



**Focused Intervention Team  
Community Oversight Group**

# **Official Recommendation**

**On the Implementation of ShotSpotter  
Technology as a Focused Deterrence Tool to  
Address Gun Violence in Portland**

**July 18th, 2022**



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**EMAILED ATTACHMENTS** (To publish w/this recommendation document)

- Independent Audit of the ShotSpotter Accuracy
- Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago
- Privacy Audit & Assesment of ShotSpotter Inc.’s Gunshot Detection Technology

*\* Links to these documents are also listed in the reference section of this recommendation.*

# IMPLEMENTATION OF SHOT SPOTTER TECHNOLOGY AS A FOCUSED DETERRENCE TOOL TO ADDRESS GUN VIOLENCE IN PORTLAND

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The FITCOG wishes to thank the community and COG members who provided constructive criticisms of this topic to better inform our recommendation framework.

## Acronyms Used in This Recommendation

- **COG:** Community Oversight Group
- **FITCOG:** Focused Intervention Team Community Oversight Group
- **FIT:** Focused Intervention Team
- **LEO:** Law Enforcement Officer
- **MJC:** MacArthur Justice Center
- **OVP:** Office of Violence Prevention
- **PPB:** Portland Police Bureau
- **SOP:** Standard Operating Procedure
- **SSP:** ShotSpotter
- **VIP:** Violent Impact Player

## Recommendation Executive Summary

### INTRODUCTION

Gun violence continues to be a major threat to livability and safety issue in the city of Portland, and has reached the level of being a public health crisis. Efforts to reduce gun violence are a matter of high priority requiring immediate attention. This FITCOG

recommendation is made with an acknowledgment of both the public health crises and this high priority.

Gun violence is a complex social issue requiring a multi-faceted approach that includes both policing and community-based responses. FITCOG fully supports the investment and inclusion of community-based interventions addressing the root causes of gun violence; as all of these strategies are critical in bringing about an equitable and peaceful society. The mission and focus of the FITCOG however, is specifically to review and give input on focused deterrence policing strategies and tools of the FIT.

No recommendation brought forward by the FITCOG is intended to be an end-all-be-all, or mutually exclusive strategy in the struggle to end gun violence. FITCOG expects that the work to end gun violence rests on the shoulders of many within the city, and community. This group is but one part of the larger efforts being made. FITCOG members represent various sections of the Portland community, with a myriad of lived experiences and formal expertise. This recommendation has been informed by our lived experiences, in addition to months of research including but not limited to: article and report reviews, conference attendance, panel discussions, public testimony, and more. As FITCOG members we bring many voices of community input but we are not unmindful that there are other voices in other parts of the community that should be heard. We highly encourage the City of Portland to provide continued opportunities for community input and discussion on this very important matter.

The FITCOG's mission is to work closely with the Commissioner-in-Charge of the Portland Police Bureau, the leadership of PPB, and FIT members and command to understand, inform and provide recommendations to the city's efforts to reduce gun violence in Portland. This will be done by remaining informed about gun violence trends, PPB, and FIT strategies, other City of Portland programs and priorities in supporting this work, and best practices for prevention, intervention, and response.

FITCOG also provides recommendations to FIT members, the Police Chief, and Commissioner-in-Charge of the PPB regarding PPB's gun violence response strategies through a racial and social justice lens, and provides these recommendations in a manner seeking equitable and racially just outcomes.

According to its bylaws, FITCOG is also empowered to make recommendations regarding allocation of City of Portland resources (for example: staffing, training, technology, funding) to support FIT in accomplishing its mission of specifically reducing gun violence. FITCOG makes decisions using a consensus model. The following recommendation was reached through consensus vote after meeting the required voting quorum.

All regular FITCOG meetings designate time on the agenda to accept public testimony from community members. This recommendation also includes feedback, insight, and concerns brought forward by members of the community who have given public



testimony in FITCOG meetings. Due to public health concerns created by the Covid-19 pandemic, FITCOG meetings are held via video conference through Zoom.

FITCOG meetings are public record and subject to Freedom of Information Act requests, with the exception of confidential briefings. All information regarding non-confidential portions of the meeting is available on the City of Portland website at: <https://www.portland.gov/wheeler/focused-intervention-team-community-oversight-group> A copy of this recommendation will be posted on the FITCOG web page per Article 8, Section 4, Subsection 5 under the FITCOG bylaws.

### **Limitations**

This recommendation is based on information and reports made available to the general public. FITCOG is a volunteer-based community oversight group and despite the extensiveness of our research, it is important to recognize that members of our group work full-time jobs and have responsibilities outside that of the work of FITCOG. Due to the nature and structure of this work, FITCOG members have natural limitations of time and capacity. The purpose of this recommendation is to establish an informed basis to further city and community dialogue on the potential use of ShotSpotter technology in addressing the gun violence crises in Portland.

An additional limitation to this recommendation is that there are only a handful of credible, and easily, publicly accessible reports and audits on ShotSpotter technology at this time. The data we do have is very informative, but it may be helpful for City leaders and community members to request data reports from individual agencies currently using the technology. Additionally, one of the most critical reports of the ShotSpotter technology does not appear to be readily available to the public for review. FITCOG is still awaiting a response from the MacArthur Justice Center on obtaining a copy of their ShotSpotter Technology analysis. Without the actual report, an analysis of the methodology or criteria used for that report are not yet possible. If we are able to obtain a copy of the actual report, we will share it and add it to our posted documents as part of the recommendation packet. Third party information and the available extrapolations made from that report on behalf of the MacArthur Justice Center are included.

Another limitation we found is that discussions in the general media on both sides of the topic of ShotSpotter Technology are often incomplete, biased, or selective. The most accurate data regarding ShotSpotter Technology comes from the hard data reported out by police departments currently using the technology, along with audit reports. Access to this information is fairly limited to the general public, and again further exploration into gaining access to these reports would be desirable for future research and analysis.

### **Exclusionary Criteria**

General news articles and reports were used as guideposts for identifying themes around public concerns regarding ShotSpotter Technology, but were not considered peer-reviewed or scientific articles on ShotSpotter Data. Any ShotSpotter data included in this recommendation was sourced from direct agency statistics, any available third-party audit

reports, and ShotSpotter Inc. We found that general news articles were very helpful in identifying public sentiment on the use of ShotSpotter technology, but were mostly comprised of third-party information, and so this recommendation focused more on the examination direct sources.

### **Method**

The research included in this recommendation was generated through a thematic analysis of public concerns regarding the use of ShotSpotter technology across the nation. Topic themes were identified via a series of FITCOG meeting discussions and questions raised by voting FITCOG members, public input given to FITCOG in those meetings, and topics raised in headliner news articles spanning from 2016-2021 until the topics/themes reached conceptual saturation. The public concerns identified in the thematic analysis were then used as the primary focus of data research.

## **RECCOMENDATION**

The FITCOG makes the overarching recommendation that:

- The City of Portland should support and invest in the Portland Police Bureau for the use and implementation of ShotSpotter Technology as a focused deterrence tool as part of the overarching gun violence response strategy.

## **SUMMARY OF CONDITIONS**

This overarching FITCOG recommendation supports the use and implementation of ShotSpotter technologies on the following conditions pertaining to concerns in the areas of: community and justice equity, civil rights protections, data collection, data analysis, public transparency, and community engagement:

- A. That PPB in collaboration with relevant City of Portland, and community-based stakeholders develop a Violent Impact Players (VIP) List specific to the needs and concerns of Portland to improve and/or enhance data driven tactics for identifying and apprehending serial trigger pullers for the purposes of reducing gun violence.
- B. That there is ongoing implicit bias training for all PPB FIT officers, and other patrol officers, and those who would be responding directly to ShotSpotter technology calls.
- C. That PPB conduct ongoing evaluation and mitigation of any unintended consequences resulting from the implementation of ShotSpotter technology in light of PPB staff shortages.
- D. That City of Portland agencies, policy makers, and PPB create, and tighten up protections from any potential legal or civil rights violations that may arise from the implementation of SSP technology, including but not limited to, either the direct, or indirect capturing and collecting of information outside that of the scope of gun or ammunition sounds.

- E. That the PPB should invest in comprehensive data collection and analysis of ShotSpotter technology capabilities to exceed minimum operational and compliance needs and will conduct public safety research and performance analytics, and share such findings with the public in a consistent and accessible manner.
- F. That City of Portland leadership invite further community input on SSP technology as a process step in adopting this recommendation.
- G. That City of Portland leadership assist PPB in obtaining full financial commitment to implement and sustain SSP technology for the duration of its established contact of service, and ensuring that funding for SSP technology will not be sourced from any other public service, social service, or public health service.
- H. That City of Portland leadership in collaboration with PPB, establish a reasonable pilot project timeline to test the efficacy of SSP technology use in the City Portland, whereby the outcomes and data analysis will be up for review to determine service renewal.
- I. That the City of Portland and PPB secure the contractual right to terminate any SSP technology service contract or agreement consistent with the laws governing contracts.
- J. That PPB ensure that SSP technology sensors are placed equitably through an evidenced based approach, reflective of current gun violence shooting statistics in the Portland-Metro area.
- K. That PPB in collaboration with Emergency Service Responders establish stronger, and more streamlined communication and partnerships with EMT, and other medical and crisis responders to gun violence scenes.
- L. That PPB maintain a high level of public transparency regarding SSP technology sensor data and gun violence trends in Portland.
- M. That City of Portland leadership in collaboration with legal partners develop judicial and investigative guidelines and limitations on the use and integration of SSP data in the criminal prosecution and conviction of gun violence cases.

## **Recommendation & Conditions Details**

**Recommendation:** *The City of Portland should support and invest in the Portland Police Bureau for the use and implementation of ShotSpotter technology as a focused deterrence tool in the overarching gun violence reduction strategy.*



FITCOG believes that when used in accordance with its best practices, ShotSpotter technology has the potential to be a highly effective focused deterrence tool for the PPB FIT in efforts to interrupt gun violence in Portland. Specifically, ShotSpotter technology will aid in:

1. Increased detection and location of gun fire incidents
2. Increased notification and response time to shots fired
3. Increased access to ballistics and crime scene evidence and data
4. Data driven interventions with violent and known serial/chronic trigger pullers, thereby further reducing the likelihood of arbitrary stops
5. Assisting in solving cases faster
6. Reducing the impact on 911 service calls

### **Background**

Currently, PPB strictly relies on the community to call 911 if gunshots are fired. Nationally, roughly only 20% of gun fire incidents are ever called into 911. Additionally, unless there is a shooting victim or direct witness, gun fire incidents often lack location accuracy. This creates a large data gap making it difficult for Portland Police to effectively pre-empt, interrupt, and investigate gun violence. ShotSpotter is a newer technology capable of filling these data gaps. ShotSpotter is a technology which relies on a comprehensive network of acoustic sensors that can detect, locate and alert police to nearly all gunshot incidents. This technology is currently being used and is in successful operation in more than 120 cities around the country. ShotSpotter technology allows police to:

- 1) Respond to a higher percentage of gunfire incidents;
- 2) Improve response times to crime scenes to better aid victims and find witnesses;
- 3) Locate key evidence to identify and prosecute suspects.

### **How it works:**

#### **ShotSpotter**

technology uses an array of acoustic sensors that are connected wirelessly to ShotSpotter's centralized, cloud-based application to reliably detect and accurately locate gunshots using triangulation. Each acoustic sensor captures the precise time and audio associated with impulsive sounds that may represent gunfire. This data is used to locate the incident and is then filtered by sophisticated machine algorithms to classify the event as a potential gunshot. Acoustic experts, who are located and staffed in ShotSpotter's 24x7 Incident Review Center, ensure and confirm that the events are indeed gunfire. They can append the alert with other critical intelligence such as whether a fully automatic weapon was fired or whether there are multiple shooters. This entire process takes less than 60 seconds from the time of the shooting to the digital alert popping onto a screen of a computer in the 911 Call Center or on a patrol officer's smartphone or mobile laptop.

### **What ShotSpotter does not do:**

ShotSpotter technology is not a tool that will single handedly end all gun violence. Instead, ShotSpotter technology is a focused deterrence tool that aids police in their investigative work and increases response time to gun fire incidents, both critical components in interrupting serial gun crime offenders, and saving lives. Gunshot detection by itself is not a panacea for gun violence, but if used as part of a comprehensive gun crime response strategy, it can contribute to a reduction. The vast majority of cities that have adopted ShotSpotter technology have done so as part of an overall strategy and have seen great value and experienced positive outcomes such as reduced gun violence, an increase in arrests and improvement in police-community relations.

ShotSpotter is not a video surveillance technology. Cities can choose to combine their own video camera surveillance technologies with ShotSpotter auditory sensors if they so choose, but this is not a service offered by ShotSpotter.

### **Challenges**

While ShotSpotter technology represents a new wave in 21<sup>st</sup> century policing, such technology often develops faster than one can assess unintended risks or outcomes. However, in a comprehensive review of concerns and critiques over the use of this technology, FITCOG believes Portland can be pro-active and responsive to such concerns and mitigate risks by:

- Creating a Portland specific framework for usage
- Implementing certain legal and civil rights protections
- Conducting ongoing data analysis
- Provide ongoing community input

### ***Creating Trust***

The biggest challenge to implementing ShotSpotter technology is that the public must trust that usage of ShotSpotter technology will not be used to their detriment. The majority of critiques on ShotSpotter technology were not on efficacy, but on fears around how the technology *might* be used. Therefore, it is imperative that the City of Portland leadership, PPB, and other public safety partners work collaboratively to mitigate these concerns so that a meaningful tool may be introduced to help interrupt and reduce the gun violence crises here in Portland... immediately. All tools have the capability of causing harm if mis-used. Consequently, this is why investments in training, data analysis, and being pro-active are integral components to policing reform and a responsive public safety approach.

### ***Understanding the Problem***

FITCOG has been charged with the mission of reviewing and providing critical insight to the PPB FIT, and the City of Portland so that gun violence response strategies take into consideration historical inequities and implicit bias as a means of preventing excessive use of force, or bad outcomes rooted in racism, implicit bias or gaps in knowledge. FITCOG fully acknowledges the connections between social and racial inequities and the emergence of gun violence on the streets as a socio-cultural response to oppression.

FITCOG also fully recognizes that marginalized communities remain disproportionately impacted by BOTH over policing and inter-community violence. These two truths create complexity. ShotSpotter technology can help limit unnecessary encounters between community members and the police.

Data driven policing helps to reduce unnecessary interfacing between at-risk/marginalized communities and the police. However, since many marginalized communities also experience inter-community violence, it must also be understood that high impact areas experiencing a lot of gun violence would be areas best served by ShotSpotter technology sensors. Therefore, the measuring tool used to determine equitable placement and usage of this technology should be in alignment with what we know is occurring in current Portland gun violence statistics. We should expect to see placement of ShotSpotter technology sensors in all high impact areas.

### ***Opportunities***

ShotSpotter technology is not a substitute for addressing the root causes of violence. Addressing the root causes of gun violence is an imperative strategy needed for positive long-term outcomes. Gun violence is a collective public health crisis requiring community engagement on all sides of this issue. Identifying and understanding high impact gun violence areas creates opportunities for greater community engagement in those areas as-well-as a more data drive approach to policing. FITCOG believes that a public health approach is a holistic approach which requires the involvement of all public safety and community stakeholders.

### **Criticisms**

In our research FITCOG has identified several primary categories of concerns regarding the use of ShotSpotter technology:

- *Privacy*: A concern over what other sounds are recorded by the technology, and how this information is stored, and by whom, as well as how this information is potentially used.
- *Implementation*: A concern over the potential for disproportionate placement or usage of ShotSpotter technology sensors in marginalized communities.
- *Data Outcomes*: A concern over accuracy of gun fire information and data interpretation, particularly in a changing environment.
- *Over Policing*: Concerns regarding increased police presence in high risk and marginalized communities.
- *Best Practices*: A concern over whether or not City and policing agencies can adhere to the best practices and remain in fidelity to the recommended ShotSpotter technology best practices guidelines.
- *Cost*: A concern regarding the cost and investment in the technologies and whether or not the resources used for ShotSpotter technology will reduce or prevent investment in other community-based, gun violence prevention strategies.
- *Public Transparency*: Concerns over data disclosure of ShotSpotter technology data for public transparency.
- *Use of Evidence*: Concerns over how judicial processes will incorporate ShotSpotter data in the criminal prosecution of gun violence cases.

- *Accuracy & Efficacy:* Concerns over how accurate gunshot detection technology is in being able to identify actual shots fired, and whether or not gunshot detection technology is an effective tool in combating the problem of gun violence in cities.

FITCOG has established some general findings on these matters, and have used these findings to inform the following recommendation conditions. In overview:

- *On privacy,* FITCOG has found no evidence to support that ShotSpotter technology poses any great threat to privacy at this time. FITCOG supports the recommendations of the NYU Policing Project on this matter to shore up potential future risks. The ACLU has also stated that privacy is not a major concern of this technology at this time. That being said, as a pre-emptive strategy, FITCOG supports any legal or policy protections required to further protect the rights of individuals who would be impacted by this technology.
- *On implementation,* FITCOG believes it is imperative that ShotSpotter technology sensors are placed equitably throughout all areas of Portland representing high risk areas for gun violence. Placement should be determined by data. Furthermore, as the danger of mass shootings are becoming an unfortunate reality of our time, we would also expect that these sensors may also be placed in areas where a mass shooting may be likely to occur, not just in communities experiencing inter-community violence. Communities most at risk for gun violence, should have a role in helping to inform the placement of these sensors.
- *On Data Outcomes,* Currently over 120 cities around the nation use ShotSpotter technology, and have reported successful and positive outcomes. Out of the hundreds of cities to use ShotSpotter technology, only a handful have discontinued the use of it. There are several reasons cited for cities discontinuing its use such as: cities having difficulty in maintaining best practices, public distrust, police agencies who dramatically struggle with equity, and cities who lacked legal protections for equitable policing strategies. Out of the cities that have reported success, the City of Tampa Florida has directly spoken and shared information on ShotSpotter technology and how this tool has been a successful aid in developing a Focused Deterrence approach. There are also several studies referenced at the end of this recommendation that explain in detail the different outcomes this technology has yielded for different cities. There is a preponderance of scientific evidence to suggest that ShotSpotter technology does increase gunfire incident notifications, increases police response time, and assists with gun violence investigation.
- *On Public Transparency,* According to ShotSpotter Inc, all ShotSpotter sensor data collected is related to the detection of the gunshot(s). The gunshot data does not contain any agency notes or results of an investigation. ShotSpotter does not provide or sell gunshot data to the media. ShotSpotter's intent is to use the gunshot data to support academic research and other research focused on gun violence in America. City of Portland/Portland Police can share the gunshot related data with other LE agencies or District/Prosecuting Attorneys for purposes such as investigating and prosecuting crimes. The City of Portland can choose to



release any data that is available within the ShotSpotter Respond and Insight Applications that is collected from ShotSpotter related alerts/incidents. FITCOG encourages the sharing of ShotSpotter technology information to maintain public transparency.

- *On Use of Evidence*, As our society becomes more reliant on technological tools, we are seeing an increase in dependency and reliance on these tools. Technology can bring great benefits and convenience to the realms of criminal justice. For example, DNA technologies have come a long way to help data driven policing. DNA testing can determine perpetrators and identify victims of crime within 99% accuracy, and in many cases also exonerate the innocent. However, even DNA technologies can be flawed, or suffer operator error if mishandled. It would seem ridiculous to suggest to eliminate the use of DNA testing technologies today. Instead, comprehensive guidelines and laws were put into place over the collection, testing, use, and storage of DNA evidence. In the context of policing and investigations, technological tools like ShotSpotter can serve as a great aid in criminal investigations and helping to reduce gun violence. However, policing and investigations on gun violence should not strictly rely on ShotSpotter technology, or serve as a substitute for good quality investigative work. Data retrieved from ShotSpotter technology sensors should not serve as the single determining factor in prosecuting or convicting in gun violence cases. For example, Michael Williams of Chicago was in the wrong place at the wrong time. In this case, the District Attorney's office allowed ShotSpotter data to be the deciding factor over guilt. After one year, Mr. Williams was fortunately able to have the case thrown out due to lack of evidence. This example highlights poor investigative and policing and judicial practice, but not necessarily an issue with the technology itself. It will be important for the City of Portland to have strict guidelines over how ShotSpotter data can be used as evidence. Specifically, there needs to be protections preventing such data from being the only data used to prosecute a case or convict.
- *On Over Policing*, Cutting edge tools can move policing towards being more data driven and can help dramatically reduce the risks of racial profiling, arbitrary stops, and unnecessary interactions with the police. It is important for City leadership and the community to understand that communities which are historically over policed are often the same communities most impacted by inter-community violence and underserved by police when it comes to interrupting gun violence. ShotSpotter technology, when used in accordance with its best practice guidelines, can help to reduce these harmful and unnecessary policing encounters within high-risk communities. For those in the community who feel more community engagement with the police is harmful, this is one policing tool that can help limit unnecessary community involvement. Furthermore, FITCOG believes that the inclusion of the Violent Impact Player (VIP) List when used in conjunction with ShotSpotter technology, can even further reduce unnecessary policing encounters and interventions within marginalized communities.
- *On Best Practices*: Any tool when used inappropriately can be harmful. FITCOG has found that the majority of issues concerning ShotSpotter was not in the technology itself, but to what degree policing agencies were following



ShotSpotter best practice guidelines. These guidelines are provided to policing agencies along with a comprehensive plan on how to follow them. These guidelines include but are not limited to: allowing patrol to respond immediately when gun fire is detected, gathering evidence, conducting community welfare checks on the scene, including involving broader community engagement services, prioritizing injured victims and getting them to a trauma center immediately.

- *Best Practices Continued...* Additionally, FITCOG has found that the degree of racial and equity awareness within a particular agency using the technology also influenced outcomes for better or for worse. Agencies with greater equity and diversity training in addition to, having policies protecting against racial profiling (or other issues of inequity) saw greater positive outcomes with the use of ShotSpotter technology than agencies who did not have those same reforms. When evaluating the appropriateness of this technology for the City of Portland, it will be important to look at Portland specific contexts, experiences and developments.
- *On Cost*, according to research, funding for the ShotSpotter technology services may come from a variety of different sources, much of those sources stemming from federal grants, and a reprioritizing of police budgeting, and public safety funds. ShotSpotter technology assists policing agencies to identifying and locating funds. Additionally, FITCOG supports an end to scarcity culture and does not believe we must sacrifice community-based interventions in the name of responsive policing. We can and should have both.
- *On Accuracy & Efficacy*, The greatest critique dominating the media narrative on the efficacy of ShotSpotter technology is a single study produced by the MacArthur Justice Center (MJC) on the review of the efficacy of SSP in the city of Chicago. Their research was based on selective information extrapolated from communications of the Office of Emergency management and Communications data on the Chicago Police Department (OEMC), rather than complete data documented from the Chicago Police Department. In a third-party analysis of ShotSpotter data and the MacArthur report, Edgeworth Analytics found that OEMC data is not an appropriate source of information to base efficacy research on because OEMC is a distinct office separate from that of the Chicago Police Department, and the OEMC data does not reflect the ultimate outcomes following subsequent investigations or reports, and only contains a small parts of much larger case files. Case files that are created in the “hours, days, weeks, and months after a gun violence incident has occurred. Edgeworth Analytics goes on to explain that while the OEMC data can be potentially useful in gaining information on initial police responses to gunshot detection incidents, miscellaneous incident codes initiated in the OEMC data is not sufficient to support the conclusion that a police deployment to gun detection incidents are unfounded, or that no crime has occurred. The MacArthur study failed to include data tracking investigative reports or cases that go beyond the initial 12 minutes of deployment in a gunfire-initiated deployment response.
  - The MJC study also made claims asserting that ShotSpotter’s pattern of deployment in Chicago is in predominantly Black and Latinix

neighborhoods, and that the “unfounded ShotSpotter alerts... can create a false ‘techwash’ justification for racialized policing and oppressive patterns of policing in communities of color.” However, Edgeworth analytics was able to confirm that placement of ShotSpotter sensors in the City of Chicago are based on hard gun violence data, and that the sensors were indeed placed in 12 districts experiencing the highest rate of gun violence homicides. This data leads us to the difficult reality that communities who have historically been overpoliced are often also the same communities disproportionately impacted by both intercommunity and gun violence.

- Links to the MJC discussion on data from their research is included in the reference section of this document. Unfortunately, it appears that the MJC has not made their study in its entirety publicly available at this time. A copy of the Edgeworth Independent Analysis of the MacArthur Justice Center Study on ShotSpotter is included in the Appendices, Appendix A. Citations to numerous other studies on ShotSpotter efficacy from other states are also included in the reference section.

The following conditions of the FITCOG ShotSpotter Technology Recommendation have all of these concerns in mind. The Conditions provide a more detailed summary of these concerns and offer solutions to mitigate these concerns.

## CONDITIONS

**Condition A:** *That PPB in collaboration with relevant City of Portland, and community-based stakeholders develop a Violent Impact Players (VIP) List specific to the needs and concerns of Portland to improve and/or enhance data driven tactics for identifying and apprehending serial trigger pullers for the purposes of reducing gun violence.*

### Background

Implementing this recommendation will help PPB create an evidence-based rubric for determining stops based on crime history and scientifically known patterns of criminal conduct involving chronic gun violence offenders. This strategy moves away from “hunch” or “intuitive” based policing strategies which are known to have increased risks in the areas of implicit bias and racial profiling.

It is well acknowledged through both research and experience that a small number of individuals account for a disproportionate number of gun offenses. In some regions these individuals are known as “impact players” acknowledging that these few individuals have a considerable impact upon violent crime in the local community as well as the fact that a large impact can be made in the level of community safety if these individuals desist from engaging in the crimes. For the most part, the criminal justice system is not structured or organized to respond to this situation. Typically, the majority of efforts are

devoted to responding to cases and situations as they occur. The pressure to respond to calls for service, citizen complaints and known offenses can often be overwhelming for many agencies.

This strategy involves the use of specific criteria (e.g., committing multiple gun offenses over an eighteen (18) month period) to identify the most violent individuals in a jurisdiction. While these criteria will vary across jurisdictions it is important that consistent criteria be developed and used within each jurisdiction to identify individuals having these characteristics. This strategy is data driven because it uses and relies on data analysis in the identification of offenders to be included on these lists. The serial/chronic violent offender strategy emphasizes the identification of individuals who are engaged in gun violence without specific reference to an individual case. The objective is more focused on identifying those individuals who have demonstrated continued involvement in gun crimes and thus represent a considerable danger to the community. Thus, data analysis is used to apply the selected criteria to criminal history data to identify individuals who share these characteristics. Law enforcement intelligence concerning these individuals can then be used to refine the list and determine enforcement strategies and priorities.

Many districts have found that devoting time to analysis and intelligence in the identification of a set of “impact players” and the integration of this information into enforcement and prosecution activities can produce considerable results in addressing gun violence. Additional benefits of this strategy include:

- Increasing awareness of the identities of high-rate gun offenders throughout the criminal justice system.
- Coordinating information sharing and enforcement activities concerning the most violent offenders within and across agencies.
- Enhancing officer safety through creating notification systems enacted as these individuals are encountered on the street.
- Creating a more efficient system through better focusing of resources upon a smaller number of offenders.
- Enhancing deterrence through enforcement and prosecution of chronic offenders involved in gun crime.
- Allowing PPB to have a more pro-active, rather than a reactionary response

## Challenges

There are many important decisions that must be made regarding the design and implementation of the components of this approach that are critical to its success. For example, research indicates that success in such a strategy requires a coordinated approach across public safety partners. The sharing of information across agencies (local, state, and federal policing agencies, correctional institutions, district attorneys etc.) should produce a greater level of awareness of the identities of these individuals and generate a more efficient response to situations involving these persons. (US Department of Justice, (2006).

Additionally, it is important that cities and districts formulate their violent gun offender strategy on a series of fact and need based information. This process involves decisions that must be made regarding the methods used to identify offenders and how this information will be integrated into local criminal justice operations. These decisions often have no direct answer and each jurisdiction will need to resolve these issues through their own deliberations. What is appropriate for one jurisdiction may not be suitable in others. A Portland VIP list would need to be in reconciliation of Oregon law.

One of the initial decisions that needs to be made is selection of the criteria that will be used to determine who is a chronic violent gun offender. What does it take to be included in the group of individuals who are determined to be “impact players?” Whatever criteria are selected it should be applied in a standard and consistent fashion. (US Department of Justice, (2006). Furthermore, a broad spectrum of data sources on offenders should be examined. The exclusive use of intelligence sources may omit some individuals who are deserving of being included with this group of offenders. In some districts concerns have been expressed regarding the creation of a list that may be perceived as biased, a valid concern. The use of specific standardized criteria that reflect demonstrated prior criminal violence is extremely helpful in mitigating bias risks, and relying instead on criminal data. Once agreed upon, the criteria for inclusion on the list may be shared with a broad range of criminal justice agencies and other stakeholders. (US Department of Justice, (2006).

## Data quality

The first step in generating a successful VIP list is by making sure the information used to determine offender criteria is based on a strict criminal safety/threat risk assessments determined by known criminal history and documented patterns of gun violence. Agencies involved in the establishment of this criteria need to be mindful of the ways in which social inequities disadvantage certain individuals, disproportionately having them interfacing with police and the justice system. Any risk/safety assessments created should include identifiable gun violence patterns specific to the City of Portland, in addition to broad based patterns.

**Condition B:** *That there is ongoing implicit bias training for all PPB FIT officers, and other patrol officers who would be responding directly to ShotSpotter technology calls.*



## Background

Implicit bias is the unconscious, unknowing differential treatment of another person based on a number of discriminatory factors, including but not limited to race, color, age, sex, gender, nationality, disability, and religion. Implicit bias operates as both an automatic, intuitive thought process and as a product of reflection. Under certain conditions, those automatic associations can influence behavior—making people respond in biased ways even when they are not explicitly prejudiced. More than thirty years of research in neurology and social and cognitive psychology has shown that people hold implicit biases even in the absence of heartfelt bigotry, simply by paying attention to the social world around them. Implicit racial bias has given rise to a phenomenon known as “racism without racists,” which can cause institutions or individuals to act on racial prejudices, even in spite of good intentions and nondiscriminatory policies or standards.

Implicit bias has been shown to have significant influence in the outcomes of interactions between police and citizens. Research suggests that *implicit* attitudes may be better at predicting and/or influencing behavior than self-reported *explicit* attitudes. Reducing the influence of implicit bias is vitally important to strengthening relationships between police and minority communities. For example, studies suggest that implicit bias contributes to “shooter bias,”—the tendency for police to shoot unarmed black suspects more often than white ones—as well as the frequency of police stops for members of minority groups. Other expressions of implicit bias, such as public defenders’ prioritization of cases involving white defendants, can have major impact on communities.

It is possible to address and reduce implicit bias through training and policy interventions with law enforcement agencies. Research suggests that biased associations can be gradually unlearned and replaced with nonbiased ones. Perhaps even more encouragingly, one can reduce the influence of implicit bias simply by changing the context in which an interaction takes place.

## Challenges

If marginalized communities are disproportionately impacted by both over policing and inter-community gun violence, there is a natural concern that police responding to ShotSpotter technology calls may have heightened implicit biases when working within these communities. As new technologies make it possible to engage in 21<sup>st</sup> century policing, it is equally vital that the social and emotional intelligences of public safety officers are able to also evolve with the times and be able to responsibly use these new technologies in a manner that does not cause more harm.



## **Opportunities**

FITCOG believes one of the most effective ways to mitigate implicit bias concerns for the FIT and PPB more generally, is by introducing implicit bias as a concept to its officers, and integrate training strategies that help officers identify, interrupt, and counter implicit bias in their daily interactions with the public. This training should be considered continuing education and thus should be ongoing (not a one-off training) and receive full investment and support from the City of Portland.

**Condition C:** *That PPB conduct ongoing evaluation and mitigation of any unintended consequences resulting the implementation of ShotSpotter technology in light of PPB staff shortages;*

## **Background**

FITCOG recognizes that many City of Portland agencies, including the PPB are facing staffing shortages and funding cuts. It can be difficult to predict the myriad of ways an intervention may impact a system until it is underway. Consequently, this why it will be important to have a culture of open communication both within the PPB, and across/between other City agencies to monitor and identify how the use of ShotSpotter technology may be impacting them...for better or for worse.

## **Challenges**

FITCOG surmises that the use of ShotSpotter technology could potentially increase caseloads for the Office of Violence Prevention (OVP). Community public safety partners such as OVP should be supported and granted the resources necessary to continue their work effectively. It will be important for the City of Portland and PPB to be in partnership and have good communication and offer support to any other City agencies or community-based organizations that will be directly involved in gun violence investigations, or cases in any way.

Another question raised among FITCOG members is whether or not PPB will have capacity to respond to a higher level of gun fire notifications. In discussions on this matter with members of the FIT, and in data research, the general consensus is that ShotSpotter technology would allow PPB to concentrate resources in a more data driven way, thereby reducing waist of limited resources.

**Condition D:** *That City of Portland City agencies, policy makers and PPB create, and tighten up protections from any potential privacy or civil rights violations that may arise from the implementation of ShotSpotter technology, including but not limited to: either the direct or indirect capturing and collecting of information outside that of the scope of gun or ammunition sounds;*

## **Background**

The ACLU, has concluded that it does not believe ShotSpotter technology to pose an active threat to privacy at this time. There are far easier ways for agencies to engage in surveillance. Personal cellphones remain the easiest, reliable, and unregulated vector for questionable surveillance. However, one concern raised by the ACLU is that the audio recorded from live microphones is stored for days. However, it should be noted that ShotSpotter received unanimous approval from the municipal privacy commissions in San Francisco and Oakland, with Oakland holding the distinction of having the strongest surveillance oversight law in the country. The Policing Project at NYU Law School conducted an independent review of ShotSpotter Inc. privacy policies and procedures. They concluded that “The risk of voice surveillance is extremely low.” The Policing Project further concluded that the audio captured is only temporarily stored, and only retained if the computer algorithm or human reviewer detects a gunshot. All other audio is routinely purged from ShotSpotter’s systems. The Policing Project identified several recommendations to ShotSpotter to improve privacy protections, which the company unanimously adopted. Some of these additional steps include:

- Reduce audio spool from 72 hours to 30 hours
- Minimize length of audio snippets to 1 second before and after the incident itself
- Strengthen internal access procedures

Storage of any data always raises the specter of security vulnerabilities. It is important for Portland City law makers to consider and implement any additional protections necessary to guard against privacy concerns. FITCOG feels would be beneficial for Portland to consider, additional safeguards as recommend by the NYU Policing Project such as:

1. Substantially reduce the duration of audio stored on ShotSpotter sensors;
2. Commit to denying requests and challenging subpoenas for sensor audio;
3. Commit to not sharing specific sensor location; and
4. Improve internal controls and supervision regarding audio access.
5. Establishing guidelines for information sharing with third parties

## **Challenges**

The ACLU did raise concerns as to whether or not ShotSpotter technology could increase incidence of stop and frisk tactics by police officers in some neighborhoods. This concern is reflected by many in the community centered on racial and social justice issues. This is very valid concern. What is also concerning is that communities who are over policed also tend be the communities most impacted by inter-community gun violence. One way to successfully mitigate this concern, is by adopting a strict data driven VIP list for serial/chronic gun violence offenders. The implementation of the VIP List removes randomness and arbitrary police stops. Furthermore, it is important to recognize that different cities which have employed ShotSpotter technology also have different laws (or lack thereof) in regards to police reform. It should be no surprise that in districts with the least amount of police reform, and the least number of trainings or engagements with topics like implicit bias, arbitrary stop and frisk practices, seem to have an increase of potential abuses with this technology. When

assessing successes, and/or risks in the use of ShotSpotter technology, it is important to take into consideration the specific city, and/or state laws (or absence thereof) that may be contributing to outcomes. For example, the Oregon Legislature has recently approved Senate Bill 1510 which drastically limits the ability of law enforcement to pull someone over based solely on a minor infraction. This is an additional safeguard protecting against random stop and frisk tactics. Other Portland specific policing safeguards may limit the risk of some of these concerns. It would benefit the city of Portland and the community to identify exactly which policing practices here are present or absent, to better assess encounter risks.

**Condition E:** *That PPB should invest in comprehensive data collection and analysis of ShotSpotter technology capabilities to exceed minimum operational and compliance needs and will conduct public safety research and performance analytics, and share such findings with the public in a consistent and accessible manner.*

### **Background**

To best gauge the effectiveness of the use of ShotSpotter technology in Portland it will be necessary for PPB to have sufficient investment in its analytics and research functions to review and assess ShotSpotter technology data. Investments may include but are not limited to, purchasing relevant software and also the hiring of analytic specialists. Specifically, engaging in enhanced performance analytics with a research focus will enable proactive identification of gun fire trends and opportunities to mitigate community concerns around over policing and improve public safety service. Additionally, it is also important that PPB be able to communicate its data results to non-technical audiences, as-well-as establishing and sharing a consistent and accessible reporting process.

### **Challenges**

For a neutral review of the data, it will be imperative for personnel within PPB, the City of Portland, and the community to understand (a) the complexity of gun violence, and (b) the communities that are most impacted by gun violence. Further, it will be important for PPB to explain in detail the reasoning behind ShotSpotter sensor placement as it relates to the way in which gun violence occurs in Portland as compared to other cities, or regions.

The three biggest challenges to useful analysis are:

1. Asking the right question;
2. Understanding what data are necessary to answer the question;
3. Communicating clearly in a manner appropriate to the audience.

It will be crucial for PPB to resist the urge to focus on answering only those questions that are easy to answer. Gun violence is a complex issue and at times may have complex explanations. Fortunately, the technology of ShotSpotter allows for comprehensive data tracking, that will aide in providing these explanations. Nevertheless, it will be important for both PPB and the community to identify what other data tracking points should be identified and used. Some obvious tracking data points are:

- Response time
- Response accuracy
- Report accuracy
- Types of information detected, and how it is stored and used

Less obvious data tracking points might include:

- Shifts in gun violence patterns
- Gun violence scenario types
- Arrests
- Guns seized
- Shifts in 911 calls on gun fire
- Shifts in response time for non-gun related calls

**Condition F:** *That City of Portland leadership Invite further community input on ShotSpotter technology as a process step in adopting this recommendation.*

### **Background**

FITCOG members represent a myriad of voices and lived experiences from the Portland community. In a review of the research and data available to us, we feel that the ShotSpotter technology, if used in accordance with best practice guidelines, and in mitigation of the conditions laid forth in this document, would benefit the people of Portland in the urgent need to respond to the gun violence crises. However, we recognize and acknowledge that communities of Portland are highly diverse and that the views and opinions of FITCOG members are not representative of every voice or community group in Portland. FITCOG highly encourages the City of Portland to continue to offer opportunities for other public and community input, specifically those who would be most impacted by the use of this technology.

### **Opportunities**

FITCOG recommends that any continuing public input on this complex issue should also engage in a series of best practices. These best practices should seek to help protect neutrality, balance power, create greater accessibility, and invite more direct stakeholders to participate. To do this, it is imperative that before members of the community are asked to give input, that there are opportunities for information sharing about ShotSpotter prior to feedback sessions. Information sessions should provide neutral, and accurate information about what ShotSpotter is, what it is not, in addition to both the pros and cons. Members of the community should be given a wide array of options on how to weigh in. Public input should come in a variety of forms such as: Online surveys, written surveys, small in-person, facilitated listening sessions, Virtual (Zoom) sessions etc. Any session, be it informational, or listening session should also be offered on a variety of days and times to accommodate the needs of working peoples. Furthermore, City of Portland leadership should engage in due diligence practices, to expand community input beyond the familiar faces who attend town hall sessions regularly, and reach in to communities typically not represented at these forums such as those from immigrant



communities, and other community members at the center of inter-community violence, who may not feel safe attending meetings where police are present.

FITCOG also recommends that if Portland were to pursue and implement ShotSpotter technologies, that a special community based advisory group be formed to help oversee and advise the pilot project, and to help ensure public transparency and data reporting. This advisory group should also be diverse and represent community members who are living in the actual areas where ShotSpotter sensors are placed and being used.

Public input will help stakeholders learn and understand how this technology assists or hinders communities in addressing the issue of gun violence. Public input should happen prior to any pilot project renewal, and community members should be given advance notice on when, where, and how such processes will be made available to them. Notification or announcements of these opportunities should also be made on a variety of platforms to help ensure wide notification, such as social media, City of Portland and PPB website, neighborhood association announcements, and notifications to community based advisory and oversight groups etc.

**Condition G:** *That City of Portland leadership assist PPB in obtaining full financial commitment to implement and sustain ShotSpotter technology for the duration of its established contact of service and that the funding for ShotSpotter technology not be sourced from any other public service, social service, or public health service;*

### **Background**

It is important for the ShotSpotter pilot project to be fully funded in a manner conducive to producing efficacy and maintaining project sustainability. Fortunately, there are a variety of potential funding sources to help make this possible. A variety of alternative funding resources available to fund ShotSpotter technology for Portland including but not limited to: federal grants and formula funds, private sector asset forfeiture funds, business sponsorships, community policing funds, security grants, and other funds allotted for public safety endeavors through community safety partners. The PPB should be given ample time, resources, and ability to implement this project with fidelity to its service mission. Additionally, PPB should be given ample resources to monitor and conduct the data analysis necessary for effectively measuring outcomes and impacts.

### **Challenges**

Although it is true that Portland agencies everywhere are confronted with challenges to resources, it is also true that people prioritize funding to things that matter to them. As a society we are often faced with a false sense of scarcity and this generates a culture of adversarial competition between and across agencies, and organizations. Scarcity culture also tends to convince others that in order for something to be funded something else must go away. This is a very binary approach to handling complex social problems. Utilizing a restorative and public health approach, the FITCOG supports investment in ShotSpotter technologies but does not support divestment from other important social or public health services in order to do so. As mentioned previously in this document, gun violence is complex social issue that requires the engagement and participation of all



public safety, public health, and community-based partners. Therefore, it is not desirable to financially constrain those who are partners in this important work. Based on the information FITCOG has researched, we believe ShotSpotter technologies can and should be funded independently without negatively impacting other important community-based organizations, or social services.

**Condition H:** *That City of Portland leadership, in collaboration with PPB, establish of a reasonable pilot project timeline to test the efficacy of ShotSpotter technology use in Portland, whereby the outcomes and data analysis will be up for review to determine service renewal;*

**Background:** The FITCOG recognizes aspects of public concern and uncertainty with the implementation of ShotSpotter technologies. Therefore, we recommend that this first implementation be a trial (pilot project) run with an experimental time-line and expiration date, with the opportunity for renewal. The timeline for this pilot project should be reasonable in that the project must be given ample time to be able to measure outcomes, and gauge impact. Renewal of this project should be based on evidence based, measurable outcomes to be determined by PPB, and the city, and public safety partners.

**Condition I:** *That the City of Portland and PPB secure the contractual right to terminate any ShotSpotter technology service contract, or agreement consistent with the laws governing contracts.*

**Background**

FITCOG supports the right of PPB, the City of Portland, and Public Safety Partners to not renew ShotSpotter, or to end service at any time in accordance with contractual law or agreements if at any time it is deemed that the harms of this project outweigh the benefits. Harms should be defined as measurable (both qualitative, and quantitative) impacts to the community, and agencies involved (directly, or indirectly).

**Condition J:** *That PPB ensure ShotSpotter technology sensors are placed equitably through an evidenced based approach, reflective of accurate gun violence shooting statistics in the Portland-Metro area;*

**Background**

ShotSpotter sensors are stationed at least 30 to 40 feet off the ground and deployed in elevated locations such as building rooftops, street light poles, cell towers, etc. Each sensor captures precise time, location, and audio snippets associated with boom and bang sounds (impulsive noise) that may represent a gunshot. Acoustic sensors are strategically placed in an array of 15-20 sensors per square mile to detect and triangulate gunshot activity.

This data is first filtered by sophisticated machine algorithms then qualified and confirmed by human acoustic experts staffed in the 24x7 Incident Review Center (IRC) located at ShotSpotter headquarters in Newark, Calif. The alerts include number of shots fired, the precise time and location (latitude and longitude) represented on a map and other situational intelligence such as multiple shooters etc. and are immediately sent to the police department.

Law enforcement agencies and cities that have adopted ShotSpotter solutions and best practices have experienced reductions in gunfire of up to 80% and reductions in related violent crime and homicides of as much as 40%.

### **Challenges**

Cities and police agencies can adopt a wide array of sensor placement strategies, based on individual community needs and concerns. Places that do not have equity or implicit bias awareness are at higher risk of utilizing such technologies in a biased and inequitable manner. Portland has been working very hard on improving its implicit bias awareness, and has been focused on integrating more critical perspectives when it comes to policing here, in comparison to other regions.

It will be important to ensure that ShotSpotter sensors are placed throughout Portland using accurate gun-violence data, and evidence-based reasoning. Sadly, gun violence disproportionately impacts communities of color. According to the Centers for Disease Control and Prevention (CDC), the number one cause of death among young Black men between the ages of 18-44 is gun violence, and the number one risk to Black and Brown communities nationwide is gun violence. Coverage areas will include regions of the community experiencing gun violence. However, Portland experiences various forms of gun violence. Therefore, it will also be important for city officials and the PPB to be transparent about how this technology can best serve the gun violence issue as a whole.

The PPB Focused Intervention Team is a policing response team specifically created to address the crises of gun violence broadly defined. Therefore, this technology can, and should be used to aid in the investigations and interruptions of the many forms of gun violence that exist including but not limited to: intercommunity violence, domestic violence, potential mass shootings, and incidents of interpersonal gun violence (such as the incidents increasing in Portland's houseless communities). Sensors should be equitably distributed to reflect the various at-risk communities. Furthermore, as gun violence patterns change, it will be important for ShotSpotter sensors to be adjusted and made responsive to the gun violence trends occurring in the community.

Concerns over officer involved shootings, specifically those involving members of marginalized communities is a valid concern and one that should be examined through city and agency specific data. One concern regarding SSP has been whether or not the use of the technology will increase chances of fatal outcomes for members of marginalized communities. The answer to this question for Portland, will largely depend on what has or is being done to eliminate explicit bias, excessive use of force, fear-based police practices, and inadequate information support. The City of Portland and PPB are taking

large steps to reduce and eliminate harmful policing practices. Additionally, as Portland further explores this subject, it is important to recognize the difference between correlation and causation. The case of Adam Toledo of Chicago highlights this point. In March of 2021 a SSP sensor detected gunfire which sent Officer Stillman to respond to the scene. Adam Toledo was a 13-year-old boy who was initially armed with a 9mm semi-automatic pistol. Body cam footage shows Toledo running from Stillman. Toledo tosses the gun behind the fence before putting his hands up. Unfortunately, Stillman shot at the boy less than a second after he dropped the gun, killing him. There are many factors that go into an officer's decision to engage in deadly force. Some of these factors are justified, while other factors are rooted in racism, bias, racial fear. Some factors involve a lack of training, fear-based training, incompetence, or all of the above. It is important to note that the Civilian Office of Police Accountability did not pursue criminal charges against Officer Stillman in the Adam Toledo Case.

There is no doubt that the issue of lethal force used by police officers is a critical issue. The question we are exploring is whether or not SSP technologies causes police to use *more* lethal force. ShotSpotter does increase police calls and responses to scenes where active gunfire is occurring. Situations where police are confronting active shooters, or openly armed individuals might increase chances of officer involved shootings. This might be particularly true for cities already experiencing high rates of officer involved shootings even without the use of SSP technologies. Of particular concern would be cities experiencing both high levels of officer involved shootings, and excessive use of force incidents. Would the Adam Toledo shooting have occurred if the encounter had happened without the ShotSpotter technology? There is no way to know the answer to this question, but even a casual review of officer involved shootings and excessive use of force complaints involving the Chicago Police Department might give us an inkling. What is clear, is that SSP technology does not by itself cause officer involved shootings or excessive use of force. Police culture, practice, attitudes, and types of trainings determine encounter outcomes. The City of Portland should examine current Portland Police data involving official complaints of officer involved shootings, and excessive use of force cases to gauge if SSP technology would be an appropriate tool for Portland Police.

**Condition K:** *That PPB in collaboration with Emergency Service Responders establish stronger, and more streamlined communication and partnerships with EMT, and other medical and crisis responders to gun violence scenes.*

### **Background**

One of the best practice guidelines in using ShotSpotter technology is in prioritizing injured victims, and getting them to trauma centers as quickly as possible. In some cities, officers are allowed to transport victims to hospitals, decreasing wait time for rescue services and saving lives. However, city and state laws can dictate to what degree police officers are allowed to engage in such practices. Based on a casual overview of PPB protocols involving injured victims there may not be a process or protocol structure allowing this best practice guideline to occur in the exact manner outlined by ShotSpotter Inc. Therefore, FITCOG recommends that PPB, and specifically the FIT build a stronger partnership and emergency response plan with EMT and crises responders in order to

increase response time for the arrival of medical and trauma services that might be needed when responding to ShotSpotter alerts.

That being stated, a newer EMS delivery model that is slowly becoming more popular is that of police paramedics, police officers who are trained paramedics and respond to medical and trauma emergency calls. This model may be a useful consideration in gun violence response calls, where life and death may hinder on a matter of minutes. The duality of the role can be challenging because sometimes a situation requires an officer and a paramedic on the same scene. Obviously making sure a scene is safe is always the top priority. There may be a benefit in having certain officers within the PPB, such as FIT officers, be trained as medical responders who can jointly respond in ShotSpotter alerts. On average, police and injured peoples experience wait times averaging between 15-30 minutes before paramedics arrive on the scene. A police paramedic program could be an innovative way to increase crises response and save lives.

**Condition L:** *That PPB maintain a high level of public transparency regarding ShotSpotter Data and gun violence trends in Portland.*

### **Background**

FITCOG supports and recommends that PPB share ShotSpotter technology information in order to maintain and preserve public transparency. Reports on ShotSpotter technology data should be reported on a regular basis and can be presented to the community in the form of links to documents on the PPB website, media releases, community presentations, through a ShotSpotter community advisory board, social media, townhalls, and PSAs/videos etc.

ShotSpotter states that the company will provide Portland 24/7, 365-day support from their Incident Review Center, and Portland will be assigned an experienced Customer Success Director (CSD) to help manage the relationship with ShotSpotter. Their CSDs are former Deputy Police Chiefs, ATF Members and Command Staff from agencies who have used ShotSpotter at their previous agencies. They will share sample procedural directives and best practices, tips for transparency and coordinate annual account reviews to make sure the PPB, Stakeholders and Command Staff is aware of their results, statistics, trends, and other useful information.

Through the ShotSpotter Respond and Insight applications, the City of Portland and PPB will also have the ability to query, export, download, share, and analyze the data. This ability is included as part of the annual subscription.

Customer agencies often publish articles on ShotSpotter alerts that have led to arrests; reduced response times, comparing ShotSpotter notifications to correlating 911 calls, if any; making arrests, or sharing stories about finding victims and saving lives resulting from a faster response from police and precise location of where the gunfire occurred.

### **Challenges**



It will be important for City of Portland leadership and PPB to examine closely contractual agreements with ShotSpotter Inc regarding information collected from technology sensors placed on commercial and private property. Although ShotSpotter in a formal statement has stated that there are no access limits to data from sensors placed on private or commercial property, in a presentation given to FITCOG, there was mention from ShotSpotter Inc presenters that there may be some limits to accessing information from sensors on commercial or private property. There is a need for clarity here. Furthermore, any potential limitations to data access from any ShotSpotter technology sensor (regardless of placement) should be made publicly transparent as part of the public review/advisory process.

**Condition M:** *That City of Portland leadership in collaboration with legal partners develop judicial and investigative guidelines and limitations on the use and integration of ShotSpotter data in the criminal prosecution and conviction of gun violence cases.*

### **Background**

ShotSpotter states that district attorneys and federal prosecutors rely on ShotSpotter evidence to assist them in prosecuting gun crimes. ShotSpotter does provide detailed forensic reports as evidentiary documents which include precision positioning calculations of each gunshot, exact timing of shots, and map placements of firing locations for every shot fired. This evidence has received favorable rulings in Daubert and Frye challenges, and as a result has been used in trials at both the local and federal level. ShotSpotter Inc. states it also provides expert witnesses to present the data at trial; to date they have testified in 17 states and the District of Columbia.

### **Challenges**

More information is needed to understand how Portland specifically would integrate the use of ShotSpotter data as forensic evidence. While technologies can help greatly advance the field of forensic science, relying solely on technology and algorithms can create harmful and costly mistakes, as made evident by the case of Michael Williams in Chicago. FITCOG recommends that ShotSpotter data be used in addition to, not in lieu of other criminal forensic and investigative evidence in the prosecution of gun violence cases. Specifically, a series of legal rules and guidelines should be created to protect against ShotSpotter data being considered the only admissible evidence needed to prosecute such cases.



## FITCOG Discussion on Peer Review Commentary

The FITCOG official recommendation on the implementation of ShotSpotter Technology has undergone peer review by Reygan Cunningham, with the California Partnership for Safe Communities and David M. Kennedy, professor, author and criminologist at the John Jay College of Criminal Justice. Copies of their original commentary are attached in Appendix E of this document. This recommendation is currently also undergoing review by Walter Katz, Vice President of Criminal Justice at Arnold Ventures. FITCOG will update this document and our website when the additional peer review commentary is submitted.

In response to the received peer review commentary of this recommendation, FITCOG finds itself to be in general alignment and agreement with the observations and insights provided with a few additions. It is not the intention of this recommendation to suggest that ShotSpotter technology will eliminate gun violence, or should be the only tool in the tool box of focused deterrence. As we know, the root causes of gun violence are complex, and deeply seated in sociological, economic, and political factors including but not limited to: racial inequities, economic inequities, socio-cultural pressures of young boys and men to resolve conflicts through violence, easy access to guns, lack of access to comprehensive and affordable mental health care, and many more. No single intervention or tool should bear the burden of eliminating all gun violence everywhere. The question we are exploring in this recommendation is whether or not ShotSpotter technology is a meaningful tool in helping to deter, interrupt, and investigate gun violence incidents. Based on the data FITCOG has reviewed, we believe ShotSpotter Technologies (when used under best practices and with the conditions listed in this recommendation) to be a beneficial and useful tool for PPB and the City of Portland.

FITCOG would like to respond and highlight several points that were made in the peer review that we believe City of Portland leaders, the PPB, and members of the community should take into serious consideration as discussions on the potential use of ShotSpotter technology in Portland continues:

As FITCOG has stated previously, the issue of gun violence is a complex social and public health issue requiring a multi-faceted approach. We fully support the development and investment of community-based interventions that seek to address root causes of harm doing. We also believe the work of the FIT should include data stemming from those on the ground working to address these root causes. We also agree that the long term of goals of criminal justice reforms should ultimately seek to reduce dependency on deterrence and enforcement systems of policing. We also recognize the gravity of the gun violence crises in Portland requiring an immediate need to respond to public safety concerns of shots fired, injuries, and murders on the street. In the words of David M Kennedy,

*“- nearly all focused deterrence interventions go as far as possible to avoid enforcement and to do as much violence prevention as possible through the engagement of key community figures with the high-risk population, and by constructing a highly focused and granular structure of support and outreach designed to keep those at high risk “safe, alive, and free.” Regardless of the larger strategic and operational approach the city and the FIT pursues, the work of the FIT should be closely linked to non-enforcement resources and interventions. Information about gun violence gathered and analyzed by law enforcement – through front-line reviews, criminal history analysis, FIT operations, ShotSpotter, or any other means – should be shared with non-law enforcement actors in legal, structured, and accountable ways to enhance the safety and well-being of those at high risk and to minimize the need for either deterrence or enforcement as much as possible.”*

FITCOG agrees that City of Portland leaders and PPB should encourage and help cultivate greater communication and positive working relationships between non-law enforcement justice workers and law enforcement representatives. Specifically, FITCOG would like to see this happen between the PPB FIT and the existing non-law enforcement agencies and groups working on the issue of gun violence. FITCOG also supports the need for agencies and organizations working together to identify and respect certain professional boundaries regarding information sharing, but also identify what information can and should be shared in an effort to generate a more holistic response while prioritizing community public health and safety needs.

Although a good amount of the data suggests that ShotSpotter technology when used in accordance with best practices, can and does deter gun violence incidents over time, the main purpose of this technology is to aid in improving policing response time and investigative information regarding gun violence incidents. It is also important to note that the role and purpose of the FIT is to serve as an immediate policing response to shots fired. The strategies and tools assessed by the FITCOG potentially used by the FIT, are specifically related to the role of the FIT as defined by the City of Portland and PPB. As David Kennedy also states, “Thinking of the FIT more as a short- and medium-term investigative body, with a focus on the most violent groups and individuals, would be more in line with focused deterrence practice, would be more effective, and would go even further to address the equity, legitimacy, and use of force concerns the FITCOG properly highlights.”

Gun violence occurs in a myriad of ways, from interpersonal disputes, to inter community violence, domestic violence and mass shootings. Equitable usage and placement of ShotSpotter technology should take into consideration place specific concerns and data regarding gun violence risks. However, it is important to recognize that how risks are determined should also consider the unique nature each form of gun violence may present in a community. For example, in response to Reyan Cunningham’s comments on ShotSpotter sensors and school shootings,

*“ShotSpotter is not going to prevent school shootings. I don’t think criminologist really know (there are some great ideas and even some small pilot projects, but no real evidence, yet) what will prevent school shootings. So, there’s no real answer there (unfortunately). BUT if a shooting were to occur at a school and if there were ShotSpotter sensors within in range it would pick it up and alert PPB pretty quickly. The challenge is knowing which schools are at higher risk of being victimized by school shootings compared to others.”*

ShotSpotter technology is not going to prevent school shootings, just as it will not prevent the myriad of other forms of gun violence that exist. This is not a claim FITCOG makes, nor is it the basis for our recommendation on the potential use of this technology. It is true that the nature of mass school shootings can be difficult to predict. This unpredictability at first glance, throws a wrench in data driven ShotSpotter sensor placement. If we don’t know when or where the next school shooting is to occur, how can we know where to place sensors, or if we should even invest in having those sensors? All of these are good questions. The fact remains that several cities across the country such as the City of Newark California have installed ShotSpotter sensors to address actual and potential school mass shootings. If ShotSpotter sensors are only placed in areas experiencing inter-community violence, and other areas experiencing other forms of gun violence are ignored, we can make an assertion that the technology is not being used in an equitable manner. At the same time, governments have limited resources and will have to prioritize which areas may be in most need. This is where accurate gun violence data will be very critical in helping to make these difficult determinations. That being said, FITCOG also believes parents, guardians, and students who are most likely to be impacted by the increasing rates of school mass shootings should have a weighted say in whether or not this technology is right for them in their communities.

On the heels of the Uvalde mass shooting where it took officers almost 45 minutes to respond to the scene, there has been increasing concerns over how law enforcement can be better alerted when an active shooter event is taking place. What we do know is that according to data from Gun Violence Archive, compiled by the Ceasefire Oregon Education Foundation, since 2014 Oregon has suffered from 21 mass shootings. Thirteen of those mass shootings occurred between December 31, 2020 and June 8, 2022. Almost half of all mass shooting deaths in the State of Oregon were a result of the Umpqua Community College Mass Shooting event. Furthermore, in a recent federal report on Indicators of School Crime and Safety: 2021 produced by the US Department of Education and the US Department of Justice, mass school shootings are on an unprecedented rise in the United States. According to the report there were 93 incidents with casualties at public and private schools in 2020-21, compared to 23 in the 2000-01 school year.

While we may not be able to predict exactly where and when a mass shooting might occur, there are certainly clear and identifiable high-risk targets such as city college campuses, large public gathering spaces, and schools that may benefit from sensor placement in the terrible event an active shooting incident were to occur. Mass shootings are on the rise and are becoming an unfortunate part of American reality. No city or town

thinks it will happen to them, until it does. Until root causes of mass shootings are meaningfully addressed in our society, city leaders, law enforcement agencies and community members should become responsive to the changing risks and realities of our time. The point being, that when it comes to mass/school shootings, our community might require a different rubric to engage in risk assessment and ShotSpotter sensor placement to address this specific form of gun violence.

One of the conditions listed in the FITCOG recommendation of ShotSpotter is that PPB continue to invest and implement in implicit bias training for its officers, specifically the FIT as a means to help raise more awareness on the different forms of racism and how these different forms of racism can impact policing decisions. Mr. Kennedy argues that *“It’s not clear at present that implicit bias training succeeds in significantly altering the behavior that leads to biased and inequitable outcomes”*. There is much research and data out there on this topic. Some of the greatest challenges to creating anti-racist police departments is that one-off trainings, inconsistencies between training and cultural practices/norms are never going to be able to dismantle generations of cultural and systemic racism. Additionally, the personal values, attitudes and mindsets of individuals within police departments plays a significant role in determining where people align in their developmental learning processes. Offering a training without participant buy-in to that training is one of the main reasons such training may not yield successful outcomes. Additionally, when transformational learning is successful, automatic, subconscious behaviors (even under stress) change, because underlying meaning schemes have shifted from unconscious incompetence to unconscious competence. This is where the field of educational psychology, rather than criminology has much to teach in the way of cultivating transformative learning and moral development. From a transformative learning perspective, capability and capacity building are integral components to developing organizational and cultural change.

Challenges to implementing diversity, equity, inclusion, and anti-racist training in police departments is not any indication that we should divest from such endeavors. On the contrary, it simply indicates that the City of Portland, PPB, and the community hold higher standards regarding what type of anti-racist training is occurring, and how it is implemented. Additionally, such trainings should accompany policy and structural changes within police departments, otherwise all such trainings are merely performative. FITCOG fully supports holistic policing reforms that include both training and structural changes. For more information on this topic please see citations in the resources section of this document on the subject of transformational learning and implicit bias training.



## REFERENCES

- Burke, G., Mendoza, M., Linderman, J., & Tarm, M. (2022). How AI powered tech landed man in jail with scant evidence. *Associated Press News*.  
<https://apnews.com/article/artificial-intelligence-algorithm-technology-police-crime-7e3345485aa668c97606d4b54f9b6220>
- Briscoe, S. (2020). *Is implicit bias training in law enforcement successful?* Today in Security.  
<https://www.asisonline.org/security-management-magazine/latest-news/today-in-security/2020/september/Is-Implicit-Bias-Training-in-Law-Enforcement-Successful/>
- Civilian Office of Police Accountability Chicago. (2021). *Case portal: Log# 2012-0001112 (Adam Toledo Investigation)*.  
<https://www.chicagocopa.org/case/2021-0001112/>
- Clark, R. (2021). *Viewpoints: ShotSpotter delivers for 120 cities and can keep Buffalo safer*. The Buffalo News.  
[https://buffalonews.com/opinion/viewpoints-shotspotter-delivers-for-120-cities-and-can-keep-buffalo-safer/article\\_d857d12a-1571-11ec-a166-dba2ad5e0d29.html](https://buffalonews.com/opinion/viewpoints-shotspotter-delivers-for-120-cities-and-can-keep-buffalo-safer/article_d857d12a-1571-11ec-a166-dba2ad5e0d29.html)
- Choi, K.S., Librette, M., & Collins, T.J. (2013). An empirical evaluation: gunshot detection system and its effectiveness on police practices. *Police Practice and Research an International Journal*. (15)1, 48-61. DOI:  
<https://doi.org/10.1080/15614263.2013.800671>
- Edgeworth Analytics. (2021). *Independent Audit of the ShotSpotter Accuracy*.  
<https://edgeworthanalytics.com/independent-audit-of-the-shotspotter-accuracy/>  
<https://edgeworthanalytics.com/wp-content/uploads/2022/03/Shotspotter-2022-Accuracy-Study.pdf>
- Edgeworth Analytics. (2021). *Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago*.  
<https://edgeworthanalytics.com/independent-analysis-of-the-mjc-study-on-shotspotter-in-chicago/>
- Erich, J. (2022). *Making the most of police partners*. EMSWorld  
<https://www.hmpgloballearningnetwork.com/site/emsworld/original-contribution/making-most-police-partners>
- Ferguson, J.M., & Witzburg, D. (2021). *The Chicago police department's use of ShotSpotter technology*. City of Chicago Office of the Inspector General.

<https://www.courthousenews.com/wp-content/uploads/2022/06/chicago-police-shotspotter.pdf>

Fox, B., Scott, A.F., & Toth, A. (2021). Evaluating the impact of Project Safe Neighborhoods (PSN) initiative on violence and gun crime in Tampa: does it work and does it last? *Journal of Experimental Criminology*.  
<https://doi.org/10.1007/s11292-021-09461-2>

Garibay, J. (2018). *Unconscious bias isn't enough: 7 tips for transformative racial equity trainings*. Checking the Code.  
<https://medium.com/racial-equity-in-tech/beyond-unconscious-bias-7-tips-for-transformative-racial-equity-trainings-8605de8e75f2>

Here and Now Podcast. April 22, (2021). *Why implicit bias training for police-doesn't work-And what can be done to combat racism*. WBUR.  
<https://www.wbur.org/hereandnow/2021/04/22/implicit-bias-training-police>

Jackson, J.L. (2018). The non-performativity of implicit bias training. *The Radical Teacher*. 112, 46-54. DOI:[10.5195/RT.2018.497](https://doi.org/10.5195/RT.2018.497)

Kegan, R. (2009). What “form” transforms? A constructive developmental approach to transformative learning. In Illeris, K. (Ed). Chapter 3, *Contemporary theories of learning: Learning theorists in their own words*. 35-52.  
[https://people.bath.ac.uk/edspd/Weblinks/MA\\_ULL/Resources/General/Illeris%202009%20Contemporary%20Theories%20of%20Learning.pdf#page=44](https://people.bath.ac.uk/edspd/Weblinks/MA_ULL/Resources/General/Illeris%202009%20Contemporary%20Theories%20of%20Learning.pdf#page=44)

Lawrence, D.S., La Vigne, N.G., & Thompson, P.S. (2019). Evaluation of gunshot detection technology to aid in the reduction of firearms violence. National Criminal Justice Reference Service.  
<https://www.ojp.gov/pdffiles1/nij/grants/254283.pdf>

La Vigne, N.G., Thompson, P.S., Lawrence, D.J., & Goff, M. (2019). *Implementing gunshot detection technology: Recommendations for law enforcement and municipal partners*. Urban Institute.  
[https://www.urban.org/sites/default/files/publication/101161/implementing\\_gunshot\\_detection\\_technology\\_recommendations\\_for\\_law\\_enforcement\\_and\\_municipal\\_partners.pdf](https://www.urban.org/sites/default/files/publication/101161/implementing_gunshot_detection_technology_recommendations_for_law_enforcement_and_municipal_partners.pdf)

Manes, J. (2021). *The state of Illinois v. Williams (Amicus brief)*. MacArthur Justice Center.  
<https://www.macarthurjustice.org/case/the-state-of-illinois-v-williams-amicus-brief/>

Mares, D., & Blackburn, E. (2021). Acoustic gunshot detection systems: a quasi-experimental evaluation in St. Louis, MO. *Journal of Experimental Criminology* 17, 193–215. DOI: <https://doi.org/10.1007/s11292-019-09405-x>

Mazerolle, L., Frank, J., Rogan, D., & Watkins, C. (1999) *Field Evaluation of the*

*ShotSpotter Gunshot Location System: Final Report on the Redwood City Field Trial.* A Report Submitted to the U.S. Department of Justice.  
<https://www.ojp.gov/pdffiles1/nij/grants/180112.pdf>

Mezirow, J. (2009). An overview of transformative learning. In Illeris, K. (Ed). Chapter 6, *Contemporary theories of learning: Learning theorists in their own words*. 90-105.  
[https://people.bath.ac.uk/edspd/Weblinks/MA\\_ULL/Resources/General/Illeris%202009%20Contemporary%20Theories%20of%20Learning.pdf#page=44](https://people.bath.ac.uk/edspd/Weblinks/MA_ULL/Resources/General/Illeris%202009%20Contemporary%20Theories%20of%20Learning.pdf#page=44)

National Initiative for Building Community Trust & Justice. *Implicit Bias*.  
<https://trustandjustice.org/resources/intervention/implicit-bias>

National Institute of Justice (1998). *Using gunshot technology in high crime areas*. U.S. Department of Justice.  
<https://www.ojp.gov/sites/g/files/xyckuh241/files/archives/ncjrs/fs000201.pdf>

Nix, J., Arnio, A.N. & Spohn, R. (2019). *Project Safe Neighborhoods Assessing the Effectiveness of ShotSpotter in Omaha: Addendum to 2016 final evaluation report*. University of Nebraska Omaha.  
<https://www.unomaha.edu/college-of-public-affairs-and-community-service/nebraska-center-for-justice-research/documents/addendum-2016-psn-final-eval-report.pdf.pdf>

Renda, W., & Zhang, C. H. (2019). Comparative analysis of firearm discharge recorded by gunshot detection technology and calls for service in Louisville, Kentucky. *ISPRS International Journal of Geo-Information*, 8(6), 275. MDPI AG. DOI: <http://dx.doi.org/10.3390/ijgi8060275>

ShotSpotter. Frequently asked questions.  
[https://www.shotspotter.com/system/content-uploads/SST\\_FAQ\\_January\\_2018.pdf](https://www.shotspotter.com/system/content-uploads/SST_FAQ_January_2018.pdf)

Silvestro, E. (2015). How cops-turned-medics are improving EMS response. Lexipol.  
<https://www.police1.com/police-products/tactical/tactical-medical/articles/how-cops-turned-medics-are-improving-ems-response-8pdtSSfq0lrHmxWi/>

Stanley, J. (2021). *Four problems with ShotSpotter gunshot detection system*. ACLU.  
<https://www.aclu.org/news/privacy-technology/four-problems-with-the-shotspotter-gunshot-detection-system>

Stanley, J. (2015). *ShotSpotter CEO answers questions on gunshot detectors in cities*. ACLU.  
<https://www.aclu.org/blog/privacy-technology/surveillance-technologies/shotspotter-ceo-answers-questions-gunshot>

Taylor, E.W. (2010). Transformative learning theory: A neurobiological perspective of

the role of emotions and unconscious ways of knowing. *International Journal of Education*. 20(3), 218-236.

<http://www.uwyo.edu/adad5050/5050unit12/transfor.pdf>

Teale, C. (2021). *3 in 5 adults back the use of gunshot detection technology generally. Even more support its use by law enforcement.* Morning Consult.

<https://morningconsult.com/2021/09/13/data-privacy-security-gunshot-detection-technology-poll/>

The Policing Project. (2019). *Privacy audit and assessment of ShotSpotter Inc.'s gunshot detection technology.* New York University. <https://www.policingproject.org/shotspotter>  
<https://static1.squarespace.com/static/58a33e881b631bc60d4f8b31/t/6065e7d81422241f592ce0e5/1617291232883/Privacy%2BAudit%2Band%2BAssessment%2Bof%2BShotspotter%2BFlex.pdf>

US Department of Justice. (2006). *Chronic Violent Offenders Lists: Case Study 4* Project Safe Neighborhoods: Strategic Interventions

<https://www.justice.gov/archive/olp/pdf/chronic-violent-offenders-final.pdf>

U.S. Department of Justice. (2020). Project Safe Neighborhoods Annual Progress Report. Accessed at: <https://www.justice.gov/psn/file/1336701/download>





## APPENDECIES

**Appendix A:** Independent Analysis of the MacArthur Justice Center Study on ShotSpotter Technology



## Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago

### Executive Summary

ShotSpotter commissioned Edgeworth Analytics ("Edgeworth") to review a study by the MacArthur Justice Center ("MJC") published May 2021 and provide an independent evaluation of the claims contained in it. Based on our analysis, Edgeworth concludes that the MJC study fails to provide a rigorous, balanced, and objective assessment of the use of ShotSpotter in Chicago and is, at best, misleading because of the inappropriate data source used for the study, the selective choice of data and a fundamental lack of understanding as to where ShotSpotter was deployed relative to the highest homicide rate areas of Chicago.

Specifically, we conclude the following:

1. *The OEMC data that was the primary data source used to support the MJC study's conclusions regarding "unfounded" CPD deployments is an inappropriate source on its own to determine the ultimate outcome of an individual incident and, therefore, is not a reliable measure of ShotSpotter's efficacy. The MJC study's interpretation is misleading because the data obtained from the OEMC is not designed to capture and account for any subsequent police action resulting from an initial ShotSpotter alert. The conclusion that the lack of a police report is a measure of ShotSpotter's accuracy is baseless and misleading.*
2. *The MJC study mischaracterizes the placement of ShotSpotter technology as unduly burdening Black and Latinx communities. Specifically, it omits important context – that the placement is based upon areas of need across Chicago as measured by incidents of homicide and gun crime.*

In addition to this analysis, Edgeworth has conducted an independent review of ShotSpotter's claims regarding accuracy in gunshot reporting and false positives—sending an alert of gunfire when none occurred. Specifically, Edgeworth examined ShotSpotter's representation that its system has an aggregated 97 percent accuracy rate that includes a 0.5 percent false positive rate across all customers over the last two years. Our review confirmed that (1) these claims are valid and based on actual customer feedback from a broad range of ShotSpotter customers and (2) despite substantial variation in the intensity of reporting potential errors across clients, ShotSpotter's accuracy rate does not appear to be sensitive to differences in clients' propensity to report potential errors. The details of this analysis are provided in a separate report.

### MacArthur Justice Center Report

The MacArthur Justice Center ("MJC") obtained Office of Emergency Management and Communications ("OEMC") data on Chicago Police Department ("CPD") deployments between July 1, 2019 and April 14, 2021 and prepared a study of calls for service ("CFS") initiated by ShotSpotter alerts and 9-1-1 calls based on these data.<sup>[1]</sup> The study's findings were posted on an MJC-created website and included in an amicus brief filed on May 3, 2021 in Cook County Circuit Court (the "Amicus Brief"). The study's primary conclusions were that: (1) ShotSpotter-initiated alerts resulted in CPD finding no evidence of a gun-related crime or any crime the majority of the time during the period of study; (2) there were more than 40,000 "unfounded" deployments of CPD; and (3) these "unfounded" deployments were disproportionately in Black and Latinx neighborhoods where ShotSpotter is deployed.

### Edgeworth Analytics Review

ShotSpotter commissioned Edgeworth Analytics to review the MJC study and provide an independent evaluation of the analysis contained in it.<sup>[2]</sup> For our analysis, we reviewed: (1) the MJC study and an Amicus Brief that describes it in detail; (2) the same publicly-available OEMC data MJC used to draw its conclusions, which was provided to ShotSpotter by the CPD, (3) the academic literature; (4) publicly available CPD data; and (5) analyses conducted by ShotSpotter.

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### Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago - Edgeworth Analytics

According to a report from the Brookings Institution, 88 percent of gunshot incidents go unreported to police.[3] ShotSpotter intends to help solve that issue. According to ShotSpotter, the company offers law enforcement agencies an acoustic gunshot detection service that detects, locates, and alerts police to gunfire enabling a precise and rapid response to incidents that likely would have gone unreported to police. The system uses wireless sensors throughout a coverage area to capture loud, impulsive sounds that may be gunfire. The data are transmitted to a central cloud service that classifies each incident with a gunfire probability percentage along with a location determined by triangulation enabled by multiple sensors. Then, specially-trained ShotSpotter employees called "reviewers" located across two ShotSpotter Incident Review Centers listen to the recorded pulses from the sensors that detected the incident audio with playback tools, visually analyze the audio waveforms to see if they match the typical pattern of gunfire, assess the grouping of sensors that participated, and either publish the incident as gunfire or dismiss it as non-gunfire. ShotSpotter said the entire process typically occurs in less than 60 seconds from the time of the gunfire to the time law enforcement is alerted to allow for a timely law enforcement response. The gunfire alerts that are sent to ShotSpotter customers, including the CPD, have three recorded audio snippets that patrol officers can listen to before they arrive on the scene.

Below are examples of gunshot and non-gunshot audio provided by ShotSpotter that were captured by ShotSpotter sensors from various locations nationwide. Each example of gunshots includes the date of the event, the rounds fired, the audio that was shared with the local police department, and a redacted Investigative Lead Summary (ILS) report for the event. For non-gunshot events, each example includes the date of the event, the type of event, and the audio that was shared with the local police department (ILS reports are not generated for non-gunshot events).

#### Example Audio of Gunshots Captured by ShotSpotter Sensors

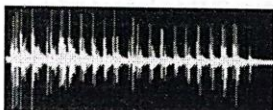
Date: July 13, 2021  
Rounds fired: 13



00:00 00:00

Investigative Lead Summary

Date: July 20, 2021  
Rounds fired: 15



00:00 00:00

Investigative Lead Summary

Date: July 14, 2021  
Rounds fired: 10



00:00 00:00

Investigative Lead Summary

#### Example Audio of Non-Gunshots Captured by ShotSpotter Sensors

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### Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago - Edgeworth Analytics

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#### Example Audio of Gunshots Captured by ShotSpotter Sensors

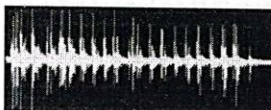
Date: July 13, 2021  
Rounds fired: 13



00:00 00:00

Investigative Lead Summary

Date: July 20, 2021  
Rounds fired: 15



00:00 00:00

Investigative Lead Summary

Date: July 14, 2021  
Rounds fired: 10



00:00 00:00

Investigative Lead Summary

#### Example Audio of Non-Gunshots Captured by ShotSpotter Sensors

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## Independent Analysis of the MacArthur Justice Center Study on ShotSpotter in Chicago - Edgeworth Analytics



Date: April 30, 2020  
Type of Incident: Helicopter



Date: July 21, 2020  
Type of Incident: Car Backfiring



### Edgeworth Conclusion: OEMC Data Cannot Be Used To Determine If A Shotspotter Alert Is In Fact A Gunfire Incident

At the outset, it is important to recognize that the OEMC is not an arm of the CPD, but instead a distinct office within the government of the City of Chicago. OEMC manages several functions, including 9-1-1 call intake and dispatch in addition to emergency management, traffic management, and other areas, according to OEMC's website.<sup>[4]</sup> Consequently, OEMC data do not reflect the ultimate outcomes following subsequent investigations or reports that are created in the hours, days, weeks, and months after a CFS occurs. Only CPD's own police reports are able to capture the entire outcome of an investigation. This is a misapprehension at the heart of the MJC study as it used OEMC data for its analysis of police deployments based solely on ShotSpotter alerts. The MJC study erroneously interpreted its results to mean that "the ShotSpotter system generates nearly two-thousand alerts every month that turn up absolutely no evidence of gun crime—or any crime at all."<sup>[5]</sup> The MJC study concluded that ShotSpotter alerts in Chicago during this time period are "dead ends" that "reinforce[s] racial disparities in policing."<sup>[6]</sup>

#### 1. Disposition Codes Are Not a Reliable Measure of ShotSpotter's Efficacy

To identify the outcome of a CFS, the MJC study relied on the "final disposition" code that law enforcement officers enter into the OEMC system when recording their findings at the scene of the reported event. The MJC study identified "unfounded" deployments as those where police assign a final disposition code of "Miscellaneous Incident," which primarily corresponds to "Other Police Service" or "No Person Can Be Found."<sup>[7]</sup> However, as noted above, OEMC data is not designed to contain complete or updated information about any investigations about a potential criminal event and so may only contain a small part of a larger case file.

The MJC study said a Miscellaneous Incident code "did not even prompt police to file a case report."<sup>[8]</sup> However, this code does not provide information on whether a police report was filed or whether a criminal event occurred. Instead, it indicates the initial response to a CFS, and that is all. If a report is later filed or if there is follow-up to the initial event, there is no update to the disposition code. A possible scenario of such an instance might include police arriving at the scene of a reported "person shot," but the injured person may have left the scene to seek medical attention. A disposition code of Miscellaneous Incident may be reported to OEMC for the CFS, but a police report may be subsequently filed at a local hospital by officers responding to a call from the hospital. Similarly, police may arrive at the scene of a "shots fired" CFS and find no person of interest or shell casings, but the next day a citizen may report property damage from a gunshot. As these examples illustrate, relying solely on OEMC final disposition data can result in incorrect interpretations of actual events and misleading conclusions about police responses to reports of gunfire.

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To illustrate this issue, Edgeworth analyzed OEMC data on events where a call was made to 9-1-1 and a person was reported to have been shot in police districts both with and without ShotSpotter coverage. Between July 1, 2019 and April 14, 2021, there were 963 CFS for a "person shot" in police districts without ShotSpotter coverage.[9] Of these, only 49 percent (469) included a final disposition code relating to a gun event.[10] The same percentage of "person shot" CFS in police districts with ShotSpotter deployed included a final disposition code for a gun event — 2,897 CFS for a person shot with 1,430 gun events, or 49 percent. This occurs because the final disposition code reported to OEMC at the scene of a reported event is not necessarily the end of the story. Using the MJC's flawed logic, one would conclude that CPD responses to 51 percent of the 9-1-1 calls from the public reporting that a person was shot were "unfounded" and generated "dangerous, unnecessary, and wasteful deployments." [11]

While the OEMC data can potentially provide useful information on *initial* responses, a Miscellaneous Incident code in the OEMC data is not sufficient to support the conclusion that a deployment was unfounded or that no crime occurred. The OEMC data, which report information on deployments, are not a substitute for case files and police reports that include details not only on the initial response, but also on any subsequent investigation.

## 2. Subsequent Identified Criminal Activity Is Unlikely to Be Connected Back to Police Deployment

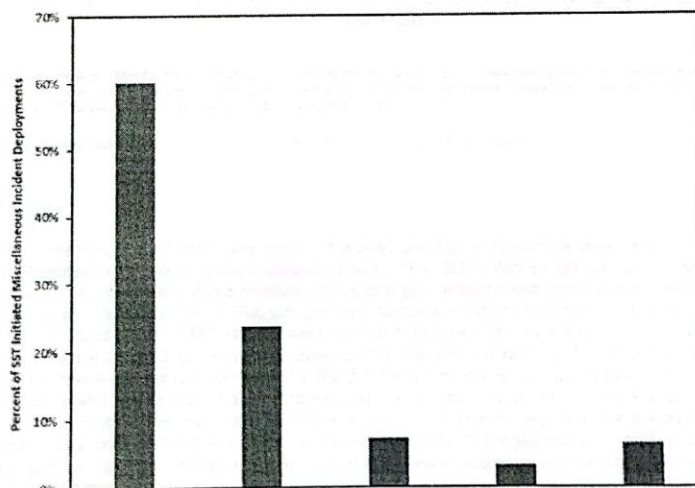
Information on the time spent on CFS that is contained in the OEMC data help to illustrate why subsequently identified criminal activity is unlikely to be connected back to a police deployment.

Specifically, an OEMC dispatch record captures: (1) the time when the deployment was initiated; (2) the location to which the deployment was made; (3) the reason for the deployment; (4) what was immediately found at the scene; and (5) the time when the deployment was closed. When the deployment is "closed," what was found (e.g., evidence, a victim, a perpetrator) is reported and the deployment is likely ended.

A core function of OEMC is to deploy an emergency response to an event. Therefore, deployments that do not require an immediate emergency response and result in Miscellaneous Incident reports, where no evidence of a crime is found at the time, are typically short-duration events, regardless of whether ShotSpotter or 9-1-1 calls reporting gunfire initiated the deployment. In both cases, the median duration of the deployment is 12 minutes, including the time for police to travel to the location. Figure 1 below shows the distribution of durations for ShotSpotter-initiated deployments recorded as Miscellaneous Incidents. The short duration of these deployments suggests that Miscellaneous Incidents in the OEMC data are typically concluded in a relatively short period of time and do not track any subsequent investigations or reports.

As our analysis demonstrates, the MJC study's analysis is misleading as it relies solely on the OEMC data which, by itself, is insufficient to assess ShotSpotter's effectiveness.

Figure 1  
Duration of Miscellaneous Incidents in Minutes  
For OEMC Dispatches Initiated by ShotSpotter  
July 1, 2019 – April 14, 2021



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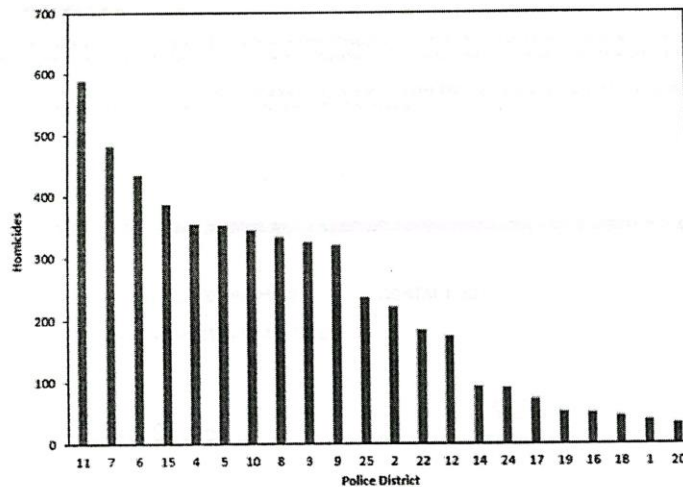
### Edgeworth Conclusion: The MJC Study Mischaracterizes The Deployment Of Shotspotter Technology

The MJC study claimed that ShotSpotter's pattern of deployment in Chicago is in predominately Black and Latinx neighborhoods and that the "unfounded ShotSpotter alerts...can create a false 'techwash' justification for racialized and oppressive patterns of policing in communities of color."<sup>[12]</sup> This claim appears to be entirely premised on the MJC study's improper conclusions addressed above.

ShotSpotter claims that coverage areas are typically determined by law enforcement and elected leadership using objective, historical data that prioritize areas of a city that experience the most gun violence. Edgeworth has confirmed that ShotSpotter deployments are indeed in the Chicago police districts where violent crime is disproportionately greater. For example, as shown in Figure 2, CPD homicide data show that the 12 police districts where ShotSpotter is deployed are the 12 police districts with the highest number of homicides between 2012 and 2021.

Similarly, applying OEMC data to 9-1-1 emergency calls (not including ShotSpotter alerts), the 12 police districts with ShotSpotter had more than 120 percent more deployments initiated by 9-1-1 emergency CFS for reports of gunfire (29,317) than the 10 other police districts (13,269) between July 1, 2019, and April 14, 2021.

Figure 2  
Homicides by Police District  
Districts with ShotSpotter Coverage Areas Highlighted in Red  
January 2012 to April 2021



Note: Police districts where ShotSpotter is deployed are in red and the remaining police districts are in gray. The shares of crime reports involving guns are proportionally the same as homicides by police district over the same period. Therefore, a graph of crime reports involving guns would be very similar to the above graph showing homicides.

Source: City of Chicago Data Portal, <https://data.cityofchicago.org/browse?category=Public%20Safety>.

### Conclusion

Edgeworth's analysis of the OEMC data used by the MJC and the conclusions it drew based on those data demonstrates that the MJC study is severely flawed. The OEMC data simply cannot be used to support the MJC's conclusions about whether gunfire or a gun-related crime occurred because they are an incomplete source of information. The unsupported conclusion that no police report of a crime for a deployment recorded in the OEMC data means no gunshot occurred can lead to incorrect interpretations of actual events and misleading conclusions about police responses to reports of gunfire. Indeed, the MJC's deeply flawed approach would implicate the 9-1-1 system—a critical, trusted tool for communities and law enforcement across the nation—as generating unnecessary police deployments 51 percent of the time when a person is reported as shot. Finally, the MJC's assertions regarding the deployment of ShotSpotter in predominantly Black and Latinx neighborhoods fail to consider that the deployment is consistent with an objective, data-based approach of using the ShotSpotter system where homicide and gun crime is most prevalent.

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## Citations

- [1] Edgeworth notes that the MJC study focused on a period of time (July 1, 2019 through April 14, 2021) that included frequent and long-term protests, unprecedented gun-related violence in Chicago, and the global pandemic. Notably, the MJC study did not acknowledge that this period is not representative of the typical deployment period, and it did not attempt to demonstrate how this period differs from others. Interestingly, Edgeworth found that, while the *raw number* of ShotSpotter-initiated dispatches spiked during parts of this period, the *rate* of dispatches resulting in a crime or gun report remained relatively stable, casting some doubt on MJC's raw number conclusions as being indicative of any credible conclusion outside of this tumultuous time period.
- [2] Based in Washington, D.C., Edgeworth Analytics is a firm of PhD economists who rigorously apply economic principles, hard data, and proven methods for gathering, structuring, analyzing, and applying data to help organizations improve their understanding of the data that drive their businesses.
- [3] <https://www.brookings.edu/research/the-geography-incidence-and-underreporting-of-gun-violence-new-evidence-using-shotspotter-data/>
- [4] OEMC website: <https://www.chicago.gov/city/en/depts/oemc.html>
- [5] Motion for Leave to File Brief as Amici Curiae in Support of Defendant's Motion for a Frye Hearing, *The State of Illinois v. Michael Williams* (20 CR 0899601), filed May 3, 2021 ("Amicus Brief"), Exhibit A, p. 2.
- [6] <https://www.macarthurjustice.org/shotspotter-generated-over-40000-dead-end-police-deployments-in-chicago-in-21-months-according-to-new-study/>
- [7] Miscellaneous Incidents are identified by final disposition codes beginning with "19." See, Chicago Police Department, Miscellaneous Incident Reporting Table – CPD-11.484.
- [8] Amicus Brief, Exhibit A, p. 8.
- [9] Following the MJC's approach as described in the Amicus Brief, throughout this report, the initial dispatch type coded for an OEMC dispatch record—whether it be an emergency 9-1-1 call or a ShotSpotter alert—is used to determine what initiated the deployment.
- [10] Note that the 51% of "unfounded" CFS for a person shot is not comparable to the MJC's corresponding figure for ShotSpotter because it does not include other reports of gunfire, which constitute over 90% of the relevant CFS.
- [11] Amicus Brief, Exhibit A, p. 3.
- [12] <https://endpolicesurveillance.com/burden-on-communities-of-color/>

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## Appendix B. Scoring Criteria in the Violent Impact Player (VIP) List

The Violent Impact Player (VIP) List is an evidence-based risk assessment, comprised of six risk factors drawn from the criminological literature as robust behavioral predictors of the repeated commission of violence and gun crime. Importantly, these risk factors also represent measures consistently available to law enforcement in their records management systems. As police typically do not have access to in-depth personality, social, and community risk factors, it is critical to include measures that both have high predictive validity and are readily available in standard police databases. These include the following empirically-derived risk factors for repeat violence and gun crime:

1. *Prior arrest for an offense involving a firearm.* Research consistently suggests that prior use of a firearm in the commission of a crime is a strong predictor of future violence and gun crime (Farrington, Loeber, & Berg, 2012; Felson & Steadman, 1983; Loeber et al., 2005). That an individual has already demonstrated that s/he is capable of possessing and using a firearm to commit crime underscores the predictive validity of this risk factor. This item was given 5 points if present, given the association with future violence and gun crime behaviors.
2. *Prior arrest for a violent crime.* Prior violent offending is also considered one of the best predictors of future violence (Farrington & Welsh, 2006). In a study by Braga, McDevitt and Pierce (2006), homicide and aggravated gun assault offenders in Lowell, MA committed an average of 3 to 12 prior violent offenses before the most recent homicide or gun assault charge. As only official (vs. self-reported offending) are available to law enforcement conducting the risk assessment, was used in the VIP List, and was worth 5 points if present.
3. *Member or associate of a gang.* Being a documented gang member or associate is consistently shown to be a strong predictor of violence and gun crime, in large part due to the close association between gang membership and propensity for interpersonal violence (Braga & Weisburd, 2012; Decker, Melde, & Pyrooz, 2013; Kennedy, 1997; Melde & Esbensen, 2012; Pyrooz, Turanovic, Decker, & Wu, 2016). Given the strong association between recent gang membership and violent crime, 5 points were given to this item in the VIP List.
4. *Probation or release from prison within the past three years.* Studies consistently indicate that an offender is at highest risk of re-offending within five years of probation or post-release. For instance, one study on the probation status of homicide and aggravated gun assault offenders found that nearly half were currently on probation at the time of the offense (Braga et al., 2006), and a study by Kurlychek, Brame, and Bushway (2006) found that the risk of re-offending was highest in the five years post-release, but substantially decreased after that. Taking a conservative estimate of these studies, any individual released from prison or on probation within the past three years were given 5 points in the VIP List score.
5. *Suspect, associate, or a victim of a shooting.* Based upon the criminological research previously reviewed, it is clear that being a suspected shooter would increase the risk

of committing future gun crimes and violence. If police had evidence and/or intelligence that rose above probable cause, but did not reach the burden of “beyond a reasonable doubt” in order to prosecute a shooting, the individual was considered a shooting suspect and given 5 points in the VIP List inclusion calculation.

Additionally, research on peer associations and social learning suggests that if an individual is the friend/associate of a shooter, s/he is at higher risk of modeling the behavior and committing similar violence in the future (Akers 2009; Borum, 2000; Fagan & Wilkinson 1998; Ferguson, San Miguel, & Hartley, 2009). This item was operationalized using police report data and intelligence, to determine if an individual self-identified as a friend or associate of an individual who committed a gun crime, or if a police report placed both individuals together in the recent past (e.g., in the same car during a traffic stop or the same house during a probation status check). Those identified as an associate of a shooter received 3 points if present.

Victimization is also a strong predictor of future criminal behavior, in certain circumstances (Agnew 2001; Hay & Evans, 2006). Research suggests that victims of shootings are at an increased likelihood of retaliating with violence against the offender (Braga et al., 2006). As most shooting victims tend to be gang members or associates, Pyrooz, Moule, and Decker (2014) found that gang membership increased the risk of being the victim of and committing violent crime by more than 200%. Therefore, all shooting victims received 1 point in the VIP List scoring.

6. *Quality contacts in the past two years.* A “quality contact” includes arrests for any non-violent felony in the past two years. While, for instance, committing a property crime is not a strong predictor of future violence, prior criminal activity is a valid predictor of future criminal activity (Gottfredson & Hirschi, 1990), particularly if the prior offending was recent. All quality contacts in the past two years were given 1 point each toward an individual’s VIP score.

## References

- Agnew, R. (2001). Building on the foundation of general strain theory: Specifying the types of strain most likely to lead to crime and delinquency. *Journal of Research in Crime and Delinquency*, 38(4), 319-361.
- Akers, R. (2009). *Social learning and social structure: A general theory of crime and deviance*. New York: Routledge.
- Borum, R. (2000). Assessing violence risk among youth. *Journal of Clinical Psychology*, 56(10), 1263-1288.
- Braga, A. A., & Weisburd, D. L. (2012). The effects of focused deterrence strategies on crime. *Journal of Research in Crime and Delinquency*, 49(3), 323-358.
- Braga, A. A., McDevitt, J., & Pierce, G. L. (2006). Understanding and preventing gang violence: Problem analysis and response development in Lowell, Massachusetts. *Police Quarterly*, 9(1), 20-46.
- Decker, S. H., Melde, C., & Pyrooz, D. C. (2013). What do we know about gangs and gang members and where do we go from here? *Justice Quarterly*, 30(3), 369-402.
- Fagan, J., & Wilkinson, D. L. (1998). Guns, youth violence, and social identity in inner cities. *Crime and Justice*, 24, 105-188.

- Farrington, D. P., Loeber, R., & Berg, M. T. (2012). Young men who kill: A prospective longitudinal examination from childhood. *Homicide Studies*, 16(2), 99-128.
- Farrington, D. P., & Welsh, B. C. (2006). A half century of randomized experiments on crime and justice. *Crime and Justice*, 34(1), 55-132.
- Felson, R. B., & Steadman, H. (1983). Situational factors in disputes leading to criminal violence. *Criminology*, 21(1), 59-74.
- Ferguson, C. J., San Miguel, C., & Hartley, R. D. (2009). A multivariate analysis of youth violence and aggression: The influence of family, peers, depression, and media violence. *The Journal of Pediatrics*, 155(6), 904-908.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford University Press.
- Hay, C., & Evans, M. M. (2006). Violent victimization and involvement in delinquency: Examining predictions from general strain theory. *Journal of Criminal Justice*, 34(3), 261-274.
- Kennedy, D. M. (1997). Pulling levers: Chronic offenders, high-crime settings, and a theory of prevention. *Valparaiso University Law Review*, 31(2), 449-484.
- Kurlychek, M. C., Brame, R., & Bushway, S. D. (2006). Scarlet letters and recidivism: Does an old criminal record predict future offending? *Criminology & Public Policy*, 5(3), 483-504.
- Loeber, R., Pardini, D., Homish, D. L., Wei, E. H., Crawford, A. M., Farrington, D. P., ... & Rosenfeld, R. (2005). The prediction of violence and homicide in young men. *Journal of Consulting and Clinical Psychology*, 73(6), 1074-1088.
- Melde, C., & Esbensen, F. A. (2013). Gangs and violence: Disentangling the impact of gang membership on the level and nature of offending. *Journal of Quantitative Criminology*, 29(2), 143-166.
- Pyrooz, D. C., Moule, R. K., & Decker, S. H. (2014). The contribution of gang membership to the victim-offender overlap. *Journal of Research in Crime and Delinquency*, 51(3), 315-348.
- Pyrooz, D. C., Turanovic, J. J., Decker, S. H., & Wu, J. (2016). Taking stock of the relationship between gang membership and offending: A meta-analysis. *Criminal Justice and Behavior*, 43(3), 365-397.

**Appendix C. VIP List Scoring Sheet** utilized by Tampa, FL Police Department

**NOTE:** *\*\* Gang designation is not allowed in the State of Oregon and thus would not be a part of the VIP scoring criteria used by Portland Police Bureau. This is only a sample of what a VIP list might include.*

**VIP Scoring Sheet**

1. **\*\*Gang Member/Affiliate – 5pts**  
\_\_\_\_\_

2. **Prior arrest with Firearm or Offense involving a Firearm – 5pts**  
\_\_\_\_\_

3. **Violent Criminal History – 5pts**  
\_\_\_\_\_

4. **Probation or Prison Release (w 3/years) – 5pts**  
\_\_\_\_\_

5. **NIBIN – 5pts**  
\_\_\_\_\_

6. **Shooter – 5pts**  
\_\_\_\_\_

**OR**

7. **Victim of Shooting (points obtained in this category only awarded if not a shooter) – 3pts**  
\_\_\_\_\_

**OR**

8. **Associates of a shooter (points awarded only if subjects were not previously allotted the points for being shooter or victim of a shooting) – 1pt** \_\_\_\_\_

9. **Quality Contact (within 18 months) – 1pt each**  
\_\_\_\_\_

**Total Points:**  
\_\_\_\_\_



## **Appendix D: Implementation of the Project Safe Neighborhoods**

### **Strategy in the Tampa Police Department**

The Project Safe Neighborhoods (PSN) initiative was established in 2001 by the United States Department of Justice (DOJ) as “an evidence-based violent crime reduction program” that “emphasizes data-driven strategies that focus on the most violent offenders and locations, while also forging partnerships with a wide range of stakeholders in local communities to achieve a sustained reduction in violent crime” (DOJ, 2020, p. 1).

To implement the PSN strategy, the Tampa Police Department (TPD) adhered to the five key program elements: 1) leadership; 2) partnerships; 3) targeted enforcement; 4) prevention efforts; and 5) increased accountability. These implementation elements are described in detail, with case study examples, on the PSN website at [www.justice.gov/psn](http://www.justice.gov/psn) and the 2020 PSN Progress Report, available at [www.justice.gov/psn/file/1336701/download](http://www.justice.gov/psn/file/1336701/download). TPD’s implementation of these elements are described briefly below.

***Leadership.*** In 2016 TPD established the Violent Crimes Bureau (VCB), led by Captain Paul Luszczynski, to serve as the agency’s centralized unit aimed at reducing violence and gun crime through the PSN initiative. The VCB, based at TPD headquarters, led the agency’s comprehensive PSN efforts, to include: a) scoring, maintaining, and monitoring the VIP List; b) leading proactive investigations and building strong cases on violent crime and gun crimes committed by VIPs in conjunction with the FBI, ATF, United States Attorney’s Office (USAO) and more, with a focus on increasing the certainty and swiftness of arrest; c) meeting regularly with the USAO to review VIP cases to jointly decide the best forum for prosecution, with a focus on enhanced enforcement of the law for re-offenders.

***Partnership.*** TPD’s VCB worked closely with federal, state, and local law enforcement agencies, to include the FBI, ATF, the Florida Department of Law Enforcement (FDLE), and more, to coordinate efforts and share information on prolific violent offenders operating across jurisdictions and statutory violations. For instance, TPD would routinely share their VIP List with the FBI and ATF on a monthly basis, as these agencies may have concurrent ongoing investigations that TPD was not aware of, but can contribute to in a proactive manner. Additionally, TPD partnered with the USAO during the investigations of these cases, in order to build the strongest possible cases and ensure that the certainty and severity of sanctions for repeat offenders was upheld. Finally, TPD partnered with the academic community, to include PSN developed Ed McGarrell and the authors of this paper, in order to identify the research based used to develop the risk factors on VIP List, implement the PSN initiative, and independently evaluate the progress and efficacy of the program.

***Targeted Enforcement.*** The focus on violent offenders who are responsible for a disproportion amount of violence and gun crime using the evidence-based VIP List

assessment was the hallmark of TPD's PSN approach. While other individual-level approaches are more subjective (e.g. gang audits) or broader in nature (e.g. all gang members), the use of the VIP List was intended to make targeted enforcement more precise, accurate, and objective. The criteria for the VIP List are described in text, in Appendix A, and in the PSN TTA Podcasts from August 2020, available at:

<https://podcasts.apple.com/us/podcast/psn-tta-podcasts/id1530280488>.

To implement the targeted enforcement, all individuals exceeding the scoring cutoff using the VIP List scoring criteria were identified by TPD and eligible for prevention/outreach and potential enhanced enforcement and sanctions if violent recidivism occurs.

***Prevention and Outreach.*** A core element of PSN is that violent crime can be prevented through specific deterrence messaging targeted at a small group of prolific offenders who are responsible for committing a disproportionate amount of violent crime. To implement this, TPD implemented strategies to directly influence the perception of the certainty, severity, and swiftness of enforcement among those identified as prolific offenders using the VIP List. These include the centralization of violent crime investigations in the VCB to ensure the most effective use of police resources so VIPs who commit additional violence and gun crimes are prioritized and charged with these offenses, enhanced investigative efforts and inter-agency collaborations aimed at increasing the swiftness and certainty of response if a subsequent violent or serious crime is committed by the VIPs, and close collaboration with the USAO and State Attorney's Office to increase the certainty and severity of punishment for VIPs who commit additional violent and serious crimes to serve both as a deterrent and to physically prevent these individuals from committing future violence and gun crimes. Finally, TPD engaged in messaging with news media outlets about the PSN initiative, and VCB detectives notified VIP's that any future violence and gun crimes will result in swift and enhanced enforcement, prosecuted to the fullest extent of the law.

***Accountability.*** As the goal of the PSN strategy is to reduce violent crime and gun violence, it is vital that the effectiveness of the initiative is evaluated to ensure accountability and demonstrate efficacy of the program, and whether this changes over time. The element was implemented through collaboration with an academic research partner, and the evaluation of TPD's PSN initiative presented in this study.

## **Appendix E: ShotSpotter FAQ, ShotSpotter Frequently Asked Questions**

### **1. What is ShotSpotter?**

ShotSpotter is gunshot detection technology that uses sophisticated acoustic sensors to detect, locate and alert law enforcement agencies and security personnel about illegal gunfire incidents in real-time. The digital alerts include a precise location on a map (latitude/longitude) with corresponding data such as the address, number of rounds fired, type of gunfire, etc. delivered to any browser-enabled smartphone or mobile laptop device as well as police vehicle MDC or desktop. This information is key to better protecting officers by providing them with increased tactical awareness. It also enables law enforcement agencies to better connect with their communities and bolsters their mission to protect and serve.

### **2. Who uses ShotSpotter and what types of cities use it?**

ShotSpotter is used in more than 85 cities across the United States and one city in South Africa. It is highly regarded by law enforcement agencies as a critical component in their gun violence prevention and reduction strategies. The customer base for ShotSpotter includes a diverse set of cities -- by size, geography and socio-economic standards. Police departments and security personnel are the primary users of ShotSpotter, while the data has proven to be valuable to prosecutors in court cases and to elected city officials for community engagement and smart city initiatives.

### **3. How does ShotSpotter work?**

ShotSpotter uses acoustic sensors that are strategically placed in an array of approximately 20 sensors per square mile. These sensors are connected wirelessly to ShotSpotter's centralized, cloud-based application to reliably detect and accurately triangulate (locate) gunshots. Each acoustic sensor captures the precise time and audio associated with impulsive sounds that may represent gunfire. This data, from multiple sensors, is used to locate the incident, which is then filtered by sophisticated machine algorithms to classify the event as a potential gunshot. Expertly trained acoustic analysts, who are located and staffed in ShotSpotter's 24x7 Incident Review Center, then further qualify those highlighted incidents. These analysts ensure and confirm that the events are in fact gunfire. In addition, the analysts can append the alert with other critical intelligence such as whether a full automatic weapon was fired and whether the shooter is on the move. This process typically takes no more than 45 seconds from the time of the actual shooting to the digital alert (with the precise location identified as a dot on a map) popping onto a screen of a computer in the 911 Call Center or on a police officer's smartphone or mobile laptop.

### **4. How does ShotSpotter help law enforcement?**

ShotSpotter helps protect officers by rapidly notifying them of gunshot crimes in progress with real-time data delivered to dispatch centers, patrol cars and even smartphones and tablets. Nearly eight out of ten gunfire events go unreported to 911. Police cannot respond effectively if unaware of an incident. Having a ShotSpotter

alert come in with contextual information ShotSpotter FAQ enhances officer safety and effectiveness with critical intelligence such as: real-time access to maps of shooting locations and gunshot audio; actionable intelligence detailing the number of shooters and the number of shots fired; accurate and precise locations for first responders who are aiding victims; and searching for evidence and interviewing witnesses. With ShotSpotter, officers can more quickly arrive at the scene of a crime with an increased level of safety because they know exactly where the gunfire took place. In many cases, an officer can arrive with the shooter still at the crime scene or if the criminal has fled, shell casings and/or other evidence can be recovered and used for investigative and potential prosecution purposes and key witnesses can be interviewed at the crime scene.

5. Does ShotSpotter replace police officers?

This investment in technology should not be considered an either/or decision. The fact is, police departments need both manpower and technology. ShotSpotter is a tool that augments and enhances the existing manpower as a force multiplier to improve both the timeliness and quality of response. By pinpointing the precise location of gunshot incidents, and by more accurately tracking geographic patterns underlying gun violence, limited law enforcement resources can be deployed more effectively and more proactively. This technology is capable of something that no amount of manpower can accomplish, which is to comprehensively report in real-time all outdoor illegal gunfire occurring in a ShotSpotter coverage area.

6. I heard ShotSpotter failed in a couple of cities. Is this true?

There has never been a single city where ShotSpotter did not technically work (i.e. - detecting, locating and alerting on illegal gunfire). ShotSpotter has gained valuable experience in more than 85 cities across the United States and one city in South Africa, and with proven best practices has shown that integrating ShotSpotter into an overall gunfire reduction strategy with other policing programs works. We also know that cities that do not implement standard best practices do not have the highest success rate. The bottom line is that cities following best practices experience a positive outcome in their gunfire reduction strategies and often achieve measurable year-over-year reductions in gunfire activity. The very few cities that did not have a positive experience had suboptimal deployment strategies and poor practices around the following:

- Too small a deployment area to effectively drive the procedural change management necessary to have a meaningful impact;
- Failure to respond to ShotSpotter gunfire alerts when they come into the PD and not responding to the precise location (the “dot on map”) that ShotSpotter indicated;
- Not including ShotSpotter data as part of an overall gunfire intelligence and crime reduction program;
- Lack of community engagement

The most successful deployments have engaged communities to educate residents on the benefits of improved police response, working together to help reduce crime and empowering community members to feel safe in their own neighborhoods. In



particular, here is a sampling of cities that have been successful in their overall gunfire crime reduction strategies, and have expanded their ShotSpotter service after initial deployment:

- Birmingham, AL – expanded from 8 to 16 square miles
- Camden, NJ – expanded from 2.5 to 7 square miles
- Chicago, IL – expanded four times from 3 to more than 60 square miles
- Denver, CO – expanded twice from 3 to 11.5 square miles
- Fresno, CA – expanded twice to cover 12 square miles
- Hartford, CT – expanded from 3 to 11.25 square miles
- Milwaukee, WI – expanded twice from 1 square mile to 3 to over 11
- Nassau County, NY – expanded from 3 to 7 square miles
- New York City, NY – expanded to cover 60 square miles after a 15-mile initial deployment
- Oakland, CA – expanded three times, from 6 to 16 square miles
- Peoria, IL – expanded from 3 to 6 square miles
- Sacramento, CA – expanded 2 times from 3 to 6.2 square miles
- San Francisco, CA – expanded 3 times to 13 square miles
- Springfield, MA – expanded from 3 to 6 square miles
- Wilmington, NC – expanded from 3 to 6 square miles

#### 7. How does ShotSpotter provide value to its customers?

Saving lives and improving the quality of life in neighborhoods, while improving officer safety, is our number one mission. Furthermore, the health care costs of treating gunshot injuries cost nearly \$630 million in 2010 with American society collectively paying these costs. In 2010, the total firearm assault injury costs were just under \$630 million (Howell and Abraham 2013). Gun violence leads to higher associated costs across the criminal justice system because of prevention, investigation, court, and prison costs. All these factors translate into monetary costs for which the public and society at large pay. At ShotSpotter, we believe that we will be able to measurably reduce gun violence and improve public safety, and in the process, enhance the resiliency of the communities we serve. In the long term, the positive impact of improved public safety is reflected in better social and economic outcomes. For these reasons, we believe ShotSpotter is well worth the money.

#### 8. How much does ShotSpotter cost?

ShotSpotter is a cloud-based subscription service. The cost for ShotSpotter is \$65-90k per square mile per year, with a \$10K per square mile one-time Service Initiation fee.

A ShotSpotter subscription includes: ShotSpotter FAQ

- Incident Review Center – Staffed 24/7/365 by trained acoustic analysts who review and classify gunfire in mere seconds by distinguishing gunshots from other impulsive sounds. Included is additional contextual information such as multiple shooters, fully automatic weapons, or moving shooter alerts;
- ShotSpotter Integration Services – Enables customers to export ShotSpotter data to other law enforcement agency systems;

- Data Analytics – Provides valuable information for Proactive Policing;
- ShotSpotter Forensic Products – Supports customer investigation efforts and strengthens court cases, including: Forensic Audio Search, Enhanced Incident Reports, Detailed Forensic Reports, Expert Testimony for court cases;
- Technical Support – 24/7/365 – available to provide assistance;
- Best Practices – a team of law enforcement consultants, analysts and trainers are available as part of the ongoing subscription to assist the agency in adopting best practices to maximize the efficacy of the ShotSpotter solution.

#### 9. What is a city missing without ShotSpotter?

The communities most affected by gunfire are least likely to call in when they hear gunshots. With fewer than 1 in 5 shooting incidents reported to 911, gun crime is vastly underreported. When 911 calls are made, the location information provided is typically inaccurate. Without knowing exactly where to respond, police waste valuable time and resources driving block by block looking for evidence as criminals escape the scene. In addition, dispatching officers to an active shooting without all available intelligence is a threat to officer safety and needlessly places the public and the officers at risk. Without ShotSpotter, a city may be missing many gunshot incidents and as a result, may not have the opportunity to respond to save victims and apprehend shooters in the act.

#### 10. Where else is ShotSpotter deployed and has it been successful there?

ShotSpotter is deployed in more than 85 cities in the United States, deployed across 23 states and the District of Columbia, covering more than 500 square miles. In addition, ShotSpotter is deployed in Cape Town, South Africa. Here is a sample of our successes:

- New York City: Deployed ShotSpotter in March 2015. In 2017, it was reported by Jessica Tisch, the NYPD deputy Commissioner of Information Technology, that only 16% of ShotSpotter alerts have 911 calls associated with them. Tisch said 1,740 shootings were detected and Police responding to the detections had seized 31 guns and made 61 arrests, according to the Wall Street Journal – August 3, 2017
- Chicago, IL: From 2014 to March 2017, ShotSpotter sensors alerted police to 1,600 gunshots in the Englewood district. “This technology doesn’t supplant what our officers do, it supports what our officers are already doing,” said Mayor Rahm Emanuel. “CPD’s smart policing strategy helps officers be more effective, proactive and professional while working toward our one goal to get more police on our streets and get gangs, guns and drugs off our streets.” ShotSpotter FAQ
- Denver, CO: Since the technology was installed in January 2015, police say it is tied to 100 arrests (Denver channel 7, March 29, 2017). “60% of shots fired in Denver go without a call to the police, and with ShotSpotter, police are getting notified within 40 seconds of the gunshots and

responding to within 25 feet of the actual crime scene," according to Lt. Aaron Sanchez (9/21/16, KUSA).

- Sacramento, CA: ShotSpotter detected 1,096 gunshot incidents from June 15, 2015 to May 31, 2017, and of these incidents only 272 times was there an accompanying citizen call to 911. In that timeframe, information captured by ShotSpotter led to the arrest of almost 90 people and the seizure of 90 guns, according to the Sacramento Bee.
- Fresno, CA: There is a 98.5% accuracy of not missing gunfire or alerts from ShotSpotter or a corresponding 911 call. Police response time from a ShotSpotter alert is 4 minutes or less, whereas from a citizen call it's 8 minutes or less. 70% of ShotSpotter alerts did not receive a phone call to 911, said Fresno Police Chief Jerry Dyer.
- San Diego, CA: According to the San Diego Police Department, in 2017 only 23% of the overall activations were called in to the Dispatch Center. "By using ShotSpotter, we are notified and respond 100% of the time and to a more precise location."
- Louisville, KY: After the first two weeks of being implemented in Louisville, ShotSpotter technology enabled police officers to respond to 89 shootings that might not otherwise have been reported, and one gang-related arrest, LMPD Major Josh Juda said. "Most of these were incidents that we wouldn't have responded to anyway," said Juda. In addition, ShotSpotter has been integrated into the Real Time Crime Center. Real Time Crime Center director Jennifer Corum said "Our analysts keep ShotSpotter on their desktops with the notifications and sound on at all times...it has become an integral part of our organization."
- Kruger National Park, SA: ShotSpotter has potential other benefits besides urban communities. With only a very small proof of concept deployment, ShotSpotter detected two poaching events that led to the capture and prosecution of several poachers as well as the recovery of a baby rhino (named Dot) whose mother rhino was poached.

#### 11. Does ShotSpotter have video monitoring capability?

No. ShotSpotter is an acoustic based system. The sensors do not have any optical capability and cannot produce images of any kind. However, ShotSpotter can integrate with video systems by sending an alert to a video management system, which can then separately pan, tilt and zoom an IP addressable camera in the appropriate area or direction. By combining these technologies, ShotSpotter enables law enforcement agencies to benefit from the best in video monitoring technology, while also benefiting from the best in acoustic gunshot detection and location technology.

#### 12. Does ShotSpotter catch shooters?

There are many cases in cities where the ShotSpotter alert has led to the arrest of a criminal. Critical forensic evidence such as shell casings are often retrieved from a scene, resulting in recovering key investigative data, which led to the introduction or arrest of a shooter. Local DA agencies also rely on ShotSpotter to prosecute some of

the toughest criminals in our country. Currently, federal homicide prosecutors are using ShotSpotter analysis and evidence to determine if a gunshot has occurred and the precise location of the shooting. ShotSpotter has been deemed admissible in court cases in 17 states and the District of Columbia, as well as in federal court. But keep in mind our primary goal is to prevent shooting incidents, so deterring the gunfire is more valuable than capturing the trigger puller.

13. Do you have any supporting data to show that your technology helps to reduce gunfire in coverage areas?

Today, ShotSpotter is highly regarded as a critical component of any comprehensive gun violence reduction strategy and is playing an active part in making communities safer for future generations. ShotSpotter technology is helping communities and law enforcement agencies work together to prevent gun violence on a global level. The ShotSpotter National Gunfire Index (NGI) reports that law enforcement agencies and cities which have adopted ShotSpotter solutions, along with best practices, have experienced up to an 80% reduction in gunfire and as much as a 40% reduction in related violent crime and homicides. The Company is becoming a recognized thought leader in the annual published National Gunfire Index Report (see 2016 National Gunfire Index - <http://www.shotspotter.com/2016NGI>), which details a comprehensive analysis and overview of instances of gun violence.

14. How is ShotSpotter data being used in court?

District attorneys and federal prosecutors rely on ShotSpotter evidence to assist them in prosecuting gun crimes. ShotSpotter provides Detailed Forensic Reports as evidentiary documents which include precision positioning calculations of each gunshot, exact timing of shots, and map placements of firing locations for every shot fired. This evidence has received favorable rulings in Daubert and Frye challenges, and as a result has been used in trials at both the local and federal level. ShotSpotter Inc. provides expert witnesses to present the data at trial; to date they have testified in 17 states and the District of Columbia.

15. What access to data does a ShotSpotter subscription give users?

The city where ShotSpotter is deployed is considered the subscriber. Subscribers have unrestricted use of their data, with the ability to integrate with internal systems, such as video management and reporting, which provides the greatest value for the data. ShotSpotter only limits the export of detailed electronic data to outside entities such as research institutions or other agencies that would use the data for derivative products.

16. Will ShotSpotter violate my privacy?

Can it record conversations? No. ShotSpotter uses acoustic sensors designed to detect, locate and alert on gunfire – not record conversations. The acoustic sensors are located on top of buildings, rooftops and poles, roughly 30 feet or more above street level. The sensors are designed to trigger (or activate) on very loud, impulsive noises, such as when a gun is fired. The sensors are designed to record seconds of the gunfire



17. Does ShotSpotter detect gunshots from gun silencers?

“Silencers” are more accurately called suppressors as they suppress the impulsive sound of gunfire, they do not wholly eliminate it. ShotSpotter has successfully, if not inadvertently, detected confirmed suppressed gunfire within our existing deployments in some cases. Although we have not formally tested our system to measure our detection rate of suppressed gunfire, we intend to do some targeted testing in the near future. Were there to be demand to detect suppressed gunfire, we believe our technology would present a number of options, ranging from increasing the density of our sensor array, to developing new software/firmware.

18. Does ShotSpotter work on school campuses?

Yes, ShotSpotter works on school campuses and is in use by leading colleges and universities of all sizes. ShotSpotter can detect gunfire accurately, provide increased situational awareness to first responders, and integrate seamlessly with existing security systems for enhanced campus/facility security. Our real-time active shooter alerts are critical so that first responders can arrive almost instantaneously to the proper location with improved situational awareness. Schools, colleges, and places of business are often targets of gun violence with statistics showing, on average, more than one incident per month in the U.S. Average active shooter incidents are shown to last 12 minutes or less, and the first calls to 911 don’t typically don’t come in for several minutes, so ShotSpotter’s real-time detection is particularly valuable in these situations. Campuses and universities are particularly vulnerable to shootings both on and off campus. ShotSpotter has been successful at helping campus police, as well as city police, when shootings have occurred near or on a campus. Recently, a late-night shooting incident happened in a popular bar area near a world-class west coast university and ShotSpotter helped to swiftly contain the incident, read about it here: <http://www.shotspotter.com/system/content/uploads/106SST-university-case-study-online.pdf>

## Appendix F: Peer Review Commentary of the FITCOG ShotSpotter Recommendation

*The following peer review comments are transcribed from a phone interview between Stephanie Howard, Director of Community Safety for the City of Portland and Reygan Cunningham (RC) of the California Partnership for Safe Communities held on Tuesday, June 28th, 2022 at 12:07 PM.*

- ❖ You expressed that you are glad to see Portland moving in this direction, as many other cities have been utilizing ShotSpotter tech for some time. However, expectations need to be managed around the recommendation because these tools only work when appropriate infrastructure and resources are also dedicated.
  - (RC) Yes
- ❖ Resources needed to maximize ShotSpotter would include (but are not limited to) assigning a specific PPB unit to respond to ShotSpotter calls and ensuring that that team has sufficient licenses to receive and review ShotSpotter data in real time.
  - (RC) Yes. If they put the sensors in a particular area, they could ensure that all officers working in that area have access to the technology. But bottom-line people need to have the ability to respond in short order.
- ❖ You cautioned that ShotSpotter can be part of a focused deterrence strategy, but it is not a focused deterrence strategy in and of itself. It can also be a tool to improve legitimacy of law enforcement in the community. By way of example, you noted that often people living in communities with high rates of gun violence do not call 911 when they hear gunshots. ShotSpotter can help with identifying the location of these shootings.
  - (RC) If nothing else, evidence can be collected and analyzed that could help in solving the crime. Again, though this requires resources meaning that even if we don't have police that can immediately respond, that we at least have evidence techs that can collect data in a timely manner and analyst that have the resources to analyze the casings.
- ❖ With regard to ensuring equity in how ShotSpotter is implemented, you stressed the importance of using data to drive decisions about where to locate ShotSpotter sensors. Data regarding gun violence hotspots should be the primary criteria.
  - (RC) Yes. The Problem Analysis that we'll discuss this week has incident maps in it from 2019-2021. These maps have both homicide and shooting incidents. There are clearly some hotspots, but also some areas where it seems to be more dispersed.
- ❖ You also noted that ShotSpotter is not a tool that is particularly useful in relation to school shootings. In other words, locating sensors around schools is not likely to yield a great deal of useful information, so location should be determined based on data around areas where gun violence is frequently occurring.
  - (RC) I think the better phrasing is that ShotSpotter is not going to prevent school shootings. I don't think criminologist really know (there are some great ideas and even some small pilot projects, but no real evidence, yet) what will prevent school shootings. So, there's no real answer there (unfortunately).

- (RC) BUT if a shooting were to occur at a school and if there were ShotSpotter sensors within in range it would pick it up and alert PPB pretty quickly. The challenge is knowing which schools are at higher risk of being victimized by school shootings compared to others. So, unless PDX has an unlimited amount of \$\$ and can put sensors in every area where there are schools (and maybe for this there is \$\$...I don't know), it would be hard to use this technology effectively to address potential (not prevent...because the shooting would have already happened once ShotSpotter picks it up) school shootings.

## 2.) **David M. Kennedy**, *John Jay College of Criminal Justice*

To: Stephanie Howard  
From: David M. Kennedy  
Re: FITCOG ShotSpotter Recommendation  
Date: 6.30.22

The report of the Focused Intervention Team Community Oversight Group is exceptionally well done. It is well framed, well researched, well thought through, and well presented. The FITCOG should be commended for its commitment and work on a matter of deep importance to the city.

The framework the FITCOG brought to its report appears to be one of how the FIT can follow an evidence-based focused deterrence approach – it looked particularly at the one implemented in Tampa, Florida and judged by outside evaluators to be markedly successful – enhanced by ShotSpotter gunfire detection technology, in ways that will be effective, equitable, and transparent. Given that framework, its recommendations are very strong and on point. If the city continues to think of the FIT and its deployment in that same way, I would encourage the city to review them carefully and follow them as closely as possible.

However, I believe that what we know about evidence-based violence prevention suggests that it may be possible – and in some important ways easier, faster, and less expensive – to bring a wider framework to bear on the FIT and the issues the FITCOG has considered. I would encourage the FITCOG and the city to consider the following points.

- 1.) As the FITCOG correctly says, community gun violence is now known to be concentrated, in terms of both victimization and perpetration, amongst a very small high-risk population mostly involved in groups and heavily driven by group dynamics. Most successful focused deterrence interventions focus on those groups and group dynamics (the Tampa intervention and one other in the focused deterrence portfolio, the “Chicago PSN”

intervention, are outliers in this regard in that they focus on individuals). Identifying those groups and group dynamics is routinely done through a relatively simple and cheap process of convening front-line law enforcement personnel and sharing what they know about those key groups and individuals and about incidents of gun violence. The city could have such a process up and running literally within days of deciding to do so, at no additional cost. It will identify individuals driving gun violence and at high risk for victimization by gun violence who does not have extensive criminal records and will thus not be identified by an examination of criminal records, and will also identify violence dynamics not effectively addressed by attention to individuals (such as a running vendetta (“beef”) between groups). This now-routine practice, will produce more immediate actionable information than a ShotSpotter implementation will. It would be very usefully enhanced by a Shotspotter implementation, as has happened in, for example, New Haven, Connecticut.

- 2.) The FITCOG is correctly concerned about the use of stops by the FIT, and its recommendations here – as with the rest of the report – are excellent. However, stops have not played an important role in focused deterrence interventions, or in fact in most other effective police approaches to preventing gun violence. Thinking of the FIT more as a short- and medium-term investigative body, with a focus on the most violent groups and individuals, would be more in line with focused deterrence practice, would be more effective, and would go even further to address the equity, legitimacy, and use of force concerns the FITCOG properly highlights.
- 3.) The Tampa focused deterrence intervention the FITCOG highlights appears to be an exclusively deterrence- and enforcement-focused approach. It is very much the exception in this regard; nearly all focused deterrence interventions go as far as possible to avoid enforcement and to do as much violence prevention as possible through the engagement of key community figures with the high-risk population, and by constructing a highly focused and granular structure of support and outreach designed to keep those at high risk “safe, alive, and free.” Regardless of the larger strategic and operational approach the city and the FIT pursues, the work of the FIT should be closely linked to non-enforcement resources and interventions. Information about gun violence gathered and analyzed by law enforcement – through front-line reviews, criminal history analysis, FIT operations, ShotSpotter, or any other means – should be shared with non-law enforcement actors in legal, structured, and accountable ways to enhance the safety and well-being of those at high risk and to minimize the need for either deterrence or enforcement as much as possible.
- 4.) It’s not clear at present that implicit bias training succeeds in significantly altering the behavior that leads to biased and inequitable outcomes. The most effective way to avoid those outcomes is to reduce the actions and situations that produce those outcomes: to avoid inequities in stops, for example, by reducing or eliminating the stops themselves. Shifting the work of the FIT in the ways suggested above would probably be more effective in addressing the equity concerns the FITCOG correctly raises.



- 5.) ShotSpotter is not essential to any of the steps suggested above. The city can relatively quickly mobilize its existing insight into high-risk groups and individuals, bring community and service resources to bear, and focus deterrence and where necessary enforcement (Including by the FIT) in ways that will be more effective, equitable, and transparent and that will reduce actual police and criminal justice actions. ShotSpotter will enhance those steps, as the FITCOG correctly says, by bringing important new information to the city. The city's priority, however, should be in getting those other elements in place and effective as it considers whether to implement ShotSpotter, and ShotSpotter if implemented should be considered to be an adjunct to those more important elements.