CRIME GUN INTELLIGENCE CENTERS

CONNECTING THE DOTS

A project of the National Resource and Technical Assistance Center for Improving Law Enforcement Investigations

Crime Gun Intelligence Center Metrics Guide

A Comprehensive Guide to Collection, Dashboard Creation, and Community Sharing

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Key Terms

Crime Gun Intelligence Center (CGIC) – An interagency collaboration focused on the timely collection, management, and analysis of crime gun evidence (e.g., cartridge casings) to identify shooters, disrupt criminal activity, and prevent future violence. The primary purpose of the local CGIC is to identify armed, violent offenders for investigation and prosecution.

CGIC Leadership Support – Comprised of senior managers and decision-makers from each partnering agency, executive team members meet regularly to set strategic priorities and review the performance of the CGIC.

CGIC Operations Personnel – Responsible for daily operations, activities of this team include, but are not limited to:

- Immediate collection and processing of crime gun evidence (cartridge casings and firearms).
- NIBIN data analysis and lead dissemination.
- Investigation of criminal shootings linked by NIBIN.
- Crime gun tracing and identification of crime gun sources by ATF.
- Firearms trafficking interdiction by ATF and law enforcement partners.
- Identification, disruption, and arrest of armed criminals by ATF and partner law enforcement agencies.
- Strategic prosecution of violent offenders at the federal, state, and local levels.

CGIC Targeting – This process identifies the most violent, active armed offenders and their sources of crime guns using objective technologies, such as NIBIN, eTrace, gunshot detection systems, and dedicated investigative follow-up.

Crime Gun – This term refers to any firearm possessed, used, or intended to be used during or in relation to a crime.

Crime Gun Trace – This is the systematic tracking of the movement of a firearm recovered by law enforcement officials. The trace is conducted from the firearm's importation into or its manufacture in the United States, through the distribution chain of federal firearms licensees, to the point of first retail sale.

eTrace – This paperless ATF firearm trace submission system is readily accessible through the internet. The system provides the necessary utilities for submitting, retrieving, storing, and querying firearm trace-related information relative to the requestor's agency.

Integrated Ballistics Identification System™ (IBIS) – This automated ballistics imaging and analysis system populates a computerized database of digital ballistic images of bullets, ammunition, and

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cartridge casings from crime guns and crime scenes. The system assists forensic experts in making identifications for investigations and trials.

- **BRASSTRAX™ –** An acquisition station that specializes in the entry of cartridge casing information into the NIBIN network.

- **MATCHPOINT™ –** An analysis station for reviewing the potential matches obtained from IBIS™ correlation algorithms.

National Integrated Ballistic Information Network (NIBIN) – The national database of digital images of spent bullets and cartridge casings found at crime scenes and test-fired from confiscated crime guns. ATF's NIBIN is the only interstate ballistic identification system that allows law enforcement partners to associate ammunition casings, crime guns, and crime scenes.

NIBIN Hit – Linkage of two or more pieces of ballistic evidence, such as crime scene cartridge casings or crime gun test-fire cartridge casing exemplars, through the use of NIBIN technology *and **confirmed*** by microscopic examination by two firearm and tool-mark examiners.

NIBIN Lead – Linkage of two or more pieces of ballistic evidence, such as crime scene cartridge casings or crime gun test-fire cartridge casing exemplars, through the use of NIBIN technology ***but not confirmed*** by microscopic examination by firearm and tool-mark examiners.

NIBIN Lead/Hit Referral Sheet – A document produced by a CGIC analyst listing all NIBIN leads/hits and distributed to investigative personnel for follow-up assignment and investigation.

NIBIN-Related Case – A case involving a NIBIN hit and/or NIBIN lead.

NIBIN Enforcement Support System (NESS) – ATF's NESS is a web-based investigative tool that provides law enforcement agency personnel with quick and easy access to NIBIN data, basic firearms tracing information, and law enforcement report information in one platform.

Suspect/Unrecovered Firearm – NIBIN links between multiple shootings associated with the same crime gun where the firearm has not yet been recovered.

Referral Lists – A function of eTrace that links each trace result to lists of associated prior firearm traces submitted by any agency found to have a common purchaser, possessor, dealer, and/or recovery location. Agencies can view previous traces submitted by their agency instantly in eTrace. For prior traces submitted by other agencies, the eTrace referral list provides the other agency's name, the trace identification number, contact name, and phone number.

RMS – A Records Management System.

Time to First Shooting (TTFS) – The time from the last known retail sale of a firearm to the first known date that a firearm was used in a shooting (e.g., NIBIN event).

Time to Crime (TTC) – The time from the last known retail sale of a firearm to when it is recovered in a crime.

Why Should Crime Gun Intelligence Centers (CGIC) Metrics Be Tracked?

Violent crime reduction initiatives and programs rarely operate in a vacuum. While evaluating and measuring a program's impact can be challenging, it is essential to consistently maintain, track, and evaluate the metrics or statistics specific to it to demonstrate program effectiveness.

The CGIC model relies on specific processes, technology, and partnerships to identify, arrest, and prosecute the most prolific offenders in a jurisdiction to disrupt the cycle of violence. Consistently tracking CGIC operations metrics is not only crucial to assessing program performance, but it also facilitates strategic planning and resource deployment. Complete and accurate CGIC metrics can help identify sustainability challenges, training and workflow issues, operational deficiencies, and process improvement areas. Analyzing CGIC data and statistics over time allows a comprehensive cost-benefit and return on investment analysis that can support program growth. Additionally, tracking CGIC data can be a useful tool for supervisors to establish investigative follow-up and accountability mechanisms that help ensure that CGIC relevant information is being acted upon.

To aid agencies in their CGIC metric collection, this guide will:

- **Help practitioners understand what CGIC metrics and statistics should be collected and why,**

- **Provide guidance on how CGIC-related data can be used to develop a dashboard or data visualization tool, and**

- **Outline the importance of sharing CGIC-related data with your communities.**

What CGIC Statistics and Metrics Should be Collected and Tracked?

The following sections outline a comprehensive list of CGIC-related metrics and statistics that a CGIC should regularly collect, analyze, and review, based on national best practices. Agencies should also establish a method to track all metrics in one easily accessible location for agency members.

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Figure 1: CGIC Statistics Tracking Template

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	CGIC Metric	January	February	March	April	May	June	July	August	September	October	November	December
2	Shots Fired Calls for Service												
3	Shootings												
4	Criminal Non-Fatal Shootings												
5	Firearm-Related Homicides												
6	Recovered Crime Guns												
7	Recovered PMFs												
8	Recovered MCDs												
9	Cartridge Casings Recovered on Scene												
10	Cartridge Casings Triaged												
11	Test-Fire NIBIN Entries												
12	Evidence Casing NIBIN Entries												
13	NIBIN Leads Generated												
14	Crime Guns Producing NIBIN Leads												
15	Stolen Firearms with NIBIN Leads												
16	eTrace Entries												
17	Successful Traces												
18	Suspect Arrests in Firearm-Related Cases												
19	State Prosecutions												
20	State Convictions												
21	Federal Prosecutions												
22	Federal Convictions												
23	Outside Agency NIBIN Submissions												
24	Internal CGIC Trainings												
25	External CGIC Trainings												

Shots Fired Calls for Service

Whether an agency is equipped with gunshot detection systems (GDSs) or relies on calls for service from the public, knowing when and where shots are fired is imperative. Identifying emerging conflicts or new hot spots provides critical intelligence for a CGIC. Knowing a shooting event's time and place can be strategically leveraged to support investigations and prevention efforts.

Documenting calls for service, including identifying duplicates, fireworks, or other non-shots-fired incidents, helps provide an accurate picture of activity in different areas. This clarity is essential for command staff to make informed strategy and deployment decisions because this data enables law enforcement agencies to deploy resources more effectively during specific times and at specific locations where gun violence is most likely to occur.

Shootings

It is critically important to track every shooting that occurs within a jurisdiction, including accidental, justified, and negligent discharges. Doing so reinforces the integrity and transparency of the program, ensuring a complete and honest representation of gun violence in the community.

Each firearm discharge has investigative value and can potentially lead to broader criminal cases or intelligence developments. Maintaining this level of comprehensive tracking provides a "10,000-foot view" of the gun violence landscape within your jurisdiction. Just as importantly, it allows agencies to drill down into specific incidents, identify trends, shape data-driven public safety strategies, and support policy or legislative changes when necessary.

Criminal Non-Fatal Shootings

While tracking all non-fatal shootings is important, placing focused emphasis on criminal shootings is crucial. This distinction helps clarify the true nature and scope of firearm violence within a jurisdiction by filtering out accidental discharges or legally justified incidents.

Leveraging National Integrated Ballistic Information Network (NIBIN) technology to link shootings is especially valuable. These connections help agencies better understand patterns and develop targeted investigative strategies to prevent retaliatory or related incidents. Monitoring non-fatal shootings on a monthly basis enables departments to establish short-, medium-, and long-term action plans that are responsive to evolving trends in gun violence.

Firearm-Related Homicides

Similar to tracking non-fatal shootings, monitoring firearm-related homicides is a fundamental component of any CGIC program. Many agencies view this as the key metric, aiming to reduce homicide rates year over year.

However, the value goes beyond the numbers. When firearm homicides are effectively integrated with NIBIN and other forensic technologies, the solvability factor of these cases increases (De Biasi, 2024). Leveraging this technology appropriately not only helps close cases but also disrupts violent networks and prevents future incidents through timely intelligence and investigative leads.

Recovered Firearms, Machine Gun Conversion Devices (MCDs), and Privately Made Firearms (PMFs)

Tracking recovered firearms is important not only for local and state jurisdictions but also for federal partners such as the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF). Maintaining a clear understanding of the number and types of crime guns recovered helps agencies assess the landscape of firearms present in their communities.

The recovery of PMFs and MCDs should also be consistently tracked and entered into eTrace to ensure that these weapons are traced at the federal level. Doing so supports broader intelligence efforts and allows for more effective collaboration and trend identification across jurisdictions. It can also enhance officer safety because tracking PMFs and MCDs can enable the agency to inform officers of the weapons being used by gun offenders.

Cartridge Casings Recovered & Triaged from a Scene

After determining how many shots-fired calls patrol officers are responding to, the next critical metric is identifying how many of those incidents result in the recovery of cartridge casings. While several variables can impact the ability to locate casings, such as weather or terrain, this metric remains vital, as the comprehensive collection of cartridge casings is essential for successful CGIC programs.

It is imperative that personnel document whether casings were recovered, where the casings were found, the specific areas searched, and any other relevant information that may support follow-up efforts (e.g., presence of surveillance cameras, witness locations). This information will help guide investigative units conducting follow-up and recanvassing efforts to potentially recover overlooked evidence. It also will help create an image of the scene and where evidence was recovered to aid in investigations of these cases.

While tracking the number of casings recovered captures the overall volume of casings being collected at crime scenes, tracking the number of casings triaged reflects the time and effort required by the NIBIN entry personnel responsible for processing evidence. This highlights the work that goes beyond the simple count of "entries into NIBIN."

For example, a single scene may yield dozens of casings, but only one or two may ultimately be entered into the system due to investigative relevance or duplication. Without tracking the total volume collected, the workload and resource commitment of NIBIN entry personnel may be underestimated. This metric provides a more accurate representation of both field and lab-level effort.

NIBIN Entry of Test-Fired Firearms and Recovered Ballistic Evidence

These metrics are essential to the long-term sustainability of a CGIC program. Tracking the volume of evidence entered into NIBIN from both test-fired firearms and recovered evidence casings provides a clear picture of firearm activity within a jurisdiction.

It is crucial to track the number of NIBIN entries from test-fires and recovered casings separately. The comprehensive collection of casings from a scene is what allows the system to generate the most possible NIBIN leads. Without a high volume of casing entries, the test-fire entries will not have anything to match with, resulting in a significant decrease in the number of NIBIN leads that will be generated.

Monitoring this data on a weekly, monthly, and annual basis helps agencies identify internal gaps (e.g., missed evidence collection opportunities) in the different evidence collection and processing workflows and assess the impact of external factors, such as changes in firearm legislation or policy. These metrics are the bread and butter of any CGIC program, as its success is directly tied to the quantity and quality of evidence entered into the system.

NIBIN Leads Generated

Tracking the number of leads generated from evidence entered into NIBIN is a core metric that directly supports the justification and sustainability of a CGIC program. This data not only reflects the system's effectiveness but also helps identify workflow shortfalls, such as instances where more firearms are recovered than related evidence is entered.

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More importantly, this metric provides agencies with a quantifiable measure of interconnected firearm-related crimes. This enables the strategic deployment of investigative resources to target gun violence more effectively. In addition, consistently generating strong leads can serve as justification for requesting enhanced support from federal partners, including additional ATF personnel to assist with follow-up investigations and analysis.

Crime Guns Producing NIBIN Leads

This metric takes a deeper dive into the overall leads produced, helping agencies recognize that not all firearms carry the same investigative value. By tracking which guns are generating the most NIBIN leads, agencies can more effectively prioritize cases. This reinforces the need to develop targeted strategies that focus finite resources on the right firearms, thereby maximizing the impact of investigations and enforcement efforts.

Stolen Firearms with NIBIN Leads

This metric tracks how many reported stolen firearms are later used in incidents that generate a NIBIN lead. Monitoring this data provides insight into how often stolen guns are involved in criminal activity and supports the development of targeted public safety campaigns, particularly those focused on firearm security and theft prevention.

Additionally, this information is critical when responding to questions about crimes involving so-called "illegal guns." In these cases, the firearm is illegally possessed and used, making it part of the illegal gun problem. Having accurate data allows for an informed and evidence-based response to both public inquiries and policymaking discussions.

Successful Traces

eTrace is a critical component of any CGIC strategy. While tracking the number of firearm traces conducted is essential for future investigative use, ensuring those traces are completed accurately is even more important. Consistent tracking and review of the quality of eTrace submissions helps identify procedural gaps or training needs within the program. Ultimately, properly executed traces enhance investigative outcomes, support linkage to broader firearm trafficking networks, and reinforce the overall effectiveness of the CGIC.

Arrests in Firearm-Related Cases

The importance of tracking arrests in firearm-related cases is twofold. First, it quantifies the effort and productivity of CGIC personnel by providing raw, measurable data. Second, it supports accountability by ensuring that NIBIN leads are being properly reviewed, investigated, and followed up on. Together, these insights help assess both operational efficiency and overall CGIC workflow effectiveness.

State Prosecutions & Convictions

Tracking the number of prosecutions and convictions on a weekly, monthly, and yearly basis offers valuable insight into the overall effectiveness of gun crime investigations. While each case is unique and influenced by multiple variables, consistent data collection allows agencies to identify trends and patterns.

This can help highlight systemic strengths or gaps, such as identifying officers whose cases are frequently dismissed, or recognizing patterns with judges or prosecutors who are more likely to dismiss cases rather than pursue them. These insights can inform training, policy adjustments, and collaborative discussions aimed at strengthening prosecution outcomes and overall program success.

Federal Prosecutions & Convictions

Like state-level tracking, the monitoring of federal indictments, prosecutions, and convictions allows an agency to assess the success of firearm-related cases at the federal level. This metric is especially effective when used in conjunction with a Project Safe Neighborhoods (PSN) style initiative, where there is a clear, coordinated understanding between state and federal prosecutors regarding case assignments.

By tracking these outcomes, agencies can ensure that the most impactful cases, particularly those involving violent or repeat firearm offenders, are pursued at the appropriate level, maximizing sentencing potential and overall deterrence.

Outside Agency NIBIN Submissions

This metric is important because it highlights the breadth and reach of an individual CGIC program. Tracking the other local agencies that contribute evidence to a CGIC not only demonstrates collaborative efforts but can also help secure additional support and resources. By fostering interagency cooperation, the CGIC can become regional in scope to extend its impact and effectively reduce gun-related violence across a broader geographic area beyond the immediate jurisdiction.

CGIC Trainings (Internal and External)

Tracking the number of CGIC-related trainings that are provided is important because it measures how effectively your agency is disseminating information internally and externally about the CGIC principles, as well as related policies and procedures. Ensuring that personnel and partner agencies understand the program's purpose and operations is vital to its success. Additionally, it supports transparency with the public. Communicating your agency's commitment to addressing gun violence, along with the strategies and programs in place, helps build trust and garner public support.

Data Sharing Memorandums of Understanding (MOUs)

Depending on the source of CGIC-related data and jurisdictional requirements or rules, a Memorandum of Understanding (MOU) between stakeholders may not be needed; however, in other jurisdictions, an MOU may be required. MOUs vary from state to state and within the federal government. They also differ based on the type of existing relationships between stakeholders. It is essential to determine whether obtaining data-sharing MOUs among stakeholders is necessary to help facilitate proper CGIC statistics collection and the free flow of information between partners.

To determine whether an MOU is necessary and the type of MOU, stakeholders should meet to discuss their respective contributions and the level of formality needed. Given that requirements may differ, it is advisable to involve the legal departments of each participating entity in these discussions. If your agency is considering making CGIC data available to external organizations, such as a university or other research institutions, it is important to ensure that data sharing, ownership, and use are regulated through an agreement or MOU.

Building a CGIC Dashboard

Dashboards transform cleaned data and essential metrics into visual tools that support daily decision-making, strategic planning, and stakeholder communication. The metrics highlighted above are most valuable when presented in formats that command staff, investigators, and analysts can quickly understand and act upon.

A well-designed CGIC dashboard enables real-time program performance monitoring, helps identify emerging patterns and trends, bolsters operational support, and provides the necessary evidence to secure continued support and resources. When command staff can quickly see that NIBIN leads have increased 30% this month or that prosecution rates are declining in certain case types, they can make informed, evidence-based decisions to improve outcomes.

A dashboard can also be a powerful tool to better understand crime trends and linked cases. For example, a dashboard can facilitate tracking the number of days between linked incidents, as well as the number of cartridge casings recovered at each crime scene. This information can provide valuable context for both investigations and prosecutions as it helps identify the most active firearms on the streets at any given time. By quantifying this activity, agencies can generate actionable intelligence to guide command staff in the strategic deployment of enforcement assets, ensuring that resources are focused on the most pressing firearm threats.

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Building an effective CGIC dashboard requires creating a reliable and clean dataset. The intended use of the CGIC dashboard will impact the type of dataset that needs to be built. If your agency is simply looking to track CGIC data over time, a simple dataset that is updated periodically with CGIC statistics like those described in the previous section may be sufficient. However, if your agency is looking to develop a tool to facilitate more complex data visualization that can be leveraged to support investigations and strategic deployments, the required dataset will be more complex, as it may require integration with case-specific information from your Records Management System (RMS).

Creating a CGIC dashboard requires specific resources and personnel. The following sections outline steps to ensure data quality and highlight required resources to properly build a CGIC dashboard.

Data Quality Considerations

Data cleaning is the systematic process of identifying and correcting errors, inconsistencies, and gaps in datasets, which is essential for effective CGIC operations. Clean data facilitates accurate analysis, reliable reporting, and confident decision-making. It ensures that the intelligence products generated by CGICs can be trusted by investigators, prosecutors, and command staff. Clean data also allows for the creation of dashboards that command staff can rely on and act upon.

Why Data Quality Matters for CGIC Success

The metrics discussed above, including shots fired, NIBIN leads, and prosecution outcomes, rely heavily on the data quality used to generate them. If this data contains errors, inconsistencies, or gaps, it can negatively impact not only the numbers on a spreadsheet but also investigations, resource allocation, and public safety outcomes. CGICs require accurate, complete, and consistent data to produce reliable intelligence and effectively support investigations. For instance, a single incorrect caliber entry can prevent NIBIN from identifying crucial ballistic matches, while missing address information can disrupt geographic analysis. Furthermore, inconsistent case coding can hinder tracking outcomes over time.

The multi-agency nature of CGIC operations exacerbates these data quality challenges. Information is sourced from patrol officers, crime scene technicians, laboratory personnel, investigators, and prosecutors, each using different systems, procedures, and quality standards. Without a systematic focus on data quality, the variations among these data pipelines can lead to significant issues that undermine the entire intelligence process.

What to Look Out For: Common Data Quality Issues

Understanding the challenges that typically plague CGIC data can help agencies recognize issues before they compromise operations or dashboard reliability. These challenges generally fall into several categories that require different approaches to identify and resolve.

Incomplete Information

Incomplete information occurs when required data fields are missing or only partially completed. Examples include incomplete addresses that prevent accurate mapping, missing suspect information that limits investigative leads, absent case outcomes that make performance measurement difficult, or incomplete firearm descriptions that jeopardize eTrace requests.

Inconsistent Formatting

Inconsistent formatting happens when the same information is recorded differently across time periods, personnel, or systems. This includes varying date formats, inconsistent address formats, different abbreviations for the same location, or varying codes for similar crime types or case dispositions.

Data Entry Errors

Data entry errors encompass mistakes made during initial data collection or data entry. Common examples include misspelled street names, transposed numbers in case identifiers, incorrect coordinates that place incidents in the wrong locations, or incorrect caliber information affecting NIBIN connections.

Duplicate Records

Duplicate records can arise when the same incident, suspect, or piece of evidence appears multiple times in datasets with slight variations. This is particularly common in multi-agency environments where different organizations may document the same events using different identifiers or slightly different information.

Logical Inconsistencies

Logical inconsistencies refer to data that does not make sense when examined together. Examples include arrest dates occurring before incident dates, suspect ages that vary dramatically across related records, or case dispositions that do not align with the charges filed.

Cross-System Disconnection

Cross-system disconnection occurs when there is limited or no integration across different data sources or systems, preventing the linking of critical information. Examples include NIBIN leads that use different case numbers than in the RMS, lab results not linking back to original incidents, prosecution records with no identifier link to investigative records, or evidence tracking that has no link back to case management.

Practical Steps: Preparing Data for Analysis and Dashboard Development

Once a strong organizational foundation for data collection and an appropriate understanding of potential data pitfalls are established, the following steps can help transform collected data into dashboard-ready information that can support analysis and decision-making.

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Step 1: Assess and Inventory Your Data

Before starting any analysis or building dashboards, it is essential to understand what data you have and its current condition.

Inventory all data sources contributing to CGIC operations:

- RMS (Records Management System)
- NIBIN Enforcement Support System (NESS)
- eTrace
- Laboratory databases
- Evidence tracking systems
- Prosecution tracking systems
- Partner agency data feeds

Review sample datasets to identify common quality issues:

- Missing required fields (e.g., addresses, dates, firearm information)
- Inconsistent formatting across time periods or personnel
- Obvious data entry errors or logical inconsistencies

Document critical data elements for dashboard development:

- Focus on metrics identified as essential for CGIC success
- Prioritize elements needed for mapping and trend analysis
- Assess key field completeness and consistency

Set realistic expectations for dashboard capabilities based on current data quality.

Step 2: Standardize Key Data Elements

Focus your standardization efforts on the data elements that are most important for analysis and dashboard functionality.

Geographic Information:

- Establish consistent address formats
- Use standard coordinate systems for mapping
- Create location reference lists for common areas

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Temporal Data:

- Standardize date formats (MM/DD/YYYY or YYYY-MM-DD)
- Use consistent time formats and time zones
- Establish clear definitions for incident vs. report dates

Categorical Variables:

- Develop standardized crime type codes
- Create consistent case disposition categories
- Establish firearm classification standards

Create reference materials and validation rules to maintain standards.

Train personnel on standardized data entry procedures.

Step 3: Clean and Integrate Existing Data

Implement systematic procedures to clean historical data and integrate information from multiple sources.

Run completeness checks:

- Identify records that are missing critical information
- Research and fill gaps using available sources
- Flag records that cannot be completed

Resolve duplicate records:

- Use multiple matching criteria (names, addresses, dates, case numbers)
- Compare records carefully before merging or deleting
- Document decisions for future reference

Validate logical consistency:

- Check that arrest dates follow incident dates
- Verify that coordinates fall within jurisdiction boundaries
- Ensure that case dispositions align with charges filed

Develop methods to connect data across systems:

- Connect NIBIN leads to original incidents
- Link prosecution outcomes to case investigations
- Maintain unified identifiers across systems

Step 4: Establish Ongoing Quality Procedures

Set up routine procedures to maintain data quality as new information is added.

Assign data quality responsibilities:

- Designate someone to oversee routine quality checks
- Ensure that someone is accountable for data standards and quality decisions
- Assign backup personnel or cross-train for coverage

Work with partner agencies/departments on basic coordination:

- Share common standards for critical data elements where possible
- Communicate about major quality issues affecting shared data
- Include basic quality expectations in all data-sharing agreements

Build quality checks into routine operations:

- Use basic validations during data entry (spell check, required fields, mandatory codes)
- Have a supervisor spot check critical data
- Provide brief trainings on data entry best practices

Conduct regular data checks and maintenance:

- Daily review of obvious errors in critical operational data
- Weekly review of new entries for completeness and consistency
- Monthly assessment of overall data quality and system integration

Get feedback from data users to identify quality issues.

Document all corrections with clear rationale for the changes made.

Step 5: Prepare Dashboard-Ready Datasets

Transform cleaned data into formats optimized for dashboard development and analysis.

Create structured datasets:

- Organize data so each row represents a single event (shooting, firearm, lead)
- Ensure consistent field names and formats across all datasets
- Remove or flag test records and administrative entries

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Add analytical fields:

- Calculate time between linked incidents
- Create geographic zones for mapping analysis
- Generate summary statistics and trend indicators

Develop documentation:

- Create data dictionaries explaining field definitions and allowed values
- Document data sources and update frequencies
- Note any limitations or quality issues that affect analysis

Test dashboard compatibility:

- Verify data imports correctly into dashboard software
- Check that filtering and aggregation functions work properly
- Identify any remaining formatting or integration issues

Establish and update procedures for maintaining dashboard data quality over time

This systematic approach to data preparation creates the foundation for effective dashboard development. Clean, well-documented data enables dashboard developers to focus on creating useful visualizations rather than dealing with data quality issues. More importantly, it ensures that dashboards provide reliable information that command staff, investigators, and analysts can trust to improve CGIC operations.

Checklist of Necessary Resources

Creating a functional and reliable dashboard for a CGIC involves more than just technical skills; it requires effectively aligning people, technology, and processes. This ensures that the dashboard meets operational needs while adhering to security and reporting standards. Agencies that take the time to assemble the right combination of personnel, software, and training resources are much more likely to develop a dashboard that is accurate, sustainable, and beneficial for daily decision-making.

Personnel

A well-chosen team with clearly defined roles is the foundation of any successful dashboard project.

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Project Lead or Executive Leadership Champion:

- ☐ Provides senior-level leadership to ensure the project aligns with agency priorities

- ☐ Secures funding and addresses policy hurdles

- ☐ Communicates dashboard value to leadership and partner agencies

- ☐ Advocates for the project when competing demands emerge

Lead Analyst/Data Steward:

- ☐ Understands data sources *and* the dashboard platform

- ☐ Manages the data pipeline from cleaned source files to dashboard-ready datasets

- ☐ Oversees data refresh schedules and troubleshoots technical or data-quality issues

- ☐ Typically serves as the lead crime analyst or intelligence analyst who manages NIBIN lead tracking

IT and System Support:

- ☐ Establishes secure connections to multiple systems (RMS, NESS, laboratory databases, eTrace exports)

- ☐ Manages permissions and ensures compliance with Criminal Justice Information Services (CJIS) security standards

- ☐ Handles servers or cloud environments where dashboards are hosted

- ☐ Provides ongoing technical support and system maintenance

End-Users:

- ☐ Includes investigators, supervisors, and personnel who will use the dashboard regularly

- ☐ Provide feedback on ease of use, clarity of terminology, and relevance of displayed information

- ☐ Ensure that the layout, filters, and navigation support investigative and supervisory workflows

- ☐ Test dashboard functionality from a user perspective to confirm it performs as needed

Subject Matter Experts (As Needed):

- ☐ May include firearms examiners, NIBIN technicians, investigators, and prosecutors who provide operational context

- ☐ Confirm that metrics align with official definitions, case stages, and investigative milestones

- ☐ Identify potential misinterpretations or misleading counts and recommend corrections

- ☐ Advise on the best ways to represent prosecution outcomes, firearm classifications, or other specialized data elements

Software

Selecting the right software tools is about more than choosing a visualization platform, it is essential to ensure that the entire data pipeline can be maintained securely and efficiently.

Dashboard/Visualization Platform:

The most common tools in law enforcement settings are, but not limited to, Microsoft Power BI, Tableau, and Esri dashboards for their mapping features. When making a choice, consider factors such as compatibility with source systems, licensing costs, user permissions, and whether the platform provides secure access for partner agencies.

Data Preparation and Integration Tools:

- ☐ For smaller datasets: Spreadsheets for basic data manipulation

- ☐ For complex integrations: SQL, R, or Python to merge and clean data from multiple sources

- ☐ Automation capabilities: Tools that can run repetitive cleaning steps, so dashboard refreshes pull ready-to-use data

- ☐ API connections: Direct links to RMS, laboratory systems, or other data sources for automatic updates

Secure Storage and Hosting:

- ☐ On-premise servers: Agency-controlled environment with direct IT oversight

- ☐ Criminal Justice Information Services (CJIS)-compliant cloud services: Secure cloud workspace that meets criminal justice security requirements

☐ **Hybrid solutions: A combination of local storage with cloud-based dashboard access**

☐ **Access controls: User permissions that allow authorized personnel while protecting sensitive data**

System Integration Requirements:

☐ **Open Database Connectivity (ODBC) connections: Standard database connectivity for automated data pulls**

☐ **Secure file transfer: Encrypted methods for moving data between systems**

☐ **Real-time vs. batch updates: Determine refresh frequency based on operational needs**

☐ **Partner agency access: Secure sharing capabilities for multi-agency CGIC operations**

Training Resources

Even with the right people and software in place, dashboards can fail if staff do not have the skills to maintain them or interpret their results.

Technical Training for Dashboard Developers:

☐ **Platform-specific instruction: Formal training in the chosen software's core and advanced features**

☐ **Data integration skills: How to connect multiple data sources and automate refresh processes**

☐ **Security and compliance: CJIS requirements, user permissions, and data protection protocols**

☐ **Troubleshooting capabilities: Problem-solving skills for technical issues and data quality problems**

Data Literacy for Dashboard Users:

Investigators, supervisors, and prosecutors who use dashboard outputs need to understand how to interpret metrics correctly, apply filters, and avoid common misinterpretations. This training ensures the dashboard informs sound operational decisions rather than reinforcing misconceptions.

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Standard Operating Procedures:

☐ **Dashboard maintenance protocols: Written procedures for data updates and system maintenance**

☐ **Data source management: Documentation of who maintains each data feed and how**

☐ **Error correction procedures: Steps for identifying and resolving data quality issues**

☐ **Change approval processes: How dashboard modifications are requested and implemented**

Operational Integration Training:

Dashboard use should be integrated into regular CGIC routines. This involves training staff on how and when to use the tool—specifically during NIBIN lead reviews, GunStat meetings, investigative case conferences, or command briefings. A dashboard that is technically functional but not actively used has no real-world value.

Putting the Checklist to Work

Before building begins, agencies should use this checklist as a readiness assessment:

☐ **Personnel readiness:** All key roles identified and committed to the project

☐ **Technical infrastructure:** Secure hosting environment and system connections planned

☐ **Software selection:** Platform chosen based on agency needs, budget, and technical capabilities

☐ **Training plan:** Both technical and user training scheduled and resourced

☐ **Operational integration:** Clear plan for incorporating dashboard into CGIC workflows

To create accurate, sustainable, and operationally valuable dashboards, agencies must ensure that all necessary personnel, technology, and training resources are in place before construction begins. Once this foundation is established, the next step will be determining what and how to effectively share relevant CGIC statistics with the public. This will enhance the value of your data and dashboard investments by promoting community engagement and transparency.

Sharing CGIC Data with the Public

A well-run, robust CGIC provides a scientific and unbiased approach to removing dangerous crime guns from the streets and from prolific gun offenders who are willing to use them against the community. Therein lies an opportunity for agency executives to inform the public of the value of CGIC. Proper public messaging of CGIC's fundamental intent and function, and a carefully crafted sampling of metrics and data that supports an impactful narrative for gun crime reduction, will serve well to promote the support needed from the community.

Background

Sir Robert Peel, known as the *Father of Modern Policing*, notably said, "The police are the public and the public are the police…" (The Police Federation of England and Wales, n.d.). This statement holds true today and is a profound reminder that the underpinning of police "power" is afforded by the people they serve. In this vein, law enforcement agencies should seek to find opportunities to share with their communities, not just vague mission statements filled with platitudes, but rather a glance into the scope of the agency's efforts to effectively reduce crime, while building and maintaining public trust.

While certain strategies and tactics exercised by law enforcement may not be appropriate to share with the public, efforts to showcase what can be shared with the community should be identified. Not only does this foster legitimacy and trust from community partners, but it could also serve as an incentive for police-public cooperation in combatting violent gun crime and other public safety concerns of the community. Transparency in law enforcement underscores the importance of making policies, procedures, data, and decision-making accessible to the public (Przeszlowski & Guerette, 2024.)

The significant investment of resources that principal and partnering agencies must commit to a successful CGIC includes a duty to inform the community of *some* information about the initiative. The lead agency and its CGIC cohorts should have frank discussions, identifying what information may be shared with the public and how. The information-sharing policy that is ultimately agreed upon should be codified into CGIC protocols and developed as part of the workflow and measurable outcomes.

Challenges & Considerations of Sharing Data with the Public

Historically, law enforcement has been hesitant to "share" information with the public and, in some cases, downright refused to do so. Some members of the public have been somewhat complacent, sharing very little information, while others have been displeased by law enforcement's lack of transparency with their communities.

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> The challenge for law enforcement remains—finding the right balance of transparency, while considering operational security and effectiveness, weighed against the benefits of community knowledge and acquiescence.

Nonetheless, the responsibility of identifying the appropriate information and mechanism for delivery to the community remains that of the law enforcement entity. For CGIC information sharing, law enforcement needs to identify:

1. **To Whom?** Some information may be appropriate for general public consumption, whereas other details may only be prudently shared with select members of the community or not at all.

   Considerations

   - **Open Source/Access:** The CGIC should carefully deliberate about what information will be readily available and public-facing. To suggest that too much information, particularly without context and/or acumen to comprehend what is shared, may be counterproductive.

   - **Community at Large:** The community, particularly those wary of contemporary and technology-driven law enforcement tactics, may challenge and scrutinize law enforcement's intentions when implementing a CGIC. For this, it may be in the best interest of CGIC executives to thoughtfully craft a community awareness message that provides ample information to educate the community and quell concerns.

   - **Select Community Partners:** Many law enforcement agencies have longstanding community partners that have demonstrated a willingness to collaborate with law enforcement to better their neighborhoods. Such relationships may present unique opportunities for CGIC information sharing, in which the partners can act as credible messengers on behalf of the agency to distribute appropriate CGIC information, mitigating misinformation spreading in the community.

2. **What & How Much Information?** Too much information may compromise the integrity of the CGIC and the science of the tools, nullifying its effectiveness. Too little information will encourage the public to "fill in the blanks," thereby creating a false narrative for the CGIC.

   Considerations

   - **Needs Assessment & Explanation:** The CGIC may want to conduct a needs assessment and publish its findings in a format suitable for community consumption to validate the effort and provide a general understanding of its purpose.

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- **CGIC Overview & Science:** The CGIC, in conjunction with all of its stakeholders, will need to determine how much, if any, of the underlying science is shared with the public.

- **Operational Concerns:** Law enforcement tactics should not be shared unnecessarily.

- **Workflow:** Some CGIC workflow processes could be shared with the community, such as the lab's involvement, but specific details may be withheld, as deemed necessary.

- **Staffing & Resources:** It may be beneficial to share the significant investments made to reduce gun crime, such as personnel, equipment, funding, grants, etc., expended in the robust CGIC effort.

- **Policies, General Orders, & Protocols:** The majority of CGICs make an effort to codify their program's workflow, protocols, metrics, staffing, etc. Some agencies already make all policies public, while other law enforcement entities have preserved those directives for department personnel only. Each CGIC will need to assess its obligation and/or willingness to share policies with the community.

- **CGIC Success:** It is a fair community expectation to understand the goals of a CGIC program. For this, the CGIC should articulate what represents progress and success for the program in a succinct format.

3. **What Metrics/Data?** Successful CGICs track large amounts of data that serve not only as an accountability measure, but also provide insight into several critical areas of the program, including—though not limited to—sustainability, training and workflow issues, operational efficiency, process improvement, performance assessment, strategic planning and resource deployment, return on investment, cost-benefit analysis, and future funding opportunities.

   Although critical for CGIC success, all of these metrics may not be appropriate to share with the public. Instead, the agency should decide what data would benefit the community, law enforcement, and the overarching goal(s) of the CGIC program.
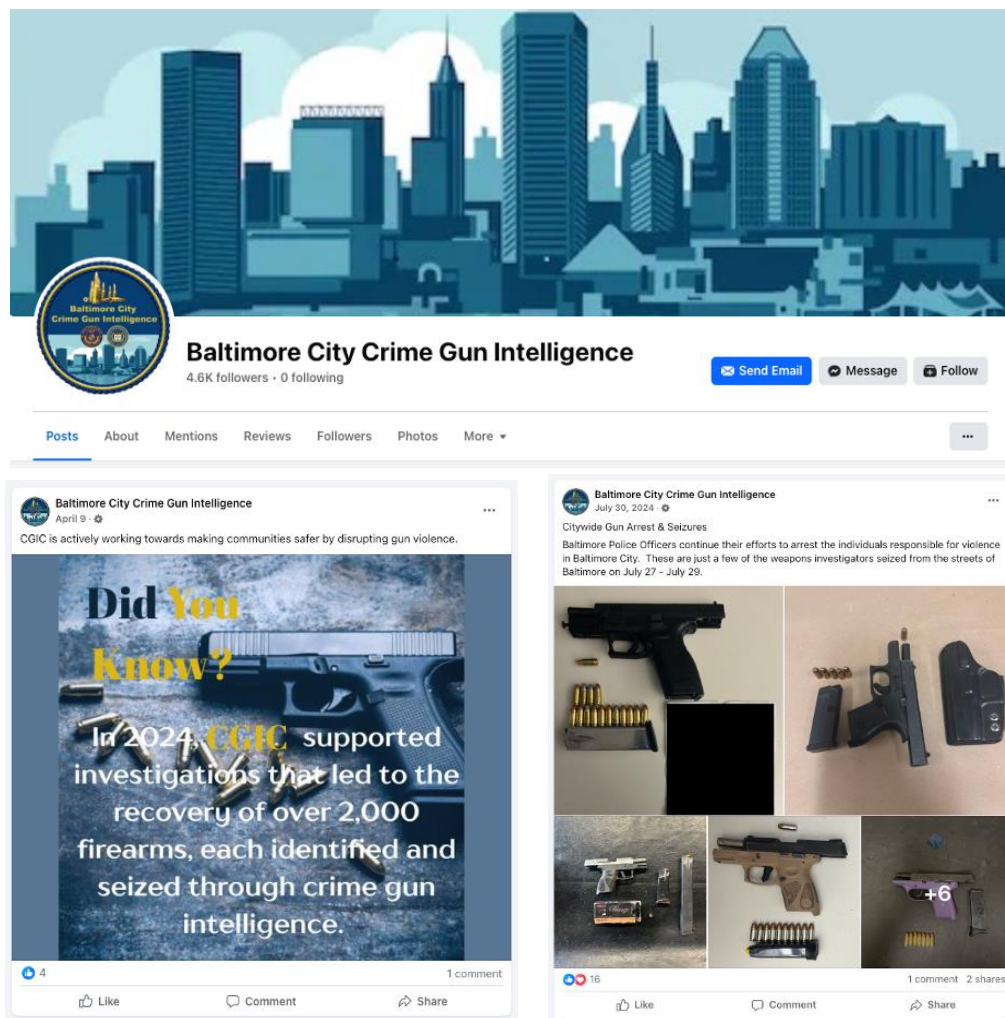
   Considerations

   - **Public -Friendly Consumption:** Any measurable data shared with the public should be done with the clear intention of informing the community of meaningful evidence of the CGIC program's successes and/or shortcomings. Moreover, the data should be discernible to the layperson to ensure context and impact of the information provided.

   - **Value:** The scope of the metrics made available to the public should encompass what "matters" to the community. The data should have a seamless nexus to the CGIC program and provide transparency as to its successes and challenges. In other words, not just the

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good news should be shared, but rather metrics that tell the full story, providing a CGIC report card.

- **Event-Based:** When a newsworthy event occurs, such as a significant investigative arrest and/or prosecution, or a milestone benchmark for statistics is reached, the CGIC may consider releasing that information to the public in the appropriate medium.

4. **What Delivery Format?** The vehicle for delivering information to the public may be equally as important as the data communicated and is strongly dependent on the consumer of the information. Some information may be communicated only verbally (for example, at community meetings), while other data may be more suitable for communication via a public-facing portal, dashboard, news outlet, or social media.

**Figure 2: Baltimore, Maryland, Police Department CGIC Facebook Page**

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Considerations

- **Website/Social Media:** This should be considered the least secure mechanism for delivering CGIC material. It should not contain sensitive information that may compromise law enforcement tactics or CGIC's overall effectiveness. However, it can still be used to engage with the community and provide a high-level overview of operations.

- **CGIC Portal/Dashboard:** Where feasible, the CGIC may choose to create a CGIC portal or dashboard with differing access permission levels.

- **Community Meetings:** This setting delivers a good opportunity, particularly for agency executives, to highlight the CGIC program, its unbiased methodology, and some of its success metrics. It offers an opportunity to build trust, buy-in, and support for CGIC and the agency as a whole.

- **Monthly/Quarterly/Yearly Reports:** The agency should decide if a periodic CGIC report is appropriate for dissemination to the public. This could be a standalone document or incorporated into existing agency reporting systems. The publishing frequency may be best suited for yearly distribution.

Figure 3: Portsmouth, Virginia, Police Department Gun Violence Dashboard
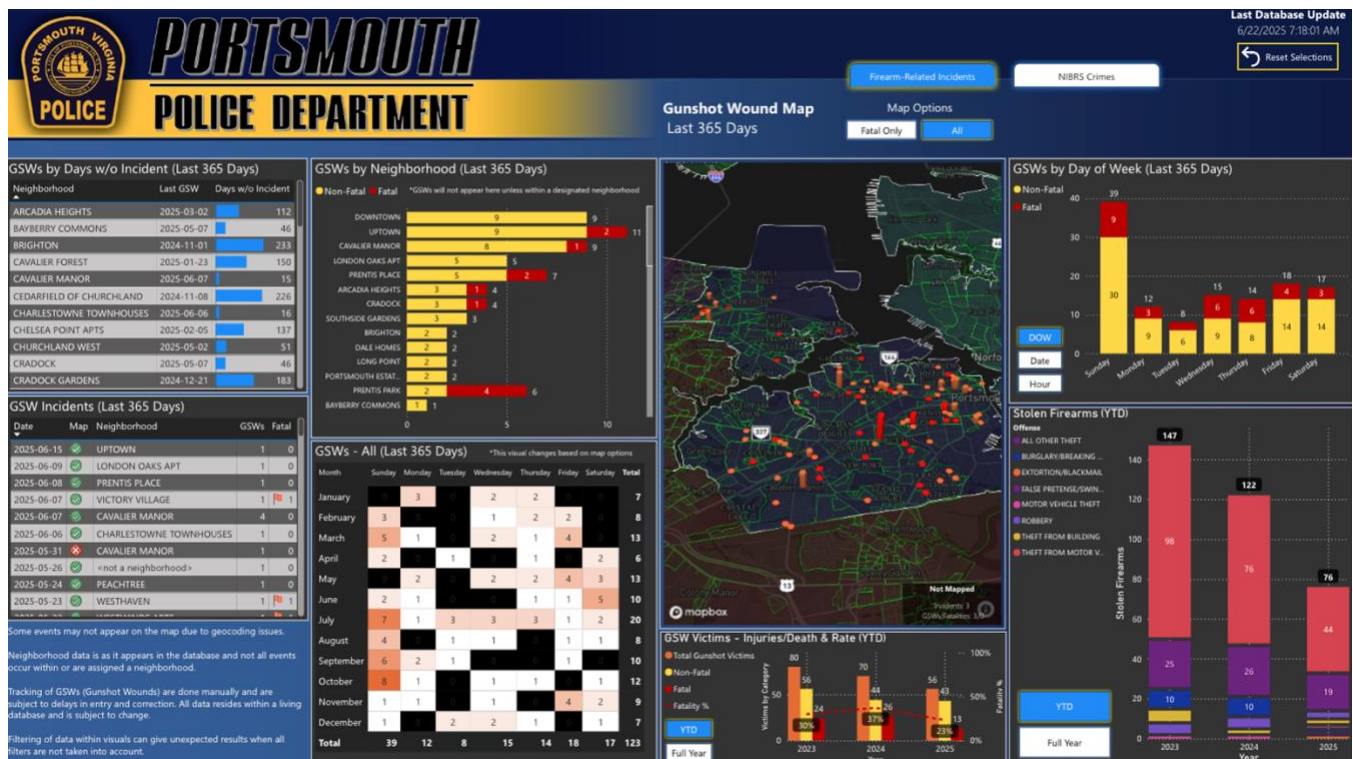
Recommendations

Regardless of whether the CGIC is well-established or in the planning stages, CGIC executives should consider prioritizing the community in the framework of the program, particularly as it relates to sharing outputs/outcomes, and the overarching impact the CGIC will have on the community. Substantial consideration should be given to eliciting the community's opinion, not only on the methodology applied by the CGIC, but also on what data may be vital to share, and in what format. For those agencies that may not currently have community support, the CGIC may provide the ideal "bridge" to mend or strengthen police-community relations.

Allowing a CGIC program to serve as the conduit for increased community support will require considerable dialogue and collaboration, as all partners will need to agree upon the message delivery, what metrics will be made available, and to what degree the "science" of CGIC will be made public. A well-crafted public information strategy will allow the CGIC to be more effective and garner greater support from the community.

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About the Authors

The National Resource and Technical Assistance Center for Improving Investigations (NRTAC)

The NRTAC is a training and technical assistance (TTA) center, created by the National Policing Institute (NPI) in collaboration with the Bureau of Justice Assistance (BJA), to improve law enforcement investigations at the local level through the development of resources on new tools and methodologies; assessment of current practices and recommendations on innovative investigative policies and practices; assessment of departmental investigatory functions and practices; and issue related recommendations for investigative practice improvement.

Since 2016, the NRTAC has supported BJA's local law enforcement CGIC integration initiative as the main TTA provider, assisting over 50 agencies in implementing the CGIC model in their jurisdictions.

Josh May

Joshua May has over 20 years of experience with the Chattanooga, Tennessee, Police Department. While an investigator, he worked in the Gang Unit for 6 years prior to being promoted to Sergeant in 2014. Once promoted, he oversaw the Group Violence Initiative as the Focused Deterrence Coordinator. In 2018, Sgt. May founded the Gun Team, a proactive unit that uses NIBIN leads to solve low-, mid- and high-level gun crime. In 2020, Sgt. May wrote the CGIC grant that established the Scenic City CGIC, which services eight agencies in and around Chattanooga. Sgt. May also served on the CPD SWAT team for nine years.

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Ryan Fisher, Ph.D. is a Senior Research Manager at the National Policing Institute. He joined the National Policing Institute in August of 2023. Previously, Dr. Fisher held roles at the American Institutes for Research and the City of Philadelphia, providing research and technical assistance on projects related to policing, crime and violence prevention, and criminal justice reform. Dr. Fisher's background is in quantitative and spatial analysis, and his published research includes work on policing practices, environmental criminology, and quantitative methods. In addition, he has extensive experience in public policy work, including researcher-practitioner partnerships and collaboration with local and federal criminal justice agencies. He earned his Ph.D. in Criminology and Criminal Justice from Temple University, focusing his dissertation work on spatial patterns of co-offending.

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Gregory Carlin

Gregory Carlin is a retired Camden County, New Jersey, Police Department Assistant Chief of Police with over 20 years of experience in law enforcement. During his time with the Camden County Police Department, Assistant Chief Carlin served as the Commanding Officer of Strategic Deployment, where he commanded their Real-Time Tactical Operations & Intelligence Center and established Team Review Accountability & Coordination (TRAC) meetings. Prior to this position, Assistant Chief Carlin served as the Commanding Officer of the Investigative Bureau where he commanded all investigative assets of the agency. Earlier in his career, Assistant Chief Carlin served as a detective in the High-Intensity Drug Trafficking Area (HIDTA) Narcotics Task Force and later as supervisor of the HIDTA Task Force Gang Unit. Assistant Chief Carlin holds a Bachelor's degree in Public Administration and a Master's degree in Administrative Science from the Fairleigh Dickinson University. Mr. Carlin has vast experience in implementing innovative violent crime reduction strategies and fostering collaboration among criminal justice stakeholders. He has presented in several conferences and symposiums as a subject matter expert.

Appendix A: CGIC Statistics Tracking Template

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	CGIC Metric	January	February	March	April	May	June	July	August	September	October	November	December
2	Shots Fired Calls for Service												
3	Shootings												
4	Criminal Non-Fatal Shootings												
5	Firearm-Related Homicides												
6	Recovered Crime Guns												
7	Recovered PMFs												
8	Recovered MCDs												
9	Cartridge Casings Recovered on Scene												
10	Cartridge Casings Triaged												
11	Test-Fire NIBIN Entries												
12	Evidence Casing NIBIN Entries												
13	NIBIN Leads Generated												
14	Crime Guns Producing NIBIN Leads												
15	Stolen Firearms with NIBIN Leads												
16	eTrace Entries												
17	Successful Traces												
18	Suspect Arrests in Firearm-Related Cases												
19	State Prosecutions												
20	State Convictions												
21	Federal Prosecutions												
22	Federal Convictions												
23	Outside Agency NIBIN Submissions												
24	Internal CGIC Trainings												
25	External CGIC Trainings												