EVALUATION OF THE KANSAS CITY CRIME GUN INTELLIGENCE CENTER

Final Report

National Gun Crime Intelligence Center Initiative
Bureau of Justice Assistance, U.S. Department of Justice

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Submitted by

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EXECUTIVE SUMMARY

The Kansas City, Missouri Police Department (KCPD) launched a Crime Gun Intelligence Center (CGIC) initiative in response to increasing levels of crime to directly impact the levels of firearm-related violence within the city. The KCPD received Bureau of Justice Assistance (BJA) grant to implement CGIC, in part, because of existing partnerships in the city, the existing infrastructure of the National Integrated Ballistic Information Network (NIBIN) and eTrace, and because of the disproportionately high level of violence – particularly firearm-involved violence – in the city. This report addresses the implementation of CGIC outputs and outcomes in Kansas City between 2017 and 2020.

CGIC is a regional, multi-agency approach to gathering, managing, analyzing, and utilizing information or intelligence that may be derived or associated with firearms. The CGIC business model involves collaborative partnerships among local agencies - including the KCPD, Bureau of Alcohol, Tobacco and Firearms (ATF), US Attorney's Office for the Western District of Missouri, and the Jackson County Prosecutor's Office – to enhance the process of gathering, analyzing, and utilizing ballistic evidence.

The CGIC model, which emphasizes 1) the comprehensive collection of ballistic evidence, 2) timely entry and correlation and crime gun tracing, 3) ATF analysis, 4) identification of NIBIN leads, 5) collaboration between local and federal law enforcement, and 6) prosecution of offenders who commit gun crimes, was implemented on September 3, 2018. Several overarching observations include:

- There is a culture of cooperation and partnership within CGIC, particularly between the police and federal partners.
- The number of ballistic evidence acquisitions and NIBIN leads has increased in Kansas City since the implementation of CGIC.
- Over time the number of NIBIN acquisitions that generated leads has increased.
- Hit rates and firearm tracing was largely not impacted by the implementation of CGIC.
- NIBIN leads are generated quicker, thereby creating opportunities for timely, actionable intelligence.
- Detectives express optimism on the potential of CGIC's contributions to investigations, but this is not universal. Detectives are less likely to believe CGIC is helpful in assault cases.
- While CGIC intelligence can be helpful in some investigations, it lacks universal utility.

- CGIC represents a culture shift for many. Utilizing ballistic information is not universal, and there remains a learning curve on how to best analyze, disseminate, and utilize this during firearm-related investigations.

This report provides an overview of crime in Kansas City (section 1) and an overview of the CGIC business model (section 2). The operationalization, organizational arrangements, and processes of CGIC in Kansas City are detailed (section 3). We examine evidence of CGIC inputs and outputs using a series of independent data sources (section 4). This report provides results from a survey conducted of detectives who have utilized NIBIN within their case assignments (section 5), and results from private interviews with stakeholders across partnering agencies are summarized and interpreted (section 6).

SECTION 1: VIOLENT CRIME IN KANSAS CITY

This section provides an overview of population characteristics and violent crime trends in Kansas City. The purpose of this section is to contextualize Kansas City and its firearm-related violence.

Kansas City is the largest city in Missouri, with 495,327 residents and a coverage area of 319 square miles. The Kansas City metropolitan area has over 2 million and comprises two states, nine counties, and numerous state, local, and federal law enforcement agencies. The KCPD had a workforce of 1,915 people, including 1,296 sworn members and 619 civilian employees, and was divided into six separate patrol divisions (Kansas City Missouri Police Department, 2019).

According to the 2019 estimates for the U.S. Census[1], Kansas City's population was 29% Black and 10% Hispanic. Approximately 53% of dwellings in Kansas City were owner-occupied, and median home values were $148,500 (and median gross rent was $899). About 82% of Kansas Citians lived in the same house in the previous year. Ninety percent of the people 25 years or older were high school graduates, and 34% were college graduates. Median household income was $52,405, and per capita income was $31,143. Approximately 17% of Kansas Citians lived at or below the poverty line, and because Kansas City is a large, sprawling city, the population density was relatively low (1,460 people per square mile). Crime estimates, to be discussed in greater detail below, were relatively high. On average, Kansas City had 25.1 homicides per 100,000 people, 1,055 aggravated assaults, 1,528 violent crimes, and 6,024 Index I crimes. Table 1.1 provides the general population and descriptive crime information for Kansas City and several other cities. These cities are rough comparisons for Kansas City and are similar sized, non-capital, non-coastal cities located in bi-state regions. This information is provided for contextual purposes and is not used as true comparison cities throughout this study.

To better understand the nature of homicide and violent gun crime in Kansas City, it is helpful to put the contemporary situation into a more extended historical context. We compiled the entire timeline of homicide counts reported to the FBI's Uniform Crime Reports from 1936 to 2018. We merged the homicide counts with decennial population data for the City, published by the U.S. Census Bureau. We interpolated population data for years between decennial censuses and then calculated the homicide rate per 100,000 inhabitants. One general observation about the population of Kansas City since 1936 is important. The population of Kansas City has remained relatively stable across these 82 years. The historic trend resembles a

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[1] https://www.census.gov/quickfacts/kansascitycitymissouri

Table 1.1. Population and Crime Characteristics for Kansas City and Select Other Cities

	Kansas City	Omaha	St. Louis	Louisville	Memphis	Cincinnati	Milwaukee
Census							
Population	495,327	478,192	300,576	617,638	651,073	303,940	590,157
Pecent Black	29%	12%	47%	24%	64%	43%	39%
Percent Hispanic	10%	14%	4%	5%	7%	4%	19%
Percent Owner Occupied	53%	58%	43%	60%	47%	38%	42%
Median Home Value	$ 148,500	$151,100	$131,900	$152,300	$ 97,000	$129,100	$ 118,000
Median Gross Rent	$ 899	$ 896	$ 810	$ 812	$ 884	$ 709	$ 842
Pct same house 1 Yr Ago	82%	82%	81%	84%	83%	75%	82%
Pecent HS Graduate	90%	89%	87%	89%	85%	88%	83%
Percnt College Graduate	34%	37%	35%	29%	26%	36%	24%
Median Household Income	$ 52,405	$ 56,780	$ 41,107	$ 51,307	$ 39,108	$ 38,542	$ 40,036
Per Capita Income	$ 31,143	$ 31,798	$ 28,478	$ 29,681	$ 24,243	$ 29,156	$ 22,605
Pecent below Poverty	17%	14%	24%	17%	27%	27%	27%
Population per Sq. Mile	1,460	3,218	5,158	1,837	2,053	3,810	6,188
Crime Estimates per 100,000							
Homicides	25.1	7.2	59.2	13.4	24.9	21.2	19.8
Aggravated Assaults	1,055	364	1,156	378	1,221	390	903
Violent Crime	1,528	570	1,858	636	1,826	922	1,523
Index I Crime	6,024	4,383	7,949	4,861	7,714	6,239	5,458

Population estimates from 2019 US Census estimates. Crime estimates are 5-year average from UCR, 2014-2018. Incomplete data from Louisville (2018) and Charlotte (violent crime and Index for 2017-2018)

relatively flat line, with two gentle waves that peak in 1971 and 2018. Although there have been slight fluctuations in the population (from a low of 399,178 in 1940 to a high of 507,330 in 1970), the overall trend is flat, especially compared to other cities in the U.S., and stable population counts mean that homicide rates are more closely associated with the homicide counts, and thus comparable across the historical trend.

While the population in Kansas City was relatively stable, homicide rates were not. The homicide timeline for Kansas City reveals four different periods (see Figure 1.1). The first period (from 1936 to 1964) was a time of relative stability, with a mean rate of 9.17 homicides per 100,000. The second period, from 1965 to 1993, was a time of increasing homicide rates (starting from a low of 11.92 per 100,000 in 1966), to a peak of 35.00 per 100,000 in 1993. The third period, from 1994 to 2014, was a period of relative decline, bottoming out in 2014 at a still-too-high rate of 16.60 homicides per 100,000. The fourth period, starting in 2015, has seen increasing homicide rates, to the point that 2017 was the third-highest year on record (at 30.53 per 100,000).[2] It is

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[2] A diversity of crime estimates are presented here to provide context and not for analytical or evaluative purposes, therefore, time periods for different crimes vary based on the availability of reliable data.

within this fourth period of rising homicide rates that the KC CGIC was created. The increase in homicide rates that started in 2015 mirrors an increase in homicide rates in the U.S. overall, and the increases in homicides in KC mirror the large increases in homicides seen in U.S. cities with 250,000 or higher population since 2014 (Rosenfeld and Fox 2019: 213-214).

FIGURE 1.1: Homicide rates in Kansas City per 100,000, 1936-2018

Homicide rate: Kansas City, Missouri, 1936 to 2018 (homicides per 100,000 pop)

Population data (1936-2010) interpolated using decennial Census counts; 2011-2017 counts use Census estimate from 2018
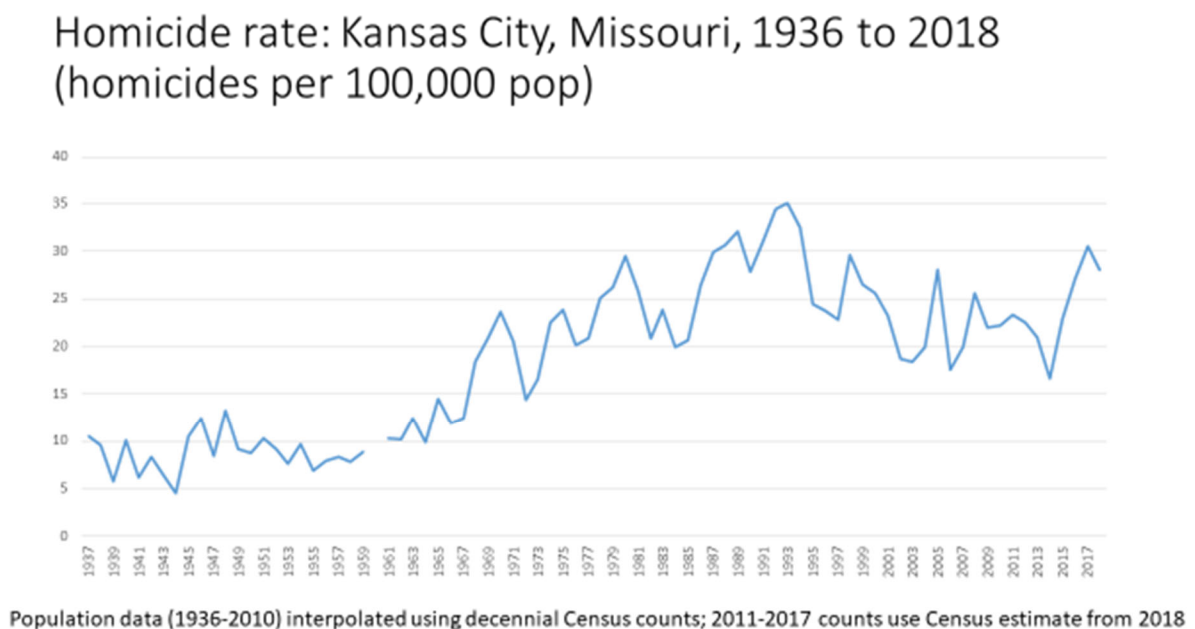
Although the homicide trend line for Kansas City has roughly followed the trend of the U.S., the homicide rate in Kansas City has, since 1970, been far higher than for the U.S. (see Figure 1.2). This figure provides annual homicide estimates per 100,000 residents for Kansas City (in red) and the national average (in blue). The United States has experienced a gentile decline in homicide rates since peaking in the early 1990s. While Kansas City's homicide rate experienced some declines, the slope of the homicide rate decline has not been as steady or steep. For example, in 1993, the national homicide rate was about 9.5 per 100,000 citizens, whereas, in Kansas City, the rate was about 35 per 100,000. By 2018,[3] the national homicide rate had dropped to about 5 per 100,000, but in 2019 Kansas City's homicide rate was 30.7 per 100,000. Kansas City's homicide rate is considerably higher for comparable cities as well. For example, the homicide rate for cities in the same population band as K.C. (250,000 to 499,999 population) in 2017 was 12.1 per 100,000, a year in which K.C.'s homicide rate was 30.5 per 100,000.[4]

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[3] National homicide rates for 2019 were unavailable at the time of publication of this report.

[4] https://ucr.fbi.gov/crime-in-the-u.s/2017/crime-in-the-u.s.-2017/tables/table-16

Figure 1.2 Kansas City and U.S. Homicide Rate Per 100,000, 1970-2019
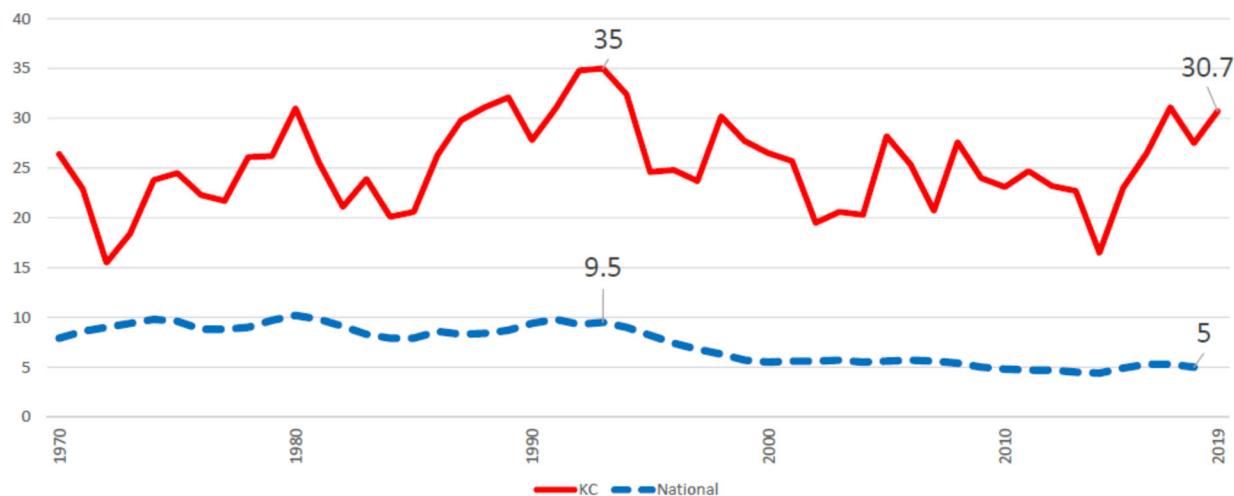
Figure 1.3 presents these data in a slightly different way. This figure estimates the homicide rate ratio for Kansas City to the national average since 1970. A ratio of 1 would indicate that the homicide rate in Kansas City was the same as other cities reporting this information to the FBI. A ratio of 2 would indicate Kansas City's homicide rate was two times higher than the national average. This figure demonstrates that over time the homicide rate has continued to deviate from national trends, and the dotted line indicates the slope of this trend. In 2019, the homicide rate ratio was 6.14, meaning the homicide rate in Kansas City was over six times higher than the national average.

Figure 1.4 presents a more detailed trend of monthly homicides in Kansas City between 2013-2020. Included in this line chart is a trend line of homicide counts per month, and this figure demonstrates a clear upward trajectory in homicides in Kansas City.

Firearms figure prominently in homicides and violent crime nationally and in Missouri. Summarizing homicides in the US, Rosenfeld and Fox (2019: 214) note, "The overall growth in homicides between 2014 and 2016 was almost completely attributable to growth in gun homicides." While a discussion of the role of state gun laws is beyond the scope of this report, it is worth noting for contextual purposes that research has demonstrated a correlation between elements of Missouri's gun laws and homicides (Webster et al., 2014). In Missouri, in 2017, 514 of 596 (86.2 percent) homicides were committed with firearms compared to a national average of 72.6 percent in 2017.[5] The proportion of homicides involving a firearm has increased in Kansas City. Figure 1.5 provides a visual of gun- vs. non-involved homicides in Kansas City between 2014

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[5] https://ucr.fbi.gov/crime-in-the-u.s/2017/crime-in-the-u.s.-2017/tables/table-20; https://ucr.fbi.gov/crime-in-the-u.s/2017/crime-in-the-u.s.-2017/tables/expanded-homicide-data-table-7.xls

and 2019. Each year, the blue bar represents the number of gun-involved homicides, and the orange bar is the number of non-gun involved homicides. During these five years, there were 745 homicides in Kansas City, of which 633 (85%) involved a firearm. The proportion, as well as the absolute number of gun-involved homicides, increase from 55 (72%) in 2014, 86 (79%) in 2015, 106 (83%) in 2016, 126 (85%) in 2017, 125 (93%) in 2018, and 135 (91%) in 2019.

Figure 1.3: Homicide rate ratio (Kansas City: U.S.) (1970-2019)
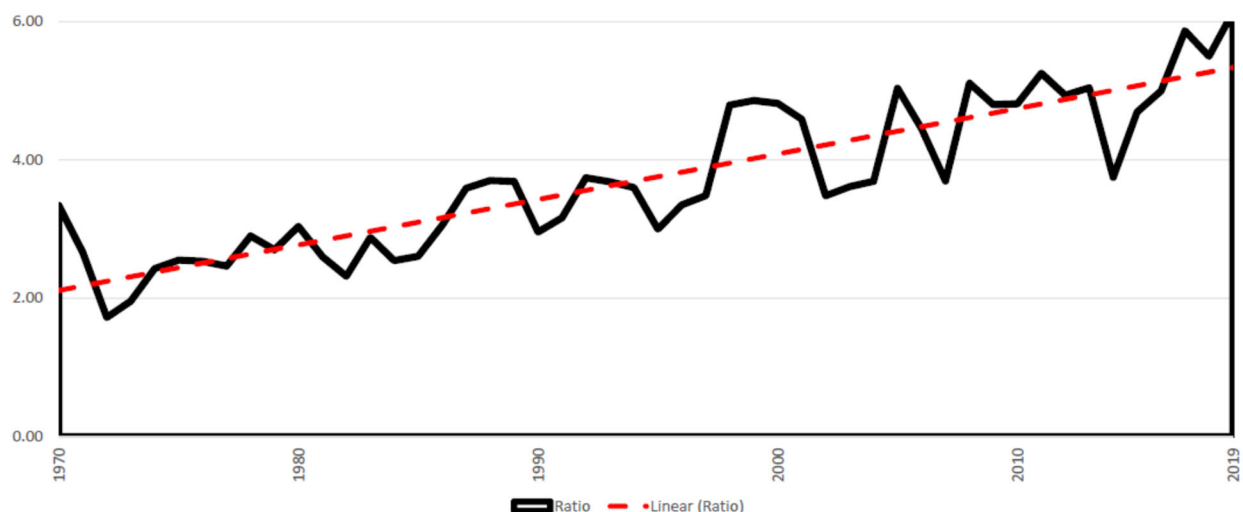
Figure 1.4: Monthly homicides in Kansas City, 2013-2020
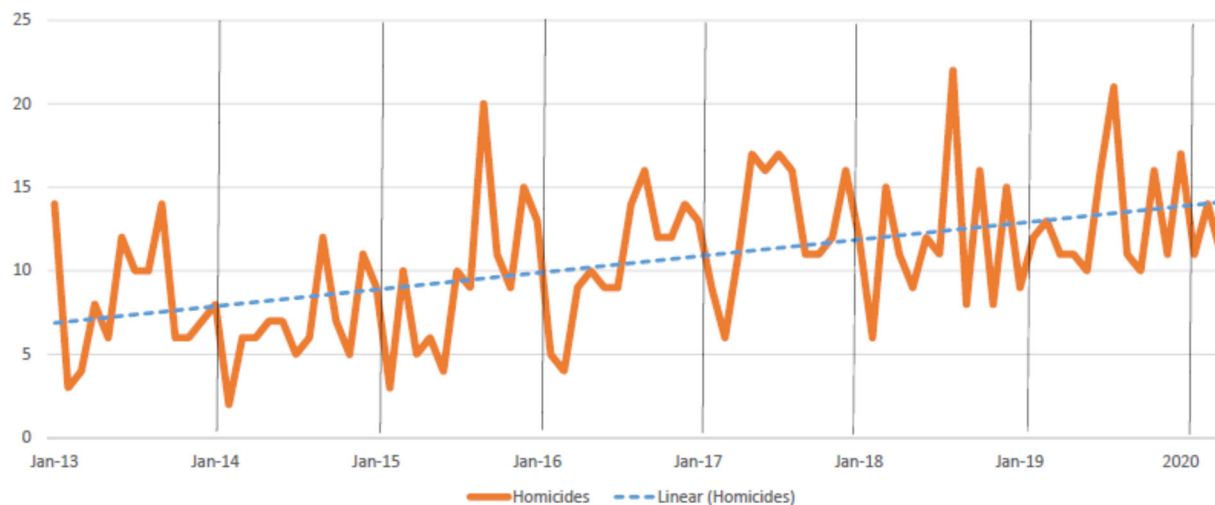
Figure 1.5: Gun Homicides and Non-Gun Homicides in Kansas City, 2015-2019
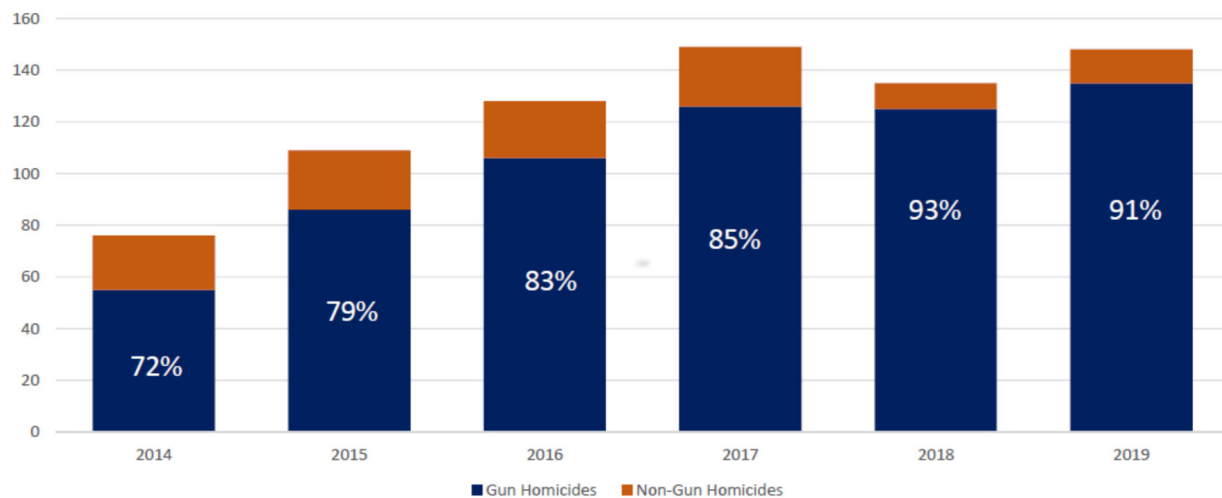
A final component of firearm violence presented here for contextual value is non-fatal shootings (NFS). Non-fatal shootings, referred locally as 'bullet to skin', are defined by the KCPD as non-accidental shooting incidents that result in a person being physically struck by a bullet that does not result in death, thus distinguishing NFS from incidents when someone is shot at (but not hit) or property hit by gunfire (see Hipple and Magee 2017). Between 2017 and 2019, there was an average of 40 NFS victims per month in Kansas City, and these rates were relatively stable. Figure 1.6 presents monthly trends in NFS over these three years. The dashed line represents the linear trend in monthly NFS victimizations, which were flat. NFS victimization rates were 99 per 100,000 people in 2017, 91 per 100,000 in 2018, and 102 per 100,000 in 2019.

There exists some evidence that monthly trends in gun-involved homicides are positively correlated with NFS. Figure 1.7 is a scatterplot of monthly firearm homicides and NFS. This chart shows a line of best fit with an upward trajectory and a statistically significant r-value of 0.463 (p < .05). This supports the assertion that months with more gun-involved homicides have correspondingly higher non-fatal shootings.[6]

Firearm violence is also geographically concentrated in Kansas City – this is worth noting for contextual purposes even though CGIC efforts are city-wide rather than place-based because areas of firearm concentration routinely receive additional police attention across patrol and investigative elements. Appendix A displays three maps detailing homicides (firearm and non-firearm, NFS, and drive-by shootings between 2015 and 2019. A visual inspection of these maps

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[6] This correlation does not indicate whether individual gun-involved homicides and non-fatal shootings involve the same people, or are events that are linked to each other, rather, this merely demonstrates these events co-vary.

Figure 1.6: Non-Fatal Shootings per month in Kansas City, 2017-2019
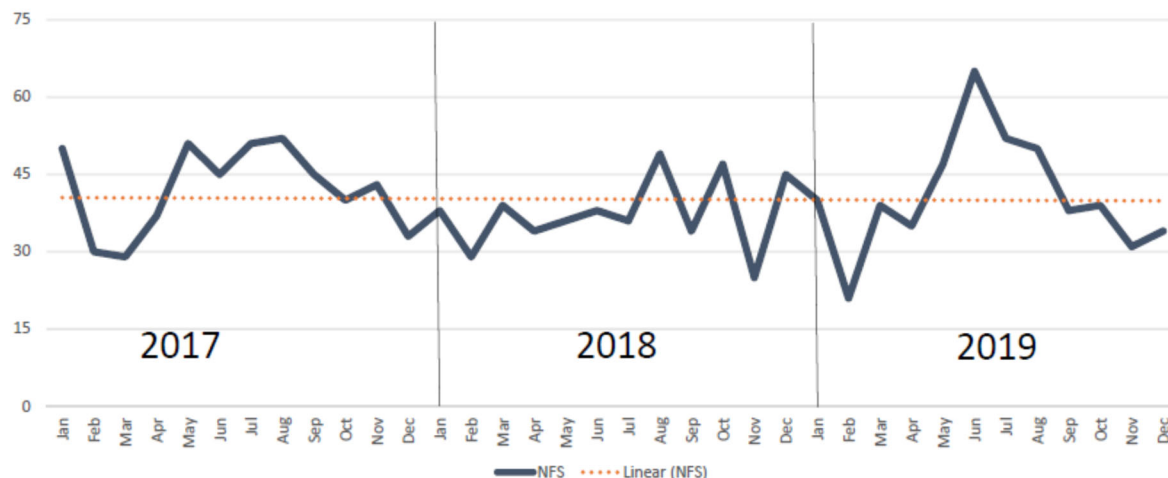
Figure 1.7: Correlation between monthly gun-involved homicides and non-fatal shootings in Kansas City, 2017-2019
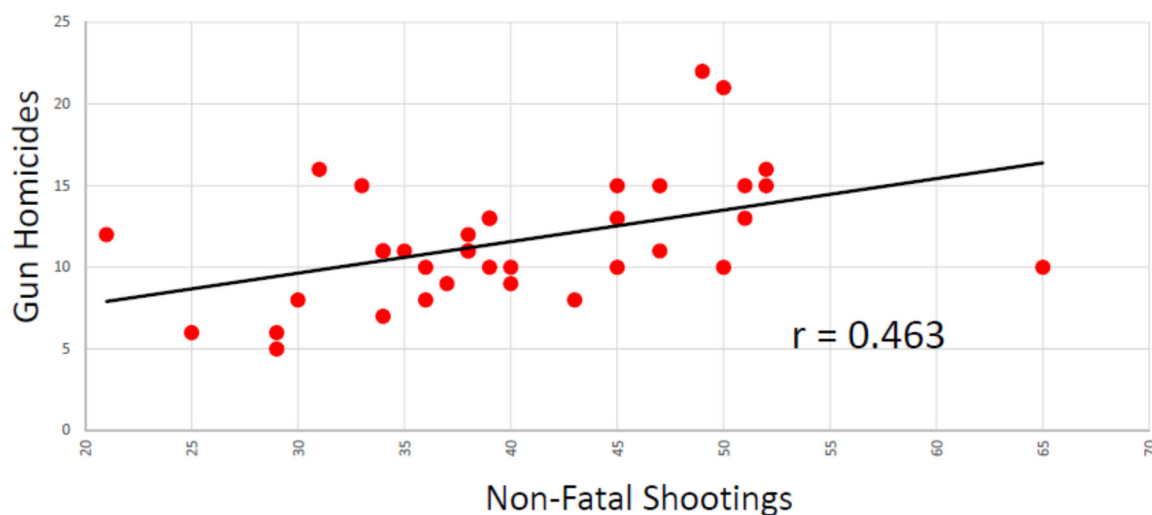
show spatial relationships across various firearm-related crimes. Years ago, KCPD analysts marked areas of high crime concentration by hand. This area, which straddled three different patrol divisions, is approximately 30 square miles (less than 10% of the total geographic area of Kansas City) but routinely accounts for over 70% of the gun violence. Due to the shape of this

area, local nomenclature has referred to this area as 'the vortex' because the shape resembles a tornado. The vortex has meaning locally within policing circles and is often referenced as such within conversations. Areas disproportionately impacted by firearm violence also experience concentrated crime, disorder, and economic disadvantage (Bowles 2005).

CONTEXTUAL CHALLENGES

There are two critical contextual challenges in Kansas City to consider firearm-related violence. First, Missouri's laws related to firearm possession and carrying has been widely criticized as weak, and this reality has deleterious consequences on gun violence. Previous research has correlated state firearm laws with firearm violence (Parsons and Weigend, 2016), and mass shootings (Reeping et al., 2019), and Webster et al. (2014) estimated the 2007 repeal of permit-to-purchase handgun laws were correlated with a 23% increase in firearm homicides. Metzl (2019) discussed the pervasive nature of the gun culture in Missouri and argued that the state's laws offered explanatory value for Missouri's high rate of firearm homicide fatalities amongst Black males and firearm suicides amongst White males. In 2017, Missouri's SB 656 expanded rights to concealed carry and stand your ground laws. These realities, collectively, yielded a 'Failing' score for Missouri by the Giffords Law Center to Prevent Gun Violence (2020). It is beyond the scope of this report to independently assess whether or to what extent Missouri's gun laws have on firearm prevalence or enforcement; instead, it is mentioned here to provide context for the nature and scope of firearm culture in Kansas City.

Second, the jail capacity in Kansas City is inadequate. As noted by detectives and stakeholders later in this report, the size of the Jackson County Correctional facility was smaller than comparable jurisdiction. This was a noted challenge voiced by the Jackson County Jail Task Force (2018). According to estimates compiled by the Department of Justice Census of Jail Facilities, Jackson County had approximately 156 jail beds per 100,000 residents, compared to 268/100,000 in Milwaukee, 330/100,000 in Memphis, and 411/100,000 in Cincinnati. Stakeholders and detectives lamented that the limited size of the jail compromised the ability for the local criminal justice system to hold violent offenders, including those involved with firearm-related offenses, before trial. It is beyond the scope of this report to assess whether or to what extent the local jail capacity has on firearm violence in general or CGIC in particular. Still, given the centrality of limited jail capacity, it is prudent to highlight it here as a potential contextual challenge.

SUMMARY

This section demonstrates that Kansas City's struggle with violent crime, particularly firearm-related violence, has persisted for many years. Homicide rates in Kansas City have been higher than the national average for generations. When the United States began to experience declines in homicides after 1993, Kansas City's homicide rate remained high, whereas, by 2019, Kansas City's homicide rate was over six times the national average. An examination of shorter periods reveals monthly homicide counts have risen steadily since 2014. Like many cities, the majority of homicides in Kansas City involve firearms, and increasingly higher proportions of all homicides involve guns. Nonfatal shootings outpace firearm-involved homicides by about 4 to 1, and counts of nonfatals have remained stable. Further, all firearm violence appears to be spatially concentrated within 'the vortex' of the urban core. It is with this backdrop that the CGIC initiative was implemented.

Crime Gun Intelligence Centers (CGIC) are intended to combat the criminal use of guns and gun violence. A CGIC is a regional, multi-agency approach to gathering, managing, analyzing, and utilizing information or intelligence that may be derived or associated with firearms. The CGIC business model involves collaborative partnerships among local agencies, such as a police agency and forensic crime lab, and a local prosecutor's office. Additionally, collaboration usually includes the local ATF Field Office, resources from ATF (especially ATF's National Tracing Center, and sometimes the ATF NIBIN Correlation Center), as well as the United States Attorney's Office (USAO). Key to the CGIC approach is ATF's National Integrated Ballistic Information Network (NIBIN), a ballistic imaging program designed to analyze and produce information that connects ballistic evidence (such as casings and crime guns) with criminal incidents. CGIC creates a comprehensive strategy to convert NIBIN information into actionable intelligence for law enforcement. The vision for this approach is to disrupt the shooting cycle through targeted and timely enforcement and effective prosecution. In short, CGIC enhances effective local crime gun investigations by improving the information derived from forensic evidence and organizing the agencies that use this information and respond to gun crime. While NIBIN is the primary investigative tool used in the process of ballistic evidence gathering, analysis, and information distribution, other networks, and tools such as the ATF's eTrace system, and in some instances, gunshot detection systems implemented by local law enforcement fall under the CGIC operational model.

CGICs are interagency collaborations that involve a process or flow of evidence and information among the agencies. Let us unpack the processes involved in the typical CGIC. When law enforcement recovers a crime-related firearm or ballistics evidence such as spent cartridges, the information surrounding that specific weapon or evidence must be analyzed and traced (Gagliardi 2019; Thompson 2010). One process involves tracing a firearm via its serial number, which can provide useful information for investigators. The ATF National Tracing Center aids in gun crime investigations with eTrace, a web-based information storehouse that allows swift access to data and information, such as the importer and seller, attached to the firearm. eTrace can also provide links to instances of illegal firearm trafficking (such as straw purchasers) and

connections to other gun crimes. Typically data produced by eTrace is supplemental to information produced by NIBIN.

Another tool sometimes used in the investigation of gun crimes is acoustic gunshot detection systems (GST). These systems operate at the local level and are usually placed in high crime neighborhoods. GST, such as Shotspotter™ uses acoustic technologies to detect and locate gunfire within a very small radius. Once detected, these systems can alert law enforcement to gunshots that may otherwise go unnoticed or unreported. This alert allows law enforcement to respond quickly, which may increase the likelihood of recovering ballistic evidence. Like eTrace, information and evidence recovered from the use of gun detection systems typically supplement NIBIN processing.

ATF's NIBIN program is central to the CGIC process. NIBIN is a program involving computerized ballistics imaging hardware, software, and a database that are used to store and compare digitized pictures (called signatures) of physical evidence from firearms (King et al., 2013; NRC, NAS 2008; U.S.DOJ OIG 2005). In almost all instances, the physical evidence is derived from fired cartridge cases (and not usually fired bullets), either recovered at a crime scene or obtained by test-firing a firearm in a crime lab or police agency. The NIBIN program is administered and overseen by ATF, but in most instances, the hardware for imaging the evidence and uploading it into the database is housed, staffed, and managed by local forensic crime labs and/or police agencies. These local hubs are called NIBIN sites. Usually, a NIBIN site is housed in a crime lab. Fired cartridge cases, recovered from crime scenes, are brought to the lab by police personnel. Likewise, crime guns recovered from crime scenes or prohibited possessors are also brought to the lab for test firing, which produces fired cartridge cases. At the lab, a NIBIN technician loads the physical evidence into the NIBIN terminal, and a digitized image (the signature) is loaded into the NIBIN database, where it is compared to other crime evidence. The database returns a rank-ordered list likely matches called *high confidence candidates*. This list must then be reviewed by visually comparing the images, a process handled either at the NIBIN site by a NIBIN technician or a firearms examiner, or sometimes handled by ATF's Correlation Center in Alabama. Automated ballistics imaging systems have greatly increased the ability to link different crimes, as compared to the prior method, which relied solely on firearms examiners visually comparing fired cartridge cases one at a time (Braga and Pierce 2004).

For most NIBIN sites, currently, if the visual review determines the evidence from two different crimes is most likely a match, the agency will issue a *NIBIN lead report*. A lead report

states that the two crimes probably involved the same gun. The report usually provides additional information, such as the crimes, dates, locations, and other pertinent information that should be useful for the investigators. If a criminal justice agency (such as the police or DA) want additional confirmation that the evidence from the two crimes is indeed a match, the lab may be asked to *confirm* the match as a *NIBIN hit*. A NIBIN hit requires that a firearms examiner visually examines both pieces of evidence using a comparison microscope, and then reports on their findings. The process of confirming a hit entails additional time and effort, so lead reports appear to be the current preferred (and more numerous) outcome from ballistics imaging analysis, and not confirmed hits. Whether a NIBIN lead or a hit, linking information associated with two crimes that were, prior to the hit or lead, not known to be connected could unlock useful information for the involved cases. In the end, NIBIN is like a key that unlocks a box of useful, investigatory information for police and prosecutors.

THE CGIC MODEL

CGICs may vary in structure and involvement of different partners; however, they tend to follow a common set of elements and vision.[7] These elements are designed to augment crime gun investigations and prosecutions. Central to CGIC is a timely and comprehensive COLLECTION of ballistic evidence from crime scenes; composed of fired casings from firearms or firearms seized as evidence, either directly connected with a specific crime or seized as part of other enforcement actions unconnected with a firearms-related crime. Fired casings can link the firearm used at one crime scene to the firearm used at other crime scenes and reveal a previously unknown connection among multiple crimes. The physical evidence serves as the inputs for NIBIN, and COMPREHENSIVE collection is critical to producing a robust dataset, as recent research has established that a greater number of NIBIN entries is associated with producing more hits (King et al., 2018; Wang, Beggs-Cassin, and Wein, 2018). Additionally, ballistic evidence must be input in a TIMELY manner to increase the likelihood of intelligence being useful for investigators. ATF Minimum Required Operating Standards (MROS) advise that input into NIBIN be carried out no later ATF MROS advise PCCs be reviewed and leads, if they exist, distributed to the necessary partners within 24 hours of confirmation that a lead exists. A 48-hour turnaround from the input of ballistic evidence to the distribution of leads to investigators is the "gold standard" for NIBIN processing. This significantly enhances the efficiency portfolio of programs and approaches to address crime guns by assisting local and state entities in identifying crime gun shooters, providing accurate and timely information.

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[7] see https://crimegunintelcenters.org/cgic-concept/

Crime gun intelligence analysis is conducted by a variety of entities, including the NNCTC. Here, NIBIN inputs are compared for possible matches or linkages between crimes, firearms, and suspects. When possible matches are identified, CGIC sites are notified to conduct additional confirmations and *assignments of leads and investigations*. Once leads have been developed and distributed, it is up to investigators to FOLLOW UP with their lead information. By following up with leads investigators to stay up to date on current information and can identify potential connections that emerge in their cases. The CGIC model is structured to provide information quickly to disrupt future gun crime incidents. Without active participation and follow up from investigators, the effectiveness of the CGIC model is limited.

Continuous FEEDBACK AND COLLABORATION is important to the success of the CGIC model and case completion. Feedback loops should include all active participants in the CGIC process. Continuous information sharing among partners maintains the integrity of the CIGIC process while also keeping all parties consistently involved in case outcomes and recognizing areas for improvement and increased efficiency.

SECTION 3 – CGIC IN KANSAS CITY

The KCPD has been using ballistic evidence to forward investigations in a limited manner since acquiring a NIBIN machine in 2002. In 2014, the Midwest Crime Gun Intelligence Center was created, which improved these operations. The CGIC began as an analytical unit within the department's Law Enforcement Research Center (LERC). Challenges, shortcomings, and operational gaps within the KCPD's property collection processes and staffing issues within the Regional Crime Lab stunted the effectiveness of early CGIC-related approaches. For example, on average, it took over 12 months for a NIBIN hit to be disseminated, and it was not clear whether the comprehensive collection of evidence was implemented. These realities were incompatible with a successful CGIC. Once the NIBIN-related intelligence was eventually disseminated, the case was so old the case detectives had moved on to more recent cases. They didn't have time to follow potential leads generated by the NIBIN products and subsequent analysis.

Therefore, in 2017, the CGIC began to make changes. The unit moved from an analytical unit that disseminated leads for other detectives to follow, to an enforcement unit that was following its own leads and making its own cases. The detectives assigned to the CGIC moved from performing analytical work to conducting investigations around the intelligence provided by the one remaining civilian analyst, and one additional detective was added to the unit. By keeping the investigative and enforcement efforts in-house, the intelligence gathered by the CGIC analysts began to be utilized. Also, grant funds were used to hire more firearms technicians, and processes were put in place to facilitate timely transportation of firearms evidence from the division stations to the crime lab.

ORGANIZATIONAL STRUCTURE

Between 2017 and 2018, KC CGIC shifted additional resources and processes to more closely resemble recommended standards. Specifically, the KC CGIC developed formal partnerships between various agencies, including the KCPD, ATF, Jackson County Prosecuting Attorney's Office, and U.S. Attorney's Office (Western District of Missouri). Stakeholders from each agency constitute the executive team for KC CGIC, including the ATF Special Agent in Charge (convener), Chief of Police, U.S. Attorney (WD-MO), and Jackson County Prosecuting Attorney. During this time, the KC CGIC also developed a closer relationship with the ATF's NIBIN National Correlation and Training Center (NNCTC) to facilitate quicker ballistic evidence analysis and reduce this burden on the local crime laboratory, freeing technicians to focus on other CGIC- and NIBIN-related duties.

The organizational structure and operations continued to evolve throughout the periods described in this report; however, many of the major discrepancies between the ideal CGIC business model (which were described in Section 2) and the KC CGIC model changed on September 3, 2018. At this time, plans were in place for comprehensive collection adherence, streamlining evidence analysis, utilization of the NNCTC, and personnel structure within CGIC. Therefore, throughout this report, September 3, 2018, is considered an intervention date when CGIC operations were substantively different from previous periods.

The organizational and tactical structure of Kansas City's CGIC evolved throughout the operations phase of the project between 2018-2020; therefore, it is not possible to define it with specificity here. KC CGIC evolved and represented a consistent work in progress. But the structure was consistent in that it was comprised of a Project Manager, a CGIC Intelligence Team, and a CGIC Enforcement Team.

The Project Manager (PM) was the point person on all CGIC-related activities. During these years, the PM was a captain within the KCPD's Investigations Bureau and was also responsible for the department's Assault Squads. The PM was accountable for leveraging resources for CGIC activities and managing personnel, as well as grant-related obligations (e.g., fiscal, performance indicators, etc.) The PM reported directly to the Executive Team, as well as the Major supervising the Investigations Bureau.

The CGIC Intelligence Unit was primarily responsible for crime gun intelligence and analysis. This included analyzing and timely dissemination of intelligence gathered from eTrace and NIBIN to detectives and investigators utilizing this information, including referring NIBIN leads to detectives and translating forensic and ballistic information on NIBIN lead sheets. This unit was administered by an ATF Group Supervisor. It included various federal and local personnel, including an ATF contractor (Industry Operations Investigator), eTrace analyst, ATF Intelligence Analyst, and KCPD crime analysts.

The CGIC Enforcement Team consisted of a combination of local and federal officers. The Enforcement Team resembled a traditional task force and was administered by an ATF Group Supervisor, a Sergeant assigned to the KCPD Assault Unit (who reported directly to the CGIC PM), detectives from the KCPD, and agents from the ATF. Figure 3.1 provides a visual description of the organizational arrangement of CGIC in Kansas City.

Figure 3.1: Organizational Arrangement of CGIC
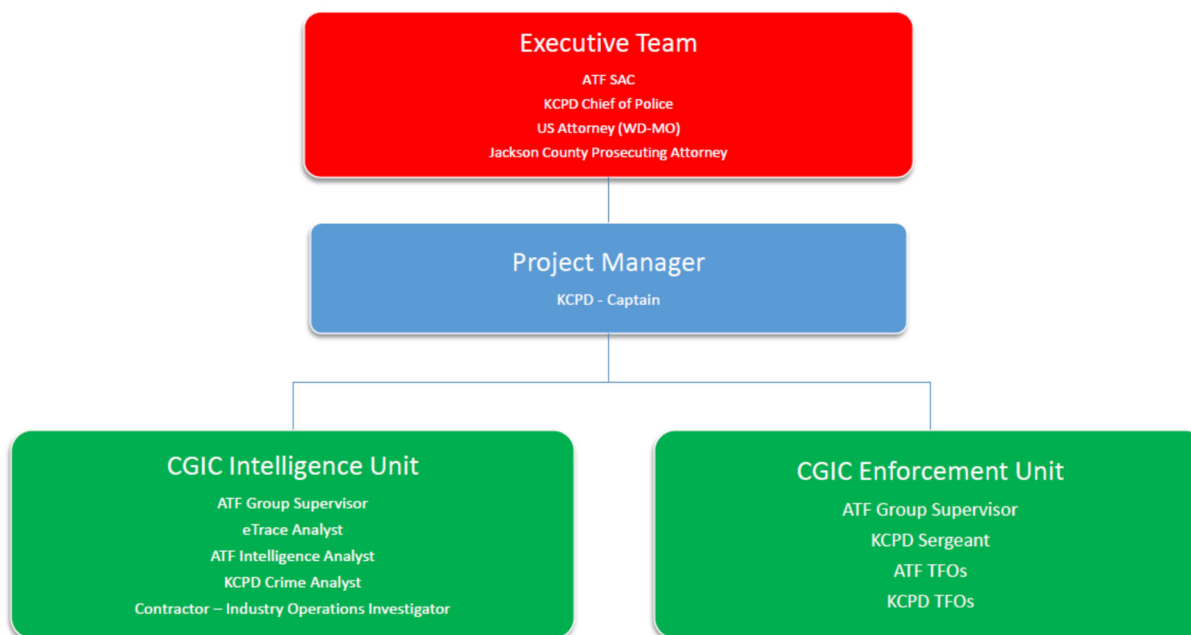
The following section details the CGIC workflow in Kansas City. Figure 3.2 presents a visual description of this process. This process roughly approximates the CGIC workflow, as described by the ATF.

COMPREHENSIVE COLLECTION OF SHELL CASINGS AND CRIME GUNS

The CGIC process began when ballistic evidence was recovered, which typically occurs in one of several ways. A typical starting point was when there was a crime committed where tangible evidence was recovered. For example, when the police respond to a homicide scene, a non-fatal shooting, or some other crime where ballistic evidence was recovered. The two primary types of evidence recovered were firearms or spent shells (e.g., casings, brass, or cartridges). These pieces of evidence are recovered at the scene, either by crime scene investigators (who come to every suspected homicide or other life-threatening events), detectives who are called to the scene, or, more typically, by responding officers. In these circumstances, the case was referred to an investigative element within the KCPD, such as Assault Squad, Homicide Squad, Robbery Squad, or another appropriate function based on the type of crime suspected. Whether the evidence recovered was a firearm, shells (or both) sets the process down two distinct paths.

Figure 3.2: Kansas City CGIC Process Workflow
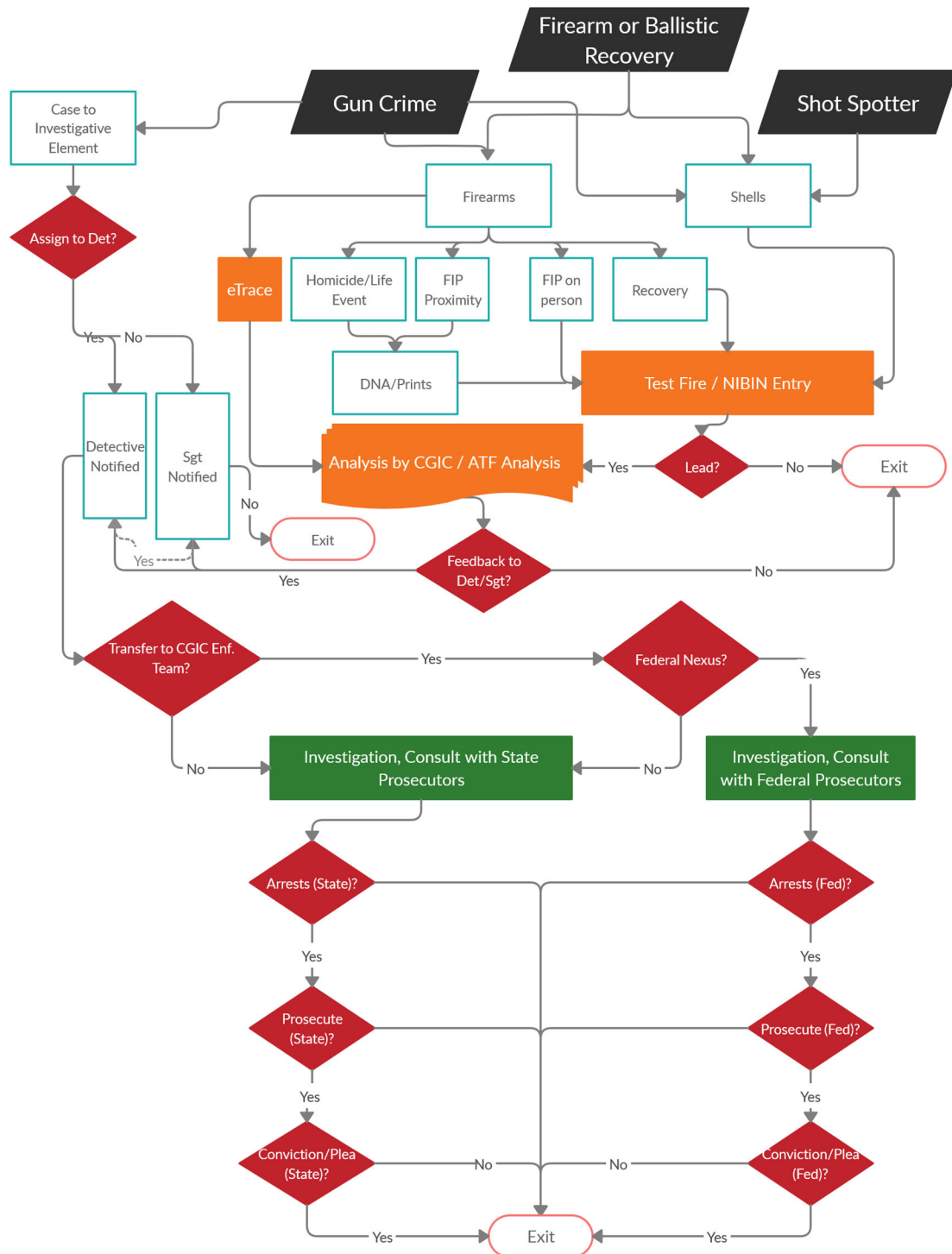
Ballistic evidence was commonly recovered in two other ways. Often KCPD was notified of locations of firearm use through its gunshot detection (GST) technology or Shotspotter™. Shotspotter™ was deployed in only 3.5 square miles of the city that has historically experienced a disproportionate level of firearm-related violence. Patrol officers are notified of Shotspotter™ activations and will respond to these locations based on priority level as defined by the communications unit. It was common for officers to not detect any crimes when arriving at Shotspotter™ activations because gunfire may have been random. In other words, a firearm was discharged, but no violent crime was committed – the scene lacks victims, witnesses, or complainants. But it was also common for officers to locate ballistic evidence at the location of Shotspotter™ activations, mainly spent shells. Historically, collection and analysis of these shells have not been a high priority within the patrol bureau; however, since the full implementation of CGIC in September 2018, a comprehensive collection of any ballistic evidence has been prioritized. Often shells are recovered by first-responding patrol officers. When this was the case, officers collect the evidence and submit it to their respective patrol division's property room. Often responding officers are unable to locate ballistic evidence during initial canvasing. Exhaustive initial canvasing was often unrealistic – this was especially true when patrol officers are responding to multiple 911 calls for service. The department was experiencing 'blackout time' (which refers to the situation when calls for service from the public exceeds the number of officers available to respond, therefore calls back up in a queue waiting for an officer to come back in-service). Blackout times are typical in KCPD's higher call-volume areas of the city, which was where there are Shotspotter™ coverage and higher levels of gunplay. Therefore, holding an officer out of service to canvas for shells when there was no other evidence of criminal behavior, and absent victims, witnesses, or complainants, was an inefficiency.

However, each patrol division had a small team of officers assigned to an Impact Squad. This squad was unencumbered from general policing functions like responding to calls for service and were able to structure their priorities, goals, and times based on problems within the patrol division to engage in strategic, discretionary activities that patrol officers typically do not have time to complete. This includes place-based strategies like directed patrol or hot spot policing, assisting investigative elements in locating wanted suspects of crimes within their area, or general problem-solving. After the implementation of CGIC, re-canvassing Shotspotter™ areas were added to Impact Squad's tasks. When shells were not located after an activation by first-responding officers, Impact Squad re-canvases the area the following morning to find cartridges or speak with neighbors. When evidence was recovered pursuant to this re-canvasing, Impact Squad collects and processes the evidence at their respective patrol division. Unlike gun crimes,

investigative elements are typically not notified because there was no crime to investigate at this stage.

Evidence can also enter the process through general recovery that was unrelated to a crime or Shotspotter™ activation. For example, if a citizen notifies the police that they found a firearm or otherwise just wants to turn a firearm over to the police, then officers will take possession of the firearm and initiate CGIC processing. An example of this may be if a citizen discovers a gun in their front yard, and they notify the police for safekeeping. This was unrelated to a crime, and no investigative element was notified; however, this recovered evidence was subjected to CGIC processing.

When patrol or Impact officers recover ballistic evidence, this evidence was processed at their patrol division. Officers complete required forms, and both are placed in the 'blue bins' for ballistic evidence. This was an improvement from previous processes designed to streamline the submission of shell casing evidence and crime guns, which before this included within general property recovery or officers' evidence lockers. This property was eventually distributed to appropriate other locations, and ballistic evidence would subsequently make it to the crime lab. But crime lab technicians would take possession of the evidence about every 7-9 days due to staffing limitations. A crime technician would commonly gather evidence from the divisions weekly, therefore delaying the overall CGIC process.[8] In contrast, post-CGIC, crime lab staff collect ballistic evidence each morning and transport the evidence to the crime lab. In other words, it typically takes just one or two days for ballistic evidence to go from the crime scene to the lab, who initiate further analysis.

NIBIN ENTRY/CORRELATION AND CRIME GUN TRACING

All firearms recovered as evidence were entered into the eTrace system, regardless of whether the firearm was directly connected to a crime or whether it was recovered in a general manner. Firearms collected as part of a homicide or other potentially life-threatening event were swabbed for DNA, and attempts are made to lift fingerprints. Similarly, DNA and prints are collected if the firearm was associated with a felon in possession (FIP) charge, and the firearm was recovered in proximity to the prohibited person. Then the firearm was test-fired at the KC crime laboratory, and shells from the test-fire were entered into the NIBIN process through the

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[8] During interviews, personnel would describe how this process was regularly delayed beyond this one-week time period. For example, of an officer did not complete the paperwork fully or correctly, the lab technician would not take possession of the evidence. The officer would be instructed to revise and correct the paperwork, which was often delayed due to normal scheduled days off or vacation/personal time. Then the technician would attempt to recover the evidence from the blue bins the following week. It is easy to see that these delays would add up fast, resulting in some ballistic evidence not making it from crime scene to the lab for several weeks, thereby delaying all processes from this point forward.

Brasstrax machine. In contrast, firearms that were collected in connection with other crimes (or a FIP case where the firearm was seized from the prohibited person) were not swabbed or printed and proceed directly to test-fire. Meanwhile, shells recovered in connection with gun crimes, Shotspotter™ activations, or general recoveries were similarly processed through the NIBIN machine. These images are sent directly to NNCTC for correlation reviews.

Meanwhile, and at the same time, many cases were referred to their appropriate investigative elements within the KCPD. This involves the sergeants who initially review the case and decides whether to assign it to a detective immediately.[9] This parallel process occurs prior to the initiation of NIBIN entries, firearm tracing, or lead notifications.

ATF CRIME GUN INTELLIGENCE ANALYSIS AND LEAD NOTIFICATION

These inputs and processes culminate with the first major decision point of the CGIC model: whether the NNCTC produces a lead (linkage between two or more gun crimes through the utilization of NIBIN technology by certified firearms examiners. If no lead was detected, then the case exits the system. When leads were identified, the NNCTC contacts KC CGIC with the relevant information and images of connections for further analysis. The CGIC / ATF investigations unit gathered NIBIN leads, and any intelligence gathered from eTrace, summarizing, standardizing, and synthesizing these data, and identify who should be notified. The CGIC investigative unit notified any KCPD supervisor or detective affiliated with this lead. CGIC referrals / NIBIN lead sheets typically occur via inter-department email, and CGIC staff created lead packets with intelligence relevant for detectives.

In some situations, the lead notification occurs before a case has been assigned to a detective. In this circumstance, the sergeant decides whether to pass the lead packet on and assign the case to a detective. In some circumstances, the case was not assigned if the sergeant does not feel there are actionable leads based on the triage of priorities at the time. But more commonly, the sergeant took this new intelligence and assigned the case to a detective within their squad.

The process proceeds to the next major decision-making point: Whether the case was transferred to the CGIC enforcement unit. The enforcement unit resembles a task force that was comprised of a KCPD supervisor and an ATF group supervisor. KCPD detectives and ATF agents work together within this unit to tactically execute selected gun crime investigations. Some cases are transferred from the KCPD detective to the CGIC enforcement unit, who, at this point, takes

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[9] This was a typical decision point for non-homicide cases, such as aggravated assaults and robberies. All homicides are assigned immediately to detectives based on homicide workloads, rotations, and other existing protocols within that unit. Additionally, the PM is also notified of serious violent crimes such as non-fatal shootings.

the lead on the investigation. Most cases, however, remain within the initially assigned KCPD unit. An effort was made to ensure detective integrity, vis-a-vis, the detective initially assigned the case remains with the case for the duration of the investigation, and these cases typically proceed up the state-level track for state-level prosecution. However, if the investigation was transferred to the CGIC enforcement unit, then federal prosecutors are consulted to determine whether the case has a federal nexus. If no federal nexus was established, then the CGIC enforcement until proceeds along the state-level track like KCPD detectives. If, however, the case was to 'go federal,' then the investigation engages with prosecutors from the U.S. Attorney's Office for the Western District of Missouri.

LAW ENFORCEMENT AND PROSECUTION COLLABORATION (STATE OR FEDERAL)

At this stage, state and federal prosecutors[10] became more actively engaged in the CGIC process. Additionally, beginning in 2020, the KCPD implemented a shooting review procedure where shootings from the previous week are reviewed to enhance investigative capacity amongst the various partners. While shooting review was not a formal part of the CGIC process, NIBIN and eTrace information frequently contributed to the investigative collaboration (shooting reviews are detailed further in Section 7 of this report). Prosecutors' involvement becomes particularly critical before filing formal charges or other key actions (such as drafting arrest or search warrants). When investigations proceed to arrests on state or federal charges, then the processes continue. Alternatively, if no formal charges materialize, then at some point, a decision was made to deactivate the investigation, at which point the case exists the system. After formal charges, state or federal prosecutors make a decision whether to prosecute, in which case the process continues. In the event the case continues, the next decision point was whether the suspect(s) plea to charges or whether a conviction occurs. If no plea or conviction, the process exits the system. After formal adjudication, which includes sentencing, the process exits the system.

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[10] The US Attorney's Office (WD-MO) assigned a single point of contact to CGIC. The Jackson County Prosecuting Attorney's Office had a single point of contact early in CGIC operations, then shifted responsibilities to several assistant prosecutors.

SECTION 4 – ANALYSIS OF INPUTS AND OUTPUTS

At its core, a CGIC is an adhocracy or inchoate hierarchy (Thacher 2004) designed to gather and process physical evidence and convert that evidence into intelligence for criminal investigators and prosecutors. In this section, we focus on one process indicator (inputs) and two output indicators (lead reports and hits) for CGIC performance involving the processing of spent cartridge casings (hereafter brass) collected from crime scenes and from test fires of confiscated crime guns. To more fully address inputs and outputs, we examine three separate data sources: ATF's Monthly Activity Reports, KCPD-generated Performance Measures, and individual NIBIN leads.

INPUTS: ACQUISITIONS

Data for this section of the report were gleaned from the ATF's Monthly Activity Reports (MARS). Processing brass; that is, pumping brass into NIBIN so it can be compared to signatures already in the database, is crucial to producing hits and leads, and research has demonstrated that the size of a ballistics imaging database is positively correlated with the number of hits it produces (Wang, Beggs-Cassin, and Wein 2017), even when controlling for relevant elements of a crime lab's structure and processes (King, Matusiak, and Campbell 2018). Simply put, the more evidence that is pumped into a NIBIN site, the greater the likelihood of identifying a hit or lead at that site. Given that indicators of processing inputs are so closely linked to outputs (e.g., hits and leads), it is essential first to examine trends in acquisitions as a process indicator for CGIC in Kansas City.

The NIBIN hardware (Brasstrax) resides in the Firearms Section of the Kansas City Regional Crime Lab (hereafter KC Lab). Ballistics evidence (either fired brass or crime guns) from crime scenes is gathered by KCPD officers, and sometimes by crime scene investigators, and then delivered to the KC Lab. The crime guns must be test-fired to produce brass, which is then input (or acquired) by NIBIN. Similarly, the brass from crime scenes must also be acquired by NIBIN. The recent acquisitions are then checked against evidence (signatures of ballistics evidence) already in the database, to check for possible hits or matches (called high confidence candidates). This process is aided by the NIBIN National Correlation and Training Center (NNCTC).

Figure 4.1: Acquisitions per month – May 2015-March 2020
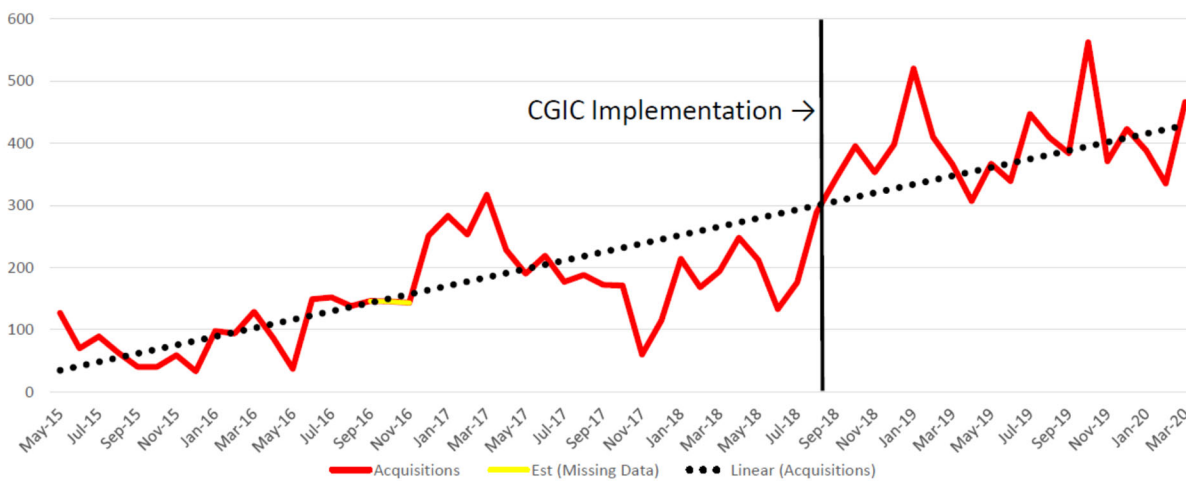
Figure 4.1 displays monthly counts of NIBIN acquisitions between May 2015 and March 2020. This line shows a steady increase in acquisitions over time, with increased acquisitions that NIBIN acquisitions by the KC Lab increased from a mean of 152.4 acquisitions per month pre-CGIC to a mean of 399.1 acquisitions per month post-CGIC. We estimated a difference of means test to examine whether monthly acquisitions were significantly different between these periods, and the results are presented below. The mean difference in acquisitions is statistically significant ($t = 12.36$; $p < .000$), which is strong evidence of dramatic increases after the implementation of CGIC in Kansas City. The increase in inputs was sudden, it occurred the same month the CGIC started in KC, and since inception, the number of inputs has never dropped below 300 per month. In comparison, the number of monthly NIBIN inputs before the CGIC only topped 300 for one month. We view this as clear evidence the CGIC significantly increased NIBIN inputs or acquisitions in KC.

Table 4.1: Difference of means of acquisitions – Pre- vs. Post-CGIC

	Pre-CGIC		Post-CGIC		
	Mean	Std. Dev.	Mean	Std. Dev.	t-value
Acquisitions	152.4	74.9	399.1	63.9	12.360***
n	40		19		

***p<.000

Another benefit of increasing the number of monthly acquisitions is that the database in which NNCTC utilizes to compare ballistic inputs correspondingly increases as well, resulting in more data points to compare future inputs. Figure 4.2 presents the cumulative trends in the NIBIN database in Kansas City between May 2015 and March 2020, with a predictive trend line extending through March 2021. This figure displays a continuing increase in the size of the database, resulting in a more robust database for comparative analysis moving forward.

Figure 4.2. Cumulative Acquisitions
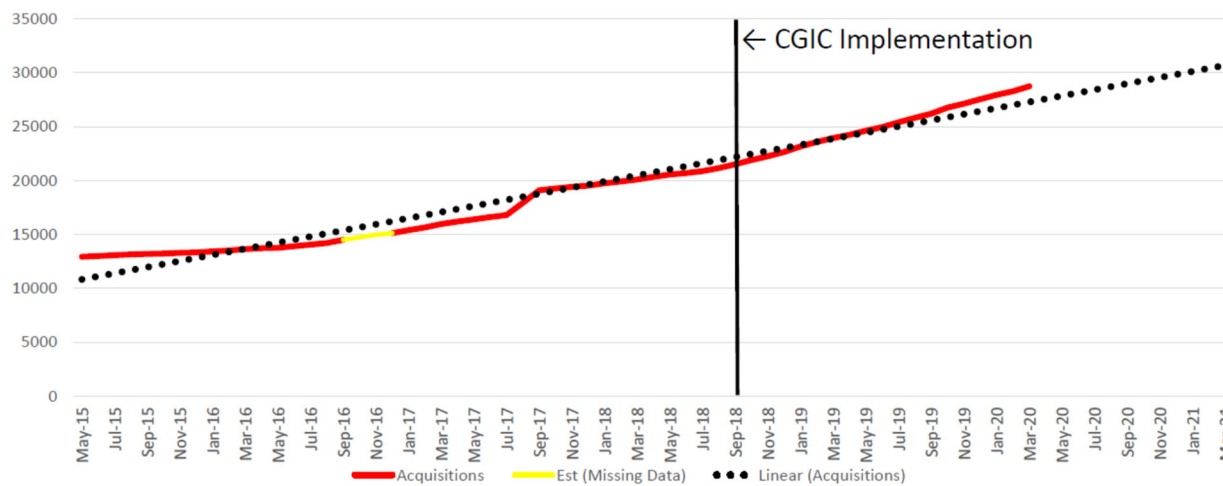
OUTPUTS: NIBIN LEADS

In order to ease (and speed-up) the process of turning ballistics evidence into useful intelligence for investigators, ATF began urging NIBIN sites to produce *NIBIN Leads*. Identifying a NIBIN lead is less labor and time-intensive, as compared to a hit. Leads can be determined by a NIBIN technician by visually comparing images of each item of evidence. If the technician believes the evidence originated from the same firearm, the evidence is designated as a lead, and a lead report is produced. Producing leads is quicker and easier for labs because they do not require a firearms examiner (leads may be identified by a technician), and do not entail a visual analysis of the actual items of evidence. Ideally, linking gun crimes using leads should occur more quickly as compared to confirming hits. More timely leads should help investigators more than less-timely hits.

Figure 4.3. Number of leads per month, July 2017-March 2020
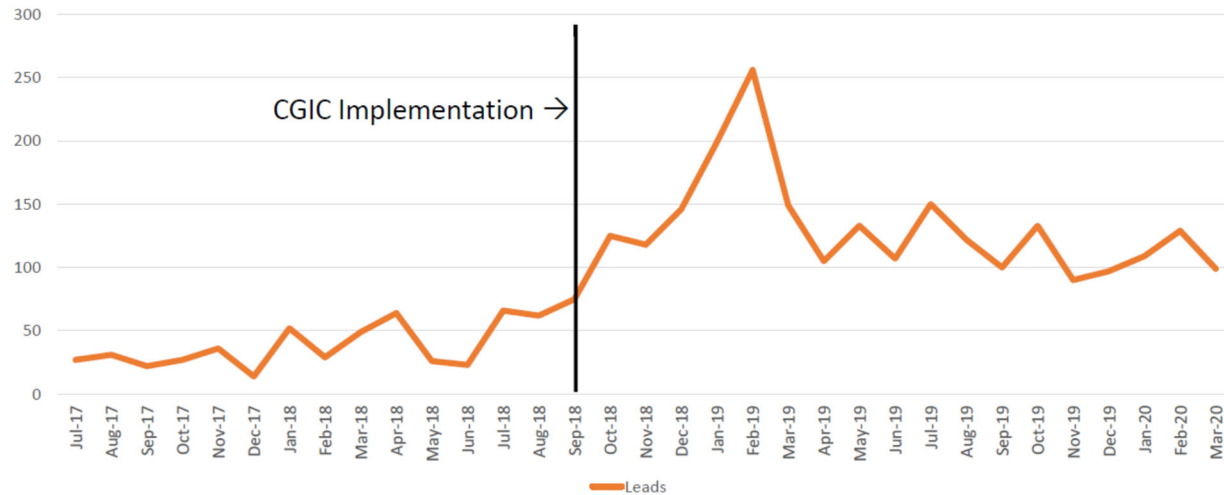
Leads

Figure 4.3 presents the number of leads per month for Kansas City. For the 14 months of pre-CGIC data, the lab identified a mean of 37.71 NIBIN leads per month. For the 19 months post-CGIC, the lab identified a mean of 128.52 leads per month. This difference, pre- and post-CGIC is statistically significant (t = 7.677; p < .000). This difference is not driven by outliers (that is, one or two months with many leads). Rather, the number of leads identified post-CGIC is relatively consistent and always greater than 75 leads per month, whereas the pre-CGIC period never identified more than 66 leads per month. It appears that the implementation of the CGIC increased the number of leads produced consistently, month after month.

Table 4.2. Difference of means of leads – Pre- vs. Post-CGIC

| | Pre-CGIC | | Post-CGIC | | |
	Mean	Std. Dev.	Mean	Std. Dev.	t-value
Leads	37.71	17.4	128.52	41.5	7.677***
n	14		19		

***p<.000

Figure 4.4 presents monthly trends in acquisitions disaggregated by whether a lead is generated between September 2017 and March 2020. The blue bars in the chart represent

acquisitions that did not produce a lead, whereas the orange portions reflect acquisitions resulting in leads.[11] For simplicity, we consider acquisitions that result in a NIBIN lead as a productive acquisition. In the year prior to the implementation of CGIC, an average of 140 acquisitions per month did not generate a lead, and an average of 39 acquisitions generated a lead. After the implementation of CGIC, these averages increased to 271 and 129, respectively. In other words, the raw number of productive acquisitions increased 228% per month after the implementation of CGIC in Kansas City.

Figure 4.4. Leads vs. No Leads per month, September 2017-March 2020
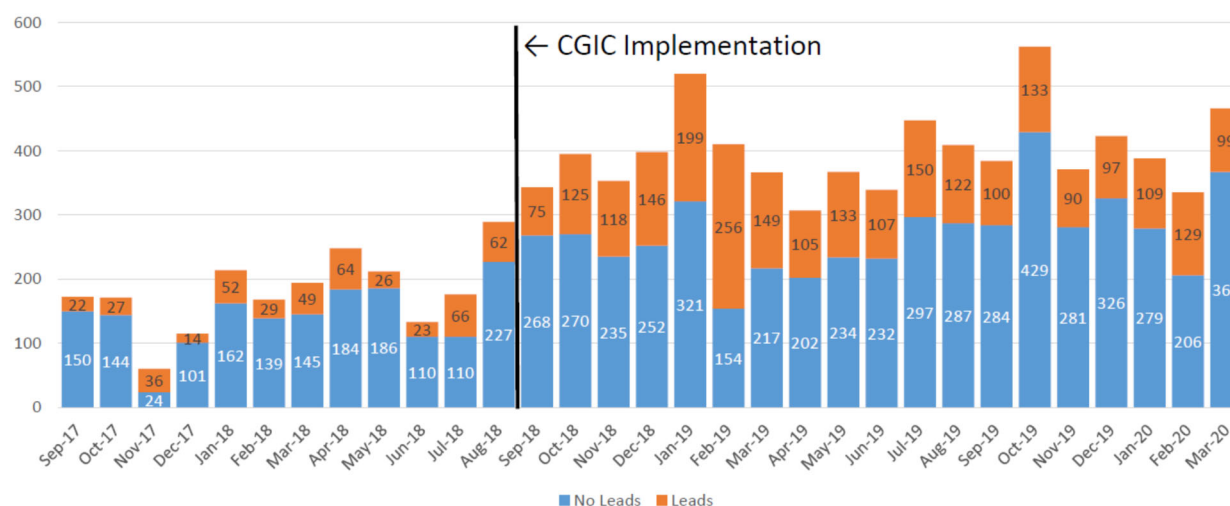
Figure 4.5 extends this examination of acquisition productivity by considering the proportion of monthly acquisitions that generated a lead. Each bar in this table presents the percentage of acquisitions that resulted in a lead between September 2017 and March 2020. On average, 21% of acquisitions before the implementation of CGIC generated a lead every month, but after the implementation of CGIC, this average increased to 32%.

Collectively, the examination of acquisitions and leads reveals an interesting story. The evidence indicates that after the implementation of CGIC in Kansas City, the number of acquisitions increased significantly, which is consistent with the CGIC principle of comprehensive collection and analysis. Naturally, this results in an increased size of the NIBIN database at an ever-increasing rate, yielding a more robust population of ballistic evidence to compare future acquisitions. One potential threat to this model might be a 'watered down' dataset that contains

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[11] We recognize a lag-effect may be prevalent here – the MARS data are not able to determine with complete accuracy whether an input in a particular month yielded a lead in that same month. This limitation notwithstanding, examination of leads vs. no leads is informative way to examine to productivity of NIBIN inputs.

Figure 4.5. Percentage of leads per month, September 2017 – March 2020
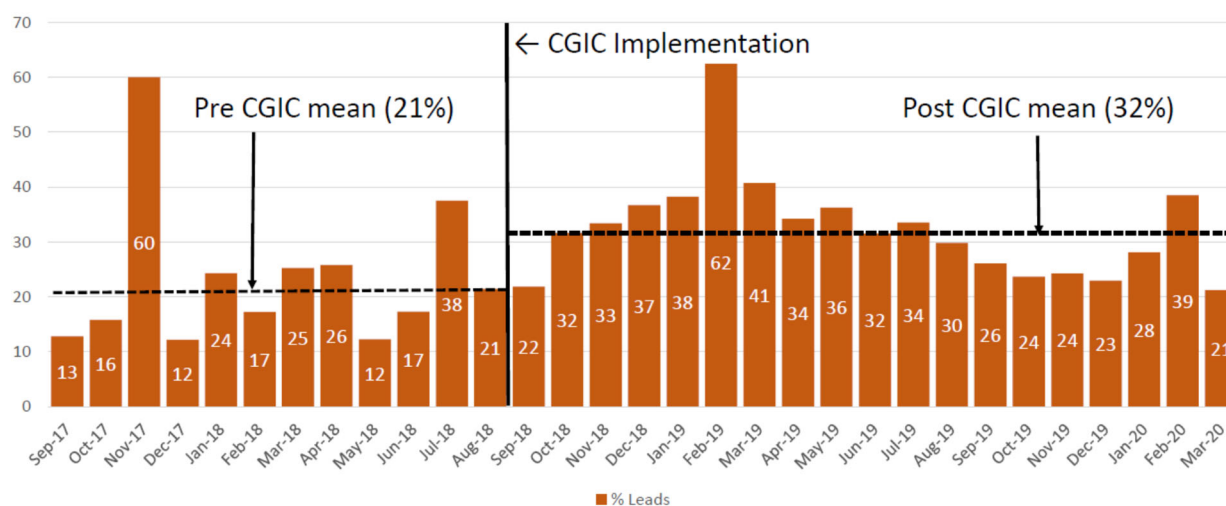
ballistic evidence on firearms unlikely to be used in future events. But the evidence presented here does not support that perspective the opposite is true. As the number of acquisitions increases, so too does the number of leads. Further, the proportion of acquisitions resulting in a lead (i.e., productive acquisitions) increased also. In other words, deliberative efforts to increase the size of NIBIN databases serve to significantly enhance the productivity of generating NIBIN leads.

OUTPUTS: NIBIN HITS

Once the database is regularly fed fresh brass, the expected output is to identify hits. Identifying a NIBIN hit entails considerable work for the firearms examiners in the Firearms Section in the lab. It is a multi-step process the entails work and time. After a new acquisition is input, the NIBIN…

> …software can then search these signatures to identify possible matches using a correlation score. In the case of spent cartridges, IBIS™ calculates two or three different correlation scores; one each for the firing pin impression, breech face, and ejector mark. Correlations are usually presented as a list of possible matches rank ordered from most to less likely. Firearms technicians or examiners review these possible correlations, view digitized images of the two pieces of evidence on the computer screen, and designate the most likely matches in the computer system by marking them as *high confidence candidates*. High confidence candidates must be manually confirmed in order to

constitute a *hit*. Confirmation requires comparing each piece of original evidence (i.e., the actual fired cartridges or bullets) using a comparison microscope. Once an examiner concludes that the evidence matches, the high confidence candidate is designated as a hit. Confirmed hits are then noted by the examiner in the digital database. (King et al., 2013: 2-3).

Confirming hits is labor-intensive; it is a multi-step process, and it requires time. A hit can only be confirmed by a firearms examiner (and not a technician), and it requires that both pieces of evidence be physically examined in the lab.

Figure 4.6: Confirmed hits per month, May 2015-March 2020
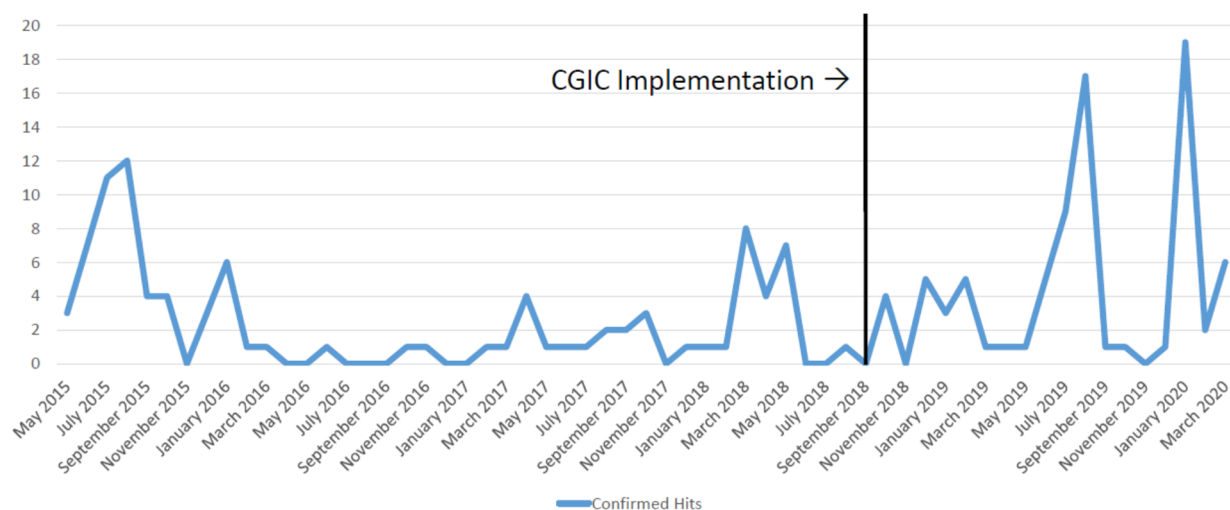
Figure 4.6 presents the monthly number of confirmed hits for the KC Lab from May 2015 to March 2020. During these 59 months, the lab averaged 3.0 confirmed hits per month. Pre-CGIC, the KC Lab averaged 2.35 confirmed hits per month. The inception of the CGIC led to an increase in confirmed hits, although the increase was not statistically significant ($t = 1.74$; $p > .05$). In other words, the implementation of CGIC in Kansas City did not yield significantly different numbers of hits.[12]

Overall, the implementation of the CGIC in Kansas City led to a significant increase in the processing of NIBIN inputs (acquisitions). It subsequently did *not* produce a significant increase in confirmed NIBIN hits, although the number of hits did increase pre- to post-CGIC. The number of NIBIN lead reports *did* increase significantly after the CGIC. And post CGIC, the number of lead

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[12] These confirmed hits per month may appear low, however, 3 to 4.26 hits per month is actually very good for a NIBIN site. King et al. (2013: 55) examined NIBIN sites nationally from 2007 to 2012 ranked the KC Lab at the 91st percentile in terms of confirmed hits, compared to all other NIBIN sites, during a time period when the KC Lab produced 5.8 NIBIN hits per month on average.

reports produced (on average 128.52 lead reports per month) far outstripped the number of confirmed hits (on average 4.26 per month). It is worth noting that focusing on lead reports did not supplant confirmed hits.

PERFORMANCE MEASURES

BJA-established performance measures were reported semi-annually. Table 4.3 presents selected performance measures for firearms, casings, and eTrace. The value of these data is to examine broad trends in firearm, casing, and eTrace patterns over time. The data are presented here to complement the MARs data reported earlier, but unlike those analyses, performance measures were reported in 6-month periods. Recall the CGIC implementation date was September 3, 2018, which bisects the second reporting period in these tables.

Table 4.3 reflects an overall increase in firearms and casings entered into NIBIN over time, and this ballistic evidence was more likely to be entered into NIBIN and in a more timely fashion. Specifically, the number of firearms and casings recovered overall increased slightly (16% increase in firearms and 29% increase in casings); however, the number of firearms and casings inputted into NIBIN increased dramatically. Firearm and casing input doubled compared to pre-CGIC implementation, suggesting a greater adherence to CGIC principles of comprehensive collection. Furthermore, the number of firearms and casings that were entered within 48 hours increased dramatically, and this increase appeared to coincide with the CGIC implementation. The proportion of firearms and casings that were entered into NIBIN rose steadily throughout the period.

These data are presented visually in the following figures. Figure 4.7 shows the count of firearms (blue line) and casings (red line) entered into NIBIN between January 2018 and June 2020. This figure reflects an abrupt increase in NIBIN usage starting in the July-December 2018 semi-annual period, and these counts remain steady thereafter. Figure 4.8 reflects count data for firearms, and casings entered within the preferred 48 hour period. Similarly, an abrupt increase in timely input appears to coincide with the implementation of CGIC, but unlike the previous figure, the number of firearms and casings entered within 48 hours continues to increase.

Table 4.3: Performance Measures (Firearms and Casings)

	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Jun 2020	Pct Change
Firearms						
Firearms recovered	1,078	1,126	1,149	1,294	1,255	16%
Firearms entered into NIBIN	548	976	1,221	1,207	1,135	107%
Firearms entered < 48 hours	21	368	519	748	1,001	4667%
% of Firearms entered < 48 hours	4%	38%	43%	62%	88%	
Casings						
Casings recovered	6,182	5,815	6,526	5,285	7,957	29%
Casings entered into NIBIN	584	978	1,101	1,017	1,293	121%
Casings entered < 48 hours	116	472	571	682	1,143	885%
% of casings entered in < 48 hours	20%	48%	52%	67%	88%	

Figure 4.7. Number of Firearms and Casings Entered into NIBIN
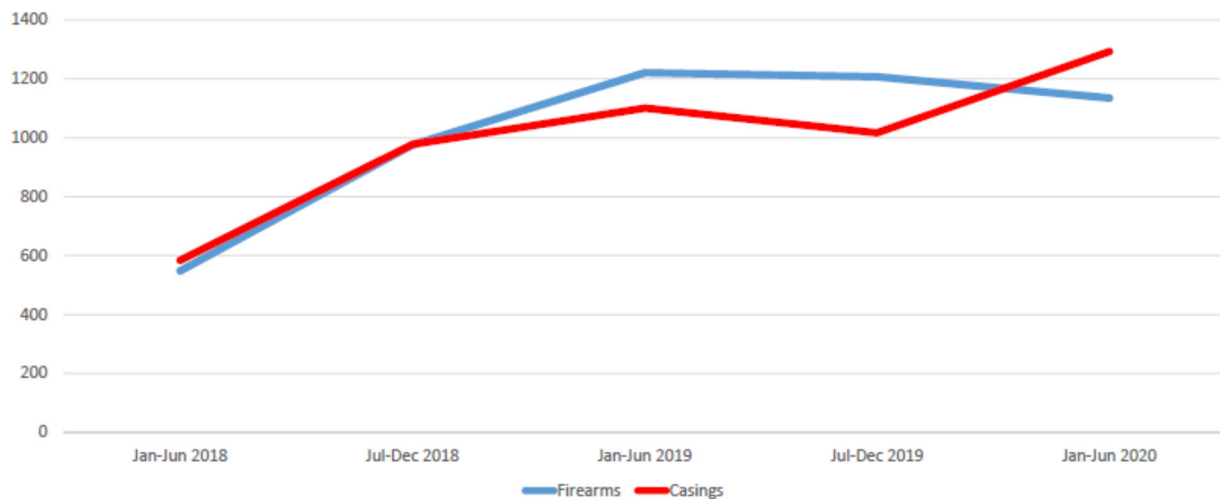
Figure 4.8. Number of Firearms and Casings Entered into NIBIN in less than 48 Hours
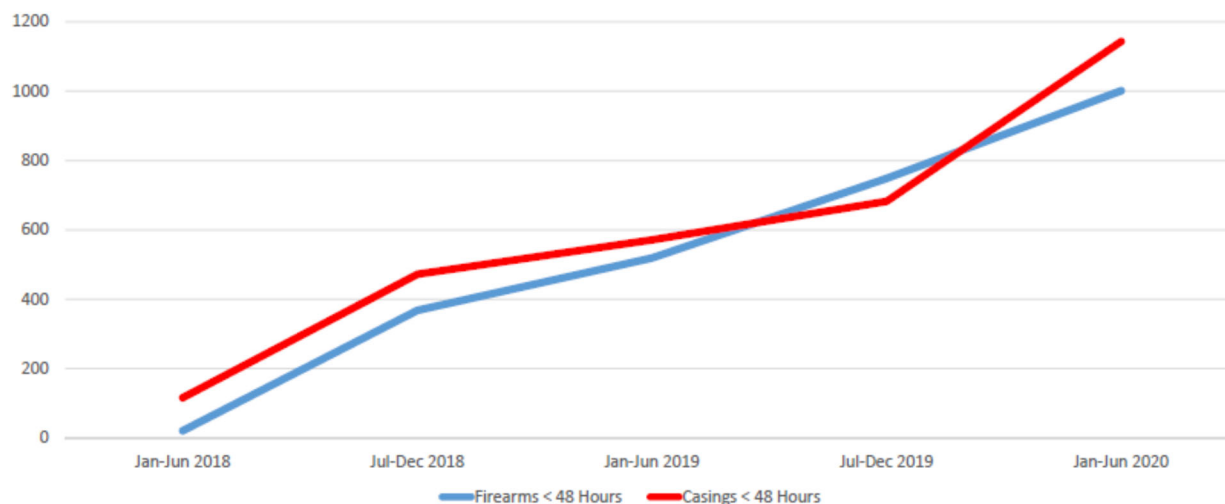
Figure 4.9 provides a visual description of the percentage of firearm and casing compliance over time. This further reflects adherence to the CGIC principle of timely input. Specifically, in January-June 2018, only 4% of firearms and 20% of casings were entered to NIBIN within 48 hours. By July-December 2019, these percentages increased to 38% for firearms and 48% for casings. These proportions continued to increase modestly over 2019, and by January-June 2020, the compliance rate for timely input of firearms and casings had increased to 88%. These figures and the above table indicate more frequent use of NIBIN for ballistic evidence seized in Kansas City. The number of pieces of ballistic evidence entered into NIBIN far outpaced the volume of evidence obtained. In other words, the observed increase in NIBIN entries cannot be explained by an increase in firearm and casing evidence seized. It is further necessary to note these changes roughly approximated the implementation of CGIC. Therefore, when taken in totality, strongly suggest an enhanced and sustained level of CGIC fidelity throughout the project.

Table 4.4 presents similar information for eTrace input. Unlike the utilization of NIBIN, trends in eTrace were relatively stable throughout the project period. The number of crime guns traced through eTrace increased modestly (5%), but the efficiency or timeliness of eTrace declined slightly – there were small declines between July 2018 and December 2019 and notably fewer timely eTraces in 2020. However, the productivity of eTrace increased over time. In January-June 2018, only 8% of traces resulted in a hit; however, this hit-rate increased to 13% (upon implementation of CGIC) and leveled at about 17% for the remaining periods. In other words, while tracing firearms were less impacted by the implementation of CGIC than ballistic

evidence processed in NIBIN, the eTrace hit rate increased. This observation is likely a function of the emphasis the Kansas City CGIC team placed on enhancing NIBIN, rather than a de-emphasis on eTrace.

Figure 4.9. Percentage of Firearms and Casings Entered into NIBIN in less than 48 Hours
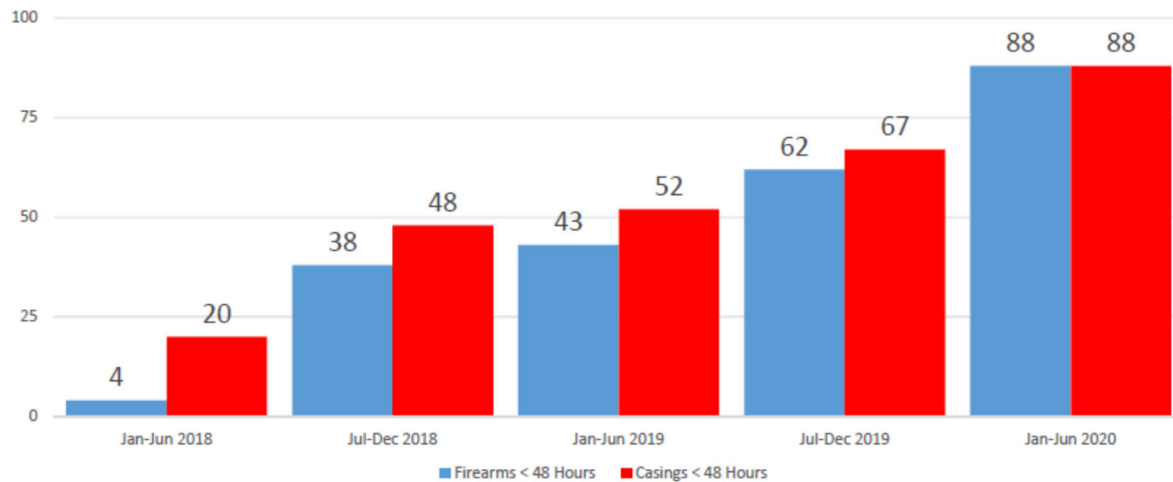
Table 4.4: Performance Measures (eTrace)

	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Jun 2020	Pct Change
Crime guns traced through eTrace	964	957	1,021	1,230	1,013	5%
Crime guns traced within < 48 hours	616	603	550	592	427	-31%
% of crime guns traced in < 48 hours	64%	63%	54%	48%	42%	
Traces resulting in a hit	74	121	177	217	175	136%
% of traces resulting in a hit	8%	13%	17%	18%	17%	

Additional performance measures are reported in Appendix B but will not be elaborated here. Some measures collected are more tangential to the focus of this section, while others appeared to contain some data-reporting irregularities that make it difficult to interpret or draw conclusions. Some data details were lost due to changes in the records management system, while other fields experience definitional changes throughout the periods examined. Definitional

changes create a history effect that threatens internal validity and will not be explored further. These performance measures are reported in the appendix in the interest of comprehensiveness and transparency.

LEADS: DEEPER DIVE

This section of the report examines CGIC outputs, with an emphasis on examining NIBIN leads. We again utilize September 3, 2018, as an intervention date to understand whether CGIC products were impacted by this change. Some of the focus presented here is similar to the previous sections utilizing macro-level data gathered from MARS and performance measures; however, here, we use individual-level data to scrutinize case-level data. To that end, we examined micro-level leads information from the CGIC in Kansas City were reviewed for the calendar year 2018, using September 2018 as a demarcation pre- and post-CGIC.

We obtained a data set of all offense with NIBIN leads from 2018 (n=1,669), and this data was used as a sampling frame for a survey of detectives that is outlined in Section 6 of this report. These data contained descriptive information, including offense characteristics and ballistic data. The unit of analysis within these data was offenses, and offenses were linked with leads, and therefore it was necessary to limit these data before analysis. We restricted our analysis to the most recent acquisition (see King et al., 2013), which yielded 732 cases.

Table 4.5 provides descriptive information for leads generated pre- and post-CGIC implementation. It is clear that after the implementation of CGIC the number of leads increased dramatically, from 189 leads (23.6 per month) to 543 leads (135.7 per month). Overall, the most common ballistic evidence that generated leads were from 40 caliber (35%), 45 caliber (14%), and 9 mm (39%) weapons.

This table also presents information on the number of matched cases within NIBIN leads, where lead dyads include a lead between two cases, triads are links between three cases, tetrads are links between four cases, and so forth. Leads with a higher number of matches indicate that a firearm was used in multiple shooting events, indicating higher-risk firearms. The majority of leads were connected to two (63%) or three (22%) separate incidents; however, it is worth noting that some leads were linked to many shooting events. The distribution of the number of matches across leads is very stable pre- to post-CGIC.[13]

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[13] Although the data examined here focus on leads generated in 2018, it is important to note that matches include links to evidence entered into the NIBIN database from previous years. For example, if a NIBIN entry in 2018 is linked to separate cases from 2016 and 2017, then it is reflected as a triad within this table.

Table 4.5: Descriptive statistics for leads (2018)

			Pre-CGIC		Post-CGIC	
	n	%	n	%	n	%
Caliber						
40 caliber	253	35%	76	40%	177	33%
45 caliber	105	14%	30	16%	75	14%
9 mm	289	39%	60	32%	229	42%
357	23	3%	8	4%	15	3%
Other	62	8%	15	8%	47	9%
Evidence type						
Casings	434	62%	106	67%	328	60%
Firearm	258	37%	51	32%	207	38%
Both	9	1%	2	1%	7	1%
Total Matched Leads						
2 matches	459	63%	123	65%	336	62%
3 matches	160	22%	41	22%	119	22%
4 matches	51	7%	9	5%	42	8%
5 matches	34	5%	9	5%	25	5%
6 matches	9	1%	2	1%	7	1%
7 matches	6	1%	0	0%	6	1%
8 matches	4	1%	2	1%	2	0%
9+ matches	8	1%	3	2%	5	1%
Total	731		189		542	

Some totals may not reconcile due to missing data

One of the guiding principles of CGIC is to increase actionable intelligence on ballistic evidence, and that this intelligence should be timely. To examine whether intelligence is being generated promptly, we examined the number of days between the date of the crime[14] and the

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[14] This estimate includes the date from crime to lead, not necessarily the time between NIBIN entry and lead. For example, if the offense occurred on June 1, the evidence is entered on June 2, and the lead is reported on June 3, then the time between crime and lead is three days. Delays in inputting ballistic evidence into NIBIN will impact this estimate, and as such, the estimates reported here are very conservative.

Table 4.6. Cumulative percentage of leads by days between crime and lead

	Pre-CGIC	Post-CGIC
1 Day	1.8	6.0
2 Days	3.0	24.6
3 Days	5.4	37.3
4 Days	5.4	48.2
5 Days	6.0	59.7
6 Days	7.8	59.7
7 Days	8.4	60.4
14 Days	10.8	65.1
21 Days	13.2	67.5
28 Days	15.6	68.9
35 Days	16.8	70.0
42 Days	18.0	72.0
49 Days	19.8	72.6
56 Days	19.8	74.1
63 Days	22.2	74.5
70 Days	28.7	75.4
77 Days	32.9	76.4
84 Days	35.9	77.7
91 Days	42.5	78.2
98 Days	47.3	79.2
105 Days	54.5	79.7

date of the lead report. Therefore, we examined trends in time between the crime and lead pre- and post-CGIC to identify whether the process had become more efficient. Table 4.6 presents information on the cumulative percentage of cases by how quickly lead reports are generated. This table is disaggregated by the percentage of leads within seven days of the crime, and the percentage of leads every week after that through 15 weeks (or 105 days). For example, for leads generated during the pre-CGIC period of January 1 to September 2, 2018, 1.8% were generated within one day of the crime, 3.0% within two days, 5.4% within three days, and so on. In contrast,

for leads generated between September 3 and December 31, 2018, 6.0% were generated within one day, 24.6% within two days, 37.3% within three days, and so on. A casual examination of the data presented here indicates that the time between crime and lead was much shorter after full implementation of CGIC in Kansas City. This trend continued when examining leads generated within 14 days (10.8% vs. 65.1%), 21 days (13.2% vs. 67.1%), and so on.

Figure 4.10 provides a visual display of these data. The red line indicates the cumulative percentage of leads for each day after the implementation of CGIC. The blue line represents the same percentage for leads before the implementation of CGIC. This figure highlights changes in the efficiency NIBIN leads after the implementation of the CGIC business model. After deployment, the NNTC provided lead information in about one in four entries in which a lead was eventually produced. This estimate increases steeply through day 5, at which point about 60% of leads were produced, at which point the cumulative number of leads levels out. In contrast, the slope of cumulative leads for the period before CGIC remains relatively flat throughout the first week between crime and lead. Figure 4.11 continues this visual trend for cases through 105 days. These estimates suggest that post-CGIC leads come back quickly from NNTC, and then trickles in afterward. In contrast, the time between crime and lead is relatively flat in the period prior to CGIC implementation – a slightly increasing trend begins around 63 days after the crime. Still, this trend never approaches what is observed after the CGIC implementation. Collectively, these estimates indicate that the goal of obtaining timely leads was accomplished with greater regularity after the implementation of the CGIC business model.

Figure 4.10: Cumulative percentage of leads within 7 days of crime
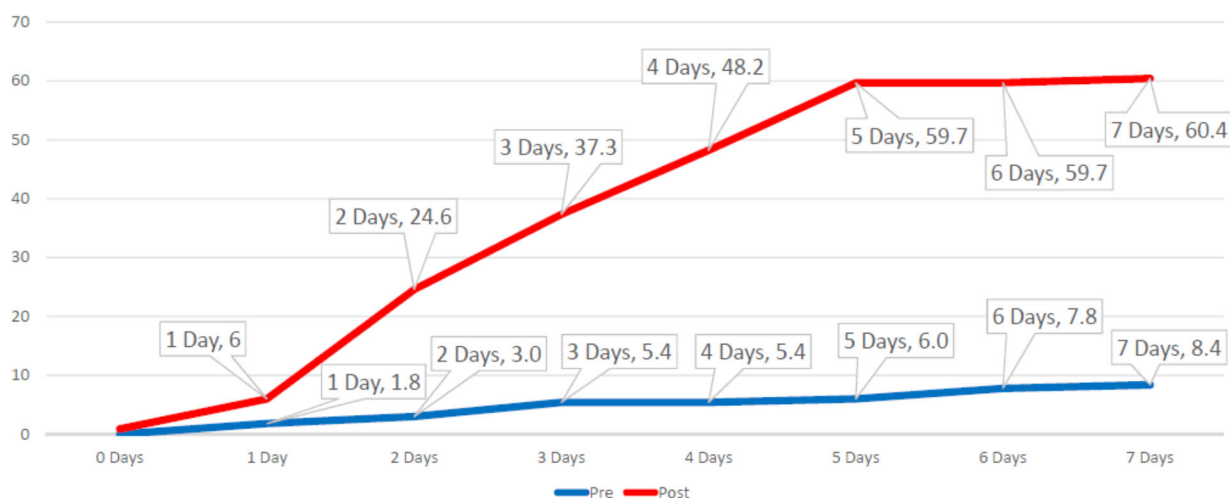
Figure 4.11: Cumulative percentage of leads within 105 days of crime
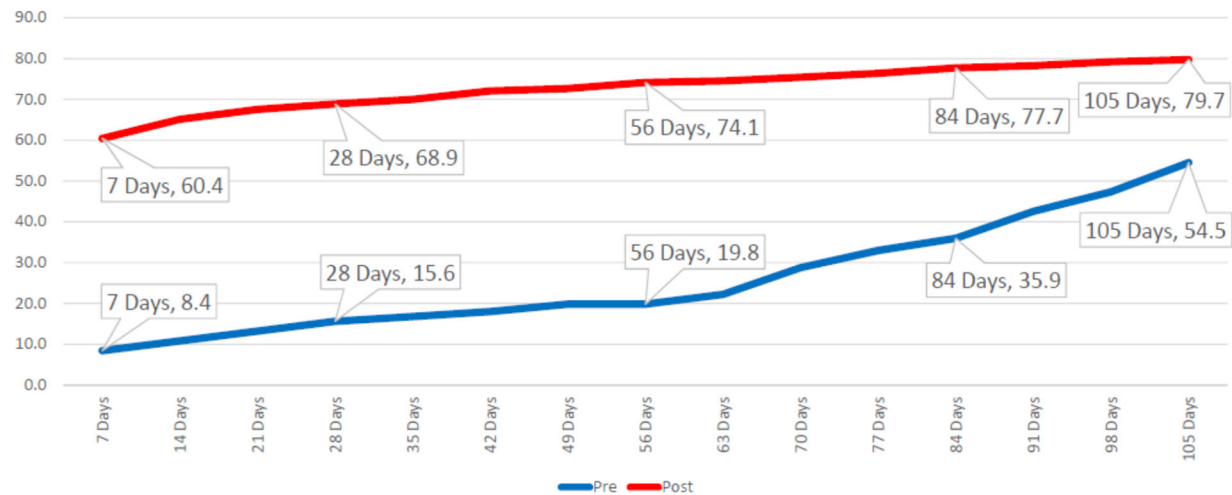
Finally, we estimated a difference of means test to examine whether the days between crime and lead were significantly and substantively different after the implementation of CGIC in Kansas City. This model is presented in Table 4.7. On average, leads were generated 90 days after the crime before the implementation of the CGIC model, and 32.6 days after CGIC implementation. This represents a statistically significant difference between these time periods (t = 10.570, p < .000), which strongly indicates that leads were generated significantly faster after the implementation of the model.

Table 4.7: Difference of means from crime to lead – Pre- vs. Post-CGIC

| | Pre-CGIC | | Post-CGIC | | |
	Mean	Std. Dev.	Mean	Std. Dev.	t-value
Days	90.0	55.0	32.6	56.9	10.570***
n	139		484		

***p<.000

SUMMARY

This section examined a variety of indicators of CGIC outputs and outcomes. This was conducted using a variety of different data sources, thereby triangulating the results in order to draw firmer conclusions. Based on the evidence examined here, several overarching conclusions can be offered.

The implementation of CGIC in Kansas City yielded several changes and benefits. There is strong evidence suggesting the number of acquisitions / inputs into NIBIN increased significantly since September 2018, and this trend was sustained over time. This also resulted in an increased number of leads generated. On the one hand, this makes intuitive sense – more data may accidentally increase the number of productive acquisitions. But the evidence examined here indicates that the productivity rate of acquisitions increased at rates that are unexplained by merely increasing the size of the NIBIN database; specifically, the proportion of productive acquisitions that generated a lead increased after the implementation of CGIC in Kansas City. The evidence examined here also indicates, however, that hits were largely not impacted by CGIC, and the volume of traces remained stable over time. The evidence considered here strongly suggests that NIBIN leads were generated quicker after the implementation of CGIC. The average amount of time between crime and lead – regardless of how time was estimated – was significantly shorter after the implementation of CGIC in Kansas City.

A survey of CGIC/NIBIN end-users was conducted to more fully understand the CGIC business model in practice. These data are presented here to complement other official outcome and process data presented within this report. Surveying end-users is essential for several reasons. First, querying end-users on their experience with CGIC provides an opportunity to identify strengths within the process, as well as identifying ongoing challenges in an effort for continual improvement. Second, a survey offers a glimpse into understanding how end-users utilize CGIC-related products daily to understand the quantity and quality of information being provided. In other words, it is an opportunity to learn whether, how, and when CGIC intelligence is used. Third, end-users perceptions of the utility of CGIC information are a critical component in sustaining innovative practices. Efforts will be more likely to be continued if users see the benefits associated with their work product. We identified the end-users of CGIC information as detectives within the KCPD.

METHODOLOGY

Our goal was to obtain a representative sample of offenses with NIBIN leads, so the sampling method proceeded as follows: We identified every firearm case with a NIBIN lead in which there was a CRN assigned from 2018 from KCPD. This year was selected because it contains crimes that occurred before and after the new CGIC processes became fully operational in September 2018, which provides an opportunity to compare cases before and after. For every NIBIN lead in 2018, we identified those cases in which a detective had been assigned.[15] This initial population consisted of 792 cases.

We then restricted cases to the following set of offenses: Aggravated assault, assault, DV aggravated assault, DV non-aggravated assault, armed robbery, robbery, aggravated robbery, homicide, and felon in possession. This decision was made to gain intelligence from the highest-priority violent offenses and rationalized that detectives would have the highest level of information to complete the survey on these offenses. In doing so, we identified 133 cases that appeared to be duplicated and removed these from the sampling frame, and these filtering and sampling decisions reduced the sample to 358.

We saw value in over-sampling cases with a high number of matched leads – in other words, lead dyads may be less informative for investigators than lead triads, tetrads, pentads, and so forth. We reasoned that a cases linked to three (or more) other cases was more likely to

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[15] The initial population was 1,251 cases, however 459 were not initially assigned to a detective.

have useful information on a suspect, motive, etc. We grouped cases into three broad categories based on the number of NIBIN leads for each case. We placed into three groups based on leads:

- Group A consisted of all dyadic leads (one case matched to only one other case), n=176,
- Group B consisted of cases with 3-5 matched incidents, n=161, and
- Group C consisted of cases with 6-14 matched incidents, n=21.

The final sample consisted of 140 randomly selected cases from both Group A and Group B, and all of the cases from Group C, resulting in a stratified random sample of 301 cases that contained a NIBIN lead in 2018.[16]

The research team worked with the KC CGIC Project Manager and analysts to identify current assignments for each detective. The Principal Investigator sent each detective an email on February 18, 2020 - one week before launching the survey - which described the purpose of the survey and solicited questions or concerns from the detectives. On February 26, 2020, each detective was then sent a survey packet through inter-office mail containing a copy of the survey, a description of the research project, an informed consent sheet, and a return envelope. Detectives were asked to complete the survey (see appendix C), place it in the return envelope, seal the envelope, and submit the packet through inter-office email back to the Project Manager (or place the completed package in a box located in the PM's office). Every couple of days, the Principal Investigator collected the sealed survey packets from the PM's office. After several weeks, detectives who had not responded to the survey were sent another email from the Principal Investigator and the second round of survey packets that were structured as described above. Data collection was closed on April 9, 2020. This process yielded 151 surveys and an initial 50.2% response rate.[17] During routine data cleaning procedures, 16 surveys were omitted from the analysis due to response peculiarities and incomplete responses, resulting in a final sample of 135 surveys (44.9% final response rate).

SURVEY RESULTS

The survey of detectives was consistent in scope to extant research in this topical area (see King et al., 2017). It contained general questions about the detective's experience with NIBIN leads, processes implemented in Kansas City, the status of their assigned case throughout the

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[16] We selected a sample of n=301 based on an expected response rate of 50%, which would yield sufficient statistical power to find a medium effect size (at .01) in a multivariate model with eight independent variables (Cohen 1992: 159).

[17] A third wave of surveys was abandoned due to the onset of Coronavirus COVID-19.

process, and the detectives' perceptions of the utility of the NIBIN lead for their specific case. Table 5.1 presents descriptive information on cases receiving NIBIN leads. The majority of cases

Table 5.1: Survey Descriptive Information

	n	%
Offense Type		
Homicide	22	16.3
Assault	78	57.8
Armed Robbery, Robbery	19	14.1
Other	16	11.8
Detective Assignment		
Homicide Squad	23	17.0
Assault Squad	79	58.5
Robbery Squad	12	8.9
Other	21	15.6
Who provides you a lead report?		
ATF	40	29.6
Crime Lab	28	20.7
Supervisor	36	26.7
Lab & Supervisor	11	8.1
CGIC	6	4.4
Other	9	6.7
Missing	5	3.7
How do you receive a lead report?		
Email	131	97.0
Email & Phone	2	1.5
Other	2	1.5
Is your supervisor informed of leads?		
Yes	115	85.2
No	11	8.1
Unsure	8	5.9

Was the lead report received in a timely manner?		
Yes	84	64.4
No	7	5.2
Missing	41	30.4
Did crime occur pre- or post-CGIC?		
Pre-CGIC	76	56.3
Post-CGIC	59	43.7

were aggravated assaults (57.8%), followed by homicides (16.3%) and robberies (armed and unarmed) (14.1%). The other cases in this sample included felons in possession, domestic violence, assault, and battery. In KCPD, these cases are assigned to specialized units within the Investigations Bureau, including Assault Squad, Homicide Squad, and Robbery Unit, respectively. Detectives tended to be assigned to these specialized functions when being assigned these specific cases.

Nearly all detectives indicate lead reports are communicated to them via email (97.0%) or via email and phone. There was some discrepancy regarding where these emails originated, but the vast majority of detectives indicated the reports came from ATF, the KCPD Crime Lab, their supervisor, CGIC, or some combination of these sources. Nearly all detectives showed that their direct supervisor received lead reports simultaneously, which is consistent with the CGIC protocol of notifying assigned detectives and their immediate supervisor simultaneously. Detectives were asked whether they believed the lead report was received in a timely manner, which permitted the detective to subjectively determine 'timeliness'. The majority of detectives (64.4%) indicated that the lead was distributed in a timely fashion, although a notable proportion of the respondents did not answer this question (30.4%). Another way to interpret this response is that only 5.2% of detectives felt that NIBIN leads were *not* received in a timely manner.

As noted previously, detectives were surveyed about cases assigned to them in 2018, and KC CGIC experienced significant changes in September 2018 that brought the process into compliance with the CGIC business model. Therefore, the survey contains cases from detectives on crimes that occurred before and after this organizational change. This permits us to compare and contrast detectives' perceptions for gun cases pre- and post-CGIC. Of the surveys in this sample, 56.3% involved crimes pre-CGIC, and 43.7% involved crimes post-CGIC.

We surveyed detectives regarding a series of investigation characteristics when they received the lead and when they completed the survey. These series of questions permit us to

more fully understand what information was known to officers at the time they were notified of a NIBIN lead that connected two or more cases, as well as the characteristics of the case as it progressed over time. The results from these questions are presented in Table 5.2. It is important to note that these questions do not ask detectives to indicate the role NIBIN or leads had across these characteristics, rather, this information should be taken at face value to understand better how gun crime characteristics progress over time. Additionally, estimates presented here exceed 100% because detectives were asked to indicate all attributes that applied to the case in question.

At the time the detective received the lead notification, no suspect was identified in 45.9% of the cases. Suspect identification was more precise over time, and at the time of the survey, only 40.7% of cases still did not have a suspect identified. At the time of receiving the lead, the detective was only actively working 13.3% of cases and was waiting on other leads (in the non-CGIC sense) in 15.5% of cases. This indicates that detectives had already started working about one-quarter of gun cases when they received the lead – this estimate is likely not higher simply because of high caseloads within the Assault and Homicide Squads, and for many cases, the lead information is distributed quickly (this will be explored further momentarily). These estimates predictably decrease over time, and at the time of the survey, only 1.5% of cases were still being worked actively, and only 5.2% of cases were active, but the detective was waiting on additional information. However, at the time of receiving the lead, 31.1% of detectives indicated their case was already inactive, and another 5.9% reported the case was already closed. This appears to be a rather large proportion of inactivated cases even before a NIBIN lead is produced and distributed.

As noted earlier, about half of detectives indicated that no suspect was identified at the time of receiving the NIBIN lead; however, details on suspect identity is often rather sparse early in the process. Detectives indicated that at the time of receiving a lead, only about 14.1% of suspects were identified by name, 4.4% by an alias, and in about 3.7% of cases a suspect was not identified, but a group/gang affiliated with the crime had been. The proportion of cases that had made their way further in the justice process was predictably low, including 1.5% that had warrants issued, 4.4% in which at least one person was arrested, 6.7% that were charged by the prosecutor's office, and 0.7% were adjudicated. These estimates increased over time. When completing the survey, detectives indicated that 19.3% of suspects were identified by name, 3.7% of cases had warrants issued, 7.4% had suspects arrested, and 13.3% were charged by the prosecutor's office. Three percent were adjudicated, and an additional 3.7% were awaiting trial. While these estimates are trending in the predictable direction over time, it is interesting to note

Table 5.2: Status of Investigation

	At the time of lead		Currently	
	N	%	n	%
No suspect identified	62	45.9	55	40.7
Case active and worked regularly	18	13.3	2	1.5
Case active but waiting on other leads	21	15.5	7	5.2
Case inactive	42	31.1	67	49.6
Case closed (but not cleared)	8	5.9	12	8.9
No suspect but identified groups	5	3.7	5	3.7
At least 1 suspect identified by alias	6	4.4	1	0.7
At least 1 suspect identified by name	19	14.1	26	19.3
Warrants issued	2	1.5	5	3.7
Arrests made	6	4.4	10	7.4
Charged by prosecutor	9	6.7	18	13.3
Suspect plea bargained	1	0.7	4	3
Suspect awaiting trial	0	0.0	5	3.7

n = 135

*exceeds 100% because multiple responses selected

the relatively small number of gun crimes that had processed throughout the entire justice system (or even the proportion that were now in the court system). This may be indicative of the difficulty of prosecuting gun crimes in general, even with the benefit of NIBIN lead information.

The information above provides an investigative foundation for further inquiries. Table 5.3 provides detectives' perspectives on the utility of NIBIN leads across these same characteristics. Overall, a tiny proportion of detectives responding to this survey highlighted NIBIN leads as helpful elements across a variety of beneficial outcomes. Specifically, only 5.2% of detectives indicated the NIBIN lead helped them to identify a group as likely suspects, and 5.2% said the lead helped to identify a specific suspect by name. In only 2.2% of cases did NIBIN leads forward the arrest of a suspect, and 3% of charges. Detectives indicated that NIBIN leads contributed to securing a plea bargain in only one case, and felt that the lead assisted in

advancing a case to trial or leveraging a sentencing outcome in 3% of cases. This feedback from detectives is likely disappointing to proponents of NIBIN. Still, it is important to note that detectives infrequently indicated that the lead itself helped with preferred investigative and prosecutorial outcomes.

Table 5.3: Impact of NIBIN lead

	n	%
Identify group as likely suspects	7	5.2
Identify at least 1 suspect by an alias	2	1.5
Identify at least 1 suspect by name	7	5.2
Lead to arrest of suspect	3	2.2
Lead to charges by the prosecutor	4	3.0
Secure plea bargain	1	0.7
Advance the case to trial	4	3.0
Sentencing	4	3.0

n = 135

% exceeds 100% because multiple responses selected

One element of the CGIC business model is a quick turnaround of NIBIN leads to detectives – in other words, to generate actionable leads, it is vital to reduce the time between the crime and generating a lead. This component is explored in greater detail in section 4 of this report; however, it is possible to also explore it here with the sample of gun crimes. Table 5.4 presents some descriptive information on the time between the crime and when the lead was generated specifically for the detectives' cases within this dataset. It is important to note that the data are highly skewed, ranging from 1 day between crime and lead and 492 days between crime and lead. Overall, the average time between offense and lead was 100 days. This table also presents time in quartiles, meaning 25% of all leads came back in 11 days or less, 50% of leads were generated in 78 days or less, and 75% of cases within 156 days or less. But this story changes when comparing crimes that occurred pre-CGIC to offenses that occurred post-CGIC in 2018.

NIBIN leads were generated much quicker after the CGIC model was fully implemented in Kansas City. The mean number of days from crime to lead decreased from 140 days to just 49 days after full implementation of CGIC. Both pre- and post-CGIC estimates remain highly skewed

right; thus, the mean is sensitive to outliers. In these situations, it is wiser to examine the median time as a more accurate depiction of central tendency. The modal gun crime pre-CGIC produced a lead in 112 days, whereas the typical gun crime post-CGIC produced a lead in 18 days. Detectives received NIBIN lead notifications much quicker after full implementation of the CGIC business model.

To explore this difference further, we estimate t-values comparing the mean number of days from crime to NIBIN lead pre- versus post-CGIC in various ways. First, we examine the unadjusted mean before and after. This difference of means test yielded a t-value of 5.568, which is statistically significant at the 0.000 level. We can say with high confidence that the time was dramatically and significantly different after full implementation of CGIC. We then performed two additional confirmatory analyses because of the highly skewed nature of these data. To minimize the influence of outliers within skewed data, we performed an 80% and 90% Winsorization procedure where outliers in the 20% and 10% tails of the distribution were substituted with the mean for each sample (Tukey 1962). Even after Winsorization of the data sets, the t-values were significant at the $p < 0.000$ level, therefore confirming the conclusion that time between crime and NIBIN lead was dramatically different post-CGIC.

Table 5.4: Time between crime and NIBIN lead

	All Cases	Pre-CGIC	Post-CGIC
Mean	100	140	49
25%	11	62	4
50%	78	112	18
75%	156	202	88
n	135	76	59

Difference of means test

	Pre-CGIC	Post-CGIC	t-value	Signif
Raw	140	49	5.568	0.000
90% Winsor	131	49	5.874	0.000
80% Winsor	122	49	5.886	0.000

We explored detectives' perceptions of the utility of NIBIN leads with a simple question, "overall, how helpful was the lead report for this case?" The results of this question are summarized in Table 5.5. A total of 25 (18.5%) of detectives did not respond to this question, which compromises our ability to draw some conclusions from the results provided. Of detectives responding, 9.1% felt that the NIBIN lead was very helpful, and 11.8% indicated the lead was helpful. Only 8.2% reported that NIBIN leads were unhelpful, and no detectives indicated very unhelpful. The vast majority of detectives – 70.9% - indicated that the lead was neither helpful nor unhelpful. For simplicity, these data were reduced to a dichotomous helpful/unhelpful response. We included the equivocal "neither helpful nor unhelpful" as unhelpful, reasoning that if detectives believe the lead offered utility, then they would have indicated as such.[18] This simplified interpretation of this question resulted in 20.9% of detectives indicating the NIBIN lead was helpful for their case. On its face, these responses from detectives are not very encouraging. While it is clear that detectives viewed the helpfulness of NIBIN leads to be more helpful than the previous section that asked officers to recall exactly how leads contributed to specific case outcomes and processes, it is noteworthy that in only about 1 in 5 gun cases involving a lead did the detective report this lead was helpful for their case.

Table 5.5: "Overall, how helpful was the NIBIN lead report in this case?"

	Helpful (5 categories)			Helpful (2 categories)		
	n	%	Valid %	n	%	Valid %
Very helpful	10	7.4	9.1%	23	17.0	20.9%
Helpful	13	9.6	11.8%			
Neither helpful nor unhelpful	78	57.8	70.9%			
Unhelpful	9	6.7	8.2%	87	64.4	79.1%
Very unhelpful	0	0.0	0.0%			
Missing	25	18.5		25	18.5	
n	135	110		135	110	

Some detectives offered additional explanation and context to their assessment of helpfulness of NIBIN leads in open-ended questions. From these responses, two specific themes developed that provide context on detectives' responses. First, detectives indicated that no additional information was available. In these situations, the lead was not necessarily unhelpful,

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[18] It should be noted this response was also reduced to three categories of helpful-neither-unhelpful, and results of subsequent analyses presented here were substantively the same as what is presented. So for parsimony we utilize the dichotomous measurement throughout the remainder of this section.

but the lead alone (absent additional information) could not forward the investigation. Detectives indicated:

"NIBIN lead did not advance the case."

"No suspects [identified] in the two linked NIBIN cases."

"Parties described in my case may assist in future leads for other cases with NIBIN hits matching."

"Involved parties in both cases were unknown. It was helpful to know location of related leads for the future."

Here, the detectives noted that perhaps this lead intelligence might be helpful in some future case, but without suspect or victim information, the lead did not help their efforts. Another detective indicated:

"We knew the identity of the involved parties, but unable to prove who shot first."

Second, detectives indicated many victims were uncooperative. This was particularly true amongst detectives investigating aggravated assaults. The lack of victim cooperation is an enduring frustration for detectives in general and Assault Squad detectives in particular. For example, detectives indicated:

"Could have potentially been helpful with victim cooperation."

"Had victim had any suspect [information], even a vehicle, this [lead] would have been helpful."

"Uncooperative victim." (4 detectives used this phrase)

The frustrations expressed by detectives here underscores the reality that forensic evidence (e.g., leads) have limited utility without additional information about the crime, either additional tangible evidence, testimony, or cooperation from victims. Without cooperation, detectives often feel that NIBIN leads do not help their investigations.

Figure 5.1 provides a visual description of the perceived helpfulness of NIBIN leads by type of crime. Crime categories are collapsed to homicides (n=19), aggravated assaults (n=71), and other (n=20), with missing responses omitted. Each vertical bar presents the percentage of detectives that indicated the NIBIN lead was unhelpful, neither helpful nor unhelpful (neutral),

helpful, or very helpful. Feedback suggests that NIBIN leads were helpful or very helpful in approximately 31% of homicide cases, neutral on almost 58% of cases, and unhelpful in 10.5% of cases. Perceived helpfulness was less for aggravated assaults – about 11% of detectives indicated NIBIN leads were helpful or very helpful, about 80% felt neutral, and 8.5% indicated leads were unhelpful. NIBIN leads appeared to be more helpful in other types of cases (e.g., FIP, non-aggravated DV, robbery), but 50% of detectives still indicated NIBIN leads were neither helpful nor unhelpful.

Figure 5.1: Perceived helpfulness of NIBIN leads by crime (percentages presented)
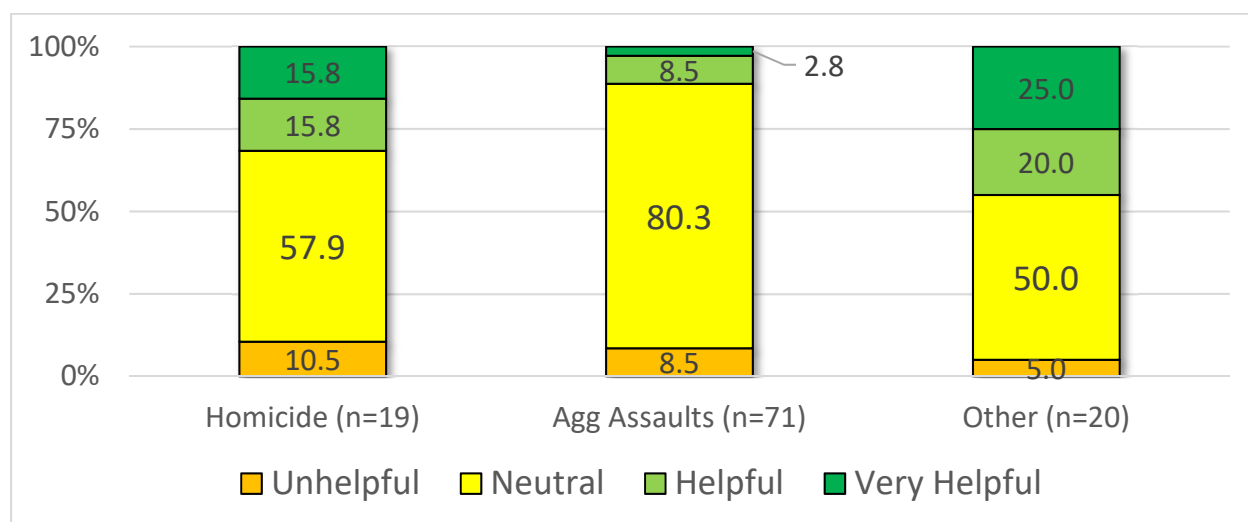
The next section unpacks detectives' perceptions of helpfulness further. Using the dichotomous measurement of NIBIN lead helpfulness, we compared detectives' perceptions across several different dimensions, and present these cross-tabulations in table 5.6. First, we examine perceptions of helpfulness by type of gun crime. For aggravated assault cases, detectives reported that NIBIN leads were helpful in 11.3% of cases. For cases other than aggravated assaults, detectives indicated that leads were useful to 38.5% of cases. This difference is statistically significant (X^2 = 11.257, p<.001). In other words, detectives were significantly <u>less</u> likely to indicate leads were helpful in aggravated assault crimes than other types of crimes. The opposite is the case for homicides, where detectives reported that leads were helpful in 31.6% of cases (compared to 18.7% of non-homicides). This is substantively important, though it should be noted that unlike aggravated assaults, this difference did not achieve statistical significance. It is not clear from these data alone why this may be the case. However, it is important to note that Assault Squad detectives have much higher caseloads than their homicide counterparts and

Table 5.6: Cross-tabulations of perceived helpfulness of NIBIN lead across various factors

	No	Yes
Other case	24	15
	61.5%	38.5%
Aggravated Assault Case	63	8
	88.7%	11.3%

$X^2 = 11.257*$

Contingency Coefficient = 0.305*

	No	Yes
Other case	74	17
	81.3%	18.7%
Homicide case	63	8
	68.4%	31.6%

$X^2 = 1.581$

Contingency Coefficient = 0.119

	No	Yes
Slow lead	69	16
	81.2%	18.8%
Quick lead	18	7
	72.0%	28.0%

$X^2 = 0.984$

Contingency Coefficient = 0.094

	No	Yes
Pre-CGIC	47	13
	78.3%	21.7%
Post-CGIC	40	10
	80.0%	20.0%

$X^2 = 0.046$

Contingency Coefficient = 0.020

n=110   *p<.001

encounter as much (if not more) witness noncooperation. In this environment, the presence of a NIBIN lead may not be helpful to progress aggravated assault crimes throughout the process. Because of how cases are assigned to their corresponding squads, it is also accurate to conclude that detectives in Assault Squad are much less likely than their Homicide Squad counterparts to view NIBIN leads as helpful for their cases.

Next, we dichotomized time between the crime and lead as either being quick or slow. We defined a quick lead as those leads that were generated in the top 25th percentile of leads overall – in other words leads that were produced and distributed to detectives within 11 days (see table 5.3). Overall, detectives were more likely to view leads as helpful when leads were generated quickly (28%) rather than slowly (18%); however, this difference was not statistically significant. To some extent, detectives view quick leads as better than slow leads. Finally, detectives' perceptions of the helpfulness of leads were unrelated to whether the crime they were assigned occurred pre- or post-CGIC. Detectives viewed leads post-CGIC implementation as helpful only 20% of the time, whereas for crimes occurring before CGIC implementation were seen as helpful 21.7% of the time – an indistinguishable difference.

What factors influence detectives' perception of the helpfulness of NIBIN leads? To address this question, we performed a series of confirmatory multivariate analyses predicting detectives' perceptions of NIBIN lead helpfulness. The benefit of this approach is that multivariate logistical regression permits inclusion of several correlates of perceived helpfulness to be estimated as a collective while adding statistical control to other factors included in the model. In other words, we are able to determine the effects of specific factors while holding other factors constant, thereby understanding the relative influence of each dimension. We considered a series of different factors, including whether the crime occurred post-CGIC, the time between crime and lead (measured four different ways – a quick lead, the days between crime and lead, and Winsorization of 90% and 80%), and crime type – aggravated assault or homicide. We hypothesize that each of these factors would be positively correlated with helpfulness. Table 5.7 presents descriptive statistics for each of the variables included in these models, and table 5.8 presents the results of a series of regression models.

Table 5.7: Descriptive statistics and measurements of key variables

Variable	Measure	n	%
Lead helpful	No = 0	87	79.1
	Yes = 1	23	20.9
Post-CGIC	Pre = 0	60	54.5
	Post = 1	50	45.5
Quick Lead	No = 0	85	77.3
	Yes = 1	25	22.7
Days crime to lead	Mean =	90.6	
Days crime to lead (90% Winsor)	Mean =	95.1	
Days crime to lead (80% Winsor)	Mean =	99.9	
Aggravated Assault Case	No = 0	39	35.5
	Yes = 1	71	64.5
Homicide Case	No = 0	91	82.7
	Yes = 1	19	17.3

Missing cases on dependent variable excluded from multivariate analysis

Four separate models were estimated, where a different estimation of time between crime and lead was used. Substantively, each of these models reaches similar conclusions: detectives investigating aggravated assault cases were significantly less likely to view NIBIN leads as helpful. This was a consistent observation across all models. In fact, detectives were approximately 6.6 times less likely to view leads as helpful than detectives investigating other cases.[19] This is true even after controlling for the influence of whether the crime occurred after CGIC was fully implemented, the amount of time between crime and lead (regardless of measurement), or other types of crime being investigated.

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[19] Odds ratio is estimated as (1-exp(b)/exp(b))+1.

Table 5.8: Logistical regression predicting detectives' perceptions of NIBIN lead helpfulness

	Model A			Model B			Model C			Model D		
	b	s.e.	exp(B)	b	s.e.	exp(B)	b	s.e.	exp(B)	b	s.e.	exp(B)
Post-CGIC	-0.089	0.55	0.92	-0.153	0.56	0.86	-0.279	0.67	0.76	-0.300	0.57	0.74
Quick Lead	0.572	0.61	1.77									
Days lead				-0.003	0	0.99						
Days to lead (90% Winsor)							-0.005	0.00	0.99			
Days to lead (80% Winsor)										-0.006	0.00	0.99
Agg Assault Case	-1.87*	0.59	0.15	-1.82*	0.59	0.16	-1.78*	0.59	0.17	-1.79*	0.60	0.17
Homicide Case	-0.643	0.68	0.53	-0.667	0.68	0.51	-0.714	0.69	0.49	-0.732	0.69	0.48
r-square = 0.167	0.167			0.17			0.184			0.187		

*p<.05

n=110

SUMMARY OF RESPONSES FROM DETECTIVES

The purpose of surveying detectives was to understand how and why they use NIBIN leads and to more fully understand their perceptions of its effectiveness. This is important because detectives – particularly those assigned to investigate firearm-related assaults and homicides – are NIBIN power users, and thus occupy a critical component in the entire CGIC process. Detectives who fully embrace the CGIC business model and view CGIC's products (e.g., NIBIN leads) as useful tools in their investigative activities will be more likely to utilize these tools during the course of their work routinely.

There is little evidence that detectives who were assigned cases in which a NIBIN lead was produced routinely felt the lead was helpful in forwarding their case. The majority of detectives reported that NIBIN leads were neither helpful nor unhelpful (70.9%). A small proportion of detectives identified specific desired outcomes from the lead, such as helping identify a suspect by name or alias or leading to arrests or charges filed against suspects. Comments from detectives suggest this is in part due to a lack of additional actionable information about the offense, or a lack of victim cooperation. Both factors stymie their investigations, rendering NIBIN leads unhelpful in the big picture. Perceptions of unhelpfulness were particularly prevalent for assaults. Detectives were significantly less likely to indicate NIBIN leads were helpful for assault investigations compared to other offenses.

These perceptions contrast to what detectives and stakeholders expressed during one-on-one interviews (see section 6 of this report). In those conversations, stakeholders (especially supervisors and organizational leaders) expressed great optimism of CGIC and its components like NIBIN and eTrace to produce actionable intelligence in firearm-related investigations. Detectives were less enthusiastic about CGIC, but in general, expressed more favorable reviews of CGIC than what was reflected in the surveys. While the juxtaposition of these viewpoints is unclear, it may be a function of whether detectives are being asked about their *general* versus *specific* attitudes and perceptions. Detectives formulate general attitudes and perceptions based on their perceived support for the strategy or policy in a more theoretical sense. In other words, the logic model of the CGIC business plan makes intuitive sense, and therefore when asked, detectives report supportive attitudes.

In contrast, when queried about the helpfulness of CGIC in particular cases, it is more challenging for detectives to identify exactly how CGIC products were helpful in these particular cases. In other words, 'NIBIN leads *can* be helpful, but it just wasn't helpful in *this* situation'[20]. Since the survey consisted of a random sample of cases across an entire year, it is likely the case that NIBIN leads are not perceived as helpful in the vast majority of investigations. As King and colleagues conclude from a similar study of ballistics imaging hits and homicides:

> "…the big breakthroughs in a case may result from multiple, small pieces of information, and not from one, large piece of information… In most instances, investigators state that they loved receiving a ballistic hit, because they wanted to get as much information about their case as possible. As one robbery detective stated, "When I work an investigation, it's like I'm hopping down a bunny trail. I want to gather as much information from anyone and anywhere as I can. Anything might prove helpful." It may be that investigators like hit reports because of the possibility of illumination, not because the hit reports "crack the case" or yield a tremendous insight. (King et al., 2017: 6-7).

But it is worth noting that almost 20% of detectives reported that leads were helpful or very helpful; therefore, it is clear that detectives believed these leads were indeed helpful in some cases. Together, this suggests that while leads were not perceived as helpful in the *typical* investigation, they may be quite helpful in a limited number of investigations. This interpretation would be consistent with feedback during stakeholder interviews. Several detectives were excited to explain in great detail how NIBIN leads forwarded their investigations, permitting them

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[20] This phenomena was evident during an interaction between the principal investigator and a detective selected to complete a survey for one of their investigations. The detective contacted the PI via email, commenting "I'm not sure why you are asking about this particular case. I can give you examples of other cases where I used NIBIN leads much more." The PI explained that the detective's case was sampled randomly from all cases, and the sample may be more generalizable to investigations in general. The detective understood, lamenting 'I wish you would have asked me about a different case so I could explain how I used the lead."

to make links between people that may not have otherwise been obvious. These 'celebrated cases' carry significant weight when understanding the usefulness of NIBIN for municipal police detectives. This also encourages a reframing of how and when leads are used – rather than expecting leads to produce efficacy in many or even most investigations, the results presented here and in interviews are suggestive that leads could be helpful in some cases. Tempering expectations regarding the utility of NIBIN leads amongst detectives and stakeholders is wise. Additionally, ensuring these 'celebrated cases' are communicated to detectives is also important for the sustainability of CGIC. If detectives believe or are told that NIBIN leads are the silver bullet to firearm investigations, then when this does not manifest itself in the majority of investigations, the police department risks creating cynicism amongst detectives. This is particularly dangerous within Assault Squad, who are assigned high caseloads. Rather than being a tool that assists with investigations, NIBIN leads become just another administrative component of the case file that does not contribute to the investigation. In these situations, leads may become a distraction. And if this distraction becomes normative, not only would this contribute to cynicism but also discourage detectives from fully utilizing NIBIN leads in future investigations.

Another key takeaway from these analyses is that NIBIN lead processing was more efficient after implementing CGIC in September 2018. One of the key components of the CGIC business model is the timely turnaround of ballistic matches – in other words, a shorter period between crime and NIBIN lead. The typical length of time between the crime and NIBIN lead in this representative sample of investigations before CGIC implementation was about 112 days. After full implementation of CGIC, the median time between crime and lead generation was 18 days. Indeed – about 1 in 4 leads were generated less than four days after the crime. This statistically significant decrease in time enhances the ability for CGIC to contribute to timely, actionable leads within firearm investigations. This enthusiasm is tempered slightly by the observation that detectives were no more likely to perceive the NIBIN lead and helpful when it was produced quickly. Logically, detectives would seem to prefer this forensic evidence to be communicated to them within days of the offense rather than weeks or months later. This was not evidenced by the feedback from detectives. One explanation for this peculiar lack of relationship between timeliness and perceptions of helpfulness is related to the previous point – if detectives do not have additional evidence or victim cooperation, the timeliness of NIBIN leads is not relevant.

SECTION 6 – STAKEHOLDER INTERVIEWS

Data and information were collected from three primary sources: official data or police records (Section 5), surveys of detectives (Section 6), and interviews with stakeholders involved with CGIC (current section). Each of these mixed-methods sought to provide context and a clearer understanding of the process and outcomes of CGIC in Kansas City. Interviews provide an opportunity to gain a richer understanding of how CGIC operates in practice and to clarify details gleaned from other sources.

Trained members of the research team conducted 43 semi-structured interviews with CGIC stakeholders across two separate phases. Phase I of the interviews occurred from June 23-27, 2019 – during Phase I, three researchers conducted interviews with 26 separate stakeholders. Phase II occurred January 6-9, 2020, and two researchers conducted interviews of 17 individual stakeholders. Each meeting lasted approximately 45 minutes, though some interviews lasted as long as 90 minutes. Interviews were held at the stakeholders' workplace, either in private offices or conference rooms [21] during their regular work hours. Conversations were private – one stakeholder at a time – and most interviews were conducted by multiple members of the research team (though eight interviews were conducted one-on-one). Interviewees were assured their identities would be confidential, and no information provided would be attributed to a particular person in this report. Researchers kept copious notes throughout these interviews, and verbatim quotes from the sessions are presented throughout this section. Interviews were not recorded. The research team summarized each phase of interviews in memorandums circulated to CGIC stakeholders (see Appendix D).

It was essential to obtain a broad perspective of views across a variety of stakeholders. Figure 6.1 provides a visual depiction of employers or roles across the interviewees. The majority of interviews were of KCPD personnel (25 of 43, or 58%). The research team conducted nine interviews with ATF personnel and five prosecutors (3 state-level prosecutors and 2 Assistant U.S. Attorneys). Additionally, the research team interviewed all four members of the Executive Team (ATF SAC, KCPD Chief of Police, U.S. Attorney (WD-MO), and Jackson County Prosecutor).

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[21] One interview was conducted via phone due to scheduling complications.

**Figure 6.1 – Distribution of Stakeholders Interviewed**
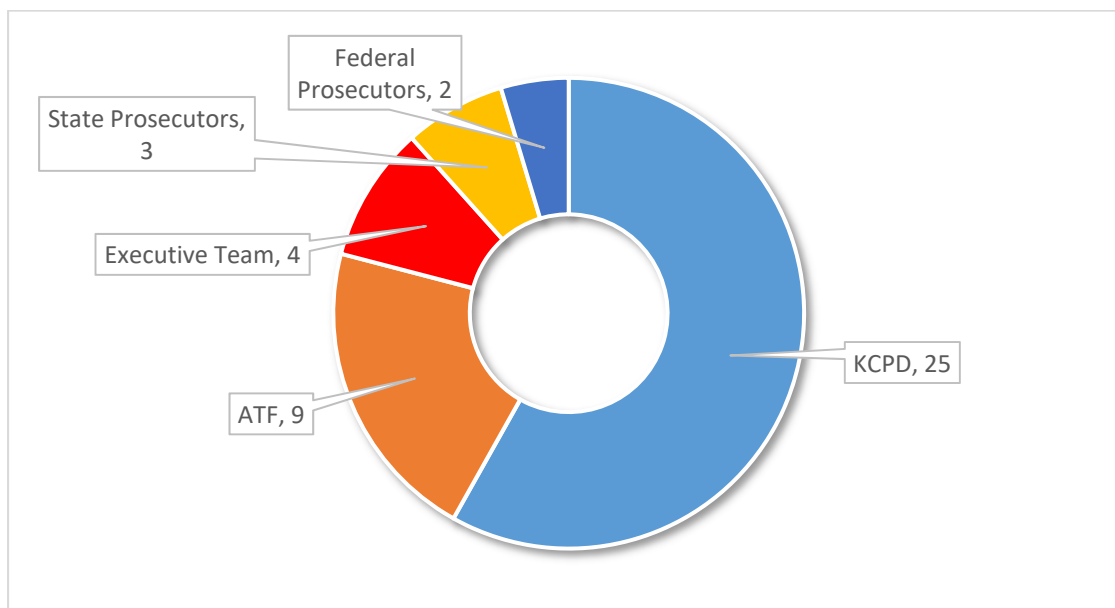
Figure 6.2 provides additional information on the distribution of KCPD personnel interviewed. The majority of interviewees, 14, were detectives assigned to several different investigative elements, including Assault Squad, Homicide Squad, Violent Offender Squad, Gun Squad, Robbery Squad, or CGIC enforcement. A total of 7 supervisors were interviewed, including sergeants, captains, majors, deputy chief, and crime lab director. Three personnel within the regional crime lab were interviewed, and one civilian crime analyst.

Figure 6.2 Distribution of KCPD Personnel Interviewed
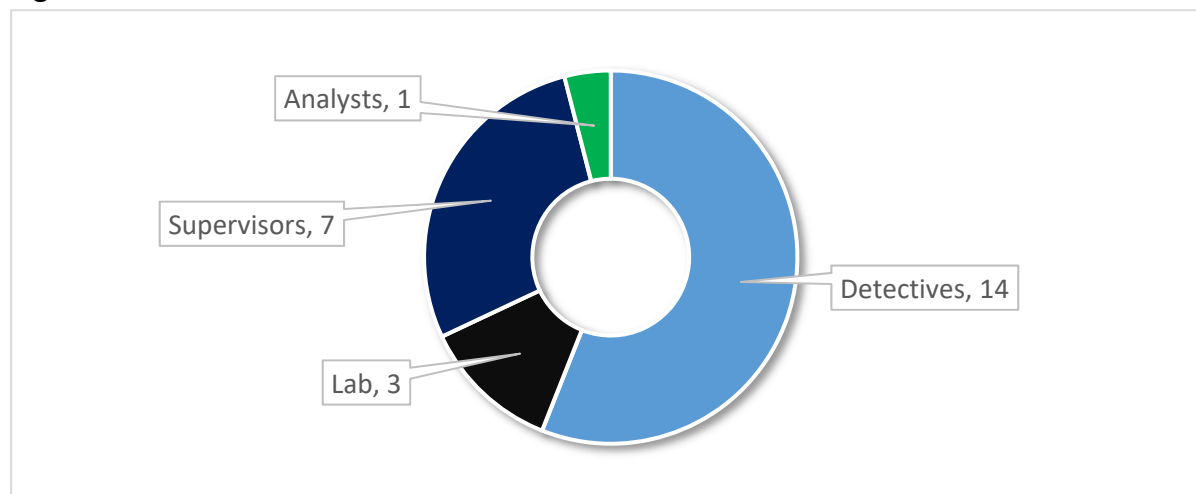
The semi-structured interviews focused on several different general themes, though the questions and conversations tended to flow in different directions depending on the role and position of the interviewee. Generally, interviews addressed a familiar script:

What is CGIC? What does it mean for you and your organization? How does CGIC fit into your work or mission? How does CGIC help? Are CGIC cases easier to investigate, charge, prosecute, etc.? Does CGIC add value, and if so, how? What are the facilitators and challenges to using CGIC-generated intelligence?

Appendix D highlights important process considerations from these different points in time, which has particular importance for stakeholders implementing CGIC in Kansas City. Here, we focus on stakeholders' perspectives of what CGIC is doing well, and where challenges remain because these observations have potentially greater generalizability to CGIC overall or similar strategies in other jurisdictions.

As described elsewhere in this report, the CGIC in Kansas City was implemented in September 2018. Phase I interviews were purposively conducted in June 2019 (10 months after implementation). This period was selected because there was sufficient time for the procedural modifications to take root, work out some inevitable initial kinks, and provide stakeholders with time to reflect on early intervention efforts. Phase II was in January 2020, 17 months after implementation, to obtain a perspective of how CGIC was developing and progressing. CGIC was, and remains, a work in progress, and its operation has evolved as challenges were identified. This is a natural process for strategies like CGIC – rarely is a complex, multi-agency initiative implemented without some redirection or reassessment – and this was observed in Kansas City. The multi-phase interview schedule provides an opportunity to determine whether or how CGIC evolved. The tradeoff to this approach, unfortunately, is that it is sometimes important to be aware of what information was obtained in a particular phase because struggles and challenges in Phase I may not be as problematic in Phase II as the strategy matures. Similarly, problems that were observed by stakeholders in Phase II may not have been noted in Phase I because interviewees were still getting their CGIC feet underneath themselves. Therefore, when relevant, we will highlight observations and feedback from interviews in this report if they are relevant to a particular phase of CGIC development in Kansas City but not the other.

Several distinct themes emerged during the interviews of stakeholders who occupied different positions and roles within the model.

WHAT IS CGIC?

Stakeholders were asked to describe CGIC in their own words, or define what CGIC is all about. Understanding how stakeholders identify an innovation is critical because how it is characterized within and between agencies will influence its sustainability as well as its practices, and provides a perspective of how the innovation is transmitted from one individual to the next. Often this cultural transmission is more important than formal training when it comes to diffusing a shared understanding of innovation. We heard CGIC described in a variety of different ways, most prevalent amongst these perspectives was *equating CGIC to a task force*. This viewpoint is informed by the fact that CGIC shares many characteristics of a traditional task force in which stakeholders have familiarity: there is substantial involvement by federal law enforcement, activities tend to center around a small subset of internal members (rather than being diffused across organizations), and there are a particular focus crime types and those individuals disproportionately involved in gun crime. Some detectives described their assignment as TFOs (Task Force Officers). Relatively small groups of detectives and officers, including ATF agents, TFOs assigned to CGIC enforcement, analysts assigned to CGIC activities, and detectives assigned to particular units (e.g., assault squad and homicide squads) were identified as being 'part of the task force,' whereas others who may not have had as much immersion into CGIC activities and products, or stakeholders who contributed to CGIC inputs or benefited from CGIC outputs only occasionally, were more likely to identify CGIC activities as 'something someone else' does. In this way, CGIC and its NIBIN and eTrace components were viewed as unique and different from many other activities and priorities. Stakeholders commented, "CGIC is an ATF and KCPD thing," suggesting that other partners were less central to the mission and goals of the innovation.

The task force shorthand was common but not universal, and stakeholders were quick to point out similarities and differences between CGIC in Kansas City and more traditional federal task forces. Interviewees noted:

> *"CGIC is kind of like a task force, but not really. It is not a task force in the traditional sense. It is a specialized unit that revolves around a technology [NIBIN] to forward its mission."*

> *"The short answer is Yes – it's a task force. It is run by ATF and [goals are] driven by ATF. But ATF must rely on local police for information, particularly their RMS [Records Management System]."*

One stakeholder bristled at the task force comparisons, suggesting CGIC has elements that distinguish itself from the task force approach.

"CGIC is not really a task force. It's more than that. It is a strategy and approach to gain actionable leads. It uses NIBIN and eTrace to do this. CGIC is a model of information and intelligence to make things actionable. The idea is to build a CGIC model, then expand it."

This same stakeholder later relented a bit, saying:

"If it is easier to think of CGIC as a task force, then I guess that makes sense. Maybe it is a little like a task force and a model. It could be both."

RESOURCES

Another theme identified was a *lack of resources* and how this impeded the performance of the CGIC. Interviewees expressed significant appreciation for the current BJA award because it provided an opportunity to 'do CGIC right', and but for this infusion of resources, many deficiencies would prohibit full implementation of the CGIC model. Nevertheless, resource gaps remained. This observation is not surprising – most organizations and units within organizations routinely complain about resource allocation shortages, and rarely do public officials note that resources are sufficient. Nevertheless, the primary resource gap centered on personnel allocation within investigative elements responsible for investigating assaults and homicides. When prompted to describe challenges, nearly every stakeholder interview noted a lack of personnel resources as a threat to successful CGIC implementation. The assault squads seemed incredibly overwhelmed, being relegated to 'case managers' of assault cases rather than investigators. Estimates varied, but detectives reported having between 25 and 40 active assaults in their caseload at any given time, and stakeholders noted that there "just isn't enough time to handle most cases because there are more being assigned daily." One stakeholder commented about Assault Squad:

"Each detective carries 25-30 cases at any given time. If it was up to me, I'd only assign cases with active leads, but customer service is important so we assign cases without leads[22] (such as when a drive-by shooting has happened with only property damage resulting)."

The caseload has an impact on the utility of NIBIN success because detectives noted that they were receiving NIBIN leads regularly but did not have sufficient time to utilize this intelligence fully.

"I have 30-35 cases right now. I get a lot of NIBIN leads. One every day or two. There are probably 8-10 (lead notifications) in my inbox that I haven't had a chance to look at."

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[22] 'Leads' here references investigative leads, not necessarily NIBIN leads.

Stakeholders also explained that the nature of NIBIN lead notifications could be overwhelming, specifically that early individual lead notifications were comprehensive and exhaustive, but this tended to be counterproductive. One stakeholder noted that valuable intelligence "had to be in the first two pages of the notification," or details would likely be ignored. This, too, is partially a function of low resources and a high workload.

An example of resource shortages was in the crime lab, specifically firearms technicians. With the grant support, three additional firearm technicians were added to the lab, and this increased capacity related to ballistic evidence input (e.g., feeding Brasstrax) and evidence collection. Other resources within the lab were credited with mitigating the slow turnaround of leads noted in previous sections of this report. The additional technicians were a necessary component because of the policy shift toward comprehensive collection. Before September 2018, NIBIN input was conducted only when requested by a detective assigned to the case. Comprehensive collection and timely analysis would not have been possible with pre-CGIC resources. This infusion of funds within the laboratory resulted in an unanticipated consequence related to efficiency, which is discussed further below.

EFFICIENCY

A third theme that developed initially was *efficiency*. A comprehensive collection of ballistic evidence had become normalized within KCPD culture, and collection, analysis, and dissemination of NIBIN lead information to case detectives continued to improve as the model progressed. This theme developed as a double-edged sword. Most stakeholders noted that ballistic evidence collection or feedback on NIBIN leads was "much better than before [September 2018]", but this came at a cost. Stakeholders who were accustomed to NIBIN leads being communicated weeks or months after a crime was now receiving leads often before the case was assigned to a detective. Detectives would be acquiring leads as part of their initial screening of a case, which on the one hand, is ideal. Still, detectives lamented that often it added to the overwhelming volume of information they had to digest when being assigned a case. The inference was that quick NIBIN leads to risk being lost in the shuffle of initial case reviews. Interviewees expressed variations on "it's almost like NIBIN leads are coming back *too* quickly."

A notable inefficiency pre-CGIC was the amount of time it took for evidence to go from the street to the lab. Detectives noted they rarely collected ballistic evidence themselves; instead, evidence was collected by either a crime scene unit (typical for homicides and sometimes other life-threatening events) or, more commonly, by street-level patrol officers. As part of the

initial implementation of CGIC, staff conducted short training at daily patrol briefings (e.g., roll calls) to explain to patrol officers why the collection of ballistic evidence that may not be obviously connected with a crime is vital to collect, and more importantly, how it would be inventoried at the patrol divisions. KCPD has six decentralized patrol divisions, and patrol officers would bring all evidence back to their assigned division and maintain the chain of custody by securing it in their evidence locker. In September 2018, ballistic evidence would be immediately tagged and placed in 'blue bins' at the division. Previously, this collection would take place every week or two, but to accelerate the timeliness of NIBIN entry, the grant-funded laboratory personnel would perform this task more quickly. In September 2018, a firearms examiner would collect ballistic evidence from each patrol division six days per week and transport it to the laboratory for further analysis.

This sudden shift in prioritization of ballistic evidence analysis resulted in confusion and frustration in maintaining a proper chain of custody. The increased volume of evidence created additional tasks for patrol officers (who were far removed from the CGIC process), and it took time for the variety of patrol officers to become familiar with new procedures. Often ballistic evidence recovery by any single officer was uncommon, resulting in new, unfamiliar forms to complete. During interviews, stakeholders lamented that street-level officers would routinely submit incomplete or incorrect paperwork associated with ballistic evidence. Given the sensitivity and importance of chain of command, firearms examiners would 'reject' initial ballistic evidence and require officers to 'revise and resubmit' paperwork. This created delays, especially when patrol officers submitting evidence have regularly scheduled days off or are not promptly made aware of the required revisions. Usually, the factors associated with rejection were bureaucratic– no bar code attached, a supervisor's signature was omitted, the 'wrong box' was checked – but these details could have a detrimental effect on maintaining a proper chain of custody. To enhance efficiency, CGIC experienced inefficiencies related to mundane paperwork and evidence submission, ironically resulting in delays and compromised timeliness of the process.

Stakeholders also noted frustration that to process ballistic evidence quickly, other forensic evidence might be lost. Specifically, stakeholders voiced concerns that DNA swabs and latent fingerprint analysis were not being conducted for all evidence collected. Historically, much like NIBIN requests in general, DNA swab and print requests typically originated with the case detective.[23] "Swab and latent" tests must be performed before test-firing firearms or entering shells into Brasstrax; therefore, swabbing every piece of ballistic evidence would compromise timely analysis – even with additional grant-supported firearms examiners, this would be an

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[23] With the exception of homicides or other life-threatening events and firearms found in proximity to a FIP, which automatically are swabbed and printed. See Figure 3.2.

unrealistic burden. But this logistical reality did not keep stakeholders from expressing concerns about the prioritization of these activities.

> "The turnaround time on [NIBIN] leads is huge, but it also ruins the chances of many cases because we're missing the chance to swab [evidence]."

> "I don't like that analysts pick and choose which casings to swab. They should be swabbing all of them.[24]"

> "Evidence collection is quick, but we are losing the possibility of DNA on many cases because of the quick process of NIBIN entry. I believe there are very effective methods of getting DNA from casings, but we're lagging behind that technology. We really want all casings swabbed, but we have to request it right now. Most times, detectives haven't had a chance to review the case to know whether they need to request a DNA swab before the opportunity is lost… Swabbing doesn't necessarily require analysis, it just means that if we decide we need DNA later, we can request it (which we can't right now because the NIBIN testing reduces the possibility of getting DNA)."

> "If a detective or CSI [Crime Scene Investigator] doesn't go to a scene, officers may bag all casings together (even if they are from multiple guns). In these cases no one is requesting swabbing/fingerprints, so we lose information. Officers mostly are probably using correct procedures, but without a detective requesting swabs, the casings go straight to NIBIN."

> "[We need] universal swabbing. This could help some with getting around uncooperative witnesses (if a victim/witness doesn't want to cooperate, we can't press charges, but a DNA hit to an un-named offender on a different case gives us someone to talk to)."

> "[We need to] preserve all evidence for potential swabbing down the road. [This] would help as a NIBIN lead is a great tool, with shell casings, now have a reason to talk to him, but no cooperation and without gun or swab, [the investigation is] tough."

NIBIN AS A TOOL

A fourth theme that emerged from Phase I interviews was the belief that CGIC and NIBIN leads could be an *effective tool* in the detective's tool belt, but there was skepticism that CGIC would produce the anticipated outcomes. Stakeholders noted that firearm-related violence was common within their caseload. They would frequently receive intelligence on NIBIN leads and links to other crimes; however, its utility in practice remains unknown. As noted above, stakeholders expressed a preference for DNA or other forensic testing in addition to (or perhaps

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[24] This comment contrasts with feedback from other stakeholders in that laboratory personnel follow explicit policy related to swabbing and in reality have little discretion. But the sentiment toward universal swabbing is evident here.

in place of) timely NIBIN leads, but two additional challenges remain. First, stakeholders noted that NIBIN leads connect incidents by a common firearm, but this does not necessarily link individuals because crime guns "change hands so quickly." Second, there was a constant undercurrent of a lack of victim and witness cooperation that hinders active investigations, regardless of what a NIBIN lead may provide.

> *"NIBIN lets us see connections that we didn't know existed."*

> *"NIBIN reports are not really helping my cases as [it]connects some things for charging, but does not show shooter…[evidence may] match other cases but if suspect is not talking, cannot prove that suspect used that gun and not that the gun changed hands."*

> *"For investigations, [it is] interesting to know where the guns were used prior to homicide but not really helpful. [NIBIN] can put the gun at the crime scene but cannot put the gun in the suspect's hands, as guns change hands frequently and quickly. Better luck on DNA recently than 6 months. However, although NIBIN is helpful to enhance case or prosecution, it is not making or breaking the cases."*

> *"Guns change hands quickly, and often don't identify a suspect only connects casings. Have had NIBIN leads that connect to multiple homicides but does not provide evidence, only situational awareness connections."*

> *"Guns change hands so quickly that [NIBIN] connections can muddy the waters."*

Collectively, these comments suggest stakeholders view CGIC as one piece of a larger puzzle, and therefore it is difficult to objectively identify how CGIC or NIBIN itself make or break an investigation, or otherwise determine, but for NIBIN, the outcome of particular cases may have been different. The theme of uncooperative victims and witnesses was raised repeatedly, suggesting this challenge has become an engrained component within the investigative culture. Additionally, stakeholders close to robbery investigations saw little direct influence of NIBIN within their caseloads.

> *"Most of our [robbery] cases involve a gun, but rarely is there evidence recovered. If someone uses a gun in a robbery then [the case] goes over to assault squad."*

> *"I honestly can't tell you what NIBINs reports do or how the information is used."*

> *"CGIC is operating as it should, and leads point us toward people to talk to or identify high-priority people. But people need to have realistic expectations on what CGIC is and what*

it is not. Just because you have a lead that you didn't have before isn't enough. You need to understand the 'why' behind it as well."

COMMUNICATION

Communication between agencies within a multi-organizational endeavor contributes to developing a shared understanding of goals, values, missions, and even what the innovation is. Communication exists across at least two distinct levels of CGIC. First, communication is important among front-level workers and immediate supervisors. This group utilizes CGIC output regularly and contributes to its input (e.g., detectives, TFOs, analysts, assistant prosecutors, ATF agents, sergeants, and ATF Group Leaders). This shared understanding of what CGIC arose amongst interviewees who commented that CGIC requires a 'cultural shift' or 'a change in the way officers think' about the role forensic evidence has in investigations and safety. Several interviewees, even during Phase II interviews that were 17 months after implementation, expressed concerns about a lack of buy-in amongst detectives. While many interviewees indicated that communication between partners was healthy, or that CGIC in Kansas City enjoyed strong partnerships, there was still room for improvement and greater consistency and deliberate communication between partners.

> *"[One challenge is] buy-in from case-level detectives. There needs to be a demonstration of success – a success story – to get investigators and prosecutors fully on-board."*

> *"Buy-in is tough because [CGIC] is a bit of a cultural shift. It can add great value in disrupting the shooting cycle, but it is just a little different [from the normal]. War stories can go a long way."*

> *"One of the biggest challenges is communication across multiple agencies. Frequent interactions are related to increased communication. NIBIN is a tool that needs to be used by humans, so a lot could go wrong. You can have all the tools and intelligence, but it still comes back to humans and communication."*

> *"NIBIN is a culture shift for many detectives. Many do not understand the benefit or potential [to their investigations]."*

The second level of communication exists across executive leadership who are responsible for setting goals and agendas for CGIC, and allocating in-kind resources within their organization to forward these goals (e.g., ATF SAC, U.S. Attorney, Chief of Police, State Prosecutor). This group is far less likely to utilize CGIC daily; however, their leadership sets a tone, establishes priorities, and allocates resources within their office. This team met regularly

throughout early CGIC implementation, and stakeholders indicated that they frequently communicated about CGIC; however, rarely convened meetings specifically related to CGIC. During this time, there were a number of different efforts operating simultaneously in Kansas City, including Project Safe Neighborhoods, Public Safety Partnership, and Operation Relentless Pursuit. Each of these initiatives had similar goals, namely to address violent crime in Kansas City, and each of these was supported by different Department of Justice programs, and each member of the executive team were involved in these other initiatives as well. CGIC fit nicely within this framework, and the executive team had leadership across each of these approaches. It stands to reason that CGIC was combined with these to experience economies of scale. The downside to this reality is that executive leadership rarely convened to specifically discuss the progress and direction of CGIC alone. Interviewees reported that 'we always talk about CGIC and NIBIN in our meetings,' but rarely was there a meeting *about* CGIC. The absence of CGIC focused meetings at the highest level could threaten the CGIC brand in the local environment.

Interviewees expressed mixed emotions regarding tracks for prosecution. There was an overarching preference for 'taking things federal,' meaning charging and prosecution within the federal system. This stands to reason given the centrality of ATF's involvement in CGIC, the perception that federal penalties for gun crimes are more severe at the federal system, and the WD-MO's tradition of frequent prosecution of gun crimes, particularly felons in possession (Holsinger and Novak, 2004). Interviewees indicated that federal prosecution was a 'bigger stick,' and cited other challenges experienced with a state prosecution. A recurring theme routinely expressed throughout interviews at both phases was the inadequate size of the county jail. Interviewees expressed frustration that defendants charged with state-level gun-related offenses would bond out quickly, thereby being back on the street soon after arrest. This frustration was expressed beyond gun-related charges – a familiar refrain for all defendants was a lack of jail space and perceived inadequate sentences upon conviction. Interviewees noted:

> *"We try to take everything Federal. State charges are bullshit."*

> *"Other cities like 'quick hits' to get [shooters] off the streets. That doesn't work here. So we try to do everything Federal."*

> *"If [the suspect is] not a convicted felon, then anyone can have a gun, so we cannot just arrest on a gun charge. Also, there are a limited number of beds in jail so most [detectives] don't want to file state cases as won't go anywhere, so we focus on federal cases. Nonfatal shooters get released from jail when full regularly."*

"We try not to take cases to the state."

SUMMARY

Feedback from stakeholders during interviews reinforced, clarified, and helped contextualize data gathered in other parts of this report. Interviewees expressed knowledge or familiarity with the CGIC model and an understanding of goals and likely outcomes associated with these efforts. Overall, interviewees were optimistic about the utility of CGIC to enhance investigations; however, they were quick to note that CGIC is a piece of a larger puzzle. CGIC can be a helpful tool, but perhaps has not demonstrated it's potential to date, suggesting the eventual success of CGIC in Kansas City is unclear. While stakeholders generally found value in CGIC as an investigative tool, some issues in the steps for processing developed when that tool became a focal point for expedited production and turnaround on cases rather than acting as an aid for thorough completion of cases. Independently, interviewees used the term 'culture shift' to describe CGIC. This was framed as a positive and a challenge – CGIC is an important new component for investigators. However, many investigators are still trying to determine how to best utilize intelligence gained from this innovation.

Interviewees were overwhelmingly excited about the efficiencies that have been realized in collecting processing ballistic evidence since September 2018, which confirms observations made in other sections of this report. But at the same time, many we spoke to wonder whether it had become too efficient at the expense of DNA and latent evidence collection. Even those who expressed frustration about the inability to comprehensively collect DNA and latent evidence recognized this was a trade-off that might be worth accepting.. A lack of resources was a recurring theme throughout both interview phases. Related to knowledge and familiarity with CGIC, interviewees expressed communication was strong across the partners, but also noted that communicating success stories remains vitally essential for the sustainability of CGIC in Kansas City.

SECTION 7. SUMMARY AND CONCLUSIONS

This report provided an overview of the processes and outcomes of KCPD's implementation of CGIC by using a mixed-methods approach consisting of official data, surveys of detectives, and interviews of key stakeholders. From this, several overarching observations can be made.

There is a culture of cooperation and partnership within CGIC, particularly between the police and federal partners.

This was evidenced particularly within interviews with stakeholders; however, this was also supported by feedback provided within surveys of detectives and observations of the working environment. The KCPD benefitted from several structures already in existence – a history of collecting and processing ballistic evidence, a functional crime laboratory, familiarity with NIBIN and eTrace, and a pattern of multi-agency cooperation in other initiatives (e.g., PSN, PSP). In other words, the CGIC initiative was not starting from scratch. Therefore, the focus was more on enhancing processes and scaling-up the use of ballistic evidence and enhancing cooperation and coordination. Partnerships were particularly strong between KCPD and ATF, which makes sense given the centrality these agencies have in CGIC. Federal prosecutors were active partners, though not as heavily involved in day-to-day operations. State prosecution was more tangential relative to the other three partners. Formal roles and CGIC processing were presented in detail within Figures 3.1 and 3.2.

The number of ballistic evidence acquisitions and NIBIN leads has increased in Kansas City since the implementation of CGIC.

Acquisitions, or the number of individual pieces of ballistic evidence fed into NIBIN machines, increased significantly after implementation of CGIC. This is consistent with the CGIC principle of comprehensive collection. After the implementation of CGIC, collections, and acquisitions of ballistic evidence – even those not directly tied to a criminal investigation – became more purposeful and deliberate. The result of increased acquisitions is a more extensive and robust database where the NNCTC can test for correlations. This trend of increased monthly acquisitions increased steadily throughout the observation periods – in other words, there was no observable 'blip' after CGIC implementation and no noticeable regression to the mean over time. Projections offered in this report suggest this trend is likely to continue for the foreseeable future.

Over time the number of NIBIN acquisitions that generated leads has increased.

There was a positive relationship between the number of acquisitions and the number of leads over time. On its surface, this should be expected – more acquisitions means more tests, which should accidentally produce more leads (matches) in raw numbers. But it is important to also note that the proportion of acquisitions that resulted in leads also increased. On average, approximately 21% of acquisitions per month resulted in leads, whereas 32% of acquisitions resulted in leads after implantation of CGIC. On the surface, this observation may be counterintuitive. But in reality, this indicates that rather than more acquisitions 'watering down' the NIBIN database, the increased raw number of acquisitions were more effectively uncovering leads. This finding supports the efficacy of a comprehensive collection protocol.

Collecting brass by patrol officers can be a daunting task with few immediately identifiable benefits. When shells are discovered outside of crime scenes – such as at a random ShotSpotter call – there could be a temptation not to collect or process them. Similarly, at random 'shots fired' calls where no victim, witness, or complainant is present, and there is no obvious crime afoot, collecting brass may feel like an insignificant reward and a waste of time. These activities take patrol officers out of service, and areas with an abundance of shots fired calls have correspondingly more 'blackout time' when no patrol officers are available to respond. Taking time to collect brass and then process it through a chain of custody protocols may appear to be a fool's errand. But results presented here do not support this – on the contrary: the shift toward comprehensive collection enhanced the number and proportion of NIBIN leads. Patrol officers would benefit from knowing this and reinforcing to these street-level bureaucrats operating in a low-visibility environment that these activities have benefits.

Hit rates and firearm tracing was largely not impacted by the implementation of CGIC.

In contrast to leads, the number of confirmed hits was unaffected by the implementation of CGIC. The number of hits per month was remarkably stable over time, and this is likely influenced by the emphasis and centrality leads has within the NIBIN process and the reduced utility of hits within ballistic-related investigations.

NIBIN leads are generated quicker, thereby creating opportunities for timely, actionable intelligence.

There is strong evidence indicating that leads were generated much quicker after the implementation of CGIC. This is confirmed by the official data gathered by the KCPD (using macro

and micro examinations of datasets), performance measures reported to BJA, as well as anecdotal information gleaned from detectives' surveys and interviews with stakeholders. This observation is, by far, the strongest and most exciting part of the research results.

This helps tell a more comprehensive CGIC story in Kansas City: the volume of ballistic evidence acquisitions increased significantly, and this was correlated with a higher number of leads. Further, the efficacy of these acquisitions increased too. And not only did the number of inputs and number of leads increase, the expediency in which leads were produce increased.

Detectives express optimism on the potential of CGIC's contributions to investigations, but this is not universal. Detectives are less likely to believe CGIC is helpful in assault cases.

While CGIC intelligence can be helpful in some investigations, it lacks universal utility.

Overall, detectives, as end-users of CGIC output, expressed optimism about the utility of NIBIN and eTrace for their investigations. During interviews, detectives were quick to share success stories and eager to explain how NIBIN leads contributed to investigations. But at the same time, when asked to recall the utility of leads in specific cases, detectives expressed that NIBIN leads were less helpful than the war stories may suggest. Detectives did not consistently report favorable impressions of leads in the normal, run-of-the-mill investigations they were assigned, nor did officers indicate that processing (i.e., arrests, charges, prosecutions, and dispositions) did not appear to be influenced by enhanced CGIC processing.

This reality may be due to the tendency to recall the unusual or celebrated cases where leads contributed to investigations rather than those investigations were little impact was observed. This is important for policymakers to keep in mind moving forward when anticipating the impact CGIC may have on typical firearms cases. Lessons learned in Kansas City suggest that NIBIN *may* be helpful in *some* investigations, or in *some* investigations, leads are the but-for link in an otherwise broken investigatory chain. But it is unrealistic to expect CGIC – even when fully operational and functioning – will be the silver bullet in many and certainly not most firearms-related investigations. It is more accurate to paint CGIC as a piece in a larger puzzle, and by doing so, it is imperative to temper the expectations of both detectives and stakeholders. Repeatedly, we heard stakeholders describe NIBIN as a tool and one of many tools at the investigator's disposal. It is not easy to determine from the information gathered here how many or how significant CGIC output had in investigations – it is difficult to accurately and fairly measure how many investigations 'but-for' NIBIN would have been unproductive. Therefore we do not hazard to guess. Future inquiries along these lines should examine and categorize case characteristics

that are more likely to yield productive CGIC-led outcomes. It is wholly reasonable to create an evidence-informed triage protocol that would 'fast track' NIBIN cases for investigative attention based on the likelihood of success, which may or may not be correlated with the seriousness of the offense. This objective approach would position police departments to more efficiently and effectively utilize the large volume of intelligence generated by CGIC.

CGIC represents a culture shift for many. Utilizing ballistic information is not universal, and there remains a learning curve on how to best analyze, disseminate, and utilize this during firearm-related investigations.

Despite the fact that KCPD had hands-on familiarity with CGIC, NIBIN, eTrace, and multi-agency collaborations before the implementation of this initiative, the routine utilization of CGIC outputs still represented a culture shift for detectives. Recognizing this learning curve is important when utilizing these products, and maybe particularly important to keep in mind when on-boarding future detectives. Communicating processes, protocols, and reasonable expectations for utilizing CGIC products has implications for sustainability and enhanced effectiveness.

EVOLVING STRATEGIES OF CGIC

This report chronicles the evolving strategies of CGIC in Kansas City between 2017 and 2020, and it is clear that development was not linear. This should come as no surprise to those with experience developing innovative strategies within policing. While the CGIC business model provides a coherent blueprint for implementation, actual development often occurs in a piecemeal fashion (especially in multi-agency collaborations). Additionally, organizations learn from successes, challenges, and setbacks, often additional responses to implementation issues. In other words, the problem-solving process is in a constant state of flux, trial-and-error, and reevaluation. Several of these developments are worth noting here, despite limitations to fully appraise the impact of some initiatives, it is responsible to highlight them nonetheless here.

First, in response to pressures within the assault and homicide units, the size of the assault and homicide squads increased dramatically in January 2020[25]. As suggested in the surveys and interviews, the overwhelming workload by detectives discouraged or made impractical, the timely integration of CGIC-related products. Typically, two assault squads were consisting of 6 detectives and one sergeant each (plus a violent crime generalist squad of similar size assigned for overnight operations. In 2020, this increased to 3 squads of 7 detectives and one sergeant each, plus three additional detectives and two sergeants working overnight. Similarly, homicide

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[25] Actual increases did not occur for several more months as detectives were transferred from other units and received formal detective training in the Academy.

units increased from four squads of six detectives to four squads of eight detectives. [26] Additionally, in early 2020 there was an infusion of resources by ATF into these units. Six ATF agents were embedded into assault and homicide, working alongside KCPD detectives. This infusion was separate from ATF personnel allocations within the CGIC enforcement unit. This arrangement was developed to aid in CGIC activities but is not part of the formal CGIC model forwarded by ATF.

This infusion of resources by KCPD and ATF created new, unexpected opportunities to engage in firearms-related investigations. Stakeholders and detectives reported in mid-2020 that investigative elements discovered time and opportunities to engage in proactive investigations of high-risk shooters. The CGIC model inherently suggests that high-risk shooters be identified for existing offenses through reactive investigations, but while investigating these crimes and individuals, detectives and agents identified opportunities to conduct undercover operations on those at greatest risk. These investigations sometimes yielded new firearm evidence, e.g., firearms recovered as evidence at the time of arrest or through controlled buys. These new pieces of evidence were processed through the existing NIBIN and eTrace protocols. When leads on this evidence were produced, it provided confirmation and valuable connections to previous firearms cases. This is a variation on the traditional NIBIN theme, where leads were used to strengthen evidence after proactive measures were performed. It is premature to determine whether the efforts listed above yield benefits, but anecdotally, stakeholders are excited about the potential.

Second, a complement to the CGIC model was shooting reviews, which were loosely based on a similar process in Milwaukee (McGarrell et al., 2019). This component was implemented in January 2020 and evolved as a method of bringing together investigative partners (many of whom were already involved with CGIC) to discuss elements of fatal and non-fatal shootings occurring in the previous week.[27] Shooting reviews are not part of the core CGIC model; however, NIBIN intelligence was routinely layered into the overviews of shooting incidents. Each week, case agents affiliated with KCPD, ATF, FBI, US Attorney's Office, Jackson County Prosecuting Attorney's Office, state and federal probation and parole, US Marshals, and DEA meet to discuss each firearm homicide and nonfatal shooting from the previous week. The explicit goal of shooting reviews is to share timely information, intelligence, and assign tasks and responsibilities across agencies. This approach was also designed to foster a culture of cooperation for firearms-related offenses and tear down silos of information, investigative fragmentation, or duplication. The shooting reviews also encouraged a culture of accountability, not dissimilar to COMPSTAT management strategies. Investigative elements would be

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[26] It is unclear whether this increase alleviated the burdens noted in the interviews.

[27] Research partners were not permitted to independently observe shooting reviews therefore the description provided here was gathered from conversations with those interviewees who participated in these meetings.

responsible for reporting back to the working group the following week on progress made and challenges encounters. Though shooting review is not an element of CGIC, NIBIN and eTrace intelligence are central elements to this process. As noted previously, NIBIN was viewed as a tool and possible piece of a larger puzzle, and in that spirit, NIBIN information was shared within these forums. It is not possible to evaluate whether shooting reviews were impactful, primarily because there is insufficient time data to identify correlation or causation, but is offered here as an example of how CGIC- and NIBIN-related information was incorporated into other investigative aspects.

Third, in 2020 a conscious effort was made to more closely track lead outcomes. This was particularly challenging in general, but particularly after the increase in lead volume beginning in September 2018. Stakeholders and CGIC personnel noted it was easy for NIBIN lead outcomes to slip between the reporting cracks, which compromised the feedback loop. Therefore, systematic tracking of NIBIN leads was necessary to enhance accountability and fill gaps.

It is not possible to fully describe, let alone evaluate the impacts of modifications in 2020, and these processes represented a work in progress. Yet they were consistent with the CGIC theme of cyclical problem-solving, and formalizing these activities encouraged sustainability of the overall CGIC business model. These also represent variations on the CGIC theme, some of which may not be necessary or possible in other CGIC jurisdictions. Nevertheless, these developments represented a desire for stakeholders to continue the development of strategies with CGIC products occupying a central position.

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Appendix A. Crime Maps

● Gunshot wound
● Other

2015-2019 Homicides
Kansas City Homicide Analysis Area

Homicide Percentages Citywide within Analysis Area

2015: 75%
2016: 69%
2017: 71%
2018: 70%
2019: 76%

Miles
0 0.25 0.5   1   1.5   2

Source: City of Kansas City, MO & Kansas City, MO Police Department

Copyright:(c) 2
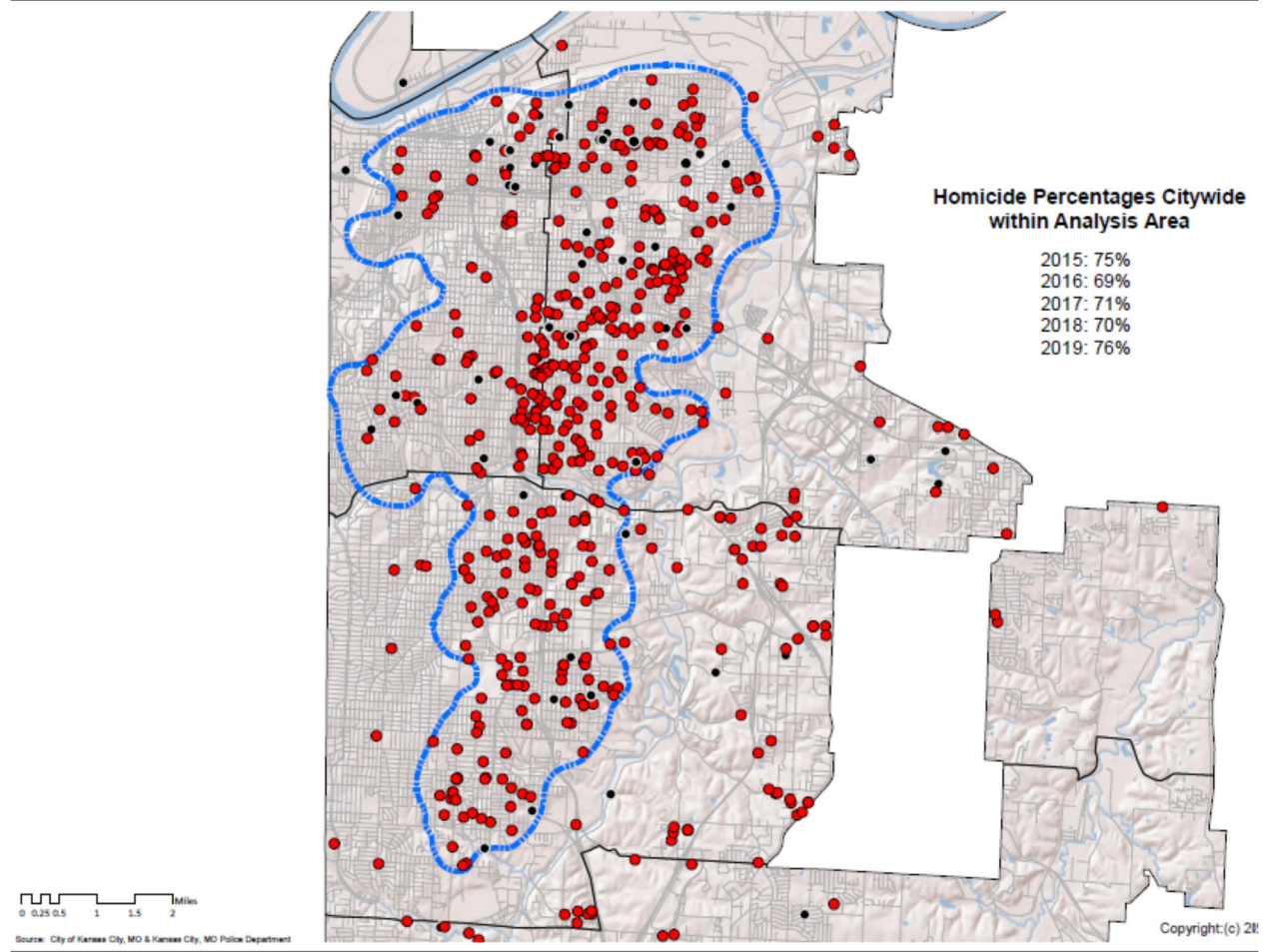
2015-2019 Bullet-to-Skin Shootings
Kansas City Homicide Analysis Area

Bullet-to-Skin Percentages Citywide within Analysis Area

2015: 79%
2016: 74%
2017: 75%
2018: 80%
2019: 75%

Copyright:(c) 2014 Esri
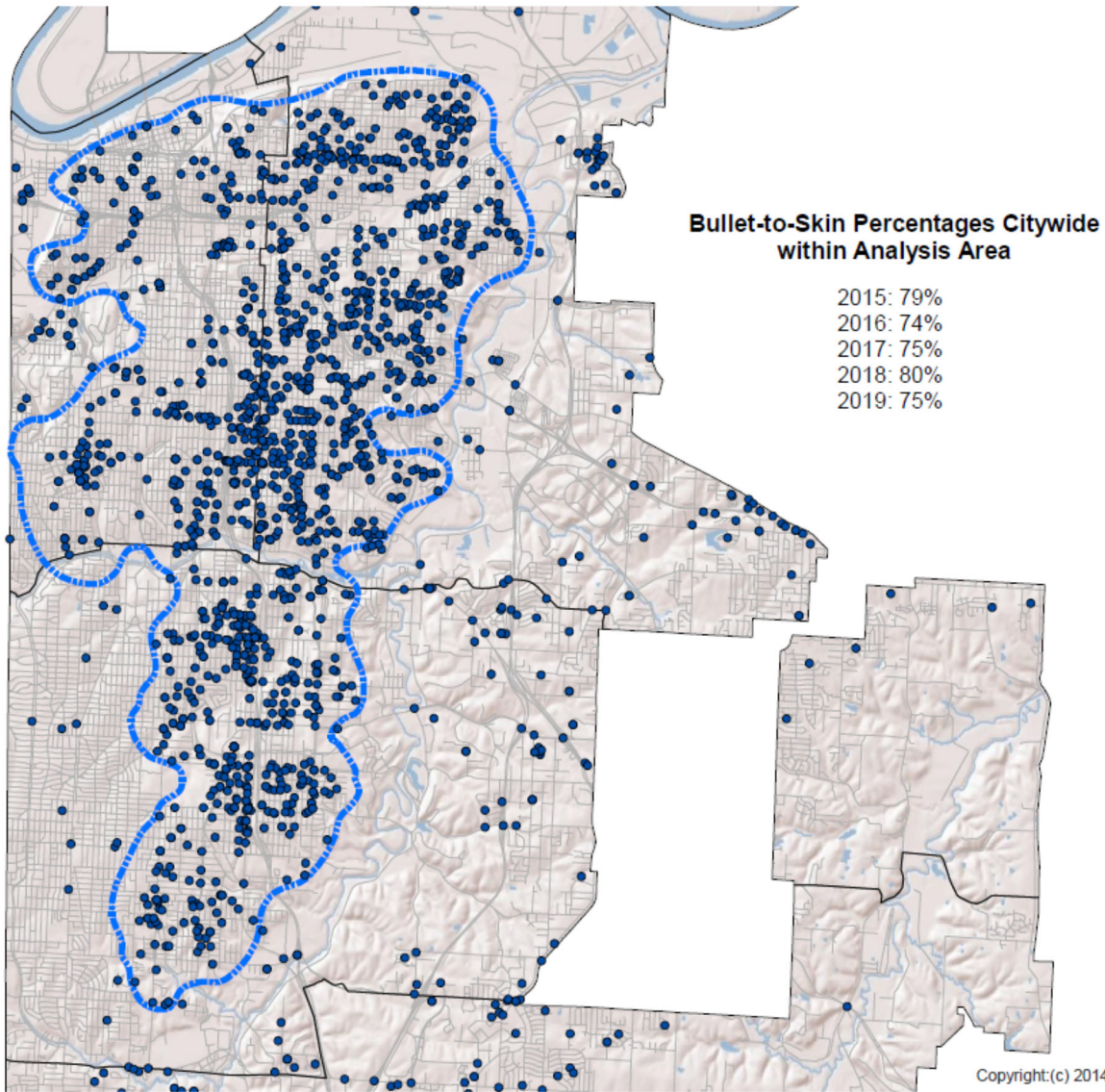
2015-2019 Drive-By Shootings

Kansas City Homicide Analysis Area

Drive-By Percentages Citywide within Analysis Area

2015: 73%
2016: 71%
2017: 73%
2018: 72%
2019: 71%

Copyright:(c) 2014 Esri
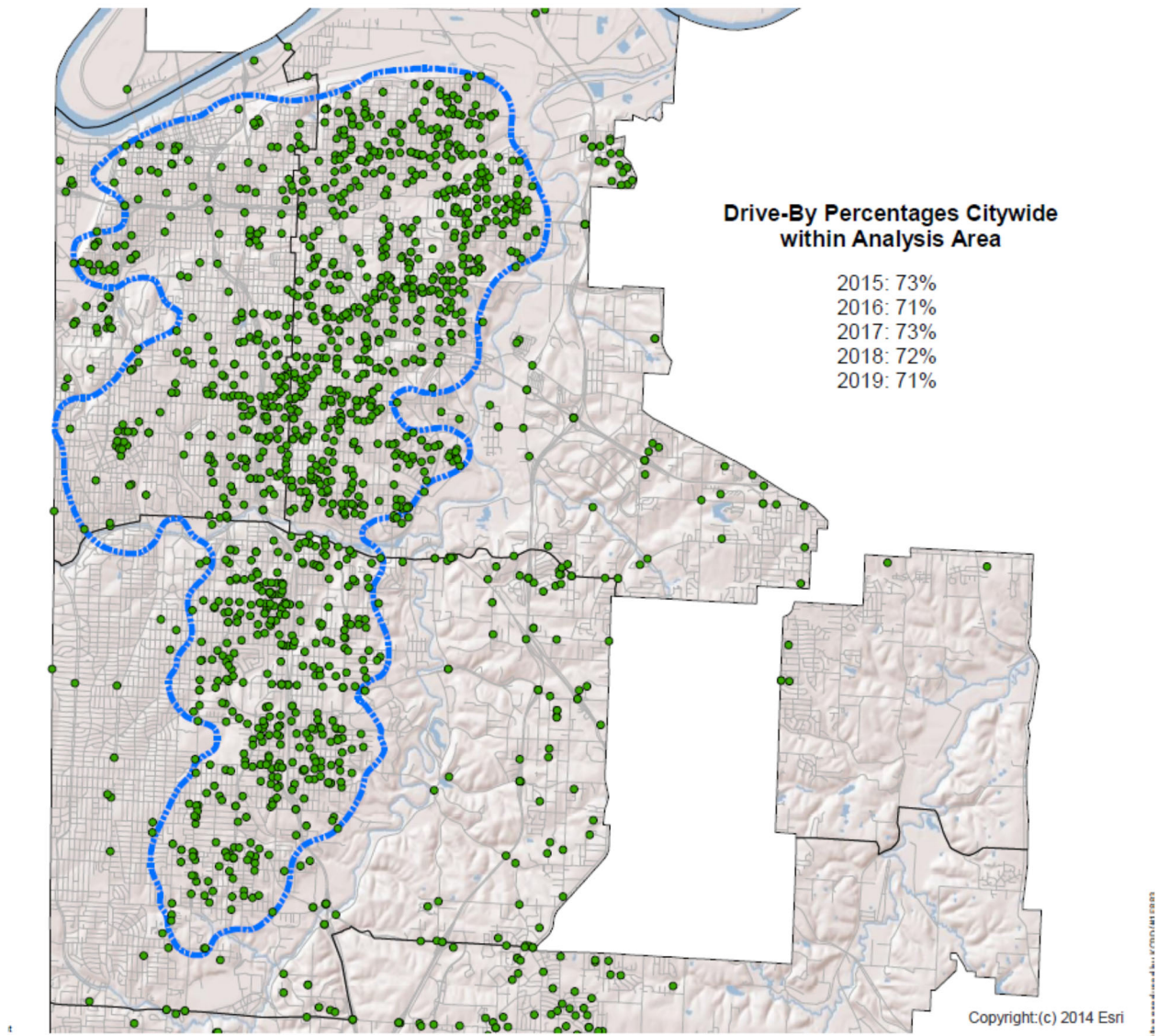
Appendix B. Performance Measures

	Jan-Jun 2018	Jul-Dec 2018	Jan-Jun 2019	Jul-Dec 2019	Jan-Jun 2020
Number full/part-time analysts	1	1	1	2	2
Number of 911 calls reporting a shooting	1,305	1,269	1,208	1,550	1,693
Number of gunshot detection system alerts	915	869	755	995	1,136
Number of confirmed shootings	684	757	314*	743	894
Number of ballistics linked to another incident	406	606	737	433	504
Number of traces resulting in a hit	74	121	177	217	175
Number of cases referred to investigative team	90	212	314	296	96
Number of cases cleared by arrest/exceptional	175	396	341	251	219
Number of suspects identified	50	168	424	408	1,535
Number of suspects arrested	6	120	281	243	983
Number of prosecutors assigned	1	1	1	1	-
Number of other members of prosecution team	-	-	-	-	-
Number of defendants prosecuted at State/Fed	1	21	21	6	3
Number of defendants convicted at State/Fed	1	1	-	-	2
Number of partnerships	6	6	6	6	6
Number of partnerships with MOU in place	7	7	7	7	7

*incomplete data due to RMS change

Appendix C. Survey Instrument

DETECTIVE SURVEY FOR CASES INVOLVING CRIME GUN INTELLIGENCE CENTER INFORMATION

INSTRUCTIONS: Dear detective: We would like to learn about the criminal case listed below. We would like to know about the status of your case <u>as of today</u> and what has happened during your investigation.

1. Agency name: <u>Kansas City Police Department</u>

2a. Case number/ID: _____

2b. NIBIN Lead number: _____

2c. Final detective name:_____

2d. Initial detective name: _____

3. Type of criminal case (e.g., homicide, robbery): _____

4. Date of crime [date]: _____

5. Street address for crime: _____

THE CASE

6. Today's date: _____/_____/_____

7. Date of initial police response to crime (if different from q 6, above) _____/_____/_____

8. Brief description of the crime, crime scene, etc. What happened? _____

_____

9. Your assignment at time of the crime (Homicide unit. Robbery unit. etc.): _____

THE NIBIN LEAD REPORT

10. Did NIBIN produce a <u>lead report</u>?

      □ Yes

      □ No (skip to question 11)

      □ Not sure (skip to question 11)

      10a. When was the lead report produced? [date] _____/_____/_____

      10b. When did YOU receive the lead report? [date]: _____/_____/_____

11. From whom do you usually receive a lead report?

□ ATF

□ Crime Lab

□ Supervisor

□ Other _____

12. How do you usually receive a lead report (email? Phone call from lab?).

□ e-mail

□ phone call

□ Other _____

13. Is your immediate supervisor informed of leads?

□ Yes

□ No

□Not sure

STATUS OF THE CASE WHEN THE LEAD REPORT WAS RECEIVED

14. What was the status of the case <u>at the moment</u> you received the lead report? (check all boxes that apply).

□No suspects had been identified

□Case was still active and was being worked regularly

□Case was listed as active, but was awaiting additional leads

□Case was inactive

□Case had not been cleared, but had been closed.

□Other_____

□No suspects had been ID'd, but a group (e.g., gang, group) had been ID'd as likely suspects.

□At least one suspect had been identified by a street name or alias, but true identity was still unknown.

□At least one suspect had been ID'd by their real name

□ Warrants issued. Awaiting arrest of suspect(s)

□At least one suspect had been arrested

□At least one suspect had been charged by the prosecutor's office

□At least one suspect had plea bargained

□At least one suspect was awaiting trial

□At least one suspect had gone to trial (outcome of trial)?

    □ Trial is pending or ongoing

    □ Mistrial or hung jury

    □ Conviction

    □ Found not guilty

    □ Other: _____

□At least one suspect had been sentenced for this crime

□ Other _____

IMPACT OF LEAD REPORT:

15. After you received the lead report, <u>what did you do</u> to gain more information? For example, did you contact another detective to learn about their case? Did you talk with your supervisor? What did you do, to unlock information revealed by the report? _____

_____

16. Did the lead report help:

□ID a group (e.g., gang, group) as likely suspects.

□ID at least one suspect, by a street name or alias, but their true identity was unknown.

□ID at least one suspect by their real name

□Arrest of at least one suspect

□Charge at least one suspect by the DA

□Secure a plea bargain from at least one suspect

□Advance the case of at least one suspect to trial

□In the sentencing of at least one suspect for this crime

17. Overall, how helpful was the lead report (or the information the report helped reveal) for this case?

        □very helpful

        □helpful

        □neither helpful, nor unhelpful

        □unhelpful

        □very unhelpful

        17b. IF the lead was unhelpful, why? (e.g., was it due to a time delay in producing the lead? Or was the lead timely, but the it linked to a second case with no real victims and no suspects and no leads?). _____

18. How timely was the NIBIN lead? (e.g., was the lead produced quickly, or years after the initial crime?).

        □ Lead report was timely

        □ Lead report was untimely or delayed

CURRENT STATUS OF CASE

19. As of <u>today</u>, what is the status of this case?

        □No suspects had been identified

                □Case is still active and is being worked regularly

                □Case is listed as active, but is awaiting additional leads

                □Case is inactive

                □Case has not been cleared, but has been closed

                □Other_____

        □No suspects has been ID'd, but a group (e.g., gang, crew) has been ID'd as likely suspects.

        □At least one suspect has been identified by a street name or alias, but true identity is still unknown.

        □At least one suspect has been ID'd by their real name

        □ Warrants issued. Awaiting arrest of suspect(s)

        □At least one suspect has been arrested

        □At least one suspect has been charged by the DA

□ Arrest made. DA declined to press charges

□At least one suspect has plea bargained

□At least one suspect is awaiting trial

□At least one suspect had gone to trial (outcome of trial)?

        □Trial is pending or ongoing

        □Mistrial or hung jury

        □Conviction

        □Found not guilty

        □Other _____

□At least one suspect has been sentenced for this crime

□ Other _____

Appendix D. Memorandums from Site Visits

To: Chief Richard Smith, Kansas City Police Department

           Captain Justin Kobolt, Crime Gun Intelligence Center, Kansas City Police Department

From: Dr. Ken Novak, University of Missouri at Kansas City

           Dr. William R. King, Boise State University, formerly Sam Houston State University

           Christi Gullion, Sam Houston State University

           Alicia Jurek, Sam Houston State University

Date: September 25, 2019

Re: Preliminary Findings and Recommendations from Stakeholder Interviews for the Kansas City Crime Gun Intelligence Center (CGIC) Initiative, 2017-DG-BX-0001

As researchers for the CGIC Grant funded by the Bureau of Justice Assistance, we have conducted an initial onsite visit to the Kansas City Police Department (KCPD) from July 24-27, 2019. Our objective during this onsite visit was to understand the protocols and processes and outcomes surrounding your agency's engagement with the CGIC and to identify successes and challenges your agency has experienced. We commend KCPD's commitment to the CGIC Initiative and the openness in communication during the visit. With this initial insight on KCPD's CGIC experiences, we offer preliminary findings and recommendations that may improve operations. We have outlined these preliminary findings and recommendations hereinafter, for your consideration.

SUCCESSES

Finding 1: Daily evidence collection from each police station by crime lab techs has eliminated the backlog.

Finding 2: Additional resources are being provided to support the CGIC Initiative, including another BrassTrax System for the crime lab and another analyst assigned to the CGIC Unit.

Finding 3: Open communication occurs between the crime lab and the CGIC Unit, and having an operations sergeant as a liaison for the crime lab is helpful.

Finding 4: The Correlation Center is turning around evidence rapidly, and the CGIC Unit gets information out to detectives quickly, including the NIBIN reports.

Finding 5: Detectives enjoy working with the CGIC Unit captain, sergeant and analysts, who are available to answer questions, and help identify connections across cases and dissect the NIBIN reports.

Finding 1: Given the shortage of detectives for the number of assaults and other types of crimes, cases are often not worked for 3-4 days after the crime incident occurred (with the exception of homicides), until or unless a NIBIN lead is received. Then the case will be assigned to a detective. Thus, detectives do not have the opportunity to provide input on what evidence gets swabbed for DNA for their case. Instead, crime lab personnel determine what evidence should be swabbed by reading incident reports. In some instances, firearms evidence is loaded into NIBIN without being swabbed first, an action which then precludes swabbing the evidence later, even if the detective would like the evidence swabbed.

> *Recommendation 1: Consider revisiting the goals and processes for collecting data from ballistic evidence, and create a policy associated with the process. A working group consisting of lab personnel, investigative elements (especially CGIC, assault, and homicide detectives), state prosecutors and federal prosecutors should draft this policy. This policy, including goals and rationale, should be communicated across CGIC elements.*

Finding 2: Patrol officers and detectives responding to the crime scenes are responsible for collecting the crime scene evidence and sometimes produce rejections when transferring chain of custody, by not properly following collection procedures. In these cases, technicians and examiners send these evidence rejections to the patrol officers and detectives for making the appropriate corrections. With the total number of property and evidence rejections at approximately fifteen percent, evidence collection rejections cause a slowdown of the process as evidence gets sent back to the patrol officers or detectives until they fix the rejections, which can take time, 2-3 days or more, with days off.

> *Recommendation 2: Hold supervisors, detectives, and officers in the police stations accountable for evidence rejections and train detectives and officers on evidence collection protocol via roll-call training and a training memo.*

Finding 3: There is a lack of communication and training regarding the capabilities and process of the CGIC Unit and NIBIN. Many detectives are not aware of what the CGIC Unit does nor how the CGIC Unit may be able to help detectives with their cases.

> *Recommendation 3a: Provide more formal communication regarding the CGIC Unit's focus, mission, and capabilities for assisting detectives with their cases.*

> *Recommendation 3b: Schedule the CGIC Unit to conduct in-service training to educate supervisors, detectives, and officers on what the CGIC Unit does and how they could help with cases.*

> *Recommendation 3c: Share with the command staff how NIBIN and the CGIC Unit can help a case from both a solvability standpoint for KCPD as well as enhancements and adjudication using stronger evidence by the federal and state prosecutor's office in their bringing cases to court.*

> *Recommendation 3d: Regularly communicate with the detectives to discuss specific NIBIN cases and their outcomes in order to explore opportunities for improvement with the CGIC Unit in future NIBIN cases.*

Finding 4: The NIBIN reports received by detectives via email can be overwhelming in terms of quantity, frequency, and multiple senders, and difficult to interpret regarding varying and complex information provided in the two NIBIN report attachments.

> ***Recommendation 4a:*** *Prioritize the NIBIN leads in terms of recent cases (timing), geographic location, and suspect information utilizing an automated priority 3-tier system process with priority 1 occurring most recently or having a suspect, priority 2 occurring somewhat less recently, etc.*

> ***Recommendation 4b:*** *Summarize the key points or copy the summary paragraph outlining the connections into the body of the email so that detectives can easily read and understand the results without opening the NIBIN report attachments.*

Finding 5: KCPD has three separate gun squads headed by three different commanders. This may not allow for optimal sharing of information and resources in terms of working to solve cases. This is especially true when connections can be found in cases across squads and given the consistent suggestion that these squads often compete with each other.

> ***Recommendation 5:*** *Consider establishing one gun unit with a focused responsibility to allow the sharing of information and resources, and enhancing work productivity across cases which may potentially increase solvability.*

We are happy to discuss these preliminary findings and recommendations in further detail. Thank you for your willingness to participate in this project and for entrusting our research team with this critical information.

To: Richard Smith, Kansas City Police Department
        Timothy Garrison, US Attorney's Office (WD-Mo)
        Marino Vidoli, ATF
        Jean Peters Baker, Jackson County Prosecuting Attorney's Office

        Cc: Captain Justin Kobolt, Crime Gun Intelligence Center, Kansas City Police Department

From: Dr. Ken Novak, University of Missouri - Kansas City
        Dr. William R. King, Boise State University, formerly Sam Houston State University

Date: March 4, 2020

Re: Preliminary Findings and Recommendations from Stakeholder Interviews for the Kansas City Crime Gun
        Intelligence Center (CGIC) Initiative, 2017-DG-BX-0001, phase 2

As researchers for the CGIC Grant funded by the Bureau of Justice Assistance, we conducted an onsite visit to the Kansas City Police Department (KCPD) and other CGIC stakeholders on January 7-9, 2020. This was the second research onsite visit (the first was July 24-27, 2019). Our objective during this onsite visit was to understand the protocols, processes, and outcomes surrounding your agency's engagement with the CGIC and to identify successes and challenges your agency has experienced. We commend KCPD's ongoing commitment to the CGIC Initiative and the openness in communication during the visit and appreciate the candor and transparency by all stakeholders associated with CGIC. We offer preliminary findings and recommendations that may improve operations. We have outlined these preliminary findings and recommendations in the future for your consideration.

SUCCESSES

Finding 1: Communication and cooperation between agencies remain high, and there is evidence this has improved since the first onsite visit in July 2019.

Finding 2: Comprehensive collection of ballistic evidence has become normalized within KCPD culture, and collection, analysis, and dissemination of NIBIN lead information to case detectives continue to improve and serve as a model process.

Finding 3: There is a general understanding amongst stakeholders that NIBIN is a useful tool for crime gun investigations.

Finding 4: Increased allocation of resources within the KCPD's Assault and Homicide Units should contribute to gun-involved investigations. (It should be noted that at the time of the second onsite visit, these transfers and implementation of shooting review were just beginning. Therefore it is unclear what impact these changes will have. But it is worth noting that the stakeholders we interviewed were optimistic, if not excited, about these shifts in KCPD's organizational resources).

CHALLENGES

Finding 1: Not all primary stakeholders have equal engagement in CGIC and NIBIN.

> KCPD and ATF are the primary drivers of KC CGIC. This is largely a function of their role in the process – NIBIN is an intelligence tool that has the greatest value-added at the beginning stages of the process. Stakeholders indicated CGIC "is a KCPD thing" or "is a KCPD and ATF thing", and therefore other stakeholders are less involved not only in the day-to-day operations but also are passive consumers of CGIC/NIBIN outputs. This creates buy-in challenges, as well as limits the overall potential of NIBIN as a tool in crime-gun investigations and prosecutions.

> *Recommendation 1: The Executive Team (i.e. Chief, SAC, US Attorney, and state prosecutor) should consider purposely meeting regularly to review CGIC inputs and outputs, and identify barriers for continued success. While CGIC-related issues may arise between stakeholders (or their designees) regularly, currently there is no forum for agency heads to focus conversation and problem solving specifically on CGIC. Consider convening a meeting of CGIC agency heads at least quarterly, at which point CGIC operations and partnerships may be discussed. This meeting would benefit from updates or reports from CGIC tactical supervisors (e.g., ATF group supervisor, KCPD sergeant assigned to CGIC) on recent activities. These tactical supervisors will be in a good position to report what is working well and what operational challenges remain, so the Executive Team can determine whether organizational resources may be shifted to suit CGIC's demands better and encourage sustainability.*

Finding 2: There remains a need for enhanced external communication and training regarding the capabilities and process of the CGIC Unit and NIBIN.

> Many detectives are not aware of what the CGIC Unit does nor how the CGIC Unit may be able to help detectives with their cases, or the value of NIBIN as a tool remains unclear. One stakeholder noted, "[y]ou have all the tools and intelligence necessary, but it still comes back to humans and communication."

> *Recommendation 2a: Identify NIBIN 'success stories' to be communicated across the various partners. Communicating NIBIN "wins and victories" engages detectives and investigators to identify how cases they are assigned can benefit from NIBIN-related information. As one stakeholder said, "success stories or war stories can go a long way to getting [detectives] to think differently".*

> *Recommendation 2b: Regularly communicate with the detectives to discuss specific NIBIN cases and their outcomes to explore opportunities for improvement with the CGIC Unit in future NIBIN cases.*

Recommendation 2c. Regularly communicate NIBIN success stories to other KCPD patrol and investigative elements (particularly those responsible for canvasing shooting scenes to collect ballistic evidence – this will contribute to buy-in among these NIBIN gatekeepers while promoting sustainability of the approach).

Finding 3: Internal intelligence communication is good but can be enhanced even further.

Currently, CGIC operations and CGIC intelligence are not co-located. On its face, this does not represent an insurmountable hurdle because most communication is shared electronically. However, there is a value associated with having all elements responsible for CGIC output co-located because proximity encourages informal conversation and collaboration that is not possible via email. There are natural challenges associated with space allocation – for example, there may not be enough physical space where tactical operations are located to office all intelligence elements.

Recommendation 3: Consider co-locating CGIC operations and intelligence to enhance communication, intelligence sharing, and problem-solving.

We are happy to discuss these preliminary findings and recommendations in further detail. Thank you for your willingness to participate in this project and for entrusting our research team with this critical information.