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SUMMARY

his policy brief highlights key aspects of the illicitly manufactured fentanyl marketplace through a North American perspective. In doing so, it examines dynamics in Mexico, Canada and the US that impact all three countries, and sheds light on features of the market that have been overlooked in drug policy discussions and media coverage. The brief reveals important nuances – not least that the illicit fentanyl ravaging US communities derives from a complex, phased and multi-directional routing and production process straddling both Mexico and the US. Meanwhile, in Canada, production now largely takes place on home soil. A failure to factor in these and other nuances dooms any unilateral policy prescription to failure.

Key points

- There is a new 'golden triangle' of criminality between Mexico and the US linking illicitly manufactured fentanyl and trafficked firearms. This underscores the binational dynamics driving overdose deaths and homicides. Encompassing the Mexican states of Baja California, Sinaloa and Sonora with the latter strategically neighbouring the US state of Arizona this golden triangle is primarily urban in nature. It benefits from strong economic integration between both countries, decades of experience honed by the Sinaloa Cartel and a production model that does not depend on crop cultivation.
- Tablet pressing and the adulteration of illicitly manufactured fentanyl also take place in the US and Canada. This shows that manufacturing is not exclusive to Mexico and that illicitly manufactured fentanyl, more than any other drug, is a North American product.
- Production in Canada largely serves the domestic market. It is more profitable for Canadian producers to ship their illegally manufactured fentanyl from west to east rather than south to the US. This also means that there is no evidence of a Canada–US trafficking route.
- There is nothing inevitable about the excess mortality in North America. Overdoses and homicides are preventable deaths. If criminal organizations exchange know-how and information, so should governments. Weakening these activities requires a transnational response.

Recommendations

Recommendations for all three countries echo the recommendations supported by participants in the 'Fentanyl and border lines' event co-hosted by the Global Initiative Against Transnational Organized Crime and the Munk School of Global Affairs and Public Policy in April 2025.¹

Mexico

- Publish data of chemical analyses on seized substances, in particular fentanyl and fentanyl-related samples. Sharing information in a timely manner will allow civil society actors and scholars to contribute with analyses that are essential for understanding criminal dynamics. This research is not meant to substitute government work but complement it. In the case of fentanyl, it can contribute to demonstrating how actors on both sides of the US-Mexico border participate in the manufacturing process.
- Adopt a proactive approach to modifying the existing border narrative. The US-Mexico border is not a perpetual crisis zone, but instead the region where most innovation in the bilateral relationship including drug policy takes place. The evidence-based work carried out by harm reduction organizations in Mexican border cities, which helps US and Mexican citizens as well as immigrants, highlights what productive engagement between the US and Mexico looks like. This proactive approach could in future include funding for public health-driven strategies that have already been implemented by civil society actors who possess extensive knowledge of the communities they serve. It could also include funding for a pilot project for naloxone distribution in Mexico. This is a cost-effective way of preventing deaths in some of the most affected communities.
- Build the capacity of non-state actors to engage with, respond to and report on the fentanyl market. Supporting independent, evidence-based reporting and market analysis to counter misinformation and promote informed decision-making is crucial to offsetting voices that push for hardline approaches to drug markets.



Officials from Mexico's attorney general's office unload fentanyl and methamphetamine seized near Ensenada in the state of Baja California. © Salwan Georges/The Washington Post via Getty Images

United States

- Target the enablers within criminal ecosystems. The designation of six Mexican cartels as 'foreign terrorist organizations' by the US Department of State in February 2025 could be leveraged to incentivize private sector compliance and accountability, particularly in terms of the role business can play in monitoring, reporting and controlling the movement of arms, chemicals and illicit financial flows. This applies to the private sector in all three North American countries.
- Publish data from the Fentanyl Profiling Programme report without delay.² Like Mexico, this data will allow civil society actors and scholars to contribute to analyses that enhance our understanding of criminal dynamics and help to prevent excess mortality.
- Invest in research and evidence generation to inform policy development, measure impact and anticipate future threats, with sustained resourcing for independent analysis.

Canada

- Harness the current momentum around fentanyl discussions to embed the issue within a strategic
 national response, addressing a gap that has long been identified as a weakness. The absence of
 a national organized crime strategy remains a foundational impediment to the country's response.
- Leverage the appointment of a national fentanyl czar to drive a coordinated, cross-sectoral approach to tackling the fentanyl challenge. This appointment is crucial for coordinating efforts across government, the private sector and civil society. To be effective, the holder of this position must be endowed with convening powers and independent resources, enabling them to build consensus around a shared, prioritized agenda.
- Ensure continued funding for public health-driven strategies. These encompass substitution treatments; expanded evidence-based public health programming to reduce deaths caused by the supply of contaminated drugs; and greater accessibility to safe consumption rooms and safe supply for people who use drugs.



DRIVERS OF EXCESS MORTALITY IN NORTH AMERICA

ince the year 2000, the US has lost more than 1.1 million people to overdose deaths.³ Today, 40% of Americans know someone who has died from an opioid overdose,⁴ and people living in the US are more likely to die in this unintentional manner than from a car crash or suicide.⁵ Regrettably, the US is not alone. More than 50 000 people in Canada have died because of an opioid-related overdose since January 2016. On average, every day in Canada there are 21 deaths related to synthetic opioids such as fentanyl; males between the ages 30 and 39 are the most vulnerable demographic.⁶

Connected to these public health crises in the US and Canada, Mexico is similarly suffering a lethal epidemic: in this case, homicide, which is the leading cause of death for men aged between 15 and 44, and the second most significant cause of death for women aged between 15 and 24.7 Importantly, in a country where there are only two stores where firearms can be purchased legally, 70% of homicides are perpetrated with a firearm. More than two thirds of firearms recovered from crime scenes in Mexico and submitted for tracing were sourced from the US.8 Easy access to illegally trafficked weapons and ammunition from the US has allowed Mexican criminal organizations, including those involved in fentanyl trafficking, to amass both a tremendous capacity for violence and a troubling capacity to intimidate.9

The linkages between the fentanyl and firearms criminal markets underscore how narratives that placed casualties and costs of the war on drugs predominantly in the Global South are inaccurate in the context of synthetic opioids and, in particular, fentanyl. The result is a region, not just one country, with high levels of excess mortality.

Mexico's homicide rate is among the highest in the world, at 24 per 100 000, while Canada and the US have overdose death rates of 21.5 and 25 per 100 000, respectively. The Mexican state of Guerrero, known among other things for the Ayotzinapa case, 10 has a homicide rate of 48 per 100 000, comparable to the overdose death rates of British Columbia (47.1 per 100 000) and Washington DC (48.9 per 100 000).

The high levels of mortality in Mexico are not only connected to production and distribution of illicit substances, but also a vicious circle where revenues from drug sales in the US, and to a lesser extent Canada, allow criminal groups in Mexico to enhance their firepower and their lethality through the acquisition of high-calibre firearms and ammunition.

On the other side of the same coin is the suffering of hundreds of thousands of families who have lost loved ones to overdoses in the US and Canada – and increasingly in Mexico too. The fentanyl epidemic is also placing significant burdens on health systems and communities. The most recent estimates place the economic cost of the opioid crisis at US\$1.5 trillion annually in the US, calculated on the basis of the total costs for healthcare, public safety, lost productivity, lower quality of life and lost lives. In Canada, total annual losses are estimated at CAD8.8 billion (in this case, measured in terms of lost productivity). Addressing these interconnected crises unequivocally requires a trilateral approach.

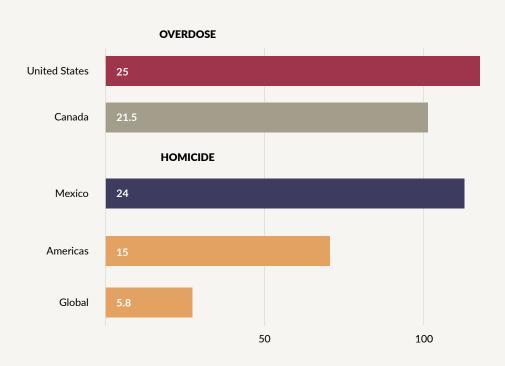


FIGURE 1 Opioid overdose rate and homicide rate per 100 000 in 2023.

SOURCES: Data from various public health agencies and the United Nations Office on Drugs and Crime. 13

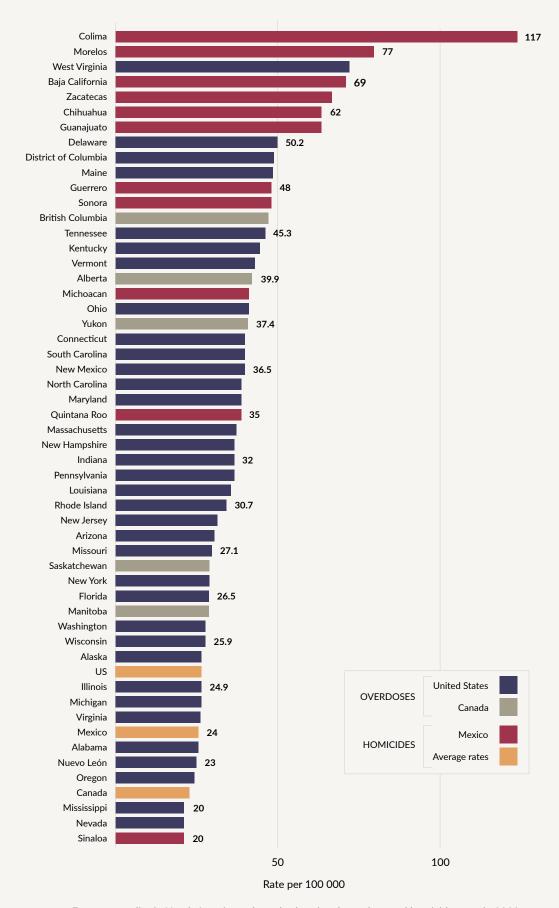


FIGURE 2 Excess mortality in North America: selected subnational overdose and homicide rates in 2023. SOURCES: Data from various public health agencies.¹⁴



ILLICITLY MANUFACTURED FENTANYL: A NORTH AMERICAN PRODUCT

llicitly manufactured fentanyl challenges the conventional wisdom of drug markets. For decades, drug policy has divided the world into 'drug consuming' countries and 'drug producing and transit' countries. Consider, for instance, cocaine, which is largely produced in the Andean region of Latin America and trafficked to the rest of the world.

Illicitly manufactured fentanyl, however, is quintessentially a North American product. It either crosses the US-Mexico border multiple times until it is delivered to consumers, or it is manufactured in Canada largely for domestic consumption, using know-how imported from Mexican criminal organizations. Arguably, more than producers of any other substance currently in the illicit drug market, producers of fentanyl have taken advantage of the economic integration that exists between Canada, Mexico and the US to satisfy the demand for opioids. Production in the three countries has shifted to the Gupta synthesis (or 'one pot') method, 15 suggesting increased efficiency in the manufacturing process over time. 16

Current legal production cannot fulfil demand

The North American region is the largest single global consumer of opioids for pain management when measured in terms of the cumulation of six baseline opioid pharmaceuticals (codeine, fentanyl, hydrocodone, hydromorphone, morphine and oxycodone).¹⁷

Together, Canada and the US annually consume 2.2 tonnes, or 67% of the total amount of hydromorphone used globally, and 43.1 tonnes (72%) of the total amount of oxycodone consumed globally. However, consumption of pharmaceutical fentanyl for pain management places the US only third (12.7%) and Canada eighth (3.4%) globally. On the total amount of oxycodone consumed globally. However, consumption of pharmaceutical fentanyl for pain management places the US only third (12.7%) and Canada eighth (3.4%) globally.

The total annual global consumption of pharmaceutical fentanyl steadily declined between 2004 and 2023, with a mean annual volume of approximately 1.2 tonnes and a range of 1.0 to 1.7 tonnes through this period. ²¹ The annual consumption of licit fentanyl in the US is estimated at 127 kilograms, while Canada's and Mexico's annual consumption of licit fentanyl is estimated at 34 kilograms and 46 kilograms, respectively. ²²

Country	Primary synthetic route (production method)	Products	Purity
Canada	Gupta	Powder and tablets	In Toronto, only 4% of the total number of fentanyl samples tested (4 883) from 2019 to 2025 were found to be uncontaminated fentanyl.
Mexico	Gupta-1 ²³	Powder Tablets	Powder samples seized at ports of entry in Arizona, California and Texas had an average purity of 36.4%, 35.2% and 32.4%, respectively. The average purity of tablets seized in Arizona, California and Texas was 2.1, 2.5 and 2.1 milligrams per tablet, respectively.
United States	Gupta-1 (powder and tablets)	Powder Tablets	The average fentanyl purity in powder was 19.2%, with a range of 0.07% to 81.5%. The average tablet contained 2.4 milligrams of fentanyl, with a range of 0.03 to 9.0 milligrams per tablet.

FIGURE 3 Products, production methods and average purity.

NOTE: The Gupta-1 method is a modified synthesis method of the Gupta method. The difference in methods stems primarily from the precursors used in the synthesis. 24

SOURCES: US Drug Enforcement Administration, Fentanyl Profiling Program report, 2022, https://www.dea.gov/sites/default/files/2024-09/CY%202022%20FPP%20Report_PUBLIC_0.pdf; Toronto's Drug Checking Service, What's in Toronto's drug supply, https://drugchecking.community

Crucially, the ongoing opioid crisis – triggered by the overprescription by physicians of synthetic opioids – has created demand that cannot be met by the licit market. Licit supply is completely insufficient to meet the needs of the illicit consumer market for these opioids, even accounting for the probable diversion of some of the licit supply to the illicit market. The scale of the fentanyl-driven overdose crisis in the US and Canada demonstrates the importance of illicitly manufactured fentanyl to the sustainability of the domestic opioid supply chain.

'Illicit opioid use and, in particular, IMF [illicitly manufactured fentanyl] use is more prevalent than previously estimated,' according to a survey published in May 2025. This survey showed that almost 11% of the US population aged 18 years and older reported using illicit opioids within the past 12 months; 7.5% of the population aged 18 years and older reported using illicitly manufactured fentanyl. To put these numbers into perspective, 7.5% of the US population is nearly 25 million people, which is more than the entire population of the state of New York.

Produced in Mexico, finished in the US

For more than 100 years, Mexico's location next to one of the largest consumer drug markets in the world has incentivized the development and ongoing professionalization of the drug trafficking business. Adaptation is the name of the game.²⁷ Official US data shows that illicit fentanyl initially arrived in the US from China in small packages through regular mail services.²⁸ In 2016 and 2017, China was the source of 97% of inbound shipments of high purity fentanyl.²⁹ In these early days of the fentanyl trade, Mexico served as a transit point, before Mexican criminal groups initiated and expanded their own production.

Interviews conducted for this study show that while barriers to entry for buying precursors are low and production of fentanyl does not require sophisticated laboratory equipment, it does require knowledge of safety protocols by the producer to avoid them becoming intoxicated and potentially dying. Moreover, production of illicit substances in the Mexican state of Sinaloa tends to be regulated and largely controlled by the Sinaloa Cartel.³⁰ This matters because while some media reports have shown a relative democratization of the illicit manufacture of fentanyl in Mexico,³¹ criminal groups are able to maintain barriers of entry – and therefore a competitive advantage – by recruiting those with adequate expertise in both manufacturing and safety protocols. Such recruitment tends to rely on both relatively lucrative compensation and duress.

Put differently, it is more cost-effective and less risky for the criminal group if the human capital in charge of production has low levels of rotation compared to a scenario where recruitment is ongoing due to deaths through intoxication. Equally importantly, a criminal group needs to maintain a degree of control over production to limit the growth of potential rivals.

While Mexican authorities no longer deny that the illicit manufacture of fentanyl takes place in the country – an untenable claim that was made repeatedly by the administration of President Andrés Manuel López Obrador (2018–2024) – enforcement remains focused in areas historically targeted for opium poppy eradication. As a result, significant efforts by law enforcement to dismantle clandestine laboratories focus on Sinaloa (for a detailed discussion on seizures, see the section 'The new "golden triangle": Fentanyl and firearms trafficking in north-western Mexico').

The US government claims that the Sinaloa and Jalisco New Generation cartels are the main actors involved in the production and trafficking of fentanyl.³² While the US Department of State earlier in 2025 designated six Mexico-based criminal groups as foreign terrorist organizations, only these two were classified as being involved in the manufacturing and trafficking of fentanyl.

Of course, statistics generated by the authorities based on the seizure of stashes and the dismantling of clandestine labs do not necessarily reflect supply. Data analysis, investigative journalism and interviews conducted for this study indicate that production is not uniquely concentrated in Sinaloa. This matters because the century-old drug trafficking relationship between Mexico and the US, particularly in terms of the salience of Sinaloa-based organizations,³³ has arguably obscured the active participation of US actors in the drug trade. This is even more evident in the case of illicitly manufactured fentanyl, since Mexican and US citizens involved in drug trafficking have designed a supply chain that benefits from licit trade regulations while simultaneously exploiting law enforcement stereotypes of who is involved in drug trafficking.

Stage of process	Buying of precursors	Synthesis	Protection of human capital in charge of synthesis
Barriers to entry	Low	Medium	High
Rationale	Most precursors used in the manufacture of fentanyl are used in legal industries.	Some expertise is required for synthesis, but the equipment needed is easily accessible in the licit market. 'Artisanal' forms of production may include pressure cookers and lab equipment (available on online platforms).	Expertise and reliable equipment are required to avoid intoxication and potential death.

FIGURE 4 Barriers to entry for fentanyl production.

SOURCE: Interview with a Sinaloa-based chemist, May 2025



A security filter at the San Ysidro port of entry in Tijuana checks vehicles entering the US for drugs such as fentanyl. © Carlos Moreno/Anadolu via Getty Images

For instance, according to the US Sentencing Commission, in the 2024 fiscal year, 83.5% of people sentenced for fentanyl trafficking were US citizens, of whom more than four-fifths were men (mostly men in their thirties).³⁴ The choice of US citizens (rather than Mexican citizens) for cross-border trafficking is not random. As explained by the former US Attorney for the Southern District of California, these are people 'who have the ability to cross but are also going to be able to slip under the radar' amid high volumes of licit crossings at ports of entry.³⁵ In 2024 alone, the US processed 39 million vehicles coming from Mexico and over 20 million pedestrians.³⁶ Notably, the San Ysidro crossing in the San Diego–Tijuana region handled 37.7% and 32.7% of the personal vehicle and pedestrian crossings respectively, equivalent to more than 40 000 vehicles and 18 000 crossings on foot daily.³⁷

With US\$1.4 million in trade per minute between the US and Mexico,³⁸ actors on both sides of the border involved in fentanyl trafficking can conceal their shipments in legitimate trade exchanged between the two countries. According to US data, 44% of the seized fentanyl entering the US passes through Nogales, Arizona, a port of entry that handles most of the fresh produce imports from Mexico.³⁹ Criminal groups are aware that US Customs and Border Protection agents are under pressure to inspect perishable shipments swiftly, so they exploit this to their advantage.

Production, like trafficking, is also transnational. Illicitly manufactured fentanyl is produced in both Mexico and the US, where significant quantities of tablets are pressed. This production serves the US domestic market and, to a lesser degree, consumption in Mexico. Production in Mexico and the US can involve inputs crossing the border multiple times before the final product reaches consumers – unlike in Canada, where precursors that originate from China are both synthesized and sold in fentanyl powder and tablet form domestically. A useful analogy in this context is the production of cars in North America. The engine might be produced in Michigan, while the frame is built in Mexico, before the frame is shipped to North Texas, where the chassis is added, ahead of re-shipping back to Mexico (along with the engine) for final assembly.⁴⁰

A similar pattern is apparent for illicitly manufactured fentanyl. While most of the public debate has focused on China as a supplier of chemical precursors to Mexican criminal organizations, precursors are also shipped to Mexico from Germany, Guatemala, India and the US.⁴¹

Criminal investigations show criminal organizations use air, land and seaports to move precursors from the US into Mexico. The ports are chosen in line with the volume of passengers and/or cargo they handle; hiding among legitimate travel and trade that takes place and exploiting the *de minimis* trade rule that allows packages valued at up to US\$800 to enter the US duty-free and with minimal paperwork and inspections. These small packages are far from marginal. According to US Customs and Border Protection, in the 2023 fiscal year, 85% of the shipments seized for health and safety violations were small packages. Health and safety violations include those that 'would injure community health and public safety', such as illegal substances. Notably, *de minimis* shipments account for 92% of all cargo entering the US, translating into Customs and Border Protection processing 4 million shipments daily.

Los Angeles International Airport, for instance, handles 80 million passengers per year and receives 684 000 air shipments daily. According to Homeland Security Investigations, precursors arrive on cargo flights into this airport and are mailed to addresses in the US. Once they arrive at their destination in the US, these packages are in turn transported by land into Mexico, where the fentanyl is illicitly manufactured, Fefore being sent back to the US, where it is sold either as a finished product or as an input for further processing into tablets. Mislabelling packages as chemicals used by the agricultural industry offers an additional advantage for groups working in Sinaloa, and to a lesser extent Jalisco. This is because both Sinaloa and Jalisco are major food producers that genuinely require significant supplies of agricultural chemicals.

A crucial – but until recently overlooked – aspect of fentanyl production is the process of tablet pressing, which takes place in both Mexico and the US. In March 2024, US Customs and Border Protection announced a public alert for pill presses and constituent parts (pill punches, moulds and ejectors)⁴⁸ that are illegally imported to the US for the manufacturing of pills containing fentanyl. The alert was part of a major Department of Homeland Security push to target not just fentanyl but the tools and materials used for its production.⁴⁹ As a result, the Department of Homeland Security developed a 'key homeland security metric' to quantify the footprint of fentanyl seizures, focusing on four variables (see Figure 5).⁵⁰

Variable	Unit of measure
Fentanyl	Pounds (lbs.) of fentanyl drugs seized by Customs and Border Protection and Immigration and Customs Enforcement
Pill presses	Counts of drug producing devices seized by Customs and Border Protection and Immigration and Customs Enforcement. This includes entire presses, dye and other parts
US currency	Dollar amounts of US cash seized by Immigration and Customs Enforcement during fentanyl disruption operations
Personal property	Dollar value of personal property other than US currency seized by Immigration and Customs Enforcement during fentanyl disruption operations

FIGURE 5 Key Homeland Security metrics for fentanyl seizures.

source: US Customs and Border Protection, Pill presses and their parts are imported to the U.S. illegally to make deadly fentanyl pills, https://www.cbp.gov/sites/default/files/2024-10/401697-fentanyl_poster_1-presses_final_3_508_0.pdf

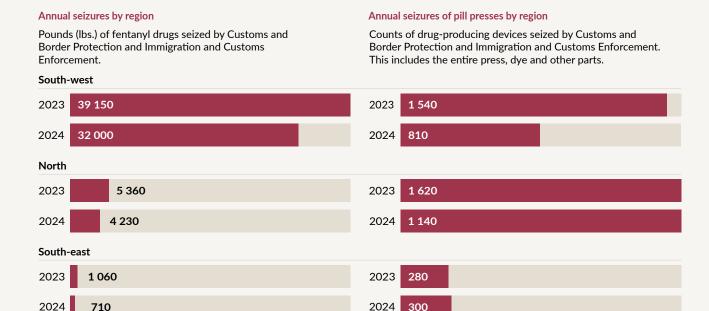


FIGURE 6 Seizures of fentanyl and pill presses in the US, 2023 and 2024.

SOURCE: Department of Homeland Security, President's state of the union highlights DHS efforts on the front lines combating illicit opioids, including fentanyl, 8 March 2024, https://www.dhs.gov/archive/news/2024/03/08/fact-sheet-presidents-state-union-highlights-dhs-efforts-front-lines-combating

According to available data for the 2023 and 2024 fiscal years, while most seizures of fentanyl occur in the south-west of the US – an area that includes all four border states with Mexico – most pill presses and constituent parts are seized in the north of the US. 51

Tablets represent a significant finished aspect of the illicit fentanyl market. Acknowledging that seizures are not a measure of supply (but rather of enforcement), 115 million pills containing fentanyl were seized by law enforcement in the US in 2023, compared to 71 million in 2021 and fewer than 50 000 in 2017.⁵² Notably, most of the seizures of pills have taken place in the west of the US, with the majority in California, followed by Arizona and Colorado.⁵³

Pill or tablet pressing – and seizures of pills – are a significant indicator of market dynamics in at least two respects. First, it shows that criminal organizations are interested in producing pills that appear to be legitimate prescription medications, such as oxycodone, Xanax and Adderall.⁵⁴ Secondly, it is clear that the manufacturing process and adulteration takes place at least in part in the US. In effect, therefore, someone who thinks that they have purchased oxycodone, Xanax or Adderall risks instead consuming a counterfeit pill that has been pressed in the US and contains fentanyl.

Meanwhile, powder seized at border crossings in Arizona, California and Texas has higher levels of purity compared to seized powder submitted for testing in other US states, according to data published in late 2024 that drew on samples submitted to the Drug Enforcement Administration's Fentanyl Profiling Program. Indeed, whereas powders from domestic samples had an average fentanyl purity of 19.2%, the average purity of samples seized at border crossings was 36.4%, 35.2% and 32.4% for Arizona, California and Texas, respectively.⁵⁵ This indicates that significant dilution occurs on US soil.

Production in Canada

Illicitly manufactured fentanyl is produced in Canada, but these domestic manufacturing enterprises primarily supply the drug market in Canada, with only small amounts shipped overseas, mainly to Australia and New Zealand. ⁵⁶ Currently, demand for fentanyl in Canada is believed to be satisfied by existing domestic production capacity. ⁵⁷ Numerous domestic labs continue to produce the volume necessary to meet consumer demand. Many customers in Canada seek highly potent fentanyl, whether it be illicitly synthesized powder or counterfeit pharmaceutical versions of it. As a result, the price for fentanyl doses in Canada remains high (for more information, see the appendix on price data).

The supply of illicit fentanyl in Canada was once dominated by the importation of finished fentanyl from Mexican-based production labs, trafficked using established overland routes that snaked north from the southern US-Mexico border through the US, following the routes of the latter's major interstate highway networks. That typology has now adapted.

A decade ago, a significant shift occurred, to the extent that Canada's supply chain is now predominantly grounded in the importation of chemical precursors rather than finished fentanyl product from China via Mexico, while the synthesis of fentanyl now takes place on Canadian soil (as does methamphetamine synthesis). Clandestine Canadian labs, replete with production models, equipment and recipes informed by Mexican technical advice – and precursors supplied by Chinese firms – are the primary characteristics of the Canadian fentanyl market. The preferred production method can be identified as the Gupta method.

Most other illicit drugs (notably cocaine and methamphetamine) that populate Canada's domestic drug market inventory continue to be trafficked into the country on overland routes through the US and across the northern Canada–US border, or through maritime channels via the Pacific coast (and, to a lesser degree, through Atlantic coastal trafficking efforts).



FIGURE 7 Fentanyl and synthetic opioid laboratories in Canada.

SOURCE: Adapted from information provided by the Royal Canadian Mounted Police



IS THERE A CANADA-US TRAFFICKING ROUTE?

n a recent investigative piece based on an interview with a cartel operative, a journalist argued that there is considerable cross-border movement of fentanyl being walked from Canada into the US through landscapes between the official crossing points.⁵⁸ According to this thesis, fentanyl enters the US through a trans-Cascadian trafficking route in the Pacific north-west. However, there is little evidence to support this claim. Fentanyl seizures confirmed by US Border Patrol or Homeland Security as originating from Canada are negligible, standing at only 0.13% of all US-based fentanyl seizures in 2024.⁵⁹

To be sure, low seizure volumes in the US originating from Canada do not necessarily constitute proof that correspondingly small volumes are trafficked in this direction. However, interviews with law enforcement personnel in US states that border Canada identify Mexican-based supply chains as the fentanyl source, contradicting the 'Canada origin' thesis. Interviews with Canadian law enforcement officials indicate that fentanyl produced in Canada is mostly consumed by the Canadian market.

Fentanyl production occurs at an industrial scale in at least three Canadian provinces: British Columbia, Alberta and Ontario. While it is likely that there is some level of finished fentanyl diversion southward to US markets in the north-west, the volume is likely to be very low. ⁶⁰ Market dynamics in Canada support the argument that the drugs produced in western Canada are transferred to eastern provincial markets, not to US markets to the south. This is for two primary reasons.

- **Economic:** It is more profitable for Canadian fentanyl producers and distributors to focus on west to east distribution rather than north to south, with much of any excess sent overseas. This is because the Canadian market has continuously high levels of demand for fentanyl and pricing at the street level remains higher in Canada than in the US. The Canadian fentanyl market consists of higher potency products compared to its southern neighbour. ⁶¹ In the drug markets of most US states that border Canada, fentanyl is more commonly available in tablet form and retailed from less than US\$1 to a few dollars per tablet (see the appendix for price data).
- Limited access to the US domestic marketplace: Border security measures coupled with the law enforcement and criminal justice environment create a tremendous amount of organizational risk, particularly in more recent years as the profile of fentanyl as an illicit commodity has increased in significance. In the absence of an embedded and resilient supply and distribution infrastructure network, access to the US domestic marketplace is limited by an increased threat of law enforcement detection across its major state fentanyl marketplaces. 62



THE NEW 'GOLDEN TRIANGLE': FENTANYL AND FIREARMS TRAFFICKING IN NORTHWESTERN MEXICO

ensions over US-Mexico security cooperation under the López Obrador administration created significant frustrations for both countries. Whereas in Mexico's heroin-producing days the governments of the two countries disagreed on the number of hectares cultivated, rather than the reality of cultivation, their differing official perceptions of fentanyl production have created two competing narratives.

The reality presented by the US casts Mexico as the standout fentanyl producing country, where López Obrador's catchphrase 'abrazos, no balazos' ('hugs, not bullets') was largely understood as a refusal to go after criminal groups under terms the US deemed acceptable. The alternative reality presented by Mexico denied that production was taking place on its territory at all – a narrative that framed fentanyl as a 'US-only' problem. This official position acknowledged that only tablet pressing was taking place on Mexican soil. Neither version of events properly diagnosed the problem, amounting to a bilateral policy malaise that resulted in disastrous consequences for communities on both sides of the border.

Frustration with Mexico on the part of the US administration of former president Joe Biden came to a head on 25 July 2024, when the US arrested Ismael Zambada (also known as 'El Mayo'). Accused of operating as a central figure in Mexican organized crime through the Sinaloa Cartel, Zambada was kidnapped and subsequently forcibly transferred to the US, according to a letter made public by his lawyer.⁶³

The kidnapping and arrest of Zambada has resulted in a significant deterioration of security in Sinaloa. His public letter confirmed an internal rift and propelled armed factions within the Zambada and Guzmán branches to publicly fight for control of the criminal group. A year later, the infighting has caused significant fatalities, particularly in Culiacán, the state capital. In the six months before Zambada's arrest, the state had an average of 42 homicides per month. After his arrest and confirmation of the public rift, the state averages 131 confirmed murders per month (in addition to 1 378 people who have disappeared between September 2024 and April 2025).

A change in Mexico's political landscape came in June 2024, when Claudia Sheinbaum was elected as president. While López Obrador was very much her political mentor, her administration does not deny that fentanyl production takes place in the country. However, despite 'record' seizures announced by her administration – in December 2024 Public Security Secretary Omar García Harfuch announced the seizure of 1 tonne of fentanyl tablets⁶⁴ – production by criminal groups remains undisturbed.

Despite the recent upsurge in violence undermining licit economic activity and daily life in Sinaloa (and especially in Culiacán), there are no shortages or increases in the price of illicitly manufactured fentanyl reported as of June 2025 in the Tijuana–San Diego region. Data analysis and interviews conducted for this policy brief strongly suggest this is because production is not concentrated in the state. According to data released by Mexico's National Defense Secretariat (better known as SEDENA, its Spanish acronym) spanning January 1990 through June 2024, the Mexican army has seized a total of 4 762.207 kilograms and over 31 million tablets of illicitly manufactured fentanyl.⁶⁵

Notably, according to this data, 34% of powder was seized in the border state of Baja California, while Sinaloa and Sonora account for 29% each. This means that 92% of the seized fentanyl powder in Mexico came from these three states. The seized tablets follow a similar pattern; 38% (12 million) were recovered in Baja California, whereas 31% and 27% were recovered in Sonora and Sinaloa, respectively. Together, the three states account for 96% of the tablets seized by the Mexican army in Mexico.

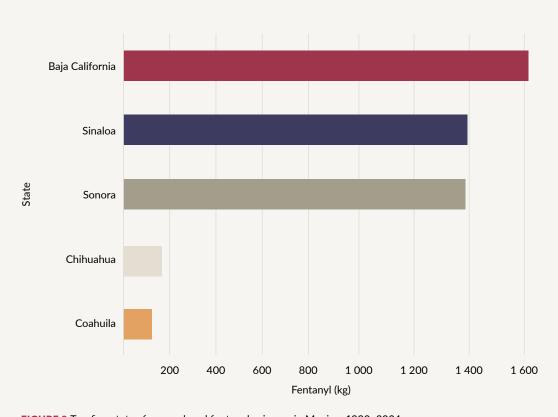


FIGURE 8 Top five states for powdered fentanyl seizures in Mexico, 1990–2024.

SOURCE: SEDENA, Freedom of information request number 330026424002125



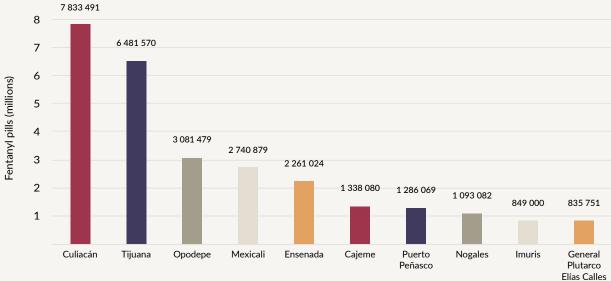


FIGURE 9 Top 10 Mexican municipalities for seizures of fentanyl pills, 1990-2024.

SOURCE: SEDENA, Freedom of information request number 330026424002125

The pre-eminence of Sonora is especially relevant given that it shares most of its border with the state of Arizona. This matters because according to an analysis by Stop US Arms to Mexico that drew on official data released by the Bureau of Alcohol, Tobacco, Firearms and Explosives, Arizona has become 'the preferred state for trafficking guns to Mexico'. 66 Texas remains more noteworthy in terms of the aggregate number of firearms traced from Mexican crime scenes, but Arizona's significance as a source has grown rapidly over recent years.

Available 2024 data (January to July) for the 'time to crime' variable – the period from the legal purchase of a firearm to its recovery by law enforcement – shows that Arizona was the source of most guns traced to the US that were purchased less than a year before their recovery in Mexico. In such cases, it is very likely that the guns were purchased with the intention of trafficking.⁶⁷

Equally importantly, on 10 October 2022, the government of Mexico filed a lawsuit against five gun dealers in Arizona for 'routinely supply[ing] high-powered firearms to criminal organizations in Mexico'. ⁶⁸ Attorneys for Mexico told Rosemary Marquez, the US District Court judge for Arizona, that over the prior five years, each of the Arizona stores were among the top 10 dealers of guns recovered from Mexican crime scenes and traced back to a dealership in Arizona. ⁶⁹

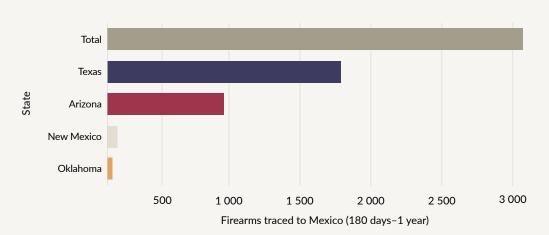


FIGURE 10 Top five US states for firearms traced from Mexican crime scenes, 2024.

SOURCE: Stop US Arms to Mexico, Time to crime database recovered in Mexico and Central America, https://stopusarmstomexico.org/no-shelter-from-the-storm

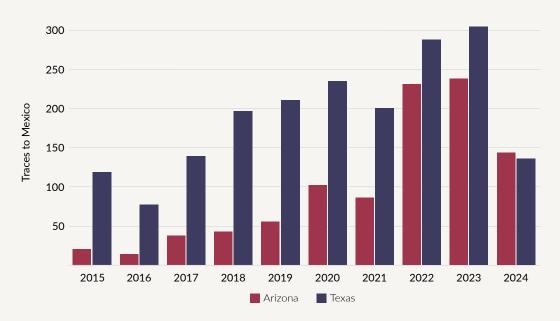


FIGURE 11 Firearms traced to the US from Mexican crime scenes (180 days to one year 'time to crime'), by year: Arizona and Texas.

 ${\tt SOURCE: Stop~US~Arms~to~Mexico, Time~to~crime~database~recovered~in~Mexico~and~Central~America,} \\ {\tt https://stopusarmstomexico.org/no-shelter-from-the-storm}$

The geography of the seizures of illicitly manufactured fentanyl and the origin of guns trafficked to Mexico and recovered from crime scenes shows that there is a new 'golden triangle' of criminality between Mexico and the US, further underscoring the linkages between overdose deaths and homicides. This 'golden triangle' is also primarily urban. Whereas opium poppy cultivation occurred in mountainous regions in the Western Sierra Madre, 40% of fentanyl powder seizures have taken place in the cities of Tijuana (Baja California) and Culiacán (Sinaloa).

A combination of state enforcement (through seizures) and inter- and intra-criminal group fighting has triggered high levels of violence in Baja California, Sonora and Sinaloa. These three states have homicide rates that are well above the national average. While the data suggests that Baja California is experiencing declines, homicide rates of 65 remain exceedingly high, not only compared to the national average of 24 but the Americas average of 15 per 100 000. Notably, as explained in this report, we expect Sinaloa's rate to increase for 2025 as a whole (full-year data is not yet available).

In the heroin trafficking days, the equivalent triangle consisted of Sinaloa, Durango and Chihuahua – states that were suitable for growing opium poppies. Today, the new triangle of Baja California, Sonora and Sinaloa relies on a production model that benefits from strong economic integration between the US and Mexico, decades of experience accumulated by the Sinaloa criminal organization and a production model that does not depend on crop cultivation.⁷⁰

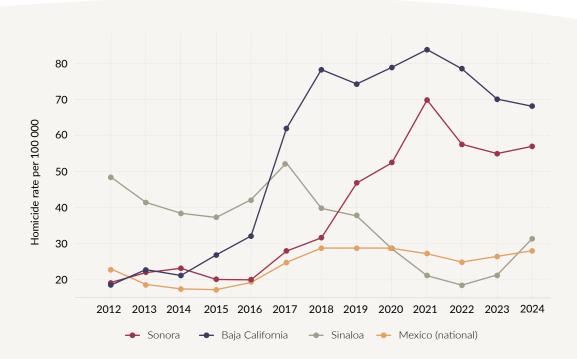


FIGURE 12 Homicide rate per 100 000 inhabitants, Mexico and selected states, 2011-August 2024.

SOURCE: National Institute of Statistics and Geography (Mexico), Reporte de resultados 24/25, defunciones por homicidio, https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2025/edr/DH2024_RR_Ene-dic.pdf



CONCLUSION AND NEXT STEPS

his policy brief makes clear the urgent need for a trilateral, responsive and flexible policy approach. A key lesson from the illicit opioid crisis in North America is how rapidly the market changes, most notably in terms of the potency and contamination of supplies.

As of July 2025, there are two recent US policy changes that can be expected to impact the synthetic opioid market in North America: the foreign terrorist organization designation against Mexican criminal groups and an elimination of the *de minimis* rule.

Foreign terrorist organization designation

On 20 February 2025, the US Department of State designated six Mexican criminal groups as 'foreign terrorist organizations': the Sinaloa Cartel, the Jalisco New Generation Cartel, Cártel del Noreste, La Nueva Familia Michoacana, Cártel del Golfo and Cárteles Unidos.⁷¹ On the same day, Canada also designated five of the six Mexican criminal groups listed by the State Department.⁷² Cártel del Noreste was excluded from the Canadian designation.

A key component of the 'foreign terrorist organization' designation is the ability to prosecute those who provide material support for the commission of certain designated offences that might be committed by terrorists (18 U.S.C. § 2339A) and those who provide material support to designated terrorist organizations (18 U.S.C. § 2339B).⁷³

It remains unclear how the current US administration will apply the material support statutes. For example, are individuals who purchase fentanyl for personal use considered to be providing material support to a foreign terrorist organization? Will US citizens involved in trafficking be prosecuted as terrorists?

The silver lining is that Mexico could potentially use the designation to put pressure on the US to prosecute individuals involved in firearms trafficking who demonstrably provide 'material support' to terrorist organizations in Mexico. More Mexico-based criminal organizations can be expected to be designated, irrespective of whether or not a group is involved in fentanyl production and trafficking. Additional designations by the US could strain trilateral engagement with Mexico and Canada.

De minimis rule changes and relocation of the fentanyl supply chain

De minimis allowed packages valued at up to US\$800 to enter the US duty-free and with minimal paperwork and inspections. An executive order by the Trump administration ended the *de minimis* exemption on 2 May 2025 for packages from China⁷⁴ (the largest source of *de minimis* shipments) and Hong Kong.⁷⁵ The stated purpose of eliminating the *de minimis* exemption is to target the synthetic opioid supply chain, given that 'many shippers based in the People's Republic of China hide illicit substances and conceal the true contents of shipments sent to the US through deceptive shipping practices. These shippers often avoid detection due to administration of the *de minimis exemption* under section 321(a)(2)(C) of the Tariff Act of 1930, as amended (19 U.S.C. 1321(a)(2)(C)).'⁷⁶

Ending the *de minimis* rule is likely to impact the supply chain of precursors, potentially with more of them arriving directly in Mexico instead of arriving in the US before transportation to Mexico for synthesis of illicitly manufactured fentanyl. In view of ongoing demand for synthetic opioids in the US, and to a lesser extent Mexico, this means that Mexican law enforcement will face greater pressure at ports to interdict packages destined for Mexican criminal organizations. Given strong domestic fentanyl production in Canada, the end of the exemption is likely to have less of an impact in that country than in the US and Mexico in terms of the supply chain and volumes available to consumers. According to Canadian law enforcement, high volumes of precursors are stored domestically to create central stores near production hubs in British Columbia, Alberta and Ontario. In this sense, it is likely that small time users and dealers will be affected rather than organized criminal groups that work with larger volumes.



Fentanyl test strips and naloxone at a bar in Oakland, California. Naloxone, which is able to swiftly reverse an opioid overdose, is a key component of harm reduction. © Reuters/Nathan Frandino



APPENDIX: PRICE DATA

rice data is notoriously absent from drug policy conversations. Although drug prices show extreme variability over time and place,⁷⁷ and there is mixed evidence about the ability of policy to influence prices,⁷⁸ this data is nevertheless relevant for understanding market dynamics.

In the context of a militarization of border regions in Mexico, the US and Canada, price data can be useful in determining whether deployments of military personnel in fact stem supply or whether militarization has the unwanted consequences of increasing profitability for criminal groups, or driving further adulteration of products with lethal consequences for users. Arguably, this is relevant for synthetic drugs such as illicitly manufactured fentanyl, given its low cost of production and relatively inelastic demand (i.e. substantial changes in prices have a marginal impact on demand). This means that it is not unthinkable to consider a scenario where fentanyl consumption in the US continues, regardless of additional border controls, translating into higher revenues for criminal actors on both sides of the border.

This appendix presents price data for fentanyl collected from three sources: harm reduction organizations operating in the US-Mexico border region of Tijuana and San Diego, and official government documents and community drug-checking services in Canada. Data from community checking services and harm reduction organizations are particularly valuable insofar as they are collected directly from users who, for the most part, consume fentanyl multiple times daily.

It is important to note that the data presented here provides a snapshot and does not reflect the retail or wholesale markets in their entirety. Moreover, the limited geographic case studies for Mexico and the US are not representative of the countries as a whole. Data presented is from March and April 2025.

Overall, the data shows that governments, civil society and researchers have a long way to go in establishing a robust and systematic understanding of prices within drug markets.

Tijuana

Point (one-tenth of a gram): US\$2.45

Form: Powder

Each dosage or 'point' sells for 50 Mexican pesos, which fluctuates between US\$2.45 to US\$2.80, depending on the exchange rate. Harm reduction operatives in Tijuana report that the price and packaging have been standardized across street dealers such that all synthetic opioids are sold in points of 50 Mexican pesos. Depending on the user's budget, they can buy multiple points, but street dealers sell points that are individually packaged. This means that

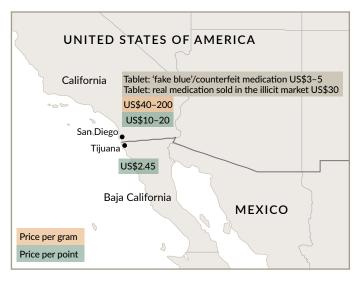


FIGURE 13 Price data map Tijuana /San Diego.

someone purchasing 500 Mexican pesos of product, for example, will receive 10 individual bags rather than a larger packet.

Whereas users and harm reduction operatives in Tijuana are aware of tablets containing fentanyl, these are not generally available in the local retail market and are mainly seen as a product for consumers in the US.

San Diego county

Point: US\$10-US\$20 **Gram:** US\$40-US\$200

Tablet ('fake blue'/counterfeit medication): US\$3-US\$5 **Tablet** (real medication sold in the illicit market): US\$30

Unlike Tijuana, in San Diego County users report varying prices both for 'points' and the purchase of a gram, with consumer discounts available. For instance, in the city of San Diego a user who would typically pay US\$75 per gram can pay US\$60 per gram when purchasing two or more grams. The purity of the gram also varies, depending largely on the quantity of fillers used. This is consistent with data from the Fentanyl Profiling Program, which shows that the average purity of fentanyl powder in California was 23%, with a range of 0.2% to 81.5%.

Packaging also varies: the product is sold in either 'baggies' or wrapped in aluminum foil. People who use doses daily prefer to purchase it in powder form, in large part because there has been a significant shift to smoking instead of injecting. According to harm reduction services operating in the county, users have also requested pipes to enable them to consume fentanyl (such pipes are more generally synonymous with the smoking of methamphetamines). If only tablets are available, users report crushing the tablets to better enable them to smoke (rather than injecting or ingesting).

In terms of the risks associated with using illicitly manufactured fentanyl, three trends reported by harm reduction providers in San Diego County are worth noting:

- Given that the potency of the product is unknown, users are showing more loyalty to dealers whose product has not produced overdoses. This is reportedly different, for example, from the methamphetamine market, where users are more willing to buy from different dealers on the basis of availability and price.
- Adulteration is likely taking place in the US. This is because there is a cyclical nature to reported overdoses by users. For example, when a new batch arrives and therefore users are determining the potency of the product more overdoses are reported. Towards the end of a batch (12 weeks) there is a reduction in the number of overdoses reported, although it is likely this is also in part due to local dealers diluting the strength of doses to ensure that their stash does not run out ahead of them being resupplied.
- Dealers are relevant actors in overdose prevention in San Diego County. This is because some of them make use of the free naloxone distribution program that exists in the county, which involves them proactively ensuring their customers have access to this medication.⁷⁹

Canada

Price points in Canada are significantly higher than those for fentanyl in the US. Canadian fentanyl retails at price points ranging from US\$150-US\$500 per gram (with a mean of US\$245).⁸⁰

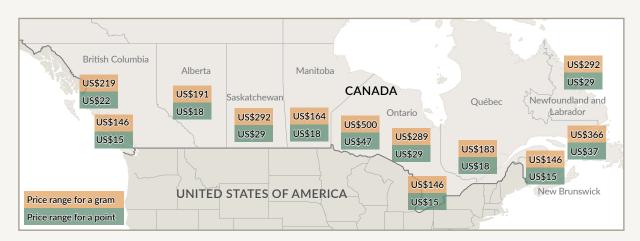


FIGURE 14 Canada: price range for a 'point' and a gram of fentanyl.

SOURCE: Canadian price data is based on provincial law enforcement estimates in 2024. The Canadian high range estimate of US\$500 is based on a per gram estimate for Northern Ontario communities, a location where the market is defined by its geographic remoteness and a low population density.

Official sources

Official data on prices exhibit a wide variability, a challenge that is exacerbated by a lack of consistency in reporting periods. The prices below were collected from publicly available government sources. For comparability, prices have been converted to 2024 US dollars, ⁸¹ with the original year of reporting available in the references.

Agency/ organization	Location	Volume	Wholesale	Retail	Notes
United Nations Office on Drugs and Crime ⁸²	US	Kilogram		US\$33 960- US\$44 148	
Commission on Combatting Synthetic Opioid Trafficking ⁸³	US	Kilogram	US\$26 584		Imported from Mexico at purity levels of 10%.
National Drug Intelligence Center, National Prescription Drug Threat Assessment ⁸⁴	US	Patch		US\$14.61- US\$146.15	
Los Angeles Police Department ⁸⁵	Los Angeles	Kilogram	US\$13 375- US\$15 433		
Los Angeles Police Department	Los Angeles	Gram		US\$60- US\$90	
Los Angeles Police Department	Los Angeles	Pill	US\$0.30- US\$0.70		Price per pill when purchasing 50 000 pills or more.
Los Angeles Police Department	Los Angeles	Pill		US\$5- US\$10	
Department of Justice, Southern District of California ⁸⁶	Imperial Valley	Pill		US\$0.45	According to the source, the price dropped considerably between June 2021 and May 2024 due to increased supply and availability. In June 2021, a pill retailed at US\$1.92 and by May 2024 it was just 45 cents.

FIGURE 15 Prices of illicitly manufactured fentanyl.



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