

Appendix. Exhibit 1 Source Notes — Deaths

Country	Year	Mortality type	Number of overdose/drug-related or drug-induced deaths	Source (mortality)	Total population*	Source (population)	Rate of deaths per 1,000,000 total population (unadjusted)	Rate of deaths (any age) per 1,000,000 population ages 15–64 (unadjusted)	2019 mortality total (if country has 2020 data)	% change in mortality total from 2019 to 2020
Australia	2020	Drug-induced deaths (see notes)	1,842	Alcohol, tobacco & other drugs in Australia (Australian Institute of Health and Welfare, April 2022)	25.7 million	National, state and territory population (Australian Bureau of Statistics, June 2021)	71.7	110.2	1,874	-2%
Canada**	2020	Apparent opioid toxicity deaths (see notes)	6,500	Apparent Opioid and Stimulant Toxicity Deaths (Public Health Agency of Canada, March 2022)	38.0 million	Canada's population estimates: Age and sex, July 1, 2020 (Statistics Canada, Sept. 2020)	171.1	258.4	3,669	77%
Denmark	2018	Drug-induced deaths***	173	European Drug Report 2021: Trends and Developments (European Monitoring Centre for Drugs and Drug Addiction, 2021)	5.8 million	Population Figures (Statistics Denmark)	29.9	46.7	N/A	N/A
France	2016	Drug-induced deaths***	465	European Drug Report 2021: Trends and Developments (European Monitoring Centre for Drugs and Drug Addiction, 2021)	66.6 million	Components of Population Changes, France (French National Institute of Statistics and Economic Studies, 2020)	7.0	11.1	N/A	N/A
Germany	2020	Drug-related deaths (see notes)	1,581	Commissioner of the Federal Government for Drug and Addiction Policy, March 2021	83.2 million	Population by nationality and sex (quality figures) , (Statistisches Bundesamt, Destatis, 2022).	19.0	29.5	1,398	13%
Netherlands	2019	Drug-induced deaths***	252	European Drug Report 2021: Trends and Developments (European Monitoring Centre for Drugs and Drug Addiction, 2021)	17.3 million	Population counter: How many people live in the Netherlands? (Netherlands Centraal Bureau voor de Statistiek, April 2022)	14.6	22.4	N/A	N/A
Norway	2020	Drug-induced deaths***	324	National Institute of Public Health, Table D7 (2022)	5.4 million	Population (Statistics Norway, 2022)	60.4	92.7	275	18%
Portugal	2018	Drug-induced deaths***	55	European Drug Report 2021: Trends and Developments (European Monitoring Centre for Drugs and Drug Addiction, 2021)	10.3 million	Resident population estimates , (Statistics Portugal, 2019)	5.4	8.3	N/A	N/A
Sweden	2020	Drug-related deaths (see notes)	822	Drug and drug poisoning deaths (Public Health Agency of Sweden, March 2022)	10.4 million	Population by age, sex and year (Statistics Sweden, April 2022).	79.2	127.4	894	-8%
Switzerland	2019	Drug-related deaths (see notes)	141	Drug-related deaths in Switzerland (Federal Office of Public Health (FOPH), Jan. 2022)	8.6 million	Key population figures, 1950-2020 (Switzerland Federal Statistical Office, 2021).	16.4	24.7	N/A	N/A
United Kingdom (England and Wales)	2020	Drug poisoning deaths (see notes)	4,561	Deaths related to drug poisoning in England and Wales: 2020 registrations (Office for National Statistics, Aug. 2021).	59.7 million	Population estimates for the UK, England, and Wales, Scotland and Northern Ireland: mid-2020 (Office for National Statistics, June 2021)	76.4	120.5	4,393	4%
United Kingdom (Scotland)	2020	Drug poisoning deaths (see notes)	1,461	Drug-related death statistics 2020 (National Records of Scotland, July 2021)	5.5 million	Population estimates for the UK, England, and Wales, Scotland and Northern Ireland: mid-2020 (Office for National Statistics, June 2021)	267.3	411.5	1,406	4%
United States	2020	Drug overdose deaths (see notes)	91,799	Drug Overdose Deaths in the United States, 1999-2020 (National Center for Health Statistics, Dec. 2021)	331.5 million	National Population Totals and Components of Change: 2020-2021 (United States Census Bureau, March 2022)	276.9	423.9	70,630	30%

* Population reflects the total population in the country for the mortality data year used.

** Canada deaths only include those related to opioids (see notes below).

Drug mortality definition notes

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)

*** Data come from EMCDDA collection and reporting and/or reflect EMCDDA definition of "drug-induced deaths"; EMCDDA generally defines drug-induced deaths as "people who die directly due to use of illegal substances, although these often occur in combination with other substances such as alcohol or psychoactive medicines. The deaths generally occur shortly after the consumption of the substance and are commonly referred to as overdoses or poisonings."

Importantly, this definition/number may not include overdose deaths from certain drugs that contribute to totals reported by individual countries.

EMCDDA methodology counts mortality cases with underlying cause of death ICD-10 codes of F11/12/14/15/16/19; X41/42/61/62 and Y11/12 in combination with particular T codes; and X44/64 and Y14 in combination with particular T codes.

For a full EMCDDA methodology description with further details, see: <https://www.emcdda.europa.eu/data/stats2021/methods/drd>; also see EMCDDA notes by country indicating potential small differences between national definitions: <https://www.emcdda.europa.eu/data/stats2021#displayTable:DRD-33>.

Individual countries

Australia: Drug-induced deaths are defined by the Australian Institute of Health and Welfare as those that can be "directly attributable to drug use and includes both those due to acute toxicity (for example, drug overdose) and chronic use (for example, drug-induced cardiac conditions) as determined by toxicology and pathology reports"; ICD-10 codes for the indicator can be found at: <https://www.abs.gov.au/methodologies/causes-death-australia-methodology/2020>.

Canada: An "apparent drug toxicity death" as defined by the Public Health Agency of Canada (PHAC) is caused by "intoxication/toxicity (poisoning) resulting from substance use, where one or more of the substances is an opioid or a stimulant, regardless of how it was obtained (e.g. illegally or through personal prescription)." ** Because Canada does not report a total mortality number for deaths related to opioids or stimulants (i.e., one that is mutually exclusive), in this figure we only use the PHAC estimate for "apparent opioid toxicity deaths." Thus, the full mortality estimate for Canada is likely higher. For more detail, see: https://health-infobase.canada.ca/src/doc/SRHD/Update_Deaths_Mar2022.pdf.

Germany: Drug-related deaths are defined by the Commissioner of the Federal Government for Drug and Addiction Policy as "people dying from illegal drugs"; totals match those reported by EMCDDA as "drug-induced deaths."

Sweden: As defined by the Public Health Agency of Sweden, drug-related deaths are for age 15 and older and include "deaths due to poisoning of specific drugs, narcotics or biological substances, as the underlying cause of death (ICD-10: X40 – X44, X60 – X64, Y10 – Y14 in combination with T36 – T50.9)"; for more detail, see: <https://www.folkhalsomyndigheten.se/folkhalsorapportering-statistik/tolkad-rapportering/folkhalsans-utveckling/resultat/halsa/lakemedels-och-narkotikaforgiftningar/>.

Switzerland: As defined by the Federal Office of Public Health, drug-related deaths are "the number of directly drug related deaths due to intoxication or overdose"; defined by ICD-10 codes (WHO version): F11/F12/F14/F15/F16/F19; X42; X62; Y12; for more detail, see: <https://ind.obsan.admin.ch/en/indikator/monan/drug-related-deaths>.

UK (England and Wales): As defined by the Office for National Statistics, drug poisoning deaths "involve a broad spectrum of substances, including controlled and non-controlled drugs, prescription medicines (either prescribed to the individual or obtained by other means) and over-the-counter medications. As well as deaths from drug abuse and dependence, figures include accidents and suicides involving drug poisonings, and complications of drug abuse such as deep vein thrombosis or septicaemia from intravenous drug use." More details of the definition, including ICD codes used, can be found at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/methodologies/deathsrelatedtodrugpoisoningenglandandwalesqmi>.

* Of note, the ONS reports based on year of death registration and indicates that "because of death registration delays, around half of these deaths will have occurred in the previous year (2019), and the majority will have occurred before the coronavirus (COVID-19) pandemic in the UK."

UK (Scotland): As defined by the Office for National Statistics, drug poisoning deaths "cover all deaths with an underlying cause of drug poisoning or drug abuse"; these include ICD-10 codes F11/12/13/14/15/16/18/19, X40-44, X60-64, X85 and Y10-14. More detail can be found at: <https://www.nrscotland.gov.uk/files/statistics/drug-related-deaths/20/drug-related-deaths-20-annex-b.pdf>.

United States: As defined by the Centers for Disease Control and Prevention, drug poisoning (overdose) deaths include "deaths resulting from unintentional or intentional overdose of a drug, being given the wrong drug, taking a drug in error, or taking a drug inadvertently"; drug overdose deaths are identified using the ICD-10 underlying cause-of-death codes X40–X44, X60–X64, X85, and Y10–Y14.

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Appendix. Exhibit 2 Source Notes — OST-MAT

Country	Definition of opioid use population used for metric	Estimate of opioid use population	Data source and data year for population estimate	Definition of opioid substitution/ medication-assisted treatment population used for metric	Estimate of population on opioid substitution/ medication-assisted treatment	Data source and data year for treatment population	Estimate of OST/MAT coverage among use population (population on treatment/opioid use population)	Notes/limitations about estimate	Acknowledgments	Additional source link (1)	Additional source link (2)
Australia	People age 18 and older who injected opioid drugs during the past six months	N/A — only coverage percentage estimate provided	Source: Australia Illicit Drug Reporting System (IDRS), National Drug and Alcohol Research Centre at UNSW Sydney Year: 2021	People 18 years and older who are currently on opioid agonist therapy, including methadone, buprenorphine, buprenorphine-naloxone, buprenorphine depot injection	N/A — only coverage percentage estimate provided	Source: Australia Illicit Drug Reporting System (IDRS), National Drug and Alcohol Research Centre at UNSW Sydney Year: 2021	44%	<ul style="list-style-type: none"> — Coverage estimates provided by IDRS/UNSW Sydney upon request — IDRS estimated OAT coverage rate at 52% in 2020 — Data from participants in capital cities, not indicative of trends in regional and remote areas — Results are not representative of all people who consume illicit drugs, nor of illicit drug use/treatment in the general population; instead, results are intended to provide evidence indicative of emerging issues that warrant further monitoring 	Guidance and data provided by Dr. Rachel Sutherland, University of New South Wales, Sydney (UNSW Sydney)	IDRS Methods	
Canada (British Columbia province)	People with opioid use disorder (PWOU)	101,451	Source: Centre for Health Evaluation and Outcome Sciences (CHEOS), see notes Year: 09/30/2020	People recently on opioid agonist treatment (OAT)	23,600	Source: Centre for Health Evaluation and Outcome Sciences (CHEOS), see notes Year: 09/30/2020	23%	<ul style="list-style-type: none"> — Updated data provided by CHEOS through 9/30/20 upon request — Estimates based on methods described in Nyosk et al. (2022) and Min et al. (2020); see links — Nyosk et al. (2022) estimated 24% OAT coverage in BC as of 11/30/2017 — CHEOS methodology leverages PharmaNet database (OAT dispensations); Discharge Abstract Database (DAD, hospitalizations); Medical Services Plan database (MSP; physician billing records); BC Vital Statistics; National Ambulatory Care Reporting System (NACRS; emergency department visits); British Columbia Perinatal Data Registry from Perinatal Services BC 	Guidance and updated data/estimate provided by Jeong Eun Min at the Centre for Health Evaluation and Outcome Sciences, and Dr. Bohdan Nyosk at the Centre for Health Evaluation and Outcome Sciences at Simon Fraser University	Past estimates and methodology description can be found in: Bohdan Nyosk, et al., "Development and validation of health system performance measures for opioid use disorder in British Columbia, Canada." <i>Drug and Alcohol Dependence</i>, 233, no. 1 (April 2022): 109375	Detailed methodology for estimating OUD prevalence can be found in: Jeong Eun Min, et al., "Estimates of opioid use disorder prevalence from a regression-based multi-sample stratified capture-recapture analysis." <i>Drug and Alcohol Dependence</i>, 217, no. 1 (Dec. 2020): 108337
Denmark	High-risk opioid use population, ages 15–64 (defined as by injection or long duration / regular use)	20,412	Source: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Year: 2016	Clients in opioid substitution treatment	6,600	Source: EMCDDA Year: 2017	32%	<ul style="list-style-type: none"> — Most recent estimates/data years provided by EMCDDA upon request — Based on confidence intervals around high-risk population estimate (14,084–34,011), EMCDDA's OST coverage estimate ranges from 19%–47% — Time period differences between OST and high-risk population 	Most recent data, estimates, and guidance provided by EMCDDA: Dr. Filippo Pericoli, Dr. Alessandro Pirona, Thomas Seyler, Bruno Guarita, Linda Montanari	European Drug Report 2021: Trends and Developments .. EMCDDA (June 2021)	
France	High-risk opioid use population, ages 15–64 (defined as by injection or long duration / regular use)	202,485	Source: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Year: 2019	Clients in opioid substitution treatment	177,100	Source: EMCDDA Year: 2019	87%	<ul style="list-style-type: none"> — Most recent estimates/data years provided by EMCDDA upon request — Based on confidence intervals around high-risk population estimate (197,824 – 207,018), EMCDDA's OST coverage estimate ranges from 86%–90% — Time period differences between OST and high-risk population 	Most recent data, estimates, and guidance provided by EMCDDA: Dr. Filippo Pericoli, Dr. Alessandro Pirona, Thomas Seyler, Bruno Guarita, Linda Montanari	European Drug Report 2021: Trends and Developments .. EMCDDA (June 2021)	
Germany	High-risk opioid use population, ages 15–64 (defined as by injection or long duration / regular use)	127,500	Source: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Year: 2018	Clients in opioid substitution treatment	79,700	Source: EMCDDA Year: 2019	63%	<ul style="list-style-type: none"> — Most recent estimates/data years provided by EMCDDA upon request — Based on confidence intervals around high-risk population estimate (116,571–138,428), EMCDDA's OST coverage estimate ranges from 58%–68% — Time period differences between OST and high-risk population 	Most recent data, estimates, and guidance provided by EMCDDA: Dr. Filippo Pericoli, Dr. Alessandro Pirona, Thomas Seyler, Bruno Guarita, Linda Montanari	European Drug Report 2021: Trends and Developments .. EMCDDA (June 2021)	
Norway	High-risk opioid use population, ages 15–64 (defined as by injection or long duration / regular use)	9,015	Source: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Year: 2013	Clients in opioid substitution treatment	7,762	Source: EMCDDA Year: 2018	86%	<ul style="list-style-type: none"> — Most recent estimates/data years provided by EMCDDA upon request — Based on confidence intervals around high-risk population estimate (6,708–13,977), EMCDDA's OST coverage estimate ranges from 56%–116% — Age range and time period differences between OST and high-risk population 	Most recent data, estimates, and guidance provided by EMCDDA: Dr. Filippo Pericoli, Dr. Alessandro Pirona, Thomas Seyler, Bruno Guarita, Linda Montanari	European Drug Report 2021: Trends and Developments .. EMCDDA (June 2021)	
Portugal	High-risk opioid use population, ages 15–64 (defined as by injection or long duration / regular use)	28,287	Source: European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Year: 2018	Clients in opioid substitution treatment	16,867	Source: EMCDDA Year: 2019	60%	<ul style="list-style-type: none"> — Most recent estimates/data years provided by EMCDDA upon request — Based on confidence intervals around high-risk population estimate (18,629–43,803), EMCDDA's OST coverage estimate ranges from 39%–91% — Age range and time period differences between OST and high-risk population 	Most recent data, estimates, and guidance provided by EMCDDA: Dr. Filippo Pericoli, Dr. Alessandro Pirona, Thomas Seyler, Bruno Guarita, Linda Montanari	European Drug Report 2021: Trends and Developments .. EMCDDA (June 2021)	
United Kingdom (England)	High-risk opioid use population, ages 15–64	261,294	Source: Public Health England Year: 2016–17	People age 18 and older who use opiates and receive "prescribing" treatment intervention	132,873	Source: National Drug Treatment Monitoring System (NDTMS) Year: 2020–21	51%	<ul style="list-style-type: none"> — People who use opiates who receive "prescribing" treatment intervention are assumed to be on OST — Based on confidence intervals around opioid use population estimate (259,018–271,403), OST coverage estimate ranges from 49%–51% — Age range and time period differences between OST and high-risk population 	Guidance on data sources and interpretation provided by Dr. Gordon Hay, Liverpool John Moores University	Estimate of high-risk opioid use from United Kingdom drug situation 2019: Fiscal Point annual report, Public Health England (March 2021)	Estimate of current opiate use population on prescription treatment from Adult substance misuse treatment statistics: 2020 to 2021: report, National Drug Treatment Monitoring System (NDTMS) (November 2021)
United Kingdom (Scotland)	People ages 15–64 with problem drug use, "defined as the problematic use of opioids (including illicit and prescribed methadone use) and/or the illicit use of benzodiazepines"	57,300	Source: NHS National Services Scotland Year: 2015–16	People using opioid substitution treatment (OST)	29,500	Source: Scottish Government, Drugs Policy Minister Year: March 2022	51%	<ul style="list-style-type: none"> — Age range and time period differences between OST and high-risk population — While high-risk opioid use population includes use of benzodiazepines, past research and expert opinion suggests that vast majority of population is opioid use — Based on confidence intervals around high-risk population estimate (55,800–58,900), OST coverage estimate ranges from 50%–53% 	Guidance on data sources and interpretation provided by Dr. Gordon Hay, Liverpool John Moores University	Estimate of high-risk opioid use from Problem Drug Use, Estimates, 2015-16, NHS, National Services Scotland (March 2019)	Estimate of current OST population from Scottish Government, 2021-22 (March 2022)
United States	People age 12 and older with a past-year opioid use disorder (OUD)	2,700,000	Source: National Survey on Drug Use and Health (NSDUH), Substance Abuse and Mental Health Services Administration (SAMHSA) Year: 2020	People age 12 and older with a past-year opioid use disorder who received medication-assisted treatment in the past year	278,000	Source: National Survey on Drug Use and Health (NSDUH), Substance Abuse and Mental Health Services Administration (SAMHSA) Year: 2020	11%	<ul style="list-style-type: none"> — Though NSDUH estimates the total OUD population in 2020 at 2.7 million, the MAT coverage estimate is based on a 2.5 million OUD estimate for respondents who completed the survey — In 2019, NSDUH estimated that 18% of people age 12 and older with a past-year opioid use disorder had received medication-assisted treatment in the past year. The survey's definition of OUD and other SUDs changed to DSM-5 in 2020 — NSDUH excludes people in institutional group settings, such as jails 		Estimate of people with opioid use disorder and those receiving medication-assisted treatment from Key Substance Use and Mental Health Indicators in the United States: Results from the 2020 National Survey on Drug Use and Health, SAMHSA	