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For more information about this report, or to access the underlying data analyzed, please visit: www.joycefdn.org/CrimeGunIntelligence.
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Executive Summary
Crime gun intelligence refers to the systematic collection, analysis, and utilization of information related to firearms involved in crime. There are several methods under the crime gun intelligence umbrella, including tracing the origins of guns used in crimes to identify trafficking patterns, and analyzing ballistic evidence to make connections between shootings and develop investigative leads. These processes require collaboration between local, state, and federal law enforcement, with the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) playing a central role in providing the technological tools that enable a crime gun intelligence approach.

When implemented comprehensively and effectively, crime gun intelligence can help law enforcement disrupt the supply of crime guns, identify and apprehend offenders, and prevent future acts of gun violence. Crime gun intelligence tools have been shown to increase clearance rates for gun crimes ranging from homicide to aggravated assault. However, there remain significant gaps in the levels of resourcing, participation, and utilization of ATF’s crime gun intelligence tools. With an eye towards driving maximum impact, this report analyzes the current crime gun intelligence landscape, and recommends ways to strengthen ATF’s crime gun intelligence tools, to increase participation and usage of the tools by federal, state, and local law enforcement, and to provide resources for an expanded and sustainable crime gun intelligence approach.

In the face of rising gun violence, the need for a comprehensive crime gun intelligence approach is as acute as ever. In the last 20 years of available data (2003-2022), more than 715,000 people in the US have been killed with guns, including almost 420,000 firearm suicides and over 270,000 firearm homicides. Guns account for over 70% of all homicide deaths in the US. Firearm homicide rates have increased over this period of time, rising by over 50% between 2003-2022. Among the states in the Great Lakes region, gun homicide rates vary, but all have gone up over the past 20 years.1 Given the scale of gun violence in the US, many researchers and policymakers identify gun violence as a public health epidemic.2

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1 CDC WONDER data 2003-2022. For purposes of this report, the Great Lakes states are defined as: Illinois, Indiana, Michigan, Minnesota, Ohio, Pennsylvania, and Wisconsin.
Reducing gun violence in the US will require a multifaceted approach, including policies that meaningfully restrict access to guns; investments in strategies to prevent and interrupt violence; and programs that address poverty, housing, and other root causes of violence. Increasingly, efforts to reduce gun violence have focused on non-police community-based violence prevention strategies (such as hospital-based violence intervention programs or community-based violence interruption programs). However, law enforcement agencies from the federal to the local level remain crucial in the fight against gun violence, with the unique power and responsibility to investigate and hold legally accountable those who perpetrate gun crimes.

Gun homicides are especially difficult for law enforcement to solve, with just 46% of all firearm murders cleared (solved) each year (as compared to 75% of murders committed with other weapons). The problem of low murder clearance rates is a national one, but is also particularly profound in several Great Lakes cities, including in Cleveland (where the clearance rate is ~30%); Indianapolis, Minneapolis, and Cincinnati (where the clearance rate is ~40%); and Chicago (where the clearance rate is ~50%). There are also significant racial disparities in clearance rates; a 2023 report from Live Free Chicago found that clearance rates for murder in predominantly Black Chicago neighborhoods is just ~17%.

Crime gun intelligence has emerged as a promising approach to help law enforcement hold offenders accountable. This report assesses the current usage and impact of ATF’s crime gun intelligence tools, with an emphasis on the Great Lakes region. Through data obtained from ATF, this report quantifies: the extent to which law enforcement agencies are using crime gun intelligence tools; the rate at which these tools generate investigative leads; and the processing times associated with lead generation. Through interviews with federal, state, and local law enforcement agencies from across the country, the report explores the impact of ATF’s crime gun intelligence tools on addressing gun violence, and barriers to the tools’ maximum usage and effectiveness. Finally, the report makes a series of recommendations on how to improve the tools’ investigative value; how to improve levels of law enforcement participation.

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4 Sarah Ryley, Jeremy Singer-Vine, and Sean Campbell, “5 Things to Know About Cities’ Failure to Arrest Shooters,” The Trace, January 24, 2019. The Trace/BuzzFeed News analysis uses data from the FBI’s “Supplementary Homicide Report” (SHR) reflecting 202 urban police departments that have reported incident-level data on at least one murder to the FBI for 34 of 38 years between 1980-2017. The FBI SHR does not include whether a case was cleared, so this analysis uses the inclusion of a suspect’s age as a proxy for whether the police had identified a specific subject.
and utilization; how to adequately resource a comprehensive crime gun intelligence approach; and how the tools should be researched and evaluated in the future.

Over the past 25 years, ATF has made available a suite of tools to law enforcement agencies around the country to support the investigation of gun crimes: eTrace, eTrace’s Collective Data Sharing (CDS) function, the National Integrated Ballistic Information Network (NIBIN), and the NIBIN Enforcement Support System (NESS). These are collectively referred to as ATF’s crime gun intelligence tools, allowing law enforcement to trace the origins of crime guns, identify linkages between shootings, and integrate information across agencies. For many agencies, these tools play a primary role in gun crime investigations. Among other things, they help target investigative efforts towards the most active shooters in a given jurisdiction, provide leads that can inform the identification of shooters, and identify the most prominent sources of crime guns (including potential traffickers, straw purchasers, and unscrupulous gun stores).7 Some jurisdictions have partnered with ATF to form Crime Gun Intelligence Centers (CGICs), which are designed to bring together ATF’s crime gun intelligence tools—as well as other tools like gunshot detection systems—to enhance law enforcement’s capacity to investigate and prevent gun violence.

Law enforcement agencies spoke of the numerous benefits of ATF’s crime gun intelligence tools in addressing gun crime. NIBIN, ATF’s ballistic evidence analysis tool, allows police to connect shootings using recovered shell casings and crime guns, generating over 150,000 leads in 2021 (the latest year of publicly available data).8 For example, in Chicago, NIBIN linked a gun stolen from a Wisconsin gun shop to 27 individual shooting incidents, resulting in 2 deaths and 24 injuries over a 20 month span.9 Critically, NIBIN allows law enforcement to identify the most active guns in a particular region and target investigative resources accordingly, theoretically reducing bias in investigative decisions, and maximizing public safety impact.

Through eTrace, ATF’s online firearms tracing system, police are able to more quickly submit trace requests and identify the origins of crime guns. As of 2021, more than 90% of all trace requests are

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7 A straw purchaser refers to an individual who purchases a gun for another individual who would not otherwise be able to legally purchase one.
9 Jeremy Gorner, Annie Sweeney, and Rosemary Sobol, “A gun was stolen from a small shop in Wisconsin. Officials have linked to 27 shootings in Chicago,” Chicago Tribune, September 28, 2021.
now submitted via eTrace.\textsuperscript{10} In Milwaukee, which now traces all recovered firearms via eTrace, these results have aided in at least 20-30 new straw purchase arrests per year.\textsuperscript{11} eTrace's Collective Data Sharing (CDS) feature provides law enforcement with access to trace results from other agencies in the same state. These results can help identify gun purchase and recovery patterns indicative of straw purchasing or gun trafficking. Using data shared via CDS, several state-level law enforcement agencies—including the Attorneys General (AGs) of Pennsylvania and Illinois—have built platforms to help identify these cross-jurisdictional linkages. These platforms synthesize eTrace data from participating agencies across the state and provide a statewide picture of crime gun recoveries, capturing key trends about the sources and flows of crime guns, and alerting law enforcement to likely traffickers or straw purchasers. Nationwide, eTrace and CDS have contributed to referring nearly 5,000 firearm trafficking investigations for federal or state prosecution between 2017-2021.\textsuperscript{12}

Finally, the NIBIN Enforcement Support System (NESS), the newest of ATF’s crime gun intelligence tools, combines information from NIBIN, eTrace, and a police department's records management system (RMS) into a single platform to provide a more comprehensive crime gun intelligence picture to law enforcement.\textsuperscript{13} NESS automatically imports and organizes NIBIN data on a nightly basis, allowing users to view connected ballistic evidence in a map-based format. If a gun is recovered and submitted to eTrace, users will also be able to view some trace information in connection with any other NIBIN recoveries matching that gun. Law enforcement agencies using NESS can also see data from their own RMS (including event data, case narratives, key people and locations) in connection with each of their NIBIN recoveries.\textsuperscript{14}

Participation in and usage of ATF’s crime gun intelligence tools has increased substantially over the years, but there is still a large gap to comprehensive adoption. Approximately 55% of state and local law enforcement agencies are participating in eTrace, and only 32% of those are participating in CDS.\textsuperscript{15} The amount of ballistic evidence entered into NIBIN has almost doubled over the past 5 years, but many participating agencies are still not entering evidence comprehensively, and some


\textsuperscript{11} Authors’ interview with CGIC staff in Milwaukee, March 27, 2023.

\textsuperscript{12} ATF, “\textit{National Firearms Commerce and Trafficking Assessment (NFCTA): Firearms Trafficking Investigations–Volume Three},” April 2024.

\textsuperscript{13} ATF, “\textit{NIBIN Enforcement Support System},” August 2022.

\textsuperscript{14} Authors’ interview with Chicago Police Department staff, April 2024.

\textsuperscript{15} ATF eTrace/CDS data provided to the authors, January 2024.
agencies are not entering evidence at all.\textsuperscript{16} NESS is still in its infancy, with just over 300 state and local law enforcement agencies having access as of March 2024.\textsuperscript{17} Incomplete participation and usage hampers the investigative impact of crime gun intelligence tools. CDS, for example, relies on all law enforcement agencies participating in order to enable a comprehensive statewide picture of crime gun recovery and trafficking patterns. NIBIN’s ability to connect shootings is only as strong as the evidence entered into the system; without comprehensive entry of ballistic evidence, the system will miss potential linkages, and therefore be limited in its ability to generate investigative leads.

There are several factors driving lagging participation and usage. Lack of awareness among law enforcement agencies is one key barrier, particularly among smaller agencies. Participation levels also vary widely by state, which suggests that state-level policymakers have a significant role to play in driving full participation. In some cases, gaps in participation and usage were attributed to limitations in the tools themselves, the difficulty of gaining access to new tools, or the efficiency and timeliness of evidence generation. Many of these limitations stem from ATF being under-resourced and hampered by statutory restrictions. A crime gun will often change hands multiple times between its first retail purchase and its eventual usage in a crime. For eTrace, the inability to view firearm sales and other transfers beyond the first retail purchase can result in cold leads. Due to restrictions on data digitization and searchability, traces often rely on ATF staff manually searching through firearm purchase and sale records, which creates long processing delays. According to ATF, the average gun trace request now takes approximately 16 days to complete.\textsuperscript{18} For eTrace’s CDS function, data cannot be shared between agencies in different states, which limits the ability to map crime gun flows regionally or nationally. Law enforcement interviewees reported that the raw data from CDS is not searchable and hence has limited value; and that compiling the data into a searchable platform is very time and labor-intensive. When it comes to NIBIN, a lack of machines, technicians, and efficient processes creates backlogs for evidence entry and delays in lead generation. Approximately 40\% of NIBIN sites have an average processing time that does not meet ATF’s two-day target for timely lead generation.\textsuperscript{19} And while many law enforcement officers point to the importance of integrating crime gun intelligence tools, the NIBIN and eTrace systems remain siloed.

Policymakers and law enforcement agencies have a responsibility to fully optimize every tool at their disposal to prevent gun violence and hold perpetrators accountable. Crime gun intelligence is a key part of this toolkit. The following recommendations are designed to maximize the utility of ATF’s crime gun intelligence tools; drive greater participation and utilization by law enforcement; and ensure adequate resourcing to support a comprehensive and efficient crime gun intelligence approach nationwide.

\textsuperscript{16} ATF NIBIN data provided to the authors, October 2023.
\textsuperscript{17} ATF written response to authors’ research questions, April 2024.
\textsuperscript{19} ATF NIBIN data provided to the authors, October 2023.
Summary of Recommendations

- ATF’s crime gun intelligence tools must be integrated, national in scope, efficient, and user-friendly.
  - All eTrace and NIBIN data nationwide should be compiled and visualized in one place, allowing law enforcement to access the maximum amount of crime gun intelligence data.
  - Timeliness is essential: eTrace results must be delivered within 7 days for standard requests and 48 hours for urgent requests; NIBIN leads must be generated within 48 hours of evidence submission.
  - To enable timely crime gun tracing, all firearm sale and transfer records should be digitized and searchable.

- State and local law enforcement agencies must participate in and use the tools comprehensively.
  - All state and local law enforcement should sign up for and comprehensively use eTrace, CDS, NIBIN, and NESS. ATF and state law enforcement should conduct outreach to increase adoption and utilization.
  - States should create online, state-level crime gun analytics platforms (like Illinois’ Crime Gun Connect or Pennsylvania’s Track and Trace).
  - State policymakers should mandate that all recovered crime guns be traced via eTrace and all recovered ballistic evidence be submitted into NIBIN.

- Additional research and evaluation is required to understand the impact of ATF’s crime gun intelligence tools, and assess capacity needs and improvements.
  - National evaluations of eTrace, CDS, NIBIN, and NESS are required.
  - Updated evaluations of CGICs should employ consistent methodologies and culminate in recommended best practices for CGIC implementation.
  - ATF should conduct needs assessments to determine how much additional resourcing is required to achieve timely processing of eTrace and NIBIN submissions.

- Expanding usage of crime gun intelligence tools will require a significant investment of resources.
  - ATF needs a significant increase in budget to improve eTrace and NIBIN processing times, and to optimally integrate data from the two systems into a single, national platform.
  - Federal policymakers should increase the US Department of Justice’s and ATF’s budgets as required and earmark federal law enforcement grant programs for use of crime gun intelligence tools.
  - State and local policymakers should provide funding for additional crime gun intelligence capacity, including new NIBIN terminals, new and expanded CGICs, and state-level crime gun analytics platforms.
Methodology
This report was researched and written between December 2022 and May 2024 by the Joyce Foundation and Understory Consulting (hereinafter referred to as “the authors”). The research employs both primary and secondary methods to investigate levels of law enforcement participation in ATF’s crime gun intelligence tools and the effectiveness of these systems.

Primary research focused on qualitative interviews with over 30 key stakeholders connected to 20 institutions, including: federal law enforcement agencies; state and local law enforcement agencies in the Great Lakes states; researchers who have studied the crime gun intelligence approach; and gun violence prevention advocacy organizations. All interviews were conducted over video conference, except for the interview with ATF, in which ATF provided written responses to a list of questions. All interviews are cited throughout the report; in some cases, the agency/organization interviewed has been anonymized in the citation. For a full list of agencies and organizations interviewed, please see Appendix A of this report.

Via a Freedom of Information Act request, the authors also obtained new data on the eTrace, eTrace CDS, and NIBIN systems from ATF. This data included: a full list of law enforcement agencies participating in ATF’s eTrace and CDS systems as of January 2024; and a full list of NIBIN sites, with the amount of ballistic evidence entered per site, and the average processing time for lead generation. This data is synthesized and cited throughout the report. For access to the raw data, please visit www.joycefdn.org/CrimeGunIntelligence.

Finally, the authors consulted a wide range of secondary sources, including but not limited to: formal evaluations of crime gun intelligence tools and programs; ATF’s own reporting on the utilization and impact of crime gun intelligence tools; publicly available data on rates of gun violence and gun crime clearance rates; and media reports on crime gun intelligence approaches and individual cases solved using crime gun intelligence. These secondary sources are cited throughout the report.
Gun Violence Rising, Clearance Rates Falling
Given high rates of gun violence and historically low clearance rates for gun crimes, a fully optimized crime gun intelligence approach is especially urgent. Over the last 20 years of available data (2003-2022), over 715,000 people have been killed with guns in the US, including almost 420,000 firearm suicides and over 270,000 firearm homicides. In its analysis of gun violence, this report focuses on gun homicides and other forms of assaultive gun violence because these are the cases in which crime gun intelligence tools are applied.

A vast majority (over 70%) of all homicides in the US are committed using firearms. Firearm homicide rates are on the rise, increasing by over 50% since 2003. Following a period of modest decline from 2006-2014, the firearm homicide rate increased, with a particularly sharp increase occurring in 2020 and 2021, associated with the economic and social impacts of the COVID-19 pandemic (including increased economic inequality, exacerbated mental health problems, increases in gun ownership and carrying, and disruptions to previously operating violence prevention programs). The gun homicide rate decreased slightly in 2022 from its 20-year-high in 2021, but remains elevated. While there is no national, comprehensive tracking of non-fatal gunshot injuries, research suggests that these have also increased in recent years, especially during 2020 and 2021.

Chart 1: US homicide and gun homicide rates (2003-2022)

“A vast majority (over 70%) of all homicides in the US are committed using firearms. Firearm homicide rates are on the rise, increasing by over 50% since 2003.”

Among the Great Lakes states, gun homicide rates vary, but all have trended up over the past 20 years, with precipitous increases in 2020 and 2021 that mirror national trends.\(^{23}\)

Chart 2: Great Lakes states gun homicide rates (2003-2022)

While comprehensive national data is not yet available for 2023, preliminary data suggests that several states and cities experienced a decline in gun homicide rate from 2022-2023, including Detroit, MI (37% decline), Philadelphia, PA (17% decline), and Chicago, IL (16% decline).\(^{24}\) This may suggest that new public safety strategies and investments are having an impact, or that gun homicide rates are simply returning to their pre-pandemic levels as the acute disruption of COVID-19 recedes.\(^{25}\)

Firearm violence is a uniquely American problem. According to a comparative analysis, the US gun homicide rate is 25 times greater than that of other high-income countries.\(^{26}\) This reflects the ease of accessing guns in the US.\(^{27}\) There are nearly 400 million civilian-owned firearms in the US, making the US the only country in the world with more guns than people.\(^{28}\) Given the scale of lives lost, many researchers and policymakers refer to gun violence in the US as a public health epidemic.\(^{29}\)

There is an increasing recognition that reversing the increase in gun violence will require a comprehensive and multifaceted approach. For example, at the national level,

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\(^{23}\) CDC WONDER data 2003-2022.

\(^{24}\) Center for American Progress, “In 2023, Gun Violence Trended Down Across the Country,” January 31, 2024.

\(^{25}\) Ibid.

\(^{26}\) Erin Grinshteyn and David Hemenway, “Violent death rates in the US compared to those of other high-income countries, 2015,” Nursing and Health Professions Faculty Research and Publications, 2019.

\(^{27}\) David Hemenway and Matthew Miller, “Firearm availability and homicide rates across 26 high-income countries,” Journal of Trauma, 2000.


President Biden’s “Comprehensive Strategy to Prevent and Respond to Gun Crime” called for additional support for ATF and law enforcement; investment in community-based violence intervention strategies; and improved data collection and research analysis, among other strategies. The recent Bipartisan Safer Communities Act also reflects this comprehensive approach, including both expanded prohibitors on gun possession and funding for solutions that address root causes of violence. At the county level, law enforcement leaders like Travis County (Austin) District Attorney Jose Garza have developed comprehensive strategies to address gun violence, including investments in housing and mental health services; funding community-based violence intervention programs; and maximizing the use of crime gun intelligence tools like NIBIN. This report focuses on one critical element of these broader, comprehensive approaches: law enforcement’s response to gun crimes through the use of crime gun intelligence tools.

Law enforcement are uniquely responsible for responding to shootings or other gun crimes, investigating and solving these crimes, and enforcing laws pertaining to how guns are transferred or possessed. Troublingly, as gun violence has increased, the rate at which such crimes are solved has decreased. University of Pennsylvania researcher Anthony Braga found that “clearance rates” for homicides (the percentage of homicides that are solved through arrest or other circumstances, i.e. the death of the primary suspect) declined from around 79% in 1976 to 61% in 2019. This dynamic worsened further in 2020, in part due to the COVID-19 pandemic and a deterioration of police-community relations following the murder of George Floyd. According to analyses of FBI data by the Marshall Project and the Murder Accountability Project, the national homicide clearance rate reached an all-time low of less than 50% in 2020. In other words, for every two homicides committed in the US, only one is cleared.

Low clearance rates represent a serious threat to public safety; unsolved homicides mean that violent individuals remain free, and retaliatory violence becomes more likely in the absence of legal accountability. Low clearance rates also contribute to reductions in community trust of law enforcement. According to a senior leader at the US Department of Justice’s Bureau of Justice Assistance (BJA), “Solving crimes is the fundamental purpose of a police department...so improved clearance rates are essential to both combating violent crime and increasing community trust.”

34 Derek Thompson, “Six Reasons the Murder Clearance Rate Is at an All-Time Low,” The Atlantic, July 7, 2022.
37 Authors’ interview with BJA’s Law Enforcement Innovation and Crime Prevention Division staffer, January 16, 2024.
community trust has several serious consequences, including leading more people to carry firearms in order to feel safe. In 2018, the Urban Institute surveyed young adults living in Chicago’s West and South Side neighborhoods (both experiencing high rates of gun violence) on why they carry guns. The survey found that “self-protection” and “to protect friends/family members” were the top reasons young adults carried guns. Gun carriers also held the perception that police are ineffective at reducing crime. More gun carrying leads to more gun deaths, creating a vicious cycle.

Another significant driver of decreased clearance rates is the fact that more homicides are now committed with guns, because gun homicides are especially difficult to solve. The use of a gun allows for physical distance between the perpetrator and victim, which reduces the likelihood that genetic evidence is left behind or that the crime is clearly witnessed. In an analysis of murder clearance rates from over 200 cities across the country, The Trace found that only 46% of murders committed with firearms are cleared, compared to 75% of murders committed with other weapons. Furthermore, the clearance rate for firearm murders is going down, while the clearance rate for non-firearm murders is going up:

“Low clearance rates represent a serious threat to public safety; unsolved homicides mean that violent individuals remain free, and retaliatory violence becomes more likely in the absence of legal accountability.”

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38 Jocelyn Fontain, Nancy La Vigne, David Leitson, Nkechi Erondu, Cameron Okeke, and Anamika Dwivedi, “‘We Carry Guns to Stay Safe,’ Perspectives on Guns and Gun Violence from Young Adults Living in Chicago’s West and South Sides,” The Urban Institute, October 2018.
39 Ibid.
40 Harvard Injury Control Research Center, “Homicide literature review,” accessed May 1, 2024.
41 Sarah Ryley, Jeremy Singer-Vine, and Sean Campbell, “5 Things to Know About Cities’ Failure to Arrest Shooters,” The Trace, January 24, 2019. The Trace/BuzzFeed News analysis uses data from the FBI’s “Supplementary Homicide Report” (SHR) reflecting 202 urban police departments that have reported incident-level data on at least one murder to the FBI for 34 of 38 years between 1980-2017. The FBI SHR does not include whether a case was cleared, so this analysis uses the inclusion of a suspect’s age as a proxy for whether the police had identified a specific subject.
The problem of low murder clearance rates is a national one, but is also particularly profound in several Great Lakes cities. For example, according to a *New York Times* analysis of 2019 FBI data, the murder clearance rate was ~30% in Cleveland; ~40% in Indianapolis, Minneapolis, and Cincinnati; and ~50% in Chicago. Clearance rates are even lower for non-fatal shootings than for firearm murders; according to an analysis by *The Trace*, only about one-third of non-fatal shootings are cleared.

There are also significant racial disparities in the solving of gun murders; since the 1980s, the clearance rate for gun murders with Black or Hispanic victims has dropped by more than 20%, while the clearance rate for gun murders with White victims has stayed steady. A 2023 report from Live Free Chicago found that clearance rates for murder in predominantly Black Chicago neighborhoods is just ~17%. Explanations for why this is the case include distrust of law enforcement among Black and Hispanic communities (driven by over-policing and police brutality), and a sense in those communities that police don’t try as hard to solve crimes involving Black and Hispanic victims. Law enforcement also recognize the deficit in their relationships with Black and Hispanic communities. For

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44 Ibid.
example, in a Pew Research Center survey, police officers were less likely to rate their relationships as “excellent or good” with Black (55%) and Hispanic (70%) communities than they were with White (91%) and Asian (88%) communities.47

Given the scope and impact of gun violence and the difficulty of solving gun crimes, law enforcement has a responsibility to fully utilize every evidence-based tool at its disposal. When implemented effectively, a crime gun intelligence approach has been shown to have a positive impact on clearance rates for gun crimes. For example, NIBIN usage and other crime gun intelligence tactics have contributed to an increased clearance rate for non-fatal shootings in Milwaukee;48 an increase in firearm arrests in Tulsa;49 and an increase in clearance rates for murder and aggravated assault in Phoenix.50

“When implemented effectively, a crime gun intelligence approach has been shown to have a positive impact on clearance rates for gun crimes.”
Background on ATF
Crime Gun Intelligence Tools
Crime gun intelligence has developed over the past 25 years as a tech-driven, strategic approach to help law enforcement prevent and solve gun crimes. Crime gun intelligence tools allow law enforcement to trace the origins of crime guns, identify linkages between shooting scenes, and integrate information across agencies. As such, crime gun intelligence tools can and should play a primary role in law enforcement’s gun crime investigations.

The Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) is the federal law enforcement agency with authority to regulate the firearms industry, including the manufacture and sale of guns. By law, ATF is the only federal agency that can query firearm sales records nationwide.\(^5^1\) This makes ATF the gatekeeper for key data on the initial sources of guns used in crime, including the dealer that sold the gun, and the individual who first purchased the gun. In addition to their regulation and oversight of the firearm industry, ATF makes available a suite of tools to law enforcement agencies around the country to support the investigation of gun crimes: eTrace, CDS, NIBIN, and NESS. These are collectively referred to as ATF’s crime gun intelligence tools. In addition to providing these crime gun intelligence tools, ATF also partners with state and local law enforcement and other agencies to form Crime Gun Intelligence Centers (CGICs). CGICs bring together all of ATF’s crime gun intelligence tools—as well as other tools like gunshot detection systems—to comprehensively collect and analyze crime gun data in an effort to identify shooters, disrupt the supply of crime guns, and prevent future violence within a particular jurisdiction.

### What evidence can be analyzed with ATF’s crime gun intelligence tools?

When a gun is used in a crime, there are three possible pieces of evidence that can be collected and analyzed using ATF’s crime gun intelligence tools. The first is the gun itself. Depending on where and when a gun was manufactured, it may have several markings that allow it to be traced: a unique serial number; the name of the manufacturer and the city and state in which it was made; the model designation; the caliber or gauge of the gun; and, for firearms manufactured outside the US, the name of the importer and the city and state to which it was imported.\(^5^2\) Image 1, taken from ATF’s “Police Officer’s Guide to Recovered Firearms”, shows where these markings would appear on an imported Glock 19 pistol (see Image 1):

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\(^{5^1}\) Simone Weichselbaum, Andrew Blankstein, Yasmine Salam, and Frank Thorp, “It’s just insanity: ATF now needs 2 weeks to perform a routine gun trace,” *NBC News*, August 19, 2022.

If a gun has been fired in the commission of a crime, there may also be ballistic evidence in the form of bullets and shell casings. These are the second and third types of evidence that can be analyzed using ATF’s crime gun intelligence tools. A “round of ammunition” includes both a bullet (the projectile that is shot out of a gun) and a shell casing, also known as a cartridge casing (which holds the bullet and the gunpowder that propels the bullet). If a gun has been fired in the commission of a crime, there may also be ballistic evidence in the form of bullets and shell casings. These are the second and third types of evidence that can be analyzed using ATF’s crime gun intelligence tools. A “round of ammunition” includes both a bullet (the projectile that is shot out of a gun) and a shell casing, also known as a cartridge casing (which holds the bullet and the gunpowder that propels the bullet).

When a gun is fired, the gun’s firing pin strikes the base of the shell casing (or the “primer”), causing the gunpowder inside to ignite. The pressure of expanding gas from the gunpowder ignition forces the bullet forward and out of the barrel. The empty shell casing is then ejected from the gun. This process leaves a series of distinctive markings on the shell casing (called “tool marks”), that can be used to connect shell
casings from different crime scenes, or to connect shell casings to a recovered gun. There are also markings left on the bullet itself, allowing for similar comparisons and connections to be made.

These pieces of evidence—recovered crime guns, shell casings, and bullets—represent the raw materials that ATF’s crime gun intelligence tools are designed to process into investigative leads.

What is eTrace?

Hosted by ATF and officially launched in 2005, eTrace is an Internet-based platform that allows law enforcement users to trace the origins of recovered crime guns. Prior to eTrace, law enforcement could only submit trace requests to ATF by phone, mail, or fax. These gun traces can identify the manufacturer/importer and the first retail purchaser of firearms recovered by law enforcement in connection with gun crimes; ATF likens this information to a gun’s “birth certificate.” Law enforcement agencies use trace data to identify potential suspects in shootings, potential gun traffickers and straw purchasers, and patterns in the supply of crime guns. For example, police in Minneapolis submitted to eTrace a recovered gun from a 2021 shooting that killed 1 and injured 14 others. The eTrace revealed that the gun had been part of a straw purchase for a convicted felon who was prohibited from possessing firearms. The purchaser was subsequently charged and convicted of transferring a firearm to a convicted felon.

Any US law enforcement agency can submit a gun trace request via eTrace, so long as they are signed up to participate and have an account to access the system. Signing up to participate in eTrace is free, and requires completing a simple Memorandum of Understanding (MOU) with ATF. Over the years, eTrace has become the go-to platform for submitting gun trace requests. It is also ATF’s preferred method for gun trace submissions. When an agency submits trace requests outside the eTrace platform, ATF staff regularly informs the agency about the availability of eTrace.

“In 2005, only 38% of all gun trace requests submitted to ATF were submitted via eTrace; by 2021, the last year of available data, this number was up to 91%.”

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59 ATF, “Fact Sheet,” May 2014.
61 ATF written response to authors’ research questions, April 2024.
63 Authors’ interview with St. Paul Police Department, March 13, 2023.
64 ATFOnline, “eTrace 4.0,” accessed February 29, 2024.
65 ATF written response to authors’ research questions, April 2024.
of all gun trace requests submitted to ATF were submitted via eTrace; by 2021, the last year of available data, this number was up to 91%. The remaining 9% of traces are submitted via mailed or faxed request forms, which have longer turnaround times, and are more susceptible to errors in data entry. According to ATF, the agency processed 512,978 firearms trace requests via eTrace in 2021 (the last year of publicly available data at the time of publication).

Once an eTrace request has been received, ATF staff at the National Tracing Center (NTC) in Martinsburg, West Virginia begin the process of tracing the gun. The NTC creates a unique transaction ID in the Firearm Tracing System (FTS) for each trace request. Then, the NTC checks the gun against other records already held within FTS, confirming that the gun is not already in the system (via a prior trace request or gun theft report, for example). If this initial FTS search yields no matches, the NTC must manually trace the gun. The inquiry starts with the manufacturer or importer that initially made the gun or brought it into the country. If a manufacturer or importer participates in the NTC Connect program, NTC personnel can search crime guns via a secure portal and identify the gun dealer (also known as an FFL) that first received the gun from that manufacturer or importer. ATF does not release information on which manufacturers or importers participate in NTC Connect, or what share of crime guns are searchable via NTC

67 ATF written response to authors’ research questions, April 2024.
If the manufacturer or importer does not participate in NTC Connect, NTC staff must reach out to the company to determine which FFL the gun was shipped to.68 If that FFL is still in business, NTC staff must reach out to the FFL and request the record of sale (also known as an acquisition and disposition record), which identifies the individual who purchased the gun from the FFL (the first retail purchaser). But, many trace requests involve FFLs that are no longer operating. All FFLs that discontinue or lose their license are required to send all firearm transaction records to the NTC. On average, the NTC receives 7 million “out-of-business” sales records per month.69 These paper records are stored in tens-of-thousands of boxes at the NTC facility (pictured in Image 3), and in cargo shipping containers outside the building.70 Although these paper records are scanned into digital formats, federal law requires that the records be “non-searchable,” meaning that NTC staff cannot use keyword searches, and cannot sort records by date or any other field.71 Thus, in many cases, NTC staff must manually search through purchase and sale records to identify the first retail purchaser, which is a time- and labor-intensive process.72

Image 3: Storage of firearm sale and transfer records

Boxes of firearm sale and transfer records and staff performing traces at the NTC in Martinsburg, WV.73

68 ATF written response to authors’ research questions, April 2024.
70 ATF,“Fact Sheet - National Tracing Center,” April 2023.
71 Simone Weichselbaum, Andrew Blankstein, Yasmine Salam, and Frank Thorp,“It’s just insanity: ATF now needs 2 weeks to perform a routine gun trace,” NBC News, August 19, 2022.
73 Simone Weichselbaum, Andrew Blankstein, Yasmine Salam, and Frank Thorp,“It’s just insanity: ATF now needs 2 weeks to perform a routine gun trace,” NBC News, August 19, 2022.
74 Ibid.
If and when the first retail purchaser is identified, ATF then sends this information—including the name and address of the FFL that sold the gun, the name and address of the first retail purchaser, and the “time-to-crime” (the number of days between the gun’s first retail purchase and its eventual recovery in connection to a crime)—back to the requesting law enforcement agency as part of a trace report.76 (The obvious drawbacks of this manual searching process will be discussed in more detail below.)

While ATF is the only agency that can access and provide this information nationally, some states can trace guns that were purchased and recovered in state. In states and districts that require the registration of all guns and gun transfers (California, Hawaii, Oregon, and the District of Columbia),77 law enforcement agencies can run a “trace” through each state’s gun transfer database.78 Since these jurisdictions require record keeping for transfers beyond the first retail purchase, these traces may have additional information that would not be available in an ATF trace.

75 Kevin Johnson, “Millions of firearms records languish at National Tracing Center,” USA Today, October 26, 2015.
76 Sample trace report provided to the authors by ATF.
77 Giffords Law Center, “Registration,” accessed February 29, 2024.
A sample, redacted trace reported provided by ATF to the authors.  

There is another layer to the eTrace system called Collective Data Sharing (CDS), which allows participating law enforcement agencies to share their firearm trace data with other participating agencies in their respective states. The ability to pool results via CDS is another advantage to requesting traces via eTrace as opposed to more antiquated methods (phone, fax, and/or mail).

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79 Sample trace report provided to the authors by ATF.
What is Collective Data Sharing (CDS)?

When ATF fulfills a gun trace request from law enforcement, by default that data goes only to the requesting law enforcement agency. While this data is valuable to the agency that requested the trace, it does not allow for identification of broader crime gun flow patterns across agencies and jurisdictions. Collective Data Sharing (CDS) is a feature within eTrace designed to address this, by allowing participating agencies within the same state to contribute to and access a shared pool of eTrace data. When signing up for eTrace, a law enforcement agency can check a box to also opt-in to CDS.

Via CDS, a participating agency can view all of the eTrace data from other in-state law enforcement agencies that have also opted-in to CDS. By providing access to a larger pool of gun trace data, CDS makes it possible to identify macro, state-level patterns in the flow of crime guns, including: the types of guns used in crime most often, and the most common sources of crime guns (which may lead to the identification of straw purchasers, gun traffickers, and FFLs who are violating sales regulations).

What is the National Integrated Ballistic Information Network (NIBIN)?

eTrace and CDS are tools exclusively related to identifying the origins of recovered firearms. The National Integrated Ballistic Information Network (NIBIN) is used to connect crime scenes via the analysis of recovered shell casings and bullets, and test-fires of recovered firearms.

Established by ATF in 1997, NIBIN is a “automated ballistic imaging” tool that compares ballistic evidence across crime scenes, leading to the identification of guns used in multiple shootings. As described above, when a gun is fired, it leaves unique markings on the shell casing and bullet. These markings are sometimes referred to as “ballistic fingerprints” and constitute what is referred to as “ballistic evidence.” NIBIN facilitates the comparison of those ballistic fingerprints, which may open up investigative leads. NIBIN analysis generates two types of matches or “leads”: casing-to-casing or casing-to-gun. Casing-to-casing leads refer to

“As of June 2023, there are 298 NIBIN sites (facilities with at least 1 NIBIN terminal) in 251 cities across the country. In the Great Lakes states, there are 51 NIBIN sites (11 each in Illinois and Ohio; 8 each in Michigan in Pennsylvania; 5 in Indiana; and 4 each in Minnesota and Wisconsin.

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81 Ibid.
83 ATF, “NIBIN,” August 2018.
matches between shell casings found at two or more different shootings. Casing-to-gun leads refer to matches between a recovered shell casing and a shell casing from a recovered firearm which has been test-fired by law enforcement.  

Ballistic evidence is submitted by law enforcement agencies through NIBIN terminals, which are located throughout the country. As of June 2023, there are 298 NIBIN sites (facilities with at least 1 NIBIN terminal) in 251 cities across the country. In the Great Lakes states, there are 51 NIBIN sites (11 each in Illinois and Ohio; 8 each in Michigan in Pennsylvania; 5 in Indiana; and 4 each in Minnesota and Wisconsin.)

Image 5: NIBIN shell casing analysis

This newly acquired evidence is then compared to other images in the NIBIN database. These comparisons, conducted via multiple algorithms, may reveal a connection between pieces of ballistic evidence from different shooting scenes. These possible matches are referred to as “correlations.” A trained NIBIN technician will then review the correlation results, and confirm whether there is a match or not. Confirmed correlations are referred to as “leads.” These leads are reported back to the submitting law enforcement agency. Before law enforcement can use the NIBIN lead for purposes of a prosecution, a NIBIN examiner will need to confirm the lead through a microscopic examination. When a lead is confirmed via microscoping imaging, it is referred to as a “hit.” According to ATF, as of 2022, NIBIN has 5.7 million pieces of ballistic evidence in its system. NIBIN entries per year have more than doubled between the program’s inception in 2005 and the most recent year of available data (2021). Since 2005, NIBIN has generated more than 640,000 leads and 145,000 hits.

85 ATF NIBIN data provided to the authors, October 2023.
In addition to comparing ballistic evidence via NIBIN, forensic laboratories can also conduct “touch DNA analysis,” which attempts to extract low levels of DNA from shell casings or firearms. ATF did not provide data on the amount of ballistic evidence processed for DNA, but did indicate that its forensic labs were finding DNA hits on shell casings at an increasing rate.  

“NIBIN entries per year have more than doubled between the program’s inception in 2005 and the most recent year of available data (2021).”

What is the NIBIN Enforcement Support System (NESS)?

The NIBIN Enforcement Support System (NESS) is ATF’s newest crime gun intelligence tool. In 2018, ATF began developing NESS as a tool that overlays NIBIN data, eTrace data, and data from the record management system (RMS) of a participating law enforcement agency. RMS data typically includes “events, people, and locations associated with a shooting or gun recovery.” NESS also offers mapping capabilities, which allows a participating agency the ability to map crime gun intelligence information within their jurisdiction. NESS automatically receives and updates NIBIN data daily within its interface.

As part of its function, when two or more pieces of ballistic evidence are connected to the same firearm via NIBIN, the NESS system creates a unique Crime Gun Identification Number (“Crime Gun ID”). The Crime Gun ID attaches to the firearm throughout the lifecycle of the crime gun, allowing law enforcement to tie it to future ballistic evidence entered into NESS. Furthermore, if an agency participating in NESS recovers a gun and traces it via eTrace, some of that trace information is also available within NESS and tied to other shell casing recoveries associated with that gun. In this way, NESS allows law enforcement to view as much crime gun intelligence information as possible in one place.

NESS is offered at no-cost to law enforcement agencies who submit evidence to NIBIN. Participating agencies must sign an MOU with the ATF in order to access the system, and then can also build a bridge between their own departmental RMS system and NESS. This process of building a data bridge is time- and resource-intensive, which may be one reason why participation in NESS remains relatively rare; as of March 2024, approximately 300 law enforcement agencies have signed NESS MOUs with ATF.

90 ATF written response to the authors, April 2024.
93 Authors’ interview with Chicago Police Department staff, April 2024.
94 ATF written response to authors’ research questions, April 2024.
95 Authors’ interview with Chicago Police Department staff, April 2024.
96 ATF written response to authors’ research questions, April 2024.
Evaluation of ATF’s Crime Gun Intelligence Tools
ATF’s crime gun intelligence tools are vital resources that have revolutionized law enforcement’s investigation of gun crimes. When implemented comprehensively and effectively, these tools have increased the rates at which law enforcement are solving gun crimes.

Despite their utility, there remain gaps to ATF’s crime gun intelligence tools achieving their full potential. These gaps stem from a variety of factors, including incomplete participation and utilization of crime gun intelligence tools on the part of law enforcement; restrictions on data digitization, searchability, and sharing; resource limitations that hamper the comprehensive and efficient processing of evidence; and issues with the user-friendliness and functionality of the tools themselves.

This section of the report evaluates each of ATF’s crime gun intelligence tools, including analysis of their value and their limitations, and illustrative examples of their use.

**eTrace**

**Value**

The value of eTrace is that the online platform streamlines the gun trace request process, making it easier for law enforcement agencies to request traces and receive trace reports (compared to more cumbersome methods like mail, fax, or phone). eTrace also improves the quality of trace data, because real-time data validation helps prevent incorrect entries. The utility of eTrace is reflected in the steady increase of law enforcement agencies participating in the program (up to 9,739 as of January 2024, representing more than 50% of all law enforcement agencies in the country)\(^97\), and the fact that more than 90% of all trace requests are now entered via eTrace.\(^98\)

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\(^97\) ATF eTrace/CDS data provided to the authors, January 2024.

To date, there has been no formal scientific evaluation of eTrace’s impact on gun crime investigations or rates of gun violence. According to interviews with local and state law enforcement agencies, the investigative value of eTrace is primarily in identifying and prosecuting illegal sources of crime guns, including straw purchasers, gun traffickers, and unscrupulous gun dealers. Nationwide, gun tracing via eTrace has contributed to the initiation of 18,492 gun trafficking investigations and the referral for prosecution of 4,778 cases over the five year period between 2017-2021. The bulk of these investigations were for trafficking in firearms by an unlicensed dealer (41%), or trafficking in firearms by a straw purchaser (40%). In most instances (63%), the investigation was initiated based on information from a CGIC, information from state or local law enforcement, or ATF’s own review of eTrace information. In each of these circumstances, eTrace is a key data source identifying potential traffickers for investigation.\(^9^9\)

In 2014, Milwaukee, WI became one of the first cities to establish a CGIC, a collaboration between the Milwaukee Police Department (MPD) and ATF.\(^1^0^0\) The Milwaukee CGIC traces all firearms recovered by MPD.\(^1^0^1\) In 2022, that meant submitting approximately 3,300 trace requests through eTrace.\(^1^0^2\) Trace reports

\(^9^9\) ATF, “National Firearms Commerce and Trafficking Assessment (NFCTA): Firearms Trafficking Investigations—Volume Three,” April 2024. While firearm trafficking was not a federal crime until the 2022 passage of the Bipartisan Safer Communities Act, ATF describes these investigations as “firearms trafficking investigations” in their reporting.


\(^1^0^1\) Authors’ interview with CGIC staff in Milwaukee, March 27, 2023.

\(^1^0^2\) Ibid.
that reveal a short time-to-crime, or multiple traces that tie back to the same initial purchaser are investigated for possible gun trafficking or straw purchasing. According to leadership of the Milwaukee CGIC, these eTraces have resulted in “at least” 20-30 straw purchase cases per year that previously may not have been pursued.\(^{103}\)

An example of a straw purchasing case made via eTrace comes from Illinois. In August 2021, Chicago Police Department (CPD) officer Ella French and another CPD officer stopped a vehicle for having expired plates. During the stop, Officer French was shot and killed by one of the occupants in the car. The second officer was shot and critically wounded, but survived.\(^{104}\)

Responding CPD officers immediately placed the vehicle’s two occupants into custody, one of whom was later charged as the shooter. The gun used in the shooting was recovered and identified as a Glock Model 44, .22 caliber semi-automatic pistol.\(^{105}\) When CPD officers ran the license plate of the shooter’s car, they found that the vehicle was registered to a man named Jamel Danzy, who lived in Indiana. Danzy was not in the car when officers pulled it over. CPD requested an urgent trace of the recovered Glock through eTrace. The trace revealed that Danzy, the owner of the car, had purchased the Glock from an FFL in Hammond, IN about 6 months prior to the shooting. Under police questioning, Danzy admitted he purchased the Glock for the shooter, and that he knew the shooter had a felony conviction that prohibited him from purchasing or possessing a firearm himself. As a result of the trace, Danzy was convicted of transferring a firearm to a convicted felon.\(^{106}\)

Another example comes from St. Paul, MN, where a 2021 shooting at the Seventh Street Truck Park Bar left one dead and 14 injured.\(^{107}\) Investigators from the St. Paul Police Department recovered a gun used in the shooting, and an urgent eTrace revealed that gun had been purchased by Jerome Fletcher Horton, Jr. at an FFL called Fleet Farm in Blaine, MN.\(^{108}\) An ATF investigation revealed that Horton had purchased 33 firearms in a period of approximately four months, and that several of these were suspected to be straw purchases.\(^{109}\) Ultimately, Horton and another man were convicted of transferring the firearm used in the Seventh Street Truck Park Bar shooting to a convicted felon. In 2022, MN Attorney General Keith Ellison filed a lawsuit against the Fleet Farm FFL, alleging that the business was “aiding and abetting straw purchasers.”\(^{110}\) At the time of this report’s publication, the lawsuit is ongoing. Cases like these illustrate the value of eTrace in identifying and disrupting the sources of crime guns.

\(^{103}\) Ibid.
\(^{105}\) Criminal Complaint Against Jamel Danzy, AO 91 (Rev. 11/11).
\(^{106}\) Ibid.
\(^{108}\) Criminal Complaint Against Jerome Fletcher Horton, Jr., AO 91 (Rev. 11/11).
\(^{109}\) Ibid.
\(^{110}\) Kyle Brown, “2-year sentence for man who straw purchased gun used in Truck Park mass shooting,” KTSP, October 25, 2022.
Limitations

Despite the investigative value of eTrace, interviewees spoke of a number of limitations that prevent the system from being as useful as it should be.

**Processing times are slow and unpredictable**

According to ATF, the average trace request now takes approximately 16 days to complete. As the volume of trace requests has gone up over the years, the average processing time has increased, approximately doubling over the past ten years.\(^{111}\) ATF noted a goal of “a 7-day completion standard for routine trace requests and a 48-hours or less completion target for urgent traces.”\(^{112}\) According to state and local law enforcement interviewees, timely trace information is essential and even ATF’s goal of a 7-day turnaround may be too long for fast-moving investigations.

ATF itself recognizes the challenges posed by these delays. In its 2023 National Firearms Commerce and Trafficking report, ATF writes: “the continued increase in demand for NTC [National Tracing Center] services has negatively impacted ATF’s ability to respond to the time-sensitive and often-critical needs of law enforcement in a timely manner. These delays are largely attributable to static staffing levels, and outdated technology systems, which have become insufficient to support ongoing increases in the volume of trace requests.”\(^{113}\) Between the introduction of eTrace in 2005 and the last year of available data in 2021, the volume of traces requested more than doubled. Over that same period of time, the NTC’s budget in constant dollars decreased by 14%, and the number of NTC personnel decreased by 21%:\(^{114}\)

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\(^{112}\) ATF written response to authors’ research questions, April 2024.


\(^{114}\) Ibid.
Chart 6: Total traces compared to National Tracing Center budget (2005-2021)

Chart 7: Total traces compared to National Tracing Center personnel (2005-2021)

Clearly, the budget and staffing for the NTC has not kept pace with the increase in volume of gun trace requests, resulting in longer processing times for each trace. According to state and local law enforcement interviewees, traces marked as “urgent” (often connected to mass shootings or shootings of police officers) can be completed within 24 hours or less, but “routine” traces can take anywhere from 48 hours to several weeks. Many interviewees noted that the pace of eTrace returns was unpredictable. A law enforcement officer in Milwaukee said, “There is no rhyme or reason to how long it takes to get an eTrace back. Sometimes it takes hours, sometimes it takes weeks.”

115 Authors’ interview with CGIC staff in Milwaukee, March 27, 2023.
A key reason why the trace process is so time- and labor-intensive is because ATF is not allowed to maintain searchable, digitized records of firearm sales and transfers. Nearly forty years ago, Congress enacted a law, the Firearms Protection Act, that prohibited ATF from using “any system of registration” of firearms, firearm owners, or firearm sales. Since then, Congress has used riders in spending bills to prohibit the agency from “consolidation or centralization” of firearm purchase and sale records. This has effectively prevented ATF from keeping a digitized, searchable database of gun sales records. As such, when a trace request comes in and the FFL associated with the gun is no longer operating, NTC staff must manually go through these out-of-business firearm transaction records to identify the gun’s first retail purchaser. This is an inherently slow process, and it is conducted within deteriorating conditions. In its FY2025 budget request to Congress, ATF paints a stark picture of its record keeping system, including resorting to shipping containers in its parking lot to store “tens of millions of out-of-business firearm records.”

ATF notes that these shipping containers “are not climate- or humidity- controlled, putting original records at risk of deterioration and mold.” They represent a safety hazard to staff, who risk injury from “stacks of boxes falling, extreme heat or cold temperatures...and exposure to environmental detriments.” “It’s just insanity to think this is how we’re operating,” said former ATF Deputy Director Edgar Domenech to NBC News. The outdated, analog approach is hampering ATF’s effectiveness and credibility among local and state law enforcement. A St. Paul Police Department Commander in charge of gun investigations said, “ATF’s record keeping system is just archaic and makes it super difficult for investigators who are trying to do the right things for the right reasons, not trying to take people’s guns from their houses, just trying to put a dent [in gun crimes].”

“...the budget and staffing for the NTC has not kept pace with the increase in volume of gun trace requests ...”

“ATF’s record keeping system is just archaic and makes it super difficult for investigators who are trying to do the right things ..”

119 Ibid.
120 Ibid.
121 Simone Weichselbaum, Andrew Blankstein, Yasmine Salam, and Frank Thorp, “It’s just insanity’: ATF now needs 2 weeks to perform a routine gun trace,” NBC News, August 19, 2022.
122 Authors’ interview with St. Paul Police Department, March 13, 2023.
Across the board, law enforcement interviewees expressed frustration with slow eTrace turnaround times, noting that trace results are not returned quick enough to help with fast-moving shooting investigations. An investigator within Minnesota’s Bureau of Criminal Apprehension reflected, “The time it takes for us to get information from an eTrace, the average is 14 days. That’s too long—people leave, people flee.”

In its FY2023 budget, ATF received $14.4 million from Congress for “NTC Modernization,” which included technological upgrades to the eTrace system (which had not previously been upgraded since 2009) and 13 new positions at the NTC. Given that the last available data on eTrace processing times was from 2021, it is unclear whether these funds had an impact on trace timeliness. Law enforcement interviewees indicated that slow eTrace processing times are still a problem as of 2024. In its FY2025 budget request to Congress, ATF requested $43.9 million to expand the capabilities of its National Services Center (NSC), which houses the NTC. This includes resources to repair and modernize the NSC buildings and to enhance its technological capabilities. When asked how much additional NTC staff would be needed to improve eTrace turnaround times, ATF did not specify a number. Increased digitization and searchability of records would also speed up the trace process, but ATF did not specify whether or how this would occur. Absent a major breakthrough in digitization and searchability of records, it stands to reason that a significant increase in NTC personnel would be required to achieve ATF’s stated goal of completing all eTraces within 7 days.

**No transactions recorded beyond the first retail purchase**

Of all traces requested between 2017-2021, ATF was able to identify the first retail purchaser of crime guns 77% of the time. (In cases where the first retail purchaser is not identified, the most common reasons are that the firearm information provided was incomplete or invalid, or that the FFL sales record was missing.) However, when a report comes back to the submitting agency, the first retail purchase is often years before the crime, with several possible transfers of the gun in between; this means that identifying the first retail purchaser has limited value for solving the crime the gun was used in. According to ATF, 54% of crime guns traced between 2017-2021 were recovered more than three years after their first retail purchase. ATF notes: “Crime guns may change hands a number of times after that first retail sale, and some of those transactions may be a theft or violate one or more regulations on firearm commerce.”

An officer with the Minnesota Bureau of Criminal Apprehension talked about the impact these time-to-crime lags have on the value of tracing, “For a majority of guns we trace, the info we get is not valuable to the investigation. The vast majority of the ones we run, the

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123 Authors’ interview with Minnesota Bureau of Criminal Apprehension, January 9, 2023.
124 Appendix, FY 2023 Budget of the US Government.
126 ATF written response to authors’ research questions, April 2024.
time-to-crime is over 1,000 days...When you don't track every [firearm] transaction [after the first legal purchase], it limits the usefulness of the information.”

Federal law does not require background checks on gun sales or transfers between private citizens; nor does it require the maintenance or submission of transaction records for these sales or transfers. As such, if a gun’s first retail purchaser goes on to sell that gun to another private citizen, the ATF would have no record of that sale, and it would not show up on a trace report. According to law enforcement interviewees, having visibility on transactions beyond the first retail purchase would significantly improve the utility of the eTrace tool.

This limitation on eTrace’s investigative value may be hampering participation rates. In an interview with a state-level law enforcement agency, a staff member recalled: “[In encouraging agencies to sign up for eTrace,] we emphasized what it can tell you, but when they started using it, they didn’t glean that much intelligence.”

A lack of engagement and support from ATF and state-level stakeholders

As of January 2024, 9,739 law enforcement agencies participate in eTrace, representing a little more than half of all state and local law enforcement agencies in the country. Most large law enforcement agencies participate in eTrace, meaning that the vast majority (>90%) of gun traces are submitted via eTrace. But, participation among smaller agencies lags behind, in part due to a lack of awareness. According to a former staffer at the Pennsylvania AG’s office, “I cannot state enough how unaware our small and midsize agencies are of eTrace...they don’t know what it is...ATF could do more to build awareness and provide training on the tool.”

Agencies also noted a lack of ATF support in navigating questions or problems related to eTrace, claiming that ATF does not “pick up the phone” when called upon for assistance. In interviews with the authors, law enforcement identified what additional support would be helpful to see from ATF, including: dedicating more outreach resources to raise awareness among state and local agencies; and having a “help desk” for eTrace on-boarding and troubleshooting, with dedicated agents readily available to offer real time assistance. Of course, providing these functions would require additional funding for ATF and specifically the NTC.

State policymakers and state law enforcement agencies also play a significant role in driving eTrace participation. Between states, participation rates vary widely. According to ATF data, the highest rate of eTrace participation was in New Jersey, where approximately 96% of law enforcement agencies were enrolled; the lowest rate of eTrace participation was

129 Authors’ interview with Minnesota Bureau of Criminal Apprehension, January 9, 2023.
131 Authors’ interview with a state-level law enforcement agency, December, 2022.
132 ATF eTrace/CDS data provided to the authors, January 2024.
134 Authors’ interview with Pennsylvania AG’s Office, December 12, 2022.
in South Dakota, where 20% of agencies were enrolled. The below chart shows eTrace participation rates across all states, with the Great Lakes states highlighted in green:

Chart 8: Percentage of law enforcement agencies participating in eTrace by state (2021)

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This data suggests the role that state-level policymakers and law enforcement officials have to play. The top three states by eTrace participation rate (New Jersey, Virginia, and North Carolina) all have state laws requiring law enforcement agencies to trace all recovered crime guns, and New Jersey specifies that this tracing be conducted via eTrace.136

“\textit{The top three states by eTrace participation rate (New Jersey, Virginia, and North Carolina) all have state laws requiring law enforcement agencies to trace all recovered crime guns ...}”

**eTrace Collective Data Sharing**

**Value**

Collective Data Sharing (CDS) is an opt-in feature within the eTrace platform that allows law enforcement agencies to share eTrace data within a given state. By enabling the sharing of eTrace data, CDS allows for statewide mapping of crime gun recoveries and crime gun sources. This can provide a high-level picture of crime gun patterns, including the types of firearms most recovered in crime, the sources of those firearms, and the individuals responsible for purchasing them. Without CDS, these insights would not otherwise be visible to a single law enforcement agency. This type of interagency data sharing is common in law enforcement, and essential to effective policing. For example, the National Crime Information Center (NCIC) is a computerized index enabling interagency data sharing of criminal justice information (including missing persons, criminal histories, and stolen properties).137 If a car is reported stolen in one jurisdiction, and pulled over for speeding in another jurisdiction, NCIC allows the officers to see that they’ve pulled over a stolen vehicle.

CDS enables similar functionality, but specific to crime guns. For example, let’s say five different crime guns are recovered in five different jurisdictions within a state. Each recovering agency requests an eTrace and the trace results reveal that all five guns had the same first retail purchaser. This indicates that this individual is potentially a straw purchaser or trafficker. However, without these agencies participating in CDS, there would be no way to identify the common purchaser connecting these crime gun recoveries.

Using data obtained via CDS, some state-level law enforcement agencies have built platforms to help identify these cross-jurisdictional linkages. For example, the Pennsylvania Gun Tracing Analytics Platform provides a statewide picture of crime gun recoveries, aggregating eTrace data from CDS-participating agencies across the state and capturing key patterns in crime gun sources.138 Similar platforms exist in Illinois

(Crime Gun Connect) and New York (Tracing Analytics Platform). These platforms typically have a publicly available version for sharing aggregate data with the public (as pictured below for Crime Gun Connect), and a private version only accessible to law enforcement featuring identifying information of individual purchasers.

In addition to helping identify potential straw purchasers and traffickers, these platforms can also inform policy design. For example, the Illinois Crime Gun Connect platform (built using data obtained from CDS data sharing) allows users to track how often ghost guns show up at crime scenes. (Ghost guns are untraceable, unserialized firearms that can be bought online and assembled at home.) By demonstrating the uptick in ghost gun usage in crime, the Crime Gun Connect platform helped inform and advance a new policy in Illinois banning the sale and possession of ghost guns statewide.

By enabling the sharing and synthesis of trace data across agencies statewide, CDS allows for the identification of crime gun patterns on a larger scale. This can lead to the identification of prominent crime gun sources, including both malfeasant gun dealers and potential traffickers; it can also lead to the design and advancement of policies aimed at restricting crime gun supply.

**Limitations**

Despite the value of CDS, there remain some significant barriers to realizing its full impact. These barriers include a lack of law enforcement participation in CDS; the limited value of raw CDS data; the labor intensiveness of compiling raw CDS data into a more meaningful, searchable format; a lack of consistency in ATF support; and an inability to share data across state lines.

**Lack of awareness of CDS drives lagging participation**

When a law enforcement agency signs up for eTrace, opting into CDS is as easy as checking a box. Yet, of the 9,739 law enforcement agencies participating in eTrace nationwide, only 3,132 (32%) are participating in CDS as of January 2024. CDS participation rates vary widely by state. For example, in New Jersey, 525 of the 528 law enforcement agencies enrolled in eTrace have also opted into CDS (99%). But, in Michigan, of the 200 law enforcement agencies enrolled in eTrace, only 19 (10%) have

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141 ATF eTrace/CDS data provided to the authors, January 2024.
opted into CDS. The below chart shows CDS participation rates across all states and territories, with the Great Lakes states highlighted in green:

Chart 9: Percentage of eTrace participants enrolled in CDS by state (2021)

<table>
<thead>
<tr>
<th>State</th>
<th>% of eTrace agencies participating in CDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Jersey</td>
<td>99.4%</td>
</tr>
<tr>
<td>New York</td>
<td>80.1%</td>
</tr>
<tr>
<td>Virginia</td>
<td>74.8%</td>
</tr>
<tr>
<td>Illinois</td>
<td>49.6%</td>
</tr>
<tr>
<td>Kentucky</td>
<td>46.0%</td>
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<tr>
<td>New Hampshire</td>
<td>40.6%</td>
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<tr>
<td>Arizona</td>
<td>37.5%</td>
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<tr>
<td>Maryland</td>
<td>36.6%</td>
</tr>
<tr>
<td>South Carolina</td>
<td>35.0%</td>
</tr>
<tr>
<td>Utah</td>
<td>34.1%</td>
</tr>
<tr>
<td>Florida</td>
<td>33.8%</td>
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<tr>
<td>California</td>
<td>32.7%</td>
</tr>
<tr>
<td>Delaware</td>
<td>30.8%</td>
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<tr>
<td>Connecticut</td>
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<tr>
<td>Nevada</td>
<td>29.0%</td>
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<tr>
<td>North Carolina</td>
<td>28.5%</td>
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<tr>
<td>Minnesota</td>
<td>27.8%</td>
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<tr>
<td>Wisconsin</td>
<td>27.6%</td>
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<tr>
<td>Pennsylvania</td>
<td>27.0%</td>
</tr>
<tr>
<td>Louisiana</td>
<td>26.7%</td>
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<tr>
<td>Georgia</td>
<td>24.9%</td>
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<tr>
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<tr>
<td>Wyoming</td>
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<td>Ohio</td>
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<tr>
<td>West Virginia</td>
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<tr>
<td>South Dakota</td>
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<tr>
<td>Washington</td>
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<tr>
<td>Tennessee</td>
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<tr>
<td>Missouri</td>
<td>21.7%</td>
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<tr>
<td>North Dakota</td>
<td>21.4%</td>
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<tr>
<td>Iowa</td>
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<tr>
<td>Texas</td>
<td>20.1%</td>
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<tr>
<td>New Mexico</td>
<td>19.2%</td>
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<tr>
<td>Nebraska</td>
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<tr>
<td>Massachusetts</td>
<td>18.6%</td>
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<tr>
<td>Indiana</td>
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<td>Colorado</td>
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<td>Mississippi</td>
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<td>Kansas</td>
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<td>Oregon</td>
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<tr>
<td>Alaska</td>
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<tr>
<td>Maine</td>
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<tr>
<td>Montana</td>
<td>15.8%</td>
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<tr>
<td>Arkansas</td>
<td>13.9%</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>12.4%</td>
</tr>
<tr>
<td>Idaho</td>
<td>12.2%</td>
</tr>
<tr>
<td>Vermont</td>
<td>10.3%</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>10.0%</td>
</tr>
<tr>
<td>Michigan</td>
<td>9.5%</td>
</tr>
<tr>
<td>Hawaii</td>
<td>0.0%</td>
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</tbody>
</table>

142 Ibid.
Interviewees attributed gaps in CDS participation to a lack of awareness about the CDS tool. According to a staff member at the Illinois AG’s office: “Those [agencies] that have awareness will do it [opt-in to CDS]...but we still have to make more agencies aware of CDS, that this system exists.” Because CDS relies on agencies signing up to share their data, lagging participation is a significant barrier to achieving maximum impact. In Illinois, there are 579 agencies enrolled in eTrace, but less than half of these agencies (287) are also participating in CDS. This means that Illinois’ CDS database and the Crime Gun Connect platform built using CDS data are missing trace data from up to 292 law enforcement agencies that could potentially be contributing. According to the Illinois AG’s office, the largest law enforcement agencies in the state are participating in CDS, meaning that the vast majority of crime guns do make it into the system, but there remains a gap to full participation. The gap is even larger in other Great Lakes states. More data makes these platforms more powerful, enabling more cross-jurisdictional linkages and more comprehensive identification of statewide patterns.

“More data makes these platforms more powerful, enabling more cross-jurisdictional linkages and more comprehensive identification of statewide patterns.”

ATF’s national office claims no responsibility for driving up awareness of or participation in CDS. When asked what the agency’s goals were for CDS participation and whether there was a timeline for achieving full participation, ATF responded, “CDS is a feature provided by ATF to law enforcement agencies. ATF does not direct law enforcement agencies to use this feature. It is fully incumbent on the law enforcement agency to determine if the CDS feature is appropriate for their agency.” However, some ATF field offices take a more proactive approach by encouraging CDS participation and providing training to agencies within their respective regions.

While lack of awareness about CDS remains a barrier, it appears to be a surmountable one. According to the team at the Illinois AG’s office: “When you see [police] departments not signed up [for CDS], sometimes you just need to call them and explain the system and tell them how easy it is [to opt-in to CDS]...once they understand that, we have not run into much resistance.”

As with eTrace, state policymakers and law enforcement officials have a role to play in driving CDS participation. In New Jersey, the AG issued a directive in 2018 to all law enforcement agencies in the state, instructing them to participate in CDS. The directive included provisions that the New Jersey State Police would provide technical support as necessary in order to comply with the directive, and provided a deadline of 30 days for all law enforcement agencies statewide to opt-in to CDS. Clearly, the directive had

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143 Authors’ interview with IL AG’s office, December 21, 2022.
144 ATF written response to authors’ research questions, April 2024.
145 Follow-up response to the authors from ATF field office, May 14, 2024.
an impact. In 2018, the year of the AG’s directive, 146 law enforcement agencies newly signed up for eTrace in New Jersey, the highest number of eTrace sign-ups in a single state and single year since the beginning of the eTrace program. In addition to signing up for eTrace, all of these agencies also opted into CDS. As of January 2024, New Jersey has by far the highest level of CDS participation of any state in the country.\textsuperscript{147}

\textit{Inconsistent tracing by jurisdictions signed-up}

Even when law enforcement agencies do participate in CDS, they may not be tracing all of their crime guns. This also limits the amount of data making it into the system, resulting in a less-than-complete picture of statewide crime gun patterns.

Although there is no national dataset tracking the percentage of crime guns traced, reporting suggests that several agencies are not regularly tracing crime gun recoveries.\textsuperscript{148} For example, in California, an investigation by \textit{The Trace} and \textit{NBC Bay Area} analyzed 150 police agencies in the state between 2010-2020 and found that more than half of recovered crime guns were not traced.\textsuperscript{149}

State policymakers can mandate the tracing of all recovered crime guns, but as of 2023, only 12 states have adopted this policy, including only two of the Great Lakes states (Illinois and Pennsylvania).\textsuperscript{150} It’s important to note that mandating the tracing of all crime guns nationwide would require a considerable investment of resources, both to support the state and local law enforcement agencies who must enter the trace requests and analyze the resulting trace data, and to support the ATF staff at the NTC responsible for completing the traces. A nationwide evaluation of the eTrace and CDS systems should also include a needs assessment to determine what additional resources would be required to trace all recovered crime guns.

\textbf{\textit{Raw CDS data has limited value}}

When individual law enforcement agencies opt-into CDS, they are able to access the trace information from other agencies in their state that have also opted in. Via the ATF eTrace platform, CDS participants can see a list of all completed or in-progress

\begin{quote}
\textit{“State policymakers can mandate the tracing of all recovered crime guns, but as of 2023, only 12 states have adopted this policy, including only two of the Great Lakes states (Illinois and Pennsylvania).”}
\end{quote}

\textsuperscript{147} ATF eTrace/CDS data provided to the authors, January 2024.
\textsuperscript{150} Everytown For Gun Safety, “Which states require crime guns to be traced?” 2023.
trace results from other CDS participants in the state. However, the searchability of this data is limited. Law enforcement are only able to set time parameters to pull up other agencies’ trace requests (i.e. last 24 hours, last week, last month, etc). This query then pulls up all gun recoveries and trace requests submitted within the timeframe. Within the eTrace/CDS system, there is no ability for law enforcement to search the trace results by purchaser name, dealer name, or any other potentially connecting characteristic.\footnote{Authors’ interview with IL AG’s office, December 21, 2022.}

In order to make those connections, an individual law enforcement agency would need to comb through the shared trace results themselves to collate information in a way that would identify common possessors, purchasers, or dealers across crime guns. This is time consuming to do, and the authors could not find an example of a local law enforcement agency using CDS to do this themselves. Some state law enforcement agencies—including the Illinois, Pennsylvania, and New York AG’s offices—have built their own platforms that compile CDS data from participating agencies across the state. Such platforms have more sophisticated search functions for participating law enforcement agencies, allowing them to search statewide records by purchaser, dealer, possessor, recovery location, and other categories. (For a deeper dive into the Illinois platform, see the case study on Crime Gun Connect.)

\textit{Time and labor intensive process of compiling CDS data}

For agencies interested in compiling statewide CDS data into an easily searchable database (like Illinois’ Crime Gun Connect, Pennsylvania’s Track and Trace, or New York’s Tracing Analytics Platform), the process is very time and labor intensive. This stems from the limitations of the ATF CDS interface. According to a staff member at the Illinois AG’s office: “Our manual downloading process [of CDS records] took forever; its [ATF’s] system is antiquated, and it was not uncommon to have the connection timeout while we were downloading records.” Once downloaded, the CDS records were not always complete and not always in a uniform format, necessitating a significant amount of manual data cleaning work: “There were data fields dropped in the downloads, so we had to manually go back into the ATF .pdf [trace] reports and fill things in, things that should have been in the download because they were in the original data.”\footnote{Authors’ interview with Illinois AG’s office, December 21, 2022.}

Given the laboriousness and complexity of the CDS data download and data cleaning process, state law enforcement agencies looking to compile CDS data often seek out support from ATF. In some cases, the request to ATF is simply for ATF to provide a flash drive with all of the state’s CDS records, so the requesting agency can avoid the time-consuming and error-prone process of downloading records from the online CDS database. According to interviewees, the level of support received from ATF is inconsistent. A staff member at a state-level law enforcement shared: “There should be some sort of formalized process to get ATF to be responsive, so we can avoid the luck of the draw in terms of who you interact with or who happens to answer the phone that
day at ATF.” Staff at another state-level law enforcement agency concurred, saying: “In building [a crime gun analytics platform], there was a lack of ATF support...it was very frustrating to put in all this time, and for the [ATF] system to not work very well.”

The amount of work involved is one reason why more states don’t have platforms like Illinois, Pennsylvania, and New York do. As part of its technological modernization efforts, ATF should ensure that CDS data can be downloaded efficiently and in a consistent format.

**Inability to share CDS data between states**

ATF’s CDS function allows a participating agency to access trace data from other participating agencies in their state. It does not enable participating agencies to access trace data from other states, including neighboring states or other crime gun source states. When asked by the authors, ATF did not specify a reason for why this limitation exists, but it did indicate that “future enhancements to the [CDS] system being considered may include agency-to-agency sharing across state jurisdictional lines.” The current functionality of CDS does not facilitate a regional or national picture of gun trafficking, straw purchasing, and other crime gun patterns.

Some states have entered into their own partnerships to share trace data across state lines. For example, in 2021, the governors of New Jersey, New York, Pennsylvania, and Connecticut signed a MOU requiring law enforcement agencies in those states to share their gun trace information with one another. These states are currently sharing trace data, though differences in records management systems between states have thus far impeded the creation of a cross-state trace platform.

“**These states are currently sharing trace data, though differences in records management systems between states have thus far impeded the creation of a cross-state trace platform.**”

To facilitate interstate data sharing and to remove the burden of compiling CDS data from state and local law enforcement, ATF itself could compile crime gun intelligence data nationwide and make a searchable platform available to all participating law enforcement. When asked if there were any plans to do this and what resources would be required, ATF did not provide any specifics, writing, “ATF analysts regularly look at nationwide trace data for various studies.” Without such a national database, local, state, and federal law enforcement agencies are left without key information on crime gun recovery patterns across states, regions, and the entire country.

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153 Authors’ interview with a state-level law enforcement agency, December 2022.
154 Authors’ interview with a state-level law enforcement agency, December 2022.
155 ATF written response to authors’ research questions, April 2024.
157 Authors’ follow-up conversation with a former staff member of the PA AG’s office, May 2024.
158 ATF written response to authors’ research questions, April 2024.
In June 2022, the Illinois Attorney General’s office (IL AG) launched Crime Gun Connect (CGC), a new gun crime intelligence platform for law enforcement use.\(^{159}\) Developed in collaboration with the Illinois State Police, Everytown for Gun Safety (a national gun violence prevention non-profit), and MK Analytics (a data analysis and technology firm), the online platform is a digital database of more than 120,000 crime gun trace records from 287 participating law enforcement agencies, going back to 2010.\(^{160}\) The platform is available to and uses data collected from law enforcement agencies in Illinois that are enrolled in eTrace and have also opted into CDS. As of January 2024, 579 IL law enforcement agencies are enrolled in eTrace; of those, 287 are enrolled in CDS.\(^{161}\) (Illinois has more than 1,000 law enforcement agencies, but crime gun recoveries are concentrated in a handful of jurisdictions—all of whom are signed up for eTrace and CDS).\(^{162}\)

The theory behind CGC is that mapping multi-agency crime gun trace data over time can assist law enforcement in maximizing the value of trace data. Prior to CGC’s launch, such a database did not exist for law enforcement agencies in the state. “People believe that a comprehensive database tracking crime guns already exists,” said a former Executive Deputy IL AG, who ran the CGC platform. “It’s 180 degrees the opposite of that, and we were tasked with putting something together that shouldn’t be necessary but is something that there is a desperate need for.”\(^{163}\) According to this former staffer, CGC takes “the power of ATF trace data...[which is] flat and complicated data and puts it into a format the world expects it to be in.”\(^{164}\)

Law enforcement outreach was key to participation

For the IL AG team, a first step towards developing CGC was to increase the number of Illinois law enforcement agencies opting into eTrace’s CDS program. The IL AG’s office has designated one staff member to serve as the CDS outreach

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\(^{160}\) Illinois Attorney General, “Curbing Gun Violence with IL Crime Gun Connect,” accessed February 28, 2024; ATF eTrace/CDS data provided to the authors, January 2024.
\(^{161}\) ATF eTrace/CDS data provided to the authors, January 2024.
\(^{162}\) Authors’ interview with IL AG’s office, December 21, 2022.
\(^{163}\) Ibid.
\(^{164}\) Ibid.
EVALUATION OF ATF’S CRIME GUN INTELLIGENCE TOOLS

coordinator between the AG’s office and Illinois’s police departments. The outreach strategy is working. The number of law enforcement agencies participating has nearly doubled since outreach began in 2022. Participating agencies represent the vast majority of all crime gun traces in Illinois, including representation from every major metropolitan area in the state. The IL AG’s office hasn’t faced any “resistance” from law enforcement agencies about CDS participation. “When ATF pushed out CDS, [it] did it kind of like an FYI, with not a lot of publicity about it. Agencies that signed up for eTrace assumed they were automatically signed up for CDS. A call from me helped to address this, emphasizing that it’s as easy to fix as pressing a button,” said the IL AG’s office’s outreach coordinator. “When I would see that a big department was not signed up [for CDS], I just needed to call them and...get them engaged in CDS.”

**CDS enables CGC, but the process of obtaining and cleaning the data was a challenge**

CGC is possible because of eTrace’s CDS functionality. Prior to the implementation of CDS, federal regulations made it difficult—if not nearly impossible—for law enforcement to access and digitize crime gun trace data across jurisdictions. For the IL AG’s office, past efforts to create a statewide crime gun tracing database ran into multiple roadblocks. According to IL AG staff, the office’s prior attempts “depended on going to ATF and asking for each individual jurisdiction’s data. It was difficult to accomplish and get cooperation [from both ATF and each individual jurisdiction].” The CDS function made it possible for the IL AG’s office to directly access and collate crime gun trace data from any participating IL agency.

Still, pulling the data through ATF’s CDS portal proved to be challenging and time consuming for the CGC team. “With CDS, it’s a manual downloading process that took forever,” said IL AG’s office staff, in large part due to the nature of ATF’s CDS interface. “It was a tremendous amount of people hours that involved our staff downloading each record from eTrace, and cleaning the data. This took months and months of effort to do. The sheer amount of work is perhaps why more state agencies don’t do [statewide tracing databases],” reflected an IL AG’s office staffer.

**Important and unique investigative leads**

Though the amount of work required to create CGC was significant, the final result has been a tremendous resource of information on gun crime patterns in Illinois. CGC’s main interface is in map format, with pins on the map signifying different events (location of gun recovery, and/or gun purchaser, possessor, dealer). When the law enforcement user clicks on the pin, it pulls up all data associated with that pin. The data can also be sorted through a comprehensive search function,

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165 Ibid.
166 Authors’ interview with IL AG’s office, December 21, 2022.
including by location, purchaser name, possessor name, and FFL name, among other options. So, for example, the law enforcement user could click on an FFL with a history of supplying crime guns, and see all in-state traces associated with that FFL. From there, the user could search the number, type, and location of all recovered guns associated with that FFL within the CGC database. The user could also search by the name of a first retail purchaser, pulling up all recoveries associated with that person on the map, including the type and location of gun recoveries (see image below). This ability allows law enforcement to easily identify the FFLs and individual purchasers who are supplying the most crime guns, and to target investigation and enforcement accordingly.

Image 6: Crime Gun Connect law enforcement view

![Screenshot from law enforcement version of Crime Gun Connect showing the flow of 9 crime guns associated with one straw purchaser. The guns were all purchased near Indianapolis and recovered near Chicago.](image)

The system also provides a trafficking index (0 to 100), which scores the likelihood that a recovered firearm was trafficked, with 0 indicating an absolute certainty that the gun was not trafficked (e.g. the person who bought the gun is the person from whom the gun was recovered), and 100 indicating an absolute certainty that the gun was trafficked. The trafficking score is based on factors like whether a gun crossed state lines, whether the firearm purchaser was different than the possessor from whom the gun was recovered, and the time to crime from purchase to recovery.

The CGC team cited a number of examples of the platform’s value. “When a crime gun trace comes back and we go talk to the original purchaser, that guy almost always says their gun was lost or stolen before it was found at a crime scene,” said a staff member with the IL AG’s office. “But now, with our platform, you might see that this original purchaser has also bought other guns that have shown up at crime scenes, or is connected in some way to a suspected shooter,” continued the staffer.

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“In connecting more of the dots, you can see not just the original purchaser, but also a more clear and refined picture of that purchaser’s history and connections.”\textsuperscript{168}

CGC’s biggest strength might be in its ability to identify straw purchasing and trafficking patterns. As a staff member with the IL AG’s office noted, “The data emphasizes that trafficking is a statewide problem. It allows you to take a step back and realize that, for example, a particular gun show in northwest Indiana is responsible for a disproportionate number of crime gun recoveries, not just in Chicago, but also in northeast Illinois. This helps you see trafficking trends and how a trend connects to multiple jurisdictions.”\textsuperscript{169} As for the platform’s aid in identifying straw purchasers, an IL AG’s office staff member said that “the data creates time-to-crime patterns, with short turnaround times that scream straw purchase.” As one example, this staffer noted a case in which the same purchaser was connected to five guns that all turned up at crime scenes within a year to 18 months of their purchase: “This data pattern tells you something larger is going on, that this guy could be a straw purchaser and he should be looked at more closely.”\textsuperscript{170}

The IL AG’s office believes that the more that participating departments actively engage with CGC, the more value the database will have over time. As of May 2024, the platform has over 200 active users in law enforcement. “That gives us the ability to start problem solving and helping to fill agency data gaps,” said a staffer with the AG’s office.\textsuperscript{171} For example, the Chicago Police Department (CPD) agreed to add “gang” boundaries to the platform, to help them track how particular gangs are being supplied. “Are there particular dealers for particular gangs? Does it differentiate by gang? These would be new patterns of information,” said a staff member with the IL AG’s office.\textsuperscript{172} Once the IL AG’s office is able to get participating law enforcement agencies to actively engage with and add their own data to the tool, they are sold on its value. “It sells itself. It is easy to use, and it tells you so much,” said a staff member with the IL AG’s office. Illinois State Police, an active user of CGC, concurred: “Crime Gun Connect compiles eTrace information [in a way] that is more easily searchable by looking up name, gun specifics, geographic location, and other options.”\textsuperscript{173}

While CGC’s platform is an interface for law enforcement, the Illinois AG provides public access to aggregate data from the database, including: the total number of crime guns traced in Illinois since 2010; the total number of crime gun recoveries by region; and the number of firearms first sold by out-of-state retailers, including the top 11 source states.

\textsuperscript{168} Authors’ interview with IL AG’s office, December 21, 2022.
\textsuperscript{169} Ibid.
\textsuperscript{170} Ibid.
\textsuperscript{171} Ibid.
\textsuperscript{172} Ibid.
\textsuperscript{173} Illinois State Police email response to authors’ questions, May 7, 2024.
This data reveals several key trends. For example, since 2010, more than 60% of crime guns recovered in Illinois were first purchased in other states. Indiana is by far the largest source state. The next highest, in order, include: Mississippi,
Wisconsin, Kentucky, Missouri, Ohio, Tennessee, and Georgia. In addition, a state heat map by county demonstrates where crime gun traces are concentrated, with Cook County (Chicago) and its surrounding counties accounting for the vast majority of all recovered crime gun traces.\(^{175}\)

When asked about recommendations to strengthen law enforcement tools like CGC, the IL AG’s office staff noted the goal of integrating NIBIN into the platform. “What we would really like to do is marry eTrace and NIBIN data, because you could do so much more with both pieces,” said a staffer. “It would be helpful if ATF enabled any law enforcement agency authorized to use NIBIN to share NIBIN data with any other authorized agency—like eTrace’s CDS but for NIBIN.”\(^{176}\) As of May 2024, the IL AG’s office is pursuing agreements with individual law enforcement agencies in IL to gain access to their NIBIN data.\(^{177}\)

The National Integrated Ballistic Information Network (NIBIN)

Value

Compared to gun tracing, NIBIN is perceived by law enforcement as far more useful in solving shootings. This is because NIBIN connects individual incidents to one another through ballistic evidence (including recovered guns, shell casings, and bullets), allowing analysts to identify the most active guns in a particular jurisdiction, which may then lead to the identification of shooters. For example, a shell casing entered into NIBIN may match 5 other shell casings recently recovered at separate crime scenes, which tells law enforcement that one gun has been used across 6 recent shootings. Investigators can then prioritize these cases, given the likelihood of future violence involving this gun. This allows investigators to apply a much more strategic, focused approach to gun crime investigation, allocating precious resources to the most recent, most active shooters in a given area. In Milwaukee, for example, NIBIN usage allowed investigators to focus

“In Milwaukee, for example, NIBIN usage allowed investigators to focus on the most active repeat shooters, who were found to account for approximately half of the city’s fatal and non-fatal shootings.”

\(^{175}\) Ibid.

\(^{176}\) Authors’ interview with IL AG’s office, December 21, 2022.

\(^{177}\) IL AG email response to authors’ follow-up questions, May 15, 2024.
on the most active repeat shooters, who were found to account for approximately half of the city’s fatal and non-fatal shootings.178

Via its data driven approach, NIBIN is also seen as a way to reduce bias in law enforcement investigations of gun crime. NIBIN allows law enforcement agencies to pinpoint the guns that have been discharged most often within a community. According to a staff member with the US DOJ’s Bureau of Justice Assistance, NIBIN “removes the arbitrariness of who we’re paying attention to…and represents a bias-free way of determining who and what to investigate.”179

Of ATF’s crime gun intelligence tools, NIBIN is the only one that has been formally evaluated. The only evaluation at the national level is from 2013, meaning the conclusions are dated and constrained by fewer NIBIN machines in circulation at the time. It found that “criminal investigators rarely used NIBIN hit reports to identify unknown suspects in violent criminal cases and hits seldom assisted in the arrest of suspects.” But, it also noted significant gaps in NIBIN implementation and resourcing at the time, and suggested that NIBIN held “great promise as a tactical and strategic tool for law enforcement agencies.”180 NIBIN usage has expanded significantly since this evaluation and, in many jurisdictions, the tool’s integration into investigative processes and protocols has improved. An updated national evaluation is essential.

More recent evaluations at the local level suggest that NIBIN has achieved some promising results. Through funding from the US Department of Justice, the National Crime Gun Intelligence Center Initiative supports local CGIC teams, including through research evaluations.181 To date, the initiative has funded at least nine evaluations of local CGICs, including programs in Denver, Detroit, the District of Columbia, Indianapolis, Kansas City, Los Angeles, Milwaukee, Phoenix, and Tulsa.182 Four CGIC evaluations showed that NIBIN had a positive impact on clearance or arrest rates, and/or firearm-related crimes:

- **Denver, Colorado:** A 2017 evaluation of Denver’s CGIC program connected an increase in NIBIN entries and leads to higher arrest rates for firearm and gang-related offenses. The number of NIBIN-related arrests in a neighborhood was also associated with lower firearm and gang-related violence in that neighborhood the following year.183

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179 Authors’ interview with Bureau of Justice Assistance, January 16, 2024.
• **Milwaukee, Wisconsin:** A 2019 evaluation of Milwaukee’s CGIC found NIBIN to be “particularly helpful” in investigating non-fatal shootings. The clearance rate for non-fatal shootings with a NIBIN lead went up from 23% in 2014 to 36% in 2017; this was significantly higher than the clearance rate for non-fatal shootings without a NIBIN lead (24%) in 2017.\(^\text{184}\)

• **Phoenix, Arizona:** A 2021 evaluation of Phoenix’s CGIC found that the implementation of the CGIC increased clearance rates for NIBIN-related cases by 36% for murder, 15% for aggravated assault, 14% for weapons possession, and 8% for discharging a firearm. Over the same period of time, clearance rates for non-NIBIN related cases remained steady.\(^\text{185}\)

• **Tulsa, Oklahoma:** A 2022 evaluation of Tulsa’s CGIC found that NIBIN entries increased 500% between 2016-2021, and this was associated with a 150% increase in firearm arrests over this period.\(^\text{186}\)

The remaining five CGIC evaluations either did not specifically attempt to quantify the impact of NIBIN; or showed that NIBIN had unclear, mixed, or little impact on rates of violent crime, or case clearance rates:

• **Los Angeles, California:** A 2019 evaluation of LA’s CGIC showed some reductions in violent crime in select LAPD divisions, but could not definitively tie these reductions to the implementation of the CGIC. The impact of NIBIN within the CGIC model was not specifically quantified.\(^\text{187}\)

• **Washington, District of Columbia:** A 2019 evaluation of Washington, DC’s CGIC found that the implementation of the CGIC had “no statistically discernible effect on violent crime” during the study period. Cases with NIBIN information were cleared at a “slightly higher rate” than cases without such evidence, but the authors could not definitively attribute this difference to NIBIN.\(^\text{188}\)

• **Kansas City, Missouri:** A 2020 evaluation of the Kansas City CGIC did not measure the impact of NIBIN (or the CGIC more broadly) on rates of violent crime or case clearance rates.\(^\text{189}\)

> “The clearance rate for non-fatal shootings with a NIBIN lead went up from 23% in 2014 to 36% in 2017; this was significantly higher than the clearance rate for non-fatal shootings without a NIBIN lead (24%) in 2017.”


• **Indianapolis, Indiana:** A 2022 evaluation of the Indianapolis CGIC did not measure the impact of NIBIN (or the CGIC more broadly) on rates of violent crime or case clearance rates.¹⁹⁰

• **Detroit, Michigan:** Due to the disruptions of COVID-19 during the evaluation period, a 2022 evaluation of the Detroit CGIC did not measure the impact of NIBIN (or the CGIC more broadly) on rates of violent crime or case clearance rates.¹⁹¹

Experts emphasized that methodologies differed across these evaluations, and that divergent results may be explained by implementation fidelity. “With NIBIN, it’s hard to evaluate the tool itself without also paying attention to how the police department implements it, and integrates it into investigative strategies,” said a staff member at the National Institute of Justice (NIJ), the US Department of Justice’s research, development, and evaluation agency.¹⁹² As such, evaluations of CGICs may have as much to do with policies and protocols within each jurisdiction as with ATF’s crime gun intelligence tools themselves.

As compared to eTrace, which only contains information on recovered crime guns, the NIBIN system has the ability to connect shootings using recovered crime guns, shell casings, and bullets. (According to data obtained from ATF spanning January 2017-June 2023, approximately 60% of NIBIN entries represent test-fires of recovered crime guns, and 40% are recovered shell casings.¹⁹³)

NIBIN infrastructure has expanded in recent years. As of June 2023, there are 298 NIBIN sites (facilities with NIBIN stations) in 251 cities across the country. There are 51 NIBIN sites within the Great Lakes states: Illinois and Ohio have 11 sites; Michigan and Pennsylvania have 8; Indiana has 5; and Minnesota and Wisconsin have 4.¹⁹⁴ In part due to the expansion of NIBIN sites, NIBIN usage has grown dramatically. According to data obtained from ATF, total NIBIN entries per year more than doubled from 288,679 in 2017 to 637,068 in 2022.¹⁹⁵

¹⁹² Authors’ interview with the National Institute of Justice, January 11, 2024.
¹⁹³ ATF NIBIN data provided to the authors, October 2023. While ATF also collects bullets for analysis, they are collected so rarely that they are not included in ATF data.
¹⁹⁴ Ibid.
¹⁹⁵ Ibid.
According to ATF, the top 10 states by number of NIBIN entries are Texas, California, Florida, Illinois, Ohio, North Carolina, Michigan, Tennessee, Louisiana, and Arizona. Together, these ten states represent over half of all NIBIN entries. The top 5 agencies with the most NIBIN submissions are the Chicago Police Department, Milwaukee Police Department, Houston Police Department, Detroit Police Department, and Memphis Police Department (all departments that are partners in a Crime Gun Intelligence Center).\(^{196}\)

There are several notable examples of how NIBIN has helped law enforcement connect the dots between shootings. In Milwaukee in 2015, NIBIN helped to link three previously unconnected shooting incidents, including a non-fatal shooting, shots fired at a minivan, and shots fired at a residence. Shell casings collected at each scene connected to the same firearm.\(^{197}\) A few months after these shootings, police responded to a report of an armed robbery and carjacking. The victim gave police the identity of the suspects. In canvassing the area, the police found the suspects, and, with them, a firearm. When police test-fired the gun, it matched the three previous shootings. Police arrested the suspects on charges, one of whom confessed to involvement in all four cases, and also identified his accomplices in the prior cases.\(^{198}\) This case demonstrates how NIBIN can identify investigative leads across incidents that otherwise seem unrelated.


\(^{198}\) Ibid.
In Chicago, a gun stolen from a Wisconsin gun shop was linked to 27 individual shooting incidents, resulting in 2 deaths and 24 injuries over a 20 month span. The first shooting was in February 2016, about a month after the gun was stolen. Three months later, in May 2016, a young woman was injured by flying glass when a shooter fired into a store window. Over the next year, shell casings connected the gun to an additional 24 shootings, concentrated mostly on the South and West sides of Chicago. The last shooting connected to the gun occurred in May 2017, a drive-by shooting in which a man was murdered and another was shot in the leg. A few months after this shooting, in July 2017, the police questioned a young man sitting inside a minivan about the vehicle’s missing registration sticker. As the young man stood up, a gun slid down the man’s sweatpants. Officers recovered the gun, test-fired it, and entered the shell casings into NIBIN. The generated NIBIN report linked the recovered gun to all 27 shootings, but the individual who had the gun in his possession claimed he had acquired the gun recently and was not involved with any of these incidents. Eventually, police made two arrests for the murder committed with the gun based on witness statements, and surveillance video which captured a license plate number and images of the suspects.

The suspected shooters did not include the man who police recovered the gun from, indicating that the gun had indeed changed hands at least once between its first use in crime and its recovery. This case points to the complexity of gun crime investigations and how NIBIN is just one piece of the puzzle.

**Limitations**

**Usage of NIBIN remains incomplete, limiting lead generation**

We do not know how many total crime guns, shell casings, and bullets are recovered by US law enforcement every year. As such, it is impossible to know what percentage of all ballistic evidence is entered into NIBIN. But, there are several indicators showing that entry of evidence into NIBIN remains incomplete. For example, in 2021, there were approximately 460,000 crime gun trace requests submitted to ATF. This means that there were at least this many crime gun recoveries, and likely far more, given that not all recovered crime guns are traced. However, in 2021, only about 330,000 test-fires of recovered guns were entered into NIBIN, meaning that at least 130,000 recovered crime guns were not test-fired and entered into the system. The gap may be even

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199 Jeremy Gorner, Annie Sweeney, and Rosemary Sobol, “A gun was stolen from a small shop in Wisconsin. Officials have linked to 27 shootings in Chicago,” Chicago Tribune, September 25, 2021.


larger for shell casings. Reporting from 2018 found that only 25% of collected shell casings were entered into NIBIN.\textsuperscript{204} Some police departments, like Milwaukee PD or New Jersey State Police, have policies mandating that all eligible recovered ballistic evidence be entered into NIBIN.\textsuperscript{205} However, many law enforcement agencies are entering some but not all of their collected ballistic evidence; for example, the 2019 evaluation of the Los Angeles CGIC found that officers submitted casings for “serious violent crimes,” but not for other crimes like “shots fired in the city limits.”\textsuperscript{206} Other law enforcement agencies are not entering any of their collected shell casings into NIBIN.\textsuperscript{207}

The NIBIN system is only as good as the evidence that police departments enter into it. More shell casings and test-fires entered into NIBIN would increase the number of correlations and leads the system generates. Between 2017-2021, 23% of NIBIN entries resulted in a lead (e.g. a match between the NIBIN entry and other previous entries in the NIBIN system). This means that the majority of NIBIN entries over this period (77%) did not result in a lead. However, as more data is entered into NIBIN, the system’s ability to generate leads has grown over time. In 2017, approximately 20% of NIBIN acquisitions resulted in a lead; by 2021, this number increased to 27%:\textsuperscript{208}

\begin{quote}
“The NIBIN system is only as good as the evidence that police departments enter into it.”
\end{quote}


There are several reasons why law enforcement agencies may not enter all ballistic evidence into NIBIN, including cost, staff capacity, and accessibility of NIBIN stations. It takes time to enter ballistic evidence into NIBIN, and this process can be especially onerous if a law enforcement agency is not in close proximity to a NIBIN station. Though the footprint of NIBIN sites has increased in recent years, there are still only 298 NIBIN sites in the US, compared to over 18,000 police departments. NIBIN sites exist within a wide range of facilities, including ATF forensic labs, state and local police forensic labs, state and local police departments, and CGICs. State and local governments have the ability to purchase their own NIBIN equipment.

As of June 2023, there are 6 states (Hawaii, Maine, Montana, North Dakota, South Dakota, and Wyoming) with no NIBIN sites at all. Policymakers recognize that more NIBIN terminals would make it easier for law enforcement to submit more evidence, and to obtain results more quickly. In 2022, Ohio announced that it was investing $10.5 million to increase the number of NIBIN terminals in the state to 16 (from the 7 that existed at the time). As Ohio Governor Mike DeWine noted, “By more than doubling the number of NIBIN units in Ohio, we'll give our local law enforcement partners easier

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209 ATF NIBIN data provided to the authors, October 2023.
access to this crime-solving technology.” Two of the new NIBIN terminals are set to be “transportable,” allowing for on-site testing in areas of the state that are currently underserved.  

Adding to these resource and infrastructure challenges is the fact that shootings have increased across the country in recent years, meaning law enforcement have more scenes to collect evidence from. Furthermore, law enforcement are finding more crime guns that use high-capacity magazines or that have been modified to function as automatic weapons. Among other things, this means an increase in the amount of ballistic evidence left at crime scenes for law enforcement to collect. For example, the head of Milwaukee’s CGIC noted that “with more automatic guns on the street, we used to have 10 casings on a scene, now we have 60 to 70.”

Recent increases in gun crime mean that there is more ballistic evidence to capture than ever. Increasing the amount of ballistic evidence entered into NIBIN is key to improving the system’s ability to connect crime scenes and generate valuable investigative leads.

**Processing times are often too slow**

When the NIBIN system does produce leads, slow turnaround times can blunt the investigative impact of this information. As ATF wrote in its “Best Practices for NIBIN Sites”: “Violent crimes investigations go cold quickly; as a result, timely intelligence gained through NIBIN may be critical to solving violent crimes.” The ATF’s minimum standards for NIBIN sites call for a 48 hour turnaround time for NIBIN lead reporting (i.e. it should take no more than 2 business days to generate a lead after ballistic evidence is “acquired,” or entered into the NIBIN system). Despite this, ATF data shows that actual processing times are inconsistent, and frequently much slower than this 2 day target.

In response to a data request, ATF provided the average time between evidence acquisition and lead generation for all NIBIN sites nationwide in 2022 and the first half of 2023. On the whole, processing times appear faster in 2023 than they were in 2022, which may indicate improvement. For test-fires of recovered crime guns in 2023, 65% of NIBIN sites had an average lead generation time of less than 48 hours, meeting ATF’s minimum standards. But, 20% of NIBIN sites had an average lead generation processing time of 2-7 days, and another 16% of sites had an average processing time of more than 1 week. For a handful of NIBIN sites, the average time between the test-fire of a recovered crime gun and the generation of a lead report was more than 100 days.

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212 Authors’ interview with Milwaukee CGIC staff, March 27, 2023.
215 ATF NIBIN data provided to the authors, October 2023.
The data looks similar for recovered shell casings, as most NIBIN sites have similar processing times for both shell casings and test-fires. In 2023, 65% of NIBIN sites generated leads from shell casings within 48 hours, on average. For 17% of sites, the average processing time was 2-7 days; and for 18% of sites, the average processing time was 1 week or more. Again, some sites took more than 100 days on average to generate lead reports from recovered shell casings.\textsuperscript{216} Processing times tended to be longest at NIBIN sites housed within crime labs, versus NIBIN sites housed within police departments. According to a senior staffer at BJA, “Crime labs are doing umpteen other things, so that usually causes a bottleneck when NIBIN machines are in those facilities... also, doing a NIBIN entry doesn’t really require the expertise or infrastructure of a crime lab.”\textsuperscript{217} When asked about the factors driving discrepancies in processing times between sites, ATF cited, in a written response to the authors, “various factors...including resources, personnel, and the volume of requests.”\textsuperscript{218}

\textbf{“For a handful of NIBIN sites, the average time between the test-fire of a recovered crime gun and the generation of a lead report was more than 100 days.”}

\textsuperscript{216} ATF NIBIN data provided to the authors, October 2023.
\textsuperscript{217} Authors’ interview with BJA’s Law Enforcement Innovation and Crime Prevention Division staffer, January 18, 2024.
\textsuperscript{218} ATF written response to authors’ research questions, April 2024.
Timeliness at NIBIN sites within the Great Lakes states is similar to national averages. From January-June 2023, 72% of NIBIN sites in the Great Lakes states had an average lead generation time of less than 48 hours for shell casings; and 63% met that threshold for test-fires. For 16% of NIBIN sites in the Great Lakes states, average processing time on shell casings was slower than 1 week; and for 20% of NIBIN sites in the Great Lakes states, average processing time on test-fires was slower than 1 week.

The implications of these delays are significant. When NIBIN leads are turned around quickly, they provide law enforcement with an ability to connect multiple crimes and identify suspects. But when lead generation takes upwards of a week, the information becomes much less useful. According to the 2013 national evaluation of the NIBIN system: “Delays in processing ballistic evidence are the single greatest threat to the utility of NIBIN as an investigative tool.”

The process of generating a lead via NIBIN involves: 1) algorithmic comparison of new ballistic evidence to existing evidence in the NIBIN system, resulting in a computer-generated series of possible matches or “correlations”; and 2) manual review of these correlations by a trained NIBIN technician, resulting in confirmed matches or “leads”.

When asked by the authors how many more NIBIN terminals and technicians are needed to meet their standard for NIBIN lead processing turnaround time, ATF did not

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provide a specific number. In a written response to this question, ATF wrote, “As with all areas of law enforcement, we can do more with more.”

According to the Cincinnati Police Department, going from having a single NIBIN terminal to having two NIBIN terminals was a “game changer”, allowing the department to enter evidence into NIBIN more quickly. The Cincinnati Police Department’s NIBIN site is currently staffed by one ATF Task Force Officer, one full-time contractor technician, and two part-time Cincinnati Police officers. From January 2022-June 2023, the average lead generation processing time was less than 1 day for both test-fires and shell casings. An updated national evaluation of NIBIN should include a needs assessment that diagnoses how many more NIBIN terminals and technicians are needed to meet a 48-hour processing time standard, and where these terminals and technicians should be placed.

**NIBIN technology can be cost-prohibitive**

Part of the reason why NIBIN infrastructure remains lacking is that the hardware is expensive. The cost of a NIBIN terminal is roughly $200,000. One driver of this high cost may be the fact that ATF relies on just one contractor, Ultra Electronics Forensic Technology (UEFT), to source all of its NIBIN equipment. Relying on one contractor can stifle innovation and prevent cheaper alternatives from entering the marketplace. Experts hypothesize that increased competition could bring the price down, and point to the example of fingerprint technology as instructive. The FBI and the National Institution of Standards and Technology (NIST) set standards for fingerprint collection, and contracts with a number of firms that meet those standards. This drove down the price of fingerprint machines to several hundred dollars. When asked by the authors why ATF relies on one contractor for their NIBIN equipment, ATF did not provide a response.

Since NIBIN’s inception, ATF has only granted its equipment contract to one company: UEFT. While other companies have developed similar NIBIN technology, those companies are not able to access ATF’s NIBIN library of ballistic evidence due to the proprietary nature of the NIBIN network. Based on the prohibitive expense of a NIBIN machine, the Orange County (CA) Crime Laboratory decided to use an alternative company, EvoFinder, to handle its ballistics evidence. While the EvoFinder machine cannot connect with the full NIBIN database, it can connect shootings within the county (which represent the majority of hits analyzed by the county). “Ideally, we would all share our data without worrying about what technology we’re all using,” said Bruce Houlihan, the director of the Orange County Crime Laboratory. “A little competition in vendor space is a good thing because they all build on each other and keep improving.”

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220 ATF written response to the authors, April 22, 2024.
221 Cincinnati Police Department responses to authors’ follow-up questions after initial interview, May 2024.
222 ATF NIBIN data provided to the authors, October 2023.
224 Ibid.
225 Ibid.
226 Ibid.
In addition to the cost of the technology itself, NIBIN implementation requires law enforcement officers to submit evidence and trained technicians to analyze it. In California, the state’s Department of Justice estimated that it would cost $12.1 million to establish NIBIN stations in all of its ten state crime labs, with subsequent annual costs projected at $10.1 million for the processing of NIBIN evidence.\footnote{Anne Givens, “A Powerful Database Helps Solve Gun Crimes, Only Two States Require Police to Use It.” The Trace, September 26, 2018; California Bureau of Forensic Services, BFS Laboratory Services, accessed May 10, 2024.}

Increased competition may be helpful in driving down the cost of NIBIN technology. At the same time, significant investment will be required in order for the NIBIN system to process as much ballistic evidence as possible, and to do so in a timely manner.

**Integrating and Applying eTrace and NIBIN Data**

The eTrace/CDS and NIBIN systems are each valuable in their own right. However, an optimal crime gun intelligence approach requires integration of the tools. Ideally, both systems should work together to make data entry and querying as easy and efficient as possible, and to provide law enforcement with the maximum amount of crime gun intelligence information.\footnote{Authors’ interview with IL AG’s office, December 21, 2022; Authors’ interview with Pennsylvania AG’s Office, December 12, 2022.}

Though NIBIN and eTrace are each crime gun intelligence systems operated by ATF, the two systems are separate and do not speak to each other. This impacts both inputs and outputs. When law enforcement test-fires a recovered crime gun for submission to NIBIN, they have to enter a lot of information about the gun (including manufacturer, serial number, etc.); if they want to also trace that gun via eTrace, they have to enter much of the same information again into the eTrace system. This creates duplicative work for the law enforcement officers or technicians entering the data, exacerbating capacity constraints and making it harder to achieve maximum participation and usage.\footnote{Authors’ interview with Minnesota Bureau of Criminal Apprehension, January 9, 2023.}

This also has implications for the outputs of each system. If law enforcement gets a NIBIN casing-to-gun match (i.e. the recovered shell casing matches to a previously recovered firearm), the trace report for the matched-to-gun is not automatically included in the NIBIN lead report; it has to be requested separately via eTrace.\footnote{Authors’ interview with Minnesota Bureau of Criminal Apprehension, January 9, 2023.}

“...“end game is to have a combined NIBIN and eTrace tracking system, so that all the important information comes up for us [in one place].”
In interviews, law enforcement officials noted how important the “marriage” between NIBIN and eTrace data is for their investigations. For example, an attorney with the Illinois AG’s office noted that “eTrace data tells you about a gun that was found at a crime scene; if you can combine it with a NIBIN correlation to casings recovered [at the crime scene], you can connect that gun unequivocally to the shooting itself.”

According to the Pennsylvania AG’s office, its “end game is to have a combined NIBIN and eTrace tracking system, so that all the important information comes up for us [in one place].”

Value

There are a number of examples of how combining both NIBIN and eTrace data can advance gun crime investigations, and make links that otherwise might not have been possible. One such case occurred in 2019 in Chicago, where a woman was shot in the back and seriously wounded while on her lunch break. The shooter, who was not known to the woman, used a 9mm semi-automatic pistol and fled the scene on his bike.

The Chicago Police Department (CPD) subsequently identified the suspect, Michael Blackman, and attempted to take him into custody. Blackman shot at CPD officers with a 9mm semi-automatic pistol. When Blackman was eventually taken into custody, CPD recovered the firearm, and requested an urgent trace. The trace indicated that the pistol recovered from Blackman was first purchased by a woman named Sequana Cigolo, less than three months prior in Robbinsdale, MN. In a police interview a few days after the shooting, Cigolo admitted that she purchased the firearm for her ex-boyfriend’s cousin, Jason Winston. Winston had asked Cigolo to purchase the firearm on his behalf, because he was prohibited from purchasing the gun himself.

As part of the investigation into the Chicago shooting, law enforcement agents learned that Cigolo’s brother had recently been shot during a home invasion in Minneapolis a few weeks after Cigolo had purchased the 9mm firearm and gave it to Winston. Ballistic evidence entered into NIBIN found that the same firearm used in the Chicago shooting was also used in the shooting of Cigolo’s brother. Winston told the police that he had passed the gun along to Cigolo’s ex-boyfriend, who was Winston’s cousin, who had recently left Minneapolis for Chicago. Cigolo’s ex-boyfriend was subsequently arrested for the shooting of Cigolo’s brother. Authorities have not specified how the gun

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231 Authors’ interview with IL AG’s office, December 21, 2022.
232 Authors’ interview with Pennsylvania AG’s Office, December 12, 2022.
233 Fox32 Chicago, “Woman who was shot in the back by Chicago bicyclist is paralyzed, court documents reveal.” September 26, 2019.
235 Ibid.
236 Ibid.
ended up in Blackman’s possession prior to the Chicago shooting. As an ATF agent in St. Paul noted in a news article about the case, “we would have never found out about the [connection] to the shootings” without the combined power of NIBIN and eTrace.

Crime Gun Intelligence Centers (CGICs) are staffed by law enforcement officers and data analysts who are tasked with making these types of connections between NIBIN and eTrace data. CGICs are interagency law enforcement collaborations focused on “the immediate collection, management, and analysis of crime gun evidence, such as shell casings, in real time, in an effort to identify shooters, disrupt criminal activity, and to prevent future violence.” Participating agencies vary by CGIC site, but can include: ATF; local police departments; state police agencies; crime laboratories; local, state, and federal prosecutors; academic organizations; and community groups. This collaborative, task force model brings together all of the stakeholders required to comprehensively collect and analyze crime gun intelligence, and to refer these investigations to the appropriate prosecuting authority. Funded in part by grants from the US Department of Justice’s Bureau of Justice Assistance, there are 54 CGIC sites nationwide.

The NIBIN Enforcement Support System (NESS) is a new crime gun intelligence tool designed to integrate NIBIN data and some eTrace data and automate these connections. The Chicago Police Department (CPD) is one of approximately 300 departments participating in NESS, and spoke to its value in merging NIBIN and eTrace data, as well as data from CPD’s records management system (RMS). “NESS is matching data from the NIBIN system and the eTrace system and tying it together,” said a CPD investigator who is staffed to the department’s CGIC. Illustrating NESS’s functionality, CPD provided an example of a recovered crime gun, which would be test-fired for entry into NIBIN and also traced via eTrace. The NESS system would give that gun a unique identification number (“Crime Gun ID”). If the test-fire of the gun matched to four other previously recovered shell casings, NESS would display all of those connected shootings in a map format, with additional information on each shooting from CPD’s RMS system. Finally, once the eTrace on the gun is complete, select trace information (including first retail purchaser and time to crime) would also appear in NESS. Given these capabilities, NESS is the most promising platform currently available for the integration of eTrace and NIBIN data.

Crime Gun Intelligence Centers, “What is a Crime Gun Intelligence Center (CGIC)?,” accessed February 29, 2024.
Ibid.
Authors’ interview with Chicago Police Department staff, April 2024.
Limitations

**Tools to integrate crime gun intelligence data are not yet widely used**

As described above, the NESS system is designed to tie together NIBIN and eTrace data, as well as data from a police department’s RMS. By combining these data sources, NESS provides law enforcement with the most complete picture of crime gun intelligence. However, NESS is not yet widely used. According to ATF, approximately 300 law enforcement agencies have signed MOUs to participate in NESS as of March 2024 (six years after the system was developed). This means that less than 2% of law enforcement agencies in the country are participating in NESS. Awareness appears to be an issue here, as several agencies interviewed did not know about NESS at all, or did not fully understand its capabilities. ATF did not provide the authors with a list of participating agencies, citing “law enforcement sensitivities.”

Using NESS or otherwise, CGICs are tasked with integrating and applying various sources of crime gun intelligence data, including NIBIN and eTrace. Some CGICs have been shown to improve clearance rates for gun crimes, suggesting that this model of inter-agency collaboration and targeted investigation has significant potential. However, there are only 54 CGICs in the country, and there are several cities with high rates of gun violence that do not yet have a CGIC. According to a senior staffer at BJA, expansion of the CGIC model is a goal for the agency: “I’d love every city to have this [a CGIC]...we are also working to develop a regional model where smaller police departments can bring their shell casings to a regional CGIC for entry.”

**Set up is time-intensive, data availability is incomplete, and implementation is inconsistent**

Any law enforcement agency participating in NIBIN can access a basic version of NESS (without RMS integration) by signing an MOU. This allows the participating agency to see all of the NIBIN leads tied to their agency, as well as some eTrace information connected to these crime guns. However, NESS does not yet facilitate complete access to eTrace information, nor does it currently facilitate the sharing of NIBIN data between agencies (though this is being piloted).

For agencies interested in integrating their own RMS data with the NESS system, this process takes significant time and resources. According to ATF, the process of

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244 ATF written response to authors’ research questions, April 2024.
245 Crime Gun Intelligence Centers, “What is a Crime Gun Intelligence Center (CGIC)?,” accessed February 29, 2024.
246 Authors’ interview with BJA’s Law Enforcement Innovation and Crime Prevention Division staffer, January 16, 2024.
248 Authors’ follow-up conversation with ATF, June 2024.
connecting a police department’s RMS to NESS “requires an experienced IT point of contact [from the department]...the amount of time required varies but is typically about 8 hours/week for 3 months to create and automate data transfer.” According to the Chicago Police Department, the whole process of gaining access to NESS took “a couple years”. “The technology side of building the data bridge between our RMS data and NESS took a long time, and there was also a legal side to deal with in terms of sharing our data,” recalled a CPD staff member.\textsuperscript{249} Given these requirements, a significant investment of resources would be required in order for the full version of NESS to reach a critical mass. There is currently a waitlist to access NESS with RMS integration, with priority given to agencies with high NIBIN volume, and a dedicated IT professional who is available to work with ATF on bridging the required data systems.\textsuperscript{250}

CGICs are also time- and resource-intensive to set up. For example, the initial BJA grants to support the establishment of CGICs in Milwaukee and Los Angeles were $1 million each, with additional investments required by these cities and their police departments to sustain CGIC operation.\textsuperscript{251} Furthermore, experts have noted inconsistencies in the implementation of the CGIC model, which may impact results. According to a staff member at NIJ, “We don’t know whether the CGICs with positive impact are due to the CGIC concept itself, or other factors such as implementation and how the organizations [within the CGIC] collaborate...mixed results tell us that different aspects at place within each jurisdiction may be influencing impact.”\textsuperscript{252}

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\textsuperscript{249} Authors’ interview with Chicago Police Department staff, April 2024. \\
\textsuperscript{250} ATF, “NIBIN Enforcement Support System,” June 2022. \\
\textsuperscript{251} US Department of Justice, “Office of Justice Programs Awards More than $5.6 Million to Enable Information, Technology Sharing to Reduce Crims,” September 26, 2016. \\
\textsuperscript{252} Authors’ interview with the National Institute of Justice, January 11, 2024.
\end{flushright}
Milwaukee, the largest city in Wisconsin, has historically experienced one of the highest rates of gun violence among US cities. To address the city’s gun violence problem, Milwaukee established one of the nation’s first Crime Gun Intelligence Centers (CGICs) in 2014. Milwaukee’s CGIC is a partnership between the ATF, the Milwaukee Police Department (MPD), and the Milwaukee County Sheriff’s Office (MCSO). The CGIC coordinates gun crime investigations in the city, including through the integration of various intelligence tools. In Milwaukee, these tools include ShotSpotter (a gunshot location detection system), NIBIN, and eTrace. To that end, Milwaukee’s CGIC staff includes detectives, crime analysts, intelligence research specialists, eTrace desk officers, NIBIN laboratory technicians, ATF consultants, and ShotSpotter liaisons. MPD has its own NIBIN site, which has been in operation since 2013. Established to address the NIBIN processing delays in the state crime laboratory, the MPD NIBIN machine runs 24 hours a day, 7 days a week.

**Strong collection and investigation protocols**

The CGIC model prioritizes comprehensive collection and analysis of ballistic evidence, and these mandates are at the heart of Milwaukee’s CGIC program. It is MPD policy to recover every cartridge casing and firearm found at a suspected crime scene. In addition to crime scene collection, officers are deployed to every ShotSpotter alert, and collect any shell casings found at a detection location. Recovered casings and firearms are swabbed for DNA and tested for fingerprints; all shell casings are processed by the MPD’s NIBIN machine; and all recovered firearms are test-fired for submission to NIBIN and also submitted to eTrace. CGIC investigators then receive NIBIN lead reports and eTrace results for investigative follow-up.

In 2022, Milwaukee requested 3,330 eTraces, which, according to an MPD Captain who runs Milwaukee’s CGIC, “is very close to the total number of guns we recovered that year.” Investigators review all eTrace results, referring to the ATF those involving short time-to-crime periods (within 45 days) or those involving multiple traces back to the same initial purchaser (a strong indication of possible gun trafficking and/or straw purchasing) for further investigation.

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254 Authors’ interview with Milwaukee CGIC staff, March 27, 2023.
256 Authors’ interview with Milwaukee CGIC staff, March 27, 2023.
257 Authors’ interview with Milwaukee CGIC staff, March 27, 2023.
According to ATF data, Milwaukee’s CGIC entered over 11,000 pieces of ballistic evidence into NIBIN in 2022.\textsuperscript{258} Over the five year period from 2017-2021, MPD had the second highest number of NIBIN submissions in the country (behind only Chicago PD); MPD also generated the second-highest number of NIBIN leads over the same period (behind only Chicago PD).\textsuperscript{259} Investigators review all NIBIN results, prioritizing cases that involve recent violent crimes where the shooter is affiliated with a criminal organization, multiple shootings, or is otherwise a high value target; or cases involving multiple serious incidents with various elements of solvability (including eyewitness information or video camera footage).\textsuperscript{260}

Image 8: Milwaukee CGIC in action

Milwaukee PD staff analyzing NIBIN entries at the CGIC.\textsuperscript{261}

After more than a year on the waiting list, the Milwaukee CGIC gained access to the NESS system in 2024. Given the newness of the system, the Milwaukee CGIC was yet not able to detail its impact.\textsuperscript{262} However, predating NESS access, the CGIC did have its own NIBIN case management system which allowed the CGIC to connect

\textsuperscript{258} ATF NIBIN data provided to the authors, October 2023.
\textsuperscript{259} National Firearms Commerce and Trafficking Assessment (NFCTA): Crime Gun Intelligence and Analysis Volume II, Part 5, December 2022, \url{https://bit.ly/3MPepfM}.
\textsuperscript{260} Chris Koper, Heather Vovak, and Brett Cowell, \textit{“Evaluation of the Milwaukee Police Department’s Crime Gun Intelligence Center”}, National Police Foundation, September 2019.
\textsuperscript{261} Ashley Luthern, \textit{“Ballistic technology gives police quick leads on gun crimes”}, \textit{Milwaukee Journal Sentinel}, September 18, 2015. Image by Michael Sears.
\textsuperscript{262} Follow-up response to the authors from Milwaukee CGIC staff, May 6, 2024.
NIBIN data, including any previous information on connected shooting incidents and/or shooters. A 2019 evaluation of Milwaukee’s CGIC found that NIBIN leads in cases involving two or more incidents could be connected to repeat shooters or networks of active offenders who accounted for nearly half of fatal and non-fatal shootings in Milwaukee.263

As the CGIC’s NIBIN database expanded with each entered shell casing, so did the number of leads generated. According to the 2019 evaluation, in 2014, casing entries resulted in 350 leads; in 2016, the last year for which there was a full year of data in the evaluation, this number more than tripled with 1,172 leads generated. NIBIN evidence seemed to be especially useful in solving non-fatal shootings, contributing to an increase in clearance of such crimes. Between 2014 and 2017, clearance rates for non-fatal shootings with a NIBIN link went up from 23% to 36%, while clearance rates for non-fatal shootings without a NIBIN link remained steady at around 23%.

“Before we had NIBIN, shooting cases were just separate incidents in which we had solvability factors or we didn’t,” said an MPD Captain. “Where we didn’t, the cases died. But NIBIN allows us to take two, three, four, or five cases and connect them and build a case.”264

Comprehensive eTracing of recovered guns is having an impact as well, especially on straw purchasing cases. “Every year there are at least 20-30 straw purchase cases made [based on our tracing of crime guns],” said an MPD Captain, “Our US Attorney’s office wouldn’t pick up a case involving just one gun, but the beauty of eTrace is that if you find a transaction that you think is a straw purchase, they can look at how many other guns this person purchased and make a case.”265

Together, the NIBIN and eTrace results can make for a potent combination of evidence. “Our NIBIN and eTrace work goes hand in hand,” an MPD Captain noted, “A NIBIN case might connect us to three different shooting incidents; and eTrace can reveal the time to crime of a recovered gun linked to those shootings, which can connect you to a shooter through the original purchaser.”266

263 Ibid.
264 Authors’ interview with Milwaukee CGIC staff, March 27, 2023
265 Ibid.
266 Ibid.
The CGIC’s sustainability requires adequate staffing and capacity

One of the primary challenges for Milwaukee’s CGIC is staffing and funding. While Milwaukee’s gun violence has worsened, the CGIC’s staffing levels have decreased. ATF capacity limitations also impact the effectiveness of Milwaukee’s use of crime gun intelligence tools. This includes the slow turnaround time of ATF’s eTrace results. “The ATF trace system is backlogged, and there are only two trace options—rush or non-rush. Not everything can be a rush, but that means you are waiting awhile for your results,” said an MPD Captain, “I wish it were more timely. It takes as long as it takes, and good luck figuring it out.” NIBIN machines are also not as efficient as they could be, creating barriers for searchability. MPD noted that the NIBIN system “bogs down during the day,” when the majority of input is done by departments in Milwaukee and across the country. As such, Milwaukee NIBIN entries “don’t get that timeliness during daytime hours.”

CGIC staff also noted that improved integration of eTrace and NIBIN would save time in terms of data inputs. According to an MPD Captain: “It would be great if both systems communicated with one another...[ideally] when you input the data [for the test-fire of a recovered firearm] into the NIBIN system, it automatically goes to the tracing center, and vice versa.”

“Our NIBIN and eTrace work goes hand in hand,” an MPD Captain noted, “A NIBIN case might connect us to three different shooting incidents; and eTrace can reveal the time to crime of a recovered gun linked to those shootings, which can connect you to a shooter through the original purchaser.”

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267 Ibid.
268 Ibid.
269 Ibid.
270 Ibid.
Recommendations to Improve the Usage and Impact of Crime Gun Intelligence Tools
ATF’s crime gun intelligence tools have been shown to improve gun crime investigations and in turn key metrics like homicide clearance rates, but there remains significant untapped potential in their design, utilization, and implementation. At a time when gun crime remains particularly high and clearance rates are on the decline, investment in crime gun intelligence is more essential than ever. The following recommendations are designed to maximize the impact of ATF’s crime gun intelligence tools on solving and preventing gun crimes. The recommendations include improvements to the tools themselves; ways to drive increased law enforcement participation and utilization of the tools at the federal, state, and local level; evaluation of their impact; and the provision of resources required to ensure comprehensive and effective implementation:

To optimally support gun crime investigations, ATF’s crime gun intelligence tools must be integrated, national in scope, efficient, and user-friendly.

• To provide law enforcement with access to as much crime gun intelligence data as possible in one place, ATF should:
  ○ Integrate all eTrace and NIBIN data nationwide (potentially via NESS), visualizing this data in a map-based format, and allowing law enforcement to search the data by individual characteristics.
  ○ Allow all law enforcement agencies who participate in eTrace/CDS and NIBIN to access this integrated platform.
  ○ Streamline data entry so that when a recovered gun is test-fired for NIBIN, an eTrace is requested automatically; or when an eTrace is requested, the gun’s data is entered automatically into the NIBIN system in anticipation of a test-fire.
  ○ Create a public-facing version of the national platform with aggregate data for policymakers, researchers, and the general public.
  ○ Until a national platform exists, provide cleaned eTrace/CDS and NIBIN data to any law enforcement agency seeking to compile this data into a statewide crime gun analytics platform (like Illinois’ Crime Gun Connect, for example).
  ○ Invest in technological upgrades to facilitate the sharing of eTrace data across state lines via CDS.

• To improve the timeliness and investigative value of eTrace and NIBIN data:
  ○ ATF should:
    • Reduce turnaround times for eTrace requests such that all results are delivered within ATF’s stated goal (7 days for standard requests and 48 hours for urgent requests).
    • Reduce turnaround times for NIBIN lead generation such that all leads are generated within ATF’s stated goal (48 hours).
Federal policymakers should:
• Remove any regulatory barriers and mandate that ATF compile and digitize searchable gun sale and transfer records to allow for faster and more accurate gun tracing, reversing any existing federal restrictions.

State policymakers and federal policymakers should:
• Mandate the recording of firearm transfers beyond the first retail purchase to improve the utility and investigative value of gun tracing.

In order for crime gun intelligence tools to achieve their maximum impact, state and local law enforcement agencies must participate in and use the tools comprehensively.

ATF should:
• Create a liaison office for outreach to state and local law enforcement to increase awareness of, and encourage participation in eTrace, CDS, NIBIN, and NESS.
• Create a technical support function dedicated to helping state and local law enforcement troubleshoot any issues related to eTrace, CDS, NIBIN, and NESS.
• Clear up the backlog of agencies on the waiting list for full NESS access (including RMS integration).

Local law enforcement agencies should:
• Sign up to participate in eTrace, CDS, and NIBIN. Sign up to participate in NESS, understanding that there is currently a waitlist.
• Create departmental policies that mandate all recovered crime guns be traced via eTrace, and all recovered ballistic evidence be submitted into NIBIN.
• In the absence of a national platform, contribute to the creation and improvement of statewide crime gun intelligence platforms by providing relevant data, and actively using the platform to inform investigations.
• Track and make public outcomes of eTrace and NIBIN usage in gun crime investigations, including leads generated, and impact on case clearance and prosecution rates.

State law enforcement should:
• Sign up to participate in eTrace, CDS, NIBIN, and NESS. Sign up to integrate RMS data with NESS, understanding that there is currently a waitlist to do so.
• Support training for local law enforcement on how to use eTrace, CDS, NIBIN, and NESS, and how data from these systems can advance gun crime investigations.
• Track and make public in-state law enforcement enrollment in and usage of eTrace, CDS, NIBIN, and NESS, by agency.
In the absence of a national platform, create an online, state-level crime gun analytics platform that integrates all eTrace information from in-state law enforcement agencies who have opted into CDS (like IL’s Crime Gun Connect or PA’s Track and Trace). Seek NIBIN data from in-state law enforcement agencies for integration into these platforms as well.

Track and make public the impact of the crime gun analytics platform in terms of number of users, investigations advanced, and other key metrics.

Create processes to incorporate crime gun intelligence data into investigations (e.g. focusing investigative resources on the most active guns identified by NIBIN, or prioritizing potential straw purchasing and trafficking investigations based on eTrace/CDS data).

State policymakers should:

- Mandate that all recovered crime guns be traced via eTrace, and that all recovered ballistic evidence be submitted into NIBIN.
- Mandate that all in-state law enforcement agencies enroll in and comprehensively use eTrace, CDS, NIBIN, and NESS. Conduct outreach and awareness campaigns to promote the value of participation.
- Mandate training for state and local law enforcement on ATF’s crime gun intelligence tools and how to integrate crime gun intelligence data into investigations.
- Mandate the creation of state-level crime gun analytics platforms that integrate eTrace and NIBIN data.

Additional research and evaluation is required to understand the impact of ATF’s crime gun intelligence tools, and assess capacity needs and improvements.

The US Department of Justice, through the National Institute of Justice (NIJ), should:

- Fund a comprehensive, national evaluation of eTrace and CDS, including their impact on rates of gun violence and gun crime clearance rates (with a focus on straw purchasing and trafficking investigations), and culminating in recommendations on how to improve the eTrace/CDS system. The evaluation should include an assessment of eTrace/CDS’s ability to reduce bias in gun trafficking investigations.
- Fund an updated, national evaluation of NIBIN, including its impact on rates of gun violence and gun crime clearance rates (with a focus on fatal and non-fatal shootings), and culminating in recommendations on how to improve the NIBIN system. The evaluation should include an assessment of NIBIN’s ability to reduce bias in gun violence investigations.
● Fund an evaluation of NESS, including its impact to-date and its ability to serve as the go-to source for integrated crime gun intelligence data.
● Fund updated evaluations of CGICs, with consistent research methodologies across geographies, culminating in recommended best practices for CGIC implementation.

● ATF should:
  ○ Conduct a needs assessment to determine how much additional NTC staff is required to achieve timely processing of eTrace requests.
  ○ Conduct a national needs assessment to determine how many additional NIBIN machines and technicians are required to achieve timely processing of NIBIN submissions, and where these resources should be allocated.
  ○ Annually update and release the National Firearms Commerce and Trafficking Assessment report series capturing usage and impact of eTrace, NIBIN, and NESS.

● State policymakers should:
  ○ Conduct state-level needs assessments to determine how many additional NIBIN machines and technicians are required to achieve timely processing of NIBIN submissions, and where these resources should be allocated.

Expanding usage of crime gun intelligence tools will require a significant investment of resources.

● ATF should:
  ○ Allocate discretionary funds and/or request the additional budget required to improve eTrace and NIBIN processing times (based on the needs assessments recommended above), to create an integrated national platform for eTrace and NIBIN data.
  ○ Allocate discretionary funds and/or request the additional budget required to form liaison offices for outreach and technical support on crime gun intelligence tools.
  ○ Allocate discretionary funds and/or request the additional budget to provide NESS to more law enforcement agencies, including eliminating the wait list for RMS integration.
  ○ Account for increases in eTrace and NIBIN volume in future budget requests.
  ○ Select additional vendors to supply NIBIN technology, creating increased competition that will drive down cost.
• Federal policymakers should:
  ○ Increase ATF’s budget in line with the requests outlined above.
  ○ Earmark federal law enforcement grant programs (like COPS Grants and Edward Byrne Memorial Justice Assistance Grants) to go towards state and local law enforcement use of eTrace, CDS, NIBIN, and NESS.
  ○ Expand the Local Law Enforcement Crime Gun Intelligence Center (CGIC) Integration Initiative, a grant program of BJA and ATF, to increase the number of cities funded and to improve the capacity of existing CGICs. Train new and existing CGICs on best practices, and make CGIC grant funding contingent on effective implementation, with regular monitoring of CGIC processes and protocols.
  ○ Provide funding for the NIJ evaluations described above.

• State and local policymakers should:
  ○ Provide funding for the creation of state-level crime gun analytics platforms.
  ○ Provide funding for outreach and awareness campaigns that would drive increased usage of eTrace, CDS, NIBIN, and NESS.
  ○ Purchase NIBIN terminals and place them in strategic locations based on which areas are experiencing high rates of gun violence and/or currently underserved by NIBIN infrastructure.
  ○ Provide funding for the creation and ongoing operation of CGICs in strategic locations.
  ○ Provide funding for law enforcement agencies to support the process of connecting their RMS systems to the NESS system.
This Appendix includes a full list of agencies and organizations whose relevant staff were interviewed for this report.

**Federal agencies**
The Bureau of Alcohol, Tobacco, and Firearms (ATF)
The Bureau of Justice Assistance (BJA)
The National Institute of Justice (NIJ)

**State law enforcement agencies**
The Office of the Illinois Attorney General (IL OAG)
The Michigan State Police (MSP)
The Minnesota Bureau of Criminal Apprehension (BCA)
The Pennsylvania Office of the Attorney General (PA OAG)

**Local law enforcement agencies**
The Chicago Police Department (CPD)’s Crime Gun Intelligence Center (CGIC)
The Cincinnati Police Department (CPD)’s Crime Gun Intelligence Center (CGIC)
The Milwaukee Police Department (MPD)’s Crime Gun Intelligence Center (CGIC)
The St. Paul Police Department (SPPD)

**Other experts**
Brady United
Everytown for Gun Safety
Giffords Law Center to Prevent Gun Violence
The National Policing Institute
Former staffer of U.S. Senator Dick Durbin
Dr. Natalie Hipple, Indiana University
Mark Kraft, Retired Chief, Firearms Trafficking and Interdiction Branch, ATF
Dr. Mallory O’Brien, Johns Hopkins University
Dr. Garen Wintemute, University of California, Davis
For more information about this report, or to access the underlying data analyzed, please visit

www.joycefdn.org/CrimeGunIntelligence