Innovation & Collaboration

Strategies for Ohio to Address the Illicit Drug Landscape

April 2025

Department of Public Safety

FOREWORD FROM THE ONIC EXECUTIVE DIRECTOR

Drug traffickers continue to manufacture new drugs to entice users and exploit the vulnerabilities of those suffering from substance use disorder. Criminal justice and health and human services agencies are forced to navigate these issues with budgetary constraints and competing priorities. All the while, the landscape of this epidemic continues to evolve at an unprecedented pace.

Under the leadership of Governor Mike DeWine, the Ohio Department of Public Safety (DPS) Ohio Narcotics Intelligence Center (ONIC) is taking a strategic and targeted approach to reduce overdose deaths by disrupting the drug supply using accelerated intelligence and enhanced partnerships. The ONIC operates intelligence units and digital forensic laboratories in four locations across the state: Cincinnati, Cleveland, Columbus, and Toledo. The ONIC collaborates with local, state, and federal law enforcement partners to leverage the very best technologies and analysis available to detect, identify, and intercept dangerous drugs from hitting our streets.

ONIC digital forensic specialists and intelligence analysts use complex analytical tools to locate connections within and beyond jurisdictions, determine links between cases, and dismantle criminal networks. Our investigations have led to the successful conclusion of significant cases including drug seizures, racketeering, online and dark markets, cryptocurrency seizures, firearms trafficking, cartels, gangs, and other violent criminal networks. These capabilities provide critical support that is indispensable to our law enforcement partners.

ONIC strategies are founded on the swift collection, analysis, and dissemination of comprehensive data. The data collection and analysis drives evidence-based approaches to interrupt the drug supply and mitigates risks of substance use and drug poisonings. Data is disseminated in various formats and sensitivity levels including public dissemination in multiple languages to ensure reach, maximize the sharing of information and resources, and allow for direct and targeted services.

ONIC, along with RecoveryOhio, hosts a series of calls that feature collaboration among public health and public safety officials. The calls highlight recurring subject matter experts who present on wide-ranging topics including public health, law enforcement, and regulatory oversight. Calls also include a featured speaker who discusses the latest trends used in their field to mitigate substance abuse and its consequences.

We believe the effective mitigation of the narcotics crisis requires a multi-faceted approach targeting both the supply and demand of drug distribution. This report describes the actions supported by ONIC to prevent drug poisoning (overdose) deaths in Ohio and to identify effective strategies in our state. ONIC will continue to monitor, assess, and respond to emerging drugs and criminal organizations that threaten Ohio's interests and residents.

The combined efforts of our partners statewide are achieving positive results. Unintentional drug poisoning deaths declined faster than the national average from January 2021, through December 2023. Law enforcement is preventing dangerous illicit drugs from hitting the streets of Ohio. More Ohioans in need are receiving naloxone, obtaining fentanyl test strips, and being connected to treatment services. This report can help build on existing achievements by aiding local and state officials going forward in addressing the harms of Ohio's illicit drug landscape.

Cynthia Peterman
ONIC Executive Director

EXECUTIVE SUMMARY

This report responds to Section 5502.69 of the Ohio Revised Code, which states the Ohio Narcotics Intelligence Center is directed to develop, update, and coordinate the implementation of an Ohio drug control strategy. The report informs Ohio's state and local leaders of illicit drug issues by charting the evolution of the Ohio illicit drug landscape from 2017 through 2022. The report outlines efforts to reduce drug use, manufacturing and trafficking, drug-related violent crime and violence, and drug-related health consequences in order to reduce drug poisonings, increase successful recoveries, and save lives.

The current drug landscape features an interconnected network of chemical suppliers, drug traffickers, and money launderers who capitalize on the global trade system and leverage technology to efficiently deliver drugs to customers across Ohio. Drug traffickers in Ohio commonly engage in a multitude of other crimes such as firearm trafficking, violent crime, and money laundering. Individuals who appear to be more at risk to develop a substance use disorder and experience drug poisoning include those who have experienced a previous non-fatal drug poisoning, those experiencing poverty and trauma, and those previously involved with the criminal justice system.

Ohio's efforts are achieving success with unintentional drug poisoning deaths decreasing 14% from 2021 through 2023; however, during the next five years, Ohio will almost certainly confront a complex, volatile, and unpredictable drug landscape. Combinations of potent drugs will very likely be responsible for most drug poisoning deaths across Ohio. Drug traffickers will very likely leverage technology such as encryption and cryptocurrency to conceal incriminating evidence about their illicit activities, presenting new challenges for law enforcement.

This report highlights strategies to effectively mitigate the harms of illicit drugs and provide a drug-control strategy focused on four core elements: cohesive prevention, coordinated disruption of supply networks, collaborative demand reduction, and consistent outreach and education. These elements require cross-functional collaboration and coordination among stakeholder groups to develop, implement, evaluate, and message solutions. The ONIC is committed to working with our local, state, and federal partners to make this strategy operational and enhance the safety and security of all Ohio residents.

CONTENTS

Foreword from the ONIC Executive Director 3
Executive Summary 4
Introduction 6
The Illicit Drug Landscape: Issues and Challenges 7
- Evolution of the Opioid Epidemic: 2000–2016 7
- Ohio Illicit Drug Supply: 2017–2022 8
- Criminal Organizations and Drug Trafficking Tactics: 2017–2022 14
- Risk Factors Associated with Drug-Related Mortality 18

Ohio's Response to the Illicit Drug Landscape: 2019–2024 20
- ONIC and RecoveryOhio Strategy 20
- Successes 21

Ohio Illicit Drug Landscape: 2025–2030 22
- Decentralization of Drug Trafficking 22
- Technological and Marketing Innovations 22
- Polydrug Mixtures and Polysubstance Use 23
- Drug Purity and Potency 23
- Emerging and Expanding Drug Threats 24
- Response to Ohio Illicit Drug Landscape: 2025–2030 25

Ohio Drug Control Strategy 26
- Cohesive Prevention 26
- Coordinated Disruption of Supply Networks 28
- Collaborative Demand Reduction 30
- Consistent Outreach and Education 32
- Recommended Strategies for Local Officials and Jurisdictions 34

Appendix 35
- Analytic Language 35
- Public Health and Law Enforcement Seizure Data 35
- Resources 38
- Glossary of Terms 39
- References 42

INTRODUCTION

The street drug supply is volatile and unpredictable with a web of criminal organizations and independent dealers combining increasingly potent drugs that pose substantial risks for drug consumers. Largely because of this volatile supply and additional factors, 27,752 Ohioans died from unintentional drug poisoning between 2017 and 2022, an average of 4,625 a year.[1] Fentanyl was involved in 21,375 (77%) of all drug poisoning deaths over that time period, often in combination with other drugs (see Footnote 1). Drug combinations are known as polydrug mixtures, and consuming multiple drugs increases the risk that a drug poisoning may occur.[2]

The current Ohio drug landscape is influenced by complex factors, both domestic and international. From 2017 through 2022, Mexican transnational criminal organizations (TCOs) such as the Sinaloa Cartel and Jalisco New Generation Cartel (CJNG) trafficked the vast majority of fentanyl, methamphetamine, cocaine, and heroin to Ohio-based drug sellers.[3] [4] [5] [6] Mexican TCOs produce ton quantities of fentanyl and methamphetamine per year in so-called "super labs," with chemicals acquired from pharmaceutical companies in countries such as China and India.[5] [7] [8] [9] Digital media offers Ohio-based drug sellers the ability to market illicit drugs, communicate, and conduct financial transactions with thousands of potential customers through a single account and post (see Footnotes 3 and 4).

Figure 1: Characteristics of Ohio Drug Poisoning Deaths from 2017 through 2022

Ohio responded to the complex drug landscape and increasing number of drug poisoning deaths by investing significant resources in prevention, treatment, and interdiction efforts, and in 2022, drug poisoning deaths decreased from the previous year for the first time since 2018, in contrast to many other states across the country (see Footnote 1). Collaboration among interested parties is at the forefront of Ohio's response to the challenges posed by the illicit drug supply.

If current trends continue over the next five years, Ohio's illicit drug landscape will very likely become more decentralized, obscured, and unpredictable than previous years. Further decentralization will very likely give rise to additional drug manufacturers and suppliers and allow traffickers to leverage technologies that obscure identities and connect a broader range of customers and drug conspirators. The drug supply will very likely see increases in synthetic drug purity at the wholesale (kilogram) level, the wider spread of polydrug mixtures, and the emergence or reentry of new drugs into the illicit supply. Deviations from current trends could occur based on certain indicators of change such as more robust international cooperation on limiting the supply of precursor and pre-precursor chemicals for drug production or the development and implementation of strategies to reduce polysubstance use.

THE ILLICIT DRUG LANDSCAPE: ISSUES AND CHALLENGES

In 2017, Ohio had the second-highest drug poisoning mortality rate in the country, according to the National Center for Health Statistics.[10] That same year, researchers at The Ohio State University estimated that the annual cost of opioid use and dependency in Ohio was as high as $8 billion.[11] State and local officials were confronted with a drug supply that was growing more volatile and unpredictable by the year as counterfeit pills containing fentanyl and mixtures of potent illicit drugs spread across Ohio.

In 2017, Ohio had the second-highest drug poisoning mortality rate in the country.

Evolution of the Opioid Epidemic: 2000–2016

Prescribing opioids such as oxycontin to treat pain became more common in the late 1990s and early 2000s, leading to an increase in prescription opioid misuse and opioid poisoning deaths from 2000 until the mid-2010s.[12] As the availability of prescription opioids diminished in the late 2000s and the prices for diverted prescription opioids increased, Mexican TCOs increased the cultivation and trafficking of heroin, an illicit opioid, to satisfy the demand in the United States (see Footnote 12).[13] [14] [15] As a result, there was an increase in heroin-involved deaths from the early-2010s through 2017 across Ohio (see Footnote 12). In the early 2010s, China-based chemists began clandestinely manufacturing and trafficking fentanyl, an opioid 50 times more potent than heroin, directly into the U.S. or selling the precursor chemicals to manufacture fentanyl to Mexican TCOs.[16] [17] Fentanyl is a synthetic drug, meaning it is manufactured through chemical synthesis. Unlike heroin, fentanyl manufacturers do not have to rely on optimal weather patterns or labor for opium cultivation, which lowers production and trafficking costs (see Figure 2) and makes it more profitable compared to heroin (see Footnote 8). Because of its potency, fentanyl is commonly combined (or "cut") with other drugs such as heroin, cocaine, or methamphetamine to decrease the amount of fentanyl per dose and extend the drug supply to maximize profit (see Footnote 14). Thus, as fentanyl-involved deaths increased from 2014 through 2016, so, too, did drug poisoning deaths involving multiple drugs across the U.S. and Ohio (see Footnote 1).[18]

Figure 2: Profitability of Heroin vs Fentanyl, 2017
Wholesale drug prices can vary based on geographic region and other factors, but the numbers depicted in this table generally reflect heroin pricing and profits in 2017.

1 Kilogram (Kilo) = 2.2 Pounds	Heroin	Pure Fentanyl
Cost Per Kilo To Drug Trafficking Organization (DTO)	$6,000	$4,150
Approx. Number Of Kilos Produced From Original Supply	1 kilo	20 kilos
Wholesale Price Per Kilo (Per Massachusetts Street Value)	$80,000	$80,000
Revenue To DTO From 1 Kilo	$80,000	$1,600,000

Source: Statista.com (2021). Potential Fentanyl Profitability Compared to Heroin in the U.S. as of 2017.

Figure 3: Evolution of the Opioid Epidemic: 2000–2022

Drug	Time Period of Increasing Presence in Drug Poisoning Deaths in Ohio	Key Points
Wave 1: Prescription Opioids	2000-2014	Opioid prescriptions to treat pain become more common in the late 1990s leading to an increase in pharmaceutical opioid abuse and opioid-related drug poisoning deaths in the early 2000s.
Wave 2: Heroin	2009-2016	Access to prescription opioids is restricted. Those with opioid dependencies increasingly turn to heroin as a substitute.
Wave 3: Fentanyl	2014-2021	Drug trafficking organizations produce synthetic opioids (mainly fentanyl) as a more profitable and potent alternative to heroin.
Wave 4: Other Synthetic Drugs & Polydrug Mixtures Involving Fentanyl	2015-2022	Drug traffickers at all levels of the illicit drug supply chain combine plant-based drugs like cocaine or heroin with synthetic drugs like fentanyl and methamphetamine to create potent polydrug mixtures.

Ohio Illicit Drug Supply: 2017–2022

Drug poisoning deaths in Ohio increased each year from 2017 through 2021, except for a decrease in 2018, almost certainly due to fentanyl and its presence in polydrug mixtures alongside cocaine, methamphetamine, heroin, and other drugs. The Ohio illicit drug supply was volatile and unpredictable with polydrug mixtures featuring multiple different drug classes responsible for a majority of drug poisonings across the state from 2017 through 2022 (see Footnote 1). The highest annual number of unintentional drug-related deaths ever for Ohio occurred during this six-year period in 2021, with 5,174 deaths reported and fentanyl present in 80% (4,137) of those cases (see Footnote 1). Drug poisoning deaths decreased by 259 (5%) in 2022 with fentanyl appearing in 174 fewer deaths year-over-year (see Footnote 1). However, deaths involving multiple drugs increased in 2022 to account for 64% of all drug poisonings, an increase from 58% in 2020 and 61% in 2021 (see Footnote 1). Drug poisoning death statistics referenced throughout this report are compiled in the Appendix section. The Ohio drug supply chain spanned the globe and criminal actors used a variety of routes, conveyance methods, communication applications, and currency exchanges to coordinate and deliver drug shipments to Ohio and launder illicit drug proceeds.

Trends in the Ohio Drug Supply

Polydrug Mixtures and Polysubstance Use

Polydrug mixtures were responsible for the majority of drug poisoning deaths in Ohio from 2017 through 2022 almost certainly because combining multiple drugs and drug classes increases the risk of a potential drug poisoning. Polydrug mixtures were responsible for approximately 16,935 (61%) of drug poisoning deaths in Ohio from 2017 through 2022, according to the Ohio Department of Health (ODH) (see Appendix and Footnote 1). Mixtures of drugs, particularly different drug classes,

render effects more unpredictable, according to the CDC (see Footnote 2). These unpredictable effects often increase the risk of a drug poisoning. Drugs can be mixed together at any level of the illicit supply chain (see Footnotes 3 and 5), sometimes unbeknownst to the intended consumer, with fentanyl the most common drug found in Ohio polydrug-mixture-involved deaths (see Footnote 1).[19] Other drugs found in combination with fentanyl in Ohio included cocaine, methamphetamine, benzodiazepines, and heroin, among others (see Footnote 1). Substance users may also knowingly consume multiple drugs to either experience enhanced physiological and psychological effects or mitigate the withdrawal symptoms associated with other drugs, such as using methamphetamine to delay fentanyl withdrawal.[20] Potent drug mixtures constitute a greater risk for users who may be unaware of additional substances and therefore, may not have a tolerance for a specific drug within the mixture (see Footnote 2). One notable trend was the increase of reported polysubstance use featuring fentanyl and stimulants among individuals in treatment for a substance use disorder in Ohio from 2015 through 2022.[21] [22] Not only does consuming multiple drugs increase the risk that a drug poisoning could occur, but polysubstance use also can limit the effectiveness of treatment for substance use disorders and decrease opioid abstinence.[23] [24] Opioid treatment providers in Ohio report that regular methamphetamine use is associated with more intense and longer-lasting psychiatric instability (see Footnote 22). Psychiatric instability can impede individuals from accessing inpatient or residential treatment programs, which can prevent them from entering into sustained recovery (see Footnote 22).

Drug Purity

The purity of synthetic drugs such as fentanyl and methamphetamine increased from 2017 through 2022 likely because Mexican TCOs refined and improved their manufacturing processes and synthetic drug users developed greater tolerances to these drugs. Drug purity refers to the amount of the drug (e.g., methamphetamine) present in the sample compared to impurities such as cutting agents or other drugs. While Ohio toxicology reporting does not capture the purity of substances involved in drug poisonings, increasingly pure fentanyl and methamphetamine likely contributed to drug-related mortality because purer substances can increase the risk that a drug poisoning could occur. The purity of federally seized illicit drugs, specifically fentanyl and methamphetamine, increased from 2017 through 2021, according to the Drug Enforcement Administration (DEA) (see Footnotes 5 and 6). In 2021, the average purity of methamphetamine seized by the DEA in the United States was 97% (see Footnote 6). In 2023, ONIC supported a DEA investigation where an individual was convicted for trafficking methamphetamine that was determined to be 99% pure according to laboratory testing.[25] Mexican TCOs have improved their methamphetamine manufacturing process and are able to produce bulk quantities of high purity methamphetamine, according to open-source reporting and the DEA (see Footnotes 5 and 9). In addition to methamphetamine, the DEA reported the average purity of fentanyl powder seized in the United States increased 33% from 2021 to 2022 (see Footnote 5). Drug tolerance is the body's ability to adapt to the effect of the drug.[26] When individuals develop a tolerance to a drug like fentanyl, they require a greater quantity of the drug, via larger or purer doses, over time in order to achieve effects similar to those experienced upon first use of the drug (see Footnote 26). Individuals who develop an opioid-use disorder typically have both a physical dependence (or "craving") for the drug as well as a tolerance.[27] Purer drugs represent a prominent risk for illicit drug users, particularly individuals who have not developed a tolerance and are more likely to experience a drug poisoning, according to the National Harm Reduction Coalition.[28]

Counterfeit Prescription Pills

Counterfeit prescription pills containing illicit drugs contributed to Ohio drug poisoning deaths from 2017 through 2022 very likely because of fentanyl and combinations of drugs found in the pills, greater numbers of pills in the illicit drug supply, and the increasing purity of fentanyl within the pills. Counterfeit prescription pills seized by law enforcement in Ohio from 2017 through 2022 were identified as imitating legitimate medications such as Oxycodone, Percocet, Xanax, and Adderall by Ohio drug chemistry laboratories (see Footnote 3).[29] [30] There were at least 364 drug poisoning deaths attributed to counterfeit prescription pills from 2020 through 2022 in Ohio, according to the CDC, although this is very likely an undercount due to the difficulty of detecting the use of counterfeit pills in post-mortem investigations.[31] Counterfeit prescription pills seized in Ohio contained different drugs and drug combinations to include fentanyl, fentanyl analogs (e.g., carfentanil), synthetic opioids (e.g., nitazines), cocaine, methamphetamine, veterinary sedatives (e.g., xylazine), benzodiazepines, and heroin (see Footnote 30).[32] Federal law enforcement seized increasing quantities of counterfeit pills containing fentanyl from 2017 through 2022.[33] [34] High Intensity Drug Trafficking Areas (HIDTAs) across the United States reported seizing nearly 45 million counterfeit pills containing fentanyl in 2022, which was an increase from 11 million pills containing fentanyl seized in 2021 (see Footnote 33). Counterfeit prescription pills containing fentanyl became more pure on average from 2021 to 2022. Among counterfeit pills containing fentanyl seized by the DEA in 2022, six out of every 10 contained a potentially lethal (two-milligram) dose (see Footnote 34). This was an increase from four out of every 10 seized in 2021 (see Footnote 34). In addition to counterfeit prescription pills containing illicit drugs, Ohio law enforcement reported seizures of pill presses and pill pressing equipment (see Footnote 3). Ohio-based drug traffickers acquired pill presses from sellers based in China, according to ONIC case work (see Footnote 3). Depending on the model, pill presses can produce hundreds of thousands of counterfeit pills in a single day (see Footnotes 3 and 4).

Figure 4: Percentage of Counterfeit Tablets Seized by the DEA that Contained a Potentially Lethal Dose of Fentanyl

Source: DEA. Note: Each tablet represents 10% of total tablets seized annually by the DEA.

Drug Trends

Fentanyl and its Analogs

Fentanyl was the most common drug identified in Ohio drug poisoning deaths from 2017 through 2022 almost certainly due to its potency and increasing purity, greater amounts in the Ohio drug supply, consumer demand, and its presence in polydrug mixtures. Fentanyl depresses the central nervous system and its propensity to disrupt or stop breathing is thought to be the primary mechanism that results in lethality from its use.[35] Fentanyl, to include its analogs, was present in 21,375 (77%) of all drug poisoning deaths in Ohio from 2017 through 2022 (see Appendix and Footnote 1). From 2017 through 2022, fentanyl was the third-most-encountered seized drug behind methamphetamine and

cocaine in Ohio as reported by crime laboratories (see Footnote 32). Fentanyl was most commonly seized in powder or pill form in Ohio; however, drug traffickers introduced fentanyl in different colors and forms to include rock-like substances, chalk, a gum-like substance, and black-tar (see Footnote 3).[36] Ohio drug consumers sought fentanyl because of its low cost and high potency, according to the Ohio Substance Abuse Monitoring Network.[37] From 2017 through 2022, fentanyl was increasingly found alongside stimulants such as cocaine and methamphetamine in Ohio drug poisoning deaths, according to the ODH (see Footnote 1). Some traffickers marketed fentanyl as other drugs entirely to mask its presence. A review of fentanyl trends among cases involving federal offenders found that 4.5% of fentanyl offenders and 9% of fentanyl-analog offenders knowingly misrepresented the substance during drug transactions.[38]

Fentanyl analogs such as flourofentanyl or carfentanil continued to appear in seized drug samples and drug poisoning deaths, albeit with less frequency than fentanyl, according to reporting by Ohio crime laboratories (see Footnotes 1, 29, and 32). These analogs can rival and exceed the potency of fentanyl with certain compounds such as carfentanil assessed to be 100 times as potent as fentanyl.[39] These analogs were encountered in different forms to include powder or pills and often mixed with fentanyl, nitazenes, heroin, xylazine, and cocaine, which creates a more dangerous mixture (see Footnote 32).

Heroin

Heroin-related drug poisoning deaths decreased from 2017 through 2022 likely because heroin's prevalence in the Ohio drug supply decreased as Mexican TCOs prioritized the production and trafficking of fentanyl over heroin. Heroin-related drug poisoning deaths decreased from 987 in 2017 to 90 in 2022, according to ODH data (see Appendix and Footnote 1). The 90 drug poisoning deaths in 2022 accounted for 2% of total unintentional drug poisoning deaths in Ohio that year (see Footnote 1). Heroin sold in the United States and Ohio is primarily produced and trafficked by Mexican TCOs (see Footnotes 3 and 5). Heroin was encountered in powder, black-tar, and counterfeit pill forms in Ohio (see Footnotes 3, 4, and 32). According to the DEA, total seizures of heroin decreased from 3,339 kilograms in 2021 to 2,356 in 2022 (see Footnote 5). This decrease was in contrast to increasing seizures of fentanyl which increased from 7,191 kilograms seized in 2021 to 12,792 kilograms in 2022 (see Footnote 5). Heroin encounters in Ohio decreased from 2017 through 2022, according to reporting by Ohio crime laboratories (see Footnote 32). Because heroin production relies on harvest seasons, weather patterns, and human labor to cultivate opium, the process to manufacture and traffic it is more time-intensive and costly compared to a synthetic drug such as fentanyl, which is developed entirely through chemical synthesis in a laboratory (see Footnote 8).[40] Thus, it is more profitable for Mexican TCOs to manufacture and traffic fentanyl (see Footnotes 7, 8, and 40). Refer to Figure 2 on page 7 for information on pricing and profits for heroin and fentanyl.

Cocaine

Cocaine-involved drug poisoning deaths increased in Ohio from 2017 through 2022 almost certainly due to increased cocaine production in Colombia and other South American coca-growing countries, drug traffickers combining it with fentanyl in polydrug mixtures, and cocaine consumers actively seeking out other substances such as fentanyl. The majority of cocaine seized in the United States is produced in Colombia, Bolivia, and Peru (see Footnote 5). Criminal organizations in these countries produced and trafficked increasing quantities of cocaine from 2020 through 2022, according to the United Nations Office of Drugs and Crime and open-source reporting.[41] [42] [43] Cocaine-involved drug

poisoning deaths increased from 2017 through 2022 and 6,342 (77%) of these deaths also involved fentanyl, according to ODH (see Appendix and Footnote 1). Cocaine was found in 1,629 (33%) of all drug poisoning deaths across Ohio in 2022, which was an increase from 29% of all drug poisoning deaths in 2021 (see Footnote 1). Stimulants like cocaine increase the body's need for oxygen and when combined with the respiratory depressive effects of fentanyl, the combination can increase the risk that a drug poisoning may occur.[44] The rate of urinalysis samples in Ohio testing positive for both fentanyl and cocaine from 2021 through 2022 was double that of the national average.[45] Multiple research studies have demonstrated that a significant portion of cocaine users also seek out and use opioids and that regular cocaine users can be up to 15 times more likely to develop a concurrent opioid dependence compared to the general population.[46] [47]

Methamphetamine

Methamphetamine-involved drug poisoning deaths increased in Ohio from 2017 through 2022 almost certainly because of expanded production and trafficking by Mexican TCOs, methamphetamine's inclusion in polydrug mixtures with fentanyl, and its increasing purity. According to open-source reporting from Insight Crime, from 2020 through 2022, Mexican TCOs produced on average between 291 and 434 tons of methamphetamine each year destined for the United States (see Footnote 9). From October 2021 through September 2022, United States Customs and Border Protection reported the seizure of 170 tons of methamphetamine.[48] Methamphetamine is categorized as a psychostimulant by ODH, and drug poisoning deaths involving methamphetamine are included as part of the psychostimulant-involved death reporting. Psychostimulant-involved deaths in Ohio increased from 2017 through 2022 and 76% of these deaths also involved fentanyl (see Appendix and Footnote 1). Psychostimulants were involved in 1,352 (28%) of all drug poisoning deaths across Ohio in 2022, which was an increase from 26% in 2021 (see Footnote 1). Methamphetamine was encountered in crystal, powder, and counterfeit pill forms across Ohio (see Footnote 32). Methamphetamine was the most encountered seized drug by Ohio crime laboratories from 2019 through 2023, and it was consistently reported as the most prevalent drug by Ohio drug task forces in their areas of responsibility (see Footnote 32).[49] Methamphetamine poses additional health risks for users short of a fatal drug poisoning to include psychosis, abscesses and skin infections, high blood pressure, blood clots, stroke, and congestive heart failure.[50] [51]

Veterinary Sedatives

Veterinary sedatives (e.g., xylazine) increased in seized illicit drug samples and polydrug poisoning deaths from 2017 through 2022 very likely because drug traffickers used them to enhance the physiological effects of fentanyl and other drugs while also extending their supply to increase profit. Veterinary sedatives such as xylazine and medetomidine were encountered in increasing quantities of seized drug samples across Ohio, particularly in the southwest region of the state from 2017 through 2022 (see Footnote 32). These sedatives, specifically xylazine, were found in increasing numbers of drug poisoning deaths across Ohio from 2019 through 2022, almost always in combination with fentanyl or other synthetic opioids.[52] Veterinary sedatives were introduced into polydrug mixtures at all levels of the illicit drug supply chain by Mexican TCOs and Ohio-based drug trafficking organizations (DTOs), according to ONIC case work (see Footnotes 3 and 4). Xylazine and other sedatives also were procured through the internet from vendors residing in China (see Footnotes 3 and 4). Veterinary sedatives pose risks for Ohio users because they produce profound sedation and muscle relaxation, lower heart rate and blood pressure, and can induce mild respiratory depression, which can compound the negative effects brought on by fentanyl consumption.[53] [54] Because these veterinary sedatives are not opioids

they do not respond to opioid reversal agents such as naloxone.[55] An individual may remain sedated even after naloxone has been administered and breathing has been restored, which can complicate lifesaving measures.[56] Xylazine can be purchased by drug traffickers on internet sites for as little as $6 to $20 per kilogram from the dark web, making it an ideal cutting agent to extend a fentanyl supply and increase the profit through a greater number of sales (see Footnote 3).[57]

Psilocybin and Hallucinogenic Drugs

Seizures of psilocybin mushrooms generally increased across Ohio from 2017 through 2022 probably, in part, because of increased attention surrounding clinical trials examining therapeutic effects in patients and decriminalization in some states and cities. Psilocybin increased in seized drug samples across Ohio from 2018 through 2021 before plateauing in 2022 according to reporting from Ohio drug chemistry laboratories (see Footnote 32). In 2018, the U.S. Food and Drug Administration approved psilocybin as a "breakthrough therapy" for treatment-resistant depression.[58] Additionally, a study found that psilocybin cases reported to U.S. poison control centers increased from 2019 through 2022 with cases more than tripling among adolescents and more than doubling among young adults compared to 2018.[59] Exposure to psilocybin and other hallucinogens may result in adverse effects such as acute psychosis, delusions, agitation, high blood pressure, and elevated heart rate (see Footnote 59). Other drugs with hallucinogenic properties such as LSD and MDMA have more recently received the breakthrough therapy designation by the U.S. Food and Drug Administration for generalized anxiety and post-traumatic stress disorder.[60] Oregon and Colorado decriminalized the possession of certain hallucinogenic drugs to include psilocybin in 2020 and 2022, respectively, and cities in other states such as California have followed suit, which may have facilitated increased in-state cultivation in those areas.[61] Ohio-based drug traffickers have been observed receiving shipments of psilocybin from states where the possession of psilocybin has been decriminalized, according to ONIC case work (see Footnote 3).

New Psychoactive Substances

New Psychoactive Substances (NPS) appeared in the Ohio illicit drug supply and drug poisonings from 2017 through 2022 probably because a subset of Ohio-based distributors and consumers acquired these drugs to evade laws and controls applicable to illicit drugs by buying unregulated substances or to experiment with novel substances. NPS are synthetic drugs designed to mimic the effects of banned or controlled substances and are marketed as "legal highs," or "research chemicals."[62] As of August 2023, more than 1,200 NPS from 141 countries and territories have been reported to the United Nations Office of Drugs and Crime's Early Warning Advisory on New Psychoactive Substances (see Footnote 62). Some of these NPS have been encountered in seized drug samples and drug-related poisonings in Ohio (see Footnote 32).[63] [64] NPS such as nitazene opioids and designer benzodiazepines like bromazolam are particularly concerning because these drugs can rival and exceed the potency of fentanyl, particularly nitazenes, but also compound the negative effects of drugs with which they are combined (See Footnotes 55, 63, and 64). For example, designer benzodiazepines (e.g., bromazolam) are often combined in mixtures with fentanyl and its analogs and these mixtures are known as benzo-dope (see Footnote 56).[65] Benzo-dope mixtures increased in the Ohio illicit drug supply from 2020 through 2022, according to reporting by Ohio drug chemistry laboratories (see Footnote 32). Ohio-based dealers acquired NPS from dark web vendors, based on ONIC case work (see Footnote 3). Currently, there is no indication that Mexican TCOs produce and traffic significant quantities of NPS into Ohio (see Footnotes 3 and 4).

Criminal Organizations and Drug Trafficking Tactics: 2017–2022

Chinese Chemical Suppliers and Money Launderers

China-based pharmaceutical vendors were the principal suppliers of precursor and other chemicals essential to synthetic drug production to Mexican TCOs from 2017 through 2022 very likely because of the size and capacity of China's pharmaceutical industry, inconsistent regulation of chemical suppliers by the Peoples Republic of China government, and the dual-use nature of the chemicals making interdiction difficult. China has one of the largest pharmaceutical sectors in the world and a subset of illicit actors within this sector are responsible for selling the vast majority of precursor, pre-precursor, and essential chemicals necessary for manufacturing synthetic drugs such as fentanyl and methamphetamine to Mexican TCOs (see Footnotes 7, 8 and, 9). China's inconsistent regulatory enforcement can be attributed to the sheer scale of the pharmaceutical industry combined with the corruption of local officials by chemical suppliers (see Footnotes 7-8). In addition to precursor chemical sales, Chinese TCOs laundered drug proceeds for Mexican TCOs, according to reporting from across the U.S. government (see Footnote 8).[66]

Pharmaceutical companies across China marketed precursor chemicals such as phenyl acetone or 4-anilino-N-phenethylpiperidine (4-ANPP), which are chemicals used to manufacture methamphetamine and fentanyl respectively, through online advertising (see Footnotes 7 and 9). Companies in China, and to a lesser extent India, Europe, the United States, and South America, also manufactured and traded essential chemicals (e.g., binders used to create prescription pills) and pre-precursor chemicals such as esters of phenylacetate (not controlled) used to make phenylacetate (not controlled) in the production of phenyl-2-propanone (controlled) (see Footnotes 8-9). These pre-precursor chemicals were often dual-use, meaning they had legal uses and are not explicitly controlled substances, making it difficult for authorities to determine if they are being diverted for illicit use (see Footnotes 7-9). With hundreds of thousands of pharmaceutical companies worldwide, insufficient international regulation of precursor and pre-precursor chemicals, and globalization facilitating the free flow of goods, illicit actors were provided a permissive environment to traffic bulk quantities of these chemicals (see Footnote 9). Mexican TCOs and Chinese chemical suppliers often employed chemical brokers, intermediaries who serve as liaisons on behalf of the organizations to exchange chemicals for monetary payment or items such as exotic wildlife (see Footnotes 7, 8 and, 9).

Chinese criminal organizations assisted the cartels with illegally concealing the origin of money obtained from drug trafficking (money laundering) from 2017 through 2022, according to the U.S. Department of the Treasury (see Footnote 66). One such indictment of a Chinese money laundering network by the federal government alleged that a single group comprised of 24 individuals took part in a scheme to launder $50 million in drug proceeds.[67] The U.S. Department of the Treasury and Department of Justice have indicted numerous individuals and entities within China's pharmaceutical sector, money launderers, and chemical brokers for their involvement in the international proliferation of synthetic drugs such as fentanyl, methamphetamine, MDMA, xylazine and nitazenes.[68] [69] [70] [71] Mexican TCOs earn substantial revenue from synthetic drug trafficking estimated to be in the low tens of billions of dollars annually, according to a RAND Corporation study (see Footnote 8).

Transnational Drug Trafficking Organizations

Mexican TCOs trafficked fentanyl, cocaine, heroin, and methamphetamine into Ohio from 2017 through 2022 almost certainly because of their substantial drug production capacity, connections with South American cocaine producers, various routes and methods available for moving

drugs into the state, and domestic demand for illicit drugs. Mexican TCOs, principally the Sinaloa Cartel and the Jalisco New Generation Cartel (CJNG), were responsible for manufacturing and trafficking fentanyl, heroin, and methamphetamine, as well as transporting large quantities of South American-produced cocaine into Ohio (see Footnotes 3 and 4). Mexican TCOs and DTOs based in the Dominican Republic and Puerto Rico trafficked cocaine into Ohio.

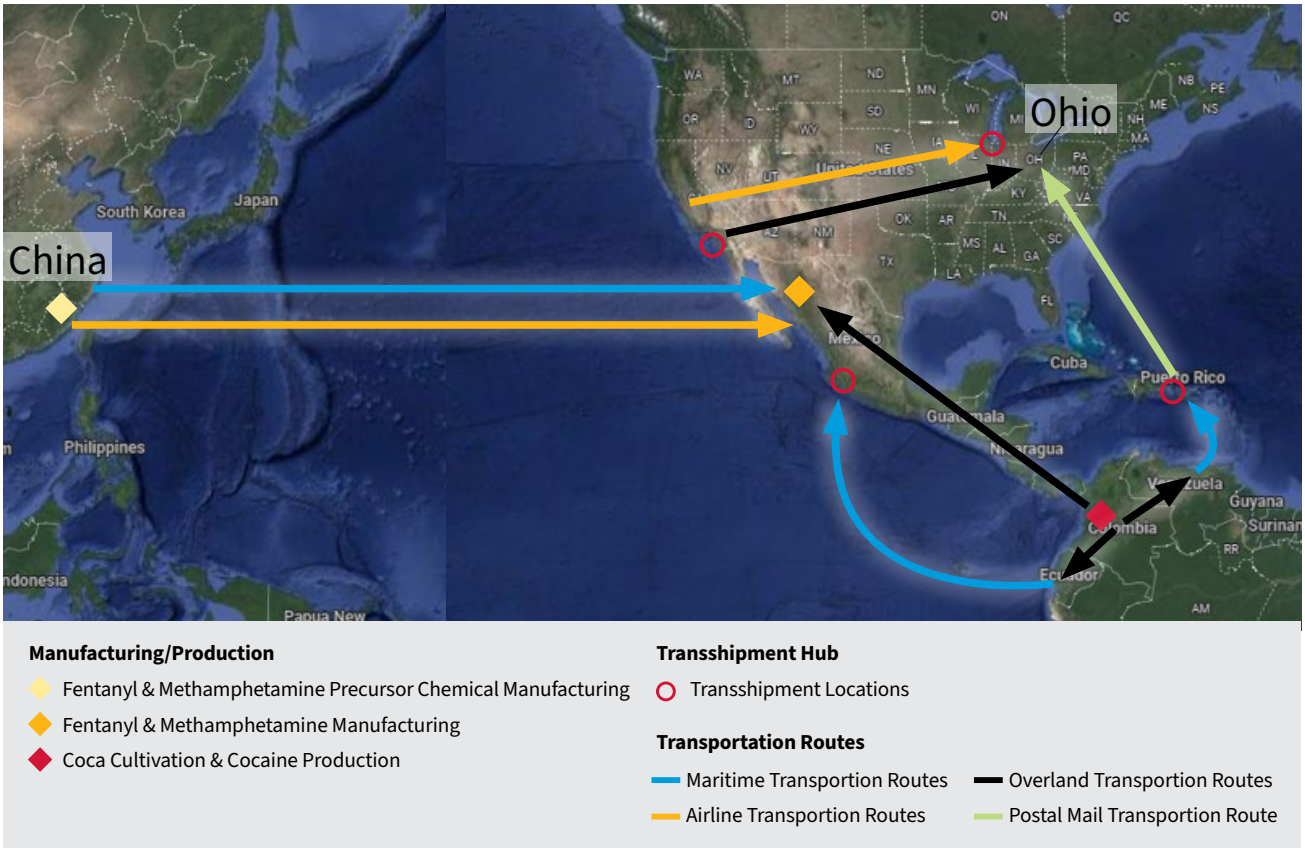
Drug Trafficking Organization (DTO): Complex organizations with defined command-and-control structures that produce, transport, and/or distribute large quantities of one or more illicit drugs.

Transnational Criminal Organization (TCO): A globalized networked structure that is entrepreneurial in nature seeking to take advantage of both criminal and licit financial opportunities and avoid unnecessary risks.

Drug Transportation Methods

Mexican TCOs used vehicles, commercial air, and postal mail to traffic drugs to Ohio for distribution to Ohio-based DTOs from 2017 through 2022 very likely because each method offers distinct advantages to criminal organizations seeking to avoid interdiction by law enforcement. Mexican TCOs used vehicles, including private vehicles and commercial trucks, to traffic multi-kilogram quantities of illicit drugs into Ohio, based on ONIC casework (see Footnotes 3 and 4). When using vehicles, Mexican TCOs commonly trafficked fentanyl, cocaine, heroin, and methamphetamine together due to the

Figure 5: General Representation of Ohio Illicit Drug Supply Chain



ability to transport larger loads in a single shipment compared to other methods such as postal mail (see Footnotes 3 and 4). Mexican TCOs and DTOs based in the Caribbean trafficked drugs using mail or express consignment (e.g., U.S. Postal Service, FedEx, UPS, DHL) to traffic smaller loads, typically one to two kilograms, because mail provides additional anonymity for suppliers such as the ability to pay in cash and use a fake name (see Footnotes 3 and 4). Mexican TCOs also use luggage aboard commercial airline flights to traffic multi-kilogram drug loads into Ohio because of added anonymity and a perceived lack of interdiction capabilities at airports (see Footnotes 3 and 4).[72] Some Ohio-based independent dealers (i.e., dealers not connected to part of a larger DTO) used the dark web to order drugs that were shipped via postal mail to include those stated above, but also other substances such as nitazene synthetic opioids, xylazine, and designer benzodiazepines (see Footnote 3).[73]

Ohio-Based Drug Trafficking Organizations and Stash Houses

Ohio-based DTOs and independent dealers were the primary distributors of fentanyl, cocaine, methamphetamine, and heroin trafficked by Mexican TCOs and DTOs from 2017 through 2022 very likely because of their network of stash houses across Ohio and established customer bases. Mexican TCOs and DTOs often had connections with Ohio-based DTOs and dealers who distributed illicit drugs across Ohio, both in cities and in rural areas (see Footnote 3).[74] Drug loads transported by Mexican TCO affiliates were typically brought or sent to stash houses, buildings where drugs, weapons, or supplies to facilitate criminal activity are stored, according to ONIC case work (see Footnote 3). These stash locations were usually residences or private businesses in larger cities such as Columbus, Dayton, Cincinnati, Cleveland, and Toledo (see Footnote 3). Connections between Mexican TCOs and Ohio-based DTOs were developed in multiple ways such as through prison contacts or familial ties (see Footnotes 3 and 4). Ohio-based DTOs ranged in size and capacity, from sophisticated entities engaging in multiple types of criminal acts (e.g., street or outlaw motorcycle gangs) to informal networks of independent drug dealers (see Footnotes 3 and 4).

Drug Proceeds

Ohio-based DTOs and Mexican TCOs transported drug proceeds using different techniques from 2017 through 2022 probably based on preference, perceived ease, and potential risk associated with each technique. Ohio-based DTOs and Mexican TCOs moved drug proceeds using techniques such as bulk currency smuggling, wire transfers, and cryptocurrency exchanges. Mexican TCOs used bulk currency smuggling to transport large quantities of cash by vehicles, mail, or commercial airlines to cities near the southwest border and into Mexico (see Footnotes 3 and 4). Besides bulk currency smuggling, drug traffickers used wire transfers and cryptocurrency to move and launder drug proceeds (see Footnote 3). For customers or dealers in Ohio that acquired drugs through the dark web, cryptocurrency was a widely used method of payment, according to ONIC case work (see Footnote 3). Additionally, Ohio law enforcement has identified Chinese criminal organizations and affiliated groups engaged in drug trafficking and money laundering.[75] [76]

Digital Drug Trafficking

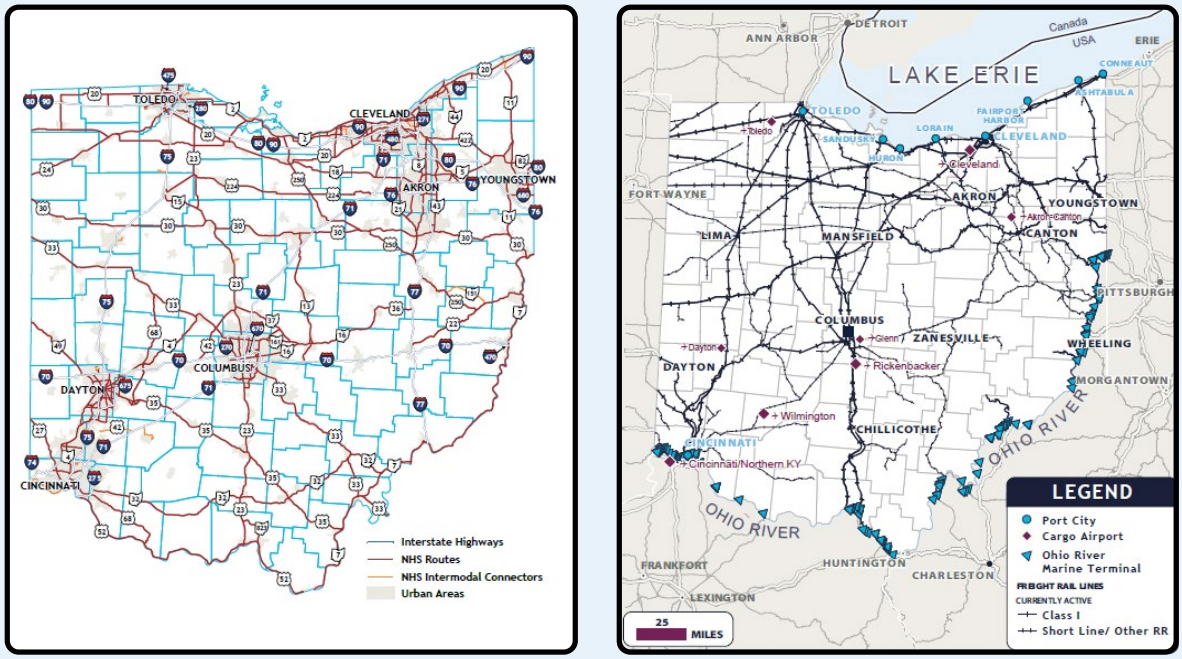
Mexican TCOs and Ohio-based DTOs used social media applications (e.g., Instagram, Snapchat) and encrypted communications applications (e.g., Telegram, WhatsApp) to coordinate the marketing and trafficking of illicit drugs from 2017 through 2022 very likely because these applications provide additional security and anonymity as well as access to greater numbers of potential customers. Mexican TCOs often used encrypted communication applications to provide instructions to drug

transporters and Ohio-based DTOs operating stash houses (see Footnote 3). Encrypted communication applications provide enhanced security and anonymity to users on both ends (see Footnote 3). Ohio-based DTOs used social media applications such as Snapchat and encrypted communication applications such as WhatsApp or Telegram to market and sell illicit drugs (see Footnotes 3 and 4). Many of these platforms have large, mostly innocuous, user bases. Telegram for example, has more than 900 million active users, which allows traffickers to reach large numbers of potential customers with a single account or post.[77] Sellers may obscure overt drug-related content by using emojis or slang terms to avoid having their posts removed by the platform's content moderators and to replace incriminating communications that refer to the substance, quantity, price, or physiological effects of the drug, according to ONIC casework and the DEA (see Footnote 3).[78] [79]

Ohio's Transportation Infrastructure

Criminal organizations almost certainly exploited Ohio's centralized location and robust transportation infrastructure to transport drugs into and throughout the state. Ohio is a northern border state sharing a maritime boundary with Canada. Ohio has the fifth largest interstate system in the United States with more than 8,000 lane miles, enough to travel from Los Angeles to Washington, D.C. about three times, according to the Ohio Department of Transportation.[80] Ohio is centrally located within a day's drive of more than 60% of the U.S. and Canadian populations, and it has eight maritime ports, eight commercial airports, and 736 miles of navigable waterways, which provide drug traffickers with different entry points into the state (see Footnote 80). Ohio law enforcement consistently made large drug and currency seizures along major transportation routes across the state. [81]

Figure 6: Ohio Interstate Highway Network and Ohio Port, Rail, and Airport Infrastructure



Source: Ohio Department of Transportation

Risk Factors Associated with Drug-Related Mortality

Academic research studies indicate that a variety of factors such as the use of illicit drugs, poverty and household disharmony, and incarceration have been found to be associated with a higher probability of developing a substance use disorder and experiencing a drug poisoning. Despite extensive research, risk-factor analysis does have limitations when attempting to assess future changes in drug-related mortality due to the interplay between various health, socioeconomic, and criminal-legal factors, which may decrease or increase the risk for a substance use disorder or drug poisoning when experienced in tandem depending on the factors and situation.[82] The risk factors discussed here may not be present in every individual who initiates drug use or experiences a drug poisoning.

Illicit Drug Use and Drug Poisonings

Prior illicit drug use, emergency department visits for an opioid drug poisoning, and naloxone administrations have been found to strongly predict future drug poisoning mortality rates, according to academic research.[83] Synthetic opioids, methamphetamine, and polydrug mixtures featuring synthetic opioids, cocaine, or heroin, have been found to be highly correlated with drug poisoning mortality (see Footnote 83). Frequent emergency department visits for opioid drug poisonings have been shown to be associated with a higher likelihood of future hospitalizations and drug poisoning mortality.[84] [85] In addition to emergency department visits, naloxone administrations by emergency medical service providers and non-prescribed naloxone use have been found to be associated with future drug poisoning mortality.[86] [87]

Poverty and Household Disharmony

Poverty and household disharmony have been identified as having an association with drug poisoning mortality. For poverty, a higher percentage of a jurisdiction's population receiving public assistance has been found to be highly correlated with drug poisoning mortality rates, more prominently in rural than urban areas (see Footnote 83). Household disharmony (i.e., family distress) has been found to be associated with drug poisoning mortality.[88] Household disharmony factors such as the prevalence of single-parent households or adverse childhood experiences are associated with youth initiation of drug use (see Footnote 88).[89] [90] Households that fall under this category are often disenfranchised and typically experience poverty, and impoverished and disenfranchised people generally experience more traumatic events (see Footnotes 88, 89, and 90). Adverse childhood experiences (i.e., abuse or neglect) and the occurrence of a mental health disorder are associated with a higher likelihood of an adolescent initiating drug use.[91] The majority of adults who meet the criteria for having a substance use disorder started using substances during their teen and young adult years according to the CDC.[92]

Incarceration, Firearm Victimization, and Drug Supply Disruptions

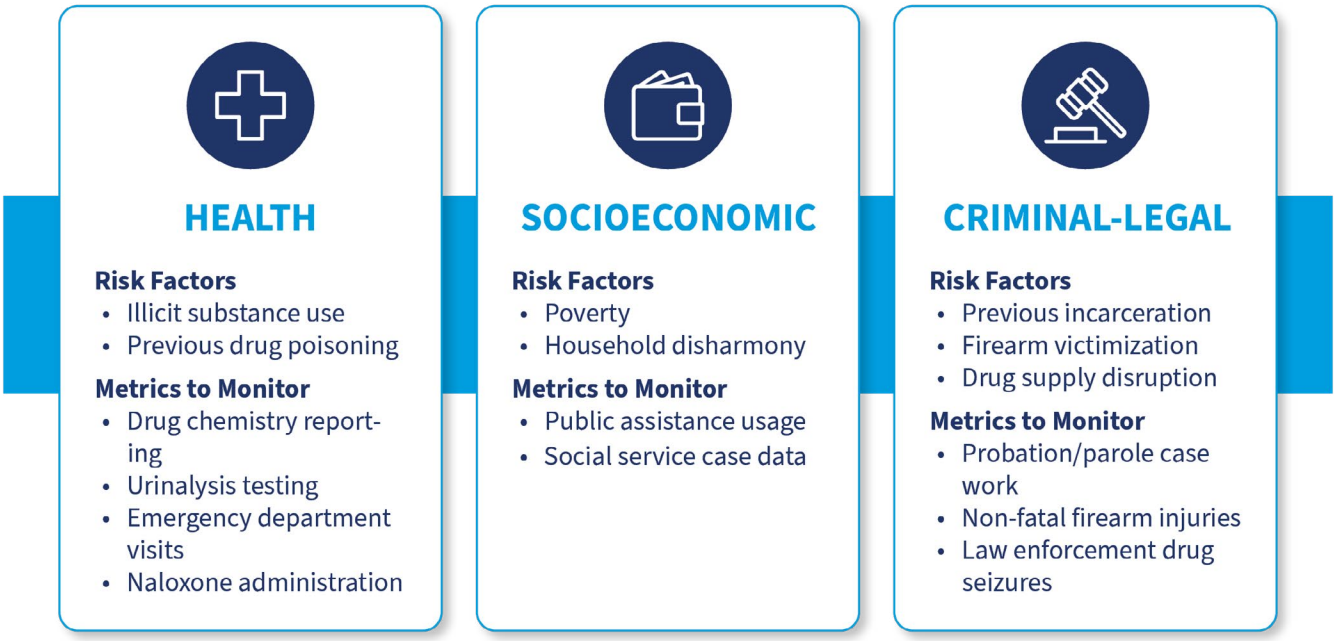
Previous involvement with the criminal justice system (e.g., probation or incarceration), firearm victimization, and drug market disruptions have been found to be associated with drug poisoning mortality. The Department of Justice Bureau of Justice Statistics has found that both substance use disorders and illicit drug use were widespread among state and federal prisoners prior to their arrests and convictions for the offenses for which they were serving time.[93] Multiple studies have demonstrated that upon release from incarceration, there is an increased likelihood that individuals with documented substance use disorders will experience a drug poisoning, with one study finding the highest likelihood was in the first two weeks following release.[94] [95] In addition to criminal justice system involvement, firearm injuries and hospitalizations have been found to be associated with

drug poisoning mortality.[96] [97] One study determined that in high firearm injury census tracts, firearm injury and drug poisoning rates were twice that of city-wide rates (see Footnote 96). Research has demonstrated that law enforcement actions such as drug seizures can disrupt drug supply and potentially lead to drug customers seeking out other drug sellers. These sellers may provide different drugs, drug mixtures, or potencies that the drug customer is unaccustomed to, leading to drug poisoning deaths.[98]

Recommended Metrics to Monitor

Prioritizing collection, analysis, and monitoring of specific heath, social, economic, and criminal-legal factors could allow state and local officials to identify vulnerable populations and assess potential changes in drug poisoning mortality rates. Officials could prioritize the collection and analysis of urinalysis testing data, drug chemistry data, public health data, public assistance usage data, social service casework, incarcerated individuals on probation and parole with a documented substance use disorder, non-fatal firearm victimization, and law enforcement drug seizures.

Figure 7: Risk Factors Associated with Drug Poisoning Mortality



OHIO'S RESPONSE TO THE ILLICIT DRUG LANDSCAPE: 2019–2024

Immediately upon taking office in January 2019, Governor Mike DeWine commissioned the RecoveryOhio Advisory Council to provide actionable recommendations to improve mental health and substance use prevention, treatment, and recovery support services in Ohio. In January 2019, Governor DeWine signed Executive Order 2019-01D which created RecoveryOhio to centralize and coordinate efforts to combat the drug epidemic. Upon examination of the statewide effort to combat the opioid epidemic, several shortfalls were identified to include insufficient data and information sharing and inadequate intelligence and digital forensics support for law enforcement dedicated to narcotics investigations. Through Executive Order 2019-20D, the Ohio Narcotics Intelligence Center (ONIC) was created to address these additional limitations.

RecoveryOhio

RecoveryOhio was created to coordinate the work of state departments, boards, and commissions by leveraging Ohio's existing resources and seeking new opportunities to mitigate the harms of the drug crisis. Its goals are to create a system to help make treatment available to Ohioans in need, provide support services for those in recovery and their families, offer direction for the state's prevention and education efforts, and work with local law enforcement to provide resources to fight illicit drugs at the source.

Ohio Narcotics Intelligence Center

ONIC's mission is to provide digital forensic and intelligence analysis support for drug task forces and law enforcement agencies in Ohio, utilize state-of-the-art digital evidence recovery and intelligence tools to discover new trends and connections between targets, and identify criminal networks and enterprises in drug crimes. In July 2023, ONIC was officially codified as a division of the Ohio Department of Public Safety.

ONIC and RecoveryOhio Strategy

The backbone of ONIC is its forensic computer specialists and intelligence analysts who provide intelligence-led support to local, state, and federal law enforcement agencies across Ohio. ONIC's digital forensics unit offers comprehensive forensics services, consultations, assistance with complex investigations, and courtroom testimony. ONIC's intelligence unit provides tactical and operational criminal case support with specialized assistance for cryptocurrency tracing and dark web investigations, Spanish translation, forensic accounting, drug-related violent crime, and strategic intelligence to inform law enforcement and other interested parties with assessing changes and understanding trends in the illicit drug supply.

In addition to investigative support, ONIC and RecoveryOhio have partnered to create a cross-functional information-sharing network that facilitates direct communication about current drug trends and creates opportunities for collaboration among law enforcement, public health officials, drug chemistry and toxicology laboratories, and addiction treatment personnel. Topics that are routinely covered across these calls include emerging drug trends, law enforcement seizure data, substance use disorder treatment and prevention topics, and public and mental health perspectives on substance use. Because of this data-sharing network, other innovative initiatives have been developed and implemented,

such as the Emerging Drug and Scientific Working Group, which has assisted with identifying and scheduling 20 drugs since its inception and provided information to inform the drafting and dissemination of public safety bulletins on issues like the proliferation of counterfeit tablets into the Ohio drug supply.

More efficient information sharing has illuminated opportunities for collaboration between ONIC and other agencies. ONIC has partnered with the Ohio National Guard Counterdrug Program to place analysts across the four ONIC offices that work closely with law enforcement to conduct criminal and strategic intelligence analysis. ONIC has also assisted the State of Ohio Board of Pharmacy on over-prescriber investigations and an early intervention deflection program to connect people with treatment before they enter the criminal justice system. In response to drug-related violent crime, ONIC has partnered with Crime Gun Intelligence Centers in Ohio and provides digital forensic and intelligence analysis for investigators working crime gun cases with a nexus to drug crimes. To bridge gaps between law enforcement and addiction treatment, ONIC, RecoveryOhio, and the Ohio Department of Public Safety (DPS) started Operation Bridging Interdiction and Data Gathering Enforcement (BRIDGE) to interdict illicit drugs and connect Ohioans to treatment and other services.

Successes

From January 2020 through July 2024, ONIC Forensics opened 4,524 cases in response to law enforcement requests and conducted 15,863 digital device examinations to support local, state, and federal law enforcement drug investigations. ONIC Intelligence received 2,723 requests for assistance from law enforcement and other interested parties across Ohio and has supported 2,435 cases. Both ONIC Forensics and Intelligence have produced critical information and intelligence for law enforcement that has resulted in the dismantling of multi-state and international drug trafficking rings, large seizures of illicit drugs, weapons, and drug proceeds, the identification of dealers responsible for drug poisoning deaths, and the arrest and conviction of individuals who have perpetrated violent crimes. Cases span the country as well as the globe and drug traffickers who transport drugs into Ohio are held accountable no matter the location from which they are operating.

From 2019 through 2024, RecoveryOhio coordinated and supported numerous initiatives aimed at mitigating the harms of illicit drugs across Ohio. RecoveryOhio works with multiple agencies to support the distribution of and related training on naloxone, the opioid reversal medication. In order to expand opportunities for Ohioans to connect to treatment, RecoveryOhio supported the Ohio Department of Health with the implementation of a comprehensive system of care in emergency departments for patients who present with opioid use disorder. As of 2022, more than 530,000 patients had been screened through this comprehensive care program. In addition to the comprehensive system of care initiative, Operation BRIDGE events have directly connected hundreds of Ohioans to treatment across the state.

The efforts of ONIC, RecoveryOhio, and the myriad agencies working to mitigate the harms of illicit drugs are producing successful results. Drug poisoning deaths decreased by 259 (5% decrease) from 2021 through 2022 and 452 (9% decrease) from 2022 through 2023, according to data from the ODH (see Footnote 1). In 2023, there were 27,809 emergency department visits for suspected drug poisoning, which was the lowest annual total since at least 2017.[99] In addition to declining drug poisonings, more Ohioans are being connected to treatment as greater numbers of individuals with opioid use disorder are receiving medication-assisted treatment, case management, and peer support as of 2022 compared to 2018, according to ODH.[100] Ohio is also succeeding in increasing access to naloxone. From 2019 through 2023, annual naloxone distribution by ODH and associated partners increased by 244,683 units (520%).[101]

OHIO ILLICIT DRUG LANDSCAPE: 2025–2030

Over the next five years, Ohio's illicit drug landscape will very likely become more decentralized, obscured, and unpredictable as the number of drug producers and suppliers increases, drug traffickers leverage technology to enhance coordination, conceal identities and incriminating information, and reach customers, the purity of synthetic drugs increases, polydrug mixtures become more widespread, and new drugs emerge or reenter into the illicit supply.

Ohio's illicit drug landscape will very likely become more decentralized, obscured, and unpredictable.

Decentralization of Drug Trafficking

Chemical vendors in China, and to a lesser extent, India, Europe, and South America, will almost certainly continue to supply precursor and pre-precursor chemicals, essential chemicals, and finished drug products to TCOs that manufacture and traffic drugs into Ohio. Expanding pharmaceutical sectors, the large number of dual-use chemicals that can be used nefariously to create illicit drugs, and the sheer volume of international trade will very likely challenge law enforcement efforts to disrupt drug trafficking over the next five years. The proliferation of pharmaceutical companies across Asia will likely further decentralize the illicit drug supply chain. Consumers will have more options for drugs and drug suppliers offering a direct manufacturer-to-consumer process by connecting via the dark and open webs, social media, or encrypted communication applications. Mexican TCOs will almost certainly continue to traffic most fentanyl, methamphetamine, cocaine, and heroin into Ohio due to their established connections with chemical suppliers, their network of drug manufacturing laboratories, established trafficking corridors into Ohio, and connections with Ohio-based DTOs. Some Ohio illicit drug users will very likely receive other psychoactive substances from suppliers via the dark web or other digital mediums.

Technological and Marketing Innovations

Precursor chemical and drug suppliers operating mainly through internet platforms will almost certainly leverage advancements in technology and digital security to market and traffic controlled substances using encrypted applications (e.g., WhatsApp, Facebook Messenger, or Telegram), which can have anonymizing features like end-to-end encryption and integrated cryptocurrency transaction mechanisms. These technologies will allow traffickers to connect securely and quickly with greater numbers of customers. The proliferation of international drug suppliers coupled with advancements in technology could present greater challenges for Ohio law enforcement agencies in identifying and disrupting drug suppliers that operate outside of Ohio and supply chains that span countries and continents. Mexican TCOs and Ohio-based DTOs will very likely experiment with different techniques to attract new customers such as introducing new drug mixtures. For example, ONIC has observed fentanyl, methamphetamine, heroin, and other drugs in various colors and forms in the Ohio drug supply and the DEA has assessed that the use of different colors is a marketing tactic to broaden the appeal of drugs (see Footnotes 3 and 5).

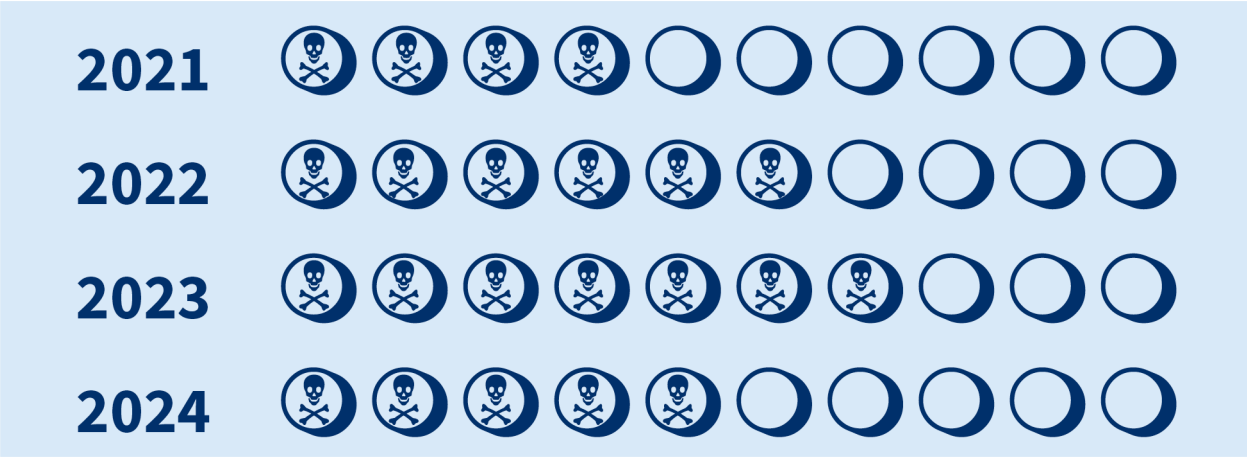
Polydrug Mixtures and Polysubstance Use

Drug poisoning deaths involving polydrug mixtures to include fentanyl and its analogs, cocaine and methamphetamine, veterinary sedatives (e.g., xylazine), designer drugs (e.g., nitazenes), and benzodiazepines will very likely increase as a percentage of total deaths over the next five years. Drug traffickers combine drugs for multiple reasons including to enhance the physiological and psychological effects, introduce new substances, and extend their supply to increase their profit. Polysubstance use, particularly involving opioids and stimulants, will likely increase among Ohio drug consumers as fentanyl, cocaine, methamphetamine, and heroin are trafficked in bulk kilogram quantities into Ohio and combined with a myriad of other illicit substances. An increase in polysubstance use will likely precipitate challenges to treatment and recovery, such as lower treatment retention rates for certain sub-population groups of illicit drug users, particularly those who co-use stimulants like methamphetamine alongside opioids such as fentanyl. Individuals who may be more susceptible to engaging in polysubstance use include those with documented substance use and mental health disorders, those living in poverty, those experiencing unstable housing, and those who have previous involvement with the criminal justice system.[102] [103] Individuals who are unable to access inpatient or residential treatment programs due to negative consequences of polysubstance use (e.g., psychiatric instability) will very likely face greater challenges in entering into a sustained recovery.

Drug Purity and Potency

The purity of drugs such as fentanyl and methamphetamine will likely continue to increase as Mexican TCOs become more skilled with their manufacturing methods and a subset of Ohio users develop higher tolerances and seek more pure or potent drugs. In 2024, the DEA reported that five out of 10 counterfeit pills seized that contained fentanyl also contained what can be a lethal (two-milligram) dose, down from seven out of every 10 in 2023 and six out of every 10 in 2022 (see Footnote 34). Stimulants and opioids with potencies that rival and exceed that of fentanyl and methamphetamine will likely be created or rediscovered and introduced into the Ohio illicit drug supply. From April 2022 to June 2024, Ohio identified and scheduled 20 drugs as controlled substances to include 18 new synthetic opioids (NSOs) as Schedule I controlled substances.[104] [105] At least nine of the NSOs have been found to be more potent than fentanyl (see Figure 9).[106] [107]

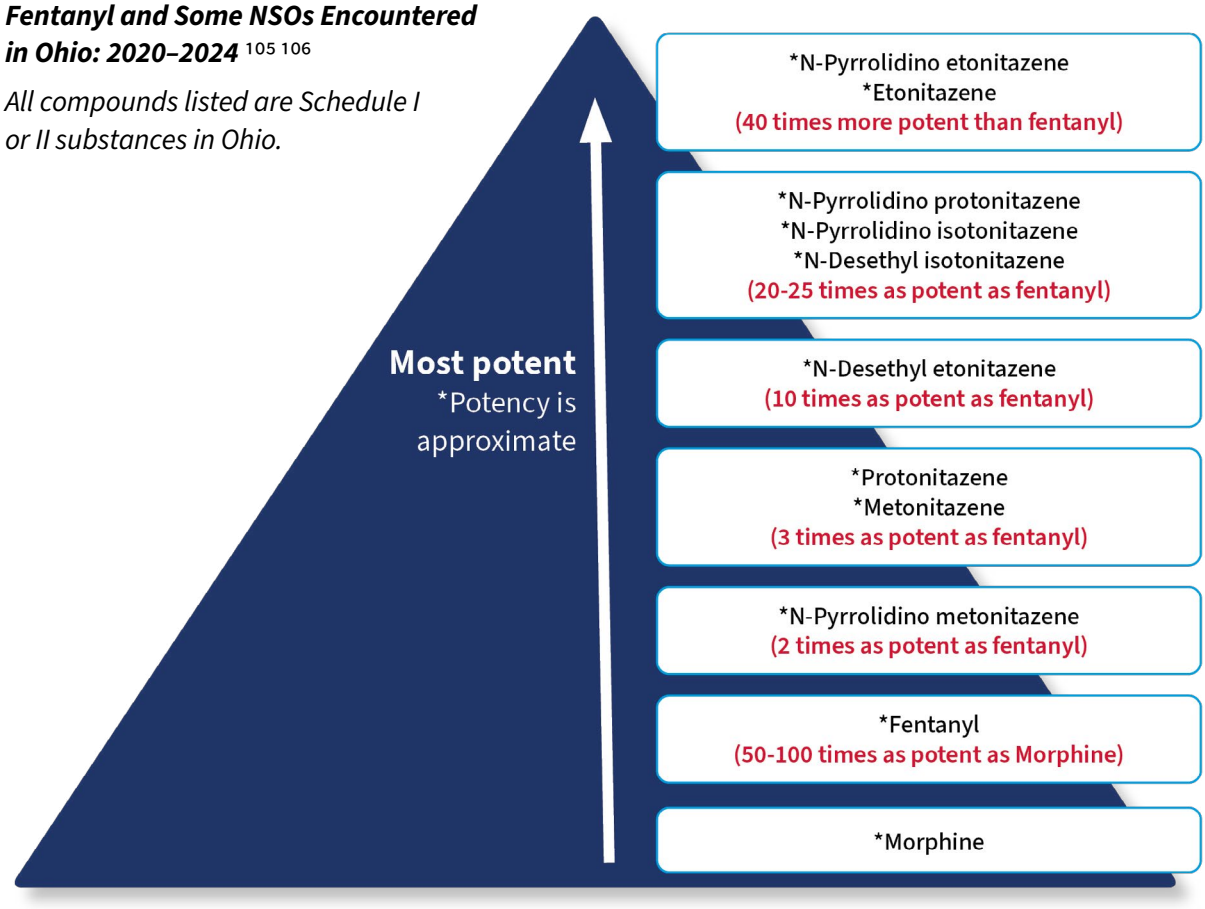
Figure 8: Percentage of Counterfeit Tablets Seized by the DEA that Contained a Potentially Lethal Dose of Fentanyl



Source: DEA. Note: Each tablet represents 10% of total tablets seized annually by the DEA.

Figure 9: Potency Comparison Between Fentanyl and Some NSOs Encountered in Ohio: 2020–2024 [105] [106]

All compounds listed are Schedule I or II substances in Ohio.



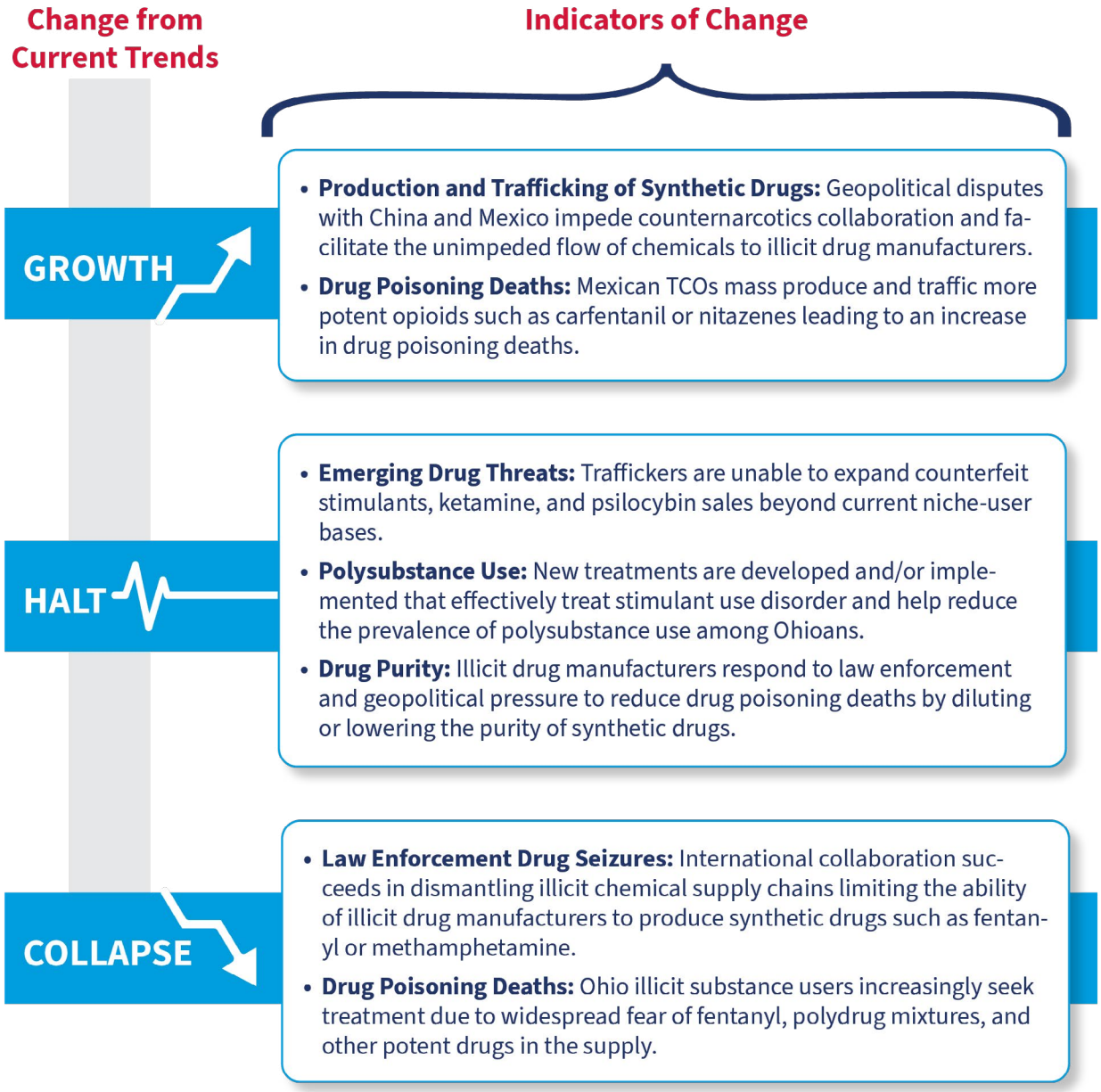
Emerging and Expanding Drug Threats

Over the next five years, Ohio law enforcement will likely encounter increasing quantities of certain drugs to include ketamine, psilocybin, and pills containing stimulants to include counterfeit prescription stimulants (e.g., counterfeit Adderall pills containing methamphetamine.) Traffickers are producing and smuggling a pink powder referred to as Tusi or "pink cocaine," which is often a combination of ketamine, MDMA, caffeine, and sometimes other drugs like cocaine, methamphetamine, or opioids, into the U.S. and Ohio (See Footnotes 3 and 5). Tusi is often encountered in the nightclub scenes in major metropolitan cities, according to the DEA (see Footnote 5). Psilocybin use among adults is increasing nationally and more cities and states across the U.S. are considering decriminalizing its use and possession.[108] As of October 2024, there is an ongoing national shortage of Adderall and record numbers of requests for prescription stimulants, according to the U.S. Food and Drug Administration.[109] Counterfeit prescription stimulant pills previously encountered in Ohio often contained methamphetamine or MDMA, according to Ohio drug chemistry laboratory reporting (see Footnote 32). The combination of these factors could create an environment where greater numbers of Ohioans are seeking prescription stimulants through alternative methods such as social media, potentially exposing them to counterfeit prescription stimulant pills containing illicit drugs. Ohio-based DTOs can acquire pill presses, commonly from Chinese vendors operating through online retail platforms, and these presses are able to produce thousands of pills in a single day that imitate legitimate prescription medication.

Response to Ohio Illicit Drug Landscape: 2025–2030

Ohio's current information sharing infrastructure will almost certainly help rapidly identify changes in the illicit drug landscape over the next five years. This will allow law enforcement, public health, and addiction treatment service providers to be proactive in preventing, disrupting, and responding to illicit drug threats across Ohio and achieving safer communities.

Figure 10: Alternative Futures for the Ohio Drug LandscapeFigure 10 is depicting alternative futures for the Ohio illicit drug supply. The indicators of change are plausible events that, if they were to occur, could alter the trajectory of current trends (through growth, collapse, etc.) in the Ohio drug landscape highlighted in the outlook.



OHIO DRUG CONTROL STRATEGY

Under section 5502.69 of the Ohio Revised Code, ONIC is charged with:

1. Coordinating law enforcement response to illegal drug activities for state agencies and acting as a liaison between state agencies and local entities for the purposes of communicating counter-drug policy initiatives.
2. Collecting, analyzing, maintaining, and disseminating information to support local, state, and federal law enforcement agencies, other government agencies, and private organizations in detecting, deterring, preventing, preparing for, prosecuting, and responding to illegal drug activities.
3. Developing and coordinating policies, protocols, and strategies that may be used by local, state, and private organizations to detect, deter, prevent, prepare for, prosecute, and respond to illegal drug activities.
4. Developing, updating, and coordinating the implementation of an Ohio drug control strategy to guide state and local governments and public agencies.

ONIC developed the following strategy for drug control efforts: Cohesive Prevention, Coordinated Disruption of Supply Networks, Collaborative Demand Reduction, and Consistent Outreach and Education.

Cohesive Prevention

Cohesive substance use prevention requires focusing on both minimizing the harms of potential drug threats and strengthening factors that make individuals less likely to engage in illicit substance use. Prevention messaging should be focused primarily on youth, adolescent, and young adult population groups. These activities allow officials and organizations to be proactive in their outreach and education efforts to equip Ohioans with the knowledge necessary to make healthy and safe choices.

Studies have shown that effective prevention programs for youth and adolescents focus on strengthening healthy beliefs, social skills, and family bonds. These programs can be delivered in school, by the family, or in community settings and can help mitigate multiple risk factors that contribute to illicit substance use, and strengthen protective factors such as parental and family engagement, family support, school connectedness, parental disapproval of substance use, and positive peer networks (see Footnotes 91 and 92).[110] [111] [112] For prevention programs to be successful, they need to be available, accessible, acceptable, of high quality, and offered by trained professionals, according to the United Nations Office of Drugs and Crime.[113] ONIC recommends focusing on the following areas as they may assist local and state officials with cohesive prevention:

- Strengthen information sharing between law enforcement, crime laboratories, coroner's offices, and health officials to facilitate the early detection of new illicit drugs and spotlight criminal actor tactics to provide decision makers with timely information that informs proactive measures.
- Explore opportunities and technologies for monitoring emerging drug threats to understand evolving trends such as enhanced information sharing with drug chemistry laboratories across Ohio and wastewater testing.
- Identify vulnerable youth and adolescent populations for family-centered prevention programs

such as those experiencing unstable housing and household disharmony, mental health disorders, and poverty.

- Adopt programs and leverage resources to promote strong social skills and healthy beliefs about illicit drug use among youth and adolescents (e.g., life skills training.)[114]
- Identify families that are experiencing multiple risk factors that could lead to illicit substance use and provide targeted interventions for parents and youth.
- School, public health, and public safety officials could identify opportunities to educate teachers on drug trends, signs of impairment, and identifying potential risk factors that could lead to illicit substance use among students.

Cohesive Prevention in Ohio

The following are examples of cohesive prevention programs and campaigns that have been implemented in Ohio or resources that are available to Ohioans.

- **Emerging Drug and Scientific Working Group (EDSWG)**: This forum is hosted by ONIC for public safety, drug chemistry/toxicology, and public health professionals to discuss emerging drugs and drug trends across Ohio. Since April 2022, early warning efforts facilitated by information shared during EDSWG meetings has led to the scheduling of 20 illicit drugs in Ohio as of June 2024. Information shared through EDSWG is synthesized and shared with law enforcement, public health, and addiction treatment service partners across Ohio through the Monthly Drug Trends Call.
- **Ohio Department of Health Project Deaths Avoided with Naloxone (DAWN)**: The Ohio Department of Health administers Project DAWN. As of October 2023, a network of 182 opioid poisoning education and naloxone distribution programs are coordinated across Ohio. From 2019 through 2023, Project DAWN distributed 783,822 naloxone kits across Ohio (see Footnote 102).
- **NaloxoneOhio**: RecoveryOhio, the Ohio Department of Health, and the Ohio Department of Mental Health and Addiction Services (OMHAS) partnered to create NaloxoneOhio with a shared goal of providing ongoing access to naloxone for all Ohioans. Naloxone can save lives by rapidly returning breathing to normal in the event of a drug poisoning. It is a critical tool in combatting the addiction crisis and making our communities safer for all Ohioans.
- **Ohio Sobriety Treatment and Reducing Trauma (START)**: START is a children-services-led initiative that has been shown, when implemented properly, to improve outcomes for both parents and children affected by child maltreatment and parental substance use disorders. The overall goal is to stabilize families harmed by parental drug use. START uses a family-centered approach and services to help children, parents, and entire families because it recognizes that substance use disorder is a family disease and recovery occurs in the context of families. As of 2022, START is operating in 54 of Ohio's 88 counties.
- **Ohio Department of Mental Health & Addiction Services K-12 Prevention Education Initiative**: The OMHAS K-12 Prevention Education Initiative empowers local communities in their efforts to help children build resiliency and reduce risk factors that contribute to the development of behavioral health conditions. It also helps train educators and related service personnel on the models and tenets of prevention of risky behaviors to include illicit substance use.
- **Start Talking**: This State of Ohio initiative can be found in the InnovateOhio digital platform that provides free resources for parents to have conversations with children about illicit drugs.

- **National Institute on Drug Abuse (NIDA) Principles of Substance Abuse Prevention for Early Childhood**: This is a free federal government resource that contains information for parents and educators designed to help them inspire learning and critical thinking in youth so that they can make informed and heathy decisions about drug use.
- **Drug Enforcement Administration (DEA) National Prescription Drug Take Back Day**: For more than a decade, the DEA has hosted prescription drug take back days every year, which allows for the anonymous disposal of unneeded medications nationwide. The sites will collect tablets, capsules, patches, and other forms of prescription drugs and vaping devices provided lithium batteries are removed.

Coordinated Disruption of Supply Networks

A primary objective for this strategy is to disrupt the networks that facilitate and traffic illicit drugs. Drug traffickers across Ohio are harnessing new technologies and tactics to insulate themselves from law enforcement interdiction and their networks are routinely spread across jurisdictional and geographic boundaries. Research shows that arresting traffickers at all levels of a DTO (e.g., wholesale supplier, retail dealer) significantly disrupts the criminal organization and can substantially reduce its revenue.[115] Ohio has 944 local police departments who are key contributors in the effort to stem the flow of illicit drugs.[116] Notably, 65% of these departments have 25 sworn personnel or less; therefore, assistance from multi-jurisdiction, state, and federal agencies augments drug interdiction capabilities at the local level (see Footnote 116). Dismantling criminal networks demands coordination. It is important for law enforcement to leverage multi-jurisdictional cooperation, intelligence collection and analysis, technology, information sharing, and subject matter experts in relevant disciplines to maintain awareness of evolving technology and criminal methods to explore best potential investigative avenues. Focusing on the following best practices may assist local and state officials in achieving coordinated disruption of supply networks:

- Use a multi-jurisdictional approach to disrupt drug supply networks with other local, state, and federal agencies when possible.
- Develop intelligence collection and collation procedures to ensure information can be analyzed and disseminated efficiently and in accordance with agency mission and goals.
- Develop personnel proficiency or expertise in specialized areas that are expected to be relevant for future drug trafficking investigations such as forensic accounting, dark web and cryptocurrency, foreign language, data science, and digital forensic evidence examination.
- Expand coordination with state and federal agencies to understand and target secondary drug transportation methods such as mail parcel, air cargo, rail, and maritime smuggling.
- Leverage resources to include digital forensics technology, intelligence analysis, analytic tools, or partnerships with agencies that can fill these gaps.
- Prioritize information sharing with public health, emergency medical services, coroners and medical examiners, and crime laboratory officials to understand trends in the illicit drug landscape in their areas of responsibility.

Coordinated Disruption of Supply Networks in Ohio

The following are examples of investigative, digital forensics, and analytical resources available to law enforcement agencies across Ohio.

- **Ohio Narcotics Intelligence Center**: ONIC, created in 2019 by Governor Mike DeWine, has personnel dedicated to providing free drug-related investigative support to local, state, and federal law enforcement across Ohio.
    - **Forensics**: ONIC Forensics supports law enforcement through the extraction and analysis of cell phones, computers, digital video recording (DVR) systems, security systems, and other electronic devices. All four ONIC locations feature state-of-the-art digital forensic tools to help law enforcement access crucial digital evidence in their cases.
    - **Intelligence**: ONIC Intelligence provides tactical and operational case support to law enforcement with specialized assistance for cryptocurrency tracing and dark web investigations, Spanish translation, forensic accounting, and drug-related violent crime case support. ONIC intelligence analysts utilize complex analytic tools to locate connections within and beyond jurisdictions, determine links between cases, uncover trends, and dismantle criminal networks.
    - **Strategic Intelligence**: The ONIC Strategic Intelligence Team analyzes the drug landscape at the global, national, and state level to analyze trends and disseminate actionable intelligence to stakeholders. The team publishes intelligence bulletins for law enforcement to assist them in identifying emerging drug threats, increasing awareness of new tactics or technologies being used by drug traffickers, or highlighting an evolving trend in the drug landscape.
- **Ohio State Highway Patrol (OSHP)**: OSHP conducts drug interdiction throughout the state on interstate highways and state roads. OSHP's Trooper Shield program is one such effort to remove criminals from the streets and conduct enforcement against drug traffickers across the state. Additionally, drug interdiction teams work with the OSHP Intelligence Unit to conduct longer-term drug trafficking investigations in tandem with local, state, and federal agencies. OSHP has a Drug Evaluation and Classification Program, which is a traffic safety program that trains drug recognition experts to detect and apprehend impaired drivers.
- **Ohio National Guard (ONG) Counterdrug Program**: The ONG Counterdrug program provides analysts for law enforcement agencies at the local, state, and federal level across Ohio to support criminal investigations involving illicit drugs. ONG analysts enhance law enforcement agencies' ability to anticipate, deter, and defeat the threat of illegal substances, trafficking, and violence in Ohio.
- **Ohio Bureau of Criminal Investigation (BCI)**: The Attorney General's BCI offers expert, impartial investigative services to local, state, and federal law enforcement agencies. BCI agents investigate a wide range of crimes, including drug trafficking. Additionally, BCI laboratory services help identify illegal drugs for law enforcement agencies across Ohio. BCI also has digital forensics and intelligence units that assist law enforcement with a myriad of criminal investigations statewide.
- **Ohio Organized Crime Investigations Commission (OOCIC)**: OOCIC assists local law enforcement agencies in combatting organized crime and corrupt activities, including drug trafficking. The Commission is composed of members of the law enforcement community and is chaired by the Ohio Attorney General.
- **Ohio Task Force Commanders Association (OTFCA)**: OTFCA shares information and provides resources to drug task forces in order to target illicit drug trafficking and associated criminal activity across Ohio.
- **Crime Gun Intelligence Centers (CGICs)**: The National CGIC initiative supports local

multidisciplinary teams in their efforts to prevent violent crime by identifying perpetrators, linking criminal activities, and identifying sources of crime guns for immediate disruption, investigation, and prosecution. This concept was developed by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) and there are currently three CGICs operating across Ohio in Columbus, Cleveland, and Cincinnati.

- **Office of Criminal Justice Services (OCJS)**: OCJS administers criminal justice grants to both state and local law enforcement agencies to provide resources to help reduce the supply of illicit drugs. It also administers and coordinates other competitive grant programs awarded to Ohio by the federal government. In 2022, Ohio drug task forces received more than $10 million towards this effort.
- **State of Ohio Law Enforcement Virtual Exchange (SOLVE)**: SOLVE is a statewide data-sharing platform for Ohio's drug task forces and law enforcement agencies that includes a case management system, a community collaboration page, data sharing, and analytics. SOLVE aims to connect disparate information across agency platforms into a statewide system that allows the data to be analyzed and deconflicted with other case information.

Collaborative Demand Reduction

Illicit drug use negatively affects personal health and also disrupts economic development, and social stability, and reduces security.[117] Development of effective policy initiatives to reduce demand for illicit drugs requires rigorous data collection and research on consumption patterns and the health, socioeconomic, and criminal-legal factors associated with illicit drug mortality.[118] Tracking and analyzing this data can assist agencies and other interested parties with identifying individuals who may be at an increased risk of experiencing drug poisoning. It is critical to fund and expand treatment programs as access to treatment for substance use disorders has been found to be associated with lower drug poisoning mortality.[119] [120] Local and state officials may focus on treatment options for individuals engaged in polysubstance use, particularly those using opioids and stimulants. Contingency management has been identified as a best practice for treating individuals with polysubstance and stimulant use disorders, according to the Department of Health and Human Services.[121] [122] Contingency management is a behavioral therapy that reinforces or rewards positive behavioral change (see Footnote 121). Focusing on the following best practices may assist local and state officials in achieving demand reduction:

- Analyze county-level data for previously stated risk factors to develop creative ways to meet population needs and mitigate the harms of illicit drugs within their jurisdictions.
- First responders, public health, and other relevant parties at the county level could collaborate to develop cross-functional teams to identify and divert or deflect individuals with substance use disorders into treatment.
- Expand access to treatment for individuals with substance use disorders across Ohio to ensure these individuals receive the necessary care and support.
- Utilize and implement evidence-based treatment approaches, specifically those that may help reduce polysubstance use featuring stimulants and opioids, such as contingency management, cognitive behavioral therapy, and medication-assisted treatment.
- Explore federal government grant options from the Substance Abuse and Mental Health Services Administration, the Centers for Disease Control and Prevention, and Department of Health and Human Services to fund demand-reduction initiatives.

Collaborative Demand Reduction in Ohio

The following programs and resources have been implemented in Ohio to reduce demand for illicit drugs or are available for Ohio residents.

- **RecoveryOhio**: RecoveryOhio was created in 2019 by Governor Mike DeWine to address the drug poisoning crisis across the state. Its mission is to create a system to help make treatment available to Ohioans in need, provide support services for those in recovery and their families, offer direction for the state's prevention and education efforts, and work with local law enforcement to provide resources to fight illicit drugs at the source.
- **RecoveryOhio Monthly Drug Trends Call**: ONIC and RecoveryOhio host a Monthly Drug Trends Call to facilitate information sharing among different stakeholder groups that are focused on minimizing the negative effects of drugs in Ohio communities. The call synthesizes data from across sectors including law enforcement, drug chemistry and toxicology, public health, mental and addiction health, and recovery specialists. This call bolsters real-time awareness of the changing Ohio illicit drug landscape and allows attendees to hear a diverse range of perspectives and information.
- **Operation Bridging Interdiction and Data-Gathering Enforcement (BRIDGE)**: Operation BRIDGE was developed based on the understanding that law enforcement actions can create a supply void that forces users to unknown dealers with unfamiliar drug products. ONIC, Ohio Department of Public Safety, and RecoveryOhio created BRIDGE to combine the resources of law enforcement and substance use treatment in a coordinated effort, focusing on the reduction of supply and demand simultaneously, prioritizing treatment for those who qualify.
- **Ohio Deflection Association (ODA)**: ODA is an association of substance use deflection programs (most notably the Quick Response Team program in Ohio). Deflection programs are partnerships that vary but can consist of law enforcement, clinicians, emergency medical services (EMS), peer support specialists, and/or other entities with a focus on providing behavioral health resources, drug poisoning prevention, treatment, and other social service referrals for individuals with substance use disorder.
- **Substance Use Deflection Center of Excellence**: Housed within the Criminal Justice Coordinating Center of Excellence at Northeastern Ohio Medical University, the Center's primary role is to collect, provide access to, and disseminate information on promising and best practices, resources, innovations, and programs that will promote progress, advance the field of deflection, and support teams around the state.
- **Ohio State Highway Patrol (OSHP) and Department of Mental Health & Addiction Services Outreach Pilot Program**: The purpose of this program is to further develop the relationship between law enforcement and mental health professionals and to connect people with mental health and addiction services. The program is being piloted in 28 counties across Ohio. Ohio State Highway Patrol troopers offer local recovery services information to everyone arrested or charged with impaired driving and/or any drug offense. Local behavioral health professionals attempt to connect with these individuals to discuss potential treatment and support options.
- **Ohio Department of Mental Health and Addiction Services (OMHAS) Substance Use Disorder Treatment**: OMHAS has funded and developed specialized programs for residents in need to include medication-assisted treatment for opioid use disorders. OMHAS partners with the Ohio Department of Rehabilitation and Correction on projects aimed at assisting incarcerated

individuals with substance use disorders.

- **Alcohol, Drug Addiction, and Mental Health (ADAMH) Boards**: Ohio has a county-operated, state-supervised, behavioral health system made up of area behavioral health authorities, or boards. These boards plan, evaluate, and fund mental health and addiction services locally. The boards contract with a wide range of providers for prevention, treatment, and recovery support for their community members.
- **Specialized Dockets**: Ohio has several specialized dockets that offer a therapeutically oriented judicial approach to providing court supervision and appropriate treatment to individuals struggling with substance use. Examples of these dockets include general drug court and specialized drug courts for veterans and formerly incarcerated individuals.
- **Ohio Department of Rehabilitation and Correction (ODRC)**: ODRC has partnered with OMHAS to introduce treatment programs featuring medication-assisted treatment and psychosocial support for individuals with documented substance use disorders within the state's prison system. These programs seek to improve treatment outcomes for offenders, instill hope and opportunity for a life without substance use, and provide a seamless holistic approach to alcohol and other drug treatment.
- **State of Ohio Board of Pharmacy Ohio Automated Rx Reporting System (OARRS) Early Intervention Program**: OARRS Early Intervention is a deflection program implemented by the Ohio Board of Pharmacy used to identify "doctor shoppers," individuals who visit multiple physicians to obtain multiple prescriptions, and offer them the opportunity to begin substance-use treatment rather than charging them with a felony.

Consistent Outreach and Education

Conducting outreach to educate individuals and sectors about the illicit drug landscape is crucial to an effective drug control strategy. The 2022 National Drug Control Strategy published by the Office of National Drug Control Policy frequently references outreach and education efforts as contributing to prevention, supply disruption, and demand reduction (see Footnote 120). ONIC and other Ohio-based organizations working to reduce the harms associated with illicit drugs are focused on a holistic approach that provides communities and interested parties across Ohio with information related to prevention strategies, the evolving drug landscape, emerging drug threats, and treatment options. Additionally, many of these organizations partner with academic institutions to research and evaluate programs covering prevention, treatment, and enforcement activities. For example, the Northeastern Ohio Medical University's substance-use deflection center conducts monthly trainings and provides a newsletter highlighting research and best practices across these areas on a recurring basis. Focusing on the following best practices may assist local and state officials in performing consistent outreach and education:

- Law enforcement, health officials, coroners, addiction treatment specialists, prosecutors, academics, non profit organizations, and forensic scientists could host and present at conferences featuring diverse audiences to provide timely, relevant information on changes in the illicit drug landscape.
- Law enforcement, health officials, coroners, addiction treatment specialists, forensic scientists, and non profit organizations could distribute public awareness information in accordance with agency media procedures and best practices.

- Law enforcement, health officials, coroners, addiction treatment specialists, forensic scientists, and non profit organizations could harness social media platforms to ensure their messages are reaching a broad audience.
- Stakeholders could develop outreach campaigns on specific issues within the drug landscape tailored for certain audiences.

Consistent Outreach and Education in Ohio

The following are programs and initiatives implemented in Ohio that advance the outreach and education mission or are resources that are available to Ohioans.

- **ONIC Public Safety Bulletins**: ONIC began publishing public bulletins in 2021 to provide information to Ohioans on threats such as polydrug mixtures, the use of emojis and slang by drug traffickers, counterfeit prescription pills, fentanyl forms, and emerging drugs like xylazine and new synthetic opioids. Public bulletins with immediate impact to health and safety are translated into multiple languages to extend ONIC's messaging into more Ohio communities.
- **RecoveryOhio Early Warning Dashboard**: The first-of-its-kind dashboard draws upon a variety of data sources to pinpoint ZIP codes at increased risk for drug poisonings up to 30 days in advance — providing local leaders with a critical window for intervention. In addition to its predictive capability, the dashboard also features resources across the state to help overcome barriers to treatment and illegal drug prevalence data.
- **"Reel Talk With ONIC"**: ONIC created a video series titled, "Reel Talk With ONIC," for the Ohio DPS Instagram and ONIC's Facebook and X (Twitter) accounts to ensure critical information is disseminated through a variety of media to reach a broader audience. In 2023, four videos were developed and disseminated on topics including counterfeit pills containing fentanyl, fentanyl forms encountered in Ohio and North America, cryptocurrency scams, and emojis and slang used in drug communications. As of August 2024, two additional videos were released highlighting carfentanil's presence in the illicit drug supply and increase in tranq-dope and benzo-dope drug combinations.
- **ONIC Drug Summit and Training**: ONIC's annual drug summit provides a free learning opportunity for criminal justice professionals who work within the drug landscape and features presentations on topics such as investigative case studies, drug case prosecutions, drug chemistry, and firearm tracing investigations. ONIC has organized other training opportunities open to law enforcement to develop new skills and knowledge to more effectively conduct investigations related to disrupting supply networks. Training topics include Mexican TCOs, outlaw motorcycle gangs, digital forensics, and analytic software tools.
- **ONIC Speaking Engagements**: From 2020 through August 2024, ONIC has conducted more than 200 presentations for groups including criminal justice professionals, public health officials, attorney and judicial groups, elected officials, school safety administrators, and students. Presentations have covered emerging drugs, criminal actor tactics, ONIC capabilities, and resources available for interested parties. ONIC has received multiple requests for subsequent speaking engagements following these presentations and has helped bring timely and relevant information on drug trends and available resources to audiences across Ohio.
- **Drug Resilience Education Awareness Mentorship (DREAM)**: The Ohio DPS Law Enforcement

Support Office (LESO) is developing a video series for grades K-12 that focuses on developing resiliency, decision-making skills, and healthy attitudes. The DREAM video series for grades K-3, 4-5, and 6-8, are live on the Ohio DPS webpage. Videos for grades 9-12 are currently in development.

- **State of Ohio Integrated Behavioral Health Dashboard**: RecoveryOhio developed a behavioral health dashboard with data from multiple agencies accessible in a single location. The dashboard provides a county- and state-level picture of long-term trends in opioid use disorder, overdoses, and treatment.
- **National Red Ribbon Week**: National Red Ribbon Week is an initiative that takes place each year from Oct. 23 through Oct. 31 and was developed by the National Family Partnership devoted to drug awareness and drug-use prevention. Its webpage houses free resources, activities, and ways to get involved with Red Ribbon Week in your local area.
- **DEA One Pill Can Kill Initiative**: This DEA nationwide initiative provides free information and data about fake pills and fentanyl curated for teenagers, parents and caregivers, and teachers. It also has social media resources, campaign templates, and a partner toolkit with materials for community organizations to use to spread the message about the dangers of fake pills and fentanyl.

Recommended Strategies for Local Officials and Jurisdictions

The various programs, initiatives, and resources highlighted within this drug control strategy could assist local officials in preventing, disrupting, reducing, and responding to illegal drug activity in their communities. The following bullets provide a key focus area that local officials could prioritize from each of the four pillars outlined within the strategy.

- **Identify vulnerable population groups within a local jurisdiction for targeted messaging based on risk factors identified in this report.** There are numerous free resources discussed in this report that can be accessed by local officials and community members to aid in delivering cohesive messaging to prevent illicit substance use.
- **Leverage multi-jurisdictional, state, and federal task forces, resources, and partnerships to disrupt complex drug supply networks.** Drug traffickers do not adhere to geographic boundaries when engaging in criminal activity.
- **Prioritize collaboration with state organizations to develop, implement, and evaluate strategies to reduce polysubstance use and overall demand for illicit drugs within a local jurisdiction to help mitigate associated barriers to treatment and recovery.** Polysubstance use negatively affects an individual's ability to enter into a sustained recovery.
- **Prioritize the use of diverse media strategies that align with agency procedures to inform constituents of information that is critical to public safety.** Communities across Ohio need relevant, accurate, and timely information on evolving drug trends.

APPENDIX

This section provides data and information that readers may find useful for additional context and awareness regarding trends in the Ohio drug landscape. Emergency department and emergency management data includes 2023 statistics, but these should be treated as preliminary and subject to change. Data presented below includes reporting on unintentional drug poisoning deaths and rates, emergency department surveillance on visits for a suspected drug poisoning, emergency management service naloxone administrations and naloxone units distributed by the ODH, and law enforcement drug seizures. Unintentional drug poisoning death data is provided from 2017 through 2022.

Analytic Language

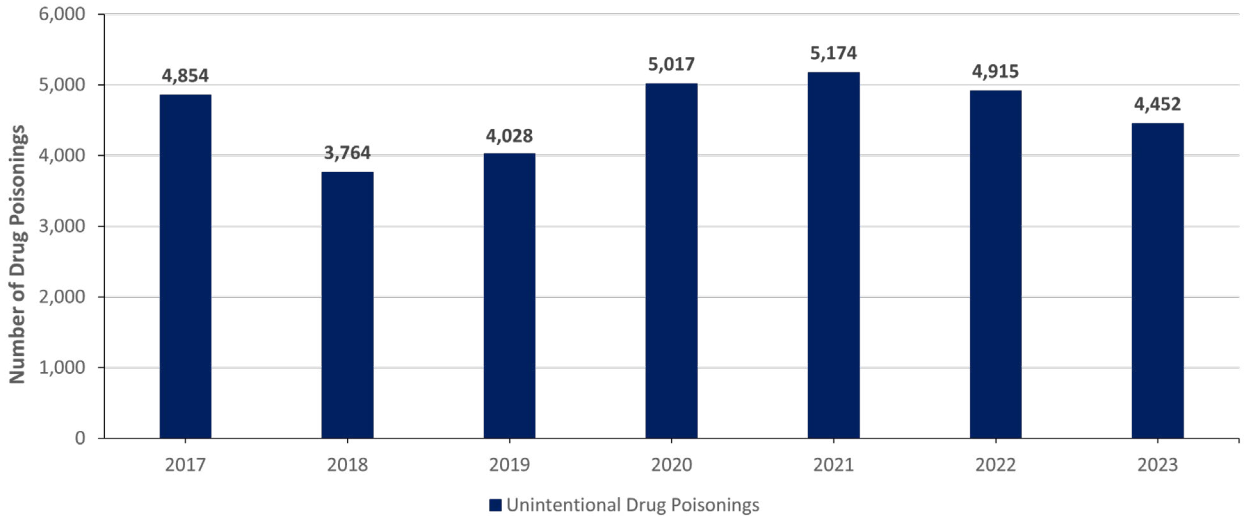
Analytic judgements are included throughout this product and indicate the likelihood or uncertainty of an occurrence. These judgements are derived from review of the available evidence and information at the time of the analysis. The following terms indicate the presence of a judgement: unlikely, probably, likely, very likely, and almost certainly.

Public Health and Law Enforcement Seizure Data

Unintentional Drug Poisoning Deaths

Figure 11: Ohio Unintentional Drug Poisoning Deaths: 2017–2023

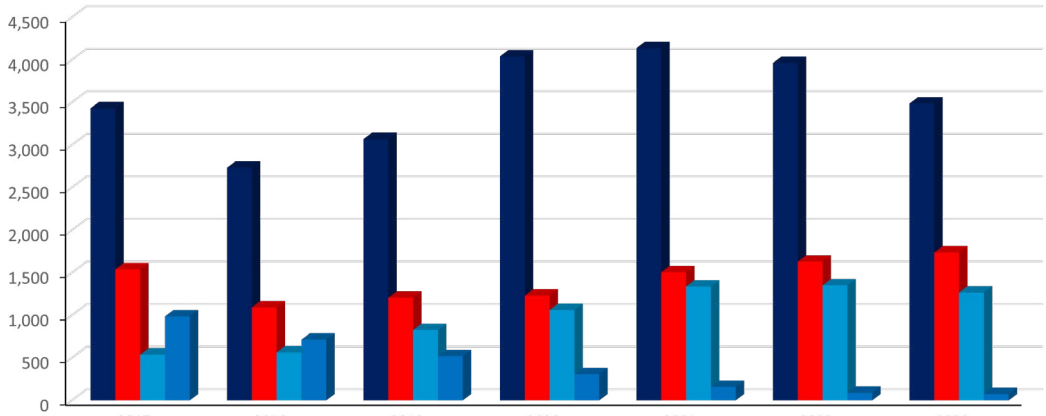
**Data from the Ohio Department of Health*



Unintentional Drug Poisoning Deaths by Drug Type

Figure 12: Ohio Unintentional Drug Poisoning Deaths by Drug Type: 2017–2023

**Data from the Ohio Department of Health*

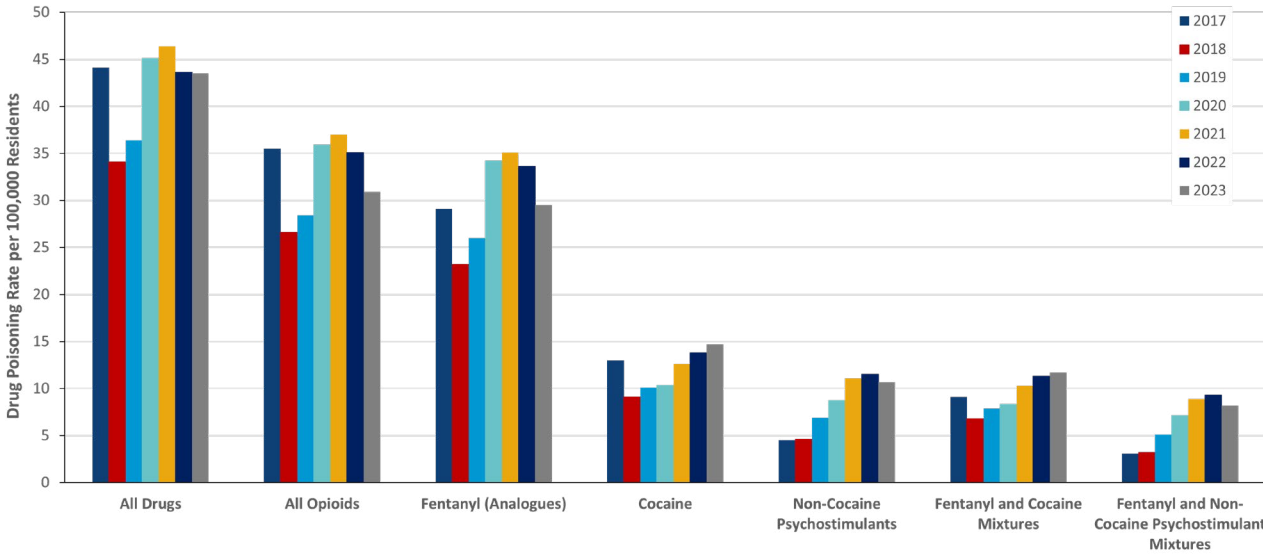


	2017	2018	2019	2020	2021	2022	2023
Fentanyl & Analogues	3,431	2,733	3,070	4,041	4,137	3,963	3,486
Cocaine	1,540	1,092	1,206	1,231	1,506	1,629	1,738
Non-Cocaine Psychostimulants	537	564	827	1,062	1,338	1,352	1,267
Heroin	987	714	520	308	159	90	75

Unintentional Drug Poisoning Death Rates

Figure 13: Ohio Drug Poisoning Death Rates: 2017–2023

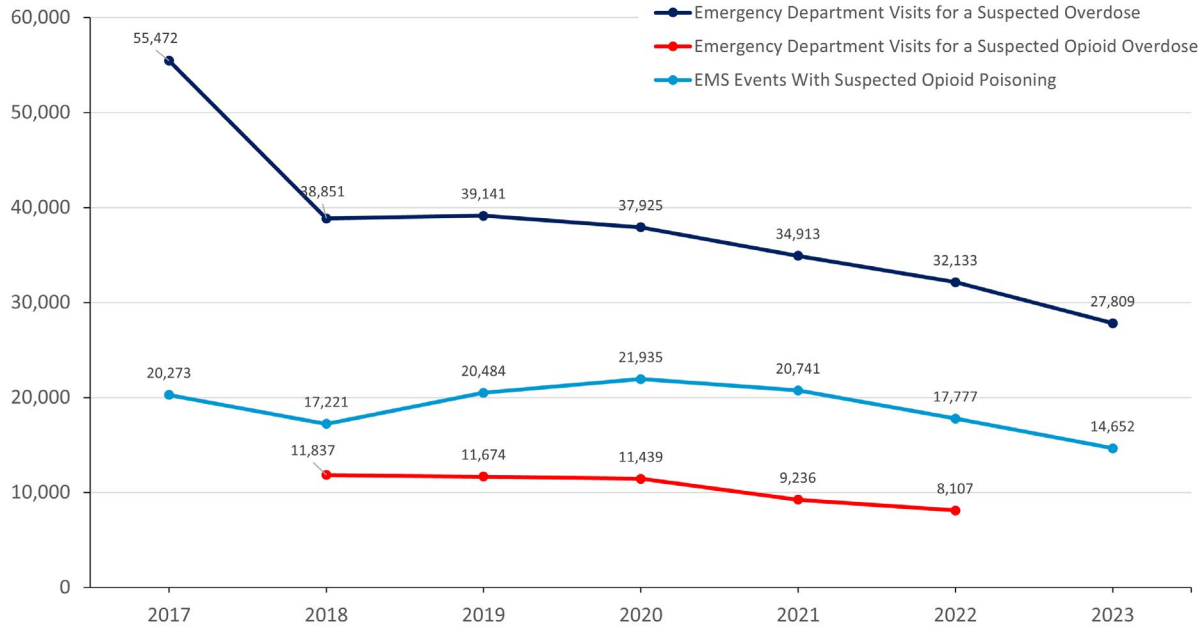
**Drug poisoning death data from the Ohio Department of Health; rates for specific drug categories determined by ONIC using 2020 U.S. census data; population files from the federal government reflecting new national standards and methodologies were available for 2020 through 2022. Because of this change, the Ohio Department of Health advised caution when comparing rates from years prior to 2020.*



Emergency Medical Service and Hospital Emergency Department Visit Data

Figure 14: Ohio Emergency Service Health Data: 2017–2023

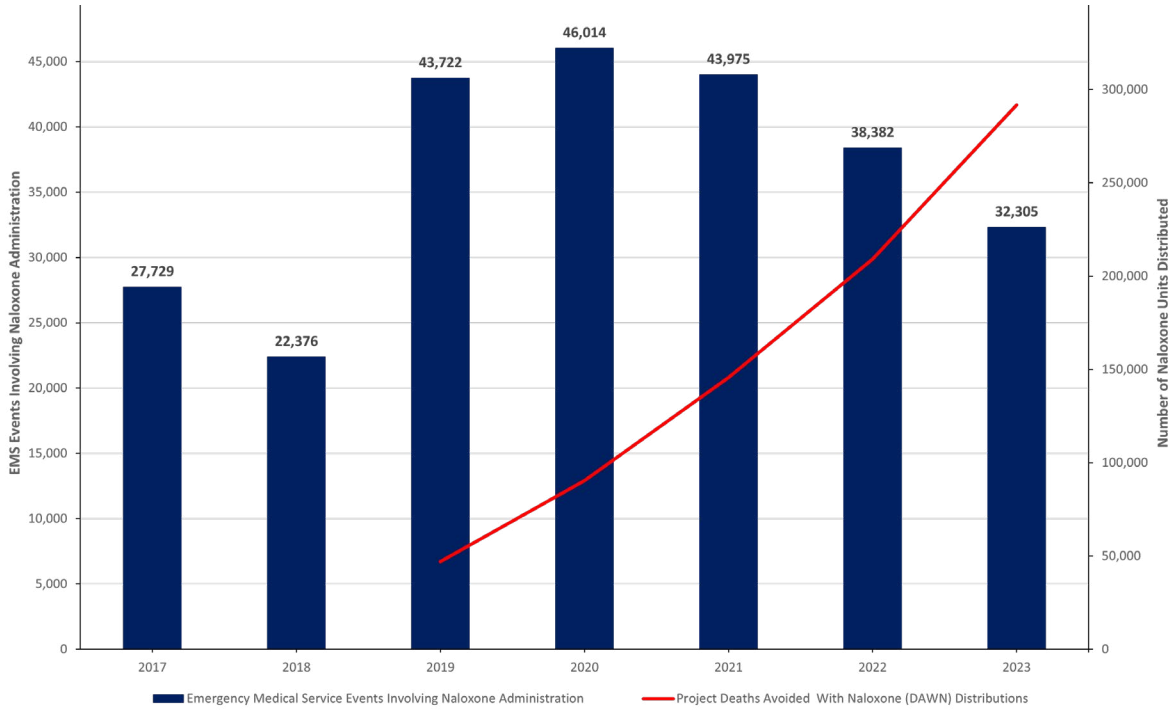
**Data from the Ohio Department of Health*



EMS Naloxone Administrations and Project DAWN Naloxone Distributions

Figure 15: Naloxone Administrations and Distribution in Ohio: 2017–2023

**Data from the Ohio Emergency Management Service and Ohio Department of Health*



Law Enforcement Drug Seizures

Below are the seizure statistics from two groups comprised of multi-jurisdictional task forces and a state agency from 2019 through 2022. Ohio Organized Crime Investigations Commission (OOCIC), the Office of Criminal Justice Services Ohio Multi-Jurisdictional Drug Task Forces, and the Ohio State Highway Patrol (OSHP) provided drug seizure statistics. The numbers below do not represent the totality of illicit drug seizures by all law enforcement across Ohio.

Figure 16: Seizures by Ohio Law Enforcement: 2019–2022[123] [124] [125]

**Drug weights are in pounds; drugs identified in seizure statistics are preliminary and have not yet been confirmed by forensic laboratory testing ; fentanyl quantities may include powder, pills, or both forms of the drug*

Item Seized	Ohio Organized Crime Investigations Commission (OOCIC) Task Forces	Office of Criminal Justice Services (OCJS): Ohio Drug Task Forces	Ohio State Highway Patrol	Totals
Crack / Cocaine	1,172	2,366	1,635	**5,173**
Fentanyl	743	940	771	**2,454**
Heroin	235	328	289	**852**
Methanmphetamine	1,168	3,122	1,277	**5,567**
Firearms	1,374	16,464	6,719	**24,557**
Currency	$56,062,011	N/A	$77,699,336	**$133,761,347**

Resources

Below are some additional resources for Ohio law enforcement agencies to obtain support, for residents to report suspicious activity related to drugs or drug trafficking, or that can provide Ohioans assistance in a time of crisis. Digital links to these resources are embedded with the titles.

Ohio Narcotics Intelligence Center

- ONIC Drug Tip Line: 1-833-OHIO-NIC (644-6642)
- ONIC Drug Tip Email: ONICDrugTips@dps.ohio.gov
- ONIC General Email: ONIC@dps.ohio.gov

The Ohio State Highway Patrol's 24/7 Watch Center and Intelligence Unit

- Hub Phone: (614) 466-2660
- Hub Email: OSPHub@dps.ohio.gov

Ohio Department of Mental Health and Addiction Services 988 Suicide and Crisis Lifeline in Ohio

- Phone or Text: 988
- Email: 988ohio@mha.ohio.gov

Glossary of Terms

Alternative Futures: A systematic method for identifying alternative trajectories by developing plausible events based on critical uncertainties to inform and illuminate potential outcomes.

Benzodiazepine: A class of medications that slow down activity in the brain and nervous system most often used for treating anxiety and related mental health conditions. Benzodiazepines are Schedule IV controlled substances in Ohio and are only available with a prescription.

Cocaine: A stimulant that comes from the coca leaf and is most commonly encountered in a white powder form. It causes central nervous system excitement and can alter brain structure and function if used repeatedly. Cocaine is a Schedule II controlled substance in Ohio.

Controlled Substance: A substance that is subject to regulation under the Controlled Substances Act. A substance can be controlled at the state or federal level, or both. The factors that determine into which schedule a substance should be placed, or whether it should be decontrolled or rescheduled are:

1. Its actual or relative potential for abuse.
2. Scientific evidence of its pharmacological effect, if known.
3. The state of current scientific knowledge regarding the drug or other substance.
4. Its history and current pattern of abuse.
5. The scope, duration, and significance of abuse.
6. What, if any, risk there is to public health.
7. Its psychic or physiological dependence liability.
8. Whether the substance is an immediate precursor of a substance already controlled.

Controlled Substances Act (CSA): The CSA places all substances, which were in some manner regulated under existing federal law, into one of five schedules. It also provides a mechanism for substances to be controlled (added to or transferred between schedules) or decontrolled (removed from control).

1. Schedule I Controlled Substances: Substances that have no currently accepted medical use in the United States, a lack of accepted safety under medical supervision, and a high potential for abuse.
2. Schedule II Controlled Substances: Substances that have a high potential for abuse, which may lead to severe psychological or physical dependence.
3. Schedule III Controlled Substances: Substances that have a potential for abuse less than I or II, and abuse may lead to moderate or low physical dependence or high psychological dependence.
4. Schedule IV Controlled Substances: Substances that have a low potential for abuse relative to Schedule III.
5. Schedule V Controlled Substances: Substances that have a low potential for abuse and consist primarily of preparations containing limited quantities of certain narcotics.

Drug Trafficking Organizations (DTO): Complex organizations with defined command-and-control structures that produce, transport, and/or distribute large quantities of one or more illicit drugs.

Fentanyl: A synthetic opioid that can be up to 50 times stronger than heroin and 100 times stronger than morphine. They are two types of fentanyl: pharmaceutical fentanyl and illicitly-manufactured fentanyl. Pharmaceutical fentanyl is prescribed by doctors to treat severe pain, especially after surgery. Fentanyl is a Schedule II controlled substance.

Hallucinogens: Hallucinogenic (psychedelic or dissociative) drugs can temporarily alter a person's mood, thoughts, and perceptions. Includes plant-based or synthetic drugs such as LSD, psilocybin, DMT, and mescaline. Hallucinogenic (psychedelic or dissociative) drugs can temporarily alter a person's mood, thoughts, and perceptions. The hallucinogenic drugs listed previously are Schedule I controlled substances.

Heroin: A semi-synthetic opioid made from morphine, which is a natural substance taken from the seed of opium poppy plants. It is commonly encountered in white or brown powder form, or a black tar-like substance. Heroin is a Schedule I controlled substance.

Medication Assisted Treatment (MAT): The use of medications in combination with counseling and behavioral therapies to treat individuals with opioid use disorder, which can help some people sustain recovery.

Medetomidine: A sedative with pain-relieving properties similar to xylazine that is approved for use in surgery by veterinarians for animals. Medetomidine is currently not a controlled substance.

Methamphetamine: A powerful, highly addictive stimulant that affects the central nervous system. It typically is encountered in a form that looks like glass fragments or blueish-white rocks. It is chemically similar to amphetamine, a drug used to treat attention-deficit hyperactivity disorder (ADHD). Methamphetamine is a Schedule II controlled substance.

Naloxone: A medicine that rapidly reverses an opioid overdose by attaching to opioid receptors in the brain and blocking the effects of other opioids.

New Psychoactive Substances (NPS): Synthetic recreational drugs that mimic the psychoactive effects of conventional recreational drugs. They are created through modifications to their chemical structures in order to circumvent drug control laws and have been sold in headshops, and on the open and dark web. Common substances that fall under this term can include: Cannabinoids (which mimic the effects of THC) and cathinones (which mimic the effects of amphetamines and cocaine). Many of these are not controlled substances when first introduced into the drug supply due to the nature of chemical modification and drug scheduling.

New Synthetic Opioids (NSOs): A sub-group of opioids under the umbrella of NPSs that can rival and exceed the potency of fentanyl. Many of these are Schedule I controlled substances in Ohio.

Opioids: Provide pain relief and include natural (e.g., morphine), semi-synthetic (e.g., heroin), and fully synthetic (e.g., fentanyl) substances.

Opioid Use Disorder (OUD): A problematic pattern of opioid use leading to clinically significant impairment or distress.

Precursor Chemicals: Chemicals that become incorporated at the molecular level into a narcotic drug or psychotropic substance and reagents and solvents used in the manufacturing of such narcotics and psychotropic substances.

Pre-Precursor Chemicals: Chemicals that enable the production of a chemical (precursor) that can be used to manufacture the desired psychotropic substance.

Polydrug Mixtures: Combinations of two or more drugs and/or drug classes and a common method through which drug traffickers introduce new substances into the illicit drug supply.

Polysubstance Use: The use of two or more drugs taken together or within a short time period. Polysubstance use can be intentional or unintentional.

1. Intentional use can occur to experience the combined effects of two different drug classes or to limit the negative effects of one of the substances with the use of the other.
2. Unintentional use is when a drug is introduced into a mixture with a separate drug without the user's knowledge.

Psychostimulants: Include several chemical classes (e.g., methamphetamine) that work by activating the brain reward pathways. Continued use can lead to persistent changes in the brain that can negatively affect memory, learning, decision making, and judgment.

Transnational Criminal Organizations (TCO): A globalized networked structure that is entrepreneurial in nature seeking to take advantage of both criminal and licit financial opportunities and avoid unnecessary risks.

Substance Use Disorder (SUD): A serious mental health condition where people are unable to stop drug use, even if it is detrimental to their health.

Xylazine: A sedative with pain-relieving effects that is approved for use in animals by veterinarians. Xylazine is a Schedule III controlled substance in Ohio and not controlled at the federal level.

References

1 Ohio Department of Health. (2023). Ohio Unintentional Drug Overdose Reports: 2017-2022. Retrieved December 19, 2023. https://odh.ohio.gov/know-our-programs/violence-injury-prevention-program/injury-data/injury-data.

2 Center for Disease Control and Prevention (CDC) (2022). Polysubstance Use Facts. Retrieved May 15, 2023. Available at https://www.cdc.gov/stop-overdose/caring/polysubstance-use.html?CDC_AAref_Val=https://www.cdc.gov/stopoverdose/polysubstance-use/index.html.

3 Ohio Narcotics Intelligence Center (ONIC). (2023). Case work.

4 Compiled Ohio Law Enforcement Reporting. (2023).

5 Drug Enforcement Administration (DEA). (2024). 2024 National Drug Threat Assessment. Retrieved May 23, 2024. Available at https://www.dea.gov/sites/default/files/2024-05/5.23.2024%20NDTA-updated.pdf.

6 Drug Enforcement Administration (DEA). (2021). 2020 National Drug Threat Assessment. Retrieved May 20, 2023. Available at https://www.dea.gov/sites/default/files/2021-02/DIR-008-21%202020%20National%20Drug%20Threat%20Assessment_WEB.pdf.

7 Felbab-Brown, V. (2022). China and Synthetic Drug Control: Fentanyl, Methamphetamines, and Precursors. Brookings Institute. Retrieved March 30, 2023. Available at https://www.brookings.edu/wp-content/uploads/2022/03/FP_20221107_drug_trafficking_felbab_brown.pdf.

8 RAND Corp. (2022). United States of America Commission on Combating Synthetic Opioid Trafficking. Retrieved November 2, 2022. Available at https://www.rand.org/pubs/external_publications/EP68838.html.

9 Dudley, S. et al. (2023). The Flow of Precursor Chemicals for Synthetic Drug Production in Mexico. Insight Crime. Retrieved February 23, 2024. Available at https://insightcrime.org/wp-content/uploads/2023/05/The-Flow-of-Precursor-Chemicals-for-Synthetic-Drug-Production-in-Mexico-InSight-Crime-March-2023-3.pdf.

10 National Center for Health Statistics (NCHS) National Vital Statistics System, Mortality (2018). Drug Overdose Deaths in the United States, 1999-2017. Centers for Disease Control and Prevention. Retrieved March 5, 2023. Available at https://www.cdc.gov/nchs/data/databriefs/db329_tables-508.pdf#3.

11 Rembert, M., Betz, M., Feng, B., & Partridge, M. (2017). Taking Measure of Ohio's Opioid Crisis. The Ohio State University Swank Program in Rural-Urban Policy. Retrieved December 20, 2022. Available at https://aede.osu.edu/sites/aede/files/publication_files/Swank%20-%20Taking%20Measure%20of%20Ohios%20Opioid%20Crisis.pdf.

12 The National Institute for Health Care Management. (2020). The Evolution of the Opioid Crisis: 2000 - 2018. Retrieved January 6, 2023. Available at https://nihcm.org/publications/the-evolution-of-the-opioid-crisis-2000-2018.

13 Office of National Drug Control Policy. (2011). Epidemic: Responding to America's Prescription Drug Abuse Crisis. Retrieved February 18, 2023. Available at https://obamawhitehouse.archives.gov/sites/default/files/ondcp/issues-content/prescription-drugs/rx_abuse_plan.pdf.

14 Suryaprasad, A.G., White, J. Z., & Xu. F., et al. (2014). Emerging epidemic of hepatitis c virus infections among young nonurban persons who inject drugs in the United States. Clinical Infectious Diseases, 2006-2012. 59(10), 1411-1419. Retrieved March 27, 2023. https://doi.org/10.1093/cid/ciu643.

15 Jones, C. M., Logan, J., Gladden, R. M., & Bohm, M. K. (2015). Vital Signs: Demographic and Substance Use Trends Among Heroin Users – United States, 2002 - 2013. Morbidity and Mortality Weekly, 64(26), 719-725. Retrieved March 26, 2024. Available at https://pubmed.ncbi.nlm.nih.gov/26158353/.

16 Drug Enforcement Administration (DEA). (2015). 2015 National Drug Threat Assessment Summary. Retrieved May 20, 2023. Available at https://www.dea.gov/sites/default/files/2018-07/2015%20NDTA%20Report.pdf.

17 Drug Enforcement Administration (DEA). (2020). Fentanyl Drug Fact Sheet. Retrieved June 5, 2023. https://www.dea.gov/sites/default/files/2020-06/Fentanyl-2020_0.pdf.

18 National Institute of Health Care Management. (2022). Charting the Stimulant Overdose Crisis & The Influence of Fentanyl. Retrieved June 4, 2023. Available at https://nihcm.org/publications/stimulant-drug-overdose-deaths-2022-update.

19 Center for Forensic Science Research Education (CFSRE). (2024). Sentinel Snapshot: Polydrug Counterfeit Fentanyl Tablets. Retrieved February 27, 2024. Available at https://www.cfsre.org/images/content/reports/public_alerts/Sentinel_Snapshot_Counterfeit_Fentayl_Tablets_Final_Feb_2024_CFSREV2.pdf.

20 Ondocsin, J., Holm, N., Mars, S. G., & Ciccarone, D. (2023). The motives and methods of methamphetamine and heroin co-use in West Virginia. Harm Reduction Journal. 20 (88). Retrieved September 22, 2023. https://doi.org/10.1186/s12954-023-00816-8.

21 Millennium Health. (2024). Millennium Health Signals Report Volume 6. Retrieved February 20, 2024. Available at https://www.millenniumhealth.com/signalsreport/.

22 Opioid Treatment Providers. (2024). Discussion on Methamphetamine and its Effects on Opioid Treatment. Ohio Department of Mental Health and Addiction Services.

23 Frost, M. C., Lampert, H., Tsui, J. I., Iles-Shih, M. D., & Williams, E. C. (2021). The impact of methamphetamine/amphetamine use on receipt and outcomes of medications for opioid use disorder: a systematic review. Addiction Science & Clinical Practice, 16 (62). Retrieved January 17, 2024. https://doi.org/10.1186/s13722-021-00266-2.

24 Breland, H., Larkins, S., Antonini, V., Freese, T., McGovern, M., Dunn, J., Rawson, R. (2023). Stimulant use among patients in opioid treatment settings: Provider perspectives. Journal of Substance Use and Addiction Treatment, 151. Retrieved December 28, 2023. https://doi.org/10.1016/j.josat.2023.209012.

25 United States Attorney's Office Northern District of Ohio. (2023). Lorain Man Sentenced to 14 Years for Possessing Methamphetamine and Being a Felon in Possession of a Firearm. Retrieved December 13, 2023. Available at https://www.justice.gov/usao-ndoh/pr/lorain-man-sentenced-14-years-possessing-methamphetamine-and-being-felon-possession.

26 Rohrig, T. P. (2019). Tolerance. Postmortem Toxicology. Ch. 15, 221-240. Retrieved May 6, 2024. Available at https://www.sciencedirect.com/science/article/abs/pii/B9780128151631000150.

27 Volkow, N. D., & Blanco, C. (2021). The Changing Opioid Crisis: development, challenges, and opportunities. Molecular Psychiatry, 26(1), 218-233. Retrieved June 16, 2024. doi:10.1038/s41380-020-0661-4. Available at https://pmc.ncbi.nlm.nih.gov/articles/PMC7398847/pdf/nihms-1551700.pdf.

28 National Harm Reduction Coalition. (2024). Opioid Overdose Basics: Overdose Risks & Prevention. Retrieved June 23, 2024. Available at https://harmreduction.org/issues/overdose-prevention/overview/overdose-basics/opioid-od-risks-prevention/.

29 Ohio Narcotics Intelligence Center (ONIC). (2021). Warning: Dangerous Counterfeit Prescription Tablets Found in Ohio. Available at https://onic.ohio.gov/information-and-education/public-safety-bulletins/01-public-safety-bulletins.

30 Center for Disease Control and Prevention. (2023). SUDORS Dashboard: Fatal Overdose Data. Retrieved April 2, 2024. Available at https://www.cdc.gov/overdose-prevention/data-research/facts-stats/sudors-dashboard-fatal-overdose-data.html?CDC_AAref_Val=https://www.cdc.gov/drugoverdose/fatal/dashboard/index.html.

31 Gribble, R. (2017, January 31). Prosecutor Warns of Counterfeit Pills Containing Fentanyl on the Street. NBC 4. Retrieved March 20, 2023. Available at https://www.nbc4i.com/news/prosecutor-warns-of-counterfeit-pills-containing-fentanyl-on-the-street/1064830957/.

32 Ohio Narcotics Intelligence Center. (2023). Data Shared by Ohio Crime Laboratories: 2017 - 2023.

33 Palamar, J. J., Fitzgerald, N., Carr, T. H., Cottler, L. B., & Ciccarone, D. (2024). National and regional trends in fentanyl seizures in the United States, 2017 - 2023. International Journal of Drug Policy. Retrieved March 31, 2024. https://doi.org/10.1016/j.drugpo.2024.104417.

34 Drug Enforcement Administration (DEA). (2023). DEA One Pill Can Kill. Retrieved January 4, 2024. Available at https://www.dea.gov/onepill.

35 Kiyatkin, E. A. (2019). Respiratory depression and brain hypoxia induced by opioid drugs: morphine, oxycodone, heroin, and fentanyl. Neuropharmacology, 15 (1), 219-226. Retrieved February 23, 2024. https://doi.org/10.1016/j.neuropharm.2019.02.008.

36 Ohio Narcotics Intelligence Center (ONIC). (2023). Fentanyl Forms Encountered in Ohio. 230307-0822024. Available at https://onic.ohio.gov/information-and-education/public-safety-bulletins/01-public-safety-bulletins.

37 Ohio Substance Abuse Monitoring (OSAM) Network. Surveillance of Drug Use Trends in the State of Ohio: June 2023. Retrieved January 17, 2024. Available at https://dam.assets.ohio.gov/image/upload/mha.ohio.gov/ResearchandData/DataandReports/OSAM/FINAL-OSAM-Drug-Trend-Report-June-2023.pdf.

38 United States Sentencing Commission. (2021). Fentanyl and Fentanyl Analogues: Federal Trends and Trafficking Patterns. Retrieved March 20, 2024. Available at https://www.ussc.gov/sites/default/files/pdf/research-and-publications/research-publications/2021/20210125_Fentanyl-Report.pdf.

39 Drug Enforcement Administration (DEA). (2018). Carfentanil: A Dangerous New Factor in the U.S. Opioid Crisis. Retrieved March 6, 2023. Available at https://www.dea.gov/sites/default/files/2018-07/hq092216_attach.pdf.

40 United States Economic and Security Commission Review. (2021). Illicit Fentanyl from China: An Evolving Global Operation. Retrieved November 4, 2023. Available at https://www.uscc.gov/sites/default/files/2021-08/Illicit_Fentanyl_from_China-An_Evolving_Global_Operation.pdf.

41 United Nations Office of Drugs and Crime. (2023). Global Report on Cocaine 2023. Retrieved August 9, 2023. Available at https://www.unodc.org/documents/data-and-analysis/cocaine/Global_cocaine_report_2023.pdf.

42 Vyas, K. (2023, July 14). U.S. Suspends Colombia Drug Crop Survey Program as Coca Output Rises. Wall Street Journal. Retrieved July 15, 2023. Available at https://www.wsj.com/articles/u-s-suspends-colombia-drug-crop-survey-program-as-coca-output-rises-ae3ff048?mod=Searchresults_pos3&page=1.

43 Vincent Fernandez, B. (2024, January 25). Record Seizures in Bolivia Suggest Growing Role in Cocaine Exports. Insight Crime. Available at https://insightcrime.org/news/record-seizures-in-bolivia-suggest-growing-role-in-cocaine-exports/.

44 Richards, J. R., & Le, J. K. (2023). Cocaine Toxicity. National Institute of Health (NIH) Library of Medicine. Retrieved December 12, 2023. Available at https://www.ncbi.nlm.nih.gov/books/NBK430976/.

45 Millennium Health. (2023). Co-positivity of Various Drugs in the Fentanyl Positive Population for 2022 - 2023. Ohio - State Level Reporting.

46 Crummy, E. A., O'Neal, T. J., Baskin, B. M., & Ferguson, S. M. (2020). One is Not Enough: Understanding and Modeling Polysubstance Use. Frontiers Neuroscience, 14 (569). Retrieved October 20, 2023. https://doi.org/10.3389/fnins.2020.00569.

47 Liu, X., & Singer, M. E. (2023). Intentional use of both opioids and cocaine in the United States. Preventive Medicine Reports, 33. Retrieved October 19, 2023. https://doi.org/10.1016/j.pmedr.2023.102227.

48 United States Customs and Border Protection (CBP). (2024). Drug Seizure Statistics. Retrieved February 20, 2023. Available at https://www.cbp.gov/newsroom/stats/drug-seizure-statistics.

49 Ohio Narcotics Intelligence Center (ONIC). (2023). Annual Reporting from Office of Criminal Justice Service Funded Drug Task Forces.

50 Glick, S. N. Klein, K. S., Tinsley, J., & Golden, M. R. (2021). Increasing heroin-methamphetamine (goofball) use and related morbidity among seattle area people who inject drugs. The American Journal of Addictions, 30, 183-191. Retrieved December 28, 2023. DOI: 10.1111/ajad.13115.

51 Frank, N. D., Banta-Green, C. J., Guthrie, B. L., Kingston, S., Tinsley, J., Whiteside, L., & Glick, S. N. (2024). Emergency Room Utilization and Methamphetamine Overdose Symptoms Among Syringe Services

Program Participants in Washington State. Substance Use & Misuse, 59(7), 1012 - 1019. Retrieved February 20, 2024. https://doi.org/10.1080/10826084.2024.2317148.

52 Hendrix, S. (2023, April 18). DEA Officials: Xylazine Linked to Increasing Fentanyl Overdoses Nationwide: What to Know. The Columbus Dispatch. Retrieved May 4, 2024. Available at https://www.dispatch.com/story/news/drugs/2023/04/18/xylazine-is-linked-to-a-number-of-ohio-overdoses-heres-what-to-know/70123029007/.

53 Papudesi, B. N., Malayala, S. V., & Regina, A. C. (2023). Xylazine Toxicity. National Institute of Health (NIH) National Library of Medicine. Retrieved January 23, 2024. Available at https://www.ncbi.nlm.nih.gov/books/NBK594271/.

54 Centers for Disease Control and Prevention (CDC). (2024). What You Should Know About Xylazine. Retrieved February 25, 2024. Available at https://www.cdc.gov/overdose-prevention/about/what-you-should-know-about-xylazine.html?CDC_AAref_Val=https://www.cdc.gov/drugoverdose/deaths/other-drugs/xylazine/faq.html.

55 Ohio Narcotics Intelligence Center (ONIC). (2023). Emerging Drug Trends: Xylazine and New Synthetic Opioids Increase Dangers in Ohio Illicit Market. Available at https://onic.ohio.gov/information-and-education/public-safety-bulletins/01-public-safety-bulletins.

56 Ohio Narcotics Intelligence Center (ONIC). (2024). Tranq-Dope and Benzo-Dope in the Ohio Illicit Drug Supply. Available at https://onic.ohio.gov/information-and-education/public-safety-bulletins/01-public-safety-bulletins.

57 Drug Enforcement Administration (DEA). (2022). The Growing Threat of Xylazine and its Mixture with Illicit Drugs. DEA-DCI-DIR-001-23. Retrieved November 4, 2024. Available at https://www.dea.gov/sites/default/files/2022-12/The%20Growing%20Threat%20of%20Xylazine%20and%20its%20Mixture%20with%20Illicit%20Drugs.pdf.

58 Lowe, H., Toyang, N., Steele, B., Valentine, H., Grant, J., Ali, A., Ngwa, W., & Gordon, L. (2021.) The Therapeutic Potential of Psilocybin. National Institute of Health. 26 (10). Retrieved June 17, 2024. https://doi.org/10.3390%2Fmolecules26102948.

59 Farah, R. Kerns, A. F., Murray, A. C., & Holstege, C. P. (2023). Psilocybin Exposures Reported to U.S. Poison Centers: National Trends Over a Decade. Journal of Adolescent Health, 74(5), 1053 - 1056. Retrieved March 4, 2024. https://doi.org/10.1016/j.jadohealth.2024.01.027.

60 LaMotte, S. (2024, March 7). Single dose of LSD provides immediate and lasting relief from anxiety, study says. CNN. Retrieved March 8, 2024. Available at https://www.cnn.com/2024/03/07/health/lsd-anxiety-fda-breakthrough-therapy-wellness/index.html.

61 Law, T. (2022, November 11). Colorado Voted to Decriminalize Psilocybin and Other Psychedelics. Time. Retrieved November 30, 2022. Available at https://time.com/6232212/colorado-decriminalizes-psychedelics-psilocybin-proposition-122/.

62 United Nations Office of Drugs and Crime (UNODC). (2023). Current NPS Threats Volume VI. Retrieved August 29, 2023. Available at https://www.unodc.org/res/scientists/ewa/Current_NPS_Threats_VI.pdf.

63 Carloss, T. (2023, February 13). Cuyahoga County Medical Examiner Alerts Public After Increase in Designer Benzodiazepines Found. ABC News 5 Cleveland. Retrieved March 1, 2023. Available at https://www.news5cleveland.com/news/local-news/cuyahoga-county-medical-examiner-alerts-public-after-increase-of-designer-benzodiazepines-found.

64 Kennedy, K. (2023, March 14). 22-Year-Old Summit County Man Overdoses on Drug Up to 40 Times Stronger than Fentanyl. 19 News Cleveland. March 15, 2023. Available at https://www.cleveland19.com/2023/03/15/22-year-old-summit-county-man-overdoses-drug-up-40-times-stronger-than-fentanyl/.

65 Center for Forensic Science Research and Education (CFSRE). (2022). Bromazolam Prevalence Surging Across the United States Driven in Part by Increasing Detections Alongside Fentanyl. Retrieved November 15, 2022. Available at https://www.cfsre.org/images/content/reports/public_alerts/Public-Alert_Bromazolam_NPS-Discovery_061522.pdf.

66 United States Department of the Treasury. (2024). Treasury Sanctions Mexico- and China-Based Money Launderers Linked to the Sinaloa Cartel. Retrieved July 5, 2024. Available at https://home.treasury.gov/news/press-releases/jy2439.

67 United States Department of the Treasury. (2023). Treasury Targets Large Chinese Network of Illicit Drug Producers. Retrieved October 3, 2023. Available at https://home.treasury.gov/news/press-releases/jy1779.

68 Lyngass, S. (2024, June 18). U.S. announces major bust as efforts to crack down on Chinese money launderers working with drug cartels ratchet up. CNN. Retrieved June 20, 2024. Available at https://www.cnn.com/2024/06/18/politics/us-chinese-money-launderers-drug-cartels/index.html.

69 United States Department of Justice Office of Public Affairs. (2023). Justice Department Announces Charges Against China-Based Chemical Manufacturing Companies and Arrests of Executive in Fentanyl Manufacturing. Retrieved June 26, 2023. Available at https://www.justice.gov/opa/pr/justice-department-announces-charges-against-china-based-chemical-manufacturing-companies.

70 United States Department of Justice Office of Public Affairs. (2023). Justice Department Announces Charges Against Sinaloa Cartel's Global Operation. Retrieved April 19, 2023. Available at https://www.justice.gov/opa/pr/justice-department-announces-charges-against-sinaloa-cartel-s-global-operation.

71 United States Department of State. (2023). Ana Gabriela Rubio Zea. Retrieved May 5, 2024. Available at https://www.state.gov/ana-gabriela-rubio-zea/.

72 Pohlman, D. (2023). Local 12 Investigates illegal drugs being seized at Cincinnati's "hidden border." ABC 6 News. Retrieved May 7, 2023. Available at https://abc6onyourside.com/news/local/exclusive-look-front-lines-smugglers-flying-contraband-in-out-cincinnati-cvg-hiding-spots-destination-duane-pohlman-airport.

73 United States Attorney's Office Southern District of Ohio. (2024). Defendant pleads guilty in dark web narcotics case involving largest cryptocurrency seizure of $150 million in drug proceeds. Retrieved January 26, 2024. Available at https://www.justice.gov/usao-sdoh/pr/defendant-pleads-guilty-dark-web-narcotics-case-involving-largest-cryptocurrency.

74 United States Attorney's Office Southern District of Ohio. (2024). Final Defendant Sentenced in Narcotics Case Involving 76 Kilograms of Fentanyl, California-to-Ohio Drug Operation. Retrieved March 7, 2024. Available at https://www.justice.gov/usao-sdoh/pr/final-defendant-sentenced-narcotics-case-involving-76-kilograms-fentanyl-california.

75 WHIOTV 7. (2024, July 26). Fuyao Plant, Nearly 30 Other Area Locations Raided in Massive Homeland Security Investigation. Retrieved August, 4 2024. Available at https://www.whio.com/news/local/homeland-security-other-law-enforcement-agencies-scene-fuyao-glass-america/PVEBMB7QIFEEREMCYT2A7E72UY/.

76 United States Department of Justice. (2018). Two Chinese Nationals Charged with Operating Global Opioid and Drug Manufacturing Conspiracy Resulting in Deaths. Retrieved October 3, 2023. Available at https://www.justice.gov/opa/pr/two-chinese-nationals-charged-operating-global-opioid-and-drug-manufacturing-conspiracy.

77 Satariano, A., Mozur, P., & Breeden, A. (2024, August 25). Telegram Becomes Free Speech Flashpoint After Founder's Arrest. The New York Times. Retrieved August 30, 2024. Available at https://www.nytimes.com/2024/08/25/technology/pavel-durov-telegram-detained-france.html?searchResultPosition=3.

78 Ohio Narcotics Intelligence Center (ONIC). (2023). Drug Emojis Used in Ohio. https://onic.ohio.gov/information-and-education/public-safety-bulletins/01-public-safety-bulletins.

79 Drug Enforcement Administration (DEA). (2021). Drug Emojis Code | Decoded. Available at https://www.dea.gov/sites/default/files/2021-12/Emoji%20Decoded.pdf.

80 Ohio Department of Transportation. (2023). ODOT Facts Book 2023. Retrieved February 20, 2024. Available at https://www.transportation.ohio.gov/about-us/facts-book/facts-book-archives/odot-facts-book-000-0-2022-23.

81 Ohio Attorney General. Drugs and Cash Confiscated Along I-70 Are Among Largest Seizures Made in Ohio. Available at https://www.ohioattorneygeneral.gov/Media/News-Releases/August-2024/Drugs-and-Cash-Confiscated-Along-I-70-Are-Among-La.

82 Cano, M., Oh, S., Osborn, P., Olowolaju, S. A., Sanchez, A., Kim, Y., Moreno A. C. (2023). County-level predictors of U.S. drug overdose mortality: A systematic review. Journal of Drug and Alcohol Dependence, 242(1). Retrieved March 20, 2023. https://doi.org/10.1016/j.drugalcdep.2022.109714.

83 Whitley, P., LaRue, L., Fernandez, S. A., Passik, S. D., Dawson, E., & Jackson, R. D. (2022). Analysis of Urine Drug Test Results From Substance Use Disorder Treatment Practices and Overdose Mortality Rates, 2013 - 2020. JAMA Network Open, 5(6). Retrieved May 17, 2023. Doi:10.1001/jamanetworkopen.2022.15425.

84 Kerry, R. Yoo, E., & Ingram, B. (2019). Spatial analysis of drug poisoning deaths in the American west: A comparison study using profile regression to adjust for collinearity and spatial correlation. Drug and Alcohol Dependence, 204. Retrieved May 13, 2023. https://doi.org/10.1016/j.drugalcdep.2019.107598.

85 Cheng, M., Sauer, B., Johnson, E., Porucznik, C., & Hegmann, K. (2013). Comparison of opioid-related deaths by work-related injury. American Journal of Industrial Medicine, 56, 308-316. Retrieved April 1, 2023. https://doi.org/10.1002/ajim.22138.

86 Khare, A., Sidana, A., Mohemmed, A., Allicock, D. M., Waterstone, A., Zimmer, M. A., & Il'yasova, D. (2022). Acceleration of opioid-related EMS runs in the spring of 2020: The National Emergency Medical Services Information System data for 2018 - 2020. Drug and Alcohol Dependence, 232(1). Retrieved June 20, 2024. https://doi.org/10.1016/j.drugalcdep.2022.109271.

87 Kline, A., Williams, J. M., Steinberg, M. L., Mattern, D., Chesin, M., Borys, S., & Chaguturu, V. Predictors of opioid overdose during the COVID-19 pandemic: the role of relapse, treatment access and nonprescribed buprenorphine/naloxone. Journal of Substance Use and Addiction Treatment, 149. Retrieved June 24, 2024. https://pmc.ncbi.nlm.nih.gov/articles/PMC10063455/pdf/main.pdf.

88 Monnat, S. M. (2019). The contributions of socioeconomic and opioid supply factors to U.S. drug mortality rates: urban-rural and within-rural differences. Journal of Rural Studies, 68, 319-335. Retrieved April 26, 2023. https://doi.org/10.1016/j.jrurstud.2018.12.004. https://doi.org/10.1016/j.drugalcdep.2022.109714.

89 Zhang, S., Lim, Y., Boyas, J. F., & Burlaka, V. (2020). Family structure and youth illicit drug use, use disorder, and treatment services utilization. Journal of Children and Youth Services Review, 111. Retrieved May 24, 2023. https://doi.org/10.1016/j.childyouth.2020.104880.

90 Farooq, B., Allen, K., Russell, A. E., Howe, L. D., & Mars, B. (2024). Rhe association between poverty and longitudinal patterns of adverse childhood experiences across childhood and adolescence: findings from a prospective population-based cohort study in the UK. Child Abuse & Neglect, 156. Retrieved September 24, 2024. https://doi.org/10.1016/j.chiabu.2024.107014.

91 LaBossier, N. J. & Hadland, S. E. (2022). Stimulant misuse among youth. Current Problems in Pediatric and Adolescent Health Care, 52(9). Retrieved August 23, 2023. https://doi.org/10.1016/j.cppeds.2022.101265.

92 Center for Disease Control and Prevention. (2022). High-Risk Substance Use Among Youth. Retrieved July 19, 2023. Available at https://www.cdc.gov/healthyyouth/substance-use/index.htm.

93 Maruschak, L., Bronson, J., & Alper, M. (2021). Alcohol and Drug Use and Treatment Reported by Prisoners. United States Department of Justice Bureau of Justice Statistics. NCJ 252641. Retrieved April 20, 2023. Available at https://bjs.ojp.gov/sites/g/files/xyckuh236/files/media/document/adutrpspi16st.pdf.

94 Ranapurwala, S. I., Shanahan, M. E., Alexandridis, A. A., Proescholdbell, S. K., Naumann, R. B., Edwards Jr, D., & Marshall S. W. (2018). Opioid overdose mortality among former North Carolina inmates: 2000 - 2015. American Journal of Public Health, 108(9), 1207-1213. Retrieved March 29, 2023. doi: 10.2105/AJPH.2018.304514.

95 Binswanger, I. A., Stern, M. F., Deyo, R. A., Heagerty, P. J., Cheadle, A., Elmore, J. G., & Koepsell, T. D. (2007). Release from prison - a high risk of death for former inmates. The New England Journal of Medicine, 356, 157-165. Retrieved April 28, 2023. Available at https://pubmed.ncbi.nlm.nih.gov/17215533/.

96 Dittmer, S. J., Davenport, D. L., Oyler, D. R., & Bernard, A. C. (2021). The Influence of the Opioid Epidemic on Firearm Violence in Kentucky Counties. Journal of Surgical Research, 264, 186-193. Retrieved April 28, 2023. https://doi.org/10.1016/j.jss.2021.02.011.

97 Magee, L.A., Ray, B., Huynh, P., O'Donnell, D., & Ranney, M. L. (2022). Dual public health crises: the overlap of drug overdose and firearm injury in Indianapolis, Indiana, 2018-2020. Injury Epidemiology, 9(20). Retrieved March 20, 2023. https://doi.org/10.1186/s40621-022-00383-9.

98 Ray, B., Korzeniewski, S. J., Mohler, G., Carroll, J.J., Del Pozo, B., Victor, G., Huynh, P., Hedden, B. J. (2023). Spatiotemporal Analysis Exploring the Effect of Law Enforcement Drug Market Disruptions on Overdose, Indianapolis, Indiana, 2020-2021. American Journal of Public Health, 113(7), 750-758. Retrieved July 28, 2023. https://doi.org/10.2105/AJPH.2023.307291.

99 Department Visits for Suspected Drug Overdose Among Ohio Residents Ages 11 Years and Older." Retrieved March 25, 2024. Available at https://odh.ohio.gov/know-our-programs/violence-injury-prevention-program/Suspected-OD-Dashboard2.

100 Ohio Department of Health. (2023). State of Ohio Integrated Behavioral Health Dashboard. Available at https://data.ohio.gov/wps/portal/gov/data/view/ohio-ibhd.

101 Ohio Department of Health. (2024.) Annual Project DAWN Data. Retrieved March 24, 2024. Available at https://odh.ohio.gov/know-our-programs/project-dawn/project-dawn-data.

102 Winkleman, T. N. A., Chang, V. W., & Binswanger, I. A. (2018). Health, polysubstance use, and criminal justice involvement among adults with varying levels of opioid use. JAMA Network Open, 1(3). Retrieved April 7, 2023. doi:10.1001/jamanetworkopen.2018.0558.

103 Ohio Narcotics Intelligence Center. (2024). Roundtable with State of Ohio Opioid Treatment Authority and Substance Use Treatment Providers.

104 Office of Governor Mike DeWine. (2024). Governor DeWine Authorizes Emergency Ban of Nine Synthetic Opioids. Retrieved June 5, 2024. Available at https://governor.ohio.gov/media/news-and-media/governor-dewine-authorizes-emergency-ban-of-nine-synthetic-opioids#:~:text=%28COLUMBUS%2C%20Ohio%29%E2%80%94Ohio%20Governor%20Mike%20DeWine%20signed%20an%20executive,These%20nine%20synthetic%20opioids%20are%20known%20as%20nitazenes..

105 Office of Governor Mike DeWine. (2022). Executive Order 2022-05D. Retrieved November 20, 2022. Available at https://governor.ohio.gov/media/executive-orders/executive-order-2022-05d.

106 De Vrieze, L. M., Walton, S. E., Papsun, D., Logan, B. K., Krotulski, A. J., Stove, C. P., & Vandeputte, M. M. (2024). In vitro structure-activity relationships and forensic case series of emerging 2-benzylbenzimidazole nitazene opioids. Archives of Toxicology, 98; 2999 - 3018. Retrieved May 2, 2024. https://doi.org/10.1007/s00204-024-03774-7.

107 Center for Forensic Science, Research, and Education. NPS Discover: N-Desethyl Etonitazene. Retrieved January 17, 2024. Available at https://www.cfsre.org/images/monographs/N-Desethyl-Etonitazene-New-Drug-Monograph-NPS-Discovery-113023.pdf.

108 Jacobs, A. (2023, January 3). Legal Use of Hallucinogenic Mushrooms Begins in Oregon. The New York Times. Retrieved January 15, 2023. Available at https://www.nytimes.com/2023/01/03/health/psychedelic-drugs-mushrooms-oregon.html.

109 U.S. Food and Drug Administration (FDA). (2023). FDA Announces Shortage of Adderall. Retrieved August 1, 2023. Available at https://www.fda.gov/drugs/drug-safety-and-availability/fda-announces-shortage-adderall.

110 Duncan, S. C., Duncan, T. E., & Strycker, L. (2002). A multi-level analysis of neighborhood context and youth alcohol and drug problems. Prevention Science, 3(2), 125-133. Retrieved September 19, 2023. Available at https://pubmed.ncbi.nlm.nih.gov/12088137/.

111 Linton, S. L., Haley, D. F., Hunter-Jones, J., Ross, Z., & Cooper, H. L. F. (2017). Social causation and neighborhood selection underlie associations of neighborhood factors with illicit drug-using social

networks and illicit drug use among adults relocated from public housing. Social Science and Medicine, 185, 81-90. Retrieved August 22, 2023. https://doi.org/10.1016/j.socscimed.2017.04.055.

112 Harrop, E. & Catalano, R. F. (2016). Evidence-Based Prevention for Adolescent Substance Use. Journal of Adolescent Child Psychiatry, 25, 387-410. Retrieved February 7, 2023. Available at https://digital.lib.washington.edu/server/api/core/bitstreams/7bc972ac-6ac0-4313-af81-069b0631a0c0/content.

113 United Nations Office on Drugs and Crime. (2024). World Drug Report 2024: Contemporary Issues on Drugs. Retrieved July 2, 2024. Available at https://www.unodc.org/unodc/data-and-analysis/world-drug-report-2024.html.

114 Botvin, G. J. & Griffen, K. W. (2004). Life Skills Training: Empirical Findings and Future Directions. The Journal of Primary Prevention, 25(2), 211-232. Retrieved February 7, 2023. B_JOPP.0000042391.58573.5b.pdf.

115 Manzi, D., & Calderoni, F. (2024). The resilience of drug trafficking organizations: Simulating the impact of police arresting key roles. Journal of Criminal Justice, 91. Retrieved July 20, 2024. https://doi.org/10.1016/j.jcrimjus.2024.102165.

116 Ohio Peace Officer Training Commissions. (2023). County Agency Report. Retrieved August 16, 2023.

117 United States Bureau of International Narcotics and Law Enforcement Affairs. (2023). Drug Demand Reduction: A Focus on Prevention, Treatment, and Recovery. United States Department of State. Retrieved September 8, 2023. Available at https://www.state.gov/drug-prevention-and-treatment/.

118 Office of National Drug Control Policy. (2022). National Drug Control Strategy. Executive Office of the President. Retrieved April 15, 2023. Available at https://www.whitehouse.gov/ondcp/the-administrations-strategy/national-drug-control-strategy/.

119 Swensen, I. D. (2015). Substance-abuse treatment and mortality. Journal of Public Economics, 122, 13 - 30. Retrieved March 28, 2023. http://dx.doi.org/10.1016/j.jpubeco.2014.12.008.

120 Haley, S. J., Maroko, A. R., Wyka, & K., Baker. (2019). The association between county-level safety net treatment access and opioid hospitalizations and mortality in New York. Journal of Substance Abuse Treatment, 100, 52-58. Retrieved March 28, 2023. https://doi.org/10.1016/j.jsat.2019.02.004.

121 Rash, C. J. (2023). Implementing an evidence-based prize contingency management protocol for stimulant use. Journal of Substance Use and Addiction Treatment, 151. Retrieved March 16, 2024. https://doi.org/10.1016/j.josat.2023.209079.

122 U.S. Department of Health and Human Services (HHS) Office of the Assistant Secretary for Planning and Evaluation. (2023). Contingency Management for the Treatment of Substance Use Disorders: Enhancing Access, Quality, and Program Integrity for an Evidence-Based Intervention. Retrieved March 9, 2024. Available at https://aspe.hhs.gov/sites/default/files/documents/72bda5309911c29cd1ba3202c9ee0e03/contingency-management-sub-treatment.pdf.

123 Ohio Attorney General. (2023). Drug Interdiction Task Forces Seize Over $64 Million in Narcotics in 2022. Retrieved August 31, 2023. Available at https://www.ohioattorneygeneral.gov/Media/News-Releases/December-2022/Drug-Interdiction-Task-Forces-Seize-Over-$64-Milli.

124 Drug Interdiction Summary Collection Overview. (2023). OCJS Drug Task Force Drug Seizure Statistics. Retrieved February 7, 2023.

125 Ohio State Highway Patrol (OSHP) Statical Analysis Unit. (2023). OSHP Contraband Seizures, 2018 - 2022. Retrieved September 9, 2024.