]				3,000	4,800	2,800	4,500	5,100	2,700	4,000	8,000	5,600
upper bound [a]				4,200	6,800	4,200	6,500	7,800	3,900	5,600	10,000	7,200
SOUTH-EAST ASIA												
Lao People's Democratic Republic (best estimate) [b, f]	9	10	11	18	25	41	23	92	..	..	..	..
lower bound [g]	7	4	7	11	15	18	11	51	84			
upper bound [g]	11	16	16	24	36	69	35	133	176			
Myanmar (best estimate) [b]	460	410	330	580	610	690	870	670[h]	647	..	550	520
lower bound			213	350	420	520	630	481	500		395	410
upper bound			445	820	830	870	1,100	916	820		706	664
LATIN AMERICA												
Colombia (best estimate)	14	10	9	8	8	8	11	12	17	13	7	..
Mexico (best estimate) [c, e]	150	325	425	300	250	220	225	360	*499*	*482*	*586*	..
lower bound									*279*	*261*	*292*	
upper bound									*693*	*684*	*876*	
OTHER												
Other countries (best estimate) [d]	58	187	178	224	290	172	182	198	178	888	272	*870*

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TOTAL (best estimate)	8,091	6,841	4,953	4,730	6,983	4,831	6,810	7,732	4,771	6,184	10,415	*7,790*
lower bound				**3,894**	**5,783**	**3,738**	**5,558**	**6,202**	**3,758**	**4,973**	**8,920**	***6,540***
upper bound				**5,576**	**8,214**	**5,539**	**8,052**	**9,419**	**5,784**	**7,391**	**11,907**	***9,070***
TOTAL best estimate (rounded)	**8,090**	**6,840**	**4,950**	**4,730**	**6,980**	**4,830**	**6,810**	**7,730**	**4,770**	**6,180**	**10,410**	***7,790***

Sources: Afghanistan, Lao People's Democratic Republic and Myanmar: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: National illicit crop monitoring system supported by UNODC. Since 2008, production was calculated based on updated regional yield figures and conversion ratios from the Department of State and the Drug Enforcement Administration of the United States of America. Mexico: up to 2014, estimates derived from surveys by the United States Government; for 2015 and onwards, UNODC estimate.

Note: Figures in italics are preliminary and may be revised when updated information becomes available. Two dots indicate that data were unavailable. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

[a] *Bound of the statistically derived confidence interval.*

[b] *Based on cultivation figures which may include areas eradicated after the date of the area survey.*

[c] *Up to 2014, the estimates are sourced from the Department of State of the United States. The Government of Mexico does not validate the estimates provided by the United States as they are not part of its official figures and it does not have information on the methodology used to calculate them.*

[d] *Includes countries with low levels of cultivation and countries with indirect evidence of illicit cultivation (eradication of opium poppy) but no direct measurement.* See table "Cultivation of opium poppy and production of opium in other countries, and eradication of opium poppy, 2008–2018".

In addition, for 2016, 2017 and 2018, best estimates for countries for which data are not available (Lao People's Democratic Republic, Myanmar for 2016 and Mexico and Colombia for 2018) are included in this category.

Starting in 2008, a new methodology was introduced to estimate opium poppy cultivation and opium/heroin production in countries with no data on illicit cultivation of opium poppy. These estimates are higher than the previous figures but have a similar order of magnitude. A detailed description of the estimation methodology is available in the online methodology section of the World Drug Report 2019.

[e] *The figures for 2015, as published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), have been revised owing to a statistical adjustment processed by UNODC. The Government of Mexico does not validate any opium production estimates. The production figures will be presented once yield data from the joint Mexico/UNODC project entitled "Monitoring of the illicit cultivation on Mexican territory" become available. Opium production figures estimated by UNODC for 2015–2017 are based on: (a) the area under cultivation, established by the joint project of the Government of Mexico and UNODC; (b) yield data, based on yield studies conducted by the United States in Mexico over the period 2001–2003. The opium production figures shown for 2015–2017 are preliminary and, for methodological reasons, are not comparable with the production figures over the period 1998–2014.*

[f] *Owing to the late timing of the monitoring activities in 2013, the survey may not have captured illicit cultivation in this year in its entirety.*

[g] *Bound of the statistically derived confidence interval, with the exception of 2015. The figures for 2015 represent independently derived upper and lower estimates; the midpoint was used for the calculation of the global total.*

[h] *Estimates for 2014, 2015 and 2018 include estimates for Kayah and Chin states. National estimates for these years are therefore not directly comparable with the other years.*

TABLE 7 Global manufacture of heroin from global illicit opium production, 2007–2018 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total potential opium production	8,091	6,841	4,953	4,730	6,983	4,831	6,810	7,723	4,771	6,180	*10,420*	*7,790*
Potential opium not processed into heroin	3,078	2,360	1,680	1,728	3,400	1,850	2,600	2,450	1,360	2,510	*1,100-1,400*	*1,225-1,525*
Potential opium processed into heroin	5,012	4,481	3,273	3,002	3,583	2,981	4,210	5,273	3,411	3,670	*9,020-9,320*	*6,265-6,565*
Total potential heroin manufacture	686	600	427	383	467	377	555	542	327	388	*692-1042*	*487-737*

Notes: The calculation shows the potential amount of heroin that could have been manufactured out of the opium produced in a given year; it does not take into account changes in opium inventories, which may add to or reduce the amount of heroin entering the market in that year. Afghanistan and Myanmar are the only countries for which the proportion of potential opium production not converted into heroin within the country is estimated. For all other countries, for the purposes of this table, it is assumed that all opium produced is converted into heroin.

The amount of heroin produced from Afghan opium is calculated using two parameters that may change: (a) the amounts of opium consumed as raw opium in the region; and (b) the conversion ratio into heroin. The first parameter's estimate is based on consumption data in Afghanistan and neighbouring countries. For the second parameter, from 2005 to 2013, a conversion ratio of opium to morphine/heroin of 7:1 was used, based on interviews conducted with Afghan morphine/heroin "cooks", on an actual heroin production exercise conducted by two (illiterate) Afghan heroin "cooks", documented by the German Bundeskriminalamt in Afghanistan in 2003 (published in Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11–31), and United Nations Office on Drugs and Crime (UNODC) studies on the morphine content of Afghan opium (12.3 per cent over the period 2010-2012, down from 15 per cent over the period 2000-2003). Starting from 2014, a different approach to the conversion was adopted, reflecting updated information on morphine content and a different method for taking purity into account. The revised approach uses a ratio of 18.5 kg of opium for 1 kg of 100 per cent pure heroin base (see Afghanistan Opium Survey 2014, UNODC, November 2014). This translates into a ratio of 9.2–12.9 kg (range: 9-14 kg) of opium for 1 kg of export-quality heroin of 50–70 per cent purity. For more details, see "Afghanistan Opium Survey 2017 – Challenges to sustainable development, peace and security" (UNODC, May 2018).

The amount of heroin produced in Myanmar in 2018 was calculated by subtracting the estimated unprocessed opium for consumption from the total opium production and using a conversion factor of 10:1. The unprocessed opium in Myanmar was estimated to be 125 tons in 2018, based on the total unprocessed opium in East Asia (TOCTA EAP report, 2013) and considering the relative cultivation levels of Lao PDR and Myanmar. For further information, please refer to the Methodology chapter (section 4.3) of the Myanmar Opium Survey 2018 (UNODC, January 2019).

For countries other than Afghanistan, a "traditional" conversion ratio of opium to heroin of 10:1 is used. The ratios will be adjusted when improved information becomes available. Figures in italics are preliminary and may be revised when updated information becomes available.

TABLE 8 Global illicit cultivation of coca bush, 2007–2017 (hectares)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	28,900	30,500	30,900	31,000	27,200	25,300	23,000	20,400	20,200	23,100	24,500
Colombia [a]	99,000	81,000	73,000	62,000	64,000	48,000	48,000	69,000	96,000	146,000	171,000
Peru [b]	53,700	56,100	59,900	61,200	64,400						
Peru [c]					62,500	60,400	49,800	42,900	40,300	43,900	49,900
Total	**181,600**	**167,600**	**163,800**	**154,200**	**155,600** [d]	**133,700**	**120,800**	**132,300**	**156,500**	**213,000**	**245,400**

Sources: Plurinational State of Bolivia: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: national illicit crop monitoring system supported by UNODC. Peru: national illicit crop monitoring system supported by UNODC.

Note: Different area concepts and their effect on comparability were presented in the World Drug Report 2012 (United Nations publication, Sales No. E.12.XI.1) (p. 41-42). Efforts to improve the comparability of estimates between countries continue; since 2011 the net area under coca bush cultivation on the reference date of 31 December was estimated for Peru, in addition to Colombia. The estimate presented for the Plurinational State of Bolivia represents the area under coca cultivation as interpreted on satellite imagery.

[a] *Net area on 31 December.*
[b] *Figures represent the area under coca cultivation as interpreted on satellite imagery.*
[c] *Net area on 31 December, deducting fields eradicated after satellite imagery was taken.*
[d] *The global coca cultivation figure was calculated with the "area as interpreted on satellite imagery" for Peru in 2011.*

TABLE 9 Reported eradication of coca bush, 2008–2017

	Method of eradication	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	manual	hectare	5,484	6,341	8,200	10,509	11,044	11,407	11,144	11,020	6,577	7,237
Colombia	manual	hectare	96,003	60,565	43,804	35,201	30,456	22,121	11,703	13,473	17,642	52,001
	spraying	hectare	133,496	104,772	101,940	103,302	100,549	47,052	55,532	36,494	0	0
Peru	manual	hectare	10,143	10,025	12,033	10,290	14,171	23,785	31,205	35,868	30,150	25,784
Ecuador	manual	hectare	12	6	3	14	..	..	..	..	..	..
		plants	152,000	57,765	3,870	55,030	122,656	41,996	15,874	45,266	20,896	10,100

Source: United Nations Office on Drugs and Crime annual report questionnaire and government reports.

Note: The totals for Bolivia (Plurinational State of) and Peru include voluntary and forced eradication. Reported eradication refers to the sum of all areas eradicated in a year, including repeated eradication of the same fields. Two dots indicate that data are not available.

TABLE 10 Potential manufacture of 100 per cent pure cocaine, 2007–2017 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	*104*	*113*	..	..	..	..	..	..	..	..	..
Colombia	683	471	488	424	384	333	290	442	646	1,053	1,379
Peru	*290*	*302*	..	..	..	..	..	..	..	..	..
Total based on "old" conversion ratios[a]	**1,077**	**886**	**920**	**862**	**815**	**738**	**662**	**746**	**936**	**1,378**	**1,743**
Total based on "new" conversion ratios[a]	***1,317***	***1,143***	***1,188***	***1,134***	***1,090***	***997***	***902***	***943***	***1,124***	***1,586***	***1,976***

Sources: Plurinational State of Bolivia: own calculations based on coca leaf yield surveys by the United Nations Office on Drugs and Crime (UNODC) (Yungas de La Paz) and scientific studies by the Drug Enforcement Administration of the United States of America (Chapare). Colombia: UNODC/Government of Colombia. Peru: own calculations based on coca leaf to cocaine conversion ratio from scientific studies by the Drug Enforcement Administration. Detailed information on the ongoing revision of conversion ratios and cocaine laboratory efficiency is available in the World Drug Report 2010 (United Nations publication, Sales No. E.10.XI.13), p. 249.

[a] *Conversion of areas under coca cultivation into coca leaf and then into cocaine hydrochloride, taking yields, amounts of coca leaf used for licit purposes and cocaine laboratory efficiency into account.*

Notes: Owing to a lack of updated conversion factors in Bolivia (Plurinational State of) and Peru, no final estimates of the level of cocaine production can be provided.

With respect to data published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), the following amendments have been made: (a) data for Colombia (2005-2008) have been revised in order to ensure a consistent implementation of revisions to the methodology, affecting the way coca production is calculated, for the entire time series 2005-2015 (for details, see Colombia Coca Cultivation Survey Report 2014 (UNODC, 2015) and Colombia Survey of territories affected by illicit crops 2015, Annex 3 (UNODC 2016)); (b) totals for 2009-2012 based on "old" and "new" conversion ratios have been revised to rectify minor inaccuracies in data processing.

Figures in italics are subject to revision. Two dots indicate that data are not available. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

TABLE 11 Cannabis cultivation, production and eradication, latest year available from the period 2012–2017

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2012	Afghanistan	resin	outdoors	10,000			1,400		
2017	Albania	herb	indoors					7,766	
2016	Albania	herb	outdoors					2,536,288	5,205
2017	Albania	herb	outdoors					66,927	500
2014	Algeria	resin	outdoors					2,522	
2016	Armenia	herb	outdoors	0.50 [a]	0.50	0.00		757	20
2017	Armenia	herb	outdoors	0.50 [a]	0.50	0.00		2,547	21
2016	Australia	herb	indoors					31,266	408
2017	Australia	herb	indoors					78,310	433
2016	Australia	herb	outdoors					22,257	1,021
2017	Australia	herb	outdoors	1.00 [a]	1.00	0.00		31,431	948
2015	Austria	herb	outdoors	3.00 [a]	3.00	0.00			
2013	Azerbaijan	herb	outdoors	23.95 [a]	23.95	0.00	263.96	8,469	151
2014	Azerbaijan	herb	outdoors	17.50 [a]	17.50	0.00		14,889	195
2017	Azerbaijan	herb	outdoors	0.25 [a]		0.25		336,791	
2015	Bahamas	herb	outdoors					17,270	
2012	Bangladesh	herb	outdoors					39,848	
2013	Bangladesh	herb	outdoors					35,012	
2014	Bangladesh	herb	outdoors					35,988	
2015	Bangladesh	herb	outdoors					39,967	
2016	Bangladesh	herb	outdoors					47,104	
2016	Belarus	herb	indoors						28
2017	Belarus	herb	indoors						32
2016	Belarus	herb	oudoors		123.80				1,945
2017	Belarus	herb	oudoors		125.90				2,283
2015	Belgium	herb	indoors					345,518	1,164
2017	Belgium	herb	indoors					415,728	1,175
2015	Belgium	herb	outdoors					4,885	93
2017	Belgium	herb	outdoors					848	59
2015	Belize	herb	outdoors					50,897	
2016	Bolivia (Plurinational State of)	herb	outdoors		14.60				35

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2017	Bolivia (Plurinational State of)	herb	outdoors		14.00				52
2016	Bosnia and Herzegovina	herb	indoors		39.00				
2017	Bosnia and Herzegovina	herb	indoors					1	1
2016	Bosnia and Herzegovina	herb	outdoors		1,680.00				
2017	Bosnia and Herzegovina	herb	outdoors	0.02 [a]	0.02	0.00		539	53
2014	Brazil	herb	outdoors		44.01			1,364,316	
2017	Brazil	herb	outdoors		117.51			1,910,451	604
2015	Bulgaria	herb	indoors					323	
2015	Bulgaria	herb	outdoors				37.77	9,488	
2017	Central African Republic	herb	outdoors	130.00	60.00	55	10.00	250,000	22
2016	Chile	herb	indoors					26,988	2,740
2017	Chile	herb	indoors					50,414	2,408
2016	Chile	herb	outdoors					58,950	264
2017	Chile	herb	outdoors					194,694	202
2016	China	herb	outdoors		9.80			1,390,000	
2016	Colombia	herb	outdoors		135.00				
2017	Colombia	herb	outdoors		173.71				
2016	Costa Rica	herb	indoors					678	5
2017	Costa Rica	herb	indoors						2
2016	Costa Rica	herb	outdoors		17.59			2,122,244	201
2017	Costa Rica	herb	outdoors						215
2016	Côte d'Ivoire	herb	outdoors					5	
2017	Côte d'Ivoire	herb	outdoors		0.25				1
2016	Czechia	herb	indoors					53,549	229
2017	Czechia	herb	indoors					50,925	305
2016	Czechia	herb	outdoors					4,111	
2017	Czechia	herb	outdoors					3,467	
2015	Denmark	herb	indoors/out-doors					14,560	97
2016	Denmark	herb	indoors/out-doors					13,217	105
2017	Denmark	herb	indoors/out-doors					34,801	65
2014	Dominican Republic	herb	outdoors	6.00 [a]	6.00	0.00	0.21	111	8
2016	Ecuador	herb	outdoors					224	34

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2017	Ecuador	herb	outdoors					397	10
2015	Egypt	herb/resin	outdoors		140.00				
2017	Egypt	herb/resin	outdoors		126.00				
2014	Eswatini	herb	outdoors	1,500.00	1,069.50	430.50		3,000,000	210
2017	Georgia	herb	indoors		0.01			186	91
2017	Georgia	herb	outdoors	0.02 [a]	0.02	0.00		93	19
2016	El Salvador	herb	outdoors			1.00		227	25
2014	France	herb	outdoors					158,592	837
2015	Germany	herb	indoors					135,925	786
2017	Germany	herb	indoors					85,226	573
2015	Germany	herb	outdoors					9,136	127
2017	Germany	herb	outdoors						95
2016	Greece	herb	indoors					16,554	
2017	Greece	herb	indoors					19,498	
2016	Greece	herb	oudoors					39,151	
2017	Greece	herb	oudoors					27,409	
2016	Guatemala	herb	outdoors		9.00			3,138,298	427
2017	Guatemala	herb	outdoors	3.50 [a]	3.81		1.61	6,033,345	150
2015	Guyana	herb	outdoors	20.00	9.40	10.60	1,000.00	419,700	19
2016	Honduras	herb	indoors					7	2
2016	Honduras	herb	outdoors					24,253	19
2017	Honduras	herb	outdoors	59.58 [a]	59.59	0.00			
2016	China, Hong Kong SAR	herb	indoors					329	1
2016	Hungary	herb	indoors					5,000	3
2016	Hungary	herb	outdoors					2,000	20
2013	Iceland	herb	indoors					6,652	323
2016	India	herb	outdoors		3,414.74				
2017	India	herb	outdoors		3,445.90			6,687,376	
2016	Indonesia	herb	outdoors	482.00 [a]	482.00	0.00			
2017	Indonesia	herb	outdoors	89.00 [a]	89.00	0.00		738,020	14
2016	Ireland	herb	indoors					7,273	
2017	Ireland	herb	indoors					9,046	50
2017	Italy	herb	indoors					56,125	1,161
2017	Italy	herb	outdoors					209,510	401

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2014	Italy	herb	indoors					51,534	639
2014	Italy	herb	outdoors					70,125	1,134
2012	Jamaica	herb	outdoors					456	382
2016	Kazakhstan	herb	outdoors	18.00 [a]	18.00	0.00		170,000	202
2017	Kazakhstan	herb	outdoors	12.30 [a]	12.30	0.00		930,774	91
2016	Kenya	herb	outdoors	12.00				8,747	46
2017	Kenya	herb	outdoors		0.10			4,662	
2015	Kyrgyzstan	herb	outdoors	5,014.00		5,014.00			
2016	Latvia	herb	indoors					557	35
2017	Latvia	herb	indoors					798	34
2016	Latvia	herb	outdoors					78	6
2017	Latvia	herb	outdoors					66	15
2015	Lebanon	herb	outdoors	3,500.00		3,500.00			
2017	Lebanon	herb	outdoors	40,772.00					
2016	Lithuania	herb	indoors						4
2017	Lithuania	herb	indoors						8
2017	Lithuania	herb	outdoors						7
2015	Madagascar	herb	outdoors		11.00			21,325	
2017	Madagascar	herb	outdoors		9.00			57,708	
2013	Malta	herb	indoors					27	
2016	Mexico	herb	outdoors		5,478.42		6,574.1		38,432
2017	Mexico	herb	outdoors		4,193.34		5,032.0		34,523
2013	Mongolia	herb	outdoors	15,000.00	4,000.00	11,000.00		4,000	4,000
2016	Morocco	plant	outdoors	47,000.00	395.00	46,605.00			
2017	Morocco	plant	outdoors	47,500.00	523.00	46,977.00			
2016	Morocco	herb	outdoors				35,652.83		
2017	Morocco	herb	outdoors				35,702.90		
2016	Morocco	resin	outdoors				713.00		
2017	Morocco	resin	outdoors				714.06		
2014	Myanmar	herb	outdoors	15.00	10.00	5.00			3
2016	Netherlands	herb	indoors					994,068	5,856
2017	Netherlands	herb	indoors					883,163	5,538
2016	New Zealand	herb	indoors					18,903	607
2017	New Zealand	herb	indoors					19,992	

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2016	New Zealand	herb	outdoors					104,725	
2017	New Zealand	herb	outdoors					19,559	
2014	Nicaragua	herb	outdoors		0.30		1,507.00	3,014	30
2016	Nigeria	herb	outdoors		718.78				65
2017	Nigeria	herb	outdoors		317.12				
2015	Norway	herb	indoors		0.04			4,000	30
2013	Panama	herb	indoors	0.50 [a]	0.50	0.00		37	2
2013	Panama	herb	outdoors	10.50 [a]	10.50	0.00		78,633	2
2016	Paraguay	plant	outdoors	1,298.50 [a]	1,298.50	0.00		5,656,266	4
2017	Paraguay	plant	outdoors		1,462.00			36,550,000	
2016	Paraguay	herb	outdoors				1,298.50		
2016	Paraguay	resin	outdoors				1.15		
2016	Peru	herb	outdoors		87.83			1,429,749	
2017	Peru	herb	outdoors		61.30			4,671,387	47
2016	Philippines	herb	outdoors		8.67			24,635,153	337
2017	Philippines	herb	outdoors		4.82			221,035	27
2016	Poland	herb	indoors					146,755	1,403
2017	Poland	herb	indoors					448	10
2016	Poland	herb	indoors/ outdoors					4,585	219
2017	Poland	herb	indoors/ outdoors						54
2017	Portugal	herb	indoors/ outdoors					22,910	158
2013	Republic of Korea	herb	outdoors					8,072	
2014	Republic of Moldova	herb	outdoors	100.00	59.00	41.00	10,000.00	200,548	
2017	Republic of Moldova	herb	outdoors	0.15	2.57			257,236	
2014	Republic of Moldova	herb	indoors		41.00				
2016	Romania	herb	indoors					1,433	41
2017	Romania	herb	indoors					1,875	46
2016	Romania	herb	outdoors		6.99				42
2017	Romania	herb	outdoors		1.90			4,905	32
2016	Russian Federation	herb	indoors		0.66				788
2017	Russian Federation	herb	indoors		0.87				1,990
2016	Russian Federation	herb	outdoors	7.61 [a]	7.61	0.00	68.64		1,143

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2017	Russian Federation	herb	outdoors	159.00 [a]	159.00	0.00	30.07		5,379
2015	Serbia	herb	outdoors				0.05		
2013	Sierra Leone	herb	outdoors	190.00		190.00		190	3
2016	Slovakia	herb	indoors					385	
2017	Slovakia	herb	outdoors	2.00 [a]	2.00	0.00		2,299	31
2014	Slovenia	herb	indoors					9,223	118
2017	Slovenia	herb	indoors					10,259	78
2014	Slovenia	herb	outdoors					1,844	
2015	Spain	herb	indoors					244,772	108
2015	Spain	herb	outdoors					135,074	44
2014	Sudan	herb	outdoors	8.00 [a]	8.00	0.00	345.00		
2017	Sudan	herb	outdoors	1,250.00 [a]	1,250.00	0.00	205.00		100
2014	Sweden	herb	indoors					10,000	56
2015	Sweden	herb	outdoors				182.00		
2017	Sweden	herb	outdoors					5,100	44
2016	Switzerland	herb	indoors					11,386	83
2017	Switzerland	herb	indoors					71,750	
2012	Tajikistan	herb	outdoors					2,180,121	
2016	Thailand	herb	outdoors	1.00 [a]	1.00	0.00	7.50		1
2015	Trinidad and Tobago	herb	outdoors		0.31			375,925	58
2012	Uganda	herb	outdoors	150.00	88.00	62.00			5
2016	Ukraine	herb	outdoors	91.00 [a]	91.00	0.00			
2017	Ukraine	herb	outdoors		166.90			4,600,000	
2016	United States of America	herb	indoors					406,125	1,865
2017	United States of America	herb	indoors					303,654	1,399
2016	United States of America	herb	outdoors					4,940,596	5,513
2017	United States of America	herb	outdoors					3,078,418	4,062
2016	Uruguay	herb	indoors					661	
2017	Uruguay	herb	indoors					1,926	
2016	Uzbekistan	herb	outdoors	0.20 [a]	0.20	0.00			586
2017	Uzbekistan	herb	outdoors	0.20 [a]	0.20	0.00			618
2015	Viet Nam	herb	oudoors		1.00				

Source: United Nations Office on Drugs and Crime annual report questionnaire, government reports and and international narcotics control strategy reports of the United States of America.

[a] *Area identified by the authorities for eradication.*

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) of the American Psychiatric Association, or the *International Classification of Diseases and Related Health Problems* (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPINGS

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)
- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine
- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Turkey and Kosovo
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands, Gibraltar and Holy See

Oceania (comprising four subregions):

- Australia and New Zealand: Australia and New Zealand
- Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
- Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
- Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

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The *World Drug Report 2019* is again presented in five separate parts that divide the wealth of information and analysis contained in the report into individual reader-friendly booklets in which drugs are grouped by their psychopharmacological effect for the first time in the report's history.

Booklet 1 provides a summary of the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 contains a global overview of the latest estimates of and trends in the supply, use and health consequences of drugs. Booklet 3 looks at recent trends in the market for depressants (including opioids, sedatives, tranquillizers and hypnotics), while Booklet 4 deals with recent trends in the market for stimulants (including cocaine, amphetamine-type stimulants and new psychoactive substances). Booklet 5 contains a review of recent trends in the market for cannabis and for hallucinogens. The section on cannabis also includes a review of the latest developments in the jurisdictions that have adopted measures allowing the non-medical use of cannabis.

As in previous years, the *World Drug Report 2019* is aimed at improving the understanding of the world drug problem and contributing towards fostering greater international cooperation for countering its impact on health, governance and security.

The statistical annex is published on the UNODC website: https://www.unodc.org/wdr2019

ISBN 978-92-1-148314-7

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United Nations Office on Drugs and Crime

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3 DEPRESSANTS

WORLD DRUG REPORT 2019

ISBN: 978-92-1-148314-7
eISBN: 978-92-1-004174-4
United Nations publication, Sales No. E.19.XI.9

Suggested citation:,
World Drug Report 2019 (United Nations publication, Sales No. E.19.XI.8).

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The content of this publication does not necessarily reflect the views or policies of UNODC or contributory organizations, nor does it imply any endorsement.

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PREFACE

The findings of this year's *World Drug Report* fill in and further complicate the global picture of drug challenges, underscoring the need for broader international cooperation to advance balanced and integrated health and criminal justice responses to drug supply and demand.

With improved research and more precise data from India and Nigeria – both among the 10 most-populous countries in the world – we see that there are many more opioid users and people with drug use disorders than previously estimated. Globally, some 35 million people, up from an earlier estimate of 30.5 million, suffer from drug use disorders and require treatment services. The death toll is also higher: 585,000 people died as a result of drug use in 2017.

Prevention and treatment continue to fall far short of needs in many parts of the world. This is particularly true in prisons, where those incarcerated are especially vulnerable to drug use and face higher risks of HIV and hepatitis C transmission. This gap represents a major impediment to achieving the Sustainable Development Goals and fulfilling the international community's pledge to leave no one behind.

Synthetic opioids continue to pose a serious threat to health, with overdose deaths rising in North America and trafficking in fentanyl and its analogues expanding in Europe and elsewhere. The opioid crisis that has featured in far fewer headlines but that requires equally urgent international attention is the non-medical use of the painkiller tramadol, particularly in Africa. The amount of tramadol seized globally reached a record 125 tons in 2017; the limited data available indicate that the tramadol being used for non-medical purposes in Africa is being illicitly manufactured in South Asia and trafficked to the region, as well as to parts of the Middle East.

The response to the misuse of tramadol illustrates the difficulties faced by countries in balancing necessary access for medical purposes while curbing abuse – with limited resources and health-care systems that are already struggling to cope – and at the same time clamping down on organized crime and trafficking.

Opium production and cocaine manufacture remain at record levels. The amounts intercepted are also higher than ever, with the amount of cocaine seized up 74 per cent over the past decade, compared with a 50 per cent rise in manufacture during the same period. This suggests that law enforcement efforts have become more effective and that strengthened international cooperation may be helping to increase interception rates.

The *World Drug Report 2019* also registers a decline in opiate trafficking from Afghanistan along the "northern" route through Central Asia to the Russian Federation. In 2008, some 10 per cent of the morphine and heroin intercepted globally was seized in countries along the northern route; by 2017 it had fallen to 1 per cent. This may be due in part to a shift in demand to synthetics in destination markets. The increased effectiveness of regional responses may also play a role.

Countries in central Asia, with the support of the United Nations Office on Drugs and Crime (UNODC), have committed considerable resources to strengthening regional cooperation through integrated UNODC country, regional and global programmes, as well as through platforms such as the Central Asian Regional Information and Coordination Centre, the Afghanistan–Kyrgyzstan–Tajikistan Initiative and the Triangular Initiative and its Joint Planning Cell. More research is needed, including to identify lessons learned and best practices that could inform further action.

International cooperation has also succeeded in checking the growth in new psychoactive substances. The Vienna-based Commission on Narcotic Drugs has acted swiftly in recent years to schedule the most harmful new psychoactive substances, and the UNODC early warning advisory has helped to keep the international community abreast of developments.

Political will and adequate funding remain prerequisites for success. Efforts by Colombia to reduce cocaine production following the 2016 peace deal

with the Revolutionary Armed Forces of Colombia (FARC) are a case in point. Alternative development initiatives have enabled farmers in central areas of the country previously under FARC control to abandon coca bush cultivation and join the licit economy. The result has been a drastic reduction in cocaine production. However, in other areas previously controlled by FARC, criminal groups have moved in to fill the vacuum and expand cultivation. Alternative development can succeed, but not without sustained attention and integration into broader development goals.

The successes identified amid the many, formidable problems that countries continue to face in grappling with drug supply and demand highlight that international cooperation works. The challenge before us is to make this cooperation work for more people.

International cooperation is based on agreed frameworks. Nearly every country in the world has reaffirmed its commitment to balanced, rights-based action based on the international drug control conventions. The most recent reaffirmation of that commitment is the Ministerial Declaration on Strengthening Our Actions at the National, Regional and International Levels to Accelerate the Implementation of Our Joint Commitments to Address and Counter the World Drug Problem, adopted at the ministerial segment of the sixty-second session of the Commission on Narcotic Drugs.

UNODC supports countries in putting their commitments into action through the application of international standards on the prevention and treatment of drug use disorders and HIV, as well as standards and norms on the administration of justice and the treatment of prisoners. We provide tailored technical assistance through our field offices and global programmes, and through toolkits and research.

I hope the *World Drug Report 2019* will shed further light on the world drug problem and inform international community responses. By working together and focusing attention and resources, we can help people get the services they need without discrimination, promote security and bring criminals to justice, safeguard health and achieve the Sustainable Development Goals.

Yury Fedotov
Executive Director
United Nations Office on Drugs and Crime

CONTENTS

Acknowledgements

The *World Drug Report 2019* was prepared by the Research and Trend Analysis Branch, Division for Policy Analysis and Public Affairs, United Nations Office on Drugs and Crime (UNODC), under the supervision of Jean-Luc Lemahieu, Director of the Division, and Angela Me, Chief of the Research and Trend Analysis Branch.

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The *World Drug Report 2019* benefited from the expertise of and invaluable contributions from INCB and from UNODC colleagues in all divisions. The Research and Trend Analysis Branch acknowledges the important contribution to Booklet 3 from its colleagues in the Laboratory and Scientific Section and in the Programme Development and Management Unit.

The Research and Trend Analysis Branch acknowledges the invaluable contributions and advice provided by the *World Drug Report* Scientific Advisory Committee:

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EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by crosshatch owing to the difficulty of showing sufficient detail.

The designations employed and the presentation of the material in the *World Drug Report* do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the *World Drug Report*, if any, should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2017 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

References to tons are to metric tons, unless otherwise stated.

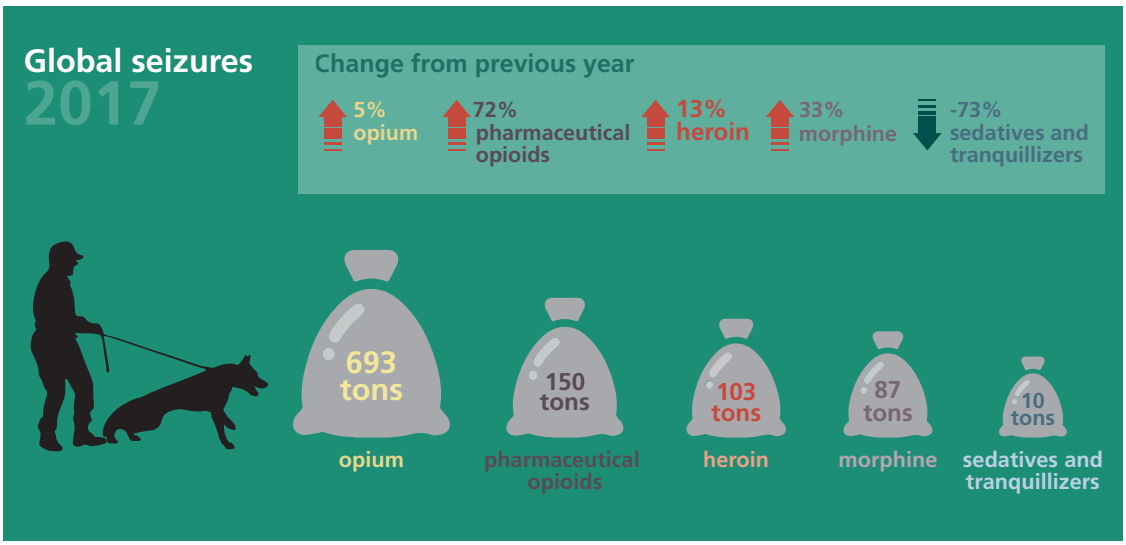
The following abbreviations have been used in the present booklet:

4-ANPP	4-anilino-*N*-phenethyl-4-piperidone
ANPP	4-anilino-*N*-phenethyl-4-piperidone
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
DEA	Drug Enforcement Administration of the United States
GABA	*gamma*-aminobutyric acid
GBL	*gamma*-butyrolactone
GHB	*gamma-hydroxybutyric acid*
INCB	International Narcotics Control Board
NPP	*N*-phenethyl-4-piperidone
NPS	new psychoactive substances
S-DDD	standard defined daily doses
UNODC	United Nation Office on Drugs and Crime
WHO	World Health Organization

SCOPE OF THE BOOKLET

This booklet, the third chapter of the *World Drug Report 2019*, provides an analysis of the market for substances that are broadly known as depressants of the central nervous system, which are primarily used to suppress, inhibit or decrease brain activity. The main classes of depressants discussed in this section include opioids, sedatives, tranquillizers and hypnotics. The sections on drug supply discuss both the depressants that have been diverted from licit sources and those that have been manufactured illicitly, while the sections on drug demand discuss the medical and non-medical use of depressants. To aid understanding of how depressants function in the human body, preliminary information is provided in the relevant sections.

While depressants of the central nervous system are used on their own for the psychoactive effect, they also figure prominently in the polydrug use patterns of people who use different drugs. One pattern of such use is the concurrent use of two or more depressants, such as the use of alcohol and benzodiazepines with opioids, to self-medicate or potentiate the effects of the opioid.[1, 2] In other instances, people who use depressants such as opioids as their primary drug, in response to market dynamics such as changes in the availability, purity and price of a drug, may readily switch to another opioid (for example, from oxycodone to heroin or vice versa) in order to maintain the same level of psychoactive experience.[3] Depressants are also used concurrently or sequentially with stimulants, either to overcome the side-effects of the other substance or to alleviate the adverse effects and severity of withdrawal symptoms.[4, 5]



1 Marc Vogel and others, "Treatment or 'high': benzodiazepine use in patients on injectable heroin or oral opioids", *Addictive Behaviors*, vol. 38, No. 10 (October 2013), pp. 2477–2484.

2 Takahiro Yamamoto and others, "Concurrent use of benzodiazepine by heroin users: what are the prevalence and the risks associated with this pattern of use?", *Journal of Medical Toxicology*, vol. 15, No.1 (January 2019), pp. 4–11.

3 See also *World Drug Report 2016* (United Nations publication, Sales No. E.16.XI.7).

4 Francesco Leri and others, "Understanding polydrug use: review of heroin and cocaine co-use" *Addiction* (2003), 98, pp. 7–22.

5 Keith A Trujillo and others, "Powerful behavioural interactions between methamphetamine and morphine", *Pharmacology, biochemistry and behaviour*, September 2011, vol. 99, No. 3, pp. 451–458.

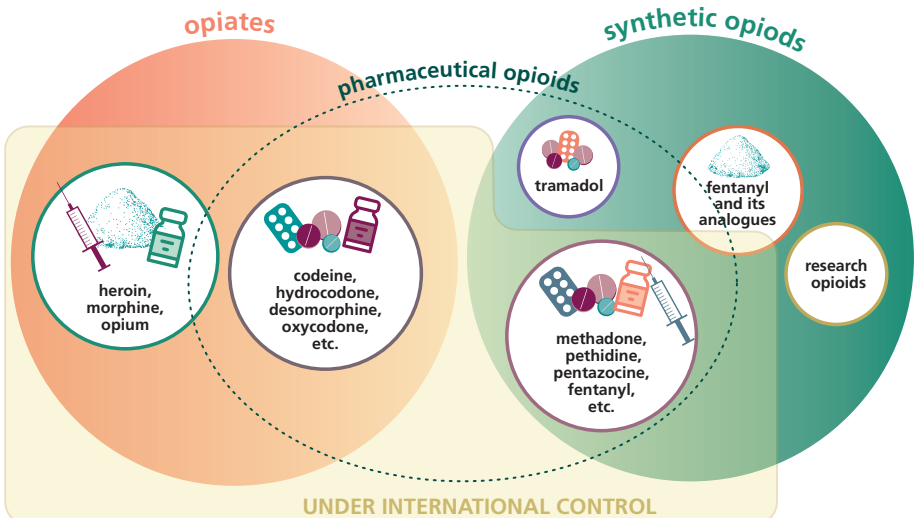
OPIOIDS

Introduction

"Opioids" is a generic term that refers both to opiates and their synthetic analogues.[6] Opiates are naturally occurring alkaloids found in the opium poppy, such as morphine, codeine and thebaine, as well as their semi-synthetic derivatives, such as heroin, hydrocodone, oxycodone and buprenorphine.[7, 8] The term "opioids" also includes synthetic opioids, which are structurally diverse substances. Some are used in medicine mainly for the management of pain resulting from conditions such as trauma, surgery and cancer, and are thus also referred to as pharmaceutical opioids, indicating their medical use.[9] Most pharmaceutical opioids are controlled under the Single Convention on Narcotic Drugs of 1961 with the exception of some, such as buprenorphine, which are controlled under the Convention on Psychotropic Substances of 1971. Tramadol is an example of a pharmaceutical opioid that is currently not controlled under the drug conventions.

Nowadays, most opium is illegally produced for either its non-medical consumption or for the illegal manufacture of morphine and its semi-synthetic derivative, heroin, which are substances controlled at the international level under the 1961 Convention. Opium and opium poppy straw are also produced legally for medical use, mostly for the manufacture of morphine, codeine and thebaine, as well as the subsequent manufacture of a number of semi-synthetic opioids, which also belong to the category of "opiates".

A number of synthetic opioid receptor agonists have been developed by the pharmaceutical industry over the past half century, both for medicinal use, including in veterinary medicine, with the aim of developing more effective medicines for pain management. A few of those substances proved to be effective and were later released into the pharmaceutical market,



Examples of synthetic opioids		
Alphaprodine	Anileridine	Bezitramide
Dextromoramide	Dextropropoxyphene	Diphenoxylate
Dipipanone	Fentanyl and some of its analogues such as alfentanil, remifentanil	Ketobemidone
Levorphanol	Methadone	Pethidine
Phenazocine	Phenoperidine	Pentazocine

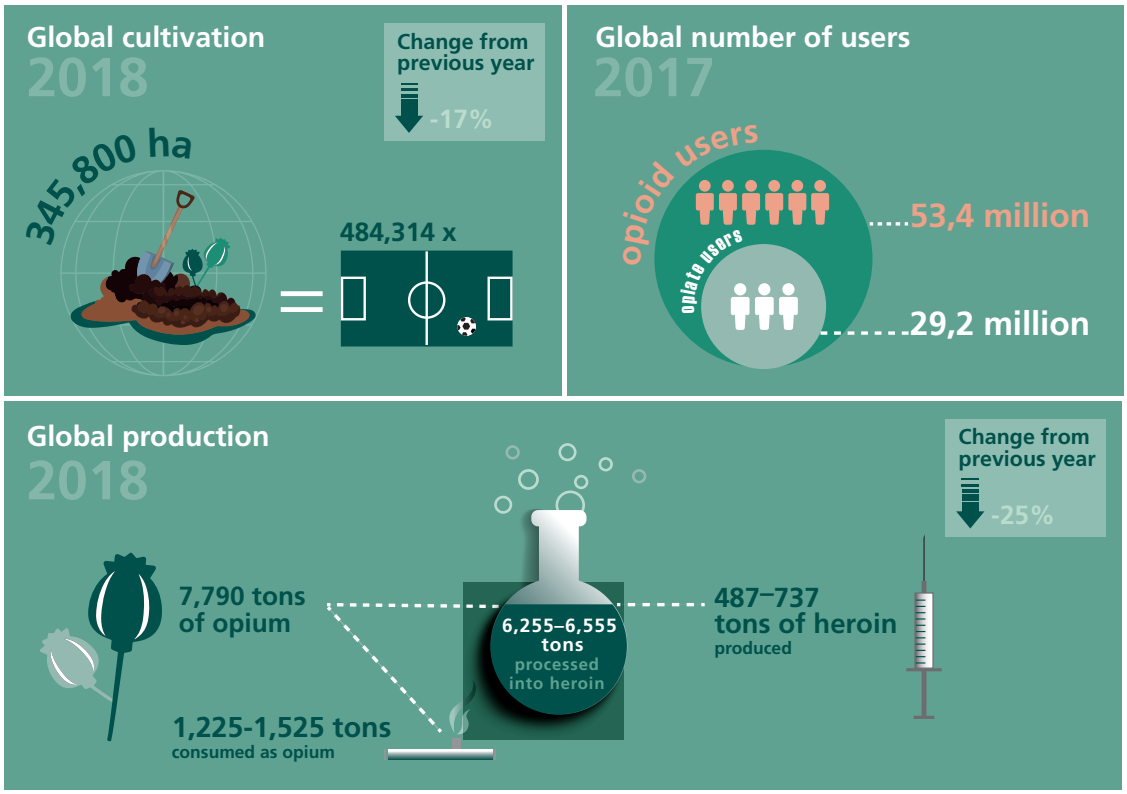
Note: These synthetic opioids are controlled under 1961 Convention, with the exception of pentazocine, which is controlled under the 1971 Convention.

6 WHO, *Lexicon of Alcohol and Drug Terms* (Geneva, 2014).

7 Ibid.

8 All opiates are controlled under the Single Convention on Narcotic Drugs of 1961, except for buprenorphine, which is controlled under Schedule III of the Convention on Psychotropic Substances of 1971.

9 See, for example, *World Drug Report 2017* (United Nations publication, Sales No. E.16.XI.6).



but many were not developed further and were never marketed as pharmaceutical opioids. Some discarded substances, including many fentanyl analogues and research opioids, such as U-47700 and AH-7921, are derived from information provided in the research publications of pharmaceutical companies and have now been introduced into the illicit drug markets. A few of those substances, such as furanylfentanyl and U-47700, have recently been placed under international control; substances not under international control are classified as NPS with opioid effects.

Opioid receptors

In the human body there are three types of opioid receptors – mu (μ), delta (Δ) and kappa (K) receptors – that mediate the activity of both exogenous opioids (drugs) and endogenous peptides such as the endorphins. Extensively present in the brain, brainstem and the spinal cord, opioid receptors are responsible for triggering brain reward systems and producing analgesia (pain relief) by decreasing pain transmission. The location of opioid receptors in specific parts of the body, such as the "respiratory centre" in the brain, intestines and the peripheral neurons, produces other effects such as suppression of breathing, constipation and sensations of warmth in association with the use of opioids.[10] In addition to these effects, opioid peptides impact a wide variety of other functions such as the regulation of stress responses, feelings, mood, learning, memory and immune functions.[11]

Pharmaceutical opioids for medical purposes

Pharmaceutical opioids have been used for the management and control of acute and chronic pain that can result from physical trauma and post-surgical care, and for palliative therapy for cancer and other chronic conditions. In addition, pharmaceutical opioids such as buprenorphine and methadone are on the WHO Model List of Essential Medicines for

10 UNODC, "Understanding the global opioid crisis", Global SMART Update, vol. 21 (March 2018).

11 WHO, *Neuroscience of Psychoactive Substance Use and Dependence* (Geneva, 2004).

the treatment of opioid use disorders. In some countries, heroin is used in a medical context as part of heroin-assisted treatment directed at people for whom other opioid treatment options have previously failed. Such treatments can help those people to remain in treatment, limit their use of street drugs, reduce their illegal activities, and possibly reduce their likelihood of overdose and mortality. In such heroin-assisted programmes, heroin is administered, preferably in a clinical setting as unadulterated, subsidized or even cost-free.[12] In addition, some of the opioids that are available over the counter are also used to relieve cough and severe diarrhoea.

TABLE 1 Pharmaceutical opioids and their use

Indication or condition	Main opioids used for treatment
Severe pain	Fentanyl, hydromorphone, morphine and pethidine
Moderate to severe pain	Buprenorphine, oxycodone and tramadol
Mild to moderate pain	Codeine, dihydrocodeine and dextropropoxyphene
Induce or supplement anaesthesia	Fentanyl and its analogues such as alfentanil and remifentanil
Cough suppressant	Codeine, dihydrocodeine, pholcodine and ethylmorphine
Gastrointestinal disorders such as diarrhoea	Codeine and diphenoxylate
Opioid use disorders	Buprenorphine and methadone

Source: INCB, *Narcotic Drugs: Estimated World Requirements for 2018 – Statistics for 2016* (E/INCB/2017/1), para. 36.

According to INCB, the consumption for medical purposes of pharmaceutical opioids that are under international control more than doubled from 1998 to 2010 (as expressed in defined daily doses), followed a stable trend from 2010 to 2014, then decreased by 10 per cent until 2017.[13]

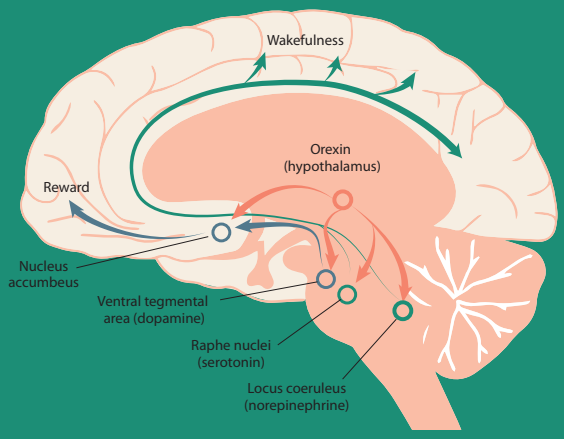
12 Marica Ferri, Marina Davoli and Carlos A. Perucci, "Heroin maintenance for chronic heroin-dependent individuals", *Cochrane Database of Systematic Reviews*, No. 12 (2011).

13 INCB, *Narcotics Drugs: Estimated World Requirements for 2019 – Statistics for 2017* (E/INCB/2018/2) and previous years.

Mesolimbic dopamine system

The mesolimbic dopamine system, involving the ventral tegmental area and the nucleus accumbens in the brain, is involved in the stimuli-reward-motivation processes.[a] Dopamine is the main neurotransmitter involved in this system and is responsible for mediating feelings of reward, pleasure motivation, drive and aggression, among others, and related stress conditions.

While cocaine and other amphetamine-like psychostimulants are known to block dopamine transporters, increasing dopamine concentration in the synaptic space, opioids have been reported to increase dopamine release in the nucleus accumbens, which is one of the principal mechanisms of the rewarding effects.[b]



The associative learning properties related to the release of dopamine strengthen the reinforcing effects of the drug as well as of the environment and emotional reactions associated with its use (stimuli and reward) and establish the compulsive conditioned behaviour known as "addiction".

a WHO, Neuroscience of Psychoactive Substance Use and Dependence (Geneva, 2004).

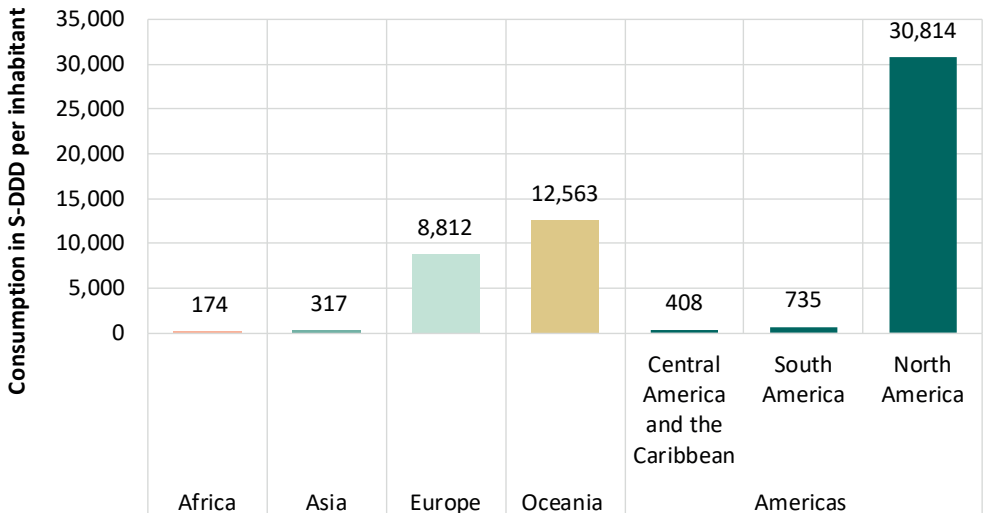
b Ide Soichrion and others, "Distinct roles of opioid and dopamine systems in lateral hypothalamic intracranial self-stimulation", *International Journal of Neuropsychopharmacology*, vol. 20, No. 5 (May 2017), pp. 403–409.

Increase in the medical use of fentanyl

Until the 1980s, fentanyl was mainly used for the induction of anaesthesia and, in combination with other substances, for anaesthesia in short-term surgical interventions. Since the early 1990s, the applications of the drug have proliferated. Controlled-release preparations (patches) of fentanyl have been introduced, as have new delivery methods, including a sublingual spray that helps cancer patients cope with severe pain. Increasingly used in all parts of the world for the treatment of severe pain, fentanyl in all its applications has created a rapidly growing licit demand for the expansion of the manufacture of the substance, which only came to a halt in recent years after reports of increasing numbers of overdose deaths attributed to the non-medical use of fentanyl and its analogues (notably in North America). This is despite the fact that, in many cases, the fentanyl and fentanyl analogues that actually caused the overdose deaths appear to have been illicitly manufactured and trafficked.[a]

[a] INCB, *Narcotic Drugs: Estimated World Requirements for 2018 – Statistics for 2016* (E/INCB/2017/2).

FIG. 1 Availability of pharmaceutical opioids for medical use (in defined daily doses per million inhabitants), average over 2015–2017



Source: INCB, *Narcotic Drugs: Estimated World Requirements for 2019 – Statistics for 2017* (E/INCB/2018/2).

Note: Consumption is measured in terms of reported wholesale sales to medical doctors, pharmacies and hospitals. For the purposes of the 1961 Convention, a drug is regarded as "consumed" when it has been supplied to any person or enterprise for retail distribution, medical use or scientific research.

The marked increase in the manufacture and sale of pharmaceutical opioids in the first decade of the new millennium increased the global per-capita consumption of those substances. The increase has been uneven, however, with extremely high levels of per-capita consumption in North America, particularly in the United States of America, while per-capita consumption of pharmaceutical opioids in the rest of the Americas, Africa and Asia remained relatively low over the period 2015–2017 (expressed in standard daily doses), suggesting a severe ongoing lack of accessibility to, and availability of, pain medication for the majority of the inhabitants of middle- and low-income countries.[14]

14 INCB, *Narcotics Drugs: Estimated World Requirements for 2019 – Statistics for 2017* (E/INCB/2018/2) and previous years.

In parallel to the strong increase in the production and sale of opioids for medical use, in North America there has been an increase in the non-medical use of pharmaceutical opioids and its adverse consequences, with an alarming increase in the number of fatal and non-fatal opioid overdose cases reported. Other subregions, such as North Africa, West and Central Africa and the Near and Middle East, have also reported the spread of the non-medical use of tramadol, an opioid not under international control. At the global level, concerns about the non-medical use of pharmaceutical opioids has created a challenge due to the concomitance of two opposing needs. On the one hand, the supply of and accessibility to pain medication are insufficient to treat pain in many regions (particularly in middle- and low-income countries) where people suffer disproportionately from a lack of medication for pain management; on the other hand, rigorous marketing and the over-prescription of opioids, particularly in North America, have had the consequences of iatrogenic addiction and fatal and non-fatal overdose cases in people requiring pain management. Some of these concerns have prompted measures, in North America, for example, aimed at gradually strengthening the overall control system for prescribing and dispensing pharmaceutical opioids and developing guidelines for the management of chronic pain.[15, 16]

Non-medical use of opioids

Overview of the use of opioids in different regions

In 2017, an estimated 53 million people (range 47–60 million) globally, or 1.1 per cent of the population aged 15–64, used opioids at least once in the past year, of whom half were past-year users of opiates (heroin and opium). The highest prevalence of non-medical use of opioids is estimated in North America, at nearly 4 per cent of the population aged 15–64, representing one quarter of global opioids users. The major opioids of concern in North America remain pharmaceutical opioids, hydrocodone, oxycodone, codeine and tramadol, which are used for non-medical purposes. The annual prevalence of opiates (mainly heroin) use in 2017 is also estimated to be higher (0.7 per cent) in North America than the global average of 0.6 per cent. The use of opioids in Australia and New Zealand also remains much higher than the global average (3.3 per cent of the adult population), with the non-medical use of pharmaceutical opioids also being the main opioids of concern.

As the prevalence of opioid use in Asia is also high, with nearly 1 per cent of the population estimated to be past-year users, the size of the population of the region means that more than half of global opioid users reside in Asia (29 million past-year opioid users). Within Asia, the Near and Middle East and South-West Asia have a high prevalence of opioid use (2.3 per cent of the adult population) with a total of almost 8.5 million past-year opioid users in those two subregions combined. The high prevalence of opioid use in those subregions is driven by use in Afghanistan, Iran (Islamic Republic of) and Pakistan; however, there are differences in the nature of the opioid problem in those countries. In Afghanistan, opium remains the predominant opioid, with nearly 70 per cent of opioid users reporting using opium, but there is also substantial use of heroin and non-medical use of pharmaceutical opioids.[17] In the Islamic Republic of Iran, nearly 90 per cent of opioid users report using opium or the condensed extract of smoked opium ashes (shireh).[18, 19] In Pakistan, opioid use is more mixed: in 2012, notwithstanding polydrug use among opioid users, of the estimated 2.7 million opioid users, 1.6 million also reported the non-medical use of pharmaceutical opioids, whereas over 1 million people were estimated to be regular opiate users, of whom the majority were heroin users (860,000) while one third were opium

15 See, for instance, Deborah Dowell, Tamara M. Haegerich and Roger Chou, "CDC guidelines for prescribing opioids for chronic pain", *Morbidity and Mortality Weekly Report*, vol. 65, No. 1 (March 2016), pp. 1–49.

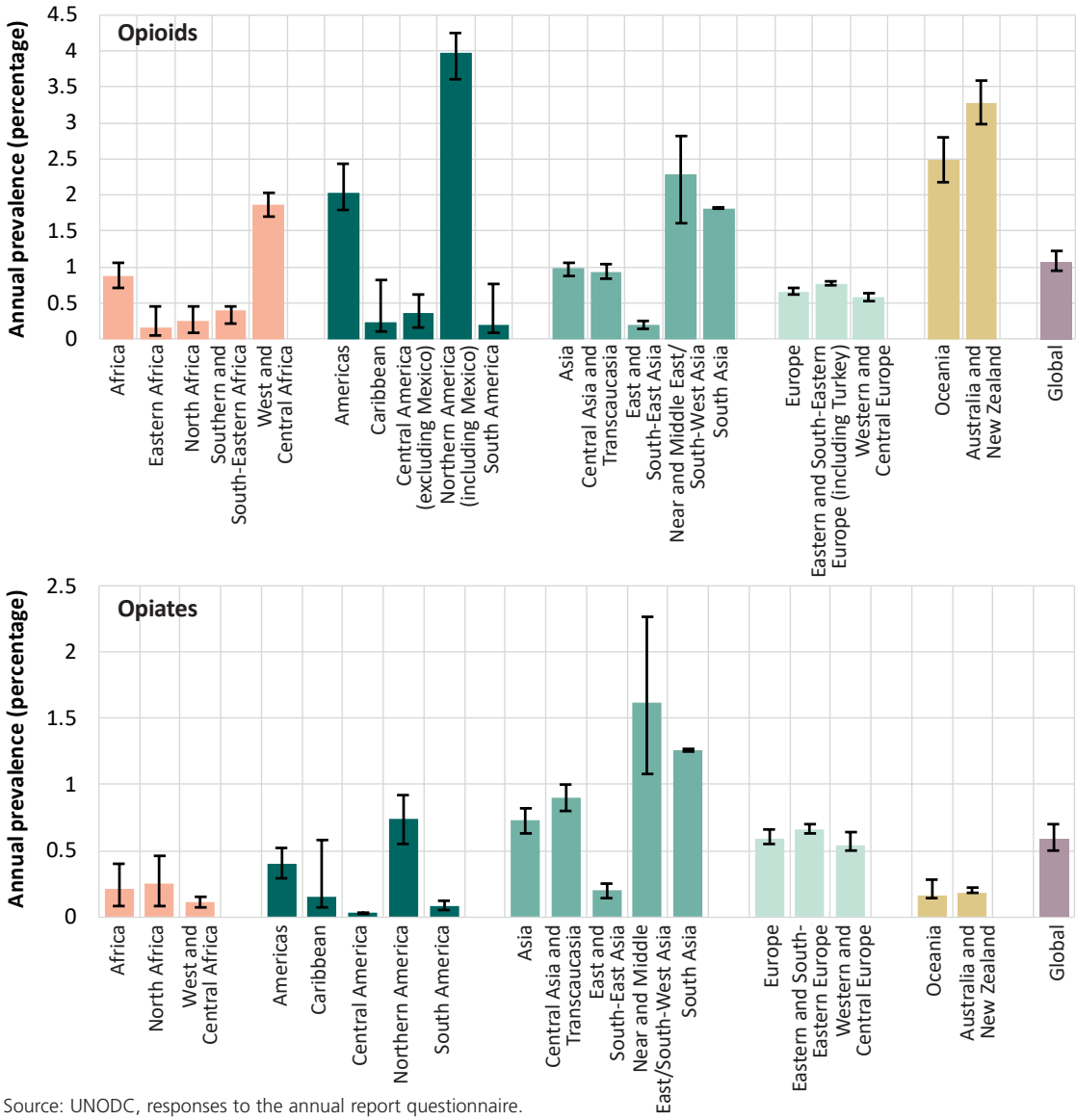
16 Nora D. Volkow and A. Thomas McLellan, "Opioid abuse in chronic pain: misconceptions and mitigation strategies", *New England Journal of Medicine*, vol. 374 (March 2016), pp. 1253–1263.

17 United Nations Office on Drugs and Crime (UNODC), "Drug use in Afghanistan: 2009 survey" (2009).

18 Official statistics reported by the Drug Control Headquarters, Islamic Republic of Iran.

19 Masoumed Amin-Esmaeili and others, "Epidemiology of illicit drug use disorders in Iran: prevalence, correlates, comorbidity and service utilization results from the Iranian Mental Health Survey", *Addiction*, vol 111, No. 10, (October 2016).

FIG. 2 Use of opioids and opiates, by region, 2017



Source: UNODC, responses to the annual report questionnaire.

users (320,000 users).[20] Although the use of opiates (heroin and opium) was much higher among men than among women in Pakistan, a similar proportion of men and women reported non-medical use of pharmaceutical opioids in the country.[21]

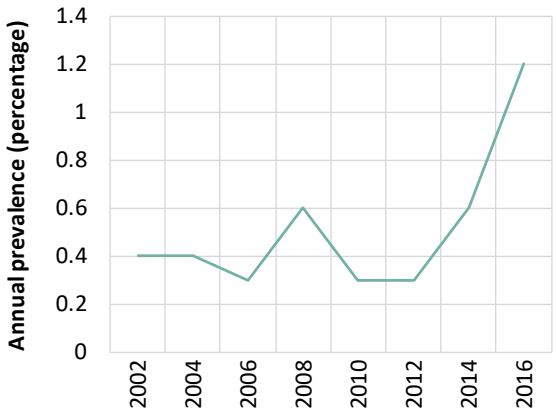
In South Asia, 1.8 per cent of the adult population or 19 million people, comprising 35 per cent of the global estimate, are past-year opioids users. These estimates are driven by India, where 2.1 per cent of the population aged 10–75, a total of 23 million people, are estimated to be past-year opioid users (2018).[22] Among opioids, heroin is the most prevalent substance, with a past-year prevalence of use of 1.1 per cent among the population aged 10–75,

20 UNODC and Pakistan, Ministry of Interior and Narcotics Control, *Drug Use in Pakistan 2013* (Islamabad, 2014).

21 Ibid.

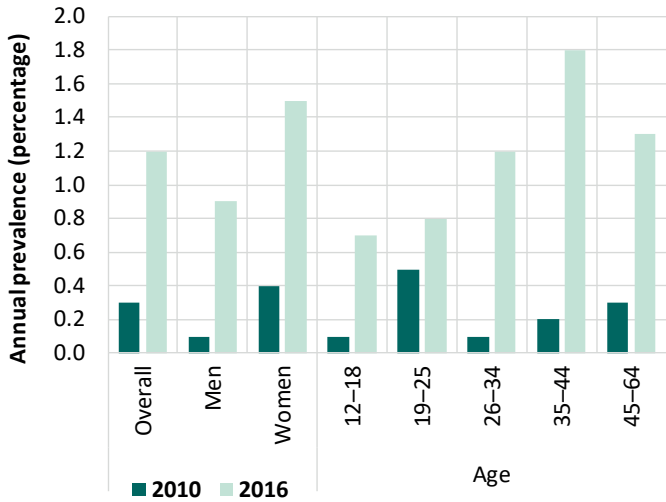
22 Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019).

FIG. 3 Non-medical use of pharmaceutical opioids, Chile, 2002–2016



Source: Chile, Ministry of the Interior and Public Security, Twelfth national study of drug use among the public of Chile, 2016 (*Décimo Segundo Estudio Nacional de Drogas en Población General de Chile*).

FIG. 4 Non-medical use of opioids by sex and age group, Chile, 2010 and 2016



Source: Chile, Ministry of the Interior and Public Security, Twelfth national study of drug use among the public of Chile, 2016 (*Décimo Segundo Estudio Nacional de Drogas en Población General de Chile*).

followed by non-medical use of pharmaceutical opioids, the prevalence of which is almost 1 per cent of the general population, and opium, the prevalence of which is almost 0.5 per cent. The past-year use of opioids is much higher among men in general (4 per cent of the male population) than women (0.2 per cent of the female population). Moreover, 1.8 per cent of adolescents aged 10–17 are estimated to be past-year opioid users. Of the total 23 million past-year opioid users, roughly one third, or 7.7 million people, are considered to be suffering from opioid use disorders in India. The states with the highest prevalence of opioid use in the country are those in the north-east (Mizoram, Nagaland, Arunachal Pradesh, Sikkim, Manipur), along with Punjab, Haryana and Delhi, in the north of the country.

West and Central Africa is also a subregion with a high prevalence of non-medical use of opioids (1.9 per cent or an estimated 5 million opioid users), which is dominated by the non-medical use of pharmaceutical opioids, in particular of tramadol. However, the lack of data on the prevalence of drug use in Africa makes it difficult to quantify its trends and level. In Nigeria, for example, the prevalence of pharmaceutical opioids in 2017 was estimated at 4.7 per cent of the population aged 15–64 (corresponding to an estimated 4.6 million past-year users), most of which can be attributed to the non-medical use of tramadol and, to a lesser extent, the non-medical use of codeine and morphine.[23]

The estimated prevalence of opioid use in Europe in 2017 was estimated at 0.7 per cent of the adult population, or nearly 3.8 million opioid users. In Western and Central Europe, where there are an estimated 2 million opioid users (0.6 per cent of the adult population), the use of opioids is dominated by heroin use. However, in recent years there have been indications of an increase in the non-medical use of pharmaceutical opioids in the subregion, with methadone, buprenorphine and fentanyl reported as the main pharmaceutical opioids misused.[24]

The non-medical use of opioids in South America in 2017 was estimated at 0.2 per cent and 0.4 per cent, respectively. Most of the countries in those subregions report the non-medical use of pharmaceutical opioids more than of heroin. Among countries in South America, in Chile, one country where recent information on non-medical use of pharmaceutical opioids has been reported, the past-year prevalence of non-medical use of pharmaceutical

23 UNODC, *Drug Use in Nigeria 2018* (Vienna, 2018).

24 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

opioids increased from 0.3 per cent in 2012 to 1.2 per cent in 2016. In 2016, the non-medical use of opioids was particularly high among women, although it has increased markedly among men as well as among the age groups 26–34 and 35–44.[25]

Drivers of the opioid epidemic in the United States

In the United States of America, the increase in the non-medical use of pharmaceutical opioids since 1997 has been attributed in part to a number of reasons, including the organization of the health system's structures for regulation and control of access to those drugs, prescription practices, the medical dispensing culture and patient expectations.[26] The number of opioid prescriptions dispensed from retail pharmacies in the United States increased from 174 million in 2000 to 256.9 million in 2009.[27] This increase in combination with high dosages and the longer duration of opioid prescriptions, primarily for the management of acute to chronic non-cancer pain, resulted in further diversion and misuse of pharmaceutical opioids and the development of opioid use disorders among users.[28, 29]

Attributed mainly to the availability of pure and cheaper heroin in the market, a gradual increase in heroin use has also been observed in parts of the United States since 2006. It has been hypothesised that the transition from the non-medical use of prescription opioids to the use of heroin, especially among young people, could be part of the progression of addiction in a subgroup of non-medical users of prescription opioids who considered it costly to maintain their patterns of consumption and switched to heroin use as they considered it more reliably available through drug dealers, more potent and more cost effective than pharmaceutical opioids.[30, 31]

Another major change in the market for pharmaceutical opioids in the United States occurred in 2010, when changes were made in the formulation of OxyContin® (oxycodone) one of the main opioids misused in the country. The new abuse-deterrent formulation of OxyContin® made it controlled release[32] and tamper proof so that it could no longer be crushed and snorted or injected.[33] However, the increase in heroin use in the United States had already begun and therefore preceded the changes introduced in policies and practices related to prescription opioids. Nevertheless, given the large number of non-medical users of pharmaceutical opioids, even a small proportion switching to heroin use has translated into a much larger number of people using heroin.[34]

Between 2002 and 2011, pooled data from the National Survey on Drug Use and Health showed that, among new initiates to heroin use, the likelihood of initiation of heroin use among people who had reported non-medical use of pharmaceutical opioids was 19 times higher than among those who had not reported non-medical use of pharmaceutical opioids. The rate of heroin initiation increased, as the frequency of past-year non-medical use of pharmaceutical opioids and among people with opioid use disorders increased. Conversely, only a small percentage (3.6 per cent) of those who had initiated the non-medical use of pharmaceutical opioids had initiated heroin use within the five-year period following their first non-medical use of pharmaceutical opioids.[35, 36]

25 Chile, Ministry of the Interior and Public Security, *Décimo Segundo Estudio Nacional de Drogas en Población General de Chile*.

26 Benikt Fischer and others, "Non-medical use of prescription opioids and prescription opioid-related harms: why so markedly higher in North America compared to the rest of the world?", *Addiction*, vol. 109, No. 2 (February 2014), pp.177–181,

27 Nicholas B. King and others, "Determinants of increased opioid-related mortality in the United States and Canada, 1990–2013: a systematic review", *American Journal of Public Health,* vol. 105, No. 8 (August 2014), pp. e32–e42.

28 Wilson M. Compton and others, "Relationship between nonmedical prescription-opioid use and heroin use", *New England Journal of Medicine*, vol. 374, No. 2 (January 2016), pp. 154–163.

29 Theodore J. Cicero and others, "Effect of abuse-deterrent formulation of OxyContin", *New England Journal of Medicine,* vol. 367, No. 2 (July 2012), pp. 187–189.

30 Compton and others, "Relationship between nonmedical prescription-opioid use and heroin use".

31 Daniel Ciccarone, "The triple wave epidemic: Supply and demand drivers of the US opioid overdose crisis", *International Journal of Drug Policy* (February 2019).

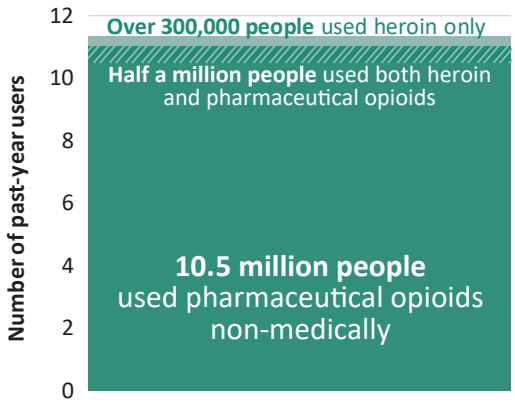
32 Controlled release formulation is designed to achieve optimal therapeutic levels over a defined period.

33 Cicero and others, "Effect of abuse-deterrent formulation of OxyContin".

34 Compton and others, "Relationship between non-medical prescription opioid use and heroin use".

35 Pradip K. Muhuri, Joseph C. Gfroerer and Christine Davies,

FIG. 5 The overlap between non-medical use of pharmaceutical opioids and heroin in the United States, 2017



Source: United States, Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health* (Rockville, Maryland, 2018).

In 2017, people who used heroin were also more likely to have previously used pharmaceutical opioids and switched to heroin use or continued to use both substances. Out of an estimated 11.1 million people in the United States in 2017 who had used opioids non-medically in the past year, 10.5 million of them (95 per cent) had primarily used pharmaceutical opioids and 5 per cent, about half a million, had also used heroin. This accounts for more than half of the estimated 886,000 people who had primarily used heroin in the past year.[37]

Up until 2013 sporadic outbreaks of fentanyl and fentanyl analogues containing heroin were causing deaths among heroin users in the United States.[38]

The appearance of fentanyls and their subsequent proliferation in the United States heroin market from 2013/14 added to the dynamics of the opioid market in that country. In subsequent years, the availability of heroin, synthetic opioids and other drugs containing fentanyls, their profitability, and increasing restrictions on prescription opioids, with a large population misusing pharmaceutical opioids, could have contributed further to the opioid epidemic in the United States. Fentanyls have been used as an adulterant of heroin and cocaine and also sold as falsified prescription opioids, such as oxycodone or hydrocodone and even as falsified benzodiazepines, to a large population of opioid users who were unaware of the actual contents.[39, 40] This has resulted in incidents with fatal consequences for opioid users, as seen in the dramatic increase in the number of fatal and non-fatal overdose cases in the United States.[41] It appears also that many people who have used fentanyl have often experienced or encountered a non-fatal overdose and therefore they consider that use of fentanyl should be avoided.[42, 43] However, demand for fentanyl itself has emerged within small groups of users and may be reported in certain areas where high-frequency users with tolerance to heroin and other opioids may seek out fentanyl.

The rapid expansion of fentanyl is also visible in seizures. Since 2014, the number of seized samples that the National Forensic Laboratory Information System of DEA in the United States has analysed and identified as fentanyl has been increasing considerably. In 2017, fentanyl represented a third of the pharmaceutical opioids that were identified in

"Associations of nonmedical pain reliever use and initiation of heroin use in the United States", CBHSQ Data Review (Rockville, Maryland, Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration, August 2013).

36 See also, Theodore J. Cicero and others, "Increased use of heroin as an initiating opioid of abuse: Further considerations and policy implications", vol. 87 (December 2018), pp 267–271.

37 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*, HHS Publication No. SMA 18-5068, NSDUH Series H-53 (Rockville, Maryland, Center for Behavioral Health Statistics and Quality, 2018).

38 Armenian and others, "Fentanyl, fentanyl analogues and novel synthetic opioids".

39 Ibid.

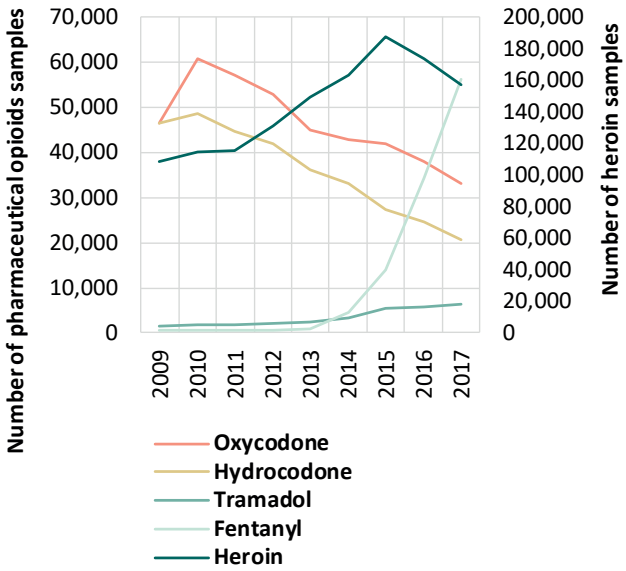
40 United States, Department of Justice, DEA, *2018 National Drug Threat Assessment* (October 2018).

41 Alana M. Vivolo-Kantor and others, "Vital signs: trends in emergency department visits for suspected opioid overdoses – United States, July 2016–September 2017", *Morbidity and Mortality Weekly Report,* vol. 67, No. 9 (March 2018).

42 Jennifer J. Carroll and others, "Exposure to fentanyl-contaminated heroin and overdose risk among illicit opioid users in Rhode Island: a mixed methods study", *International Journal of Drug Policy*, vol. 46 (August 2017), pp. 136–145.

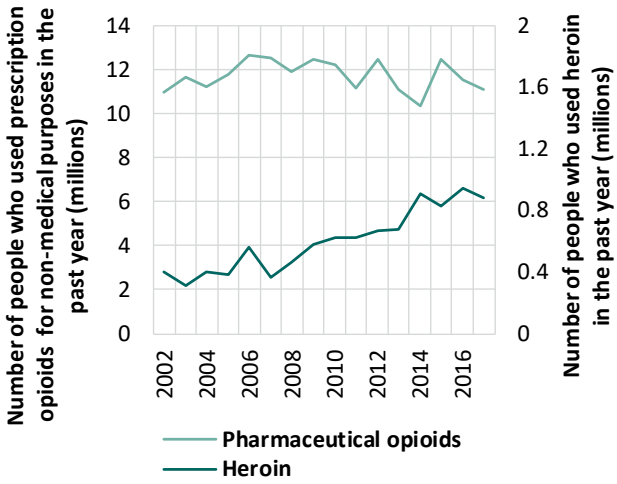
43 Tess M. Kilwein, Preston Hunt and Alison Looby, "A descriptive examination of nonmedical fentanyl use in the United States: characteristics of use, motives, and consequences", *Journal of Drug Issues*, vol. 48, No. 3 (April 2018), pp. 409–420.

FIG. 6 Number of substances submitted to and analysed by forensic laboratories, by type of drug identified, United States, 2009–2017



Source: United States, Department of Justice, DEA, National Forensic Laboratory Information System, reports for different years.

FIG. 7 Use of heroin and non-medical use of pharmaceutical opioids in the United States, number of people, 2002–2017



Source: United States, Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health* (2018).

different samples, but the spread of fentanyl use has been uneven in the United States. In 2017, fentanyl made up the highest percentage of seized pharmaceutical opioid samples in the North-east and the Midwest (55 per cent and 34 per cent, respectively),[44] which are regions with a comparatively higher prevalence of heroin use in the United States.

Trends in opioid use in the United States

According to survey data, in the United States, since the increase over the period 2013–2014, the prevalence of heroin use has remained relatively stable, at 0.3 per cent of the population aged 12 and older, or around 900,000 past-year users, while the annual prevalence of non-medical use of pharmaceutical opioids decreased from a peak in 2015 of 4.7 per cent of the population aged 12 and older (12.5 million past-year users) to around 4.2 per cent of the population aged 12 and older (11 million past-year users) in 2017.[45] Considering that the national household survey excludes institutionalized and homeless populations, which may have disproportionately higher rates of non-medical use of opioids, these estimates are probably an underestimation of the extent of such use in the United States. For example, the number of chronic heroin users[46] estimated in 2010 at 1.5 million[47] was more than twice the number of past-year users (620,000) or six times the number of past-month heroin users (240,000) estimated in the national household survey in the same year.

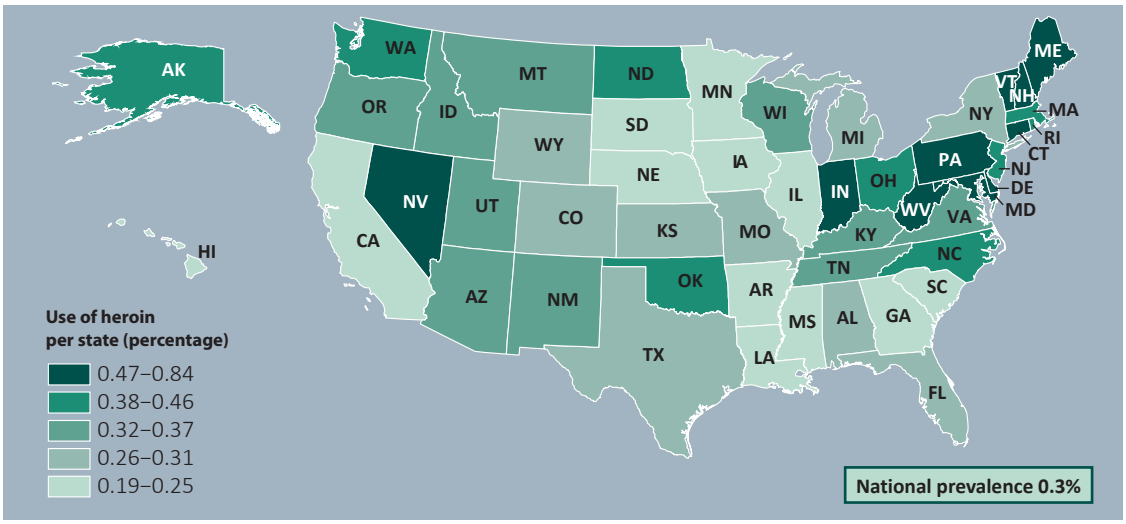
44 United States, Department of Justice, DEA, Diversion Control Division, "National Forensic Laboratory Information System: NFLIS-Drug 2017 annual report" (Springfield, Virginia, 2018).

45 Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*.

46 Defined as those who had used heroin for four days or more in the past month.

47 Jonathan P Caulkins and others, "Cocaine's fall and marijuana's rise: questions and insights based on new estimates of consumption and expenditures in US drug markets", *Addiction*, vol. 110, No. 5 (May 2015), pp 728–36.

MAP 1 Heroin use in the past year among the population aged 12 and older in the United States, by state, 2017

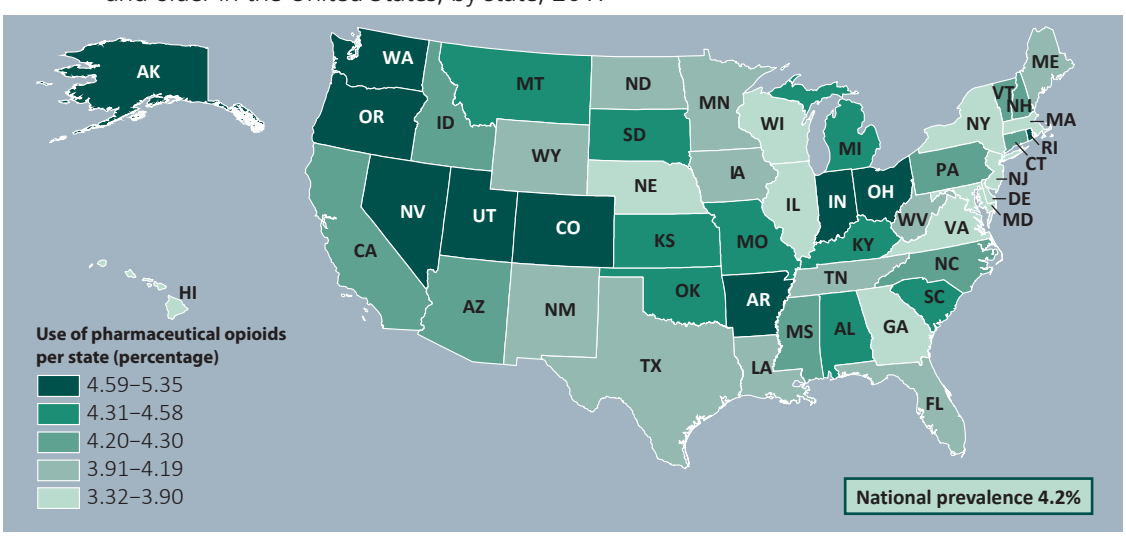


Source: SAMISHA, Center for Behavioral Health Statistics and Quality, NSDUH, 2016 and 2017.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

The extent of past-year non-medical use of pharmaceutical opioids and of heroin varies considerably from region to region in the United States, but heroin use seems more geographically concentrated than non-medical use of prescription opioids. Estimated past-year non-medical use of pharmaceutical opioids in the western part of the country (4.5 per cent of the population aged 12 and older) was higher in 2017 than the estimated national prevalence (4.2 per cent), while the estimated past-year prevalence of heroin use was higher in the north-eastern part of the country (0.45 per cent). Non-medical use of

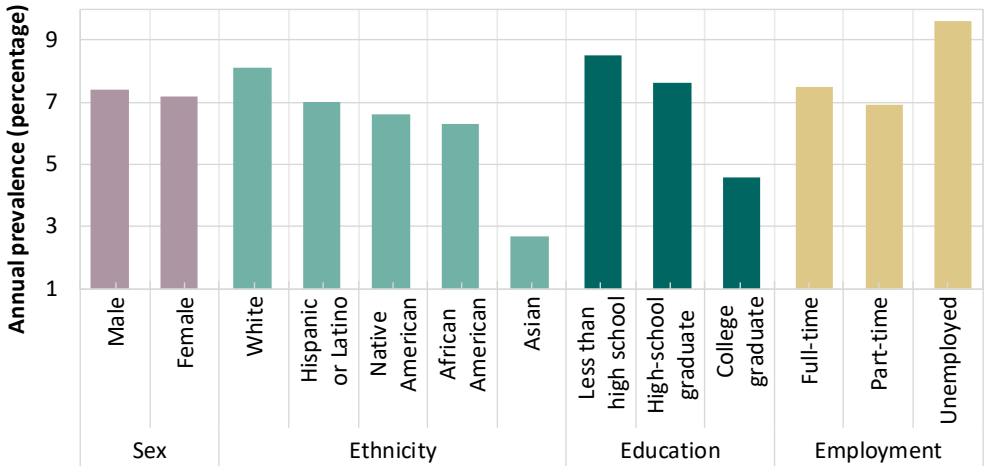
MAP 2 Non-medical use of pharmaceutical opioids in the past year among the population aged 12 and older in the United States, by state, 2017



Source: SAMISHA, Center for Behavioral Health Statistics and Quality, NSDUH, 2016 and 2017.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

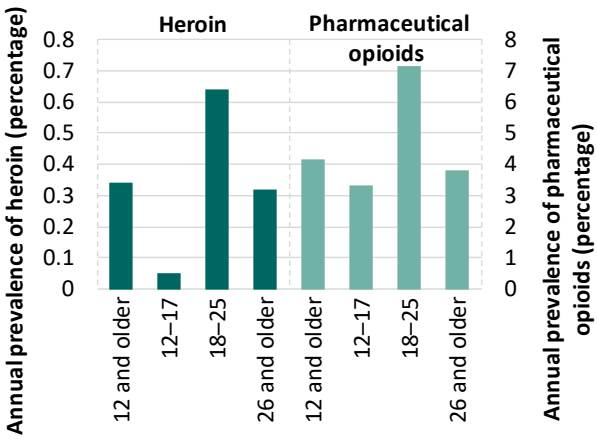
FIG. 8 Opioid use among people aged 18–25, by sociodemographic characteristics, United States, 2017



Source: United States, Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health* (2018).

pharmaceutical opioids was more prevalent in completely rural counties (4.3 per cent) and small metropolitan counties (4.3 per cent) than in large metropolitan (3.9 per cent) and urbanized counties (3.9 per cent).[48]

FIG. 9 Use of opioids in the United States, by age group, 2017



Source: United States, Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health* (2018).

48 United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

Opioid use in Canada

Information on the non-medical use of opioids in Canada is very limited. In 2017, around 85,000 people or nearly 0.4 per cent of the population aged 15–64 reported the past-year use of pharmaceutical opioids in order to "get high", with the highest rates being among young adults aged 20–24 (1.1 per cent) and young people aged 15–19 (0.8 per cent,).[49, 50] There is insufficient information on the extent of non-medical use of opioids among women and most age groups for the country.[51]

Trends and patterns of opioid use in Europe

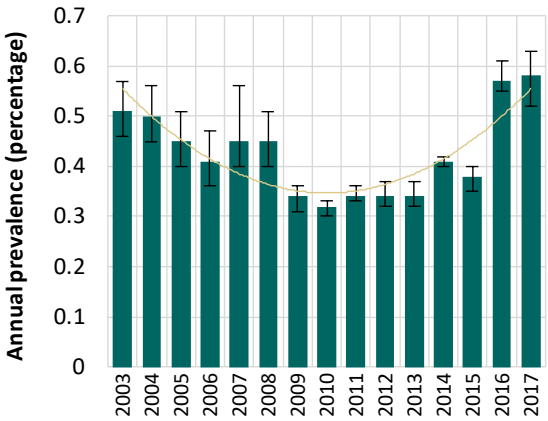
The annual prevalence of opioid use in Europe in 2017 is estimated at 0.7 per cent of the population aged 15–64, with heroin remaining the most commonly used opioid in the region. In Eastern and South-Eastern Europe, the prevalence of opiate use (heroin and opium) remains higher (0.7 per cent) than in other subregions, although there was a decrease in the preceding years in the overall use of

49 Canadian Tobacco, Alcohol and Drugs Survey, February–December 2017.

50 Owing to "high sampling variability", these results are to be interpreted with caution.

51 Owing to "high sampling variability", the prevalence among women and other age groups cannot be estimated.

FIG. 10 Opiate use in Western and Central Europe, 2003–2017



Source: UNODC, responses to the annual report questionnaire.

opioids in the subregion, driven primarily by the decrease in the number of registered opioid users in the Russian Federation. In the Russian Federation, which used to have a high prevalence of opioid use, the opioid market has started to change in recent years, and synthetic drugs other than opioids have started to dominate. The number of first-time entrants into treatment for opioid use (mostly heroin use) decreased by more than three quarters over the period 2006–2017.

In Western and Central Europe (mainly the States members of the European Union), heroin remains the main opioid used. Opioid use in the subregion remained stable over the past decade, but there have been signs of an increase or resurgence in the opioid market since 2013, with a major increase observed at the subregional level in the prevalence of opioid use in 2016. The increase was primarily the result of higher opiate use estimates reported by Poland, reflecting not only an increase in the prevalence of heroin use, from 0.1 per cent of the population aged 15–64 in 2014 to 1.1 per cent in 2016, but also high levels of use of "kompot" (1.7 per cent), a home-made heroin preparation manufactured from poppy straw in that country.

France, Germany, Italy, Spain and the United Kingdom, which account for some 60 per cent of the population of the European Union, are estimated to account for three quarters of the estimated high-risk opioid users in the European Union. Notwithstanding an increase in the prevalence of opioid use in Poland in 2016, opioid use in the rest of Western and Central Europe has remained quite stable over the past five years. In Western and Central Europe there seems to be an ageing cohort of opioid users who have been in contact with drug treatment services, and who present a range of chronic medical conditions associated with ageing as well as problems associated with long-term opioid use.[52, 53]

Apart from heroin, some of the most common opioids reported in countries in the European Union in recent years are opium, morphine, methadone, buprenorphine, tramadol and various fentanyl analogues.[54] Some of those opioids may be diverted from legitimate pharmaceutical supplies, while others are illicitly manufactured and sold. The non-medical use of pharmaceutical opioids in Western and Central Europe is mainly observed in the context of users seeking alternatives to heroin. The prevalence of the non-medical use of pharmaceutical opioids remains quite low in the subregion and is essentially linked to the diversion of methadone or buprenorphine for non-medical use among opioid users, including self-medication outside treatment settings.[55]

In recent years, an increasing number of countries in Western and Central Europe have reported that more than 10 per cent of opioid users who enter treatment do so for problems related to opioids other than heroin.[56] The non-medical use of buprenorphine is reported by around one third of opioid users in treatment in Czechia, while the non-medical use of methadone is reported by almost a quarter of opioid users in treatment in Denmark. In Cyprus

52 Anne Marie Carew and Catherine Comiskey, "Rising incidence of ageing opioid users within the EU-wide treatment demand indicator: the Irish opioid epidemic from 1996 to 2014", *Drug and Alcohol Dependence*, vol. 192 (November 2018), pp. 329–337.

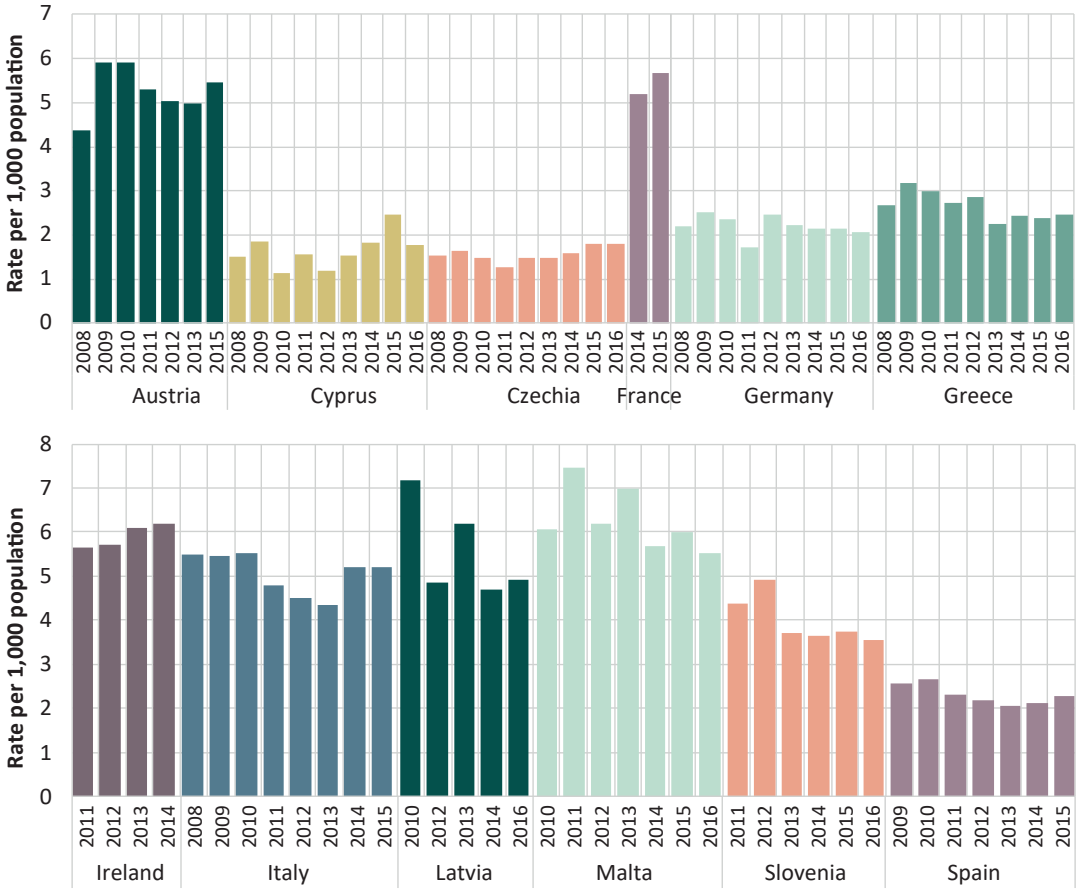
53 Anne Marie Carew and Catherine Comiskey, "Treatment for opioid use and outcomes in older adults: a systematic literature review", *Drug and Alcohol Dependence*, vol. 182 (January 2018), pp. 48–57.

54 EMCCDA, *European Drug Report 2018*.

55 Paul Griffiths, Michael Evans-Brown and Roumen Sedefov, "The misuse of psychoactive medicines: getting the balance right in complex system", *Addiction*, vol. 109, No. 2 (February 2014), pp. 182–188.

56 EMCCDA, *European Drug Report 2018*.

FIG. 11 Trends in high-risk opioid use in countries in Western and Central Europe



Source: EMCDDA, Statistical Bulletin 2018.

Note: High-risk opioid use is defined by EMCDDA as recurrent drug (opioid) use that causes actual harms (negative consequences) to the person (including dependence, but also other health, psychological and social problems) or places the person at a high probability/risk of suffering such harms.

and Poland, between 20 per cent and 30 per cent of opioid users are in treatment for problems related to the use of opioids such as oxycodone (Cyprus), and "kompot" in Poland.[57]

Over the past two decades, Estonia and Finland have experienced a transition from the use of heroin to the use of fentanyl (in the case of Estonia) and buprenorphine (in the case of Finland). Following a decline in heroin availability in Estonia, 3-methylfentanyl first appeared in the drug market in 2002. By 2005, 3-methylfentanyl and 3-methylfentanyl -fentanyl mixtures accounted for the majority of opioids seized and had replaced heroin use in the country.[58] Although national estimates of opioid use are not available for Estonia, the majority of people who inject drugs there reportedly inject 3-methylfentanyl and, since 2015, other fentanyl analogues such as furanylfentanyl, acrylfentanyl, carfentanil, and ocfentanil.[59]

In Finland, the proportion of clients entering treatment for non-medical use of buprenorphine

57 Ibid.

58 Ilkka Ojanperä and others, "An epidemic of fatal 3-methylfentanyl poisoning in Estonia", *International Journal of Legal Medicine,* vol. 122, No. 5 (September 2008), pp. 395–400.

59 EMCDDA, "Estonia: Estonia drug report 2018" (June 2018).

increased from 3 per cent in 1998 to more than one third in 2008[60] and as of 2018 accounted for almost all opioid users in treatment.[61] It is noteworthy that concurrent use of amphetamines and opioids is quite common among problem drug users in Finland. In 2014, a smaller proportion of clients in treatment also reported the use of the opium derivatives, tramadol, oxycodone, codeine preparations and fentanyl.[62]

Tramadol: the other opioid crisis

In recent years, tramadol, a synthetic opioid not under international control, has emerged as an opioid of public health concern in many subregions, in particular West, Central and North Africa. The non-medical use of tramadol is also reported in the Middle East and in other parts of Asia as well as in Europe and North America. In middle-income and developing countries, the non-medical use of pharmaceutical opioids such as tramadol seems to occur in contexts where health-care systems, including for the dispensing of prescription opioids, are not well developed or regulated, and where falsified or illicitly manufactured/trafficked pharmaceutical opioids are available to meet the demand for the non-medical use of the substances.[63]

In Egypt, for example, since 2000 there has been an increase in the non-medical use of tramadol among people entering treatment for drug use disorders. However, there has been a change in their source of supply, as most patients report having obtained tramadol from pharmacies in the early 2000s by bypassing the regulations for dispensing prescription painkillers, whereas over the next 10 to 15 years most reported resorting to the illicit market to obtain tramadol, which had been illicitly manufactured and smuggled into Egypt.[64] In a small-scale study conducted in the Islamic Republic of Iran, of the 162 people who had obtained tramadol from a pharmacy, more than half did not have a prescription. More than 60 per cent of those interviewed matched the criteria of dependence and had a prior history of substance use disorders, more than half were aged 18 or under and two thirds had taken at least two courses of tramadol, each for more than one week's duration, without a prescription during the previous year.[65]

Various studies suggest that the high level of non-medical use of tramadol in the above subregions is the result of the drug's easy availability in pharmacies and on the illicit ("black") market, its low price in comparison with controlled drugs and the perception among users, especially young people, that since tramadol is a medication, its use does not carry the same level of risk and stigma as the use of other controlled drugs.[66, 67, 68, 69]

National-level prevalence estimates of the non-medical use of tramadol for most countries in the Middle East and West and Central and North Africa are not available, but different studies and surveys in a few countries point to a widespread non-medical use of tramadol in those subregions.[70] For example, in 2016 in Egypt, 3 per cent of the adult population reported non-medical use of tramadol in the past year, while nearly 68 per cent of people in treatment for drug use disorders were being treated for

60 Hanna Uosukainen and others, "Twelve-year trend in treatment seeking for buprenorphine abuse in Finland", *Drug and Alcohol Dependence*, vol. 127, Nos. 1–3 (January 2013), pp. 207–214.

61 EMCDDA, "Finland: Finland drug report 2018" (June 2018).

62 Finland, National Institute for Health and Welfare, *Finland Drug Situation 2014*, report 3/2015 (Tampere, Finland, 2015).

63 *Report of the International Narcotics Control Board for 2012* (E/INCB/2012/1).

64 Samir Abou El Magd and others, "Tramadol misuse and dependence in Egypt and the UAE: user characteristics and drug-use patterns", *International Addiction Review,* vol. 2, No. 1 (April 2018), pp. 6–13.

65 Ebrahim Zabihi and others, "Potential for tramadol abuse by patients visiting pharmacies in Northern Iran", *Substance Abuse: Research and Treatment,* vol. 5 (2011), pp. 11–15.

66 Samir Abou El Magd and others, "Tramadol misuse and dependence in Egypt and the UAE: user characteristics and drug-use patterns", *International Addiction Review,* vol. 2, No. 1 (April 2018), pp. 6–13.

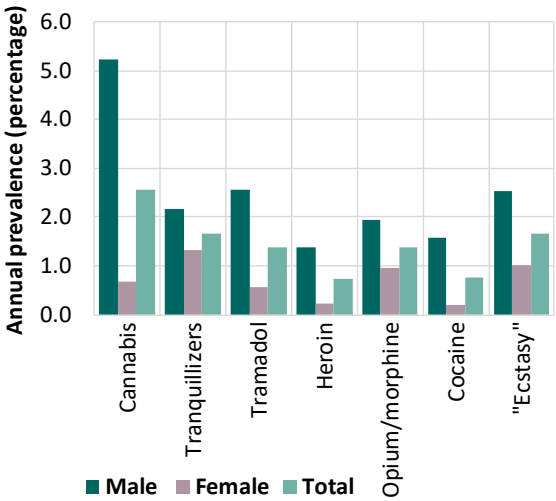
67 Saeed Bashirian, Majid Barati and Yadollah Fathi, "Prevalence and factors associated with tramadol abuse among college students in West of Iran: an application of the theory of planned behaviour", *Avicenna Journal of Neuropsychiatry*, vol. 1, No. 1 (August 2014), pp. 26–30.

68 Nabil R. Mohamed and others, "An epidemiological study of tramadol HCl dependence in an outpatient addiction clinic at Heliopolis Psychiatric Hospital", *Menoufia Medical Journal*, vol. 28, No. 2 (2015), pp. 591–596.

69 Medhat M Bassiony and others, "Adolescent tramadol use and abuse in Egypt", *The American Journal of Drug and Alcohol Abuse*, vol. 41, N0. 3 (2015), pp. 2016–211.

70 See *World Drug Report 2017* and *World Drug Report 2018* (United Nations publications, Sales No. E.18.XI.9).

FIG. 12 Drug use among secondary school students in Egypt, 2016



Source: MedSPAD 2016 in Egypt: Results of the First Mediterranean School Survey Project on Alcohol and other Drugs (MedSPAD) in Egypt.

tramadol use.[71] In the State of Palestine, among the estimated 10,000 high-risk male drug users in 2016 (1.8 per cent of the male population aged 15 and older) in Gaza, although polydrug use was a common phenomenon, almost all were using tramadol non-medically and almost half of those who did used it for 4–7 days per week. Tramadol was also the first substance that the majority had initiated at around 20 years of age.[72]

The non-medical use of tramadol is also reported as being quite common among young people and university students. A study among university students in Egypt (2012–2013) revealed that the past-year prevalence of the non-medical use of tramadol was 12.3 per cent, with the average age of onset being 17. The non-medical use of tramadol among university students was correlated with the use of cannabis and alcohol as most (85 per cent) tramadol users reported concurrent use of more than one substance.[73] Another study, in 2014, among college students (aged 18–30) in the west of the Islamic Republic of Iran showed that 11 per cent of respondents had used tramadol non-medically in the past year and that the majority of those users (75 per cent) had also used it in the past month.[74] A significant proportion of students also reported high levels of social pressure for the non-medical use of tramadol. The first ever survey among secondary school students in Egypt also showed a high prevalence of the non-medical use of tramadol as well as of the use of opium and morphine among 15–19-year-old students in 2016.[75]

Another study of people with tramadol use disorders in treatment in Egypt and the United Arab Emirates in 2018 showed that the non-medical use of tramadol was more common among young people aged 26–35, those with a primary or secondary school education (as opposed to little or no schooling, or with university education), and those who were currently unemployed or were skilled workers.[76]

A number of studies in the Middle East and North Africa have shown that tramadol is used non-medically for a number of reasons, including: for its pleasurable effect, i.e., to improve mood; for the prolongation of the duration of sexual intercourse; to delay the sensation of fatigue; because of the perception that its effects last long; and as self-medication for pain relief or the relief of symptoms of depression, anxiety or other comorbid psychiatric disorders.[77, 78] The non-medical use of

71 Egypt, General Secretariat of Mental Health of the Ministry of Health, "Report of the General Secretariat of Mental Health and Addiction Treatment on tramadol" (2017).

72 Palestinian National Institute of Public Health and UNODC, *Estimating the Extent of Illicit Drug Use in Palestine* (November 2017).

73 Medhat M. Bassiony and others, "Opioid use disorders attributed to tramadol among Egyptian university students", *Journal of Addiction Medicine,* vol. 12, No. 2 (March 2018), pp. 150–155.

74 Bashirian, Barati and Fathi, "Prevalence and factors associated with tramadol abuse among college students in West of Iran".

75 Egypt, General Secretariat of Mental Health and Addiction Treatment, and Pompidou Group, Council of Europe, *MedSPAD: Results of the First Mediterranean School Survey Project on Alcohol and Other Drugs (MedSPAD) in Egypt* (December 2017).

76 Samir Abou ElMagd and others, "Tramadol misuse and dependence in Egypt and the UAE: user characteristics and drug-use patterns", *International Addiction Review,* vol. 2, No. 1 (April 2018), pp 6–13.

77 Ibid.

78 Nabil R. Mohamed and others, "An epidemiological study of tramadol HCl dependence in an outpatient addiction clinic at Heliopolis Psychiatric Hospital", *Menoufia Medical Journal*, vol. 28, No. 2 (2015), pp. 591–596.

Non-medical use of opioids in Nigeria

The first ever comprehensive survey of drug use in Nigeria, in 2018, revealed that the past-year prevalence of the non-medical use of pharmaceutical opioids (mainly tramadol) was 6 per cent among men and 3.3 per cent among women. Corresponding to 4.6 million past-year users of pharmaceutical opioids aged 15–64 in Nigeria, the non-medical use of opioids was second only to the use of cannabis, which had an estimated prevalence of 10.8 per cent among the population aged 15–64.

The mean age of initiation of the non-medical use of pharmaceutical opioids (mainly tramadol) was 21 and, on average, past-year opioid users had regularly used opioids for 12 years. Nearly 80 per cent of all opioid users were daily or near-daily users and spent around $3.60 per day on pharmaceutical opioids, compared with $10 on heroin. The past-year prevalence of the non-medical use of pharmaceutical opioids (tramadol, codeine, morphine) was high among almost all age groups but was particularly high among people aged 35–39 and 60–64. Polydrug use was also a common feature among opioid users, with more than half reporting using concurrently or sequentially 4–5 substances, including cannabis, pharmaceutical opioids (tramadol, codeine, morphine), cough syrup and tranquilizers.

The majority of opioid users suffered from a severity of dependence that would require intervention to address their drug use disorders, with nearly 40 per cent of opioid users reporting that they wanted help or treatment for their drug problems but were unable to get it. High scores of severity of dependence, in general, have been associated with a high risk of injecting and sexual behaviours that were observed among opioid users in the survey.

Nearly half of drug users reported problems at home, school or workplace as the main problems they face as a consequence of their regular drug use. Other drug users reported being in physical danger or having relationship issues with family or friends or trouble with law enforcement officials because of their drug use. Many high-risk drug users also reported committing petty crimes such as theft, shoplifting and burglary to finance their drug use. Moreover, almost one out of eight people in the general population had suffered a negative experience in the past 12 months as a result of a person using drugs in their family, neighbourhood or community.

Source: UNODC and Government of Nigeria, Drug use in Nigeria 2018.

pharmaceutical opioids in the Middle East and North Africa seems to be less a result of "iatrogenic addiction", when non-medical use of those substances occurs after receiving treatment for a legitimate medical condition, and seems to be more led by the desire, especially among young people and people with substance use disorders, to use them for non-medical purposes.[79, 80] Given its dual properties of being an opioid while also acting on the serotonergic and noradrenergic receptor system,[81] tramadol, in contrast to other opioids, is also perceived by people using it for non-medical purposes as an energy and mood booster. This makes tramadol attractive to broad sections of society, including students during examinations and bus and taxi drivers in a number of developing countries, who would not otherwise be using any opioids.[82]

Non-medical use of tramadol is also reported in other parts of the world. In 2018, for example, of 130,000 respondents to the Global Drug Survey, although a non-representative sample (young people, mainly aged between 18 and 35, who have access to the Internet, and mostly in developed countries), 2.3 per cent reported past-year non-medical use of

79 Sahba Jalali and others, "Higher Regulatory Control of Tramadol to Prevent its Abuse and Dependence", *Journal of Drug Policy Analysis* (January 2017).

80 Medhat M Bassiony and others, "Opioid use disorders attributed to tramadol among Egyptian university students", *Journal of Addiction Medicine,* vol. 12, No. 2 (March/April 2018), pp. 150–155(6).

81 WHO Expert Committee on Drug Dependence, "Annex 1: extract from the report of the forty-first meeting of the Expert Committee on Drug Dependence – fentanyl analogues, synthetic cannabinoids, cathinones, and medicines: pregabalin and tramadol" (Geneva, 2019).

82 See, for example, *World Drug Report 2018*.

The non-medical use of tramadol in West Africa: early findings from an ongoing study

The non-medical use of tramadol in West Africa has raised concerns in recent years. There is a severe lack of quantitative information on drug use in West Africa, but several countries in the region have reported tramadol as one of the drugs most consumed (in a non-medical context), after cannabis. The only country with recent scientific data, Nigeria, indicates that pharmaceutical opioids (tramadol, codeine, and morphine) were the second most misused drugs after cannabis in 2017.[a, b] In West Africa, the non-medical use of tramadol is reported by authorities across all ages, genders and socioeconomic classes, both in urban and rural areas. One particularly worrying finding is that there are reports of tramadol being misused by children in schools.

Most tramadol tablets or capsules appear to be bought on the informal market (street markets, itinerant sales people, tea sellers, etc.) with packaging mentioning a dosage higher than that available in pharmacies. While the regulation of supply chains of pharmaceutical opioids in most West African countries may be vulnerable to risks of diversion for the non-medical use of pharmaceutical drugs, it seems that the majority of the tramadol used non-medically is derived from illegally imported shipments, rather than from the diversion of legally imported products.

Interviews with non-medical users of tramadol show that they are looking for a number of different effects. Some consume tramadol for its calming, analgesic and anti-fatigue effects in order to improve intellectual, physical and working performances, and to lessen the need for sleep and decrease appetite. In farming communities, there are reports of tramadol being used by humans and fed to cattle to enable them to work under extreme conditions.[b] Others use tramadol as a recreational drug on account of its stimulant and euphoric effects, or to improve sexual stamina. Drug users also use tramadol as a substitute for heroin, to ease withdrawal symptoms and cravings. Attractive packaging encourages the recreational use of tramadol and the fact that it is a medicine makes its use without a prescription perceived as non-harmful. As stated by WHO, however, the non-medical use of tramadol "has the potential to precipitate drug abuse and/or dependence in humans".[c]

Polydrug use is common among people who use tramadol non-medically in West Africa. Tramadol is reported to be used along with coffee, alcohol, cannabis and with substances such as taurine and caffeine; some users mix tramadol and codeine. The use of diazepam and other benzodiazepines seems to be common among people who use tramadol non-medically, together with, or instead of, tramadol.

Source: Tramadol Trafficking in West Africa (provisional title), UNODC, forthcoming.

[a] See box on non-medical use of opioids in Nigeria.

[b] UNODC and Government of Nigeria, *Drug Use in Nigeria 2018.*

[c] Souvik Kusari and others, "Synthetic origin of tramadol in the environment", *Angewandte Chemie International Edition* (2015).

[d] WHO, *Critical review Report: Tramadol, Expert Committee on Drug Dependence*, 41st Meeting, Geneva, 12-16 November 2018.

tramadol, compared with 0.8 per cent who reported the use of heroin and 0.6 per cent who reported use of opium.[83]

Opioid overdose deaths

One major toll of opioid use observed globally is the high burden of disease attributed to opioid use disorders. This is particularly the case in North America", where it accounts for nearly 4.4 million healthy years of life lost due to disability and premature death.[84] While population surveys indicate an overall decline in the non-medical use of opioids, including heroin, between 2015 and 2017, opioid-related deaths continue to increase in the United States. Opioids, mainly synthetic opioids (a category comprising fentanyl and tramadol), are the main driver of overdose deaths in the United States. In

83 Adam R. Winstock and others, *Global Drug Survey (GDS) 2018: Key Findings Report 2018* (London, 2018).

84 Institute for Health Metrics and Evaluation, *Global Burden of Disease Study 2017*, Global Health Data Exchange. Available at http://ghdx.healthdata.org/gbd-2017.

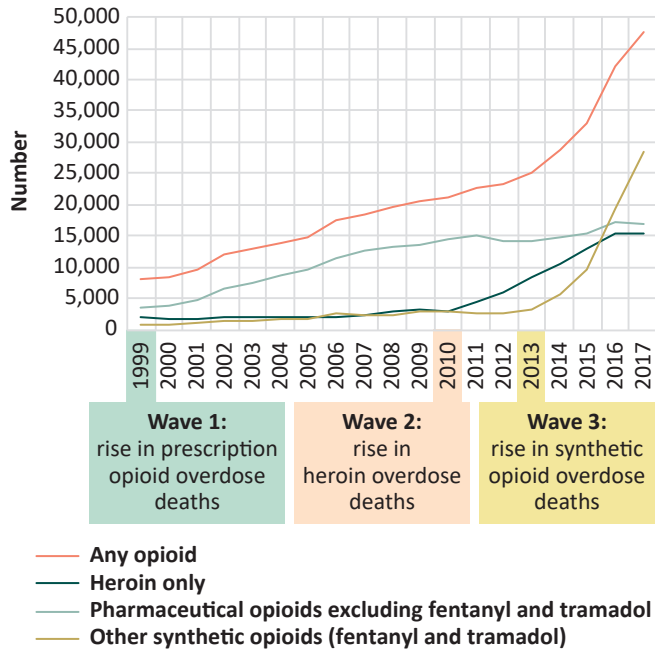
2017, nearly 68 per cent (47,600) of all overdose deaths (70,237) were attributed to the use of opioids, corresponding to a rate of 14.6 deaths per 100,000 population. Of those, the largest number of overdose deaths were attributed to synthetic opioids such as fentanyl and its analogues, which increased from over 19,000 overdose deaths in 2016 to over 28,000 in 2017. Overdose deaths attributed to other pharmaceutical opioids and heroin remained stable, at high levels, from 2016 to 2017.

Drug overdose rates, including opioid overdose deaths, which were higher than the national rate of 14.6 per 100,000, were mainly reported in states in the eastern United States. From 2013 to 2017, the overdose death rate increased significantly in 35 states (out of 50), including the District of Columbia. Fifteen of the 20 states, for which quality overdose data were available, reported a significant increase in the overdose death rate involving synthetic opioids in the previous year; they included eight states west of the Mississippi river (Arizona, California, Colorado, Minnesota, Missouri, Oregon, Texas and Washington). Over the period 2016–2017, opioid overdose deaths increased significantly among both sexes, among opioid users aged 25–44, across most ethnic groups and in metropolitan areas with a population between 250,000 and 1 million inhabitants (referred to as "medium metro counties") and suburban areas with a population of 1 million or more (referred to as "large fringe metro" areas). Overall, the overdose epidemic in the United States continues to worsen, with the increasing involvement of both pharmaceutical and illicitly sourced drugs: in 2016, synthetic opioids (primarily illicitly sourced fentanyls) were involved in 24 per cent of deaths involving pharmaceutical opioids, 37 per cent of those involving heroin, and 40 per cent of those involving cocaine.[85]

In Canada, 3,998 opioid-related deaths were reported in 2017, corresponding to a rate of 10.9 deaths per 100,000 population. Opioid overdose deaths increased by 33 per cent over the period 2016–2017. Moreover, in the first six months of 2018, 2,066 opioid overdose deaths, or 11.2 deaths per 100,000 population, were reported, the majority being attributed to fentanyls. In 2017, the largest numbers of opioid overdose deaths were reported in British Columbia (1,482: 30.8 deaths per 100,000 population) Ontario (1,265: 8.9 deaths per 100,000 population) and Alberta (745 deaths: 17.4 deaths per 100,000 population), and, overall, among males and among people aged 30–39.[86]

In Europe, Estonia has recorded a high rate of opioid overdose deaths (10.6 per 100,000 population) attributed to the use of fentanyls. After a peak in the number of opioid overdose deaths in 2012 (170 deaths), the rate decreased steadily until 2015 then increased in 2016 (114 deaths: 13.4 deaths per 100,000 population). Results of toxicological examinations attributed the majority of those deaths to synthetic opioids, mainly 3-methylfentanyl and other fentanyl analogues such as carfentanil, furanylfentanyl and acrylfentanyl.[87]

FIG. 13 Opioid overdose deaths in the United States, 1999–2017



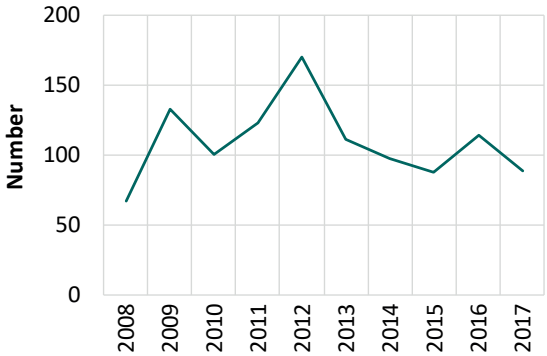
Source: United States, Centers for Disease Control and Prevention, National Center on Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC WONDER).

85 Lawrence Scholl and others, "Drug and opioid-involved overdose deaths: United States, 2013–2017", *Morbidity Mortality Weekly Report*, vol. 67, No. 5152 (January 2019), pp. 1419–1427.

86 Canada, "Overview of national data on opioid-related harms and deaths", 12 December 2018.

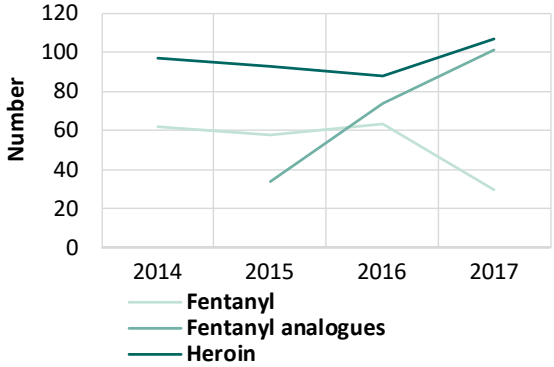
87 EMCDDA, "Estonia drug report 2018".

FIG. 14 Trends in fentanyl overdose deaths in Estonia



Source: Estonian causes of death registry.

FIG. 15 Opioid overdose deaths in Sweden

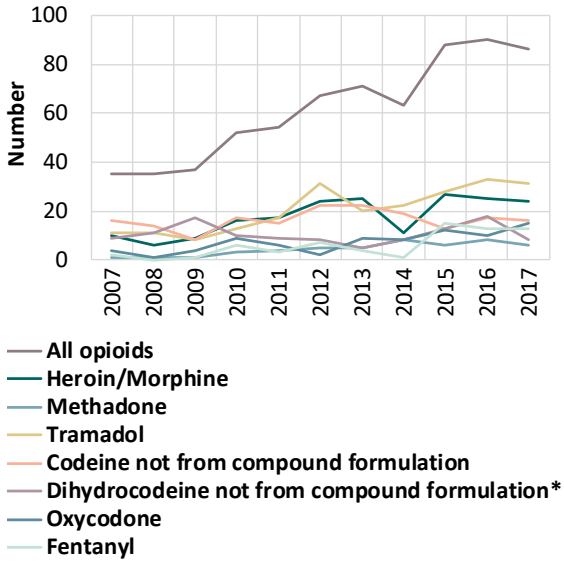


Source: "Swedish National Threat Assessment on fentanyl analogues and other synthetic opioids" (October 2018).

Sweden has also experienced overdose deaths attributed to the use of opioids, including heroin, fentanyl and fentanyl analogues. A total of 590 overdose deaths were reported in Sweden in 2016 (9.5 per 100,000 population), of which opioids accounted for over 90 per cent. Fentanyl analogues were introduced into the drug market in Sweden in 2014, through online sales of illicit fentanyl analogues, mainly in the form of nasal spray but also in the form of tablets, powder and capsules.[88] Since 2015, fentanyl analogues have resulted in an increasing number of overdose deaths. While the number of heroin overdose deaths remained high in Sweden over the period 2015–2017, fentanyl and fentanyl analogues accounted for a larger number of overdose deaths; however, the majority of those deaths involved more than one substance.[89] Overall, most fentanyl analogue deaths in 2015 were attributed to acetylfentanyl (31 cases), while in 2016 most were attributed to acrylfentanyl (43 cases) and in 2017 to cyclopropylfentanyl (72 cases). In 2017, people who died from a fentanyl overdose were older on average (median age: 44.6) than those whose overdose was caused by fentanyl analogues (median age: 32.9).[90]

In Northern Ireland, the number of opioid-related deaths has been increasing since 2013. In 2017, a total of 136 drug-related deaths were reported (almost 7 drug-related deaths per 100,000 population), of which 40 per cent were attributed to opioids. Tramadol and heroin were the main opioids found in those deaths, but smaller numbers of deaths caused by codeine, oxycodone and fentanyl have also been reported and are considered to be

FIG. 16 Opioid-related deaths in Northern Ireland, 2007–2017



Source: Northern Ireland Statistics and Research Agency, "Drug related and drug misuse deaths 2007–2017", 4 March 2019.

Note: Drug-related deaths are defined as deaths of which the underlying cause recorded on the death certificate is drug poisoning, drug abuse or drug dependence. Drug-misuse deaths occur when the underlying cause is drug poisoning, drug abuse or drug dependence and when any of the nationally controlled substances is involved in the death.

88 Swedish Police Authority, National Operations Department, "Swedish National Threat Assessment on fentanyl analogues and other synthetic opioids" (October 2018).

89 Ibid.

90 Sweden, National Board of Forensic Medicine.

increasing. It is noteworthy that almost half of recorded drug overdose deaths involved three or more drugs, of which diazepam was the most commonly reported substance. The most deaths resulting from drug misuse were reported to be those of young males aged 25–34.[91]

Emergence of new psychoactive substance opioids

With the aim of developing more effective medications for pain management, both for medicinal and veterinary use, a number of synthetic opioid receptor agonists have been developed by the pharmaceutical industry in the past five decades. After initial research, however, many of the substances were not further developed, or were considered "not suitable for human consumption". In recent years, along with fentanyl analogues, many opioid receptor agonists, which are derived from information published in the research publications of pharmaceutical companies or patents, have emerged in the illicit drug markets. In the scientific literature they are often referred to as "research opioids" or "novel synthetic opioids".[92] From the perspective of UNODC, since these substances are not under international control they have been labelled as "NPS with opioid effects" or "NPS opioids". Synthetic opioid receptor agonists are of varying potency and, as with other opioids, their clinical effects are dose dependent. Although they are structurally unrelated to morphine, NPS opioids are full agonists of the μ-opioid receptors, which account for profound depression of the central nervous system and respiratory system; this is responsible for significant morbidity and mortality associated with their use.[93] In cases of toxicity with NPS opioids, larger doses of naloxone are required to reverse the effects than in cases of overdose with many other opioids.[94]

NPS opioids appear to be an expanding group of substances that are being introduced into the drug market for non-medical use. Among the new NPS reported in 2017 to the UNODC early warning advisory, nearly one third were synthetic opioid receptor agonists, the majority of these 22 substances being fentanyl analogues while a few were from other families of research opioids, such as U-48800 and U-51754. In addition, in recent years other opioid receptor agonists, such as AH-7921, MT-45, and U-4700, or similarly named substances, have been reported, seized and analysed.[95, 96]

Many synthetic opioid receptor agonists, including AH-7921, MT-45 and U-4700 have been sold as such to regular opioid users.[97] Other synthetic opioids, including fentanyl analogues, are reportedly sold in drug markets as replacements for controlled drugs, and in many instances as falsified prescription painkillers such as oxycodone, and even as falsified benzodiazepines.[98] In other instances, synthetic opioids have been used as adulterants to heroin and other drugs, such as cocaine, and those buying them, sometimes marginalized opioid users, are not usually aware of their exact contents and often miscalculate their doses, with deleterious consequences.[99]

Many fentanyl analogues are marketed for non-medical use directly to users and almost exclusively on the Internet.[100] The proliferation of e-commerce has also facilitated the sale of synthetic opioids through both the conventional Internet and the darknet.[101, 102] As reported in recent cases in Sweden, unlabelled nasal sprays containing acryloylfentanyl (acrylfentanyl) have been offered for purchase online;[103] there are also reports of "e-liquids" containing fentanyl analogues that can be vaped using

91 Northern Ireland Statistics and Research Agency, "Drug related and drug misuse deaths 2007–2017", 4 March 2019.

92 Armenian and others, "Fentanyl, fentanyl analogues and novel synthetic opioids".

93 Ibid.

94 Ibid.

95 EMCDDA, *EMCDDA-Europol Joint Report on a New Psychoactive Substance – 1-cyclohexyl-4-(1,2-diphenylethyl) piperazine ('MT-45')*, Joint Report Series, MT-45 (Luxembourg, Publication Office of the European Union, 2014).

96 "Swedish National Threat Assessment on fentanyl analogues and other synthetic opioids".

97 Ibid.

98 *2018 National Drug Threat Assessment*.

99 Ibid.

100 EMCDDA, *Fentanils and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation – An Update from the EU Early Warning System* (Luxembourg, Publication Office of the European Union, 2018).

101 Armenian and others, "Fentanyl, fentanyl analogues and novel synthetic opioids".

102 EMCDDA, *Fentanils and Synthetic Cannabinoids*.

103 "Swedish National Threat Assessment on fentanyl analogues and other synthetic opioids".

electronic cigarettes.[104] Overall, synthetic opioids are becoming a major concern that requires regular monitoring by law enforcement, toxicological laboratories, chemists, pharmacists and physicians, in order to improve understanding of their emergence and provide guidance for responding to the threat to individual and public health that they pose.

Supply of opiates

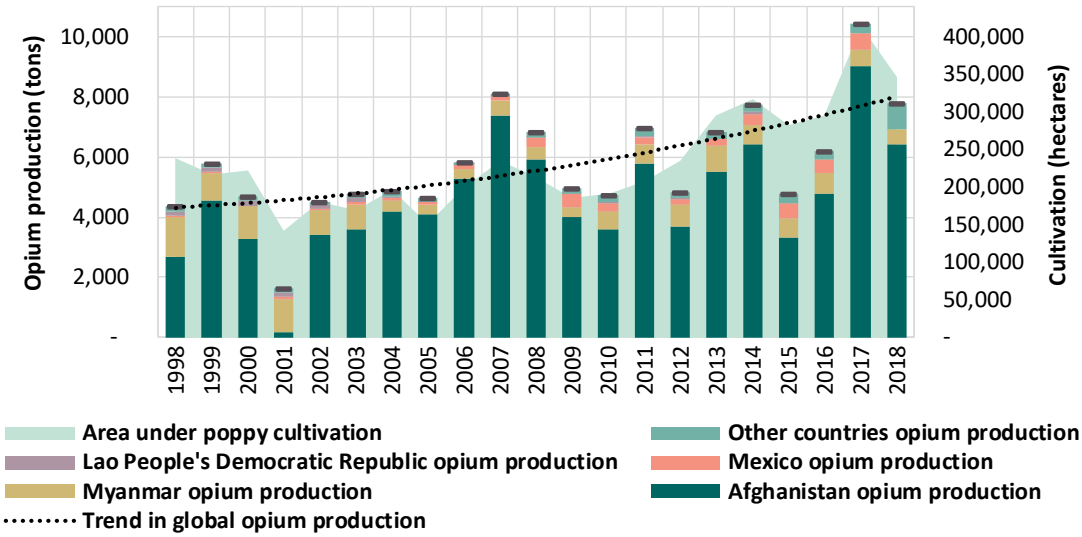
Opium is illicitly produced in some 50 countries worldwide, although production is highly concentrated in Afghanistan, Myanmar and Mexico, which accounted for roughly 96 per cent of global opium production over the period 2014–2018.

Opiates produced in Afghanistan, the single largest opium producer, have a global reach. They supply markets in neighbouring countries, Europe, the Near and Middle East, South Asia, Africa and a small proportion of the markets in North America (mainly Canada) and Oceania. In South-East Asia, Myanmar and, to a lesser extent, the Lao People's Democratic Republic supply the heroin markets in East and South-East Asia and Oceania. In Latin America, Mexico and, to a lesser extent, Colombia and Guatemala provide most of the heroin supply to the United States and supply the comparatively small heroin market in South America.

Global area under opium poppy cultivation and opium production declined in 2018

Despite a decrease in size of 17 per cent from the previous year, the global area under illicit opium poppy cultivation remained at a high level of around 346,000 ha in 2018. Global opium production also decreased in 2018, by 25 per cent, but the estimate is still among the highest in the past two decades. Of the estimated 7,790 tons of opium produced worldwide in 2018, it is estimated that some 1,225–1,525 tons remained unprocessed for consumption as opium, while the rest was manufactured into heroin, resulting in an estimated 486–736 tons of heroin (expressed at export purity) being manufactured in 2018. Both opium and heroin prices continued to decline in 2018 in Afghanistan and Myanmar, implying that there is no sign of a possible shortage of opiates on the market as a result of the decline in global opium production in 2018.

FIG. 17 Opium poppy cultivation and production of opium, 1998–2018*



Source: UNODC calculations, based on UNODC illicit crop monitoring surveys and annual report questionnaire.
Note: Data for 2018 are still preliminary; notably no new data for Mexico for the year 2018 were available at the time of writing this report.

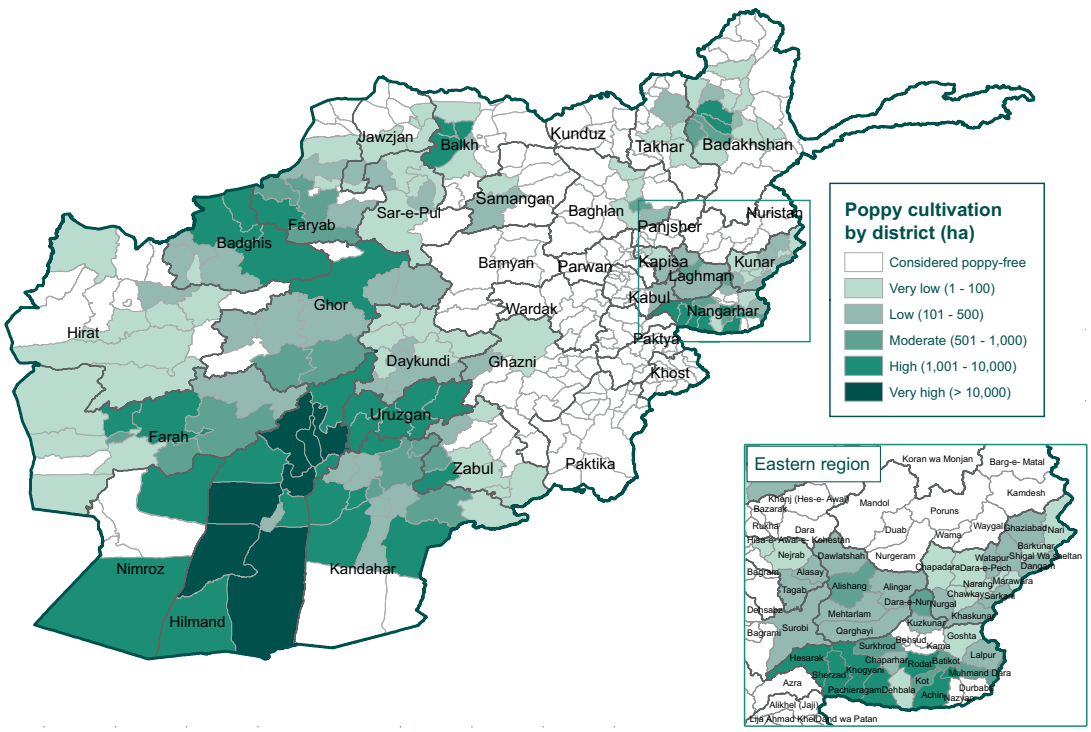
104 EMCDDA, *Fentanils and Synthetic Cannabinoids.*

Decline in opium production mainly due to decreases reported in Afghanistan

The global decline in opium production in 2018 was primarily related to Afghanistan where, following years of an upward trend, the area under opium poppy cultivation shrank by 20 per cent from its record 2017 level, although the estimated area for 2018 is still the second largest ever reported for that country. As the opium yield fell, overall opium production decreased by 29 per cent in Afghanistan in 2018. Nonetheless, Afghanistan remains the world's largest opium-producing country, accounting for 82 per cent of global illicit opium production.

More than two thirds (69 per cent) of opium production in the country continues to take place in southern Afghanistan, most notably in the provinces of Helmand (52 per cent of the total) and Kandahar (9 per cent). However, cultivation and production declined in all regions in 2018, in particular in the northern, western and central parts of the country and, to a lesser extent, in eastern, southern and north-eastern Afghanistan.[105] This was mainly the result of a severe drought that affected not only rain-fed but also irrigated land. As it had not snowed sufficiently in the mountains in the winter of 2017/2018, there was not sufficient groundwater for irrigating many parts of the country, including areas under opium poppy cultivation. The subsequent lack of rain negatively affected rain-fed opium poppy cultivation in western and northern Afghanistan.[106] The drought not only affected opium production but also agriculture in general. This caused a humanitarian crisis in several parts of the country, in particular in western and northern part

MAP 3 Opium poppy cultivation in Afghanistan, 2018



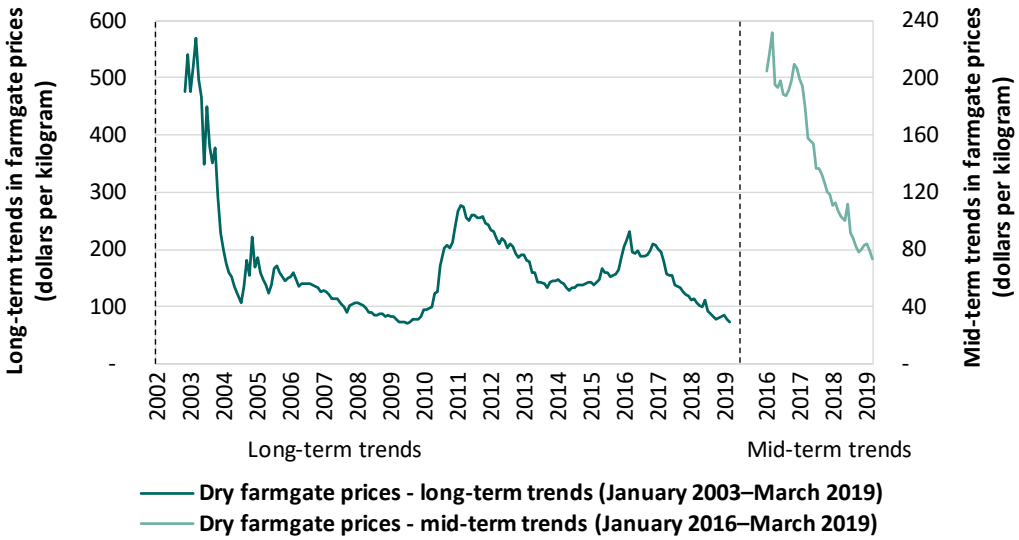
Source: UNODC and Afghanistan, Ministry of Counter Narcotics, *Afghanistan Opium Survey 2018: Cultivation and Production* (November 2018).

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

105 UNODC and Afghanistan, Ministry of Counter Narcotics, *Afghanistan Opium Survey 2018: Cultivation and Production* (November 2018).

106 Ibid.

FIG. 18 Average dry opium farm-gate prices in Afghanistan, November 2002–March 2019



Source: Afghanistan, Ministry of Counter Narcotics and UNODC, "Afghanistan drug price monitoring monthly report" (March 2019 and previous years).

of the country, where 1.4 million people were considered at risk of acute food insecurity as a result of the drought in the spring of 2018, and that situation led to a forecast decrease in cereal production of some 28 per cent in 2018 from the average for the period 2013–2017.[107]

Apart from the drought, sharply falling opium prices – probably a consequence of the record opium production in 2017 – might have acted as a disincentive for farmers to grow opium poppy in 2018. Opium prices continued to decline in 2018,[108] while the indebtedness of many Afghan farmers increased as a consequence of the drought. Research has shown that growing indebtedness, often in the form of "salaam" arrangements, in which the following year's opium harvest is sold in advance in exchange for immediate cash payments, may prompt farmers, irrespective of a decrease in opium prices, to revert to opium poppy production in order to repay their debts.[109] Cultivating opium poppy is one of the many coping strategies that a rural household may employ for securing its livelihood. Income for covering basic needs, including food, medical expenses and debt were the three most common uses of opium income reported by farmers in Afghanistan in 2017.[110] In particular, "infrequent poppy farmers" cited the need to repay loans as a key reason for cultivating opium poppy.[111]

Decline in opium production also reported in Myanmar

Opium poppy cultivation in Myanmar, home to the world's second largest area under opium poppy cultivation, continued to decline in 2018, with the country accounting for 11 per cent of the global area under illicit opium poppy cultivation worldwide that year. Some 37,300 hectares of opium poppy are estimated to have been cultivated in the country in 2018, which represents a decline of 12 per cent from the previous year and of one third since 2015.[112] Opium production in Myanmar also

107 Food and Agriculture Organization of the United Nations, Global Information and Early Warning System on Food and Agriculture, "Country brief: Afghanistan", 21 June 2018.

108 Afghanistan, Ministry of Counter Narcotics and UNODC, "Afghanistan drug price monitoring monthly report" (March 2019).

109 Mohammad Ehsan Zia and others, *Rural Finance in Afghanistan and the Challenge of the Opium Economy*, Report No. 33275 (Washington D.C., World Bank, July 2005).

110 UNODC and Islamic Republic of Afghanistan, *Afghanistan Opium Survey 2017 – Challenges to sustainable development, peace and security*, (May 2018).

111 Ibid.

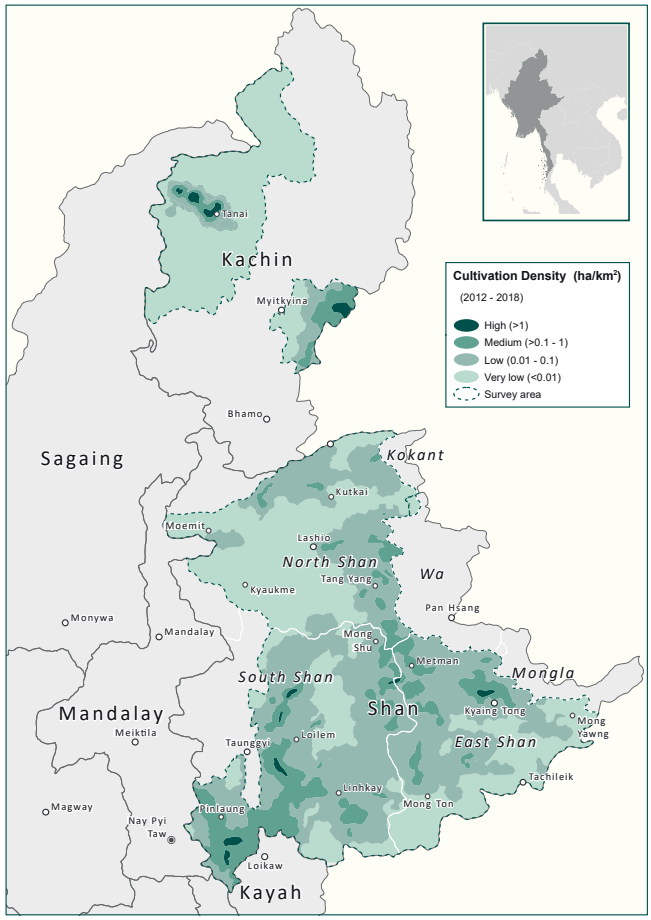
112 Percentage decline estimated based on the regions where estimates were available in both 2017 and 2018 (Shan and

declined in 2018 to an estimated 520 tons (7 per cent of global opium production), its lowest level since 2010.

Almost 90 per cent of the opium poppy in Myanmar continued to be cultivated in Shan State, while most of the remainder was cultivated in neighbouring Kachin State, in the north of the country. Smaller pockets of opium poppy cultivation were also found in Kayah State, in the south, and in Chin State, in the west. [113] The most marked declines in opium poppy cultivation in Myanmar in 2018 were in areas with a comparatively good security situation. There were also declines in parts of North Shan and Kachin states, where there had been a protracted state of conflict in recent years and central government control is limited.

Apart from the security situation, a number of structural vulnerabilities are frequently associated with opium poppy cultivation in Myanmar, such as income inequality, lack of employment opportunities and of infrastructure, such as access to markets and availability of health clinics. Those vulnerabilities continued to play a role in the areas where there is a high concentration of opium poppy cultivation. Moreover, the presence of organized crime groups in those areas is also associated with the manufacture and trafficking of heroin.[114] Lower opium prices might also have played a role, as in the period 2015–2018 farm-gate prices of dry opium decreased by around 45 per cent in Myanmar, possibly a consequence of a shift from the use of opiates to the use of synthetic drugs, particularly methamphetamine, in several parts of East and South-East Asia.

MAP 4 Opium poppy cultivation density map in Myanmar, June 2017–May 2018



Source: UNODC and Myanmar, Central Committee for Drug Abuse Control.
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Opium production on the increase in Mexico

The latest available estimates of the annual opium harvest for the period July 2016–June 2017 indicated a continued increase in the area under opium poppy cultivation in Mexico, by 21 per cent from the previous year, to 30,600 hectares.[115] In general, opium poppy cultivation in Mexico is found in areas that are not easily accessible and are characterized by a low level of economic development.[116] The main areas under opium poppy cultivation in 2017 continued to be in the states that form part of the Sierra Madre Occidental, i.e., the states near the Gulf of California, in particular Sinaloa, Durango, Chihuahua and Nayarit, as well as further south, in the states of the Sierra Madre del Sur, which are located along the Pacific Coast, in particular the

Kachin States).

113 UNODC and Myanmar, Central Committee for Drug Abuse Control, *Myanmar Opium Survey 2018: Cultivation, Production and Implications* (Bangkok, December 2018).

114 UNODC, Socioeconomic report on evidence for enhancing reliance on opium poppy cultivation in Shan State, Myanmar (draft report, quoted in the *Myanmar Opium Survey 2018*).

115 UNODC and Mexico, *México: Monitoreo de Cultivos de Amapola 2015–2016 y 2016–2017* (November 2018).

116 Ibid.

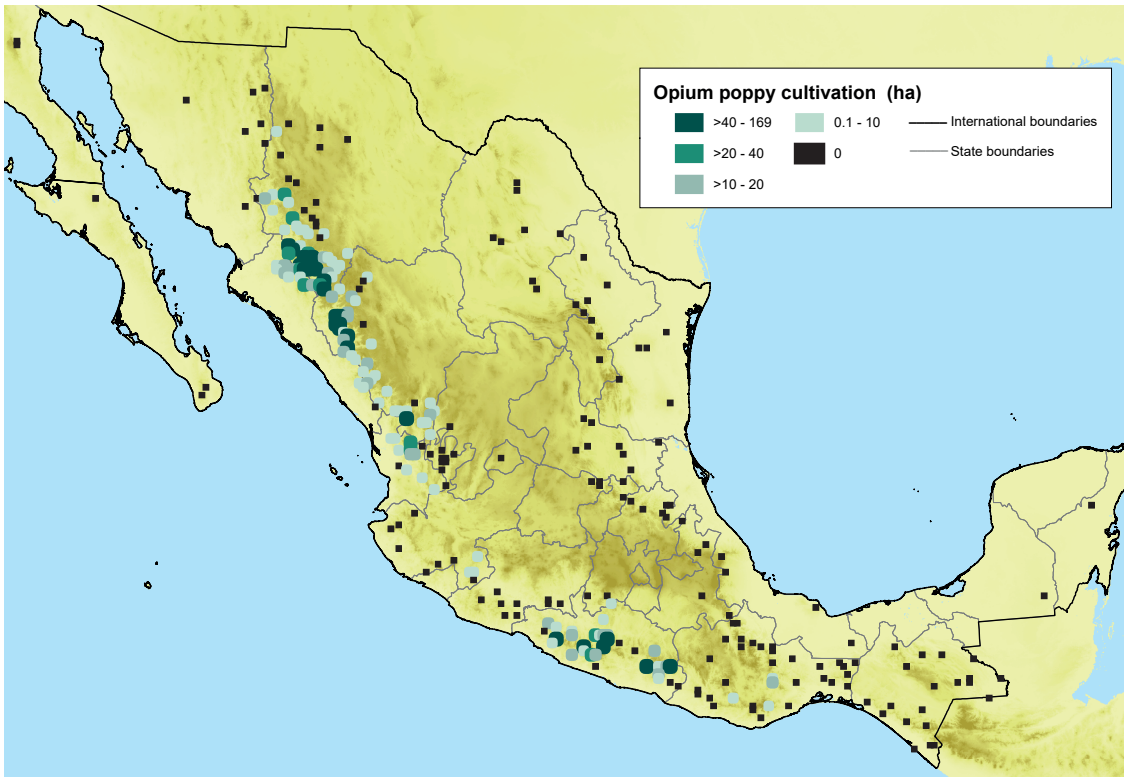
State of Guerrero, which surrounds Acapulco, and the State of Oaxaca.[117]

The states of Sinaloa, Chihuahua and Durango, also known as the "Golden Triangle" of Mexico, are not only known for opium poppy cultivation but also for widespread cultivation of cannabis, which is mainly destined for the United States market. Reports suggest a shift in the activities of organized crime groups in Mexico as cannabis grown in the country appears to have lost its competitive advantage in the United States market, where the production of high-quality cannabis has been on the increase following the legalization of cannabis supply for recreational use in several states.[118]

The reported increase in the area under opium poppy cultivation in Mexico went in parallel with a number of law enforcement activities, including a 32 per cent increase in the eradication of poppy cultivation in Mexico in 2017, a 44 per cent increase in the quantities of heroin and morphine seized in the country, a tripling in the quantity of opium gum seized and a tripling in the number of clandestine heroin laboratories dismantled in Mexico in 2017.[119] Meanwhile, the quantity of heroin seized by United States authorities along the south-west border with Mexico increased by 36 per cent from a year earlier (fiscal year of 2017).

Based on forensic profiling, United States authorities estimated that in 2016, 86 per cent of the heroin analysed (744 samples taken from 1.6 tons of heroin seized in the United States) had originated in Mexico, up from 20 per cent in 2006.[120] Most indicators point to an expansion of the heroin

MAP 5 Opium poppy cultivation density in Mexico, 2016–2017



Source: UNODC and Mexico, *Mexico: Monitoreo de Cultivos de Amapola 2015–2016 y 2016–2017* (November 2018).

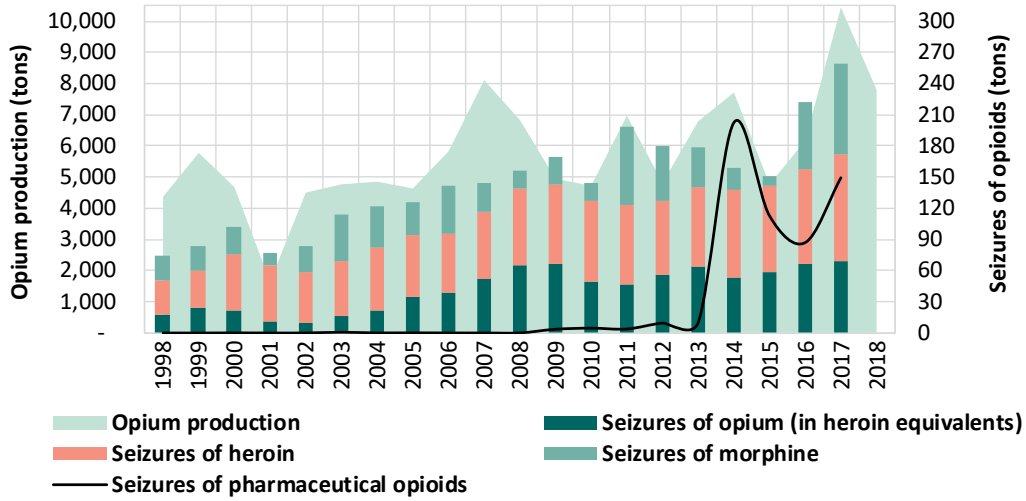
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

117 Ibid.

118 *2018 National Drug Threat Assessment.*

119 *México: Monitoreo de Cultivos de Amapola 2015-2016 y 2016-2017.*

FIG. 19 Global opium production and quantities of opioids[a] seized, 1998–2018



Sources: UNODC, responses to the annual report questionnaire and other Government sources.
[a] *A ratio of 10:1 was used to convert opium into heroin equivalents.*

market in the United States in recent years:[121] overall, heroin seizures in the country more than tripled between 2006 and 2016, to 7.1 tons, then increased further, to 8.1 tons in 2017, while the number of heroin-related deaths in the United States rose sevenfold over the period 2007–2017, or, excluding the involvement of other, synthetic opioids, fourfold.[122]

Opium production has been fluctuating greatly but global opiate seizures have increased steadily over the past two decades

At the global level, annual opium production has been fluctuating more than annual heroin seizures and global opiate use, suggesting the existence of opium inventories. By offsetting fluctuations in opium production, such inventories appear to ensure a smooth supply of heroin to the main consumer markets and explain the comparatively smaller year-on-year changes in heroin seizures. The overall upward trend in quantities of opiates seized over the past two decades has been more pronounced than the upward trend in opium production,[123] suggesting that law enforcement authorities may have become increasingly successful in intercepting trafficked opiates worldwide, although changes in purity could also partially explain the difference.

Opiate seizures increased to new record levels in 2017 and remained concentrated in Asia, especially in South-West Asia

In 2017, quantities of opiates seized globally reached an all-time high, with a 5 per cent increase from the previous year in the quantity of opium seized (to 693 tons), a 13 per cent increase in heroin seized (to 103 tons) and a 33 per cent increase in morphine seized (to 87 tons). Expressed in common heroin equivalents, heroin seizures continued to exceed those of morphine and opium in 2017.

Most seizures of opiates continued to be reported in, or close to, the main opium production areas. Thus, with more than 90 per cent of global illicit opium production taking place in Asia, the region accounted for 86 per cent of all quantities of opiates seized (expressed in heroin equivalents) in 2017.

120 *2018 National Drug Threat Assessment.*

121 For further details of the increasing demand for heroin in the United States, see the section on the demand for opioids.

122 National Institute on Drug Abuse, "Overdose death rates", revised January 2019.

123 Notwithstanding possible changes in heroin purity seizures (not accounted for in the calculation).

The vast majority of those opiates continued to be seized in the Near and Middle East/South-West Asia in 2017 (79 per cent of global opiates seized, expressed in common heroin equivalents), particularly opium (97 per cent of global opium seizures) and morphine (99 per cent of global morphine seizures).

Accounting for 39per cent of the global total, the largest quantity of opiates (expressed in heroin equivalents) continued to be seized in the Islamic Republic of Iran in 2017, followed by Afghanistan (26 per cent) and Pakistan (14 per cent). The next largest seizures of opiates were reported by Turkey (7 per cent), the United States and China (4 per cent each).

Quantities of heroin and morphine seized continue to increase in all regions except Oceania

The quantities of heroin and morphine intercepted in Asia more than doubled in 2016 and increased by a further 14 per cent in 2017. This primarily reflected increases in the quantities of morphine and heroin seized in the Near and Middle East/South-West Asia, a consequence of marked increases in Afghan opiate production in 2016 and 2017, as well as ongoing law enforcement operations in those subregions.

In East and South-East Asia, the quantities of heroin and morphine seized decreased in 2016 but increased in 2017. The majority of heroin and morphine seizures in that subregion continued to be reported by China, which accounted for 72 per cent of all such seizures in the subregion in 2017.

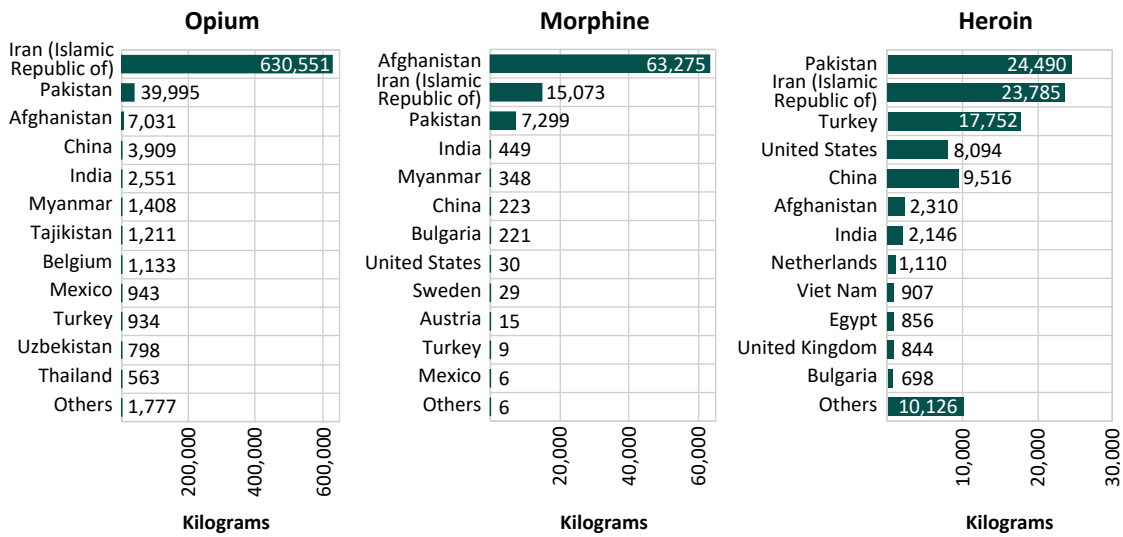
In South Asia, a marked increase, most notably in India, in the quantities of heroin and morphine seized has been reported in recent years. With increases of 34 per cent in 2016 and 51 per cent in 2017, the subregion now accounts for almost 2 per cent of the global total quantities of heroin and morphine seized.

The largest quantities of heroin and morphine seized outside Asia are reported in Europe (13 per cent of the global total), followed by the Americas (5 per cent), two important markets for heroin.

In Europe, the quantities of heroin and morphine seized more than doubled in 2017, to 24 tons, back to the level reported in the first decade of the new millennium. The increase in Europe was primarily the consequence of a tripling in the quantities of heroin and morphine seized in South-East Europe, notably in Turkey and, to a lesser extent, Bulgaria and other countries along the Balkan route.

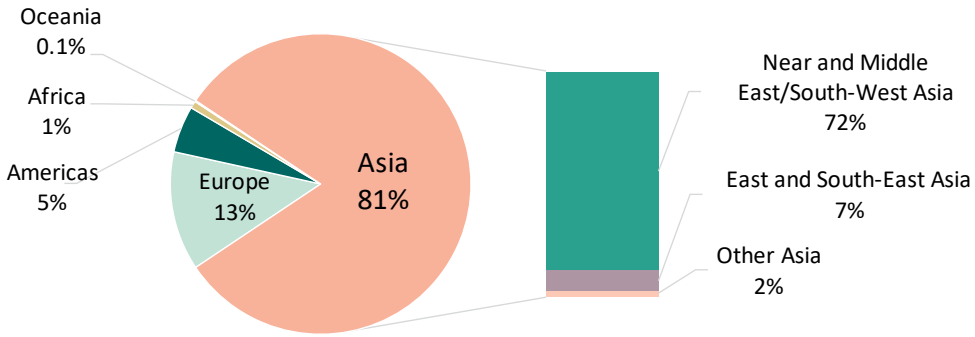
Quantities of heroin and morphine seized in West and Central Europe rose by 29 per cent in 2017

FIG. 20 Countries reporting the largest quantities of opiates seized, 2017



Source: UNODC, responses to the annual report questionnaire and other Government sources.

FIG. 21 Distribution of global quantities of heroin and morphine seized in 2017 (total = 190 tons)



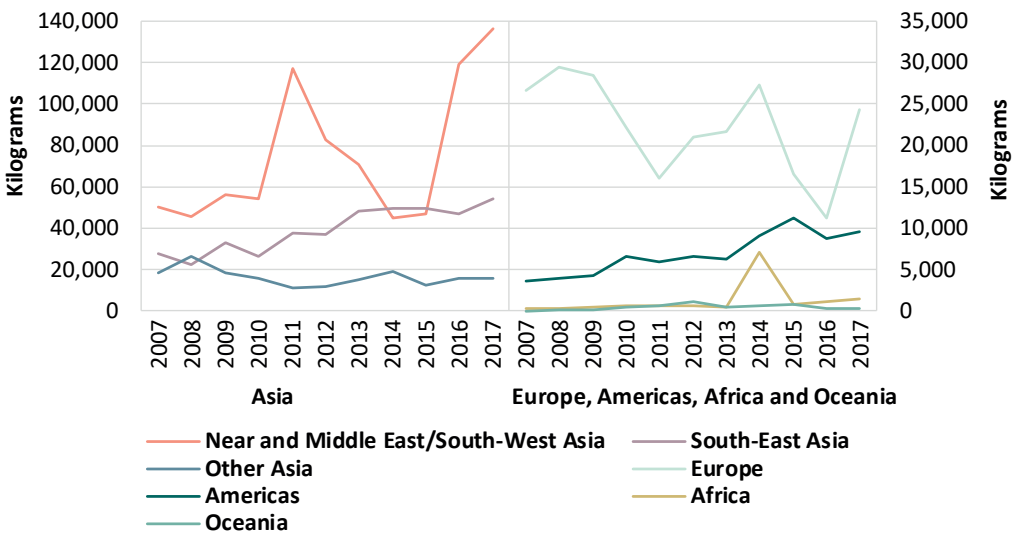
Source: UNODC, responses to the annual report questionnaire, and other Government sources

from the previous year, with increases reported by most countries. Seizures in the subregion nonetheless remained clearly below the annual average reported over the past decade. The largest seizures in the subregion in 2017 were reported by the Netherlands, followed by the United Kingdom, France, Italy and Spain.

By contrast, the quantities of heroin and morphine seized continued to decline in Eastern Europe for the third year in a row, falling by 48 per cent in 2017 (or by 85 per cent since 2014), mainly as a result of a decline in the quantities seized in the Russian Federation. This is in line with the ongoing decline, by 64 per cent in 2017 (or by 78 per cent since 2014), reported in the quantities of heroin and morphine seized in Central Asia and Transcaucasia, the main transit area for heroin shipments to the market in the Russian Federation.

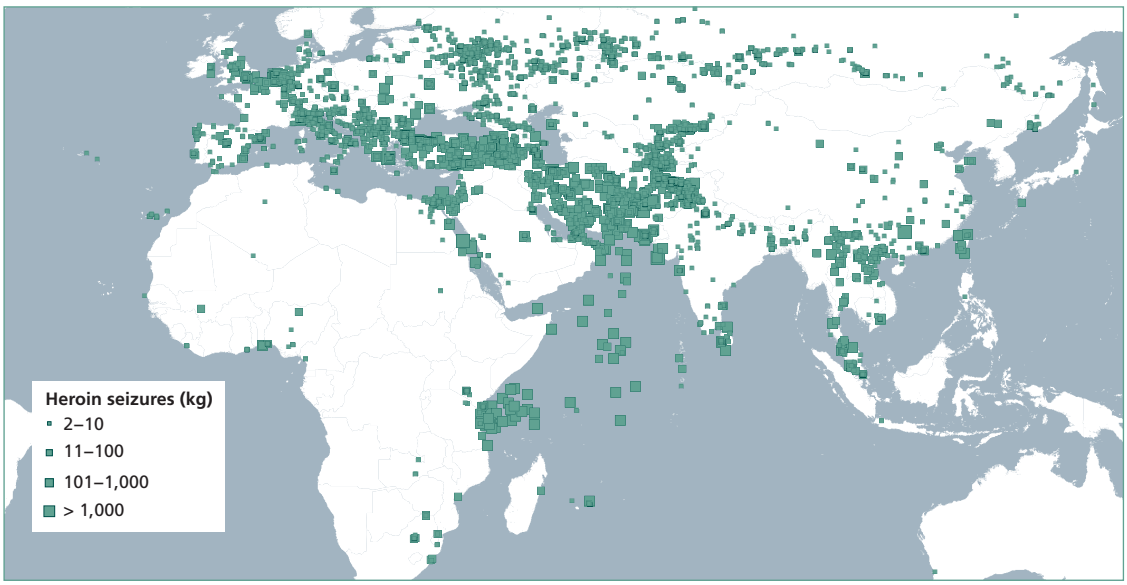
The quantities of heroin and morphine seized in the Americas rose by 9 per cent in 2017, to 9.5 tons, almost three times the quantity seized a decade earlier. Seizures made in North America accounted for 90 per cent of all the heroin and morphine intercepted in the Americas, with 85 per cent being seized

FIG. 22 Quantities of heroin and morphine seized, by region, 2007–2017



Source: UNODC, responses to the annual report questionnaire data and other Government sources.

MAP 6 Significant individual heroin seizures, January 2013–April 2019



Source: UNODC and Paris Pact, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

in the United States, followed by Colombia, Ecuador, Mexico, Canada and Guatemala.

Despite a 31 per cent increase in 2017 and a fourfold increase compared with a decade ago, the quantities of heroin and morphine seized in Africa remained comparatively low, at 1.5 tons, in 2017. Most seizures continue to be reported in North Africa, which accounted for nearly two thirds of all quantities of heroin and morphine seized in Africa in 2017, and in East Africa (21 per cent). Egypt is the country where most such seizures have been reported in Africa, reflecting the trafficking of opiates via the Red Sea and Suez Canal, followed by the United Republic of Tanzania, South Africa, Kenya and Nigeria.

The quantities of heroin and morphine seized in Oceania decreased in 2017 for the second year in a row, to the lowest level since 2009, with more than 99 per cent being seized in Australia.

Trafficking in opiates continues to be dominated by opiates originating in Afghanistan

Reflecting the increasing dominance of opium production in Afghanistan, most opiates worldwide are trafficked from Afghanistan to markets in neighbouring countries (in particular the Islamic Republic of Iran, Pakistan, Central Asian countries and India), to Europe, the Near and Middle East, South Asia, Africa and, to a lesser extent, South-East Asia, North America and Oceania. Some 88 per cent of the global total of heroin and morphine seized in 2017 was related to Afghan opiate production, up from 73 per cent in 2015. Nearly all opiates seized in Europe, Central Asia and Africa are derived from opium originating in Afghanistan; that country accounted for 100 per cent of all mentions of the "country of origin" of opiates seized in Central Asia, 96 per cent of mentions by authorities in Europe and 84 per cent of mentions in Africa over the period 2013–2017.[124]

Heroin is also trafficked from production areas in South-East Asia (Myanmar and, to a lesser extent, the Lao People's Democratic Republic) to markets in East and South-East Asia and Oceania. In the Americas, heroin manufactured in Latin America (notably Mexico, and, to a far lesser extent, Colombia and Guatemala) accounts for most of the heroin

124 For details of calculation, see the online methodology section.

supply to the United States and also supplies the comparatively limited heroin market in South America.

Most opiates continue to be trafficked from Afghanistan along the Balkan route and its various branches

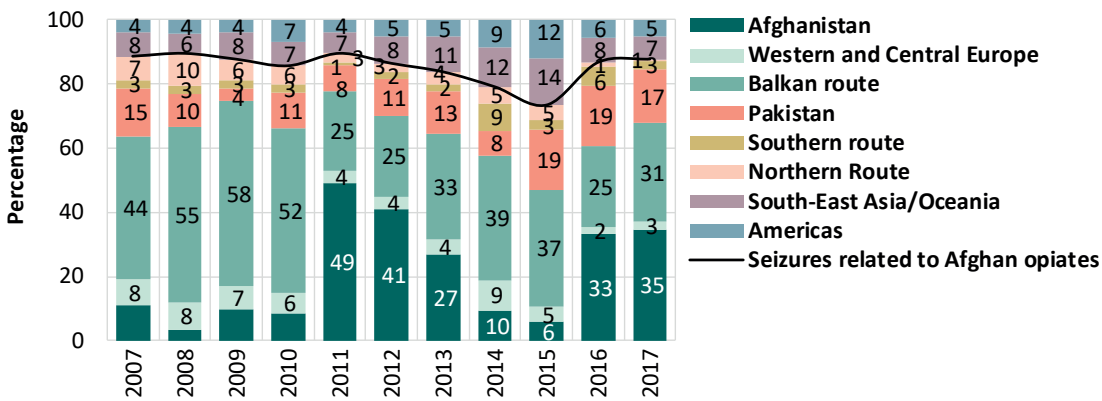
Based on seizures, the world's single largest heroin trafficking route continues to be the Balkan route, along which opiates are smuggled from Afghanistan to the Islamic Republic of Iran, Turkey, and the Balkan countries to various destinations in Western and Central Europe. Excluding seizures made in Afghanistan, countries along the Balkan route accounted for 47 per cent of the global quantities of heroin and morphine seized in 2017, with a further 4 per cent reported by countries in Western and Central Europe.

Opiates are either trafficked along the eastern branch of the Balkan route from Turkey to Bulgaria and then onward to Romania and Hungary, or along the western branch from Bulgaria to various western Balkan countries and from there to Western and Central Europe. More than three quarters of the mentions of countries of origin, departure and transit of heroin in the annual report questionnaire submitted by countries in Western and Central Europe over the period 2013–2017 referred to trafficking via countries along the Balkan route, while 7 per cent referred to shipments via Pakistan.

Although some heroin may transit Pakistan for subsequent trafficking along the Balkan route, some heroin is also trafficked directly from Pakistan, either by air or sea to Europe; this has been mainly reported by the United Kingdom, Denmark and Italy and, to a lesser extent, by Greece, Spain, France and Belgium in recent years. Pakistan reported 32 tons seized in 2017, up from a low of 4 tons (4 per cent of the global total) in 2009. The main destination countries, based on seizures made by the Pakistani authorities in 2017, were, in Europe, the United Kingdom and, on the Arabian Peninsula, the United Arab Emirates and Saudi Arabia. In addition, opiates are smuggled via Pakistan and via the Islamic Republic of Iran for onward trafficking along the Balkan route. The Islamic Republic of Iran reported that 80 per cent of the morphine and 85 per cent of the heroin seized on its territory in 2017 had been smuggled into the country via Pakistan, with only the remainder having been smuggled directly from Afghanistan into the Islamic Republic of Iran.

Smaller amounts of heroin were also seized on the "Caucasus route" and along the Black Sea. This deviation of the Balkan route goes from the Islamic

FIG. 23 Distribution of global quantities of heroin and morphine seized, by main trafficking routes, 2007–2017[a]



Source: UNODC, responses to the annual report questionnaire.

[a] *The Balkan route: Islamic Republic of Iran, half of Transcaucasia, South-Eastern Europe; the southern route: South Asia, Gulf countries and other countries in the Near and Middle East and Africa; the northern route: Central Asia, Eastern Europe and half of Transcaucasia. Heroin seized in Transcaucasia was partly attributed to the Balkan route and partly to the northern route as it may supply both routes.*

Republic of Iran to the Caucasus countries (Azerbaijan, Armenia and Georgia) across the Black Sea to Ukraine and then by land to Romania for onward trafficking along the eastern branch of the Balkan route to Central and Western Europe. This route increased in importance for several years, with seizures of heroin and morphine rising from 0.7 tons in 2007 to 1.8 tons in 2014, before falling to 1.3 tons in 2016 and 0.4 tons in 2017, compared with 18 tons of heroin and morphine seized in Turkey, 0.9 tons seized in Bulgaria and 0.4 tons seized in Greece in 2017. While seizures in Turkey, Bulgaria and Greece increased in 2017, they decreased in countries affected by trafficking via the Black Sea. The decrease in 2017 resulted from a marked reduction in seizures reported by Azerbaijan and Georgia, which was not offset by the increase in seizures reported by Armenia, Ukraine, Romania and the Republic of Moldova.

The "Caucasus route" has also been used to supply heroin to markets in the Russian Federation, although to a lesser extent than the northern route (via Central Asia).[125]

Heroin continues to be trafficked along a complex array of routes running south from Afghanistan

The southern route encompasses an array of different routes along which opiates are smuggled from Afghanistan via Pakistan or the Islamic Republic of Iran for onward trafficking to the Near and Middle East, Africa and Europe, to India for onward trafficking to neighbouring countries (Sri Lanka and Bangladesh) and to North America (notably Canada), as well as to South-East Asia and Oceania. Countries along the southern route accounted for, on average, 4 per cent of global heroin and morphine seizures (excluding seizures made in Afghanistan) over the period 2013–2017, including in 2017.

Trafficking of heroin along the southern route has been referred to in 9 per cent of mentions of countries of origin, departure or transit by countries in Western and Central Europe. The latest data reported suggest that in 2017 trafficking via the southern route played a key role for only one European country, Belgium, which reported a fifth of its "heroin imports" smuggled via Uganda and another fifth via Ethiopia. Italy reported limited trafficking of heroin via Qatar, Oman and South Africa, while Spain and Portugal reported some trafficking via Mozambique.

Some of the heroin trafficked along the southern route is also destined for domestic consumption in various countries located along the route, in particular Pakistan, as well as countries on the Arabian Peninsula and in East and Southern Africa.

While there is some domestic production of opiates in India for the illicit market, India reported that 53 per cent of all the heroin seized on its territory in 2017 came from Pakistan and just 0.4 per cent originated in Myanmar. India also reported an almost sixfold increase in the quantity of heroin seized that originated in South-West Asia, which was linked to an increase in maritime trafficking. The bulk of the heroin smuggled into India in 2017 arrived by boat (88 per cent) with smaller amounts smuggled across land borders (12 per cent), often by heroin parcels being thrown over border fences along the border between Pakistan and India or being hidden in farming equipment transported to India on trucks. Heroin of South-West Asian origin seized in India was reported to be of higher purity (54 per cent on average) than other heroin seized in the country in 2017.

Countries in South-West Asia and South Asia (Pakistan, followed by Afghanistan, India and the Islamic Republic of Iran) were also the most frequently mentioned countries of origin, departure and transit of heroin shipped to Africa (as mentioned by African countries). The above-mentioned Asian countries accounted for 91 per cent of all such mentions of Asian countries over the period 2013–2017, with the remaining 9 per cent accounted for by countries in South-East Asia (Thailand, the Lao People's Democratic Republic and Myanmar). Transit via the United Republic of Tanzania, followed by Nigeria and Kenya, was the most frequently mentioned transit route through Africa over the period 2013–2017 at the global level, though African countries also mentioned trans-shipment through Uganda, Ethiopia, Madagascar and South Africa.

While heroin is often smuggled to East Africa by sea (80 per cent of the total reported by Kenya in

125 UNODC and Afghan Opiate Trade Project, "Short update: the Caucasus route" (Vienna, 2019) (forthcoming).

Recent heroin seizures in Africa

Overall, seizures suggest that the trafficking of heroin via Africa appears to have increased between 2013, when less than 0.5 tons of heroin was seized, and 2017, when almost 1.5 tons were seized, with 2018 seizures suggesting that it may have increased further since then. The Egyptian authorities seized 1,350 kg of heroin in the exclusive economic zone of the Red Sea in April 2018 and 2,147 kg (including 99 kg of crystal methamphetamine) in April 2019.[a] In May 2018, the Combined Maritime Forces seized 260 kg of heroin on a dhow in the exclusive economic zone of the United Republic of Tanzania; overall, 1.63 tons of heroin were seized over the period July 2017–June 2018 by the Combined Maritime Task Force in various operations in the Indian Ocean when searching ships bound for, or planning to transit, the United Republic of Tanzania.[b] Moreover, in October 2018, the National Coast Guard of Mauritius seized 125 kg of heroin in Coin de Mire, Mauritius. A number of smaller heroin seizures were also reported by Kenya in 2018, most notably on the coast near Mombasa, and by the Seychelles, Madagascar, Zambia and Mozambique.[c] The authorities of Mozambique reported frequent trafficking of heroin from Pakistan to Kenya and from there to Mozambique, most notably Maputo, for onward trafficking to Johannesburg in South Africa.[d] A number of reports suggest that heroin trafficking activities to Mozambique for onward trafficking to South Africa may have gained in importance in recent years.[e]

[a] UNODC and Paris Pact, Drugs Monitoring Platform.

[b] Twenty-eighth Meeting of Heads of National Drug Law Enforcement Agencies, Africa, "Country report: United Republic of Tanzania", UNODC/HONLA 28 CRP.16, Dar es Salaam, (17-21 September 2018).

[c] UNODC and Paris Pact, Drugs Monitoring Platform.

[d] Twenty-eighth Meeting of Heads of National Drug Law Enforcement Agencies, Africa. "Country report: Mozambique: Situation of Illicit Drug Trafficking in Mozambique", UNODC/HONLA 28 CRP.7, Dar es Salaam, (17-21 September 2018).

[e] Joseph Hanlon, "The Uberization of Mozambique's heroin trade", *London School of Economics* (Working Paper Series 2018, No. 18-190, July 2018); Nampula, Africa is heroin's new highway to the West, The Economist, (31 January 2019).

2014 and 50 per cent by Madagascar in 2016), heroin trafficking to countries in Southern and West Africa seems to be more common by air (75 per cent of the total in South Africa in 2017, 99 per cent of the total in Nigeria in 2017 and 100 per cent of the total in Ghana in 2016). Similarly, most outbound heroin trafficking by countries in Southern and West Africa seems to be by air.

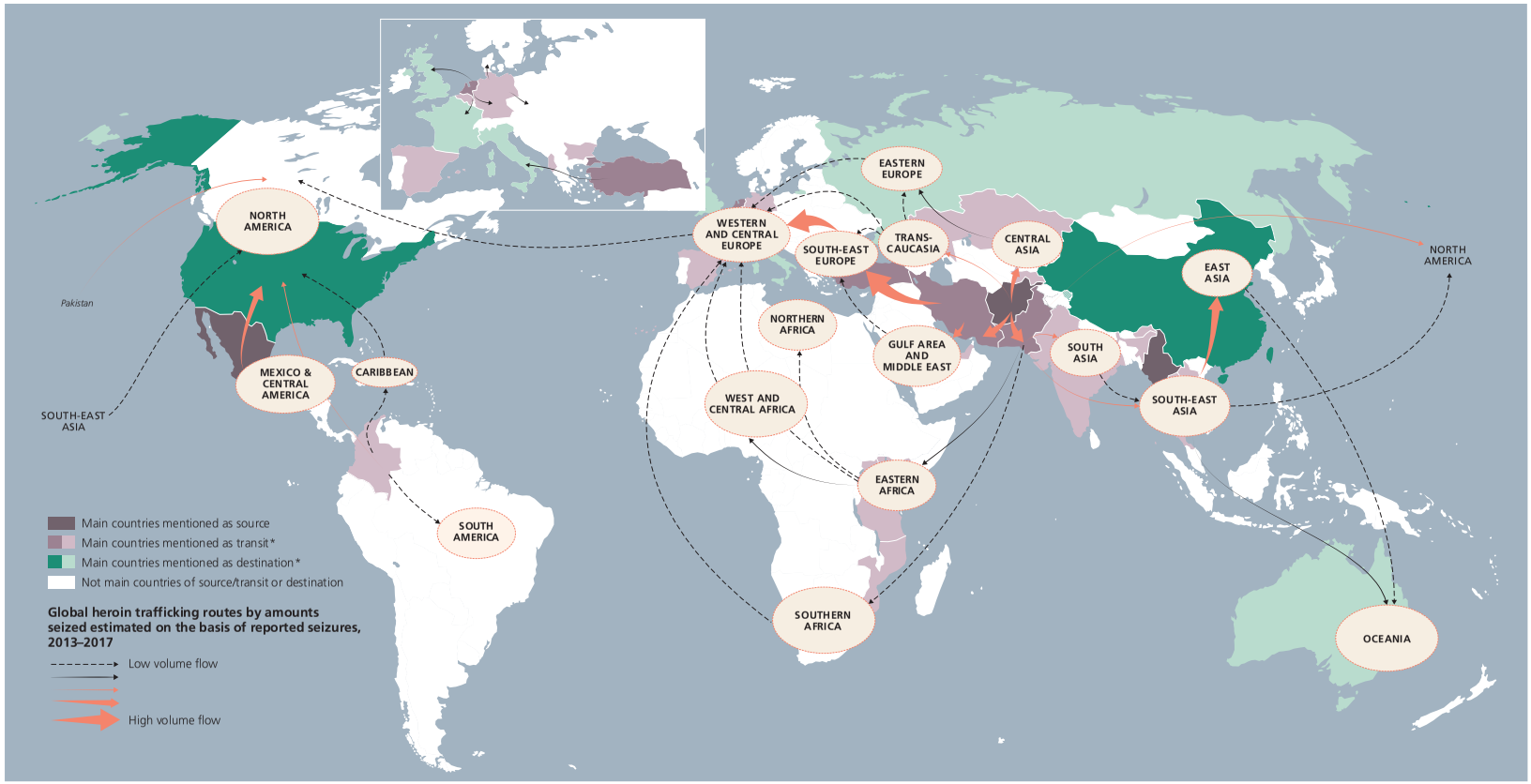
The main heroin trans-shipment countries on the Arabian Peninsula, both globally and for countries in Africa, were the United Arab Emirates and Qatar over the period 2013–2017.

Relative importance of the northern route continues to decline

The northern route continues to be used to smuggle heroin from Afghanistan via Central Asia to markets in that subregion as well as to the Russian Federation, the main destination market. There are also reports of heroin trafficking, although to a very small extent, to countries neighbouring the Russian Federation such as Belarus, Lithuania, Latvia and Ukraine, as well as of small amounts of heroin smuggled into the Russian Federation, in particular the Kaliningrad Oblast (an exclave between Poland and Lithuania), via countries in the European Union.

The trafficking of heroin to the Russian Federation is carried out predominantly via the northern route. Its importance seems to have been declining, however: 10 per cent of global quantities of heroin and morphine were seized along the route in 2008, whereas the proportion decreased to 1 per cent in 2017; it is noteworthy that over the past decade there has also been a decline in the number of registered opiate users in Central Asia and the Russian Federation. In 2015, the Russian Federation estimated that 80 per cent of the heroin seized in the country had originated in Afghanistan and had been trafficked via Central Asia into the Russian Federation, while 20 per cent had departed from Pakistan and was probably trafficked via the Islamic Republic

MAP 7 Main heroin trafficking routes as described by reported seizures, 2013–2017



Sources: UNODC, responses to the annual report questionnaire and individual drug seizure database.

**A darker shade indicates a larger amount of heroin being seized with the country as transit/destination.*

The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the period 2013–2017. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin does not reflect the country in which the substance was produced.

The main countries mentioned as transit or destination were identified on the basis of both the number of times they were identified by other Member States as departure/transit or destination of seizures, and the annual average amount that these seizures represent during the period 2013–2017. For more details on the criteria used, please see the Methodology section of this document.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

of Iran and Azerbaijan into the Russian Federation. In subsequent years, however, Pakistan was no longer reported to be a major country of departure for heroin shipments intercepted in the Russian Federation. The main transit countries for heroin found in the Russian Federation in 2016 were in Central Asia (notably Tajikistan and Kazakhstan) and the Caucasus (notably Azerbaijan), with reports in 2017 suggesting that, in the context of ongoing decreases in heroin shipments to the Russian Federation, there may have been an overall decrease in trafficking along the northern route and a concentration via Central Asia, notably via Kazakhstan (50 per cent of all identified shipments in transit) and Uzbekistan (30 per cent).

Decline in heroin trafficking linked to a decline in opium production in East and South-East Asia, but the subregion remains the main source of opiates for Oceania

On the basis of seized amounts, the largest non-Afghan-related opiate trafficking activities are of opiates produced in South-East Asia (mostly Myanmar), which are trafficked to other markets in East and South-East Asia (mostly China and Thailand) and to Oceania (mostly Australia). Seizures made in those countries accounted for 11 per cent of the total global quantities of heroin and morphine seized (excluding seizures reported by Afghanistan) in 2017. This represents a decrease from 2015 when the share was 15 per cent. The decrease went in parallel with a reported decline in opium production in Myanmar of 37 per cent over the period 2013–2017.[126]

Despite the recent decline in opium production in Myanmar, the Australian authorities, based on a detailed analysis of bulk weight border seizures, reported that the proportion of heroin of South-East Asian origin seized increased from a low of 26 per cent in 2008 to more than 99 per cent over the period January–June 2017.[127] Nonetheless, in line with the reported decline in opium production in Myanmar, heroin seizures made at the Australian border turned out to be smaller in 2016–2017 than in 2014–2015, both in terms of quantity and number of seizure cases.[128] The main embarkation points for heroin seized at the Australian border in 2016–2017 were, by weight, Malaysia, followed by the Lao People's Democratic Republic, Thailand, Cambodia and Viet Nam, i.e., all countries located in South-East Asia.[129]

Most of the heroin trafficked in the Americas continues to originate in the region

Based on quantities seized, heroin trafficking within the Americas, towards the United States in particular, has shown a clear upward trend over the past decade. Most of this trafficking takes place within North America, i.e., from Mexico to the United States and, to a far lesser extent, from Colombia and Guatemala (typically via Mexico) to the United States.

Analysis of wholesale seizures of heroin in the United States has shown the increasing predominance of heroin originating in Mexico over the past decade, which accounted for over 80 per cent of the heroin samples analysed in 2016. This does not include the 14 per cent that was classified as "inconclusive South American", i.e., consisting of white powder heroin processed using the "South American method", with no means of linking the samples to heroin originating either in Colombia or Mexico. In parallel, the proportion of heroin originating in South America (mostly Colombia), which appears to have been predominant until 2010, has since been decreasing (4 per cent in 2016). Data on retail trafficking in metropolitan areas confirm the shift to the predominance of heroin from Mexico, not only in the western areas of the country but also in the eastern areas, which until 2014 appear to have been dominated by heroin originating in South America. [130] In the United States market, the presence of heroin from Asia has become minimal: heroin from South-West Asia was identified in less than 1 per cent of samples in 2016, while heroin from South-East Asia,

126 This is based on changes in opium production reported from Shan and Kachin States (UNODC and Central Committee for Drug Abuse Control, *Myanmar Opium Survey 2017* (December 2017, p. iv).

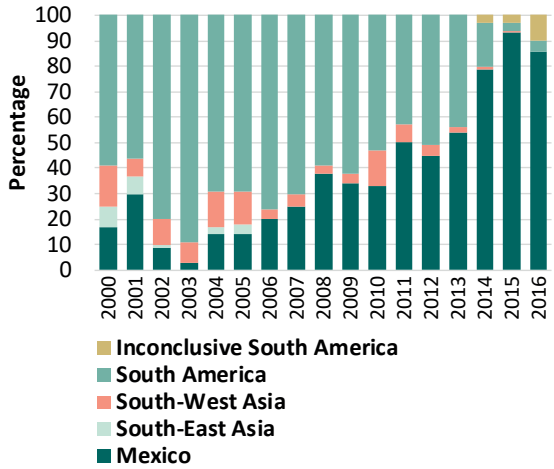
127 Australian Criminal Intelligence Commission, *Illicit Drug Data Report* 2016-17 (Canberra, 2018).

128 Ibid.

129 Ibid.

130 *2018 National Drug Threat Assessment.*

FIG. 24 Origin of heroin seized at the wholesale level in the United States, 2000–2016



Source: United States, DEA, *2018 National Drug Threat Assessment 2018.*

the main source of heroin over the period 1988–1994,[131] is likely to have disappeared from the United States market. The last shipment of heroin in the United States found to have originated in South-East Asia was in 2005, with no sample of heroin originating in that subregion having been identified since then in wholesale-level seizures.[132]

By contrast, heroin found in Canada is mostly of Afghan origin, with transit through Pakistan and India, and also through the Islamic Republic of Iran and the United Arab Emirates. In addition, transit through Africa (South Africa and United Republic of Tanzania) and Europe (Belgium, Netherlands and Germany) were reported over the period 2013–2017.

In South America, Central America and the Caribbean, heroin markets continue to be supplied mainly with heroin from Colombia, with transits through a number of countries within those subregions (2013–2017). However, a number of indicators suggest that those heroin markets remain relatively small.

131 United States, DEA, *2014 National Drug Threat Assessment* (November 2014).

132 *2018 National Drug Threat Assessment.*

Supply of pharmaceutical opioids

Licit and illicit manufacture of pharmaceutical opioids

The supply of pharmaceutical opioids to illicit drug markets for non-medical use may occur in the form of diversion from licit sources and from illicit production. Diversion can take place in various ways: the purchase of pharmaceutical opioids – often in preparations (such as cough syrups containing codeine) – for non-medical purposes in drug stores and pharmacies, which are subsequently re-sold on the black market; theft from hospitals or pharmacy stocks; the diversion of shipments from the licit trade at the wholesale level or at the import/export level when crossing borders mainly by means of false declarations;individuals can also access the licit supply of pharmaceuticals to obtain substances through doctor shopping, that is, obtaining prescriptions from several different doctors.

The most widely manufactured licit opioids at the global level in 2017, in descending order, were the three main opium alkaloids directly derived from the poppy plant: morphine, codeine and thebaine.[133, 134]

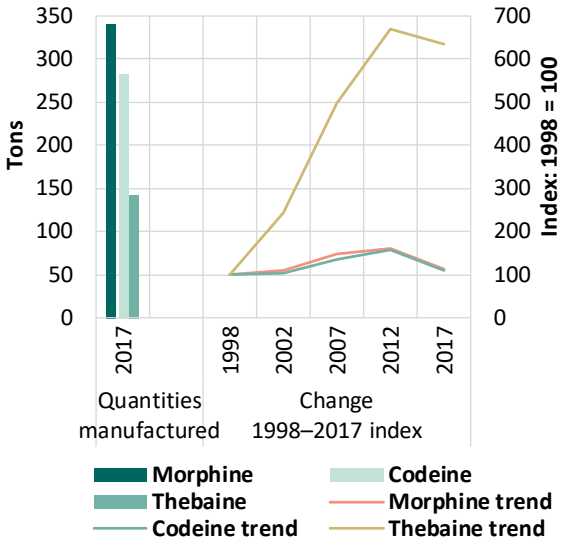
The global production of morphine and codeine has remained largely stable over the past two decades; however, production of thebaine has risen sixfold and increased demand for thebaine-rich poppy plant material has been reported. Although thebaine is not used for therapeutic purposes, it is required as a starting material in the manufacture of a number of semi-synthetic opioids, including oxycodone, oxymorphone and buprenorphine. In most years, the United States has been the main manufacturer of oxycodone, hydrocodone and of the other thebaine-related substances, except for buprenorphine.[135]

133 *Narcotic Drugs: Estimated World Requirements for 2019.*

134 Although all of these substances are directly extracted from opium or from poppy straw, codeine is also manufactured from morphine or thebaine, while thebaine is also partly manufactured from oripavine, another alkaloid of the poppy plant (see, INCB, *Narcotic Drugs: Estimated World Requirements for 2019*).

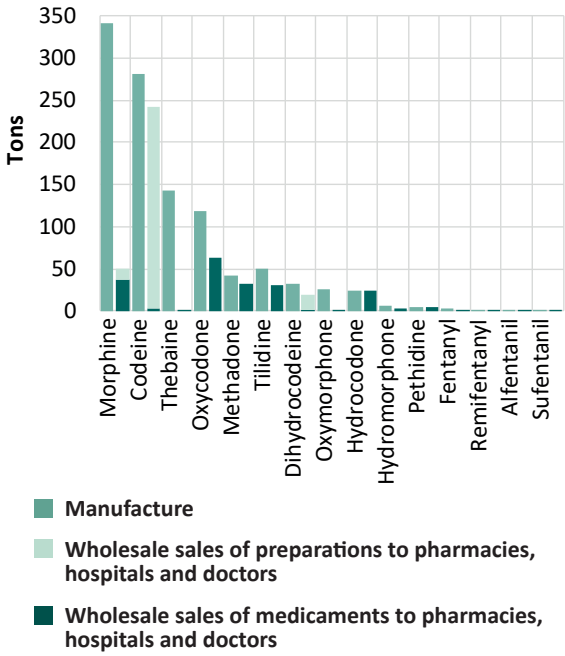
135 *Narcotic Drugs: Estimated World Requirements for 2019*, and previous years.

FIG. 25 Global quantities of the main opium alkaloids manufactured in 2017 and trends over the period 1998–2017



Source: *Narcotic Drugs: Estimated World Requirements for 2019—Statistics for 2017* (E/INCB/2018/2) and previous years.

FIG. 26 Licit manufacture of selected opioids and amounts available for consumption, 2017



Source: *Narcotic Drugs: Estimated World Requirements for 2019–Statistics for 2017* (E/INCB/2018/2).

Note: The large differences in the manufacture of morphine and the amounts of morphine available for consumption result from the fact that roughly 88 per cent of the morphine manufactured globally is converted into other narcotic drugs, mostly codeine, which is in turn used for the manufacture of various preparations, notably cough medication (89 per cent), or into substances not covered by the 1961 Convention. The remaining morphine is used directly for medical purposes, mainly for palliative care.

Given the role of the main natural opium alkaloids in the manufacture of various semi-synthetic opioids –including of hydrocodone, dihydrocodeine and desomorphine from codeine, while codeine and a large number of semi-synthetic opioids (including heroin) are also manufactured from morphine – wholesale quantities of those alkaloids sold to pharmacies, hospitals and medical doctors, i.e. opioids available for consumption, are far smaller than the actual quantities manufactured. It should also be noted that in a few cases, in particular of codeine and dihydrocodeine, amounts available for consumption have been dominated by the sale of preparations of these substances,[136] which are subject to less strict controls at the international level, and thus usually at the national level.

The licit manufacture of heroin takes place, mainly in Switzerland and the United Kingdom, to supply people enrolled in heroin-assisted treatment programmes in those countries as well as in a number of other countries, including Canada, Denmark, Germany and the Netherlands. During the period 2013–2017, the quantity manufactured globally per year amounted, on average, to less than 1 ton (929 kg in 2017),[137] which is only a minor fraction of the average total quantity of heroin estimated to have been illicitly manufactured (540 tons per year)[138] and seized (88 tons per year) over that period. This adds weight to the hypothesis that diversions from the licit market, if occurring, are a negligible contributor to the supply of heroin to illicit markets.

136 *Narcotic Drugs: Estimated World Requirements for 2019.*

137 Ibid.

138 UNODC estimate based on UNODC opium poppy cultivation surveys.

Likewise, most of the morphine found on illicit markets originates from illicitly produced opium, and only small quantities of morphine are likely to be diverted from licit manufacture to illicit markets. In fact, there is no evidence of large-scale diversion. Over the period 2013–2017, 4,417 cases of diversion of morphine (665,000 units, or 67 kg) were reported, while the overall number of reported seizure cases of "illicit morphine" was almost twice that figure (8,135 seizures of 221 tons). Moreover, while the majority of the licit manufacture of morphine takes place in France, followed by the United Kingdom and Australia,[139] nearly all of the morphine seized has been intercepted in South-West Asia, which is also the subregion where most of the opium destined for illegal markets is produced and where most clandestine morphine and heroin laboratories have been dismantled.

Compared with the 234 clandestine heroin laboratories (most of them in Afghanistan) reported by 14 countries over the period 2013–2017, only a few clandestine laboratories manufacturing other opioids were dismantled over the same period, including a few laboratories manufacturing morphine (India and Mexico), methadone (Belarus, Latvia and the Russian Federation), desomorphine (Russian Federation), codeine (Czechia) and monoacetylmorphine (Austria).

Data that can help explain whether other pharmaceutical opioids are diverted from the licit to the illicit market or are illicitly produced at source are limited, although this varies depending on the substance and region. In the case of fentanyl, for example, evidence suggests that the bulk of the substance found on the illicit market comes from illicit manufacture, although some small diversions of fentanyl have been reported in the United States. The clandestine manufacture of pharmaceutical opioids concerns fentanyl and its analogues. A number of laboratories have been found manufacturing fentanyl and analogues in recent years in Australia, Canada, the Dominican Republic, Germany, Mexico, the Russian Federation, Slovakia, Sweden and the United States. At the same time, most of the illicit supply, based on reports by Member States, appears to have originated in illicitly operating laboratories in China. However, as the United States is also the largest manufacturer country of licit fentanyl worldwide (2017 and previous years),[140] some diversion of fentanyl from domestic licit manufacture also seems to occur, mostly for personal use and street sales in the country.[141]

The large market for tramadol of non-medical use in North Africa and the Near and Middle East also seems to be supplied by tramadol specifically manufactured and trafficked for the illegal market, but information remains limited. The diversion of pharmaceutical opioids such as codeine and oxycodone from the licit to the illicit market is evident in North America. Outside that subregion diversions of pharmaceutical opioids are not reported in large quantities, but that could be the result of underreporting or the limited capacity of law enforcement authorities to detect diversions. There is a gap in knowledge about the supply chain of codeine that is reportedly being used non-medically across many subregions. The fact that the global quantities of codeine seized are far smaller than those licitly manufactured at the global level, coupled with a lack of evidence of the existence of illicit laboratories for codeine manufacture, suggests that the non-medical use of codeine is largely supplied by the legal market. It is unclear, however, how and at what stage the supply of codeine for medical use is diverted for non-medical use. There may be a combination of scenarios, with some codeine preparations being easy to access for non-medical use in pharmacies or other types of outlet and diversion taking place before the drug reaches the retail market, resulting in a large proportion of the licit supply been diverted to the illicit market.

Amounts of pharmaceutical opioids available for consumption

Amounts of opiates and synthetic opioids (expressed in daily doses) available for consumption globally more than doubled over the period 1998–2010, followed by a period of stabilization and a decline over the period 2014–2017. This sharp increase mainly reflected an increase in the United States, where the increase over the period 1998–2010 was a consequence of initial reports suggesting that there had been insufficient access to pain medication for

139 *Narcotic Drugs: Estimated World Requirements for 2019.*

140 Ibid.

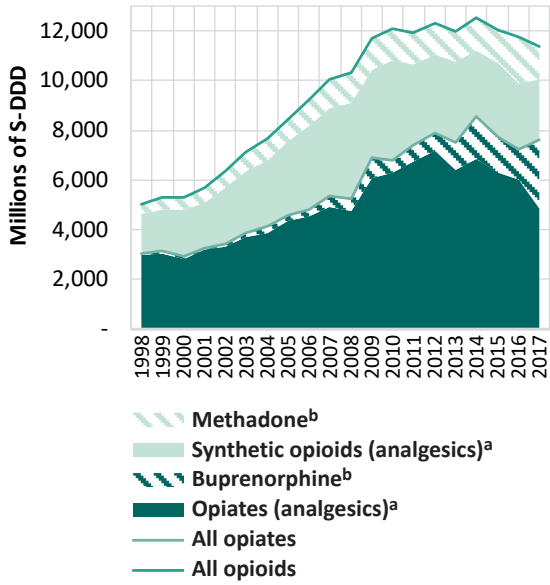
141 *2018 National Drug Threat Assessment.*

patients suffering from severe pain, and the view that few people would develop dependence on that type of medication if taken in a medical environment,[142, 143] together with the broadening of applications and an increase in the demand for some opioids, including fentanyl.[144]

Most of the increase in the amounts of pharmaceutical opioids available for consumption over the period 1998–2010 was not, however, of "traditional" opiates such as codeine and morphine; they increased in line with overall growth in opioid wholesale sales. The bulk of that increase was in the United States in wholesale sales of "new opiates"[145] marketed in the past as having less potential for addiction, substances used in substitution treatment and some synthetic opioids, notably fentanyl.[146] The strong increases in the amounts available for consumption included oxycodone (which experienced tenfold growth over the period), hydromorphone (fivefold growth), hydrocodone (threefold growth) and oxymorphone (46,000-fold growth). Substances used in substitution treatment for heroin-dependent people also saw strong increases in the amounts available for consumption. This applied to both methadone (threefold growth) and buprenorphine (11-fold growth). Amounts available for consumption of fentanyl rose ninefold over the period 1998–2010.[147]

While most of the increase in the availability of opioids for consumption over this period reflected increases in North America, some increases – starting from far lower levels – were also observed in most other regions, except Africa.[148]

FIG. 27 Global amounts available for consumption of pharmaceutical opioids for medical use under international control, number of daily doses, 1998–2017



Source: *Narcotic Drugs: Estimated World Requirements for 2019–Statistics for 2017* (E/INCB/2018/2)

Note: S-DDD refers to "defined daily doses for statistical purposes" as defined by INCB. S-DDDs are "technical units of measurement" for the purposes of statistical analysis and are not recommended daily prescription doses; actual doses may differ based on treatments required and medical practices. The statistics exclude preparations of opioids listed in Schedule III of the 1961 Convention. Details of S-DDDs used for these calculations will be provided in the methodological annex.

[a] *Substances used as analgesics, i.e. excluding substances used in substitution treatment;*

[b] *Substances used in substitution treatment and as analgesics.*

The initial strategy of marketing "new opiates" as having very low addiction potential, however, turned out to be harmful.[149, 150, 151] Reports of an increase in the non-medical use of pharmaceutical opioids as well as in related drug use disorders and health

142 Russell Portenoy and Kathleen Foley, "Chronic use of opioid analgesics in non-malignant pain: report of 38 cases", *Pain*, vol. 25, No. 2 (May 1986), pp. 171–186.

143 Gary M. Franklin, "Opioids for chronic, non-cancer pain", St. Luke's Rehab Institute and COHEs, 7 November 2007.

144 *Narcotics Drugs: Estimated World Requirements for 2018*.

145 Most "new opiates" are not, in fact, really new. Their development mostly dates back to the first or second decade of the 20th century. However, several of these substances had their names and formulas changed successfully for marketing purposes (see, Arzneimittelkommission der deutschen Ärzteschaft: Oxycodon (Oxygesic®) – Missbrauch, Abhängigkeit und tödliche Folgen durch Injektion zerstoßener Retardtabletten, *Deutsches Ärzteblatt*, vol. 100, No. 36 (2003); Patrick Radden Keefe, "The family that built an empire of pain", *The New Yorker* (New York, 23 October 2017).

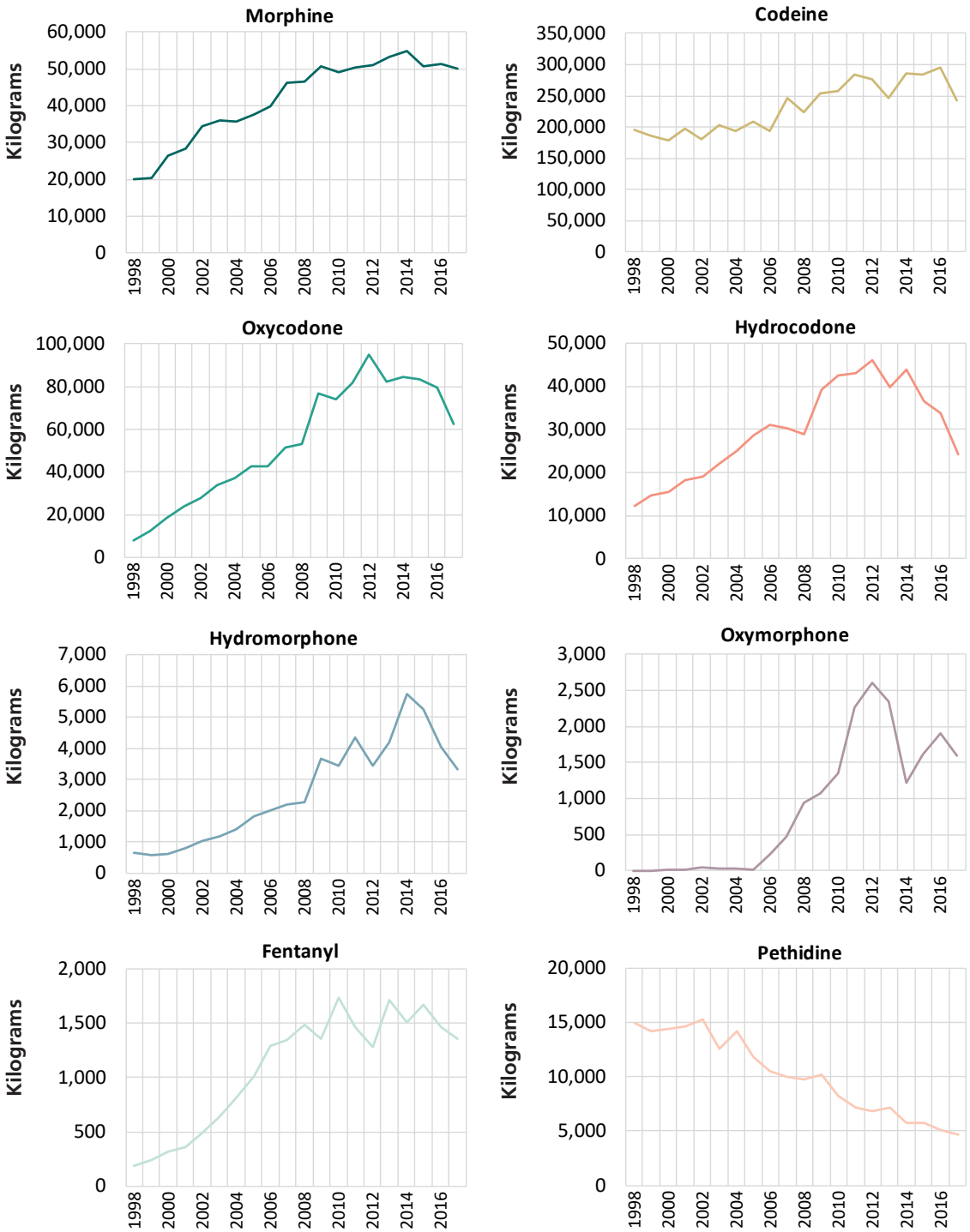
146 Gary M. Franklin, "Opioids for chronic, non-cancer pain", St. Luke's Rehab Institute and COHEs, 7 November, 2007.

147 *Narcotic Drugs: Estimated World Requirements for 2019* and previous years.

148 *Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes* (E/INCB/2018/1/Supp.1).

149 National Academies of Sciences, Engineering, and Medicine, *Pain Management and the Opioid Epidemic: Balancing Societal and Individual Benefits and Risks of Prescription Opioid Use* (Washington, D. C., The National Academies Press, 2017).

FIG. 28 Global amounts available for consumption of selected opioids (including preparations) for medical use, 1998–2017 (kilograms)



Source: INCB, *Narcotic Drugs: Estimated World Requirements for 2019–Statistics for 2017* (E/INCB/2018/2) and previous years.
Note: all these substances are controlled under the 1961 Convention.

consequences prompted authorities in North America to gradually strengthen the overall control system and warn medical doctors of the dependence potential of these substances and against overprescribing in order to avoid diversion.

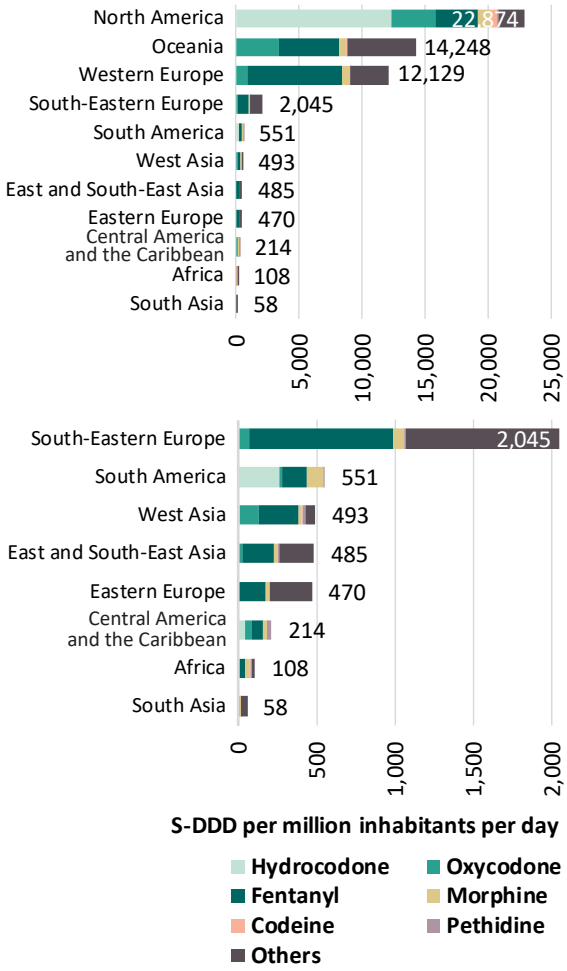
This in turn led to a period of stabilization, at a high level, of the licit manufacture and availability for consumption of internationally controlled pharmaceutical opioids over the period 2010–2014, followed by a period of moderate decline (around 10 per cent) at the global level over the period 2014–2017, as opioid-related harm continued to worsen and controls were further tightened in North America. The recent decline at the global level was mostly prompted by reductions in amounts of opioids available for consumption reported in North America, although declines in 2017 from the previous year were also reported from South America, East and South-East Asia, West and Central Europe and Africa.[152]

Since 2014, the decline in the amounts of opiates available for consumption has been particularly pronounced in the case of opiates, such as oxycodone, hydrocodone and hydromorphone, which had found their way on to the illicit markets, particularly in North America. Despite this decline, North America continued to account in 2017 for a major share of global amounts available for consumption of hydromorphone (72 per cent), oxycodone (73 per cent) and hydromorphone (99 per cent).[153]

Some of the other synthetic opioids, such as pethidine, continued declining (69 per cent over the period 1998–2017) and amounts available for consumption of dextropropoxyphene, which was very popular in the 1990s, fell by more than 99 per cent over the past two decades following requests by the United States authorities not to prescribe it any longer,[154] while in other countries the substance was banned owing to concerns over serious side effects.[155]

By contrast, amounts of buprenorphine available for consumption, which, like methadone, is used to treat drug-dependent people, continued to increase, by 65 per cent over the period 2014–2017. This

FIG. 29 Amounts available for consumption of codeine, fentanyl, morphine, pethidine and other opioids, by region, expressed in standard defined daily doses per million inhabitants, 2017



Source: *Narcotics Drugs: Estimated World Requirement for 2019–Statistics for 2017* (E/INCB/2018/2), p. 49.

150 Wilson M. Compton and others, "Relationship between nonmedical prescription opioid use and heroin use", *The New England Journal of Medicine*, vol. 374 (2016), pp 154–163.

151 Brigid Huey, "Mother's postpartum oxycodone use: no safer for breastfed infants than codeine", *Journal of Pediatrics* (Elsevier, 6 September 2011).

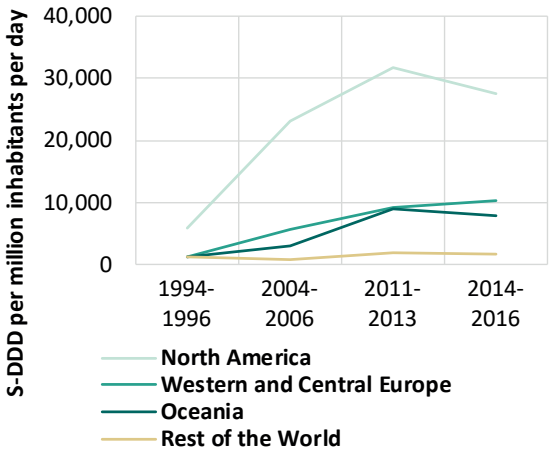
152 INCB database on the amounts available for consumption of opioids, expressed in S-DDD per million inhabitants per day, to hospitals, pharmacies and medical doctors.

153 Ibid.

154 United States, Food and Drug Administration, Drug Safety and Availability, "FDA drug safety communication: FDA recommends against the continued use of propoxyphene", 19 November 2010.

155 INCB, *Narcotics Report 2018*, (New York, 2019).

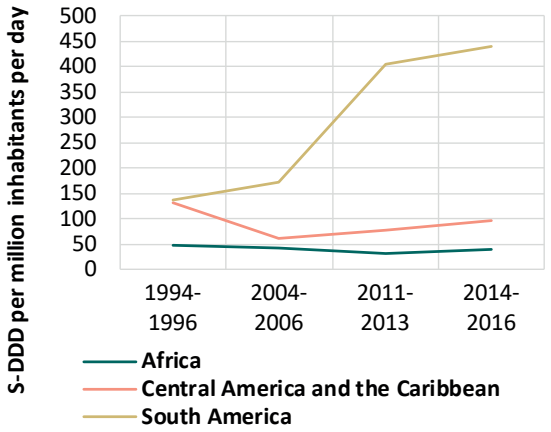
FIG. 30 Trends in availability of opioid analgesics for consumption, by region, 1994–2016



Source: Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes (E/INCB/2018/1/Supp.1).

Note: S-DDD per million inhabitants per day, by total regional population.

FIG. 31 Trends in availability of opioid analgesics for consumption, selected subregions, 1994–2016



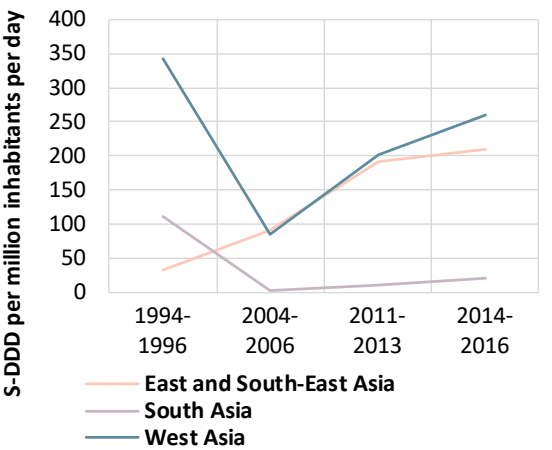
Source: Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes (E/INCB/2018/1/Supp.1).

Note: S-DDD per million inhabitants per day, by total regional population.

resulted in a substantial increase in amounts of buprenorphine and methadone available for consumption, which, taken together, increased by 34 per cent over that period. However, as with other pharmaceutical opioids, there are large differences in the global consumption patterns of buprenorphine and methadone for medical purposes, as seen in the coverage of opioid-agonist treatment for people with opioid use disorders.[156]

In more general terms, although they have declined in recent years, amounts of pharmaceutical opioids available for consumption remain at a very high level – expressed in standard defined daily doses (S-DDD) per million inhabitants – in North America, followed by Oceania and Europe. By contrast, the level continues to be extremely low in most developing countries, notably in South Asia and in Africa.[157] While the comparatively high level of sales and the availability of pharmaceutical opioids in North America may point to over-prescription practices in the subregion, data indicate that a number of countries in the developing world continue to face a severe lack of access to pharmaceutical opioids as pain medication, despite an increase in their availability in subregions such as South America, East and South-East Asia and South-West Asia. Subregions of Africa and Central America and the

FIG. 32 Trends in availability of opioid analgesics for consumption, Asia, 1994–2016

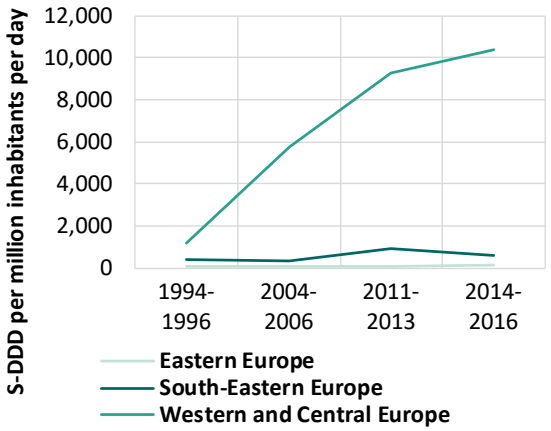


Source: INCB, *Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes* (E/INCB/2018/1/Supp.1).

156 See, for example, *World Drug Report 2018*.

157 *Narcotics Drugs: Estimated World Requirements for 2019*.

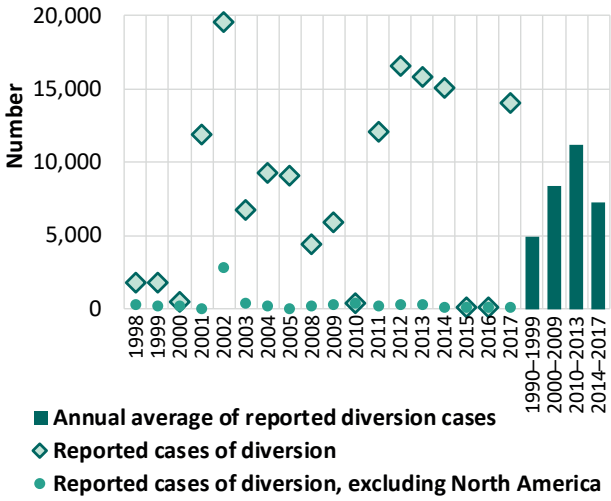
FIG. 33 Trends in availability of opioid analgesics for consumption, Europe, 1994–2016



Source: Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes (E/INCB/2018/1/Supp.1).

Note: S-DDD per million inhabitants per day, by total regional population.

FIG. 34 Reported cases of diversion of pharmaceutical opioids, 1990–2017



Source: UNODC, responses to the annual report questionnaire.

Caribbean, starting from low levels, even faced a decline in availability.[158, 159]

Diversion of pharmaceutical opioids from licit sources

Over the period 1998–2017, 71 countries reported cases of diversion of pharmaceutical opioids from licit sources, including 44 countries reporting cases within their national borders. This includes thefts from manufacturing laboratories and wholesalers, sales of prescriptions to unauthorized persons, thefts from hospitals and doctor's surgeries, and diversion from international trade. The diversion of pharmaceutical opioids from licit sources was reported in all five regions, but the majority of cases (90 per cent) over the past two decades were reported by countries in North America, a subregion where availability for consumption of pharmaceutical opioids is at the highest per-capita level.[160] The number of reported diversions of pharmaceutical opioids fluctuated greatly over the period, mostly because of reporting practices, in particular in North America, rather than year-on-year changes in the number of diversions.

A total of 63 different pharmaceutical opioids have been reported in diversions since 1998. In terms of the number of cases in which each substance is involved, which mainly reflects diversions reported by countries in North America over the past two decades, oxycodone tops the list, followed by hydrocodone, morphine, hydromorphone and codeine. In 2017, however, reflecting a number of indicators that suggest growth in the illegal market for fentanyl in North America, most reported diversions were of fentanyl, followed by morphine and tramadol.

For most substances, reported seizures are far more important than reported diversions, both in terms of cases and even more so in terms of quantities seized.

Seizures of pharmaceutical opioids

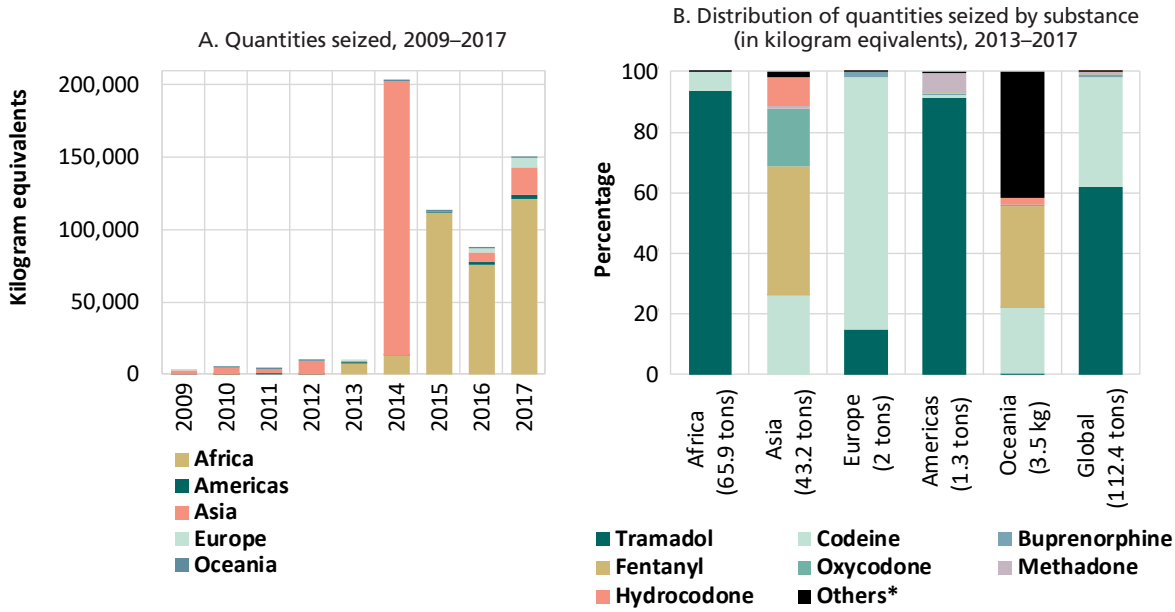
Seizure data show the distinct problems that each region faces in relation to the non-medical use of opioids: the illicit market for non-medical use of opioids is dominated by tramadol in Africa, codeine in Asia and fentanyl in North America. Those regions also experience different challenges in

158 Regions as defined by INCB.

159 *Progress in Ensuring Adequate Access to Internationally Controlled Substances for Medical and Scientific Purposes* (E/INCB/2018/1/Supp.1).

160 *Narcotic Drugs: Estimated World Requirements for 2019.*

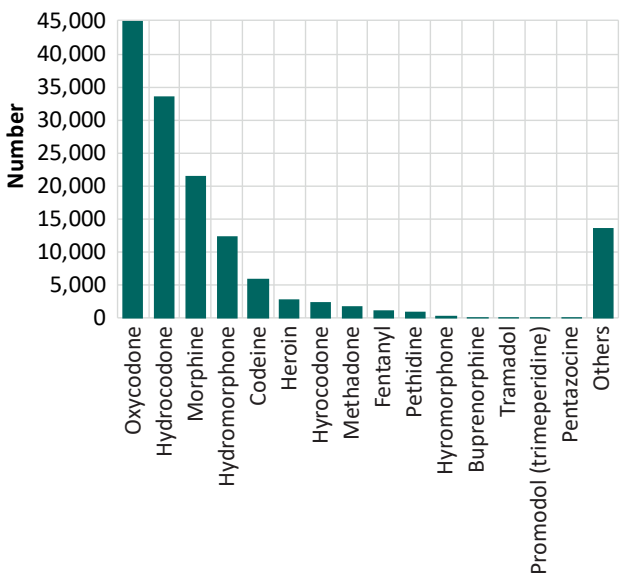
FIG. 35 Global quantities of pharmaceutical opioids seized



Source: UNODC, responses to the annual report questionnaire.

**Others include diphenoxylate, thebaine, hydromorphone, morphine, phenazocine, novahistex, pentazocine, carfentanil, alpha-methylacetylfentanyl, ocfentanil, furanylfentanyl, pethidine, Percocet®methyldihydromorphine, tapentadol, trimeperidine, Oxycocet®, Apo-oxycodone®, dihydrocodeine, M-Eslon®, Oxyneo® and U-47700.*

FIG. 36 Main pharmaceutical opioids reported to have been diverted, number of cases, 1998–2017

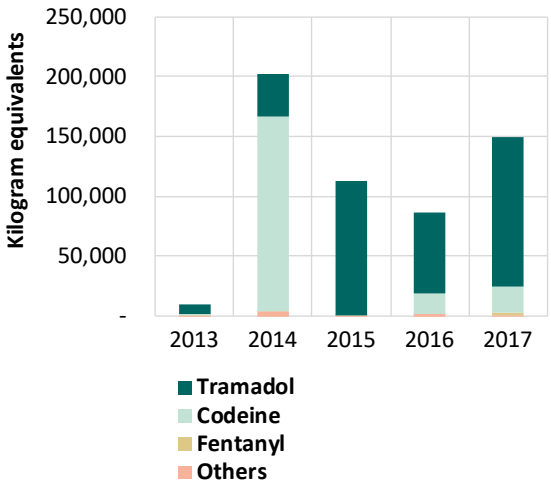


Source: UNODC, responses to the annual report questionnaire.

relation to the availability of opioids for medical use, with North America having the highest availability of opioids for medical purposes and Africa and Asia the lowest.

Until 2009, only small quantities of pharmaceutical opioids were seized each year at the global level (an average of 116 kg per year over the period 1998–2008). Those quantities increased, however, to an annual average of 6.3 tons over the period 2009–2013. In 2014, the amount seized reached a record high of 203 tons; since then, despite fluctuations, the amount seized has remained at a high level, exceeding global seizures of heroin every year, except in 2016. In 2017, 150 tons of pharmaceutical opioids were intercepted worldwide, more than 1,000 times the quantity of opioids reported in diversion cases, which accounted for 47 kg, 72 litres and 61,000 units of different opioids. In 2017, the increase, compared with that in 2016, was particularly marked in the case of fentanyl (sixfold increase) and methadone (fivefold increase). By contrast, global quantities of oxycodone and hydrocodone seized in 2017 decreased by 92 per cent and 47 per

FIG. 37 Global quantities of pharmaceutical opioids seized, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

Note: others include methadone, hydrocodone, oxycodone, dextropropoxyphene, diphenoxylate, hydromorphone, buprenorphine, thebaine, hydromorphone, morphine, phenazocine, novahistex, pentazocine, penazocine, carfentanil, -alpha-methylacetylfentanyl, cfentanil, furanylfentanyl, pethidine, Percocet®,methyldihydromorphine, tapentadol, trimeperidine, Oxycocet®, Apo-oxycodone®, dihydrocodeine M-Eslon®, Oxyneo® and U-47700.

cent, respectively, from the previous year. That might have been linked to a number of factors that mainly affected the United States market, including a decline in the licit manufacture and the amounts of those substances available for consumption,[161, 162] and reduced demand (see page 16 of the present booklet) – for example, the implementation of prescription drug monitoring programmes, which track the prescription and dispensation of controlled prescription drugs to patients[163] – which resulted in fewer opportunities for trafficking and, consequently, for diversion and seizures.

In recent years, 59 per cent of the total quantity of pharmaceutical opioids seized over the period 2013–2017 was intercepted in Africa, where it was mostly destined for local markets in the region, and 38 per cent was intercepted in Asia. In Africa, those seizures were mostly of tramadol in West and North Africa; in Asia they were of codeine, mainly in East and South-East Asia, South Asia and the Caucasus.

Accounting for 62 and 36 per cent, respectively, of the total quantity seized, tramadol and codeine dominated global seizures of pharmaceutical opioids over the period 2013–2017. Expressed in S-DDD, as defined by INCB,[164] seizures of pharmaceutical opioids were, however, dominated by fentanyl and its analogues in both 2016 and 2017 (over 80 per cent in 2017), followed by tramadol (11 per cent). This reflects the fact that fentanyl is about 100 times more potent than morphine.[165] Such comparisons may be misleading, however, as the purity of the various substances may differ. While some of the products diverted from licit channels may be completely pure, like any licit pharmaceutical drug, fentanyl(s) seized in the United States were found to have been heavily adulterated (average purity of 5.1 per cent in 2017).[166]

Trafficking in tramadol continues to grow in importance

Tramadol is not under international control, even though it is under national control in many countries in Africa, the Middle East, Europe and North America. It has been considered for critical review by the Expert Committee on Drug Dependence six times over the past three decades: in 1992, 2000, 2002, 2006, 2014 and 2018.[167]

Tramadol is widely used in medicine and was originally manufactured in Germany in 1977 then, some 20 years later, in other industrialized countries, including Australia, the United Kingdom and the United States.[168] It is not clear if, and to what extent, tramadol found in the illicit markets has been diverted from licit channels or to what extent is has been illicitly manufactured. Some high dosage packaging found on illicit markets in Africa[169] suggest that there is specialized manufacturing to supply the illegal market, but more extensive research is required to improve understanding of

161 *Narcotic Drugs: Estimated World Requirements for 2019.*

162 INCB database on the amounts available for consumption of opioids.

163 *2018 National Drug Threat Assessment.*

164 *Narcotic Drugs: Estimated World Requirements for 2019.*

165 Ibid.

166 *2018 National Drug Threat Assessment.*

167 WHO, "Annex 1: extract from the report of the forty-first meeting of the Expert Committee on Drug Dependence".

168 *World Drug Report 2018.*

169 Ibid.

Tramadol trafficking to and within West Africa: early findings from an ongoing study

Based on data from investigations and interviews with both officials and key informants in West Africa, it seems that most tramadol available for the non-medical market in West Africa has been imported from India, by boat or plane. A number of different methods of concealment have been used, including: false declarations claiming legitimate transport of items and falsification of legal documentation such as import licences; fraudulent packaging (for example, illicitly manufactured tramadol tablets have been discovered in boxes bearing the United Nations symbol); concealment of illicitly sourced tramadol among legally imported pharmaceutical drugs, medical equipment and other goods. Criminal networks also exploit some West African countries' structural vulnerabilities, such as limited knowledge of pharmaceutical drugs among law enforcement agencies and corruption.

Criminal groups from West Africa that are based in Asia and Asian criminal groups play a role in the trafficking of tramadol to West Africa. West African importers usually develop their supply chain by making contact with an exporter or an intermediary located in Asia, or directly with a manufacturer or a pharmaceutical trading company.[a] Importers often rely on their local contacts in the country of production for picking, buying and delivering the drugs. Importers of illicitly sourced tramadol may work in tandem with importers of licitly supplied pharmaceutical products who provide their expertise, blurring the frontier between the legal and the illegal markets. There is no evidence of clandestine laboratories manufacturing tramadol in West Africa, but a number of interviewees shared their concern about the likelihood of tramadol manufacture emerging in the subregion.

The smuggling of tramadol across West Africa appears to involve a range of actors. On the one hand, "big men" with the capacity to buy significant quantities of the drug control overall aspects of trafficking on a certain route; on the other hand, there are individuals who buy small quantities from retailers in, for example, street markets, organize transport from one country to another by taxi, motorcycle or bus, and resell the merchandise to users or to small-scale dealers.

Source: UNODC, Tramadol Trafficking in West Africa (provisional title), forthcoming.

[a] See for example: UNODC Transnational organized crime in West Africa: A Threat Assessment, Vienna, 2013; TOCTA, 2013; Gernot Klantschnig, "Négocier les profits et la facticité : Le commerce des produits pharmaceutiques entre la Chine et le Nigeria", Politique africaine, 2014/2 (N° 134), p. 89-110.

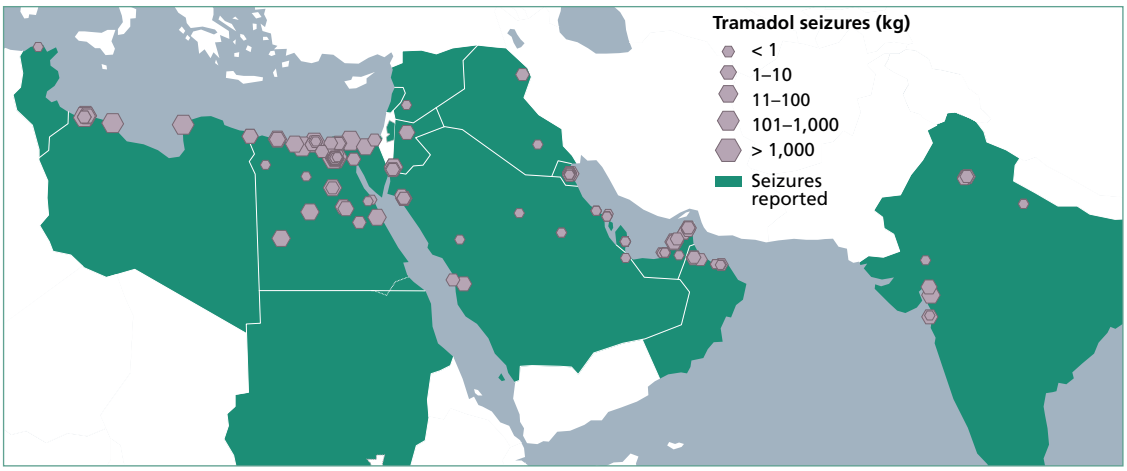
these dynamics. Most tramadol seized worldwide over the period 2013–2017 seems to have originated in India. In 2017, only India was reported to have been a country of origin of internationally trafficked tramadol.

Global seizures of tramadol increased from less than 10 kg in 2010 to almost 9 tons in 2013; they reached a record high of 125 tons in 2017. The largest quantities of tramadol seized over the period 2013–2017 were reported by Nigeria, followed by Benin, Egypt, Jordan, the United Arab Emirates and the Islamic Republic of Iran. In 2017, Nigeria intercepted the largest quantity worldwide (96 tons), followed by Egypt (12 tons in weight equivalents) and the United Arab Emirates (9 tons in weight equivalents).

Based on recent seizure data, the main destinations of illegal tramadol shipments are countries in West and Central Africa (including Benin, Cameroon, the Central African Republic, Chad, Côte d'Ivoire, Ghana, Guinea, the Niger, Senegal, Sierra Leone and the Sudan) and Northern Africa (mostly Egypt and, to a lesser extent, Libya), from which some tramadol is further smuggled to countries in the Near and Middle East (including Jordan and Lebanon). In addition, significant shipments in terms of quantity have been intercepted, originating in India and destined for countries in the Near and Middle East, such as the United Arab Emirates, both for use in the region and onward trafficking.

The fact that tramadol has been intercepted in areas close to where Islamic State and some of its

MAP 8 Significant seizures of tramadol in South Asia, North Africa and the Near and Middle East, January 2013–January 2019



Sources: Source: UNODC and Paris Pact, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

associated groups have been active (including in parts of Libya, Nigeria and the Syrian Arab Republic, as well as in the Sahel) has given rise to additional concerns that tramadol trafficking may be used by those groups to finance terrorist activities and that it may also be used non-medically by their fighters to suppress pain caused by injury, to increase endurance and their potential for violence while altering their senses.[170, 171, 172] Shipments to those groups have allegedly been sent from South Asia to countries in West Africa, North Africa and the Middle East, sometimes via Europe.

The largest tramadol seizures in Europe in recent years concerned tramadol shipments to final destinations in North Africa. Malta reported 36 million tramadol tablets seized in three seizure cases in 2016, all originating in India and destined for Libya, as well as a further 117 million tablets seized in four seizure cases in 2017. Another major seizure of tramadol tablets took place in Genoa, Italy, in May 2017. The seizure consisted of 37 million tablets, which had originated in India and been sold to an importer based in Dubai, United Arab Emirates. The importer sent the tablets to Sri Lanka before shipping them by sea to Italy en route to the cities of Misrata and Tobruk in Libya, possibly destined for Islamic State groups operating in that country.[173] Greece reported the seizure of 26 million tramadol tablets in two seizure cases in 2016; the tablets had originated in India, with Libya as the final destination.

Those seizures are modest in comparison with the quantities of tramadol intercepted by some countries in North Africa and the Middle East. For example, Egypt reported the seizure of 252 million tramadol tablets in 2016 and 236 million in 2017, while the United Arab Emirates seized 175 million in 2017. In addition, for the first time, Morocco reported the seizure of 40 million units of tramadol in 2017, which had been shipped into the country from India by sea in containers; they were destined for Guinea and other countries in West Africa.

Most of the tramadol seizures reported by Libya since 2013 have been made along the country's

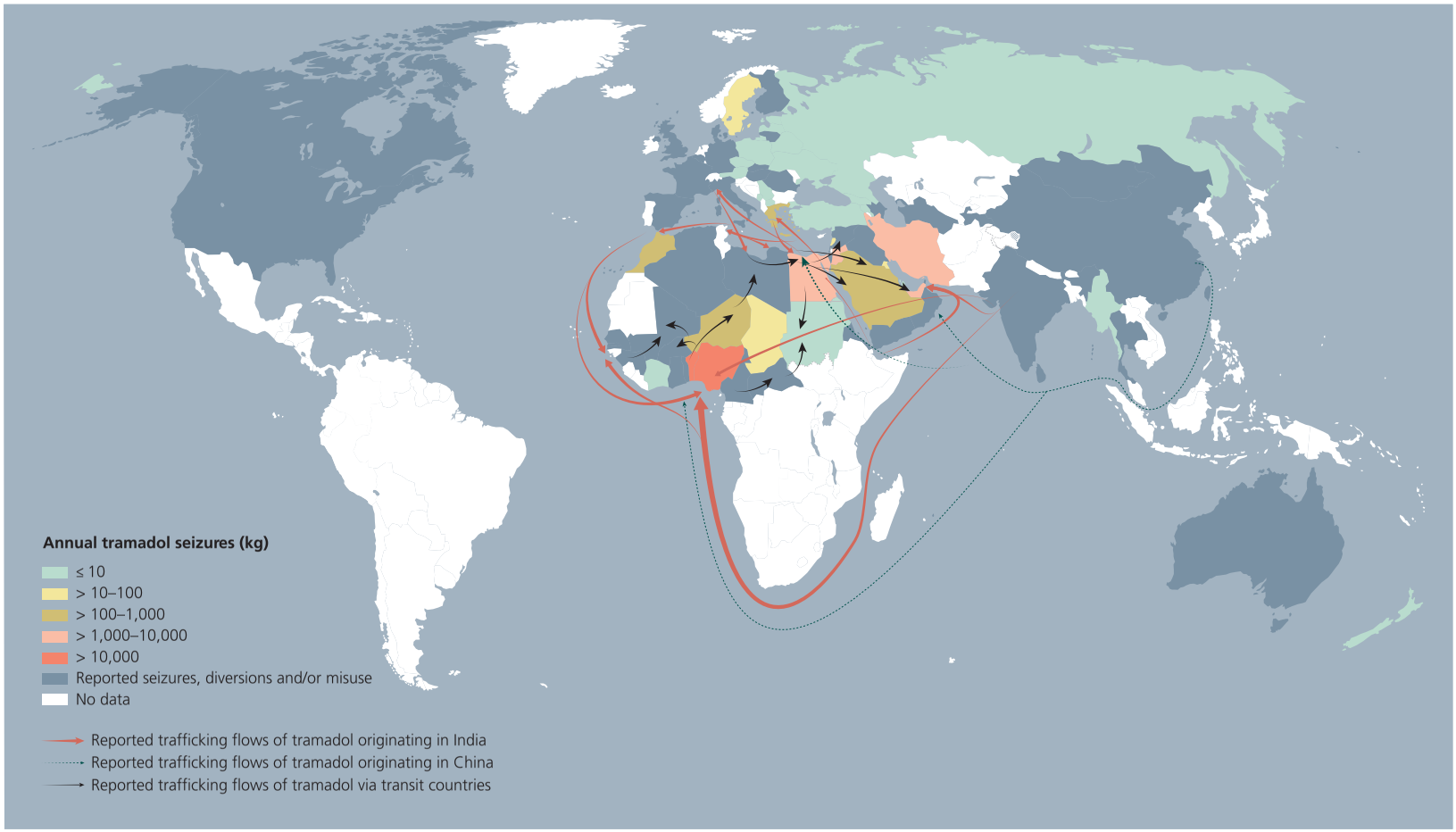
170 INCB, "Tramadol: review of the global situation".

171 Rita Santacroce and others, "The new drugs and the sea: the phenomenon of narco-terrorism", *International Journal of Drug Policy, January*, vol. 51 (January 2018), pp. 67–68.

172 Florence Gaub and Annelies Pauwels, *In-depth Analysis: Counter-Terrorism Cooperation with the Southern Neighbourhood* (Brussels, European Parliament, Directorate-General for External Policies, Policy Department, 2017).

173 Guardia di Finanza, reported in UNODC, Drugs Monitoring Platform; Santacroce and others, "The new drugs and the sea", pp. 67–68.

MAP 9 Reported seizures, diversion and trafficking routes of tramadol (based on reported seizures), 2013–2017



Sources: UNODC, annual report questionnaire data; International Narcotics Control Board, Report 2018 (and previous years); Heads of National Law Enforcement Agency report 2018 (and previous years); World Health Organization, Expert Committee on Drug Dependence, Thirty-sixth Meeting, Geneva, 16–20 June 2014; Bureau for International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Report 2019* (and previous years).

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries. The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Mediterranean coast. A cluster of tramadol seizures occurred in the Middle East in various countries in the Gulf region, from Kuwait to Oman, most notably along the coast of the United Arab Emirates. Most of the tramadol seizures in India in 2017 and 2018 were reported in the western part of the country, in particular in three locations: the State of Gujarat, India, which accounts for a third of the total turnover of that country's pharmaceutical sector;[174] in locations near the coast and in the city of Mumbai (suggesting substantial trafficking in tramadol by sea); and in New Delhi, in particular at its airport.[175]

There have also been reports of non-medical use of tramadol in North America, Europe, East and South-East Asia, and Oceania, where diversion from licit sources has been reported in a number of countries.

The overall trafficking patterns of tramadol seen to date may change in the near future, however. As of April 2018, under its Narcotics and Drugs and Psychotropic Substances Act of 1985, India introduced more restrictive control measures for tramadol.[176] Control under the Act gives more powers to law enforcement and, in particular, enables authorities to enter the premises of tramadol laboratories and prosecute those who manufacture tramadol without permission.

Trafficking in fentanyl and its analogues on the increase

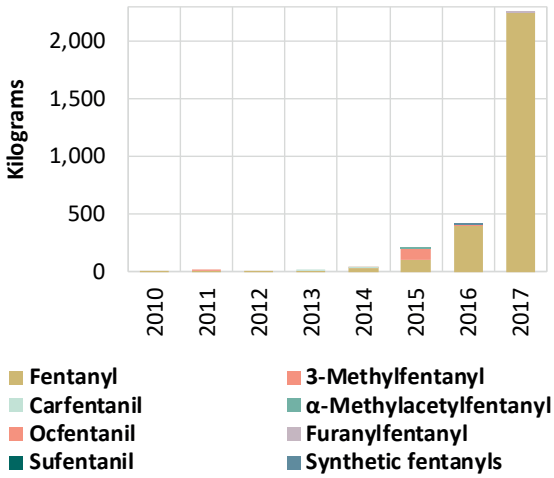
Accounting for more than 80 per cent of all quantities of pharmaceutical opioids seized in 2017, when expressed in S-DDD, the global quantity of fentanyl and analogues seized has grown markedly in the past few years: year-on-year increases were fourfold in both 2015 and 2016 and almost sixfold in 2017. While the number of countries reporting seizures of fentanyls has increased over the past few years, the illicit market for fentanyls remains highly concentrated in North America, accounting for 99 per cent of all global quantities of fentanyls seized in 2017.

174 India, Government of Gujarat, "Pharmaceuticals: sector profile" (Gujarat, 2017).

175 UNODC and Paris Pact, Drugs Monitoring Platform.

176 "Tramadol: review of the global situation".

FIG. 38 Global quantities of fentanyl and its analogues seized, 2010–2017



Source: UNODC, responses to the annual report questionnaire.

While a number of fentanyl analogues have been intercepted recently, fentanyl remains the most seized fentanyl-type substance (in terms of quantities) in all the regions, with the exception of Europe in 2015, when the Russian Federation reported several hundred seizure cases involving over 98 kg of 3-methylfentanyl.

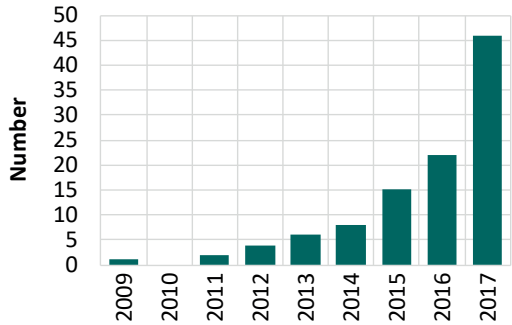
New synthetic opioid receptor agonists not under international control are dominated by newly emerging fentanyl analogues. Their number has risen markedly in recent data provided by Member States. Out of 78 NPS identified at the global level for the first time in 2017, forensic laboratories reported 22 new synthetic opioids receptor agonists, of which 19 were fentanyl analogues.[177]

In the European Union in 2016, only 2 per cent of the total number of seizures of new substances reported to the European early warning system were new opioids; however, around 70 per cent of those 2 per cent (1,600 seizure cases of new opioids) were fentanyl analogues.[178]

177 UNODC, early warning advisory on new psychoactive substances (January 2019).

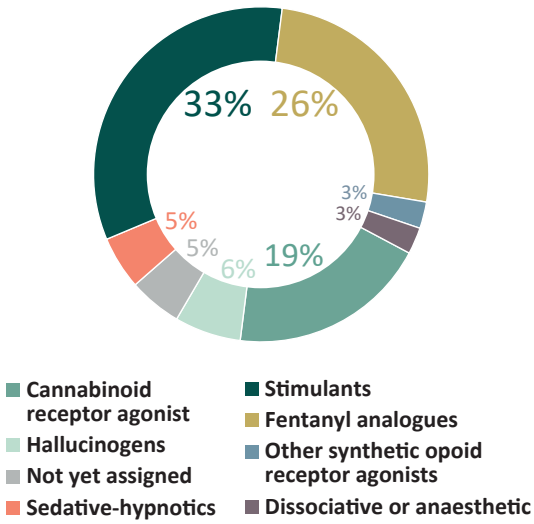
178 EMCDDA, *Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation–An Update from the EU Early Warning System* (Luxembourg, Publications Office of the European Union, 2018).

FIG. 39 Identified new synthetic opioid receptor agonists, 2009–2017



Source: UNODC, early warning advisory on new psychoactive substances.

FIG. 40 New psychoactive substances reported for the first time in 2017 (N = 78)

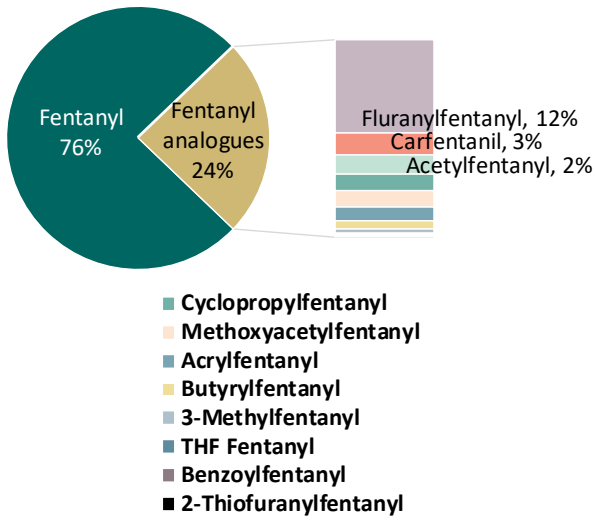


Source: UNODC, early warning advisory on new psychoactive substances.

In the United States, the single largest market for fentanyl and its analogues, in 2016, 85 per cent of more than 40,000 samples of seized fentanyl-type substances were fentanyl. Making up the other 15 per cent of the total sample, 16 different fentanyl analogues were identified, including furanylfentanyl (6 per cent), acetylfentanyl (4 per cent), carfentanil (3 per cent) and 3-methylfentanyl (1 per cent).[179]

Another analysis, based on a smaller sample of substances seized by the DEA of the United States in

FIG. 41 Distribution by substance of fentanyl and its analogues identified in the United States, 2017 (N = 2,475)



Source: United States Department of Justice, DEA, *2018 National Drug Threat Assessment*, October 2018, p. 22.

2017, pointed to the growing importance of the fentanyl analogues, which accounted for a quarter of the samples analysed. However, fentanyl remained the main substance in this group, accounting for 76 per cent of all fentanyls analysed, followed by furanylfentanyl, carfentanil and acetylfentanyl.[180]

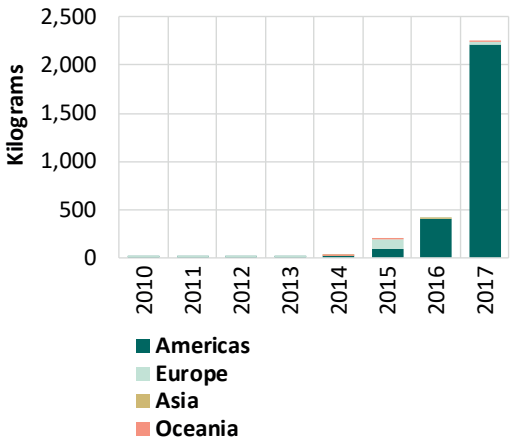
Overall, 21 countries in the Americas, Asia, Europe and Oceania reported seizures of fentanyls over the period 2013–2017. The number rose from just 4 countries in 2013 to 12 countries in 2016 and 16 countries in 2017, pointing at the global spread of trafficking in fentanyl-type substances.

Nonetheless, based on seizures, trafficking in fentanyl and its analogues appears to be mainly concentrated in the Americas (mostly in North America), which accounted for 95 per cent of the total quantities of fentanyls seized worldwide over the period 2013–2017. In the same period, seizures of fentanyls in Europe totalled 4.8 per cent; countries in Oceania and Asia reported minimal seizures and Africa reported none. The largest seizures of fentanyls in 2017 (expressed in kg equivalents) were reported by the United States (2,158 kg), Canada (61 kg), Estonia (10 kg) and Sweden (4 kg).

179 *2018 National Drug Threat Assessment.*

180 Ibid.

FIG. 42 Global quantities of fentanyl and its analogues seized, by region, 2010–2017



Source: UNODC, responses to the annual report questionnaire.

In 2017, the total quantity of fentanyl seized amounted to 2.2 tons. For comparison, global licit manufacture of fentanyl was 2.7 tons and the amount of fentanyl available for medical consumption was 1.4 tons.[181] As it is unlikely that more than 80 per cent of the global licit manufacture of fentanyl in 2017 was seized and/or that more fentanyl was diverted than was available for consumption, fentanyl seizures suggest the existence of significant clandestine manufacture of the drug at the global level to supply illicit drug markets. In addition, there may be significant adulteration of the fentanyl products on the illicit markets, resulting in large quantities of fentanyl of low purity seized (as reported by the United States).

Rapidly growing market for fentanyl and its analogues in North America – supplied mainly with substances produced in East Asia

According to United States authorities, the bulk of fentanyls trafficked to the United States (the principal market for the drugs) for the illegal market, seems to originate in China.[182] Fentanyls are imported either by mail directly to the United States or they are trafficked into the country via Mexico, often in the form of diluted powders or falsified prescription tablets containing fentanyls. Having been ordered on the darknet, some also enter the United States via Canada, where powders containing fentanyl substances are processed further by, for example, being pressed into tablets, mixed with heroin and sometimes sold as heroin, both for consumption in that country as well as for onward smuggling into the United States, in particular the north-eastern states.[183] The main "departure" country for shipments (which may be different from the country of "origin") of fentanyls to the United States in 2017 appears to have been Mexico, followed by China.[184]

Smuggling patterns can be even more complex. While the main final destination of fentanyls seized in the United States was the domestic market, some shipments were also meant for destinations abroad, notably Mexico (4 per cent) and Canada (1 per cent) in 2017. It has been speculated that some of these "exports" from the United States might have been intended for pressing into falsified pharmaceutical opioid tablets, such as falsified oxycodone tablets, in Mexico for subsequent "re-imports" into the

Top five fentanyl analogues identified by law enforcement in the European Union, 2016

Powders: valerylfentanyl, ocfentanil, carfentanil, 4-fluoro-isobutyrylfentanyl, furanylfentanyl

Liquids: acryloylfentanyl, furanylfentanyl, tetrahydro furanylfentanyl, 4-fluoro-isobutyrylfentanyl, cyclopentylfentanyl.

Tablets: acryloylfentanyl, 4-fluoro-isobutyrylfentanyl acetylfentanyl, cyclopentylfentanyl, furanylfentanyl.

Source: EMCDDA, Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation–An Update from the EU Early Warning System (Luxembourg, Publications Office of the European Union, 2018).

181 *Narcotic Drugs: Estimated World Requirements for 2019.*

182 *2018 National Drug Threat Assessment.*

183 United States Department of Justice, DEA, *2017 National Drug Threat Assessment*, October 2017.

184 *2018 National Drug Threat Assessment.*

United States.[185] Moreover, the discovery of clandestine laboratories in both Canada and the United States suggests that illicit production of fentanyl (and analogues) has also been taking place in the two countries.

Although the diversion of fentanyl from the pharmaceutical industry takes place, it appears to be no more than a minor contribution to the supply of fentanyl and analogues to the North American illicit market. In the United States, the largest licit producer of fentanyl worldwide,[186] diversion of fentanyl mainly seems to take place on a small scale, mostly for personal use and/or street sale.[187] In Canada, 391 identified cases of fentanyl diversion from licit sources were reported in 2017, but there were more than four times as many identified trafficking cases involving fentanyl (1,626 cases). The differences are even more pronounced when the quantities intercepted are considered. The aggregate amounts of fentanyl identified in diversion cases in Canada amounted to less than 0.1 kg in 2017 while the quantity of fentanyl seized, resulting from trafficking activities, amounted to 61 kg in the same year.

According to United States authorities, in both 2016 and 2017, about 97 per cent of all fentanyls intercepted in international mail in the United States originated in China. However, imports of fentanyls by mail are estimated to represent just a fraction (12 per cent) of total illegal fentanyl imports into the United States, as the bulk of the fentanyls found on the United States market is estimated to have entered the country via land borders.[188] Most people arrested for trafficking in fentanyls in the United States were citizens of the United States, and, to a lesser extent, Mexico.

Fentanyl profiling in the United States[189] shows that, although typically seized in small quantities, fentanyl shipped directly from China is of high purity. In almost 80 per cent of such cases of direct shipment, purity was over 50 per cent; in half of those cases, it was actually over 90 per cent. This compares with an overall average purity of fentanyl of 5.1 per cent found on the United States market in 2017. This also seems to confirm the thesis that most fentanyl found on the United States market, in gross weight terms at least, has been trafficked overland from Mexico into the United States, which typically results in seizures of larger bulk quantities but of a far lower purity than fentanyl shipped by mail directly to the United States. It also supports the hypothesis that the bulk of the fentanyls found on the United States market is not diverted from the licit sector, which would be of almost 100 per cent purity.

Most of the fentanyls seized and most of the increase in the quantities seized along the border between Mexico and the United States in 2017 were observed in Tucson and San Diego, – that is, at the western end of the border, which is an area largely controlled by the Sinaloa cartel.[190] While the Sinaloa cartel controls most of the northern Pacific ports of Mexico, most of the country's southern Pacific ports, which are also key for imports of fentanyl and/or its precursors from South Asia, are controlled by the Cartel de Jalisco Nueva Generación.[191] Investigations in the United States have shown that the two cartels are the primary groups involved in the trafficking of fentanyl into the United States via its southwestern border,[192] although both cartels have also been heavily involved in the smuggling of a number of other drugs into the United States.[193]

According to United States authorities, shipments of fentanyls from Mexico to the United States include fentanyls manufactured in China and adulterated in Mexico, as well as fentanyls manufactured and adulterated in Mexico. The hypothesis that there may be also significant illicit manufacture of fentanyls in Mexico was confirmed in 2017 when a Mexican army patrol, operating in some remote areas of the State of Sinaloa, discovered a major fentanyl manufacturing facility, which was subsequently dismantled.[194]

As reported by the United States, precursor chemicals used in the manufacture of fentanyls in

185 *2017 National Drug Threat Assessment.*

186 *Narcotic Drugs: Estimated World Requirements for 2019.*

187 *2018 National Drug Threat Assessment.*

188 Ibid.

189 Ibid.

190 *2017 National Drug Threat Assessment.*

191 Scott Stewart, "Mexico's cartels find another game changer in fentanyl", *Stratfor*, 3 August 2017.

192 *2018 National Drug Threat Assessment.*

193 *2017 National Drug Threat Assessment.*

194 *2018 National Drug Threat Assessment.*

clandestine laboratories in North America appear to originate in China and are trafficked to the United States, partly via Mexico and Canada, while some are also smuggled from the United States into Mexico for subsequent "re-imports" of fentanyls into the United States. The main chemical used in the clandestine manufacture of fentanyls intercepted in the United States in recent years is 4-ANPP, suggesting that the less sophisticated "Siegfried method" is popular among operators of clandestine laboratories in both Mexico and the United States. This method can also use NPP as the starting material for its synthesis into 4-ANPP and then into fentanyl.[195]

Growing market for fentanyl and its analogues in Europe

A far smaller, though also growing market for fentanyl and its analogues is found in Europe. Fentanyl seizures and/or the non-medical use of fentanyl have been reported in most countries in Europe. Quantities of fentanyl and analogues seized have shown a clear upward trend in Western and Central Europe, rising from 1 kg in 2013 to 5 kg in 2016 and 17 kg in 2017. In parallel, the European early warning system also has shown a clear increase in the number of seizures involving fentanyls in recent years, as well as in the quantities of powder and tablets seized.[196]

Most shipments of new fentanyls arriving in Europe reportedly originated in China.[197] Reports received by UNODC from a number of countries in Europe – Estonia (2017), Poland (2017), Sweden (2016) and the United Kingdom (2017) – also seem to confirm that China is the main source of fentanyl and its analogues found on the markets in Europe.

Like many other new substances, most new fentanyl analogues are not controlled under the international drug control conventions, which means that they can be manufactured in many countries and traded relatively freely. This situation has been exploited by organized crime groups in Europe that use companies to manufacture fentanyl analogues, which are then typically shipped to Europe by express mail and courier services. Once in Europe, the new fentanyls are sold as "legal" replacements for controlled opioids on the surface web as well as on the darknet. Similar to the situation in the United States, the new fentanyls may be sold as heroin, or mixed with heroin and other controlled opioids. They may then be found in falsified medical products, although to a lesser extent than in the United States.[198]

Although fentanyls are often injected, their high potency and ease of use mean that nasal sprays containing diluted solutions have also appeared in some illicit markets in Europe in recent years. In Sweden, for example, unlabelled nasal sprays filled with acryloylfentanyl were offered for sale online until the

Recent international control of fentanyls and related precursor chemicals

The international scheduling of ANPP and its direct precursor, NPP, in Table I of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988 was decided by the Commission on Narcotic Drugs in March 2017 and went into effect in October 2017. All parties to the 1988 Convention are requested to place those substances, the two main precursors for manufacturing fentanyl, under national control.

In the past few years, the Commission on Narcotic Drugs has also approved the placing of a number of fentanyl analogues under international control. The substances include: carfentanil, acrylofentanyl, furanylfentanyl, tetrahydrofuranylfentanyl, ocfentanil and 4-fluoroisobutyrylfentanyl (all controlled in 2018), butyrfentanyl (2017) and acetylfentanyl (2016). Following the scheduling of 116 NPS by China in October 2015, the country also placed carfentanil, furanylfentanyl, acryloylfentanyl and valerylfentanyl under control in March 2017.[a]

[a] *2017 National Drug Threat Assessment.*

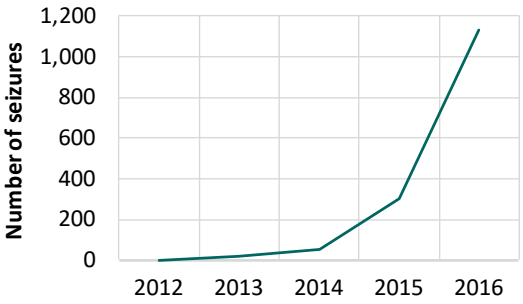
195 *2017 National Drug Threat Assessment.*

196 EMCDDA, *Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation.*

197 Ibid.

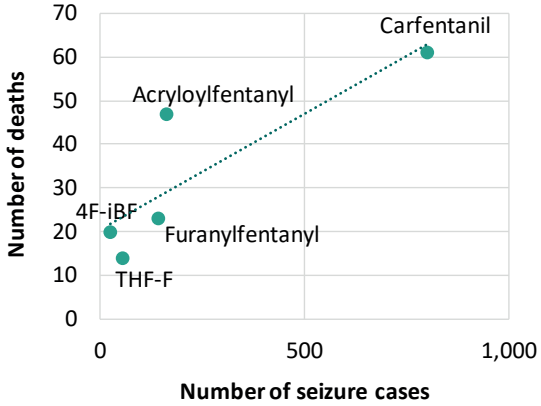
198 Ibid.

FIG. 43 Seizures of fentanyls reported to the European early warning system, 2012–2016



Source: EMCDDA, *Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation*, p. 10.

FIG. 44 Number of deaths and seizure cases involving fentanyl analogues in the European Union (based on key findings from risk assessments of fentanyl analogues, conducted between 2013 and 2017)



Source: EMCDDA, *Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation*, p. 13.

company was dismantled in 2016; nasal sprays of this type were involved in 47 deaths in Europe that year. There have also been reports of the emergence of e-liquids containing fentanyls that can be vaped using electronic cigarettes.[199]

Given the increasing problems related to a number of fentanyl analogues in Europe in recent years, EMCDDA and Europol conducted joint investigations and research on the following: acetylfentanyl in 2015; acryloylfentanyl and furanylfentanyl in 2016; and 4-fluoroisobutyrylfentanyl (4F-iBF), tetrahydrofuranylfentanyl (THF-F), carfentanil, methoxyacetylfentanyl and cyclopropylfentanyl in 2017. They resulted in the preparation of five risk assessments in 2017 and revealed that the largest numbers of both seizure cases and substance abuse-related deaths in Europe among the five substances investigated were related to carfentanil, followed by acrylofentanyl and furanylfentanyl.[200]

The diversion of fentanyl from licit sources prior to 2013 was reported by several countries in Europe (Bulgaria, Croatia, Germany, Hungary, the Russian Federation and the United Kingdom). No such cases have been reported to UNODC since then.

In addition, there have been sporadic reports of fentanyls produced in clandestine laboratories in Europe,[201] mostly destined for local distribution and consumption. The only exception involved laboratories operating in the Russian Federation that may also have supplied fentanyl to neighbouring countries. In particular, Estonia reported for years that the Russian Federation was the main source of fentanyl found on its territory, but this appears to have changed in 2017 following the dismantling of an organized crime group and the disappearance from the market in Estonia of fentanyls trafficked from the Russian Federation within a period of several weeks. This has since been largely substituted by fentanyls trafficked by mail from China, according to reports from Estonia.

Most of the significant seizures of fentanyl and its analogues in the Russian Federation over the period 2013–2017 were reported in the part of the country that is located in Europe, notably in the area around Saint Petersburg and other cities in the north of the country. The substances reported in significant seizures were mostly 3-methylfentanyl, fentanyl and carfentanil.[202]

199 Ibid.

200 Ibid.

201 EMCDDA, *Fentanyls and Synthetic Cannabinoids: Driving Greater Complexity into the Drug Situation*.

202 UNODC and Paris Pact, Drugs Monitoring Platform.

OTHER CENTRAL NERVOUS SYSTEM DEPRESSANTS

Introduction

After opioids, the groups of depressants that are seized in the largest quantities are sedatives and tranquillizers. In contrast to opioids, most sedatives and tranquillizers are diverted from legal sources rather than being illegally produced. Whereas most opioids are controlled under the 1961 Convention, sedatives and tranquillizers are controlled under the 1971 Convention. While benzodiazepines and barbiturates are controlled under the less strict Schedules III and IV of the 1971 Convention, methaqualone and GHB are controlled under Schedule II of the 1971 Convention.

Different benzodiazepines may vary in potency and are widely used in medicine as anticonvulsants, anxiolytics, hypnotics, sedatives, skeletal muscle relaxants and tranquillizers. Many benzodiazepines are currently under international control in the 1971 Convention.

Barbiturates represent another group of synthetic central nervous system depressants that were once widely used medically as hypnotics and sedatives. Their medical use today is limited to anti-epileptics, adjuncts to anaesthesia in surgical procedures and, less commonly, as anti-anxiety drugs. Some of the common pharmaceutical barbiturates include amobarbital, pentobarbital, phenobarbital and secobarbital. As with benzodiazepines, individual barbiturates differ in the onset and duration of their action and potency. Since barbiturates have a low therapeutic index – that is, the quantity that produces a therapeutic effect and may result in toxicity – an overdose of barbiturates can prove fatal.[203] As a result, they have been largely replaced on both the licit and illicit markets by benzodiazepines. Nevertheless, in 2016 and 2017, some 18 countries, mainly located in Europe and Asia, ranked the non-medical use of barbiturates higher than the non-medical use of benzodiazepines on their territory.

Methaqualone is another synthetic central nervous system depressant with sedative-hypnotic, anticonvulsant, antispasmodic and local anaesthetic properties. As with other depressants in this class, the sedative-hypnotic properties of methaqualone are mediated through its effect on the GABA receptors.[204]

GHB is another central nervous system depressant that produces sedation and anaesthesia; it is mainly associated with drug-facilitated sexual assault. The effects of GHB on the body are mediated through a specific GHB receptor, its activation of the GABA receptors, as well as through the dopamine system.[205] GBL, a natural precursor of GHB that generates GHB in the body after ingestion, is also available in some countries as an industrial solvent for cleaning metal and removing spray paint. GBL is sold on the illicit market as a substitute for GHB in some countries.

Gabapanthinoids, such as gabapentin and pregabalin, are another group of central nervous system depressants that are considered to be derivatives of the neurotransmitter GABA or its analogues. Gabapentionoids have been traditionally used to treat epilepsy and generalized anxiety disorder; as non-opioid analgesics, they are also effective in treatment of neuropathic pain.[206] Gabapentin and pregabalin are neither on the WHO Model List of essential medicines nor under control in the international conventions, but there are reports of their non-medical use, especially among opioid users.

Non-medical use of sedatives and tranquillizers

The non-medical use of sedatives and tranquillizers as a group of substances remains quite widespread and is reported in all regions. In 2017, 40 Member States ranked the non-medical use of sedatives and tranquillizers among the three most commonly used substances in their countries, while the non-medical use of benzodiazepines was ranked number one within the broader category of sedatives and

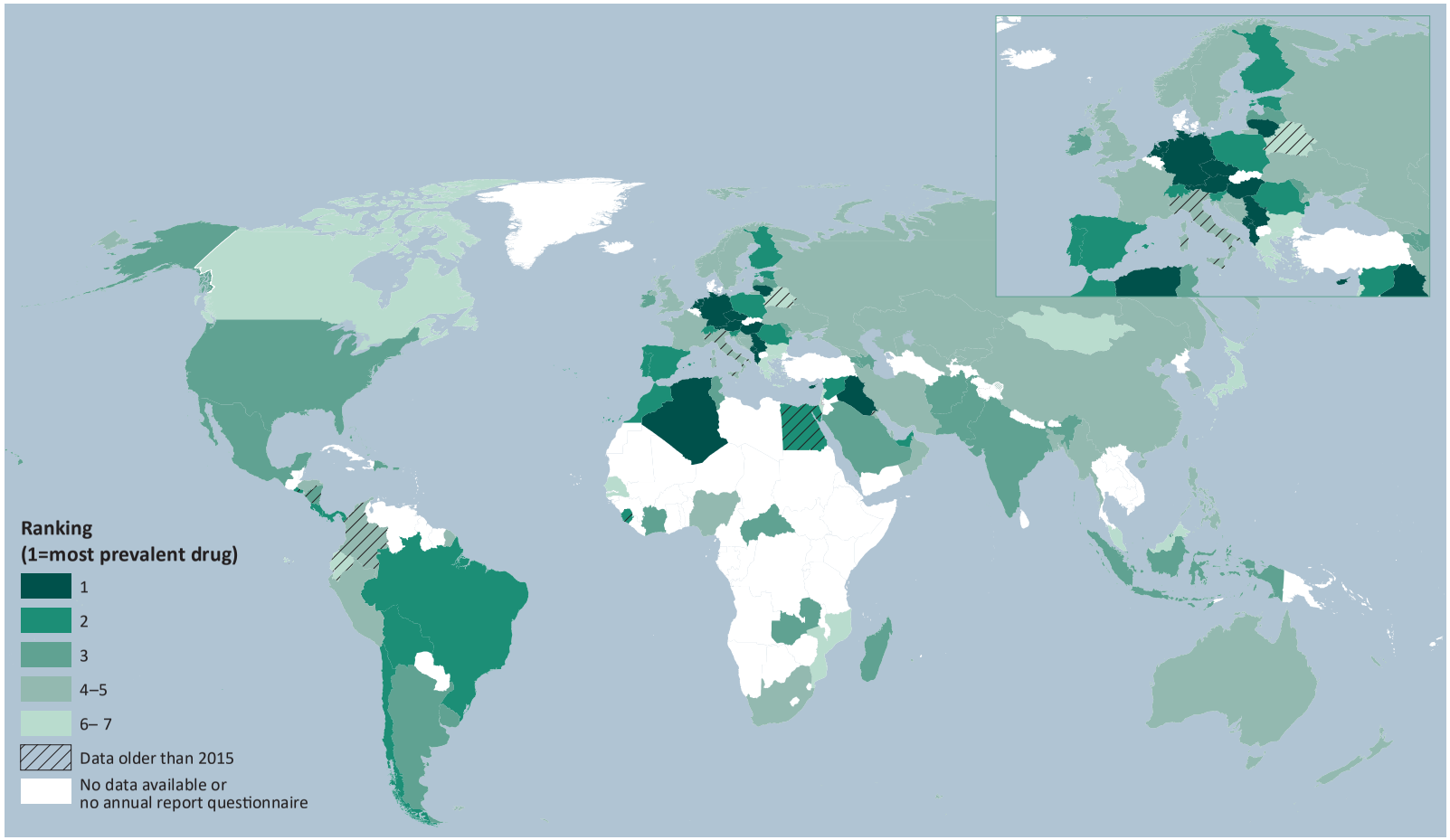
203 *Terminology and Information on Drugs*, 3rd ed. (United Nations publication, Sales No. E.16.XI.8).

204 Ibid.

205 Ibid.

206 WHO, Expert Committee on Drug Dependence "Pregabalin: pre-review report–agenda item 5.1" (Geneva, November 2017).

MAP 10 Ranking of sedatives and tranquillizers in order of prevalence (based on national qualitative information, 2017)



Source: UNODC.

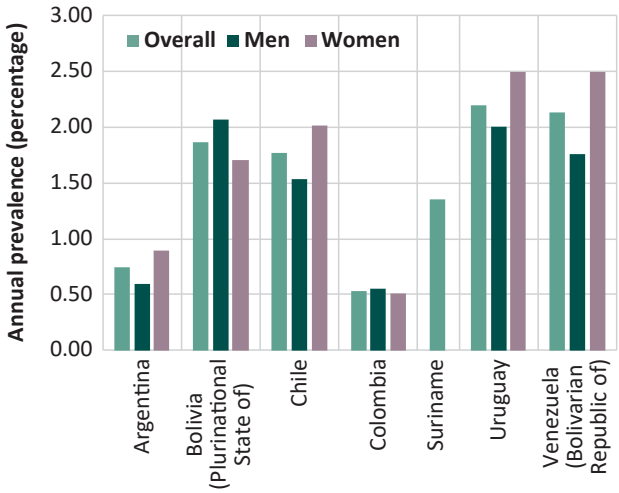
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.
Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

tranquillizers. Women seem to be particularly affected by the non-medical use of sedatives and tranquillizers, with past-year prevalence in some countries reported as being higher among women than among men, or at least at comparable levels.[207] The non-medical use of benzodiazepines also figures quite prominently within polydrug use patterns, especially among opioids users.[208] Opioid users typically use benzodiazepines to self-medicate in order to increase or potentiate the effects of opioids, as well as to deal with the negative effects of opioid use, such as negative emotional states, dealing with anxiety or depression and even dealing with opioid withdrawal.[209] Individuals in long-term opioid agonist treatment are particularly prone to using benzodiazepines in order to increase the effects of opioid medication and to achieve a more potent "euphoric effect".[210] Benzodiazepines are also commonly reported among overdose deaths attributed to the use of opioids.[211, 212]

Extent of non-medical use of sedatives and tranquilizers

Among the countries that have reported recent survey data on the non-medical use of sedatives and tranquillizers in South and Central America, the annual prevalence of non-medical use of tranquillizers in most of them is more than 2 per cent of the general population and the non-medical use of tranquillizers is higher among women than among men. The non-medical use of tranquillizers is also quite commonly reported in school surveys in those subregions. For example, El Salvador reported an annual prevalence of the non-medical use of tranquillizers of 1.9 per cent among students aged 13 to17 in 2016, Chile reported a rate of 10 per cent among those aged 15 to 16 in 2015, and Colombia reported a rate of 2.3 per cent among those aged 15 to 16 in 2016.

FIG. 45 Non-medical use of tranquillizers and sedatives among the general population in Central America and South America



Source: UNODC, responses to annual report questionnaire.

Note: The reference year for Argentina is 2017; Bolivia (Plurinational State of), 2014; Chile, 2016; Suriname, 2013; Uruguay, 2014; and Venezuela (Bolivarian Republic of), 2011.

In North America, the past year non-medical use of tranquillizers in 2017 was reported to be 0.2 per cent of the population aged 15 and older in Canada[213] and 2.2 per cent of the population aged 12 and older in the United States. The non-medical use of tranquillizers in the United States was reported to be at similar levels among men and women, and to be highest among young people aged 18-25.[214]

The non-medical use of tranquillizers is quite common in Western and Central Europe, where it ranges from 19.5 per cent among the adult population in Czechia to less than 1 per cent in Portugal. In eight of the 14 countries that reported recent estimates, non-medical use of tranquillizers was greater than the use of cannabis; in all 14 countries

207 See, for example, *World Drug Report 2018: Women and Drugs–Drug Use, Drug Supply and Their Consequences* (United Nations publication, Sales No. E.18.XI.9 (Booklet 5)).

208 Jermaine D. Jones, Shanthi Mogali and Sandra D. Comer, "Polydrug abuse: a review of opioid and benzodiazepines combination use", *Drug and Alcohol Dependence,* vol. 125, Nos. 1–2 (September 2012), pp. 8–18.

209 EMCDDA, "Perspectives on drugs: the misuse of benzodiazepines among high-risk opioid users in Europe" (Lisbon, 2018).

210 Jones, Mogali and Comer, "Polydrug abuse".

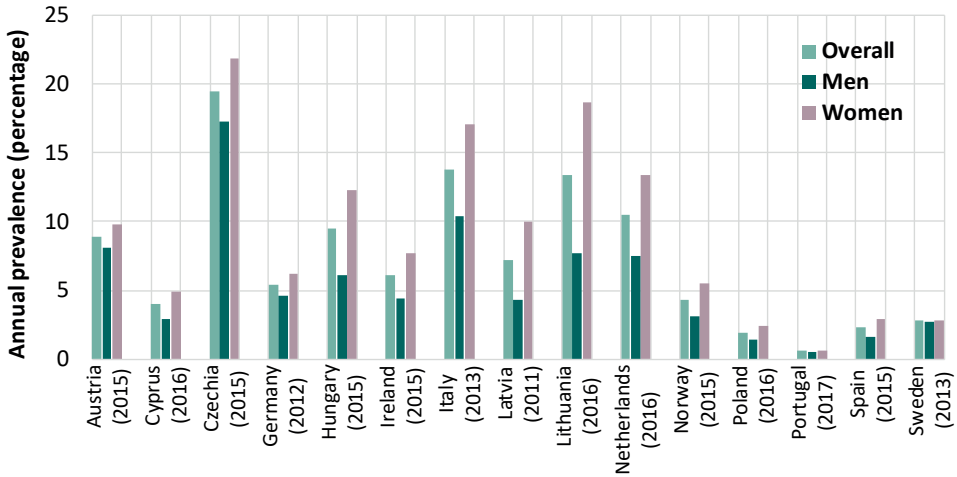
211 EMCDDA, "The misuse of benzodiazepines among high-risk opioid users in Europe".

212 UNODC, "Non-medical use of benzodiazepines: a growing threat to public health", Global SMART Update, vol. 18 (September 2018).

213 Health Canada, "Canadian Tobacco, Alcohol and Drugs Survey (CTADS): summary of results for 2017", December 2017.

214 *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.*

FIG. 46 Non-medical use of tranquillizers among the adult population aged 15–64 in Western and Central Europe



Source: UNODC, responses to the annual report questionnaire.

the non-medical use of tranquilizers was higher among women than men. The non-medical use of tranquillizers and sedatives was also quite common among students aged 15 and 16 in Europe. In 2015, lifetime prevalence was reported to be 6 per cent, the highest rates being reported in Poland (17 per cent) and Czechia (16 per cent) and the lowest in Demark and Romania (between 1 and 2 per cent). Students who had used alcohol also reported the use of other substances, including cigarettes (54 per cent), cannabis (19 per cent), inhalants (9 per cent), tranquillizers or sedatives (7 per cent) and NPS or other controlled drugs (5 per cent or less). Since 2016, falsified Rivotril®, a benzodiazepine containing clonazepam and classified as a narcotic substance in Finland, has been reported as having been trafficked from Central Europe to Finland, among other Nordic countries.[215]

The non-medical use of sedatives and tranquillizers was also reported in Africa, although survey data are limited in the region. In the 2018 drug use survey in Nigeria, the past-year prevalence of the non-medical use of tranquillizers was estimated at roughly 0.5 per cent of the adult population: 0.4 per cent among women and 0.5 per cent among men.[216] The non-medical use of tranquillizers was also prevalent in North Africa: for example, in Algeria in 2010, the annual prevalence of the non-medical use of tranquillizers among the population aged 12 and older (0.6 per cent) was at a comparable level to that of cannabis (0.5 per cent). Recent school surveys among secondary school students measured the past-year prevalence of the non-medical use of tranquillizers – mainly benzodiazepines. Among students aged 15–19 in Egypt, the prevalence was 1.7 per cent in 2016;[217] among students aged 15–17 in Morocco, the prevalence was 2.3 per cent in 2017.[218]

In Asia, where survey data are also limited, the annual prevalence of the non-medical use of tranquillizers reported in the most recent drug use survey in Pakistan, conducted in 2013, was 1.5 per cent among women and 1.3 per cent among men.[219] In India in 2018, around 1 per cent of people aged 10–75 were current users of sedatives and tranquillizers for non-medical reasons.The non-medical use of sedatives and tranquillizers was also reported in South-East Asia, including in Brunei Darussalam; Hong Kong, China; Indonesia; Malaysia; the Philippines; Singapore; and Taiwan Province of China. Prevalence estimates are not available, however.

215 EMCDDA, "Finland country report 2018".

216 UNODC, *Drug Use in Nigeria 2018*.

217 MedSPAD 2016 in Egypt.

218 Jallal Toufiq, National Centre for Drug Abuse Prevention and Research of Morocco, presentation on "Drug use among Moroccan youth: MedSPAD surveys", Lisbon, October 2017.

219 UNODC and Pakistan, Ministry of Interior and Narcotics Control, *Drug Use in Pakistan 2013*.

NPS benzodiazepines

The number of reported NPS with a sedative-hypnotic effect remains low: they numbered 25 among the 492 NPS reported in 2017. Of the 79 NPS reported for the first time to the UNODC early warning advisory in 2017, only four were NPS with a sedative-hypnotic effect. Most such NPS are benzodiazepines, some of which have been patented, but many have never been marketed for medical use. The majority, as in the case of NPS opioids, have never undergone clinical trials.[220] They are sold as "legal benzodiazepines", "designer benzodiazepines" or "research chemicals".[221]

There are also a number of NPS benzodiazepines that have been approved for medical use in a few countries, but their use is largely unknown elsewhere. Phenazepam is one such example; it was developed in the former Soviet Union in the 1970s and was licensed for medical use in the Russian Federation and parts of the Commonwealth of Independent States.[222] Along with nimetazepam, phenazepam was the first NPS benzodiazepine to be identified in Europe, in 2007, on the illicit market.[223] Following a large number of reports about its non-medical use and fatalities associated with its use, especially in Europe, phenazepam was put under international control in the 1971 Convention in 2016. Since then, small numbers of NPS benzodiazepines – including adinazolam, cloniprazepam, flunitrazolam, metizolam and nitrazolam – continue to be reported, mainly in Europe.[224]

Many NPS benzodiazepines have also been found mixed with other NPS, including synthetic cannabinoids and synthetic opioids.[225] NPS benzodiazepines may also provide an alternative to prescribed benzodiazepines as they are readily available via the internet or sold on the illicit market.[226] As the pharmacology and toxicology of NPS benzodiazepines is largely unknown, they may pose a high risk to users and in some cases have resulted in acute emergencies and deaths. NPS benzodiazepines and thienodiazepines were implicated in nine drug-related deaths in England and Wales in the period 2013–2014, as either the cause of death or having contributed to death.[227]

Methaqualone

Methaqualone is a potent quinazoline within the class of sedatives, which has hypnotic, anticonvulsant, antispasmodic and local anaesthetic properties. Formerly sold under the brand names Quaalude® and Mandrax®, methaqualone became popular as a club drug in the late 1960s and 1970s, but its use had waned in Western countries by the mid-1980s. Withdrawn from the pharmaceutical market around the same time in many countries as a result of problems of abuse, methaqualone is controlled under Schedule II of the 1971 Convention.[228] One of the few countries that currently reports the non-medical use of methaqualone is South Africa, where the mixed use of cannabis and methaqualone (also known as "smoking white pipe") is reported in some regions as being the primary or secondary substance of use among people in treatment for drug use disorders and is seen as serious public health problem.[229, 230]

gamma-Hydroxybutyrate

GHB, another depressant, is used medically as an adjunct in anaesthesia and is also used to treat insomnia and clinical depression. The non-medical use of GHB is not common, with only a few countries worldwide reporting such use among the general population. The past-year prevalence of GHB ranges from 0.1 per cent reported in Israel

220 Kieran R. Manchester and others, "The emergence of new psychoactive substances (NPS) benzodiazepines: a review", Drug Testing and Analysis, vol. 10, No. 1 (January 2018), pp. 37–53.

221 See also *World Drug Report 2018: Analysis of Drug Markets–Opiates, Cocaine, Cannabis, Synthetic Drugs* (United Nations publication, Sales No. E.18.XI.9 (Booklet 3)).

222 "Non-medical use of benzodiazepines: a growing threat to public health".

223 Ibid.

224 Manchester and others, "The emergence of new psychoactive substances (NPS) benzodiazepines".

225 EMCDDA, "The misuse of benzodiazepines among high-risk opioid users in Europe".

226 Ibid.

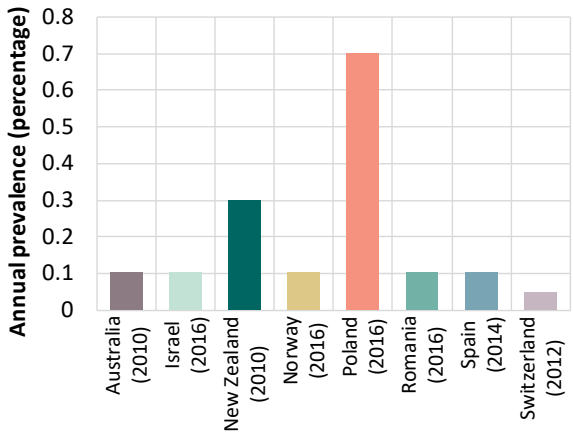
227 Manchester and others, "The emergence of new psychoactive substances (NPS) benzodiazepines".

228 *Terminology and Information on Drugs*.

229 Siphokazi Dada and others, *Monitoring Alcohol, Tobacco and Other Drug Use Trends in South Africa*: *Phase 43* (Cape Town, South Africa, South African Community Epidemiology Network on Drug Use, October 2018).

230 Greg McCarthy, Bronwyn Myers and Nandi Siegfried, "Treatment for methaqualone dependence in adults", *Cochrane Database of Systematic Review* (April 2005).

FIG. 47 GHB use among the general population in selected countries



Source: UNODC, responses to the annual report questionnaire.

Note: In the case of Norway, Romania and Switzerland, the prevalence is reported for both GBL and GHB.

and Spain to 0.7 per cent reported in Poland. The use of GBL, a natural precursor to GHB, has also been reported among the general population in Norway, Romania and Switzerland. Yet, in 2016, GHB ranked fourth in the top 20 drugs recorded in emergency presentations in 19 sentinel hospitals in 13 European Union member countries.[231]

GHB acts on the central nervous system in a biphasic time profile, i.e. induces an initial stimulant-like effect with a disinhibiting action and a subsequent sedative effect. This makes GHB one of the most used substances in drug-facilitated sexual assaults and in settings in which men have sex with men, with an associated risk of sexually transmitted infections, including HIV.[232]

The use of GHB, GBL and benzodiazepines such as flunitrazepam has been associated with drug-facilitated sexual assault, which occurs when alcohol or drugs are used to compromise an individual's ability to consent to sexual activity. It has been reported across the regions.[233, 234, 235] The use of GHB and GBL has also been reported over the past two decades among subgroups of drug users such as those attending dance events[236, 237] and in lesbian communities in Australia, Europe and North America.[238, 239, 240] The use of GHB, along with methamphetamine and mephedrone, is also frequently reported among people who participate in "chemsex".[241, 242, 243]

Different qualitative studies have shown that people engaging in chemsex report that these drugs "reduce their inhibitions, increase pleasure, facilitate sustained arousal and induce a feeling of instant rapport with sexual partners".[244] "Chemsex", or sexualized drug use, in particular has emerged as a marker of high-risk sexual activity and poor sexual health among gay, bisexual and other men who have sex with other men.[245] Several sociosexual factors associated with the practice of chemsex have been

231 EMCDDA, *European Drug Report 2018*.

232 Giorgetti and others, "When 'Chems' meet sex".

233 United States, Department of Justice, Department Enforcement Administration, Community Outreach and Prevention Support Section, Victim Witness Assistance Program, "Drug-facilitated sexual assault" (April 2017).

234 EMCDDA, "Sexual assaults facilitated by drugs or alcohol" (Lisbon, 2008).

235 Nancy S. Harper, "Drug-facilitated sexual assault", in *Child Abuse and Neglect: Diagnosis, Treatment, and Evidence*, Carole Jenny, ed. (Philadelphia, United States, Saunders, 2010).

236 Judith C. Barker, Shana L. Harris and Jo E. Dyer, "Experiences of gamma hydroxybutyrate (GHB) ingestion: a focus group study", *Journal of Psychoactive Drugs*, vol. 39, No. 2 (June 2007), pp. 115–129.

237 Mark A. Bells and others, "The role of an international nightlife resort in the proliferation of recreational drugs", *Addiction*, vol. 98, No. 12 (December 2003), pp. 1713–1721.

238 EMCDDA, *European Drug Report 2018*.

239 EMCDDA, *GHB and its Precursor GBL: An Emerging Trend Case Study* (Lisbon, 2008).

240 Raffaele Giorgetti and others, "When 'Chems' meet sex: a rising phenomenon called "ChemSex"", *Current Neuropharmacology*, vol. 15, No. 5 (2017), pp. 762–770.

241 The term "chemsex" was first coined on the London gay scene and rapidly spread, to indicate the voluntary intake of psychoactive and other drugs in the context of sex parties and sexual intercourse with the intention of facilitating or enhancing sexual encounters, mostly among men who have sex with other men.

242 Hannah McCall and others, "What is chemsex and why does it matter", *British Medical Journal,* vol. 351 (2015).

243 Claire Edmundson and others, "Sexualized drug use in the United Kingdom (UK): A review of literature", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 131–148.

244 McCall and others, "What is chemsex and why does it matter".

245 Isabelle Giraudon, Axel Jeremias Schmidt and Hamish Mohammed, "Surveillance of sexualised drug use: the challenges and the opportunities", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 149–154.

identified by a number of studies. Those factors are HIV-positive status; social engagement with gay men who use drugs; a high number of sexual partners; and participation in group sex and unprotected sex with casual partners.[246, 247, 248]

Pregabalin and gabapentin

Pregabalin and gabapentin, the two gabapentinoids that are also GABA analogues, respectively marketed under the brand names Lyrica® and Neurontin,®, are used in medicine to treat epilepsy, neuropathic pain, fibromyalgia and generalized anxiety syndromes.[249] Systematic reviews of the scientific literature on the misuse of pregabalin and gabapentin have shown that an increasing number of patients, in Europe in particular, self-administer higher doses than the recommended therapeutic dose to achieve euphoria.[250, 251] The majority of case reports concerning the non-medical use of pregabalin involved people with a history of substance use disorders, especially opioid users: between 15 and 22 per cent of opioid users had used gabapentin non-medically and between 3 and 68 per cent had used pregabalin non-medically concomitantly with opioids.[252]

In Europe, out of the total adverse drug reaction reports of non-medical use and substance use disorders over the period 2004–2015, around 7 per cent of cases were associated with the non-medical use of pregabalin and 5 per cent with the non-medical use of gabapentin.[253, 254] In a 2013 online survey of people aged 16–59 in the United Kingdom, self-reported lifetime prevalence of the non-medical use of gabapentin was 1.1 per cent and of pregabalin was 0.5 per cent.[255] The survey also revealed that the provenance of most of the pregabalin used non-medically was from sources other than legitimately prescribed medication.[256]

The non-medical use of pregabalin has also been reported in countries in the Near and Middle East. In Saudi Arabia, 7 per cent of people in drug treatment were reportedly in treatment for disorders related to the non-medical use of pregabalin. In a 2015 study in the United Arab Emirates, more than 80 per cent of people in treatment were polydrug users, of whom the majority had used four or more substances either sequentially or concomitantly.[257] While tramadol and heroin remained the main opioids used among this group, more than 60 per cent reported concurrent use of pregabalin.[258] In Gaza, Palestine, in 2016, nearly all high-risk male drug users reported current use of tramadol, and more than half also reported the concurrent use of pregabalin.[259]

The concomitant use of gabapentin with opioids

246 Mohammad A Hammoud and others, "Intensive sex partying with gamma-hydroxybutyrate: factors associated with using gamma-hydroxybutyrate for chemsex among Australian gay and bisexual men–results from the Flux Study", *Sexual Health*, vol. 15, No. 2 (December 2017), pp. 123–134.

247 G. J. Melendez-Torres and others, "Typology of drug use in United Kingdom men who have sex with men and associations with socio-sexual characteristics", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 183–186.

248 Kathleen E. Ryan and others, "Implications of survey labels and categorisations for understanding drug use in the context of sex among gay and bisexual men in Melbourne Australia", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 149–154.

249 James E. Framptom, "Pregabalin: a review of its use in adults with generalized anxiety disorder", *CNS Drugs,* vol. 28, No. 9 (September 2014), pp. 835–854.

250 Kirk E. Evoy, Megan D. Morrison and Stephen R. Saklad, "Abuse and misuse of pregabalin and gabapentin", *Drugs,* vol. 77, No. 4 (March 2017), pp. 403–426.

251 Ole Schjerning and others, "Abuse potential of pregabalin: a systematic review", *CNS Drugs,* vol. 30, No. 1 (January 2016), pp. 9–25.

252 Evoy, Morrison and Saklad, "Abuse and misuse of pregabalin and gabapentin".

253 EudraVigilance, the database of European Medicines Agency.

254 Stefania Chiappini and Fabrizio Schifano, "A decade of gabapentinoid misuse: an analysis of the European Medicine Agency's 'Suspected Adverse Drug Reactions' database", *CNS Drugs,* vol. 30, No. 7 (July 2016), pp. 647–654.

255 Vikas Kapil and others, "Misuse of the gamma-aminobutyric acid analogues baclofen, gabapentin and pregabalin in the UK", *British Journal of Clinical Pharmacology*, vol. 78, No. 1 (July 2014), pp. 190–191.

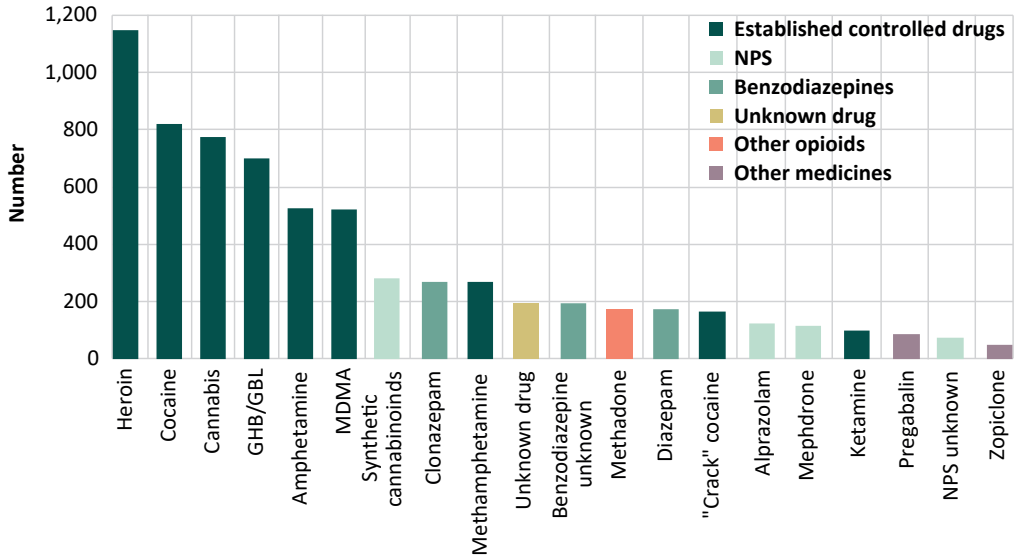
256 Ibid.

257 Hiba Alblooshi and others, "The pattern of substance use disorder in the United Arab Emirates in 2015: results of a National Rehabilitation Centre cohort study", *Substance Abuse Treatment, Prevention, and Policy* (May 2016), pp. 11–19.

258 See also Amneh Al-Husseini, Mayyada Wazaify and Marie Claire Van Hout, "Pregabalin misuse and abuse in Jordan: a qualitative study of user experiences", *International Journal of Mental Health and Addiction*, vol. 16, No. 3 (June 2018) pp. 642–654.

259 Ministry of Health of the State of Palestine and Palestinian National Institute of Public Health, *Estimating the Extent of Illicit Drug Use in Palestine* (Ramallah, 2017).

FIG. 48 Emergency presentations in sentinel hospitals, by top 10 drugs recorded in Europe, 2016



Source: EMCDDA, *European Drug Report, 2018.*

has been associated with a substantial increase in the risk of opioid overdose, probably reflecting both additive respiratory depression and increased gabapentin concentrations when used with opioids.[260] In 13 countries in the European Union, pregabalin is listed among the top 20 drugs reported in 2016 among drug-related toxicity presentations in 19 sentinel hospitals, although not in the same numbers or proportions as drugs such a heroin, cocaine, cannabis and GHB.[261]

Supply of sedatives and tranquillizers

In terms of quantity, methaqualone has been the substance most seized among sedatives and tranquillizers over the past two decades, other than during the period 2010–2015 when benzodiazepines were dominant. Overall, 133 countries reported seizures of sedatives and tranquillizers to UNODC over the period 1998–2017, including 91 countries over the period 2013–2017. The largest quantities of sedatives and tranquillizers seized in the period 2013–2017 were reported by countries in Asia (47 per cent), Africa (25 per cent) and the Americas (21 per cent), most notably by India, the United States, South Africa, Nigeria and Thailand (in descending order of quantities).

Methaqualone

The geographical scope of trafficking in methaqualone appears to be quite limited at present, except for ongoing trafficking flows from India to East and Southern Africa. Almost the entire quantity of methaqualone (99 per cent) seized over the period 2013–2017 was intercepted in just three countries: 75 per cent of it in India and the remainder in Mozambique and South Africa. This reflects the fact that the majority of the illicit manufacture of methaqualone worldwide takes place in India and its main illicit markets are located in Southern Africa. The lack of data on the use of methaqualone for non-medical purposes, however, makes it difficult to assess the overall extent of the market for the drug.

Data indicate that a limited amount of very large shipments of methaqualone – that is, seizures weighing several kg to several tons — are intercepted in India, which are mainly destined for export. In addition, a large number of small seizures, destined for trafficking and distribution on the local market, are made in South Africa. The average methaqualone seizure in South Africa was 0.14 kg in both 2016

260 Tara Gomes and others, "Gabapentin, opioids, and the risk of opioid related death: a population-based nested case–control study", *PLoS Medicine*, vol. 14, No. 10 (October 2017).

261 EMCCDA, *European Drug Report 2018.*

and 2017, while in India it was 3 tons in 2016 and 5 kg in 2017. This may be an indication of a supply chain originating in India, from where methaqualone is exported at wholesale level to South Africa, where it is distributed on the retail market, although little is known about detailed trafficking patterns and routes. Seizures of methaqualone have also been reported by other countries in Southern Africa (Namibia) and in East Africa (Kenya and the United Republic of Tanzania) in the past decade. However, given the limited capacity of some countries in Africa to undertake and report seizures, it is also possible that some trafficking goes undetected in that region.

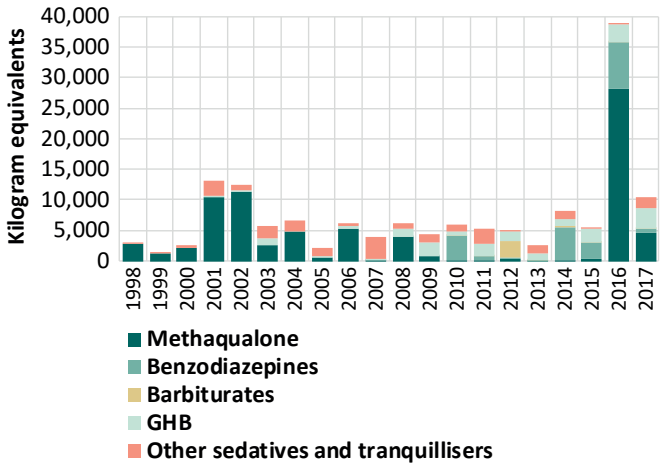
A few other countries also reported seizures of methaqualone over the period 2013–2017, including countries in the Americas (notably the United States and, to a lesser extent, Canada and Argentina), Europe (Spain, Italy and Belgium) and Oceania (Australia).

While methaqualone used to have a global reach – 70 countries reported seizures over the period 1982–2017 across all regions – only 11 countries reported seizures of the drug in the past five years. The presence of methaqualone in international drug markets and in drug shipments intercepted appears to have declined since its widespread use as a recreational drug in the club scene in North America and Europe in the late 1960s and 1970s. The decline in the 1990s followed the rescheduling of methaqualone from a Schedule IV to a Schedule II substance in 1979, given reports of its limited medical usefulness and of abuse potential.[262, 263] The declining use was prompted by subsequent recommendations in 1989 to have its production and its international trade stopped.[264]

However, there has been a recent surge in the quantities of methaqualone seized, owing primarily to large quantities intercepted in India in 2016 (24 tons). This resulted in a global total of 28 tons seized that year, the third-largest annual quantity ever reported. Annual methaqualone seizures in 2017 fell back to 4.5 tons, although that was still above the average over the period 2007–2016 (3.4 tons).

The licit manufacture of only very limited amounts

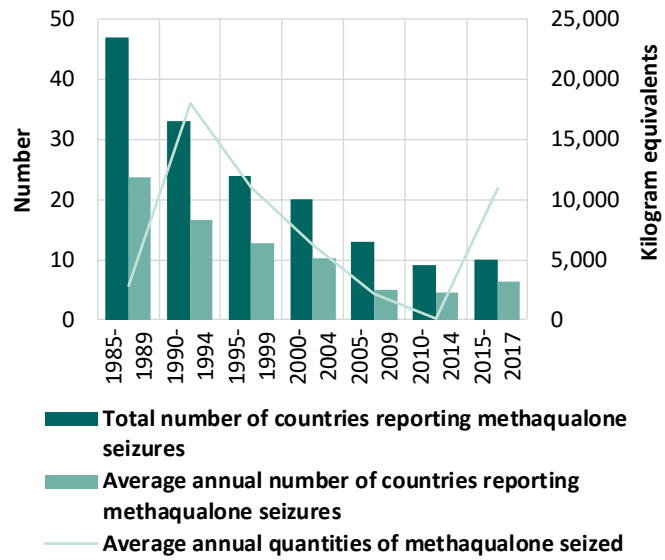
FIG. 49 Global quantities of sedatives and tranquillisers seized, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

Note: GHB has been reported explicitly in the annual report questionnaire since 2003, benzodiazepines since 2007 and barbiturates since 2010. Prior to that, seizures of such substances were included under "other depressants".

FIG. 50 Countries reporting methaqualone seizures and quantities of methaqualone seized, 1985–2017



Source: UNODC, responses to the annual report questionnaire.

262 *WHO Expert Committee on Drug Dependence: Twenty-fifth Report*, WHO Technical Report Series, No. 775 (Geneva, World Health Organization, 1989).

263 *Psychotropic Substances: Statistics for 2016–Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV of the Convention on Psychotropic Substances of 1971* (E/INCB/2017/3), para. 27.

264 *WHO Expert Committee on Drug Dependence: Twenty-fifth Report.*

of methaqualone has been reported in recent years:[265] 10 g in the United States, and 2 g in Japan in 2017; 20 g in Switzerland in 2016; and 30 g in Canada in 2014.[266] As a result, it can be assumed that, in contrast to most other sedatives and tranquillizers, practically all of the methaqualone trafficked and seized in recent years has been illicitly manufactured.

While India appears to have been the main source of methaqualone destined for international illicit markets, a number of clandestine methaqualone laboratories have been dismantled in recent years in South Africa (eight in 2013 and eight in 2016). Authorities in Mozambique also reported the dismantling of a clandestine methaqualone laboratory in 2017.[267] This is a contrast to the period 2006–2009, when South Africa regularly reported that most of the methaqualone found on its market originated in China and, to a lesser extent, in India. No mentions of China, either by South Africa or any other country, were reported in subsequent years. Pertaining to 2015, the latest detailed report received from India confirmed that most of the methaqualone seized in that country continued to be destined for markets in East and Southern Africa. The United Republic of Tanzania accounted for 35 per cent of the total, and Zambia for another 8 per cent of all known destination countries. Almost a third of it was reported as destined for markets in South-East Asia (Malaysia, 30 per cent).

Benzodiazepines

The use of benzodiazepines for non-medical purposes as well as trafficking in benzodiazepines appear to be far more widespread than for methaqualone at the global level, even though the overall reported quantity seized was smaller than that of methaqualone in both 2016 and 2017.

A total of 36 benzodiazepines were under international control in 2018, of which 28 had a significant presence on the licit market in 2017.[268] Most benzodiazepines are listed in Schedule IV of the 1971 Convention. The licit manufacture of benzodiazepines was reported by 21 countries in 2016;[269] Italy, India, China and Brazil, in descending order of amounts manufactured, together accounted for more than 85 per cent of the total global manufacture of benzodiazepines in 2017.[270]

The largest licit manufacture of benzodiazepines in 2017 was of diazepam (47 tons), followed by chlordiazepoxide (19 tons) and oxazepam (14 tons). Expressed in S-DDD, the largest production was of alprazolam (9.5 billion S-DDD in 2017), followed by diazepam (4.8 billion S-DDD) and lorazepam (3.7 billion S-DDD).[271, 272] Those three substances are the most consumed benzodiazepines in the context of medical use,[273] and alprazolam and diazepam are the benzodiazepines most frequently found on illicit markets. In 2017, the most traded benzodiazepines worldwide, in terms of number of countries reporting their licit import, were diazepam, midazolam, clonazepam, alprazolam and lorazepam in 2017.[274]

Global licit manufacture of and trade in benzodiazepines decreased significantly in 2017. Manufacture of bromazepam and midazolam, for example, decreased by more than 70 and 25 per cent, respectively, from the previous year. Global stocks of diazepam and alprazolam decreased by 50 per cent each, while stocks of midazolam and clonazepam decreased by 18 and 30 per cent, respectively. As a result, the volume of imports and exports also decreased, with imports of diazepam decreasing by more than 40 per cent and midazolam by 50 per cent in 2017.[275]

In parallel to the reduction in the licit manufacture and trade in benzodiazepines, seizures of benzodiazepines also declined by more than 90 per cent from the previous year, following marked

265 *Psychotropic Substances: Statistics for 2017–Assessments of Annual Medical and Scientific Requirements for Substances in Schedules II, III and IV of the Convention on Psychotropic Substances of 1971* (E/INCB/2018/3), para. 177.

266 E/INCB/2017/3.

267 Country report submitted by Mozambique to the Twenty-eighth Meeting of Heads of National Drug Law Enforcement Agencies, Africa (UNODC/HONLAF/28/CRP.7).

268 E/INCB/2018/3.

269 E/INCB/2017/3.

270 E/INCB/2018/3.

271 Ibid.

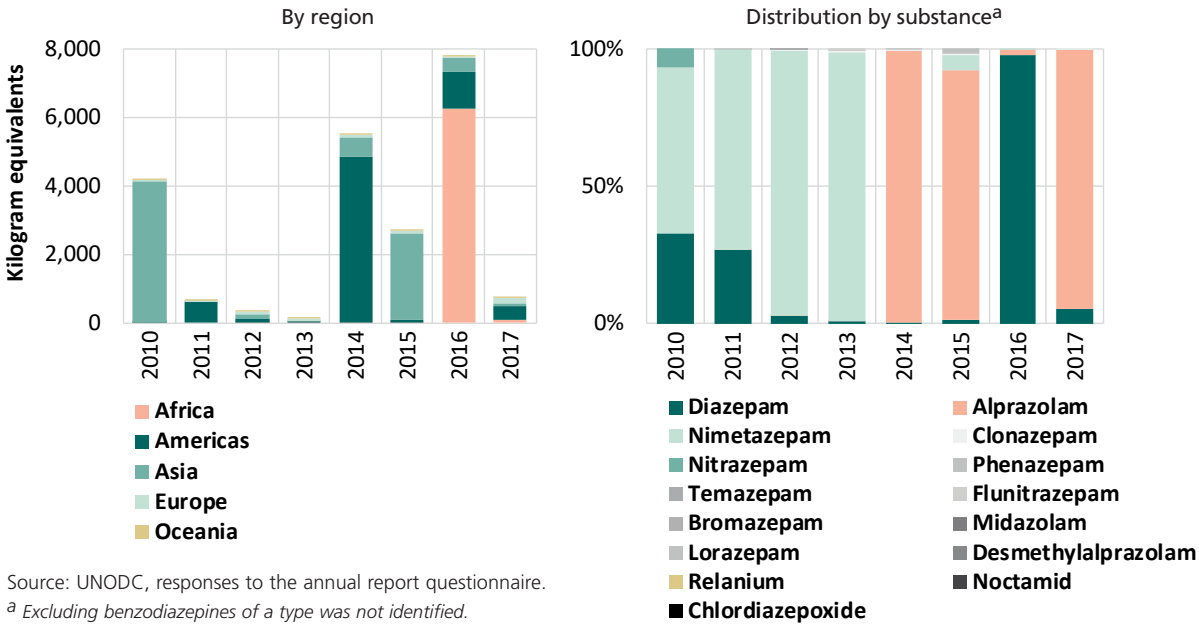
272 Ibid. E/INCB/2017/3.

273 Ibid.

274 E/INCB/2018/3.

275 Ibid.

FIG. 51 Global quantities of benzodiazepines seized, 2010–2017



Source: UNODC, responses to the annual report questionnaire.

[a] *Excluding benzodiazepines of a type was not identified.*

fluctuations over the years. The regions where most quantities seized were reported have also shifted over time. In 2010 and 2015, most seizures (measured in kg equivalents) were reported in Asia; in 2016, most quantities seized were reported in Africa; and in 2011, 2013 and 2017, in the Americas.

Record highs in quantities of specific benzodiazepines seized have been reported in recent years, including 4.8 tons of alprazolam (e.g. Xanax®) in 2014 and 6.3 tons of diazepam (e.g. Valium®) in 2016. For comparison, in 2016 the global licit manufacture of alprazolam and diazepam totalled 12.1 tons and 46.5 tons, respectively.[276] Overall, the licit manufacture of benzodiazepines (some 150 tons in 2017)[277] is substantially greater than global seizures of benzodiazepines (8 tons in 2016 and 0.7 tons in 2017). Since 2010, diazepam has been seized in larger quantities than any other benzodiazepine, although large quantities of alprazolam have also been intercepted in recent years.

One of the key benzodiazepines on illicit drug markets in the 1980s and the 1990s, flunitrazepam (e.g. Rohypnol®) is often used by heroin-dependent persons and as a drug facilitating sexual assault. It was transferred from Schedule IV to Schedule III of the 1971 Convention in 1995,[278] and remains the only benzodiazepine found in this schedule. In parallel, owing to its potential for abuse, several countries, including major manufacturers and importers of the substance, adopted strict control policies for it, in close cooperation with the pharmaceutical industry.[279]

Licit manufacture and diversions of the substance have declined markedly of late: global licit manufacture of flunitrazepam amounted to 590 kg in 2016 and 205 kg in 2017, down from nearly 2 tons in 2015.[280] Meanwhile, global flunitrazepam seizures fell from some 60 g in 2013 to just 0.2 g in 2017. Seizures of flunitrazepam were reported only by Canada, Taiwan Province of China and Kenya. France was the only country to report diversions of the substance over the period 2013–2017, suggesting that only small amounts of this benzodiazepine still enter global clandestine drug markets.

276 E/INCB/2017/3.

277 E/INCB/2018/3.

278 *WHO Expert Committee on Drug Dependence: Twenty-ninth Report*, WHO Technical Report Series, No. 856 (Geneva, World Health Organization, 1995).

279 E/INCB/2018/3 and previous years.

280 E/INCB/2017/3.

TABLE 2 Examples of trafficking routes of benzodiazepines with provenance or transit from abroad, 2013–2017

Substance	Country where the substance was seized	Countries mentioned as being of provenance or transit	Countries mentioned as destination
alprazolam	Indonesia	Malaysia, Thailand, United Arab Emirates and United States	Indonesia
phenazepam	Ukraine	Belarus, Bulgaria, Republic of Moldova and Russian Federation	Belarus, Republic of Moldova, Russian Federation and Ukraine
clonazepam	Azerbaijan	Georgia, Iran (Islamic Republic of) and Russian Federation	*n.a.*
	Finland	Estonia, Hungary and Sweden	Finland
	Latvia	Netherlands	Latvia and Sweden
nitrazepam	Bhutan	China	Bhutan
nimetazepam	Malaysia	Taiwan Province of China and Myanmar	Indonesia, Malaysia, Singapore and Thailand
	Indonesia	Taiwan Province of China and Malaysia	Indonesia
	Singapore	Malaysia	Singapore
	Brunei Darussalam	Malaysia	Brunei Darussalam
flunitrazepam	Belgium	Netherlands, Spain	*n.a.*
benzodiazepines (undistinguished)	Australia	China; Hong Kong, China; and Republic of Korea	*n.a.*
	Indonesia	China, and Hong Kong, China	Indonesia
	Sweden	China and India	Sweden
	Norway	Hungary, Spain and Thailand	Norway
	Romania	Serbia	Norway and Sweden

PSource: UNODC, responses to the annual report questionnaire.

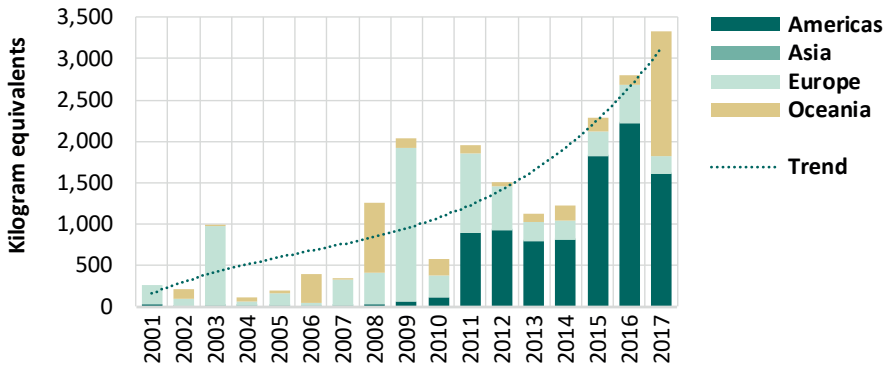
Note: n.a. information not available

The majority of benzodiazepines seized over the period 2013–2017 consisted of diazepam (in Africa), alprazolam (in the Americas and Asia) and clonazepam, followed by diazepam (in Europe). In total, five countries accounted for 92 per cent of the global quantity of benzodiazepines seized over that period: Nigeria and the United States, followed by Thailand, India and Canada.

In contrast to most other drugs, no clear trafficking patterns emerge from seizures of benzodiazepines. Most countries could not provide information about the origin of the benzodiazepines seized on their territory. When countries did identify a country of origin, it was often their country itself. Only a small number of countries identified other countries of provenance or transit of benzodiazepines over the period 2013–2017.

Although most seizures of benzodiazepines result from the diversion from licit manufacture, a small number of clandestine laboratories illicitly manufacturing benzodiazepines have been detected in recent years. In 2011 and 2015, Malaysia reported the dismantling of clandestine laboratories manufacturing nimetazepam. Canada, India and Sweden reported the dismantling of a total of six clandestine laboratories involved in the manufacture of alprazolam in the period 2013–2017. Sweden also reported the dismantling of a laboratory manufacturing flunitrazolam (a NPS benzodizepine) in 2017.

FIG. 52 Global quantities of GHB seized, by region, 2001–2017



Source: UNODC, responses to the annual report questionnaire.

gamma-Hydroxybutyric acid

GHB, also known on the street as "liquid ecstasy", was put under international control in 2001 and transferred from Schedule IV to Schedule II of the 1971 Convention in 2013[281] on the basis of a growing number of countries reporting problems,[282] in particular deaths linked to respiratory depression involving GHB, especially when taken together with alcohol,[283] as well as the use of GHB as a drug facilitating sexual assault.[284] There was also evidence that dependence on GHB exists in humans and withdrawal syndromes, including withdrawal seizures, have been reported. The non-medical use of GHB was reported mainly in the United States of America, Europe and Australia. [285]

The licit manufacture of GHB, which is used in the pharmaceutical industry and in the production of a variety of industrial polymers, has been increasing for some time, in particular since 2012, and reached a record high of 72 tons in 2016 (68 tons in 2017). International trade in GHB has continued to increase: in 2017, total reported imports of GHB amounted to 71 tons at the global level, up from 20 tons in 2015,[286] although it should also be noted that the reported global imports (71 tons in 2017) and exports (34 tons) do not match.[287]

At the same time, illicitly supplied GHB appears to have increased and seizures of GHB have shown a marked upward trend over the past 15 years, in particular since 2015, with the total quantity of GHB seized exceeding 3 tons in 2017. Over the period 2013–2017, countries in the Americas accounted for more than two thirds of the total global quantity of GHB seized, followed by countries in Oceania (19 per cent) and Europe (13 per cent), while seizures in Asia were comparatively small (0.1 per cent). No GHB seizures were reported in Africa.

A total of 32 countries reported seizures of GHB over the period 2013–2017, with the largest quantities seized reported in the Americas: the United States (also the leading licit manufacturer of GHB worldwide in 2016 and previous years), followed by Canada and Argentina. In Oceania, the largest quantity of GHB was intercepted in Australia, followed by New Zealand. In Europe, the largest quantities seized were reported by Norway, followed by Poland, Belgium, Sweden and Switzerland.

281 *WHO Expert Committee on Drug Dependence: Thirty-fifth Report*, WHO Technical Report Series, No. 973 (Geneva, World Health Organization, 2012).

282 Ibid.

283 E/INCB/2017/3, para. 27.

284 Lawrence P. Carter and others, "Illicit gamma-hydroxybutyrate (GHB) and pharmaceutical sodium oxybate (Xyrem®): differences in characteristics and misuse, *Drug and Alcohol Dependence*, vol. 104, Nos. 1–2 (September 2009), pp. 1–10.

285 *WHO Expert Committee on Drug Dependence: Thirty-fifth Report*.

286 E/INCB/2017/3, para. 28.

287 E/INCB/2018/3.

Barbiturates

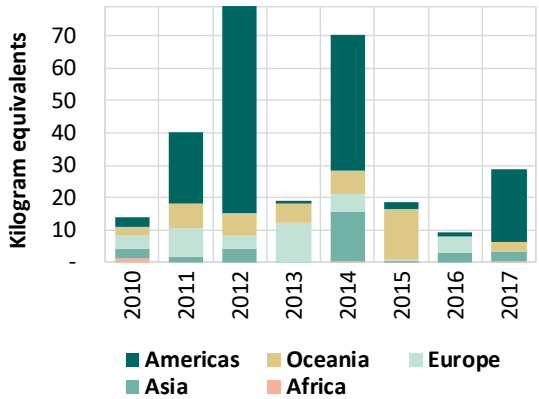
Overall, 12 different barbiturates are under international control, under schedules II, III and IV of the 1971 Convention.[288]

Quantities of barbiturates seized, although fluctuating, have been substantially smaller than those of benzodiazepines, which reflects the fact that far more benzodiazepines than barbiturates are manufactured and traded at the global level. While an annual average of 3.4 tons of benzodiazepines were seized over the period 2013–2017, seizures of barbiturates amounted to less than 600 kg per year.

Over the period 2013–2017, most data on barbiturates seized do not specify the substance involved, except in the case of phenobarbital. In the period 2010–2012, phenobarbital, barbital, pentobarbital, pentobarbitone and secobarbital were also explicitly mentioned among the substances seized. This seems to be in line with the licit manufacture of barbiturates: in 2017, phenobarbital accounted for 73 per cent of global manufacture of all barbiturates, followed by barbital (11 per cent) and pentobarbital (8 per cent).[289] Global licit manufacture of the seven barbiturates most commonly seen on international markets amounted to 356 tons in 2017.

Of the barbiturates seized over the period 2013–2017, 47 per cent of the total quantity was reported in the Americas (mostly the United States, followed by Canada and Argentina), 22 per cent in Oceania (mostly Australia), 16 per cent in Europe (mostly Portugal and the Russian Federation), 15 per cent in Asia (mostly India, followed by Indonesia, Tajikistan, Myanmar and Japan) and 1 per cent in Africa (mostly Zambia, followed by Senegal).

FIG. 53 Quantities of barbiturates seized, by region, 2010–2017



Source: UNODC, responses to the annual report questionnaire.

Not much is known about the trafficking routes for barbiturates, with the Russian Federation being the only country to report information: in 2016, most of the barbiturates (that is, phenobarbital) seized in the Russian Federation had departed from China and Ukraine with the Russian Federation as final destination. According to INCB, China continued to be the leading licit manufacturer of barbiturates, accounting for 49 per cent of total manufacture of the entire group of barbiturates in 2017, followed by India (24 per cent) and the United States (10 per cent).[290]

288 E/INCB/2017/3, para. 141.
289 E/INCB/2018/3, para. 61.
290 E/INCB/2018/3, p. 43.

TABLE 3 Annual prevalence of the use of opioids, by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**6,080,000**	**5,000,000**	**7,390,000**	**0.87**	**0.71**	**1.06**
Eastern Africa	-	-	-	-	-	-
Northern Africa	360,000	120,000	660,000 -	0.25	0.08	0.46-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**13,600,000**	**11,980,000**	**16,320,000**	**2.03**	**1.79**	**2.43**
Caribbean	-	-	-	-	-	-
Central America (excluding Mexico)	-	-	-	-	-	-
Northern America (including Mexico)	12,830,000	11,640,000	13,720,000	3.96	3.60	4.24
South America	580,000	250,000	2,180,000	0.20	0.09	0.76
Asia	**29,460,000**	**26,280,000**	**31,910,000**	**0.98**	**0.88**	**1.06**
Central Asia and Transcaucasia	540,000	480,000	600,000	0.93	0.83	1.03-
East and South-East Asia	3,280,000	2,330,000	4,010,000	0.20	0.15	0.25
Near and Middle East/South-West Asia	6,950,000	4,910,000	8,550,000	2.28	1.61	2.81
Southern Asia	18,680,000	-	-	1.81	-	-
Europe	**3,570,000**	**3,330,000**	**3,830,000**	**0.66**	**0.61**	**0.70**
Eastern and South-Eastern Europe (including Turkey)	1,730,000	1,660,000	1,810,000	0.77	0.74	0.80
Western and Central Europe	1,840,000	1,670,000	2,020,000	0.58	0.52	0.63
Oceania	**650,000**	**570,000**	**730,000**	**2.48**	**2.18**	**2.79**
Australia and New Zealand	630,000	570,000	680,000	3.28	2.98	3.58
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**53,350,000**	**47,160,000**	**60,180,000**	**1.08**	**0.96**	**1.22**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

TABLE 4 Annual prevalence of the use of opiates, by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**1,470,000**	**530,000**	**2,800,000**	**0.21**	**0.08**	**0.40**
Eastern Africa	-	-	-	-	-	-
Northern Africa	360,000	120,000	660,000 -	0.25	0.08	0.46-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**2,690,000**	**1,970,000**	**3,480,000**	**0.40**	**0.29**	**0.52**
Caribbean	-	-	-	-	-	-
Central America (excluding Mexico)	-	-	-	-	-	-
Northern America (including Mexico)	2,400,000	1,790,000	2,970,000	0.74	0.55	0.92
South America	240,000	150,000	330,000	0.08	0.05	0.12
Asia	**21,730,000**	**18,970,000**	**24,570,000**	**0.72**	**0.63**	**0.82**
Central Asia and Transcaucasia	520,000	470,000	580,000	0.90	0.80	1.00
East and South-East Asia	3,280,000	2,330,000	4,010,000	0.20	0.14	0.25
Near and Middle East/South-West Asia	4,930,000	3,300,000	6,910,000	1.62	1.08	2.27
Southern Asia	12,990,000	-	-	1.26	-	-
Europe	**3,220,000**	**3,010,000**	**3,600,000**	**0.59**	**0.55**	**0.66**
Eastern and South-Eastern Europe (including Turkey)	1,490,000	1,410,000	1,570,000	0.66	0.63	0.70
Western and Central Europe	1,740,000	1,590,000	2,030,000	0.54	0.50	0.64
Oceania	**40,000**	**40,000**	**70,000**	**0.16**	**0.14**	**0.28**
Australia and New Zealand	35,000	35,000	41,000	0.18	0.18	0.22
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**29,160,000**	**24,510,000**	**34,520,000**	**0.59**	**0.50**	**0.70**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

TABLE 5 Illicit cultivation of opium poppy, 2007–2018 (hectares)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SOUTH-WEST ASIA												
Afghanistan (best estimate)	193,000	157,000	123,000	123,000	131,000	154,000	209,000	224,000	183,000	201,000	328,000	263,000
lower bound [a]			102,000	104,000	109,000	125,000	173,000	196,000	163,000	182,000	301,000	242,000
upper bound [a]			137,000	145,000	155,000	189,000	238,000	247,000	202,000	221,000	355,000	283,000
SOUTH-EAST ASIA												
Lao People's Democratic Republic (best estimate) [b]	1,500	1,600	1,900	3,000	4,100	6,800	3,900	6,200	5,700	..	..	..
lower bound [a]	1,230	710	1,100	1,900	2,500	3,100	1,900	3,500	3,900			
upper bound [a]	1,860	2,700	2,700	4,000	6,000	11,500	5,800	9,000	7,600			
Myanmar (best estimate) [b]	27,700	28,500	31,700	38,100	43,600	51,000	57,800	57,600[c]	55,500[c]	..	41,000	37,300[c]
lower bound [a]	22,500	17,900	20,500	17,300	29,700	38,249	45,710	41,400	42,800		30,200	29,700
upper bound [a]	32,600	37,000	42,800	58,100	59,600	64,357	69,918	87,300	69,600		51,900	47,200
SOUTH AND CENTRAL AMERICA												
Colombia (best estimate)	715	394	356	341	338	313	298	387	595	462	282	..
Mexico (best estimate) [b, d, f, h]	6,900	15,000	19,500	14,000	12,000	10,500	11,000	17,000	26,100	25,200	30,600	..
lower bound [a]									21,800	20,400	22,800	
upper bound [a]									30,400	30,000	38,400	

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
OTHER												
Other countries [e]	**5,885**	**10,509**	**9,479**	**12,221**	**16,462**	**12,282**	**13,293**	**11,522**	**10,597**	**68,139**	**14,589**	***45,471***
TOTAL (best estimate)	235,700	213,003	185,935	190,662	207,500	234,895	295,291	316,709	281,492	294,801	414,471	*345,771*
lower bound			**152,935**	**149,762**	**170,000**	**189,444**	**245,201**	**269,809**	**242,692**	**256,501**	**367,251**	***307,751[g]***
upper bound			**211,835**	**233,662**	**249,400**	**287,952**	**338,309**	**372,209**	**320,792**	**335,601**	**462,251**	***385,551[g]***
TOTAL (best estimate, rounded)	**235,700**	**213,000**	**185,900**	**190,700**	**207,500**	**234,900**	**295,300**	**316,700**	**281,500**	**294,800**	**414,500**	***345,800[g]***

Sources: Afghanistan, Lao People's Democratic Republic and Myanmar: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: Government of Colombia. Mexico: up to 2014, estimates derived from surveys by the Government of the United States of America (international narcotics control strategy reports); for 2015 and onwards, joint Mexico/UNODC project entitled "Monitoring of the illicit cultivation on Mexican territory".

Note: Figures in italics are preliminary and may be revised when updated information becomes available. Two dots indicate that data were unavailable. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

[a] *Bound of the statistically derived confidence interval.*
[b] *May include areas that were eradicated after the date of the area survey.*
[c] *Estimates for 2014, 2015 and 2018 included satellite image estimates for Kayah and Chin states. National estimates for these years are therefore not directly comparable with the other years.*
[d] *Up to 2014, the estimates for Mexico are sourced from the Department of State of the United States. The Government of Mexico does not validate the estimates provided by the United States as they are not part of its official figures and it does not have information on the methodology used to calculate them.*
[e] *Includes countries with low levels of cultivation (with less than 400 hectares in at least two of the last three years) and countries with indirect evidence of illicit cultivation (eradication of opium poppy) but no direct measurement. See table "Cultivation of opium poppy and production of opium in other countries, and eradication of opium poppy, 2008–2018".*
In addition, for 2016, 2017 and 2018, best estimates for countries for which data are not available (Lao People's Democratic Republic, Myanmar for 2016 and Mexico and Colombia for 2018) are included in this category.
Starting in 2008, a new methodology was introduced to estimate opium poppy cultivation and opium/heroin production in countries with no data on illicit cultivation of opium poppy. A detailed description of the estimation methodology is available in the online methodology section of the World Drug Report 2019.
[f] *The figures for 2015, as published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), have been revised owing to a statistical adjustment processed by UNODC. These figures are based on the estimation period July 2014-June 2015.*
[g] *Preliminary estimates for 2018; they may change as more country estimates will become available.*
[h] *The figures for 2016 and 2017 are based on the estimation periods July 2015–June 2016 and June 2016–July 2017 respectively.*

TABLE 6 Potential production of oven–dry opium, 2007–2018 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SOUTH-WEST ASIA												
Afghanistan (best estimate)	7,400	5,900	4,000	3,600	5,800	3,700	5,500	6,400	3,300	4,800	9,000	6,400
lower bound [a]				3,000	4,800	2,800	4,500	5,100	2,700	4,000	8,000	5,600
upper bound [a]				4,200	6,800	4,200	6,500	7,800	3,900	5,600	10,000	7,200
SOUTH-EAST ASIA												
Lao People's Democratic Republic (best estimate) [b, f]	9	10	11	18	25	41	23	92	..	..	..	..
lower bound [g]	7	4	7	11	15	18	11	51	84			
upper bound [g]	11	16	16	24	36	69	35	133	176			
Myanmar (best estimate) [b]	460	410	330	580	610	690	870	670[h]	647	..	550	520
lower bound			213	350	420	520	630	481	500		395	410
upper bound			445	820	830	870	1,100	916	820		706	664
LATIN AMERICA												
Colombia (best estimate)	14	10	9	8	8	8	11	12	17	13	7	..
Mexico (best estimate) [c, e]	150	325	425	300	250	220	225	360	*499*	*482*	*586*	..
lower bound									*279*	*261*	*292*	
upper bound									*693*	*684*	*876*	
OTHER												
Other countries (best estimate) [d]	58	187	178	224	290	172	182	198	178	888	272	*870*

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TOTAL (best estimate)	8,091	6,841	4,953	4,730	6,983	4,831	6,810	7,732	4,771	6,184	10,415	*7,790*
lower bound				**3,894**	**5,783**	**3,738**	**5,558**	**6,202**	**3,758**	**4,973**	**8,920**	***6,540***
upper bound				**5,576**	**8,214**	**5,539**	**8,052**	**9,419**	**5,784**	**7,391**	**11,907**	***9,070***
TOTAL best estimate (rounded)	**8,090**	**6,840**	**4,950**	**4,730**	**6,980**	**4,830**	**6,810**	**7,730**	**4,770**	**6,180**	**10,410**	***7,790***

Sources: Afghanistan, Lao People's Democratic Republic and Myanmar: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: National illicit crop monitoring system supported by UNODC. Since 2008, production was calculated based on updated regional yield figures and conversion ratios from the Department of State and the Drug Enforcement Administration of the United States of America. Mexico: up to 2014, estimates derived from surveys by the United States Government; for 2015 and onwards, UNODC estimate.

Note: Figures in italics are preliminary and may be revised when updated information becomes available. Two dots indicate that data were unavailable. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

[a] *Bound of the statistically derived confidence interval.*

[b] *Based on cultivation figures which may include areas eradicated after the date of the area survey.*

[c] *Up to 2014, the estimates are sourced from the Department of State of the United States. The Government of Mexico does not validate the estimates provided by the United States as they are not part of its official figures and it does not have information on the methodology used to calculate them.*

[d] *Includes countries with low levels of cultivation and countries with indirect evidence of illicit cultivation (eradication of opium poppy) but no direct measurement.* See table "Cultivation of opium poppy and production of opium in other countries, and eradication of opium poppy, 2008–2018".

In addition, for 2016, 2017 and 2018, best estimates for countries for which data are not available (Lao People's Democratic Republic, Myanmar for 2016 and Mexico and Colombia for 2018) are included in this category.

Starting in 2008, a new methodology was introduced to estimate opium poppy cultivation and opium/heroin production in countries with no data on illicit cultivation of opium poppy. These estimates are higher than the previous figures but have a similar order of magnitude. A detailed description of the estimation methodology is available in the online methodology section of the World Drug Report 2019.

[e] *The figures for 2015, as published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), have been revised owing to a statistical adjustment processed by UNODC. The Government of Mexico does not validate any opium production estimates. The production figures will be presented once yield data from the joint Mexico/UNODC project entitled "Monitoring of the illicit cultivation on Mexican territory" become available. Opium production figures estimated by UNODC for 2015–2017 are based on: (a) the area under cultivation, established by the joint project of the Government of Mexico and UNODC; (b) yield data, based on yield studies conducted by the United States in Mexico over the period 2001–2003. The opium production figures shown for 2015–2017 are preliminary and, for methodological reasons, are not comparable with the production figures over the period 1998–2014.*

[f] *Owing to the late timing of the monitoring activities in 2013, the survey may not have captured illicit cultivation in this year in its entirety.*

[g] *Bound of the statistically derived confidence interval, with the exception of 2015. The figures for 2015 represent independently derived upper and lower estimates; the midpoint was used for the calculation of the global total.*

[h] *Estimates for 2014, 2015 and 2018 include estimates for Kayah and Chin states. National estimates for these years are therefore not directly comparable with the other years.*

TABLE 7 Cultivation of opium poppy and production of opium in other countries, and eradication of opium poppy, 2008–2018

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Guatemala	Cultivation (hectares)					220	310	640	260	310	700	
Guatemala	Production (tons)					4	6	14	6	6	15	
Pakistan	Cultivation (hectares)	1,909	1,779	1,721	362	382	493	217	372	130	90	
Pakistan	Production (tons)	48	44	43	9	9	12	5	9	3	2	
Thailand	Cultivation (hectares)	288	211	289	289	209	265			399		
Thailand	Production (tons)	5	3	5	6	3	4					
Afghanistan	Eradication (hectares)	5,480	5,351	2,316	3,810	9,672	7,348	2,692	3,760	355	750	406
Algeria	Eradication (plants)			868	340	204	2,721	7,470				
Algeria	Seizure poppy plants (in kg equivalents)	7,761	962	87	34	20.4	272.1			106		
Argentina	Seizure poppy plants (in kg equivalents)									0.2		
Armenia	Seizure poppy plants (in kg equivalents)							0.18	0.13	60		
Australia	Seizure poppy plants (in kg equivalents)									37	264	
Austria	Seizure poppy plants (in kg equivalents)	8.76	13.83		4.60	1.91	2.07	1.41		0.05	0.2	
Azerbaijan	Eradication (hectares)				2.26	0.21	0.40	0.45				
Azerbaijan	Eradication (plants)				201	2,628	34	284			49,154	
Bangladesh	Eradication (hectares)			8	22							

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bangladesh	Seizure poppy plants (in kg equivalents)		145,021									
Belarus	Eradication (hectares)			14	52	26				92	157	
Belarus	Seizure poppy plants (in kg equivalents)				59		81	51		94	119	
Canada	Eradication (hectares)			7	7							
Canada	Eradication (plants)			60,000	60,000							
Canada	Seizure poppy plants (in kg equivalents)			6,600	9.3		7.3			85.9		
China	Eradication (hectares)									6		
Colombia	Eradication (hectares)	381	546	712	294	320	514	813	613	450	397	
Cyprus	Seizure poppy plants (in kg equivalents)								6			
Czechia	Seizure poppy plants (in kg equivalents)								40			
Ecuador	Eradication (plants)	74,555	115,580	128,653	22,100	2,170,900	1,797,966	2,023,385	183,573	1,207,147	279,074	
Ecuador	Seizure poppy plants (in kg equivalents)	7,456	11,558	12,865	2,210	185,490	75,765					
Egypt	Eradication (hectares)	121	98	222	1		3		98	105	60	
Georgia	Seizure poppy plants (in kg equivalents)							8		9		
Greece	Eradication (plants)					192	60	144	145	624	44	
Guatemala	Eradication (hectares)	536	1,345	918	1,490	590	2,568	1,197	430	45	803	
Guatemala	Eradication (plants)									17,643,447	417,004,278	

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Guatemala	Seizure poppy plants (in kg equivalents)	27,880,441	69,228,416	54,612,442			10,935,532	864,150				
Hungary	Seizure poppy plants (in kg equivalents)					1,502	2,152			1917		
India	Eradication (hectares)	624	2,420	3,052	5,746	1,332	865	1,636	3,461	2,875	3,076	
India	Seizure poppy plants (in kg equivalents)							3,770				
Iran (Islamic Republic of)	Eradication (hectares)			2		1	1	1		1	0.5	
Iran (Islamic Republic of)	Eradication (plants)					140,000	100,000	120,000		90,000	90,000	
Italy	Eradication (plants)			1,797	2,007	6,717						
Italy	Seizure poppy plants (in kg equivalents)					716	375	168	30	1,098		
Japan	Seizure poppy plants (in kg equivalents)	535	104	90	26	20	11					
Kazakhstan	Eradication (hectares)									0.2		
Kazakhstan	Eradication (plants)				1,692			2,254	19,510	15,515		
Kazakhstan	Seizure poppy plants (in kg equivalents)	68	127	105	90	30	2	8	298			
Kyrgyzstan	Seizure poppy plants (in kg equivalents)	102	344	58	200	399	147	63	55			
Lao PDR	Eradication (hectares)	575	651	579	662	707	397		809			
Latvia	Seizure poppy plants (in kg equivalents)	23	31		1	12	7	9	43			
Lebanon	Eradication (hectares)		21	14	4		6	1				

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Lithuania	Seizure poppy plants (in kg equivalents)	45	16									
Mexico	Eradication (hectares)	13,095	14,753	15,491	16,389	15,726	14,662	21,644	26,426	22,437	29,692	
Mexico	Seizure poppy plants (in kg equivalents)	7,263	7,964	9,335	10,101	9,572	10,209	14,812	17,948	16,401	20,187	
Myanmar	Eradication (hectares)	4,820	4,087	8,267	7,058	23,718	12,288	15,188	13,450	7,561	3,533	2,605
Nepal	Eradication (hectares)	21	35									
New Zealand	Seizure poppy plants (in kg equivalents)										0.2	
Oman	Eradication (hectares)						6					
Pakistan	Eradication (hectares)	0	105	68	1,053	592	568	1,010	605	1,470	169	
Pakistan	Seizure poppy plants (in kg equivalents)	81,675	25,550				4,650	5,976	4,576	1,023	4,789	
Peru	Eradication (hectares)	23	32	21								
Poland	Eradication (hectares)		9									
Portugal	Seizure poppy plants (in kg equivalents)				164		1.6	9.4			0.4	
Republic of Korea	Eradication (plants)						25,369					
Republic of Korea	Seizure poppy plants (in kg equivalents)			3,855					8,013	9,771	10,040	
Republic of Moldova	Eradication (plants)				32,413	11,255						
Republic of Moldova	Seizure poppy plants (in kg equivalents)	79	26,075									
Russian Federation	Eradication (hectares)		3.3		1.4	0.6	0.9	1.1	0.6	0.8	2.4	

Country	Indicator	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Russian Federation	Eradication (plants)							645				
Russian Federation	Seizure poppy plants (in kg equivalents)	2,799	2,807	2,575	4,273	3,196	2,216	1,438	1,043	270	375	
Spain	Seizure poppy plants (in kg equivalents)			13		10	30	219		0.02	0.5	
State of Palestine	Seizure poppy plants (in kg equivalents)				4.2	5.8	1.2	17.8				
Tajikistan	Eradication (plants)				13	5,400	103					
Thailand	Eradication (hectares)	285	201	278	208	205	264			319		
Ukraine	Eradication (hectares)	28		436			39		48	164		
Ukraine	Eradication (plants)			1,185,118		474,000	22,800,000					
Ukraine	Seizure poppy plants (in kg equivalents)	164,000		4,162		7.4		384	930			
Uzbekistan	Eradication (hectares)				1		1	0.3	0.3	0.3	0.3	
Uzbekistan	Seizure poppy plants (in kg equivalents)	138	687	896	413	330	336	406	205	863	188	
Viet Nam	Eradication (hectares)	99	31		38	35	25	19	18			

Source: United Nations Office on Drugs and Crime annual report questionnaire, government reports, reports of regional bodies, and international narcotics control strategy reports of the United States of America.

TABLE 8 Global manufacture of heroin from global illicit opium production, 2007–2018 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Total potential opium production	8,091	6,841	4,953	4,730	6,983	4,831	6,810	7,723	4,771	6,180	*10,420*	*7,790*
Potential opium not processed into heroin	3,078	2,360	1,680	1,728	3,400	1,850	2,600	2,450	1,360	2,510	*1,100-1,400*	*1,225-1,525*
Potential opium processed into heroin	5,012	4,481	3,273	3,002	3,583	2,981	4,210	5,273	3,411	3,670	*9,020-9,320*	*6,265-6,565*
Total potential heroin manufacture	686	600	427	383	467	377	555	542	327	388	*692-1042*	*487-737*

Notes: The calculation shows the potential amount of heroin that could have been manufactured out of the opium produced in a given year; it does not take into account changes in opium inventories, which may add to or reduce the amount of heroin entering the market in that year. Afghanistan and Myanmar are the only countries for which the proportion of potential opium production not converted into heroin within the country is estimated. For all other countries, for the purposes of this table, it is assumed that all opium produced is converted into heroin.

The amount of heroin produced from Afghan opium is calculated using two parameters that may change: (a) the amounts of opium consumed as raw opium in the region; and (b) the conversion ratio into heroin. The first parameter's estimate is based on consumption data in Afghanistan and neighbouring countries. For the second parameter, from 2005 to 2013, a conversion ratio of opium to morphine/heroin of 7:1 was used, based on interviews conducted with Afghan morphine/heroin "cooks", on an actual heroin production exercise conducted by two (illiterate) Afghan heroin "cooks", documented by the German Bundeskriminalamt in Afghanistan in 2003 (published in Bulletin on Narcotics, vol. LVII, Nos. 1 and 2, 2005, pp. 11-31), and United Nations Office on Drugs and Crime (UNODC) studies on the morphine content of Afghan opium (12.3 per cent over the period 2010-2012, down from 15 per cent over the period 2000-2003). Starting from 2014, a different approach to the conversion was adopted, reflecting updated information on morphine content and a different method for taking purity into account. The revised approach uses a ratio of 18.5 kg of opium for 1 kg of 100 per cent pure heroin base (see Afghanistan Opium Survey 2014, UNODC, November 2014). This translates into a ratio of 9.2-12.9 kg (range: 9-14 kg) of opium for 1 kg of export-quality heroin of 50 – 70 per cent purity. For more details, see "Afghanistan Opium Survey 2017 – Challenges to sustainable development, peace and security" (UNODC, May 2018).

The amount of heroin produced in Myanmar in 2018 was calculated by subtracting the estimated unprocessed opium for consumption from the total opium production and using a conversion factor of 10:1. The unprocessed opium in Myanmar was estimated to be 125 tons in 2018, based on the total unprocessed opium in East Asia (TOCTA EAP report, 2013) and considering the relative cultivation levels of Lao PDR and Myanmar. For further information, please refer to the Methodology chapter (section 4.3) of the Myanmar Opium Survey 2018 (UNODC, January 2019).

For countries other than Afghanistan, a "traditional" conversion ratio of opium to heroin of 10:1 is used. The ratios will be adjusted when improved information becomes available. Figures in italics are preliminary and may be revised when updated information becomes available.

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) of the American Psychiatric Association, or the *International Classification of Diseases and Related Health Problems* (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPING

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)
- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine
- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Turkey and Kosovo
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands, Gibraltar and Holy See

Oceania (comprising four subregions):

- Australia and New Zealand: Australia and New Zealand
- Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
- Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
- Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

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UNODC Research

The *World Drug Report 2019* is again presented in five separate parts that divide the wealth of information and analysis contained in the report into individual reader-friendly booklets in which drugs are grouped by their psychopharmacological effect for the first time in the report's history.

Booklet 1 provides a summary of the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 contains a global overview of the latest estimates of and trends in the supply, use and health consequences of drugs. Booklet 3 looks at recent trends in the market for depressants (including opioids, sedatives, tranquillizers and hypnotics), while Booklet 4 deals with recent trends in the market for stimulants (including cocaine, amphetamine-type stimulants and new psychoactive substances). Booklet 5 contains a review of recent trends in the market for cannabis and for hallucinogens. The section on cannabis also includes a review of the latest developments in the jurisdictions that have adopted measures allowing the non-medical use of cannabis.

As in previous years, the *World Drug Report 2019* is aimed at improving the understanding of the world drug problem and contributing towards fostering greater international cooperation for countering its impact on health, governance and security.

The statistical annex is published on the UNODC website: https://www.unodc.org/wdr2019

ISBN 978-92-1-148314-7

UNODC
United Nations Office on Drugs and Crime

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4 STIMULANTS

WORLD DRUG REPORT 2019

ISBN: 978-92-1-148314-7
eISBN: 978-92-1-004174-4
United Nations publication, Sales No. E.19.XI.9

Suggested citation:,
World Drug Report 2019 (United Nations publication, Sales No. E.19.XI.8).

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PREFACE

The findings of this year's *World Drug Report* fill in and further complicate the global picture of drug challenges, underscoring the need for broader international cooperation to advance balanced and integrated health and criminal justice responses to drug supply and demand.

With improved research and more precise data from India and Nigeria – both among the 10 most-populous countries in the world – we see that there are many more opioid users and people with drug use disorders than previously estimated. Globally, some 35 million people, up from an earlier estimate of 30.5 million, suffer from drug use disorders and require treatment services. The death toll is also higher: 585,000 people died as a result of drug use in 2017.

Prevention and treatment continue to fall far short of needs in many parts of the world. This is particularly true in prisons, where those incarcerated are especially vulnerable to drug use and face higher risks of HIV and hepatitis C transmission. This gap represents a major impediment to achieving the Sustainable Development Goals and fulfilling the international community's pledge to leave no one behind.

Synthetic opioids continue to pose a serious threat to health, with overdose deaths rising in North America and trafficking in fentanyl and its analogues expanding in Europe and elsewhere. The opioid crisis that has featured in far fewer headlines but that requires equally urgent international attention is the non-medical use of the painkiller tramadol, particularly in Africa. The amount of tramadol seized globally reached a record 125 tons in 2017; the limited data available indicate that the tramadol being used for non-medical purposes in Africa is being illicitly manufactured in South Asia and trafficked to the region, as well as to parts of the Middle East.

The response to the misuse of tramadol illustrates the difficulties faced by countries in balancing necessary access for medical purposes while curbing abuse – with limited resources and health-care systems that are already struggling to cope – and at the same time clamping down on organized crime and trafficking.

Opium production and cocaine manufacture remain at record levels. The amounts intercepted are also higher than ever, with the amount of cocaine seized up 74 per cent over the past decade, compared with a 50 per cent rise in manufacture during the same period. This suggests that law enforcement efforts have become more effective and that strengthened international cooperation may be helping to increase interception rates.

The *World Drug Report 2019* also registers a decline in opiate trafficking from Afghanistan along the "northern" route through Central Asia to the Russian Federation. In 2008, some 10 per cent of the morphine and heroin intercepted globally was seized in countries along the northern route; by 2017 it had fallen to 1 per cent. This may be due in part to a shift in demand to synthetics in destination markets. The increased effectiveness of regional responses may also play a role.

Countries in central Asia, with the support of the United Nations Office on Drugs and Crime (UNODC), have committed considerable resources to strengthening regional cooperation through integrated UNODC country, regional and global programmes, as well as through platforms such as the Central Asian Regional Information and Coordination Centre, the Afghanistan–Kyrgyzstan–Tajikistan Initiative and the Triangular Initiative and its Joint Planning Cell. More research is needed, including to identify lessons learned and best practices that could inform further action.

International cooperation has also succeeded in checking the growth in new psychoactive substances. The Vienna-based Commission on Narcotic Drugs has acted swiftly in recent years to schedule the most harmful new psychoactive substances, and the UNODC early warning advisory has helped to keep the international community abreast of developments.

Political will and adequate funding remain prerequisites for success. Efforts by Colombia to reduce cocaine production following the 2016 peace deal

with the Revolutionary Armed Forces of Colombia (FARC) are a case in point. Alternative development initiatives have enabled farmers in central areas of the country previously under FARC control to abandon coca bush cultivation and join the licit economy. The result has been a drastic reduction in cocaine production. However, in other areas previously controlled by FARC, criminal groups have moved in to fill the vacuum and expand cultivation. Alternative development can succeed, but not without sustained attention and integration into broader development goals.

The successes identified amid the many, formidable problems that countries continue to face in grappling with drug supply and demand highlight that international cooperation works. The challenge before us is to make this cooperation work for more people.

International cooperation is based on agreed frameworks. Nearly every country in the world has reaffirmed its commitment to balanced, rights-based action based on the international drug control conventions. The most recent reaffirmation of that commitment is the Ministerial Declaration on Strengthening Our Actions at the National, Regional and International Levels to Accelerate the Implementation of Our Joint Commitments to Address and Counter the World Drug Problem, adopted at the ministerial segment of the sixty-second session of the Commission on Narcotic Drugs.

UNODC supports countries in putting their commitments into action through the application of international standards on the prevention and treatment of drug use disorders and HIV, as well as standards and norms on the administration of justice and the treatment of prisoners. We provide tailored technical assistance through our field offices and global programmes, and through toolkits and research.

I hope the *World Drug Report 2019* will shed further light on the world drug problem and inform international community responses. By working together and focusing attention and resources, we can help people get the services they need without discrimination, promote security and bring criminals to justice, safeguard health and achieve the Sustainable Development Goals.

Yury Fedotov
Executive Director
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CONTENTS

Acknowledgements

The *World Drug Report 2019* was prepared by the Research and Trend Analysis Branch, Division for Policy Analysis and Public Affairs, United Nations Office on Drugs and Crime (UNODC), under the supervision of Jean-Luc Lemahieu, Director of the Division, and Angela Me, Chief of the Research and Trend Analysis Branch.

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The *World Drug Report 2019* benefited from the expertise of and invaluable contributions from INCB and from UNODC colleagues in all divisions. The Research and Trend Analysis Branch acknowledges the important contribution to Booklet 4 from its colleagues in the Laboratory and Scientific Section and in the Programme Development and Management Unit.

The Research and Trend Analysis Branch acknowledges the invaluable contributions and advice provided by the *World Drug Report* Scientific Advisory Committee:

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EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by cross-hatch owing to the difficulty of showing sufficient detail.

The designations employed and the presentation of the material in the *World Drug Report* do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the *World Drug Report*, if any, should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2017 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

References to tons are to metric tons, unless otherwise stated.

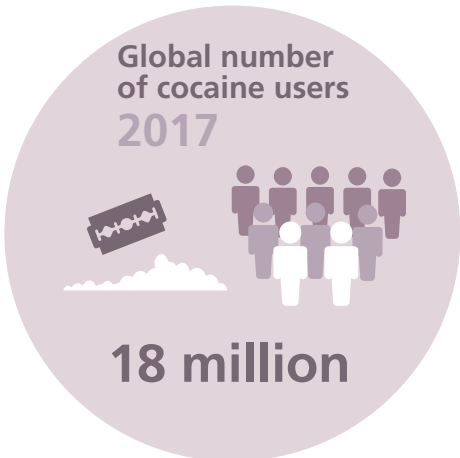
The following abbreviations have been used in the present booklet:

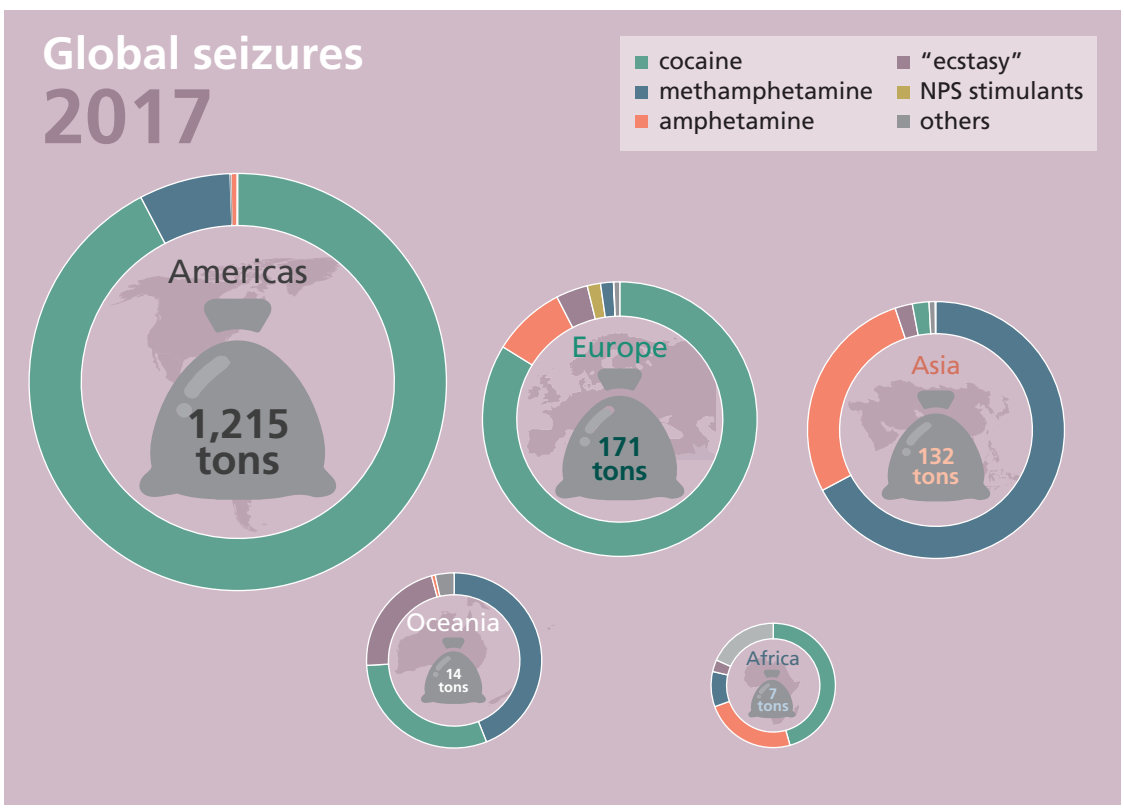
2CB	2,5-dimethoxy-4-bromophenethylamine
3-MMC	3-methylmethcathinone
4-FA	4-fluoroamphetamine
ATS	amphetamine-type stimulants
DAINAP	Drug Abuse Information Network for Asia and the Pacific
DEA	Drug Enforcement Administration of the United States
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
FARC-EP	Revolutionary Armed Forces of Colombia-People's Army
GBL	*gamma*-butyrolactone
GHB	*gamma*-hydroxybutyrate
HCl	hydrochloride
INCB	International Narcotics Control Board
MDA	methylenedioxyamphetamine
MDEA	methylenedioxyethamphetamine
MDMA	3,4-methylenedioxymeth-amphetamine
MDPV	methylenedioxypyrovalerone
MedSPAD	Mediterranean School Survey Project on Alcohol and other Drugs
MT-45	1-cyclohexyl-4-(1,2-diphenyl-ethyl)piperazine
NPS	new psychoactive substances

P-2-P	phenyl-2-propanone
PMA	para-methoxyamphetamine
PMMA	para-methoxymethamphetamine
PNIS	National Comprehensive Programme for the Voluntary Substitution of Illicit Crops of Colombia
SAMHSA	Substance Abuse and Mental Health Services Administration
SCORE	Sewage Analysis CORE Group Europe
SEDRONAR	Ministry of Programming for the Prevention of Drug Addiction and Trafficking in Drugs
SENDA	National Service for the Prevention and Rehabilitation of Drug and Alcohol Use
UNODC	United Nations Office on Drugs and Crime

SCOPE OF THE BOOKLET

This booklet, the fourth chapter of the *World Drug Report 2019*, provides analysis of recent trends in the market for stimulants, which include cocaine, amphetamine-type stimulants and new psychoactive substances with stimulant effects. Substances of either a plant-based or synthetic nature, stimulants increase alertness, heighten arousal and cause behavioural excitement. The early focus of the booklet is on supply of and demand for cocaine, before turning to emerging issues and trends in the consumption and trafficking of amphetamine-type stimulants, including methamphetamine, amphetamine, pharmaceutical stimulants and "ecstasy". The final part of the booklet looks at supply of and demand for stimulant new psychoactive substances.





STIMULANT DRUGS

Stimulants, or psychostimulants, are a class of drugs that act on the central nervous system and increase alertness, heighten arousal and cause behavioural excitement.[1] Their general mechanism of action is an increase in the activation of natural stimulating pathways in the brain, which in particular enhances the function of the three main monoamine neurotransmitters: dopamine, norepinephrine and serotonin.[2]

Psychostimulants can be plant-based substances: for example, cocaine and "crack" cocaine (derived from the coca leaf), ephedrine and pseudoephedrine (ephedra), and cathinone (khat). They can also be of a synthetic nature: for example, amphetamine and methamphetamine; "ecstasy"-group substances, such as MDMA(3,4-methylene-dioxymethamphetamine), MDA (3,4-methylenedioxyamphetamine) and MDEA(3,4-methylenedioxyethylamphetamine); and synthetic cathinones, such as mephedrone, MDPV(methylenedioxypyrovalerone) and methylone.

Some psychostimulants have been approved for medical use; others, such as synthetic cathinones (mephedrone, MDPV and methylone) have not.[3] Some psychostimulants are controlled under the international drug control conventions (e.g., cocaine, amphetamine, methamphetamine and MDMA), with different levels of scheduling; others are not internationally controlled and are referred to as NPS. Amphetamine and its different isomers have an established medical use for treating conditions such as attention deficit hyperactivity disorder and narcolepsy, a sleep disorder; it can also be used as an appetite suppressant.[4] In recent years, a number of stimulant NPS have emerged in the market. Since 2009, stimulants have comprised the main category

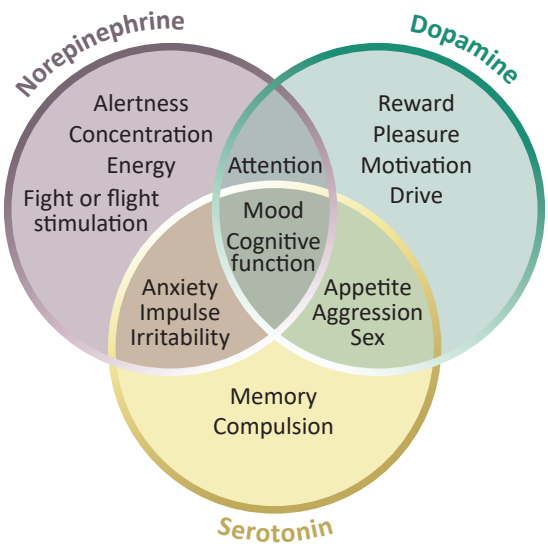
1 Jerrold S. Meyer and Linda F. Quenzer, *Psychopharmacology: Drugs, the Brain, and the Behavior*, 3rd ed. (Oxford, Oxford University Press, 2019).

2 *Terminology and Information on Drugs* (United Nations publication, Sales No. E.16.XI.8).

3 Ibid.

4 David J. Heal and others, "Amphetamine, past and present: a pharmacological and clinical perspective", *Journal of Psychopharmacology*, vol 27, No. 6 (June 2013), pp. 479–496.

FIG. 1 Behavioural effects mediated by the three main neurotransmitters



Source: Terminology and Information on Drugs (United Nations publication, Sales No. E.16.XI.8).

(36 per cent) of NPS reported to the UNODC early warning advisory.

Amphetamine and methamphetamine produce predominantly stimulant effects as a result of their influence on the levels of dopamine and norepinephrine, and, to a lesser extent, on serotonin.[5] The effects of cocaine are similar to those of amphetamine and methamphetamine, except that cocaine has a more pronounced effect on the level of dopamine than of amphetamine or methamphetamine. MDMA, on the other hand, has more pronounced effects on the serotonin system, which results in different pharmacological effects.[6]

Patterns of stimulant use

After cannabis, stimulants constitute the second most widely used category of drugs globally and – polydrug use notwithstanding – account for 68 million past-year users. The type of stimulants used, however, varies considerably across the different subregions.

5 *Terminology and Information on Drugs*.

6 Ibid.

TABLE 1 Main stimulants used in different regions or subregions

Region, subregion	Type of stimulants predominantly used, based on ranking of substances by countries in region, subregion	Other stimulants used
Africa	cocaine, methamphetamine	cocktails containing "crack" cocaine and cannabis; "ecstasy", khat
North America	cocaine, methamphetamine, non-medical use of prescription stimulants, "ecstasy", amphetamine	
Latin America and the Caribbean	cocaine, non-medical use of prescription stimulants	"crack" cocaine, cocaine base paste, amphetamine, methamphetamine, "ecstasy"
East and South-East Asia	methamphetamine (crystal and tablet form)	"ecstasy", stimulant NPS, cocaine
Central Asia and Transcaucasia	amphetamine, methamphetamine and "ecstasy"	
South-West Asia	methamphetamine	"ecstasy", cocaine
Near and Middle East	"captagon" (amphetamine)	methamphetamine, pharmaceutical stimulants, cocaine and "ecstasy"
Western and Central Europe	cocaine, amphetamine, "ecstasy"	methamphetamine, stimulant NPS
Eastern and South-Eastern Europe	cocaine	amphetamine, methamphetamine, "ecstasy"
Australia and New Zealand	methamphetamine (crystal and powder), "ecstasy", cocaine	non-medical use of prescription stimulants and stimulant NPS

Source: UNODC, responses to the annual report questionnaire.

The concurrent use of different stimulants and the concurrent or sequential use of stimulants with depressants are common polydrug use patterns observed in different regions.[7, 8, 9] Users who concurrently use other stimulants can be found across different typologies of drug users: from users of club drugs to people suffering from drug use disorders. Such users, owing to the tolerance (or cross-tolerance) developed to their main stimulants, may use a combination of stimulants, such as cocaine and MDMA. Alternatively, they may use stimulants with other drugs, such as cannabis and/or alcohol, to potentiate the effect of the stimulants and to increase the overall psychoactive experience.[10, 11, 12]

The simultaneous use of stimulants also figures prominently among groups of homosexual or

7 *World Drug Report 2016* (United Nations publication, Sales No. E.16.XI.7).

8 Keith A. Trujillo, Monique L. Smith and Melissa M. Guaderrama, "Powerful behavioral interactions between methamphetamine and morphine", *Pharmacology, Biochemistry, and Behavior*, vol. 99, No. 3 (September 2011), pp. 451–458.

9 Aukje K. Lamonica and Miriam Boeri, "An exploration of the relationship between the use of methamphetamine and prescription drugs", *Journal of Ethnographic and Qualitative Research*, vol 6, No. 3 (2012), pp. 160–176.

10 Andrew C. Parrot, E. Sisk and J. J. D. Turner, "Psychobiological problems in heavy ecstasy (MDMA) polydrug users", *Drug and Alcohol Dependence*, vol. 60, No. 1 (July 2000), pp. 105–110.

11 Christian Grov, Brian C. Kelly and Jeffrey T. Parsons, "Polydrug use among club-going young adults recruited through time-space sampling", *Substance Use and Misuse*, vol. 44, No. 6 (July 2009), pp. 848–864.

12 Miriam Boeri and others, "Poly-drug use among ecstasy users: separate, synergistic, and indiscriminate patterns", *Journal of Drug Issues,* vol. 38, No. 2 (April 2008), pp. 517–541.

bisexual men and men who have sex with men, who may use different stimulants in the context of "chemsex", where a stimulant such as methamphetamine or mephedrone may be used in combination with *gamma*-hydroxybutyric acid (GHB), "poppers" and medecines used for erectile dysfunction (e.g., sildenafil, tadalafil and vardenafil) in order to enhance the overall drug-taking and sexual experiences.[13]

The use of stimulants, including cocaine and methamphetamine, by regular users of opioids is also quite a common phenomenon and can take different forms. The literature has documented two main combinations: "speedball", in the case of the simultaneous use of cocaine and heroin; and "bombita",[14] in the case of heroin and methamphetamine.[15, 16] When stimulants and opioids are administered simultaneously, the user may experience mutually reinforcing effects of both the cocaine or methamphetamine and the opioids. When opioids and stimulants are used sequentially, the aim is either to use one substance to overcome the side effects, or to alleviate the adverse effects and severity of withdrawal symptoms, of the other. Cocaine use, for example, may help reduce some adverse effects of opioids while maintaining the "rush" induced by opioids. Cocaine and amphetamines may help manage opioid withdrawal symptoms. Similarly, using depressants such as opioids after cocaine induces a "depressant" effect or helps to reach a "relaxed high", which mitigates the overexcitement caused by the use of stimulants.[17, 18] Opioid users who are in long-term opioid agonist therapy may also use stimulants to self-medicate for depression or other untoward effects of opioid agonist therapy.[19, 20]

13 Raffaele Giorgetti and others, "When "Chems" Meet Sex: a rising phenomenon called "ChemSex"", *Current Neuropharmacology*, vol. 15, No. 5 (July 2017), pp. 762–770.

14 Everett H. Ellinwood Jr., Robert D. Eibergen and M. Marlyne Kilbey, "Stimulants: interaction with clinically relevant drugs", *Annals of New York Academy of Sciences,* vol. 281, No. 1 (December 1976), pp. 393–408.

15 Francesco Leri, Julie Bruneau and Jane Stewart, "Understanding polydrug use: review of heroin and cocaine co-use", *Addiction*, vol. 98, No. 1 (January 2003), pp. 7–22.

16 Trujillo, Smith and Guaderrama, "Powerful behavioural interactions".

17 Barry K. Logan, "Methamphetamine: effects on human performance and behavior", *Forensic Science Review*, vol. 14, Nos. 1–2 (January 2002), pp. 133–151.

18 Matthews S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drugs and Alcohol Dependence*, vol. 193 (December 2018), pp. 14–20.

19 Schwann Shariatirad, Masoomeh Maarefvand and Hamed Ekhtiari, "Methamphetamine use and methadone maintenance treatment: an emerging problem in the drug addiction treatment network in Iran", *International Journal of Drug Policy*, vol. 24, No. 6 (November 2013), pp. e115–e116.

20 Darshan Singh and others, "Substance abuse and the HIV situation in Malaysia", *Journal of Food and Drug Analysis*, vol. 21, No. 4 (December 2013), pp. S46–S51.

Note: Data refer to 2017.

Supply of cocaine

Coca bush cultivation and cocaine manufacture reached an all-time high in 2017

Primarily as a result of a sharp decline in Colombia, coca bush cultivation decreased from its peak in 2000 by 45 per cent over the period 2000–2013. This was followed by a twofold increase in the area under coca cultivation at the global level over the period 2013–2017. The increase in 2017 (15 per cent) was less marked than in the previous year but resulted in a record high of 245,400 ha under coca bush cultivation worldwide.

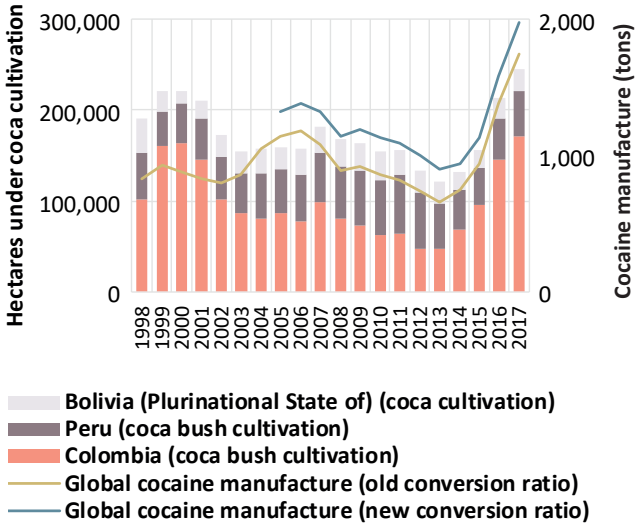
Estimated global manufacture of cocaine also reached an all-time high of 1,976 tons in 2017, which was more than double the level recorded in 2013 and represented an increase of 25 per cent over the level in 2016.

Increase in global coca bush cultivation mainly driven by changes in coca cultivation in Colombia

Trends in the global area under coca bush cultivation over the past two decades have been largely driven by developments in Colombia. Coca bush cultivation in Colombia fell by 70 per cent over the period 2000–2013 but more than tripled between 2013 and 2017. In parallel, the proportion of the global area under coca bush cultivation accounted for by Colombia decreased from 74 per cent of the total in 2000 to 40 per cent in 2013, before increasing again to 70 per cent of the global total in 2017.

Coca bush cultivation has been identified in 22 of the 32 departments in Colombia. In 2017, most coca bush cultivation continued to take place in the

FIG. 2 Global coca bush cultivation and cocaine manufacture, 1998–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

Recent increase in coca bush cultivation in Colombia

Trends: increase in, and concentration of, coca bush cultivation and integration of illicit coca/cocaine supply chain

Coca bush cultivation increased in Colombia from 46,000 ha to 171,000 ha over the period 2013–2017. This change was not homogenous across the country: in some areas, coca bush cultivation increased sharply while in others it not only decreased but may be disappearing altogether. Coca bush cultivation has become more concentrated as it has intensified in some of the areas where it has been present over the past decade. Roughly 80 per cent of coca bush cultivation detected in 2017 took place in the areas continuously affected by coca cultivation in the last decade.[a] However, in 37 per cent of the areas where there had been coca bush cultivation at any time in the past decade there was no coca bush cultivation in the last three years.

The increase in, and the concentration of, coca bush cultivation has largely taken place in border areas (land or maritime boarders) where there are now areas with intense coca bush cultivation and a cocaine manufacturing infrastructure. These areas are instrumental in cocaine trafficking as they integrate the different phases of the coca/cocaine supply chain: coca bush cultivation; transformation/manufacturing of coca into cocaine; and cocaine trafficking. Within this complex network, coca growers play only a minor role in the cocaine supply chain in Colombia.

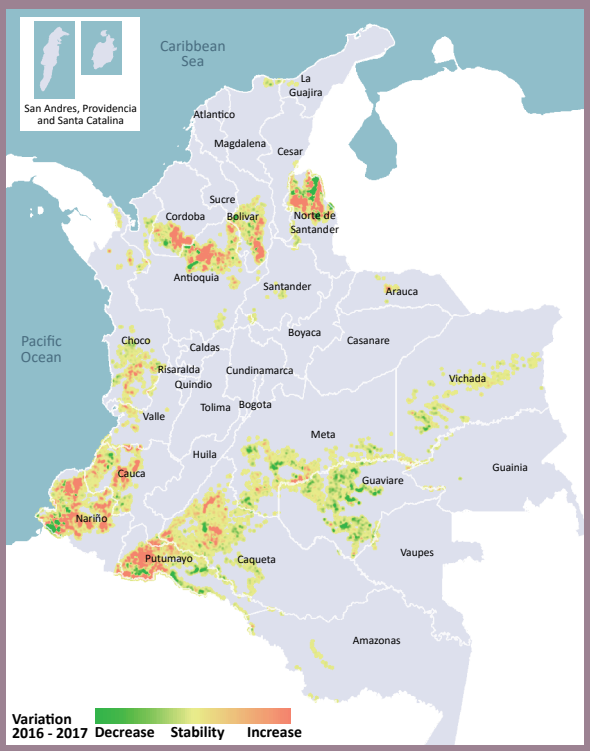
Main causes: vulnerabilities, changes in trafficking control structures, incentives

A number of factors may have driven the expansion of coca bush cultivation in some areas and its reduction in others. The areas that remain heavily affected by coca bush cultivation are, on average, at least 250 km from the main cities and are located near rural towns that have a limited infrastructure. These conditions hinder the competitivity of licit agriculture and make the economic integration of such communities extremely difficult.

Decreases in coca bush cultivation have occurred primarily in areas where the geographical and sociopolitical nature of the territory facilitates state investment in socioeconomic interventions. For example, a measurable reduction in coca bush cultivation has been observed in the eastern part of Colombia where, following the peace agreement and subsequent government programme, farmers in areas where FARC was previously predominant have abandoned coca bush cultivation.

Yet not all of those areas have experienced a reduction in coca bush cultivation. The concentration of coca bush cultivation in some areas may have been driven by the strategic positioning of both old and new organized groups. As a result of the peace process with FARC and the activities of the Colombian authorities in tackling drug trafficking, the groups that were previously predominant in large areas of the territory (for example, FARC, AUC, BACRIM) have been partially replaced by groups that are more geographically concentrated and are more motivated by profit generated from the cultivation of illicit crops than by political agendas. The geographical concentration of coca bush cultivation increases its profitability for such

Trends in coca bush cultivation, Colombia, 2016–2017



Source: Government of Colombia - UNODC supported monitoring system.

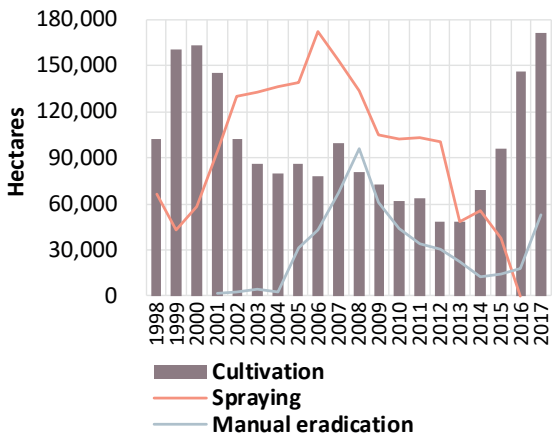
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

organized groups as they can provide incentives to coca growers through competitive farmgate prices and violent coercion and can corrupt local authorities.

The overall increase in coca bush cultivation in Colombia since 2013 may also have been driven in part by the perception that the cultivation of coca bush was less risky than in previous years because of the decline in eradication activities. Together with higher prices and greater profits, this may have constituted a factor in favour of coca bush cultivation, although this does not ultimately translate into a substantial improvement in the quality of life of coca growers.

[a] 24 per cent of the areas affected by coca bush cultivation in the past 10 years have been continuously affected during this period.

FIG. 3 Area under coca bush cultivation, sprayed and manually eradicated in Colombia, 1998–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

south of the country, notably in Nariño (27 per cent of the total) and Putumayo (17 per cent), and to a lesser extent in the north, notably in Norte de Santander (16 per cent).[21]

After 2012, areas under coca cultivation that were fumigated and/or manually eradicated declined from some 130,000 hectares to 18,300 hectares in 2016 before rising again to 53,600 ha in 2017. This decline in eradication, however, went hand in hand with an intensification of law enforcement efforts against the manufacturing of cocaine in Colombia.

In Colombia, the overall number of laboratories used for the manufacture of coca paste, cocaine base and cocaine HCl that were dismantled more than doubled, from 2,334 in 2013 to 4,820 in 2016 – the highest number ever reported – before decreasing slightly to 4,252 in 2017. Moreover, the quantity of cocaine HCl seized more than doubled, from 167 tons in 2013 to 362 tons in 2016 and increased further to 435 tons in 2017. All of these increases reflect government efforts to disrupt the cocaine market and the increase in the supply of cocaine-related products. Nonetheless, the clandestine manufacture of cocaine in Colombia is estimated to have increased almost fivefold, from 290 tons in 2013 to 1,379 tons in 2017, although the annual growth rate of the area under coca bush cultivation has started to decelerate, dropping from 52 per cent in 2016 to 17 per cent in 2017.[22]

More marked than the 17 per cent increase in the area under coca bush cultivation was the increase in the estimated quantity of cocaine manufactured in Colombia in 2017, which rose 31 per cent to 1,379 tons. The increase in manufacture was primarily the result of a sharp increase in the size of the "productive area" of coca bush cultivation in that country. This was due to the expansion of coca bush cultivation to new areas in 2016, which only produced sufficient coca leaf for harvest and the manufacture of cocaine in 2017.[23]

21 UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017*.

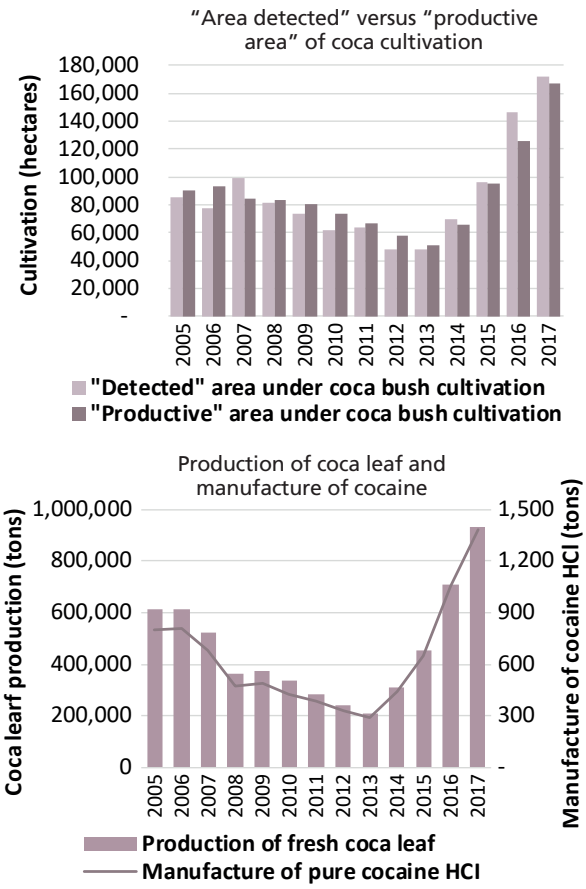
22 UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017* and previous years.

23 UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years.

Alternative development in Colombia

The National Comprehensive Programme for the Voluntary Substitution of Illicit Crops of Colombia (PNIS) increased its assistance to families, which rose from approximately 54,000 families in 2017 to more than 99,000 families in 14 departments in 2018. After registering with the programme, beneficiaries receive 1 million Colombian pesos per month (roughly $325) for a period of 12 months. Once a family has received the first payment, it has 30 to 60 days for the "voluntary eradication" of its coca cultivation. UNODC verified the "voluntary eradication" of more than 29,000 ha over the period August 2017–December 2018 (including 3,000 ha in 2017 and 26,000 ha in 2018) out of the approximately 52,000 ha under coca cultivation in the municipalities that have so far benefited from the programme. There was a "voluntary eradication" compliance rate of 94 per cent. In addition, national authorities reported manual "assisted eradication" by the police and army in PNIS areas of more than 5,000 ha up to 31 January 2019. After the verification of "voluntary eradication", PNIS provides technical assistance, most notably for projects that support the improvement of food security (at a cost of roughly $600 per beneficiary family), quick-income projects ($3,000 per beneficiary family) and some long-term productive projects ($3,300 per beneficiary family). In order to limit the otherwise perverse incentive of farmers growing coca bush purely to obtain alternative development assistance, both coca farmers (69 per cent of all beneficiaries) and non-coca farmers in areas heavily affected by narcotrafficking were entitled to register for PNIS and received the same benefits. PNIS also established complementary assistance for coca leaf labourers (non-land owners), who receive 1 million Colombian pesos per month for a period of 12 months as payment for community service activities.

FIG. 4 Coca bush cultivation and manufacture of cocaine in Colombia, 2005–2017



Source: UNODC and Colombia, *Colombia: Monitoreo de Territorios Afectados por Cultivos Ilícitos 2017* (September 2018).

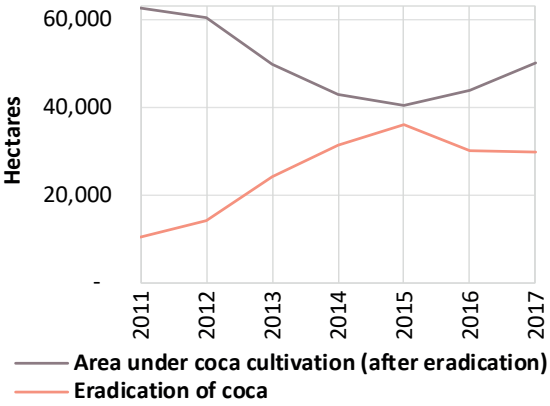
Increase in coca bush cultivation in Peru

Equivalent to 20 per cent of global coca bush cultivation, the overall area under coca bush cultivation in Peru in 2017 increased by 14 per cent from the previous year to 49,900 ha; this is roughly equivalent with the level reported in 1998 (51,000 ha), although still substantially lower than the peak in 1990 (121,300 ha).[24]

Coca bush cultivation in Peru declined in the 1990s by 64 per cent, in tandem with severe State action against the *Sendero Luminoso* ("Shining path"), an

24 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017* (December 2018) and previous years.

FIG. 5 Area under coca bush cultivation and eradication in Peru, 2011–2017



Source: UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017* (December 2018).

MAP 1 Area under coca bush cultivation, by production zone, Peru, 2016–2017

Source: UNODC and DEVIDA, *Perú Monitoreo de Cultivos de Coca 2017*, December 2018.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

insurgent group whose activities were partly financed by coca production, and the introduction of a "shoot-down policy" in the mid-1990s – "air bridge denial", to prevent unauthorized planes from transporting coca paste from Peru to Colombia. This was followed by a decrease in coca leaf prices in Peru and thus fewer incentives for farmers to cultivate coca bush; however, cultivation increased over the period 2000–2011 by 45 per cent, as the policy ended and coca leaf prices rebounded. Coca bush cultivation in Peru declined again over the period 2011–2015, by 35 per cent, partly as a result of successful alternative development interventions in combination with increasing coca bush eradication.[25] Since 2015, however, coca bush cultivation has been increasing in Peru, while eradication has been decreasing.[26]

The area under coca bush cultivation in Peru increased in 2017. Coca leaf production rose by 11 per cent in that country from the previous year. Despite the increases in supply, coca leaf prices in Peru also increased slightly (from $3.10 to $3.40 per kg), suggesting sustained demand for cocaine worldwide.[27]

Coca cultivation was found in 13 of the 24 departments in Peru in 2017, with Cusco – encompassing the area of La Convención y Lares and parts of the Valle de lo Ríos Apurimac, Ene y Mantaro – continuing to be the department most affected.[28] Indeed, most coca leaf production in Peru continues to take place in the Valle de lo Ríos Apurimac, Ene y Mantaro (67 per cent of total in 2017), and in La Convención y Lares (13 per cent).

25 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2015* (July 2016).

26 UNODC and Peru, *Perú Monitoreo de Cultivos de Coca 2017.*

27 Ibid.

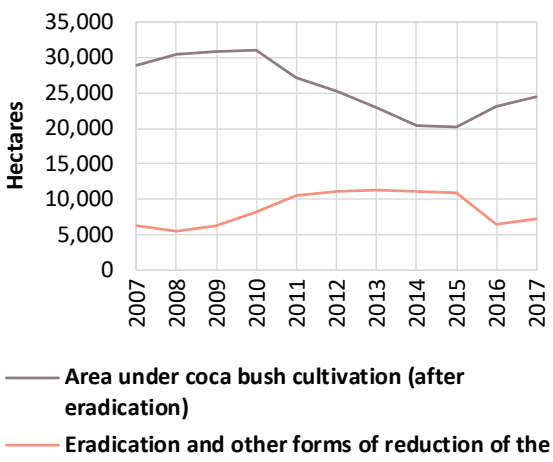
28 Ibid.

Slight increase in coca bush cultivation in the Plurinational State of Bolivia

The area under coca bush cultivation in the Plurinational State of Bolivia increased by 6 per cent in 2017, to 24,500; this was similar to the level estimated in 2012, although still only half the size of the peak in 1990 (50,300 ha). The Plurinational State of Bolivia accounted for 10 per cent of global coca cultivation in 2017. Most coca bush in the country continues to be cultivated in the traditional coca-producing area, Yungas de la Paz (65 per cent in 2017), and to a lesser extent in Tropicó de Cochabamba (35 per cent), mostly in the province of Chapare.

The increase in coca bush cultivation in the Plurinational State of Bolivia in 2017 ended the previous downward trend over the period 2010–2015, during which cultivation decreased by 35 per cent.[29] According to the Government, that decrease happened at the same time as the policy of "rationalization of coca production" through social control mechanisms was introduced[30] – that is, a policy based on a voluntary reduction in coca bush cultivation to a maximum of 1 cato per family[31, 32] – as well as a policy of eradication of cultivation beyond the accepted limit and in national parks.

FIG. 6 Area under coca bush cultivation and eradication in the Plurinational State of Bolivia

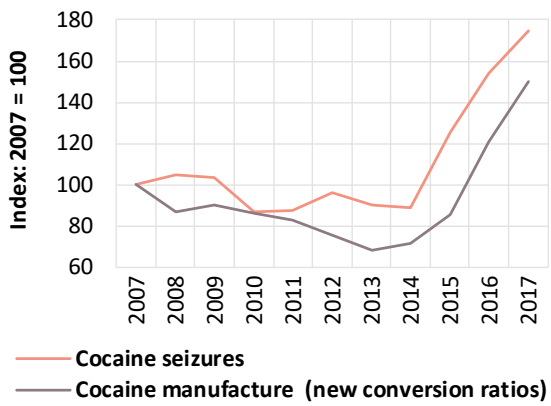


Source: UNODC and Plurinational State of Bolivia, *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2017* (August 2018).

Cocaine available for consumption has increased less than the manufacture of cocaine, as seizures reach record highs

Global seizures of cocaine rose to 1,275 tons (prior to purity adjustments) in 2017, the largest quantity ever reported. The increase in the quantity of cocaine seized over the past decade (74 per cent) reflects the increase in cocaine manufacture (50 per cent) and a subsequent increase in cocaine trafficking. The amount of cocaine available for consumption (manufacture less seizures) has therefore increased less

FIG. 7 Global cocaine manufacture and global quantities of cocaine seized, 2007–2017



Sources: UNODC, Coca cultivation surveys in Bolivia (Plurinational State of), Colombia and Peru, 2017 and previous years and UNODC, annual report questionnaire data.

29 UNODC and Plurinational State of Bolivia, *Estado Plurinacional de Bolivia: Monitoreo de Cultivos de Coca 2015* (July 2016).

30 Plurinational State of Bolivia, National Council against Drug Trafficking (CONALTID), *Estrategia de Lucha contra el Narcotráfico y Revalorización de la Hoja de Coca 2007-2010* (La Paz, 2007), quoted in European Commission, *Bolivia: Country Strategy Paper 2007-2013* (Brussels, 2007), pp. 37–38.

31 Robert Lessmann, "Bolivien: Zwischen Modellfall und Unregierbarkeit", in *Bolivien Staatszerfall als Kollateralschaden*, Thomas Jäger, ed. (Wiesbaden, Germany, VS Verlag für Sozialwissenschaften, 2009), p. 54.

32 According to this policy, rights to grow coca are given to communities or local coca growers' associations; if an area of more than one cato of coca is found per individual farmer, the rights are taken away for the whole community or association (Jaqueline Garcia-Yi, "Social control as supply-side harm reduction strategy", Iboeroamerican Journal of Development Studies, vol. 3, No. 1 (2014), pp. 58–82)).

than the manufacture of cocaine, which is explained by the fact that the increase in the quantity of cocaine seized has exceeded growth in the manufacture of cocaine. This suggests that, at the global level, law enforcement efforts and international cooperation have become more efficient and have intercepted a larger share of cocaine products than in the past, although changes in purity could also partially account for the different trends.

Cocaine seizures remain concentrated in the Americas and in Europe

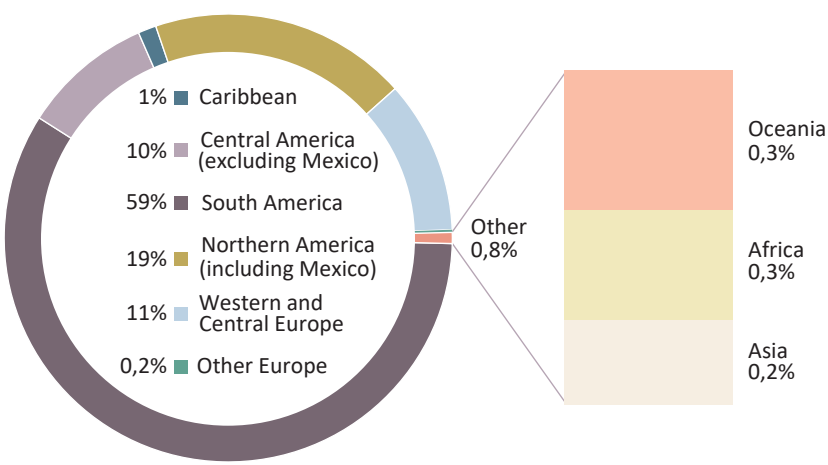
In terms of quantity, the bulk of cocaine continues to be seized in the Americas, which accounted for almost 90 per cent of the global total in 2017. The largest portion was seized in South America, with the largest quantities seized in Colombia (38 per cent of the global total), Ecuador (7 per cent), Brazil (4 per cent) and Venezuela (Bolivarian Republic of) (3 per cent) in 2017. The global quantity of cocaine seized in 2017 increased by 13 per cent from the previous year. Increases of about 20 per cent from 2016 levels were recorded in Colombia in 2017 in seizures of both cocaine HCl and of cocaine paste and base, to 434 tons and 55 tons (including over 2 tons seized as "*basuco*"), respectively, the largest quantities of such substances seized worldwide.

In one of the most significant developments in cocaine trafficking in 2017, authorities in Colombia also reported that in addition to the trafficking of cocaine manufactured in Colombia, there was a sharp increase in the trafficking of coca paste and base by boat to neighbouring countries for transformation into cocaine HCl. A number of countries in Latin America reported the dismantling of cocaine base and cocaine HCl laboratories over the period 2013–2017. In descending order of quantity, those countries were Colombia, followed by the Plurinational State of Bolivia, Peru, Argentina, the Bolivarian Republic of Venezuela, Brazil, Chile and Ecuador (with an equal number dismantled), Paraguay, Honduras and El Salvador. Moreover, small numbers of cocaine laboratories dismantled over that period were reported by countries in North America (Canada and the United States of America) and Europe (Albania, Belgium Greece, Slovenia, Portugal and Spain).

In North America, the United States continued to account for the largest quantity of cocaine seized (18 per cent of the global total); in Central America, the largest quantities were reported by Panama (5 per cent) and Costa Rica (2 per cent). Seizures reported by countries in the Caribbean, by contrast, accounted for just 1 per cent of the total global quantity of cocaine intercepted, mostly reflecting seizures made by the Dominican Republic.

The largest quantity of cocaine seized outside the Americas in 2017 was again reported in Europe (11

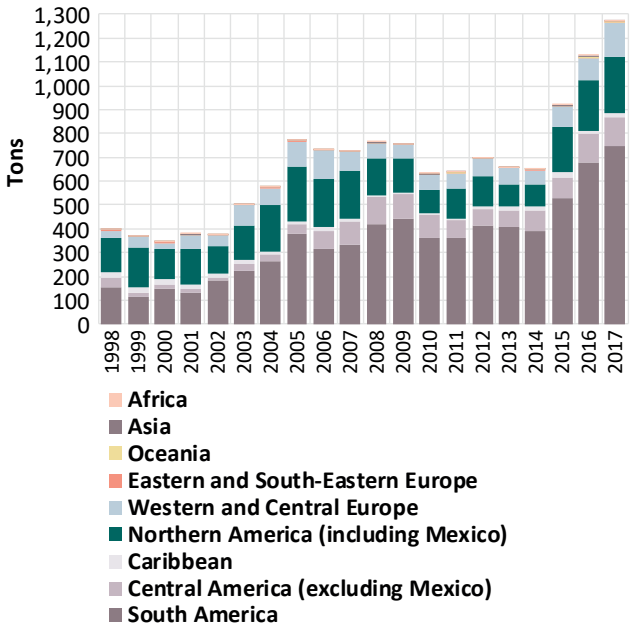
FIG. 8 Global quantity of cocaine seized, breakdown by region, 2017



Source: UNODC, based on responses to the annual report questionnaire.

Note: total amount seized was 1,275 tons, including cocaine HCl, coca paste and base, crack-cocaine.

FIG. 9 Global quantity of cocaine seized, by region,1998–2017



Source: UNODC, based on responses to the annual report questionnaire.

Note: includes seizures of cocaine HCl, coca paste and base, "crack" cocaine.

per cent of the global total), mostly in Western and Central Europe, in particular in Belgium (3.5 per cent of the global total), Spain (3.2 per cent), France (1.4 per cent) and the Netherlands (1.1 per cent). The quantity of cocaine seized in the rest of the world in 2017 remained comparatively limited: Oceania (4.3 tons), mainly reported in Australia; Africa (3.4 tons), notably in Morocco, South Africa and Nigeria; and Asia (2.8 tons), most notably in Saudi Arabia, followed by Pakistan.

The global quantity of cocaine seized in 2017 increased by 13 per cent from the previous year, reflecting an increase in all regions except Asia. The sharpest increases were reported in Oceania (94 per cent) and Europe (53 per cent), where the increases in the quantities of cocaine seized in recent years reflect the increase in the availability of cocaine and an expansion of the cocaine market, as suggested by increases in the use and purity of cocaine, as well as in cocaine metabolites found in wastewater. Similar trends have been seen in North America. The quantities of cocaine seized in Asia, despite decreasing by more than 50 per cent in 2017, were still at the second-highest level ever reported.

Given the existing cocaine trafficking routes, most cocaine interceptions take place at sea or near to it. Over half of significant seizures of cocaine (55 per cent) over the period 2013–2017 (cocaine HCl and cocaine base) were related to trafficking at sea, while around a quarter were related to trafficking by land and another 15 per cent were intercepted at airports.[33, 34]

Seizures reflect the fact that cocaine continues to be trafficked primarily from South America to North America and Western and Central Europe

A total of 143 countries across all regions reported cocaine seizures over the period 2013–2017, up from 99 countries over the period 1983–1987, suggesting that cocaine trafficking has expanded into a global phenomenon. Seizure data suggest that most of the cocaine trafficked from the Andean countries is destined for the main consumer markets in North America and Western and Central Europe. Based on the quantities of cocaine seized over the period 2013–2017, the quantity of cocaine trafficked to North America would be nearly double that trafficked to Western and Central Europe. Trafficking to other regions, although still limited, also seems to be on the increase, thus contributing to the proliferation of cocaine trafficking routes across the globe.

Cocaine trafficking to North America

In the Americas, the primary cocaine trafficking flow is from Colombia to the United States. Overall cocaine seizures in North America have more than doubled in the period 2013–2017, from 94 tons to 238 tons. The main destination country in the subregion for cocaine shipments continues to be the United States, which accounted for 94 per cent of all the cocaine seized in North America over the period 2013–2017, as well as in 2017 itself.

According to the authorities of the United States, cocaine is often shipped to the United States via

33 Individual drug seizures are based on information provided by 85 countries over the period 2013–2017, including 56 countries that provided information on cocaine seizures.

34 UNODC, individual drug seizure database.

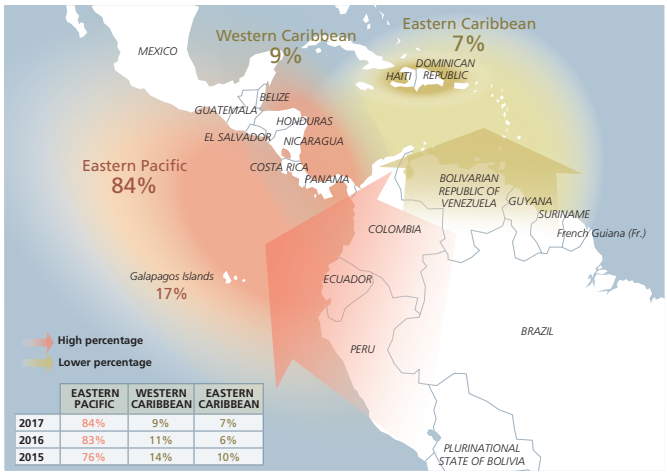
Mexico, having previously departed and/or transited other countries, mainly Colombia, Ecuador and Guatemala.[35] Similarly, the authorities of Mexico have reported that Colombia and Ecuador, followed by Peru, are the main cocaine departure countries in South America, and Guatemala is the main transit country in Central America. In the past, most cocaine was smuggled into Mexico by sea; however, the authorities of Mexico reported that most of the cocaine (52 per cent) seized in that country in 2017 was smuggled by land via Guatemala, while 45 per cent was shipped to Mexico by sea; a further 3 per cent was trafficked by air into the country. Most of the cocaine arriving in Mexico continues to be for onward trafficking to the United States and/or for domestic use, although 2017 data suggest that smaller amounts (4 per cent of the total seized in 2017) are also destined for China.

The vast majority (93 per cent) of the cocaine analysed in the United States in 2017 originated in Colombia, while 4 per cent originated in Peru; the origin of the remainder (3 per cent) could not be identified.[36] In terms of trafficking routes, it is estimated that the Pacific Ocean continues to be used to smuggle cocaine into the United States far more than the Atlantic Ocean.[37]

The predominance of cocaine trafficking to the United States via the Pacific seems to be linked to the concentration of coca leaf production and cocaine manufacture in southern Colombia (Narino, Putumayo, Cauca and Caquetá), where the Pacific ports of Colombia and neighbouring Ecuador provide the closest access to the sea. The cocaine is typically trafficked from Colombia to Central America or Mexico by ship or semi-submersible.[38]

It is difficult to estimate how much cocaine is smuggled into the United States by land and how much by sea, but the Pacific and Atlantic routes remain

MAP 2 Cocaine flow from South America to the United States, 2017

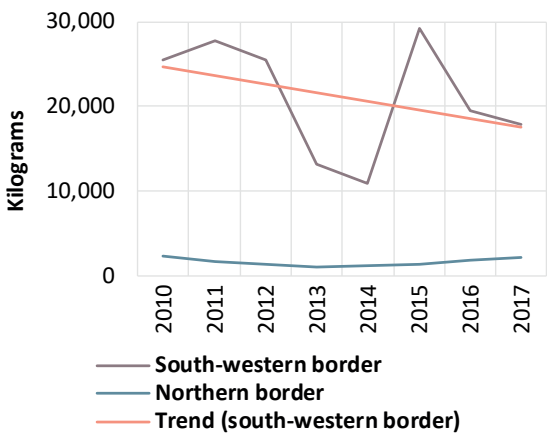


	EASTERN PACIFIC	WESTERN CARIBBEAN	EASTERN CARIBBEAN
2017	84%	9%	7%
2016	83%	11%	6%
2015	76%	14%	10%

Source: United States Government database of Drugs Seizures and Movement.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

FIG. 10 Quantity of cocaine seized on the south-western and northern borders of the United States, 2010–2013



Source: National Seizures System as of 11 March 2019.

the two main trafficking routes, while trafficking by air and mail is comparatively limited. Seizures of cocaine entering the United States by land are made mostly on the south-western border with Mexico, with the quantities intercepted declining in recent years.[39] By contrast, seizures of cocaine in the transit

35 United States, Immigration and Customs Enforcement, Homeland Security Investigations, "Executive information statistical report", quoted in UNODC, responses to the annual report questionnaire.

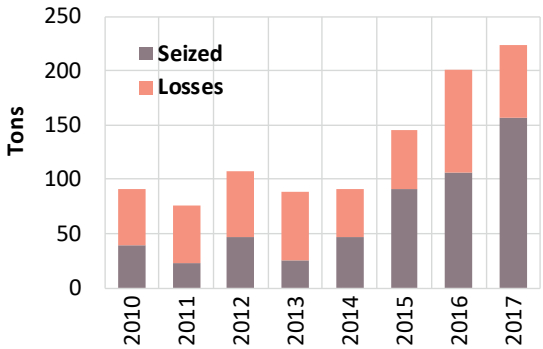
36 United States Department of Justice, DEA, *2018 National Drug Threat Assessment* (October 2018), p. 41.

37 United States Department of Justice, DEA, *2018 National Drug Threat Assessment* (October 2018), p. 51.

38 Jarrod Sadulski, "The business of cocaine and how semi-submersible vessels threat the detection of drug smugglers", Homeland Security, 27 July 2018.

39 Data reported to the National Seizure System, quoted in UNODC, responses to the annual report questionnaire.

FIG. 11 Quantities seized and losses of cocaine in sea transit zones in the Caribbean and eastern Pacific, United States, 2010–2017



Source: United States, Department of Homeland Security reports from the Office of Inspector General 2017 and previous years.

Note: "Losses" typically refer to the estimated amounts of cocaine thrown by drug traffickers into the sea before ships are searched by the authorities; this is usually an attempt to reduce subsequent drug trafficking charges.

zones of the Caribbean and eastern Pacific heading towards the United States market have shown a clear upward trend, especially since 2014.

Elsewhere in North America, the vast majority of the cocaine seized in Canada also originates in Colombia – roughly 90 per cent of all cocaine smuggled into Canada over the period 2013–2017 – and reaches the country through the Caribbean (mainly via Jamaica, the Dominican Republic and Trinidad and Tobago) and, to a lesser extent, the United States. The quantity of cocaine seized along the northern border of the United States increased in recent years, suggesting ongoing trafficking activities via the United States to Canada.

Cocaine trafficking to Western and Central Europe

The second most important cocaine trafficking flow worldwide is from the Andean countries to Western and Central Europe, the second largest market for cocaine worldwide after the United States. The quantity of cocaine seized in West and Central Europe more than doubled, from 65 tons in 2013 to 141 tons in 2017, accounting for 98 per cent of the cocaine intercepted in Europe in 2017, as well as over the period 2013–2017. According to seizure data reported by Member States, Spain remains the main transit country reported by other countries in Europe for cocaine trafficked from South America, together with the Netherlands, followed by Germany, Belgium and Italy.

Cocaine smuggled to Western and Central Europe originates mainly in Colombia, which accounted for around 60 per cent of mentions as the country of origin by countries in the subregion in 2017 and over the period 2013–2017. The analysis of individual drug seizures reported by 27 countries in Europe suggests that up to 74 per cent of all cocaine intercepted over the period 2013–2017 may have originated in Colombia, 21 per cent in Peru and 4 per cent in the Plurinational State of Bolivia.[40] Shipments are smuggled in a variety of ways: directly from those countries or via neighbouring countries, including via Ecuador and the Bolivarian Republic of Venezuela in the case of cocaine manufactured in Colombia; via Brazil, in the case of cocaine manufactured mainly in Bolivia (Plurinational State of) and Peru; or via Africa, mostly West and Central Africa.

The distribution of cocaine seizures made in Europe by type of trafficking route (sea, land or air) suggests that the largest quantity of cocaine reaches Europe by sea, through ports in Spain, Belgium, the Netherlands, Italy and France, from where cocaine shipments are trafficked to other countries in Europe by land. Reports by many other countries in Europe, which have much smaller cocaine markets and seize far smaller quantities of cocaine, suggest that most cocaine was smuggled via a neighbouring country by road or by air.

Cocaine trafficking to Africa

Based on quantities of cocaine seized, trafficking to countries outside the Americas and Western and Central Europe remains comparatively limited (1 per cent of the global quantity seized), although it has been growing and cocaine trafficking routes have been proliferating in recent years. The limited capacity of countries in Africa to carry out and report seizures may result in an underestimation of the extent of cocaine trafficking in Africa. Indeed, in descending order of quantity, recent large seizures in Morocco, South Africa and Guinea-Bissau

40 UNODC, individual drug seizures database.

Significant cocaine seizures reported in Africa

Morocco reported cocaine seizures of 120 kg in 2015, 1.6 tons in 2016 and of 2.8 tons in 2017, including a single shipment of 2.6 tons of cocaine from Brazil seized in October 2017. In another major seizure the following year, 1 ton of cocaine paste was seized in El Jadida, Morocco, in December 2018, from a network smuggling cocaine from Latin America to Europe.[a]

South Africa reported cocaine seizures of 191 kg in 2016 and of 210 kg in 2017, involving 4,639 reported seizure cases that year. In January 2019, however, a single seizure of 706 kg was reported on a vessel at Coega Harbour, near Port Elizabeth, which was on its way to Singapore and India, the expected final destination of the shipment.[b] Guinea-Bissau, which has not reported any cocaine seizures to UNODC in recent years, seized 789 kg of cocaine in March 2019, its single largest ever cocaine seizure. The cocaine was found in the false bottom of a truck loaded with frozen fish,[c] a well-known practice used by criminals to discourage the authorities from in-depth searches, since if no drugs are found, compensation may be demanded.

a UNODC, Drugs Monitoring Platform.

b Ibid.

c UNODC, Regional Office for West and Central Africa, "Bissau-Guinean authorities achieve largest ever drug seizure in the history of Guinea Bissau", 9 March 2019.

indicate that the trafficking of cocaine via Africa continues to be well organized.

Often intended for onward trafficking to Europe and, to a lesser extent, Asia, cocaine shipments to Africa are mainly directed to countries in West and Southern Africa. Total quantities of cocaine seized in Africa have fluctuated in recent years: they were at similar levels in 2013 and 2017, but nearly tripled from the low of 1.2 tons in 2015 to 3.4 tons in 2017.

The trafficking of cocaine to Africa takes place mostly by air and by sea, with reports often shifting from one year to the next. In 2017, Angola, the Central African Republic, Ghana, Kenya, Madagascar, Nigeria and the Sudan reported that most cocaine shipments were trafficked by air, while Morocco, which accounted for 86 per cent of all the cocaine seized in Africa in 2017, reported that 90 per cent of it had been shipped to the country by sea.

According to information provided by Member States, over the period 2013–2017, most of the cocaine trafficked to Africa seems to have departed from Brazil, followed by Colombia, the Plurinational State of Bolivia and Peru; transit to Africa via the United Arab Emirates also seems to occur. In Africa itself over the same period, the transit of cocaine is reported by countries to take place mostly via Nigeria, followed by South Africa and the United Republic of Tanzania and by Ghana.

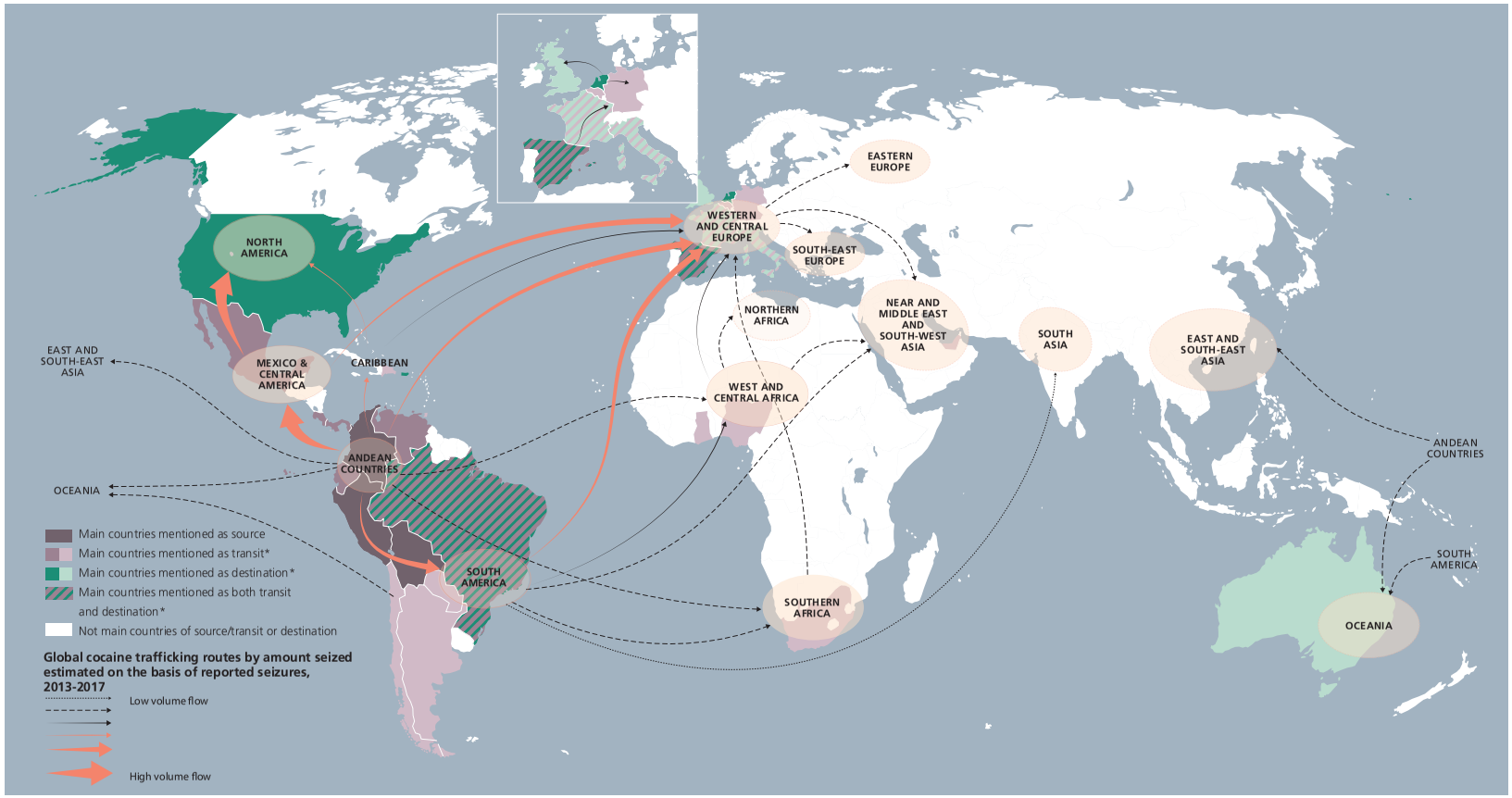
While most of the reported destination countries outside Africa for cocaine trafficked within the region over the period 2013–2017 are located in Europe (notably France, Spain, Italy and, to a lesser extent, the Netherlands and the United Kingdom of Great Britain and Northern Ireland), countries in Africa also mentioned the United States and, to a lesser extent, China, Israel and Malaysia as destination countries.

Cocaine trafficking to Asia

Quantities of cocaine seized in Asia have also been fluctuating, reaching 2.8 tons in 2017 after a peak of 6.4 tons in 2016. Over the period 2013–2017, the largest quantities of cocaine seized in Asia were reported by East and South-East Asia (46 per cent) and the Near and Middle East and South-West Asia (38 per cent).

The trafficking of cocaine to Asia seems to take place mainly by air, the exception in recent years being

MAP 3 Main cocaine trafficking routes as described by reported seizures, 2013–2017



Sources: UNODC.

** A darker shade indicates a larger amount of cocaine being seized with the country as transit/destination.*

The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the period 2013–2017. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin does not reflect the country in which the substance was produced.

The main countries mentioned as transit or destination were identified on the basis of both the number of times they were identified by other Member States as departure/transit or destination of seizures, and the annual average amount that these seizures represent during the period 2013–2017. For more details on the criteria used, please see the Methodology section of this document.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

China, a country to which most cocaine is trafficked by sea. The most frequently mentioned departure countries for cocaine smuggled to China over the period 2013–2017 were Brazil and Colombia. In addition, one major seizure of 928 kg made in Sri Lanka in December 2016 involved a maritime shipment of cocaine from Ecuador that was destined for India. Another exception is Japan, where most cocaine was reported to have entered the country by mail, followed by shipments by air. The most frequently mentioned departure countries for cocaine smuggled to Japan were countries in North America (United States and Canada) and Europe (the Netherlands), although some cocaine was also shipped directly from Peru.

Brazil is overall the single most mentioned transit country by Member States for cocaine shipments destined to Asia (all subregions) over the 2013–2017 period. Direct shipments from cocaine manufacturing areas in South America have also been reported by Asian countries, as has transit through a number of other countries in the Americas, including Mexico, the United States and Panama, as well as a number of countries in Africa, notably Nigeria, South Africa and Egypt .

According to Member States, cocaine shipments within Asia seem to transit the United Arab Emirates, mostly via Dubai, a major air traffic hub for other countries in Asia and, to a lesser extent, Thailand. The most frequently mentioned final destination countries for cocaine smuggled to Asia over the period 2013–2017 were China (including Hong Kong, China), followed by Israel.

In 2018, a number of significant cocaine seizures took place in Asia, including 1.3 tons in China in April, after a major cross-border drug trafficking gang was busted in Shenzhen (the border city with Hong Kong, China).[41]

Cocaine trafficking to Oceania

Based on information provided by Australia and New Zealand on countries of origin, departure and transit for cocaine by countries in Oceania over the period 2013–2017, cocaine seems to arrive in the region mainly, in descending order of quantity, via the United States and Chile. Direct shipments from Peru also occur and transit via a number of other countries in the Americas (notably Brazil, Argentina and Canada) and Europe (notably the United Kingdom and the Netherlands).

Cocaine smuggled to Oceania seems to be predominantly destined for Australia, especially Sydney,[42] and to a lesser extent, New Zealand. No other country in the region reported cocaine seizures to UNODC in the past decade. The cocaine seized in Australia accounted for 98 per cent of all the cocaine seized over the period 2013–2017 in Oceania, during which seizures of the drug quadrupled from 1 ton to 4.1 tons. The quantity of cocaine seized in New Zealand during the same period also increased, from 0.2 kg to 108 kg. A joint international investigation in September 2018 led to the seizure of around 500 kg of cocaine in Solomon Islands destined for Australia.[43]

Most of the cocaine intercepted in the fiscal year 2016–2017 at the border of Australia had crossed transpacific routes by air (46 per cent), by mail (25 per cent) and by sea (23 per cent), with the remainder being smuggled by aircraft passengers (6 per cent).[44] Similarly, most of the cocaine intercepted in New Zealand in 2017 (55 per cent) arrived in the country by air.

Data from Australia for the fiscal year 2016–2017 revealed a total of 47 departure points for the cocaine detected at the country's borders. The United States remained the primary departure point, followed by South Africa, Canada, Mexico, the United Kingdom, Brazil, France, Chile, Singapore, and Trinidad and Tobago.[45]

The trafficking of cocaine to Australia is highly profitable, given the high price of cocaine, which was estimated at a wholesale level of between 180,000 and 300,000 Australian dollars (equivalent to $136,000–$226,000) per kg in 2016–2017.[46] Such high prices make the smuggling of cocaine profitable even from high-price transit countries such as

41 UNODC, Drugs Monitoring Platform.

42 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17* (Canberra, 2018).

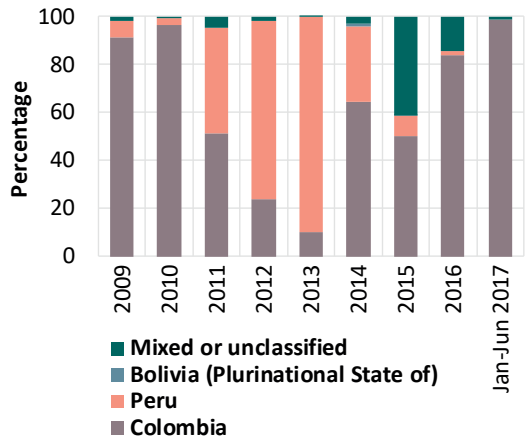
43 UNODC, Drugs Monitoring Platform.

44 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

45 Ibid.

46 Ibid.

FIG. 12 Origin of cocaine seized (bulk weight) in Australia, 2009–2017



Source: Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016–17* (Canberra, 2018).

the United States, where cocaine wholesale prices ranged between $4,000 and $50,000 per kg in 2017. In the major producing countries, cocaine can be bought at far lower prices: for example, for $1,500 per kg in Colombia or for $880 per kg in Peru in 2017. Yet direct and large-scale smuggling from those countries to Australia has not been documented by the authorities of Australia, suggesting that it may be considered too risky or that criminal groups in Australia have more direct links with trafficking groups in other countries.

Despite a high prevalence of cocaine use in Australia, the very high cocaine prices in the country, as well as in neighbouring New Zealand, seem to have helped to keep the quantity of cocaine consumed at quite a low level in both countries, compared with countries in other regions, as confirmed by wastewater analyses[47] and drug treatment data. However, high cocaine prices may have led to increasing drug trafficking activity, resulting in an increasing supply of cocaine and an increase in the likelihood of larger quantities of cocaine being seized in Australia than in the past.[48]

47 Australian Criminal Intelligence Commission, University of Queensland and University of South Australia, *National Wastewater Drug Monitoring Program: Report 6* (December 2018) and previous years.

48 Australian Criminal Crime Commission, Illicit Drug Data Report 2016-2017.

Forensic profiling of the cocaine seized in Australia in the past 5 years indicates a clear trend away from cocaine originating in Peru, which accounted for 90 per cent of all cocaine seized in 2013, to cocaine originating in Colombia, which accounted for 99 per cent of all cocaine seized in the first two quarters of 2017. This change may be the result of the sharp increase in coca leaf production in Colombia since 2013.

Demand for cocaine

In 2017, an estimated 18 million worldwide, or nearly 0.4 per cent of the adult population aged 15–64, had used cocaine in the past year. In parallel to an increase in the global supply of cocaine, there is an ongoing increase in cocaine use at the global level. This has been documented in the two main cocaine markets: North America and Western and Central Europe. Anecdotal information points to an emerging cocaine use market in Africa and Asia, but the availability of data on drug use in those regions is chronically limited.

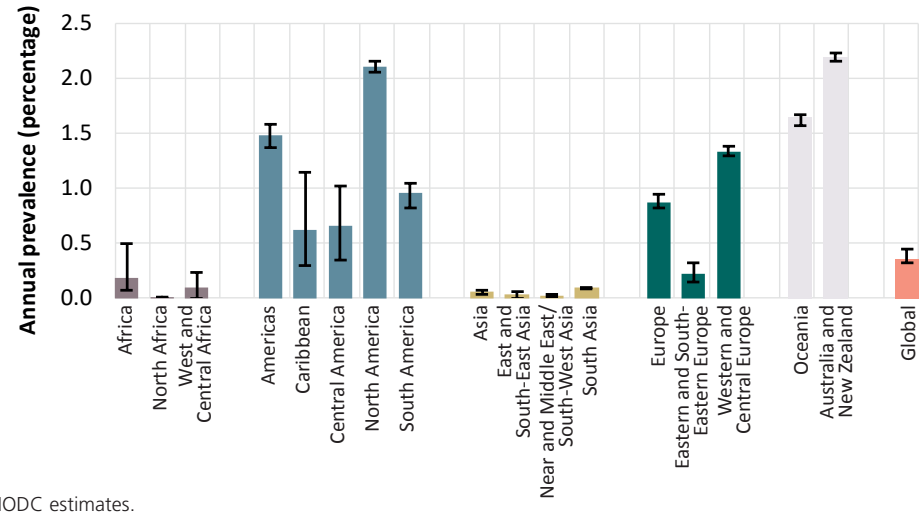
A high prevalence of cocaine use is estimated in Oceania (Australia and New Zealand, 2.2 per cent), North America (2.1 per cent), Western and Central Europe (1.3 per cent) and South America (1.0 per cent), subregions where there have been signs of an increase in cocaine use in recent years. Moreover, the use of cocaine takes place both among socially integrated drug users, who use the drug, for example, in recreational or nightlife settings, and among socially marginalized drug users who also use "crack" cocaine.[49]

Extent of cocaine use in Central and South America and in the Caribbean

Past-year prevalence of cocaine use in Central and South America in 2017 remained much lower than in North America or the other major cocaine markets. In South America, nearly 2.7 million people, or almost 1 per cent of the population aged 15–64, were estimated to be past-year cocaine users in 2017; both in Central America and the Caribbean, around

49 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications of the European Union, 2018).

FIG. 13 Cocaine use, by subregion, 2017



Source: UNODC estimates.

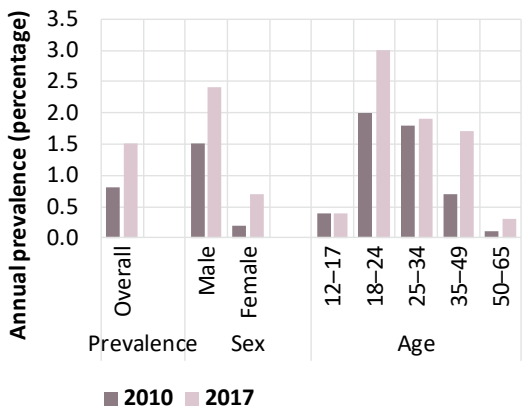
200,000, or 0.7 and 0.6 per cent of the population, respectively, were estimated to be past-year cocaine users in 2017.

In South America, among the countries where most recent data are available, Argentina, Brazil and Chile are the three countries with past-year prevalence of cocaine use higher than the subregional average. With nearly 1.5 million past-year cocaine and "crack" cocaine users, Brazil is actually the largest cocaine market in South America.[50]

The use of cocaine base paste, which was previously confined to cocaine-manufacturing countries has spread to many countries in South America; however, such use is difficult to estimate since people using cocaine base paste are usually from socially marginalized groups, which are not well captured by household surveys.[51]

In Argentina in 2017, 1.5 per cent of the population (2.4 per cent of males; 0.7 per cent of females) aged 12–65 had used cocaine in the past year.[52] The highest prevalence of past-year cocaine use (3 per cent) was reported among young people aged 18–24

FIG. 14 Cocaine use among the population aged 12–65, Argentina, 2010–2017



Source: SEDRONAR, *Consumo de Cocaína: Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas* (2017).

and, to a lesser extent, among adults aged 25–49. Cocaine base paste was estimated to have been used by 0.1 per cent of the general population in the past year, mainly by male users and adults aged 25–34, although this could be an underestimation of the extent of its use in Argentina. Over the period 2010–2017, cocaine use nearly doubled in Argentina, an increase that was more marked among women than among men, and among adults aged 35–49 than among other age groups.

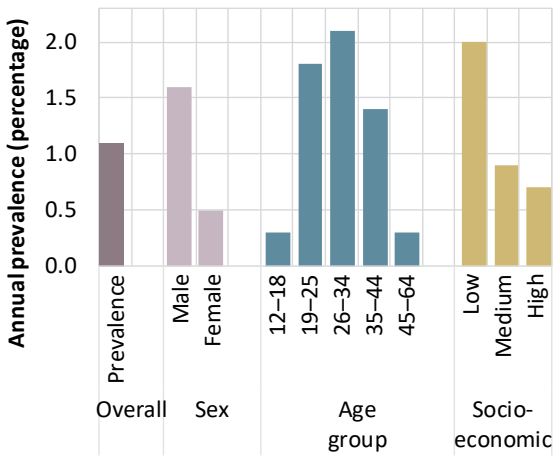
50 Based on UNODC estimate of 1.0 per cent of the population aged 15–64 in 2016.

51 Argentina, SEDRONAR, *Consumo de Cocaína: Estudio Nacional en Población de 12 a 65 años sobre Consumo de Sustancias Psicoactivas* (2017).

52 SEDRONAR, *Consumo de Cocaína.*

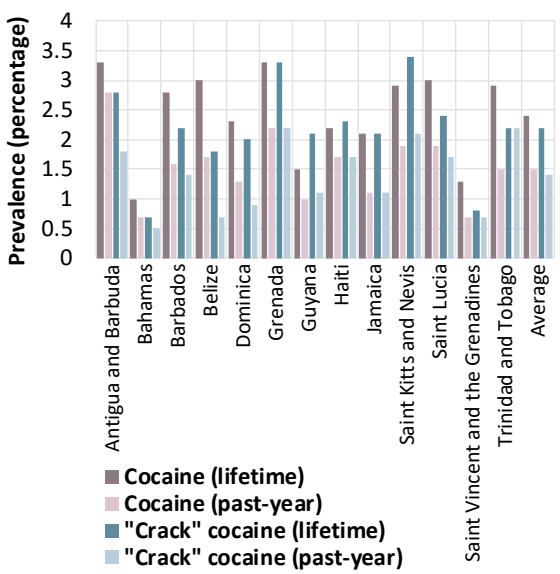
In Chile in 2016, the annual prevalence of the use of cocaine and cocaine base paste was estimated at 1.1 and 0.4 per cent, respectively, of the population aged 12–64.[53] The use of cocaine and cocaine base paste in Chile has been declining since 2000.

FIG. 15 Cocaine use, by demographic and socioeconomic characteristics, Chile, 2016



Source: SENDA, *Décimo Segundo Estudio Nacional de Drogas en Población General de Chile, 2016.*

FIG. 16 Cocaine and "crack" cocaine use among secondary school students in 13 countries in the Caribbean, 2016



Source: Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: 2016.*

The past-year use of cocaine in Chile was higher among men than women, and highest among people aged 26–34. The past-month prevalence of cocaine use was estimated at 0.4 per cent of the population, which was the same level as in 2012. Among those who had used cocaine in the past month, the average number of days used was 3.8, and was higher among men (4 days) than women (1.9 days). In 2016, around one quarter of cocaine users were considered dependent, whereas in the case of the smaller group of cocaine base paste users, almost half were considered dependent or problematic users.

While recent information on the extent of cocaine use among the general population in any of the countries in the Caribbean is not available, secondary school surveys undertaken in 13 countries in the Caribbean in 2016 among students aged 14–17 show that the average lifetime and past-year prevalence of cocaine were 2.4 and 1.5 per cent, respectively, with a similar level of "crack" cocaine use among secondary school students.[54]

Increase in cocaine use in North America

In Canada, the past-year prevalence of cocaine use in 2017 was estimated at 2.5 per cent of the population aged 15 and older, significantly higher than in 2013 (0.9 per cent). Use was higher among men than women, and among young adults aged 20–24 than other age groups. Most of the increase in cocaine use since 2013 was due to an increase in use in men and in adults aged 20 and older.[55, 56]

In the United States in 2017, 5.9 million people – or 2.2 per cent of the population aged 12 and older

53 Chile, SENDA, *Décimo Segundo Estudio Nacional de Drogas en Población General de Chile, 2016* (Santiago, Observatorio Chileno de Drogas, diciembre de 2017).

54 Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago* (OEA/Ser.L/XIV.6.46).

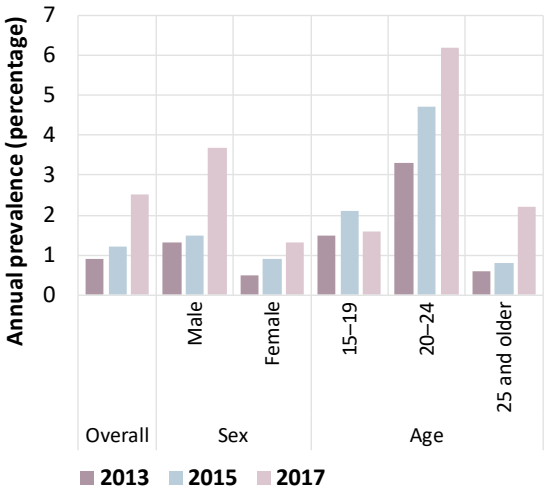
55 Health Canada, Canadian Tobacco, Alcohol and Drug Survey 2017.

56 Canadian Centre on Substance Use and Addiction, "Canadian Drug Summary: cocaine", 2019.

– had used cocaine in the past year,[57] with a higher prevalence of cocaine use estimated in states in the western (2.5 per cent) and north-eastern (2.3 per cent) parts of the country. As a long-term trend, the past-year use of cocaine reached a low in 2011 but has been increasing ever since, with an acceleration in that increase in 2017; the past-year use of "crack" cocaine and the past-month use of both cocaine and "crack" cocaine show similar trends. The increase in cocaine use occurred in the context of the increasing availability of cheaper and purer cocaine than before:[58] between 2012 and 2017 the average retail price per pure gram of cocaine decreased in the United States, while its average purity increased.[59]

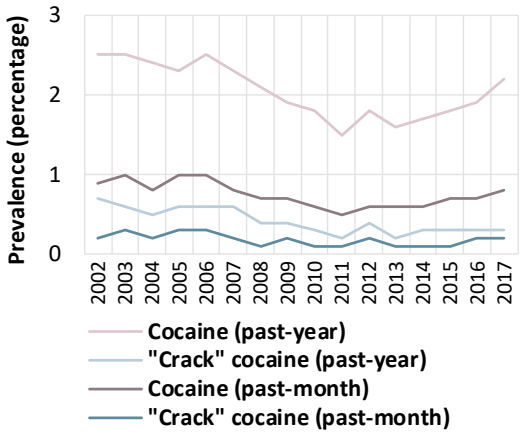
In 2017, cocaine use in the United States was estimated to be highest among young adults aged 18–25, with a past-year prevalence of 6.2 per cent; the use of "crack" cocaine was much lower, with 930,000 people, or 0.3 per cent of the population, aged 12 and older estimated to have used it in the past year. Among adults aged 18 and older, comparatively higher "crack" cocaine use was estimated among those aged 26 and older. Overall, among the 5.8 million past-year cocaine users in the country, more than one-third were estimated to be past-month users, the majority (54 per cent) of whom had used the drug 1 or 2 days in the past month; only 6 per cent were estimated to be daily or near-daily users of cocaine.

FIG. 17 Trends in cocaine use, by sex and age group, Canada, 2013–2017



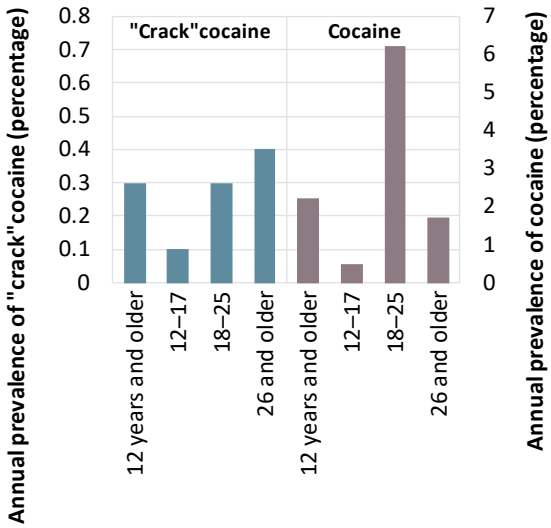
Source: Canadian Tobacco, Alcohol and Drug Survey 2013, 2015 and 2017.

FIG. 18 Trends in the use of cocaine and "crack" cocaine, United States, 2002–2017



Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

FIG. 19 Cocaine and "crack" cocaine use, by age group, United States, 2017



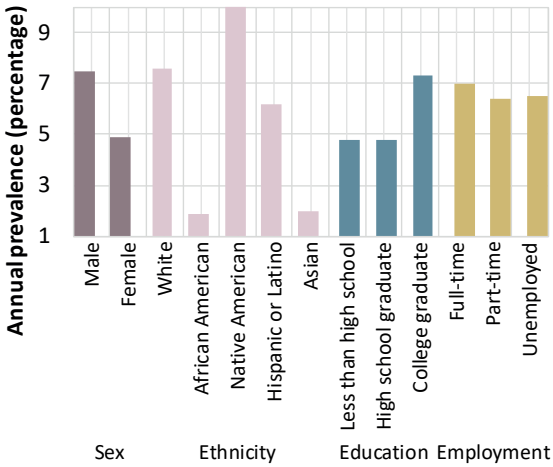
Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

57 SAMHSA, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

58 DEA, *2018 National Drug Threat Assessment*.

59 Ibid.

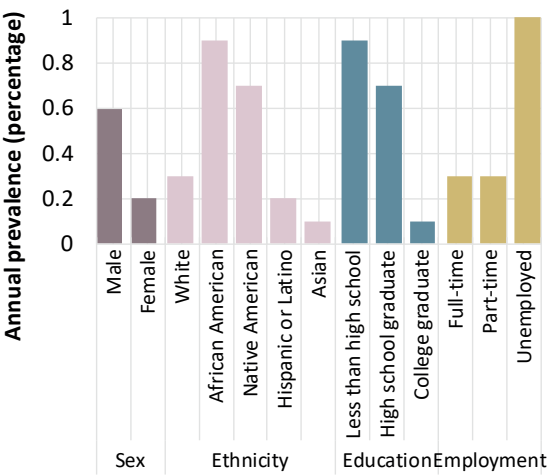
FIG. 20 Cocaine use among young people aged 18–25, by sociodemographic characteristics, United States, 2017



Source: SAMHSA, Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.

Note: in this figure the characteristics of young people aged 18–25 are presented, since cocaine use stands out among this age group.

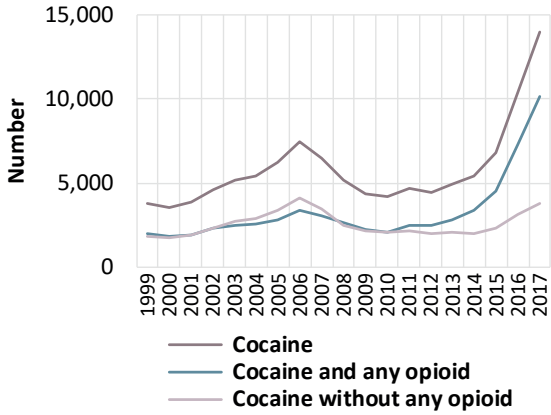
FIG. 21 Use of "crack" cocaine among adults aged 18 and older, by sociodemographic characteristics, United States, 2017



Source: SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.*

Note: in this figure, characteristics of adults aged 18 and older are presented, since the difference in prevalence among those aged 18–25 and those aged 26 and older are minimal. Also, when sociodemographic characteristics of "crack" cocaine users within the entire adult population aged 18 and older are analysed, characteristics such as ethnicity and employment status stand out for "crack" cocaine users.

FIG. 22 Cocaine overdose deaths, United States, 1999–2017



Source: United States, Centers for Disease Control and Prevention, National Center for Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC WONDER).

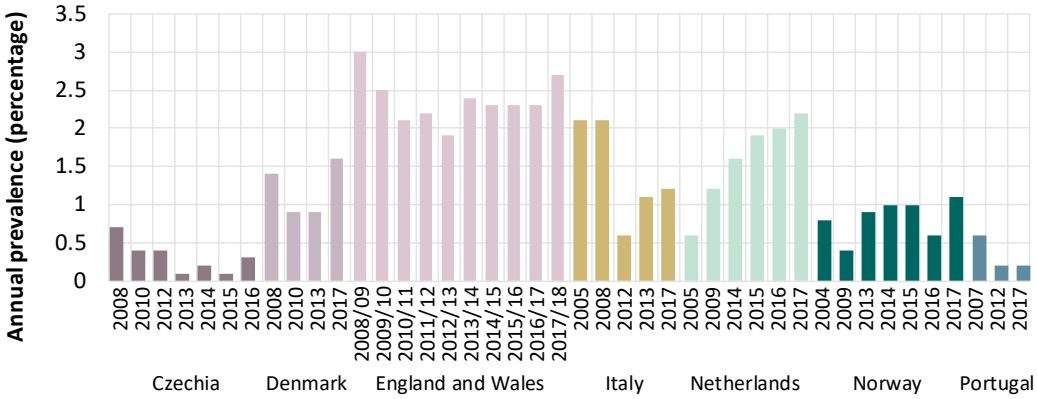
Generally, cocaine use in the United States is comparatively more common among socially integrated users, whereas cocaine injecting and the use of "crack" cocaine is observed more frequently among socially marginalized users. In young adults aged 18–25, the use of cocaine is higher among those who are male, white and college graduates, while use does not differ according to employment status; however, in 2017, the past-year use of cocaine among Native Americans was highest among all ethnic groups. Among adults aged 18 and older, "crack" cocaine use is comparatively higher among those who are male, African American, have an educational level lower than high school and are unemployed.[60]

In the United States, overdose deaths attributed to cocaine use have also been increasing (doubling over the period 2007–2017), especially since 2014. However, this increase has been largely attributed to deaths involving cocaine and opioids, in particular synthetic opioids (fentanyl and analogues). This is in line with reports of cocaine being mixed or adulterated with fentanyl and its analogues in the United States.[61]

60 SAMHSA, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables.*

61 DEA, *2018 National Drug Threat Assessment.*

FIG. 23 Trends in cocaine use in countries in Western and Central Europe that reported new survey results



Source: UNODC, responses to the annual report questionnaire; EMCDDA and national reports.

Increase in cocaine use also observed in Western and Central Europe

With an estimated 4.2 million past-year users (1.3 per cent of the population aged 15–64) in 2017, the use of cocaine is also high in Western and Central Europe, which accounts for some 90 per cent of all the cocaine users in Europe as a whole, and where more than half of cocaine users are young people aged 15–34. Among the countries in Western and Central Europe that reported new survey data in 2017, most countries report an increase in cocaine use. There is also evidence of an increase in the availability of cocaine of the highest reported purity for over a decade in the European Union.[62]

As in the United States, the use of cocaine in Europe also differs between socially integrated users, who typically snort powder cocaine, and marginalized users, who typically inject cocaine or smoke "crack" cocaine, sometimes along with opioids. In the United Kingdom, for example, 0.9 per cent of the population aged 15–64 was estimated to have used opioids and/or "crack" cocaine in 2016–2017, while the prevalence purely of "crack" cocaine use in that age group was estimated at 0.5 per cent. The combined prevalence of opioid and "crack" cocaine use in the United Kingdom increased significantly (by 8.5 per cent) from 2011–2012 to 2016–2017.[63]

The number of first-time entrants in treatment for cocaine use disorders has also increased over the past two years in European Union member states, although three quarters of the cocaine users who accessed specialized drug treatment services for the first time were reported in just three countries: Italy, Spain and the United Kingdom. Among all cocaine users entering drug treatment in the European Union, one-third were seeking treatment for cocaine use disorders only, while the rest also reported the use of secondary substances, especially alcohol (31 per cent) and cannabis (26 per cent), but also heroin and other opioids. Many of the "crack" cocaine users entering treatment reported using heroin as a secondary drug.[64]

Recent increases in the number of people entering treatment for "crack" cocaine use disorders were reported in Italy and the United Kingdom. In the United Kingdom, the number of people entering treatment for "crack" cocaine use disorders increased by 18 per cent, and those with both "crack" cocaine and opioid use disorders – representing half of opioid users in treatment – increased by 3 per cent from 2017 to 2018.[65] Nevertheless, the use of

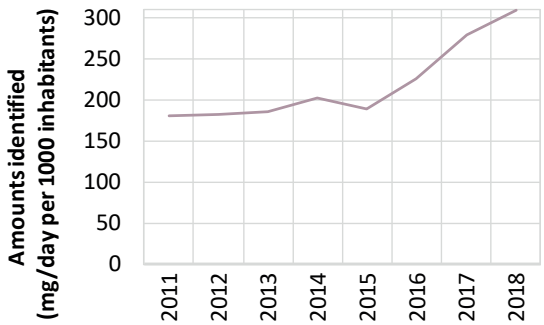
62 EMCCDA, *European Drug Report 2018*.

63 Gordon Hay, Anderson Rael dos Santos and Zoe Swithenbank, *Estimates of the Prevalence of Opiate Use and/or Crack Cocaine Use, 2016-17: Sweep 13 Report* (Liverpool, Public Health Institute, Liverpool John Moores University, March 2019).

64 EMCCDA, *European Drug Report 2018*.

65 Public Health England, *Adult Substance Misuse Statistics from the National Drug Treatment Monitoring System (NDTMS)*,

FIG. 24 Benzoylecgonine (cocaine metabolite) found in wastewater in 78 cities in Europe, 2011–2018



Source: UNODC calculations based on Sewage Analysis CORe group Europe (SCORE).

Note: Average quantity of benzoylecgonine found in wastewater in 78 cities (82 sites) weighted by the population of the sites: assumption of gradual increase/decrease in years in which no analysis took place in a city and no change since latest available data.

"crack" cocaine is much lower among the general population than the use of cocaine in the European Union. In England and Wales, for example, "crack" cocaine was used in the past year by 0.1 per cent of the general population aged 16–59 in 2017–2018.[66] This compares with 2.6 per cent who were past-year cocaine users, although the vast majority were sporadic users, more than half reporting using cocaine once or twice in the past year and only 1 per cent reporting daily or near-daily use of cocaine.

The overall increase in cocaine consumption in Europe in recent years is even more noticeable in wastewater analyses, which suggest an increase of over 70 per cent since 2011, mostly since 2015, in the quantities of cocaine consumed in 78 cities in 20 countries in Europe over the period 2011–2018.[67] Western Europe not only dominates the region in terms of cocaine use, but also in terms of cocaine consumption based on the quantity of cocaine metabolites (benzoylecgonine) found in wastewater.[68] All of the cities with large per-capita quantities of cocaine metabolites found in their wastewater are located in Western Europe, in particular in Belgium, the Netherlands, France, Spain, Switzerland and the United Kingdom, while smaller quantities were found in cities in Northern Europe (notably Finland), in a number of countries in Central Europe (notably Czechia and Slovakia) and in the Baltic area (Lithuania).[69] Data also show that an east-west divide exists in Germany, where cities located in what used to be East Germany reported small per capita quantities of cocaine in their wastewater, while those located in the former West Germany reported levels above the European average.[70]

Increase in cocaine use in Australia

In Australia, 2.5 per cent of the population aged 14 and older were estimated to have used cocaine in the past year, making the prevalence of cocaine use in 2016 the highest estimate since 2001.[71] The highest estimated prevalence of cocaine was among young adults aged 20–29, in both the past year (6.9 per cent) and the past month use (2.4 per cent). It is interesting to note, however, that the average age of those who reported cocaine use in the past year rose from 28 years in 2001 to 31 years in 2016. As in other large cocaine markets, the majority of cocaine users reported sporadic use of cocaine, with 64 per cent of past-year cocaine users reporting using it once or twice a year, around 10 per cent using it about once a month and around 3 per cent using it once a week or more. Cocaine use was reported as being higher among people with a post-high school qualification, those currently in employment and those residing in major cities. Polydrug use was also common among cocaine users, with nearly all cocaine users reporting concurrent use of alcohol, 30 per cent reporting use of cannabis and 27 per cent use of "ecstasy".[72]

PHE publications gateway No. 2018575 (London, November 2018).

66 United Kingdom, Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*, Statistical Bulletin 14/18 (July 2018).

67 UNODC calculations based on Sewage Analysis CORe group Europe (SCORE). For details of the calculations, see the online Methodological Annex of this report.

68 Benzoylecgonine is the main cocaine metabolite, a substance formed in the transformation of cocaine in the body, which is expelled through urination.

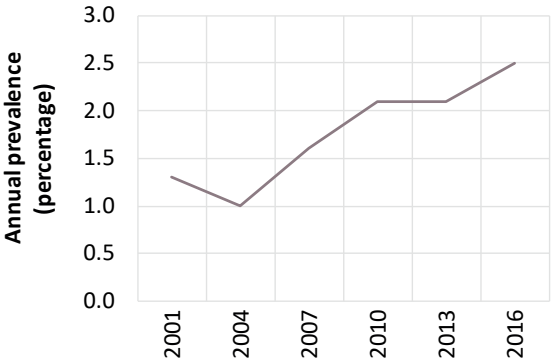
69 UNODC calculations based on Sewage Analysis CORe group Europe (SCORE).

70 Ibid.

71 Australian Institute of Health and Welfare, "National drug strategy household survey – 2016, detailed findings", 2017.

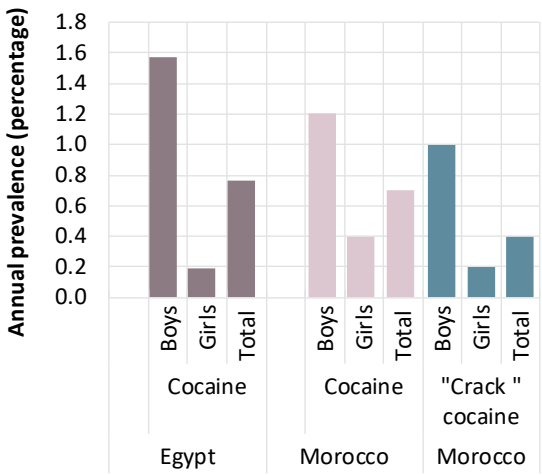
72 Australian Institute of Health and Welfare, "National drug strategy household survey 2016: detailed findings", 28

FIG. 25 Cocaine use in Australia among the population aged 14 and older, 2001–2016



Source: Australian Institute of Health and Welfare, "National drug strategy household survey 2016: detailed findings", 28 September 2017. Data tables: chapters 5 – illicit drug use.

FIG. 26 Cocaine and "crack" cocaine use among secondary school students in Egypt and Morocco, by sex, 2016



Sources: "MedSPAD 2016 in Egypt: results of the first Mediterranean School Survey Project on Alcohol and other Drugs (MedSPAD) in Egypt" (December 2017); Fatima El Omari, Maria Sabir and Jallal Toufiq, *Résultat de l'enquête MedSPAD III: Maroc 2017* (2018).

The upward trend in cocaine use shown in household survey data up until 2016 in Australia may have continued in the subsequent years. According to wastewater analyses undertaken across Australia in 2018 – in 58 sites covering 13 million people[73] – per-capita quantities of cocaine consumed over the period August 2017–August 2018 increased 35 per cent, compared with the period August 2016 –August 2017, which was greater than the increase reported for any other drug in wastewater analysis in Australia.[74] Confirming data from other sources, wastewater analysis also suggests that the highest level of cocaine consumption in Australia takes place in Sydney, the largest city.

However, despite an increase since 2014, based on wastewater data, per-capita cocaine consumption in Australia seems to be much lower than in Europe. Analysis of wastewater in Canberra, which reports levels of per-capita cocaine consumption close to the national average,[75] suggests that the level of benzoylecgonine found in 2018 was still 38 per cent lower than the average level in Europe. This was despite the fact that the levels reported in the city had doubled in 2018 from a year earlier and were three times as high as in 2014, the year that wastewater analysis started in the city.[76]

Cocaine use in Africa and Asia remains lower than in other regions

Past-year cocaine use in Africa in 2017 is estimated at between 0.02 and 0.40 per cent of the population aged 15–64, or between 160,000 and 2.6 million past-year users. Meanwhile, Asia is the region where the prevalence of cocaine use is estimated to be the lowest: between 0.04 and 0.07 percent but due to its population translates into 1.1 and 2.2 million past-year users. Those two regions suffer from large data gaps, however, which make any trend analysis very difficult.

Among the countries in Africa where recent survey data are available, the past-year prevalence of cocaine use in Nigeria in 2017 was estimated at 0.1 per cent, or roughly 92,000 past-year cocaine users aged 15–64, of whom approximately one-quarter were

September 2016. Data tables: chapters 5 – illicit drug use.

73 Australian Criminal Intelligence Commission, University of Queensland, University of South Australia, *National Wastewater Drug Monitoring Program*.

74 Ibid.

75 Ibid.

76 UNODC calculation based on data from the Sewage Analysis CORe group Europe (SCORE).

high-risk cocaine users.[77, 78] Kenya has a similar prevalence of cocaine use: 0.1 per cent of the population aged 15–64 in 2016, or around 28,000 past-year cocaine users.

In North Africa, where there are no recent data on the extent of cocaine use in the general population, the extent of cocaine use among secondary school students is moderately high. In Egypt, cocaine use was reported by 1.6 per cent of boys and 0.2 per cent of the girls aged 15–19,[79] while in Morocco, 1.2 per cent of boys and 0.4 per cent of girls aged 15–17 reported past-year use of cocaine in 2016. Moreover, in Morocco, 0.7 per cent of boys and 0.1 per cent of girls reported past-month use of cocaine or "crack" cocaine.[80] Among the students who reported cocaine use in the past month in Morocco, the majority had either used it once (39 per cent) or between two and five days (35 per cent) in the past month. However, the frequency of use was higher among "crack" cocaine users, with 38 per cent reporting having used that substance on between two and five days, and around 35 per cent on 10 days or more in the past month.

Recent data on the extent of cocaine use are not available from most countries in Asia; where data are available, however, cocaine use remains quite low. For example, in 2016, roughly 56,000 people in the Philippines and 3,250 people in Thailand were estimated to be past-year cocaine users, which was less than 0.1 per cent of the population aged 15–64.[81] In Pakistan in 2012, around 13,000 people, or 0.01 per cent of the adult population, were estimated to have used cocaine in the past year.[82] In India, past-year use of cocaine was reported by around 0.2 per cent of the male and 0.01 per cent of the female population aged 10–75 (around 1 million people) in 2018.[83] Moreover, while many countries in Asia report qualitative information on trends in cocaine use to UNODC, suggesting that cocaine is used by some people in those countries, survey data are not available in most of those countries to help determine the extent and patterns of, and trends in, cocaine use in the region.[84]

77 UNODC and Government of Nigeria, *Drug use in Nigeria 2018* (Vienna, 2019).

78 For the purpose of the present report, high-risk drug users are defined as those who had used opioids, "crack"/cocaine or amphetamines in the past 12 months and for at least five times in the past 30 days.

79 Egypt, General Secretariat of Mental Health and Addiction Treatment and Pompidou Group of the Council of Europe, "MedSPAD 2016 in Egypt: results of the first Mediterranean School Survey Project on Alcohol and Other Drugs (MedSPAD) in Egypt" (December 2017).

80 Jallal Toufiq, "Drug use among Moroccan youth: MedSPAD Surveys", power point presentation, Lisbon, October 2017.

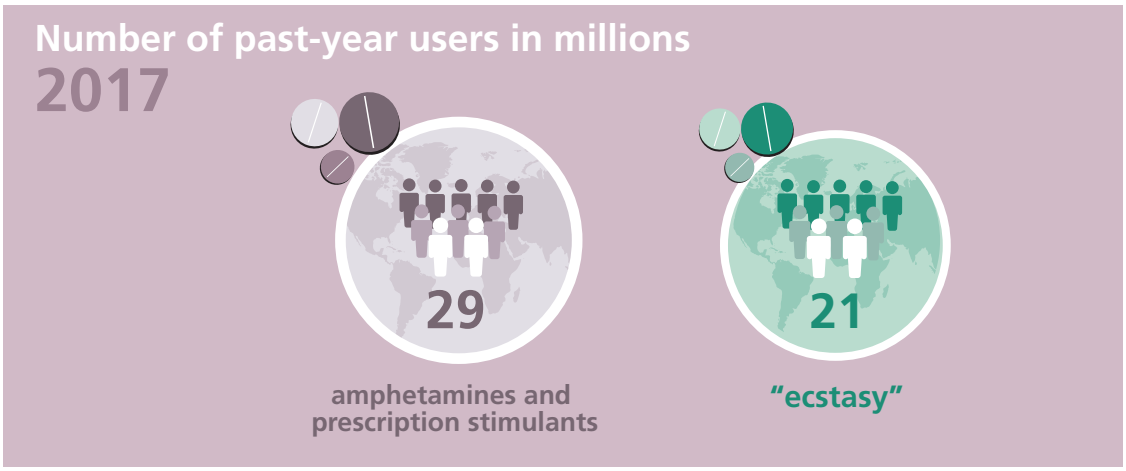
81 The estimate for Thailand is reported in Darika Saingam "Substance abuse policy in Thailand: current challenges and future strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018), pp. 1–10.

82 UNODC and Pakistan, Ministry of Interior and Narcotics Control, *Drug Use in Pakistan 2013* (Islamabad, 2014).

83 Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019).

84 Armenia, China (including Hong Kong, China, and Macao, China), Iran (Islamic Republic of), Israel, Japan, Jordan, Lebanon, Mongolia, Pakistan, the Philippines, the Republic of Korea, Saudi Arabia, Singapore, Sri Lanka, the Syrian Arab Republic, Thailand and the United Arab Emirates have indicated the use of cocaine in the annual report questionnaire for 2016 and 2017.

AMPHETAMINE-TYPE STIMULANTS



Supply of amphetamine-type stimulants

Manufacture of amphetamine-type stimulants continues to be dominated by methamphetamine

Because clandestine laboratories that manufacture ATS can be located anywhere, determining the precise location of manufacture of synthetic drugs is more challenging than of plant-based drugs, for which the location of production can be determined using remote-sensing technology. Moreover, while the dismantling of clandestine laboratories and the reports of "country of origin" of the drugs seized in different countries may point to manufacturing locations and trafficking routes, it is difficult to estimate the quantities of those drugs manufactured.

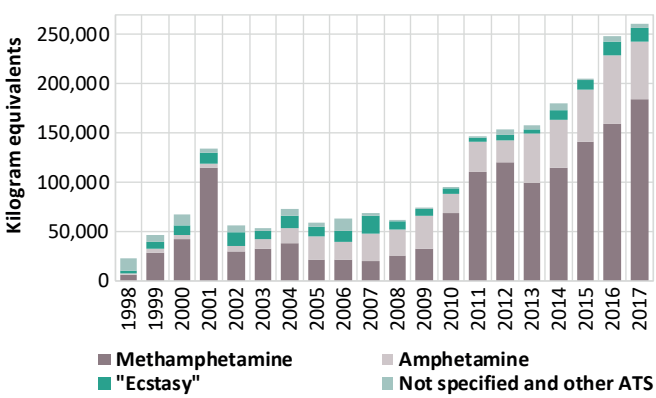
Over the period 2013–2017, Member States reported the dismantling of some 36,600 clandestine laboratories used in the manufacture of ATS. Around 96 per cent of those laboratories were manufacturing methamphetamine; 2 per cent, amphetamine; 1 per cent, "ecstasy"; and the rest manufactured other stimulants.

Seizures of ATS have increased over the past two decades

Seizures of ATS increased sharply from the second half of the 1990s until 2001 and over the period 2009–2017, when the quantity of amphetamine and "ecstasy" doubled and that of methamphetamine quintupled. Data for 2017 show an ongoing increase from the previous year in the quantity of methamphetamine seized at the global level (an increase of 16 per cent) while that of amphetamine decreased (a decrease of 18 per cent) and the quantity of "ecstasy" remained stable.

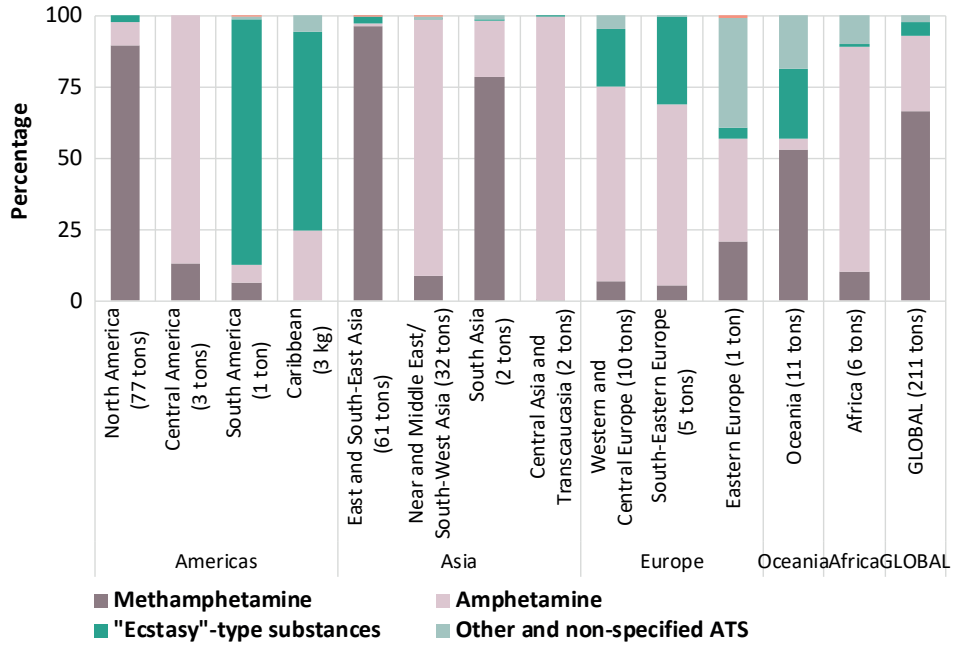
In most years since 1998, the largest quantity of ATS seized was of methamphetamine, which accounted for 66 per cent of the total quantity of ATS seized globally over the period 2013–2017, followed by amphetamine (26 per cent of the total) and "ecstasy" (5 per cent).

FIG. 27 Global quantity of amphetamine-type stimulants seized, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 28 Distribution by substance of the average annual quantity of amphetamine-type stimulants seized, by subregion, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

The distinction between seizures of amphetamine and methamphetamine posed challenges, however: the content of 1 per cent of the global quantity of ATS seized over the period 2013–2017 was not accurately reported, with seizures of unclear "amphetamine/methamphetamine" content being reported, mostly in West and Central Africa, which suggests an ongoing lack of forensic resources in that subregion. Elsewhere, undefined seizures of "speed", which were mostly reported in Western and Central Europe (including the United Kingdom, the Netherlands and Belgium) are likely to have consisted of amphetamine.

Other stimulants (including MDPV, methcathinone, methylone, several other cathinones, dimethoxyamphetamine and several piperazines) accounted for 0.4 per cent of the global quantity of ATS seized since 2013.

Seldom seized in general, prescription stimulants accounted for 0.2 per cent of the global quantity seized, suggesting that most ATS seized were not diverted from licit sources but manufactured in clandestine laboratories. Only small quantities of pharmaceutical stimulants seized were reported over the period 2013–2017 (0.3 tons on average per year): the largest amount in Asia, mainly in East and South-East Asia and the Near and Middle East. To the extent that they were explicitly mentioned, the most seized substances were methylphenidate in North and South America, and phentermine and methylphenidate in Western and Central Europe and Oceania. Methylphenidate and phentermine were also the two pharmaceutical stimulants manufactured in the greatest quantities at the global level in 2017 (70.7 and 32.3 tons, respectively).[85]

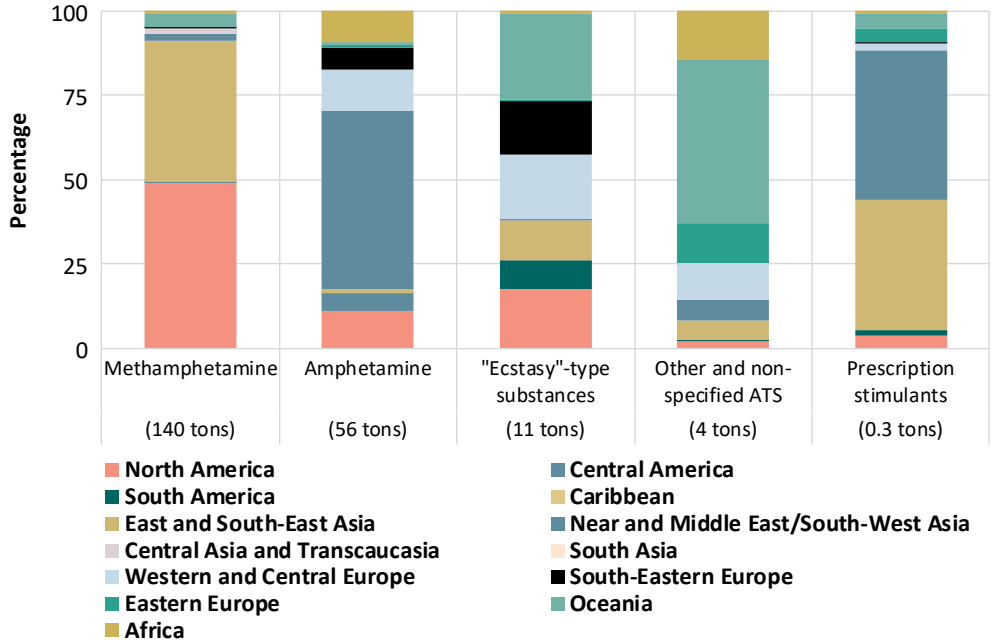
Moreover, INCB data suggest that the global licit manufacture of "amfetamine" (18.5 tons in 2017) and of "metamfetamine"[86] (0.9 tons in 2017)[87]

85 *Psychotropic Substances: Statistics for 2017–Assessment of Annual Medical and Scientific Requirements for Substances in Schedule II, III and IV of the Convention on Psychotropic Substances of 1971* (E/INCB/2018/3), pp. 52–53.

86 The spelling of licitly manufactured "amfetamine" or "metamfetamine" (as used by INCB) differs from that of illicitly manufactured "amphetamine" or "methamphetamine".

87 E/INCB/2018/3.

FIG. 29 Regional distribution of the average annual quantity of amphetamine-type stimulants seized, by drug, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

would not have been sufficient to supply the illicit markets, where seizures alone amounted to 58 tons of amphetamine and 184 tons of methamphetamine in 2017. This indirectly confirms that most ATS found in the illicit markets comes from illicit manufacture in clandestine laboratories rather than from diversions from licit channels.

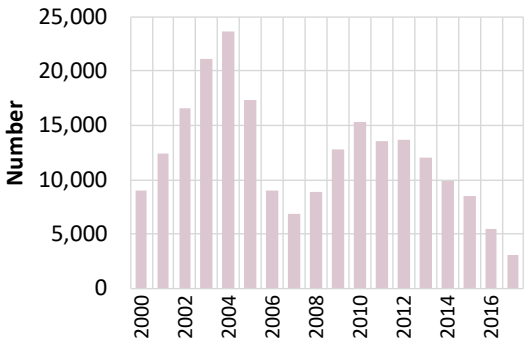
While the number of countries reporting seizures of amphetamine and of "ecstasy" remained relatively stable, at roughly 100 in each of the periods 2003–2007 and 2013–2017, the number of countries reporting seizures of methamphetamine rose by 50 per cent in the last decade, which suggests that there has been an increase in the geographical spread of methamphetamine and that most of the increase in ATS trafficking at the global level over the past decade was due to trafficking in methamphetamine.

Different substances dominated the quantities of ATS seized in different regions and subregions over the period 2013–2017: methamphetamine in North America, East and South-East Asia, South Asia, Central Asia and Transcaucasia and Oceania; and amphetamine in the Near and Middle East/South-West Asia, Europe, Africa and Central America. South America and the Caribbean emerged as the only subregions where seizures of "ecstasy" were predominant among all ATS intercepted in that five-year period.

Global methamphetamine manufacture is dominated by North America and East and South-East Asia

While 50 countries were identified by Member States as possible countries of origin for methamphetamine manufacture, about 35,000 clandestine methamphetamine laboratories were reported dismantled in 31 countries over the period 2013–2017. The majority of those laboratories (90 per cent) were dismantled in North America, mostly in the United States, followed by Mexico and Canada. The United States reported the dismantling of 3,036 methamphetamine laboratories in 2017, in which year a total of 3,661 laboratories were dismantled worldwide. Most of the laboratories reported in the United States were "kitchen labs", producing

FIG. 30 Methamphetamine manufacturing facilities dismantled in the United States, 2000–2017



Source: El Paso Intelligence Center, National Seizure System as of June 2018, in DEA, *2018 Drug Threat Assessment.*

methamphetamine for the local market, with a small output compared with those detected in other countries, such as the several large-scale, industrial-size laboratories found in Mexico and in East and South-East Asia that were producing methamphetamine for export markets.

The number of clandestine laboratories detected in the United States fell by about 80 per cent over the period 2010–2017 and by 87 per cent after the peak in 2004.[88] That was probably the result of improved precursor control (notably through the regulation of over-the-counter sales of methamphetamine precursor chemicals such as ephedrine preparations and pseudoephedrine) and ongoing efforts to dismantle laboratories, which acted as a deterrent to domestic methamphetamine manufacture.[89] The initial decline in manufacture after 2004 may have initially helped reduce domestic demand for methamphetamine in the United States: annual prevalence of methamphetamine use fell from 0.7 per cent in 2002 to 0.3 per cent in 2008.[90]

The ongoing decline after 2010 in the numbers of dismantled laboratories over the past few years was, however, in contrast to the upward trend in a number of indicators pointing to an expansion of the methamphetamine market in the United States, both in terms of supply of the drug (rising seizures, falling purity-adjusted prices) and demand (rising prevalence rates, positive tests among the general workforce, treatment admissions and deaths). The annual prevalence of methamphetamine use doubled over the period 2008–2017 to 0.6 per cent of the population aged 12 and above.[91]

These discrepancies may be explained by an apparent decline in the domestic supply of methamphetamine combined with rapidly growing illegal methamphetamine imports from clandestine manufacture sites in neighbouring Mexico, resulting from a kind of "balloon" effect caused by the diversification of the drug portfolio of Mexican organized criminal groups attempting to reduce their dependence on cocaine shipments from the cocaine-producing countries of South America. The marked growth in methamphetamine shipments intercepted along the south-western border of the United States over the past few years points in that direction.[92]

The next largest number of methamphetamine laboratories was dismantled in Asia (6 per cent of the global total), most notably in China and the Islamic Republic of Iran, which together accounted for 95 per cent of all such laboratories dismantled in Asia, while some clandestine laboratories were dismantled (by descending order of importance) in Malaysia, the Philippines, Indonesia, the Republic of Korea, Thailand, India and Myanmar. In addition, a number of other countries were identified as countries of origin for methamphetamine shipments, including countries in the Near and Middle East/South-West Asia and in Transcaucasia.

Similar to the trend reported in the United States, China has also reported a decreasing number of dismantled laboratories in recent years (for the manufacture of both methamphetamine tablets and crystalline methamphetamine),[93] which, in

88 United States, Department of Justice, Drug Enforcement Administration (DEA), *2018 National Drug Threat Assessment* (October 2018).

89 Ibid.

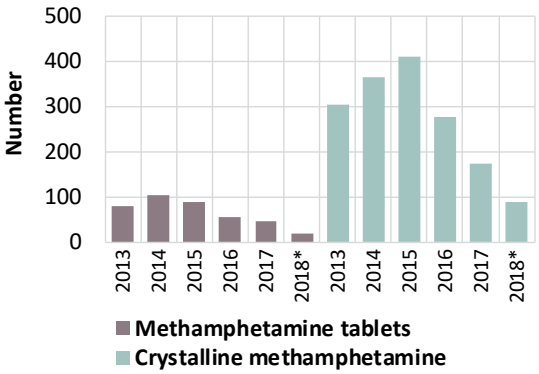
90 United States, Center for Behavioral Health Statistics and Quality, *Results from the 2014 National Survey on Drug Use and Health: Detailed Tables,* (Rockville, Maryland, SAMHSA, 2015).

91 United States, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables,* (Rockville, Maryland, SAMHSA, 2018).

92 DEA, *2018 Drug Threat Assessment.*

93 UNODC, *Synthetic Drugs in East and South-East Asia:*

FIG. 31 Methamphetamine manufacturing facilities dismantled in China, 2013–2018



Source: UNODC, Synthetic Drugs in East and South-East Asia: Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances, (March 2019).

**Data for 2018 cover the first 10 months of the year.*

combination with declines in quantities of methamphetamine found in wastewater in China,[94, 95] is likely to point to a decline in domestic manufacture of the drug. That trend is, however, coupled with rising illegal imports of methamphetamine from neighbouring Myanmar, mainly from areas outside the control of the Government of Myanmar in the eastern part of the country.[96]

Europe accounted for 3 per cent of all methamphetamine laboratories dismantled over the period 2013–2017, with almost 90 per cent of all such laboratories dismantled in Czechia (mostly "kitchen labs"), followed by Bulgaria, Germany, Austria, Slovakia, Poland and Lithuania.

Oceania (Australia and New Zealand) accounted for a limited share (1 per cent) of the global number of methamphetamine laboratories dismantled. It is likely, however, that a number of clandestine laboratories manufacturing amphetamines dismantled in recent years in Australia were actually manufacturing methamphetamine (the reporting made no distinction between amphetamine and methamphetamine). Moreover, most ATS precursors seized in Australia were ephedrine or pseudoephedrine, which points to the predominance of the manufacture of methamphetamine in the country.[97]

Africa accounted for less than 0.1 per cent of the global total of clandestine methamphetamine laboratories dismantled over the period 2013–2017, most notably Nigeria and, to a lesser extent, South Africa. Methamphetamine manufacture was also documented in Nigeria in 2018, as reflected in the dismantling of a further three laboratories in the first 10 months of the year.[98] To a lesser extent, a number of other African countries were reported (mostly by African countries) as countries of origin of methamphetamine, including, in descending order, Mozambique, Kenya, the United Republic of Tanzania, Benin and other countries in West Africa. However, in contrast to the manufacture of the drug in other regions, methamphetamine produced in Africa seems to be, to a significant extent, destined for overseas markets, in particular East and South-East Asia.

Available information suggests that most manufacture of methamphetamine in Africa, Asia, Europe and Oceania continues to use ephedrine or pseudoephedrine. By contrast, methamphetamine manufactured in North America, which also used to be manufactured with those precursors, is mostly manufactured nowadays using P-2-P synthesis

Trends and Patterns of Amphetamine-type Stimulants and New Psychoactive Substances–A Report from the Global SMART Programme (March 2019).

94 "Trends in methamphetamine and ketamine use in major Chinese cities from 2012 to 2016", poster presentation by Peng Du of the Laboratory of Earth Surface Processes, College of Urban and Environmental Sciences, Peking University at the third international conference "Testing the waters 2017: wastewater-based epidemiology–current applications and future perspectives", held in Lisbon on 26–27 October 2017.

95 Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence,* vol. 194 (January 2019), pp. 302–309.

96 UNODC, *Synthetic Drugs in East and South-East* Asia; National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2018* (Beijing, 2018) and UNODC, annual report questionnaire.

97 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17* (Canberra, 2018).

98 *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2018 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2018/4).

routes, with P-2-P pre-precursors such as phenylacetic acid and a number of non-scheduled chemicals, including APAAN,[99] a substance scheduled at the international level in March 2019.[100] The shift towards the use of P-2-P and its precursors over the past decade seems to have been a consequence mainly of improved controls of pseudoephedrine in Canada, Mexico and the United States. A few years ago, P-2-P tended to be manufactured illegally from phenylacetic acid or its non-controlled derivatives, but another forensic profile has emerged in Mexico since 2014. P-2-P then started to be manufactured using benzaldehyde and nitroethane as the initial precursor chemicals,[101] i.e., two substances not under international control, although they have been under national control in Mexico since October 2015.[102] By the second half of 2017, 54 per cent of all samples of Mexican methamphetamine analysed in the United States had been manufactured using this synthesis route for the illicit manufacture of P-2-P, while 12 per cent of P-2-P samples had been manufactured from phenylacetic acid, a substance under international control.[103]

According to United States authorities, most of the chemicals used in the clandestine manufacture of methamphetamine in Mexico continue to be sourced from companies in China,[104] although there is now evidence of purchases of chemicals from companies in other countries, most notably India.[105] One case revealed by United States authorities showed a shipment of 17.6 tons of benzaldehyde from India transiting the United States en route to Haiti, but investigations following its interception at a port in the United States in November 2017 revealed that the chemical had actually been destined for a port in Mexico.[106]

99 Ibid.

100 UNODC Laboratory and Scientific Section Portals, "UNODC: nine substances and three precursors "scheduled" at the 62nd session of the Commission on Narcotic Drugs". Available at www.unodc.org.

101 For a more detailed discussion, see *World Drug Report 2017: Market Analysis of Synthetic Drugs–Amphetamine-type Stimulants, New Psychoactive Substances* (United Nations publication, Sales No.E.17.XI.10).

102 DEA, *2018 National Drug Threat Assessment*.

103 Ibid.

104 Ibid.

105 Ibid.

106 Ibid.

Global methamphetamine market in expansion

The information available globally on methamphetamine, although limited, points to a market expansion over the past two decades. Qualitative information on methamphetamine supply provided by national experts, data on drug treatment facilities, prevalence data in countries based on survey data, and prices all suggest that the methamphetamine market has been expanding, in particular in the two largest "demand regions": South-East Asia and North America.

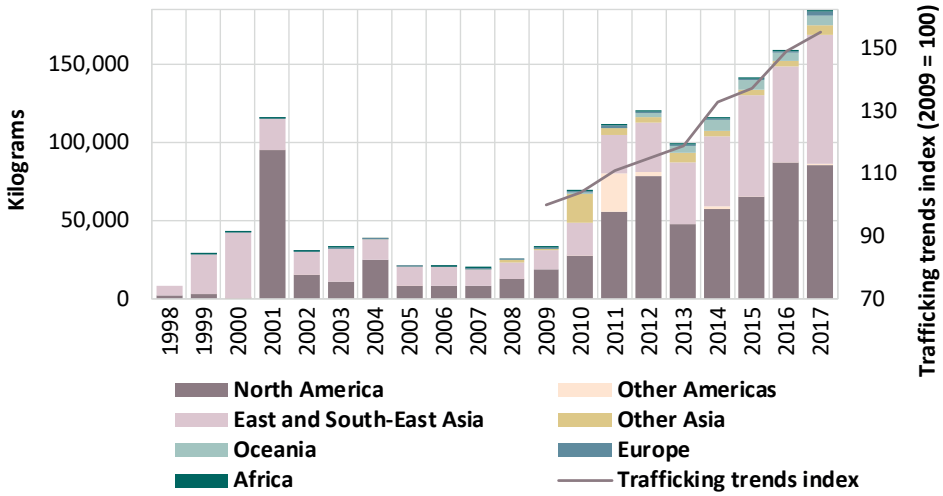
Indicators related to interdiction show two divergent trends in both of those subregions, however: the number of dismantled laboratories and quantities of seized precursors have been on the decline in East and South-East Asia and in North America, while quantities of seizures have been increasing sharply in both subregions. There is no specific evidence that can provide a solid explanation for those divergent trends, but considering the expanding dynamics of the market, one possibility could be that global interception capacity may have been shifting from manufacturing to distribution. This could be the result of a shift in the geographical location of manufacturing to countries with limited interdiction capacity, although the diverging trends could be partially explained by a shift towards fewer laboratories with greater output.

Methamphetamine trafficking continues to increase but remains mainly concentrated in North America and East and South-East Asia

Based on quantities of methamphetamine seized and qualitative information on trends in methamphetamine trafficking reported by Member States, trafficking in methamphetamine appears to have expanded over the past two decades, in particular since 2009.

In the past two decades, methamphetamine has mainly been seized in North America and in East and South-East Asia, which respectively accounted for 49 per cent and 42 per cent of global quantities of methamphetamine seized over the period 2013–2017, while seizures in Oceania (4 per cent), the Near and Middle East/South-West Asia (2 per cent), South Asia and Europe (1 per cent each) were lim-

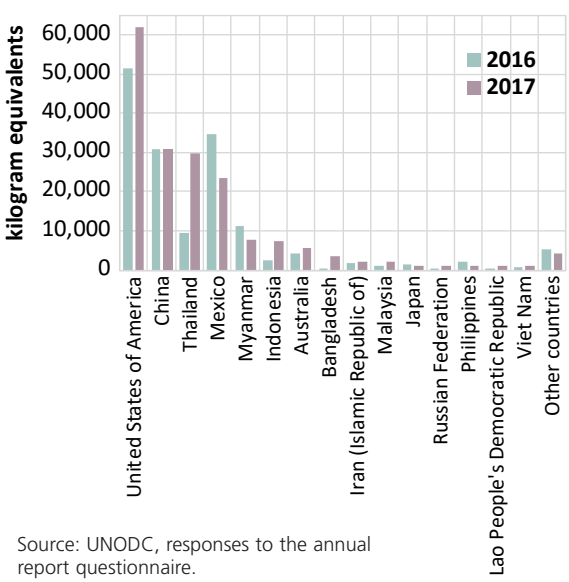
FIG. 32 Quantities of methamphetamine seized, 1998–2017, and methamphetamine trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

ited by comparison. The largest quantities of methamphetamine seized in 2017 were reported by the United States followed by China, Thailand, Mexico and Myanmar. Marked increases from the previous year in the quantity seized in 2017 were reported most notably by the Russian Federation (38-fold increase) and Bangladesh (tenfold increase).

FIG. 33 Methamphetamine: countries of largest seizures, 2016–2017



Source: UNODC, responses to the annual report questionnaire.

Trafficking in methamphetamine may be stabilizing at a high level in North America

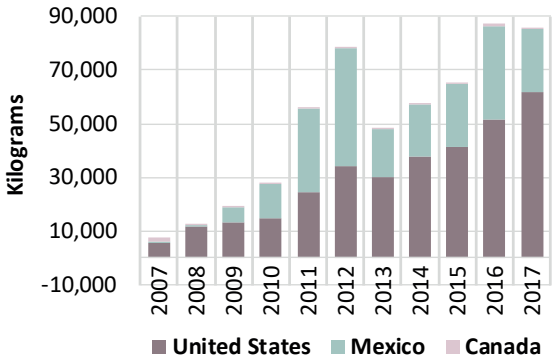
Despite the overall expansion of methamphetamine markets worldwide, based on seizures, most methamphetamine trafficking continues to be intraregional, for example, trafficking within North America or within East and South-East Asia. Smaller trafficking flows have been reported within Europe and from Africa to East and South-East Asia.

Quantities of methamphetamine seized in North America rose more than tenfold over the period 2007–2016 and stabilized in 2017. They were dominated by seizures reported by the United States, followed by Mexico.

Cross-border methamphetamine trafficking in North America is mainly from Mexico to the United States, and practically all the major transnational criminal organizations in Mexico seem to be involved in the smuggling of methamphetamine to the United States. They include the Sinaloa Cartel, the Jalisco New Generation Cartel, the Juárez Cartel, the Gulf Cartel, the Los Zetas Cartel and the Beltrán-Leyva Organization.[107] In parallel, outlaw motorcycle gangs continue to be involved in the distribution of methamphetamine within the United

107 Ibid., pp. 97–98.

FIG. 34 Quantities of methamphetamine seized in North America, 2007-2017



Source: UNODC, responses to the annual report questionnaire.

States.[108] The increased involvement of Mexican organized criminal groups in the trafficking of drugs other than cocaine contributed to the spread of methamphetamine trafficking from states in the west of the United States to the country as a whole, including the states in the eastern part of the country, which had previously been spared from the large-scale harmful use of methamphetamine.[109] The expansion of methamphetamine trafficking has gone hand in hand with the increasingly common practice of mixing fentanyls with other drugs, including methamphetamine. This practice has proved to be particularly harmful and was identified in most methamphetamine-related deaths reported in the north-eastern and mid-western states of the United States in 2017.[110]

The south-west border remains the main entry point for illegal imports of methamphetamine into the United States: 97 per cent of the methamphetamine seized by United States customs occurred at, or near, the country's south-west border in 2017. Quantities of methamphetamine seized in the United States as a whole doubled between 2012 and 2017, whereas those intercepted along the south-west border more than tripled during the same period, more than half being reported in the San Diego corridor in 2017.[111]

Trafficking modi operandi include concealment by human couriers on commercial flights, parcel services and the use of pick-up trucks and commercial buses. An emerging trend is the use of drones, which can easily overcome physical barriers on the border and whose operators can remain at a safe distance from the area where drugs are dropped, thereby reducing the potential risk of arrest.[112]

The purity[113] of methamphetamine found on the wholesale market in the United States continues to be very high, at over 95 per cent, over the period 2013–2017. Initially, the shift from the use of pseudoephedrine to P-2-P as the key precursor chemical used in the manufacture of methamphetamine meant that only a less potent racemic *d,l*-methamphetamine could be produced in Mexico instead of the more potent *d*-methamphetamine. This resulted in the potency[114] of methamphetamine found on the United States market decreasing from over 90 per cent in 2007 to around 60 per cent by 2009.[115] Initially, this decrease in potency was compensated by an increase in purity; later, organized criminal groups operating in Mexico soon developed methods of applying additional purification in order to increase potency[116] and by the first half of 2012 the average potency of methamphetamine on the United States market rose to 85 per cent. Potency amounted to 87 per cent in the first half of 2015, gradually increasing to 95 per cent by the second half of 2017, which suggests an increasing sophistication of methamphetamine manufacture in Mexico.[117]

Although most of the methamphetamine trafficking affecting North America is intended for markets within the subregion, smaller amounts of methamphetamine are also trafficked from North America

108 Ibid., pp. 110–112.

109 SAMHSA, "Reports and Detailed Tables from the 2017 National Survey on Drug Use and Health and previous years. Available at www.samhsa.gov.

110 DEA, *2018 National Drug Threat Assessment*.

111 Ibid.

112 Ibid.

113 Purity is defined as a measure of the amount of an illicit substance present in a sample compared with other substances in the sample such as adulterants, diluents or solvents.

114 Potency is defined as the measure of drug activity in terms of the dosage required to exert an effect on the body and is measured by the amount of the highly potent d-isomer present in the drug substance.

115 *World Drug Report 2010* (United Nations publication, Sales No.E.10.XI.13).

116 *World Drug Report 2011* (United Nations publication, Sales No.E.11.XI.10).

117 DEA Methamphetamine Profiling Program, quoted in *2018 National Drug Threat Assessment*, p. 60.

to other subregions, including other parts of the Americas, Oceania, East and South-East Asia and Western and Central Europe. According to seizure information provided by Member States, there seems to have been methamphetamine trafficking from Mexico to other countries in the Americas (Argentina, Brazil and Guatemala) and to a few countries in Asia (Japan, the Republic of Korea and the Philippines), Oceania (New Zealand) and Europe (Spain and Belgium) over the period 2013–2017. More recently, methamphetamine shipments have been intercepted en route from Mexico to the Netherlands for distribution in Europe. According to media sources, in May 2019 the Dutch authorities raided a river boat in the Netherlands with a full crystalline methamphetamine laboratory on board, apparently operated by members of a Mexican organized criminal group.[118, 119] The United States has been reported by other countries as a country of departure of methamphetamine for neighbouring Canada, Oceania (Australia and New Zealand), Asia (Japan and the Philippines) and Europe (Germany and Italy). Methamphetamine trafficked from Canada has also been reported in South America (Chile), Oceania (Australia and New Zealand) and Northern Europe (Iceland and Latvia).

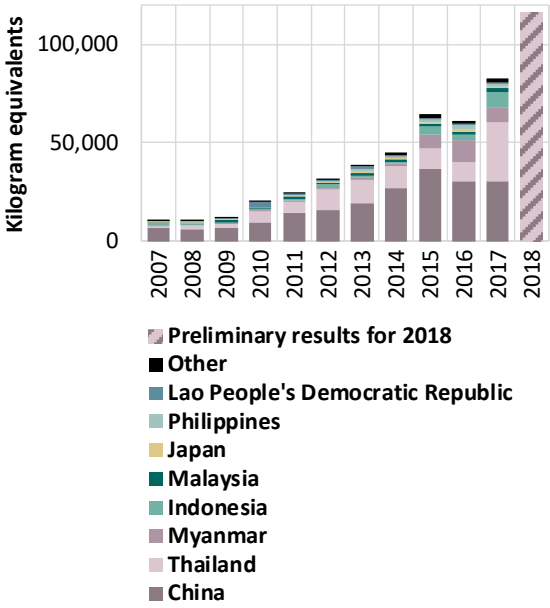
Signs of a marked expansion of methamphetamine trafficking in East and South-East Asia in 2017 and 2018

Quantities of methamphetamine seized in East and South-East Asia increased more than eightfold over the period 2007–2017 and, at 82 tons. Preliminary data for 2018 indicate a further sharp increase of around 42 per cent from the previous year, to 116 tons, in quantities of methamphetamine seized in East and South-East Asia.[120]

In most years in the past decade, the largest quantities of methamphetamine seized in East and South-East Asia were reported by China. However, the quantities of methamphetamine seized in Thailand in 2017 reached the same level as those reported by China, and preliminary data suggest that those reported by Thailand in 2018 may have exceeded those reported by China, reflecting underlying shifts in the methamphetamine market in South-East Asia.[121]

Methamphetamine seizures have been increasing in East and South-East Asia, in the form of tablets and crystalline methamphetamine. The amount of methamphetamine tablets seized annually in East and South-East Asia increased by 40 per cent in 2017 from the previous year to reach almost 450 million tablets. Preliminary data indicate a further rise to 745 million methamphetamine tablets seized in the subregion in 2018, equivalent to an increase of two thirds in 2018. Thailand accounted for the bulk of those seizures, with more than 515 million tablets

FIG. 35 Quantity of methamphetamine seized in East and South-East Asia, by country, 2007–2018



Sources: UNODC, response to the annual report questionnaire for the years 2007-2017; for the year 2018, UNODC, *Synthetic Drugs in East and South-East Asia.*

Note: At the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea and Thailand had all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, Japan for the first half of the year 2018, and Taiwan Province of China for the first eight months of 2018.

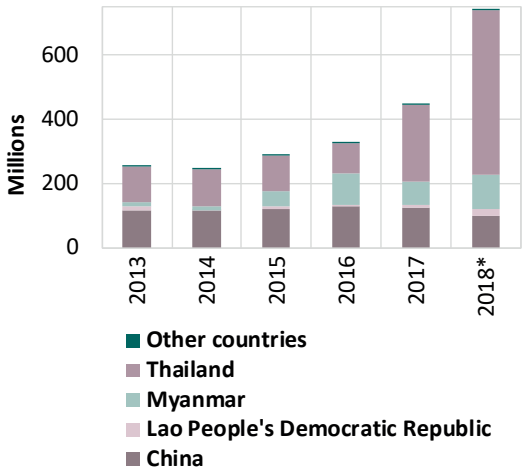
118 Janene Pieters, "Mexican cartel tied to booby-trapped floating drug lab in Dutch police sting", *NL Times*, 13 May 2019.

119 Daniel Boffey, "Booby trap scuppers police raid on Dutch floating crystal meth lab", *Guardian*, 13 May 2019.

120 UNODC, *Synthetic Drugs in East and South-East Asia*

121 Ibid.

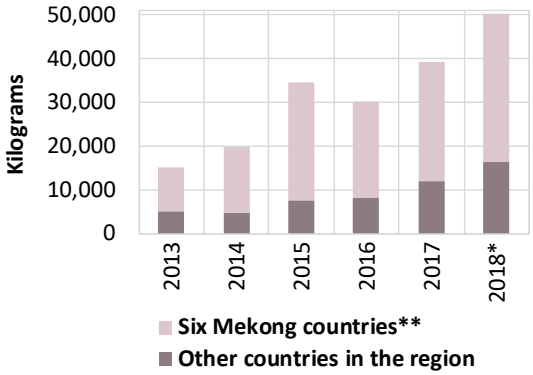
FIG. 36 Quantity of methamphetamine tablets seized in East and South-East Asia, by country, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 include only those confirmed by countries in the region.*

FIG. 37 Quantity of crystalline methamphetamine seized in East and South-East Asia, by subregion, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 are still preliminary; at the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea, and Thailand, all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, Japan for the first half of the year 2018, and Taiwan Province of China for the first eight months of 2018.*

***The six Mekong countries are: Cambodia, China, Lao PDR, Myanmar, Thailand and Vietnam.*

reported seized – about 70 per cent of all seizures in 2018 confirmed to date.[122] Preliminary data suggest that 99 per cent of all methamphetamine tablets seized in East and South-East Asia were seized in the Greater Mekong subregion in 2018.[123]

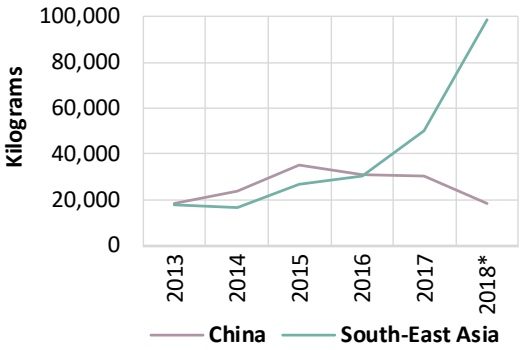
The typical purity of methamphetamine tablets encountered in East and South-East Asia has remained relatively stable in recent years, mostly within a range of 15 to 25 per cent.[124] However, retail prices of methamphetamine tablets have been sharply decreasing in several countries in the region in recent years, which when taken together with the sharp increase in seizures, suggests supply of methamphetamine outstrips demand in the subregion.[125]

Seizures, prices and purities also indicate an expansion of the crystalline methamphetamine market in East and South-East Asia. With the exception of 2016, quantities of crystalline methamphetamine seized in the subregion have been increasing every year over the past decade. In 2017, a total of 39.4 tons were seized in the subregion, surpassing the previous record reported in 2015 (34.7 tons). Preliminary data suggest a further marked increase to at least 48 tons in 2018, equivalent to an increase of 22 per cent from the previous year.[126]

The average purity of crystalline methamphetamine in East and South-East Asia continues to remain very high. Thailand, for example, reported that the vast majority (91 per cent) of samples were of a purity exceeding 90 per cent in 2017. The average purity of samples analysed in China reached 89 per cent in 2017 and other countries in the region (Brunei Darussalem, Cambodia, Indonesia, Malaysia and Viet Nam) reported purity levels of between 70 and 80 per cent.[127] While purity remained high, retail prices of crystalline methamphetamine have decreased in several countries in the subregion in recent years, including Cambodia, Indonesia, Japan, Malaysia and Myanmar.[128] This points towards an

122 Ibid.
123 Ibid.
124 Ibid.
125 Ibid.
126 Ibid.
127 Ibid.
128 Ibid., p. 5.

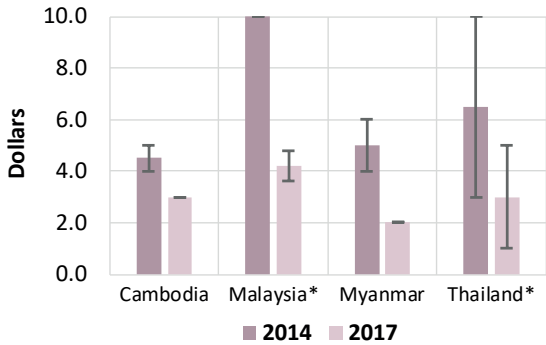
FIG. 38 Quantity of methamphetamine seized in China and South-East Asia, 2013–2018



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

**Data for 2018 are still preliminary; at the time of writing, Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, the Republic of Korea, and Thailand, all provided drug seizure data for the whole year 2018. China, Indonesia and Singapore provided data up to September 2018, Viet Nam for the first 11 months of 2018, and Japan for the first half of the year 2018.*

FIG. 39 Typical retail price of methamphetamine tablets, selected countries in East and South-East Asia, 2014 and 2017, or latest year available



Source: UNODC, *Synthetic Drugs in East and South-East Asia.*

Note: The high-low bars represent the upper and lower limits of the price ranges for the countries reporting such ranges in addition to reporting the typical price.

**Data for Malaysia and Thailand are for 2018.*

increase in the availability of crystalline methamphetamine in the subregion.[129]

However, trends in China regarding methamphetamine supply and trafficking appear to be in contrast to those trends observed in the rest of East and South-East Asia. Data on seizures and prices suggest that the methamphetamine market in China has contracted while the market outside China has expanded. The number of dismantled clandestine laboratories has declined in China in recent years[130] (both for the manufacture of methamphetamine tablets and for crystalline methamphetamine),[131] as have the quantities of methamphetamine seized in China. Moreover, for the first time in years, the proportion of users of synthetic drugs (mostly methamphetamine) among all registered drug users decreased, although only slightly, in 2017 from the previous year.[132] Research conducted in China also found a decline in the quantities of methamphetamine found in wastewater in recent years, which, according to the Chinese authorities, followed campaigns to crack down on the drug's manufacture and use.[133, 134]

Price data also follow diverging trends between China and other countries in South-East Asia in recent years, with several countries in South-East Asia reporting a decrease in methamphetamine prices. In Viet Nam, for example, the wholesale price of crystalline methamphetamine declined by 40 per cent from $13,500 per kg in 2016 to $8,000 per kg in 2017.[135] In China, by contrast, prices showed a more than sevenfold increase, from a typical wholesale price for crystalline methamphetamine of $2,910 per kg in 2015 to $21,800 in 2018.[136]

A number of successful law enforcement operations in the Golden Triangle provided evidence of the large quantities of methamphetamine produced there, in particular in northern Shan State, where six methamphetamine manufacturing facilities were dismantled in Kutkai in early 2018. The large-scale facilities were estimated to have manufactured some

129 Ibid., p. 4.

130 National Narcotics Control Commission of China, Annual Report on Drug Control in China 2018., p. 52.

131 UNODC, *Synthetic Drugs in East and South-East Asia,* p. 27.

132 National Narcotics Control Commission of China, *Annual Report on Drug Control in China 2018*, p. 49.

133 David Cyranoski, "China expands surveillance of sewage to police illegal drug use", *Nature; International Journal of Science*, vol. 559, No. 7714 (July 2018).

134 Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018".

135 UNODC, *Synthetic Drugs in East and South-East Asia*.

136 Ibid.

1.2 million methamphetamine tablets, roughly 260 kg of crystalline methamphetamine, and other substances (mostly ketamine).[137]

This shift from China as the main location of methamphetamine manufacture and trafficking to other countries in East and South-East Asia is also indirectly reflected in trafficking data reported by Australia. China and Hong Kong, China, were the two main embarkation points for methamphetamine trafficked to Australia in 2015, whereas by 2017 Thailand and Malaysia had become the second and third most important embarkation points, after the United States.

Most of the methamphetamine available in East and South-East Asia is sourced in the subregion, with Myanmar and, to a lesser extent, China continuing in 2017 to be the most frequently identified by other countries as the origin of seized methamphetmine. Some methamphetamine is also reported to be sourced outside the subregion, including, in descending order, in Mexico, the United States, the Islamic Republic of Iran and India, although their role in supplying markets in East and South-East Asia remains limited.

While methamphetamine trafficking flows from East and South-East Asia to countries outside the region remain modest, some smuggling was reported, mainly from China and Thailand, over the period 2013–2017. According to seizure information provided by Member States, destinations outside the subregion include other countries in Asia (Bangladesh and Sri Lanka, followed by Saudi Arabia and Israel), countries in Oceania (Australia and New Zealand), countries in the Americas (United States and Canada) and countries in both Western and Eastern Europe.

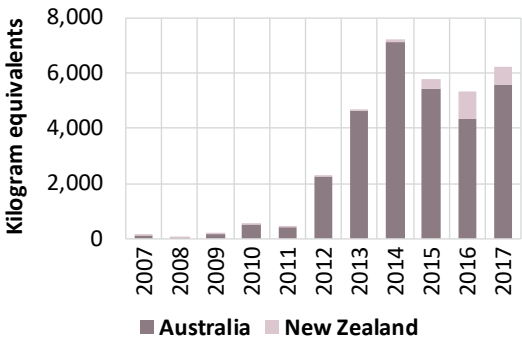
High levels of methamphetamine trafficking into and across Oceania

The quantities of methamphetamine seized in Oceania showed a marked upward trend over the period 2009–2014, followed by a decline over the period 2014–2016 and an increase in 2017. Australia accounted for 93 per cent of all quantities seized in the region over the period 2013–2017 and New Zealand for 7 per cent.

137 Ibid.

In parallel to the marked increase in the quantities of methamphetamine seized, the median purity of methamphetamine samples also rose drastically in Australia, from around 10 per cent in the period 2007–2010 to 60–80 per cent in the period 2014–2015 and has remained at such a level since then.[138]

FIG. 40 Quantity of methamphetamine seized in Oceania, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

The analysis of the synthetic route of manufacture of samples taken from seizures effected at the border of Australia revealed that in each year since 2012 most of the methamphetamine smuggled into Australia was manufactured from either ephedrine or pseudoephedrine (82 per cent in 2016) and only a small proportion (7 per cent in 2016) was produced from P-2-P. Over the first two quarters of 2017, however, the proportion of samples manufactured from ephedrine or pseudoephedrine declined to 53 per cent, while the proportion of methamphetamine manufactured from P-2-P increased to 33 per cent.[139] This may indicate the increasing importance of methamphetamine trafficked to Australia from North America over the first two quarters of 2017. Based on the analysis of the methods used for the manufacture of amphetamines (i.e., mostly methamphetamine) in Australia, the P-2-P method was found in just 19 clandestine laboratories dismantled in Australia in the fiscal year 2016/17, or 8 per cent of all dismantled amphetamines laboratories, for which the production method used could be identified (of which a few may have also produced

138 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

139 Ibid.

amphetamine), while most laboratories dismantled in Australia still relied on ephedrine or pseudoephedrine for manufacturing methamphetamine.[140]

Nonetheless, there is still significant domestic clandestine manufacture of methamphetamine in Oceania. New Zealand reported the dismantling of, on average, 61 methamphetamine laboratories per year over the period 2013–2017, with a fluctuating, upward trend (45 in 2015, 745 in 2016 and 79 in 2017). Australia, by contrast, reported a downward trend in the detection of clandestine laboratories manufacturing amphetamines (including methamphetamine), from a peak of 809 in the fiscal year 2011/12 to 463 in 2016/17,[141] while the number of dismantlements of clandestine laboratories used exclusively for illicit manufacture of methamphetamine fell from 270 in 2012/13 to 206 in 2016/17.

Most methamphetamine reaching Australia continues to be sourced in Asia, but there are also signs of new sources of methamphetamine in Africa. In 2017 methamphetamine was smuggled into Australia from both East Asia (most notably China; Hong Kong, China; and Taiwan Province of China) and South-East Asia (notably Malaysia, Cambodia and Viet Nam), while South Africa also appeared as a key embarkation point for the first time ever.[142] Of note is that authorities of South Africa reported the smuggling of methamphetamine from Nigeria and Mozambique into South Africa and clandestine manufacture of methamphetamine in the country, for both the domestic market and international markets, in 2017.

In 2017, Canada and, to a lesser extent, the United States were reported for the first time ever as being main departure countries for methamphetamine found in New Zealand, followed by Hong Kong, China; China; and Mexico. For Australia, the United States was the primary embarkation point for amphetamines trafficked during the fiscal year 2016/17, while Canada was the fifth most important.[143] That situation may be due to the high price of methamphetamine in Oceania, which in 2017 amounted, on average, to $456 (United States dollars) per gram (range $152–$761) in Australia and $354 per gram (range $212–$992) in New Zealand. This compared with a price of some $70 (range: $23–$115) per gram in Canada and around $75[144] per gram in the United States (range: $10–$400), thus making the smuggling of methamphetamine from countries in North America highly lucrative.

Market size and seizures of methamphetamine in Australia

Wastewater analysis has been used in Australia to estimate annual amounts of methamphetamine consumed in the country: 8.4 tons in the fiscal year 2016/17.[a] Reported quantities of methamphetamine seized amounted to 5.6 tons in Australia in 2017, while average purity in the fiscal year 2016/17 was reported at 77 per cent: purity-adjusted seizures may have thus amounted to 4.3 tons. Excluding from the calculation potential losses incurred that would not be included in seizures, some 12.7 tons (8.4 tons plus 4.3 tons) of methamphetamine either entered the country and/or were manufactured domestically, of which 4.3 tons, or 34 per cent of the total, appear to have been seized in 2017. Such a high seizure rate may explain the high price of methamphetamine in Australia.

[a] Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17.*

Methamphetamine seizures in Europe remain modest despite increases in 2017

The quantity of methamphetamine intercepted in Europe is comparatively limited. The region accounted for around 1 per cent of the global quantity seized in the period 2013–2017, with Western

140 Ibid.

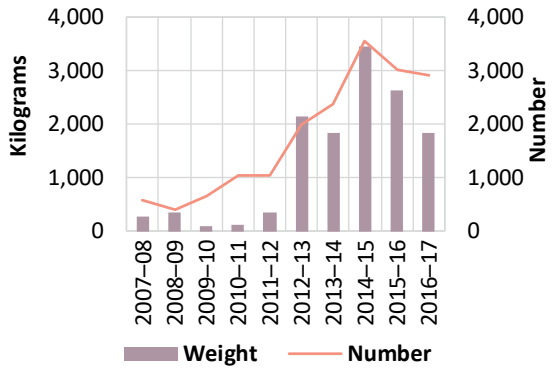
141 Ibid.

142 Ibid.

143 Ibid.

144 Based on a purity adjusted price of $70 and a purity level of 93.2 per cent over the period January-March 2017 as reported by DEA in *2018 National Drug Threat Assessment*, p. 61.

FIG. 41 Number of seizures and quantity of amphetamines (mainly methamphetamine) seized at the Australian border, 2007-2017



Source: Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*, p. 24.

and Central Europe accounting for just over half of the quantity, South-Eastern Europe accounting for a quarter, and Eastern Europe for a fifth. However, the situation changed in 2017, when quantities of methamphetamine seized increased dramatically in both Eastern and South-Eastern Europe, taking methamphetamine seizures in Europe to a record high of 2.6 tons that year – a threefold increase from 2016.

That increase was the result of record quantities being intercepted in both the Russian Federation and Turkey, which clearly exceeded seizures reported by France, Germany and Czechia, the three countries that reported the largest quantities of methamphetamine seized in Western and Central Europe in 2017. Czechia, the country that probably faced the most serious methamphetamine problem in Europe over the past two decades (based on the number of clandestine methamphetamine laboratories identified, and on indicators of methamphetamine demand and related deaths), reported a sharp increase in the quantity of methamphetamine seized up until 2015, followed by a decline thereafter – a trend that is also reflected in the overall amounts of methamphetamine found in wastewater in European cities in recent years.[145]

145 Based on information from SCORE.

When considering a longer time period, there may also have been a geographical expansion of methamphetamine trafficking across Europe, as suggested by the number of countries reporting seizures of the drug, which increased from 12 countries reporting seizures in 2000 to 31 countries in 2017.

Methamphetamine trafficked in Europe appears to originate mainly within the region, in particular in Czechia (28 per cent of all mentions of origin of seizures in the period 2013–2017), followed by Lithuania (12 per cent). Czechia also reported the largest number of methamphetamine laboratories dismantled over the period 2013–2017: 1,321, or 89 per cent of all dismantled methamphetamine laboratories reported in Europe in that period. Although to a lesser extent, the methamphetamine found on the European market may also be sourced outside the region (16 per cent in total), mainly in South-East Asia (mostly Thailand, China and Viet Nam), followed by South-West Asia (Islamic Republic of Iran) and Africa. European airports are used solely as transit locations for shipments to final destinations in East and South-East Asia (including Malaysia, Indonesia, Japan and the Republic of Korea).

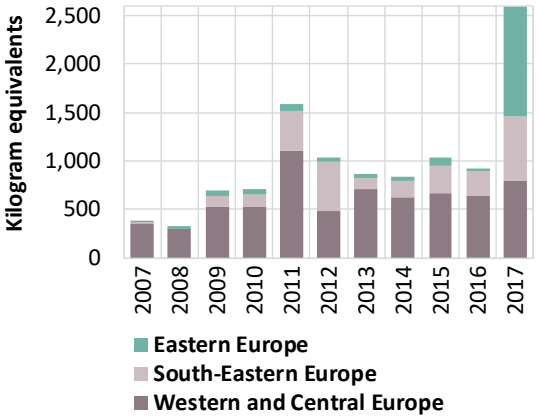
Methamphetamine seized in the Russian Federation, the European country reporting the largest quantities of methamphetamine seized in 2017, is reported to have been smuggled into the country in the period 2013–2017, mainly from countries in the European Union (including Czechia, Slovakia and the Baltic States), followed by China and the Islamic Republic of Iran and, to a far lesser extent, Belarus and the Ukraine.

Most of the methamphetamine seized in countries in South-Eastern Europe appears to have been produced and trafficked within the subregion itself, with countries in South-Eastern Europe accounting for 75 per cent of all mentions of countries of origin, departure and transit over the period 2013–2017.

Amphetamine manufacture remains concentrated in Europe

Overall, 22 countries reported the dismantling of 790 clandestine amphetamine laboratories over the period 2013–2017, while 37 countries were reported as countries of origin of amphetamine seized over that period, suggesting that, as is the case with

FIG. 42 Quantity of methamphetamine seized in Europe, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

methamphetamine, the illegal manufacture of amphetamine may be more geographically widespread than what the location of dismantled clandestine laboratories suggests.

In addition, a few countries reported the diversion of amphetamine from licit sources to illicit channels, including the United States, Brazil and Canada in the Americas, and Slovakia and Belgium in Europe.

More than half the total number of amphetamine laboratories reported dismantled worldwide in the period 2013–2017 were in just 17 European countries, mainly in Western and Central Europe. The Netherlands reported the largest number of amphetamine laboratories dismantled and, with Poland and Belgium, was among the countries of origin of amphetamine that were most reported by other countries worldwide, while amphetamine from South-Eastern Europe was reported as being mainly sourced from Bulgaria and Turkey.

An additional quarter of the total number of clandestine amphetamine laboratories reported worldwide were dismantled in North America over the period 2013–2017, mostly in the United States, followed by Guatemala, where the drug is mainly produced for the United States market.

While a number of clandestine amphetamine laboratories were reported to have been dismantled in Oceania, accounting for a fifth of the global total, methamphetamine manufacturing seems to have been predominant in that subregion over the period 2013–2017. In both Australia and New Zealand, significant amounts of ephedrine and pseudoephedrine were seized; both are substances used in the manufacture of methamphetamine, not of amphetamine. By contrast, only small amounts of amphetamine precursors, P-2-P and phenylacetic acid were seized in the Oceania.

In Asia, only India and Myanmar reported the detection of a few amphetamine laboratories to UNODC over the period 2013–2017. While ATS precursor seizures in both countries mainly were of ephedrine and pseudoephedrine, smaller quantities of P-2-P and phenylacetic acid were also seized, providing indirect evidence that some amphetamine manufacture may also have taken place there, in addition to the probably more significant manufacture of methamphetamine.

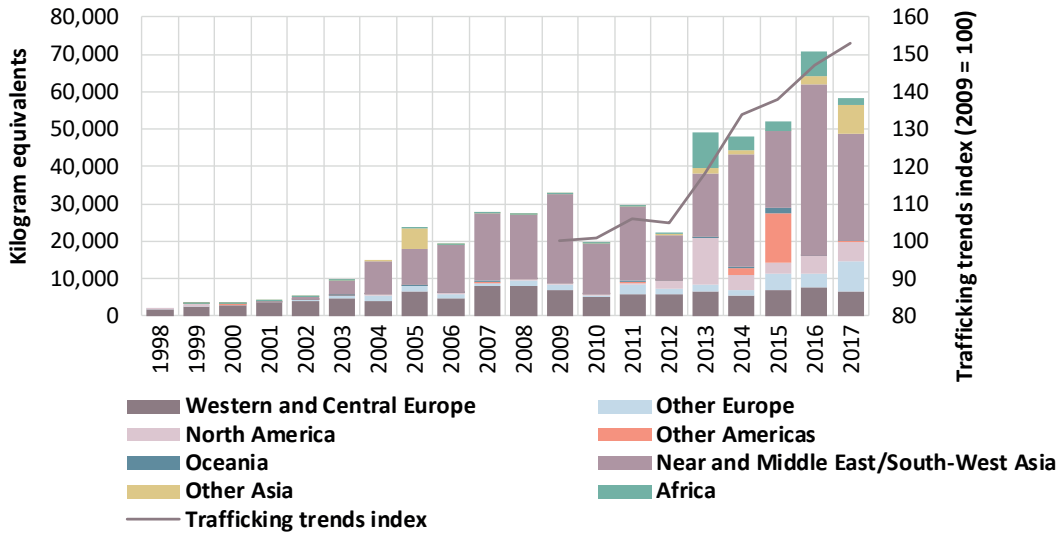
The production of "captagon" tablets, i.e., amphetamine tablets mixed with caffeine, in the Near and Middle East is possibly more important in Asia than the manufacture of amphetamine in South and South-East Asia. Indications received from other countries in the region, as well as media reports, suggest the existence of clandestine laboratories manufacturing "captagon" tablets, in particular in the Syrian Arab Republic and Lebanon, partly for domestic consumption and partly for the more lucrative markets of Saudi Arabia and a number of other Gulf States. In addition, another two countries in the Near and Middle East/South-West Asia – in descending order, Jordan and the Islamic Republic of Iran – have been identified by other countries in those subregions as possible countries of origin of amphetamine shipments.

The fact that no amphetamine laboratories were dismantled in Africa in the period 2013–2017 suggests there is an absence of manufacture of the substance in the region and/or a limited capacity to detect such manufacture.

Amphetamine trafficking has been increasing over time

The quantities of amphetamine seized increased markedly over the period 1998–2007 and, despite some fluctuations, continued to rise rapidly, reaching a peak in 2016. The global increase in quantities

FIG. 43 Quantity of amphetamine seized, 1998–2017, and amphetamine trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

of amphetamine seized over the past two decades has mainly been driven by increases in seizures reported in Asia, most notably by countries in the Near and Middle East/South-West Asia.

Quantities of amphetamine seized in Europe have also increased, most notably the quantities reported in South-Eastern and Eastern Europe, which, in 2017, exceeded those reported by countries in Western and Central Europe for the first time. In European Union countries, it is likely that amphetamine availability has increased slightly over the past decade, as suggested by a slight decline in the price of the drug and a slight increase in its purity over that period.[146]

Quantities of amphetamine seized in the Americas increased sharply over the past decade, in particular in North America, although seizures in the Americas in 2017 were still below the peak of reported quantities in 2015, which was mainly linked to large quantities intercepted in Guatemala, and quantities seized in North America were still below the peak reported in 2013.

Likewise, quantities of amphetamine seized in Africa turned out to be substantially higher in 2017 than a decade earlier, but they were clearly below the peak reported in 2013, which was due to the large amphetamine seizures reported by Burkina Faso. The largest quantities of amphetamine seized in the period 2013–2017 in Africa were reported by Egypt, followed by Burkina Faso and the Sudan.

Although global quantities of amphetamine seized declined by 18 per cent between 2016 and 2017, there are no indications of a general decline in amphetamine trafficking: while amphetamine seizures fell in the Near and Middle East/South-West Asia, in South Asia and in Africa (notably in North Africa) in 2017, increases were reported in Europe, the Americas and Oceania. Moreover, qualitative information reported by Member States suggest continuous growth in amphetamine trafficking in 2017.

Most amphetamine trafficking remains concentrated in the Near and Middle East and in Europe

In the period 2013–2017, 56 per cent of the global quantity of amphetamine seized was reported in Asia – of which 51 per cent was accounted for by countries in the Near and Middle East/South-West Asia; 19 per cent by countries in Europe, including 12 per cent by countries in Western and Central

146 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

Europe; 16 per cent in the Americas, including 11 per cent by countries in North America; 9 per cent by countries in Africa; and 1 per cent by countries in Oceania.

Both Europe and the Near and Middle East/South-West Asia continued to report substantially higher seizures of amphetamine than of methamphetamine, suggesting that the availability of amphetamine is still significantly greater than of methamphetamine in those regions and subregions.[147, 148]

Sizeable markets for amphetamines (mostly amphetamine) have existed in many European countries since the 1970s[149] and in the Near and Middle East/South-West Asia since the 1980s, although significant quantities of amphetamines have been seized in the latter subregion only since the beginning of the new millennium.

Saudi Arabia is the country that seized the largest quantities of amphetamine at the global level, accounting for a quarter of the quantity seized worldwide in the period 2013–2017, followed by the United States (10 per cent), Jordan (8 per cent), Turkey, Guatemala, Lebanon and the United Arab Emirates (5 per cent each).

Similar to the case with methamphetamine, most amphetamine trafficking continues to be mainly intraregional. European countries, for example, reported that most (93 per cent of all mentions in the 2013–2017 period) of the amphetamine trafficked on their territory originated in the region.[150] Amphetamine destined for the European market was most frequently reported as being sourced in the Netherlands (37 per cent of all mentions), followed by Poland (19 per cent), Lithuania (10 per cent), Belgium (9 per cent), the Russian Federation (3 per cent) and Bulgaria (3 per cent). In addition, some of the amphetamine illicitly manufactured in Europe is also destined for export, mainly to countries in the Middle East (including "captagon" tablets) and, to a lesser extent, to countries in the Far East and Oceania.[151]

147 *Report of the International Narcotics Control Board for 2018* (E/INCB/2018/1), para 780.

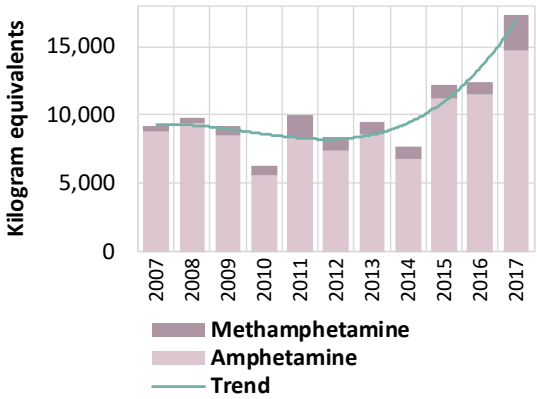
148 EMCDDA, *European Drug Report 2018*.

149 Ibid.

150 Ibid.

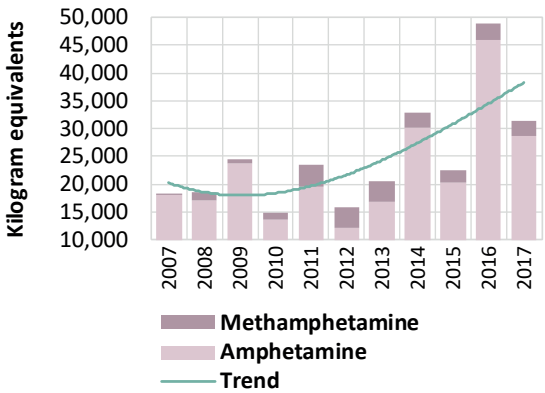
151 Ibid.

FIG. 44 Quantities of amphetamine and methamphetamine seized in Europe, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 45 Quantities of amphetamine and methamphetamine seized in the Near and Middle East/South-West Asia, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

The most frequently reported countries of origin of amphetamine (mainly "captagon") in the Near and Middle East/South-West Asia over the period 2013–2017 were the Syrian Arab Republic and Lebanon, which together accounted for more than half of all mentions of countries of origin made by country authorities in those subregions, in contrast to the situation in the period 2010–2012 when the main country of origin reported was Turkey. From around 1990 to the mid-2000s, amphetamine manufactured in the Balkan countries, most notably Bulgaria, was

"Captagon" tablets in the Near and Middle East

Instability and conflict in the Middle East appear to be continuing to contribute to trafficking in falsified "captagon" in the subregion.[a] Moreover, a lack of control and monitoring has led to an increase in the manufacture of "captagon" tablets in some countries, which is a potential source of income for terrorist and insurgency groups in the subregion.[b] Tablets with a "captagon" logo (originally the brand name of a medicinal product) used to contain fenetylline until the substance came under international control in 1986. While the diversion of fenetylline from existing stocks might still have occurred thereafter until the end of the 1990s, those stocks, some of which were apparently located in Bulgaria, became increasingly depleted. While the brand name and logo continued to be used, increasingly, "captagon" tablets began to contain amphetamine, often mixed with caffeine and other substances. An analysis of seizures made in Lebanon in 2013, for example, revealed that such tablets contained 8–14 per cent amphetamine, 12–35 per cent caffeine, 10–14 per cent theophylline and 6–20 per cent paracetamol.[c] Data generated in the context of Operation Missing Link, covering countries in the Middle East and North Africa, led by INCB between April 2016 and January 2017,[d] confirmed the mixed content of "captagon" tablets; they revealed combinations of amphetamine with caffeine, theophylline, quinine and paracetamol as the main active ingredients in tablets analysed in 65 seizures made in Jordan, Lebanon and the United Arab Emirates.[e] Amphetamine tablets seized in Turkey in 2017 were reported to contain between 2 and 99 mg of amphetamine, the upper range being far higher than in previous years (in 2016, a typical dose was 15 mg; range 4–28 mg; in 2014, a typical dose was 4 mg; range: 1–9 mg), or in the amounts of amphetamine previously found by the United States authorities in "captagon" tablets seized in Iraq in 2009 (7-20 mg).[f]

While Operation Missing Link led to the seizure of a number of pre-precursors of amphetamines, including P-2-P methyl glycid acid derivatives,[g] data collected during the operation revealed that the vast majority of the amphetamine found in "captagon" tablets (82 per cent) in the Middle East had been manufactured out of APAAN,[h, i] another pre-precursor of amphetamine (precursor of P-2-P), which came under international control in October 2014.[j]

It is possible that this international targeting of "captagon" in 2016 and its main precursor chemicals in the Middle East and North Africa contributed to the marked increase in the quantities of amphetamine seized in the Near and Middle East/South-West Asia in 2016 from the previous year (more than doubling, from 20 tons to 46 tons) and in North Africa (more than doubling, from 2.4 tons to 6.6 tons), and also led to the subsequent decline in 2017 (respectively, to 29 tons and to 1.7 tons).

a E/INCB/2018/1.

b Ibid.

c EMCDDA, *Captagon: Understanding Today's Illicit Market*.

d E/INCB/2017/1.

e EMCDDA, *Captagon: Understanding Today's Illicit Market*.

f DEA, "Captagon mimic tablets (containing *d,l*-amphetamine, caffeine, theophylline, and other components) in Al Anbar Province, Iraq", *Microgram Bulletin,* vol. 42, No. 3 (March 2009), pp. 28–29.

g *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2017 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2017/4)

h Ibid.

i EMCDDA, *Captagon: Understanding Today's Illicit Market*.

j Commission on Narcotic Drugs decision 57/1.

the main source of the falsified "captagon" tablets sold in the Arabian Peninsula by Bulgarian and Turkish criminal networks.[152] Later, amphetamine was also synthesized in Turkey.[153] By the mid-2000s, law enforcement operations in Bulgaria and Turkey appear to have reduced illicit manufacture of "captagon" in the two countries. However, from 2011 onwards, the conflict in the Syrian Arab Republic appears to have had an impact as various factions that were seeking access to funds through involvement in the illicit drug trade had an incentive to become active in the production of "captagon".[154]

Initially, some of the amphetamine manufactured in the region might have been produced from the very large quantities (98 tons) of P-2-P imported licitly into Jordan over the period 2008–2011, mostly for re-export to Iraq, which represented more than two thirds of the global trade in P-2-P in that period and was sufficient to produce 55–65 tons of amphetamine.[155] Subsequently, "captagon" tablets seem to have been manufactured from precursor chemicals smuggled from Europe via seaports into the Syrian Arab Republic. Some of these "captagon" tablets were then also smuggled into Turkey for onward trafficking to various countries in the Near and Middle East, or via Lebanon to other countries on the Arabian Peninsula. Turkey reported that it continued to be used as a transit country for trafficking in "captagon" sourced in the Middle East, particularly in the Syrian Arab Republic, including by terrorist and insurgency groups operating there.[156] Moreover, some 599 bags of "captagon" were seized by law enforcement officers in the Basra region of Iraq, near the Kuwaiti border, in November 2017.[157]

Large trafficking from Jordan to Saudi Arabia is also documented. There is some evidence that manufacture of "captagon" tablets has taken place in Jordan. In two separate incidents, in January and March 2018, customs authorities of Saudi Arabia foiled attempts to smuggle "captagon" tablets into the country. A total of about 6.3 million tablets of the substance were recovered during those operations at the border with Jordan in 2017. While some of these tablets may have originated in neighbouring countries, Jordan, for the first time, also dismantled a clandestine laboratory manufacturing "captagon", mainly destined for markets in Saudi Arabia and neighbouring countries.[158]

Large law enforcement operations also document trafficking between the Syrian Arab Republic and Lebanon and Gulf countries. In 2017, the United Arab Emirates seized 45 million tablets of "captagon".[159] Most of the trafficking of "captagon" seems to be have been from Lebanon and the Syrian Arab Republic to other countries in the Near and Middle East, using both direct and indirect routes. In a few cases, Europe has also been used for the transit of "captagon" for onward trafficking to Saudi Arabia. In one case, customs officials of France reported the interception of 350,000 "captagon" tablets at Charles de Gaulle airport, Paris, in January and February 2017; the drug, hidden in industrial moulds exported from Lebanon, was intended for shipment to Czechia and onward trafficking via Turkey to Saudi Arabia.[160]

In addition to the large-scale manufacture of "captagon" tablets in the Near and Middle East, there have also been reports of some manufacture in Europe, including in Belgium and Greece, in the period 2013–2017, destined for the Near and Middle East, often via Turkey. Of greater significance is the emerging cooperation between local organized crime groups in Lebanon and organized crime groups in Europe that are involved in synthetic drug manufacture. The dismantling of one such "captagon" production site in Lebanon, in December 2015, revealed that the custom-made reaction vessels and other equipment found there were very similar to those found in Belgium and the Netherlands.

152 EMCDDA, *Captagon: Understanding Today's Illicit Market*.

153 *World Drug Report 2008* (United Nations publications, Sales No. E.08.XI.1).

154 EMCDDA, *Captagon*: *Understanding Today's Illicit Market*.

155 Ibid.

156 E/INCB/2017/4.

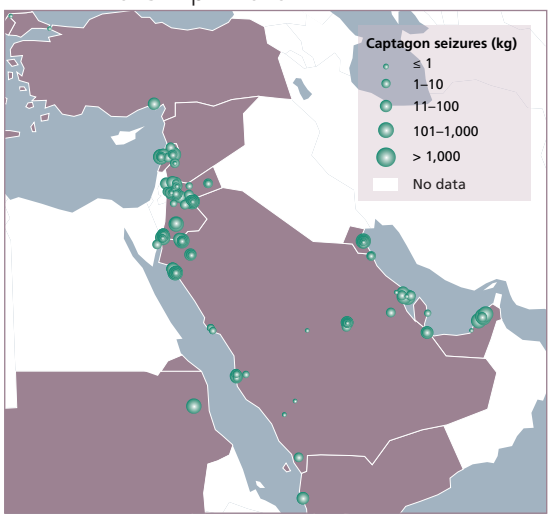
157 Ibid.

158 Ibid.

159 Ibid.

160 France, Ministère de l'Action et de Comptes Publics, Douane et Droits Indirect, "Premières saisies de captagon en France: 750 000 comprimés à Roissy", 30 Mai 2017; Customs Today, "Captagon seizes for first time in France", 30 May 2017; Radio France International, "Customs seize 135 kg of captagon for first time in France", 30 May 2017.

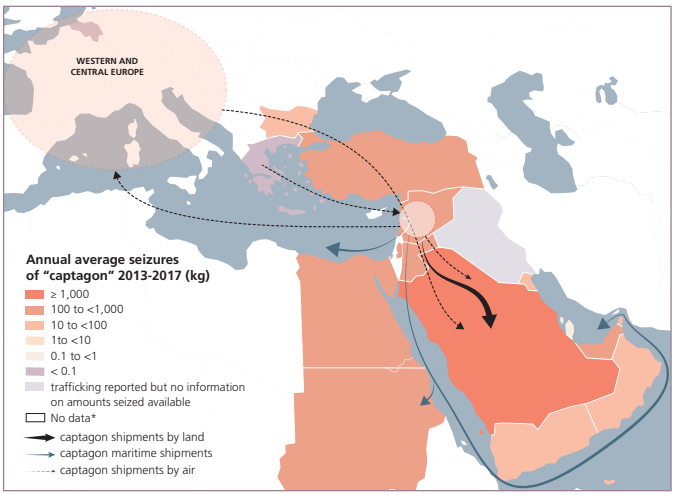
MAP 4 Reported significant individual drug seizures of "captagon" tablets, January 2013–April 2019



Source: UNODC and Paris Pact, Drugs Monitoring Platform.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

MAP 5 Reported seizures and trafficking routes of "captagon" tablets, 2013–2017



Sources: UNODC, annual report questionnaire data; International Narcotics Control Board (INCB); Heads of National Law Enforcement (HONLEA) reports; Bureau of International Narcotics and Law Enforcement Affairs, *International Narcotics Control Strategy Reports*; EMCDDA, *Captagon: understanding today's illicit market,* EMCDDA Papers, October 2018; Republique Française, Ministère de L'Action et des Comptes Publics, Douane et Droits Indirect, *Premières saisies de captagon en France - 750 000 comprimés à Roissy*, 30 Mai 2017.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

** Boundaries are not displayed for adjacent countries or territories with no available data.*

According to seizure information, the main destination market for amphetamine smuggled to the Near and Middle East over the period 2013–2017 was Saudi Arabia, followed by the Gulf countries (most notably the United Arab Emirates, followed by Qatar, Kuwait and Bahrain). Other countries mentioned as destination countries include Egypt, Iran (Islamic Republic of) and the Sudan.

"Ecstasy" manufacture concentrated in Europe, although it may be spreading to other regions

A total of 19 countries reported the dismantling of 367 "ecstasy" laboratories in the period 2013–2017, and 35 countries were identified as countries of origin of seized quantities of the drug. "Ecstasy" continues to be manufactured primarily in Europe, most notably in Western and Central Europe, although the share of countries in that subregion mentioned as "country of origin" of "ecstasy" has declined slightly over the past two decades. Europe accounted for two thirds of the "ecstasy" laboratories dismantled worldwide in the period 2013–2017, followed by the Americas (14 per cent of the global total), Asia (12 per cent) and Oceania (7 per cent), whereas no "ecstasy" laboratories have been detected and dismantled to date in Africa.

Both the number of "ecstasy" laboratories dismantled and reports of countries of origin of the drug point to the Netherlands and Belgium as the main manufacturing countries of "ecstasy", both in Europe and worldwide, in the period 2013–2017, while a large number of laboratories were also dismantled by the Russian Federation.

The largest number of dismantled "ecstasy" laboratories in the Americas was reported by the United States, followed by Canada and Brazil over the period 2013–2017, while, in Asia, the largest number was reported by Malaysia, followed by Indonesia and Viet Nam. In Oceania, only Australia and New Zealand reported the dismantling of "ecstasy" laboratories.

Three indicators – the number of reported dismantled "ecstasy" laboratories, the trends in the manufacture of "ecstasy" on the basis of qualitative information and the quantities of "ecstasy" seized – all showed an upward trend over the period 2010–2017, suggesting that the overall supply of "ecstasy"

increased during the period. Several countries reported levels of MDMA content in "ecstasy" tablets (over 100 mg of MDMA per tablet) that were higher than a decade ago, which also points to a likely increase in the availability of "ecstasy".

This upward trend in the global supply of "ecstasy" over the period 2010–2017 follows a downward trend in the second half of the first decade of the new millennium, which had been prompted by a shortage of traditional "ecstasy" precursor chemicals on the market (notably 3,4-MDP-2-P), mainly due to improved precursor control at the global level and in China in particular.[161]

The recent increase in the supply of "ecstasy" is probably the result of the identification of a number of new pre-precursors used in the manufacture of the drug. Those chemicals include a number of 3,4-MDP-2-P substitutes, such as helional, as well as "designer precursors" such as the various 3,4-MDP-2-P methyl glycid acid derivatives, all of which are chemicals without legitimate uses that appear to have been developed exclusively for use in the clandestine manufacture of "ecstasy" in order to evade existing international controls.[162] It should be noted that 3,4-MDP-2-P methyl glycidate, known for its misuse in the clandestine manufacture of "ecstasy" since 2010,[163] came under international control in 2019.

"Ecstasy" trafficking on the increase again

Trafficking in "ecstasy" at the global level, as reflected in seizures, appears to have expanded over the period 1998–2007, largely in parallel with increasing demand for the drug, while it declined over the period 2007–2011, a consequence of a shortage of "ecstasy" precursors on the market (mainly due to improved controls on 3,4-MDP-2-P by China).[164, 165] Since 2011, "ecstasy" trafficking has increased again, in particular since 2013, as the operators of clandestine MDMA laboratories switched to manufacturing "ecstasy" from non-controlled pre-precursors.[166, 167] Likewise, qualitative information as reported by Member States points to a decline in the trafficking of "ecstasy" over the period 2009–2011 before it increased again over the period 2011–2017.

Very sharp increases in the quantities of "ecstasy" seized over the period 2013–2017 were reported from subregions that had previously reported only limited amounts of "ecstasy" seized. This was the case in Africa, where "ecstasy" seizures increased 60-fold over that period, the Near and Middle-East/South-West Asia (40-fold) and Central Asia and Transcaucasia (31-fold). Marked increases were also reported in Oceania (a ninefold increase), South America (a fivefold increase), East and South-East Asia (a fourfold increase) and Europe (a threefold increase), most notably Western and Central Europe (a fourfold increase).

The marked increase in the quantity of "ecstasy" seized in Europe, from 2.2 tons in 2013 to 6.4 tons in 2017, went hand in hand with signs of ongoing expansion of the "ecstasy market", including increasing use of "ecstasy" pre-precursors in the manufacture of the drug in the region, a decline in "ecstasy" prices and a very sharp increase in the MDMA content of "ecstasy" tablets since the low in 2009. The average MDMA content of tablets more than doubled over the period 2006–2016 in the countries of the European Union,[168] with some very large amounts of MDMA found in some batches of the drug, resulting in increased harm and even deaths linked to the use "ecstasy".[169] The analyses of MDMA in wastewater also found clear evidence of an increase in the amount of "ecstasy" consumed in Europe over the period 2011–2018.[170]

161 *World Drug Report 2014* (United Nations publication, Sales No. E.14.XI.7), p. 83; and *Precursors and Chemicals Frequently Used in the Illicit Manufacture of Narcotic Drugs and Psychotropic Substances: Report of the International Narcotics Control Board for 2013 on the Implementation of Article 12 of the United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988* (E/INCB/2013/4).

162 E/INCB/2018/4.

163 Note by the Secretariat on changes in the scope of control substances under the United Nations Convention against Illicit traffic in Narcotic Drugs and Psychotropic Substance of 1988 (E/CN.7/2019/9).

164 UNODC, *Global Smart Update 2012*, vol. 7 (March 2012).

165 *World Drug Report 2014*; and E/INCB/2013/4.

166 UNODC, Global Smart Update 2012, Volume 7, March 2012.

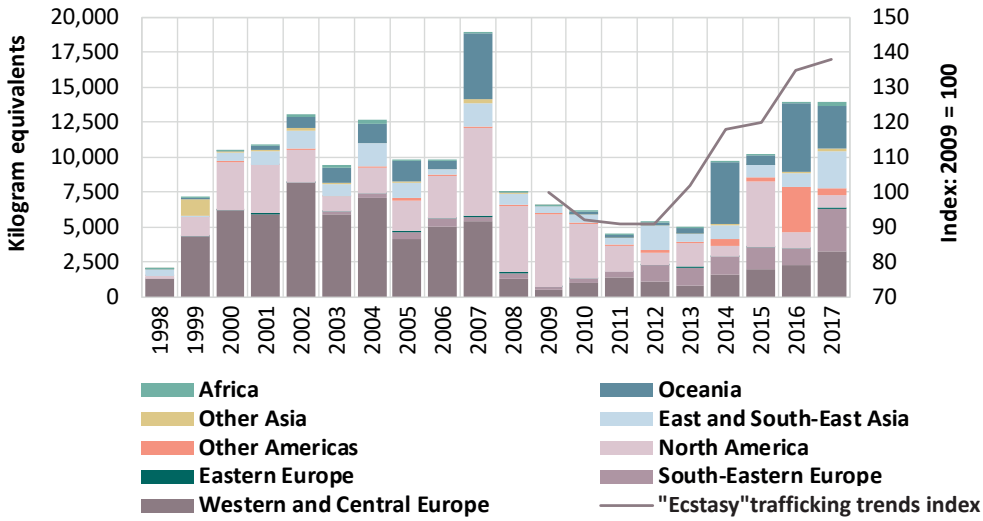
167 E/INCB/2017/4.

168 EMCDDA, *European Drug Report 2018*, p. 30.

169 Ibid., p. 31.

170 EMCDDA, "Wastewater analysis and drugs: a European

FIG. 46 Quantity of "ecstasy" seized, by region, 1998-2017 and "ecstasy" trafficking trends index (2009 = 100)



Source: UNODC, responses to the annual report questionnaire.

The largest quantity of "ecstasy" seized worldwide over the period 2013–2017 continued to be reported in Europe, which accounted for more than one third of global quantities intercepted, while the Americas (most notably North America) and Oceania accounted for one fifth each, and Asia (mostly East and South-East Asia) accounted for 12 per cent. However, the greater expansion of the "ecstasy" market in other regions has led to a decline in the overall importance of Europe, in particular of Western and Central Europe, in global "ecstasy" trafficking as suggested by seizures. This reflects a trend towards the increasing globalization of trafficking in "ecstasy" and the emergence of "ecstasy" manufacturing sites in a number of countries across all regions.

In contrast to other ATS, "ecstasy" is not only trafficked at the intraregional level but also between regions. The Netherlands and Belgium remain the most frequently mentioned source countries of "ecstasy" worldwide, accounting for 42 and 16 per cent, respectively, of all mentions of origin over the period 2013–2017. A number of other European countries, mostly in Western and Central Europe, including, in descending order, Germany, Spain, the United Kingdom, France and Poland, are also frequently mentioned as source or transit locations for "ecstasy" found in markets in the region and beyond.

"Ecstasy" manufacture in the other regions seems to be almost exclusively for use within the region where it was manufactured. In Oceania, however, in addition to "ecstasy" being smuggled from Europe (most notably Germany, the Netherlands and the United Kingdom), Australia reported in the fiscal year 2016/17 "embarkation points" in North America (Canada and the United States), [171] and in the fiscal year 2014/15, "embarkation points" in Asia (notably China, including Hong Kong, China; the United Arab Emirates; and Singapore).[172]

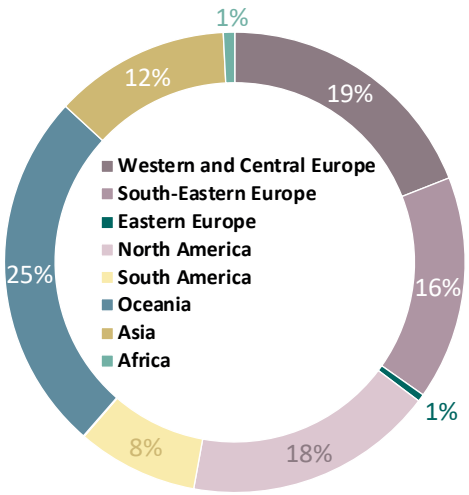
Seizures of "ecstasy" in Asia have markedly increased in recent years, from 0.6 tons in 2013 to 2.9 tons in 2017, 96 per cent of which was reported by countries in East and South-East Asia over the period 2013–2017. In 2017, a total of approximately 9 million "ecstasy" tablets were seized in East and South-East Asia, representing a significant increase

multi-city study", Perspectives on Drugs Series (Lisbon, March 2019).

171 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2016-17*.

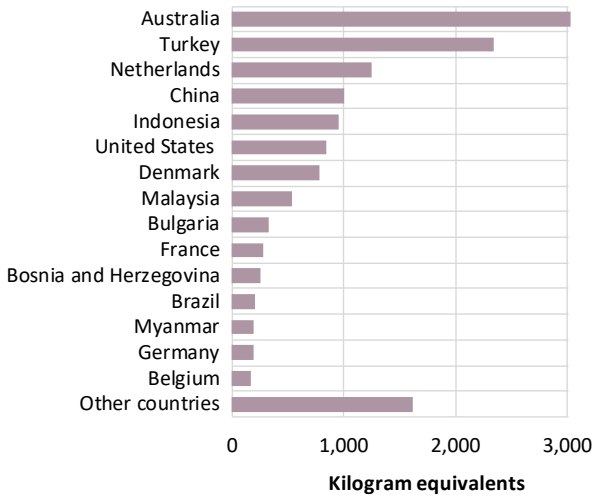
172 Australian Criminal Intelligence Commission, *Illicit Drug Data Report 2014-15* (Canberra, 2016).

FIG. 47 Regional distribution of the quantity of "ecstasy" seized, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 48 Quantity of "ecstasy" seized, by main seizing countries, 2017



Source: UNODC, responses to the annual report questionnaire.

from the three preceding years when around 3 million tablets were seized annually.[173]

The manufacture of "ecstasy", as evidenced by dismantled laboratories, was reported by China, Malaysia, Viet Nam,[174] as well as by Indonesia, Thailand[175] and Myanmar[176] in the period 2013–2017. In addition, a clandestine "ecstasy" laboratory was dismantled in the Philippines in 2018.[177] Similar to reports from other subregions, there have also been noticeable increases in the average MDMA content of "ecstasy" tablets found in East and South-East Asia in recent years. In addition to "ecstasy" tablets, crystalline MDMA, generally considered to be purer than "ecstasy" tablets, has become available in that subregion in recent years.[178] The largest seizures of "ecstasy" tablets in East and South-East Asia in the period 2013–2017 were reported by Indonesia (41 per cent of the total in the subregion), followed by China (28 per cent) and Malaysia (15 per cent).[179] A large seizure in 2018 concerned a shipment of 1.2 million "ecstasy" tablets from the Netherlands, seized in Indonesia in August 2018.[180]

In contrast to the thriving "ecstasy" markets in most of the regions, quantities of "ecstasy" seized in recent years in North America have decreased by a factor of five in the last two years, from 4.7 tons in 2015 to less than 0.9 tons in 2017. The long-established trafficking pattern of Asian organized crime groups being involved in the manufacture of "ecstasy" in Canada (from precursor chemicals smuggled into Canada from East Asia) and the subsequent smuggling of "ecstasy" tablets from Canada into the United States appears to be continuing, however.[181] The Canadian authorities estimated that a total of 63 organized crime groups were involved in the country's "ecstasy" market and in the smuggling of "ecstasy" precursor chemicals into Canada in 2017. However, such crime groups, which are mostly located in British Columbia and Ontario, have decreased in number since 2016, when there were an estimated 78 such groups; the increasing difficulty in accessing precursor chemicals might have played a role in the decrease.

173 UNODC, *Synthetic Drugs in East and South-East Asia,* p. 12.
174 Ibid.
175 UNODC, responses to the annual report questionnaire.
176 UNODC, *Synthetic Drugs in East and South-East Asia*.
177 Ibid.
178 Ibid.
179 Ibid.
180 Ibid.
181 DEA, *2018 National Drug Threat Assessment.*

While operators of clandestine laboratories in Europe were successful in overcoming the shortage of the key "ecstasy" precursor 3,4-MDP-2-P, after 2011, by using pre-precursors, no such shift has been reported in North America.[182] Thus, "ecstasy" seems to have continued to be manufactured in North America with traditional precursors, although perhaps at a lower level of output, while imports, in particular from Europe, appear to have increased.

In addition to domestic manufacture of MDMA (with nine "ecstasy" laboratories dismantled in 2017) in the United States and ongoing smuggling of "ecstasy" into the country from Canada, significant trafficking in "ecstasy" from Europe, most notably from the Netherlands and via Germany, was also reported in 2017. The bulk of the "ecstasy" found on the United States market is estimated to be for domestic use (81 per cent in 2017), but some of the "ecstasy" seized in 2017 was found to have been intended for onward trafficking, mostly to Argentina (16 per cent) and Mexico (1 per cent). Data also show that clandestine manufacture of "ecstasy" takes place in Latin America, including in Argentina, Brazil, Colombia and the Dominican Republic, as reflected in reports of dismantled "ecstasy" laboratories over the period 2013–2017. Possibly linked to the growing importance of sales of "ecstasy" on the darknet,[183] shipments by mail accounted for 55 per cent of all the intercepted quantities of "ecstasy" in the United States in 2017. By contrast, trafficking of "ecstasy" from the United States to markets abroad was mainly by sea (94 per cent).

Demand for amphetamine-type stimulants

Use of amphetamines

It is estimated that in 2017, roughly 0.6 per cent of the global population aged 15–64, or 29 million people, had used amphetamines (amphetamine and methamphetamine) in the past year. The highest past-year prevalence of use of amphetamines worldwide was estimated to be in North America (2.1 per cent), followed by Australia and New Zealand (1.3 per cent). The prevalence of use of amphetamines, especially methamphetamine, is also reported to be high in East and South-East Asia; however, owing to insufficient data in the subregion, it is difficult to estimate the actual extent of their use. Qualitative information in many countries in the subregion, however, continues to point to an increase in the use of amphetamines. From the limited quantitative information available, it can be estimated that in 2017 between 0.2 and 1.2 per cent of the population aged 15–64, comprising more than one third of the estimated number of global users, had used amphetamines in the past year in East and South-East Asia. Among the amphetamines, there are indications of an increase in the use of methamphetamine, in particular in East and South-East Asia (mainly crystalline methamphetamine) and North America.

Pharmaceutical stimulants are the main amphetamines misused in South and Central America

The overall past-year prevalence of use of amphetamines in countries in South and Central America remains low, at around 0.2 per cent of the population aged 15–64 in 2017. In many countries in the two subregions, among those that reported recent survey data, the non-medical use of pharmaceutical stimulants is the most prevalent issue related to ATS use. "Slimming pills" such as sibutramide hydrochloride monohydrate (e.g. Aderan®, Ipomex®) and phentermine (e.g. Duromine®, Suprenza®) along with methylphenidate and amphetamine are reported to be the most commonly misused pharmaceutical stimulants.[184, 185] The non-medical use of "slimming pills is reported as being higher among women than men.[186]

Recent information on the extent of the use of amphetamines in any of the countries in the Caribbean is not available. However, data from a secondary

182 E/INCB/2018/4.

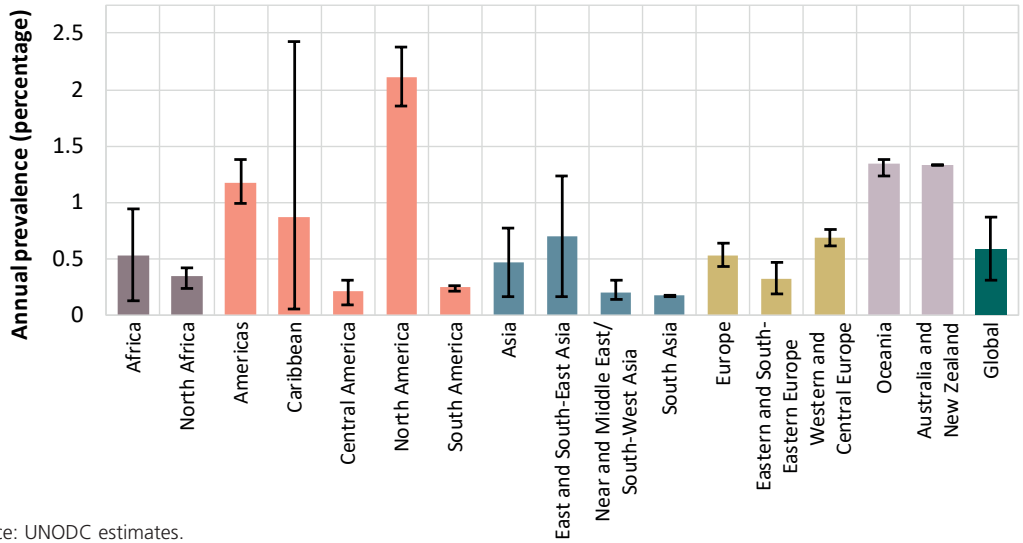
183 Global Drug Survey 2018 and previous years.

184 Argentina, Secretaría de Políticas Integrales sobre Drogas de la Nación Argentina (SEDRONAR), *Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas: Argentina 2017–Informe de Resultados No.1: Magnitud del Consumo de Sustancias a Nivel Nacional* (Buenos Aires, 2017).

185 El Salvador, Dirección Ejecutiva de la Comisión Nacional Antidrogas, "Estudio Nacional Sobre Consumo de Drogas en Población General de El Salvador 2014 (Octubre 2014).

186 SEDRONAR, *Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas*.

FIG. 49 Use of amphetamines, by region, 2017



Source: UNODC estimates.

school survey conducted in 2016 in 13 countries in the Caribbean show that the average past-year prevalence of the non-medical use of stimulants among students aged 15–17 was 2.2 per cent – ranging between 3.7 per cent in the Dominica to 1.2 per cent in Guyana.[187] On average, 1.5 per cent of surveyed students aged 15–17 reported past-month non-medical use of pharmaceutical stimulants.

Increase in methamphetamine use in the United States

The annual prevalence of use of amphetamines in North America in 2017 was estimated at 2.1 per cent, which is mainly a reflection of the use of amphetamines in the United States: the annual prevalence in Canada and Mexico was estimated at around 0.2 per cent of the population aged 15–64. In the United States, the non-medical use of pharmaceutical stimulants (mostly amphetamine and methylphenidate) is more prevalent than the use of methamphetamine, with around 2.1 per cent of the population (5.8 million people) aged 12 and older reporting past-year use of pharmaceutical stimulants for non-medical purposes in 2017, while 0.6 per cent (1.6 million people) used methamphetamine.[188, 189]

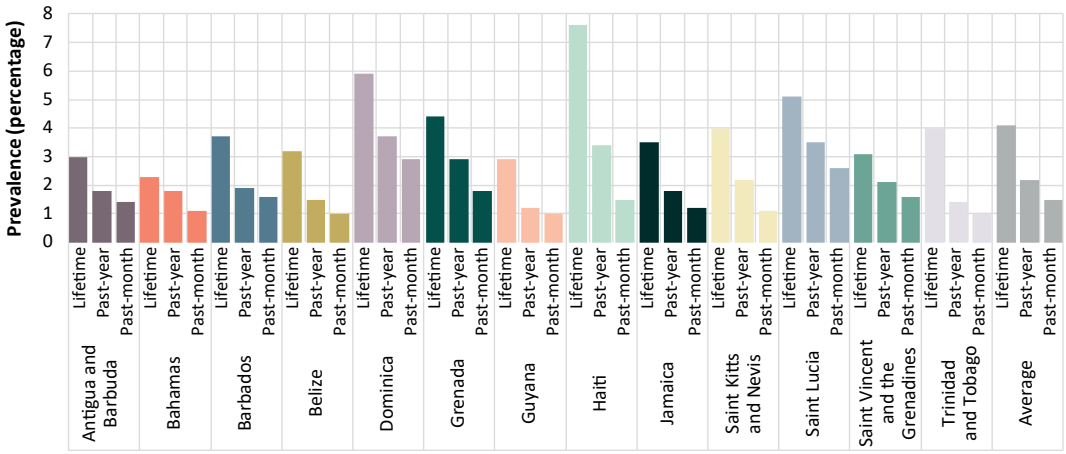
In the United States, the non-medical use of pharmaceutical stimulants in 2017 was more prevalent among people aged 18–25 than among other age groups. Among those aged 18–25, the non-medical use of pharmaceutical stimulants was comparatively higher among men, white people with a college degree and those in part-time employment. By contrast, the use of methamphetamine was comparatively higher among people aged 18–25 (nearly the same level for men and women); within this age group it was higher among those who had not completed high school and those who were unemployed. The use of methamphetamine was also more prevalent in less urbanized and rural counties than in metropolitan areas.

187 Inter-American Drug Abuse Control Commission, *A Report on Students' Drug Use in 13 Caribbean Countries: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and* Tobag, document OEA/Ser.L/XIV.6.46"

188 Prior to 2015, the household survey included questions on methamphetamine use in the context of questions on the misuse of prescription stimulants as methamphetamine is legally available by prescription in the United States (Desoxyn®). Currently, most methamphetamine used in the United States is produced and distributed illicitly rather than through the pharmaceutical industry. In 2015, a new question was added in the survey to capture the illicit use of methamphetamine in the United States and therefore the trend in methamphetamine use from 2015 onwards is not comparable with previous years.

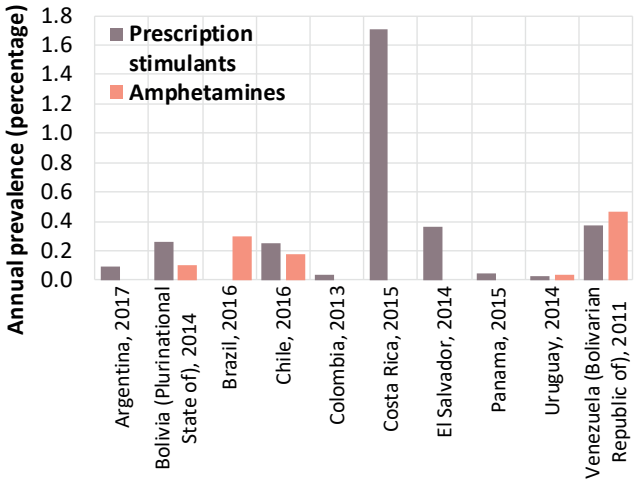
189 United States, SAMHSA, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

FIG. 50 Non-medical use of stimulants among secondary school students in 13 countries in the Caribbean, 2016



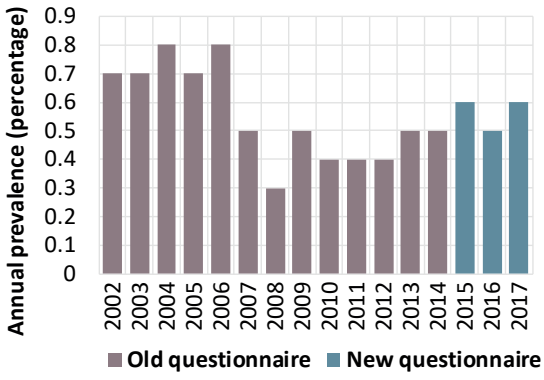
Source: Inter-American Drug Abuse Control Commission A Report on Students' Drug use in 13 Caribbean Countries: 2016.

FIG. 51 Use of amphetamines and non-medical use of prescription stimulants in Central and South America



Source: UNODC, responses to the annual report questionnaire.

FIG. 52 Methamphetamine use among the population 12 and older in the United States, 2002–2017

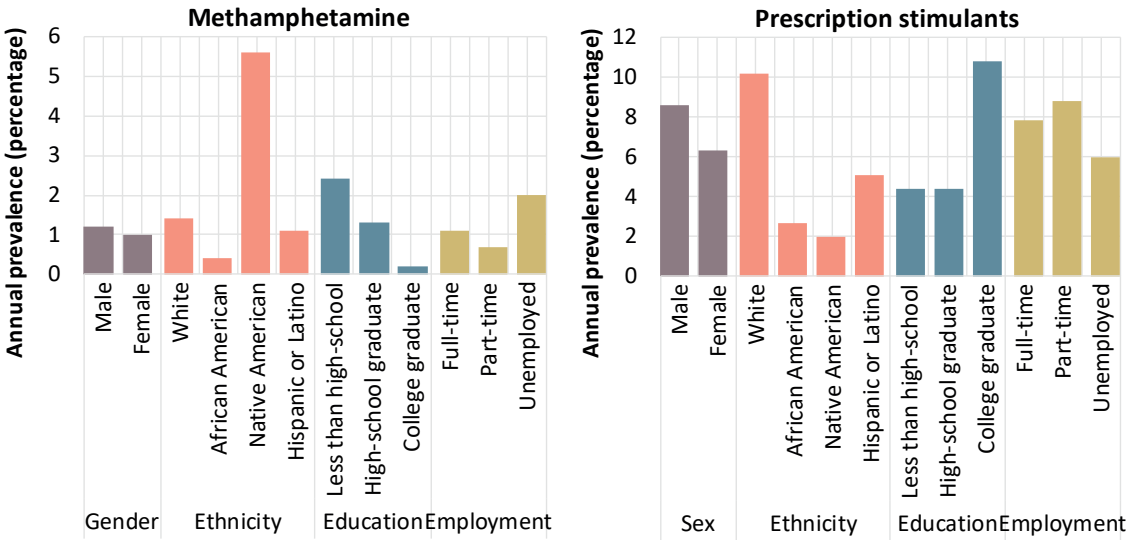


Source: SAMHSA, National Survey on Drug Use and Health (different years).

Note: Owing to changes in the questionnaire in 2015, the trends between 2002 and 2014 and 2015 and 2017 are not comparable.

While the use of methamphetamine is reported among fewer individuals than the non-medical use of pharmaceutical stimulants in the United States, the use of methamphetamine appears to be more regular and potentially more harmful. In 2017, roughly 0.3 per cent of the population aged 18 and older reported using methamphetamine in the past 30 days; 40 per cent of them were daily or near-daily users. By contrast, of the 0.7 per cent who had used prescription stimulants non-medically in the past month, only 7 per cent were daily or near-daily users; most had used them for either 1 or 2 days (43 per cent) or 3 to 5 days (32 per cent) in the past month. Among people aged 18 and older who were diagnosed with substance use disorders, the prevalence of past-year use of methamphetamine was 0.4 per cent; for non-medical use of pharmaceutical stimulants, the prevalence was 0.2 per cent.

FIG. 53 Methamphetamine use and non-medical use of prescription stimulants among young people aged 18–25 in the United States by sociodemographic characteristics, 2017



Source: SAMHSA, "2017 National Survey on Drug Use and Health: Detailed Tables", (Rockville, Maryland 2018).

Indicators of an increase in methamphetamine use and health harms across the United States

National survey data in the United States suggest that past-year methamphetamine use remained stable overall among the general population over the period 2015–2017.[190] This survey excludes institutionalized and homeless populations, however, both of which may be affected by disproportionately higher rates of drug use. Other indicators actually point to an increase in methamphetamine use in the United States. In a context where the availability of methamphetamine seems to be increasing, with reported purity being high (over 90 per cent) and the price per pure gram having decreased 14 per cent) over the period 2012–2017,[191] the proportion of the workforce testing positive for methamphetamine has been increasing steadily since 2012 and reached 33 per cent in 2017.[192] The number of treatment admissions for primary methamphetamine use disorders also increased by 45 per cent over the period 2012–2016, from 6 per cent of total treatment admissions for drug use disorders in 2012 to 10 per cent in 2016.[193]

Increase in methamphetamine use among people with opioid use disorders in the United States

A nationwide study among people entering treatment in the United States shows that over the period 2011–2017 there was a considerable increase in the proportion of people with opioid use disorders entering treatment who also reported the use of methamphetamine, both concomitant and sequential.[194] This increase was significantly higher in the western part of the United States than in the rest of the country and among people living in urban and

190 Prior to 2015, the household survey included questions on methamphetamine use in the context of questions on the misuse of prescription stimulants; from 2015, a separate question was added to the survey to capture the use of illicit methamphetamine among the general population. Therefore, it is difficult to construct a time trend of the use of methamphetamine that goes back beyond 2015.

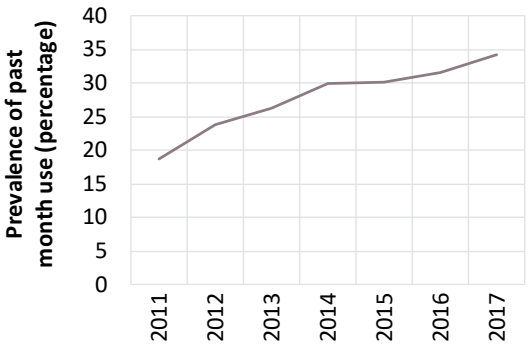
191 United States, Department of Justice, Drug Enforcement Administration, *2018 National Drug Threat Assessment* (October 2018).

192 Ibid.

193 SAMHSA, Treatment Episode Data Set (TEDS). Based on data received through March 2018.

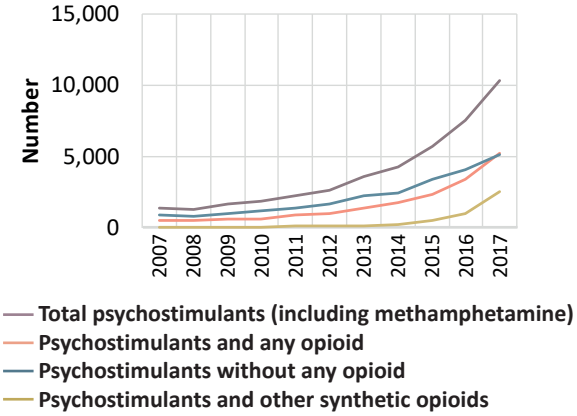
194 Matthew S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drug and Alcohol Dependence,* vol. 193 (December 2018), pp. 14–20.

FIG. 54 Methamphetamine use among people in the United States with opioid use disorders who were entering treatment, 2011–2017



Source: Matthew S. Ellis, Zachary A. Kasper and Theodore J. Cicero, "Twin epidemics: the surging rise of methamphetamine use in chronic opioid users", *Drug and Alcohol Dependence,* vol. 193 (December 2018).

FIG. 55 Overdose deaths attributed to psychostimulants with and without opioids, 1999–2017



Source: United States, Centers for Disease Control and Prevention, National Center on Health Statistics, Wide-ranging Online Data for Epidemiologic Research (CDC Wonder).

Note: The category "psychostimulants" referes to psychostimulants with abuse potential and mainly includes methamphetamine; "any opioids" inlcudes all prescription opioids and heroin; "other synthetic opioids" is dominated by fentanyl.

suburban settings than those living in rural settings. It was also more marked among women than men. While easy access to the drug and its low price were suggested as the main reasons for the concomitant use of methamphetamine, it seems that opioid users were also expressly seeking the high that concomitant use of methamphetamine and opioids provides. However, the study findings also suggest that the majority of people with opioid use disorders who were using methamphetamine were using it sequentially as a means of balancing the highs and lows of these two dichotomous drugs.[195]

The number of overdose deaths attributed to the use of psychostimulants[196] (including methamphetamine) increased in the United States over the period 2007–2017. In recent years, this increase has been particularly marked in cases involving both psychostimulants and synthetic opioids (72-fold increase) and those involving both psychostimulants and any opioid (11-fold increase). The rate of methamphetamine-related deaths per 100,000 population was higher in the eastern part of the United States than in the rest of the country.

Overall stable trends in use of amphetamines reported in surveys in Western and Central Europe, while wastewater analysis shows an increase in consumption

The past-year annual prevalence of use of amphetamines in Europe in 2017 is estimated at 0.5 per cent of the population, or around 2.9 million people. Among those aged 15–64, the extent of use of amphetamines in Western and Central Europe was 0.7 per cent of the population, or 2.2 million people; in Eastern and South-Eastern Europe, the figure was 0.3 per cent, or 700,000 people. In Western and Central Europe, amphetamine is more commonly used than methamphetamine, the use of which has mainly been reported in Czechia, although increasing use of the drug is now also being reported in other countries, such as Cyprus, Germany (the eastern part), Slovakia and Spain, as well as parts of northern Europe.[197] With an estimated past-year

195 Ibid.

196 Psychostimulants with abuse potential include methamphetamine, amphetamine, methylphenidate and MDMA. Between 2010 and 2015 approximately 85–90 per cent of the drug poisoning deaths that were reported under psychostimulants mentioned methamphetamine in the death certificate.

197 EMCCDA, *European Drug Report 2018: Trends and Devel-*

FIG. 56 Trends in the use of amphetamines in countries in Western and Central Europe that reported recent data

Source: UNODC, responses to the annual report questionnaire.

prevalence of 1.0 per cent, the use of amphetamines is higher among young adults aged 15–34 than other age groups.[198] In some countries in Western and Central Europe, trends in use of amphetamines are either stable or declining, especially in Czechia, Spain and the United Kingdom, whereas the latest survey data from Denmark, Germany and Norway show an increase in use of amphetamines.

European waste-water analysis confirms the patterns of use found in household survey data, which point to an overall higher prevalence of use of amphetamine than of methamphetamine, and to methamphetamine use dominating in just a few countries. Wastewater analyses were conducted in 80 cities in 21 countries across Europe, with a total of 84 sites covering a combined population of 32 million people. Those analyses suggest that the quantity of amphetamine consumed per capita over the period 2011–2018 was double that of methamphetamine (2.6 times larger in 2018). In most cities in Europe, quantities of amphetamine consumed dominated in 2018 (or latest year available), in a quarter of the sites. However, in Czechia, Germany (in regions bordering Czechia), northern Italy (Milan), Lithuania, Slovakia, Spain (Madrid and Barcelona), some cities in Switzerland (Zurich, Basel, Geneva) and Turkey (Istanbul), the level of methamphetamine found in wastewater was higher than the level of amphetamine.[199]

Quantities of amphetamine and methamphetamine found in wastewater over the period 2011–2018 increased by at least a third overall in the participating cities, albeit with some fluctuations. The upward trend was more marked in the case of amphetamine. However, since a peak in 2016, the quantities of methamphetamine found in wastewater have

opments (Luxembourg, Publications Office of the European Union, 2018).

198 Ibid.

199 UNODC analysis based on the data from Sewage Analysis CORe Group–Europe (SCORE) 2018.

decreased, in particular in cities in Czechia and Slovakia.

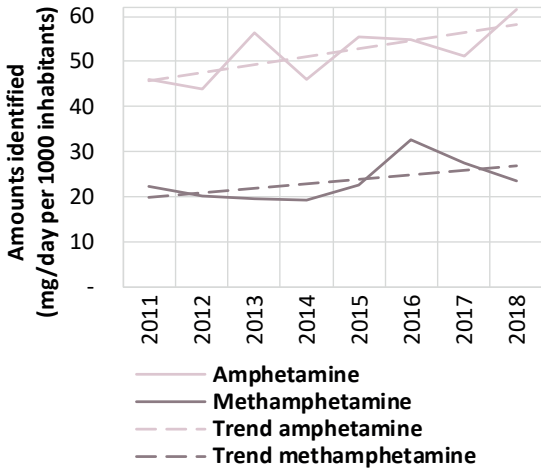
Increasing use of crystalline methamphetamine in East and South-East Asia

A lack of sufficient quality data based on household surveys in Asia makes it difficult to estimate with precision the prevalence of drug use in the region. In Asia in 2017, based on the limited data available, it is estimated that 0.2 to 0.8 per cent of the population aged 15–64 (5 million to 23 million people) used amphetamines in the past year; roughly 80 per cent of those individuals reside in East and South-East Asia. Recent household surveys conducted in that subregion show that the number of past-year methamphetamine users was roughly 1 million (0.5 per cent of the population aged 10–59) in Indonesia in 2017; 860,000 (1.1 per cent of the population aged 10–64) in the Philippines in 2016; and 440,000 (0.9 per cent of the population aged 12–65) in Thailand[200] in 2016.

In Thailand, where trend data on methamphetamine use across multiple years are available, there has been an increase in the use of methamphetamine, both in crystalline and tablet form, since 2008. However, the number of people in treatment for methamphetamine use disorders, who account for more than three quarters of people in treatment for drug use disorders in that country, has declined from its peak in 2013. The number of people reporting the use of crystalline methamphetamine in Thailand – 42,000 past-year users or 0.08 per cent of the population in 2016 – remains much smaller than the number using methamphetamine in tablet form.[201]

In other countries in East and South-East Asia, drug treatment admissions are the only indicator, albeit an indirect one, that can be used to provide information on patterns of drug use. With the exception of Viet Nam, all countries in the subregion reported methamphetamine as the primary drug of concern in 2018 (or the latest available year). The majority

FIG. 57 Quantities of amphetamines found in wastewater, in 80 cities in Europe, 2011–2018



Source: UNODC calculations based on wastewater data provided by SCORE Europe.

** Note: Average quantity of benzoylecgonine found in wastewater in 80 cities (82 sites) weighted by the population of the sites: assumption of gradual increase/decrease in years in which no analysis took place in a city and no change since latest available data.*

of people seeking drug treatment in Brunei Darussalam, Cambodia, Malaysia, the Philippines and Singapore were users of crystalline methamphetamine; in the Lao People's Democratic Republic and Thailand, they were primarily users of methamphetamine tablets.[202] Several countries in the subregion, including Brunei Darussalam, Cambodia, Indonesia, Malaysia and Singapore, reported an upward trend in the number of methamphetamine users brought into formal contact with authorities for drug use, which may reflect an increase in the number of users and/or an increase in law enforcement activities. An increase in the quantities of methamphetamine seized and a decrease in the retail price of the drug in the subregion suggest that the supply of methamphetamine – and of crystalline methamphetamine, in particular – has expanded, with a possible repercussion being an increase in the number of people using methamphetamine.[203]

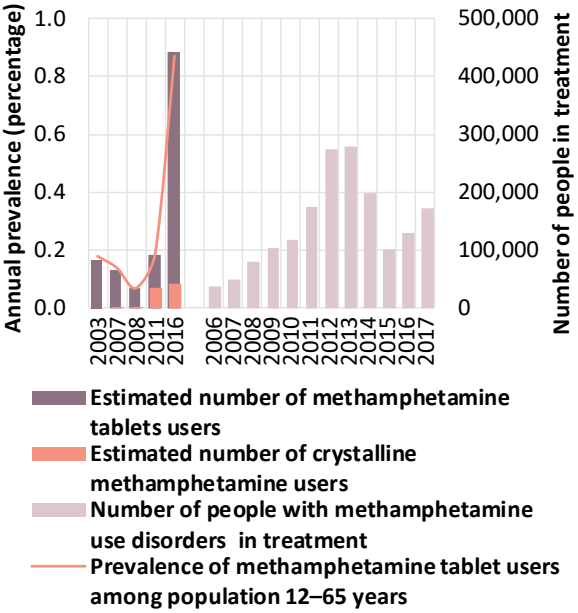
200 Sourced from data from the Administrative Committee of Substance Abuse Academic Network of Thailand as reported in Darika Saingam, "Substance abuse policy in Thailand: current challenges and future strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018), pp 1–10.

201 Ibid.

202 Manop Kanato and others, eds., *ASEAN Drug Monitoring Report 2017* (Bangkok, ASEAN Narcotics Cooperation Centre, August 2018).

203 UNODC, *Synthetic Drugs in East and South-East Asia: Trends and Patterns of Amphetamine-type Stimulants and New*

FIG. 58 Methamphetamine use and people in treatment for methamphetamine use disorders, Thailand, 2003–2017



Source: based on data reported in Darika Saingam, "Substance Abuse Policy in Thailand: Current Challenges and Future Strategies", *Journal of Drug and Alcohol Research*, vol. 7 (2018); the data on people in treatment for methamphetamine use disorders is from DAINAP.

Signs of stable to declining trends in the use of methamphetamine in China

Data on registered drug users suggest that after years of sharp increases, methamphetamine use is stabilizing in China. Users of synthetic drugs (mainly methamphetamine) accounted for 60 per cent of the 2.5 million drug users officially registered by the authorities in 2017. This proportion has been increasing since the early 2000s, when roughly 75 per cent of registered drug users were users of opioids. The number of synthetic drug users registered in China increased between 2008 and 2014 and has remained stable since then.

A study[204] was conducted on wastewater analysis in Dalian, China – a port city in the northeast that is considered as a typical city in that country by the authors of the study. According to the study, the concentration of methamphetamine in the wastewater, the estimated quantity consumed by the population per capita and the estimated prevalence rate all peaked in 2016. As of 2018, those measures had declined considerably, to levels that were much lower than those reported in 2015.[205, 206]

Low levels of the use of amphetamines in other parts of Asia and in Africa

The use of amphetamines in other subregions in Asia is lower than in East and South-East Asia. In South-West Asia, for example, the past-year prevalence of use of amphetamines in the Islamic Republic of Iran is estimated at roughly 0.4 per cent of the adult population aged 15–64 in 2015. The use of methamphetamine in the Islamic Republic of Iran was not common prior to 2005, but it has since become common among people who use drugs and, in particular, among people with opioid use disorders who are in long-term agonist treatment.[207, 208] Similarly, in South Asia, less than 0.2 per cent of the population aged 10–75 in India, or roughly 1.9 million people, reported past-year use of ATS in 2018.[209]

There is insufficient data on the use of amphetamines in Africa. In, 2017, however, past-year use was estimated at between 0.1 and 1.0 per cent of the population aged 15–64 (between 900,000 and 6.6 million people). In Nigeria in 2018, past-year use in the same age group was estimated at 0.2 per

Psychoactive Substances–A Report from the Global SMART Programme (March 2019).

204 Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence,* vol. 194 (January 2019), pp. 302–309.

205 Ibid.

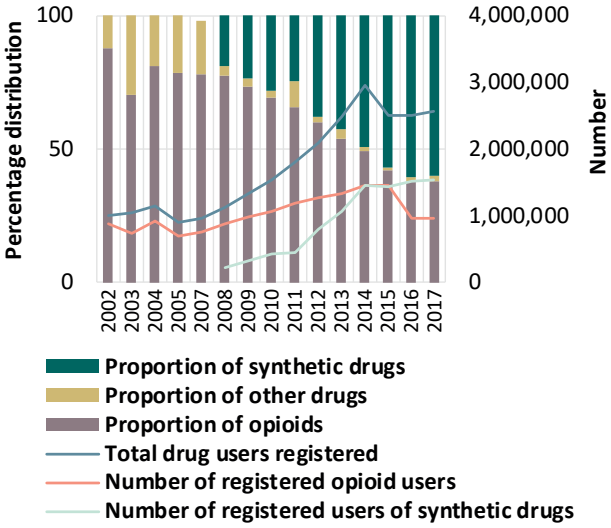
206 Based on the information on human metabolic parameters of methamphetamine, information of daily flow rate and the population served by wastewater treatment plants the authors used the concentration levels of methamphetamine in the wastewater to back-calculate real-time consumption of methamphetamine and the prevalence in the city's municipalities.

207 Atireza Bananej and others, "No evidence of subgroups found in amphetamine consumers in Iran", *Neuropsychiatrie*, vol. 32 No. 2; (March 2018) pp 69–74.

208 Alireza Noroozi, Mohsen Malekinejad and Afarin Rahimi-Movaghar, "Factors influencing transition to shisheh (methamphetamine) among young people who use drugs in Tehran: a qualitative study", *Journal of Psychoactive Drugs* vol. 50, No. 3 (January 2018), pp. 214–223.

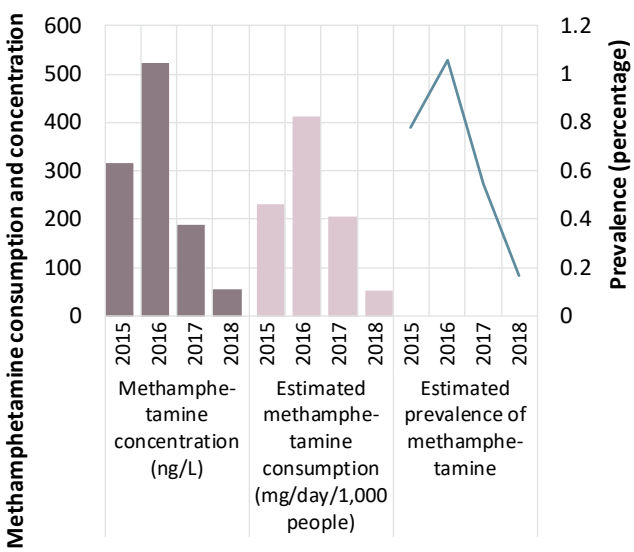
209 Atul Ambekar and others, *Magnitude of Substance Use in India 2019* (New Delhi, Ministry of Social Justice and Empowerment, 2019).

FIG. 59 Registered drug users, by drug type in China, 2002–2017



Source: China, National Narcotics Control Committee, *Annual Report on Drug Control in China* (different years).

FIG. 60 Methamphetamine use in Dalian, China, 2015–2018



Source: Zhe Wang and others, "Reduction in methamphetamine consumption trends from 2015 to 2018 detected by wastewater-based epidemiology in Dalian, China", *Drug and Alcohol Dependence*, vol. 194 (January 2019).

cent, or an estimated 240,000 people. Among that group, the non-medical use of pharmaceutical amphetamine was more common than the use of methamphetamine.[210]

Mixed trends in the prevalence of methamphetamine use in Oceania

In Australia, the past-year prevalence of use of amphetamines in 2016 was estimated at 1.4 per cent of those aged 14 and older, or 280,000 past-year users.[211] More than half of them (57 per cent) reported crystalline methamphetamine as their main drug of use, while others reported methamphetamine powder (20 per cent) and the non-medical use of prescription amphetamines (11 per cent). The past-year prevalence of the use of amphetamines (2.8 per cent) was highest among young adults aged 20–29.

The past-year use of methamphetamine in Australia has declined considerably since 2001. That decline was more marked over the period 2013–2016 and was driven by a decrease during that period in the past-year prevalence among young adults aged 20–29 (from 5.7 per cent to 2.8 per cent). The decline in overall use of amphetamines masks the stabilization of the past-year use of crystalline methamphetamine during the same period, while the frequency of crystalline methamphetamine use increased, with a higher proportion of users reporting weekly use of the drug in 2016 than in 2013.

Crystalline methamphetamine remains the main substance most often injected in the past month among people who regularly inject drugs (44 per cent) in Australia,[212] although most of those individuals reported heroin as their drug of choice.[213] In addition, the frequency of crystalline methamphetamine use has increased among people who regularly inject drugs; they reported a median of 46 days of use, or twice weekly, in 2018. The

210 UNODC, *Drug use in Nigeria 2018* (Vienna, 2019).

211 Australian Institute of Health and Welfare, *National Drug Strategy Household Survey 2016: Detailed findings*, Drug Statistics series No. 31, (Canberra, 2017)

212 Crystalline methamphetamine is considered as 80 per cent pure, whereas powder (speed) is typically around 10–20 per cent pure.

213 Amy Peacock and others, *Australian Drug Trends 2018: Key Findings from the National Illicit Drug Reporting System (IDRS) Interviews* (Sydney, University of New South Wales, National Drug and Alcohol Research Centre, 2018).

expansion of the crystalline methamphetamine market in Australia is confirmed by the higher perceived purity of the drug and its decreasing price, which reached 210 Australian dollars per gram in 2018, the price observed a decade earlier.[214]

After a fourfold increase over the period 2009–2015 in the quantity of methamphetamine found in wastewater in urban areas in Australia, subsequent analyses have found more stable levels of methamphetamine in wastewater in Queensland, Victoria (Melbourne) and New South Wales, and decreasing levels in Western Australia (Perth). Only Adelaide in South Australia continued to experience an upward trend in the quantity of methamphetamine found in wastewater, which carried on until to the beginning of 2018 before the start of a decline in the second quarter of that year.[215]

In New Zealand, the past-year prevalence of use of amphetamines in 2017 was estimated at roughly 1 per cent of the population aged 15–64, a figure that remained the same over the period 2014–2017; however, based on qualitative information reported by Member States, the use of methamphetamine in New Zealand is considered to have increased in recent years. According to the wastewater analysis carried out in Christchurch and Auckland's North Shore, the weekly quantity of methamphetamine consumed in New Zealand is estimated to have increased by 18 per cent during 2017.

"Ecstasy" use

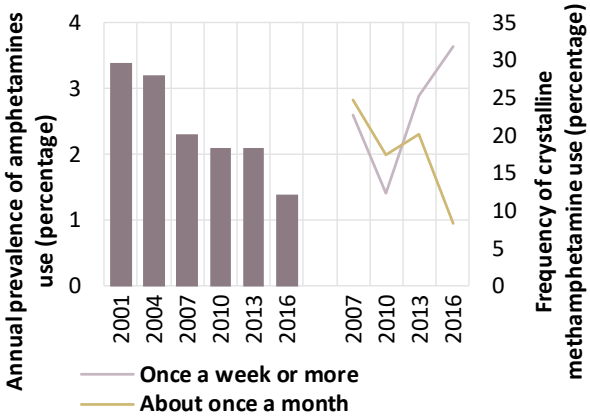
"Ecstasy" is a term that was originally used to describe tablets containing MDMA. However, over the past decade an increasing number of substances that are marketed as "ecstasy" have appeared on the market.[216] In the past few years, essentially three types of "ecstasy" products have been available on different markets, although not necessarily in all markets at the same time. Those products are tablets containing little or no MDMA, which may contain

214 Ibid.

215 Australian Criminal Intelligence Commission, the University of Queensland and University of South Australia, National Wastewater Drug Monitoring Program, Report No. 6, December 2018.

216 See also *World Drug Report 2017: Market Analysis of Synthetic Drugs–Amphetamine-type Stimulants, New Psychoactive Substances* (United Nations publication, Sales No. E.17.XI.10).

FIG. 61 Use of amphetamines and frequency of crystalline methamphetamine use in Australia among the population aged 14 and older, 2001–2016



Source: Australian Institute of Health and Welfare, National Drug Strategy Household Survey 2016: *Detailed Findings*, Drug Statistics Series No. 31 (Canberra, 2017).

any of its analogues (including MDA, MDEA, PMA or PMMA) or NPS (including 2CB or piperazines); tablets with a high MDMA content; and "ecstasy" sold in powder and crystal forms.[217, 218, 219]

The use of "ecstasy" is generally observed among young people in high-income countries and among affluent youth in urban centres in middle- and low-income countries.[220] Its use is mainly associated with recreational nightlife settings, including mainstream clubs and parties, having started in settings such as clubs, "raves" and festivals, where electronic dance music was played in the 1990s and early 2000s.[221] Binge use of "ecstasy" and polydrug use among young "ecstasy" users is a common phenomenon:[222]

217 Ibid.

218 EMCDDA, Recent changes in Europe's MDMA/ *Ecstasy Market: Results from an EMCDDA Trendspotter Study*, EMCDDA Rapid Communication Series (Luxembourg, Publications Office of the European Union, 2016)

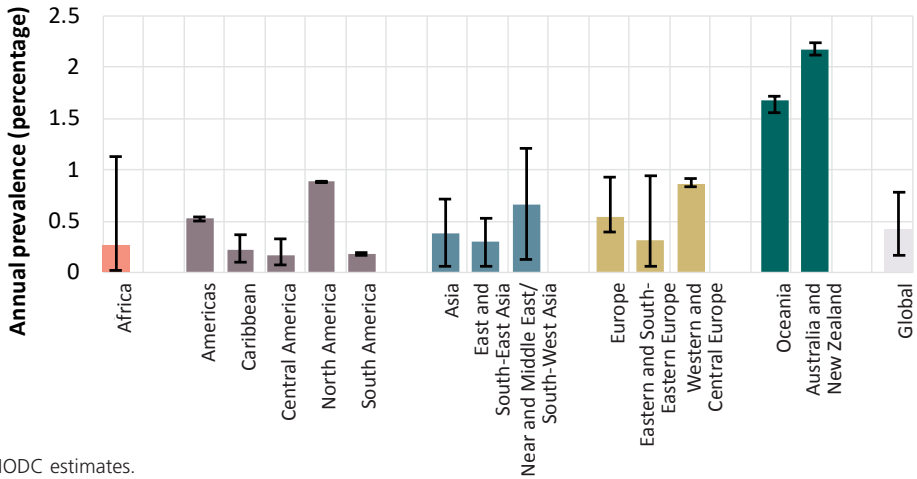
219 Thierry Favrod-Coune and Barbara Broers, "The Health Effect of Psychostimulants: A Literature Review", *Pharmaceuticals,* vol. 3, No. 7 (July 2010), pp. 2333–2361.

220 *World Drug Report 2018*, Drugs and Age – *Drugs and Associated Issues Among Young People and Older People* (United Nations publication, Sales No. E.18.XI.9 (Booklet 4)).

221 EMCDDA, *Recent changes in Europe's MDMA/ecstasy market*.

222 Claire E Sterk, Katherine P. Theall and Kirk W. Elifson, "Young adult ecstasy use patterns: quantities and combinations", *Journal of Drug Issues*, vol. 36, No. 1 (January 2006), pp. 201–228.

FIG. 62 "Ecstasy" use, by region, 2017



Source: UNODC estimates.

in addition to the use of tobacco and alcohol, the use of cannabis, methamphetamine, cocaine, GHB and ketamine is commonly reported among young "ecstasy" users.[223] Most polydrug use among people who use "ecstasy" and/or other drugs in club settings is reported in the context of experiencing the synergistic effect of the combined drugs or moderating the effects of – or "easing the come down" from a "high" resulting from the use of – other psychostimulants.[224]

Reflecting the level of uncertainty in the estimates of "ecstasy" use in some subregions, in 2017 it was estimated that 0.2 to 0.8 per cent of the global population aged 15– 64, or between 8.4 million and 40 million people, had used "ecstasy" in the past year. Prevalence rates of "ecstasy" use that are higher than the global average were reported in Australia and New Zealand (2.2 per cent), North America (0.9 per cent) and Western and Central Europe (0.9 per cent).

223 Christian Grov, Brian C Kelly and Jeffrey T. Parsons, "Polydrug use among club-going young adults recruited through time-space sampling", *Substance Use & Misuse*, vol. 44, No. 6 (July 2009) pp. 848–864.

224 Miriam W Boeri and others, "Poly-Drug Use among Ecstasy Users: Separate, Synergistic, and Indiscriminate Patterns", *Journal of Drug Issues*, vol. 38, No. 2 (April 2008), pp. 517–541.

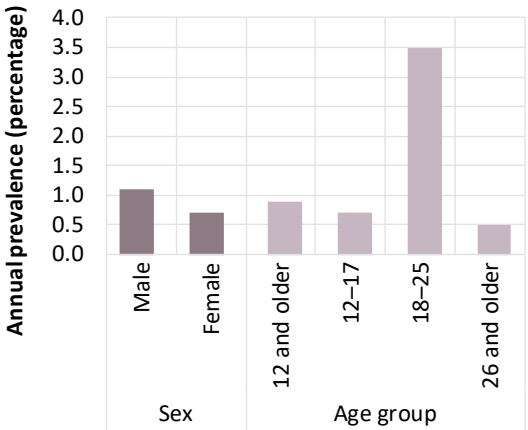
Low levels of "ecstasy" use in both Central and South America, but some countries with new data show an increase

The use of "ecstasy" in South and Central America remains lower than the global average, with an estimated annual prevalence of 0.2 per cent, equivalent to roughly 500,000 past-year "ecstasy" users in South America and 100,000 in Central America in 2017. In some of the countries in those subregions where recent estimates and trend data are available, the annual prevalence of "ecstasy" use increased in the past decade. For example, in Costa Rica, the prevalence rose from 0.2 per cent in 2010 to 0.5 per cent in 2015. It also increased in Argentina, from 0.2 per cent in 2008 to 0.3 per cent in 2017. In Chile, however, "ecstasy" use has remained stable at around 0.1 per cent of the adult population over the past decade.

Overall stable trends in "ecstasy" use in North America

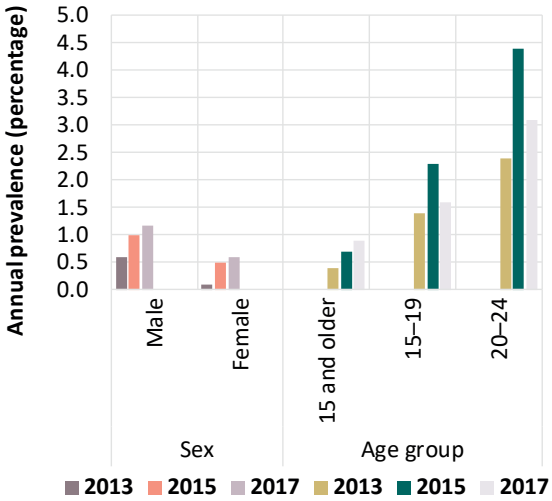
In North America, it is estimated that 0.9 per cent of the population aged 15–64 were past-year "ecstasy" users in 2017. In the United States, "ecstasy" use remained stable over the period 2015–2017, with 0.9 per cent of the population aged 12 and older, or around 2.5 million people, estimated to be past-year users of "ecstasy" in 2017. The annual prevalence of "ecstasy" use was reportedly highest

FIG. 63 "Ecstasy" use in the United States, by sex and by age group, 2017



Source: SAMHSA, *2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018)

FIG. 64 "Ecstasy use in Canada, by sex and by age group, 2013-2017



Source: Canadian Tobacco, Alcohol and Drugs Survey, 2013, 2015 and 2017.

among young adults aged 18–25, who accounted for 400,000 past-year users.

In Canada, by contrast, "ecstasy" use showed an increasing trend over the period 2015–2017, with over 200,000 people aged 15 and older (0.9 per cent) estimated to be past-year "ecstasy" users in 2017. As in other countries, the highest past-year prevalence was reported among young adults (aged 20–24). The increase in past-year "ecstasy" use over the period 2013–2017 was more marked among women than men and among young adults.

Increasing trends in "ecstasy" use Western and Central Europe

In Europe, roughly 0.5 per cent of the population aged 15–64 is estimated to have used "ecstasy" over the past year in 2017, with the rate in Western and Central Europe (0.9 per cent, or 2.7 million pas year users) being triple that in Eastern and South-Eastern Europe (0.3 per cent, or 1.3 million past-year users).

In Western and Central Europe, the countries that reported new data – Denmark, Norway and the United Kingdom – registered an increase in "ecstasy" use in 2017. In the United Kingdom (specifically, England and Wales), the main increase in "ecstasy" use, although fluctuating in the preceding years, was reported among those aged 16–24, with an increase from 3.3 per cent in 2011–2012 to over 5 per cent in 2017–2018. By contrast, there has been a long-term downwards trend in "ecstasy" use in Spain since 2009 and in Portugal since 2007.

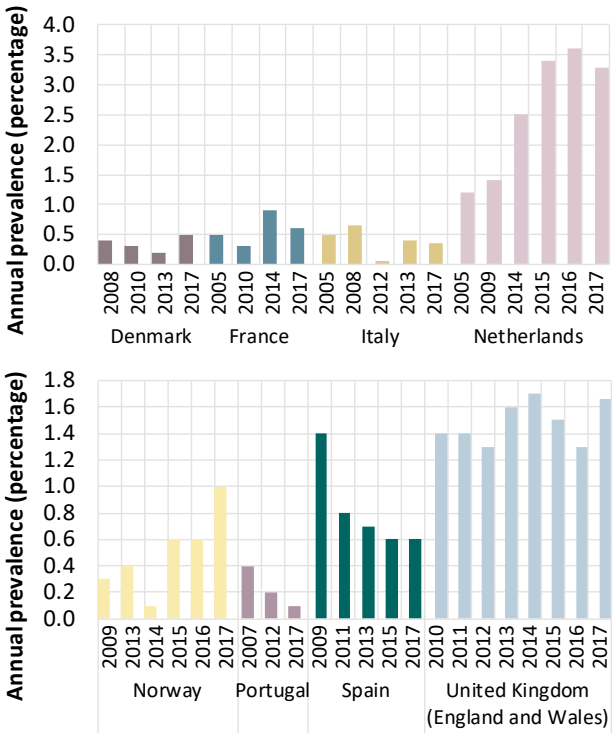
Moreover, analyses of wastewater across Europe shows a clear upward trend in "ecstasy" content over the period 2011–2018.[225] The highest concentrations of "ecstasy" found in wastewater in 2018 (or latest available year) were identified in a number of cities in the Netherlands (Amsterdam, Eindhoven and Utrecht), Belgium (Antwerp) and Switzerland (Zurich). The findings of the analyses suggest that the quantity of "ecstasy" consumed increased by at least 55 per cent over the period 2011–2018 in the participating cities.

Diverging trends in "ecstasy" use in Australia and New Zealand

"Ecstasy" use in Australia has been declining since 2004, when the past-year prevalence was estimated at 3.4 per cent in the population aged 14 and older. In 2016, it was still relatively high at 2.2 per cent; however, nearly half of those past-year users reported using "ecstasy" once or twice a year, while a third reported using it every few months. This is

225 Sewage Analysis CORe Group Europe (SCORE).

FIG. 65 Trends in "ecstasy" use in countries in Western and Central Europe that reported new data in 2017



Source UNODC, responses to annual report questionnaire.

confirmed by wastewater analysis, which has shown low levels of per-capita consumption of "ecstasy" across the country.[226] Nonetheless, the "ecstasy" market in Australia continued to diversify in 2017; there has been a significant increase in the use of "ecstasy" in forms other than tablets, such as crystals, capsules and powders.[227]

The past-year prevalence of "ecstasy" use in New Zealand in 2013 was estimated at 2 per cent in 2013. Although new prevalence estimates are not available for New Zealand, wastewater analysis points to a 350 per cent increase in the quantity of MDMA consumed in the country in 2017. MDMA consumption in Christchurch surpassed that of methamphetamine in December 2017. Together with an increase in the quantities of MDMA seized over the period 2015–2017, this resulted in qualitative assessments suggesting that the demand for MDMA and "ecstasy"-type substances has been increasing rapidly in New Zealand.

226 Australian Criminal Intelligence Commission, the University of Queensland and University of South Australia, National Wastewater Drug Monitoring Program, Report 6, December 2018.

227 J. Uporova and others, *Australian Trends in Ecstasy and Related Drug Markets* 2017: Findings from the Ecstasy and Related Drugs Reporting System (EDRS), Australian Drug Trends Series No. 190 (Sydney, University of New South Wales, National Drug and Alcohol Research Centre, 2018).

STIMULANT NEW PSYCHOACTIVE SUBSTANCES

Stimulant NPS can be considered to be substances with stimulant properties that are not controlled by the Single Convention on Narcotic Drugs of 1961 or the Convention on Psychotropic Substances of 1971, but which may pose a public health threat similar to the substances that are under international control. Stimulant NPS include substances that have been designed to mimic established substances with stimulant properties that are under international control, such as amphetamine, methamphetamine, cathinone and methcathinone.

Whether or not a substance is considered to be a stimulant NPS is complicated by the fact that some of these substances have several pharmacological properties, including stimulant, hallucinogenic and analgesic. Moreover, structural similarities between the various molecules in a substance group do not necessarily imply pharmacological similarities. Some groups of NPS, such as cathinones, can be considered to be stimulants regardless of the approach used to classify them. For other substances, however, the characterization of the stimulant effect is not straightforward. Phenethylamines, for example, tend to have stimulant properties, but phenethylamines of the 2C family of drugs (e.g., 2CB, 2CD and 2CE) primarily have hallucinogenic rather than stimulant properties and are often used as substitutes for MDMA. Aminoindanes, which predominantly act as central nervous system stimulants, have also been found in the NPS market as substitutes for MDMA, owing to their empathogenic and entactogenic effects as serotonin-releasing drugs. They also have analgesic properties.[228] Likewise, piperazines, which tend to have stimulant effects have been frequently used as substitutes for "ecstasy". In one case, however, the piperazine MT-45 was found to have pharmaceutical effects resembling those of synthetic opioids. It was therefore, like most other opioids, placed under control of the 1961 Convention by the Commission on Narcotic Drugs, in 2016.[229]

The challenge when analysing NPS stimulants is not only in their classification but also in the rapid dynamics of the market and the control system. A number of key stimulant NPS, such as mephedrone (4-methylmethcathinone), MDPV and methylone (3,4-methylenedioxy-*N*-methylcathinone) have been scheduled at the international level in 2015 or later; as a result, by definition they have ceased to be NPS. At the same time, however, a number of countries continue to report "bath salts" as NPS even when they actually contain various cathinones, such as mephedrone, MPDV and methylone, which are already under international control.

This section describes the market, in terms of supply of and demand for the various substances that are currently considered to be NPS stimulants or were considered to be NPS stimulants prior to 2015.

Number of newly identified stimulant new psychoactive substances increased year on year over the period 2009–2017

Similar to stimulants under international control, stimulant NPS share subjective effects in humans such as "boosted mood" or euphoria, feelings of empathy and compassion (empathogenic and entactogenic effects of serotonin-releasing drugs), increased sociability and sex drive, a perceived increase in the ability to learn and focus, increased energy and alertness.[230]

The number of stimulant NPS identified over the period 2009–2017 increased more than fourfold, from 48 substances in 2009 to a peak of 206 in 2015, a number that has remained stable since then. In most years, stimulant NPS have been the largest group of NPS identified and reported by Member States, followed by synthetic cannabinoids. Over a third of all NPS identified since 2009 are stimulants,

228 UNODC, Laboratory and Scientific Section Portals, Aminoindanes. Available at www.unodc.org/.

229 UNODC, Commission on Narcotic Drugs, "Scheduling procedures resource material". Available at www.unodc.org, based on recommendations of scheduling MT-45 in Schedule I of the Single Convention on Narcotic Drugs of 1961 (E/CN.7/2016/9); Commission on Narcotic Drugs decision [[59/1 on inclusion of acetylfentanyl in Schedules I and IV of the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol and decision 59/2 on inclusion of MT-45 in Schedule I of the 1961 Convention as amended by the 1972 Protocol (E/2016/28)]] on international control of acetylfentanyl and MT-45 enters into force, June 2016.

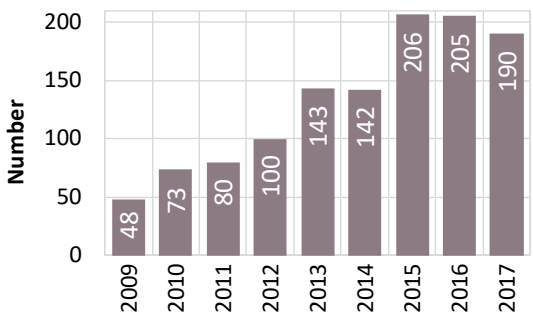
230 M. Rosaria Vari and others, "New psychoactive substances: synthetic stimulants", *WIREs Forensic Science,* vol. 1, No. 2 (March/April 2019), e1197.

TABLE 2 New psychoactive substances identified or reported for the first time in 2017 and considered as stimulants for the purpose of this report

Substances	Substances
N-Acetyl-4-bromo-2,5-dimethoxyamphetamine	3-Fluoroethamphetamine
N-Acetyl-3-methylmethcathinone	3-Fluoroethcathinone
1-(1-Benzofuran-4-yl)-*N*-ethylpropan-2-amine (4-EAPB)	4-Fluoro-*N*-ethylpentedrone
1-(5-Chlorothiophen-2-yl)-2-(methylamino)propan-1-one (5Cl-bk-MPA)	2-Fluorophenmetrazine
3,4-Dichloroethcathinone	1-[1-(2-Fluorophenyl)propan-2-yl]pyrrolidine
3,4-Dichloro-*N*, *N*-cyclohexylmethylmethcathinone	1-(4-Fluorophenyl)-4-methyl-2-(pyrrolidin-1-yl)pentan-1-one (4F-α-PHiP)
1-(2,3-Dihydro-1*H*-inden-5-yl)-2-(methylamino)propan-1-one	2-(Isopropylamino)-1-phenylhexan-1-one (NiPH)
3,4-Dimethoxymethcathinone	2-(Methylamino)-1-(naphthalen-2-yl)propan-1-one
2,5-Dimethoxy-4-methylthioamphetamine	2-Methylamphetamine
2-(2,5-Dimethoxyphenyl)-*N*-(2-methoxybenzyl)ethan-1-amine	4-Methyldiethcathinone
1,4-Dimethylamylamine	2,3-Methylenedioxymethamphetamine
2-(Ethylamino)-4-methyl-1-phenylpentan-1-one (NEiH)	3,4-Methylenedioxy-β-methoxyphenethylamine
2-Fluoroethamphetamine	Octodrine

Source: UNODC early warning advisory.

FIG. 66 Number of stimulant NPS reported annually at the global level, 2009–2019



Source: UNODC, early warning advisory on new psychoactive substances (classification as of March 2019).

including 39 per cent of all NPS identified in 2017. A total of 26 out of the 79 new substances that were identified and reported for the first time in 2017 were stimulants.[231]

Most of the new stimulant NPS identified on the markets and reported to UNODC in 2017 were cathinones or phenethylamines.[232]

231 UNODC, early warning advisory on new psychoactive substances.

232 Ibid.

Market for stimulant new psychoactive substances appears to still be growing

Quantities of stimulant NPS seized increased slightly (5 per cent) in 2017 from the previous year, mainly driven by seizures of cathinones, which rose by 4 per cent to 2.8 tons, most of which was accounted for by 2.7 tons of the cathinone metamfepramone seized in the Russian Federation. The largest rise in relative terms was of phenethylamines, from 0.2 kg in 2016 to 39 kg in 2017. By contrast, quantities of piperazines and aminoindanes seized decreased by 95 per cent or more in 2017 from a year earlier.

Quantities of stimulant NPS seized fluctuated markedly over the period 2009–2017 within an overall upward trend to a peak reported in 2015. The fluctuations were sometimes the result of large quantities being seized in individual countries. Thus, they may not necessarily reflect real changes in the market, but rather changes in the national and international control of substances, or differences in the capacity of forensic laboratories to detect substances. The most widely seized NPS stimulants in this period were piperazines (in 2009, 2010 and 2013), phenethylamines (in 2011 and 2012) and cathinones (in 2014 to 2017).

Challenges in analysing the market for stimulant new psychoactive substances

There are a number of issues that challenge the use of traditional supply and demand indicators in the analysis of stimulant NPS markets. Seizures of stimulant NPS that are not under international control depend, to a large extent, on information provided by countries that have already put them under national control. However, this does not mean that trafficking in those substances does not occur in countries that have not yet put them under national control. NPS seizure data will thus always be characterized by a certain bias.

The fact that NPS are not under international control also means that some countries only report broad categories of such substances seized while others report them by their specific names, which may differ from country to country. There is also a problem with their classification when seizures contain more than one substance or more than one group of substances: for instance, some substances may be part of the phenethylamine group while others may be part of the cathinone group. Given the inherent problems in reporting such cases, some countries refrain from reporting seizures of NPS.

Another problem is the comparability of quantities of different products seized. As in the case of other controlled substances, the best approach would be to convert all seizures of stimulant NPS into "standard doses", but the problem is that no standard doses have been established for most of those substances, because the majority of them are not used as pharmaceutical drugs. Nevertheless, stimulant NPS reported to date have roughly the same doses as other substances in the same group. This is in contrast to lysergic acid diethylamide (LSD), among hallucinogens, or fentanyl, among opioids, which have substantially different doses.

Information on the prevalence of NPS use is generally limited; information on the prevalence of stimulant NPS use, however, is even more sparse. In most household surveys, there tends to be an underestimation of the self-reported use of substances, and in the case of NPS, many users are unaware of what substance they have used. Therefore, drug use surveys are not an ideal tool for understanding the extent of stimulant NPS use in the general population, but they can provide broad information on trends in NPS use.

In the three years before 2017, mephedrone was the substance in the group that was seized in the greatest amount, reported by the Russian Federation: 0.7 tons in 2014; 3.1 tons in 2015; and 2 tons in 2016. Most stimulant NPS seized in 2013 concerned *meta*-chlorophenylpiperazine, which was mainly seized in Belgium.

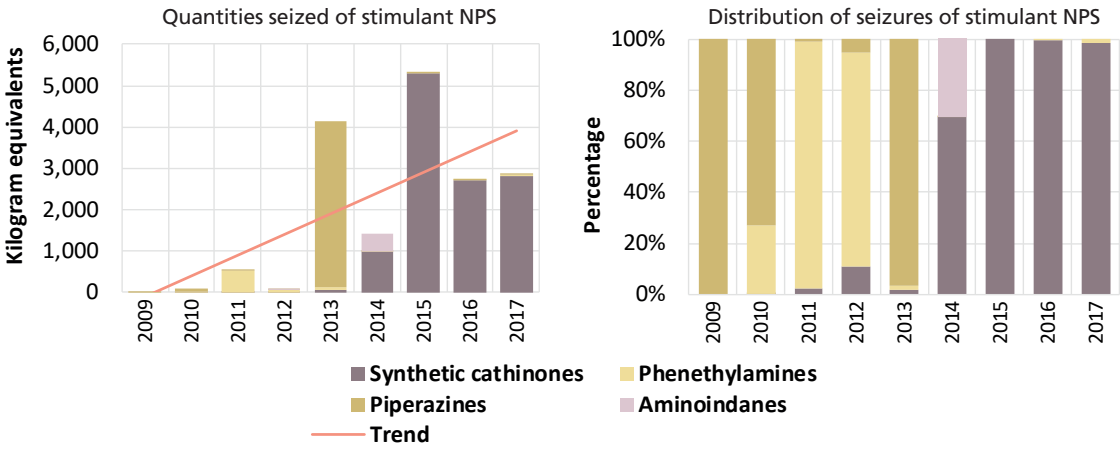
Overall, 33 countries reported seizures of NPS stimulants over the period 2013–2017. Some 82 per cent of the global total of stimulant NPS seized was seized in Europe, most notably by the Russian Federation, followed by Belgium and Spain. An additional 14 per cent was seized in Asia, most notably by Hong Kong, China, followed by Indonesia, the Philippines and Taiwan Province of China. Of the remainder, 2 per cent was seized in the Americas, most notably by the United States, followed by Canada; 1 per cent was seized in Africa, most notably by South Africa; and 1 per cent was seized in Oceania, most notably by Australia.

Once current stimulant NPS are combined with those that have been controlled in the years since 2015, the upward trend in the quantities of stimulant NPS seized over the 2009–2017 period becomes even more pronounced.

Over the period 2013–2017, 44 countries reported seizures of stimulants that were previously classified as NPS and are now under international control. The most important of such substances in terms of quantity seized were mephedrone, followed by MDPV; others, for which seizures are regularly reported, include methylone and, to a lesser extent, *N*-benzylpiperazine.

Seizures of mephedrone reached a peak of 4.2 tons in 2012, most of it reported by the United

FIG. 67 Quantities and distribution of stimulant NPS seized, 2009–2017*



Source: UNODC, responses to the annual report questionnaire.

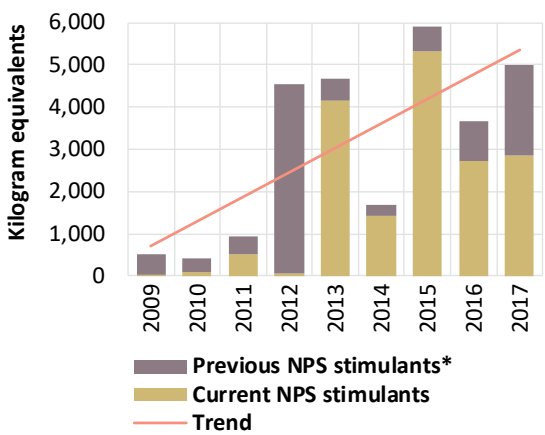
* *Substances currently not under international control.*

Kingdom, prior to its control at the international level in 2015.[233] The largest quantities of mephedrone seized over the period 2013–2017 were also reported by the United Kingdom, followed by the Russian Federation, India, Poland and Hong Kong, China. Mephedrone was reported to have been seized by 20 countries over this period.

The next-largest quantity seized of previous NPS stimulants was of MDPV, another cathinone, which reached a peak in 2013, two years before its international scheduling. Seizures of the substance were reported by 13 countries in Europe, North America and East and South-East Asia over the period 2013–2017.

After their international scheduling in 2015, the quantities of both mephedrone and MDPV seized remained substantially below the peaks reported prior to their international control. However, quantities of mephedrone seized have been rising since 2015, suggesting that there are still niche markets for the substance in various countries. By contrast, in 2017 seizures of MDPV reached their lowest level since reporting began in 2010. Only Canada reported some minimal seizures of MDPV in 2017.

FIG. 68 Quantities of current and previous* stimulant NPS seized, 2009–2017



Source: UNODC, responses to the annual report questionnaire.

**Substances that have been put under international control in the years since 2015.*

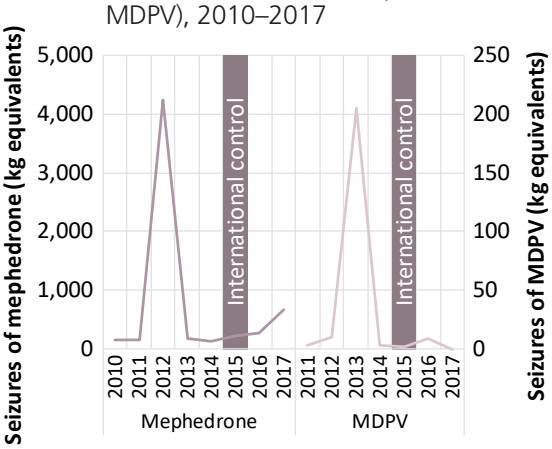
Demand for stimulant new psychoactive substances

Many stimulant NPS, like other types of NPS, are sold in a variety of forms in specialized shops. Often branded as "legal highs", they are sold on the Internet and the darknet[234, 235] and on illicit markets,

233 United Kingdom, "UK secures UN ban on 'legal high' mephedrone: UK-led proposal to introduce international controls on 'legal high' drug at UNODC Commission on Narcotic Drugs", 13 March 2015.

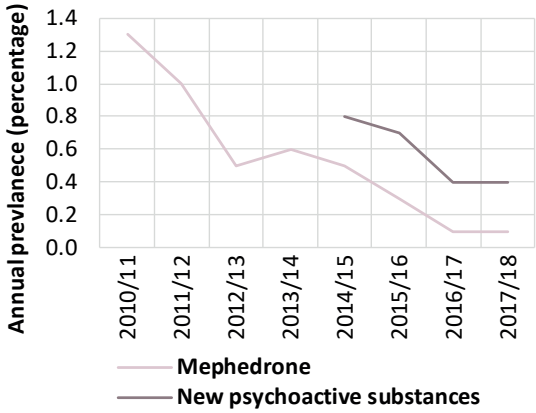
234 Cristina Miliano and others, "Neuropharmacology of new psychoactive substances (NPS): focus on the rewarding and reinforcing properties of cannabimimetics and amphetamine-like stimulants", *Frontiers in Neuroscience,* vol. 10, article No. 153 (April 2016).

FIG. 69 Quantities of recently controlled stimulant NPS seized (mephedrone and MDPV), 2010–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 70 Mephedrone and NPS use in the United Kingdom (England and Wales) among people aged 16–59, 2010–2018*



Source: Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales, Statistical Bulletin No. 14/18* (London, July 2018), data tables.

**Data refer to the United Kingdom financial years: for example, "2017/18" refers to the period 1 April 2017 to 31 March 2018.*

sometimes under their own names or marketed falsely as controlled drugs, such as amphetamines, cocaine, "ecstasy" and benzodiazepines.[236] For example, NPS cathinones were often introduced into the market as an alternative to MDMA, amphetamines and cocaine because of their psychoactive stimulant effects.[237, 238]

In England and Wales, overall use of NPS has shown a significant downward trend since 2016, which is probably also valid for stimulant NPS. The prevalence of NPS use among the population aged 15–69 who reported having used such substances in the past year in England and Wales fell to 0.4 per cent in 2017/18 from 0.8 per cent in 2014/15. The decrease was even more pronounced among those aged 16–24, with the annual prevalence rate falling from 2.8 to 1.2 per cent.[239] This may have been prompted by the Psychoactive Substances Act, which came into force in the United Kingdom in 2016 and includes substances used for their psychoactive effects that do not fall under the Misuse of Drugs Act 1971, or are otherwise exempt from it. A review of this legislation revealed that the Psychoactive Substances Act resulted in an increase in the prices of NPS and a decrease in their availability. The Act also caused "head shops" to close or to no longer sell NPS. In addition, the annual prevalence of NPS use fell, including among people aged 16–24.[240]

Similarly, school survey data from the United States show a clear fall in the use of "bath salts" (synthetic cathinones)[241] following the implementation of new legislation that rendered their sale illegal as of

235 Cristina Miliano and others, "Sales and advertising channels of new psychoactive substances (NPS): Internet, social networks, and smartphone apps", *Brain Science*, vol. 8, No. 7 (July 2018).

236 EMCDDA, *European Drug Report 2017: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2017).

237 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*, EMCDDA Rapid Communication Series (Luxembourg, Publications Office of the European Union, 2017).

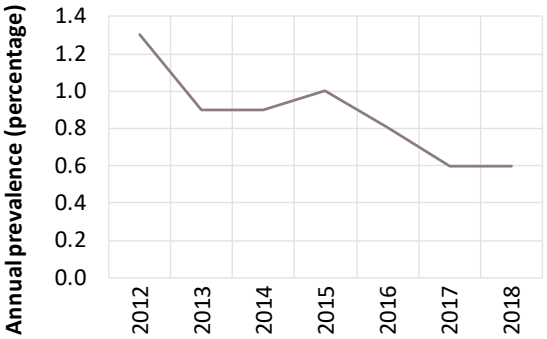
238 Matej Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia, and the perceived problems experienced by users", *International Journal of Drug Policy,* vol. 27 (2016), pp. 65–73.

239 United Kingdom, Home Office, *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*, Statistical Bulletin No. 14/18 (London, July 2018), data tables.

240 United Kingdom, Home Office, *Review of the Psychoactive Substances Act 2016*, presented to Parliament pursuant to section 58 of the Psychoactive Substances Act 2016 (November 2018), pp. 4–5; *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales.*

241 United States, National Institute on Drug Abuse, DrugFacts, "Synthetic cathinones are 'Bath Salts'", February 2018.

FIG. 71 Use of bath salts (synthetic cathinones) among 12th grade students in the United States, 2012–2018



Source: United States, National Institute on Drug Abuse, "Monitoring the future study: trends in prevalence of various drugs". Available at www.drugabuse.gov.

2011.[242, 243] The annual prevalence of use of bath salts among 12th grade students fell by half between 2012 and 2018.[244]

Despite the diversity of the NPS market, only a few substances seem to have established markets of their own or have replaced conventional drugs.[245] People who use drugs may opt to use NPS based on different factors that include the substance's legal status as well as its availability, price and perceived psychoactive effects.[19, 247] Many NPS eventually disappear, possibly as a result of a combination of the following factors: adverse effects are experienced by users;[248, 249] the availability of the primary substance sought by people who are using NPS as an alternative increases; or the NPS is unable to establish a profitable market. However, some substances have remained on the market and created their own niche.

Among stimulant NPS, including stimulants that were previously classified as NPS but recently controlled, the most widely used synthetic cathinones in the European Union are mephedrone (also known as 4-MMC), 3-MMC, 4-methylethcathinone, pentedrone and pyrovalerone derivatives such as MDPV and *alpha*-PVP.[250, 251] The changes that have occurred in the mephedrone market in Europe, in particular in the United Kingdom, over the past decade provide an example of how NPS can establish their own market and how that market can evolve in response to control policies. Mephedrone was among the first NPS to emerge around 2007 and was marketed mainly as an alternative to MDMA or "ecstasy". As mentioned above, in 2010–2011, past-year use of mephedrone was reported as being 1.3 per cent among those aged 16–59 in the United Kingdom, the same rate of prevalence as "ecstasy".[252] After mephedrone was placed under control in the United Kingdom in 2010 and under international control in 2015,[253] its use among the general population declined considerably; in 2017–2018 its past-year prevalence was reported as being 0.1 per cent among those aged 16–59.[254]

242 In October 2011, the Drug Enforcement Administration temporarily banned three synthetic stimulants commonly found in bath salts as Schedule I substances under the Substance Control Act: MDPV, mephedrone and methylone.

243 Jennifer A. Gershman and Andrea D. Fass, "Synthetic cathinones ('Bath Salts') legal and health care challenges", *Pharmacy and Therapeutics,* vol. 37, No. 10 (October 2012), pp. 571–572, 595.

244 United States, National Institute on Drug Abuse, "Monitoring the future study: trends in prevalence of various drugs". Available at www.drugabuse.gov.

245 *World Drug Report 2018: Analysis of Drug Markets–Opiates, Cocaine, Cannabis, Synthetic Drugs* (United Nations publication, Sales No. E.18.XI.9 (Booklet 3)).

246 Lenka Vavrincikova and others, *New Psychoactive Substances Among People Who Use Drugs Heavily: Towards Effective and Comprehensive Health Responses in Europe–5-Country RAR Report* (Prague, New Psychoactive Substances in Europe and Department of Addictology, Charles University in Prague, 2016).

247 Rosalind Gittins and others, "Exploration of the use of new psychoactive substances by individuals in treatment for substance misuse in the UK", *Brain Science*, vol. 8, No. 4 (April 2018).

248 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

249 Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia".

250 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

251 Barbara Janikova and others, "New psychoactive substances among people who use drugs heavily in Europe: an inventory of changing drug consumption patterns, shifting drug markets and lagging policy responses", *Adiktologie,* vol. 16, No. 2 (June 2016), pp. 92–105.

252 Joanna Hockenhull, Kevin G. Murphy and Sue Paterson, "Mephedrone use is increasing in London", *The Lancet*, vol. 387, No. 10029 (April 2016), pp. 1719–1720.

253 "UK secures UN ban on 'legal high' mephedrone". Available at www.gov.uk.

254 *Drug Misuse: Findings from the 2017/18 Crime Survey for England and Wales*.

While there is no evidence of current widespread use of stimulant NPS among the general population in Europe, it remains a practice in some subpopulation groups. For example, the injection of stimulant drugs, including synthetic cathinones, by a subgroup of men who have sex with men has raised public health concerns in recent years in Europe. This injecting behaviour, generally referred to as "slam" or "slamming", appears to take place primarily in the context of sex parties.[255]

In Slovenia, after the ban on mephedrone, experienced users, including those who were using NPS in nightlife settings, continued to seek the same effects in other NPS and were reported to have shifted to 3-MMC, methylone, 4-methylethcathinone and pentedrone, which were believed to have similar effects as mephedrone.[256] Furthermore, it has also been reported in Slovenia that 3-MMC is being used simultaneously with other opioids among people who inject drugs, often as a replacement for cocaine.[257, 258]

Synthetic cathinones, such as mephedrone, are sometimes also used in combination with other drugs such as GHB, GBL, crystalline methamphetamine, cocaine and sildenafil, with the purpose of reducing inhibitions and enhancing sexual experiences, as part of "chemsex" or sexualized drug use.[259, 260]

The stimulant NPS 4-FA is yet another example of a stimulant NPS that had temporary success on the drug market in some countries in Europe, but then only really established itself among small subpopulation groups. In the Netherlands, between 2007 and 2009, as the availability of MDMA had decreased, 4-FA was mainly sold as "amphetamine" or "ecstasy".[261] This changed after the MDMA and amphetamine markets rebounded in the Netherlands and 4-FA established its own niche market among users who reportedly preferred 4-FA over MDMA for its specific psychoactive effects.[262] There were also indications that the use of 4-FA had increased in other countries in Europe, such as Denmark, Germany and Spain.[263] The use of 4-FA was also reported among people who inject drugs in the needle and syringe programme in many countries in Europe.[264]

In Hungary, owing to the limited availability, low purity and high prices of established drugs such as heroin, amphetamines and cocaine, people who inject drugs have also switched to the use of synthetic cathinones. Among people who inject drugs, the proportion who injected amphetamine or heroin decreased from 95 per cent in 2009 to 13 per cent in 2015, while cathinones such as MDPV, mephedrone, pentedrone and methylone became the main substances injected in that country.[265] The practice of injecting synthetic cathinones is also reported by other countries in Europe, namely Austria, Finland, Germany, Latvia, Slovenia, Sweden and the United Kingdom.

Other patterns of stimulant NPS use among people who inject drugs in Europe have also been reported. In Belgium, among high-risk drug users, the most common NPS used include mephedrone, 2CB, methoxetamine, MDPV and 4-FA. The last of those is the most frequently used substance by people who inject drugs and attend a needle and syringe programme.[266] In Czechia, one third of high-risk drug users have reported the use of a cathinone or phenethylamine at least once, and 10.5 per cent

255 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

256 Sande, "Characteristics of the use of 3-MMC and other new psychoactive drugs in Slovenia".

257 Andrea Drev, ed., *Report on the Drug Situation 2015 of the Republic of Slovenia* (Ljubljana, National Institute of Public Health, 2015).

258 Matej Sande and Simona Šabic, "The importance of drug checking outside the context of nightlife in Slovenia", *Harm Reduction Journal,* vo. 15 (January 2018).

259 Raffaele Giorgetti and others, "When "Chems" meet sex: a rising phenomenon called "ChemSex"", *Current Neuropharmacology*, vol. 15, No. 5 (2017), pp. 762–770.

260 Claire Edmundson and others, "Sexualized drug use in the United Kingdom (UK): a review of literature", *International Journal of Drug Policy,* vol. 55 (May 2018), pp. 131–148.

261 Felix Linsen and others, "4-Fluoroamphetamine in the Netherlands: more than a one-night stand", *Addiction*, vol. 110, No. 7 (July 2015), pp 1138–1143.

262 Ibid.

263 See, for instance, *World Drug Report 2018.*

264 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study.*

265 Máté Kapitány-Fövény and J. Rácz, "Synthetic cannabinoid and synthetic cathinone use in Hungary: a literature review", *Developments in Health Science*vol. 1, No. 3 (November 2018), pp. 63–69.

266 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

have used them in the last 12 months, although only a very small proportion reported them as their primary drug. In Finland, people who inject drugs have also reported, as a pattern of polydrug use, the use of synthetic cathinones such as *alpha*-PVP and MDPV, along with their primary substance, such as amphetamines.[267]

Adverse effects and toxicity of stimulant new psychoactive substances

Studies that have documented the adverse effects of stimulant NPS report that nearly one quarter of users experience adverse effects after the administration of synthetic stimulants such as cathinones. Among the documented adverse effects of cathinones, the most common symptoms are hyperthermia, tachycardia, nausea, vomiting and chest pains, while many people with acute intoxication from synthetic stimulants suffer skin rashes and bruxism (clenched jaw and grinding teeth). Psychiatric manifestations account for a significant proportion of symptoms among people with intoxication from cathinones who require medical intervention. These symptoms include altered mental status, confusion, agitated delirium, anxiety, paranoia, delusions, dysphoria, depression and suicidal ideation. Self-harm without evidence of psychosis or depression is also associated with use of synthetic cathinones, hanging being the most common form, although gunshot wounds, self-inflicted stab wounds, repeated self-laceration and even slitting one's own throat have also been reported. The more serious symptoms of synthetic cathinone toxicity, which require substantial and prolonged medical treatment and in some cases lead to death, include the following: liver failure; kidney failure; rhabdomyolysis, a serious syndrome resulting from a direct or indirect muscle injury from the death of muscle fibres and release of their contents into the bloodstream; and the development of compartment syndrome, which involves the swelling of the muscular fascia compartments. Acute toxicity with cathinones, often involving concomitant use of other drugs, has been reported in many fatalities.[268, 269, 270, 271]

The injection of synthetic cathinones has also been linked with increased transmission of HIV and hepatitis C in many countries in Europe, including Hungary, Ireland and the United Kingdom; in Greece and Romania, the injection of these substances was identified in 2012 as a possible factor linked to outbreaks of HIV infection.[272]

267 EMCDDA, *European Drug Report 2018: Trends and Developments* (Luxembourg, Publications Office of the European Union, 2018).

268 Vari and others, "New psychoactive substances".

269 Christopher L. German, Annette E. Fleckenstein and Glen R. Hanson, "Bath salts and synthetic cathinones: an emerging designer drug phenomenon", *Life Sciences*, vol. 97, No. 1 (February 2014), pp. 2–8.

270 Laurent Karila and others, "Synthetic cathinones: a new public health problem", *Current Neuropharmacology*, vol. 13, No. 1 (January 2015), pp. 12–20.

271 Vavrincikova and others, *New Psychoactive Substances Among People Who Use Drugs Heavily*.

272 EMCDDA, *High-Risk Drug Use and New Psychoactive Substances: Results from an EMCDDA Trendspotter Study*.

TABLE 3 Annual prevalence of the use of cocaine,[a] by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**1,300,000**	**160,000**	**2,570,000**	**0.19**	**0.02**	**0.37**
Eastern Africa	-	-	-	-	-	-
Northern Africa	-	-	-	-	-	-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	250,000	1,000	633,000	0.09	0.00	0.24
Americas	**9,930,000**	**9,200,000**	**10,590,000**	**1.48**	**1.37**	**1.58**
Caribbean	180,000	80,000	330,000	0.62	0.29	1.15
Central America (excluding Mexico)	200,000	100,000	310,000	0.66	0.34	1.02
Northern America (including Mexico)	6,800,000	6,660,000	6,950,000	2.10	2.06	2.15
South America	2,740,000	2,360,000	3,000,000	0.95	0.82	1.04
Asia	**1,670,000**	**1,140,000**	**2,220,000**	**0.06**	**0.04**	**0.07**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	70,000	30,000	130,000	0.02	0.01	0.04
Southern Asia	1,030,000	1,030,000	1,030,000	0.10	0.10	0.10
Europe	**4,740,000**	**4,460,000**	**5,140,000**	**0.87**	**0.82**	**0.95**
Eastern and South-Eastern Europe (including Turkey)	500,000	340,000	720,000	0.22	0.15	0.32
Western and Central Europe	4,240,000	4,120,000	4,420,000	1.33	1.29	1.39
Oceania	**430,000**	**410,000**	**440,000**	**1.65**	**1.57**	**1.67**
Australia and New Zealand	420,000	410,000	420,000	2.20	2.15	2.23
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**18,070,000**	**15,380,000**	**20,960,000**	**0.37**	**0.31**	**0.42**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

[a] *Cocaine includes cocaine salt, "crack" cocaine and other types such as coca paste, cocaine base, "basuco", "paco" and "merla".*

TABLE 4 Global illicit cultivation of coca bush, 2007–2017 (hectares)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	28,900	30,500	30,900	31,000	27,200	25,300	23,000	20,400	20,200	23,100	24,500
Colombia [a]	99,000	81,000	73,000	62,000	64,000	48,000	48,000	69,000	96,000	146,000	171,000
Peru [b]	53,700	56,100	59,900	61,200	64,400						
Peru [c]					62,500	60,400	49,800	42,900	40,300	43,900	49,900
Total	**181,600**	**167,600**	**163,800**	**154,200**	**155,600** [d]	**133,700**	**120,800**	**132,300**	**156,500**	**213,000**	**245,400**

Sources: Plurinational State of Bolivia: national illicit crop monitoring system supported by the United Nations Office on Drugs and Crime (UNODC). Colombia: national illicit crop monitoring system supported by UNODC. Peru: national illicit crop monitoring system supported by UNODC.

Note: Different area concepts and their effect on comparability were presented in the World Drug Report 2012 (United Nations publication, Sales No. E.12.XI.1) (p. 41-42). Efforts to improve the comparability of estimates between countries continue; since 2011 the net area under coca bush cultivation on the reference date of 31 December was estimated for Peru, in addition to Colombia. The estimate presented for the Plurinational State of Bolivia represents the area under coca cultivation as interpreted on satellite imagery.

[a] *Net area on 31 December.*
[b] *Figures represent the area under coca cultivation as interpreted on satellite imagery.*
[c] *Net area on 31 December, deducting fields eradicated after satellite imagery was taken.*
[d] *The global coca cultivation figure was calculated with the "area as interpreted on satellite imagery" for Peru in 2011.*

TABLE 5 Reported eradication of coca bush, 2007–2017

	Method of eradication	Unit	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	manual	hectare	5,484	6,341	8,200	10,509	11,044	11,407	11,144	11,020	6,577	7,237
Colombia	manual	hectare	96,003	60,565	43,804	35,201	30,456	22,121	11,703	13,473	17,642	52,001
	spraying	hectare	133,496	104,772	101,940	103,302	100,549	47,052	55,532	36,494	0	0
Peru	manual	hectare	10,143	10,025	12,033	10,290	14,171	23,785	31,205	35,868	30,150	25,784
Ecuador	manual	hectare	12	6	3	14	..	..	..	..	..	..
		plants	152,000	57,765	3,870	55,030	122,656	41,996	15,874	45,266	20,896	10,100

Source: United Nations Office on Drugs and Crime annual report questionnaire and government reports.

Note: The totals for Bolivia (Plurinational State of) and Peru include voluntary and forced eradication. Reported eradication refers to the sum of all areas eradicated in a year, including repeated eradication of the same fields. Two dots indicate that data are not available.

TABLE 6 Potential manufacture of 100 per cent pure cocaine, 2007–2017 (tons)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Bolivia (Plurinational State of)	*104*	*113*	..	..	..	..	..	..	..	..	..
Colombia	683	471	488	424	384	333	290	442	646	1,053	1,379
Peru	*290*	*302*	..	..	..	..	..	..	..	..	..
Total based on "old" conversion ratios[a]	**1,077**	**886**	**920**	**862**	**815**	**738**	**662**	**746**	**936**	**1,378**	**1,743**
Total based on "new" conversion ratios[a]	***1,317***	***1,143***	***1,188***	***1,134***	***1,090***	***997***	***902***	***943***	***1,124***	***1,586***	***1,976***

Sources: Plurinational State of Bolivia: own calculations based on coca leaf yield surveys by the United Nations Office on Drugs and Crime (UNODC) (Yungas de La Paz) and scientific studies by the Drug Enforcement Administration of the United States of America (Chapare). Colombia: UNODC/Government of Colombia. Peru: own calculations based on coca leaf to cocaine conversion ratio from scientific studies by the Drug Enforcement Administration. Detailed information on the ongoing revision of conversion ratios and cocaine laboratory efficiency is available in the World Drug Report 2010 (United Nations publication, Sales No. E.10.XI.13), p. 249.

[a] *Conversion of areas under coca cultivation into coca leaf and then into cocaine hydrochloride, taking yields, amounts of coca leaf used for licit purposes and cocaine laboratory efficiency into account.*

Notes: Owing to a lack of updated conversion factors in Bolivia (Plurinational State of) and Peru, no final estimates of the level of cocaine production can be provided.

With respect to data published in the World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7), the following amendments have been made: (a) data for Colombia (2005–2008) have been revised in order to ensure a consistent implementation of revisions to the methodology, affecting the way coca production is calculated, for the entire time series 2005–2015 (for details, see Colombia Coca Cultivation Survey Report 2014 (UNODC, 2015) and Colombia Survey of territories affected by illicit crops 2015, Annex 3 (UNODC 2016)); (b) totals for 2009–2012 based on "old" and "new" conversion ratios have been revised to rectify minor inaccuracies in data processing.

Figures in italics are subject to revision. Two dots indicate that data are not available. Information on estimation methodologies and definitions can be found in the online methodology section of the World Drug Report 2019.

TABLE 7 Annual prevalence of the use of amphetamines,[a] by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**3,680,000**	**900,000**	**6,600,000**	**0.53**	**0.13**	**0.94**
Eastern Africa	-	-	-	-	-	-
Northern Africa	500,000	340,000	610,000	0.34	0.23	0.42
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**7,860,000**	**6,660,000**	**9,230,000**	**1.17**	**0.99**	**1.38**
Caribbean	250,000	20,000	700,000	0.87	0.05	2.42
Central America (excluding Mexico)	60,000	30,000	100,000	0.21	0.09	0.31
Northern America (including Mexico)	6,840,000	5,990,000	7,690,000	2.11	1.85	2.38
South America	710,000	630,000	740,000	0.25	0.22	0.26
Asia	**14,140,000**	**4,980,000**	**23,290,000**	**0.47**	**0.17**	**0.78**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	-	-	-	-	-	-
Southern Asia	1,850,000	1,850,000	1,850,000	0.18	0.18	0.18
Europe	**2,900,000**	**2,350,000**	**3,480,000**	**0.53**	**0.43**	**0.64**
Eastern and South-Eastern Europe (including Turkey)	710,000	410,000	1,040,000	0.32	0.18	0.46
Western and Central Europe	2,180,000	1,940,000	2,440,000	0.68	0.61	0.76
Oceania	**350,000**	**320,000**	**360,000**	**1.34**	**1.24**	**1.38**
Australia and New Zealand	250,000	250,000	250,000	1.34	1.34	1.34
Melanesia	-	-	-	-	-	-
Micronesia	5,400	1,900	10,500	1.58	0.56	3.10
Polynesia	-	-	-	-	-	-
Global	**28,920,000**	**15,210,000**	**42,960,000**	**0.59**	**0.31**	**0.87**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

[a] *Amphetamines include both amphetamine and methamphetamine.*

TABLE 8 Annual prevalence of the use of "ecstasy", by region and globally, 2017

	Number of users annually (best estimate)	Estimated number of users annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**1,800,000**	**100,000**	**7,880,000**	**0.26**	**0.01**	**1.13**
Eastern Africa	-	-	-	-	-	-
Northern Africa	-	-	-	-	-	-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	-	-	-	-	-	-
Americas	**3,500,000**	**3,390,000**	**3,630,000**	**0.52**	**0.51**	**0.54**
Caribbean	60,000	30,000	100,000	0.23	0.10	0.36
Central America (excluding Mexico)	50,000	20,000	100,000	0.17	0.07	0.33
Northern America (including Mexico)	2,870,000	2,870,000	2,870,000	0.89	0.89	0.89
South America	510,000	470,000	550,000	0.18	0.16	0.19
Asia	**11,490,000**	**1,600,000**	**21,380,000**	**0.38**	**0.05**	**0.71**
Central Asia and Transcaucasia	-	-	-	-	-	-
East and South-East Asia	-	-	-	-	-	-
Near and Middle East/South-West Asia	-	-	-	-	-	-
Southern Asia	-	-	-	-	-	-
Europe	**4,060,000**	**2,930,000**	**6,970,000**	**0.54**	**0.39**	**0.93**
Eastern and South-Eastern Europe (including Turkey)	1,310,000	250,000	4,040,000	0.31	0.06	0.95
Western and Central Europe	2,750,000	2,680,000	2,930,000	0.86	0.84	0.92
Oceania	**440,000**	**410,000**	**450,000**	**1.68**	**1.56**	**1.72**
Australia and New Zealand	410,000	400,000	430,000	2.17	2.12	2.23
Melanesia	-	-	-	-	-	-
Micronesia	-	-	-	-	-	-
Polynesia	-	-	-	-	-	-
Global	**21,290,000**	**8,420,000**	**40,310,000**	**0.41**	**0.16**	**0.78**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) of the American Psychiatric Association, or the *International Classification of Diseases and Related Health Problems* (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPINGS

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)
- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine
- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Turkey and Kosovo
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands, Gibraltar and Holy See

  Oceania (comprising four subregions):
  - Australia and New Zealand: Australia and New Zealand
  - Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
  - Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
  - Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

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The *World Drug Report 2019* is again presented in five separate parts that divide the wealth of information and analysis contained in the report into individual reader-friendly booklets in which drugs are grouped by their psychopharmacological effect for the first time in the report's history.

Booklet 1 provides a summary of the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 contains a global overview of the latest estimates of and trends in the supply, use and health consequences of drugs. Booklet 3 looks at recent trends in the market for depressants (including opioids, sedatives, tranquillizers and hypnotics), while Booklet 4 deals with recent trends in the market for stimulants (including cocaine, amphetamine-type stimulants and new psychoactive substances). Booklet 5 contains a review of recent trends in the market for cannabis and for hallucinogens. The section on cannabis also includes a review of the latest developments in the jurisdictions that have adopted measures allowing the non-medical use of cannabis.

As in previous years, the *World Drug Report 2019* is aimed at improving the understanding of the world drug problem and contributing towards fostering greater international cooperation for countering its impact on health, governance and security.

The statistical annex is published on the UNODC website: https://www.unodc.org/wdr2019

ISBN 978-92-1-148314-7

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5 CANNABIS AND HALLUCINOGENS

WORLD DRUG REPORT 2019

ISBN: 978-92-1-148314-7
eISBN: 978-92-1-004174-4
United Nations publication, Sales No. E.19.XI.9

Suggested citation:,
World Drug Report 2019 (United Nations publication, Sales No. E.19.XI.8).

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The content of this publication does not necessarily reflect the views or policies of UNODC or contributory organizations, nor does it imply any endorsement.

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PREFACE

The findings of this year's *World Drug Report* fill in and further complicate the global picture of drug challenges, underscoring the need for broader international cooperation to advance balanced and integrated health and criminal justice responses to drug supply and demand.

With improved research and more precise data from India and Nigeria – both among the 10 most-populous countries in the world – we see that there are many more opioid users and people with drug use disorders than previously estimated. Globally, some 35 million people, up from an earlier estimate of 30.5 million, suffer from drug use disorders and require treatment services. The death toll is also higher: 585,000 people died as a result of drug use in 2017.

Prevention and treatment continue to fall far short of needs in many parts of the world. This is particularly true in prisons, where those incarcerated are especially vulnerable to drug use and face higher risks of HIV and hepatitis C transmission. This gap represents a major impediment to achieving the Sustainable Development Goals and fulfilling the international community's pledge to leave no one behind.

Synthetic opioids continue to pose a serious threat to health, with overdose deaths rising in North America and trafficking in fentanyl and its analogues expanding in Europe and elsewhere. The opioid crisis that has featured in far fewer headlines but that requires equally urgent international attention is the non-medical use of the painkiller tramadol, particularly in Africa. The amount of tramadol seized globally reached a record 125 tons in 2017; the limited data available indicate that the tramadol being used for non-medical purposes in Africa is being illicitly manufactured in South Asia and trafficked to the region, as well as to parts of the Middle East.

The response to the misuse of tramadol illustrates the difficulties faced by countries in balancing necessary access for medical purposes while curbing abuse – with limited resources and health-care systems that are already struggling to cope – and at the same time clamping down on organized crime and trafficking.

Opium production and cocaine manufacture remain at record levels. The amounts intercepted are also higher than ever, with the amount of cocaine seized up 74 per cent over the past decade, compared with a 50 per cent rise in manufacture during the same period. This suggests that law enforcement efforts have become more effective and that strengthened international cooperation may be helping to increase interception rates.

The *World Drug Report 2019* also registers a decline in opiate trafficking from Afghanistan along the "northern" route through Central Asia to the Russian Federation. In 2008, some 10 per cent of the morphine and heroin intercepted globally was seized in countries along the northern route; by 2017 it had fallen to 1 per cent. This may be due in part to a shift in demand to synthetics in destination markets. The increased effectiveness of regional responses may also play a role.

Countries in central Asia, with the support of the United Nations Office on Drugs and Crime (UNODC), have committed considerable resources to strengthening regional cooperation through integrated UNODC country, regional and global programmes, as well as through platforms such as the Central Asian Regional Information and Coordination Centre, the Afghanistan–Kyrgyzstan–Tajikistan Initiative and the Triangular Initiative and its Joint Planning Cell. More research is needed, including to identify lessons learned and best practices that could inform further action.

International cooperation has also succeeded in checking the growth in new psychoactive substances. The Vienna-based Commission on Narcotic Drugs has acted swiftly in recent years to schedule the most harmful new psychoactive substances, and the UNODC early warning advisory has helped to keep the international community abreast of developments.

Political will and adequate funding remain prerequisites for success. Efforts by Colombia to reduce cocaine production following the 2016 peace deal

with the Revolutionary Armed Forces of Colombia (FARC) are a case in point. Alternative development initiatives have enabled farmers in central areas of the country previously under FARC control to abandon coca bush cultivation and join the licit economy. The result has been a drastic reduction in cocaine production. However, in other areas previously controlled by FARC, criminal groups have moved in to fill the vacuum and expand cultivation. Alternative development can succeed, but not without sustained attention and integration into broader development goals.

The successes identified amid the many, formidable problems that countries continue to face in grappling with drug supply and demand highlight that international cooperation works. The challenge before us is to make this cooperation work for more people.

International cooperation is based on agreed frameworks. Nearly every country in the world has reaffirmed its commitment to balanced, rights-based action based on the international drug control conventions. The most recent reaffirmation of that commitment is the Ministerial Declaration on Strengthening Our Actions at the National, Regional and International Levels to Accelerate the Implementation of Our Joint Commitments to Address and Counter the World Drug Problem, adopted at the ministerial segment of the sixty-second session of the Commission on Narcotic Drugs.

UNODC supports countries in putting their commitments into action through the application of international standards on the prevention and treatment of drug use disorders and HIV, as well as standards and norms on the administration of justice and the treatment of prisoners. We provide tailored technical assistance through our field offices and global programmes, and through toolkits and research.

I hope the *World Drug Report 2019* will shed further light on the world drug problem and inform international community responses. By working together and focusing attention and resources, we can help people get the services they need without discrimination, promote security and bring criminals to justice, safeguard health and achieve the Sustainable Development Goals.

Yury Fedotov
Executive Director
United Nations Office on Drugs and Crime

CONTENTS

Acknowledgements

The *World Drug Report 2019* was prepared by the Research and Trend Analysis Branch, Division for Policy Analysis and Public Affairs, United Nations Office on Drugs and Crime (UNODC), under the supervision of Jean-Luc Lemahieu, Director of the Division, and Angela Me, Chief of the Research and Trend Analysis Branch.

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The *World Drug Report 2019* benefited from the expertise of and invaluable contributions from UNODC colleagues in all divisions. The Research and Trend Analysis Branch acknowledges the important contribution to Booklet 5 from its colleagues in the Laboratory and Scientific Section.

The Research and Trend Analysis Branch acknowledges the invaluable contributions and advice provided by the *World Drug Report* Scientific Advisory Committee:

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EXPLANATORY NOTES

The boundaries and names shown and the designations used on maps do not imply official endorsement or acceptance by the United Nations. A dotted line represents approximately the line of control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. Disputed boundaries (China/India) are represented by crosshatch owing to the difficulty of showing sufficient detail.

The designations employed and the presentation of the material in the *World Drug Report* do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities or concerning the delimitation of its frontiers or boundaries.

Countries and areas are referred to by the names that were in official use at the time the relevant data were collected.

All references to Kosovo in the *World Drug Report*, if any, should be understood to be in compliance with Security Council resolution 1244 (1999).

Since there is some scientific and legal ambiguity about the distinctions between "drug use", "drug misuse" and "drug abuse", the neutral term "drug use" is used in the *World Drug Report*. The term "misuse" is used only to denote the non-medical use of prescription drugs.

All uses of the word "drug" and the term "drug use" in the *World Drug Report* refer to substances controlled under the international drug control conventions, and their non-medical use.

All analysis contained in the *World Drug Report* is based on the official data submitted by Member States to the UNODC through the annual report questionnaire unless indicated otherwise.

The data on population used in the *World Drug Report* are taken from: *World Population Prospects: The 2017 Revision* (United Nations, Department of Economic and Social Affairs, Population Division).

References to dollars ($) are to United States dollars, unless otherwise stated.

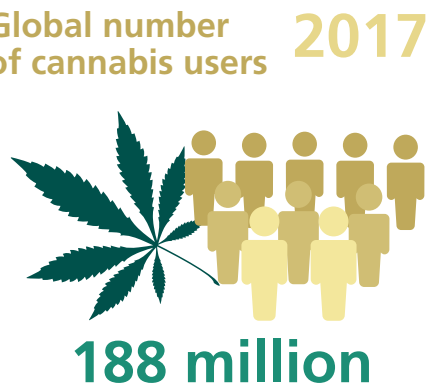
References to tons are to metric tons, unless otherwise stated.

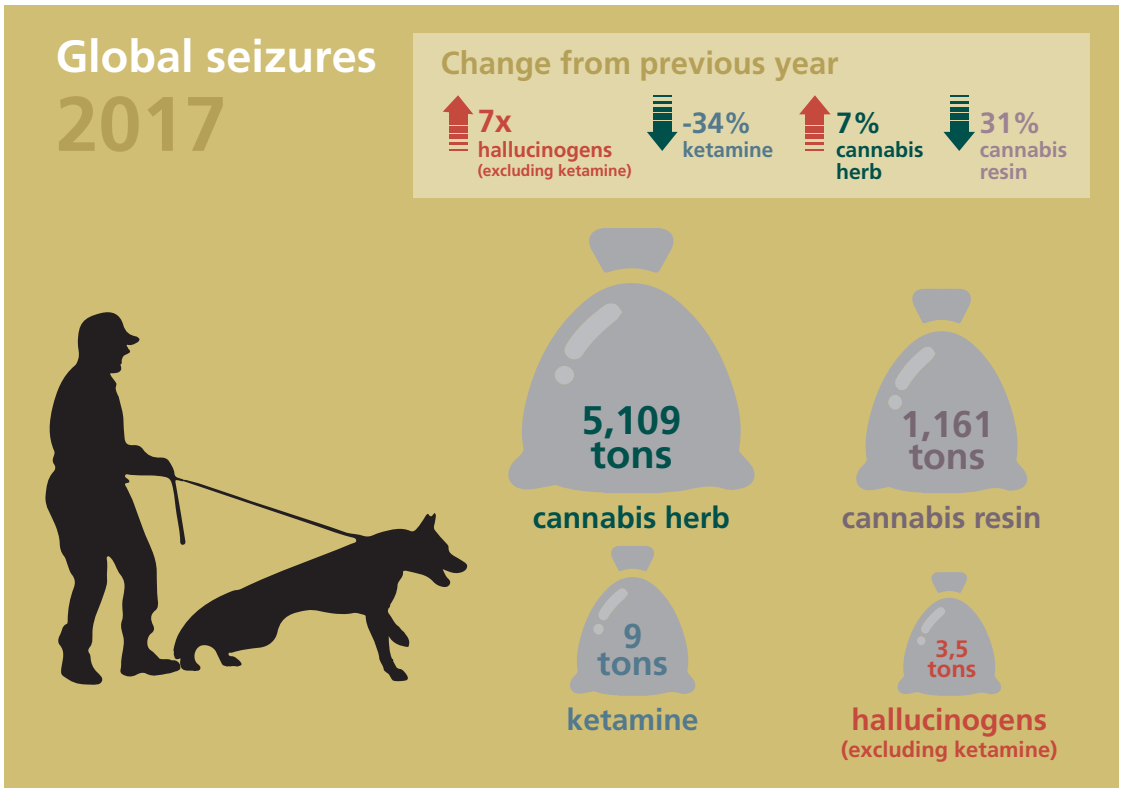
The following abbreviations have been used in the present booklet:

ATS	amphetamine-type stimulants
CBD	cannabidiol
CBN	cannabinol
DMT	dimethyltryptamine
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
ha	hectares
LSD	lysergic acid diethylamide
MDMA	3,4-methylenedioxymethamphetamine, commonly known as "ecstasy"
NPS	new psychoactive substances
PCP	phencyclidine
THC	(Δ-9 – tetrahydrocannabinol)
UNODC	United Nations Office on Drugs and Crime
WHO	World Health Organization

SCOPE OF THE BOOKLET

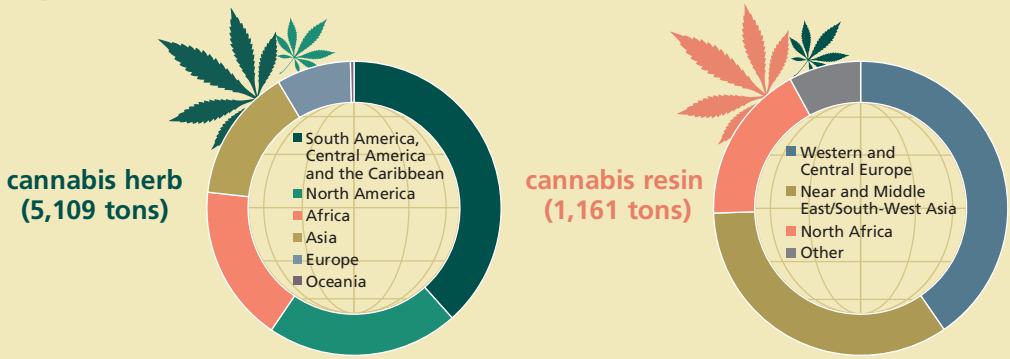
Constituting the fifth chapter of the *World Drug Report 2019*, the present booklet contains an analysis of the global market for cannabis that looks at supply in terms of cultivation and production of and trafficking in cannabis herb and cannabis resin, as well as consumption in terms of trends in the prevalence of use of cannabis. The booklet also gives an overview of developments in measures regulating the non-medical use of cannabis in Canada, the United States of America and Uruguay and contains an analysis of the global market for different hallucinogens that examines recent developments in seizures and trends in the prevalence of their use.





CANNABIS

2017 Quantity of cannabis seized by region



Introduction

Although there is an ongoing debate as to whether the genus cannabis comprises one or more species, the drug is currently considered to be monospecific (*Cannabis sativa* L) by the scientific community.[1, 2] There are two subspecies of the plant (*Sativa* and *Indica*) and four varieties. Cannabis plants contain 70 unique compounds, collectively known as phytocannabinoids,[3] the main psychoactive substance being THC, which provides the psychoactive effects of cannabis.

Produced in almost every country, cannabis herb consists of the dried and crumbled leaves and flowering tops of the cannabis plant, which are generally smoked. By contrast, cannabis resin, which is the concentrated extract of cannabis flower and plant, is mainly produced in a few countries in North Africa, the Middle East and South-West Asia. Hash oil is a cannabis product that can be extracted from any part of the plant, with minimal or no residual solvent. Cannabis is controlled under the Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol (Schedules I and IV).

In the past two decades, there have been rapid advances in cannabis plant cultivation techniques. This has led to the spread of domestic (indoor) cultivation, thereby reducing reliance on imported cannabis products. Based on the cultivation of unpollinated female cannabis plants (sinsemilla), indoor cannabis plant production involves the use of controlled growing conditions and genetically selected strains, which has led to an increase in the number of harvests, as well as in yield and potency. Mainly focused on achieving high THC content, selective breeding has also resulted in the selection of varieties containing lower levels of CBD.[4]

In addition to the major transformation of cannabis cultivation in recent years, the cannabis market has diversified to the extent that it now comprises a broad range of products with varying means of ingestion, potency and effects.

1 WHO Expert Committee on Drug Dependence, Pre-review, "Cannabis plant and cannabis resin: section 1 – Chemistry" (Geneva, 2018).

2 The letter "L" denotes Carl Linnaeus, who, in 1753, gave the botanical name to the plant.

3 Jerrold S. Meyer and Linda F. Quenzer, eds., *Psychopharmacology: Drugs, the Brain, and Behaviour*, 3rd ed. (Oxford, Oxford University Press, 2019).

4 EMCDDA, *Cannabis Production and Markets in Europe*, EMCDDA Insights Series No. 12 (Luxembourg, Publications Office of the European Union, 2012).

Supply of cannabis

Cannabis cultivation and production affect all regions

In contrast to the production of other plant-based drugs, which is concentrated in a limited number of countries, cannabis is produced in almost all countries across the world. Cannabis plant cultivation was reported to UNODC through either direct indicators (cultivation or eradication of cannabis plants and eradication of cannabis-producing sites) or indirect indicators (seizure of cannabis plants, origin of cannabis seizures reported by other Member States) by 159 countries, covering 97 per cent of the world's total population, over the period 2010–2017.

Most countries do not have systems in place to systematically monitor the area under cannabis cultivation. Thus, in general, estimates of the area under cannabis cultivation made available to UNODC may not meet strict scientific standards and must be interpreted with caution. For the time being, no single indicator is available for reliably estimating the area under cannabis cultivation at the global level.

However, a number of indicators (such as hectares of cannabis eradicated, number of cannabis plants eradicated, number of cannabis sites eradicated, number of cannabis plants seized and origin of cannabis seized) may be used to identify where cannabis cultivation and production are likely to occur. Analysis of the various indicators over the period 2010–2017 has shown that cannabis cultivation and production occur to a large extent in the following countries (in descending order of estimated potential magnitude of cultivation and production):

Americas

- North America: Mexico, the United States of America and Canada
- South America: Paraguay, Brazil, Colombia, Peru and Chile
- Central America: Guatemala and Costa Rica;
- Caribbean: Jamaica

Africa

- Morocco, Nigeria, Eswatini, the Sudan, South Africa, Malawi, the Democratic Republic of Congo and Ghana

Europe

- Western and Central Europe: the Netherlands, Italy, the United Kingdom of Great Britain and Northern Ireland, Spain and Belgium
- South-Eastern Europe: Albania
- Eastern Europe: the Russian Federation and Ukraine

Asia

- Near and Middle East: Afghanistan, Pakistan and Lebanon
- Central Asia: Kyrgyzstan and Tajikistan
- South Asia: India and Nepal
- East and South-East Asia: Indonesia and the Philippines

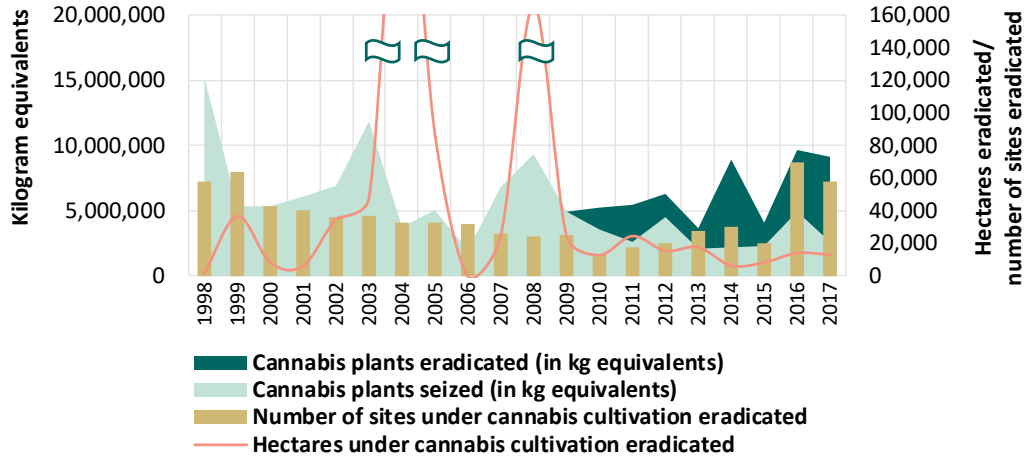
Oceania

- Australia and New Zealand

Trends in indirect indicators of cannabis cultivation have been fluctuating over the years. Significant seizures of cannabis plants were made in 1998 as a result of large seizures reported by Turkey, Egypt, Nigeria and Paraguay (in descending order), while the number of hectares under cannabis cultivation eradicated reached a peak in 2004, mainly owing to large eradications reported by the Russian Federation; large eradications were reported by Albania in 2008. In 2017, the largest numbers of cannabis sites eradicated and the largest areas under cannabis cultivation eradicated were reported by Mexico, while the largest numbers of cannabis plants eradicated were reported by Paraguay, followed by India, and the largest quantity of cannabis plants seized was reported by Guatemala.

Despite those fluctuations, based on qualitative information provided by 105 countries (an average of 35 countries per year), in six out of seven years, more countries reported an increase in cannabis cultivation than a decline. Based on those perceptions, overall cannabis cultivation is thought to have increased over the period 2010–2017, with most of the increase reported to have occurred over the period 2014–2017.

FIG. 1 Global quantity of cannabis plants seized and eradication of cannabis plants, 1998–2017



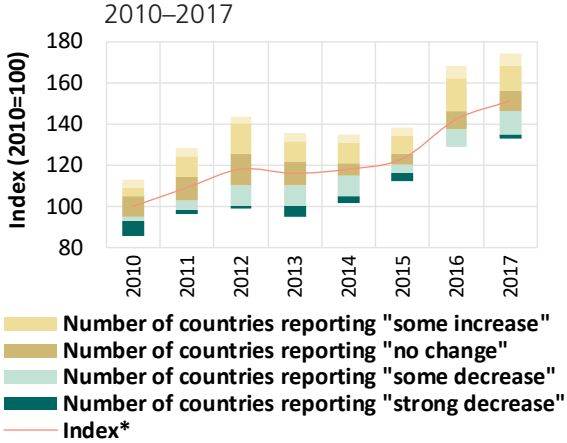
Source: UNODC, responses to the annual report questionnaire.

Outdoor cultivation of cannabis is more widespread than indoor cultivation, but the increase in indoor cultivation of cannabis is larger

Available data suggest that outdoor cannabis cultivation continues to be more widespread at the global level than indoor cannabis cultivation. Over the period 2013–2017, 80 countries reported outdoor cannabis cultivation and/or law enforcement activities linked to outdoor cannabis cultivation (eradication, seizures of cannabis plants, dismantling of cannabis-producing sites) to UNODC and 55 countries reported indoor cannabis cultivation. While outdoor cannabis cultivation is found around the globe, most of the countries reporting indoor cultivation are located in Europe, followed by North America (Canada and the United States), Central America (Costa Rica, El Salvador, Honduras and Panama) and South America (Chile, Colombia, Ecuador and Uruguay). Beyond those regions, indoor cannabis cultivation still seems to be limited and has been reported by only two countries in Oceania (Australia and New Zealand) and a few countries in Asia (Armenia, Georgia and Israel, as well as Hong Kong, China).

Trend data (based on qualitative information reported by Member States) suggest that both outdoor and indoor cannabis cultivation increased at the global level over the period 2013–2017, although the increase in indoor cultivation appears to have been larger than that in outdoor cultivation. The increasing importance of indoor cannabis cultivation is closely associated with an overall increase in the THC content of cannabis on the main markets over the past two decades.[5, 6]

FIG. 2 Qualitative information on trends in cannabis cultivation (index: 2010=100), 2010–2017



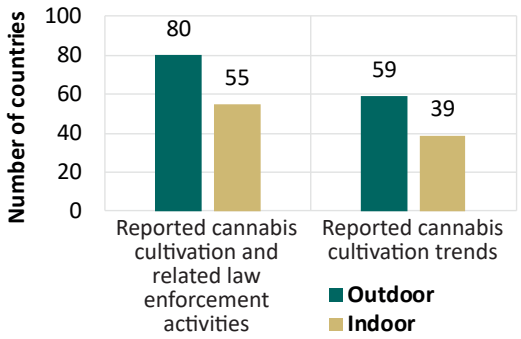
Source: UNODC, responses to the annual report questionnaire.

** Number of countries reporting increases less number of countries reporting decreases (2 points for "strong increase", 1 point for "some increase", 0 points for stable, -1 point for "some decline", -2 points for "strong decline"), 2010=100.*

5 EMCDDA, "Price, purity and potency", Statistical Bulletin 2018 (and previous years).

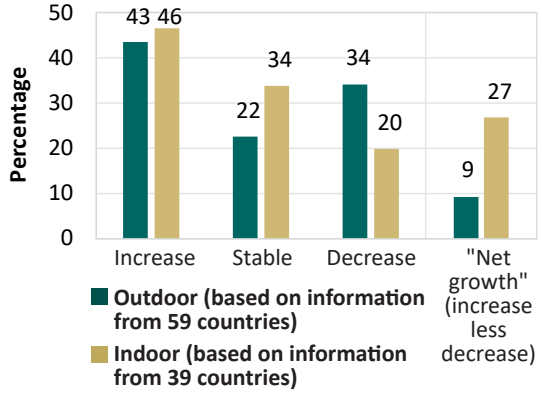
6 Mahmoud A. ElSohly and others, "Changes in cannabis potency over the last 2 decades (1995-2014): analysis of current data in the United States, *Biological Psychiatry* (Amsterdam, Elsevier, 2016), pp. 1–7.

FIG. 3 Countries reporting outdoor and indoor cannabis cultivation, 2013–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 4 Reported trends in outdoor and indoor cannabis cultivation, 2013–2017

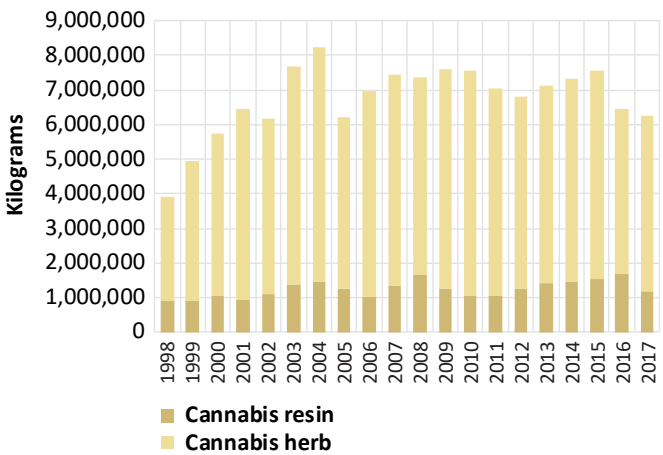


Source: UNODC, responses to the annual report questionnaire.
Note: Numbers in the figure have been rounded.

Global cannabis seizures remained stable in 2017

Over the period 2010–2017, 166 countries reported to UNODC that they had seized cannabis herb or resin (113–140 countries per year). In terms of weight, the amounts of cannabis herb and resin seized remained largely unchanged in 2017 (at some 6,300 tons), compared with the previous year, and were in line with trend data on the number of seizure cases. Seizures were markedly larger than in 1998 (3,900 tons) but were smaller than in most years since 2000, with peaks of 8,200 tons in 2004 and more than 7,500 tons in 2010 and 2015. The smaller quantities of cannabis seized and reported in 2016 and 2017 may have been the result of less reporting in some countries, coupled with possible shifts in the priorities of law enforcement authorities, notably in the Americas, where the largest quantities seized had previously been reported. In terms of weight, 49 per cent of all cannabis herb and resin seized in 2017 were in the Americas, followed by 18 per cent in Asia, 17 per cent in Africa, 15 per cent in Europe and less than 1 per cent in Oceania.

FIG. 5 Global quantities of main cannabis products seized, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

While the decline in the quantities of cannabis seized in 2016 was linked to smaller quantities reported in Africa (partly linked to reporting issues) and North America (possibly a consequence of shifts in the priorities of law enforcement authorities owing to the liberalization of cannabis markets in several parts of the continent),[7] data for 2017 show an ongoing decline in cannabis seizures in North America, Asia and Africa (mostly resulting from fewer seizures in North Africa and fewer African countries reporting to UNODC) and increases (in descending order) in South America, Oceania, Europe and the Caribbean.

In terms of products, herbal cannabis continued to account for for the majority of cannabis seized in 2017 (81 per cent) at the global level. Data show

7 United States, Government Accountability Office, *State Marijuana Legalization: DOJ Should Document Its Approach to Monitoring the Effects of Legalization*, GAO report GAO-16-1 (Washington D.C., December 2015).

decreases in the quantity of cannabis resin seized in 2017 (by 31 per cent, from very high levels reported the previous year), while the quantity of cannabis herb seized increased slightly (7 per cent), reflecting increases in the quantities intercepted in South America (79 per cent), Oceania (69 per cent), Europe (37 per cent), Asia (16 per cent) and the Caribbean (15 per cent), which more than offset the continuing decline in the quantity of cannabis herb seized in North America (41 per cent less than in 2016).

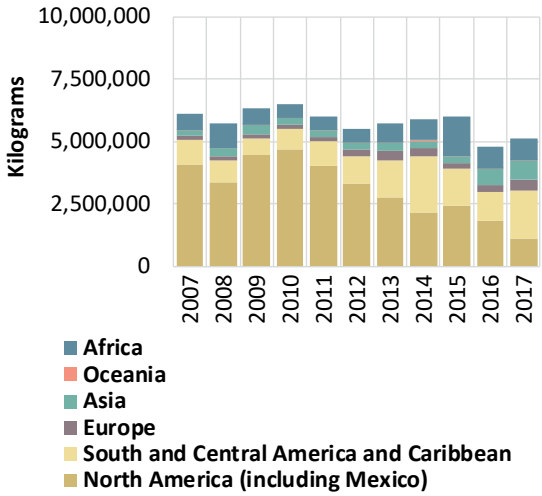
Quantities of cannabis herb seized continue to decline markedly in North America following major transformation of the cannabis market

In 2017, as in previous years, the Americas continued to account for the largest share of the global quantity of cannabis herb seized (60 per cent of the global total). South America alone accounted for 38 per cent of the global total and North America for 21 per cent. This was in contrast to most of the previous years, when the largest amount of cannabis herb seized had been reported in North America. The next-largest amounts seized were reported in Africa (17 per cent of the total), Asia (15 per cent), Europe (8 per cent) and Oceania (0.4 per cent).

Despite a slight increase to 5,100 tons, the global quantity of cannabis herb seized in 2017 was still one of the smallest reported since 2000. The decline in the quantity of cannabis herb seized (over 20 per cent) since 2010 was driven by decreases reported in North America (77 per cent), with marked declines reported in Mexico (83 per cent), the United States (71 per cent) and Canada (67 per cent).

The decline in the amounts of cannabis herb reported seized in North America has gone hand in hand with significant increases in the use of cannabis herb in the subregion over the past decade. Detailed data from the United States show a sharp increase in the number of annual users of cannabis over the period 2007–2017 (63 per cent), which was exceeded by an increase in daily or near-daily users of cannabis of some 130 per cent over the same period;[8, 9] this is of importance as most cannabis is consumed by daily or near-daily users.[10, 11] It can thus be excluded that the decline in seizures of cannabis herb in North America was merely a consequence of a shrinking cannabis market in the subregion.

FIG. 6 Global quantities of cannabis herb seized, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

Conversely, the quantity of cannabis herb seized in regions other than North America doubled over the period 2007–2017. Qualitative information reported by Member States to UNODC suggests a

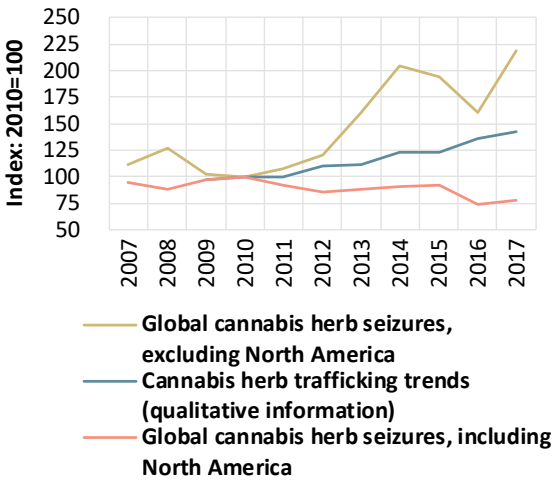
8 Jonathan P. Caulkins and others, "Beyond prevalence: importance of estimating drug consumption and expenditures", *Addiction*, vol. 110, No. 5 (Society for the Study of Addiction, 2015).

9 Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Marijuana Policy Group, August 2018).

10 United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*, HHS Publication No. SMA 18-5068, NSDUH Series H-53 (Rockville, Maryland, 2018). United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2018).

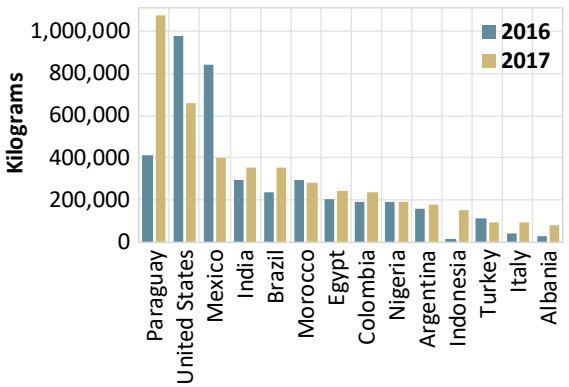
11 United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, September 2018).

FIG. 7 Global trends in the quantity of cannabis herb seized and trends in cannabis herb trafficking, 2007–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 8 Quantities of cannabis herb seized in the countries reporting the largest amounts, 2016 and 2017



Source: UNODC, responses to the annual report questionnaire.

slight, although steady, upward trend in cannabis trafficking over the past decade (based on information from 86 countries). This trend suggests that, rather than reflecting a global downward trend in the supply of cannabis herb, the global decline in seizures of cannabis herb may be the result of the major transformation that the cannabis market in the United States has undergone since 2010. It is worthy of note that the decline in seizures in North America started after the first referendum on the legalization of cannabis for non-medical use, which was held in California in 2010 and received much media attention although it was rejected, and before the referendums on the legalization of the non-medical use of cannabis in Washington and Colorado in 2012, when such use was approved by the electorate.[12]

In 2017, for the first time ever, Paraguay reported seizing the largest quantity of cannabis herb globally. In that year, cannabis herb produced in Paraguay was reported to have been mainly destined for neighbouring Brazil (77 per cent) and Argentina (20 per cent). In parallel, Brazil has repeatedly reported Paraguay as being the main country of origin of the cannabis herb seized on its territory.

The major increase in the quantity of cannabis herb seized in Paraguay in 2017 was mainly the result of two major seizures in the Department of Amambay, in the northern part of the country, on the border with Brazil, where most cannabis cultivation is concentrated. Large amounts of cannabis herb in South America were also reported seized by Brazil and Colombia.

The largest quantity of cannabis herb seized in Asia was reported by India. Morocco, Egypt and Nigeria (in descending order) reported seizing the largest amounts in Africa; and Turkey, Italy and Albania (in descending order) accounted for the largest quantities of cannabis herb seized in Europe. Overall, trafficking in cannabis herb remains mainly intraregional. Over the period 2013–2017, the countries that were most frequently mentioned in the annual report questionnaire as the main countries of origin, departure or transit of seized cannabis herb were (in descending order of frequency of times they were mentioned):

- North America: Mexico, the United States and Canada
- South America: Paraguay and Colombia
- Central America: Guatemala
- Caribbean: Jamaica
- Africa: Ghana, Mozambique and the United Republic of Tanzania
- Europe: the Netherlands, Albania and Spain

12 For more information, see *World Drug Report 2017: Market Analysis of Plant-Based Drugs* (United Nations publication, Sales No. E.17.XI.6 (Booklet 3)).

- Asia: India, Myanmar, Afghanistan, Malaysia and Kyrgyzstan

Oceania is the only region where the most frequently mentioned countries (United States and Canada) are located outside the region.

Intraregional trafficking, which is the predominant form of cannabis herb trafficking, is mainly carried out by road, rather than by sea or air. There have been only a few exceptions where cannabis herb appears to have been trafficked more by sea; such trafficking was reported by two countries in 2017 (Indonesia and Italy), two countries in 2016 (Costa Rica and Italy) and two countries in 2015 (Italy and Panama).

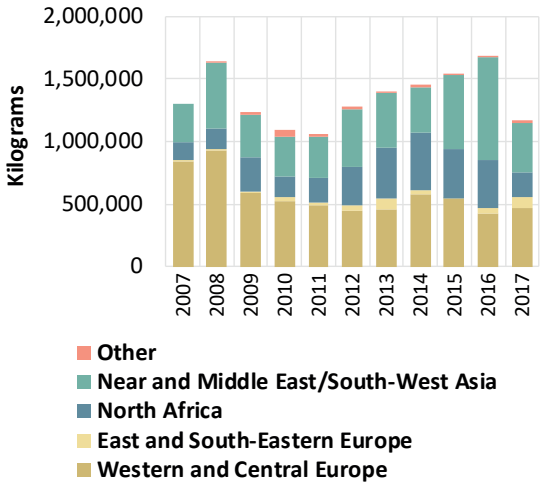
Global upward trend in cannabis resin seizures came to a halt in 2017, mainly as a result of a decline in seizures in production regions

The upward trend in the global quantity of cannabis resin seized over the period 2011–2016 came to a halt in 2017, when it declined by some 30 per cent worldwide, to its lowest level since 2011. That decline was a result of a halving of the quantities seized in the world's main cannabis resin-producing subregions, North Africa, the Near and Middle East/South-West Asia. By contrast, the quantity of cannabis resin seized in Western and Central Europe increased by roughly 10 per cent in 2017.

Qualitative information on trends in trafficking in cannabis resin (based on data from 68 countries reporting over the period 2007–2017) points to an increase since 2012, including in 2017, irrespective of the global decline in the amount of cannabis resin seized in that year. However, the overall reported increase in cannabis resin trafficking in 2017 was less pronounced than in previous years.

The overall upward trend in cannabis resin trafficking in 2017 masks different patterns across regions. Seizure data and qualitative information on trends suggest that there was a decline in cannabis resin trafficking in Morocco in 2017, although that has not yet had an impact on subsequent trafficking within the cannabis resin consumer markets. Spain reported a stable trend, while France and a number of other European countries reported an increase in cannabis resin trafficking activities in 2017. In fact, the amount of cannabis resin seized increased in 21 out of 29 countries in Western and Central Europe in 2017.

FIG. 9 Global quantities of cannabis resin seized, 2007–2017

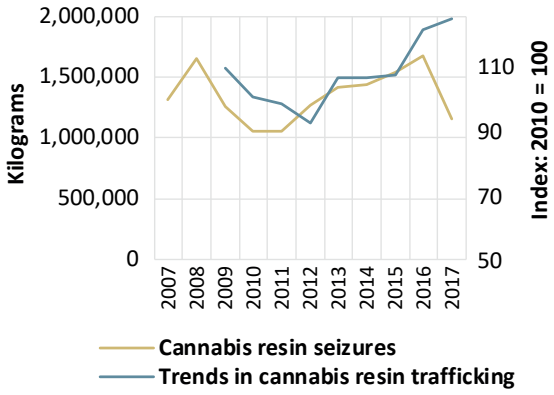


Source: UNODC, responses to the annual report questionnaire.

One of the main exceptions was Italy, which reported a sharp decrease in the quantity of cannabis resin seized (22 per cent less in 2017 compared with the previous year and 84 per cent less compared with 2014). This mainly reflects changes in cannabis trafficking routes, as the most direct route for trafficking cannabis resin of Moroccan origin via Libya to Italy, which accounted for 66 per cent of all identified cannabis resin shipments in 2013, decreased in importance to the extent that most Moroccan cannabis resin was shipped via Spain and France to Italy in 2017. Trafficking in cannabis resin from Morocco via Algeria to Libya also decreased, with the quantity of cannabis resin seized in Algeria in 2017 decreasing by more than 50 per cent compared with the previous year and by 75 per cent compared with 2013.

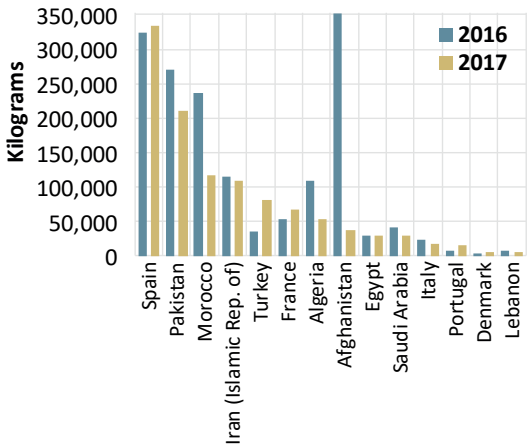
The patterns are less clear for South-West Asia. Afghanistan reported a decrease of 90 per cent in the quantity of cannabis seized in 2017 compared with 2016, although the quantity reported in 2017 was still at a similar level to those reported in 2013 and 2014 and was still larger than that reported in 2010. Decreases were also reported by Pakistan (22 per cent), the Islamic Republic of Iran (6 per cent)

FIG. 10 Global trends in quantities of cannabis resin seized, and qualitative information on trends in cannabis resin trafficking, 2007–2017



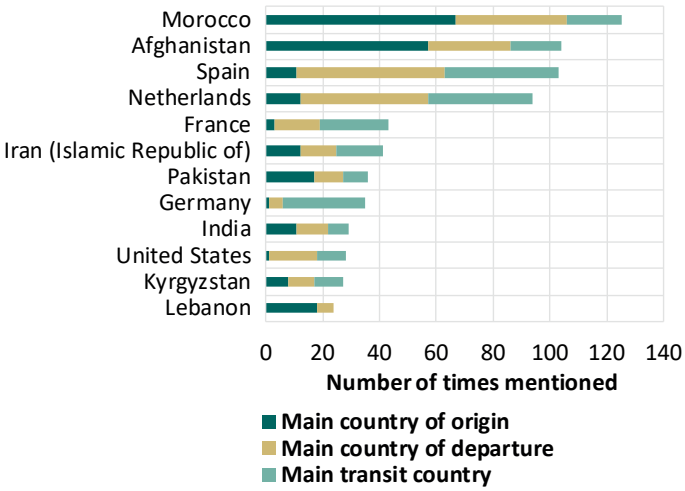
Source: UNODC, responses to the annual report questionnaire.

FIG. 11 Quantities of cannabis resin seized in the countries reporting the largest amounts, 2016 and 2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 12 Main countries of origin, departure and transit of cannabis resin as reported by Member States, 2013–2017[a]



Source: UNODC, responses to the annual report questionnaire.

[a] *Based on data from 67 countries providing such information to UNODC over the period 2013–2017.*

and the rest of the Near and Middle East (53 per cent). In the Islamic Republic of Iran, which reports that all cannabis resin is imported from either Afghanistan or Pakistan, qualitative information suggested that trafficking in cannabis resin continued to decrease in 2017. An increase in cannabis resin trafficking was reported by India in 2017, a country where over half (59 per cent in 2016) of the cannabis resin intercepted is sourced from domestic production and the remainder originates in neighbouring Nepal.

Trafficking in cannabis resin continues to be far more geographically concentrated than trafficking in cannabis herb. Some 34 per cent of the total quantity of cannabis resin seized worldwide in 2017 was intercepted in the Near and Middle East and South-West Asia, 18 per cent in North Africa and 40 per cent in Western and Central Europe; those three subregions accounted for 92 per cent of all cannabis resin seized worldwide in 2017.

During the period 2013–2017, Morocco, where some 47,000 ha was reported by the Government to be under cannabis cultivation in 2017, was mentioned in almost a quarter of cases as the main country of origin of cannabis resin seized worldwide. It was followed by Afghanistan (where a UNODC survey in 2010 revealed an area of 9,000–29,000 ha under cannabis cultivation),[13] which was reported as the country of origin of cannabis resin in one fifth of cases. Cannabis resin produced in Morocco is mainly destined for other markets in North Africa (it was listed as the country of origin in 83 per cent of reports by countries in the subregion) and in Western and Central Europe (listed as the country

13 UNODC and Ministry of Counter Narcotics of Afghanistan, *Afghanistan: Cannabis Survey 2010* (Vienna, 2011).

Countries of origin/departure/transit and final destination of drugs

Submitted to Member States by UNODC each year, the annual report questionnaire contains a set of questions on drug supply designed to improve the understanding of how international trafficking in specific drugs is organized.

Based on drugs seized, Member States are asked to provide the three main producing/manufacturing countries ("countries of origin") of each drug, its three main "departure countries", i.e. the countries from where the drug was actually shipped, the three main "transit countries" from where the drug entered the respective country, and its three main "final destination countries". This information is subsequently analysed to identify the major drug trafficking patterns of different drugs.

One drawback is that not all countries are in a position to differentiate accurately between "countries of origin", "countries of departure" and "transit countries". In this context, some of the analysis in the *World Drug Report* is based on aggregated information provided on "countries of origin", "departure countries" and "transit countries" so as to reduce the bias resulting from potentially incorrect reporting.

Moreover, as not all countries provide such information on a regular basis, to avoid any subsequent biases that are simply the result of the reporting or non-reporting of countries in individual years, data are often presented over a five-year period (for example, 2013–2017).

of origin in 43 per cent of all reports by countries in the subregion); 14 per cent of the cannabis resin reported seized by countries in Western and Central Europe originated in Afghanistan. Some cannabis resin of Moroccan origin is also trafficked to Eastern Europe and South-Eastern Europe. Most of the cannabis resin produced in Morocco that is destined for Europe is shipped to Spain, from where it is smuggled to other markets in the region. For years, including over the period 2013–2017, Spain has been identified by other European countries as the principal departure and transit country for cannabis resin, followed by the Netherlands.

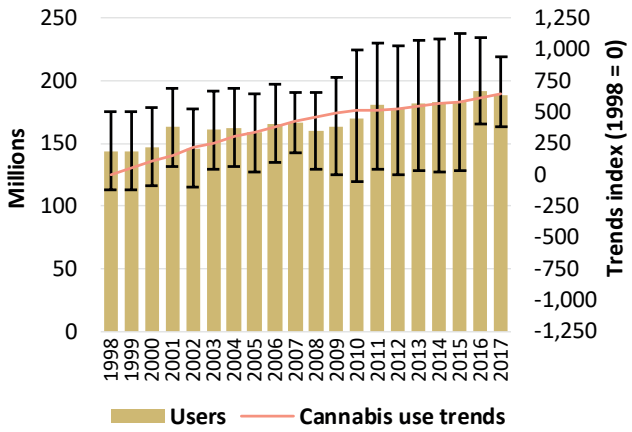
Afghanistan appears to be the second most important source country of cannabis resin worldwide, with 20 per cent of all cannabis resin seized worldwide reported in the annual report questionnaire over the period 2013–2017 as originating there, followed by Lebanon (6 per cent) and Pakistan (6 per cent). The cannabis resin from those countries is principally used to supply markets in the Near and Middle East and South-West Asia, although cannabis resin originating in Afghanistan has also been identified in Central Asia, Eastern Europe and Western and Central Europe. The Islamic Republic of Iran also reported Afghanistan as the primary source of the cannabis resin on its market. According to the country's authorities, in 2017, about 90 per cent of cannabis resin entered the Islamic Republic of Iran via Pakistan and only 10 per cent came directly from Afghanistan. Most (60 per cent) of the cannabis resin was trafficked by land and 39 per cent was shipped by sea, mainly on boats that had begun their journey in Pakistan. In 2017, some 55 per cent of the cannabis resin smuggled out of the Islamic Republic of Iran was destined for countries on the Arabian Peninsula, 25 per cent was destined for Turkey and the Caucasus and 20 per cent was for domestic consumption. Cannabis resin from Lebanon is mainly found in the Near and Middle East and, to a lesser extent, in Western and Central Europe.

Demand for cannabis

Global prevalence of cannabis use has remained stable in recent years, despite an increase in the number of cannabis users

Cannabis continues to be the most widely used drug worldwide. UNODC estimates that roughly 3.8 per cent (range: 3.3–4.4 per cent) of the global population aged 15–64 years used cannabis at least once in 2017, the equivalent of some 188 million people (range: 164–219 million). The average global prevalence of cannabis use increased over the period

FIG. 13 Global trends in number of cannabis users and qualitative information on trends in cannabis use,[a] 1998–2017



Source: UNODC, responses to the annual report questionnaire.

[a] *The index is based on information of, on average, 74 countries per year over the period 2007–2017. Two points were given for "large increase", 1 point for "some increase", 0 for "stable", -1 for "some decrease" and -2 for "large decrease". For reference, if all countries had reported each year "some increase" in cannabis use over the period 2007-2017, the cannabis use perception index would have reached 811 points in 2017. For details on the perception index calculations, refer to the methodological annex, available in the online version of the present report.*

1998–2007, from 3.4 to 3.9 per cent, before remaining basically stable during the subsequent decade.

The overall number of annual cannabis users is estimated to have increased by roughly 30 per cent during the period 1998–2017. Since 2009, the past-year prevalence of cannabis use has increased by some 4 per cent, while the number of cannabis users has increased by around 19 per cent, reflecting in part an increase in the global population, which had increased by 10 per cent over the same period. This increase should be interpreted with caution, however, because of the wide margins of error around the estimation of prevalence and of the number of cannabis users. Nevertheless, qualitative information on changes in cannabis use, as reported by an average of 74 Member States per year, confirms the increase in cannabis use over the period 2007–2017.

Cannabis use in Africa and Asia

In Africa, the annual prevalence of cannabis use in 2017 is estimated at 6.4 per cent of the population aged 15–64, corresponding to 44.9 million past-year users. Within the region, the subregion West and Central Africa has the highest prevalence of use, at nearly 10 per cent, or an estimated 27 million past-year users. Recent estimates of cannabis use are only available from two countries in Africa, however. In Kenya, the annual prevalence of cannabis use is estimated at 1.2 per cent (2016) of the adult population, whereas in Nigeria it is estimated at 10.8 per cent, corresponding to 10.6 million past-year cannabis users. Cannabis use in Nigeria is more prevalent among men (annual prevalence of 18.8 per cent) than women (2.6 per cent) and among adults aged 29–34 years.[14]

The estimate for cannabis use in Asia is much lower than in other regions, nearly at 2 per cent annual prevalence, yet, owing to the size of the population, nearly one third of estimated global cannabis users (54 million) reside in the region. In Pakistan, for example, the past-year prevalence of cannabis use was estimated at around 3.6 per cent of the adult population, or nearly 4 million past-year users.[15] In India, more than 3 per cent of the population aged 18 and older, and less than 1 per cent of adolescents aged 10-17, had used any cannabis product in the past year in 2018. This included the use of "bhang",[16] the most commonly used variant of cannabis in India, as well as cannabis herb and resin. Overall, the past-year use of cannabis was higher among men (5 per cent) than women (0.6 per cent) and in the states of Uttar Pradesh, Punjab, Sikkim, Chhattisgarh and Delhi than in other states. Nearly 0.7 per cent of the total population (aged 10–75) was considered to be suffering from cannabis use disorders.[17]

In the absence of survey data that would allow for a robust analysis of trends, it can be surmised, on the basis of the cannabis use perception index, that cannabis use increased in Africa and Asia over the period 2010–2017. In addition, an increase in cannabis use was reported, on the basis of qualitative

14 UNODC, *Drug Use in Nigeria 2018* (Vienna, 2019).

15 Ministry of the Interior and Narcotics Control of Pakistan and UNODC, *Drug Use in Pakistan 2013* (Islamabad, 2014).

16 Bhang is an edible preparation of cannabis used in food and drink and traditionally distributed during the festival of Holi. Bhang is legal in many states in India.

17 Atul Ambekar and others, "Magnitude of Substance Use in India", (New Delhi, Ministry of Social Justice and Empowerment, 2019).

information, by almost all the countries in Africa that returned the annual reports questionnaire in 2016 and 2017. Similarly, qualitative information reported by many countries in nearly all of the subregions of Asia suggested an increase in cannabis use in 2016 and 2017.

Cannabis use is still on the increase in North America

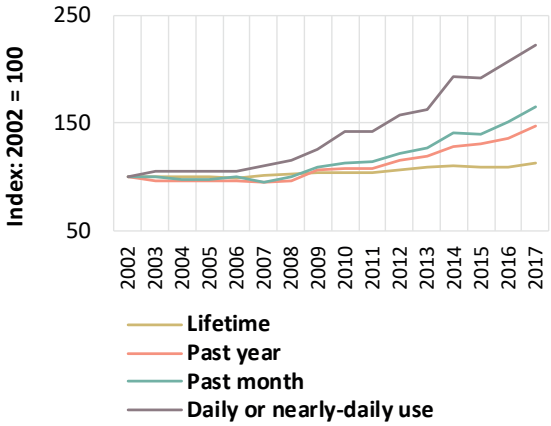
Past-year cannabis use increased in the Americas from 42 million people in 2007, or 7.0 per cent of the population aged 15–64,[18] to 57 million people in 2017, or 8.4 per cent of the population aged 15-64. The increase was most pronounced in the United States where, after some minor decreases at the beginning of the 2000s, annual cannabis use increased from 9.9 per cent in 2007 to 15.3 per cent in 2017.[19] High levels of cannabis use have also been reported in Canada, where past-year cannabis use was reported by 14.7 per cent[20] of the population aged 15 and older in 2015, up from 10.7 per cent in 2013[19] and 9.1 per cent in 2011.[20]

Cannabis use continues to increase in the United States

Change in the cannabis market in the United States has occurred in terms of the number of users, but more dramatically in the frequency of use and quantities of cannabis consumed. While the lifetime prevalence of cannabis use among the adult population (aged 18 and older) in the United States increased by 10 per cent over the period 2002–2017, the past-year and past-month use of cannabis increased by 50 per cent and 65 per cent, respectively.[21] However, the most pronounced increase in cannabis use is among those who are daily or near-daily users of cannabis – a proportion that has doubled. In 2017, over 24 million people aged 18 or over were estimated to be past-month users of cannabis; of them, more than 40 per cent, or over 10 million people, were daily or near-daily[22] users of cannabis. Consumption data from states such as Colorado, where the non-medical use of cannabis has been legalized, indicate, daily or near-daily users of cannabis accounted for 80 per cent of the quantity of cannabis consumed in 2017.[23] As noted in earlier editions of the *World Drug Report*, the expansion in the use of cannabis in the United States has occurred in a context of ongoing policy debates over legalizing the non-medical use of cannabis; drastic policy changes; media coverage of the legalization debate, in which the medical benefits of cannabis have been frequently highlighted;[24] and a decrease in the number of people perceiving cannabis use as a risk to health.

In the United States, 3 million people aged 12 years or older initiated cannabis use in 2017, which is significantly more than in 2016 and in 2002. The

FIG. 14 Trends in cannabis use among the adult population (aged 18 and older) in the United States of America, 2002–2017



Source: United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

18 *World Drug Report 2009* (United Nations publication, Sales No. E.09.XI.12).

19 Results from the *National Survey on Drug Use and Health 2017*.

20 UNODC, annual report questionnaire data based on the *Canadian Tobacco, Alcohol and Drugs Survey 2015*.

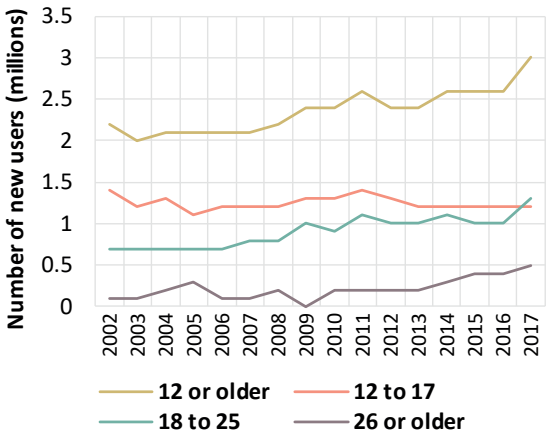
21 *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*.

22 Daily or near-daily use is defined as use of a substance for 20 days or more in month.

23 Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).

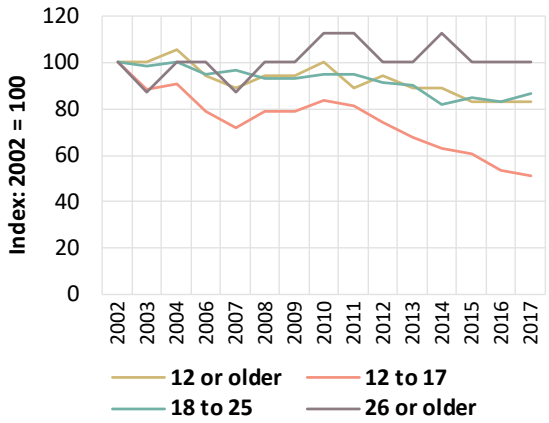
24 See, for example, Hwalbin Kim, "Framing marijuana: a study of how us newspapers frame marijuana legalization stories and framing effects of marijuana stories", Doctoral dissertation, University of South Carolina, 2017.

FIG. 15 Past-year cannabis use initiation among the population aged 12 and older in the United States, 2002–2017



Source: United States, Substance Abuse and Mental Health Services Administration, *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*, HHS Publication No. SMA 18-5068, NSDUH Series H-53, (Rockville, Maryland 2018).

FIG. 16 Cannabis use disorders in the United States, 2002–2017



Source: United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

most significant increase in the number of cannabis initiates was among those aged 18 and older.[25]

While cannabis use disorders have remained fairly stable among the population aged 12 and older since 2002 and have been declining among those aged 12–17, there was a statistically significant increase in cannabis use disorders in 2017 among those aged 18–25 years.

The annual prevalence of cannabis use among high-school students increased significantly in 2017 compared with the previous year: from an annual prevalence of 9.4 per cent among 8th grade students in 2016 to 10.1 per cent in 2017; from 23.9 per cent among 10th grade students in 2016 to 25.5 per cent in 2017; and from 35.6 per cent among 12th grade students in 2016 to 37.1 per cent in 2017. However, these values are lower than the annual prevalence in 2002 for 8th and 10th grade students.[26] By contrast, the past-month and daily and near-daily use of cannabis also showed signs of an increase among 10th grade students from 2016 to 2017. The National Survey on Drug Use and Health reported a stable trend over the period 2016–2017 in past-year and past-month cannabis use among those aged 12–17.

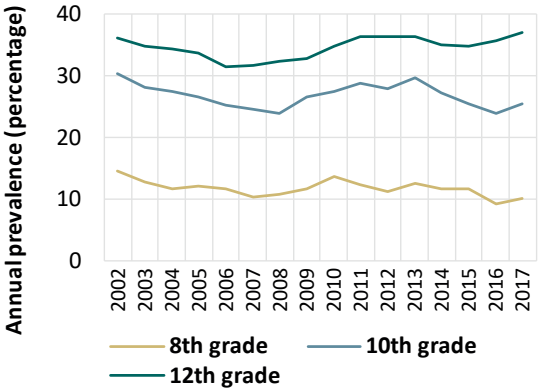
Young people who do not attend college seem to be more vulnerable to frequent cannabis use than high-school graduates who attend college. In 2017, cannabis use was much higher among high school graduates aged 19–22 who attend college than among those who do not attend college,[27] and the proportional difference between the college students and their peers increased by measures of more frequent use: annual prevalence of cannabis use among the college students was 38 per cent, compared with 41 per cent among those who were not in college. Similarly, past-month cannabis use was 21 per cent among the college students, compared with 28 per cent among those who were not in college. The rate of daily cannabis use was three times higher for the group of young people not in college (13.2 per cent), compared with the group of college students (4.4 per cent).

25 *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health.*

26 United States, National Institute on Drug Abuse, "Trends in Prevalence of Various Drugs", Monitoring the Future Study (revised December 2018). Available at www.drugabuse.gov/trends-statistics/monitoring-future/monitoring-future-study-trends-in-prevalence-various-drugs.

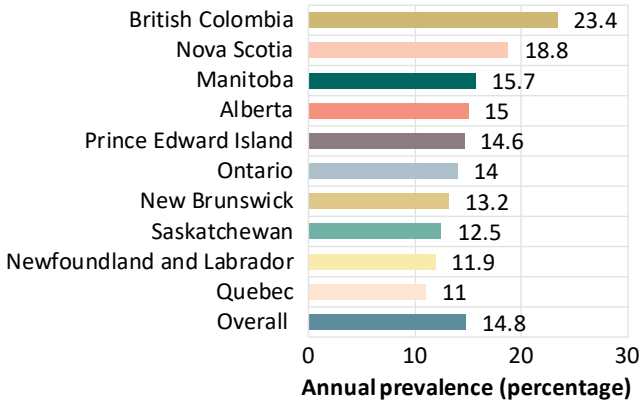
27 John E Schulenberg and others, *Monitoring the Future National Survey Results on Drug Use, 1975–2017: Volume II, College Students and Adults Ages 19–55* (Institute for Social Research, The University of Michigan, 2018).

FIG. 17 Cannabis use among high-school students in the United States, 2002–2017



Source: Lloyd D. Johnston and others, *Monitoring the Future National Survey Results on Drug Use: 1975-2017: Overview, Key Findings on Adolescent Drug Use* (Institute for Social Research, The University of Michigan, 2018).

FIG. 18 Cannabis use among the population aged 15 and older in Canada, by province, 2017



Source: Canada, Health Canada, "Canadian Tobacco, Alcohol and Drugs Survey (CTADS): summary of results for 2017" (updated 4 January 2019). Available from www.canada.ca/en/health-canada/services/canadian-tobacco-alcohol-drugs-survey/2017-summary.html.

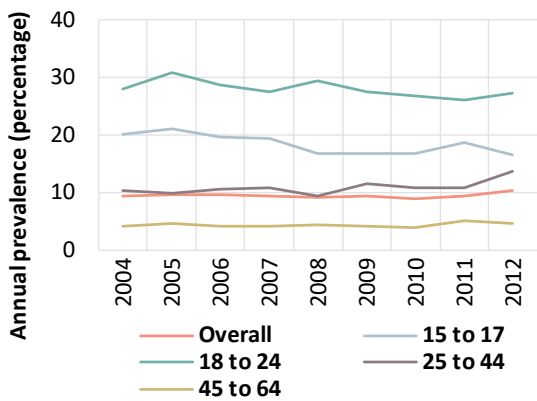
Note: Health Canada does not provide analysis of drug use in the territories (Northwest Territories, Nunavut and Yukon).

Cannabis use in Canada also continues to increase

In North America, comparatively high levels of cannabis use have also been reported in Canada. Past-year prevalence of cannabis use in 2017 was 15 per cent (4.4 million people) among the population aged 15 and older, of whom 37 per cent reported using cannabis for medical purposes. Past-year use of cannabis among the general population has increased by 25 per cent since 2015. As in other countries, past-year use of cannabis is reported to be higher among young people (aged 15–19) (19 per cent annual prevalence) and those aged 20–24 (33 per cent annual prevalence) than those aged 25 or older (13 per cent annual prevalence). In 2017, nearly one quarter of past-year users, or 1 million people, were daily or near-daily users of cannabis.[28]

While cannabis users reported using more than one mode of cannabis consumption, smoking was the most common (91 per cent) in Canada in 2017. Mixing cannabis with tobacco (22 per cent), "chasing" (smoking a tobacco product right after smoking cannabis) (34 per cent) and consuming cannabis in edibles such as brownies (38 per cent) were also

FIG. 19 Cannabis use in Canada, by age group, 2004–2012



Source: Canadian drug use monitoring survey (CADUMS), 2004–2012.

reported.[29] Past-year cannabis use was reported to be above the national average in British Columbia, Nova Scotia and Manitoba.

When looking at the long-term trend, cannabis use in Canada remained stable between 2004 and 2011, at about 9 per cent annual prevalence among the general population aged 15 and older, but it increased each year thereafter: past-year cannabis

28 Canada, Health Canada, "Canadian Tobacco, Alcohol and Drugs Survey (CTADS): summary of results for 2017" (updated 4 January 2019). Available from www.canada.ca/en/health-canada/services/canadian-tobacco-alcohol-drugs-survey/2017-summary.html.

29 Ibid.

THC and CBD: the importance of considering both

The principal cannabinoids in the cannabis plant are THC, CBD and CBN. As they occur in the plant, all three are also known as phytocannabinoids, as opposed to endocannabinoids (anandamide and 2-AG), which occur naturally in the body. Among them, THC is considered to be the primary substance that causes the psychoactive effects sought by cannabis users. THC and its synthetic preparation dronabinol are used medically for the management of conditions such as anorexia associated with weight loss in patients with acquired immune deficiency syndrome (AIDS), nausea and vomiting associated with chemotherapy for cancer, and for chronic pain related to conditions such as multiple sclerosis and for neuropathic pain. Used non-medically, in a healthy person, THC can induce psychotic symptoms and anxiety and can impair memory and psychomotor control,[a] whereas in patients with schizophrenia, THC may exacerbate existing psychotic symptoms, anxiety and memory impairments. THC is therefore considered as the main cannabinoid responsible for the development of mental health disorders in long-term, heavy users of cannabis. One plausible reason for an increased risk of developing mental health disorders, including schizophrenia,[b] among long-term cannabis users is that cannabinoids such as THC may interfere with the neurodevelopmental roles of endocannabinoids.[c] The effects of CBD, on the other hand, are considered to be the opposite of those of THC; CBD has anxiolytic and anti-psychotic properties.[d]

Over the past decade, an increasing number of cannabis products that are considered to have high levels of potency have been introduced onto the cannabis market. These products tend to be high in THC and low in CBD. In Europe, for example, the mean THC content of cannabis resin doubled from about 8 per cent in 2006 to 17 per cent in 2016, and the THC content of cannabis herb increased from 5 per cent to 10 per cent over the same period.[e] In the State of Colorado, in the United States, cannabis flower is reported as having a THC content of 20 per cent and cannabis concentrates of 69 per cent.[f] As the scientific literature suggests, such potent cannabis may predispose cannabis users, in particular those who are long-term, high-frequency users, to cannabis use disorders and associated psychiatric comorbidity.[g] Moreover, it is considered that, when CBD and THC are co-administered in balanced proportions, CBD may be able to reduce some of the effects of THC, such as anxiety and paranoia.[h]

[a] Deepak Cyril D'Souza and others, "Delta-9-tetrahydrocannabinol effects in schizophrenia: implications for cognition, psychosis, and addiction", *Biological Psychiatry*, vol. 57, No. 6 (March 2005), pp. 594–608.

[b] Marta Di Forti and others, "The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study", *The Lancet Psychiatry*, 19 March 2019.

[c] Hui-Chen Lu and Ken Mackie, "An introduction to the endogenous cannabinoid system", *Biological Psychiatry*, vol. 79, No. 7 (April 2016), pp. 516–525.

[d] Franjo Grotenhermen, Ethan Russo and Antonio Waldo Zuardi, "Even high doses of oral cannabidiol do not cause THC-like effects in humans: comment on Merrick et al. *Cannabis and Cannabinoid Research 2016*", *Cannabis and Cannabinoid Research*, vol. 2, No. 1 (2017).

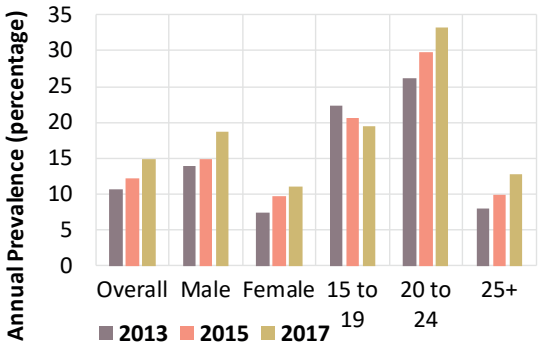
[e] Tom P. Freeman and others, "Increasing potency and price of cannabis in Europe, 2006–16" *Addiction*, 29 December 2018.

[f] For trends in the potency of cannabis products, see the section on development of cannabis markets in different states in the United States in the present booklet.

[g] Darby J. E. Lowe and others, "Cannabis and mental illness: a review", *European Archives of Psychiatry and Clinical Neuroscience*, vol. 269, No. 1 (2019), pp. 107–120.

[h] Sagnik Bhattacharya and others, "Opposite effects of Δ-9-tetrahydrocannabinol and cannabidiol on human brain function and psychopathology", *Neuropsychopharmacology*, vol. 35, No. 3 (February 2010), pp. 764–774.

FIG. 20 Cannabis use in Canada, by sex and age group, 2013–2017



Source: Canada, Health Canada, "Canadian Tobacco, Alcohol and Drugs Survey (CTADS): summary of results for 2017" (updated 4 January 2019).

Note: The Canadian Tobacco, Alcohol and Drugs Survey was initiated as a biennial survey on tobacco, alcohol and drugs in 2013 and replaced the earlier CADUMS (Canadian drug use monitoring survey); therefore, the results of the two are not entirely comparable, in particular, across age groups.

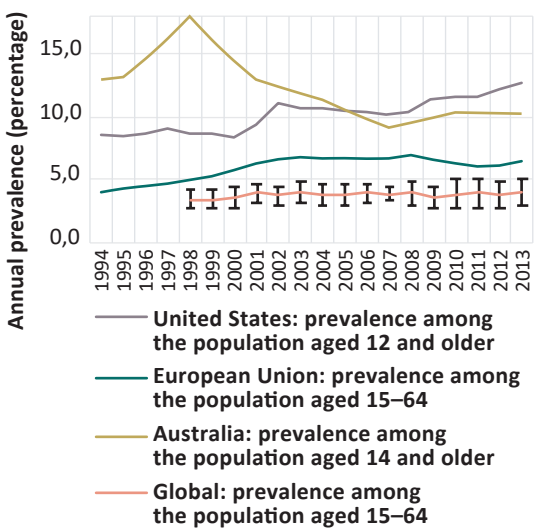
use increased by 40 per cent between 2013 and 2017. This is largely a result of a decrease in the perception of risk around cannabis use and of the national debate about legalizing non-medical use of cannabis.[30, 31] The increase in cannabis use in Canada since 2013 has been more pronounced among adults (aged 20 or older) while it has declined among young people (aged 19 or younger).

Cannabis use remains relatively stable in Oceania and Europe

While Canada and the United States have experienced significant increases in cannabis use in the past decade, the trend in Oceania has been different. Annual prevalence of cannabis use in Oceania, most notably in Australia, was substantially higher than in the United States in the 1990s, but it decreased dramatically, from almost 18 per cent of the population aged 14 and older in 1998 to roughly 10 per cent a decade later. It has remained at that level throughout the past decade, at almost 4 percentage points below the level reported in the United States.

Cannabis use in countries in Western and Central Europe has fluctuated over the past decade, with 6–7 per cent of the population aged 15–64 having used cannabis in the past year. The highest annual prevalence of cannabis use in Western and Central Europe in recent years has been reported by France (11.1 per cent in 2016), Italy (10.2 per cent in 2017), Spain (9.5 per cent in 2015), Czechia (9.5 per cent in 2016), Netherlands (9.2 per cent in 2017) and Switzerland (9.1 per cent in 2016). Among the six countries that provided data on cannabis use in 2017, five reported an increase since the last survey. Past-month use of cannabis in Western and Central Europe (primarily European Union member States) is estimated at around 3.1 per cent of the population aged 15–64 in 2017; on average less than 1 per cent of the population aged 15-64 are estimated to be daily or near-daily users of cannabis. The prevalence of cannabis use remains high among young adults (aged 15–34), with an average past-month prevalence of 5.4 per cent; 1.2 per cent of young adults were daily or near-daily users of cannabis in 2017.[32]

FIG. 21 Cannabis use in Australia, the United States of America, the European Union and globally, 1994–2017



Sources: UNODC, responses to the annual report questionnaire; EMCDDA; Substance Abuse and Mental Health Services Administration (United States), EMCDDA; and Australian Institute of Health and Welfare.

30 Anna McKiernan and Katie Fleming, *Canadian Youth Perceptions on Cannabis* (Ottawa, Canadian Centre on Substance Abuse, 2017).

31 Eldon Spackman and others, "Marijuana use and perceptions of risk and harm: a survey among Canadians in 2016", *Healthcare Policy*, vol. 13, No. 1 (August 2017).

32 EMCDDA, "Prevalence of drug use", Statistical Bulletin 2018.

Synthetic cannabinoid receptor agonists and their trends

Synthetic cannabinoid receptor agonists, also known as synthetic cannabinoids, are substances designed to mimic the desired effects of cannabis and act on CB1 and CB2 receptors;[a] these substances can include wide-ranging and chemically diverse substances. Many of them were used widely in pharmaceutical research for several decades and were not considered suitable for human consumption. Outside of pharmaceutical research, synthetic cannabinoids were present in the market until 2004, when they began appearing in advertisements for herbal preparations in, for example, Europe and North America.[b] Synthetic cannabinoids are typically soaked into or sprayed onto plant material, which itself did not contain substances with psychoactive effects. Many synthetic cannabinoids were sold as smokable "herbal blends" and "legal highs" under a variety of brand names, such as "Spice", "K2" and "Kronic", and labelled "not for human consumption".[c] Since UNODC began monitoring NPS in 2009, synthetic cannabinoids have been one of the main categories of substances reported as NPS identified in national markets.

Most persistent cannabinoid receptor agonists that were reported to UNODC over the period 2012–2018 and have remained on the market

5F-APINACA; AB-FUBINACA; AB-PINACA; ADB-FUBINACA; AM-2201; APINACA; JWH-018; JWH-081; JWH-122; JWH-203; JWH-210; JWH-250; MAM-2201; PB-22; QUCHIC; RCS-4; UR-144; XLR-11.

It remains challenging to determine the prevalence of use of any particular cannabinoid receptor agonists, since in most instances users are unaware of the kind of synthetic cannabinoid they are using. Moreover, the use of synthetic cannabinoids, in many instances after these substances have been put under national control, remains more common and problematic among marginalized groups, especially among people who are homeless or in prison.[d]

Many synthetic cannabinoid receptor agonists have been associated with acute cases of intoxication and even death in some instances.[e] Overall, the acute psychological effects of synthetic cannabinoids may resemble those reported during acute intoxication with cannabis (THC), which can range from euphoria to distress and anxiety. Along with distorted perceptions of time, hallucinations and paranoia, psychiatric disorders may also occur.[f] For example, case studies of acute administration of and intoxication with ADB-FUBINACA suggest that the substance may have contributed to severe adverse reactions such as agitation, confusion, hypertension, tachycardia and even death.[g, h] Another case study looked at the rapid death of an individual who had used ADB-FUBINACA. The autopsy showed the cause of death to be coronary arterial thrombosis in combination with the use of ADB-FUBINACA.[i] In 2015, Poland registered an outbreak of intoxications with a substance called "mocarz", which contained frequently changing synthetic cannabinoids. Many of the "mocarz" samples contained a variety of synthetic cannabinoids, including UR-144, XLR-11, BB-22, 5F-PB-22 and MDMB-CHMICA. One of the victims reported to have died from multiple organ failure and was found to have MDMB-CHMICA in the body.[j]

While the non-medical use of natural cannabis and its products is common, and natural cannabis remains the principal type of cannabis consumed, synthetic cannabinoid receptor agonists continue to proliferate in many subregions, as reported through the UNODC early warning advisory. Owing to the unknown chemical structure of many synthetic cannabinoid receptor agonists and therefore their potential harm, their use always carries the risk of acute intoxication and other adverse public health effects.

a Nicola J Kalk and others, "Spice and all things nasty: the challenge of synthetic cannabinoids" *BMJ*, vol. 355, No. 8079 (October 2016).

b EMCDDA, "Synthetic cannabinoids in Europe", Perspectives on Drugs series (Lisbon, 6 June 2017).

c *World Drug Report 2017*, Booklet 4: *Market Analysis of Synthetic Drugs*.

d Ibid.

e "Synthetic cannabinoids in Europe".

f Francois R. Lamy and others, "Increases in synthetic cannabinoids-related harms: results from a longitudinal web-based content analysis", *International Journal of Drug Policy*, vol. 44 (June 2017), pp. 121–129.

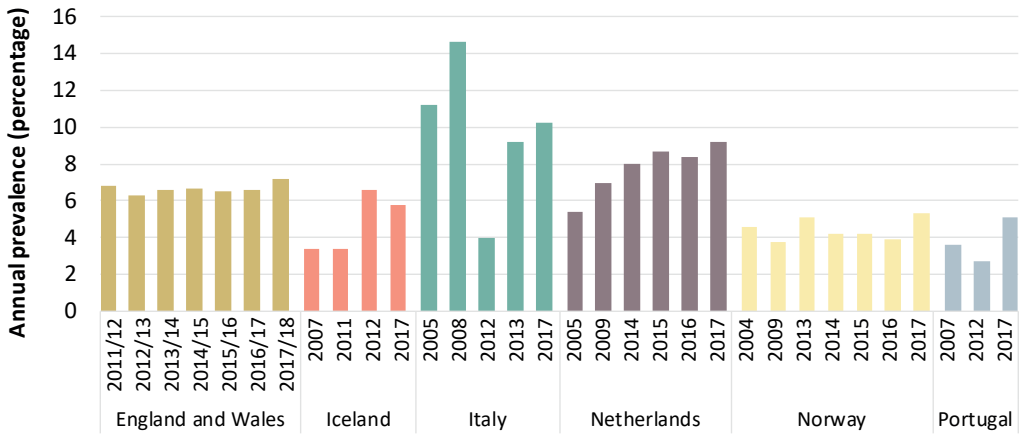
g Nicklaus Brandehoff and others, "Synthetic cannabinoid 'Black Mamba' infidelity in patients presenting for emergency stabilization in Colorado: a P SCAN cohort", *Clinical Toxicology*, vol. 56, No. 3 (2018), pp. 193–198.

h Rex Pui Kin Lam and others, "Supraventricular tachycardia and acute confusion following ingestion of e-cigarette fluid containing AB-FUBINACA and ADB-FUBINACA: a case report with quantitative analysis of serum drug concentrations", *Clinical Toxicology*, vol. 55, No. 7 (April 2017), pp. 662–667.

i Kevin G. Shanks, William Clark and George Behonik, "Death associated with the use of the synthetic cannabinoid ADB-FUBINACA", *Journal of Analytical Toxicology*, vol. 40, No. 3 (April 2016), pp. 236–239.

j UNODC, Laboratory and Scientific Section Portals, "Poland: "Mocarz" intoxications now linked to synthetic cannabinoid MDMB-CHMICA" (March 2016).

FIG. 22 Cannabis use in selected countries in Western Europe



Source: UNODC, responses to the annual report questionnaire.

Developments in measures regulating the non-medical use of cannabis

As of March 2019, legal provisions allowing the non-medical use of cannabis have been approved in Canada and Uruguay as well as in 10 jurisdictions in the United States. The common feature of the legislation is that it generally allows for the production and sale of cannabis products for non-medical use in the relevant jurisdictions. However, there are differences in the level of regulation and control of the non-medical use of cannabis and the different regulations that are being implemented in different local contexts and dynamics are likely to have a different impact within each jurisdiction on the development of cannabis markets, the extent of non-medical use of cannabis and other public health, safety and criminal justice outcomes.

This section contains a description of the different features and status of legislation and regulations on the non-medical use of cannabis in Canada, Uruguay and jurisdictions in the United States. For the United States, the section covers the main features of cannabis regulations and some state-level differences in the regulation of cannabis markets. It also covers the development of a cannabis market in some of the states where information was available. The section also presents the main features of the federal law passed by the Government of Canada in 2018 that legalized the non-medical use of cannabis, as well as the division of responsibilities at the federal and state levels in regulating the non-medical use of cannabis in Canada.[33]

Cannabis regulations and their implementation in the United States

By the end of 2018, a total of 33 states, as well as the District of Columbia, Guam and Puerto Rico, had approved or had in place a comprehensive public medical cannabis programme. As of 2019, 10 state-level jurisdictions in the United States,[34] plus the District of Columbia, allow the non-medical use of cannabis.[35, 36] In 2018, Michigan and Vermont were the two states in which legislation allowing the non-medical use of cannabis had been approved. While the non-medical use of cannabis was legalized through voters' initiatives in the other jurisdictions, Vermont is the only state that legalized it through state legislature. It is worthy of note that all the states that have legalized the non-medical use of cannabis had prior measures permitting the medical use of

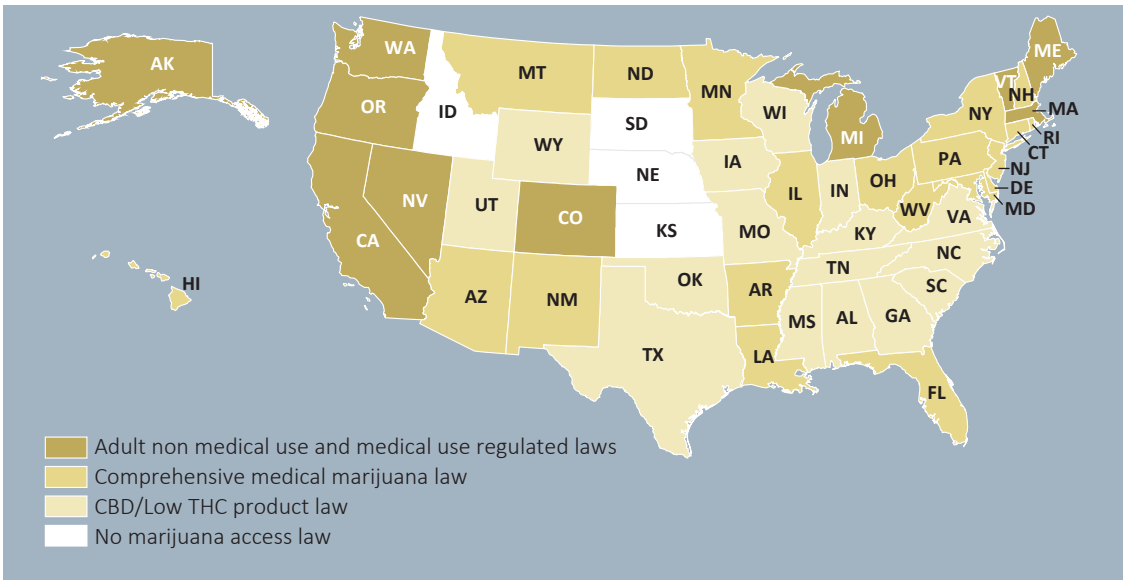
33 For details of different measures in each of the jurisdiction, see table 2 on pages 36–43 of the present booklet.

34 In the United States, cannabis is federally prohibited as a substance in schedule I of the Controlled Substances Act.

35 Home cultivation is not allowed in the State of Washington. The number of plants allowed in each state varies.

36 National Conference of State Legislatures, "Marijuana overview", 14 December 2018.

MAP 1 Jurisdictions in the United States that allow non-medical use of cannabis, medical use of cannabis and those that do not allow access to cannabis, December 2018



Source: National Conference of State Legislatures, "Marijuana overview", 14 December 2018.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

cannabis. In fact, in states such as Colorado, the initial applications for recreational cannabis licences were restricted to businesses that were already licensed to sell cannabis for medical purposes.

Cannabis regulations in the United States are not implemented uniformly in each state

The level of implementation of the legislation permitting the non-medical use of cannabis varies across state jurisdictions and may even include different approaches within the same jurisdiction. For example, some states that have legalized the non-medical use of cannabis allow city administrations to formulate their own cannabis regulations and give options to cities and neighbourhoods within those cities to opt out and not permit the sale of cannabis. In Colorado, 25 of the state's 64 counties allow some form of business activity related to the non-medical use of cannabis, which may include only allowing cannabis dispensaries to operate, allowing cannabis production, setting a limit on licensing new businesses, or a combination of those. The remaining counties in Colorado have either a complete ban or a moratorium in place. In Oregon, of the state's 36 counties, 20 allow the sale of cannabis for non-medical use and 16 have banned it. In California, the largest state to legalize the non-medical use of cannabis, less than 20 per cent of cities, i.e., 89 out of 482 cities, allow retail shops to sell cannabis for non-medical use.[37] Moreover, fewer than one in five cities in California allow the sale of cannabis for medical purposes, which has been legal in the state for almost 22 years. In Michigan, the municipalities can place harsher restrictions on cannabis businesses than the state legislation. Such restrictions may include capping the number of licences or banning the commercial production and sale of cannabis for non-medical use altogether. Residents can also petition their town for such ordinances.

Regulation of the cannabis market is similar to the regulation of the alcohol market

All the states that have measures allowing the non-medical use of cannabis regulate the cannabis market in a manner similar to that of the alcohol market; for instance, by prohibiting the sale of cannabis to people under 21 years of age or by licensing

37 Patrick McGreevy (Tribune News Service), "Legal pot sales fall short of expectations in California", Governing: the States and Localities, 3 January 2019.

commercial enterprises to produce, market and sell a wide range of cannabis products. Some states, such as Alaska, Oregon and Washington, have added cannabis market regulation to the existing alcohol or liquor boards. In California, Colorado and Massachusetts, cannabis regulatory bodies have been established and in Nevada and Michigan, the cannabis market is regulated by the departments of revenue or taxation. Maine is the only state where cannabis regulation is overseen by the Department of Agriculture, Conservation and Forestry. At the time of writing, the regulatory system for the production or sale of cannabis for non-medical use in Vermont had not been set up.

Different limits for possession and home cultivation of cannabis

With the exception of the District of Columbia and Maine, which permit the possession of larger quantities, most of the states allow for the possession of up to 28.5 g of cannabis. In addition, all states permit the home cultivation of around six plants, with a varying number of plants that can be flowering; Michigan, which allows for the home cultivation of up to 12 plants, is an exception. The conditions allowing home cultivation of cannabis vary but may include measures such as plants having to be grown out of public view or cultivation being subject to the permission of the house owners or other tenants in the building or to neighbourhood zoning laws.

Taxes levied on cannabis differ considerably

In general, the pricing of and taxes levied on cannabis products are based on different considerations and essentially adhere to Laffer curve criteria.[38] When states make decisions on how to tax cannabis, one consideration is to maintain a price that is more attractive than that on the "black market" in order to prevent organized crime groups from generating profits from the illicit trade in cannabis and for the State authorities themselves to generate revenue from cannabis sales. Part of that revenue is utilized for implementing the regulatory framework and investing in public health initiatives to address the harm caused by the non-medical use of cannabis. Another consideration is that the price of cannabis products (including taxes) needs to be low enough to displace the illegal cannabis market, but not so low that it encourages more and more frequent use of cannabis. On the basis of these considerations, all states have put together an elaborate structure of taxation and revenue collection from the cultivation, production and sale of cannabis. Current tax rates range from about 10 to 37 per cent across states, although several states have recently changed their tax rates and/or structures.[39] Currently, at 37 per cent, Washington State levies the highest sales tax. Colorado imposes a 15 per cent excise tax on cultivation and used to impose a 10 per cent cannabis retail sales tax until it was lowered to 8 per cent in July 2017. It also imposes an additional 2.9 per cent state sales tax and up to 3.5 per cent local sales tax. City-level jurisdictions can also impose their own local taxes on the sale of cannabis.

Advertising cannabis products

All of the states in which the use of cannabis is legalized have some degree of restriction on the advertising of cannabis products. For example, in California, advertising can only be directed at people aged 21 or older, there are restrictions on false claims that can be made relating to health benefits, and product labels cannot be appealing to children. In Colorado, advertising is restricted to media with audiences that comprise no more than 30 per cent of people under the age of 21. In some states, such as Washington, advertisements cannot depict cartoon characters and pictures that could be appealing to children.

Product proliferation

With regard to cannabis products and pricing in the states that have implemented measures for the non-medical use of cannabis, there has been a proliferation of products that include flowers, pre-rolled joints, vaporizers (vaping cannabis), concentrates and edibles such as cakes and soda drinks. The potency of those products can vary across states and, while

38 The Laffer curve, defined as the relationship between the tax rate and total revenue raised, is usually considered in macroeconomics to describe the relationship between income taxes and labour supply. A similar relationship has been applied to commodity taxes, as the tax pushes the price upwards, ultimately reducing demand. Arthur B. Laffer described this relationship (1985), although the concept is originally credited to Dupuit (1844).

39 For details of taxation in each state, see table 3 on pages 44–49 of the present booklet.

many states have facilities for monitoring potency, the increasing potency of cannabis products, in particular, products other than those made from cannabis flower, may be a public health concern as there are generally no restrictions on the potency of cannabis products.

Development of cannabis markets in different states in the United States

Prices of cannabis products in different states have also been fluctuating, which is a reflection of the competitiveness of the markets where the demand for cannabis products and the cultivation and production of cannabis are on the increase. It has been argued that there is still a residual illicit cannabis market in Washington and Colorado.[40, 41] The market for the non-medical use of cannabis has evolved in terms of the pricing and sale of cannabis products, changes in the potency of products and patterns of consumption of non-medical use. Since Colorado has a longer-standing cannabis market than other states, for both the medical and non-medical use of cannabis, with more long-term trend data, the examples in the present section are primarily taken from Colorado.

Decreasing prices in some jurisdictions have led to an increase in the demand for and sale of cannabis and related revenue

Colorado and Washington were the first states to legalize the non-medical use of cannabis. In both states, cannabis prices have decreased considerably since the inception of the drug's legal sale. In Colorado, the prices of cannabis for non-medical use are declining in general. From 2014 to 2017, the average annual price of cannabis flower decreased by 62 per cent, from $14.05 per gram (weighted average) in 2014 to $5.34 in 2017.[42] Over the same period, the price of cannabis concentrates decreased by 47.9 per cent, from $41.43 per gram to $21.57. The price of infused edible products has hovered around $18 per 100 mg package but has not exhibited a consistent trend over time. In the State of Washington, the price per gram of flower (pre-tax) decreased by 77 per cent, from $17.23 per gram in 2014 to $5.18 in October 2017. The decrease in retail prices is considered to reflect a competitive market in which both cultivators and retailers are constantly vying for business, although the decrease has also led to an increase in demand, sales and tax revenue. Thus, one concern in the State of Washington has been an oversupply of cannabis in the market because of overproduction: the area available for cannabis production was initially capped at 2 million square feet and later raised to 8 million square feet, and the number of licences for retail outlets, which was initially capped at 334, increased to 556 by January 2016.[43] During the period January to November 2018, total sales of different cannabis products were estimated at $1.4 billion in Colorado. The average retail price of inhalable products, which accounted for 80 per cent of total sales, decreased by 10 per cent; the average retail price of ingestibles (edibles) increased by 9 per cent; and the price of topical cannabis products by 10 per cent.[44]

Overall, according to a study of the market size and demand for cannabis in Colorado, while the price for marijuana is falling gradually, the price of a "standard serving" of THC has declined more rapidly. It is unclear whether this is a long-term trend that will lead to a "high THC/low price" paradigm, or whether the market price will stabilize to suggest an equilibrium.[45]

In the states of California, Colorado and Oregon, where price and sales monitoring data were available, combined sales reached $4.2 billion during the period January to November 2018. While prices mostly decreased in Colorado and Oregon, the trend was different in California (see the next subsection).

In 2017, based on sales data in Colorado, the principal demand for cannabis products for non-medical

40 Nicholas P Lovrich and other, "Learning from the legalization of recreational marijuana: a preliminary assessment of Washington State's experience", presented at Annual Meeting of the Academy of Criminal Justice Scienes, 2019 in Baltimore, USA

41 Jonathan P. Caulkins and others, "Triangulating web and gerneral population surveys: how well do results match legal cannabis market sales?", presented at annual conference of the International Society for the Study of Drug Policy, held in Vancouver, Canada, from 16 to 18 May 2018.

42 Orens and others, "Market size and demand for marijuana in Colorado".

43 Brett Hollenbeck and Kosuke Uetake, "Taxation and market power in the legal marijuana industry", Munich Personal RePEc Archive Paper No. 90085, 12 November 2018.

44 BDS Analytics Inc., data.

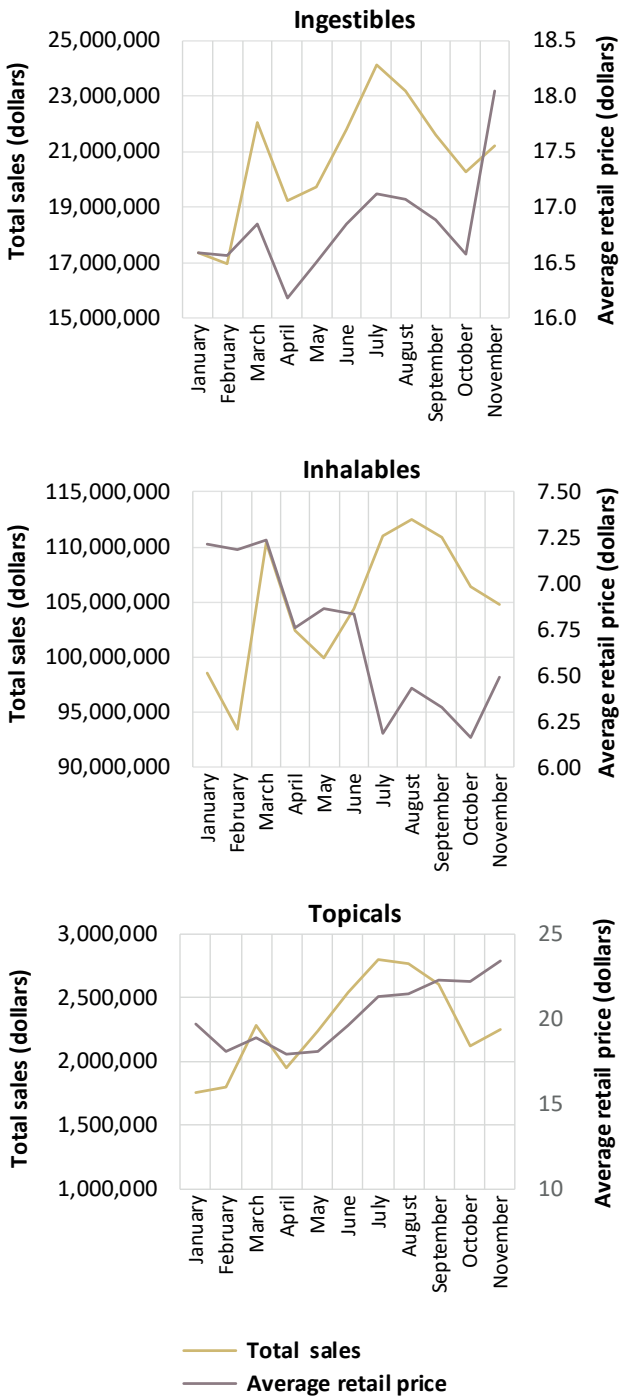
45 Orens and others, "Market size and demand for marijuana in Colorado".

use was for cannabis flower, followed by cannabis concentrates. The cannabis market appears to be moving away from flower (primarily for smoking), the price of which has been decreasing since 2014. On the other hand, an increase has been observed in the demand for products such as concentrates and edibles. In 2017, more than one third of total sales were for non-flower products, compared with one quarter in 2014. The most popular products, after cannabis flower, are oil-filled vaporizer cartridges, wax/shatter concentrates and infused edibles.

The sale of cannabis for non-medical use commenced operations in California in January 2018, albeit with some challenges

In California, the sale of cannabis for non-medical purposes officially began in January 2018, when stores were licensed. This occurred after 22 years of tolerating a largely unregulated medical cannabis market. The roll-out of sales of cannabis for non-medical purposes following the new legislation in California experienced some bottlenecks. Firstly, many cities did not allow the sale of cannabis for non-medical purposes, while many municipalities that did allow such sale were slow to issue licences to cultivators, dispensaries and manufacturers. In addition, stricter testing requirements went into effect in July 2018, before many manufacturers were ready and before adequate testing facilities were available to handle the added workload. Thus, the first year of sales was affected by supply shortages that led to high prices, a dynamic that was compounded by some of the highest tax rates on cannabis among the states that have regulations allowing its use for non-medical purposes. Cannabis prices on the regulated market in California thus remain higher than on the illicit cannabis market, in particular in the case of cannabis flower. This probably indicates that consumers of cannabis flower either remained with, or even moved to, the illicit cannabis market in 2018. As a result, the state failed to meet revenue projections in the first year. In the last months of 2018, some of the bottlenecks eased slightly and, as greater competition took hold, prices began declining slowly. However,[46] with a larger share of cannabis sales coming from categories such

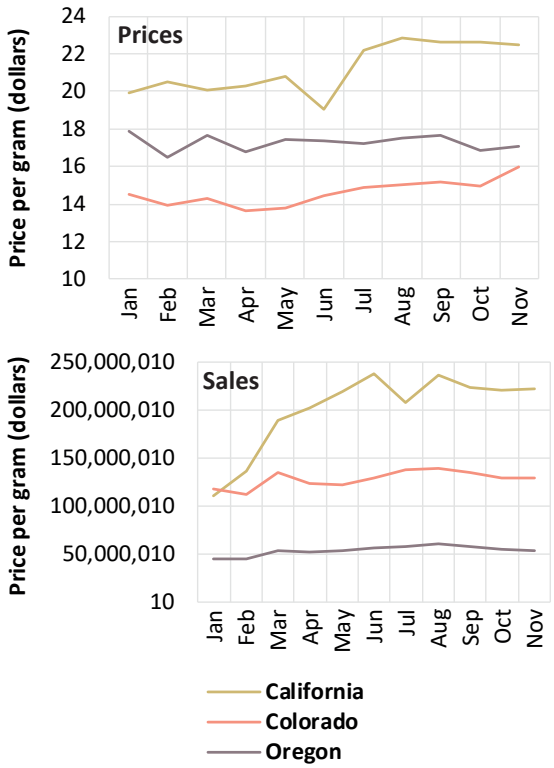
FIG. 23 Total sales and average retail price of cannabis in Colorado, by type of product, January to November 2018



Source: BDS Analytics Inc., Cannabis industry market trends and consumer insights, 2019.

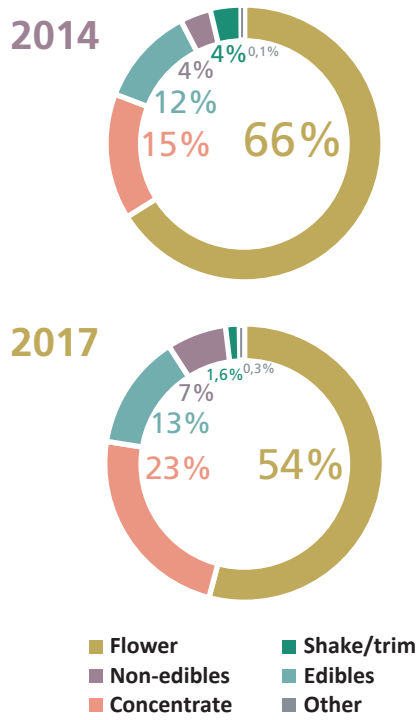
46 Analysis of market prices and sales provided by BDS Analytics Inc. to UNODC on request.

FIG. 24 Trends in cannabis prices and sales in California, Colorado and Oregon, January to November 2018



Source: BDS Analytics Inc., Cannabis industry market trends and consumer insights, 2019.

FIG. 25 Share of cannabis products in Colorado, 2014 and 2017



Source: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).

as concentrates, edibles and topicals, with comparatively higher average retail prices, the overall average retail price of cannabis was pushed up even further.

Trend in increasing potency of cannabis products

The monitoring of the potency of cannabis products was initiated in Colorado in 2014. According to testing data, while the potency (THC levels) of cannabis flower has remained lower (19.6 per cent in 2017) than that of cannabis concentrates (68.6 per cent in 2017), the potency of both product types increased by about 20 per cent over the period 2014–2017.

The market for cannabis concentrates has evolved rapidly, with a wide range of products, such as wax, shatter, oil and vaporizer cartridges, now available, each with varying average levels of THC, although the proportion of tested cannabis concentrates that contain over 75 per cent THC has increased fivefold in recent years (from 5 per cent in 2015 to 25 per cent in 2017). As mentioned earlier, the rate of the decrease in price per serving has outpaced the price-per-gram decrease, owing to a combination of falling cannabis flower prices and a slight increase in potency from 2014 to 2017.[47]

Per-capita non-medical consumption of cannabis

Understanding how cannabis use has changed in Colorado requires analysis that goes beyond the trend in the number of users. The biggest change in the cannabis market in Colorado actually seems to have occurred in terms of heavier and more frequent use of more potent cannabis products than

47 Orens and others, "Market size and demand for marijuana in Colorado".

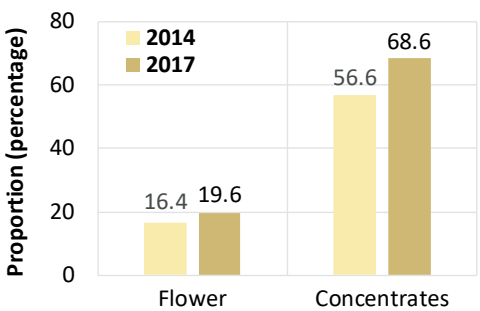
Understanding cannabis products

"Concentrates" are products made from the cannabis plant that have been processed to keep only the most sought-after plant compounds (primarily cannabinoids and terpenes), while removing excess plant material and other impurities.

"Shake" is made up of the small pieces of cannabis flower that have broken off the larger buds. "Trim" consists of the leftover leaves that are trimmed from the cannabis flower. Shake and trim offer a more cost-effective input than flower and provide reasonable levels of THC for extraction. Both shake and trim are sold directly to the consumer, usually in the form of pre-rolled joints.

"Cannabis-infused products", or "edibles", may include a range of products such as cookies, brownies and cakes, as well as cannabis-infused drinks and capsules. The ingredients may include cannabis tincture, butter or oil.

FIG. 26 THC content of cannabis flowers and concentrates in Colorado, 2014 and 2017



Source: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).

High level of THC consumption in Colorado

Heavy cannabis consumers are estimated to consume approximately 1.6 g of flower per day. This corresponds to inhaling roughly 314 mg of THC per day, based on an average potency of 19.6 per cent THC content of cannabis flower in Colorado in 2017. The quantity of cannabis product necessary to produce 314 mg of THC varies depending on whether consumption is of cannabis flower, concentrates or infused products.

Source: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).

in the past, whereas changes in the overall number of users are not so pronounced. An increase in current cannabis use (past 30 days) is visible across the United States as a whole. In terms of numbers, however, current users only represent a small share of annual users, although they do consume the vast majority of the cannabis products in the market.

Against the backdrop of market dynamics where cannabis prices are falling and cannabis products of up to 80 per cent THC content are increasingly available, it is important to understand the per-capita consumption of cannabis for non-medical use in Colorado.

In Colorado, based on national survey data for 2017, nearly 1 million people aged 21 or older are estimated to be past-year users of cannabis,[48] of whom one third have used cannabis once or less than once in the past month. On the other hand, more than one quarter of past-year cannabis users are estimated to be daily or near-daily users of cannabis. In 2017, it was estimated that annual consumption of cannabis flower by heavy users in Colorado was 189 tons (range: 148.3–233.4 tons), the use of most (80 per cent) of which was accounted for by daily or near-daily users of cannabis. Furthermore, it is estimated that visitors to Colorado

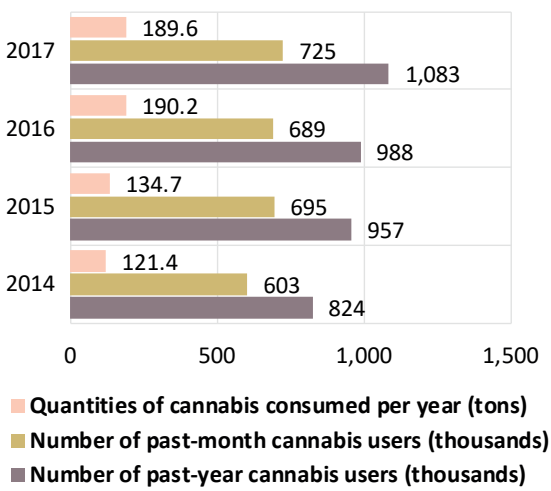
48 Marijuana Policy Group, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue, August 2018.

TABLE 1 Frequency of cannabis use in a month and annual consumption of cannabis flower among annual users of cannabis aged 21 or older in Colorado, 2017

Number of days used per month	Estimated past-year users	Proportion of users among past-year users (%)	Average consumption of cannabis flower per year (tons)	Quantity used out of total quantity (%)
Less than once	297,592	30.2	0.7	0.3
1–5 days	216,387	22	6.4	3.4
6–10 days	68,694	7	5.4	2.8
11–15 days	58,390	5.9	7.5	3.9
16–20 days	78,998	8	14	7.4
21–25 days	42,590	4.3	20.9	11
26–31 days	221,882	22.5	134.9	71.1
Total	**984,534**	**100**	**189.6**	**100**

Source: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).

FIG. 27 Trends in the number of users aged 18 and older and estimated quantity (tons) of cannabis flower consumed in Colorado, 2014–2017



Sources: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).; and United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National survey on drug use and health – state level estimates of cannabis users.

Note: The United States Substance Abuse and Mental Health Services Administration reports prevalence among those aged 12 or older or 18 years or older; in this case the latter age category has been used a proxy of number of cannabis users 21 years and older.

consume an additional 19 tons of cannabis flower per year.[49]

In terms of trends, the quantity of cannabis used by annual users saw a sharp increase over the period 2014–2017; 56 per cent in four years. While there was also an increase in the number of annual users, this was driven more by an increase in the number of past-month users and in large part by more frequent or regular users of cannabis. An increase in the state population also played a marginal role.[50] Heavy and regular use of high-potency cannabis products remains within a population subgroup that earlier studies have suggested is more socially disadvantaged than occasional cannabis users. Moreover, as the literature suggests, those cannabis users who progress to daily use have a higher probability of developing cannabis use disorders. Furthermore, high THC content in cannabis has been identified as a risk factor for acute and chronic adverse health outcomes, including mental health problems and cannabis use disorders.[51, 52]

49 Ibid.

50 Ibid.

51 Wilson M. Compton and others, "Marijuana use and use disorders in adults in the USA, 2002–14: analysis of annual cross-sectional surveys", *Lancet Psychiatry*, vol. 3, No. 10 (October 2016), pp. 954–964.

52 Steven S. Davenport and Jonathan P. Caulkins, "Evolution of the United States marijuana market in the decade of

Legalization of the non-medical use of cannabis in Canada

In 2018, the Government of Canada passed legislation permitting the production and sale of cannabis for non-medical use among people aged 18 or older. The legislation and its supporting regulations came into effect on 17 October 2018. The objectives of the legislation are to keep cannabis away from young people (under 18 years of age) while preventing criminals profiting from the distribution and sale of cannabis and safeguarding public health and safety by allowing adults (aged 18 or older) legal access to cannabis.[53] Based on the constitutional division of powers in Canada, the federal Government and provincial governments have different responsibilities.[54]

The federal Government is responsible for setting the requirements for those who grow and produce cannabis, including the types of cannabis products available for sale. Building on the framework, the production and sale of edible cannabis, cannabis extracts and topicals will be permitted for sale no later than 17 October 2019. The federal Government is also responsible for restricting promotional activity, as well as for setting standards in packaging and labelling, so that products are not appealing to young people and important product information is presented correctly. Selling cannabis through self-service displays or vending machines is also not permitted under the regulations.[55]

The provincial and territorial governments are responsible for developing, implementing, maintaining and enforcing systems to oversee the distribution and sale of cannabis. In most of them, the retail licensing regime is similar to that regulating the sale of liquor and the sale of cannabis takes place through licensed retailers, provincial retail stores and online. Provinces and territories can also add their own safety measures by adding restrictions, for example, by increasing the minimum age, set at 18 by the federal Government. At the time of writing, all the provinces and territories, other than Quebec and Alberta had set the minimum age for the non-medical use of cannabis at 19. The provinces and territories can also lower the personal possession limits, which are set at 30 g of legal cannabis, dried or equivalent, and can create additional rules for the cultivation of cannabis in the home, including the number of plants per residence. At the time of writing, most provinces allow cultivation of up to four cannabis plants either per household or, in some instances, per person. However, Manitoba and Quebec do not permit home cultivation, and the Government of Nunavut has not yet regulated the home cultivation of cannabis plants. All the provinces and territories have restrictions on the consumption of cannabis products in public places. In addition, each province and territory has its own excise stamp for cannabis products, without which their sale would not be legal.

With regard to the use of cannabis for medical purposes in Canada, access was first provided in 1999, under exemptions within the Controlled Drugs and Substance Act. In June 2013, the Government of Canada implemented the Marijuana for Medical Purposes Regulations, which set the rules and regulations of a commercial industry for the production and distribution of cannabis for medical use. Under the Regulations, individuals with a medical need could access quality-controlled dried marijuana produced under secure and sanitary conditions. In June 2015, the Government issued further exemptions to permit licensed producers to produce and sell cannabis oil, fresh cannabis buds and leaves, in addition to dried cannabis, and to allow authorized users

Permitted quantities of cannabis products for personal possession in Canada

- 30 g of dried cannabis or equivalent
- 150 g of fresh cannabis
- 450 g of edible product
- 2100 g of liquid product
- 7.50 g of concentrates (solid or liquid)
- 30 cannabis plant seeds

liberalization before full legalization", *Journal of Drug Issues*, vol. 46, No. 4 (August 2016).

53 Canada, Ministry of Justice, "Cannabis legalization and regulation". Available at www.justice.gc.ca/eng/cj-jp/cannabis.

54 See table 2 on page 36 of the present booklet.

55 Canada, Ministry of Justice, "Cannabis regulations", SOR/2018-144, December 2018.

to possess the different forms of cannabis for medical purposes. In August 2016, the Government of Canada introduced the Access to Cannabis for Medical Purposes Regulations, which replaced the earlier regulations. Health Canada is the regulatory body for cannabis for medical purposes and is responsible for licensing and overseeing the commercial medical cannabis industry and registering individuals to allow them to produce a limited amount of cannabis for their own medical purposes (or for another individual to produce it for them).

Under the new cannabis act, which came into force in October 2018, new regulations for the medical use of cannabis have replaced the Access to Cannabis for Medical Purposes Regulations.

Among other conditions, people authorized by their health-care provider are still able to access cannabis for medical purposes by buying directly from a federally licensed seller, registering with Health Canada for producing a limited amount of cannabis for their own medical purposes or designating someone to produce it for them. An authorized health-care provider can permit the use of cannabis for medical purposes for a period of up to one year and sets the daily quantity of dried cannabis expressed in grams. Furthermore, subject to age limits, in the provinces, people can also purchase cannabis (for medical use) through provincial or territorial authorized retail outlets or through authorized online sales platforms. Irrespective of how individuals obtain cannabis to be used for medical purposes, the possession limit is the lesser of a 30-day supply or 150 g of dried cannabis, or the equivalent amount if in another form. The number of people registered for the use of cannabis for medical purposes at the end of December 2018 was 359,292, which was an increase over the 23,930 people registered during the period April–June 2015.[56]

The implementation of laws permitting the non-medical use of cannabis in Canada is nascent and may take several years of monitoring to clarify how the cannabis market has evolved and to identify its dynamics and the impact of legalization on public health and public safety, among other outcome measures. Differences in the implementation of the federal legislation in the provinces may also vary in impact and thus require contextual analysis at the provincial and territorial levels. The Government of Canada has invested in a formal monitoring system and, among other measures, established a baseline in 2018 through a national cannabis survey for evaluating the impact of the new legislation and to support the development of policy and programme initiatives. The annual cannabis survey is aimed at providing an understanding of the frequency of cannabis use and to monitor changes in behaviour as a result of the legalization and regulation of the use of cannabis for non-medical purposes. The survey is also intended to be used in conjunction with other data sources to improve understanding of how the legalization and regulation of the use of cannabis could impact health and social services and the Canadian economy. The Government of Canada will also use the data to understand the patterns of use of cannabis for medical purposes and its impact on individuals. Furthermore, the Government of Canada has invested in research on cannabis and also monitors the scientific literature on the potential therapeutic uses of cannabis and its adverse effects and will continue to conduct research on cannabis and cannabinoids, including research on the use of cannabis for medical purposes.[57]

Developments in the regulation of cannabis in Uruguay

In 2013, the Government of Uruguay approved legislation (Law No. 19.172) regulating the cultivation, production, dispensing and use of cannabis for non-medical purposes. In accordance with the legislation, cannabis can be obtained by individuals aged 18 or older for non-medical purposes through registration with the national Institute for the Regulation and Control of Cannabis and by choosing one of three options: (a) purchase in authorized pharmacies; (a) membership of a club; or (c) domestic cultivation.[58] The quantity of cannabis permitted

56 Statista, "Quarterly number of medical marijuana clients registered in Canada between April 2015 and June 2018", 2019.

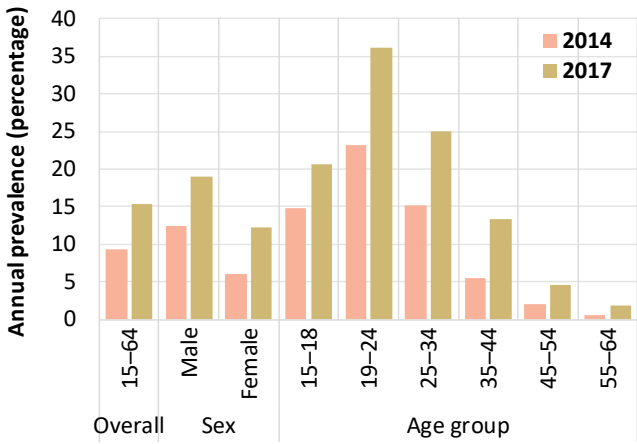
57 Canada, "Cannabis for medical purposes under the Cannabis Act: information and improvements", October 2018.

58 See also *World Drug Report 2018: Analysis of Drug Markets – Opiates, Cocaine, Cannabis, Synthetic Drugs* (United Nations publication, Sales No. E.18.XI.9 (Booklet 3)).

per person, obtained through any of the three mechanisms, cannot exceed 480 g per year. Initially, the Government of Uruguay set THC content at 2 per cent and CBD content at 6–7 per cent. In 2017, the Government introduced two new varieties, with THC content of 9 per cent and CBD content of almost 3 per cent.[59] Overall, the implementation of the regulation has been slow and gradual; for example, by February 2018 there were 16 pharmacies dispensing cannabis for non-medical use in the country, with 34,696 people registered to acquire cannabis from them. By February 2019, 115 cannabis clubs had been registered, with a total membership of 3,406, and 6,965 persons had been registered for personal or domestic cultivation of cannabis. This makes a total of approximately 45,000 people with access to the regulated cannabis market in Uruguay,[60] which remains a small share of the entire population of cannabis users in the country.

A survey on drug use was implemented by the Uruguayan Drug Observatory in 2014. The results of that survey showed an estimated annual prevalence of cannabis use of 9.3 per cent (12.5 per cent among men and 6.4 per cent among women), or about 162,000 past-year cannabis users. The past-month prevalence of cannabis use in 2014 was 6.5 per cent (9.4 per cent among men and 3.8 per cent among women), or about 112,000 past-month cannabis users.[61] In 2017, the project Monitor Cannabis Uruguay implemented another drug use survey, which showed that annual prevalence of cannabis use was 15 per cent among the adult population aged 15–64.[62] While past-year cannabis use increased over the period 2014–2017, among both men and women, the main increase was observed among young people (aged 19–24) and, to a lesser extent, among young adults (25–34 years).

FIG. 28 Cannabis use in Uruguay, by sex and age group, 2014 and 2017



Source: Monitor Cannabis Uruguay, 2018.

59 John Hudak, Geoff Ramsey and John Walsh, "Uruguay's cannabis law: pioneering a new paradigm", (Washington D.C., Centre for Effective Public Management, Brookings Institution, March 2018).

60 Uruguay, IRCCA, 4 March 2019.

61 Uruguay, Sixth national household survey on drug use (National Drug Observatory and National Drug Council, 2016).

62 Clara Musto and Gustavo Robaina, "Evolución del consumo de cannabis en Uruguay y mercados regulados", Monitor Cannabis Uruguay, 2018.

TABLE 2 Regulations for the legalization of the non-medical use of cannabis in Canada

	Federal law	Alberta	British Columbia	Manitoba
Legal process	Government legalislation			
Title	Cannabis Act	Gaming, Liquor and Cannabis Act and Gaming, Liquor and Cannabis regulation	Cannabis control and licensing Act (CCLA) Cannabis distribution Act (CDA)	Safe and Responsible Retailing of Cannabis Act
Date implemented	October 17, 2018			
Regulatory authority		Albertal Gaming Liquor and Cannabis (AGLC)	Liquor and cannabis regulation branch	Liquor, Gaming and Cannabis Authority of Manitoba (LGCA) Manitoba Liquor and Lotteries (MBLL)
Minimum age	18	19	19	19
Personal possession quantity	30 g dried or equivalent i.e., 150 g of fresh cannabis 450 g of edible product 2100 g of liquid product 7.5 g of concentrates (solid or liquid) 30 cannabis plant seeds	30 g or equivalent	30 g or equivalent	30 g or equivalent
Home cultivation	Grow from licensed seeds four cannabis plants per residence for personsal use Cannabis products such as food and drink at home if organic solvents are not used	Yes	Adults can grow up to four cannabis plants per household, but the plants must not be visible from public spaces.	Home growing is not permitted
Interpersonal sharing	30 g or equivalent of legal cannaibs product			
Retail transaction limit		30 g or equivalent		
Average retail price per gram after tax		$9.24 per gram	Dried cannabis flowers at $6.99 to $16.28 per gram.	$12 per gram

	Federal law	Alberta	British Columbia	Manitoba
Maximum THC content	Dried cannabis to be consumed by inhalations must not exceed 1 g in each discrete unit of cannabis product Products intended to be "administered orally, rectally, vaginally or topically" must not exceed a maximum yield quantity of 10 mg of THC. Cannabis oil must not exceed a maximum yield of 30 mg of THC per ml of the oil			
Commercial production	Licensed producers. Each province has an Excise stamp that needs to be fixed on the cannabis products			
Commercial distribution		Licensed retailers Private retail stores, provincial online sales	Private and provincial retail stores, online sales Retail licensing regime similar as for liquor	Private retail stores and online sales
Restrictions on edibles	Cannabis edible products and concentrates will be legal for sale one year after, i.e., October 2019	Edicles as yet not allowed	Edibles to be allowed within a year	Not allowed until Federal Government allows
Advertising	No promotion, packaging or labelling that could be considered appealing to young people, and ensuring that important product information is presented clearly.	No promotion, packaging or labelling that could be considered appealing to young people, and ensuring that important product information is presented clearly Advertising allowed inside cannabis stores	Same as Federal Law	
Taxation Cannabis excise duty rates in provinces and territories (Department of Finance, Canada)	Flower $0.25/g Trim $0.75/g Seed $0.25/seed Seedling $0.25/seedling Federal Ad Valorem Rate 2.5% of dutibal amount of cannabis product when delivered to purchaser	Flower: $ 0.75/g plus 16.8% of base amount Trim: $0.225/g plus 17.8% of base amount Seed: $0.75/seed plus 16.8% of base amount Ad Valorem Additional Rate 7.5% plus 16.8% of deductible amount when delivered (total applicable rate 24.3%)	Flower $0.75/g Trim $0.22/g Seed and seedling : $0.75/seed or seedling 7.5% provincial sale tax in addition to Federal taxes	Wholesale mark-up on non-medical cannabis, a $0.75 per gram mark-up plus 9% per cent mark-up applied on top of the $0.75 per gram
Restrictions on use		In cars, areas frequented by children, or tobacco-restricted areas	In cars, arease frequented by children, or tobacco restricted areas	Smoking and vaping cannabis is illegal in public places (including enclosed public places)

	Federal law	New Brunswick	New Foundland and Labrador	Northwest Territories
Legal process	Government legalislation			
Title	Cannabis Act	Cannabis Control Act Cannabis Management Corporation Act	Newfoundland and Labrador Cannabis Regulations Control and Sale of Cannabis Act	Cannabis Legalization and Regulation Implementation Act
Date implemented	October 17, 2018			
Regulatory authority		Cannabis Management Corporation	Newfoundland and Labrador Liquor Corporation (NLC)	North West Territories Liquor & Cannabis Commission (NTLCC)
Minimum age	18	19	19	19
Personal possession quantity	30 g dried or equivalent i.e., 150 g of fresh cannabis 450 g of edible product 2100 g of liquid product 7.5 g of concentrates (solid or liquid) 30 cannabis plant seeds	30 g or equivalent	30 g or equivalent	30 g or equivalent
Home cultivation	Grow from licensed seeds four cannabis plants per residence for personsal use Cannabis products such as food and drink at home if organic solvents are not used	Can grow up to four plants at primary residence. Plants must be kept in a separate locked space Outdoor plants must be located behind a locked enclosure at least 1.52 metres high	A private dwelling can contain up to four cannabis plants	Grow up to four cannabis plants per household
Interpersonal sharing	30 g or equivalent of legal cannaibs product			
Retail transaction limit				
Average retail price per gram after tax		$8.50 to 15.50	Range $16-13 per gram	Government online store $13.13 to $17.50 per gram

	Federal law	New Brunswick	New Foundland and Labrador	Northwest Territories
Maximum THC content	Dried cannabis to be consumed by inhalations must not exceed 1 g in each discrete unit of cannabis product Products intended to be " administered orally, rectally, vaginally or topically" must not exceed a maximum yield quantity of 10 mg of THC. Cannabis oil must not exceed a maximum yield of 30 mg of THC per ml of the oil			
Commercial production	Licensed producers. Each province has an Excise stamp that needs to be fixed on the cannabis products			
Commercial distribution		Cannabis NB retail stores and online sales	Private retail stores, provincial online sales	NWT Liquor Stores, provincial online sales
Restrictions on edibles	Cannabis edible products and concentrates will be legal for sale one year after, i.e., October 2019			
Advertising	No promotion, packaging or labelling that could be considered appealing to young people, and ensuring that important product information is presented clearly.			
Taxation Cannabis excise duty rates in provinces and territories (Department of Finance, Canada)	Flower $0.25/g Trim $0.75/g Seed $0.25/seed Seedling $0.25/seedling Federal Ad Valorem Rate 2.5% of dutibal amount of cannabis product when delivered to purchaser	Flower: $0.75/g Trim:$0.225/g Seed/seedlings $0.75 7.5% of the dutiable amount when delivered to purshaser	Flower: $0.75 /gm Trim:$0.225 /gm Seed/seedlings $0.75 7.5% of the dutiable amount when delivered to purshaser	Flower: $0.75/g Trim:$0.225/g Seed/seedlings $0.75 7.5% of the dutiable amount when delivered to purshaser
Restrictions on use		Illegal to smoke everywhere except private property or residence	Illegal to smoke everywhere except private property or residence	Illegal to smoke everywhere except private property or residendce

	Federal law	Nova Scotia	Nunavut	Ontario
Legal process	Government legalislation			
Title	Cannabis Act	Cannabis Control Act	Cannabis Act Cannabis Statutes Amendments Act	Cannabis, Smoke-Free Ontario, and Road Safety Statute Law Amendment Act, 2017 Cannabis Statute Law Amendment Act, 2018
Date implemented	October 17, 2018			
Regulatory authority		Nova Scotia Liquor Corporation	Nunavut Liquor and Cannabis Commission	Alcohol and Gaming Commission of Ontario
Minimum age	18	19	19	19
Personal possession quantity	30 g dried or equivalent i.e., 150 g of fresh cannabis 450 g of edible product 2100 grams of liquid product 7.5 grams of concentrates (solid or liquid) 30 cannabis plant seeds	30 g or equivalent No limit on home storage for personal use	30 g or equivalent	30 g or equivalent
Home cultivation	Grow from licensed seeds four cannabis plants per residence for personsal use Cannabis products such as food and drink at home if organic solvents are not used	Adults can grow up to four cannabis plants per household	Territorial government can regulate whether plants can be grown at home	Adults can grow up to four plants per residence
Interpersonal sharing	30 g or equivalent of legal cannaibs product			
Retail transaction limit				
Average retail price per gram after tax		$6.33 to $10.99 for "value cannabis," $9.00 to $10.98 for "core cannabis," and $10.99 and above for "premium cannabis."	$13.71 per gram	$7.95 to $13.25 per gram

	Federal law	Nova Scotia	Nunavut	Ontario
Maximum THC content	Dried cannabis to be consumed by inhalations must not exceed 1 g in each discrete unit of cannabis product Products intended to be "administered orally, rectally, vaginally or topically" must not exceed a maximum yield quantity of 10 milligrams of THC. Cannabis oil must not exceed a maximum yield of 30 mg of THC per ml of the oil			
Commercial production	Licensed producers. Each province has an Excise stamp that needs to be fixed on the cannabis products			
Commercial distribution		Designated NSLC stores or online	Currently through government-operated online store or by phone	Government retail stores and online sales
Restrictions on edibles	Cannabis edible products and concentrates will be legal for sale one year after, i.e., October 2019	Sale of edibles illegal under Federal law Edibles can be produced at home for personal use		
Advertising	No promotion, packaging or labelling that could be considered appealing to young people, and ensuring that important product information is presented clearly			
Taxation Cannabis excise durty rates in provinces and territories (Department of Finance, Canada)	Flower $0.25/g Trim $0.75/g Seed $0.25/seed Seedling $0.25/seedling Federal Ad Valorem Rate 2.5% of dutibal amount of cannabis product when delivered to purchase	Flower: $0.75/m Trim: $0.225/m Seed/seedlings $0.75 7.5 % of the dutiable amount when delivered to purshaser	Flower: $0.75/g plus 19.3% of base amount Trim: $0.225/g plus 19.3% of base amount Seed/seedling: $0.75 seed plus 19.3% of base amount 7.5% plus plus 19.3% of the dutiable amount of a cannabis product when delivered to a purchaser (total applica-ble rate of 26.8%)	Flower: $0.75/g plus 3.9% of base amount Trim: $0.225/g plus 19.3% of base amount Seed/seedling: $0.75 seed plus 19.3% of base amount 7.5% plus plus 19.3 % of the dutiable amount of a cannabis product when delivered to a purchaser (total applicable rate of 26.8 %)
Restrictions on use		Illegal everywhere except for areas where tobacco may be smoked	Illegal everywhere except for areas where tobacco may be smoked	Illegal to smoke everywhere except private property

	Federal law	Prince Edward Island	Quebec	Saskatchewan	Yukon
Legal process	Government legalislation				
Title	Cannabis Act	Cannabis Control Act Cannabis Management Corporation Act	Cannabis Regulation Act Act to constitute the Société québécoise du cannabis	The cannabis control (Saskatchewan) Act The cannabis control (Saskatchewan) regulations	Cannabis control and regulation act
Date implemented	October 17, 2018				
Regulatory authority		Provincial cannabis committee Cannabis management corporation	Société québécoise du cannabis	Cannabis Authority under the Saskatchewan Liquor and Gaming Authority	Yukon Liquor Corportation Cannabis Licensing Board (2019)
Minimum age	18	19	18	19	19
Personal possession quantity	30 g dried or equivalent i.e., 150 g of fresh cannabis 450 g of edible product 2100 grams of liquid product 7.5 grams of concentrates (solid or liquid) 30 cannabis plant seeds	30 g or equivalent	30 g in a public place 150 g in a private residence	30 g of dried cannabis or equivalent	30 g of dried cannabis or equivalent
Home cultivation	Grow from licensed seeds four cannabis plants per residence for personal use Cannabis products such as food and drink at home if organic solvents are not used	A household is permitted to have four cannabis plants.	Prohibited to cultivate cannabis for personal use	Limit of four cannabis plants grown per household	Four plants per household
Interpersonal sharing	30 g or equivalent of legal cannaibs product				
Retail transaction limit			30 g per visit at Société québécoise du cannabis		30 g per purchase
Average retail price per gram after tax		$5.65 pre-rolled half gram $7.83 per gram	$8.5 per gram	$13 to $16 per gram	$10.09 per gram THC oil $68.28 per bottle
Maximum THC content	Dried cannabis to be consumed by inhalations must not exceed 1 g in each discrete unit of cannabis product Products intended to be "administered orally, rectally, vaginally or topically" must not exceed a maximum yield quantity of 10 milligrams of THC. Cannabis oil must not exceed a maximum yield of 30 mg of THC per ml of the oil				

	Federal law	Prince Edward Island	Quebec	Saskatchewan	Yukon
Commercial production	Licensed producers. Each province has an Excise stamp that needs to be fixed on the cannabis products		Licensed producers		
Commercial distribution		Four dedicated government-owned retail stores and online sales	Government retail stores and online sales	Private retail stores, provincial online sales	Government retail stores and online sales Cannabis Yukon retail store
Restrictions on edibles	Cannabis edible products and concentrates will be legal for sale one year after, i.e., October 2019				
Advertising	No promotion, packaging or labelling that could be considered appealing to young people, and ensuring that important product information is presented clearly				
Taxation Cannabis excise durty rates in provinces and territories (Department of Finance, Canada)	Flower $0.25/g Trim $0.75/g Seed $0.25/seed Seedling $0.25/seedling Federal Ad Valorem Rate 2.5% of dutibal amount of cannabis product when delivered to purchase	Flower: $0.75/g Trim:$0.225/g Seed/seedlings $0.75 7.5 % of the dutiable amount when delivered to purshaser	Flower: $0.75/g Trim:$0.225/g Seed/seedlings $0.75 7.5 % of the dutiable amount when delivered to purshaser	Flower: $0.75/g plus 6.45% of base amount Trim: $0.225/g plus 6.45% of base amount Seed/seedling: $0.75 seed plus 6.45% of base amount 7.5% plus plus 6.45 per cent of the dutiable amount of a cannabis product when delivered to a purchaser (total applicable rate of 13.95%)	Flower: $0.75/g Trim: $0.225/g Seed/seedlings $0.75 7.5% of the dutiable amount when delivered to purshaser
Restrictions on use		Illegal to smoke everywhere except private property, some exceptions for certain public spaces	Illegal to smoke everywhere except for areas where tobacco may be smoked, excluding university and CEGEP campuses	Illegal to smoke everywhere except private property or residendce	Illegal to smoke everywhere except private property or residendce

TABLE 3 Regulations for the legalization of the non-medical use of cannabis in jurisdictions in the United States

	Alaska	California	Colorado	District of Columbia	Maine
Legal process	Voter initiative, state statute	Voter initiative	Voter initiative, amendment to state constitution	Voter initiative	Voter initiative
Title	Ballot Measure 2	Proposition 64	Amendment 64	Initiative 71	Question 1
Date passed	Nov-14	Nov-16	Nov-12	Nov-14	Nov-16
Date implemented/required date of rule adoption	February 2015: Personal possession, consumption, cultivation October 2016: Retail sales	Licences to be issued by 11 January 2018	December 2012: Personal possession, consumption, cultivation January 2014: Retail sales	February 2015: Personal possession, consumption, cultivation	Take effect on 7 January 2017; regulation for business to be in place August 2017
Regulatory authority	Alcohol and Marijuana Control Office	Bureau of Marijuana Control	Marijuana Enforcement Division (Department of Revenue)	Not applicable; considering separate legislation to regulate commercial production and sale to adults	Department of Agriculture, Conservation and Forestry
Minimum age	21	21	21	21	21
Residency requirement	None	Not specified	None	None	Not specified
Personal possession quantity	28.5 g	1 oz flower 8 g concentrate	28.5 g	2 oz (57 g)	2.5 oz (70.8 g) 5g concentrate
Home cultivation	Six plants, three of which can be flowering; not subject to public views; within property with lawful possession or with consent of the person in lawful possession	Six plants, away from view	Six plants, three of which can be flowering	Six plants per person; Twelve plants per household, six of which can be flowering	Six mature plants, twelve immature plants, unlimited amount of seedlings away from view and tagged with personal identification number. Property owners can prohibit home cultivation. Cultivation for medical purposes not subject to same restrictions
Interpersonal sharing	28.5 g	Yes	28.5 g	28.5 gm or less	Yes for home grow. Not permitted for retail marijuana
Retail transaction limit	28.5 g	Presumably same limits for personal possession	Residents: 28.5 g Non-residents: 7 g	Not applicable	2.5 oz. of marijuana Twelve seedlings
Retail pricing structure	Market	Market/commercial	Market	Market	Market/commercial
Average retail price per gram after tax	Medium $20.00	$21.20	$14.60	Not applicable	Medium quality $14.00
Maximum THC content	Not set initially	Not set initially	Not set initially	Not set initially	Not set initially
Registration requirements	None	Not specified	None	None	Not specified

	Alaska	California	Colorado	District of Columbia	Maine
Commercial production	Licensed cannabis producers	Licensed cultivators and manufacturers, varying types	Licensed cannabis cultivation facilities	None	Licensed cultivators; two types based on size
Commercial distribution	Licensed retail cannabis stores	Limits on market concentration	Licensed retail cannabis stores	None	State authority may not limit total number of stores; localities may regulate number and location of establishments
Restrictions on edibles	5 mg of THC for single serving, no more than 50 mg of homogenous THC allowed per package. Child-resistant packaging required. Separate warnings on risks, not appealing to children	10 mg THC per serving. Warning and potency labels. List of ingredients and cannabinoid content	Maximum of 10 mg of THC in each individually packed serving; warning labels "keep out of reach of children"; THC symbol on labels and not attractive to children	Currently not allowed	Serving size and potency limits to be developed in regulations. List of ingredients packing and labels; products and edibles may not contain additives designed to make product more appealing to children
Advertising	Logo or advertisement for licensed marijuana may not promote excessive consumption, depiction appealing to a person under 21 years. Restrictions on advertisements in school areas, public transport, and contrain presribed warning	Restricted to those over 21. Restrictions on false advertisement or claims of untrue health benefits. Products cannot appeal to children	Restricted to media with no more than 30% of the audience under the age of 21	Not applicable, no commercial market	Restricted to those over 21. Restrictions on false advertisement or claims of untrue health benefits. Products cannot appeal to children
Taxation	$50 excise tax per ounce on sales or transfers from cultivation facility to retail store or product manufacturer; other parts of plant, e.g., stems and leaves are taxed at $15 per ounce	15% excise on retail, $9.25 per dry weight ounce on flower after harvest. $2.75 per drug weight ounces on leaves	15% excise tax on cultivation; 10% retail marijuana sales tax to be decreased to 8% in July 2017 2.9% state sales tax Up to 3.5% local sales taxes	Not applicable, no commercial market	10% excise on retail
Cannabis clubs	Not explicitly allowed or prohibited Earlier ban on in-store consumption repealed in November 2015	Not specified although they may exists in the form of microbusiness that allow on-site consumption	Not allowed	Not allowed; currently under investigation by city task force.	State-licensed clubs
Restrictions on use	Cannabis use in public is unlawful	Prohibit cannabis use in a public place unlicensed for such use, including near schools and other areas where children are present.	Not permitted in public places	Not permitted in public places (use on private property)	Not permitted in public places (allowed use in private property or smoking in a state-licensed marijuana social club)
Medical cannabis	1998: Patient registry, no dispensaries registration; out-of-state patients recognized for approved conditions but not for dispensary purchases; possession, home cultivation	1996 and 2003; Patient registry - voluntary registration; cooperatives and collectives; State-wide licensing of dispensaries will begin 2018	2000: Patient registry, dispensaries already existed; out-of-state patients not recognized; possession, consumption; 2010: commercial production and sales	1998/2010: Patient registry; dispensaries allowed	1999: Patient registry or identification card; dispensaries, recognizes patients from other states but not for dispensary purchases

TABLE 4 Regulations for the legalization of the non-medical use of cannabis in jurisdictions in the United States and Uruguay

	Michigan	Massachusetts	Nevada	Oregon	Vermont	Washington	Uruguay
Legal process	Voter initiative	Voter initiative	Voter initiative	Voter initiative, state statute	Legislative process	Voter initiative, state statute	Government initiative, national law
Title	Proposal 18-1	Question 4	Question 2	Measure 91	No. 86	Initiative 502	Law No. 19.172
Date passed	6 December 2018	Nov-16	Nov-16	Nov-14		Nov-12	Dec-13
Date implemented/ required date of rule adoption	Commercial licences application begin by 6 December, 2019	15 September 2017. Licences issued starting 1 October 2017	Takes effect on 1 January 2017 and regulations to in place by 1 January 2018	July 2015: Personal possession, consumption, cultivation October 2015 up to December 2016: Retail sales through medical dispensaries January 2017: retail sales through licensed retailers	01 July 2018	December 2012: Personal possession, consumption July 2014: Retail sales	August 2014: Personal cultivation October 2014: Grower clubs Mid-2017: pharmacy sales
Regulatory authority	Department of Licensing and Regulatory Affairs	1) Cannabis Control Commission, and 2) Cannabis Advisory Board	Department of Taxation	Oregon Liquor Control Commission		Liquor and Cannabis Board (formerly the Liquor Control Board)	Institute for the Regulation and Control of Cannabis (IRCCA)
Minimum age	21	21	21	21	21	21	18
Residency requirement		Not specified	Not specified	None		None	Uruguayan citizenship or permanent Uruguayan residency required
Personal possession quantity	2.5 oz (70.8 g) on person and 10 oz (283 g)at home	1 oz flower (28.5 g)	1 oz flower	In public: 28.5 g	1 oz or 5 g of hashish	28.5 g	40 g per month
		5g concentrate	3.5g concentrate	At home: 228 g			
Home cultivation	Up to 12 plants per household	6 plants, 12 in a single residence away from view; 10 oz. of dried marijuana permitted at home	Six plants, no more than twelve on property in indoor or in enclosed with permission of landlord and must be 25 miles away from retail cannabis store	Four plants in flower	2 mature plants or 4 immature plants	Not allowed	Six plants in flower

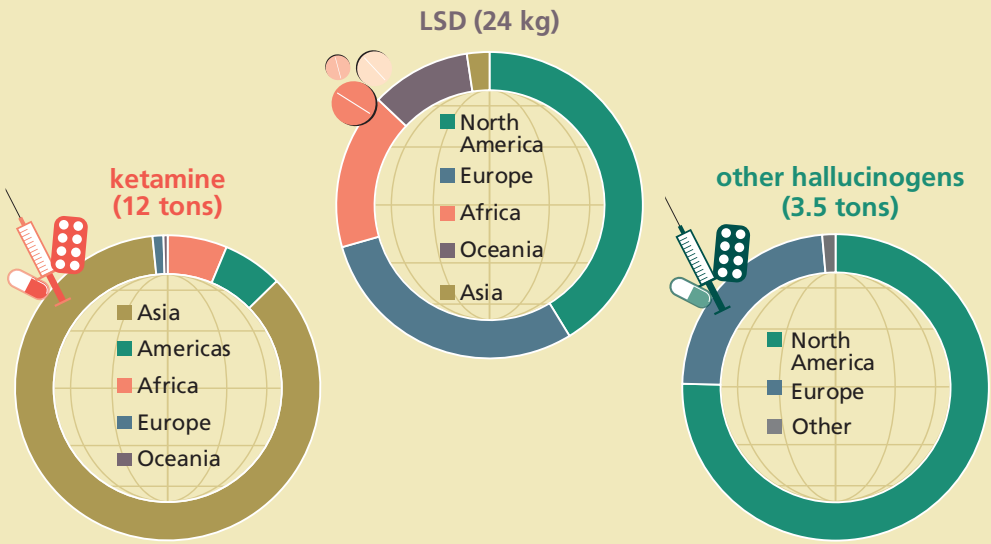
	Michigan	Massachusetts	Nevada	Oregon	Vermont	Washington	Uruguay
Interpersonal sharing	Yes (2.5 oz with a max of 15 mg of concentrate)	Yes	Yes	28.5 g	Same as personal possession limits	Not allowed	Allowed within the home
Retail transaction limit		Not specified, presumably same limits as for personal possession	Not specified, presumably same limits as for personal possession	1 oz dried flower 16 oz edbile form 72 oz cannabis in liquid form 10 cannabis seeds 4 immature cannabis plants		28.5 g	40 g per month, 10 g per week (sale through pharmacies to registered users)
Retail pricing structure	Market/commercial	Market/commercial	Market/commercial	Market	No provision for setting up a taxed-and-regulated retail marketplace	Market	Government price control
Average retail price per gram after tax		Medium quality $12.9	Medium quality $10.05	$17.26		Medium quality $11.15	200 pesos per 5 grams (apprx US $1.4 per gram)
Maximum THC content		Not set initially	Not set initially	Not set initially	Not set	Not set initially	All products are required to indicate that CBD is equal to or more than 3 per cent and THC is equal to or less than 9%.
Registration requirements		Personal data collection not required	Personal data collection not required	None		None	Yes, with IRCCA for any of the three modes of access
Commercial production	Licensed establishments	Licensed establishments	Licensed establishment	Licensed cannabis producers	Not clarified in law	Licensed cannabis producers	Licensed marijuana producers
Commercial distribution	A municipality may completely prohibit or limit the number of establishments operating	Licensed establishments; localities can regulate, limit or prohibit the operation of businesses	Limits on market concentration by population	Licensed retail cannabis stores	Not clarified in law	Marijuana can only be sold and purchased at state-licensed retail stores	Licensed pharmacies

	Michigan	Massachusetts	Nevada	Oregon	Vermont	Washington	Uruguay
Restrictions on edibles		Serving size and potency limits to be developed in regulations. List of ingredients	Not specified	Maximum of 10 mg of THC in each individually packed serving; edible products to undergo a preapproval process; not appealing to children		10 mg of THC in each individually packaged serving; child-proof packaging; THC labelling; marijuana-infused products, packages and labels to be approved by the State Liquor Control Board before sale	
Advertising	Restrictions on public signs related to cannabis establishments	Restrictions on marketing to children to be developed in regulations	A licensed marijuana establishment cannot engage in advertising that contains any false or misleading statements, promotes overconsumption, depicts actual consumption, or appeals to minors. Also applies 70/30 rule from Colorado	Entry sign required on exterior of dispensaries; Oregon Liquor Control Commission has authority to further regulate or prohibit advertising		Cannabis business licensees are limited to two permanent signs on their licensed premises, and all other forms of outdoor ads on the premises are banned. New rules mandated that billboards and signs can no longer contain images of the cannabis plant or cannabis products. Cannot contain depictions of cartoon characters or any depictions that may be appealing to children	Prohibited
Taxation	10% excise tax	3.75% excise on retail	15% excise on wholesale sale 10% excise tax on retail sale	No tax on retail sales from October 2015 to December 2015 25% sales tax after 5 January 2016 17% sales tax in 2017 with options for local communities to establish local tax up to 3%		July 2014 to June 2014: 25% at each stage (production, processing, retail) July 2015: 37% sales tax	No tax, although IRCCA can impose tax in the future.

	Michigan	Massachusetts	Nevada	Oregon	Vermont	Washington	Uruguay
Cannabis clubs		Not allowed, although they may exist in establishments that allow on-site-consumption	Not specified	Not allowed		Not allowed	Clubs with 15-45 members allowed to cultivate up to 99 plants, maximum 480 g of dried product per member per year
Restrictions on use	Not permitted in places place or where prohibited by owner or designatted public places not accessible to persons under 21 years of age	Cannot use cannabis in a place where smoking tobacco is prohibited	Cannabis consumption is for private use only. It is illegal to smoke in public, on federal land or in a vehicle without risking a fine.	Smoking marijuana in public is illegal,	Use is limited to individual dwellings. Prohibited in street, alley, park or sidewalk in addition to usual smoke free places	It is illegal to consume marijuana in view of the public	
Medical cannabis	2008: patient registry, dispensaries can be established with local ordinances; dispensation for specific conditions, recognize out of state patinets only for legal protection of possession but not for dispensary purchases	2012/2013; patient registry or identification cards; dispensaries, out-of-state patients not recognized	2000: Patient registry or identification card, No dispensaries; recognize out of state patients if other state's programmes are substantially similar; patients must fill out Nevada paper work	1998: Patient registry, dispensaries already existed but not clearly authorized by law or regulated; possession, home cultivation		1999/2010/2011; no registration or identification card; dispensaries approved as of November 2012, first stores opened in July 2014: 1999 possession 2012: Home cultivation	2014: Passed, but not yet effective

HALLUCINOGENS

2017 Quantity of hallucinogens seized by region



Introduction

Hallucinogens are a diverse group of naturally occurring and synthetic drugs that induce distorted states of consciousness, perception, thinking and feeling, accompanied by different degrees of auditory or visual hallucinations.[63] The status of control for different hallucinogens varies: most of the common hallucinogens are controlled under the Convention on Psychotropic Substances of 1971, although some synthetic hallucinogens are not currently under international control and are labelled as NPS. Ketamine is an example of non-controlled substance that is included in the WHO list of essential medicines.[64] For the hallucinogens that are under international control, the 1971 Convention does not cover the plants or plant material from which these substances can be extracted. As an example, psilocybin is under international control but the mushroom *Psilocybe mexicana*, from which it is extracted, is not. Nevertheless, under the national legislation of many countries, both the psychoactive substance and the plant material from which the substances are extracted are controlled.

Many NPS with hallucinogenic effects are reported to UNODC and remain in circulation in different markets. As is the case with all NPS, many substances with a hallucinogenic, dissociative or anaesthetic effect are transient and thus may appear and disappear quickly from the market. Among them, substances belonging to the NBOMe series, which are either sold or referred to as LSD, "synthetic LSD" or "ecstasy" have been reported by many countries, in particular, in South America.[65]

On the basis of their mechanism of action in the human central nervous system, hallucinogens in general can be divided into two main groups: classic hallucinogens and dissociative or anaesthetic

63 *Terminology and Information on Drugs*, 3rd ed. (United Nations publication, E.16.XI.8).

64 Although ketamine is not a new substance, in some instances it is included under the category of NPS in order to differentiate it from controlled substances.

65 *World Drug Report 2017*.

TABLE 5 International control status of some common hallucinogens

Controlled hallucinogens	Schedule of the Convention on Psychotropic Substances of 1971
PCP	II
LSD	I
Psilocybin	I
Mescaline	I
Tryptamines Diethyltryptamine (DET) Dimethyltryptamine (DMT) Etryptamine	I
Mescaline	I
25B-NBOMe 25C-NBOMe 25I-NBOMe	II
4-Bromo-2,5-dimethoxyphenethylamine (2C-B)	II
Brolamfetamine (DOB)	I
2,5-Dimethoxy-4-methylamphetamine (STP/DOM)	I
3,4,5-Trimethoxyamphetamine (TMA)	I
Non-controlled hallucinogens	
Ketamine	WHO list of essential medicines
Plants, such as *Salvia divinorum*, containing Salvinorin A	
Peyote cactus (mescaline)	
Numerous species of mushrooms from the genera C*onocybe, Copelandi, Panaeoulus, Psilocybe* and *Strophia*, which are also commonly called "magic mushrooms" and produce the main ingredient psilocybin and related compounds	

Source: 1971 Convention on Psychotropic Substances.

hallucinogens.[66] Classic hallucinogens fall into several chemically related groups, such as LSD, mescaline, psilocybin, bufotenine, DMT and 5-MeO-DMT (5-methoxy-dimethyltrptamine) and salvinorin. Classic hallucinogens, such as LSD, psilocybin or DMT, are also referred to as "psychedelics". By acting as serotonin receptor agonists, those substances ultimately produce synaesthesia and altered perceptions of reality. Synaesthesia is an extraordinary condition in which senses that are usually experienced separately are combined, so that a person hearing a sound may see a colour as a result (a phenomenon referred to as "hearing colours").[67]

Mescaline is a hallucinogen found in several species of cactus, such as the peyote. The mechanism of action of mescaline is similar to other hallucinogens and its effects are mediated through its interaction with serotonin receptors in the body. The effects of mescaline can last up to 10–12 hours. Psilocybin is another naturally occurring hallucinogen found in numerous species of mushroom that are often referred to as "magic mushrooms"; the duration of action of psilocybin is typically 4–6 hours.[68] *Salvia divinorum* is another plant-based hallucinogen with the principal psychoactive substance salvinorin A. The substance may produce out-of-body experiences and other feelings resembling, but not necessarily identical to, those produced by other hallucinogens.[69]

LSD is a semi-synthetic drug that is derived from lysergic acid – an alkaloid found in a fungus. LSD is one of the most potent hallucinogenic substances scheduled under the drug conventions. As with other hallucinogens, the effects of LSD vary and depend

66 Ibid.

67 *Terminology and Information on Drugs.*

68 Ibid.

69 Meyer and Quenzer, *Psychopharmacology: Drugs, the Brain, and Behaviour.*

on the mental state of the user and the setting. For some individuals, the same dose may produce good and bad experiences ("trips"), depending on the circumstances of use. Long-term effects of LSD use can include frightening flashbacks, also called Hallucinogen Persisting Perception Disorder, ongoing visual disturbances, disorganized thinking, paranoia and mood swings.[70]

Tryptamines (e.g., DMT) are a group of substances that are related to LSD and psilocybin in their structure and action. In addition, several tryptamines also occur naturally in a variety of plants, fungi and animals. Some tryptamines can also be manufactured through chemical synthesis, and many of the DMT analogues, such as alpha-methyltryptamine (AMT) and 5-methoxy-diisopropyltryptamine, have become popular in recent times. Currently, no tryptamines are approved for medical use. When DMT is smoked or snorted it can produce a brief – lasting up to 30 minutes – but intense hallucinatory experience.[71, 72]

The NBOMe series are another group of synthetic hallucinogens that are derivatives of the "2C series" of substances and are often sold as LSD. These substances vary in potency, pharmacological effect and toxicity; errors in dosage may therefore have fatal consequence. As with LSD, NBOMe substances are commonly sold on blotter paper.[73]

Dissociative anaesthetics are a group of substances with hallucinogenic and stimulant properties; they inhibit the reuptake of dopamine, norepinephrine and serotonin, thus intensifying the effect of those three neurotransmitters, and modulate effects at the N-methyl-D-aspartate (NMDA) receptor in the brain and produce feelings of detachment and dissociation from the self and the environment.[74] The most prominent example of this group on illicit drug markets is PCP, which was introduced in the 1950s as an anaesthetic but, owing to its adverse effects, its clinical use was terminated in 1967.[75]

PCP and some of its analogues, including eticyclidine (PCE), rolicyclidine (PHP, PCPY) and tenocyclidine (TCP), are controlled substances under the 1971 Convention, but derivatives such as 3-MeO-PCE and 4-MeO-PCP are not under international control.[76] Since 2010, a number of phencyclidine-type substances have also appeared and been reported, in Europe in particular; of them, 4-MeO-PCP is the most common PCP-type substance reported.

The other main substance in this group is ketamine,[77] which is widely used in human and veterinary medicine. Listed on the WHO List of Essential Medicines, ketamine is safer to administer than other types of anaesthetic agents, as well as for pain relief, as it does not depress breathing or lower blood pressure and does not require expensive patient-monitoring equipment.[78] Ketamine is therefore the main anaesthetic used in war zones and countries with poor resources, and is also widely used as a general sedative in veterinary medicine. Ketamine is marketed commercially as an injectable liquid. Supply of ketamine for non-medical use may originate in clandestine laboratories or be diverted from licit channels.[79, 80] Street sellers evaporate the liquid to yield a powder that is either snorted or compressed into a pill and sold under names such as "K", "special K" and "cat Valium".[81] In countries such as Indonesia and Thailand, ketamine may also be sold to unwitting users as "ecstasy" or methamphetamine tablets.[82] Among the effects of its long-term use reported in the literature are dependence, lower urinary tract dysfunction, such as ulcerative cystitis, and increased sexual impulses or violent behaviour.

70 United States, National Institute on Drug Abuse, "What are hallucinogens?" DrugFacts, January 2016.

71 *Terminology and Information on Drugs*.

72 Meyer and Quenzer, *Psychopharmacology: Drugs, the Brain, and Behaviour.*

73 *Terminology and Information on Drugs.*

74 Ibid.

75 Meyer and Quenzer, *Psychopharmacology: Drugs, the Brain, and Behaviour.*

76 UNODC, Early warning advisory on new psychoactive substances, "Phencyclidine-type substances" Available at www.unodc.org.

77 EMCDDA and European Union Agency for Law Enforcement Cooperation (Europol), "EMCDDA–Europol 2010 annual report on the implementation of Council Decision 2005/387/JHA" (Lisbon, 2011), annex 2.

78 WHO, "Fact file on ketamine" (March 2016).

79 Ibid.

80 *World Drug Report 2017,* Booklet 4: *Market Analysis of Synthetic Drugs*.

81 WHO, "Fact file on ketamine".

82 *World Drug Report 2017,* Booklet 4: *Market Analysis of Synthetic Drugs*.

TABLE 6 NPS with hallucinogenic, dissociative or anaesthetic effects reported for the first time in 2017

Substance	Effect group
Eticyclidone	Dissociative-anaesthetic
3-Hydroxyeticyclidine	Dissociative-anaesthetic
1-Methyl-LSD	Hallucinogen
25H-NBOH	Hallucinogen
4-Hydroxy-N-methyl-N-cyclopropyltryptamine	Hallucinogen
5-Methoxy-N,N-tetramethylenetryptamine	Hallucinogen
6-Methoxy-N,N-diisopropyltryptamine	Hallucinogen

Source: UNODC early warning advisory.

Classic hallucinogens such as psilocybin-containing mushrooms were used for centuries by the Aztecs, Maya, Mazatec and other tribes in Mexico and countries in Central America, who developed religious rituals around their consumption.[83] In the twentieth century, the use of hallucinogens was associated with the "psychedelic culture" among young people in the 1960s and 1970s.[84] In later decades, the increased popularity of other substances resulted in a decline in the use of hallucinogens.

In recent times, people report using hallucinogens more for social or recreational purposes, including to have fun, help them deal with stress or enable them to enter into what they perceive as a more enlightened sense of thinking or being.[85] Currently, among the countries reporting data on the use of hallucinogens, most report the use of LSD and non-medical use of ketamine – the latter being reported more in the context of club drugs and drug use in recreational settings.[86]

Since the monitoring of NPS through the UNODC early warning advisory began in 2009, an increasing number of NPS are being classified as hallucinogens and dissociative-anaesthetics. In 2017, out of the 492 NPS reported, hallucinogen NPS accounted for 18 per cent. In 2017, five new hallucinogens and two dissociative-anaesthetics were reported.

Supply of hallucinogens

Supply of hallucinogens has been on the increase for the past two decades

Overall quantities of substances with hallucinogenic properties seized have shown an upward trend over the past two decades. Ketamine has been dominating seizures of substances with hallucinogenic properties (expressed in kilogram equivalents) for the last 15 years and accounted for 87 per cent of the quantity of such substances seized in the last five years. This is potentially misleading, however, as a typical dose of ketamine is far larger (roughly 0.1 g)[87] than a typical dose of LSD (about 0.00005 g), for example.[88] Tentative calculations of the amounts seized expressed in typical doses suggest that, despite its dominance in terms of weight, ketamine accounted for just 24 per cent of all substances with hallucinogenic properties seized, expressed in doses, over the period 2013–2017, while LSD accounted for two thirds and other hallucinogens accounted for 10 per cent of the total. Ketamine dominated seizures of substances with hallucinogenic properties, expressed in doses, over the period 2006–2010,

83 United States, National Institute on Drug Abuse, "Hallucinogens and dissociative drugs", revised, NIDA Research Report Series, NIH Publication No. 15-4209 (Washington D.C., 2015).

84 Meyer and Quenzer, *Psychopharmacology: Drugs, the Brain, and Behaviour.*

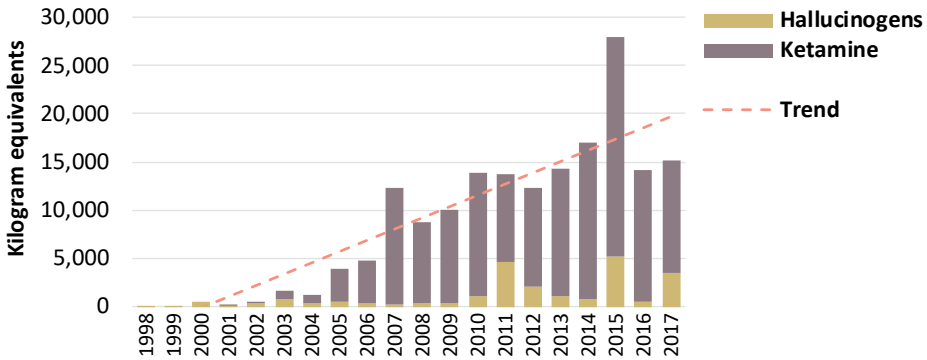
85 "Hallucinogens and dissociative drugs".

86 Jih-Heng Li and others, "To use or not to use: an update on licit and illicit ketamine use", *Substance Abuse and Rehabilitation*, vol. 2, No. 1 (March 2011), pp. 11–20.

87 Depending on the study, individual doses of ketamine vary between 10 to over 250 mg. See the methodological annex to the present publication (available in the online version) for more details.

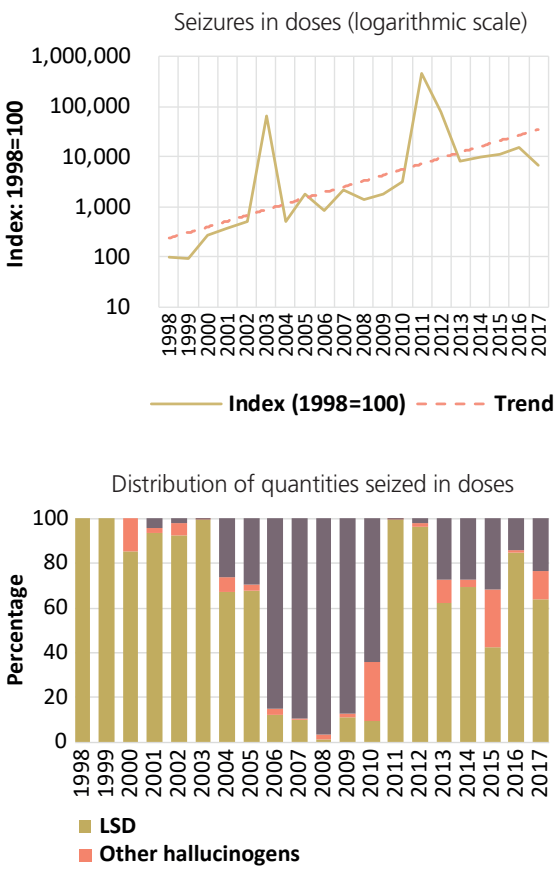
88 This conversion ratio has been used by UNODC for the last 20 years. It dates back to an internal review of such conversion ratios used by law enforcement agencies around the globe.

FIG. 29 Global quantities of substances with hallucinogenic properties seized, expressed in kilogram equivalents, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 30 Trend in global quantities of substances with hallucinogenic properties seized, expressed in doses, 1998–2017



Source: UNODC, responses to the annual report questionnaire.

but LSD dominated such seizures over the period 1998–2005 and over the period 2011–2017. When considering the period 1998–2017 as a whole, LSD accounted for 95 per cent of the total amounts of substances with hallucinogenic properties seized expressed in doses, ketamine for 4 per cent and all other hallucinogens for 1 per cent.

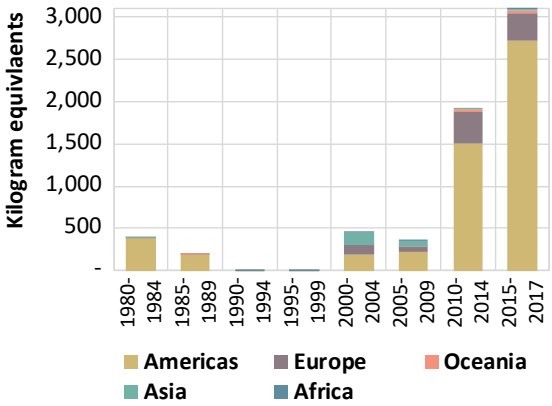
Supply of hallucinogens other than ketamine also on the increase

The quantities of substances with hallucinogenic properties (other than ketamine) seized globally have been fluctuating over time, but have shown an upward trend in recent years, in line with reported qualitative information on increasing use of such substances in recent years.

Overall, 94 countries reported seizures of hallucinogens over the period 1998–2017 (but not every year). Although significant, this is still smaller than the number of countries that reported seizures of cannabis (201), cocaine (186), opioids (183) or ATS (162), indicating that trafficking in hallucinogens is more clustered compared with trafficking in other drug types. Seizures suggest that trafficking in hallucinogens (other than ketamine) has been concentrated in the Americas (most notably the United States), where 88 per cent of the total amount (expressed in kilogram equivalents) was seized over the period 2015–2017, and also in Europe (where 10 per cent was seized).

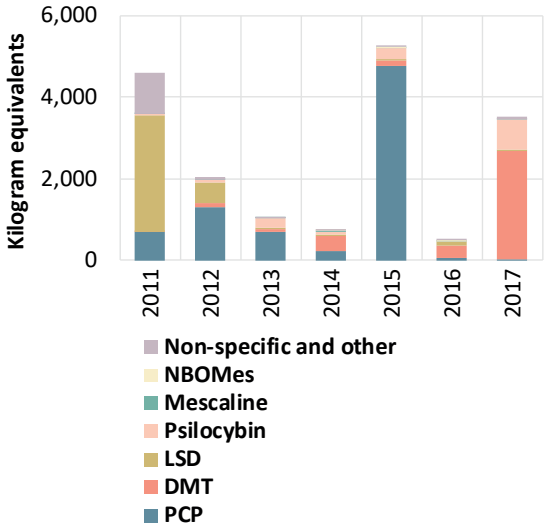
The hallucinogenic substance (other than ketamine) most seized at the global level in terms of weight

FIG. 31 Average annual quantities of hallucinogens (other than ketamine) seized, by region, in kilogram equivalents, 1980–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 32 Global quantities of hallucinogens (other than ketamine) seized, by substance, in kilogram equivalents, 2011–2017



Source: UNODC, responses to the annual report questionnaire.

over the period 2011–2017 was phencyclidine (PCP), also known by its street name "angel dust"[89] (accounting for 44 per cent of the total quantity of hallucinogens seized), followed by dimethyltryptamine (DMT), also known in the 1971 Convention as 3-[2-(dimethylamino)ethyl]indole (20 per cent), LSD (20 per cent), psilocybin (8 per cent), mescaline, also known as 3,4,5-trimethoxyphenethylamine (0.2 per cent), and the three NBOMe compounds (0.03 per cent).

However, seizure patterns have been changing in recent years. Only available since 2011, a detailed breakdown of the hallucinogens (other than ketamine) seized indicates that LSD and, later, PCP were the hallucinogenic substances mostly seized in the early 2010s, and that DMT started to dominate global seizures after that. The large share of PCP was exclusively the result of large amounts of the substance seized in the Americas (notably in North America). DMT, by contrast, was not only the most commonly seized hallucinogenic substance in the Americas, in terms of weight, in 2016, but also in Europe and in Oceania in the same year. It was the most commonly seized hallucinogenic substance (again in terms of weight) in the Americas, Europe and in Asia in 2017.

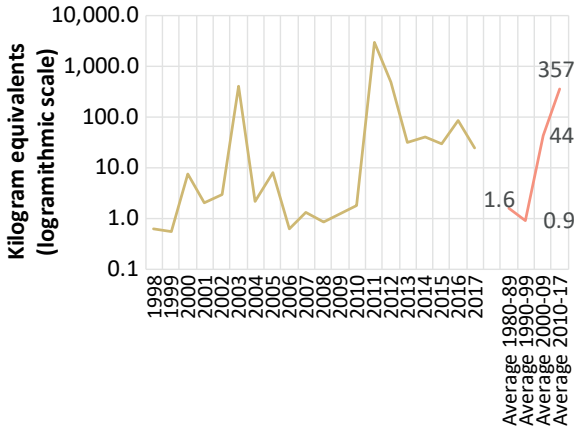
89 "Hallucinogens and dissociative drugs".

In terms of average doses, the total amount of hallucinogens seized would still have been dominated by LSD: it accounted for more than 99 per cent of all hallucinogens (excluding ketamine) seized over the period 1998–2017. Although the "typical dose" to be applied to each hallucinogenic substance is the subject of debate, as doses vary among individual users, as do the typical doses found in the literature, there can be no doubt that seizures of hallucinogens, when converted into doses, continue to be dominated by LSD.

The quantities of LSD seized, however, have been extremely erratic, with peaks typically reflecting the dismantling of LSD production laboratories.

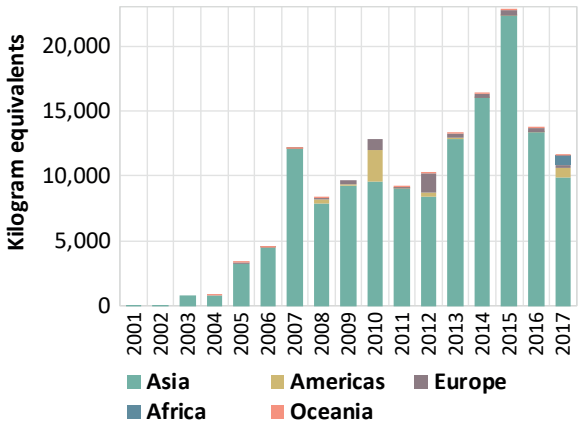
In terms of trafficking, data reported by Member States suggest that the most frequently mentioned countries of origin, departure or transit of LSD over the period 2013–2017 were: for the Americas, the United States, followed by Argentina and China; for Europe, the Netherlands, followed by the United Kingdom, Belgium, Spain and Germany; for Asia, India, followed by the Netherlands, the United Kingdom and Canada; for Oceania, the Netherlands, followed by Canada and the United Kingdom; and for Africa, South Africa.

FIG. 33 Global quantities of LSD seized, in kilogram equivalents, 1980–2017



Source: UNODC, responses to the annual report questionnaire.

FIG. 34 Global quantities of ketamine seized, by region, 2001–2017



Source: UNODC, responses to the annual report questionnaire.

A substance of concern mainly in East and South-East Asia, ketamine is spreading to other regions

Although ketamine has important medical uses, its use as a recreational drug may also explain the large amounts of it seized at the global level, which easily exceed, in terms of quantity, the amount of hallucinogens under international control seized globally. The main ketamine markets continue to be in Asia but, based on seizures and qualitative information reported by Member States, ketamine trafficking appears to be spreading to other regions.

The quantities of ketamine seized showed a marked upward trend until 2015, when they peaked at 23 tons, before falling to 12 tons in 2017.

In contrast to hallucinogens in general, and to PCP (another dissociative anaesthetic that is mainly encountered in the Americas) in particular, ketamine is most widespread in Asia. Over the period 2013–2017, 89 per cent of all ketamine seized worldwide was seized by authorities in Asia. Most of the ketamine seized was reported (in descending order of the amount seized) by China, followed by Taiwan Province of China, Hong Kong, China, Malaysia, Myanmar, Thailand, the United Kingdom, India and the Netherlands. The amount of ketamine reported seized outside Asia, while still small, tripled over the period 2015–2017, the increase being most notable in Africa, the Americas and Oceania.

The most frequently mentioned point of origin, departure or transit for ketamine at the global level over the period 2013–2017 was India, followed by China, Malaysia, Taiwan Province of China and Hong Kong, China. Most shipments of ketamine originating in Asia remain in the region.

In Europe, most ketamine seems to transit or originate in India and Belgium, followed by the Netherlands and Czechia; in the Americas, the United States, followed by China and Hong Kong, China; and in Oceania, the United Kingdom, India and Hong Kong, China.

Even though the non-medical use of ketamine continues to be of concern primarily in countries and territories in Asia, the total number of countries reporting ketamine seizures to UNODC rose from just 2 in 2001 to 17 in 2005, before more than doubling, to 36, in 2017, indicating that ketamine trafficking is no longer exclusively a phenomenon found in Asia, even though ketamine markets outside the region are still quite small. Overall, 47 countries and territories reported ketamine seizures to UNODC over the period 2001–2017, of which 21 are in Europe, 16 are in Asia (mostly East and South-East Asia and, to a lesser extent, South Asia), 6 in the Americas, 2 in Africa (East and North-Africa) and 2 in Oceania.

Demand for hallucinogens

Use of hallucinogens appears to be on the increase again

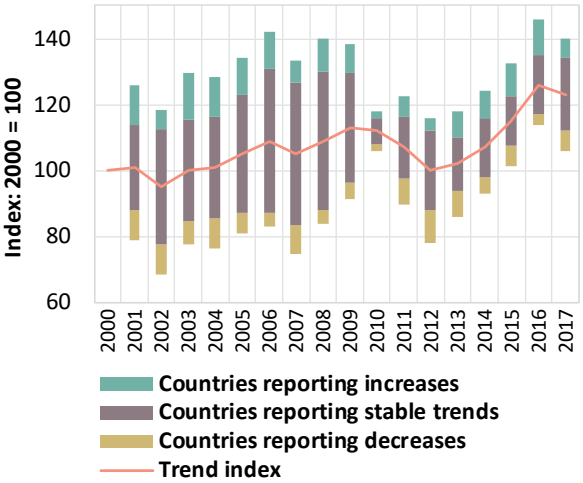
While there are no global estimates on the use of hallucinogens, many countries report their use to UNODC; however, in many instances, they do so without specifying the type of hallucinogen. The ranking of drugs by Member States suggests that the use of hallucinogens at the global level (with a ranking of, on average, 5.3 over the 2013–2017 period) is less of a concern than the use of cannabis, ATS, sedatives and tranquillizers, opioids and cocaine.[90]

For every year during the period 2001–2017 for which qualitative information on trends in the use of different substances is available, the majority of countries reported no significant change in the use of hallucinogens. Nonetheless, there are signs of a perceived increase in the overall use of hallucinogens in recent years, particularly over the period 2012–2016, with the number of countries reporting increases in the use of hallucinogens greater than the number of countries reporting decreases. However, recent or current use of hallucinogens in general is quite low in most countries and there is limited recent scientific literature on the epidemiology and patterns of such use. The use of hallucinogens and dissociative or anaesthetic substances is quite varied; for example, the use of LSD and substances with similar effects is more common in South and North America, Western and Central Europe and Oceania (Australia) than in other regions. The use of LSD, although not at the same level as other drugs, seems to be on the increase in both North and South America. The use of ketamine, on the other hand, is mainly reported in South-East Asia, with mixed trends in its use being reported in the subregion.

In 2017, a number of countries in Asia reported the use of LSD,[91] although prevalence data are not available for most of them. In the case of Indonesia, where quantitative measures are available, "magic mushrooms" are the main hallucinogens reported, with a low prevalence (0.01 per cent) in comparison with the use of other drugs. Ketamine use in South-East Asia is also quite common, with eight countries and territories reporting the use of ketamine in recent years. Qualitative information on trends in the use of ketamine shows that there has been an increase in the use of ketamine in Cambodia, Indonesia and Thailand, while use of the drug has declined in China, including in Hong Kong, China, and Macao, China, and Myanmar. In South-East Asia, the use of ketamine has been primarily associated with recreational and club settings, within a polydrug use scenario (with "ecstasy" and cannabis) and, in many countries, has even surpassed the use of other club drugs.[92]

In Australia, the prevalence of the use of hallucinogens and dissociatives remains lower than that of other drugs, with the annual reported prevalence of LSD being 1 per cent and the annual reported prevalence of ketamine being 0.4 per cent in 2016. Over the years, the use of LSD has declined in Australia, in particular, over the period 2013–2016, while the non-medical use of ketamine increased over the same period, following a period of relative stability.[93]

FIG. 35 Qualitative information on trends in the use of hallucinogens, 2000–2017



Source: UNODC, responses to the annual report questionnaire.

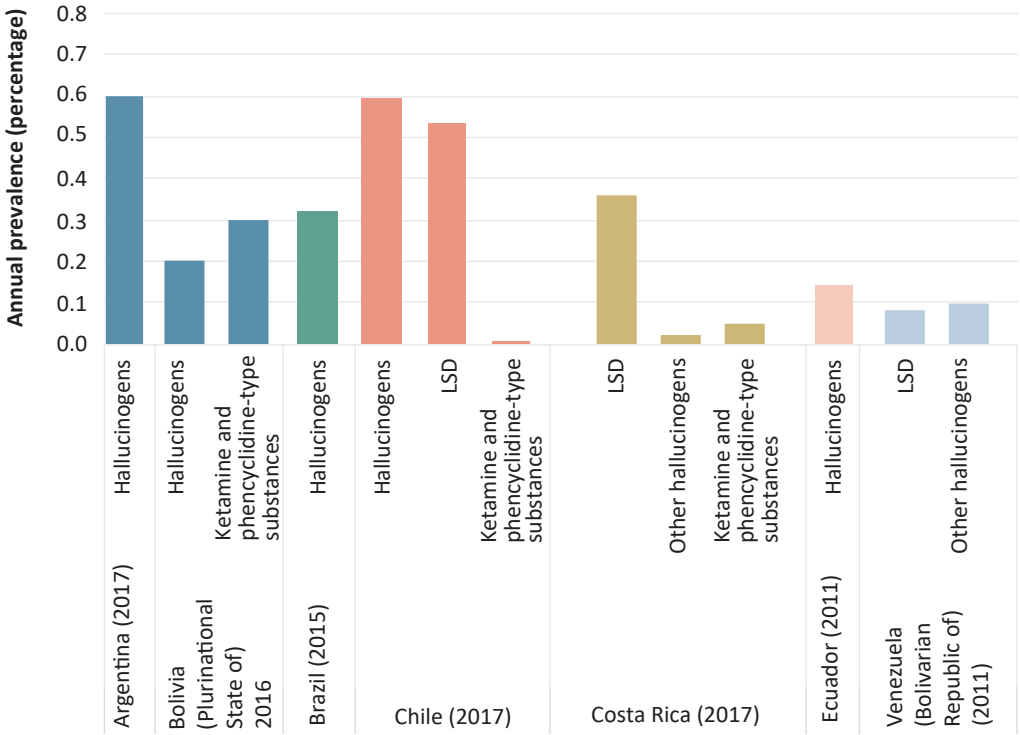
90 This is based on data on drug rankings provided to UNODC by 123 countries, including 78 countries providing such information on hallucinogens, over the period 2013–2017.

91 Those countries include Iran (Islamic Republic of), Japan, Kazakhstan, Lebanon, Oman, the Republic of Korea, Singapore, Sri Lanka and the United Arab Emirates.

92 Li and others, "To use or not to use".

93 Australian Institute of Health and Welfare, *National Drug*

FIG. 36 Use of hallucinogens in Central and South America



Source: UNODC, responses to the annual report questionnaire.

In the countries in South America that report it, the annual prevalence of use of hallucinogens ranges from 0.1 per cent in the Bolivarian Republic of Venezuela to about 0.6 per cent of the population aged 15–64 in Argentina and Chile. In Argentina, according to a 2017 survey, 0.6 per cent of the population aged 12–65 had used hallucinogens (including LSD, peyote, PCP and mescaline)[94] in the past year. The use of hallucinogens is reported to be higher among men (1.0 per cent) than women (0.2 per cent). Past-year use was highest among those aged 18–24 (1.9 per cent) and 25–34 (1.0 per cent). Chile is one country in the subregion that reports a considerable increase in past-year use of LSD. The past-year prevalence of LSD increased sixfold, from 0.1 per cent of the population aged 12–64 in 2002 to 0.6 per cent of the same population group in 2016,[95] a trend also seen, for example, in a survey of university students (aged 18–25 years) in the Andean countries. The past-year prevalence of LSD among the four countries ranged from 0.2 per cent in Peru to 1 per cent in Ecuador and 4.2 per cent in Colombia. Overall, past-year use of LSD increased considerably among university students in those four countries, from an estimated 0.2 per cent in 2009 to 1.6 per cent in 2016.[96] The increase observed in LSD use among university students was driven primarily by an increase in LSD use among students in Colombia, where it increased fourfold

Strategy Household Survey 2016: Detailed Findings, Drug Statistics Series No. 31 (Canberra, September 2017).

94 Argentina, Secretariat for Comprehensive Drug Policies (Sedronar), *Estudio Nacional en Población de 12 a 65 años, sobre Consumo de Sustancias Psicoactivas: Argentina 2017–Informe de Resultados No.1: Magnitud del Consumo de Sustancias a Nivel Nacional* (Buenos Aires, 2017).

95 Chile, Ministry of the Interior and Public Security, National Drug and Alcohol Prevention and Rehabilitation Service (SENDA), *Décimo Segundo Estudio Nacional De Drogas en Población General de Chile, 2016* (Santiago, Chilean Drug Observatory, 2017).

96 UNODC, *III Estudio Epidemiológico Andino sobre Consumo de Drogas en la Población Universitaria: Informe Regional 2016* (Lima, 2017).

over the period 2009–2016. The appearance of hallucinogenic NPS such as NBOMe, which in many countries are reportedly sold as LSD, is also noteworthy in South America. NBOMes have emerged onto the existing and possibly growing market for hallucinogens in the subregion in recent years.[97]

In the United States, the annual prevalence of LSD use is reported as 0.9 per cent of the population aged 12 and older and the use of PCP is negligible, while Canada has reported the annual prevalence of hallucinogen use as 1.4 per cent of the adult population. The use of *Salvia divinorum* is also quite prevalent in Canada: among the general population, a lifetime prevalence of 2.7 per cent was reported in 2015 and the past-year prevalence of *Salvia divinorum* use among 15–16 year olds was 1.5 per cent in the period 2015–2016.

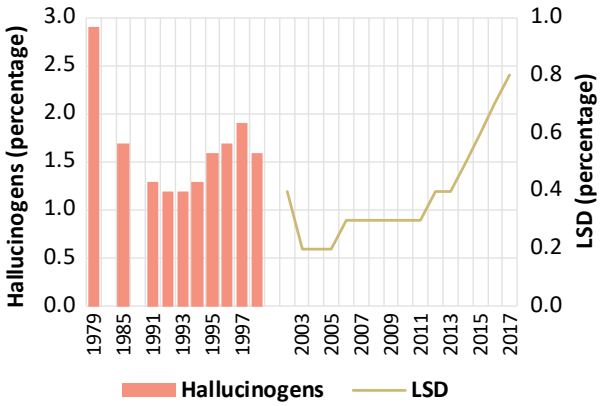
The long-term trend in the use of hallucinogens in the United States, which also reports seizing the largest amount of hallucinogens (excluding ketamine) worldwide, shows that, following a strong downward trend in the 1980s, the use of hallucinogens started increasing in the 1990s. Subsequent data for the use of LSD, the drug most associated with the use of hallucinogens, showed quite a stable trend during the 2000s and a sharp increase since 2010.

The use of hallucinogens among students in twelfth grade in the United States is relatively common, although it is not at the same level as the use of cannabis and opioids. In recent years, the use of LSD was reported to be increasing, the use of PCP has remained at similar levels to those of the 1990s, while the use of *Salvia divinorum* and ketamine has declined considerably, in particular among students in the twelfth grade.

In Europe, the overall prevalence of LSD and hallucinogenic mushroom use has been generally low and stable for a number of years. The unweighted average annual prevalence of LSD in the States members of the European Union and Norway, based on the latest available data, is estimated at 0.2 per cent of the population aged 15–64, ranging from 0.7 per cent in Czechia and 0.5 per cent in Finland to 0.1 per cent in Slovakia and Slovenia. The use of

97 *World Drug Report 2017*, Booklet 4: *Market Analysis of Synthetic Drugs*.

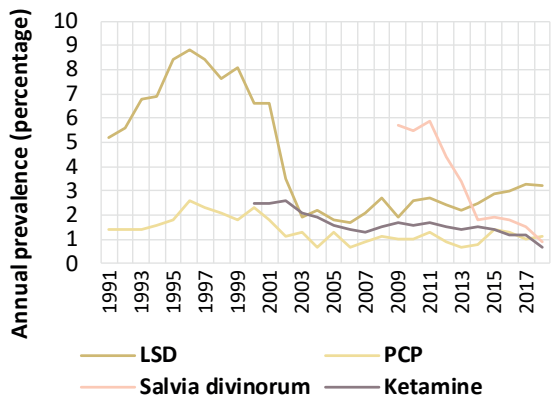
FIG. 37 Use of hallucinogens in the United States of America, 1979–2017



Source: United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, *Results from the 2017 National Survey on Drug Use and Health: Detailed Tables* (Rockville, Maryland, 2018).

Note: From 1979 to 1998, the category "hallucinogens" included the use of LSD and PCP; from 2002 onwards, MDMA was included in the drug category "hallucinogens" and, as the use of PCP is negligible, the table above shows the prevalence of LSD use only from 2002 onwards.

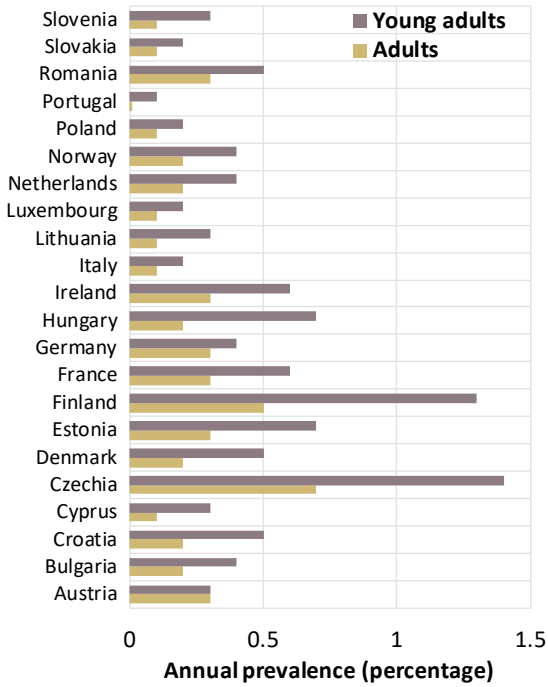
FIG. 38 Use of hallucinogens among twelfth grade students in the United States of America, 1991–2018



Source: United States, National Institute on Drug Abuse, "Trends in Prevalence of Various Drugs", Monitoring the Future Study (revised December 2018). Available at www.drugabuse.gov/trends-statistics/monitoring-future/monitoring-future-study-trends-in-prevalence-various-drugs.

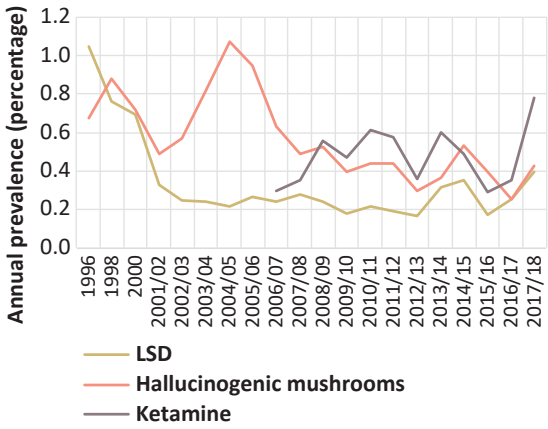
LSD among young adults (aged 15–34) is much higher than among all adults (aged 15–64), ranging from 1.4 per cent in Czechia and 1.3 per cent in Finland to 0.1 per cent in Portugal. The countries that have reported the use of *Salvia divinorum* in Europe are Italy and Spain, while the use of ketamine has only been reported in Czechia, England

FIG. 39 LSD use among young adults (aged 15–34) and adults (aged 15–64) in Europe



Source: EMCDDA, "Prevalence of drug use", Statistical Bulletin 2018.

FIG. 40 Use of hallucinogens in England and Wales, 1996–2017/18



Source: United Kingdom of Great Britain and Northern Ireland, Home Office, "Drug misuse: findings from the 2017/18 crime survey for England and Wales", Statistical Bulletin 14/18 (London, 2018), Appendix tables.

and Wales, and Spain. In England and Wales, there has been a significant increase in the past-year use of hallucinogens. In the United Kingdom, ketamine was rescheduled from a class C to class B substance in 2014, but its use over the 12-month periods 2016/17 and 2017/18 increased considerably, driven by an increase from 1.2 per cent to 3.1 per cent among 16–24-year olds. This is the highest estimate of ketamine use since measurement of use of the drug began in that country, in 2006–2007.[98]

Another measure of the extent of use of hallucinogens and dissociative-anaesthetics is the Global Drug Survey. However, the respondents cannot be said to be a representative sample of the global population as respondents are primarily young people with access to the Internet, most of whom live in Europe.[99] In 2018, half of the respondents were younger than 25 and about 19 per cent were 35 years or older. The 2018 results, based on responses from 130,000 respondents, showed that, among the 10 substances that had been most commonly used in the past12 months, 4 were hallucinogens and dissociative or anaesthetic substances; 11 per cent of the respondents reported past-year use of LSD, 9.2 per cent use of hallucinogenic mushrooms, 6.5 per cent misuse of ketamine and 1 per cent use of *Salvia divinorum*. Among the hallucinogens and dissociative or anaesthetic substances, ketamine, LSD and hallucinogenic mushrooms also featured in the list of 13 substances for which young people had sought medical treatment as a result of acute drug intoxications.

98 United Kingdom of Great Britain and Northern Ireland, Home Office, "Drug misuse: findings from the 2017/18 crime survey for England and Wales", Statistical Bulletin 14/18 (London, 2018).

99 Adam R. Winstock and others, *Global Drug Survey (GDS) 2018: Key Findings Report 2018* (London, 2018).

TABLE 7 Annual prevalence of the use of cannabis, by region and globally, 2017

	Number of users annually (best estimate)	Estimated number ofusers annually (lower)	Estimated number of users annually (upper)	Per cent of population aged 15–64 years (best estimate)	Per cent of population aged 15–64 years (lower)	Per cent of population aged 15–64 years (upper)
Africa	**44,900,000**	**35,350,000**	**62,690,000**	**6.4**	**5.1**	**9.0**
Eastern Africa	-	-	-	-	-	-
Northern Africa	-	-	-	-	-	-
Southern and South-Eastern Africa	-	-	-	-	-	-
West and Central Africa	26,760,000	25,700,000	29,420,000	10.0	9.6	11.0
Americas	**56,590,000**	**55,600,000**	**58,330,000**	**8.4**	**8.3**	**8.7**
Caribbean	1,040,000	580,000	2,090,000	3.6	2.0	7.2
Central America (excluding Mexico)	880,000	820,000	990,000	2.9	2.7	3.3
Northern America (including Mexico)	44,630,000	44,460,000	44,810,000	13.8	13.7	13.8
South America	10,040,000	9,740,000	10,440,000	3.5	3.4	3.6
Asia	**54,210,000**	**41,140,000**	**64,840,000**	**1.8**	**1.4**	**2.2**
Central Asia and Transcaucasia	1,670,000	640,000	2,410,000	2.9	1.1	4.2
East and South-East Asia	13,570,000	4,160,000	21,740,000	0.8	0.3	1.4
Near and Middle East/South-West Asia	9,500,000	6,890,000	11,180,000	3.1	2.3	3.7
Southern Asia	29,470,000	29,430,000	29,520,000	2.9	2.9	2.9
Europe	**29,490,000**	**28,810,000**	**30,210,000**	**5.4**	**5.3**	**5.6**
Eastern and South-Eastern Europe (including Turkey)	5,880,000	5,530,000	6,220,000	2.6	2.5	2.8
Western and Central Europe	23,610,000	23,270,000	23,990,000	7.4	7.3	7.5
Oceania	**2,840,000**	**2,790,000**	**2,950,000**	**10.9**	**10.7**	**11.3**
Australia and New Zealand	2,090,000	2,090,000	2,090,000	11.0	11.0	11.0
Melanesia	-	-	-	-	-	-
Micronesia	60,000	40,000	80,000	17.2	11.3	23.1
Polynesia	-	-	-	-	-	-
Global	**188,040,000**	**163,680,000**	**219,020,000**	**3.8**	**3.3**	**4.4**

Source: UNODC estimates based on annual report questionnaire data and other official sources.

TABLE 8 Cannabis cultivation, production and eradication, latest year available from the period 2012–2017

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2012	Afghanistan	resin	outdoors	10,000			1,400		
2017	Albania	herb	indoors					7,766	
2016	Albania	herb	outdoors					2,536,288	5,205
2017	Albania	herb	outdoors					66,927	500
2014	Algeria	resin	outdoors					2,522	
2016	Armenia	herb	outdoors	0.50 [a]	0.50	0.00		757	20
2017	Armenia	herb	outdoors	0.50 [a]	0.50	0.00		2,547	21
2016	Australia	herb	indoors					31,266	408
2017	Australia	herb	indoors					78,310	433
2016	Australia	herb	outdoors					22,257	1,021
2017	Australia	herb	outdoors	1.00 [a]	1.00	0.00		31,431	948
2015	Austria	herb	outdoors	3.00 [a]	3.00	0.00			
2013	Azerbaijan	herb	outdoors	23.95 [a]	23.95	0.00	263.96	8,469	151
2014	Azerbaijan	herb	outdoors	17.50 [a]	17.50	0.00		14,889	195
2017	Azerbaijan	herb	outdoors	0.25 [a]		0.25		336,791	
2015	Bahamas	herb	outdoors					17,270	
2012	Bangladesh	herb	outdoors					39,848	
2013	Bangladesh	herb	outdoors					35,012	
2014	Bangladesh	herb	outdoors					35,988	
2015	Bangladesh	herb	outdoors					39,967	
2016	Bangladesh	herb	outdoors					47,104	
2016	Belarus	herb	indoors						28
2017	Belarus	herb	indoors						32
2016	Belarus	herb	oudoors		123.80				1,945
2017	Belarus	herb	oudoors		125.90				2,283
2015	Belgium	herb	indoors					345,518	1,164
2017	Belgium	herb	indoors					415,728	1,175
2015	Belgium	herb	outdoors					4,885	93
2017	Belgium	herb	outdoors					848	59
2015	Belize	herb	outdoors					50,897	
2016	Bolivia (Plurinational State of)	herb	outdoors		14.60				35
2017	Bolivia (Plurinational State of)	herb	outdoors		14.00				52

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2016	Bosnia and Herzegovina	herb	indoors		39.00				
2017	Bosnia and Herzegovina	herb	indoors					1	1
2016	Bosnia and Herzegovina	herb	outdoors		1,680.00				
2017	Bosnia and Herzegovina	herb	outdoors	0.02 [a]	0.02	0.00		539	53
2014	Brazil	herb	outdoors		44.01			1,364,316	
2017	Brazil	herb	outdoors		117.51			1,910,451	604
2015	Bulgaria	herb	indoors					323	
2015	Bulgaria	herb	outdoors				37.77	9,488	
2017	Central African Republic	herb	outdoors	130.00	60.00	55	10.00	250,000	22
2016	Chile	herb	indoors					26,988	2,740
2017	Chile	herb	indoors					50,414	2,408
2016	Chile	herb	outdoors					58,950	264
2017	Chile	herb	outdoors					194,694	202
2016	China	herb	outdoors		9.80			1,390,000	
2016	Colombia	herb	outdoors		135.00				
2017	Colombia	herb	outdoors		173.71				
2016	Costa Rica	herb	indoors					678	5
2017	Costa Rica	herb	indoors						2
2016	Costa Rica	herb	outdoors		17.59			2,122,244	201
2017	Costa Rica	herb	outdoors						215
2016	Côte d'Ivoire	herb	outdoors					5	
2017	Côte d'Ivoire	herb	outdoors		0.25				1
2016	Czechia	herb	indoors					53,549	229
2017	Czechia	herb	indoors					50,925	305
2016	Czechia	herb	outdoors					4,111	
2017	Czechia	herb	outdoors					3,467	
2015	Denmark	herb	indoors/out-doors					14,560	97
2016	Denmark	herb	indoors/out-doors					13,217	105
2017	Denmark	herb	indoors/out-doors					34,801	65
2014	Dominican Republic	herb	outdoors	6.00 [a]	6.00	0.00	0.21	111	8
2016	Ecuador	herb	outdoors					224	34

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2017	Ecuador	herb	outdoors					397	10
2015	Egypt	herb/resin	outdoors		140.00				
2017	Egypt	herb/resin	outdoors		126.00				
2014	Eswatini	herb	outdoors	1,500.00	1,069.50	430.50		3,000,000	210
2017	Georgia	herb	indoors		0.01			186	91
2017	Georgia	herb	outdoors	0.02 [a]	0.02	0.00		93	19
2016	El Salvador	herb	outdoors			1.00		227	25
2014	France	herb	outdoors					158,592	837
2015	Germany	herb	indoors					135,925	786
2017	Germany	herb	indoors					85,226	573
2015	Germany	herb	outdoors					9,136	127
2017	Germany	herb	outdoors						95
2016	Greece	herb	indoors					16,554	
2017	Greece	herb	indoors					19,498	
2016	Greece	herb	oudoors					39,151	
2017	Greece	herb	oudoors					27,409	
2016	Guatemala	herb	outdoors		9.00			3,138,298	427
2017	Guatemala	herb	outdoors	3.50 [a]	3.81		1.61	6,033,345	150
2015	Guyana	herb	outdoors	20.00	9.40	10.60	1,000.00	419,700	19
2016	Honduras	herb	indoors					7	2
2016	Honduras	herb	outdoors					24,253	19
2017	Honduras	herb	outdoors	59.58 [a]	59.59	0.00			
2016	China, Hong Kong SAR	herb	indoors					329	1
2016	Hungary	herb	indoors					5,000	3
2016	Hungary	herb	outdoors					2,000	20
2013	Iceland	herb	indoors					6,652	323
2016	India	herb	outdoors		3,414.74				
2017	India	herb	outdoors		3,445.90			6,687,376	
2016	Indonesia	herb	outdoors	482.00 [a]	482.00	0.00			
2017	Indonesia	herb	outdoors	89.00 [a]	89.00	0.00		738,020	14
2016	Ireland	herb	indoors					7,273	
2017	Ireland	herb	indoors					9,046	50
2017	Italy	herb	indoors					56,125	1,161
2017	Italy	herb	outdoors					209,510	401

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2014	Italy	herb	indoors					51,534	639
2014	Italy	herb	outdoors					70,125	1,134
2012	Jamaica	herb	outdoors					456	382
2016	Kazakhstan	herb	outdoors	18.00 [a]	18.00	0.00		170,000	202
2017	Kazakhstan	herb	outdoors	12.30 [a]	12.30	0.00		930,774	91
2016	Kenya	herb	outdoors	12.00				8,747	46
2017	Kenya	herb	outdoors		0.10			4,662	
2015	Kyrgyzstan	herb	outdoors	5,014.00		5,014.00			
2016	Latvia	herb	indoors					557	35
2017	Latvia	herb	indoors					798	34
2016	Latvia	herb	outdoors					78	6
2017	Latvia	herb	outdoors					66	15
2015	Lebanon	herb	outdoors	3,500.00		3,500.00			
2017	Lebanon	herb	outdoors	40,772.00					
2016	Lithuania	herb	indoors						4
2017	Lithuania	herb	indoors						8
2017	Lithuania	herb	outdoors						7
2015	Madagascar	herb	outdoors		11.00			21,325	
2017	Madagascar	herb	outdoors		9.00			57,708	
2013	Malta	herb	indoors					27	
2016	Mexico	herb	outdoors		5,478.42		6,574.1		38,432
2017	Mexico	herb	outdoors		4,193.34		5,032.0		34,523
2013	Mongolia	herb	outdoors	15,000.00	4,000.00	11,000.00		4,000	4,000
2016	Morocco	plant	outdoors	47,000.00	395.00	46,605.00			
2017	Morocco	plant	outdoors	47,500.00	523.00	46,977.00			
2016	Morocco	herb	outdoors				35,652.83		
2017	Morocco	herb	outdoors				35,702.90		
2016	Morocco	resin	outdoors				713.00		
2017	Morocco	resin	outdoors				714.06		
2014	Myanmar	herb	outdoors	15.00	10.00	5.00			3
2016	Netherlands	herb	indoors					994,068	5,856
2017	Netherlands	herb	indoors					883,163	5,538
2016	New Zealand	herb	indoors					18,903	607
2017	New Zealand	herb	indoors					19,992	

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2016	New Zealand	herb	outdoors					104,725	
2017	New Zealand	herb	outdoors					19,559	
2014	Nicaragua	herb	outdoors		0.30		1,507.00	3,014	30
2016	Nigeria	herb	outdoors		718.78				65
2017	Nigeria	herb	outdoors		317.12				
2015	Norway	herb	indoors		0.04			4,000	30
2013	Panama	herb	indoors	0.50 [a]	0.50	0.00		37	2
2013	Panama	herb	outdoors	10.50 [a]	10.50	0.00		78,633	2
2016	Paraguay	plant	outdoors	1,298.50 [a]	1,298.50	0.00		5,656,266	4
2017	Paraguay	plant	outdoors		1,462.00			36,550,000	
2016	Paraguay	herb	outdoors				1,298.50		
2016	Paraguay	resin	outdoors				1.15		
2016	Peru	herb	outdoors		87.83			1,429,749	
2017	Peru	herb	outdoors		61.30			4,671,387	47
2016	Philippines	herb	outdoors		8.67			24,635,153	337
2017	Philippines	herb	outdoors		4.82			221,035	27
2016	Poland	herb	indoors					146,755	1,403
2017	Poland	herb	indoors					448	10
2016	Poland	herb	indoors/ outdoors					4,585	219
2017	Poland	herb	indoors/ outdoors						54
2017	Portugal	herb	indoors/ outdoors					22,910	158
2013	Republic of Korea	herb	outdoors					8,072	
2014	Republic of Moldova	herb	outdoors	100.00	59.00	41.00	10,000.00	200,548	
2017	Republic of Moldova	herb	outdoors	0.15	2.57			257,236	
2014	Republic of Moldova	herb	indoors		41.00				
2016	Romania	herb	indoors					1,433	41
2017	Romania	herb	indoors					1,875	46
2016	Romania	herb	outdoors		6.99				42
2017	Romania	herb	outdoors		1.90			4,905	32
2016	Russian Federation	herb	indoors		0.66				788
2017	Russian Federation	herb	indoors		0.87				1,990
2016	Russian Federation	herb	outdoors	7.61 [a]	7.61	0.00	68.64		1,143

Year	Country	Product	Outdoors/ indoors	Area cultivated (ha)	Area eradicated (ha)	Harvestable area (ha)	Production (tons)	Plants eradicated	Sites eradicated
2017	Russian Federation	herb	outdoors	159.00 [a]	159.00	0.00	30.07		5,379
2015	Serbia	herb	outdoors				0.05		
2013	Sierra Leone	herb	outdoors	190.00		190.00		190	3
2016	Slovakia	herb	indoors					385	
2017	Slovakia	herb	outdoors	2.00 [a]	2.00	0.00		2,299	31
2014	Slovenia	herb	indoors					9,223	118
2017	Slovenia	herb	indoors					10,259	78
2014	Slovenia	herb	outdoors					1,844	
2015	Spain	herb	indoors					244,772	108
2015	Spain	herb	outdoors					135,074	44
2014	Sudan	herb	outdoors	8.00 [a]	8.00	0.00	345.00		
2017	Sudan	herb	outdoors	1,250.00 [a]	1,250.00	0.00	205.00		100
2014	Sweden	herb	indoors					10,000	56
2015	Sweden	herb	outdoors				182.00		
2017	Sweden	herb	outdoors					5,100	44
2016	Switzerland	herb	indoors					11,386	83
2017	Switzerland	herb	indoors					71,750	
2012	Tajikistan	herb	outdoors					2,180,121	
2016	Thailand	herb	outdoors	1.00 [a]	1.00	0.00	7.50		1
2015	Trinidad and Tobago	herb	outdoors		0.31			375,925	58
2012	Uganda	herb	outdoors	150.00	88.00	62.00			5
2016	Ukraine	herb	outdoors	91.00 [a]	91.00	0.00			
2017	Ukraine	herb	outdoors		166.90			4,600,000	
2016	United States of America	herb	indoors					406,125	1,865
2017	United States of America	herb	indoors					303,654	1,399
2016	United States of America	herb	outdoors					4,940,596	5,513
2017	United States of America	herb	outdoors					3,078,418	4,062
2016	Uruguay	herb	indoors					661	
2017	Uruguay	herb	indoors					1,926	
2016	Uzbekistan	herb	outdoors	0.20 [a]	0.20	0.00			586
2017	Uzbekistan	herb	outdoors	0.20 [a]	0.20	0.00			618
2015	Viet Nam	herb	oudoors		1.00				

Source: United Nations Office on Drugs and Crime annual report questionnaire, government reports and and international narcotics control strategy reports of the United States of America.

[a] *Area identified by the authorities for eradication.*

GLOSSARY

amphetamine-type stimulants — a group of substances composed of synthetic stimulants controlled under the Convention on Psychotropic Substances of 1971 and from the group of substances called amphetamines, which includes amphetamine, methamphetamine, methcathinone and the "ecstasy"-group substances (3,4-methylenedioxymethamphetamine (MDMA) and its analogues).

amphetamines — a group of amphetamine-type stimulants that includes amphetamine and methamphetamine.

annual prevalence — the total number of people of a given age range who have used a given drug at least once in the past year, divided by the number of people of the given age range, and expressed as a percentage.

coca paste (or coca base) — an extract of the leaves of the coca bush. Purification of coca paste yields cocaine (base and hydrochloride).

"crack" cocaine — cocaine base obtained from cocaine hydrochloride through conversion processes to make it suitable for smoking.

cocaine salt — cocaine hydrochloride.

drug use — use of controlled psychoactive substances for non-medical and non-scientific purposes, unless otherwise specified.

fentanyls — fentanyl and its analogues.

new psychoactive substances — substances of abuse, either in a pure form or a preparation, that are not controlled under the Single Convention on Narcotic Drugs of 1961 or the 1971 Convention, but that may pose a public health threat. In this context, the term "new" does not necessarily refer to new inventions but to substances that have recently become available.

opiates — a subset of opioids comprising the various products derived from the opium poppy plant, including opium, morphine and heroin.

opioids — a generic term that refers both to opiates and their synthetic analogues (mainly prescription or pharmaceutical opioids) and compounds synthesized in the body.

problem drug users — people who engage in the high-risk consumption of drugs. For example, people who inject drugs, people who use drugs on a daily basis and/or people diagnosed with drug use disorders (harmful use or drug dependence), based on clinical criteria as contained in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) of the American Psychiatric Association, or the *International Classification of Diseases and Related Health Problems* (tenth revision) of WHO.

people who suffer from drug use disorders/people with drug use disorders — a subset of people who use drugs. Harmful use of substances and dependence are features of drug use disorders. People with drug use disorders need treatment, health and social care and rehabilitation.

harmful use of substances — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a pattern of use that causes damage to physical or mental health.

dependence — defined in the *International Statistical Classification of Diseases and Related Health Problems* (tenth revision) as a cluster of physiological, behavioural and cognitive phenomena that develop after repeated substance use and that typically include a strong desire to take the drug, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to drug use than to other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

substance or drug use disorders — referred to in the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) as patterns of symptoms resulting from the repeated use of a substance despite experiencing problems or impairment in daily life as a result of using substances. Depending on the number of symptoms identified, substance use disorder may be mild, moderate or severe.

prevention of drug use and treatment of drug use disorders — the aim of "prevention of drug use" is to prevent or delay the initiation of drug use, as well as the transition to drug use disorders. Once a person develops a drug use disorder, treatment, care and rehabilitation are needed.

REGIONAL GROUPINGS

The *World Drug Report* uses a number of regional and subregional designations. These are not official designations, and are defined as follows:

- East Africa: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania and Mayotte
- North Africa: Algeria, Egypt, Libya, Morocco, Sudan and Tunisia
- Southern Africa: Angola, Botswana, Eswatini, Lesotho, Malawi, Mozambique, Namibia, South Africa, Zambia, Zimbabwe and Reunion
- West and Central Africa: Benin, Burkina Faso, Cabo Verde, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Sao Tome and Principe, Senegal, Sierra Leone, Togo and Saint Helena
- Caribbean: Antigua and Barbuda, Bahamas, Barbados, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago, Anguilla, Aruba, Bonaire, Netherlands, British Virgin Islands, Cayman Islands, Curaçao, Guadeloupe, Martinique, Montserrat, Puerto Rico, Saba, Netherlands, Sint Eustatius, Netherlands, Sint Maarten, Turks and Caicos Islands and United States Virgin Islands
- Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama
- North America: Canada, Mexico, United States of America, Bermuda, Greenland and Saint-Pierre and Miquelon
- South America: Argentina, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Ecuador, Guyana, Paraguay, Peru, Suriname, Uruguay, Venezuela (Bolivarian Republic of) and Falkland Islands (Malvinas)
- Central Asia and Transcaucasia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan
- East and South-East Asia: Brunei Darussalam, Cambodia, China, Democratic People's Republic of Korea, Indonesia, Japan, Lao People's Democratic Republic, Malaysia, Mongolia, Myanmar, Philippines, Republic of Korea, Singapore, Thailand, Timor-Leste, Viet Nam, Hong Kong, China, Macao, China, and Taiwan Province of China
- South-West Asia: Afghanistan, Iran (Islamic Republic of) and Pakistan
- Near and Middle East: Bahrain, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, State of Palestine, Syrian Arab Republic, United Arab Emirates and Yemen
- South Asia: Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- Eastern Europe: Belarus, Republic of Moldova, Russian Federation and Ukraine
- South-Eastern Europe: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, Serbia, Turkey and Kosovo
- Western and Central Europe: Andorra, Austria, Belgium, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom of Great Britain and Northern Ireland, Faroe Islands, Gibraltar and Holy See

Oceania (comprising four subregions):

- Australia and New Zealand: Australia and New Zealand
- Polynesia: Cook Islands, Niue, Samoa, Tonga, Tuvalu, French Polynesia, Tokelau and Wallis and Futuna Islands
- Melanesia: Fiji, Papua New Guinea, Solomon Islands, Vanuatu and New Caledonia
- Micronesia: Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Guam and Northern Mariana Islands

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The *World Drug Report 2019* is again presented in five separate parts that divide the wealth of information and analysis contained in the report into individual reader-friendly booklets in which drugs are grouped by their psychopharmacological effect for the first time in the report's history.

Booklet 1 provides a summary of the four subsequent booklets by reviewing their key findings and highlighting policy implications based on their conclusions. Booklet 2 contains a global overview of the latest estimates of and trends in the supply, use and health consequences of drugs. Booklet 3 looks at recent trends in the market for depressants (including opioids, sedatives, tranquillizers and hypnotics), while Booklet 4 deals with recent trends in the market for stimulants (including cocaine, amphetamine-type stimulants and new psychoactive substances). Booklet 5 contains a review of recent trends in the market for cannabis and for hallucinogens. The section on cannabis also includes a review of the latest developments in the jurisdictions that have adopted measures allowing the non-medical use of cannabis.

As in previous years, the *World Drug Report 2019* is aimed at improving the understanding of the world drug problem and contributing towards fostering greater international cooperation for countering its impact on health, governance and security.

The statistical annex is published on the UNODC website: https://www.unodc.org/wdr2019

ISBN 978-92-1-148314-7

UNODC
United Nations Office on Drugs and Crime

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World Drug Report 2019

Pre-release to Member States

Vienna, 19 June 2019

UNODC
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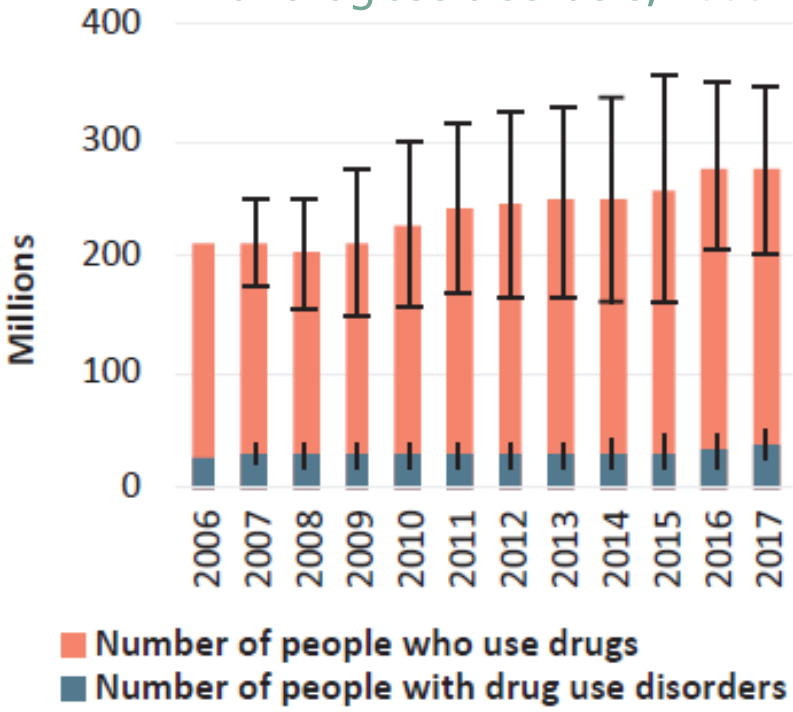
DRUG USE

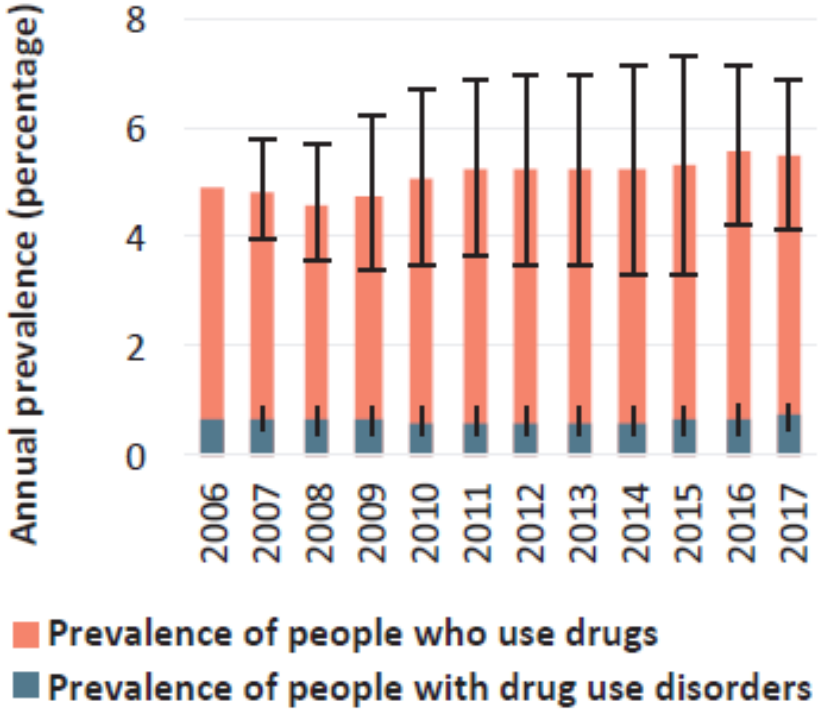
Global trends in the estimated number of people who use drugs and those with drug use disorders, 2006–2017



Source: UNODC, responses to the annual report questionn

Note: Estimates of people who use drugs are for adults (aged 15–64) who used drugs in the past year.

Global trends in the estimated prevalence of drug use and drug use disorders, 2006–2017



Source: UNODC, responses to the annual report questionnaire.

Note: Estimated percentage of the annual prevalence of drug use is for adults (aged 15–64) who used drugs in the past year.

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Impact of new data in global estimates

	2016 estimates	2017 estimates
Annual **opiate** users	19.4 ml	29.2 ml
Annual **opioid** users	34.3 ml	53.3 ml
People with **drug use disorder**	30.5 ml	35 ml
PWID	10.6	11.3 ml

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Impact of new data in regional estimates

Asia

		2016 estimates	2017 estimates
South Asia	Annual opiate users	-	13 ml
	Annual opioid users	-	18.7 ml
Asia	Annual opiate users	11.2 ml	21.7 ml
	Annual opioid users	13.6 ml	29.5 ml

Africa

	2016 estimates	2017 estimates
Annual opiate users	2 ml	1.5 ml
Annual opioid users	2.2 ml	6 ml

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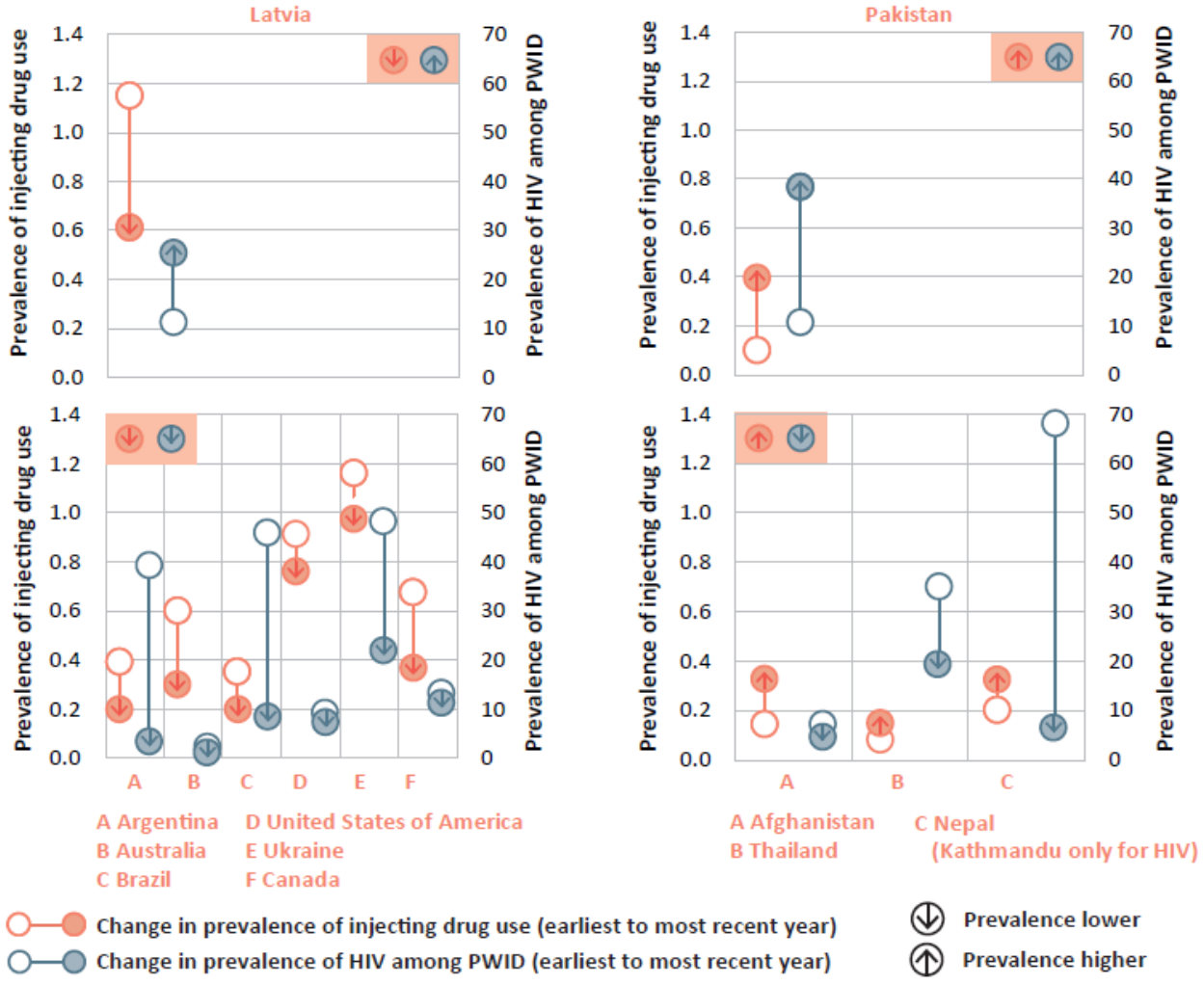
Long-term trends in injecting drug use and HIV among people who inject drugs, selected countries, various years covering the overall period 1992–2017



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PRISONS AND DRUGS

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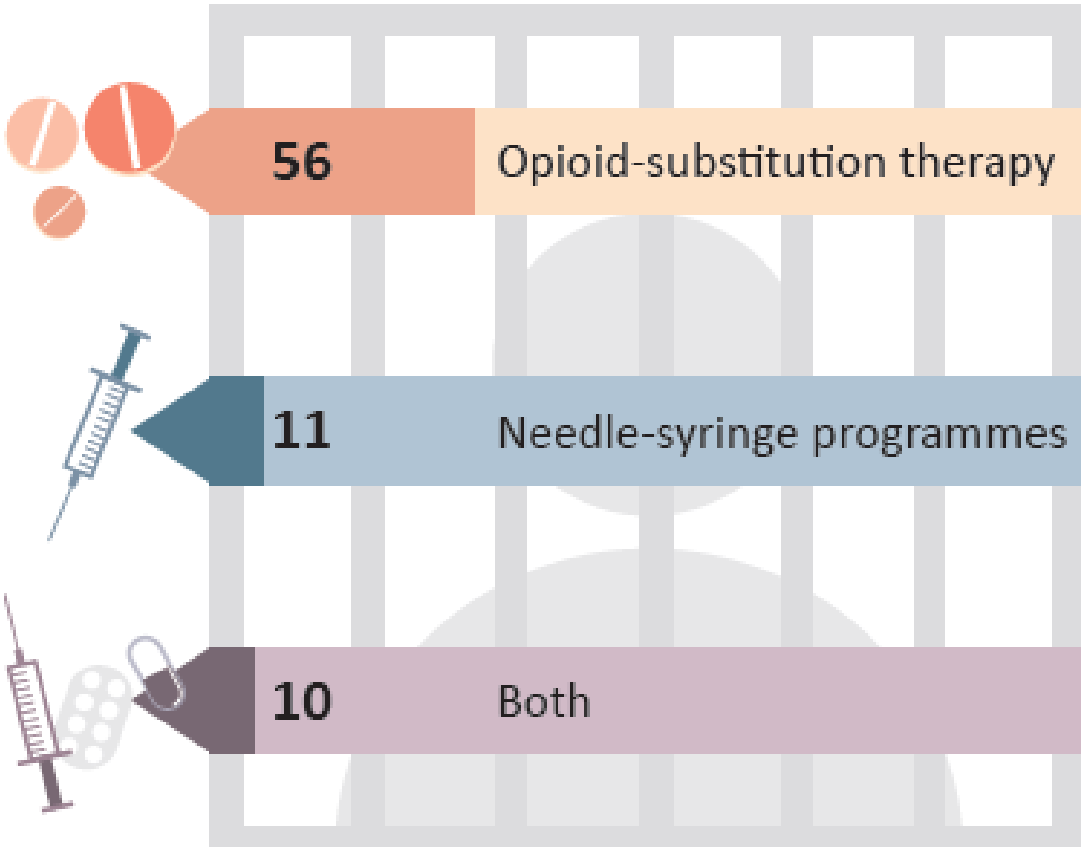
PRISONS AND DRUGS

Numbers of countries implementing interventions in at least one prison



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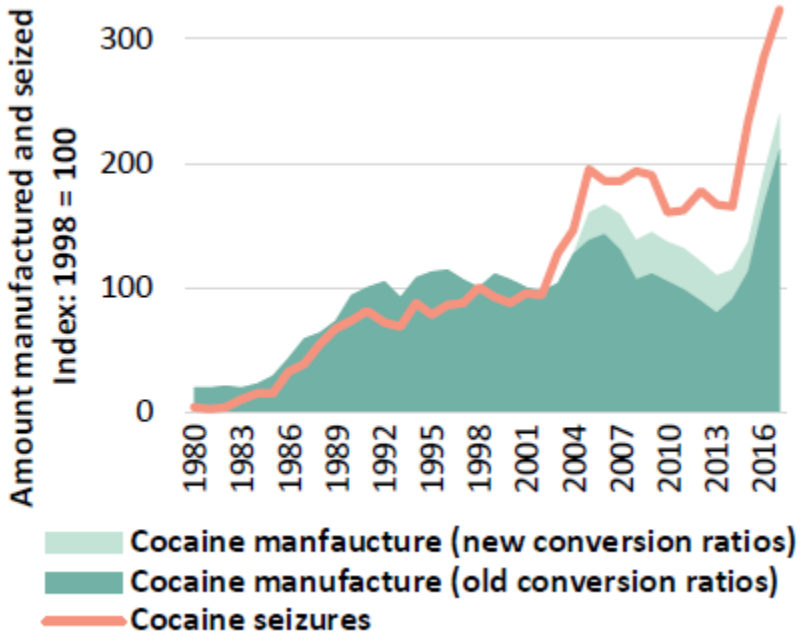
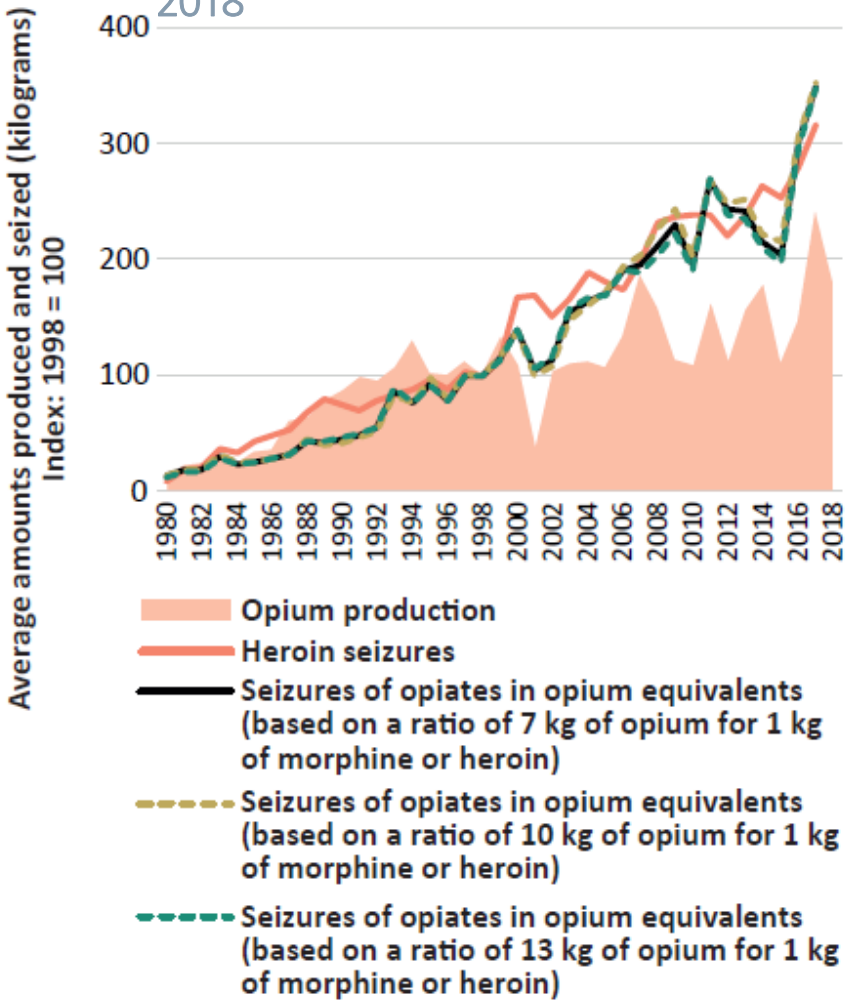
TRENDS IN PRODUCTION AND INTERCEPTIONS

Global cocaine manufacture and global quantities of cocaine seized, 1980–2018



Global opium production and global quantities of heroin and of opiates (in opium equivalents) seized, 1980–2018



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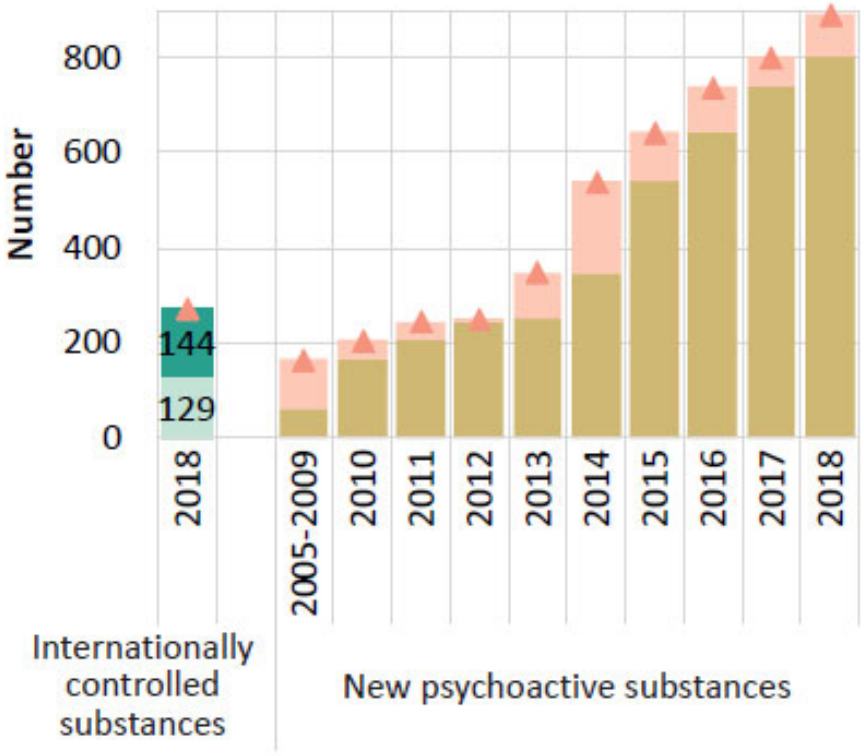
Internationally controlled drugs in 2018 and identified new psychoactive substances at the global level, 2005–2018 (cumulative)



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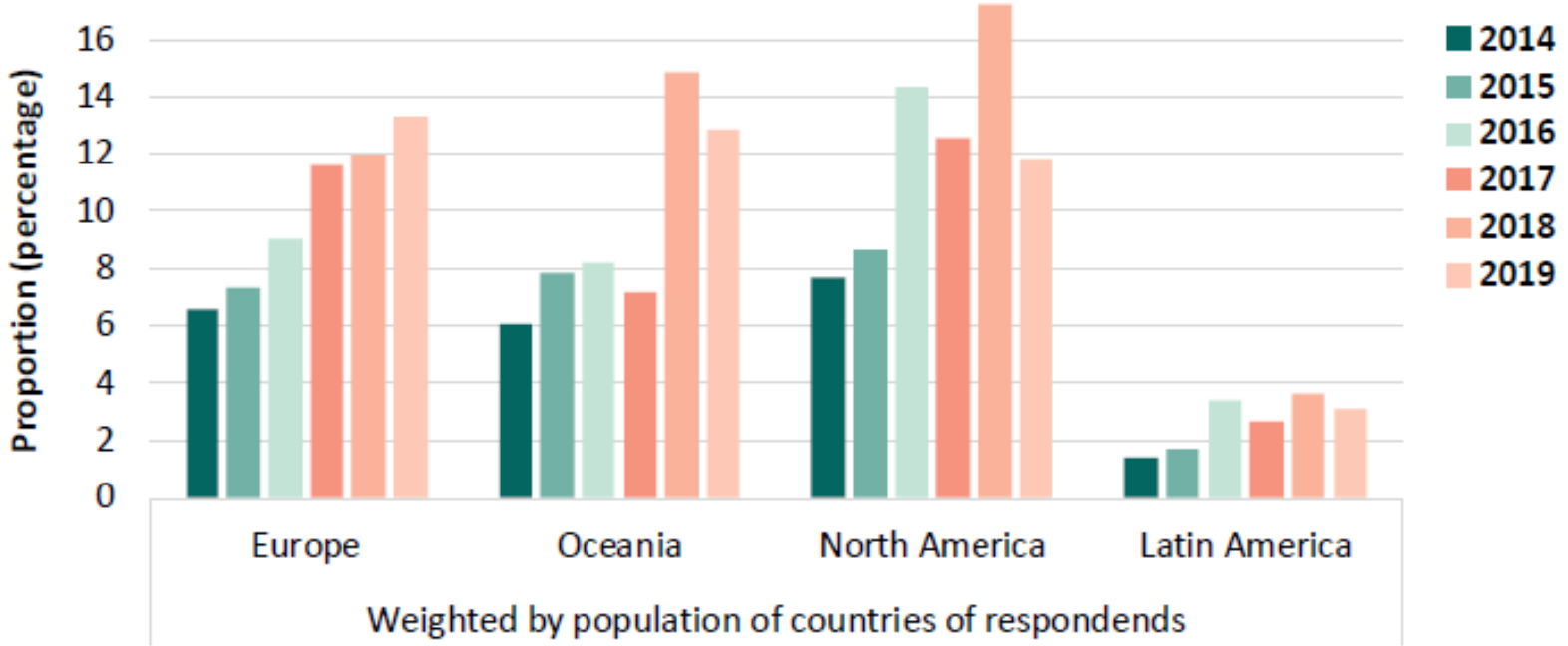
Proportion of surveyed Internet users using drugs (in the past year) who purchased drugs over the darknet, 2014–2019, selected regions and subregions



Source: UNODC calculations, based on Global Drug Survey 2019 data: detailed findings on drug cryptomarkets. Available from Dr. Monica Barratt, Drug Policy Modelling Program, National Drug and Alcohol Research Centre, Australia.

Note: For Europe, the average is based on information from respondents in 22 countries; in Oceania, the average is based on information from respondents in Australia and New Zealand; in North America, the average is based on information from respondents in Canada and the United States; and in Latin America, the average is based on information from respondents in Brazil, Chile, Colombia and Mexico.

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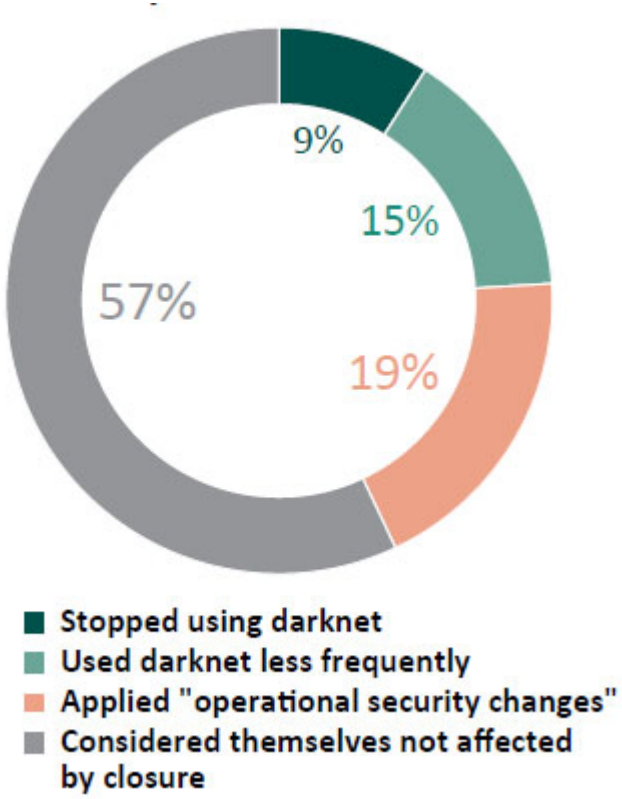
DARKNET: Consequences of shutdown of AlphaBay and Hansa markets in 2017 as reported by drug users (internet survey) in January 2018



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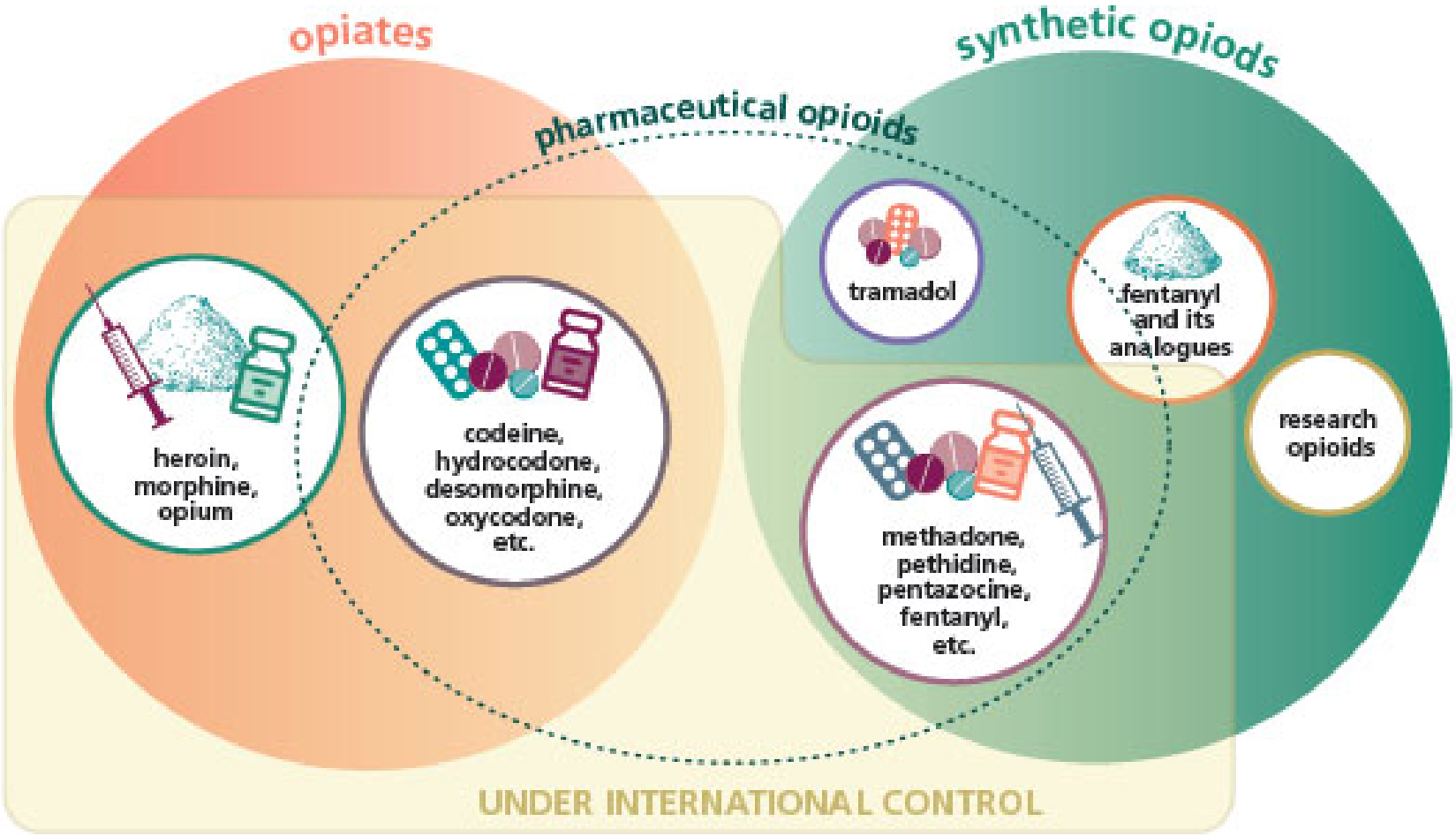
OPIOIDS



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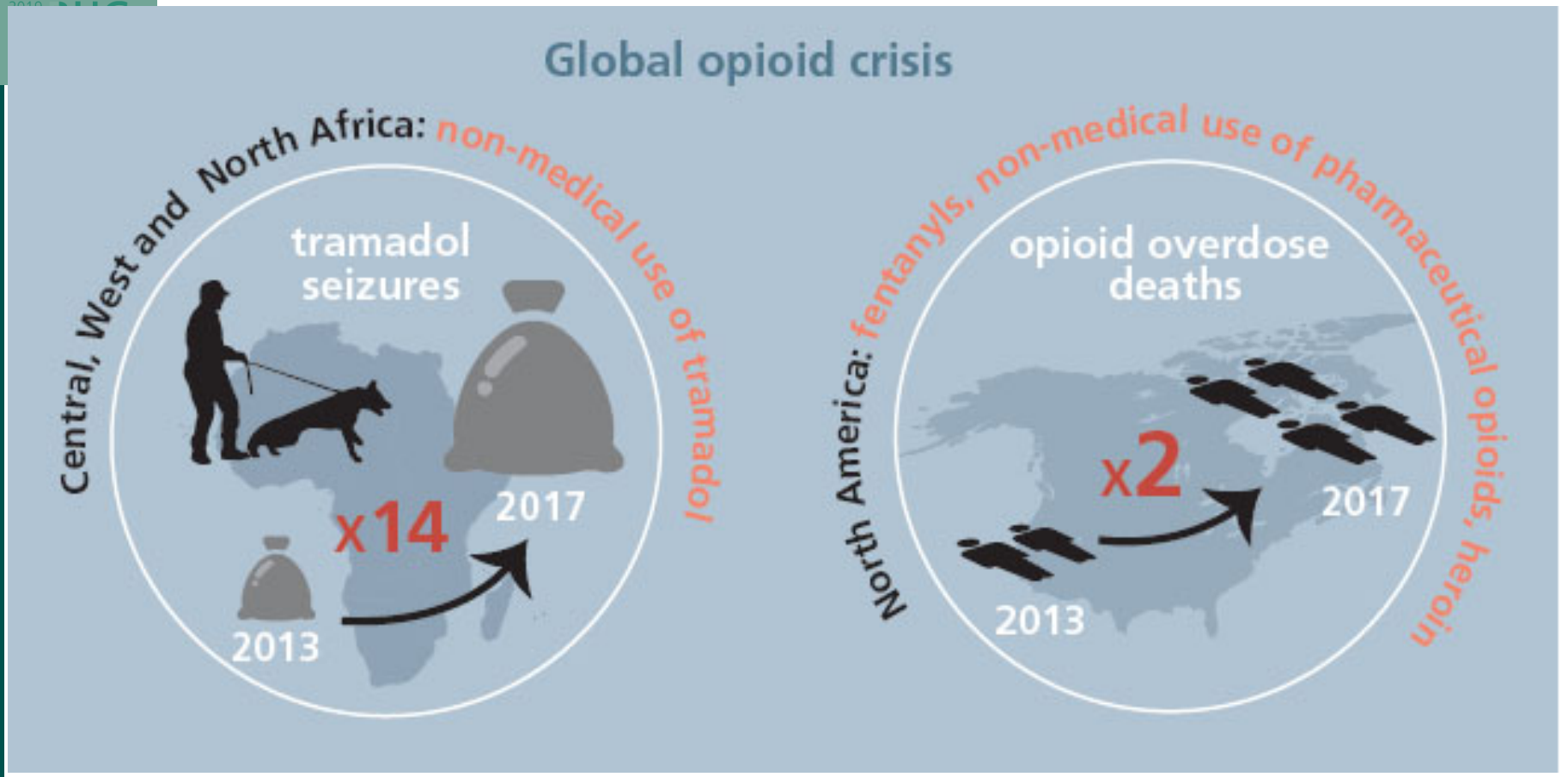

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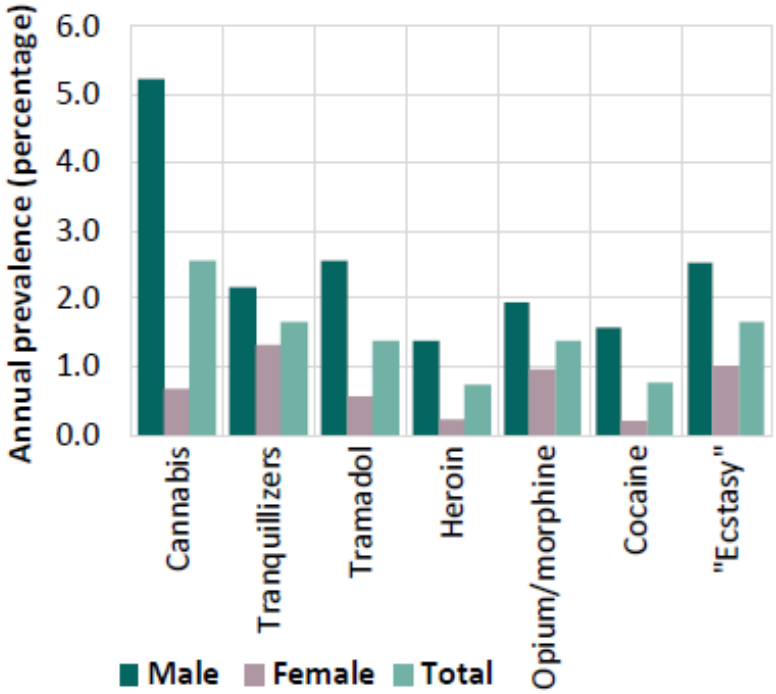
Drug use among secondary school students in Egypt, 2016



In Nigeria, 4.6 ml persons non-medical annual users of opioids (mainly tramadol)

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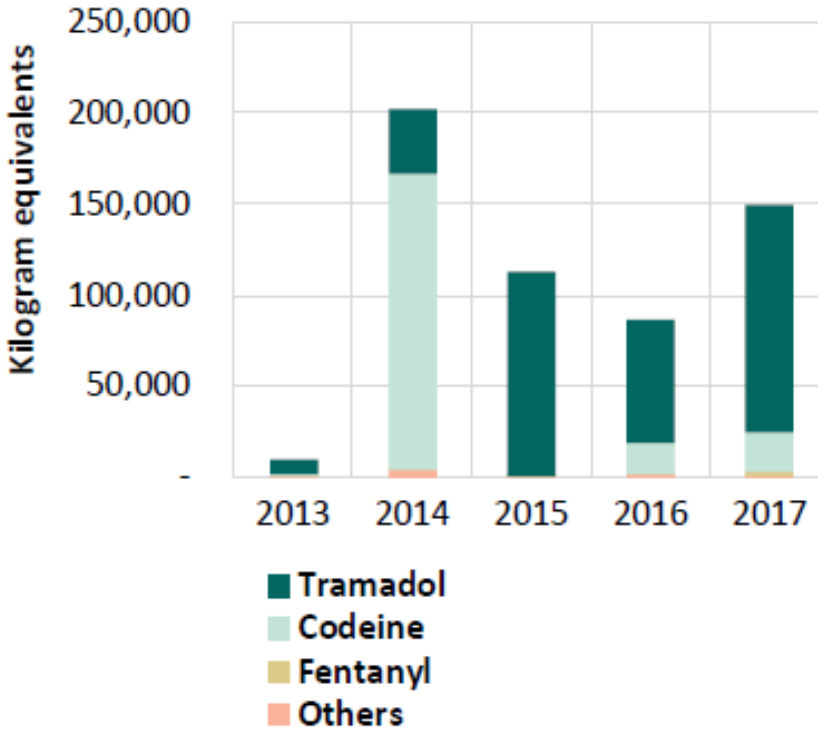
Global quantities of pharmaceutical opioids seized, 2013–2017



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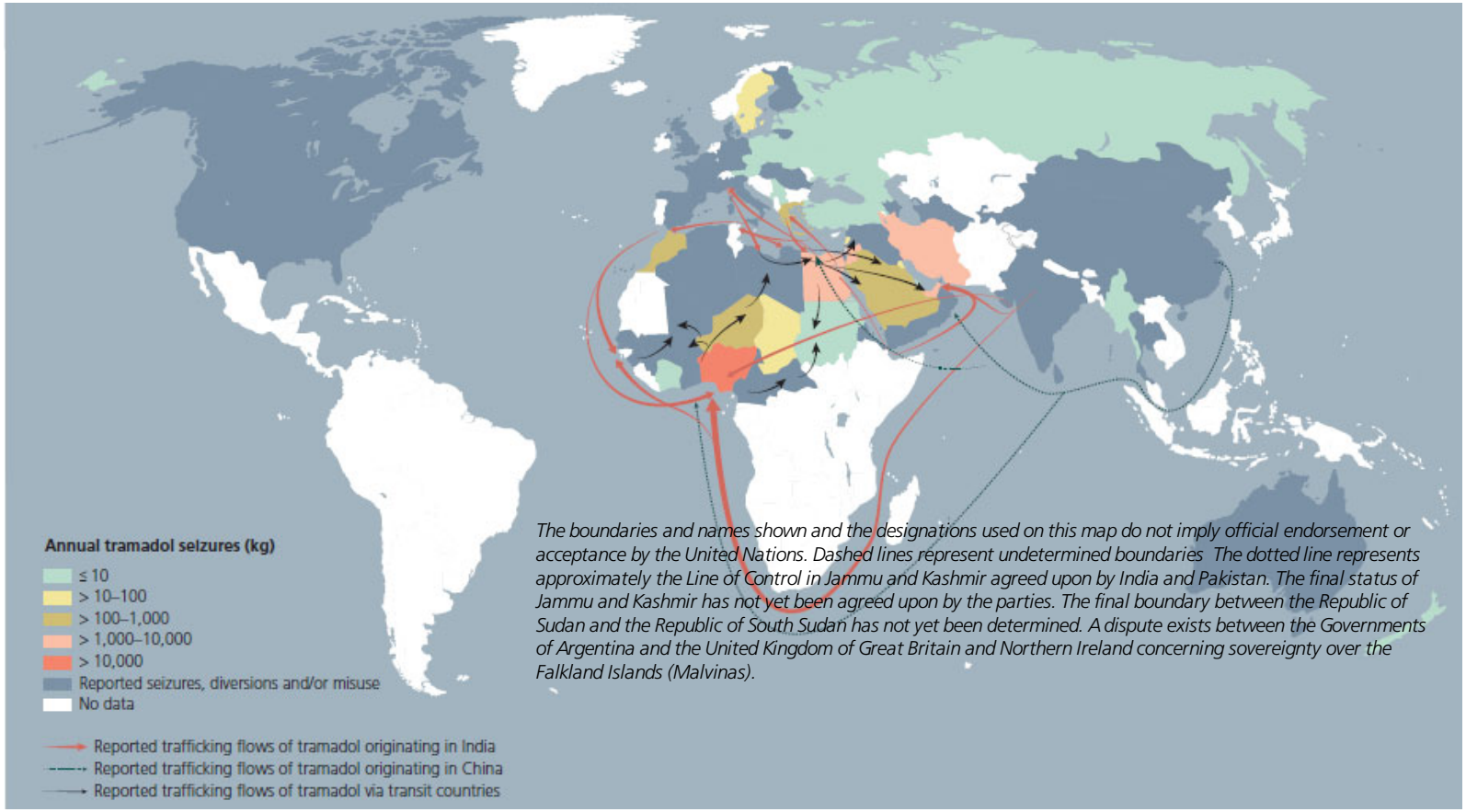
Reported seizures, diversion and trafficking routes of tramadol (based on reported seizures), 2013-2017



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Dashed lines represent undetermined boundaries The dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

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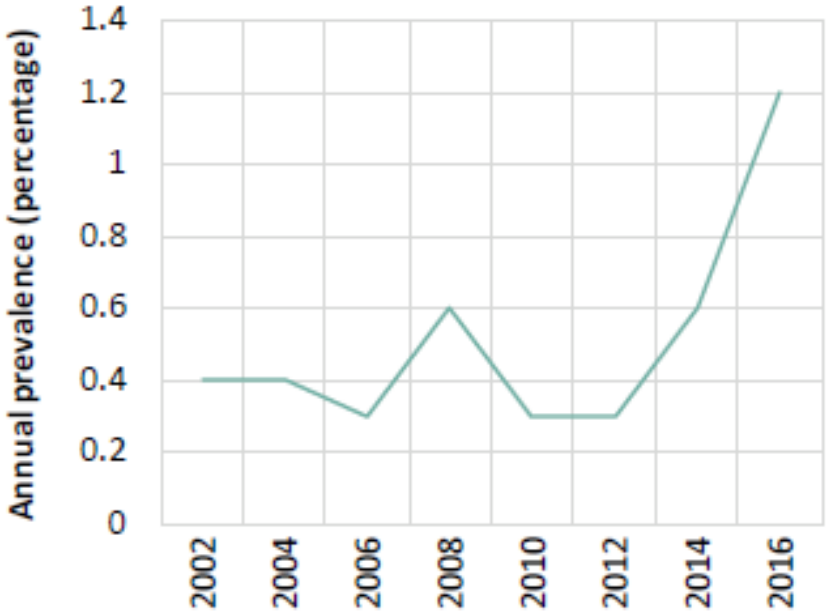
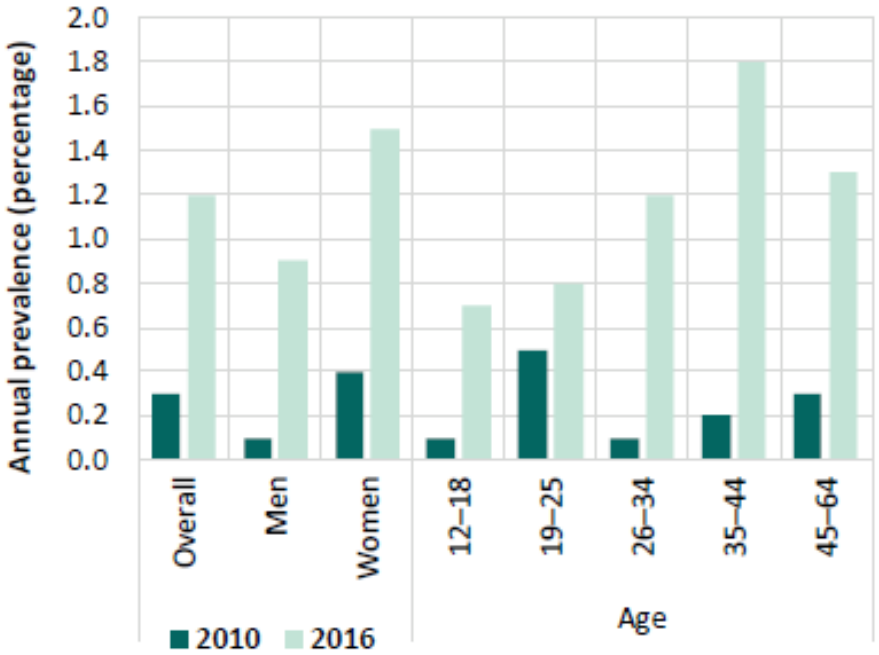
Opioid use in Chile

Non-medical use of pharmaceutical opioids, Chile, 2002–2016



Source: Chile, Ministry of the Interior and Public Security, Twelfth national study of drug use among the public of Chile, 2016 (*Décimo Segundo Estudio Nacional de Drogas en Población General de Chile*).

Non-medical use of opioids by sex and age group, Chile, 2010 and 2016



Source: Chile, Ministry of the Interior and Public Security, Twelfth national study of drug use among the public of Chile, 2016 (*Décimo Segundo Estudio Nacional de Drogas en Población General de Chile*).

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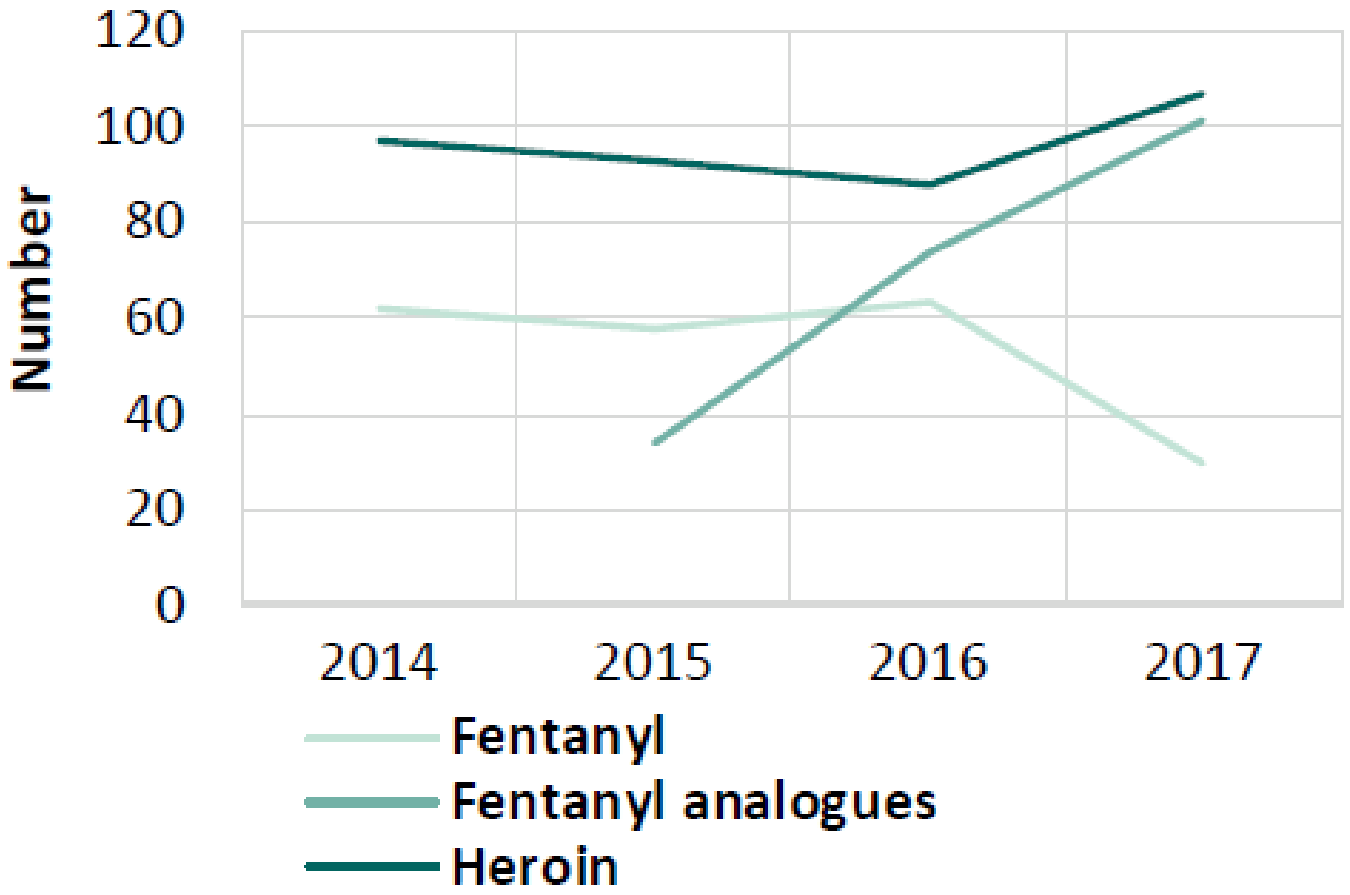
Opioid overdose deaths in Sweden, 2014-2017



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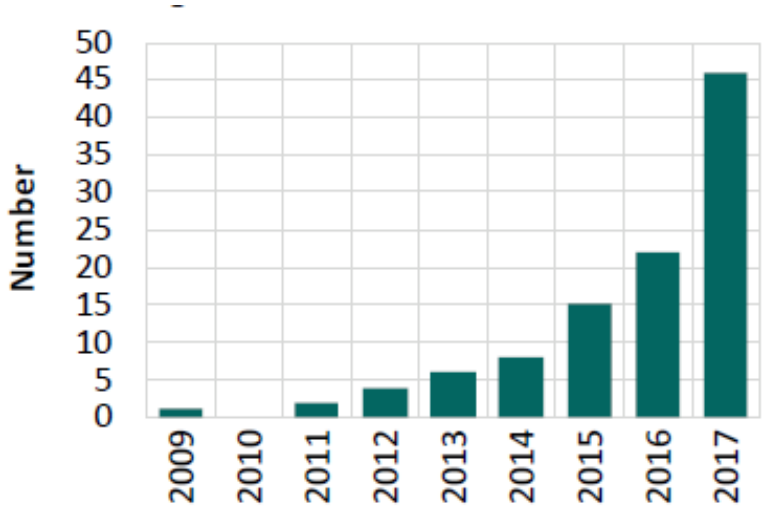
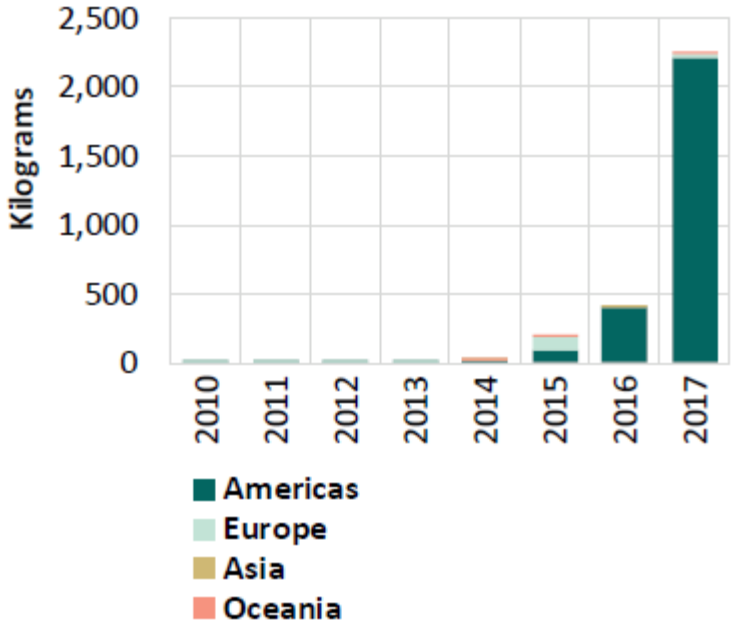
Identified new synthetic opioid receptoragonists, 2009–2017



Global quantities of fentanyl and its analogues seized, by region, 2010–2017



Just 4 countries reported seizures in 2013, 12 countries in 2016 and 16 countries in 2017.

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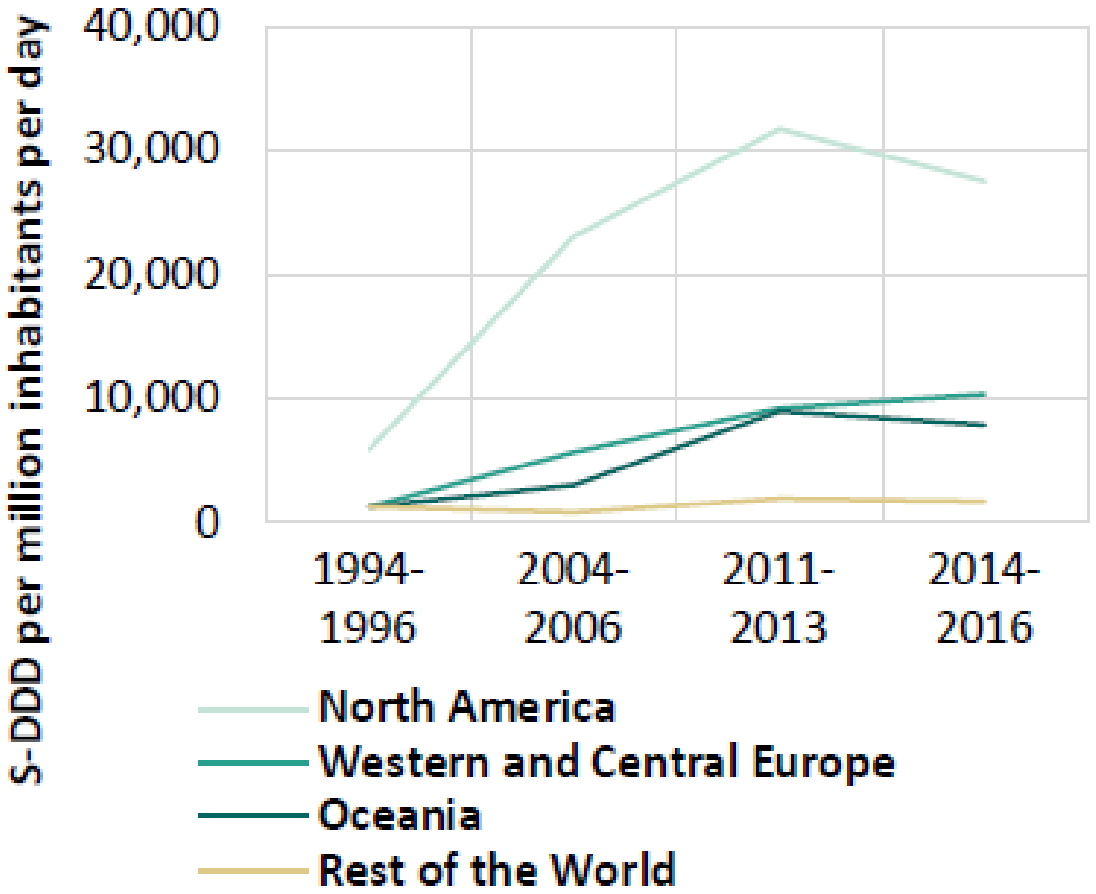
Trends in availability of opioid analgesics for consumption, by region, 1994–2016



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Diversion or illicit manufacturing of synthetic opioids for the non medical use market?

In North America, diversion of **Oxycodone**

Fentanyl illicitly manufactured

Tramadol manufactured and/or packaged for non medical market

Codeine?

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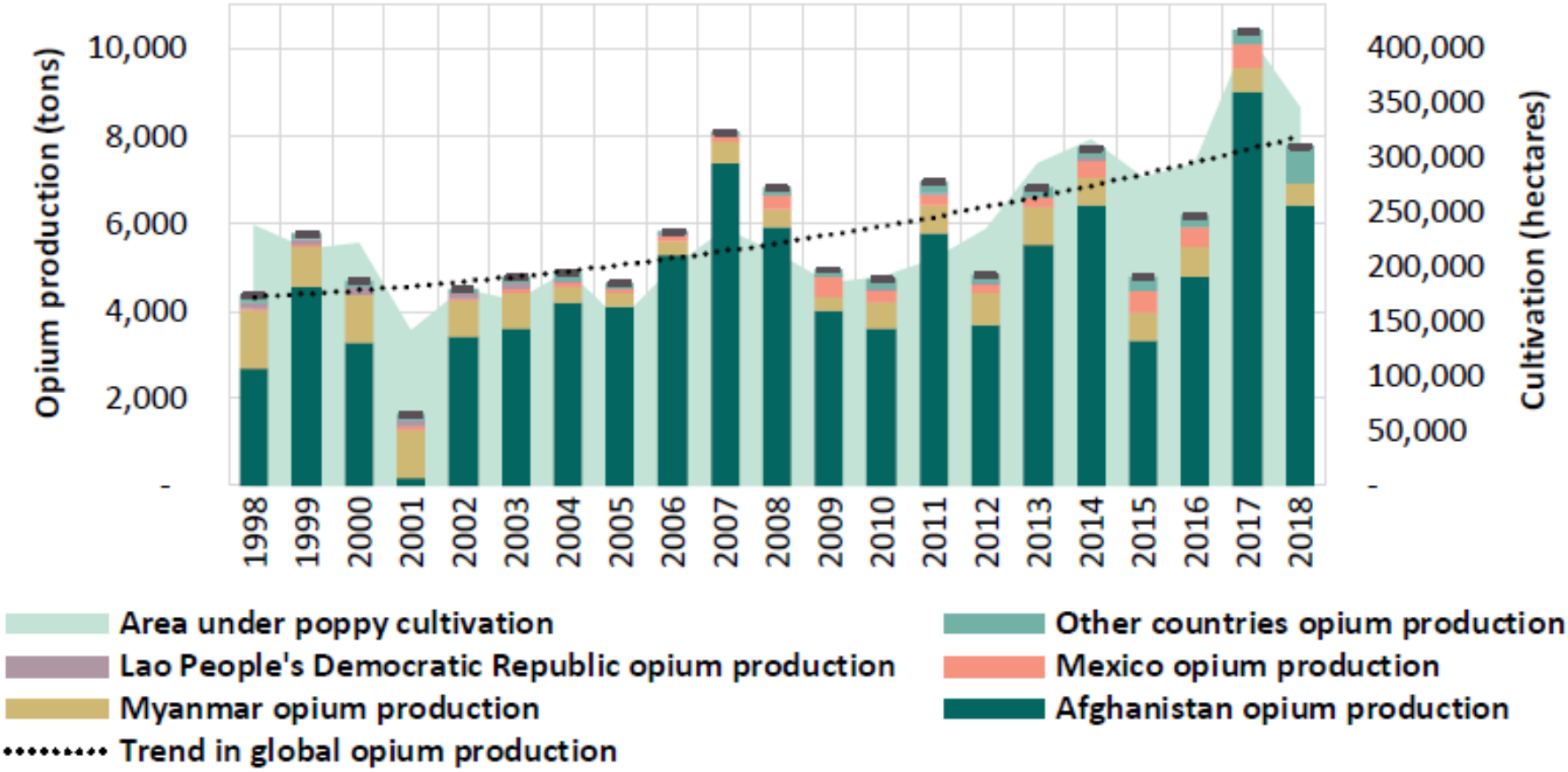
Opium poppy cultivation and production of opium, 1998–2018*



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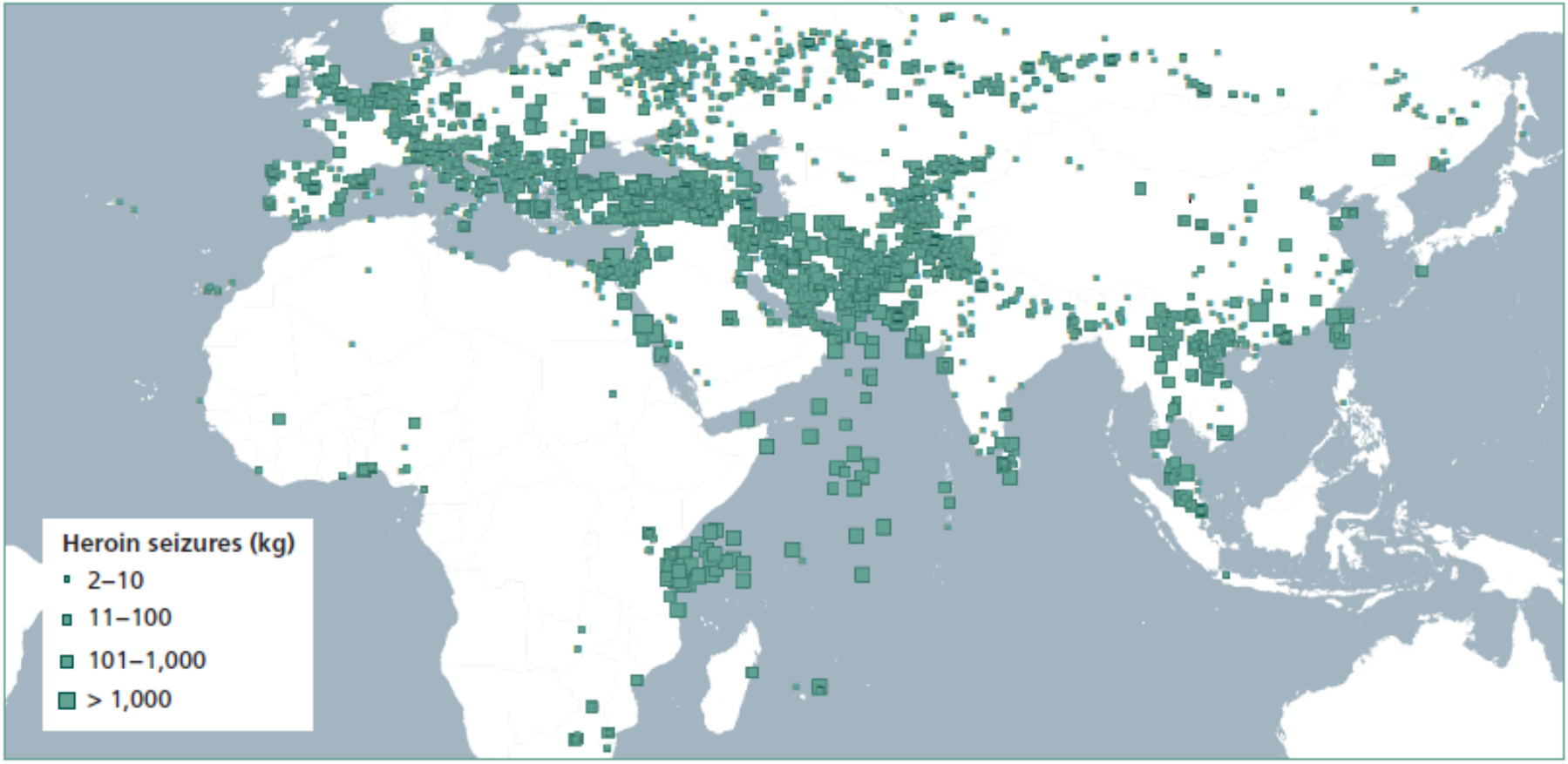
Significant individual heroin seizures
January 2013–April 2019



Source: UNODC and Paris Pact, Drugs Monitoring Platform.

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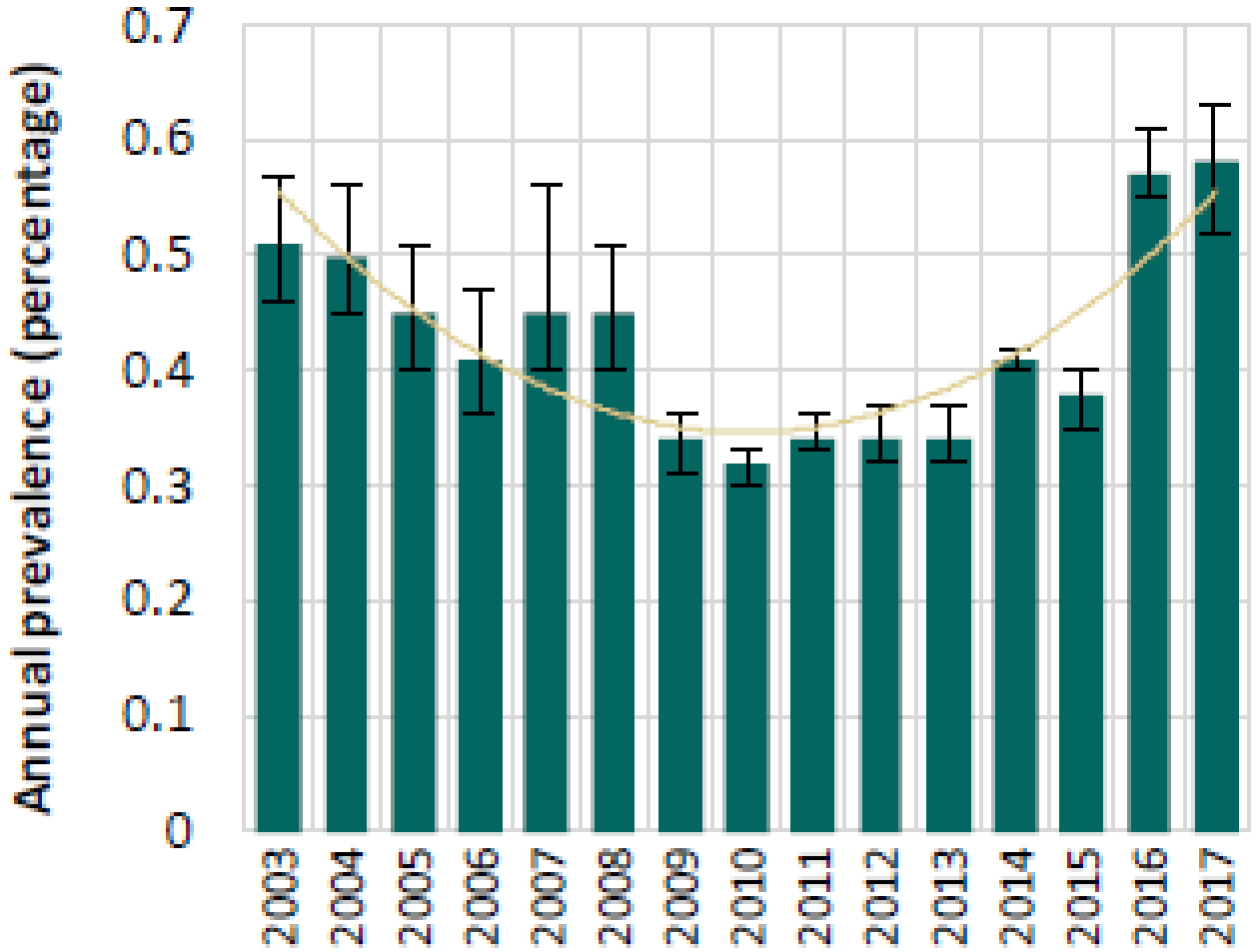
Opiate use in Western and Central Europe, 2003–2017



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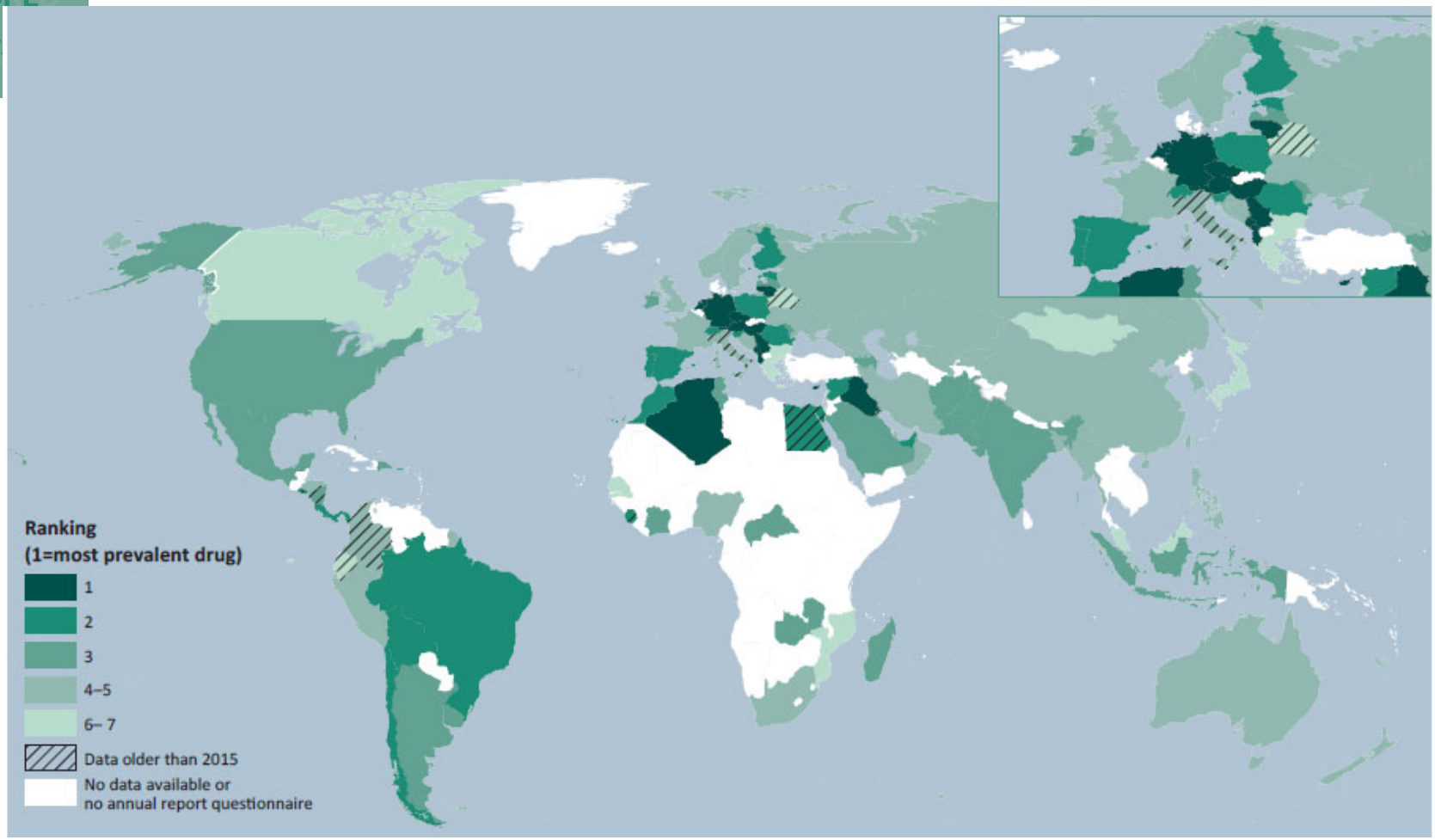
Ranking of sedatives and tranquillizers in order of prevalence (based on national qualitative information), 2017



Source: UNODC.

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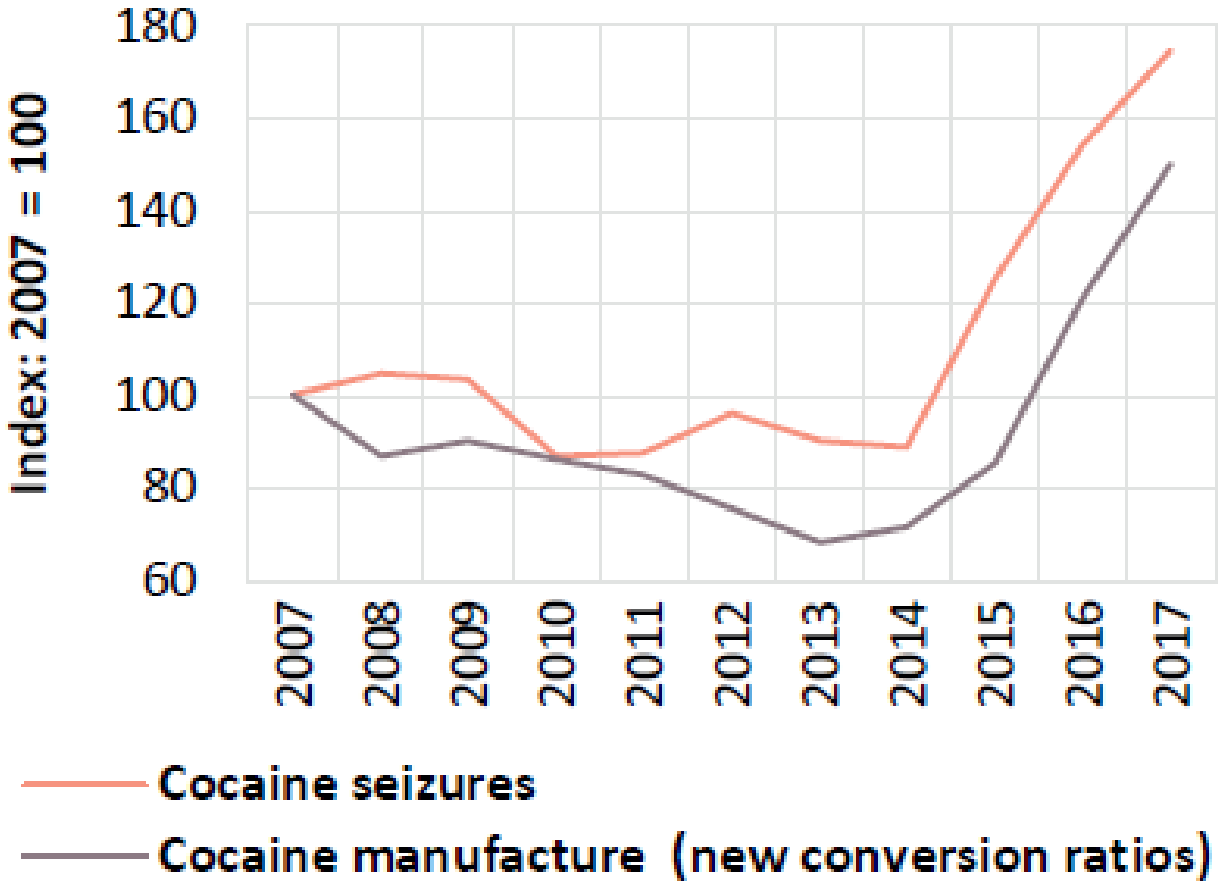
Global cocaine manufacture and global quantities of cocaine seized, 2007–2017



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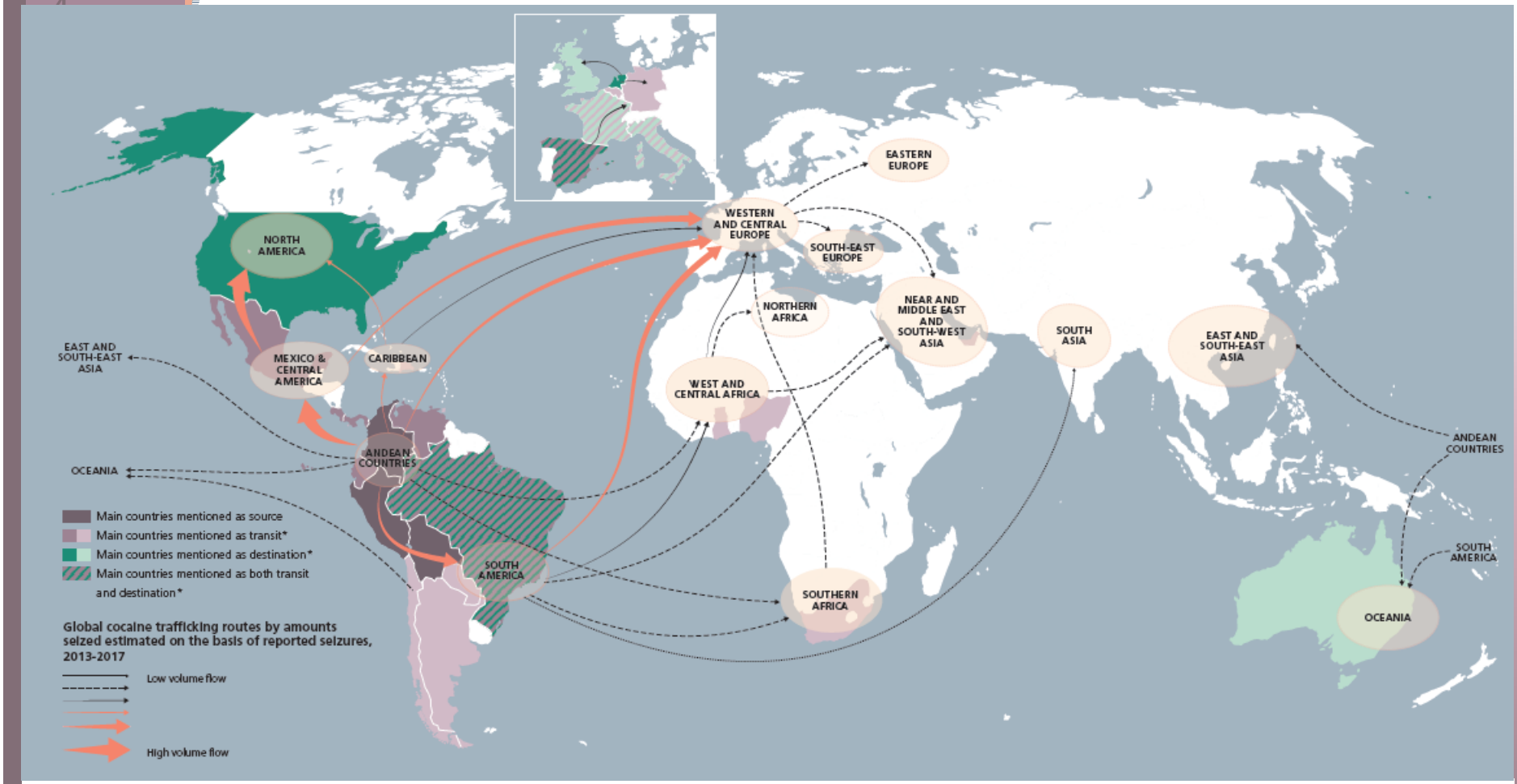
Main cocaine trafficking routes as described by reported seizures, 2013–2017



*Sources: UNODC. * A darker shade indicates a larger amount of cocaine being seized with the country as transit/destination. The size of the route is based on the total amount seized on that route, according to the information on trafficking routes provided by Member States in the annual report questionnaire, individual drug seizures and other official documents, over the period 2013–2017. The routes are determined on the basis of reported country of departure/transit and destination in these sources. As such, they need to be considered as broadly indicative of existing trafficking routes while several secondary routes may not be reflected. Route arrows represent the direction of trafficking: origins of the arrows indicate either the area of departure or the one of last provenance, end points of arrows indicate either the area of consumption or the one of next destination of trafficking. Therefore, the trafficking origin does not reflect the country in which the substance was produced. The main countries mentioned as transit or destination were identified on the basis of both the number of times they were identified by other Member States as departure/transit or destination of seizures, and the annual average amount that these seizures represent during the period 2013–2017. For more details on the criteria used, please see the Methodology section of this document. The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.*

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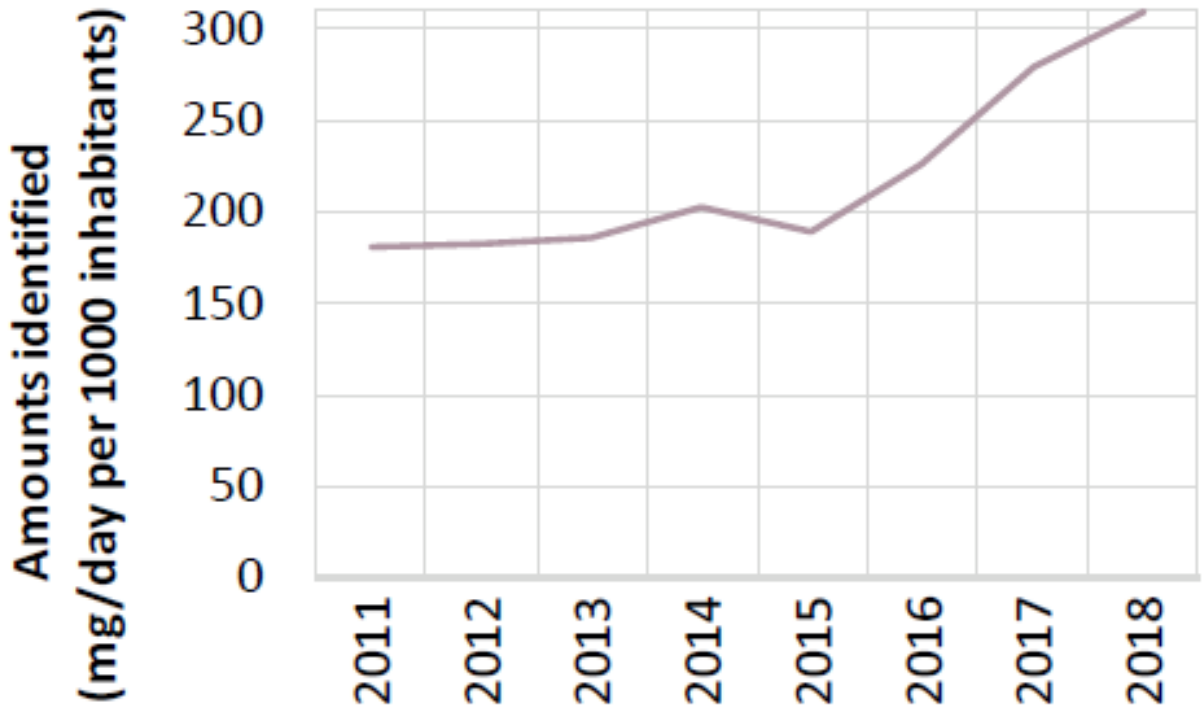
Benzoylecgonine (cocaine metabolite) found in wastewater in 78 cities in Europe, 2011–2018



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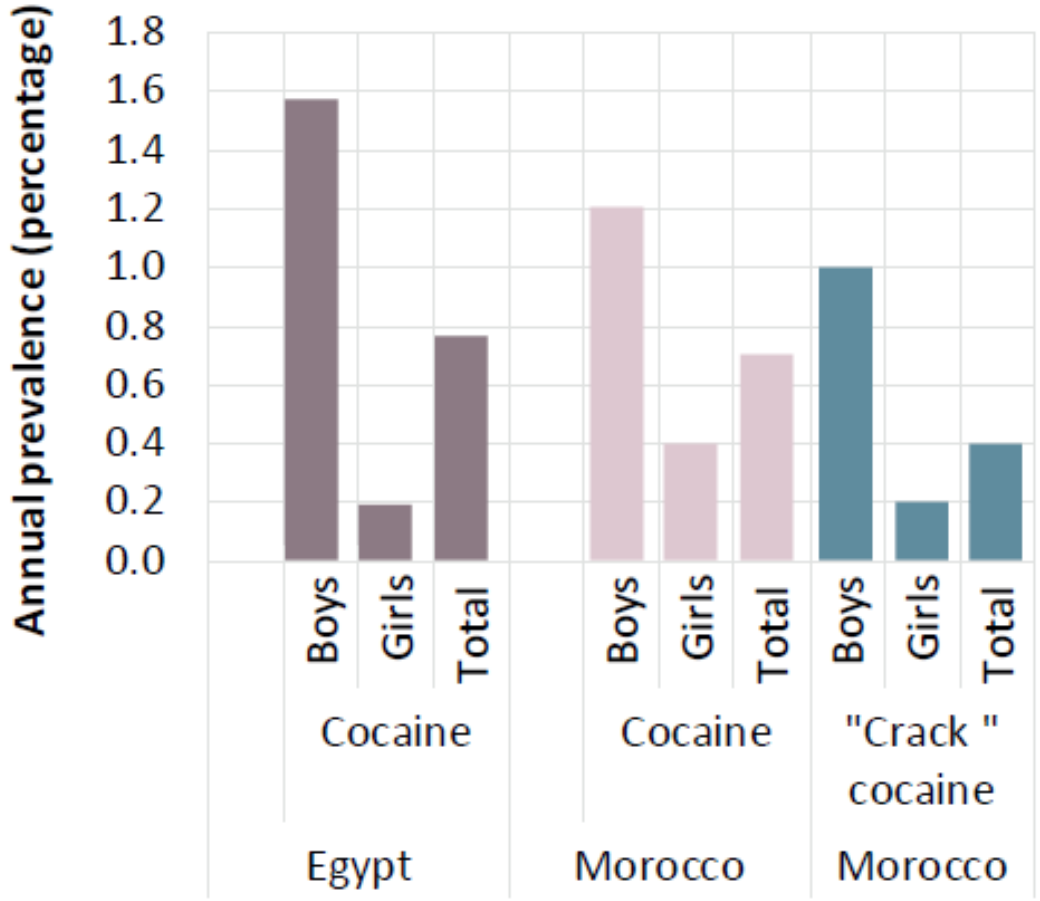
Cocaine and "crack" cocaine use among secondary school students in Egypt and Morocco, by sex, 2016



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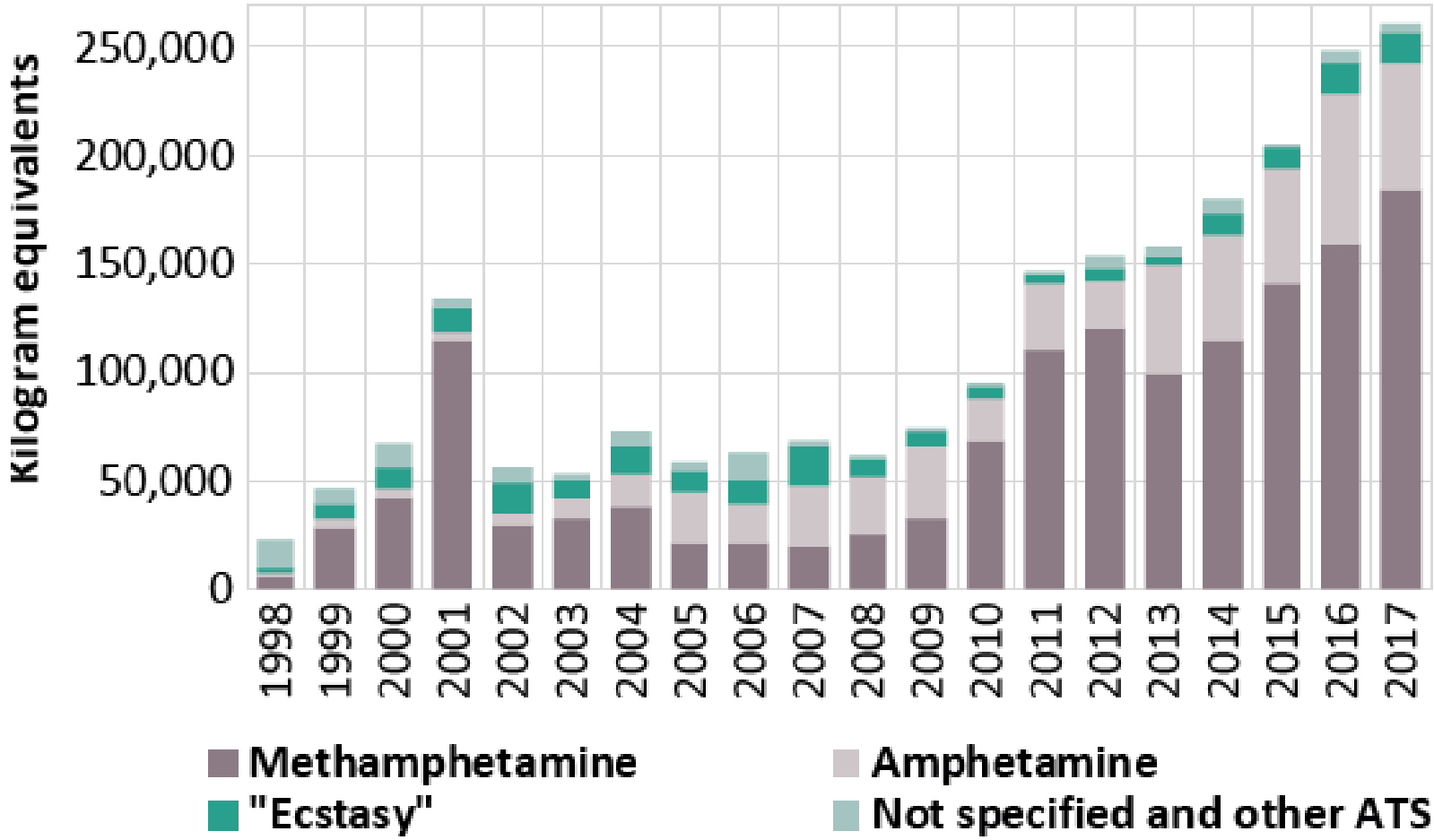
Global quantity of amphetamine-type stimulants seized, 1998–2017



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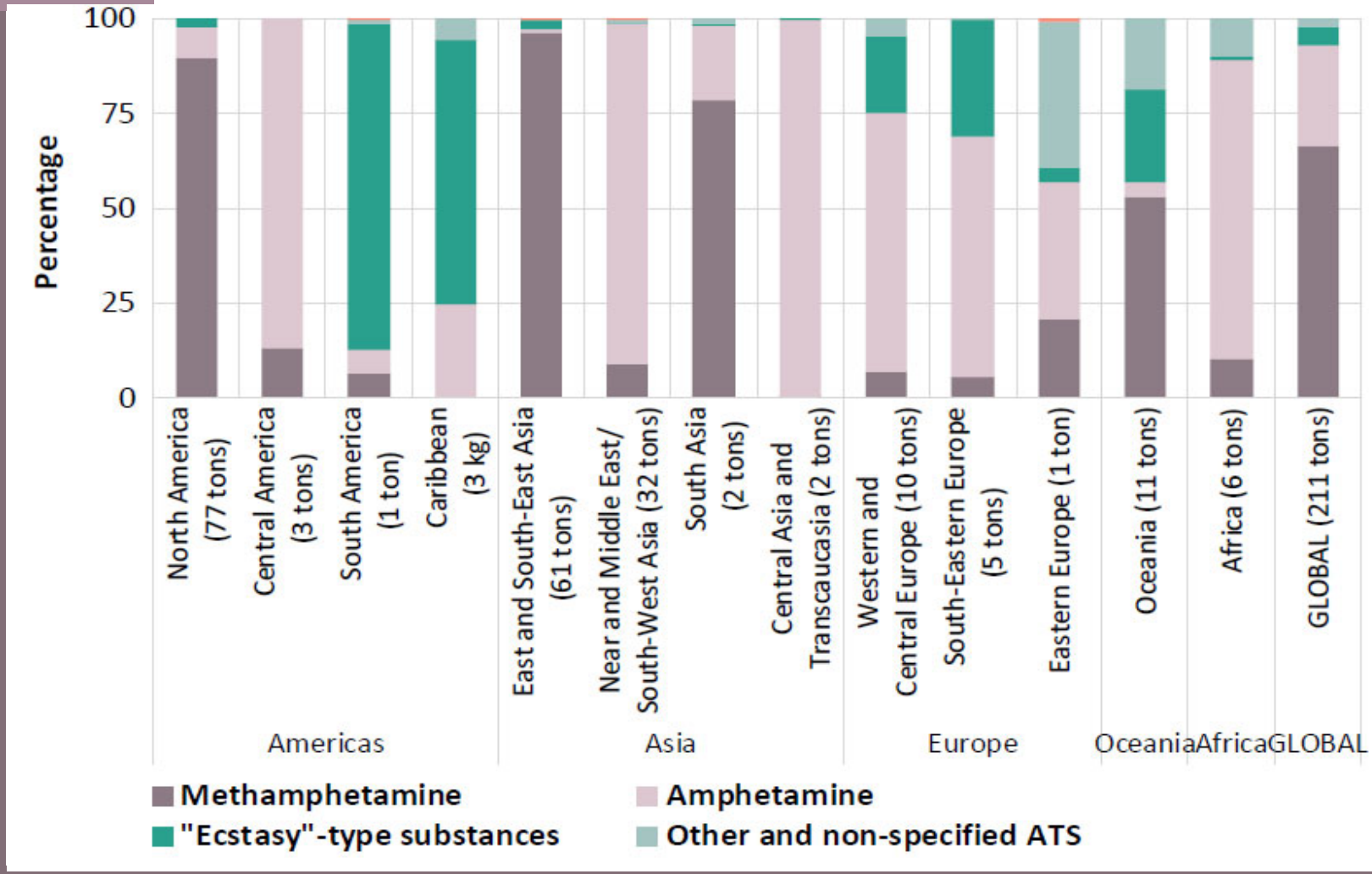
Distribution by substance of the average annual quantity of amphetamine-type stimulants seized, by subregion, 2013–2017



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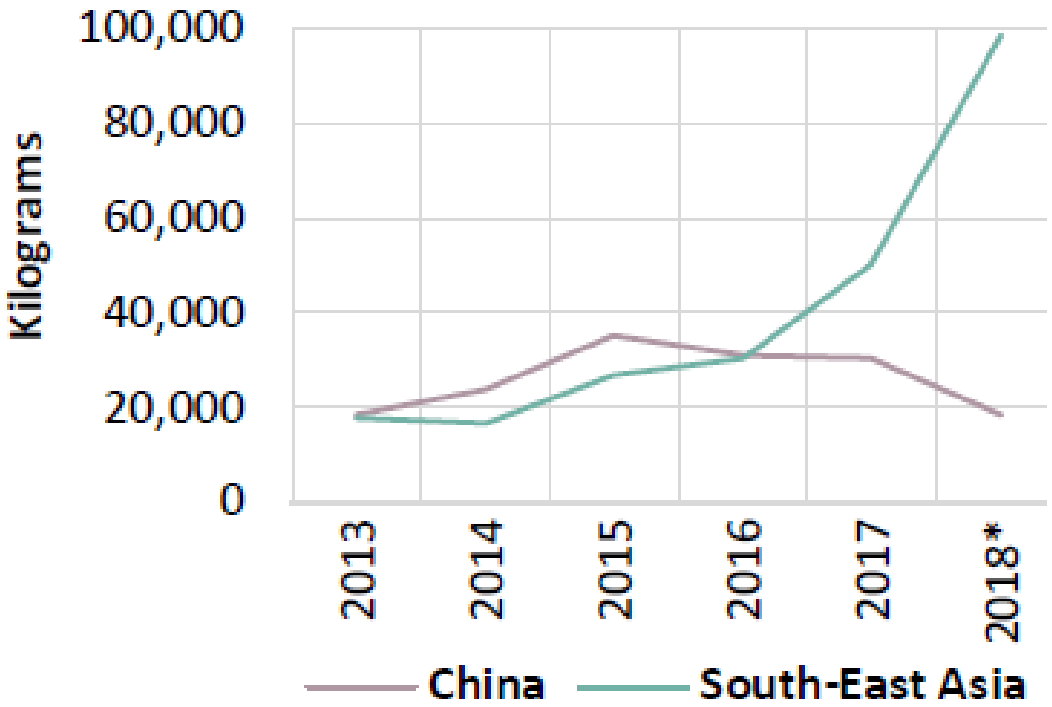
Quantity of methamphetamine seized in China and South-East Asia, 2013–2018



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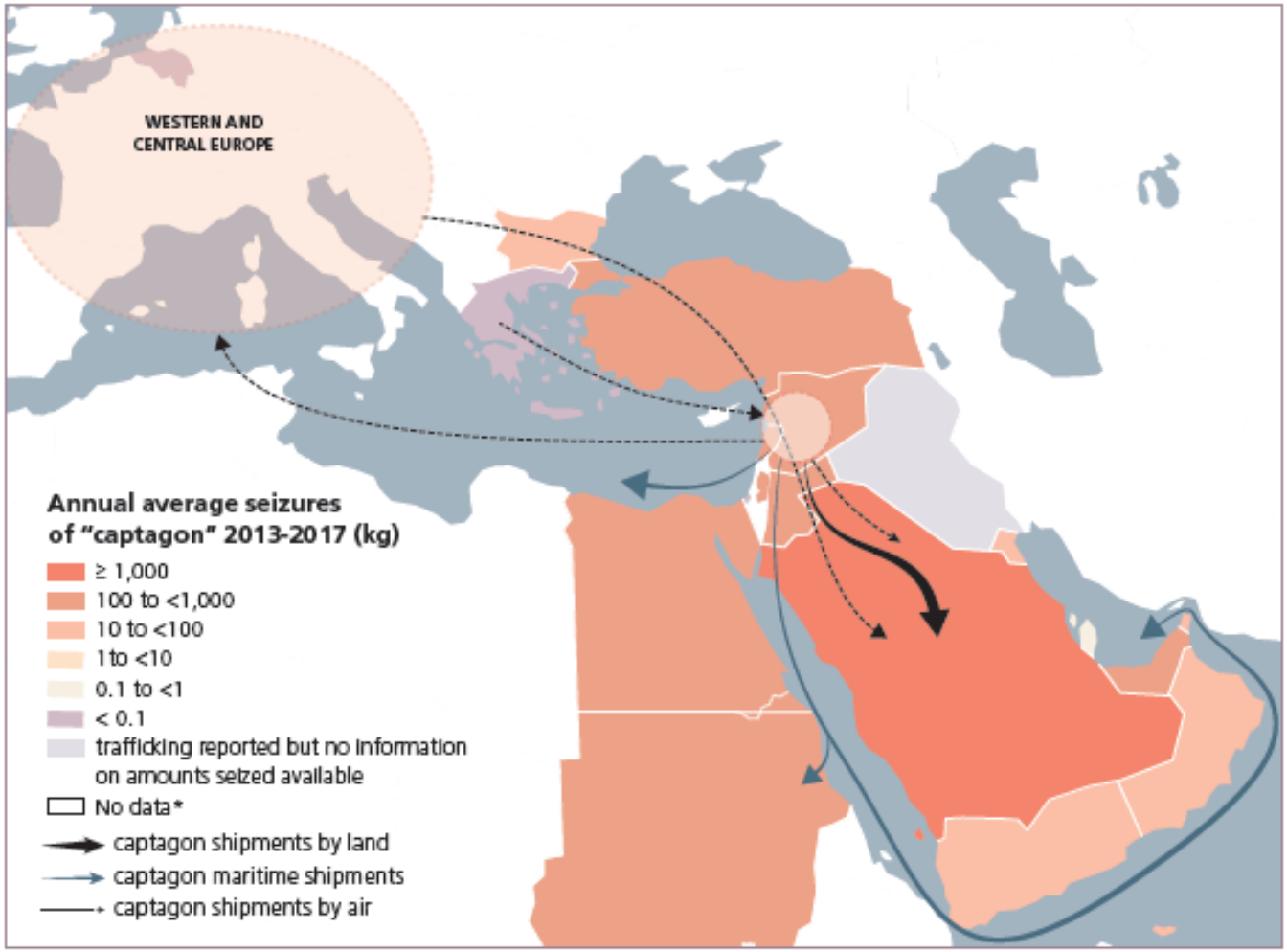
Reported seizures and trafficking routes of "captagon" tablets, 2013–2017



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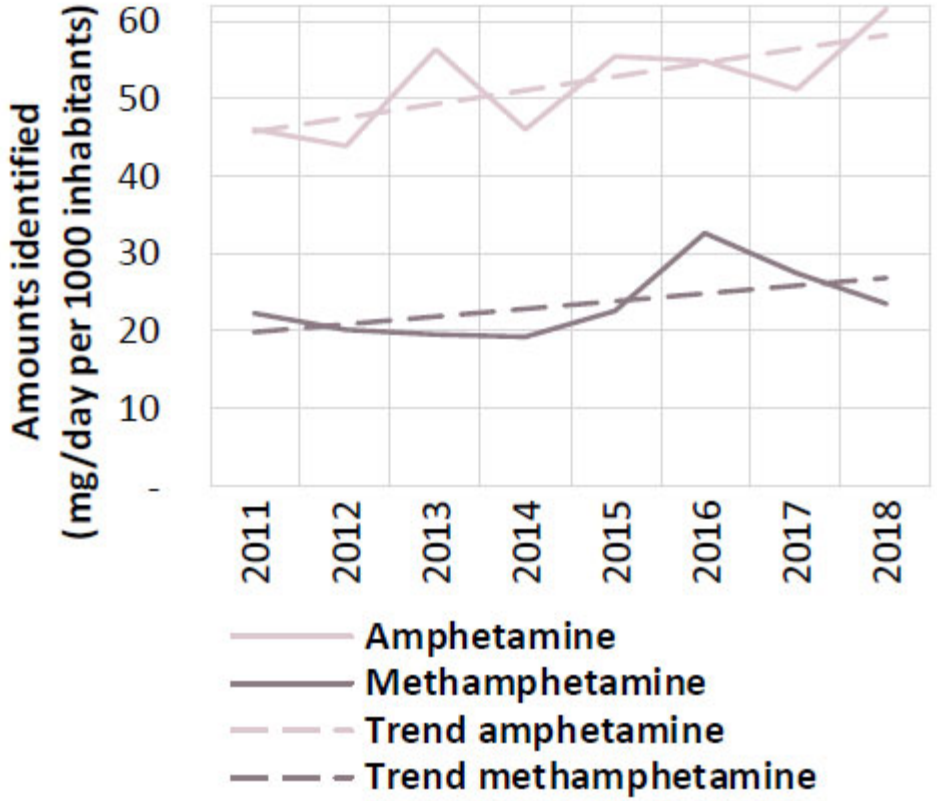
Quantities of amphetamines found in wastewater, in 80 cities in Europe, 2011–2018



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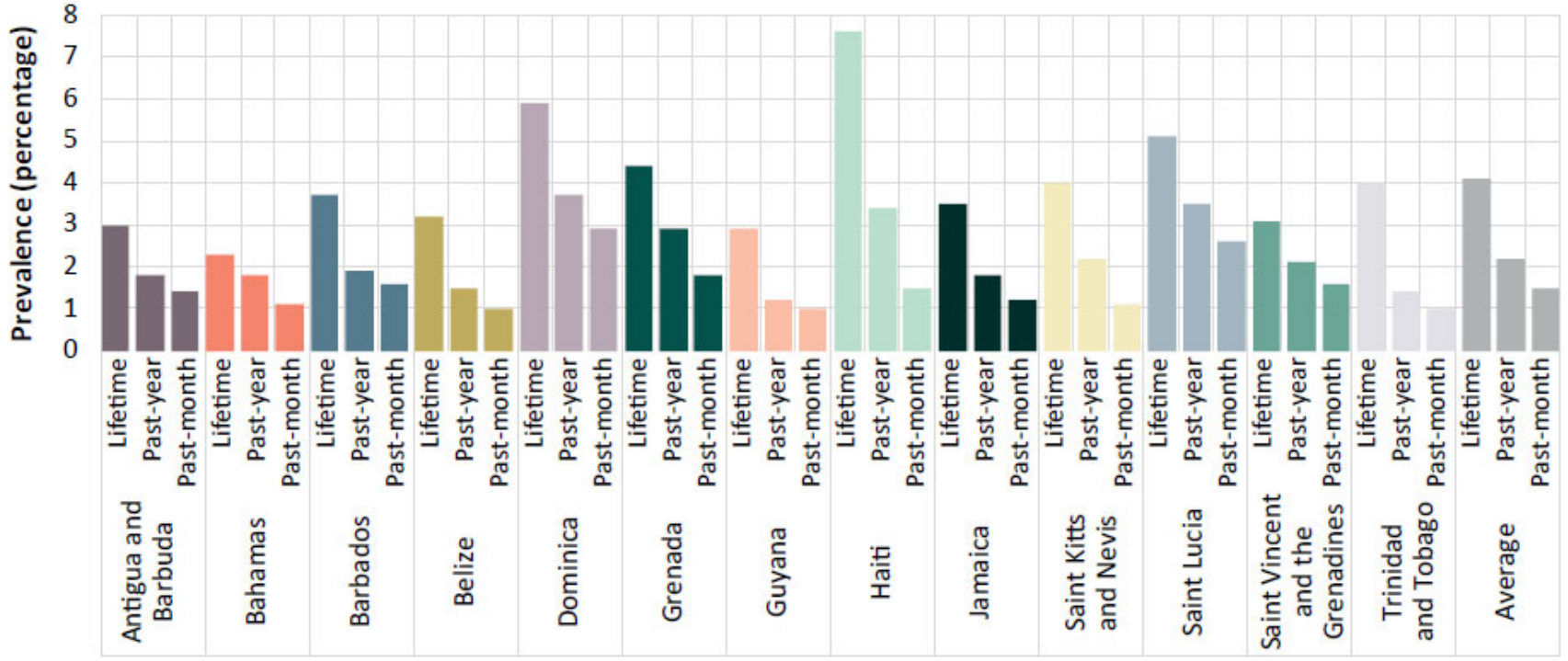
Non-medical use of stimulants among secondary school students in 13 countries in the Caribbean, 2016



Source: Inter-American Drug Abuse Control Commission A Report on Students' Drug use in 13 Caribbean Countries: 2016

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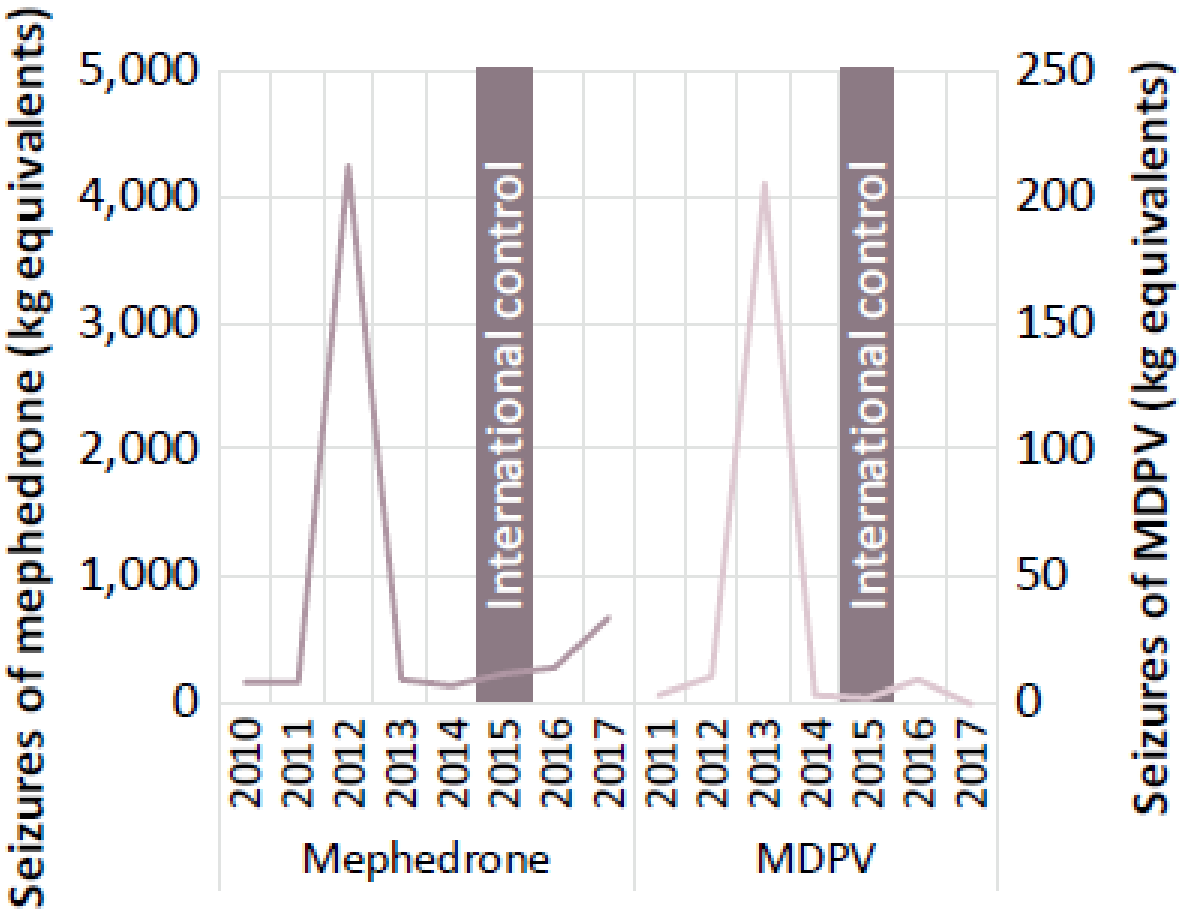
Quantities of recently controlled stimulant NPS seized (mephedrone and MDPV), 2010–2017



Source: UNODC, responses to the annual report questionnaire.

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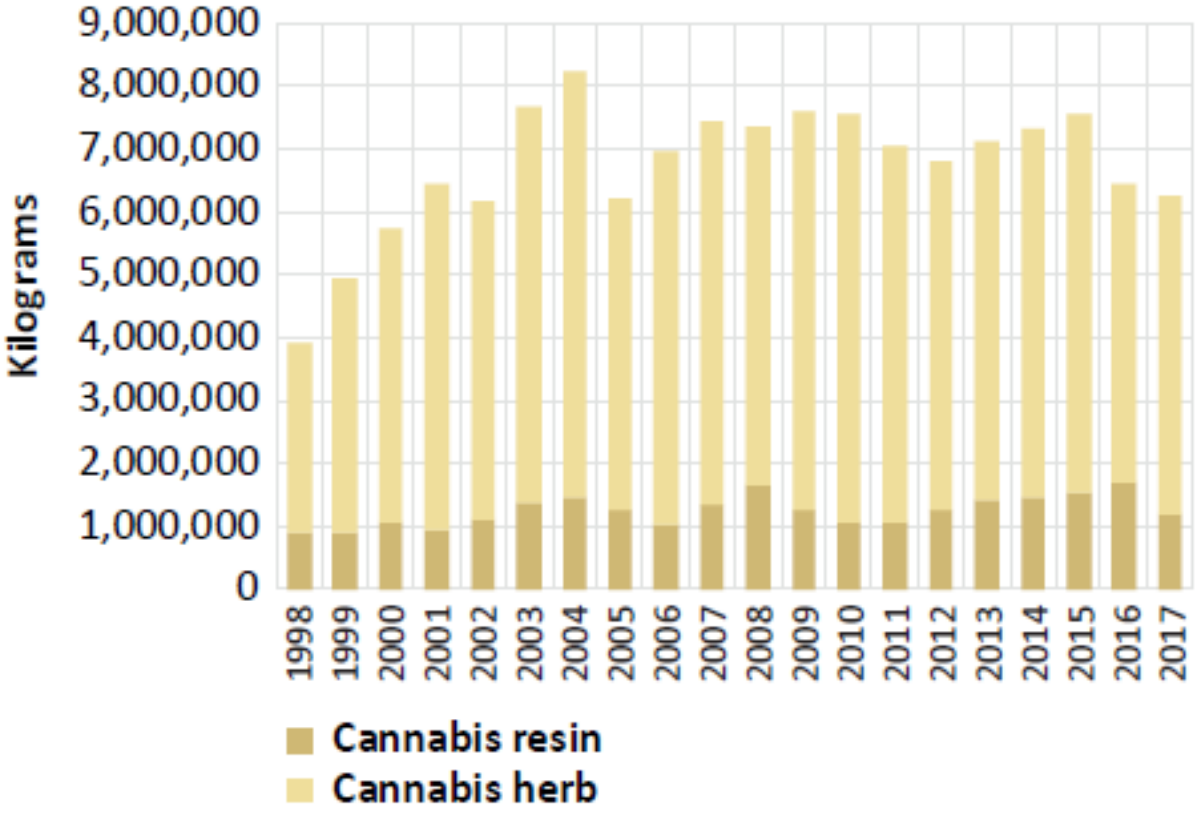
Cannabis seizures / trafficking

Global quantities of main cannabis products seized, 1998–2017



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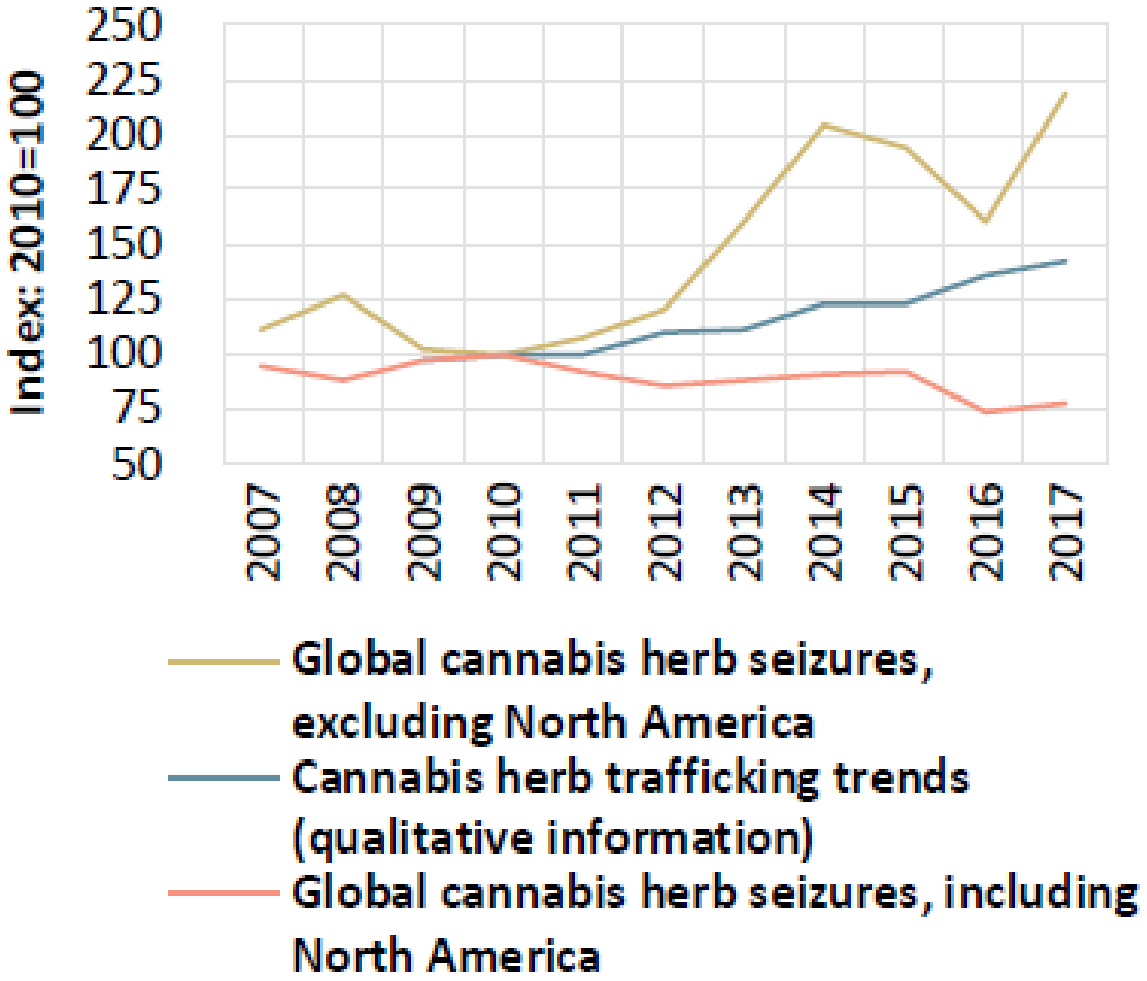
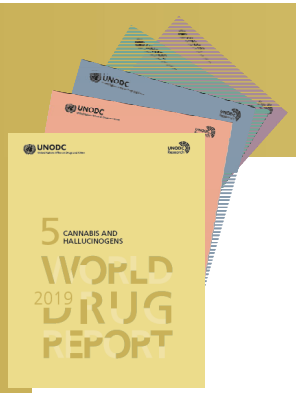
Global trends in the quantity of cannabis herb seized and trends in cannabis trafficking, 2007-2017



Source: UNODC, responses to the annual report questionnaire



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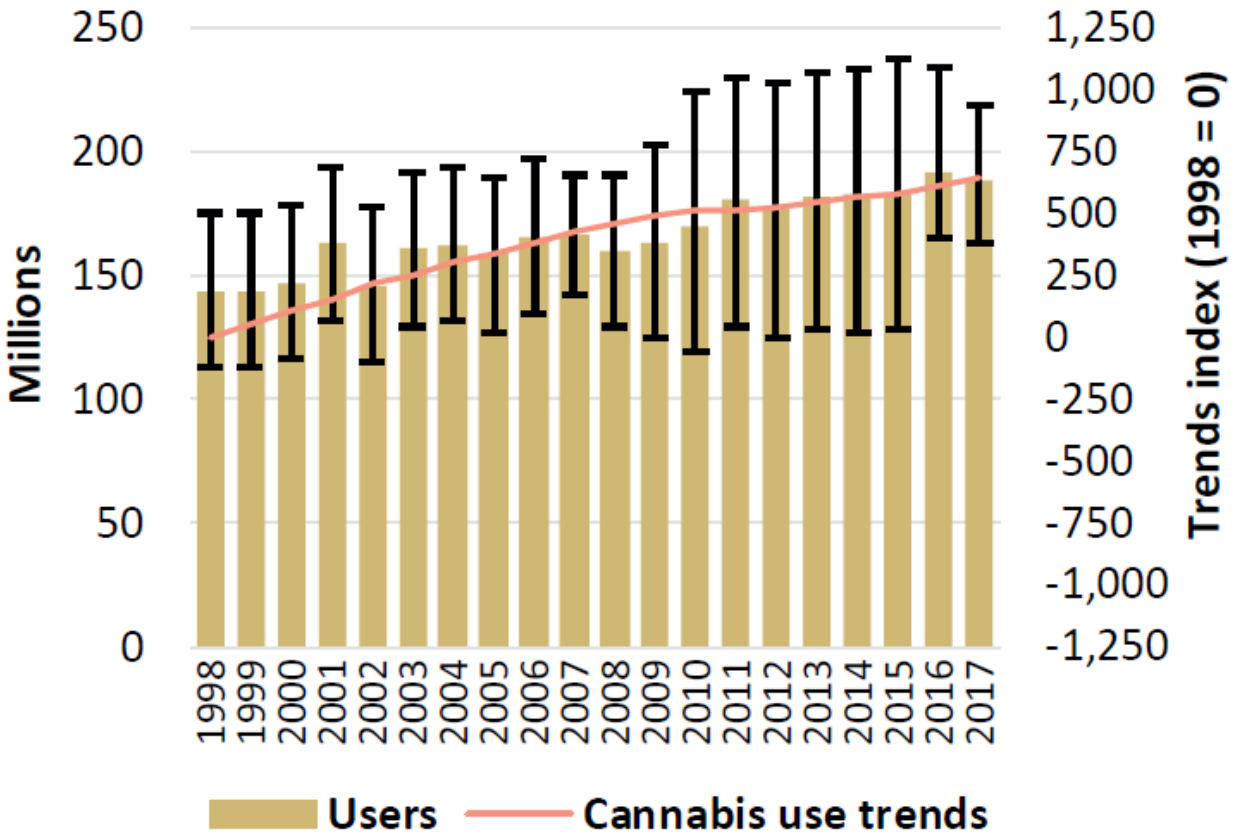
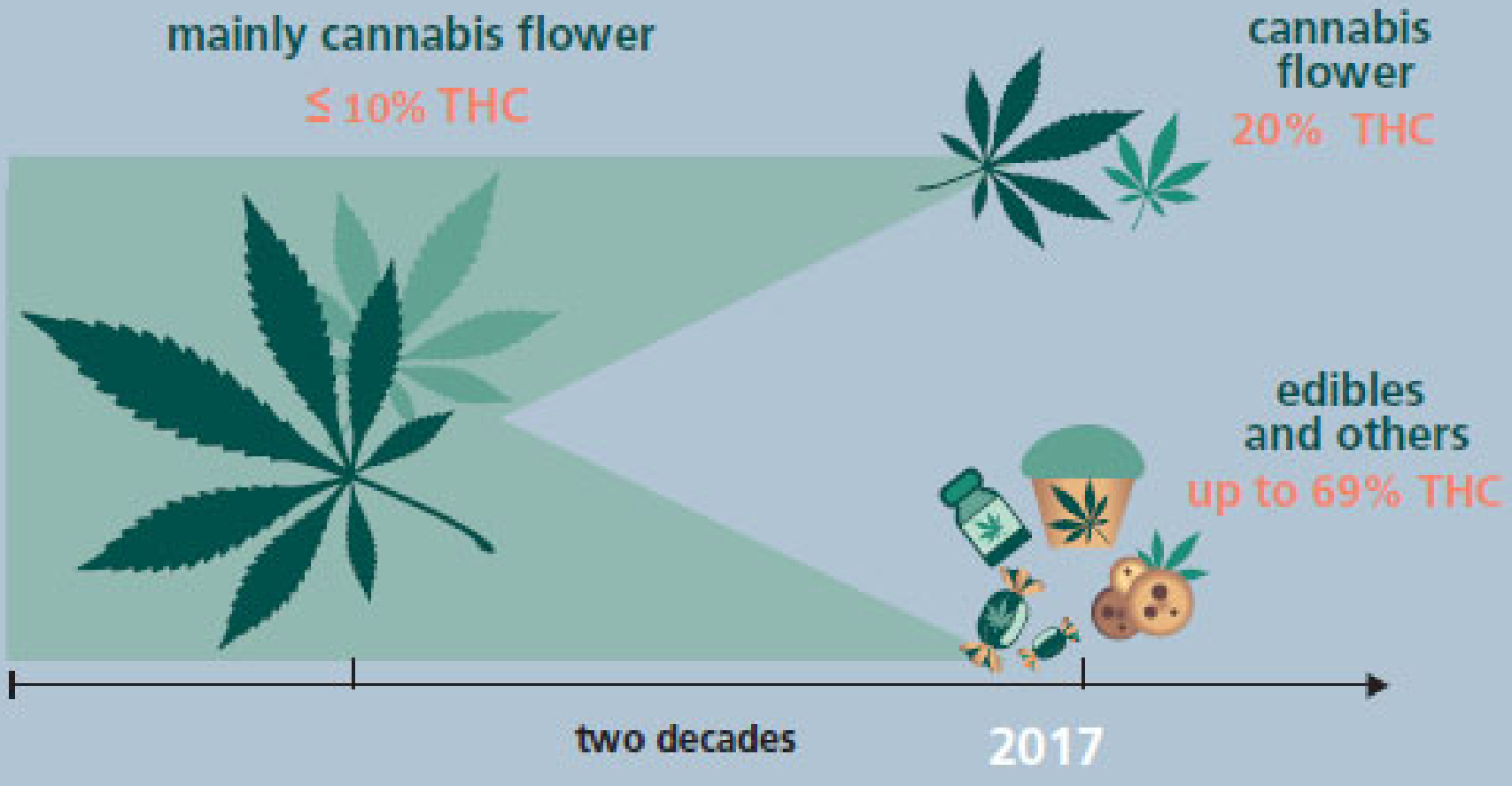
Global trends in number of cannabis users and qualitative information on trends in cannabis use,[a] 1998–2017



Source: UNODC, responses to the annual report questionnaire

a The index is based on information of, on average, 74 countries per year over the period 2007–2017. Two points were given for "large increase", 1 point for "some increase", 0 for "stable", -1 for "some decrease" and -2 for "large decrease". For reference, if all countries had reported each year "some increase" in cannabis use over the period 2007-2017, the cannabis use perception index would have reached 811 points in 2017. For details on the perception index calculations, refer to the methodological annex, available in the online version of the present report.

Diversification of cannabis products consumed in some juridictions that allow the non-medical use of cannabis



Based on Orens and others, "Market size and demand for marijuana in Colorado".

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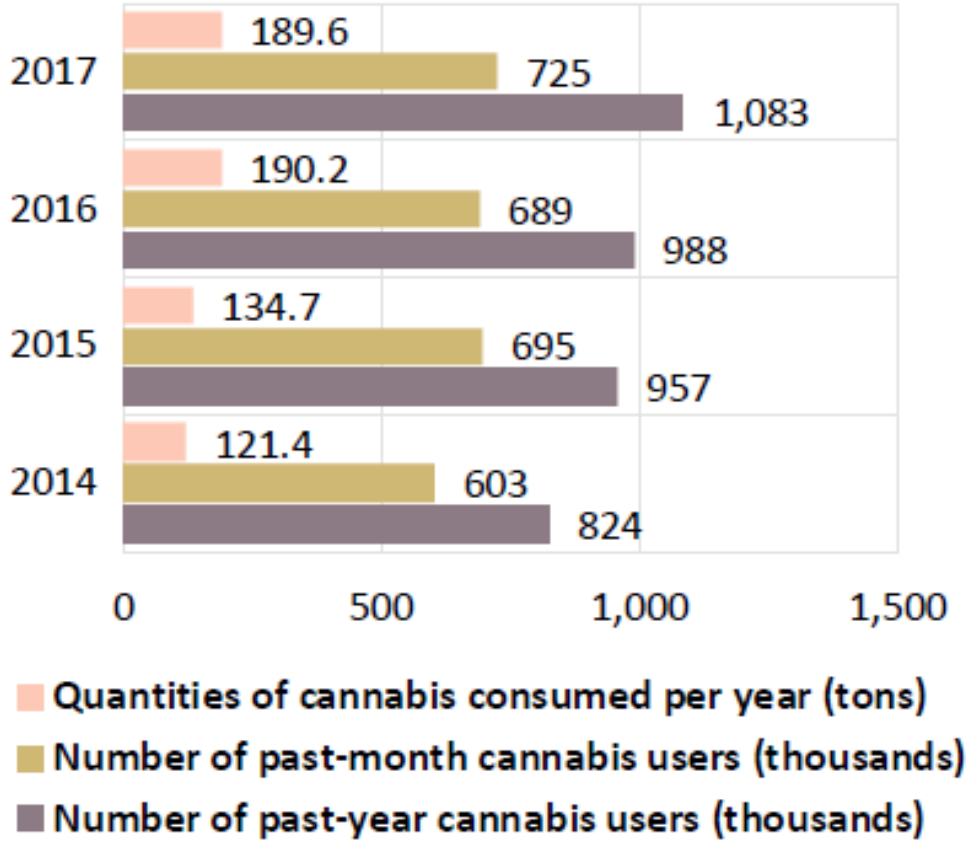
Trends in the number of users aged 18 and older and estimated quantity (tons) of cannabis flower consumed in Colorado, 2014–2017



Sources: Adam Orens and others, "Market size and demand for marijuana in Colorado: 2017 market update", prepared for the Colorado Department of Revenue (Denver, Colorado, Marijuana Policy Group, August 2018).; and United States, Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality, National survey on drug use and health – state level estimates of cannabis users.

Note: The United States Substance Abuse and Mental Health Services Administration reports prevalence among those aged 12 or older or 18 years or older; in this case the latter age category has been used a proxy of number of cannabis users 21 years and older.

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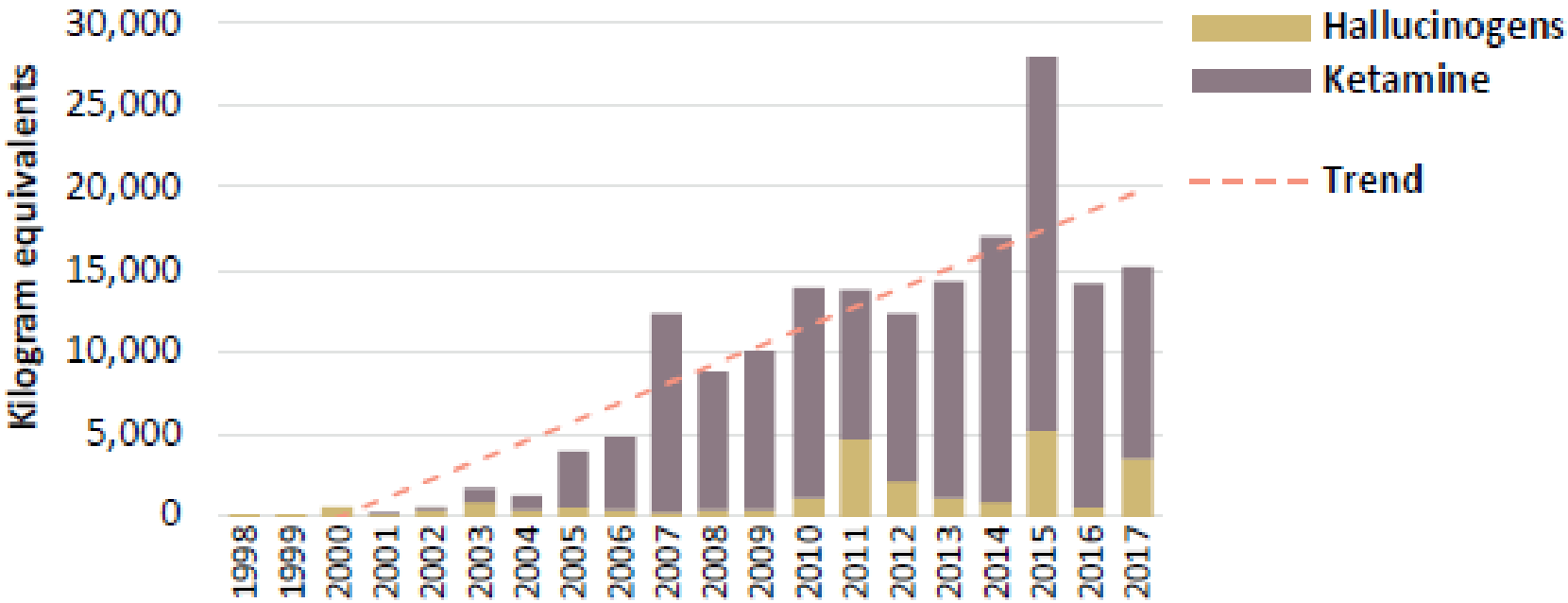
Global quantities of substances with hallucinogenic properties seized, expressed in kilogram equivalents, 1998–2017



Source: UNODC, responses to the annual report questionnaire

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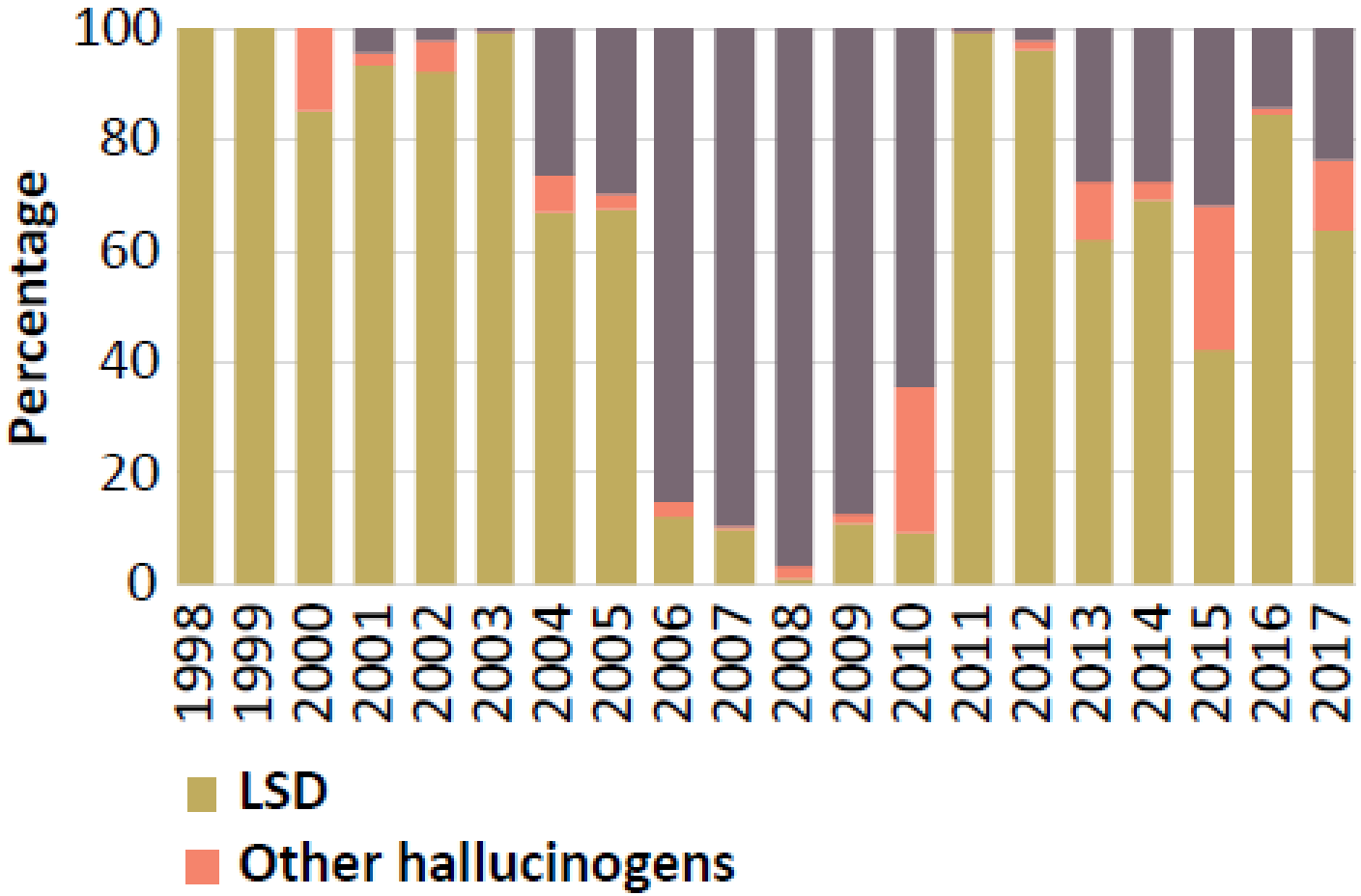
Distribution of quantities seized in doses



Source: UNODC, responses to the annual report questionnaire

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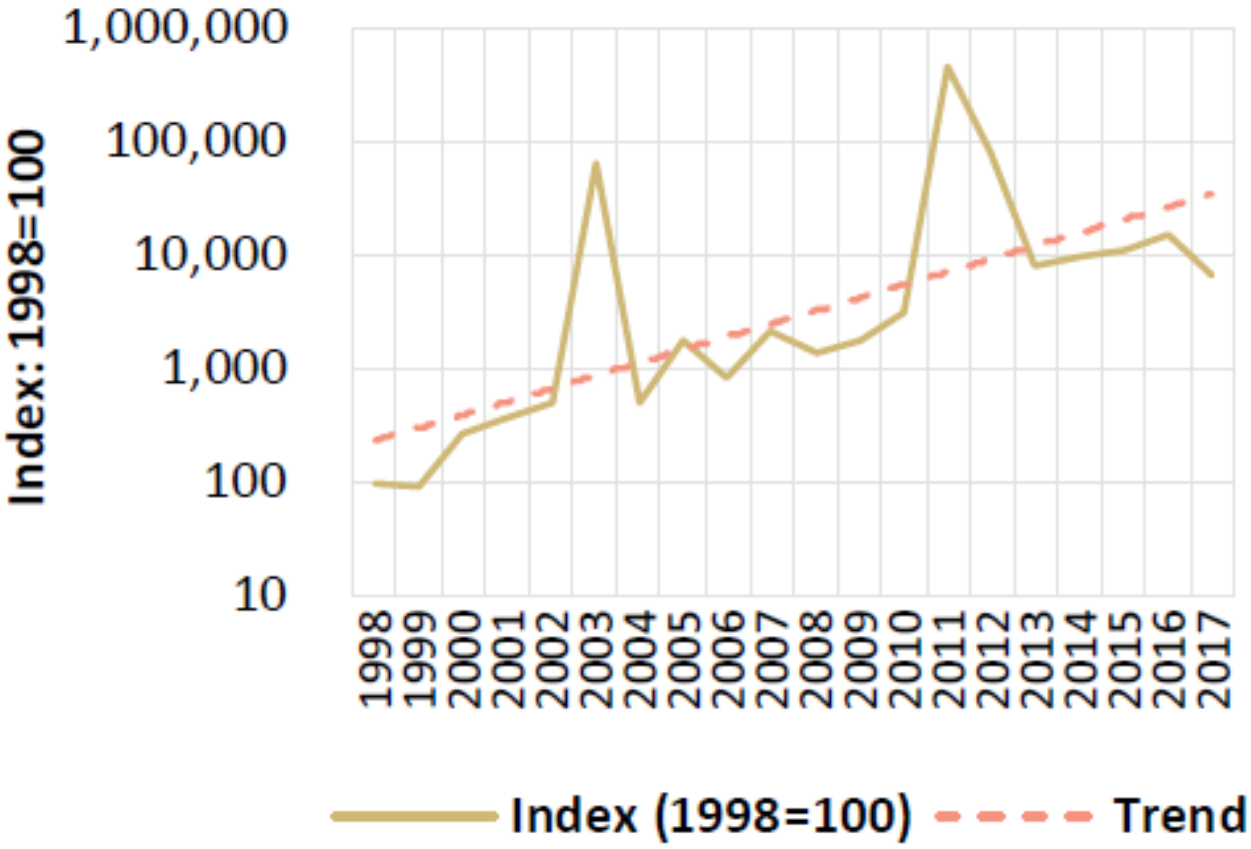
Trend in global quantities of substances with hallucinogenic properties seized, expressed in doses, 1998–2017



Source: UNODC, responses to the annual report questionnaire