Evaluation of the Milwaukee Police Department's Crime Gun Intelligence Center

Christopher Koper | Heather Vovak | Brett Cowell

Evaluation of the Milwaukee Police Department's Crime Gun Intelligence Center

Final Report Prepared for the Milwaukee Police Department

September 2019

Christopher Koper | Heather Vovak | Brett Cowell

With contributions from William Johnson, Xiaoyun Wu, and Breanne Cave

Table of Contents

Section I: Executive Summary

This study presents an evaluation of the Crime Gun Intelligence Center (CGIC) initiative in Milwaukee conducted by a research partner team from the National Police Foundation and George Mason University. The report covers the operations and impacts of the CGIC program from 2014 through 2017.

The first part of the report documents the CGIC program as it operated during the study period. The heart of the CGIC initiative involves systematic collection and analysis of ballistics evidence collected from both crime scenes and test fires of recovered firearms. This ballistics evidence is scanned into the National Integrated Ballistics Information Network (NIBIN) administered by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). Scanning ballistics evidence into NIBIN enables analysts to compare images of ballistics evidence across cases nationwide to identify gun crimes that may have involved the same firearm (based on unique markings that firearms make on fired shell casings and bullets). This helps investigators to identify crimes that are likely to have been committed by the same offender or by offenders who used the same firearm. Teams of detectives, analysts, and other staff from MPD, ATF, and other partner agencies use these leads to prioritize, inform, and target gun crime investigations and prosecutions.

The second part of the report presents three series of analyses conducted by the Milwaukee CGIC's research partners to assess the potential and actual impacts of the CGIC initiative on gun-related investigations and gun crime in Milwaukee. All of these analyses focus in particular on the outcomes of NIBIN testing and the value of NIBIN-related evidence in solving gun-related investigations and reducing gun crime.

The first set of analyses examined the scope and nature of interconnected gun crimes in Milwaukee. The CGIC program targets repeat shooters and networks of offenders responsible for multiple gunfire incidents through sharing of firearms. As a first step in evaluating the impacts of the program, the research team sought to determine how much of Milwaukee's gun violence is attributable to such offenders using data from CGIC case files and the MPD's records management system (RMS). This portion of the study helped to define the scope of the problem targeted by the CGIC program and illuminate the program's strategic value as a tool for improving gun crime investigations and reducing gun crime. It also illustrates the value of NIBIN testing as an analytical tool to improve the understanding of gun crime in the city.

The next series of analyses examined the impact of NIBIN testing on the outcomes of gun-related investigations in Milwaukee. In principle, the CGIC program, and NIBIN testing in particular, should produce leads that help investigators solve gunfire-related crimes that might otherwise go unsolved. The research team thus examined the outcomes of NIBIN-related investigations and the role that NIBIN evidence played in these investigations using information extracted from NIBIN-related case files. In addition, the research team used data from MPD's RMS to examine

whether the CGIC program has improved overall case closure rates for gunfire-related crimes since its major launch in 2014.

Finally, the third set of analyses investigated whether NIBIN-related enforcement activity has reduced gun crime in Milwaukee. If the CGIC program is successful in targeting the most active shooters and networks in the city, then the program could produce significant incapacitation and deterrence effects that reduce the city's overall level of shooting incidents. This was examined through a time series analysis of trends in NIBIN-related arrests and shootings (fatal and non-fatal) across Milwaukee's police districts from 2011 through 2017.

In summary, the evaluation suggests that the CGIC program in Milwaukee has high strategic value in targeting the city's gun violence prevention efforts. Ballistics evidence generated through NIBIN testing is helping the MPD focus on repeat shooters and networks of active offenders who account for roughly half of fatal and non-fatal shootings in Milwaukee. Hence, the CGIC program has a high ceiling for its potential to reduce gun crime.

NIBIN-related evidence is also helping investigators identify and apprehend more suspects in gun crime investigations. This does not mean that NIBIN evidence is a cure-all for investigating gun crime; cases with NIBIN links do not always produce arrests, nor is NIBIN evidence always critical to closing cases when it is available. Greater coordination and effort focused on NIBIN-related cases have also contributed to better outcomes for these investigations. On balance, nonetheless, systematic collection and analysis of ballistics evidence appears to be a useful strategy for solving cases and illuminating active shooters for further investigation.

NIBIN-related evidence and the CGIC investigative process appear to have been particularly helpful for improving the investigation of non-fatal shootings. After an initial decline in clearances for these crimes in 2014 (due likely to a surge in gun violence throughout the city), they have been increasing during the years of the CGIC initiative. By some measures, clearances for non-fatal shootings in 2017 (the last year studied) were better than those prior to the program, despite the fact that gun violence levels were considerably lower during the pre-program years. Further, these recent improvements have been due specifically to improvements in clearances of cases with NIBIN-related evidence.

Finally, the study provides tentative indications that NIBIN-related arrests have reduced shootings. These findings were not definitive. However, it was difficult to conduct a rigorous assessment of the program's impacts on shootings given the lack of comparison areas for study (the program was implemented citywide, so it was not possible to compare areas with and without the program). A general rise in gun violence in Milwaukee that coincided with the implementation of the program also complicated efforts to judge the program's impacts.

In light of these findings, longer term study of Milwaukee's CGIC program would seem valuable. The program's effects may well become stronger over time as the MPD's ballistics evidence database grows. Indeed, the rate of matches and leads from recovered ballistics evidence has grown notably during the life of the program. Hence, the research team recommends additional

follow-up study to assess the program's longer-term impacts on shooting investigations and gun crime. If impacts on gun crime can be determined more conclusively, cost-benefit analyses could also be conducted to quantify the program's financial benefits.

Section II: Introduction

In 2014, the Milwaukee, Wisconsin, Police Department (MPD) established a Crime Gun Intelligence Center (CGIC) to help prevent gun violence in the city through improved identification, investigation, and prosecution of armed offenders. In 2016, the U.S. Department of Justice, Bureau of Justice Assistance (BJA), provided funding support to MPD to enhance and improve the operations of its CGIC and evaluate its impact.

This study details the operations of MPD's CGIC from 2014 – 2017 and evaluates its impact on a variety of relevant outcome measures in the City of Milwaukee, with a particular focus on gun crime investigations and the occurrence of firearm violence.

Firearm Violence in Milwaukee, Wisconsin

Milwaukee, Wisconsin, is a city of nearly 600,000 residents located approximately 90 miles north of Chicago, Illinois. Milwaukee is the largest city in Wisconsin, covering approximately 96 square miles. The Milwaukee Police Department (MPD), with approximately 1,870 sworn officers, divides the city into seven patrol districts.

Historically, Milwaukee has been afflicted with an inordinate amount of firearm violence. From 2011 – 2013, the city averaged 85 firearm homicides and 1,557 shooting incidents each year.[1] In 2013, the city experienced a homicide rate of 17.31 per 100,000 people, ranking it 23rd among U.S. cities with populations over 100,000. In comparison, Chicago, Illinois, with a population nearly 4.5 times Milwaukee, had a homicide rate of 15.22 per 100,000 people.[2]

The State of Wisconsin allows the open carrying of firearms and, as of 2011 with Wisconsin Act 35, authorizes the carrying of concealed firearms with a permit. The state is considered its own source state for crime guns. In fact, the Milwaukee Police Department has found the overwhelming majority of crime guns recovered in metropolitan Milwaukee originated from Federal Firearms Licensees (FFLs) located within 30 minutes of the city.

Deployment of Gunshot Detection Technology

To help combat the firearm violence the city was experiencing, the MPD implemented the ShotSpotter (SST) gunshot location system in 2011. MPD initially deployed the system to provide

---

[1] Figures calculated using incident report data provided by MPD. Shooting incidents consist of Recklessly Endangering Safety (RES) and Endangering Safety by Use of Dangerous Weapon (ESBUODW) incidents committed with a firearm.

[2] Federal Bureau of Investigation. (2013). Crime in the United States 2013. Retrieved from https://ucr.fbi.gov/crime-in-the-u.s/2013/crime-in-the-u.s.-2013/tables/6tabledatadecpdf/table-6

approximately two square miles of coverage in the city, based on locations identified by MPD district crime analysts with high volumes of gun crime. Shortly after deployment, the system was expanded to 3.1 square miles of coverage.

The ShotSpotter system utilizes audio sensors placed strategically around the city's coverage area to capture the sounds of gunshots and geolocate the incidents. When a sound matching the acoustic signature of a gunshot is detected by the sensors, the recorded sound is sent in real-time to the ShotSpotter analysis center in California for confirmation. Once confirmed as a gunshot, ShotSpotter sends an alert to MPD, which then dispatches officers to the location of the gunshot(s) through a call generated by the agency's computer-aided dispatch (CAD) system. Patrol officers also receive these ShotSpotter alerts directly on their vehicle's mobile data computer (MDC) and through a smartphone application, which enables officers to pinpoint the origin of the gunshot(s) on a map of the area.

Due to the success of the ShotSpotter system in helping MPD identify and locate incidents of gunfire that previously had been largely unreported, MPD secured funding from Milwaukee County and the State of Wisconsin to expand the coverage area of the system. In August 2014, MPD expanded the ShotSpotter system coverage area to 12 square miles, incorporating 4 of MPD's 7 patrol districts.

NIBIN

The National Integrated Ballistic Information Network (NIBIN) is a national network of linked ballistic imaging systems administered by the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF). The network provides law enforcement agencies with the ability to upload and compare digital images of recovered ballistic evidence (shell casings and fired bullets) to a national database of previously submitted ballistic evidence for the purpose of matching evidence that may have been fired by the same firearm across multiple incidents of firearm violence.[3]

When law enforcement recovers ballistic evidence from a crime scene and/or a test-fired crime gun, the casings and bullets can be sent to trained firearms examiners or technicians for entry into the Integrated Ballistic Identification System (IBIS). IBIS is comprised of two different workstations. The firearms examiner or IBIS technician first enters the ballistic evidence into the data acquisition station and uses laser optics to digitally map markings and significant areas of interest on the casing or bullet, such as the unique markings left by a firearm's breech face, firing pin, or ejector. Once the ballistic image data has been collected, the operator uses the image analysis station, also known as a correlation station, to submit the image data to the NIBIN

---

[3] King, W., Wells, W., Katz, C., Maguire, E., & Frank, J. (2013). Opening the black box of NIBIN: A descriptive process and outcome evaluation of the use of NIBIN and its effects on criminal investigations. Retrieved from https://www.ncjrs.gov/pdffiles1/nij/grants/243875.pdf

database. Image analysis software then compares the submitted image to ballistic images in the NIBIN database for possible matches, called "correlations." Once complete, the software provides the operator with a list of possible correlations, each with a relative (high to low) and quantitative score indicating the probability of a match.[4] The operator then visually compares the highest probability correlations to determine if it is highly likely that the casings or bullets were fired by the same firearm. If the operator is confident in a match, the correlation is classified as a Potential Candidate for Comparison (PCC), also known as an unconfirmed "hit." These unconfirmed hits must still be "confirmed" by an examination from a certified firearms examiner through a comparison microscope in order to definitively prove the match,[5] which is necessary for inclusion in court proceedings, but the unconfirmed hits can provide timely, actionable intelligence for investigators without the delay of waiting for confirmation from a firearms examiner.

The identification of a probable linkage between a submitted casing or bullet from one incident and ballistic evidence from a separate incident is often referred to as a NIBIN "lead" because it can provide investigators with new information on the connectedness of gun crime incidents, possibly generating new opportunities for investigators to identify witnesses and suspects and gather additional evidence. When two or more incidents of gun crime are linked through NIBIN, a NIBIN "case" is created. Each NIBIN case can have multiple firearm-related incidents, all linked by the same firearm. It is important to note that each NIBIN case tracks a particular firearm used in the linked incidents. Only when that firearm is recovered by law enforcement is the NIBIN case officially closed.

Embedding NIBIN in the Milwaukee Police Department

From 2004 through late 2013, MPD relied on the Wisconsin State Crime Laboratory (WSCL) for all NIBIN entries and correlations. Typically, it took approximately 1-2 months for MPD to receive notifications of confirmed hits from the WSCL. This evidence provided value in the prosecution of gun crime cases, but the time delay resulted in missed opportunities to pursue investigative leads in near real-time.

Recognizing an opportunity to improve gun crime investigations in Milwaukee, the ATF partnered with MPD in November 2013 and provided MPD with NIBIN equipment and training to internally operate a NIBIN program. MPD embedded the NIBIN program within its Intelligence Fusion Center (IFC) and dedicated three full time sworn officers to process ballistic evidence as trained IBIS technicians. MPD's NIBIN program officially went live in December 2013 and almost

---

[4] Bureau of Alcohol, Tobacco, Firearms and Explosives. (2016). Automated firearms ballistics technology. Retrieved from https://www.atf.gov/firearms/automated-firearms-ballistics-technology
[5] Bureau of Alcohol, Tobacco, Firearms and Explosives. (2016). Automated firearms ballistics technology. Retrieved from https://www.atf.gov/firearms/automated-firearms-ballistics-technology

immediately began generating actionable leads. In January 2014, MPD IBIS technicians were able to enter 137 crime scene casings into IBIS, which resulted in 40 NIBIN leads.

Implementing a Crime Gun Intelligence Center (CGIC)

In January 2013, the Denver, Colorado, Police Department and ATF joined together in a pilot program to form a Crime Gun Intelligence Center (CGIC). This formal partnership, the first of its kind, joined together the capabilities of NIBIN, ATF crime gun tracing, ATF special agents, Denver Police investigators, and other federal, state, and local partners to quickly identify serial shooters and their sources of crime guns for timely investigation, disruption, and prosecution to prevent future shootings.[6]

Following the initial success of MPD's NIBIN program, MPD became interested in further expanding its capacity to combat gun crime in the city. Accordingly, MPD collaborated with ATF, and in September 2014, MPD reorganized resources and created a Crime Gun Intelligence Center (CGIC) within its Intelligence Fusion Center (IFC). This CGIC will be described in detail in the next section and is the focus of this study.

---

[6] Police Executive Research Forum. (2017). The "crime gun intelligence center" model: Case studies of the Denver, Milwaukee, and Chicago approaches to investigating gun crime. Retrieved from https://www.policeforum.org/assets/crimegunintelligencecenter.pdf

Section III: Milwaukee Police Department's Crime Gun Intelligence Center

The mission of Milwaukee Police Department's Crime Gun Intelligence Center is to "prevent gun violence through the consistent production of timely, precise, and actionable intelligence concerning gun crimes to identify armed violent offenders for investigation and targeted enforcement."[7] Its creation formally combined the resources of MPD, ATF, and local, state, and federal partners to provide near real-time intelligence support for improved identification, investigation, and prosecution of serial shooters in Milwaukee. The CGIC is staffed by the following personnel:

- MPD and ATF supervisors
- MPD NIBIN laboratory technicians – responsible for test firing recovered crime guns, entering ballistic evidence into IBIS, and correlating submitted ballistic evidence against the NIBIN database to identify NIBIN leads
- NIBIN detectives – MPD detectives dedicated to providing investigative support on NIBIN cases
- MPD Gun Desk officers – responsible for verifying the accuracy of firearm information and tracing all recovered firearms through ATF's eTrace program
- ATF/CGIC task force officers – comprised of ATF special agents and deputized MPD officers and detectives who provide investigative support on high priority NIBIN cases and investigate supply-side issues, such as straw purchasers and firearms trafficking
- MPD IFC crime analysts – assist by researching suspects and known associates, mapping gun crime, and identifying trends in gun crime incidents
- ATF intelligence research specialist (IRS) – responsible for providing case support and conducting eTrace data analysis for ATF task force lead generation
- ATF contractors – responsible for triaging NIBIN cases (described later) and providing other investigative support
- ShotSpotter liaison – MPD officer responsible for the administration of the ShotSpotter system in Milwaukee

Additionally, the operations of the CGIC routinely involve representatives from Probation and Parole, Department of Corrections, the District Attorney's Office, and the U.S. Attorney's Office.

---

[7] Based on a briefing provided to the research team by MPD's CGIC personnel on May 4, 2017.

CGIC Operations

The operations of the MPD CGIC and its partners can be broken down into eight (8) phases of workflow, each described and illustrated in detail below. Some changes to the CGIC workflow, structure, and NIBIN case assignment process have been made since 2017, but for the purpose of this study, only the operations of the CGIC during the evaluation period from 2014 – 2017 are detailed.

Phase 1: Comprehensive Evidence Collection

The comprehensive collection of ballistic evidence is foundational to the operation of the CGIC as this can affect the number of subsequent investigative leads. Accordingly, MPD officers, detectives, and crime scene technicians are directed by MPD policy to recover every fired cartridge casing and firearm found during an investigation. Furthermore, MPD leverages its ShotSpotter gunshot detection system to deploy officers to all alerts of gunfire. These officers recover all fired casings at or near the alert location, conduct a canvass for witnesses, and obtain video evidence, if available. If casings are not recovered from a ShotSpotter alert, an explosive detection canine is brought to the scene, typically the next morning, to search for undiscovered casings. The use of the ShotSpotter technology in this manner to find spent shell casings is a significant contributor to the amount of ballistic evidence recovered by MPD. For example, in 2015, the first full year of the 12-square mile ShotSpotter coverage area, MPD officers responded to 6,996 ShotSpotter alerts involving approximately 27,000 shots fired. Table 1 below provides the number of ShotSpotter alerts for each year of the evaluation period.

Table 1: ShotSpotter Alerts by Year from 2014 – 2017

Year	Total ShotSpotter Activations
2014[8]	4,413
2015	6,996
2016	8,331
2017	9,119

All recovered shell casings are inventoried at the appropriate police district before the end of an officer's shift. Property Control Section (PCS) personnel retrieve casings every morning from each district and transfer them to the PCS warehouse.

---

[8] The expanded 12-square mile coverage area did not go into effect until August 6, 2014.

All recovered firearms are inventoried, and a firearms report is completed to document the specific details of each recovered firearm. Crime guns are then taken directly to the Investigative Management Division for DNA and latent print processing.

Phase 2: Processing of Ballistic Evidence

Once a crime gun is brought to the Investigative Management Division, MPD Forensics Section personnel process the firearm for latent fingerprints and swab for DNA. When this process is complete, a NIBIN technician retrieves the firearm from the Forensics Section and test fires the weapon in an on-site shoot room located in the sub-basement of the building.[9] The NIBIN technician conducts the test fire and obtains two samples of fired cartridge casings from the firearm.[10] The firearm is then returned to the Forensics Section for pickup by PCS personnel, and the sample casings are taken to the MPD NIBIN laboratory for entry into IBIS. The process of gathering latent prints and DNA and test firing the crime gun is completed within 24 hours of firearm recovery to maximize the investigative value of the results.

Within a week of the test fire, a CGIC Gun Desk officer retrieves the crime gun from the PCS warehouse, verifies that the firearm information entered on the firearms report is accurate, and submits the firearm for tracing through ATF's eTrace submission system.[11] The firearm is then returned to MPD's Property Control Section (PCS) warehouse. This process and the eTrace request can be expedited for high-priority cases.

Recovered shell casings are picked up from the PCS in 2-week intervals, every 10 to 14 days, and brought to the NIBIN laboratory. For priority requests, such as casings recovered from a homicide, a NIBIN technician will retrieve the casings from the PCS daily or twice daily. Recovered bullets must be sent to the Wisconsin State Crime Laboratory (WSCL) for analysis.

In the MPD NIBIN laboratory, a NIBIN technician examines the recovered shell casings to determine the number of firearms represented and to select the casing(s) most suitable for IBIS entry (the casing with the best impressions for each firearm represented). The NIBIN technician also examines test-fired casings and determines in each pair which casing is best for IBIS submission.

Once the most suitable casings have been identified, the NIBIN technician enters the casings into IBIS using the BrassTRAX data acquisition station. Once the submitted casing has been digitally mapped, the technician uses the MatchPoint Plus image analysis station (also known as the

---

[9] The shoot room was previously located off-site at MPD's Property Control Section warehouse. However, to expedite the processing of firearms, an additional shoot room was constructed in the same building as the Forensics Section and NIBIN laboratory using BJA grant funds.

[10] The purpose of the test fire is to obtain a known sample of a shell casing fired from that firearm for entry and correlation in IBIS. The technician uses one nickel cartridge and one brass cartridge for the test fire.

[11] Gun Desk officers physically inspect the firearm and verify the information on the firearms report is correct before submission to eTrace to increase the likelihood of a successful trace.

Section III: Milwaukee Police Department's Crime Gun Intelligence Center

correlation station) to enter the casing into the NIBIN database and initiate a search for correlations against other casings submitted in Wisconsin and northern Illinois (to include Chicago). If investigators have reason to believe the firearm used in the offense originated from or was used in an offense in an area outside this standard search area, the NIBIN technician can include the additional areas in the search (at the cost of added processing time). Once a search for correlations is initiated, correlation results are typically received within 1 to 5 hours.

In addition to processing ballistic evidence recovered in the city of Milwaukee, MPD also processes ballistic evidence recovered by neighboring law enforcement agencies because many of the gun-related incidents that occur in surrounding jurisdictions have a nexus to the city of Milwaukee.

Phase 3: Confirmation and Distribution of Lead Notification(s)

When correlation results are received, the NIBIN technician reviews the top 100 correlations based on the highest probabilities for a match to the submitted casing and visually compares the most likely matches. If the technician is confident in a match, it is classified as a Potential Candidate for Comparison (PCC), and the NIBIN technician generates a NIBIN "lead" letter to notify CGIC supervisors and the appropriate investigative division(s) of the lead. Table 2 provides the number of NIBIN entries and leads for each year of the evaluation period and displays the acquisition to lead ratio, which is the percentage of NIBIN entries resulting in a new NIBIN lead (a probable link to one or more previous incidents).

Table 2: NIBIN Entries and Leads by Year from 2014 – 2017

Year	Casing Entries	Test Fire Entries	Total Entries	Total NIBIN Leads	Acquisition to Lead Ratio
2014	1850	545	**2395**	350	14.6%
2015	2840	686	**3526**	733	20.8%
2016	3385	1441	**4826**	1172	24.3%
*2017**	*1456**	*1035**	*2491**	*606**	*24.3%**

* Data shown for 2017 only represents January – May 2017. At the time of the evaluation, total NIBIN leads from June – December 2017 were unavailable.

During this phase of workflow, the CGIC Gun Desk will also review all eTrace results, which usually take about 3-7 days to receive from ATF after submission of a trace. Each trace provides the initial point of purchase and purchaser for a firearm and provides insight about the time-to-crime for the firearm, which is the amount of time between the initial purchase of the firearm from an FFL to the recovery of the firearm by law enforcement. Cases involving firearms with short time-to-crime, particularly as little as 30 to 45 days, and/or multiple traces back to the same initial purchaser are referred to the ATF CGIC task force for investigation of possible gun trafficking and/or straw purchasing.

Phase 4: NIBIN Lead Triage and Referral to CGIC Investigators

Due to the volume of NIBIN cases handled by the CGIC, cases must be triaged based on priority and solvability before assignment. When a NIBIN lead is generated, an ATF contractor reviews the lead and the incidents linked in the NIBIN case, summarizes the linked incidents, identifies needed follow-up activity, and assigns the case to one of four classifications:

- *Red (CGIC Priority Level Notification)* – Cases designated at the red level are deemed to have the highest priority and solvability. These cases involve the most violent crimes that are recent in nature. This designation is assigned when there is an identified suspect who is known to be part of a criminal enterprise, known to be a serial shooter, and/or has been identified as a Project Safe Neighborhood or CGIC High Value Target (HVT). NIBIN lead notifications at this level are provided to the primary investigator(s) from the investigation division(s) in which the offenses occurred, such as the Metropolitan Investigations Division for homicides, for their immediate situational awareness. A CGIC investigator (ATF CGIC task force officer or NIBIN detective) will then be assigned to the case and develop a collaborative investigative strategy with the primary investigator(s).

- *Black (Investigations Level)* – Cases designated at the black level typically involve multiple serious incidents, like non-fatal shootings and violent armed robberies, with solvability factors. NIBIN lead notifications at this level are provided to the case officers that originally investigated the incidents, such as North, Central, or South Division detectives. NIBIN detectives coordinate with the primary investigators and provide assistance with follow-up activities.

- *Blue (District Level)* – Cases designated at the blue level have identified suspects and/or problem locations that should be investigated further or targeted by district police officers. Blue level cases may also have identified follow-up actions that could potentially lead to the clearance of the NIBIN case. NIBIN lead notifications are provided to the relevant districts for follow-up activity, as appropriate.

- *Green (Situational Awareness Level)* – Cases designated at the green level do not have any investigative leads, identified suspects, or required follow-up actions. NIBIN lead notifications are provided to advise the district(s) in which the incidents occurred of the related gun crimes and their locations to increase situational awareness and assist with violent crime reduction deployment strategies within the patrol district(s).

Once the ATF contractor has classified a NIBIN case based on the new lead(s), the case is sent to a CGIC supervisor to confirm or change the case's designation level. After the supervisor has made a determination, the supervisor transmits a lead notification, as determined by the case's designation level, and assigns follow-up actions.

Important to note, as new NIBIN leads are generated for a NIBIN case, the case's designation may change based on priority and solvability factors.

Phase 5: CGIC Investigation and Intelligence Deconfliction

When red and black level cases are referred to CGIC investigators, investigators work collaboratively with the primary incident investigator(s) to follow up on existing leads and information obtained from NIBIN to identify additional witnesses, evidence, or other offenses that may be linked to a suspect. CGIC investigators are aided by MPD's NIBIN case management system, which is integrated with MPD's records management system (RMS) and property management system. The NIBIN case management system enables CGIC personnel to easily document and reference NIBIN case information, such as summaries of NIBIN linked incidents, needed follow-up activity, identified suspects, case evidence, suspect disposition (e.g., arrested and/or charged), related NIBIN cases, and picture attachments (usually of identified suspects).

The CGIC also holds weekly NIBIN meetings to further collaboration and the identification of actionable intelligence. These meetings, chaired by a supervisor from the Intelligence Fusion Center or the CGIC, include:

- ATF CGIC task force officers
- CGIC analysts
- NIBIN detectives
- Detectives from each MPD patrol district and investigative division
- Representatives from the Wisconsin Department of Corrections, Probation, and Parole, the District Attorney's Office, and the U.S. Attorney's Office

During these weekly meetings, attendees are briefed on important developments for NIBIN cases of all designation levels. Attendees also discuss NIBIN success stories and identify actionable follow-up on particular NIBIN cases. In the most serious cases, a prosecutor from the Milwaukee District Attorney's Office or the U.S. Attorney's Office can be assigned to work on an investigation at this stage to provide support to investigators, including case consultation and the drafting of search and arrest warrants. If probation and parole violations are identified by investigators, NIBIN suspects can be targeted through coordination with the Department of Corrections.

To provide even more timely collaboration, the CGIC conducts daily briefings with NIBIN detectives, CGIC task force officers, ATF, and CGIC crime analysts. CGIC supervisors discuss the latest developments in NIBIN cases and identify offenders that should be targeted based on intelligence provided from the CGIC and/or MPD's Predictive Crime Unit.

Phase 6: Arrest Warrants Issued by District Attorney's Office or U.S. Attorney's Office

When sufficient evidence has been gathered on a NIBIN case, suspects are referred to the Milwaukee District Attorney's Office or the U.S. Attorney's Office for prosecution. Suspects in a NIBIN case may be referred to a prosecutor because of the case information that NIBIN detectives have developed surrounding their involvement in a firearm offense, or they may be prosecuted for another type of offense because the prosecutor is aware of their involvement in firearm crimes due to NIBIN case information. This latter approach of "targeting" an individual for typically lesser charges, such as illicit drug-related charges, is used to arrest suspected serial shooters more quickly to prevent future gun violence when insufficient evidence exists to charge the suspect with the more serious gun offenses.

Phase 7: State or Federal Prosecution

Next, suspects are prosecuted at the state or federal level. At the state level, an investigator presents a case to the District Attorney's Office. If accepted, a complaint is drafted. At the federal level, cases are initially screened, and cases appropriate for federal prosecution are referred to an Assistant U.S. Attorney (AUSA) for final determination. If accepted, the District Attorney's Office will maintain local charges until the U.S. Attorney's Office indicts the case.

During this phase, the prosecutors may require NIBIN leads to be officially confirmed as hits so that they can be admitted into court proceedings as evidence. Since MPD's NIBIN technicians are not certified firearms examiners, all PCCs (NIBIN leads) must be sent to the WSCL for review and confirmation.

Phase 8: Feedback to Officers and Detectives

After a suspect has been referred for prosecution, CGIC personnel develop feedback reports about NIBIN success stories and lessons learned to underscore the importance of the CGIC and the NIBIN program and improve future investigations. These success stories are routinely shared with MPD officers and shared quarterly with CGIC partners.

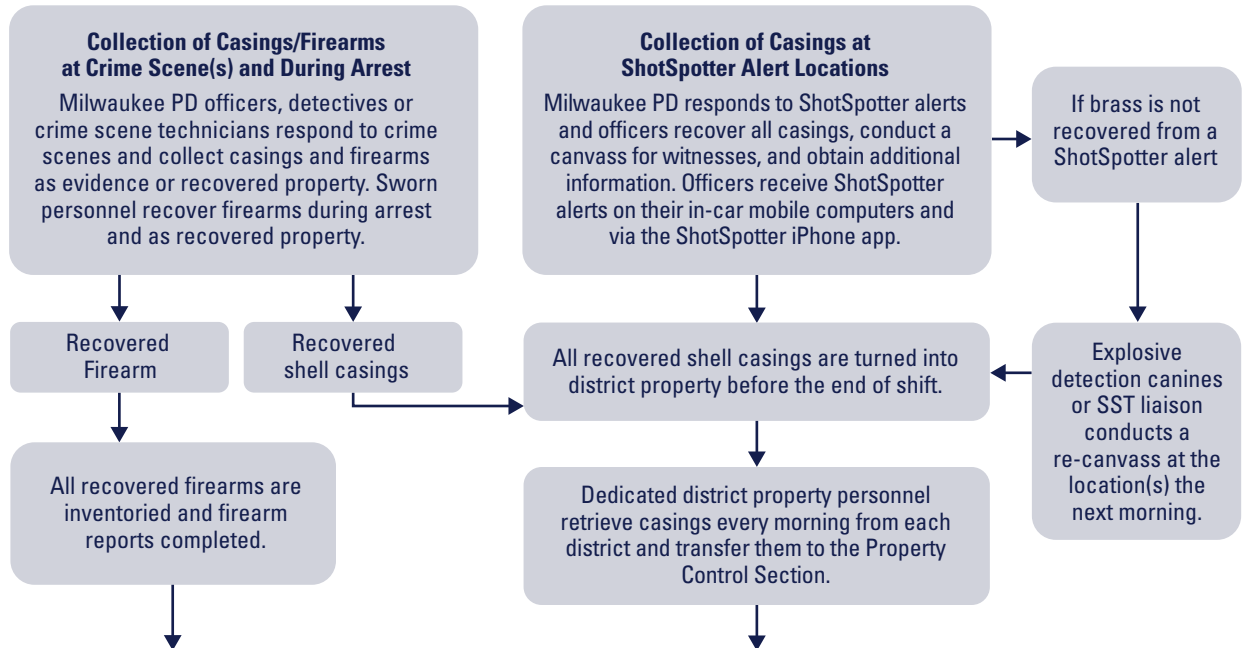MPD also conducts regular roll call and in-service training with officers and detectives on the components of the CGIC, the NIBIN process, and how to leverage the resources of the CGIC and the NIBIN case management system to support gun crime investigations.

CGIC Process Map

The following process map illustrates the various phases of workflow for the MPD CGIC as it operated between 2014 and 2017.

MILWAUKEE CGIC PROCESS MAP

1
Evidence Collection of Casings and Firearms by Officers /Detectives

Collection of Casings/Firearms at Crime Scene(s) and During Arrest
Milwaukee PD officers, detectives or crime scene technicians respond to crime scenes and collect casings and firearms as evidence or recovered property. Sworn personnel recover firearms during arrest and as recovered property.

Collection of Casings at ShotSpotter Alert Locations
Milwaukee PD responds to ShotSpotter alerts and officers recover all casings, conduct a canvass for witnesses, and obtain additional information. Officers receive ShotSpotter alerts on their in-car mobile computers and via the ShotSpotter iPhone app.

If brass is not recovered from a ShotSpotter alert

Recovered Firearm

Recovered shell casings

All recovered shell casings are turned into district property before the end of shift.

Explosive detection canines or SST liaison conducts a re-canvass at the location(s) the next morning.

All recovered firearms are inventoried and firearm reports completed.

Dedicated district property personnel retrieve casings every morning from each district and transfer them to the Property Control Section.

2
NIBIN Entry and Correlation by Lab/ Firearms Trace Initiated

The firearm is sent to the Forensics Section for DNA and latent processing.

NIBIN contractor runs WIN ACE weekly/biweekly query of recovered shell casings and generates a request for a property pull and pick up for NIBIN entry.

DNA/Latents
MPD Forensics Section personnel fingerprint recovered firearms and swab for DNA.

Shell casings are picked up from the Property Control Section in 2-week intervals, every 10 to 14 days, and brought to NIBIN section. Pick-up request requires sign off. NIBIN lab officers handle priority requests in which they go to the Property Control Section daily or sometimes twice per day.

Test Fire
NIBIN technicians retrieve the recovered firearms from the Forensics Section for test firing within hours of recovery. NIBIN technicians conduct test fires in shoot room (one brass primer cartridge and one nickel primer cartridge).

NIBIN Test Fire Casing Entry
NIBIN technician examines both test-fired casings to determine which is better for NIBIN submission.

NIBIN Recovered Casing Entry
NIBIN technician examines shell casings to determine the number of firearms represented and select the casing with the better impression for NIBIN submission.

MPD firearm recovery form is transferred to gun desk officer from the Property Control Section at headquarters.

ATF NIBIN contractor or CGIC officer enters shell casings (both recovered shell casings and better test fires) into BRASSTRAX. Results received within 1 to 5 hours.

eTrace
Gun desk officer reviews the MPD firearm recovery form for comparison to the actual firearm for accurate identification and makes necessary corrections.

Review top 100 correlations.

Gun desk officer enters the firearm in eTrace. Process takes up to 3 weeks, resulting in a high success rate.

3

Confirmation and Distribution of Lead Notification(s)

eTrace results are forwarded to NIBIN contractor and analysts for evaluation of NIBIN leads/indicators of firearms trafficking.

If match is made

ATF NIBIN contractor generates NIBIN lead letter for notification. This notification occurswithin 24 hours of correlation.

4

Hit Triage and Referral to CGIC Investigators

ATF NIBIN contractor triages leads, pulls copies of police reports/other information associated with leads, adds case number, date and location of incident, and officer involved to NIBIN lead letter, recommends investigative steps, and forwards lead letter to CGIC lieutenants for review to confirm classification.

CGIC lieutenants confirm the classification based on designated color code that dictates prioritization and assignment.

RED (designated priority #1)
CGIC NIBIN Lead Notification. Case identified as high priority according to CGIC deployment plan. CGIC investigator will follow up with the case officers for coordination and deconfliction on the NIBIN investigation.

BLACK (designated priority #2)
Investigative Lead. Case may be part of an ongoing case management within the Investigations & Intelligence Bureau. Additional follow-up may be required.deconfliction on the NIBIN investigation.

BLUE (designated priority #3)
Investigative lead. Additional follow-up may be required.

GREEN (desginated priority #4)
No leads/No suspects.

Situational awareness and deployment strategies only.

Red cases go directly to CGIC TFOs. Cases involve the most violent crimes and those recently committed.

Lead provided to original case officers. Case is deemed highly solvable.

Investigative lead provided to original case officers.

Lead provided to the district(s) within which the related crimes occurred.

CGIC TFOs
Focus investigations on removing the shooter as quickly as possible and on recovering the firearm.

ATF special agents- Groups 1 and 3
Work with NIBIN detectives and CGIC TFOs on NIBIN investigations. The Firearms Trafficking Unit reviews all cases for trafficking and straw purchasing leads.

NIBIN detectives
Liaison, coordinate and provide assistance to MPD detectives working cases associated with NIBIN hits.
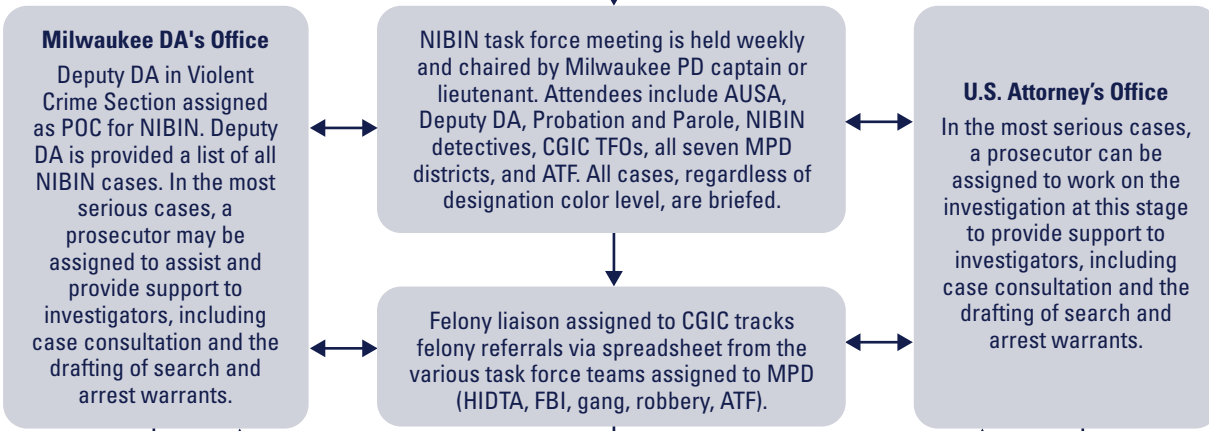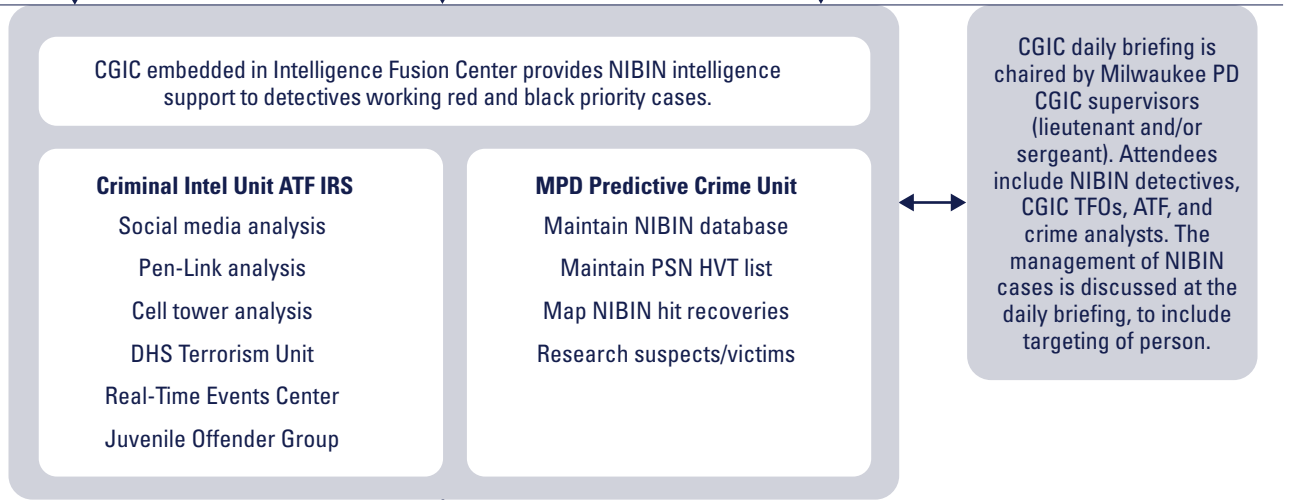
5

CGIC Investigation and Intel De-confliction

CGIC embedded in Intelligence Fusion Center provides NIBIN intelligence support to detectives working red and black priority cases.

Criminal Intel Unit ATF IRS
Social media analysis
Pen-Link analysis
Cell tower analysis
DHS Terrorism Unit
Real-Time Events Center
Juvenile Offender Group

MPD Predictive Crime Unit
Maintain NIBIN database
Maintain PSN HVT list
Map NIBIN hit recoveries
Research suspects/victims

CGIC daily briefing is chaired by Milwaukee PD CGIC supervisors (lieutenant and/or sergeant). Attendees include NIBIN detectives, CGIC TFOs, ATF, and crime analysts. The management of NIBIN cases is discussed at the daily briefing, to include targeting of person.

Milwaukee DA's Office
Deputy DA in Violent Crime Section assigned as POC for NIBIN. Deputy DA is provided a list of all NIBIN cases. In the most serious cases, a prosecutor may be assigned to assist and provide support to investigators, including case consultation and the drafting of search and arrest warrants.

NIBIN task force meeting is held weekly and chaired by Milwaukee PD captain or lieutenant. Attendees include AUSA, Deputy DA, Probation and Parole, NIBIN detectives, CGIC TFOs, all seven MPD districts, and ATF. All cases, regardless of designation color level, are briefed.

U.S. Attorney's Office
In the most serious cases, a prosecutor can be assigned to work on the investigation at this stage to provide support to investigators, including case consultation and the drafting of search and arrest warrants.

Felony liaison assigned to CGIC tracks felony referrals via spreadsheet from the various task force teams assigned to MPD (HIDTA, FBI, gang, robbery, ATF).

If parole or probation violations are identified by investigation, they can be acted upon.

6

Arrest Warrants Issued by DDA/AUSA

Arrest Warrants / Arrest
Arrest of suspect by NIBIN investigative team. Most cases are charged in state court.
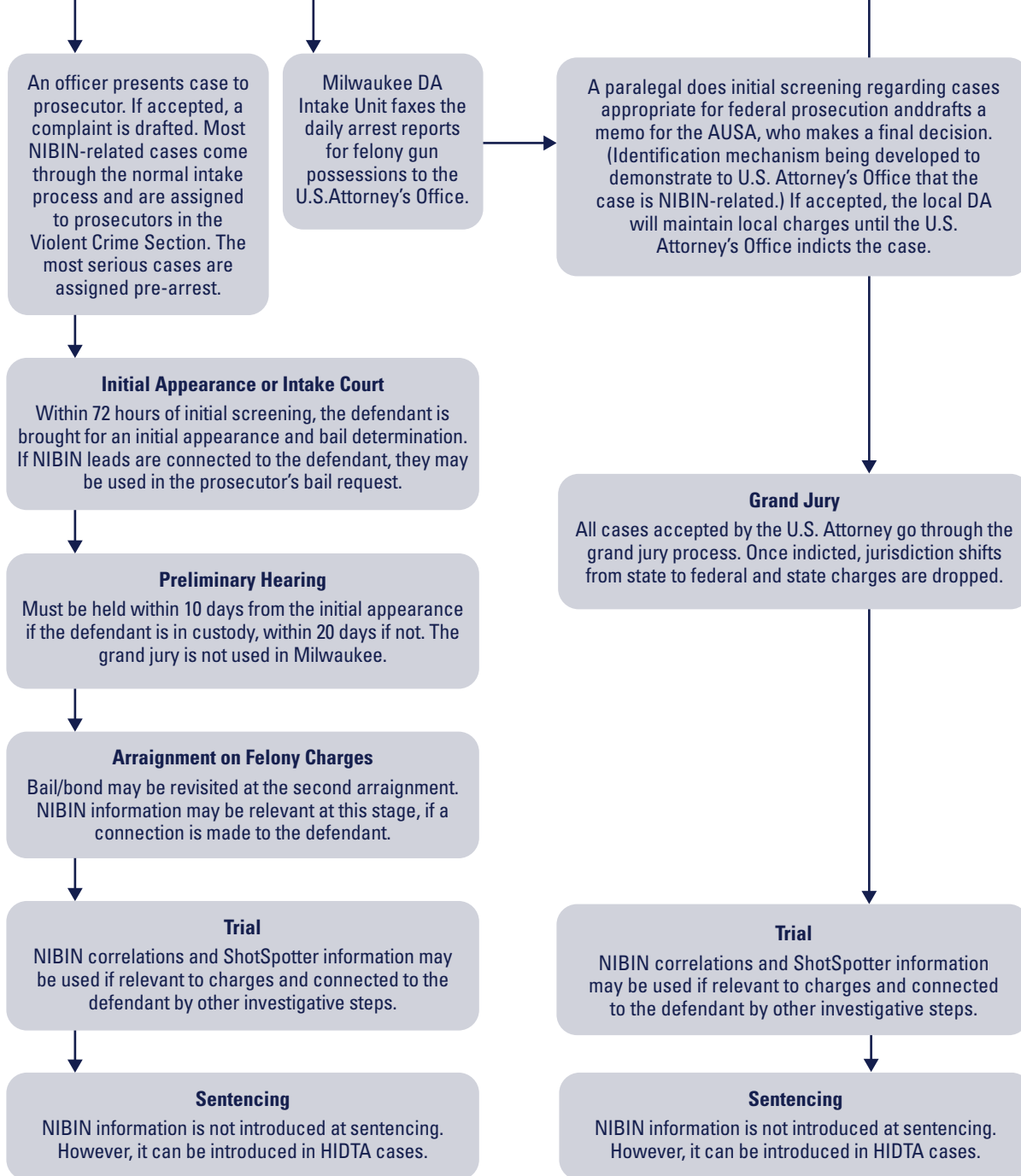
7

State or Federal Prosecution

During investigative phase or prosecutorial phase, investigators or prosecutors may require a NIBIN lead to be confirmed as a hit. A laboratory request with the associated evidence is sent to the laboratory for confirmation.

Milwaukee DA

AUSA

An officer presents case to prosecutor. If accepted, a complaint is drafted. Most NIBIN-related cases come through the normal intake process and are assigned to prosecutors in the Violent Crime Section. The most serious cases are assigned pre-arrest.

Milwaukee DA Intake Unit faxes the daily arrest reports for felony gun possessions to the U.S.Attorney's Office.

A paralegal does initial screening regarding cases appropriate for federal prosecution anddrafts a memo for the AUSA, who makes a final decision. (Identification mechanism being developed to demonstrate to U.S. Attorney's Office that the case is NIBIN-related.) If accepted, the local DA will maintain local charges until the U.S. Attorney's Office indicts the case.

Initial Appearance or Intake Court

Within 72 hours of initial screening, the defendant is brought for an initial appearance and bail determination. If NIBIN leads are connected to the defendant, they may be used in the prosecutor's bail request.

Preliminary Hearing

Must be held within 10 days from the initial appearance if the defendant is in custody, within 20 days if not. The grand jury is not used in Milwaukee.

Grand Jury

All cases accepted by the U.S. Attorney go through the grand jury process. Once indicted, jurisdiction shifts from state to federal and state charges are dropped.

Arraignment on Felony Charges

Bail/bond may be revisited at the second arraignment. NIBIN information may be relevant at this stage, if a connection is made to the defendant.

Trial

NIBIN correlations and ShotSpotter information may be used if relevant to charges and connected to the defendant by other investigative steps.

Trial

NIBIN correlations and ShotSpotter information may be used if relevant to charges and connected to the defendant by other investigative steps.

Sentencing

NIBIN information is not introduced at sentencing. However, it can be introduced in HIDTA cases.

Sentencing

NIBIN information is not introduced at sentencing. However, it can be introduced in HIDTA cases.

8

Feedback to Officers and Detectives

MPD generates heat maps on a weekly basis that reflect ShotSpotter "hot spots" for the last 21 days for affected districts.

MPD created a roll-call video to explain NIBIN to the department, with a focus on the newly developed NIBIN database.

MPD created a NIBIN success story poster board to be displayed at MPD.

NIBIN contractor sends quarterly CGIC success stories to all CGIC partners.

BJA Grant Funding

Beginning in October 2016, MPD received a grant from the Bureau of Justice Assistance (BJA) under the National Crime Gun Intelligence Center Initiative to improve the operations of the MPD CGIC. This grant funding enabled MPD to increase the capabilities and capacity of its CGIC through additional personnel, equipment, supplies, and training. This included the hiring of an additional NIBIN technician; the procurement of supplies and equipment such as ammunition of various calibers, firearm tool kits, and a bullet trap to facilitate test-firing of recovered crime guns; the provision of additional training to NIBIN technicians, including train-the-trainer sessions; and overtime funding to reduce, and eventually eliminate, MPD's backlog of casings awaiting review and entry into the NIBIN database. Additionally, the grant funding enabled MPD to construct a new shoot room to test fire crime guns in the same building as the NIBIN laboratory and Forensics Section, expediting the processing of firearms. Previously, NIBIN technicians had to utilize a shoot room located off-site at MPD's PCS warehouse, which resulted in delays in NIBIN entries.

Section IV: Evaluation of Milwaukee's Crime Gun Intelligence Center

As a grantee under the National Crime Gun Intelligence Center Initiative, the Milwaukee Police Department received technical assistance from the National Resource and Technical Assistance Center for Improving Law Enforcement Investigations (NRTAC).[12] This support to MPD included a detailed mapping and analysis of MPD's CGIC processes and outputs, the provision of lessons learned and best practices from other CGIC grantees across the country, and a detailed list of recommendations on how MPD can improve each phase of workflow within its CGIC. Because elements of a process evaluation were already being conducted on MPD's CGIC, the Police Foundation and George Mason University research team focused much of their attention on assessing the impact of MPD's CGIC. Accordingly, the research team conducted three series of analyses to assess the potential and actual impacts of the CGIC initiative on gun-related investigations and gun crime in Milwaukee. All of these analyses focus in particular on the outcomes of NIBIN testing and the value of NIBIN-related evidence in solving gun-related investigations and reducing gun crime.

The first set of analyses examines the scope and nature of interconnected gun crimes in Milwaukee. The CGIC program targets repeat shooters and networks of offenders responsible for multiple gunfire incidents through sharing of firearms.[13] As a first step in evaluating the impacts of the program, the research team sought to determine how much of Milwaukee's gun violence is attributable to such offenders using data from CGIC case files and the MPD's records management system (RMS). This portion of the study helps to define the scope of the problem targeted by the CGIC program and illuminates the program's strategic value as a tool for improving gun crime investigations and reducing gun crime. It also illustrates the value of NIBIN testing as an analytical tool to improve the understanding of gun crime in the city.

The next series of analyses examines the impact of NIBIN testing on the outcomes of gun-related investigations in Milwaukee. In principle, the CGIC program, and NIBIN testing in particular, should produce leads that help investigators solve gunfire-related crimes that might otherwise go unsolved. The research team thus examined the outcomes of NIBIN-related investigations and the role that NIBIN evidence played in these investigations using information extracted from NIBIN-related case files. In addition, the research team used data from MPD's RMS to examine whether the CGIC program has improved overall case closure rates for gunfire-related crimes since its major launch in 2014.

---

[12] See https://crimegunintelcenters.org/ for more information about the NRTAC.

[13] MPD frequently uses NIBIN to help map gang networks in FBI gang-related investigations and Project Safe Neighborhood operations.

Finally, the third set of analyses seeks to determine whether NIBIN-related enforcement activity has reduced gun crime in Milwaukee. If the CGIC program is successful in targeting the most active shooters and networks in the city, then the program could produce significant incapacitation and deterrence effects that reduce the city's overall level of shooting incidents. This subsection of the report examines recent trends in gunfire-related crimes and describes other analyses to estimate the CGIC program's impacts on gun crime trends.

The methods and results of these analyses are described in further detail in the subsections below. In brief, findings suggest that the CGIC initiative has high strategic value in illuminating active shooters and networks that are responsible for a large share of gun violence in Milwaukee. There is also tentative evidence that the program is helping investigators to improve the MPD's clearance rate for nonfatal shootings. Gun violence surged during the years of the CGIC program, making it difficult to determine whether the program has been effective in reducing gun crime.

Assessing the Problem of Repeat Shooters and Networks Linked to Multiple Shootings

Researchers conducted two analyses to assess the scope and nature of interconnected gun crimes in Milwaukee. First, the research team analyzed data from CGIC databases and the MPD's RMS for the four-year period of 2014-2017. Second, the research team conducted a more in-depth analysis of a sample of NIBIN-related investigations that were ongoing during 2015 and 2016. The latter analysis involved studying and meticulously coding the narrative case files of 100 NIBIN-related investigations as described below. In the discussion that follows, note that the term "NIBIN case" refers to an investigation involving two or more gun crime incidents that have been linked through NIBIN testing.

Overview of NIBIN-Related Investigations from 2014-2017

From 2014 through 2017, MPD staff opened 2,073 NIBIN cases that involved 6,188 separate gun crime incidents. These cases had an average length of 84.75 days from the first incident to the last linked incident (not necessarily the recovery of the crime gun).[14] As shown in Table 3, slightly more than half of the NIBIN cases involved 2 related shooting incidents, more than three quarters (78%) involved 2-3 incidents, and the remaining cases involved anywhere from 4 to 17 incidents. Virtually all of these incidents were violent crimes or weapons violations involving firearms.[15] Incidents with NIBIN links appeared to account for one-third of homicides, 9-10% of all assaults, and 29% of weapons violations recorded in the MPD's RMS during this period. The nature of gun

---

[14] Average case length was calculated based on 1,860 NIBIN cases. Two hundred and thirteen (213) cases were dropped from the average case length analysis due to missing data.

[15] Crime type could not be determined for 9% of the incidents.

crimes linked through NIBIN testing is explored in further detail below. Roughly half of the NIBIN cases (1,021) involving 56% of the connected incidents were prioritized for investigation at the CGIC (red) or Investigative Division (black) level.

Table 3: Number of Related Incidents and Investigative Referral Status for NIBIN-Related Investigations, 2014-2017[16]

Incidents	CGIC (Red Level)	District (Blue Level)	Investigative Division (Black Level)	No Referral Status[17]	Situational Awareness (Green Level)	Total Cases
2	247	296	179	202	185	1,109
3	173	100	105	59	69	506
4	74	23	41	26	18	182
5	58	17	29	8	16	128
6	35	5	8	4	5	57
7	17	5	3	2	2	29
8	13	1	4	1	2	21
9	8	0	3	1	0	12
10	9	0	1	1	0	11
11	1	0	1	0	0	2
12	1	0	0	0	0	1
13	3	0	1	0	0	4
14	2	0	0	0	0	2
15	1	0	0	0	0	1
17	1	0	0	0	0	1
Number of cases	**644**	**448**	**377**	**307**	**297**	**2,073**
Number of incidents	**2,317**	**1,143**	**1,146**	**793**	**789**	**6,188**

NIBIN-related incidents occurred throughout the city but were concentrated most heavily in districts 3, 5, and 7. More specifically, 46% of NIBIN cases involved at least one incident in District 5, 45% involved at least one incident in District 7, and 41% involved at least one incident in District 3. Further, 21% of NIBIN cases involved an incident in District 4 and 17% involved an incident in District 2.

---

[16] Seven NIBIN cases are not shown in this table because, at the time of data collection, they were incorrectly showing only one linked incident each. MPD later provided additional incident data related to these cases, but the research team had already calculated sample weights and concluded the analysis based on the numbers shown.

[17] MPD did not begin triaging NIBIN cases into the different designation levels until Fall 2015.

Although related incidents tended to occur in fairly close proximity (within 1.6 miles on average), they often crossed district boundaries. Nearly half of NIBIN cases (47%) involved incidents that were spread across 2 districts, and another 14% were spread across 3 or more districts. Furthermore, MPD indicated that it is not uncommon for NIBIN related incidents to spread into surrounding jurisdictions.

Analysis of NIBIN Investigation Case Files, 2015-2016

The results above show that NIBIN testing through the CGIC program helps MPD investigators focus on offenders who are responsible for a large amount of gun violence throughout major portions of the city. To provide a fuller sense of offenses and victimizations stemming from these incidents, additional data were collected from a sample of 100 NIBIN cases from 2015 and 2016. This involved examining the narrative case files from these investigations to provide a more in-depth look at the nature and scope of crime types and victimizations that were given the highest investigative priority by the CGIC.

The cases selected for this study were sampled from among 580 NIBIN cases referred to CGIC investigators or detectives in the MPD's Investigative Divisions (ID) during 2015 and 2016 (i.e., red-level and black-level cases, respectively). Accordingly, these cases are not representative of all NIBIN cases, but they do reflect the most serious incidents connected through NIBIN linkages. To select 100 cases for study, the full universe (i.e., sampling frame) of 580 cases was stratified into four groups based on: 1) the type of investigative referral (CGIC or ID); and 2) the number of related incidents tied to each case, which was categorized for sampling purposes as 2-3 versus 4 or more. Twenty-five cases were then randomly sampled from each of the four groups. This sampling scheme disproportionally selects cases involving higher numbers of incidents (4 or more) in order to provide more precise estimates for this smaller subset of cases.[18] However, the estimates shown below are statistically weighted to be fully representative of all CGIC and ID cases for 2015 and 2016.

Table 4: Number of NIBIN Cases Sampled by Designation Level and Number of NIBIN-Related Incidents

Number of Related Incidents	CGIC Priority (Red Level)	Investigative Division (Black Level)	Total
2-3	25	25	50
4+	25	25	50
Total	**50**	**50**	**100**

As shown in Table 5, the 100-case sample includes a total of 468 NIBIN-related incidents. Detailed information was collected on the incidents, victims, and suspects involved in the sampled NIBIN

---

[18] To a lesser degree, the sampling scheme also disproportionately draws from ID-level investigations.

cases, as were data on evidence recovered and investigative outcomes, including arrests and prosecutions.

Table 5: Number of Incidents in the NIBIN 100-Case Sample by Designation Level and Related Incidents

Number of Related Incidents	CGIC Priority (Red Level)	Investigative Divisions (Black Level)	Total
2-3	60	49	109
4+	184	175	359
Total	**244**	**224**	**468**

Tables 6 and 7 present selected information about the incidents and victims within the sample. Additional information about suspects and case outcomes is discussed in the next subsection of the report. Table 6 highlights the types of offenses that were investigated in high priority (CGIC and ID-level) NIBIN cases during 2015 and 2016. Important to note, incidents were classified based on the most serious offense committed during the incident.

For each offense type, Table 6 shows the average number of those offenses per NIBIN case as well as a sample-based estimate of the total number of those offenses that were linked by CGIC and ID-level NIBIN investigations in 2015 and 2016 (this is referred to as the "population estimate").

As shown, CGIC and ID-level NIBIN cases involved nearly 4 linked gunfire incidents per case on average and 2,199 incidents in total. This total included 130 gun homicides (and a total of 134 incidents involving a fatality), 710 "reckless endangerment" non-fatal shooting cases (including 490 incidents that involved at least one non-fatal gunshot injury), and 1,095 other shots fired incidents (ESBUODW). To a lesser extent, NIBIN cases also included gun robberies and other weapons violations. Most commonly, a NIBIN case involved one non-fatal shooting on average and one to two other related shots fired incidents.

Table 6: Incident Totals and Offense Types for 2015-16 NIBIN Cases

	Average per Sampled NIBIN Case	Population Estimate
Total incidents	3.79	2,199
Gun homicides	0.22	130
Reckless Endangerment (shootings)	1.22	710
ESBUODW (shots fired)	1.89	1,095
Robbery	0.12	71
Other weapons violation	0.26	149
Incidents with 1+ fatalities	0.23	134
Incidents with 1+ non-fatal injuries	0.84	490

Estimates based on a stratified random sample of 100 NIBIN cases. Averages weighted for sampling.

Section IV: Evaluation of Milwaukee's Crime Gun Intelligence Center

Table 7 provides additional data on the victimizations that resulted from these incidents. In total, these NIBIN cases involved 132 victims who were killed and 661 who were injured. Almost all of the latter group were non-fatal gunshot victims (622 of 661). NIBIN cases also involved over 1,100 additional non-injured victims who were shot at or threatened in some manner.

Table 7: Totals and Nature of Victimizations for NIBIN Cases, 2015-16

	Average per Sampled NIBIN Case	Population Estimate
Victims killed	0.23	132
Victims injured	1.14	661
Non-fatal gunshot victims	1.07	622
Uninjured victims	1.95	1,129

Estimates based on a stratified random sample of 100 NIBIN cases. Averages weighted for sampling.

To put this in perspective, a study by the Milwaukee Homicide Commission reported that there were 236 gun homicides in Milwaukee during 2015 and 2016 and 1,188 non-fatal shootings.[19] Hence, the results in Tables 6 and 7 show that offenders involved in connected shooting incidents and targeted by the CGIC initiative are responsible for roughly half of the gun homicides and shootings in Milwaukee.[20] This suggests that the upper bound potential of the CGIC program to reduce gun violence is quite substantial.

Impacts of the CGIC on Gun Crime Investigations

To assess the impacts of NIBIN links on the outcomes of gun crime investigations, the research team examined outcomes from the sample of 100 NIBIN cases discussed above and used narrative information in the associated case files to evaluate the contribution of NIBIN links to these investigations. In addition, we conducted a multi-year analysis of case clearances for selected gun crimes to determine whether clearance rates have improved over time as a result of NIBIN testing and the CGIC program.

---

[19] See 2016 *Annual Report: Homicides and Nonfatal Shootings in Milwaukee* by the Milwaukee Homicide Review Commission, p. 17.

[20] Roughly 15% of the non-fatal shootings in the NIBIN sample occurred before 2015 or after 2016, as did 5% of the gun homicides. Adjusting for these numbers suggests that NIBIN-related incidents accounted for 45% of the city's non-fatal shootings and 53% of its gun homicides in 2015 and 2016.

Outcomes from NIBIN Investigation Case Files, 2015-2016

Table 8 highlights key figures regarding suspects and arrests in the sample cases. Unless noted otherwise, the case file data were collected during the latter part of 2018 and reflect outcomes as of that time.

Based on the population estimates derived from the 100-case analysis, CGIC and ID-level NIBIN cases in 2015-2016 involved a total of 3,502 suspects, including 1,080 (31%) that police could identify by name.[21] These statistics again underscore the concentration of a large amount of serious gun offending among a very small percentage of Milwaukee's population. More specifically, the 3,502 suspects in these cases account for only 0.6% of Milwaukee's full population of 595,351 (as estimated in 2017); the named suspects account for just 0.2%.

Table 8: Suspects and Arrests for NIBIN Cases, 2015-2016

	Average per Sampled NIBIN Case	Population Estimate
Suspects	6.03	3,502
Named suspects	1.86	1,080
Arrests (total)	1.41	816
Arrests for homicide	0.17	100
Arrests for RES	0.57	332
Implicated offenses (total)	2.30	1,335

Estimates based on a stratified random sample of 100 NIBIN cases. Averages weighted for sampling.

Police made 816 total arrests in these cases, thus apprehending three-quarters of named suspects and about one quarter of all suspects. These arrests included 100 arrests for homicide and 332 arrests for reckless endangerment (RES) incidents, which include non-fatal shootings and other attempted shootings. Hence, investigators made 1 corresponding arrest for every 1.3 NIBIN-related homicides, every 2.1 non-fatal RES incidents, and every 2.7 NIBIN-related incidents overall.[22]

In some regards, these arrest counts may understate the full impact of these investigations on incapacitating active offenders and generating deterrence. Many arrested offenders were implicated in other offenses for which they were not formally arrested or charged. These

---

[21] Important to note, the 2,422 unidentified suspects should be considered an upper bound of possible suspects. Since these suspects were not identified, the total may not be representative of unique suspects.

[22] These figures also suggest that investigators cleared roughly 37% of all NIBIN-related incidents by arrest (816/2199), including 77% of NIBIN-related homicides and 47% of NIBIN-related non-fatal shootings. However, these are maximum estimates because some arrestees may have been arrested for the same incidents.

included other incidents to which they were linked through NIBIN, as well as other incidents with no NIBIN linkages. As shown in Table 8, the 816 arrests made through the NIBIN-related investigations involved offenders who were implicated in 1,335 offenses overall.

On the other hand, these figures can also overstate the success of NIBIN-related investigations in apprehending offenders and ultimately securing convictions. Many suspects could not be identified or arrested. As shown above, investigators were unable to arrest roughly one quarter of the named suspects, as well as thousands of additional suspects that could not be identified despite NIBIN linkages.

Further, a significant portion of the NIBIN-related arrests resulted from the 42% of NIBIN cases in which the firearm linking the related incidents was not recovered. In such cases, NIBIN links may have guided investigators to suspects, but they were not the key to closing the cases through arrest. Other forms of witness and physical evidence (besides shell casings and firearms) were also typically collected in NIBIN-related investigations, and they sometimes contributed to or determined the investigative outcomes as well.

Finally, many NIBIN-related arrests did not result in charges brought against the arrestee, and arrestees that were prosecuted were not always convicted and sentenced for committing the shooting incidents to which they were connected.

To illustrate, the study sample of 100 NIBIN cases involved a total of 138 suspects who were arrested (these are unweighted numbers and do not reflect full population estimates). Of those arrested suspects, 80 (58%) were charged, 45 (33%) were not charged by the District Attorney's Office, 12 (9%) were not referred for prosecution by MPD, and 1 (1%) was still pending a charge decision at the time of data collection in 2019.[23] Among 73 suspects who were charged, 55 had been convicted as of the summer of 2019 (the outcomes of 4 cases were still pending).[24] This convicted group represents 75% of those charged and 42% of those who were arrested within the 100-case sample.[25] For the 45 arrested suspects who were not charged, insufficient evidence was cited for the vast majority as the reason why the District Attorney's Office declined to prosecute. This was sometimes due to uncorroborated testimony of co-actors or victims and/or witnesses refusing to cooperate with the investigation.

Among the convicted offenders, 17 were convicted of homicide, attempted homicide, and/or a non-fatal shooting (RES). Twelve were convicted for armed robbery (three of whom also had RES charges). The remainder were convicted for a variety of other crimes mostly related to illegal possession, carrying, or use of a firearm. Some were convicted of non-gun crimes like drug or auto-related offenses.

---

[23] Rounded percentages sum to more than 100.
[24] Conviction data was only available for 73 of the 80 charged suspects at the time of this analysis.
[25] Percentage of arrested suspects who were later convicted was calculated based on a total of 131 arrested suspects. Seven (7) suspects were dropped from this calculation due to missing conviction data.

In sum, there are many complexities in judging the value of NIBIN-related evidence to gun crime investigations. To illustrate, the synopses below describe a series of example cases that illustrate both the benefits and limits of NIBIN evidence as an investigative tool.

NIBIN Case Example #1

In September 2016, MPD officers responded to a call of shots fired outside of a residence. Upon arrival, officers recovered three different calibers of spent casings, but they were unable to locate the suspects or obtain detailed suspect descriptions during canvassing.

In December 2016, officers were dispatched to another call of shots fired. Officers recovered three 40 caliber casings, but they were unable to locate a victim, witnesses to the shots fired, video evidence, or any objects struck by gunfire. Four days later, officers responded to a person suffering from a self-inflicted gunshot wound in his leg after his firearm accidentally discharged while he was trying to secure it in his vehicle's glove compartment. Officers recovered the fired shell casing, but the firearm was given to the subject's girlfriend for safekeeping (no crime had been committed with the firearm as the injured subject had a valid conceal carry permit).

In January 2017, officers were dispatched to a ShotSpotter alert. Officers recovered six 40 caliber casings, but they were unable to locate any victims, witnesses, suspects, or objects struck by gunfire.

On February 15, 2017, NIBIN technicians entered the casing recovered from the self-inflicted gunshot wound into NIBIN and found a correlation to the first two shots fired incidents. Shortly thereafter, the casings from the shots fired incident in January were entered into NIBIN and correlated with the three previous incidents.

Based on the NIBIN leads linking the injured subject to the three shootings, CGIC investigators obtained a warrant for the suspect's arrest. On March 22nd, MPD was able to locate and arrest the suspect, and the suspect's firearm was recovered during a search of the suspect's residence. Armed with the knowledge of the linked incidents through NIBIN, investigators were able to question the suspect about each of the shootings, and the suspect ultimately confessed to his involvement in each. The suspect subsequently entered guilty pleas for 2 lesser counts of disorderly conduct while armed.

This red level case demonstrates the value of NIBIN in providing investigators with new suspects and evidence through linked incidents that otherwise may appear completely unrelated. It also underscores the importance of MPD's policy of collecting and submitting all ballistic evidence into NIBIN. As a result, a new NIBIN lead was generated that provided CGIC investigators with a new suspect for two previous shooting incidents. Without the NIBIN leads, the suspect would not have been identified because no other witness or evidence existed tying the suspect to the shootings, and the firearm would not have been recovered.

NIBIN Case Example #2

In October 2015, MPD officers responded to an armed robbery. A male subject was robbed at gunpoint, but officers learned that the victim had chased and fired shots at the robbery suspects as they were fleeing. Officers recovered two 9mm casings and arrested the shooting suspect (Arrestee #1), who was the initial victim of the robbery, but officers did not recover the firearm used in the shooting.

In November 2015, MPD responded to two separate shooting incidents, one involving unoccupied vehicles struck by gunfire and the other involving a shot fired following a fight. In both incidents, officers were unable to obtain a detailed suspect description, and no video evidence was recovered. Officers recovered a total of seven 9mm casings from the two incidents.

In January 2016, officers were dispatched to an armed robbery. A suspect reportedly entered a tavern, demanded money from the bartender and patrons, and fired one shot into the ceiling of the bar before fleeing. Officers recovered one 9mm casing, a video of the suspect, and a detailed suspect description from the victims. Over the next 9 days, three more armed robberies of local restaurants and bars occurred, all linked through NIBIN.

Following the last robbery on January 31st, CGIC investigators learned of a potential suspect through a regular CGIC collaboration meeting with detectives investigating an unrelated armed robbery incident. The suspect matched the description of the armed robbery suspect in the NIBIN-linked incidents. Less than a day later, CGIC investigators were able to piece together the identity of the suspect.

On February 1st, ATF CGIC task force officers arrested the suspect (Arrestee #2) at his residence, but the firearm used in the NIBIN case was not recovered. The following day, the investigators questioned the suspect about the NIBIN-linked robberies, and the suspect confessed to his involvement in each. The suspect was subsequently charged with felonies for each of the incidents.

Seven months later in September 2016, MPD patrol officers observed a traffic violation and conducted a traffic stop. During the stop, officers observed a firearm partially hidden underneath the driver's seat. Officers arrested the driver (Arrestee #3), who was eventually charged with carrying a concealed weapon without a permit. The recovered firearm was test-fired, and the casing correlated to the previous shooting and armed robbery incidents.

This NIBIN case highlights the challenging nature of gun crime investigations in Milwaukee. The red level case involved eight incidents over an 11-month period in three different patrol districts, and it involved the firearm changing hands between three, potentially four, suspects. However, due to the collaboration between detectives enabled by the CGIC, as well as MPD's policy of processing all recovered crime guns and entering ballistic evidence into NIBIN, MPD successfully arrested a serial robber and successfully closed the NIBIN case with the firearm recovery.

NIBIN Case Example #3

Case example #3 is a black level NIBIN case that involved five mostly gang-related incidents. Beginning in March 2016, officers responded to two incidents. The first incident involved a non-fatal shooting after a vehicle pulled up to the victim and occupants opened fire with two different firearms. The second incident involved shots fired from a minivan occupied by three African-American males who were chasing another vehicle. Officers recovered spent casings from both incidents, but officers were unable to obtain detailed suspect descriptions.

A third shooting incident occurred one month later in April 2016. Officers responded to shots fired into an occupied residence that very nearly struck one occupant. Due to an ongoing feud, a potential suspect (Suspect #1) was identified and provided to police. Officers recovered two different calibers of spent casings, but they were unable to locate any video of the incident.

Four days later, officers responded to shots fired. A witness observed occupants of a vehicle driving through an alley and shooting at someone in a yard. The witness was able to provide MPD with a description of the suspect's vehicle and the vehicle's license plate number. MPD traced the license plate, which traced to the residence of Suspect #1. Officers located Suspect #1 and took him into custody. However, witnesses could not positively identify Suspect #1, so he was later released.

Another four days passed, and MPD officers were dispatched to an armed robbery and carjacking. The victim told police five suspects had robbed him at gunpoint and taken his vehicle. MPD saturated the area and successfully located the stolen vehicle. The five suspects attempted to flee, but all were apprehended by police and charged with armed robbery, including Suspect #1 from the previous incidents. Police also recovered a 9mm pistol near one of the suspects, which was ultimately linked through NIBIN to the previous four shooting incidents.

Investigators questioned Suspect #1 about his involvement in each of the NIBIN-linked incidents. Suspect #1 confessed his involvement and identified the following accomplices in each of the incidents:

1. March 2016 Non-fatal Shooting
   a. Suspect #2
   b. Suspect #3
2. March 2016 Shots Fired
   a. Suspect #4
3. April 2016 Shots Fired into Residence
   a. Suspect #4
   b. Suspect #5
4. April 2016 Shots Fired in Alley
   a. Suspect #4
5. April Armed Robbery & Carjacking
   a. Suspect #4

b. Suspect #6
c. Suspect #7
d. Suspect #8

Based on information provided from Suspect #1, MPD subsequently arrested Suspect #2, Suspect #3, Suspect #4, and Suspect #5 for their involvement in the shooting incidents prior to the armed robbery. However, charges were eventually dismissed for Suspect #2, #4, and #5 due to lack of evidence (only evidence was the uncorroborated testimony of Suspect #1). Suspect #3 was not charged for his involvement in the first incident but was instead arrested for violating terms of his probation.

This case again demonstrates how NIBIN linkages can be used to identify multiple suspects and investigative leads in otherwise seemingly unrelated incidents. It also shows, though, how investigators are not always able to gather enough evidence to support charges for each offense a person is suspected to have committed.

NIBIN Case Example #4

In December 2015, officers were dispatched to shots fired. The victim reported his unoccupied vehicle was struck by gunfire while parked in front of his residence. The victim described the suspect as a heavy-set Hispanic male.

In January 2016, officers responded to a non-fatal shooting. The victim had been shot twice while working on a recently purchased vehicle behind his house. The victim indicated the purchased vehicle had previously been involved in a gang dispute. The victim could only identify the suspect as a slim Hispanic male.

In both April and August of 2016, officers responded to a call of shots fired. Officers recovered casings during both incidents, but they were unable to locate any suspects or obtain detailed suspect descriptions.

In September 2016, officers responded to a battery with shots fired. The victim of the incident was punched numerous times in her face by her boyfriend. The boyfriend then walked out of the residence and discharged a firearm into the air. The boyfriend, an African-American, was arrested, but he did not match the description of the Hispanic male shooter in the previous NIBIN-linked incidents. The firearm used by the boyfriend was not recovered.

MPD investigators presented the case against the boyfriend to the District Attorney's (DA) Office, but the Assistant District Attorney declined to prosecute the case for battery or endangering safety by use of a dangerous weapon (ESBUODW) due to the victim's refusal to cooperate with the investigation. The suspect was subsequently only charged with being a felon in possession of a firearm.

In January 2018, almost a year and a half later, MPD officers responded to a ShotSpotter alert. After deploying an ATF explosive detection canine to locate ballistic evidence, officers were able to recover seven 9mm casings. However, officers were unable to locate a victim, witnesses, objects struck by gunfire, or a video of the incident during canvassing.

At the time of this evaluation in 2018, this NIBIN case remains open (the firearm has not been recovered) with no investigative leads.

This black level case involves six incidents spanning more than two years (the majority of those incidents occurring within a 9-month span in one police district). The case illustrates that, despite NIBIN linking these incidents, successful investigation is still reliant on physical evidence and/or testimony from witnesses and victims to identify, arrest, and charge those responsible for each gun crime incident. Successful identification and apprehension of suspects in this case is further complicated by the apparent movement of the firearm between multiple suspects. This shows how NIBIN can be used to identify related shooting incidents through a particular firearm, but NIBIN linkages do not necessarily prove a particular person was the shooter in each of the linked incidents.

Trends in Clearances for Gunfire Crimes, 2011-2017

The final component of the investigative analysis examines whether the CGIC program has improved clearances for gun crimes since its primary launch in 2014. This analysis tracks clearances by arrest for three major categories of gunfire incidents including gun homicides; non-fatal shootings as approximated by RES incidents;[26] and shots fired incidents as measured by ESBUODW incidents. The analysis examines trends from 2011 through 2017, thus including three years of pre-CGIC data and four years of post-program data. The use of pre-program data serves to highlight any secular trends in clearance rates that may have preceded the CGIC program.

In total, this analysis is based on 739 gun homicides, 3,495 nonfatal shootings, and 13,492 shots fired incidents identified through MPD's RMS for the study period. To calculate the percentage of incidents cleared by arrest, incident reports were linked to arrest files by their incident numbers to determine which of these incidents resulted in arrest and when. The incident data were also linked to MPD's CGIC databases to identify incidents that were connected to NIBIN cases. The incident and arrest data were collected as of early 2018 and thus reflect case outcomes as of that time. Accordingly, clearance rates for 2017 should be interpreted cautiously because incidents that occurred in 2017 had less follow-up time for clearance during the study period than other years in the evaluation period. To address this limitation, a clearance ratio analysis was also conducted which examined the number of arrests by offense type in a given year to the number of incidents committed by offense type for that year.[27] This clearance ratio measure is calculated similarly to the FBI Uniform Crime Reporting (UCR) program clearance rate calculation.

---

[26] Shootings and attempted shootings cannot be differentiated in the RMS data that were used for this analysis.
[27] This method of analysis may include arrests for offenses that were committed in prior years.

Calculating gun crime clearance in this manner ensures each year of the evaluation period is equivalent in the amount of follow-up time available to investigators.

The results presented below track trends by year in the percentage of incidents resulting in arrest for each offense type (percentage cleared) and the ratio of arrests to offenses (clearance ratio). We particularly focus on whether clearances by arrest improved for gunfire crimes following large-scale initiation of the CGIC in 2014. The analysis also differentiates between post-2013 trends in NIBIN-related cases and other cases (i.e., those with no NIBIN links) to determine if any observed changes in overall clearances were due specifically to the former.

As shown in Table 9, the share of gun homicides cleared by arrest varied between 64% and 73% during the study years. Clearance rates for nonfatal shootings ranged from 32% to 39%, while those for shots fired incidents ranged from 9% to 22%.[28] In general, there were no upward trends in the percentage of incidents cleared during the post-CGIC period (2014-2017) for any of the offense types. Clearances for gun homicides and shots fired incidents were noticeably lower during the post-program period. However, the clearance rates for shots fired cases may be misleading because many more of these incidents, which were previously unreported, were being discovered and reported following the increase in the ShotSpotter coverage area in 2014, as well as changes to MPD policy requiring officers to file reports and recover casings for each incident. As such, the decline in ESBUODW clearances may be largely due to this reporting effect.

Table 9: Clearance Rates for Gun-Related Crimes, 2011-2017

Year	Homicides Cleared	RES Cleared	ESBUODW Cleared
2011	69.86%	39.09%	22.06%
2012	70.33%	34.99%	18.80%
2013	69.57%	37.34%	20.01%
2014	72.73%	31.62%	13.60%
2015	64.39%	34.80%	10.68%
2016	67.81%	34.09%	10.19%
2017	66.98%	33.98%	9.02%

Based on 739 gun homicides, 3,495 RES incidents, and 13,492 ESBUODW incidents, all of which involved a firearm

Table 10 presents figures from the clearance ratio analysis from 2011-2017. Arrests declined in proportion to shots fired incidents during the post-CGIC period, following a similar downward trend shown in Table 9. However, arrests generally increased in proportion to non-fatal shootings following a drop in 2014.

---

[28] As a caveat, these figures may overstate clearance rates to the extent that these arrests did not result in charges filed against the arrestees.

Table 10: Arrests to Crimes Ratios by Offense, 2011-2017

Year	Homicides Cleared	RES Cleared	ESBUODW Cleared
2011	0.56	0.36	0.21
2012	0.71	0.36	0.18
2013	0.59	0.36	0.20
2014	0.71	0.31	0.13
2015	0.61	0.35	0.11
2016	0.69	0.34	0.10
2017	0.90	0.37	0.10

Based on 739 gun homicides, 3,495 RES incidents, and 13,492 ESBUODW incidents, all of which involved a firearm

Table 11 distinguishes between the percentage of incidents cleared by arrests with and without NIBIN links for the post-program years. Although there is no apparent evidence of NIBIN-related improvements associated with gun homicide or shots fired investigations, there are indications that NIBIN has enhanced nonfatal shooting investigations. The clearance rate for shootings with NIBIN leads climbed from 27% in 2014 to nearly 42% in 2017. In contrast, clearance rates for nonfatal shootings without NIBIN leads generally trended downward. In discussions with MPD, MPD indicated the CGIC would likely have the greatest impact on RES investigations since homicide investigations already received a significant amount of manpower and investigative resources with or without NIBIN leads. The results in Table 11 seem to support this assumption.

Table 11: Clearance Rates for Gun-Related Crimes by NIBIN Status, 2014-2017

Year	Homicides Cleared, NIBIN Link	Homicides Cleared, Non-NIBIN	RES Cleared, NIBIN Link	RES Cleared, Non-NIBIN	ESBUODW Cleared, NIBIN Link	ESBUODW Cleared, Non-NIBIN
2014	79.31%	70.00%	27.39%	33.52%	9.61%	14.98%
2015	68.75%	61.90%	31.72%	36.50%	5.23%	13.37%
2016	62.07%	71.59%	36.17%	32.94%	7.72%	11.60%
2017	65.79%	67.65%	41.55%	31.47%	6.11%	9.86%

Only incidents involving a firearm were used when examining non-NIBIN linked incidents

Table 12 presents the clearance ratio analysis for offenses by NIBIN status from 2014-2017 and shows a similar upward trend in clearances for RES offenses with NIBIN links.

Table 12: Arrests to Crimes Ratios for Gun-Related Crimes by NIBIN Status, 2014-2017

Year	Homicides, NIBIN Link	Homicides, Non-NIBIN	RES, NIBIN Link	RES, Non-NIBIN	ESBUODW, NIBIN Link	ESBUODW, Non-NIBIN
2014	0.72	0.70	0.24	0.34	0.08	0.14
2015	0.60	0.61	0.30	0.38	0.05	0.13
2016	0.62	0.74	0.39	0.31	0.07	0.12

Section IV: Evaluation of Milwaukee's Crime Gun Intelligence Center

| 2017 | 0.89 | 0.90 | 0.45 | 0.34 | 0.09 | 0.10 |

Only incidents involving a firearm were used when examining non-NIBIN linked incidents

Additional analyses were conducted based only on investigations that were not cleared by arrest on the day of the incident. The rationale for this step is that same-day clearances, which constitute 45% of all clearances for the crime types under study, likely reflect investigations in which the offender was caught at the scene or shortly afterwards while fleeing. NIBIN linkages would seem to be more helpful, in contrast, for investigations that require additional investigative follow-up effort.

Restricting the sample to crimes with follow-up investigations did not produce dramatically different trends in clearances overall (Tables 13 and 14). However, it is notable that clearance rates for nonfatal shooting cases (Table 13) improved steadily during the CGIC years (rising from 22.6% in 2014 to 26.8% in 2017) after hitting a low point during the first full year of the NIBIN program and the implementation of the CGIC in 2014. Similarly, the clearance ratio analysis presented in Table 14 shows arrests increasing in proportion to RES offenses during the years of the CGIC, rising to the highest ratio in 2017 since before 2011.

Table 13: Clearance Rates for Gun-Related Crimes Not Cleared Same Day, 2011-2017

Year	Homicides Cleared	RES Cleared	ESBUODW Cleared
2011	63.33%	30.20%	11.16%
2012	63.51%	23.81%	9.39%
2013	63.64%	26.60%	8.74%
2014	68.24%	22.60%	6.95%
2015	59.48%	24.89%	5.30%
2016	60.83%	25.85%	4.55%
2017	60.67%	26.80%	4.01%

Based on 621 gun homicides, 3,061 RES incidents, and 12,505 ESBUODW incidents, all of which involved a firearm

Table 14: Arrests to Crimes Ratios for Gun-Related Crimes Not Cleared Same Day, 2011-2017

Year	Homicides	RES	ESBUODW
2011	0.47	0.27	0.10
2012	0.65	0.25	0.09
2013	0.51	0.25	0.09
2014	0.66	0.22	0.06
2015	0.55	0.25	0.05
2016	0.63	0.26	0.04
2017	0.88	0.30	0.05

Based on 621 gun homicides, 3,061 RES incidents, and 12,505 ESBUODW incidents, all of which involved a firearm

Section IV: Evaluation of Milwaukee's Crime Gun Intelligence Center

Tables 15 and 16 provide additional indications that NIBIN has enhanced follow-up investigations of nonfatal shootings. Focusing on the post-program years, clearance rates (Table 15) rose from 23.5% in 2014 to 35.7% in 2017 for nonfatal shootings that had NIBIN hits. This is a relative improvement of 52% (though see caveats below about the interpretation of this trend). A similar improvement was shown for arrests relevant to RES offenses in the clearance ratio analysis presented in Table 16. There were no sustained improvements for shootings that did not have NIBIN hits, and these crimes had much lower clearance rates than did NIBIN-related incidents during 2016 and 2017. The separation of trends in clearances for shootings with and without NIBIN hits is also illustrated graphically in Figures 1 and 2.

Table 15: Clearance Rates for Gun-Related Crimes Not Cleared the Same Day by NIBIN Status, 2014-2017

Year	Homicides Cleared, NIBIN Link	Homicides Cleared, Non-NIBIN	RES Cleared, NIBIN Link	RES Cleared, Non-NIBIN	ESBUODW Cleared, NIBIN Link	ESBUODW Cleared, Non-NIBIN
2014	78.57%	63.16%	23.49%	22.15%	6.49%	7.11%
2015	67.39%	54.29%	24.85%	24.91%	3.36%	6.32%
2016	57.69%	63.24%	29.41%	23.84%	5.57%	3.94%
2017	59.38%	61.40%	35.66%	23.83%	3.47%	4.17%

Based on 410 gun homicides, 1,888 RES cases, and 9,583 ESBUODW cases. All incidents involved the use of a firearm.

Table 16: Arrests to Crimes Ratios for Gun-Related Crimes Not Cleared the Same Day by NIBIN Status, 2014-2017

Year	Homicides, NIBIN Link	Homicides, Non-NIBIN	RES, NIBIN Link	RES, Non-NIBIN	ESBUODW, NIBIN Link	ESBUODW, Non-NIBIN
2014	0.71	0.63	0.19	0.23	0.05	0.07
2015	0.59	0.53	0.23	0.27	0.03	0.06
2016	0.58	0.66	0.33	0.22	0.05	0.04
2017	0.88	0.88	0.40	0.27	0.06	0.05

Based on 410 gun homicides, 1,888 RES cases, and 9,583 ESBUODW cases. All incidents involved the use of a firearm.

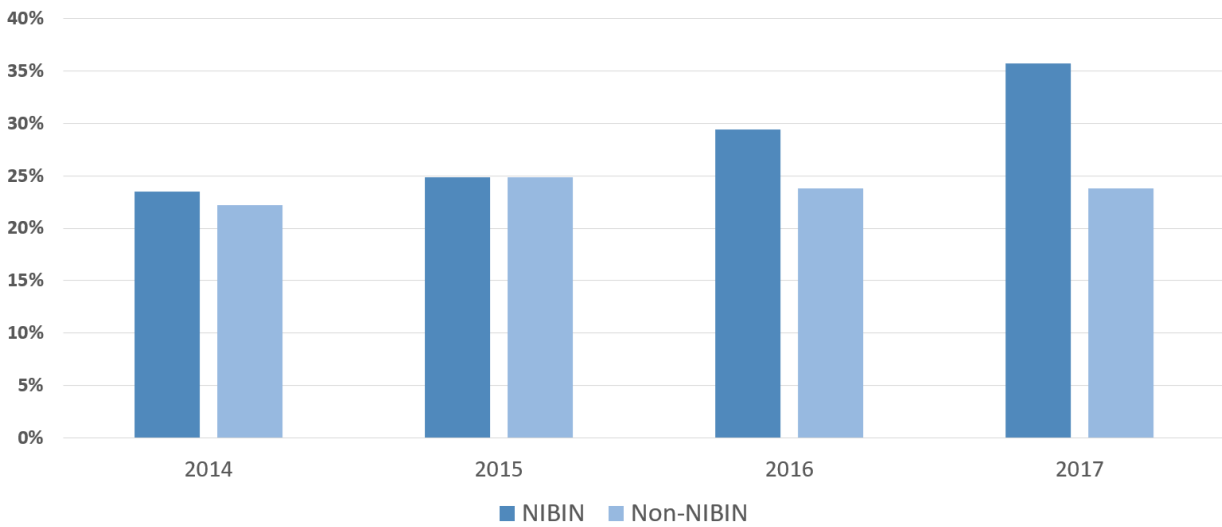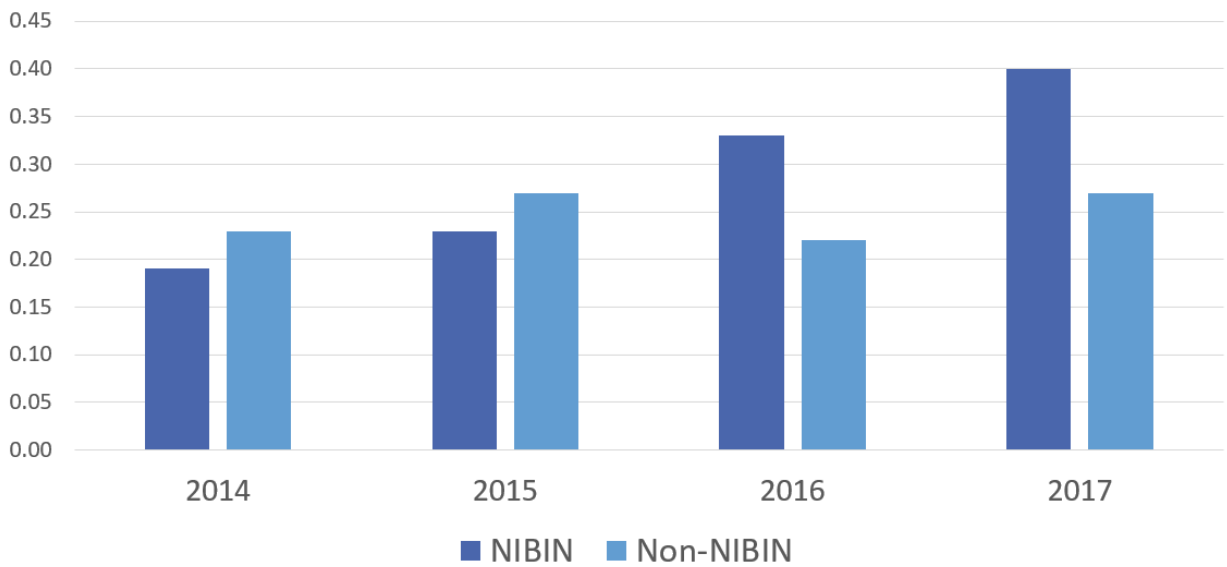**Figure 1: Clearance Rates for Non-Fatal Shootings Not Cleared Same Day**

Figure 2: Arrests/Crimes Ratio for Non-Fatal Shootings Not Cleared Same Day

As a cautionary note, closed investigations with NIBIN hits may reflect both cases in which NIBIN links guided investigators to suspects and cases in which suspects were arrested by other means

and post-arrest NIBIN testing illuminated links to other incidents.[29] With the steady increase in NIBIN testing over time, both types of outcomes may have contributed to the upward trend in clearances for NIBIN-related shootings, though this has not been apparent with gun homicides or shots fired cases. (It is difficult to tease out these subtleties in RMS data.) Accordingly, caution is warranted in interpreting the figures presented above. Nevertheless, the overall improving clearance trend for shooting investigations with follow-up (shown in Tables 15 and 16) provides additional evidence, albeit tentative, that NIBIN testing and targeted CGIC and ID investigations are measurably improving the outcomes of shooting investigations. Further, this improving trend has been happening at a time when nonfatal shootings have been rising (see annual trends below), creating greater caseloads for investigators.

Impacts of the CGIC on Gun Crime in Milwaukee

The final component of the evaluation study investigated whether CGIC enforcement activity has reduced gun crime in Milwaukee. In principle, the use of NIBIN testing to guide investigations should help MPD investigators target and apprehend the city's most active shooters and networks, potentially producing both incapacitation and deterrence effects that reduce gun crime. To test for such effects, the research team examined the relationship between NIBIN-related arrests and shootings within MPD districts over several years.

### *Descriptive analysis of trends in gunfire crimes, 2011-2017*

As a first step in this analysis, Table 17 and Figures 3 and 4 present annual trends in gunfire crimes from 2011 through 2017 as measured for the city overall. This analysis is based on 17,726 incidents recorded in the MPD's RMS in which the primary offense was firearm homicide, nonfatal shooting or attempted shooting (RES), or shots fired (ESBUODW).[30]

---

[29] Both outcomes arguably represent positive developments. The former suggests that NIBIN links are helping to solve more investigations, and the latter suggests that investigators have been successful in apprehending active offenders.

[30] These figures are incident counts and are based on the most serious offense that occurred during each incident. For example, a homicide and non-fatal shooting that occurred as part of the same incident would be counted here as a homicide.

*Table 17: Trends in Gunfire Crimes in Milwaukee, 2011-2017*

Offense	2011	2012	2013	2014	2015	2016	2017	Total
Nonfatal Shootings (RES)	463	443	458	506	523	531	571	3,495
Shots Fired (ESBUODW)	807	1,117	1,384	1,985	2,659	2,778	2,762	13,492
Firearm Homicides	73	91	92	99	132	146	106	739
Total	**1,343**	**1,651**	**1,934**	**2,590**	**3,314**	**3,455**	**3,439**	**17,726**

Figure 3: Trends in Gun Homicides and Non-Fatal Shootings, 2011-2017
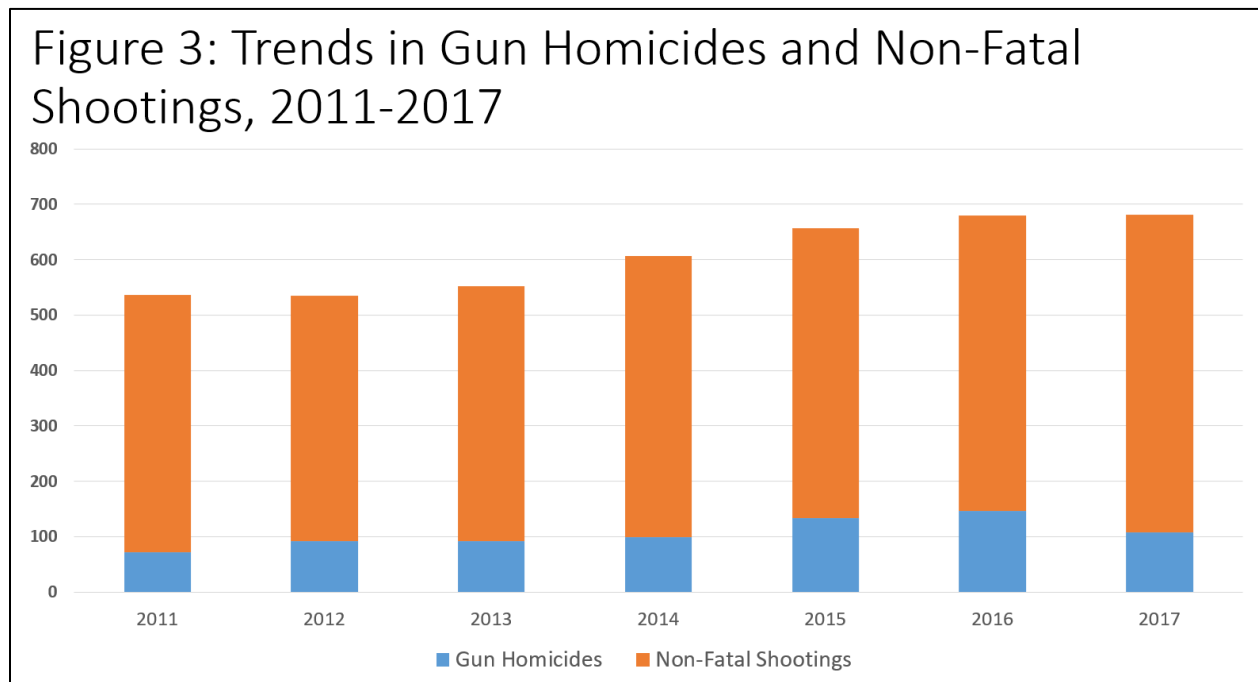
As shown, fatal and non-fatal shootings were relatively stable during the three years prior to the CGIC initiative (2011-2013). Gun homicides and shootings then began increasing in 2014 and surged notably in 2015 and 2016. The overall trend for shootings had begun to level off in 2017, though this reflected diverging trends for gun homicides, which declined, and non-fatal shootings, which continued to increase. Shots fired incidents increased throughout the study period, though that trend also began to level off in 2017. As noted earlier, the increase in shots fired incidents is likely due in significant part to growing efforts by the MPD to investigate and record shots fired incidents using ShotSpotter and systematic patrol follow-up on shots fired alerts and calls. For this reason, the analysis below focuses specifically on fatal and non-fatal shootings, which are less likely to be impacted by such reporting effects.

Figure 4: Trends in Shots Fired Incidents, 2011-2017
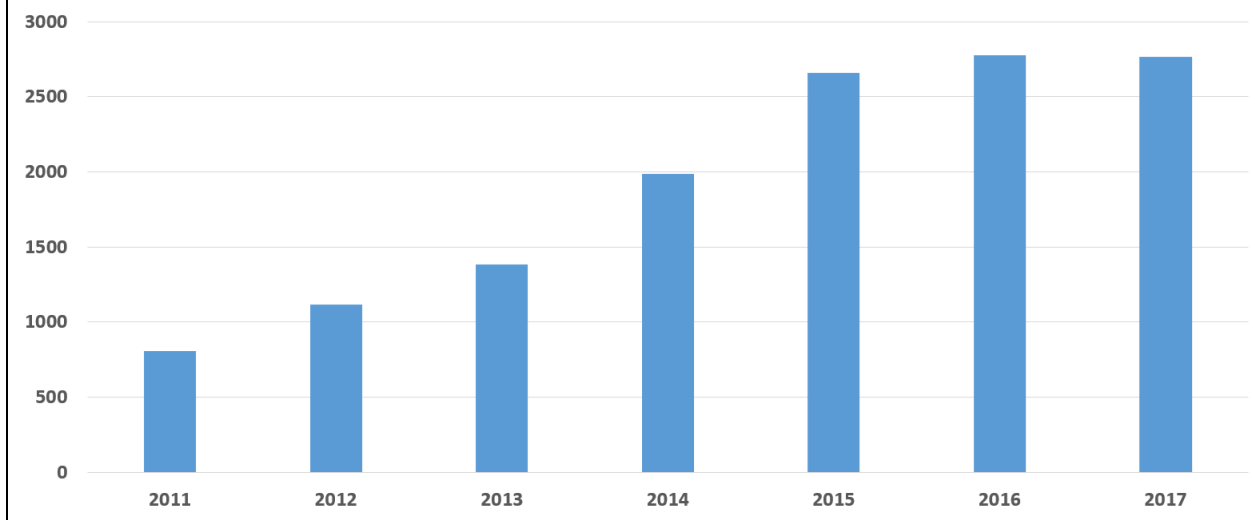
The basic trends in gun violence show no obvious indication of gun crime declining after the initiation of the CGIC program. The general rise in gun violence that coincided with the CGIC program also complicates any effort to assess the program's effects. Although it is possible that NIBIN-related arrests helped to slow the rise in gun violence, it is challenging to statistically differentiate any such impacts from the many social factors and other policing efforts that may have affected trends in gun crime in the city during this time.[31] As described below, our analysis attempts to discern the effects of NIBIN-related arrests on shootings while controlling for these general trends.

Methodological Approach

Because the CGIC program was implemented across the entire city, it was not possible to evaluate the program's effects on gun crime using a comparison group design (e.g., comparing areas of the city that received the intervention to those that did not). This is a significant limitation to the study, as a comparison group design (whether experimental or quasi-experimental) would provide a much stronger methodology for estimating the CGIC program's effects. The phase-in and acceleration of the program over time also create further complexities in conducting before and after evaluation.

In light of these complexities, the research team used correlational time series models to estimate the impact of NIBIN-related arrests on district-level trends in shootings (fatal, non-fatal,

---

[31] Formally investigating the causes of these gun violence trends in Milwaukee was outside the scope of our evaluation, and we have not seen any other studies attempting to explain these trends.

and attempted) across the city for the period of 2011-2017. Hence, the study examines the impact of the CGIC program during its first four years while controlling for baseline levels and trends in gun violence during the three preceding years. The analysis is based on data from MPD districts 2, 3, 4, 5, and 7. Districts 1 and 6 were excluded because they had very few shootings during the study period. Shootings, NIBIN-related arrests, and other variables (described below) were measured at quarterly intervals for each study district, thus creating a time series of 28 data points per district. These data were pooled to estimate cross-sectional time series models (i.e., panel models) in which the units of observation correspond to the combination of district and quarterly time period (5 districts * 28 quarters = 140 total data points).

NIBIN-related arrests connected to shootings or shots fired incidents were used as the primary indicator of CGIC enforcement. Note that these arrests do not include all arrests of suspects in connection with NIBIN cases; rather, they reflect only arrests for shootings or shots fired incidents that could be linked to a NIBIN case through records in the RMS. As such, these arrests may underestimate the full extent of CGIC enforcement activities, though they should represent the most consequential arrests achieved through the program.[32]

Further, there are considerable challenges to examining the relationship between NIBIN arrests and shootings because each is likely to affect the other. On the one hand, we can expect that NIBIN-related arrests may reduce shootings. At the same time, NIBIN-related arrests are likely to rise and fall with changes in gun crime. In other words, higher levels of shootings (in a particular place and/or at a particular time) should produce more ballistics evidence, NIBIN cases, and related arrests, thus creating a positive association (in direction) between shootings and arrests. This will tend to diminish or mask any estimate of the impact that arrests may have in reducing shootings. Yet, statistically disentangling these effects is difficult.

Two approaches were used to mitigate this problem. First, NIBIN related arrests were measured both as counts and as a rate per shooting. The latter measure provides some indication of whether NIBIN-related arrests were rising or falling relative to the level of shootings at that time and place. This is referred to below as the arrest ratio measure.[33] Second, and most importantly, the primary models highlighted below focus on the lagged effect of arrests on shootings. Specifically, the models examine the effects of arrests in district (d) during quarter (t) on shootings in district (d) during quarter (t+1). As a caveat, this approach is likely to underestimate the full impact of NIBIN arrests because it misses any effects that arrests at quarter (t) may have had on shootings during quarter (t). However, it has the benefit of avoiding the reverse causality problem noted above (i.e., shootings tomorrow do not cause arrests today). Further, incidents

---

[32] During the program years (2014-2017), these arrests averaged between four and five per quarter across the study districts.

[33] While the ratio measure has merits, estimation of its effect on shootings is also susceptible to bias because the measure may go up or down due to changes in shootings that are unrelated to the effects of NIBIN arrests. This can cause the ratio measure to show a spurious negative association with shootings.

that are linked through NIBIN evidence often occur several weeks or months apart, which strengthens the rationale of testing for lagged enforcement effects.[34, 35]

Finally, several additional variables were included in the models to statistically control for other factors that may have affected or been associated with levels, patterns, and trends in shootings. These included measures of non-gun violence (i.e., homicides, assaults, and robberies without guns), serious property crimes (i.e., burglary, auto theft, and larceny), and seasonal effects.[36] In addition, fixed effects were added for districts and years to account for, respectively, time-stable differences between districts and annual changes in shootings that occurred across districts. The fixed effects help to control for additional unmeasured factors that caused differences between districts and changes over time independently of NIBIN arrests or other factors included in the models.[37]

Main Results

Models were estimated with variables measured in levels and as change scores (i.e., first differences). Models in levels show how the number of shootings in a given district during a given quarter varied as a function of the explanatory variables. The change score models show how

---

[34] To illustrate, in the random sample of 100 CGIC and ID-level NIBIN cases discussed earlier, cases with 2 linked incidents had a median time of 20 days between incidents and an average time of 90 days. In cases with 3 linked incidents, the time from first to last incident had a median 120 days and an average of 183 days.

[35] The research team also attempted to estimate more complex simultaneous equation models which can sometimes be used to disentangle the contemporaneous reciprocal impacts that variables of interest have on one another. In this context, estimating such models requires one to identify a variable that impacts NIBIN arrests but does not have a direct effect on shootings (in other words, a variable that is only associated with shootings through its impact on arrest). The number of NIBIN technicians working on the program per year was tested as a variable that might meet this condition (i.e., more technicians should increase NIBIN tests, matches, and arrests independently of the number of shootings). However, this variable did not perform well in modeling efforts (difficulties were encountered with estimation), likely because it did not vary across districts and because the numbers changed only slightly over time.

[36] The seasons were coded as winter (Jan.-Mar.), spring (Apr.-Jun.), summer (Jul.-Sep.), and fall (Oct.-Dec.).

[37] Preliminary models also included indicators for proactive policing as measured by combined arrests for traffic offenses and disorderly conduct. These arrests were expressed as rates relative to the number of serious violent and property crimes. However, this variable was statistically non-significant and produced very small test statistics. It was therefore removed from subsequent modeling. Population counts were not included in the analysis because they are not available by year or quarter for specific districts. Further, U.S. Census data indicate that Milwaukee's overall population changed very little during the study period. Finally, the research team considered adding lagged shooting measures to the models based on the notion that shootings during one time period might have causal effects on shootings in subsequent periods. However, adding lagged dependent variables to time series models causes well known biases in model results. There are advanced techniques available to counter these biases, but they are not well suited to the type of data that were available for this analysis.

district-level changes in shootings from one quarter to the next were impacted by the explanatory variables.[38]

Table 18 summarizes key results from the various models. For brevity, the table highlights results for the NIBIN enforcement variables only.[39] The table shows the estimated impact of NIBIN arrests, measured as counts or as an arrest ratio per 10 shootings. The table also shows the associated probability (p) value for each coefficient. Customarily, probability values less than 0.05 are viewed as "statistically significant" evidence of a hypothesized relationship (meaning that the relationship is unlikely to be due to chance fluctuations in the data).

In short, the models show that NIBIN arrests were associated with fewer shootings in subsequent time periods. In models using arrest counts, each additional NIBIN arrest during a particular quarter was associated with 0.27 to 1 fewer shooting during the subsequent quarter. Similarly, the models using the arrest ratio variable suggest that each increase of 1 arrest per 10 shootings was associated with approximately 1 fewer shooting during the next quarterly period. However, only one of these coefficients was statistically significant (the estimate for the NIBIN arrest count in the change score model). While not definitive, the results do provide some tentative indications that CGIC enforcement activity has helped to reduce gun violence in Milwaukee despite the general upward trend in shootings. Stated differently, CGIC may be helping to slow and reverse the city's growth in gun violence. The estimates from the arrest count models, for example, suggest that NIBIN arrests may have reduced shootings by roughly 3% to 12% relative to what their levels would have been without the program.[40]

As noted, the estimated effects from these NIBIN arrests may also understate the true impacts because they do not capture the immediate effects of the arrests. However, additional testing did not reveal evidence of more distant lagged effects from these arrests.

---

[38] Preliminary testing showed that the shooting series had stationary means in both levels and first differences. The models control for autocorrelation in the residuals, which was generally modest (in the range of 0.2 to 0.3 in absolute terms). The models in first differences do not include fixed effects for districts (which are removed via the differencing process).

[39] Results for the other variables are not shown but are available upon request.

[40] This assumes that each of the 360 NIBIN arrests for shootings or shots fired incidents that occurred in the study districts prevented 0.27 to 1 shooting that would have otherwise occurred. This would have reduced the overall citywide total during 2014-2017 by 3% to 12%.

Table 18: Impacts of NIBIN-Related Arrests on Shootings

	Models in Levels	**Models with Change Scores**
NIBIN arrest counts	-0.27 (p=.462)	**-1.0 (p=.004)**
NIBIN arrest ratio	-1.0 (p=.381)	-0.94 (p=.348)

Models control for non-gun violence, serious property crime, seasonal effects, general time trends (yearly fixed effects), and stable differences across districts (district fixed effects). Models also control for serial correlation over time. Observations = 130 after adjustment for creation of lagged variables and estimation of serial correlation. Statistically significant results (p<.05) are bolded.

Additional Tests

A number of additional analyses were also undertaken to further examine the relationship between NIBIN arrests and shootings. Most notably, an expanded measure of "indirect" NIBIN arrests was created to test whether NIBIN arrests had wider impacts than those examined above. To illustrate this concept, consider a hypothetical NIBIN case involving three linked incidents. Imagine that two of the hypothetical incidents occurred in District 4 and the third occurred in District 5. Assume further that an offender was arrested for the final incident in District 5 but could not be definitively linked to and charged for the first two incidents. The main NIBIN arrest measure would thus correspond to the arrest for the crime in District 5. However, it is also possible that this arrest had wider effects in District 4 since the offender and/or his associates had quite possibly committed the earlier linked offenses in District 4. Based on this notion, an additional NIBIN arrest indicator was created to capture the effect of the main arrest for the crime in District 5 and the offenses that were indirectly affected (and indirectly cleared one might argue) in District 4. This measure was thus intended to capture all offenses related to a particular arrest and to also provide a means of testing whether NIBIN arrests in one district had impacts in other districts.[41] This expanded NIBIN arrest measure was tested in models like those discussed above (results not shown). However, this alternative measure did not have any statistically significant association with shootings, nor did it produce any stronger evidence of prevention effects. On the contrary, the expanded arrest measure had a positive association with shootings in some models.

---

[41] As discussed previously, a large share of NIBIN cases involve incidents that occurred in multiple districts.

Section V: Discussion and Conclusions

In summary, this evaluation study suggests that the CGIC program in Milwaukee has high strategic value in targeting the city's gun violence prevention efforts. Ballistics evidence generated through NIBIN testing is helping the MPD focus on repeat shooters and networks of active offenders who account for roughly half of fatal and non-fatal shootings in Milwaukee. Hence, the CGIC program has a high ceiling for its potential to reduce gun crime.

NIBIN-related evidence is also helping investigators identify and apprehend more suspects in gun crime investigations. This does not mean that NIBIN evidence is a cure-all for investigating gun crime; cases with NIBIN links do not always produce arrests, nor is NIBIN evidence always critical to closing cases when it is available. Greater coordination and effort focused on NIBIN-related cases have also contributed to better outcomes for these investigations. On balance, nonetheless, systematic collection and analysis of ballistics evidence appears to be a useful strategy for solving cases and illuminating active shooters for further investigation.

NIBIN-related evidence and the CGIC investigative process appear to have been particularly helpful for improving the investigation of non-fatal shootings. After an initial decline in clearances for these crimes in 2014 (due likely to a surge in gun violence throughout the city), they have been increasing during the years of the CGIC initiative. By some measures, clearances for non-fatal shootings in 2017 (the last year studied) were better than those prior to the program, despite the fact that gun violence levels were considerably lower during the pre-program years. Further, these recent improvements have been due specifically to improvements in the clearance of cases with NIBIN-related evidence.

Finally, this study provides tentative indications that NIBIN-related arrests have reduced shootings. However, these findings were not definitive. It was difficult to conduct a rigorous assessment of the program's impacts on shootings given the lack of comparison areas for study (the program was implemented citywide, so it was not possible to compare areas with and without the program). A general rise in gun violence in Milwaukee that coincided with the implementation of the program also complicated efforts to judge the program's impacts.

In light of these findings, longer term study of Milwaukee's CGIC program would seem valuable. The program's effects may well become stronger over time as the MPD's ballistics evidence database grows. Indeed, the rate of matches and leads from recovered ballistics evidence has grown notably during the life of the program. Furthermore, MPD has enacted many changes to its CGIC since the evaluation period to improve the quality and timeliness of gun crime investigations.[42] Hence, the research team recommends additional follow-up study to assess the

---

[42] Since the evaluation period ended in 2017, MPD has reorganized the investigative divisions within its Criminal Investigations Bureau, to include the creation of a new Special Investigations Division (SID) and the reassignment of CGIC personnel. This reorganization has slightly changed the work location responsible for investigating each of the NIBIN case designation levels. Now, instead of cases being assigned to investigation divisions based on the

program's longer-term impacts on shooting investigations and gun crime. If impacts on gun crime can be determined more conclusively, cost-benefit analyses could also be conducted to quantify the program's financial benefits. These could be considerable, as even small reductions in homicides and non-fatal shootings produce very substantial cost savings for society.[43]

Possible Program Refinements

Others (notably, the National Resource and Technical Assistance Center for Improving Law Enforcement Investigations) have studied the CGIC process in Milwaukee and already suggested some refinements in the program's operation (which, in general, the assessment reviewed quite favorably). Therefore, the final comments offered here provide some complementary suggestions that might help to further enhance the program's operations.

One recommendation is to continue and strengthen the use of strategic analyses to target the program's investigations and preventive efforts. Prioritizing cases linked to key offenders (e.g., violent gang members and other known high-rate violent offenders) as well as hot spot locations may help to maximize the preventive value of program arrests.

Further strategic analysis of prior cases might also be undertaken to determine whether it is possible to predict which NIBIN cases are most likely to result in subsequent shootings and perhaps where these incidents are most likely to occur. For example, MPD expressed interest in learning whether NIBIN cases that begin with ESBUODW (shots fired) incidents tend to escalate in offense severity to include RES (non-fatal shooting) incidents and/or homicides. The research team sought to answer this question through an analysis of incidents linked to the full population of 1,915 NIBIN cases within the evaluation period. The results, shown in Table 19 below, generally show the initial occurrence of ESBUODW incidents in a NIBIN case was not a strong predictor of future RES or homicide incidents within the NIBIN case.

---

geography of a crime, cases are assigned based on the types of crimes involved. For example, red level cases with homicides were previously assigned to Metro and CGIC investigators, but under the reorganization, red level cases are now assigned to the Homicide Division and SID's CGIC investigators. Black level cases were previously assigned to North and South Investigations Divisions, but now they could be assigned to Violent Crimes or Robbery Division, depending on the crimes involved. Another change following the reorganization is MPD's new Violent Crimes Division is now responsible for holding the weekly NIBIN meetings and conducting "Shoot Reviews" to examine NIBIN leads and collaboratively identify strategies to target suspects and locations involved in recent gun violence. Furthermore, by April 2018 (after the end of the evaluation period), MPD eliminated the backlog of casings awaiting entry into NIBIN, and MPD is now processing all crime guns within 24 hours and casings within 48 hours. MPD has also seen a cultural change in that investigators are now routinely inquiring about NIBIN leads and prioritizing NIBIN entries.

[43] Research on the costs of crime suggests that every homicide in the United States costs society several million dollars. The full social costs of non-fatal shootings may also exceed $1 million per shooting based on some studies.

Table 19: Probability of RES or Gun Homicide after Initial Occurrence of ESBUODW Incidents in a NIBIN Case

Future Offense	First 2 Incidents are ESBUODWs	First 3 Incidents are ESBUODWs	First 4 Incidents are ESBUODWs
RES	6%	7%	7%
Homicide	2%	2%	5%

While this analysis did not produce anything particularly actionable, this brief examination of the progression of shots fired incidents is one step towards using NIBIN data in a predictive capacity. It may be possible to conduct more sophisticated analyses of this type using detailed information about incidents, circumstances, and actors in NIBIN cases. MPD analysts might also consider using geographic profiling techniques to study patterns of linked gunfire incidents.

Systematically tracking case outcomes and documenting reasons for success or failure (lessons learned) may also help in sharpening program operations and investigations. The MPD already has comparable experience in this regard through its prior work with the Milwaukee Homicide Review Commission.

Finally, monitoring notable increases and decreases in the ratio of NIBIN arrests to shootings across districts might also reveal places where CGIC-related efforts are going particularly well or poorly. Further study of these variations could reveal actions and conditions contributing to success or failure and provide additional lessons to help CGIC staff in their operations.

National Police Foundation
2550 S Clark Street, Suite 1130
Arlington, VA 22202
www.policefoundation.org

Center for Evidence-Based Crime Policy, George Mason University
4400 University Drive, MS 6D12
Fairfax, VA 22030
https://cebcp.org/