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From the U.S. to Mexico:
Tracing the Flow of Illicit Firearms across the
Border

by

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and to our families, whose love and support made this work possible.

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Dedication

I would like to begin by thanking my parents, Rachel and Pete, and my stepdad, Jimmy, for their constant love and support. Everything I have achieved is because of the foundation you built for me. You have always encouraged me to work hard, stay grounded, and pursue my goals with determination, and I am endlessly grateful for that.

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Hoya Saxa!

Claire Castrejon

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Hoya Saxa!

Abigail Tank

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List of Acronyms

ATF — Bureau of Alcohol, Tobacco, Firearms, and Explosives

AI — artificial intelligence

AMLO — Andrés Manuel López Obrador; former President of Mexico (2018–2024)

AWB — Federal Assault Weapons Ban

BIS — Bureau of Industry and Security

BLUF — bottom line up front

CBP — U.S. Customs and Border Protection

CCL — Commerce Control List

CPEUM — Constitución Política de los Estados Unidos Mexicanos

CRS — Congressional Research Service

DEA — Drug Enforcement Administration

DOJ — U.S. Department of Justice

FBI — Federal Bureau of Investigation

FFL — Federal Firearms License

FOIA — Freedom of Information Act

GAO — U.S. Government Accountability Office

ICE — U.S. Immigration and Customs Enforcement

IFR — Interim Final Rule

INEGI — Instituto Nacional de Estadística y Geografía

NCTC — National Counterterrorism Center

NFCTA — National Firearms Commerce and Trafficking Assessment

NII — non-intrusive inspection

NRA — National Rifle Association

POE — port of entry

SEDENA — Secretaría de la Defensa Nacional

TTC — time to crime

UCAM — Unidad de Comercialización de Armamento y Municiones

UNODC — United Nations Office on Drugs and Crime

USML — U.S. Munitions List

Abstract

This capstone examines the origins, pathways, and consequences of U.S.-sourced firearms recovered in Mexico, drawing on firearm trace data obtained from the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) through a Freedom of Information Act (FOIA) request. Employing a mixed-methods approach that integrates geospatial analysis, quantitative data, and a structured review of existing literature, this study maps the geographic distribution of traced firearms at the U.S. ZIP code level and analyzes their relationship to major transportation infrastructure across the 2015-2024 study period. The findings reveal that the majority of traced firearms originated in Texas and Arizona, with a notable shift towards Arizona beginning in 2019, a pattern this capstone links to demand-side changes in Mexican trafficking networks, particularly the rise of fentanyl corridors along the Sinaloa-Sonora-Arizona axis and shifting cartel territorial dynamics. Time-to-crime analysis further indicates that a significant share of recovered firearms were purchased and deliberately diverted from legal markets. Situating these findings within broader scholarship on U.S. firearm policy, Mexican legislation, militarization, and cycles of violence, this capstone argues that the flow of U.S. firearms into Mexico constitutes a transnational human rights crisis that cannot be addressed through domestic or militarized solutions alone. In response, this capstone proposes four policy recommendations: implementing universal background checks, increasing outbound border inspections, returning oversight of small arms exports to the U.S. Department of State, and repealing the Tiahrt Amendments. This project was conducted in partnership with Global Exchange's Stop U.S. Arms to Mexico initiative and under the supervision of Professor Jenny Guardado at Georgetown University's Walsh School of Foreign Service.

Introduction

In June 2025, the U.S. Supreme Court blocked a lawsuit brought by the Mexican government against major American gun manufacturers, who stood accused of facilitating gun violence in Mexico. The ruling highlighted a broader and deeply troubling reality: the flow of firearms from the United States into Mexico operates with relative impunity, enabled by structural gaps in U.S. law, enforcement limitations, and a vast commercial arms market. This case was among the catalysts for this capstone project, which seeks to examine the origins, pathways, and consequences of both licit and illicit firearm flows across the U.S.-Mexico border.

The urgency of this issue became increasingly apparent throughout the course of our research. Shortly after the 2026 spring semester started, the assassination of Nemesio Ruben Osegura Cervantes also known as “El Mencho,” leader of the *Cártel de Jalisco Nueva Generación*, triggered a wave of retaliatory violence, with images circulating publicly of cartel members armed with automatic weapons, a stark illustration of the firearm availability that animated Mexico’s ongoing security crisis. These events are not anomalies. They reflect persistent and systemic problems rooted in the asymmetry between the two countries’ regulatory frameworks. While the United States has one of the most accessible commercial firearms markets in the world, Mexico maintains some of the strictest gun laws, with civilians permitted to purchase firearms at only one federally operated location, the *Unidad de Comercialización de Armamento y Municiones (UCAM)* in Mexico City, following a rigorous application process conducted on military bases.

The scale of the U.S.-sourced firearms in Mexico constitutes a growing human rights crisis. This project seeks to contextualize the impact of both illicit firearms on state and non-state violence in Mexico through quantitative and qualitative research, while building upon existing literature on cross-border firearm flows, security governance, and human rights. In doing so, it

contributes to the mission of Global Exchange's Stop U.S. Arms to Mexico initiative, which has worked for over a decade to reduce U.S. legal arms exports and combat illegal trafficking. Under the supervision of Professor Jenny Guardado, this capstone proposes concrete policy recommendations to address the flow of weapons into Mexico. As discourse and policymaking regarding violence and organized crime in Latin America continue to trend toward militarized solutions, it is critical to establish evidence-based frameworks that target the upstream sources of firearm proliferation rather than solely its downstream consequences.

Literature Review and Contextual Background

There is a broad range of research that intersects with the themes discussed in this capstone. Research on firearms and violence in Mexico has expanded substantially over the past two decades, particularly in response to the escalation of the country's war on drugs and the growing recognition of cross-border dynamics in organized crime. The flow of firearms from the United States into Mexico, through legal exports and illicit trafficking, has become a defining factor in Mexico's persistent security and human rights crisis. Consequently, the literature spans multiple disciplines, including political science, criminology, economics, and security studies, and employs a wide range of methodological approaches. Existing research engages with the relationship between firearms and violence in Mexico through overlapping lines of inquiry, including analyses of violence dynamics and organized crime; studies of U.S. policy and cross-border firearm flows; scholarship on the militarization and securitization of Mexican security forces; and research examining how these dynamics reproduce insecurity through cycles of violence and governance failure. However, despite this growing body of work, fundamental uncertainties remain about the scale, composition, pathways, and impacts of firearms entering Mexico. This literature review includes key contributions from several disciplines that intersect with this project and underscores the importance of continued discussion of firearms.

U.S. Firearm Policy and Cross-Border Gun Flows

A growing literature explicitly links violence in Mexico to the availability of firearms originating in the United States. This research examines how variation in U.S. firearm policy, enforcement practices, and market conditions shapes cross-border gun flows, highlighting the international spillover effects of domestic regulation. These studies reframe violence in Mexico

as shaped in part by policy decisions made beyond its borders, emphasizing the transnational consequences of regulatory asymmetries between the two countries.

One of the most influential aspects of this literature investigates how changes in U.S. gun laws affect the availability and lethality of firearms trafficked into Mexico. Dube et al. (2013) demonstrate that the expiration of the U.S. Federal Assault Weapons Ban (AWB) in 2004 was associated with significant increases in gun-related homicides in Mexican municipalities located near the U.S. border. While it is important to note that this increase cannot be attributed solely to the expiration of the ban, given the sheer number of factors that contribute to violence, this study is still important in reflecting how firearm regulation in the U.S. can be a part of changes in violence abroad. These findings underscore the importance of policy-induced variation in firearm supply and availability in shaping the flow of guns (Dube et al., 2013; Grillo, 2013).

Additional research examines the role of regulatory variations within the United States. Differences in state-level gun laws—especially regarding background checks, private sales, and bulk purchasing—create uneven enforcement landscapes that facilitate firearm diversion. Studies show that firearms recovered in Mexico are disproportionately traced to U.S. states with weaker regulatory regimes, suggesting that traffickers strategically exploit legal and geographic loopholes (Dube et al, 2013; Grillo, 2021; McDougal et al., 2015). This literature highlights how the decentralization of gun governance in the U.S. complicates efforts to regulate transnational firearm movement.

In addition to domestic sales regulation, U.S. export policy also shapes cross-border firearm flows. Changes to the governance of commercial arms exports have altered the institutional process for authorizing the international transfer of firearms. In 2017, oversight of most commercial firearm exports was transferred from the U.S. Department of State to the

Department of Commerce. This shift in regulatory authority marked the departure from a foreign policy-oriented framework to an agency whose core mandate emphasizes exports (Stop US Arms to Mexico, 2025). In the wake of the change, the government stated the following:

“These final rules significantly reduce the regulatory burden on the U.S. commercial firearms and ammunition industry, promote American exports, and clarify the regulatory requirements for independent gunsmiths, while at the same time prioritizing national security controls and continuing our ability to restrict exports where human rights, illicit trafficking, and related issues may be of concern. We anticipate that a number of firearms manufacturers, including many small businesses, that are currently required to register with the Department of State, will be relieved from an annual fee burden under these rules. The Department of Commerce’s Bureau of Industry and Security does not have registration requirements or export licensing fees” (Department of State, 2020).

However, unlike the Department of State, the Department of Commerce is not required to notify Congress of applications for firearms export licenses, which has reduced transparency and limited legislative oversight. This change has coincided with a substantial increase in U.S. firearm exports. For example, in the three years following the transfer of authority, global firearm exports increased by approximately 30 percent compared to previous years. During the same period, handgun exports to Latin America rose more than 80 percent. Only in late 2023 did the Department of Commerce finally announce that it would initiate a review of export rules and partially suspend certain export licenses, which did cause a decline in firearm exports (Stop US Arms to Mexico, 2025).

Several other U.S. policy initiatives have sought to stem the southbound flow of weapons with mixed results. For example, the 2009 National Southwest Border Counternarcotics Strategy

under the Obama Administration prioritized disrupting the trafficking of drugs, bulk cash, and firearms through strengthened law enforcement coordination and data-sharing between U.S. and Mexican authorities (DOJ, 2009). Similarly, Project Gunrunner, by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) from 2006-2011, aimed to trace firearms used by Mexican cartels back to the U.S. sources and dismantle trafficking networks. However, while the program led to seizures, it was highly controversial for permitting weapons to “walk,” meaning they were allowed to be sold illegally in order to track the purchase networks. Ultimately, the operations lost track of thousands of guns, contributing to the violence it sought to prevent (DOJ, 2010). These initiatives illustrate the structural tension between enforcement goals and the limitations of U.S. oversight capacity in the face of a vast legal arms market.

Adding depth to this discussion, Chu and Krouse (2009), in their Congressional Research Service report *Gun Trafficking and the Southwest Border*, analyze the structural and institutional barriers that limit the U.S. effectiveness in controlling illicit firearms. They identify three primary challenges: (1) gaps in federal gun-tracking systems, (2) the prevalence of “straw purchases” in the U.S. border states, and (3) inadequate coordination between federal and local enforcement agencies. Their findings highlight how high legal firearm availability and inconsistent enforcement enable traffickers to exploit weak regulatory frameworks. Chu and Krouse conclude that the U.S. lacks a comprehensive, unified strategy to interdict weapons destined for Mexican criminal groups, a gap that undercuts both nations’ security initiatives.

Mexican Legislation

On the Mexican side, legislation on firearms is characterized by strict federal control. While the right to bear arms is guaranteed by Article 10 of the Constitution, it only permits the possession of arms in the home for self-defense. This right does not extend to the right to carry.

Furthermore, the types of guns civilians are legally permitted to purchase are limited. Article 2 of the Federal Law of Firearms¹ allows the possession of handguns (*pistolas*) in calibers of .380 or less², shotguns (*escopetas*) in 12 gauge or smaller, and rifles in .30 caliber or smaller (Kopel, 2012; Law Library of Congress, 2009).

In contrast to the U.S., all legal gun sales and gun permits are issued by the Secretaría de la Defensa Nacional (SEDENA). The sole firearms store in the country, Unidad de Comercialización de Armamento y Municiones (UCAM), is located in Mexico City and is owned and operated by the military. All sales are tracked through the Federal Firearm Registry, and gun permits are valid for one year and must be registered with the Ministry of National Defense within thirty days of acquisition. Gun owners who belong to a federally recognized shooting club are permitted to purchase up to ten firearms, but standard citizens are typically restricted to a single handgun. There are rare cases in which collectors are granted special permits allowing them to own more than ten firearms, but they are subject to frequent military police inspections to prevent theft and diversion. All permit applications are processed on military bases, and applicants undergo thorough screening (*Código Penal Federal*, 1931; *Constitución Política de los Estados Unidos Mexicanos* [CPEUM], 1917, art. 10; Kopel, 2012; Law Library of Congress, 2009; *Ley Federal de Armas de Fuego y Explosivos*, 1971).

Carry permits are also issued differently in Mexico. Unlike in the U.S., the grounds for these permits are: necessity due to occupation or employment; special circumstances related to one's residence; or other reasonable grounds at the discretion of the government. Applicants must also post a bond and provide five character references. However, in practice, these carry licenses are typically restricted to the wealthy or politically connected. For example, in 2012,

¹ Ley Federal de Armas de Fuego y Explosivos [LFAFE], Diario Oficial de la Federación [DOF] 11-01-1972, últimas reformas DOF 29-05-2025, art. 2 (Mex.).

² With the exception of .357 magnum and 9mm parabellum.

there were only about 4,300 carry licenses in Mexico, whereas in 2022, there were an estimated 21.8 million concealed carry permit holders in the U.S. This statistic also does not capture the full scope of American firearm carriers either, because as of 2023, there were twenty-seven states with Constitutional Carry laws; these laws permit people to carry concealed handguns without permits. In other words, approximately 65% of the U.S. is allowed to carry without a permit, making it difficult to accurately measure how many individuals actually carry (Kopel, 2012; Lott, Moody, & Wang, 2023).

Regardless of the legislation, there is a large civilian gun stock in Mexico. In 2017, the *Small Arms Survey*, an international gun control think tank based in Geneva, estimated that there were 3,100,000 registered and 13,700,000 unregistered firearms in civilian hands in Mexico. In contrast, there were over 394,000,000 in civilian holdings in the United States in the same year of investigation (*Small Arms Survey*, 2017). Recent initiatives in Mexico, such as the 2025 national *Sí al Desarme, Sí a la Paz* (Yes to Disarmament, Yes to Peace) campaign, have sought to incentivize voluntary gun surrender through cash rewards. The campaign, in collaboration with the Catholic Church, encourages citizens to anonymously exchange firearms for money and offers up to \$1300 for machine guns and \$1200 for AK-47s. Furthermore, the campaign encourages children to swap toy guns for educational toys. It represents an attempt to reverse decades of proliferation by addressing firearm saturation among civilians. Yet, as reports highlight, roughly 70 percent of homicides in Mexico still involve firearms, many smuggled from the United States, highlighting the persistent imbalance between domestic disarmament efforts and the continued influx of U.S. weapons (CBS News, 2025; Mexico News Daily, 2025).

Legal and Illicit Firearm Flows

Building on research on U.S. and Mexican firearm policy, literature on firearm circulation in Mexico distinguishes between legally authorized transfers and illicit trafficking. Scholars document how legal exports, state procurement, private markets, and diversion mechanisms interact, which complicates efforts to clearly separate licit from illicit flows. This literature underscores the importance of examining firearm movement as a continuum rather than a binary distinction and demonstrates that there is still a lot of work to be done, especially in uncovering illicit flows.

The volume of firearms sold in the U.S. and trafficked across the U.S.-Mexico border is incredibly difficult to estimate. Any attempts to quantify the illicit side of firearm flows encounter the shadowy realities and nature of a trade that deliberately seeks to evade accurate estimations (Hernandez-Roy et al., 2024). Some researchers have attempted to estimate the scale of illicit firearm trafficking by relying on administrative data and indirect measurement strategies. Much of the existing quantitative evidence on U.S.-sourced firearms in Mexico is derived from ATF tracing data, freedom of information requests to SEDENA, and other firearm seizure data. However, it is important to recognize that this data captures only a partial and highly selective subset of firearms recovered in Mexico, especially considering tracing requests to the ATF are submitted primarily by Mexico's federal Attorney General's Office and do not systematically include firearms seized by state or municipal authorities (Hernandez-Roy et al., 2024; McDougal et al., 2015). Furthermore, even the available data is minimal in comparison to the estimated hundreds of thousands of guns trafficked to Mexico every year. These figures more often reflect enforcement and reporting practices rather than underlying trafficking patterns.

Despite these limitations, estimates based on ATF and related data suggest that a substantial number of firearms are diverted from the U.S. legal market into illicit circulation.

Hernandez-Roy et al. (2024) report that at least 253,000 may have been purchased annually with the intent to traffic them into Mexico during the early 2010s. Additionally, the report revealed that Latin America accounts for roughly one-third of global homicides despite representing only eight percent of the world's population—a pattern connected to the influx of U.S.-sourced weapons in the region. Similarly, under Project Thor, the ATF estimated that between 250,000 and one million firearms may be trafficked annually. However, the lack of a publicly available methodology makes this figure difficult to verify independently. Regardless, scholars consistently emphasize that such estimates should be treated with caution (Grassley, 2024; Grillo, 2021; Kopel, 2012; McDougal et al., 2015).

Other studies seek to move beyond seizure-based approaches by modeling demand for trafficked firearms. McDougal et al. (2015) employ a novel spatial, economic, and statistical strategy using country-level data on Federal Firearms Licensees (FFLs) in the United States. By analyzing the density and location of licensed firearm retailers in relation to the U.S.-Mexico border, the authors estimate the proportion of U.S. firearm sales attributable to cross-border trafficking. Their findings suggest that approximately 2.2 percent of domestic U.S. firearm sales during 2010-2012, which is equivalent to roughly 212,000 firearms annually, were intended for trafficking to Mexico. In their discussion, they acknowledge other factors and reasons that might constitute caveats for the estimates in the study, such as demand from border security personnel (e.g., ICE and CBP officers) and 'Minutemen' militia. However, this approach demonstrates that it is possible to leverage retailers' locations to estimate the volume of illicit trafficking in the context of scarce data. Additionally, this approach also conceptualizes trafficking not as an anomaly external to legal markets, but as a demand embedded within lawful commercial activity (McDougal et al., 2015).

Qualitative accounts complement these quantitative analyses by examining the human stories that connect to the dimensions of the firearm trade. Grillo (2021) bridges structural and personal dimensions to demonstrate the complexity of guns and crime. Through interviews across a spectrum of actors, including, but not limited to, government agents, traffickers, gun sellers, victims, and murderers, he determines four primary methods by which guns enter the black market or are directly acquired by criminals: the private-sale loophole, straw purchasing, theft, and ghost guns (Grillo, 2021). He addresses how current legislation allows so many guns to enter the illicit trade. This is echoed in Hernandez-Roy et al. (2024) as well, in the discussion of the growing significance and desirability of untraceable firearms and component parts in cross-border trafficking. “Ghost guns,” which lack serial numbers and can be assembled from parts kits, pose particular challenges for tracing and enforcement because they are excluded from traditional regulatory frameworks. For example, a 2023 U.S. Department of Justice indictment revealed a trafficking scheme involving approximately 4,800 semi-automatic rifle-equivalent parts sent to a single recipient in Mexico, illustrating how fragmented legal transactions can culminate in large-scale illicit transfers (Hernandez-Roy et al., 2024). In another case by the DOJ, an individual acted as a straw purchaser and bought over 700 guns before he was caught (Grillo, 2021). These are just a few of the countless cases that further blur the distinction between legal commerce and illicit flows, as individual transactions may comply with existing regulations while collectively enabling trafficking.

This body of literature demonstrates that legal and illicit firearm flows are deeply intertwined, with legal markets serving as both the source and infrastructure through which diversion occurs (see Figure 1). Efforts to quantify illicit trafficking consistently confront severe data constraints, selective enforcement and data reporting, and methodological trade-offs. As a

result, existing estimates provide only partial insight into the scale and composition of cross-border firearm flows, highlighting the need for continued empirical innovation.

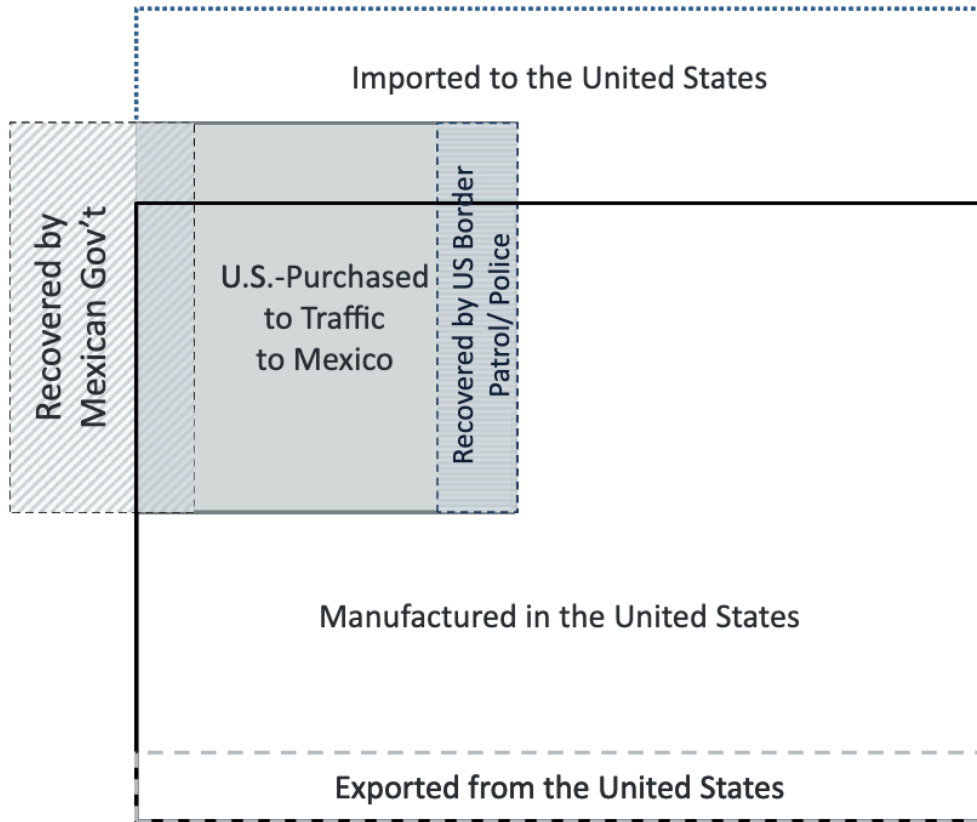


Figure 1: Venn diagram depicting the relationship of total firearms purchased in the U.S. with various sub- and super-sets of firearms. (Box sizes are not proportional to actual volumes. Source: McDougal et al., 2015).

Militarization and Security Governance in Mexico

Beyond analyses of criminal violence and illicit firearms, a substantial body of scholarship examines the militarization of public security in Mexico and its consequences for governance and human rights. They discuss the Mexican War on Drugs as a hybrid conflict—one that blurs the boundaries between organized crime and armed conflict. In this framing, illicit economies operate through reciprocal cross-border flows in which drugs move north, while firearms and cash move south, transforming border cities into sites of sustained militarized

violence rather than episodic criminal activity (Grillo, 2021; Jusionyte, 2024; McDougal et al., 2015). This literature documents the expanded role of the armed forces in policing, increased reliance on military-grade weaponry, and the increasingly securitized approaches to organized crime. While framed as necessary responses to escalating violence by the Mexican government, these strategies have generated new forms of insecurity and contested state authority. This line of research challenges conventional distinctions between crime and war, providing a useful lens for understanding why militarized state responses have expanded under democratic governance and why human rights violations have become systemic rather than exceptional.

For example, Flores-Macías and Zarkin (2021) examine the political consequences of militarizing law enforcement under democratic regimes. This pivotal piece contributes to literature on the constabularization of the military in Latin America and offers a case study of Mexico. The authors found that in the case of Mexico, there has been a generalized constabularization of the military since 2006 under President Calderón. Constabularization in this article is defined as “when the armed forces take on the responsibilities of civilian law enforcement agencies.” In response, organized crime groups have acquired more military-grade weapons and equipment and adopted tactics to withstand increased state militarization. (Flores-Macías & Zarkin, 2021). Furthermore, it deepens scholarship on the impact of militarization on violence and human rights violations. The authors’ evidence suggests that constabularized soldiers engage in more violations than the police, and the rate of complaints against the Mexican military grew significantly once they were deployed for public safety purposes. Their findings underscore how security strategies centered on the deployment of armed forces for domestic policing can reproduce insecurity rather than resolve it (Flores-Macías & Zarkin, 2021).

Perret (2023) also contributes to the literature on the militarization and privatization of security, demonstrating that these shifts have intensified violence and complicated domestic situations in Latin America. He argues that the dual expansion of military and private security roles has reshaped the monopoly of force, generating inequities in protection and often displacing rather than resolving criminal threats. In Mexico, the growing militarization of policing and the increasing presence of private security actors together create a context in which conflict is both perpetuated and institutionalized, illustrating once more how state responses can inadvertently reproduce insecurity even as they aim to contain it. Furthermore, this study discusses the role of human rights law and other existing international legal regimes, and how they are unable to appropriately respond to the challenges posed by the War on Drugs. It emphasizes the importance of these laws in application, but also notes the definitive need for both international humanitarian law and human rights law to adapt to counter the growing violence in Mexico and Latin America as a whole (Perret, 2023).

Together, these two studies highlight three key themes relevant to the study of firearms and violence in Mexico. First, the deployment of military forces does not guarantee reductions in organized crime or homicide, suggesting that the mere concentration of armed power is insufficient to resolve entrenched insecurity. Second, militarization and privatization reshape both the political and institutional landscape of countries, which can weaken citizenship and alter patterns of governance in ways that can facilitate the circulation and misuse of firearms. Finally, these interventions produce unintended consequences that extend beyond immediate crime outcomes, creating cycles of violence in which communities remain vulnerable, and organized actors continue to exploit firearm flows. Furthermore, vulnerable populations plagued by this insecurity can find opportunities to participate in these illicit activities. By situating Mexico

within these broader Latin American patterns, this literature provides a foundation for understanding the interaction between state security policy, constabularization, and the persistence of violence. This offers an essential context for analyses of firearm flows and their consequences—many of which extend beyond the immediate, obvious headlines.

Insecurity and Cycles of Violence

Finally, another substantial body of scholarship examines how violence reshapes insecurity, governance, and social life in Mexico. Researchers highlight how firearm-enabled violence erodes trust in institutions, normalizes coercion, and generates cycles of fear and displacement that extend beyond direct victimization. These dynamics contribute to the reproduction of insecurity, reinforcing conditions that allow violence to persist over time.

For example, Michaelsen and Salardi (2010) explore how violence impacts educational performance during Mexico's War on Drugs. They found that homicides near schools lead to lower scores on exams for primary students, especially when violence occurred during the week prior to exams due to psychological stress and other consequences, such as temporary school closure and teacher strikes. Their work is part of a growing body of research seeking to understand the violence on educational outcomes, which can have long-term effects on their adult life and reinforce prior inequalities (Michaelsen & Salardi, 2010). Similarly, Brown and Velasquez (2017) investigated the effect of violent crime on the human capital accumulation of young adults. The results showed that violence exposure in Mexico reduces the educational attainment of young adults, which then increases the probability of unemployment. (Brown & Velasquez, 2017).

In Adams (2011), the author discusses how low levels of social capital have been demonstrated to be both cause and effect of chronic violence. This violence can lead to a

breakdown of family and intergenerational relations, destruction of traditions, and an intensification of interpersonal and gender violence. In these conditions dominated by violence, fear, and social repression, the lines between perpetrators and victims become increasingly blurred (Adams, 2011). As Grillo found during his research and interviews for the book, *Blood Gun Money*, low levels of social capital leave youth vulnerable to the appeal of illicit opportunities linked to violence, where they, in turn, become perpetrators of violence. Communities that face insecurity provide ample spaces for criminal groups to proliferate and recruit new members. These neighborhoods face the trauma and negative economic consequences of these violent and illicit activities, continuing the deadly and bloody cycle of poverty and violence (Adams, 2011; Cruz, 2016; Grillo, 2021).

Collectively, this research illustrates how violence shapes not only the social and economic outcomes of populations but also the structural conditions that perpetuate insecurity and crime. Firearms play a central role in these dynamics, serving as tools and symbols of coercion, power, and opportunity (Aponte González et al., 2023). The widespread availability and use of guns amplifies the lethality of conflicts, enables the expansion of organized crime, and reinforces cycles in which vulnerable populations experience both direct victimization and long-term social and economic harm. These findings underscore the importance of examining how firearms interact with social and institutional structures and realities.

What We Know vs. What We Don't

Existing scholarship has established several core findings about the relationship between firearms, violence, and insecurity in Mexico. This research has spanned political science, economics, sociology, criminology, security studies, and more to help provide insights into the impact and nature of the firearm trade. At the same time, this literature is marked by contested

claims, uneven evidence, statistical weaknesses, and extraneous variables that go unacknowledged. Therefore, it is essential to clearly distinguish what is known from what remains uncertain or underexplored. This section first discusses areas of relative consensus in the literature before turning to the limitations of current knowledge.

The Known

First, there is broad agreement that firearms play a central role in the lethality and intensity of violence. A substantial share of homicides are committed with firearms, and regions affected by organized crime and trafficking routes are often associated with higher homicide rates. Firearms are an essential tool for market operations of organized crime groups and an accelerant for disputes. Criminals use guns to regulate their illicit markets, eliminate rivals, enforce debts, establish parallel governance, and counter law enforcement. They function not only as tools of violence but also as strategic assets that shape patterns within criminal markets and populations as a whole. In these communities, guns become a symbol of power and opportunity, especially in the face of insecurity. Firearms also amplify the speed and scale of intentional and unintentional homicide (Aponte González et al., 2023; Blattman et al., 2025; Dube et al., 2013; UNODC, 2024).

Second, the literature consistently finds that a large portion of firearms used in Mexico originates in the United States. These weapons enter Mexico through both licit and illicit methods. For example, arms are legally transferred to Mexico through government-to-government sales, joint operations, and other legal processes. Illicit networks include diversion from legal markets through a variety of methods, including straw purchasing, unlicensed dealing, and theft. However, even legal transactions between governments are subject to leakage when states are unable to protect their stocks from theft, unauthorized retransfers, or

corrupt diversion (UNODC, 2024). While precise estimates vary considerably, scholars still agree that U.S.-sourced firearms constitute a dominant share of guns recovered in Mexico, underscoring the transnational nature of the problem (Grillo, 2021; McDougal et al., 2015).

Additionally, scholars also recognize that firearm-enabled violence generates broader forms of insecurity that extend beyond just direct victimization. Studies such as those discussed in the literature review document how exposure to violence undermines educational outcomes, labor market participation, social trust, and community cohesion, therefore producing long-term social and economic costs. These effects reinforce cycles of insecurity by weakening institutions, increasing fear, and fracturing citizens' trust in both the government and the efficacy of democracy. This creates conditions in which armed actors can more easily recruit, govern, and expand their influence (Adams, 2011; Blattman et al., 2025; Lessing, 2015; Lessing, 2021).

Finally, there is the understanding that firearm violence in Mexico cannot be understood as solely a domestic phenomenon. The interaction between U.S. gun markets, Mexican security policy, and regional trafficking networks is central to understanding the persistence and distribution of violence. Legal loopholes in the American legal system fuel illegal markets because of the ease with which criminals can acquire arms practically undetected. While the Mexican Constitution guarantees the right to carry arms, the possession and sales of firearms, ammunition, and explosives are highly regulated. By understanding and identifying the role of the United States, literature offers better analyses that emphasize cross-border spillovers, policy asymmetries, and globalized arms markets.

The Unknown

While it is important to note what is known about the firearm trade, it is equally, if not more, important to identify and discuss the unknowns of the illicit trade. Scholars face persistent

uncertainty regarding the scale, perpetrators, pathways, and consequences of illicit firearms flows. These unknowns reflect technical limitations along with factors such as corruption, impunity, and institutional constraints that ultimately undermine both data collection and the reliability of available information.

One of the most significant gaps concerns the exact scale of the illegal trade. As mentioned previously, researchers can estimate the number of firearms trafficked using tracing data, seizure records, or proxies such as gun dealer density, but these methods capture only a fraction of a much larger market. What is known about the legal trade cannot be transposed to the illicit trade. Diversion of firearms often occurs within legal supply chains, yet these processes are rarely observable in official data. Furthermore, certain statutory and constitutional limitations prevent key law enforcement personnel, specifically the ATF, from employing actions that might infringe on the rights and privacy of lawful gun owners. For example, federal law prohibits the ATF from centralizing or computerizing firearms purchase records to create a national gun registry. This constitutes a major limitation on tracking the movement of all firearms and owners, which could aid in illicit trade investigations. Similarly, no law requires FFLs to flag or report purchases of large quantities of firearms in a single transaction or over a short period. While some transactions and individuals have garnered the attention of authorities, it is unknown how many more have previously and are currently flying under the radar. Furthermore, fragmented jurisdictional authority and inconsistent inter-agency coordination in the U.S. and Mexico, respectively, and between the two countries, limit the capacity to counter this problem (Grillo, 2021).

Relatedly, there is limited detailed knowledge of informal smuggling networks. While the U.S. government has conducted many operations to uncover these routes, most notoriously, the

failed Operation Fast and Furious, where thousands of guns were allowed to “walk” from stores in an attempt to track where the guns ended up, there has been little success. Existing research identifies common routes or trafficking methods in the broader sense, but the organizational structure, scale, and adaptability of these networks remain poorly understood. Corruption among customs officials, law enforcement, and political actors on both sides of the border further obscures these flows, especially as incentives and coercion to conceal or manipulate records undermine transparency. In contexts of high impunity, especially in Mexican communities dominated by organized crime groups, the absence of enforcement not only enables trafficking but also erodes the production of credible information about it and the trustworthiness of the government.

Another issue concerns the precise causal mechanisms linking firearm flows to violence. While the correlation between firearm availability and homicide rates is well established, isolating how specific flows translate into particular forms of violence remains difficult. Firearms may increase lethality, alter criminal competition, empower non-state actors, or shift state responses—but these effects do not operate in isolation. These patterns of violence are also shaped by a range of factors, including, but not limited to, uneven state presence, unequal access to public goods, forced displacement, internal migration, gender norms, and many more factors. These overlapping factors complicate efforts to identify the specific impact of firearms. Quantitative analyses have to be particularly mindful to control for variables that might influence the observed effect.

Beyond immediate data on violence and trafficking, there is limited research on the long-term social and institutional impacts of sustained firearm proliferation. While studies, such as those in the literature review, have documented the effects on education, employment, and

social cohesion, there remains a realm of research that deserves greater attention. The outcomes of chronic exposure to violence can vary from community to community. Furthermore, they are difficult to quantify and often unfold in ways that are not easily captured by conventional datasets. It is the responsibility of future researchers to continue traversing these difficult topics to determine how violence fed by firearms reshapes governance and communities. A combination of qualitative and quantitative methods is crucial for strengthening insights for this complex problem.

Finally, the problem of missing or unreliable data in settings with strong institutions as well as in those with weak institutions reflects the sheer challenge of collecting data on the illicit trade. Data is often inconsistent or incomplete due to jurisdictional differences, limited reporting mandates, and methodological constraints. Furthermore, information may be strategically withheld, selectively reported, or manipulated in response to political incentives, self-preservation, or direct complicity. At the population level, victims and witnesses may also underreport violence due to fear of retaliation, mistrust in authorities, or disillusionment with the system. As a result, scholars confront a dual challenge: the majority of the relevant information on illicit firearm flows and violence is missing, and the data that does exist may reflect bureaucratic or political constraints that obscure empirical realities. Research in this area relies heavily on partial, indirect, and triangulated evidence to approximate a phenomenon that remains difficult—if not impossible—to observe directly.

Ultimately, what remains unknown about illicit firearm flows is inseparable from the conditions that sustain them. Illicit flows are designed to evade detection, making them difficult to study. Furthermore, the production of knowledge about violence and insecurity is constrained by secrecy, fear, bureaucratic limits, and political interests that shape what is recorded, what is

omitted, and what can be safely known. While these constraints do not invalidate existing research, they do demand greater reflection about how evidence is generated and interpreted. Acknowledging the limitations of data is necessary for a context-sensitive analysis of this ongoing problem.

Methodology

This capstone employs a mixed-methods approach, integrating quantitative, geospatial, and qualitative analysis to examine the flow of firearms purchased in the United States and recovered in Mexico. The quantitative and spatial components identify measurable patterns in firearm trace data, while the qualitative component draws on existing academic literature and policy research to contextualize these patterns within broader institutional, regulatory, and socio-political dynamics.

The qualitative component consists of a structured review of existing scholarship on arms trafficking, violence, and governance in Mexico. This literature informs research design, guides variable selection, and supports the interpretation of observed spatial and statistical patterns. Rather than generating original qualitative data, this study relies on secondary sources to provide theoretical and contextual groundings for the findings and policy recommendations.

Research Design

This study employs a quantitative, geospatial research design to examine the distribution of U.S.-sourced firearms recovered in Mexico and their relationship to transportation infrastructure. The primary unit of analysis is the U.S. ZIP code associated with the point of firearm purchase, with additional analysis conducted at the Mexican state level for firearm recovery and homicide data. The study period spans 2015-2024, enabling examination of both the spatial distribution and temporal variation in firearm recoveries over time.

Data Sources

Firearm Trace Data

The primary dataset consists of firearm trace records obtained from the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF) through a Freedom of Information Act

(FOIA) request submitted by our partner organization, Stop U.S. Arms to Mexico. The dataset includes records of firearms recovered in Mexico and successfully traced to their point of purchase in the United States. Key variables include the recovery location by Mexican state, the purchaser's U.S. ZIP code, total firearm counts, and time-to-crime (TTC), defined as the elapsed time between purchase and recovery. The use of FOIA-obtained trace data provides a rare and detailed view of cross-border firearm flows, enabling spatial analysis at the ZIP code level that is not possible with publicly available data.

Transportation Infrastructure Data

To examine the spatial relationship between firearm origins and major transportation networks, this study incorporated roadway infrastructure data for both Mexico and the United States. The Mexican road network was obtained in shapefile format and projected in WGS84. Relevant attributes, including road classifications (tipo vial), speed (velocidad), and road hierarchy (nivel), were used to isolate high-capacity transportation corridors, with particular emphasis on major highway segments. U.S. roadway data were obtained from the U.S. Census Bureau's TIGER/Line shapefiles, which provided detailed geographic information on national transportation networks and were used to contextualize firearm purchase locations within major domestic corridors.

Homicide Data

To contextualize patterns of violence within Mexico, this study incorporated homicide data from the Instituto Nacional de Estadística y Geografía (INEGI), aggregated at the state level and covering the period 2015-2024. This data serves as a macro-level indicator of lethal violence, enabling geographic comparison between firearm recovery patterns and broader trends in homicide across Mexican states.

Data Preparation

Prior to analysis, the ATF firearm trace data were cleaned and standardized. Records with missing or invalid ZIP code information were removed, and ZIP codes were formatted consistently as five-digit numeric values to align with Tableau's geographic role requirements. The dataset was filtered to include only firearms successfully traced to Mexico during the 2015-2024 study period, and duplicate or incomplete entries were excluded to maintain data integrity.

Following cleaning, the data were aggregated at the ZIP code level by summing total firearm recovery counts per location. The dataset was also organized by year to enable temporal filtering and comparison across the study period. Additional variables were constructed to support visualization and analysis, including total firearm recoveries per ZIP code, year-based fields for temporal segmentation, and time-to-crime categories grouped into defined intervals. The Mexico road network shapefile was prepared for use in Tableau by verifying coordinate reference system compatibility with the mapping environment. Roadway segments were filtered to retain only primary networks, enabling a cleaner visualization of major transportation corridors.

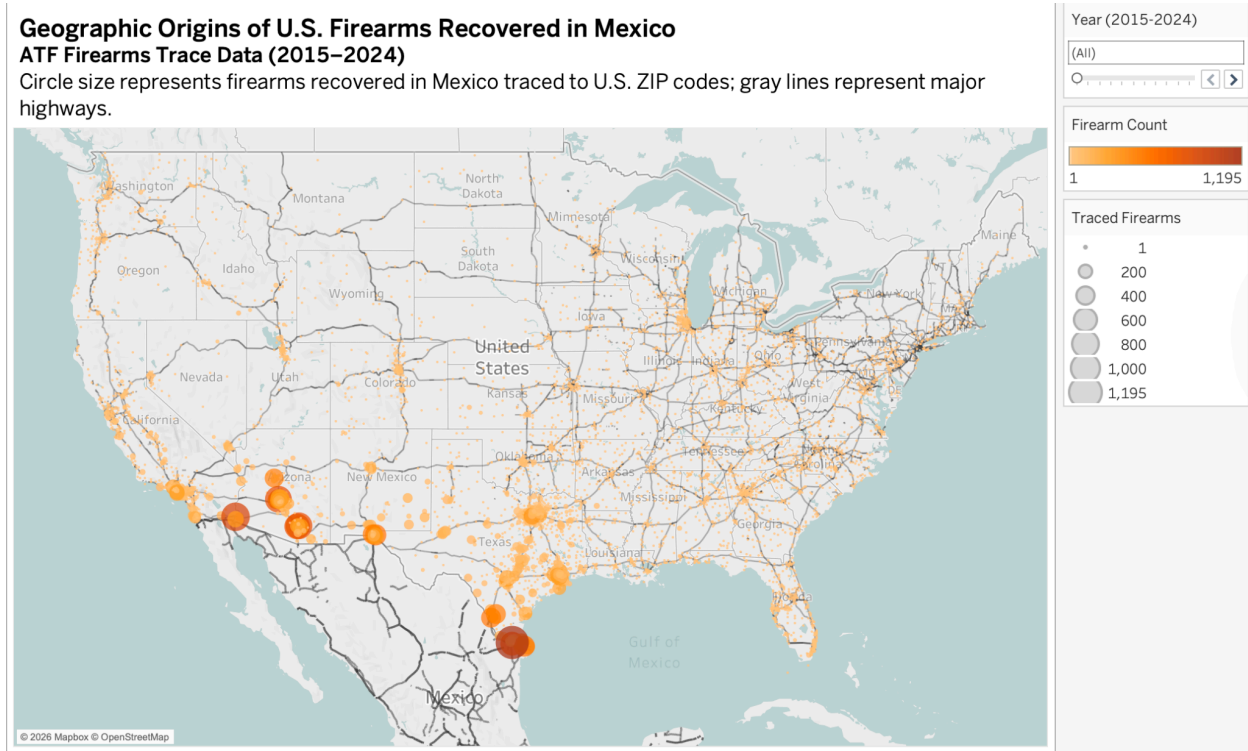
Data Integration and Visualization

Cleaned and aggregated firearm trace data were imported into Tableau and lined to geographic locations using Tableau's built-in ZIP code geocoding functionality. The Mexico and U.S. road network shapefiles were loaded as separate data sources and rendered using their respective geometry fields. These datasets were combined within Tableau to produce a layered geospatial visualization integrating point-based firearm recovery data with line-based

transportation infrastructure, allowing for simultaneous analysis of firearm origin patterns and major roadway networks across the study region.

Results and Analysis

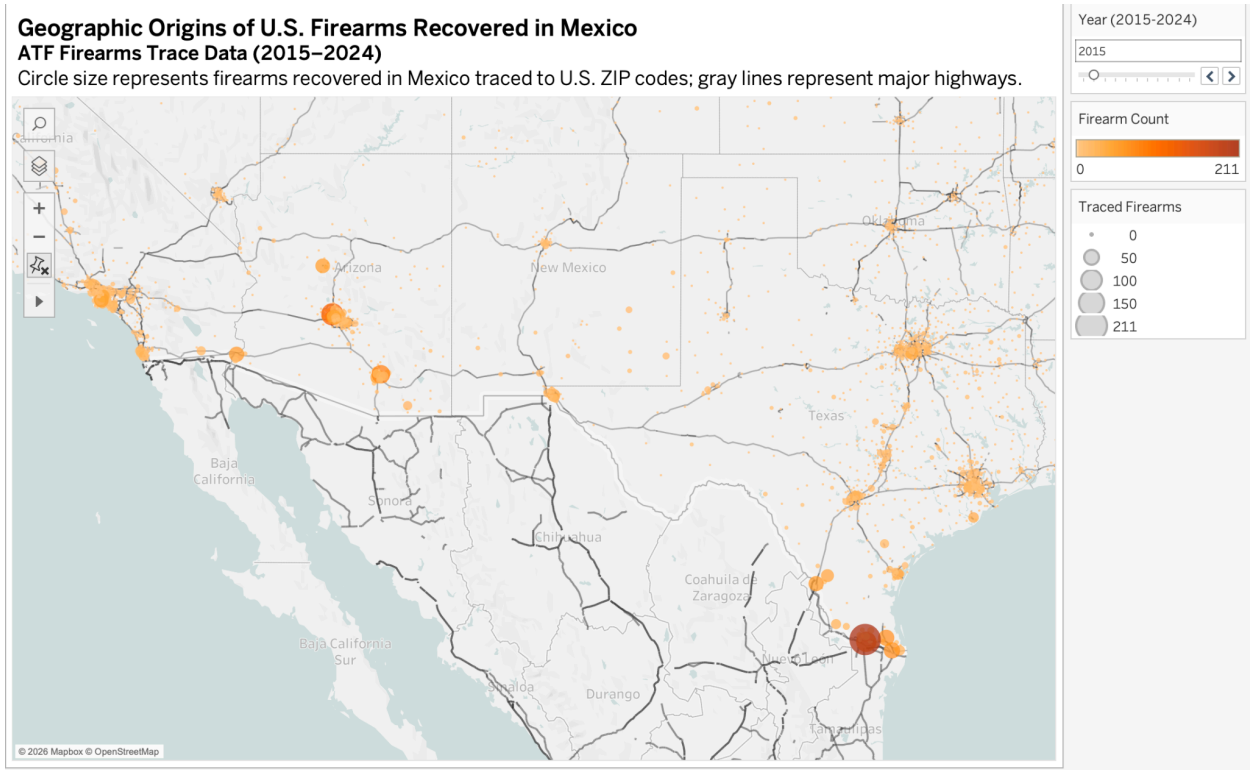
Figure 2: Geographic Origins of U.S. Firearms Recovered in Mexico (2015-2024)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

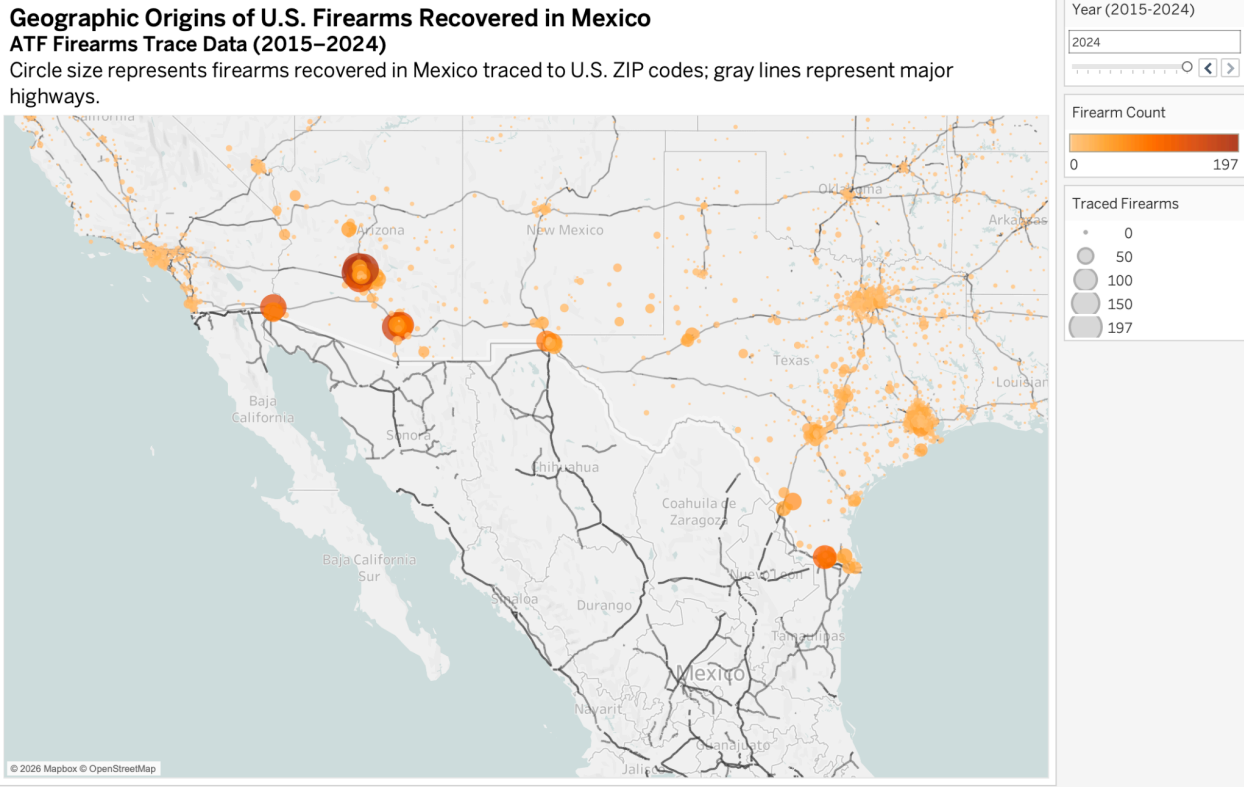
Figure 2 illustrates the geographic origins of U.S. firearms recovered in Mexico, traced to U.S. ZIP codes, with yellow, orange, and red circles indicating areas with high levels of traced firearms recovered from 2015-2024. Furthermore, the gray lines represent major highways in the U.S. and Mexico, demonstrating the proximity of various firearm hotspots to highways. All of the regions with high levels of firearms traced back to points-of-purchase are in close proximity to or are directly passed through by major national transportation networks. As seen in Figures 3 and 4 below, the concentration of firearms traced back to Arizona has greatly increased over the ten-year period, especially around the cities of Tucson, Phoenix, and Yuma. Where the southern tip of Texas had the highest concentration of traced firearms in 2015. See Figures A.1 and A.2 in the Appendix for complete maps of the continental U.S. during 2015 and 2024.

Figure 3: Geographic Origins of U.S. Firearms Recovered in Mexico (U.S. Border States, 2015)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

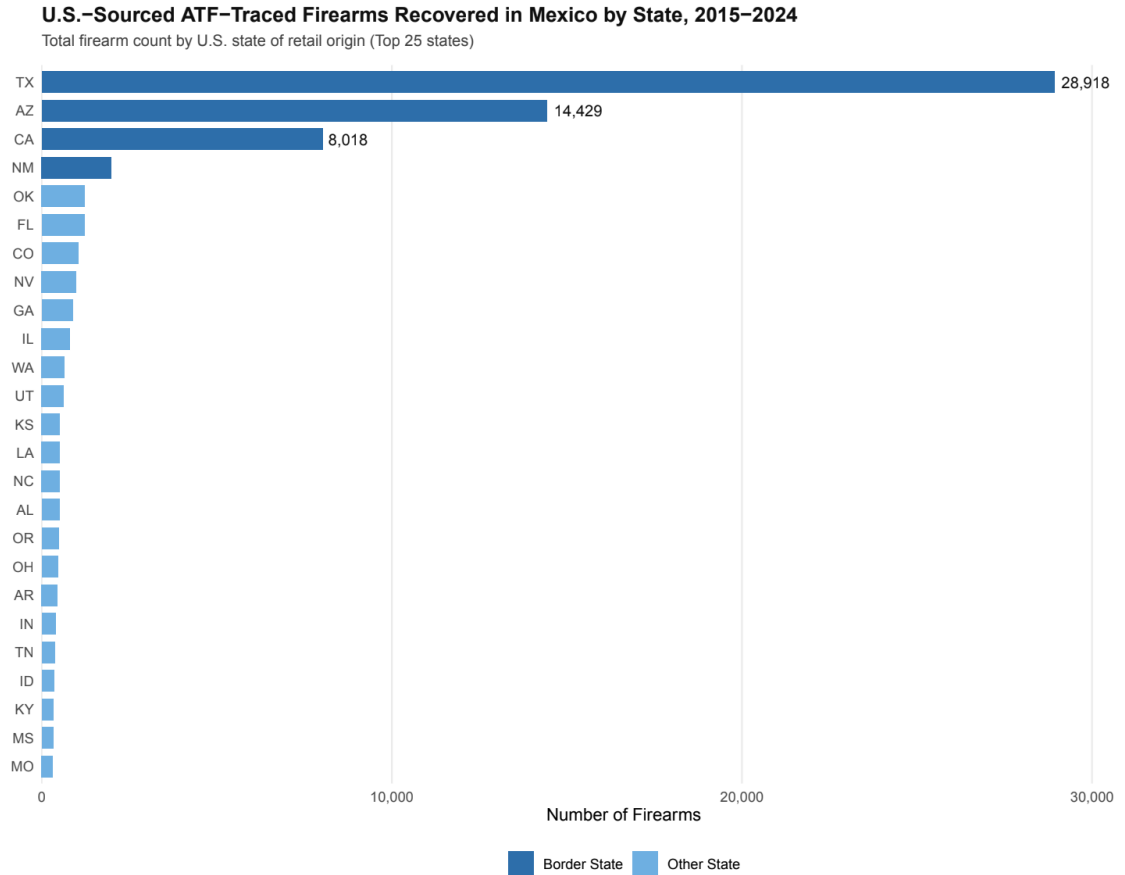
Figure 4: Geographic Origins of U.S. Firearms Recovered in Mexico (U.S. Border States, 2024)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

The primary clusters of high-intensity locations where firearms were traced to are visible along the southern border throughout the entire 2015-2024 period of study. Notably, while Texas was where the majority of guns recovered in Mexico and traced to U.S. purchase were sold from 2015-2018, there was a shift in 2019 and onward. Now, the data on guns trafficked from the U.S. to Mexico shows that the majority of the guns were sold in Arizona. Of the more than 73,000 firearms recovered in the last decade that were traced to a U.S. purchase, nearly 9,000 were recovered less than a year after their original purchase, and 83.6% were bought in Texas or Arizona. Figure 5 below displays the top 25 point-of-sale states, showing the total firearms recovered in Mexico and traced by the ATF during that period in each state.

Figure 5: Totals of U.S.-Sourced ATF-Traced Firearms Recovered in Mexico by State (2015-2024)



Source: ATF Firearms Trace Data, 2015-2024
 Note: State assigned from ZIP code using USPS prefix ranges. Dark blue bars indicate U.S.-Mexico border states.

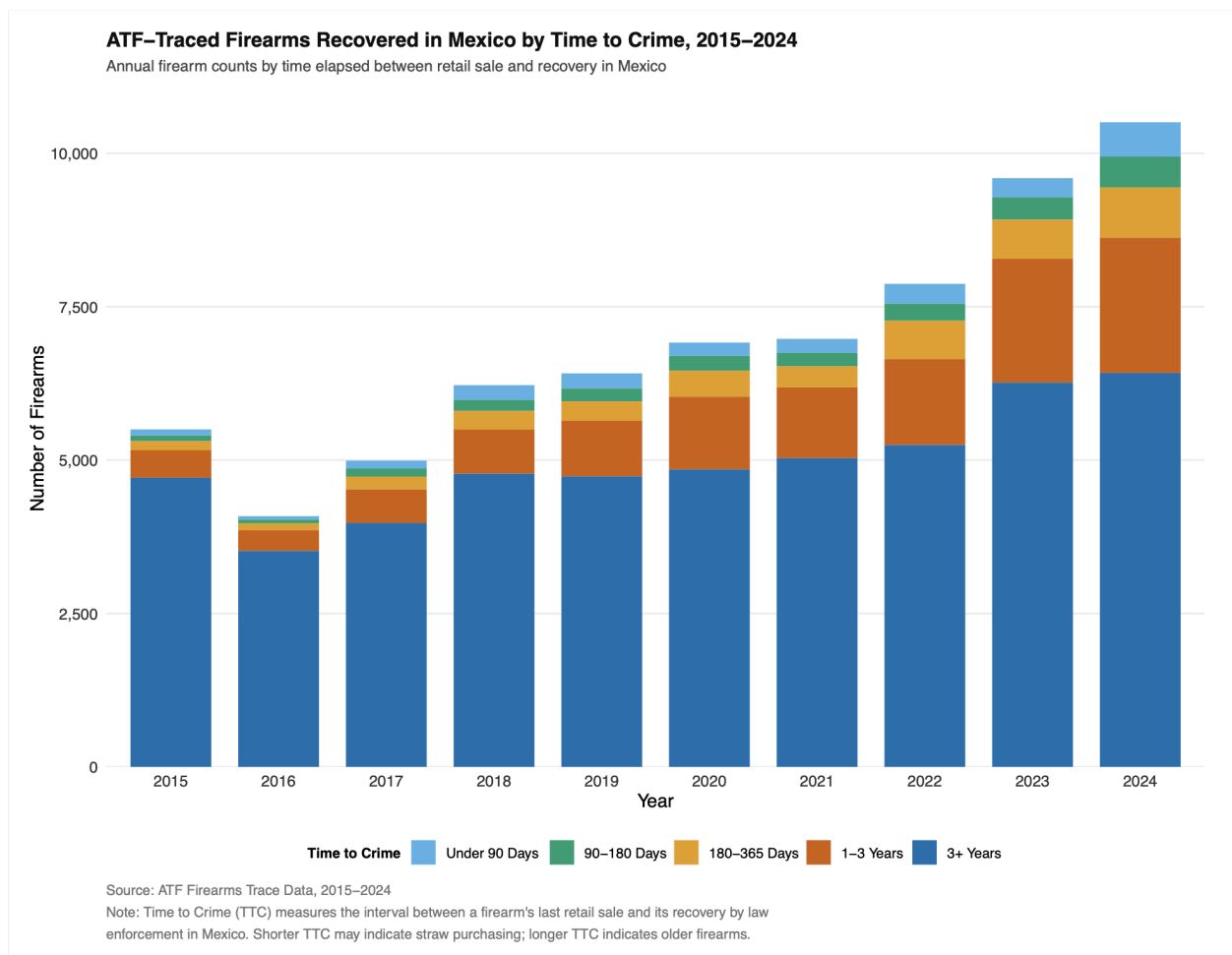
Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

From 2023-2024, of the top fifteen U.S. ZIP codes where the most guns were purchased and then recovered in Mexico, fourteen of them are located in Arizona. Furthermore, according to ATF data, 62% of U.S. guns trafficked to Mexico with a short “time-to-crime” of a year or less (the time between purchase and confiscation) came from Arizona (Stop US Arms to Mexico, 2026). Between Texas and Arizona, 69% of the short time-to-crime guns recovered and traced in 2024 came from just three counties: Maricopa, Pima, and Harris. As seen in Figure 4 of 2024, the largest hotspots were located in these border regions. Maricopa County, Arizona (the Phoenix

area), accounted for 53.9% of these guns; Pima County, Arizona (Tucson area), 8.8%; and Harris County, Texas (Houston area), 6.4%.

The short time-to-crime factor is a primary indicator of firearm trafficking because it suggests that the weapon was likely diverted from the legal market to the criminal market shortly after purchase. In other words, the rapid transition from the legal to criminal market indicates the original purchaser bought the firearm with the intent to resell it or transfer it to an illicit user. The number of short time-to-crime guns that were recovered in Mexico and traced by the ATF has increased drastically since 2015. Figure 6 below demonstrates this growth.

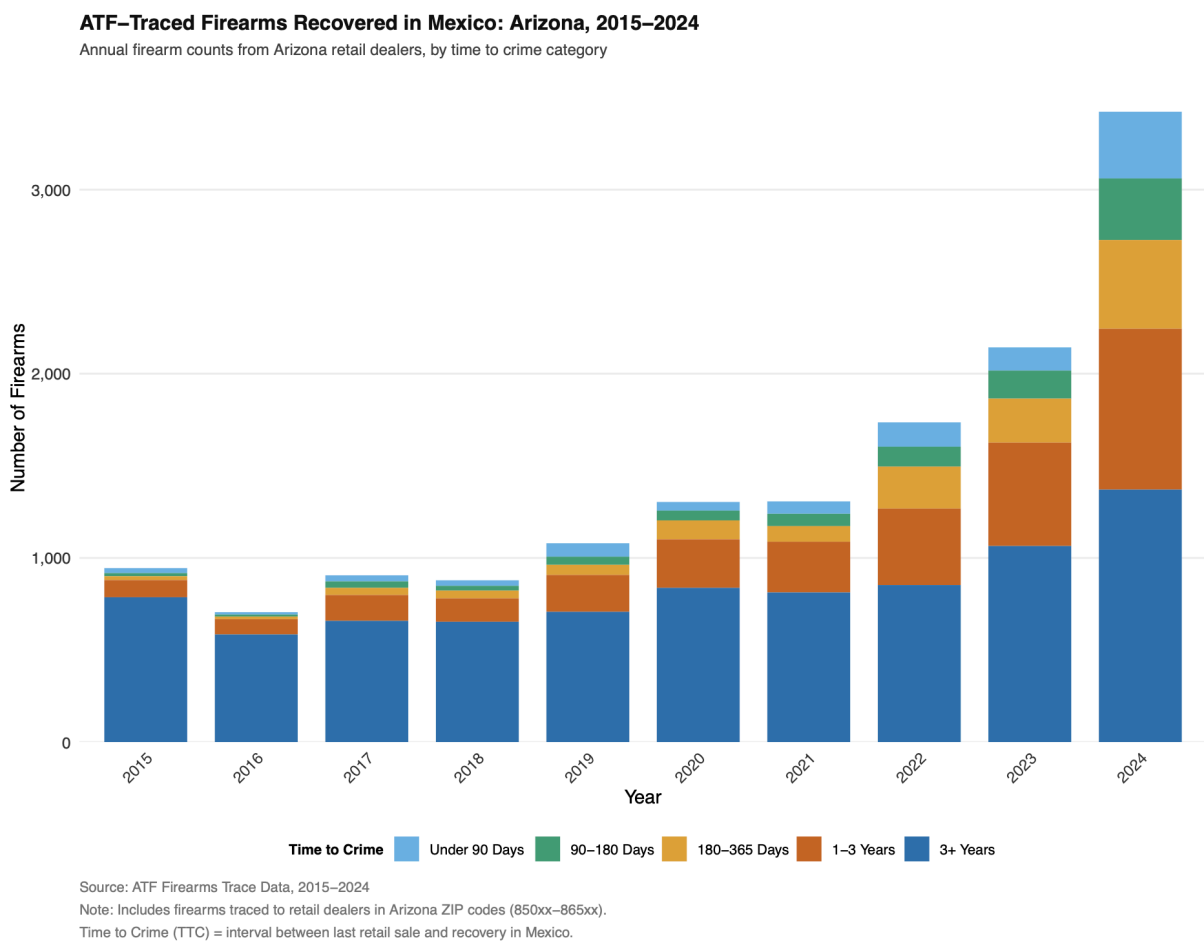
Figure 6: ATF-Traced Firearms Recovered in Mexico by Time-to-Crime (2015-2024)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

While Texas has remained a steady source of trafficked guns, the portion of guns sourced from Arizona, specifically with a short time-to-crime of a year or less, has increased dramatically to the point where approximately a third of Arizona guns recovered and traced in 2024 had a time-to-crime of a year or less (see Figure 7 below of Arizona and Figure A.6 in the Appendix of Texas). This indicates a clear shift in traffickers’ purchase location preference. But what caused this shift?

Figure 7: Time-to-Crime of ATF-Traced Firearms Recovered in Mexico (Arizona, 2015-2024)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

Ultimately, traffickers' main objective is to minimize costs to maximize profits. When something changes—whether that be policy, increased policing, heightened federal scrutiny—that makes a location less (or more) conducive to illicit activity, organized crime may divert its networks elsewhere. On the firearm policy side, Texas and Arizona are quite similar in their legislation, as both have permissive “constitutional carry” gun laws, meaning that individuals twenty-one and older can carry concealed or openly without a permit. Additionally, neither state requires background checks for private, non-licensed gun sales. Background checks are required for purchases from Federal Firearms Licensees (FFLs). However, there were no major changes from 2015 to 2024 that would have made it easier to purchase firearms in Arizona than in Texas.

Similarly, there is little evidence of a relative decline in border enforcement intensity or security posture divergence between Arizona and Texas that could explain a structural shift in trafficking routes. U.S. Customs and Border Protection (CBP) maintained sustained enforcement operations and broadly parallel enforcement operations across both regions (*CBP operational data*, 2026). Across this period, enforcement priorities and capabilities were adjusted at the federal level and applied across the U.S.-Mexico border as a whole, with no documented state-specific relaxation or weakening in Arizona relative to Texas. Therefore, neither variation in border enforcement nor firearm policy provides a plausible explanation for the observed shift in the relative importance of Arizona within cross-border trafficking networks. Therefore, if the U.S. (supply) side, from a policy standpoint, has not caused the patterns of illicit firearm flows to change, other angles need to be examined.

Looking at the demand side, a series of events may have shifted purchase preferences. For example, in July 2023, under the AMLO administration, the navy was granted full control of

Mexico City's busiest airport to combat smuggling. Furthermore, customs oversight at ports of entry and exit was also transferred over to Mexico's military (Center for Preventive Action, 2026). This would have made aspects of aerial smuggling more difficult, especially for weapons-trafficking networks moving from the Gulf to the Pacific side of Mexico. Additionally, another challenge facing trafficking networks connected to Tamaulipas was the repeated, highly visible federal security deployments during this period. These deployments were triggered by spikes in cartel violence and fragmentation, particularly involving the Gulf Cartel factions and splinter groups competing over key trafficking corridors (NCTC, 2026; Park, 2025). These interventions often took the form of rapid "surge" operations by the Mexican military forces and once formed, the National Guard. They were often concentrated in strategic hotspots such as Reynosa and Nuevo Laredo; they were publicly visible with stated goals of restoring order, securing highways, and reasserting federal control over contested areas.³

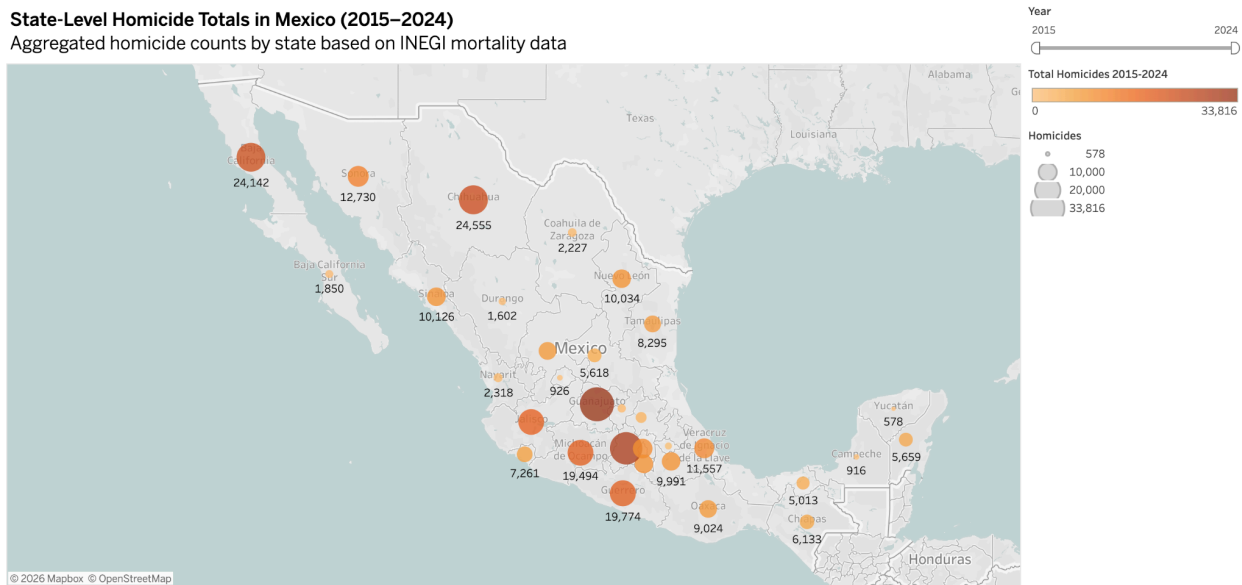
While Tamaulipas was not unique in terms of temporary federal interventions by the Mexican state, the frequency and scale of these interventions within Tamaulipas may have been another reason Arizona became more appealing for gun trafficking. The yearly counts of firearms recovered in Mexico and traced by the ATF also demonstrate the shift. For example, in 2015, 1,101 firearms were recovered in Tamaulipas and traced back to U.S. purchases; by contrast, 595 firearms were recovered and traced in 2024. That is almost a 46% reduction. The complete opposite happened in Sonora. In 2015, 569 firearms were recovered and traced back to U.S. purchases, and that number rose to 1,673 firearms in 2024 (See Figure A.3 in the Appendix for the total firearms recovered and traced by Mexican state, and see Figures A.4 and A.5 for the 2015 and 2024 yearly counts by state). The increase in Sonora and decrease in Tamaulipas could

³ See a few examples: [Mexican Defense Ministry deploys 500 troops to Tamaulipas](#); [AMLO Has Fueled Mexico's Drug War](#); [Tiroteos y redadas militares: la implacable búsqueda de un líder del Cártel del Golfo detona violencia en Tamaulipas - Infobae](#); [Llegan 300 elementos de Fuerzas Federales a Matamoros – El Financiero](#)

be attributed to the increase in guns trafficked from Arizona. Demand for Texas-origin guns remained strong regardless, but the increased scrutiny, regardless of whether or not the Mexican government had sustained stabilization in the regions where it deployed forces, is a potential cause for preferences to shift.

Additionally, it is important to explore how the flow of U.S. arms into Mexico has impacted violence. Figure 8 below shows the aggregated homicide counts by Mexican state from 2015 to 2024. It reveals potential patterns between arms flows and violence, as states with high homicide counts are also the states with high numbers of firearms recovered and traced back to U.S. purchases. Notably, the U.S.-Mexico border states that have high recovery and trace levels also have high homicide counts.

Figure 8: State-Level Homicide Totals in Mexico (2015-2024)



Note: Own construction using data from INEGI.

Several important limitations influence the scope and interpretation of this relationship. For example, homicide data in Mexico is widely understood to suffer from underreporting, misclassification, political distortion, and other factors. Although INEGI represents the most

authoritative official source available, its figures ultimately reflect state-recorded homicide rather than the true incidence of lethal violence. Disappearances, extrajudicial killings, and deaths misclassified under other causes are therefore not fully captured. As a result, the homicide figures used here should be interpreted as indicators of officially recorded violence rather than comprehensive measures of insecurity and violence. Nevertheless, the spatial overlap between high levels of traced weapons and homicide counts underscores the importance of further examination of how firearms impact security realities for communities plagued by violence.

Shifting back to the question of what has caused the shift to Arizona, cartel activities are another avenue to explore. In regards to the Sinaloa Cartel, a lot has happened over the last decade. Following the 2014 recapture of its leader, Joaquín “El Chapo” Guzmán, subsequent escape in 2015, and recapture in January 2016, a power vacuum occurred within the cartel. This caused an increase in violence not only among the various factions within the Sinaloa Cartel but also with rival groups seeking new territory and influence. Even more recently, the arrest and extradition of the cartel’s leader, Ismael “El Mayo” Zambada, in July 2024 have sparked internal wars. Since then, more than two thousand people have been killed in Sinaloa. It is also the Mexican state with the highest rate of police officers murdered, with 46 officers killed in 2025 as of December 18. Most of the weapons used during the bloody internal war are from the U.S., specifically from Arizona (Center for Preventive Action, 2025; Fernanda Arocha & Pellegrini, 2025). The increased movement of firearms to Sinaloa since mid-2024 is reflected in data on gun confiscations by the Mexican military as well. In 2025 alone, 2,095 firearms were seized in the state of Sinaloa, more than twice as many as in any other state.⁴

⁴ Secretaría de Defensa Nacional, January 19, 2026, response to public information request, Folio 340026400005526.

The instability in the Sinaloa Cartel's leadership has not only caused a spike in violence in the group's stronghold of Sinaloa but has also spread to territories controlled and disputed by the group. Similar to what occurred in the wake of El Chapo's capture and extradition to the United States, rival criminal groups are seeking to exploit internal rifts within the Sinaloa Cartel to expand operations and territorial control (Fernanda Arocha & Pellegrini, 2025). Geographically, the Sinaloa Cartel has a dominant presence in the states of Baja California, Baja California Sur, Chihuahua, Sonora, Sinaloa, and Durango, but also has a scattered and disputed presence throughout the rest of the country. Based on Figure 4, it is plausible that demand for firearms has increased in regions where inter- and intra-cartel conflict has intensified amid fractures in Sinaloan leadership. Ultimately, traffickers' main objective is to minimize costs to maximize profits. The increase in conflict along the border in the states controlled by the Sinaloan Cartel is an opportunity for traffickers to earn a profit as armed actors seek to protect themselves and compete with rivals for economic and territorial gain. These high-conflict regions also happen to border all four of the U.S. border states: California, Arizona, New Mexico, and Texas.

Another possible explanation for the shift in the increase in purchases occurring in Arizona is the shift in drug trafficking trends. For decades, the "Golden Triangle" of Mexico was Sinaloa, Durango, and Chihuahua. This region was considered the heartland of opium and marijuana cultivation and heroin production. Geographically, Chihuahua shares a border with Texas, making that the easiest route to traffic heroin into the U.S. The rise of fentanyl demand in the United States has given way to a new golden triangle: Baja California, Sinaloa, and Sonora. These three states alone accounted for 92% of the fentanyl seized by the army in Mexico

(Farfán-Méndez & Eligh, 2025). Sonora shares a border with Arizona, making it an important link between the drug trade and gun trade.

The decline of heroin and the rise of fentanyl reflect both demand- and supply-side changes. On one hand, fentanyl's extreme potency allows traffickers to move smaller quantities while maintaining profitability. On the other hand, because fentanyl is synthetically produced, it eliminates reliance on opium poppy cultivation that was once concentrated in Mexico's original "golden triangle," which has enabled more centralized and flexible production systems (DEA, 2024). This shift has had implications for trafficking supply chains. Rather than moving bulky agricultural products across multiple regions, fentanyl can be produced in clandestine laboratories and transported directly to the U.S. border through tightly controlled corridors. The dominance of the Sinaloa Cartel in the fentanyl trade has resulted in the western routes linking Sinaloa to Sonora and onward into Arizona to become increasingly efficient and strategically valuable (Congressional Research Service, 2023; DEA, 2024).

Although Texas remains the dominant entry point for illicit drugs overall, according to official U.S. government data, fentanyl-specific seizure patterns highlight the growing importance of Arizona. CBP data from fiscal years 2022-2024 show that Arizona, and particularly the Nogales Port of Entry (POE) and the Tucson Sector, accounts for a disproportionately large share of fentanyl seizures relative to its border length and traffic volume. Nogales frequently ranks among the leading POEs nationwide for fentanyl interdictions, while the Tucson Sector is among the top Border Patrol sectors for fentanyl seizures between ports of entry (CBP, 2026; DEA, 2024).

The increasing centrality of Arizona is likely tied to the geographic and organizational structure of fentanyl trafficking networks. As mentioned previously, the Sinaloa Cartel maintains

strong operational control in both Sinaloa and the neighboring state of Sonora, and was identified by the DEA as one of the two primary organizations driving fentanyl production and distribution (DEA, 2024; CRS, 2023). This creates a highly efficient corridor characterized by production in Sinaloa-based clandestine laboratories, transit through Sonora, and entry into the U.S. via Arizona POEs. The vertically integrated structure minimizes the need for coordination across multiple criminal groups, reducing transaction costs and exposure to interdiction on both sides of the border.

The increasing strategic importance of the Arizona corridor for fentanyl trafficking has coincided with a parallel shift in the geography of firearm sourcing. The same corridor that facilitates the efficient movement of fentanyl northbound into the U.S. also appears to support the flow of firearms southbound into Mexico. The rise in fentanyl-centered trafficking networks may have reinforced Arizona's role as a preferred procurement location. Criminal groups have strong incentives to co-locate complementary illicit activities in order to maximize profits. From an organizational perspective, sourcing firearms in Arizona reduces transaction costs in several ways. First, it requires fewer intermediaries. With firearms being acquired closer to the drug trafficking operational corridor, it reduces reliance on brokers in more distant U.S. states and regions. Second, it simplifies logistics as weapons in Arizona can be moved shorter distances across the border into Sonora, where the Sinaloa Cartel's infrastructure is already established. Lastly, shorter transport routes reduce the number of potential interdiction points.

This explanation of a possible alignment between fentanyl trafficking corridors and firearm procurement patterns, particularly along the Arizona–Sonora border region, is a compelling argument. However, more research needs to be done to determine whether Arizona's increased relevance reflects a deliberate strategic shift by trafficking organizations or whether it

emerges indirectly from broader changes in synthetic drug markets, enforcement environments, or another purchase-point incentive.

Recommendations

1. Implement mandatory background checks for all firearm sales.

BLUF: To stem the flow of illegal firearms into Mexico and keep firearms out of the hands of prohibited individuals, Congress should pass a mandatory background checks act for all firearm sales.

Applicable Actors: Congress, the President, and individual state legislatures.

Rationale: Under federal law⁵ background checks are only required for sales conducted by licensed dealers. However, the law does not apply to sales and transfers between private parties. Currently, only twenty-two states and the District of Columbia have enacted laws requiring universal background checks for all or most firearm sales.⁶ This means that individuals who would fail a background check if purchasing from an FFL, such as felons or those convicted of domestic abuse, are able to purchase firearms. The private sale loophole, also known as the “gun show loophole,” is a frequent channel that firearm traffickers exploit. In 2024, the ATF released the third volume of its National Firearms Commerce and Trafficking Assessment (NFCTA), where it found that 40.7% of the firearm trafficking channel types that it investigated from 2017 to 2021 were by an unlicensed dealer (private person). Additionally, it found that illegal diversions from lawful firearm commerce occurred through online marketplaces (3.6%); gun shows, flea markets, and auctions (3.0%); and social media platforms (2.7%). These transactions, unless mandated by state law, all occurred without a background check. With a federal universal background check mandate, these channels would lose some of their appeal for traffickers by

⁵ The Brady Handgun Violence Prevention Act (1993).

⁶ As of 2025, 19 states and D.C. require background checks for all firearm sales: California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Maryland, Massachusetts, Michigan, Nevada, New Jersey, New Mexico, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington. Within these states, there are also variation in the laws. Minnesota and Nebraska also have some universal background check requirements applicable to handguns and some semiautomatic rifles.

making it more difficult for them to obtain firearms while also protecting law-abiding citizens' right to arms.

Feasibility: Given that over 70 bills have been introduced in Congress to narrow or close the private sales loophole, all of which have failed, there is a slim chance that a universal background check bill would pass at the federal level. For it to pass, the bill would require significant bipartisan support in both the House and the Senate, as well as presidential approval. The Bipartisan Background Checks Act of 2019 is an example of this challenge; the bill passed in the Democrat-controlled House by a 240-190 vote but failed in the Republican-controlled Senate⁷, with the White House warning that President Trump would veto the legislation if it reached his desk (Seipel, 2019). The National Rifle Association (NRA) and National Shooting Sports Foundation lead the opposition to universal background checks, arguing that these checks do not stop criminals but instead infringe on Americans' Second Amendment rights and are an invasion of privacy. They emphasize that these checks create unnecessary burdens on law-abiding citizens and constitute an overreach of government authority. Furthermore, another leading argument against universal background checks is that they will lead to a national gun registry, which is legally restricted. Overall, the polarized political landscape, paired with a strong gun rights advocacy lobby, is a significant challenge to this policy recommendation.

Alternative Action(s): Alternatively, given that the majority of the guns recovered in Mexico and traced back to a U.S. purchase in Texas or Arizona, these specific states could pursue more legislation requiring background checks for private sales and transfers. For example, New Mexico passed legislation requiring background checks for nearly all firearms sales in March

⁷ The 116th Congress had a breakdown of 235 Democrats, 199 Republicans, and 1 Libertarian in the House of Representatives; in the Senate, there were 53 Republicans, 45 Democrats, and 2 independents (who caucused with Democrats).

2019, and it took effect in July 2019. It made it a misdemeanor to sell a firearm without a background check, with exceptions for family transfers and law enforcement (NM Senate Bill 8, 2019). Comparatively, there are a lot fewer trafficked firearms traced back to a purchase in New Mexico, even though it is also a border state with major U.S. highways that connect to Mexico. The same goes for California—it is a border state with major highways, but unlike Texas and Arizona, it has universal background check laws. While firearm trafficking still happens in both New Mexico and California despite their background check laws, the concentration of trafficked guns' origins in the same counties is not nearly as prolific as those in Arizona and Texas. By enacting additional legislation, these two states stand to lessen the flow of illicit firearms to Mexico and other dangerous individuals, which will increase the safety of their communities in the long run. Politically, it will be difficult to pass these laws given that both Arizona and Texas are some of the most pro-gun states in the country. However, it might be easier than passing federal-level legislation, especially as border communities face some of the greatest direct and indirect effects of organized crime organizations, including, but not limited to, drug trafficking, violence, money laundering, and influx of violence-induced migration into the United States.

2. Increase diligence and inspection efforts at outbound checkpoints along the U.S.-Mexico border.

BLUF: To stem the flow of illegal firearms into Mexico, Customs and Border Protection must standardize and increase outbound inspections at all southern border crossings.

Applicable Actors: Department of Homeland Security, Customs and Border Patrol Officers, U.S. Border Patrol, and U.S. Immigration and Customs Enforcement.

Rationale: Increasing diligence and inspection efforts at outbound U.S.-Mexico border

checkpoints directly disrupts trafficking networks that arm violent, non-state actors and fuel violence. As demonstrated in the analysis and map visualizations, the U.S. ZIP codes with the highest amount of illicit firearms traced back to them are in close proximity to major U.S. highways. Additional checkpoints, increased personnel, and enhanced technology at outbound checkpoints will reduce the ability of smugglers to operate. These efforts will increase seizure rates of illegal weapons, reducing the firepower of criminal organizations. Reducing the capacity of criminal organizations could also affect their illicit drug networks by minimizing their ability to defend their wares, decreasing the number of people they can sustainably arm, and more. Ultimately, addressing outbound infrastructure helps enhance regional and national security.

Feasibility: Enhancing outbound border security is highly feasible. Advancements in non-intrusive inspection (NII) technology, biometric screening, and a strategic investment in AI are enabling stronger inspection capabilities at lower cost. Already, these technologies are deployed in varying degrees for inbound traffic, with the Department of Homeland Security actively and publicly announcing investments made by its Science and Technology Directorate in the next wave of emerging technologies to secure the border (Department of Homeland Security, 2025). There is clear political will to increase border security under the current Trump Administration, evidenced by the signing of the \$65 billion border security bill in 2025, but it is now a matter of emphasizing the importance of outbound security alongside inbound security while ensuring that funds are allocated appropriately (U.S. Customs and Border Protection, 2026).

Alternative Action(s): While strengthening border efforts at the federal level is feasible, an alternative approach is to involve local border communities. Engaging in dialogue with neighboring communities both in the United States and Mexico can help build collaborative

security solutions and does not require costly technological advancements. Oftentimes, individuals within these communities are left out of the decision-making process but have the potential to make some of the most insightful contributions to effective solutions. Local residents stand to gain a lot from reduced smuggling and trafficking throughout their communities, especially in Mexico, as these communities are known to have significant safety concerns due to turf battles over trafficking routes. If given the opportunity, border communities would add a valuable perspective to not only the ongoing fight against firearm trafficking, but also human and drug trafficking.

3. Return complete oversight of U.S. exports of small arms to the State Department.

BLUF: Returning small arms export oversight from the Department of Commerce to the State Department is essential to curb illegal trafficking and prevent U.S.-made guns from causing foreign violence.

Applicable Actors: Department of Commerce, Department of State.

Rationale: In addition to targeting firearm diversion on U.S. soil, we also need to address the export side of diversion. The shift of most firearms, ammunition, and firearm component parts from the U.S. Munitions List (USML)⁸ to the Commerce Control List (CCL)⁹ since March 2020 has weakened oversight and regulation of firearm exports. For example, articles on the USML require notifications to Congress before export, while articles on the CCL do not. This previous level of oversight and scrutiny from lawmakers has proven vital on multiple occasions. For example, in 2019, lawmakers blocked a sale of \$2.4 million of semi-automatic rifles to security forces of the Philippine government because of ongoing police-led violence against its citizens.

⁸ Overseen by the Department of State.

⁹ Overseen by the Department of Commerce.

Without this regulation, this sale might have gone through and contributed to this violence. Another important differentiation is that the USML requires exporters and importers of listed items to register with the State Department, while the CCL does not. Under the USML, both companies and individuals must register and apply for a license, which provides important sources of information regarding firearms exports and imports that the Department of Commerce simply does not collect or require. Notably, the State Department conducts more thorough end-use monitoring through its Blue Lantern program. When items on the USML are exported to another country, U.S. embassy officials in the recipient country are required to conduct pre-license checks and post-shipment verifications of items, reducing the likelihood of firearm trafficking (Giffords, 2020).

Feasibility: The U.S. Government Accountability Office (GAO) published a report in February 2025 on export controls, stating a need for improvements in licensing and monitoring firearms. It issued twelve recommendations for State and Commerce, and both agencies concurred with the recommendations GAO issued. These are good indications that the prospect of change regarding firearm export regulation is palatable in both departments. However, in September 2025, the Bureau of Industry and Security (BIS)¹⁰ rescinded most of the Interim Final Rule (IFR) on firearms export controls that was enacted in April 2024. The IFR was issued to tighten regulations on exporting firearms to enhance national security and foreign policy interests. Primarily, it was intended to combat the diversion and misuse of U.S.-origin firearms in high-risk regions (Bureau of Industry and Security, 2024). The September 2025 actions reversed most of these changes, restoring license validity to four years, eliminating mandatory submission of purchase orders, easing restrictions on license exceptions, and ending requirements to submit

¹⁰ An agency within the Department of Commerce.

end-user documents. The Department of Commerce stated that the rescission would allow U.S. firearms manufacturers to compete in overseas markets and create “hundreds of millions of dollars per year in export opportunities.” The statement denied the benefits to national security that these regulations had, and asserted that the change is “doing right by America’s proud firearms industry” (Bureau of Industry and Security, 2025). The repeal of the Firearms IFR and press statements from Commerce indicate that creating export opportunities for American companies is a priority for the current administration, which will weaken the political will for returning oversight of Categories I, II, and III back to the State Department, regardless of the GAO’s findings.

Alternative Action(s): While BIS conducts end-use checks on firearm exports, it lacks dedicated personnel for conducting these checks, especially in regions at high risk for diversion. There is unclear guidance on how to separate the duties of personnel to promote the commercial interests of U.S. exporters while also restricting those exports through their end-use checks. Consistent with the tenth recommendation given in GAO’s 2025 report, instead of transferring oversight of small arms back to the State Department, the Department of Commerce could develop an interagency process to conduct end-use checks. This interagency process would involve the collaboration of the State Department’s Foreign Service Officers in assisting with BIS end-use checks (GAO, 2025). By developing a clear process with defined personnel with set roles and responsibilities, the Department of Commerce and specifically its BIS arm can counter misuse of U.S. firearm exports without enacting barriers to opportunities for the American firearm industry.

4. Repeal the Tiahrt Amendments.

BLUF: Repealing the Tiahrt Amendments will enhance public safety, increase transparency, and improve the ability of law enforcement to fight illegal gun trafficking.

Applicable Actors: Congress, the President, Bureau of Alcohol, Tobacco, Firearms and Explosives, Department of Justice, Federal Bureau of Investigation, and other law enforcement agencies.

Rationale: Repealing the Tiahrt Amendments will allow the FBI, ATF, and other agencies to collect, preserve, and disclose gun records and gun tracing data. For example, the FBI would no longer be mandated to destroy approved buyer records within 24 hours, which would aid in gun trafficking investigations by increasing law enforcement's ability to audit or catch "straw" purchasers. With their repeal, the ATF would also be permitted to require gun dealers to conduct physical inventory checks and submit their inventories to law enforcement to reduce illegal gun sales. Currently, the amendments cripple the ATF's ability to share crime gun tracing, a critical data source for solving gun crimes. Local governments and police are not allowed to access federal gun trace data beyond their immediate geographic area, which reduces their capability of investigating gun trafficking. Appealing or overturning the amendments would aid effective strategies against gun trafficking.

Feasibility: Repealing the Tiahrt Amendments or passing a standalone legislation to repeal them would require a majority vote in both the House and Senate and a presidential signature. As it stands, there is a strong opposition from gun rights advocates who argue that it prevents the misuse of data for litigation. Much like opposition to universal background checks, the NRA, gun manufacturers, and their trade groups lobby extensively to keep the Tiahrt Amendments. However, the "Gun Records Restoration and Preservation Act" (H.R. 4223) was introduced on

June 27, 2025, to remove the restrictions on the ATF's abilities and repeal the Tiahrt Amendments. The latest action regarding the bill was its referral to the Committee on the Judiciary. While the bill may never be called up for a vote, hearing, or markup, it still indicates that there are representatives at the federal level interested in changing the amendments.

Alternative Actions: An alternative approach to repealing the Tiahrt Amendments that balances Second Amendment rights with increased ATF operational capabilities is to amend, rather than repeal, the legislation to allow for target sharing of data. This amendment would allow the ATF to share trace data with authorized law enforcement agencies while maintaining restrictions on public, academic, and civil litigant access. Additionally, instead of a full repeal of the 24-hour destruction of background checks rule, the law could be modified to allow the FBI to retain background check records for a longer, fixed period of time (e.g., 90 days or a year) rather than requiring the destruction within 24 hours. This would aid in retrospective investigations of straw purchases while not creating a permanent federal gun registry, which is one of the opposition's greatest concerns. Both of these options address the concerns of law enforcement regarding gun trafficking while preserving the protection against the creation of a national gun registry and protecting the firearms industry from data-driven civil lawsuits.

Conclusion

The flow of U.S.-sourced firearms into Mexico is a complex transnational policy challenge with real human consequences on both sides of the border. Behind the patterns identified in trace data and trafficking routes in this capstone are millions of lives shaped by insecurity, loss, and the normalization of violence—from families in Mexico living under constant threat of armed groups to communities in the United States affected by the same systems of easy access and diversion. This capstone reveals firearm flows that are geographically concentrated and temporally dynamic, with a notable shift in origin states over time and a consistent and growing presence of short time-to-crime firearms that suggest a growth in diversion from legal markets into illicit circulation. These findings demonstrate a broader system in which firearms move across jurisdictions shaped by differing regulatory frameworks, enforcement capacities, and market structures. Addressing this challenge requires approaches that engage with the U.S. origins directly, rather than focusing solely on downstream manifestations of violence, in order to meaningfully reduce the scale and speed of firearm diversion across the U.S.-Mexico border. In conclusion, the authors believe that with the right tools and political will, we can make the world a better and safer place.

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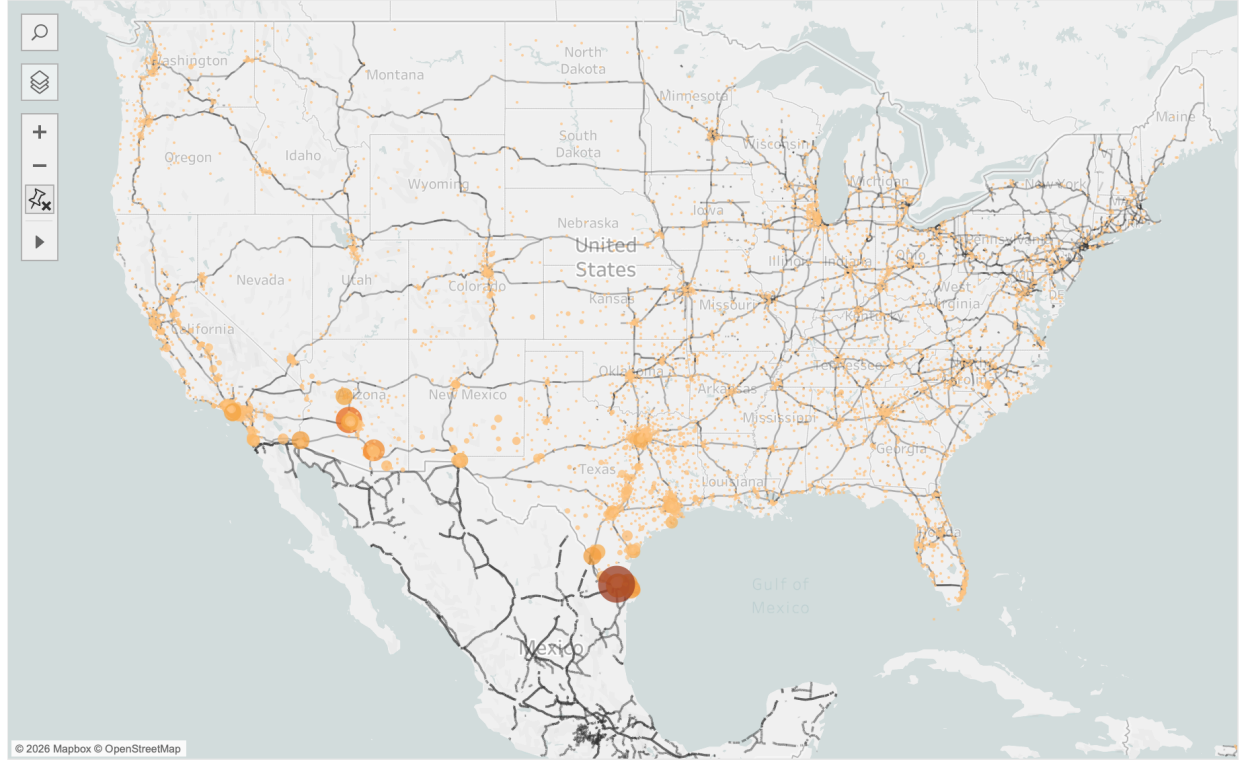
<https://www.cbp.gov/about/history/cbps-historic-first-year-under-current-administration>

Appendix

Figure A.1: Geographic Origins of U.S. Firearms Recovered in Mexico (2015)

**Geographic Origins of U.S. Firearms Recovered in Mexico
ATF Firearms Trace Data (2015–2024)**

Circle size represents firearms recovered in Mexico traced to U.S. ZIP codes; gray lines represent major highways.



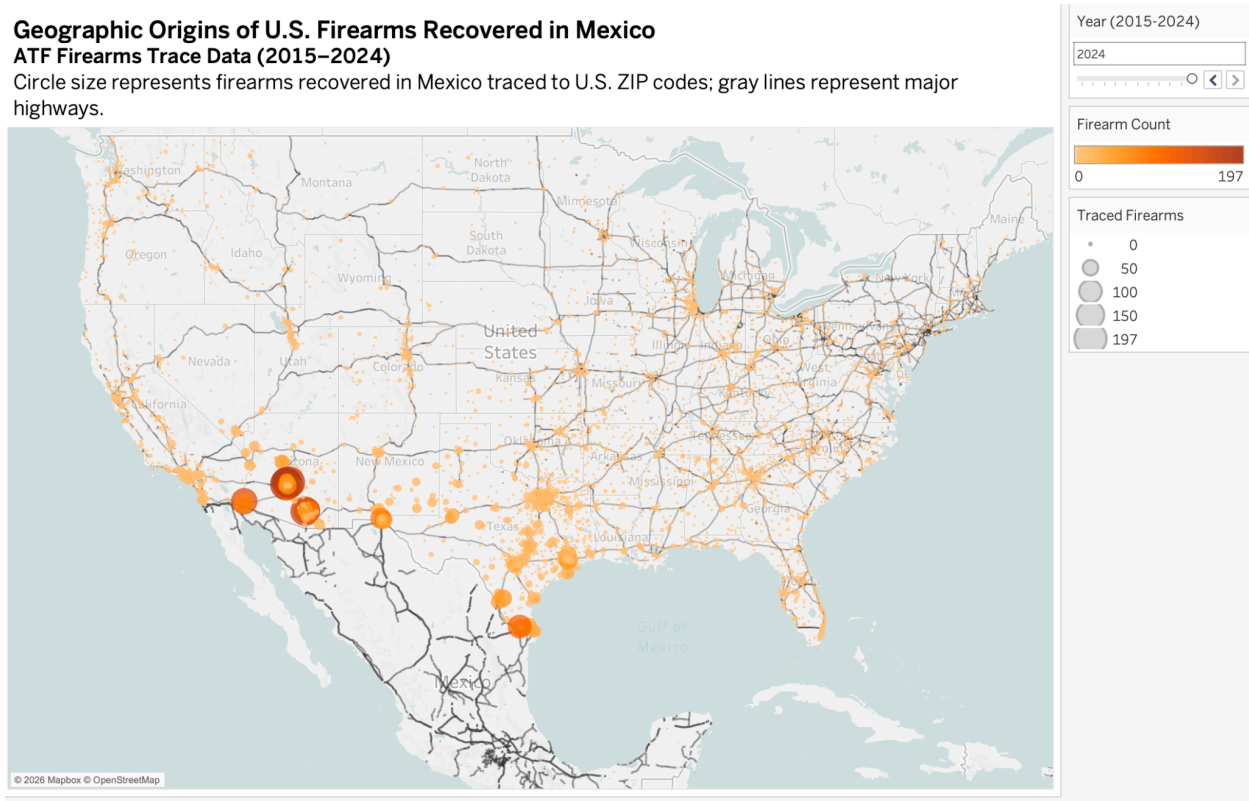
Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

Figure A.2: Geographic Origins of U.S. Firearms Recovered in Mexico (2024)

Geographic Origins of U.S. Firearms Recovered in Mexico

ATF Firearms Trace Data (2015–2024)

Circle size represents firearms recovered in Mexico traced to U.S. ZIP codes; gray lines represent major highways.

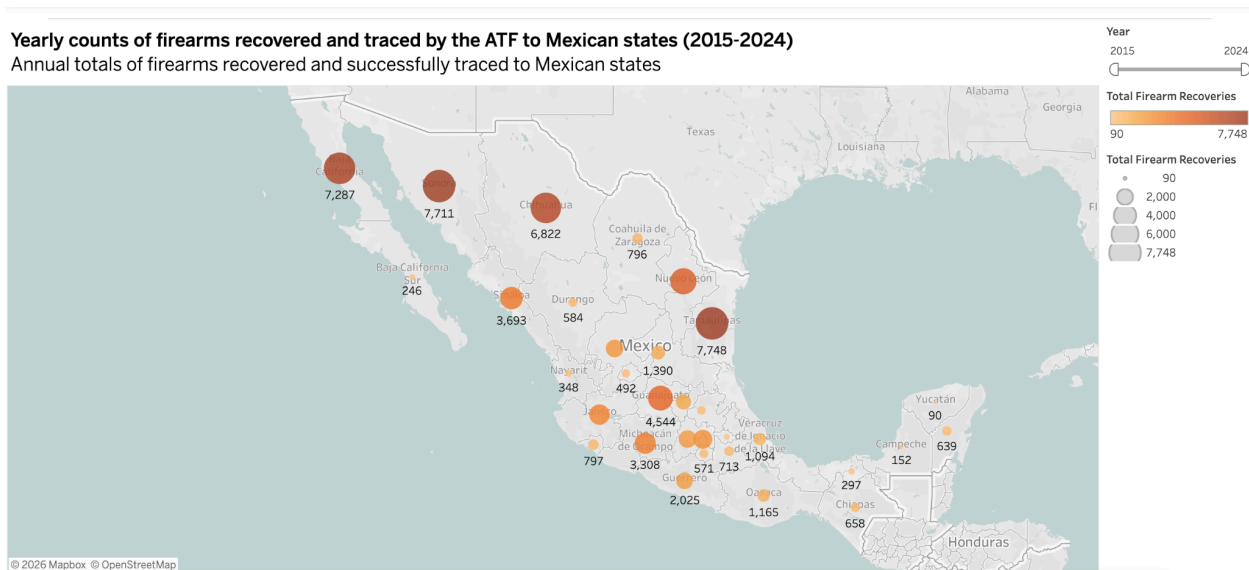


Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

Figure A.3: Total Firearms Recovered per Mexican State and Traced back to U.S. Purchase (2015–2024)

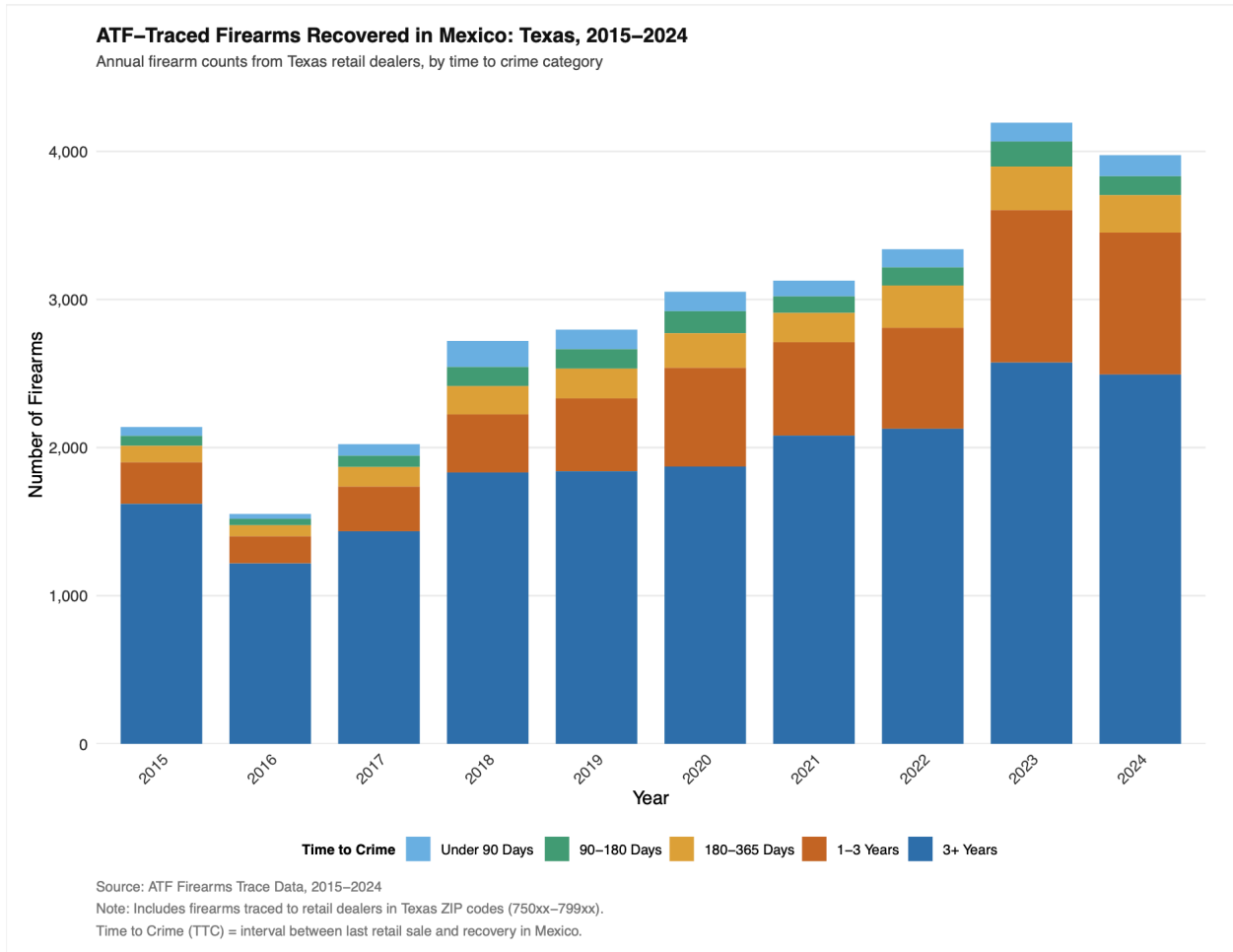
Yearly counts of firearms recovered and traced by the ATF to Mexican states (2015–2024)

Annual totals of firearms recovered and successfully traced to Mexican states



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.

Figure A.6: Time-to-Crime of ATF-Traced Firearms Recovered in Mexico (Texas, 2015-2024)



Notes: Own construction using data from the ATF; FOIA requested by Stop US Arms to Mexico.