
ShotSpotter is Listening
A SPECIAL REPORT BY OJRC

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The Oregon Justice Resource Center (OJRC) is a 501(c)(3) nonprofit founded in Portland, Oregon, in 2011. We work to promote civil rights and improve legal representation for communities that have often been underserved in the past: people living in poverty and people of color among them. Our clients are currently and formerly incarcerated Oregonians. We work in partnership with other, like-minded organizations to maximize our reach to serve underrepresented populations, train public interest lawyers, and educate our community on civil rights and civil liberties concerns.

We are a public interest law firm that uses integrative advocacy to achieve our goals. This strategy includes focused direct legal services, public awareness campaigns, strategic partnerships, and coordinating our legal and advocacy areas to positively impact outcomes in favor of ending mass incarceration.

Executive Summary

AMID A RECORD-BREAKING RATE of gun violence in Portland in fall 2022, the City announced its intention to contract with gunshot detection technology provider, ShotSpotter. ShotSpotter uses a system of microphones placed throughout the city to detect gunfire, triangulate the location of that gunfire, and report the incident to local law enforcement, who are then dispatched to that location. Through a heavy-handed marketing campaign conducted over the course of nearly a year, ShotSpotter convinced city officials that this technology would make the community safer by reducing gun violence. Though initially intending to award a sole-source contract to ShotSpotter, the City recently changed course and opened a competitive process for vendors to bid on a gunshot detection technology pilot project. This report focuses on ShotSpotter because that is the primary company the City has engaged with and seems the most likely to win the contract. However, if the City selects an alternative, many (though not all) of the negative impacts listed below will still come to pass. This report will be updated and added to as the situation evolves. Regardless of the vendor, the City is now poised to spend hundreds of thousands of dollars on a gunshot detection technology that research demonstrates will have little impact on gun violence while creating significant risks to the civil rights of vulnerable communities.

While Portland needs a solution to gun violence, study after study shows that cities with ShotSpotter see no increases in arrests or case closures, nor any decrease in gun violence or homicides. In part, this is attributable to the potential problems with ShotSpotter's technology. While ShotSpotter is notoriously unwilling to allow a truly independent audit of their technology, many cities have abandoned the system after finding it either failed to detect gunshots in critical incidents or reported other sounds as gunfire, including helicopters, fireworks, and church bells. But even if the technology were reliable, it still fails to aid policing. In fact, some cities found that as low as 2% of ShotSpotter alerts led to an arrest. Other cities found that only 30% of ShotSpotter deployments led to evidence of a gun-related crime. What the experiences of other cities does show is

Portland's response times for shots fired have increased over 200% in three years; increasing the police's workload will only exacerbate, not solve current problems.

that ShotSpotter significantly increases police workloads by as much as 400%. In a city like Portland, where police response times for shots fired have increased over 200% in three years to an average of nearly 25 minutes in 2022, merely increasing the workload of the police without actually helping them solve crimes will exacerbate, not solve current problems.

While there is clearly little to no benefit to implementing ShotSpotter in Portland, there are significant drawbacks that will unfortunately impact vulnerable communities the most. First, the system of microphones records street-level noise all day, every day, including traffic and potential gunfire but also conversations. This increase in government surveillance amounts to, at a minimum, a significant risk to individual privacy and potentially a violation of Oregon law, which requires consent for recording. Additionally, when other communities implemented ShotSpotter, it led to police conducting unconstitutional stops and searches of people merely in the area of ShotSpotter microphones. ShotSpotter evidence has even been used by police to falsely charge and detain innocent individuals who were victims of police brutality themselves. And, like many consequences of unconstitutional policing, these impacts are most likely to be borne by communities of color and houseless communities, as the areas most likely to house ShotSpotter microphones are also the areas in which those communities live.

While it is understandable that Portland's leaders want to appear responsive to community concerns about gun violence, we urge them to look at the evidence, not ShotSpotter's marketing, and implement evidence-based strategies to curb violent crime. The research clearly establishes that ShotSpotter fails to help police and neither prevents nor reduces gun violence. Instead, long-term investments in community-based solutions provide opportunities for those who might otherwise engage in violence and ultimately create stable and safe communities. It is irresponsible for the City of Portland to invest in technology with no benefit and significant drawbacks for the community when those resources could instead be used to fund initiatives proven to actually reduce gun violence.

Introduction

SINCE 2019, PORTLAND has experienced a significant increase in gun violence. From 2019 to 2021, the city saw a 144% increase in homicides.[1] While many similar cities, including Minneapolis, San Francisco, and Denver, all experienced increasing homicide rates during the COVID-19 pandemic, Portland's increase was more than double peer cities'.[2] The majority of those homicides (75%) were the result of a gunshot.[3] In both 2021 and 2022, Portland experienced over 1,300 shooting incidents overall, a 218% increase from 2019,[4] and 2022 held an all-time record 101 homicides.[5] While the impacts are felt throughout the city, some neighborhoods and communities feel the effects more than others. For instance, in 2022, 47% of homicide victims were Black, a rate more than 15 times higher than the murder rate for white community members.[6] This stark disparity for those impacted by gun violence only increases the pressure on the City and community leaders to do something to reverse this troubling trend.

On July 21st, 2022, Portland Mayor Ted Wheeler announced a "gun violence emergency" to expedite city-developed plans to address the issue.[7] One strategy is to implement a gunshot detection technology, most likely a California-based technology called ShotSpotter. ShotSpotter would install a system of microphones to detect shots fired outdoors in targeted parts of the city.[8] The system typically costs between $65,000 and $90,000 per square mile per year, plus an additional $10,000 in set-up fees.[9] Once installed, the microphones listen for short bursts of loud noises, like gunshots (or fireworks, cars backfiring, and other noises). Multiple microphones triangulate the sound to provide a specific location (ShotSpotter claims the location information is accurate within 82 feet[10]) and alert a ShotSpotter employee. That employee then reviews the audio and, if they determine the sounds to be gunfire, alerts a law enforcement dispatcher.[11] According to ShotSpotter, the technology provides quicker and more accurate information to law enforcement, better enabling them to respond, investigate, and ultimately reduce

gun violence.[12] However, in other cities with the technology, ShotSpotter has had few, if any, positive impacts on community safety. ShotSpotter has instead resulted in high costs to taxpayers, significant increases in police workloads, and civil rights abuses.

Currently, over 100 cities are contracted with ShotSpotter[13]; however, at least twenty-five cities and counting, including Charlotte, San Antonio, and Atlanta, have either declined to engage with ShotSpotter or decided against renewing a contract with ShotSpotter.[14] Most of the latter cite ShotSpotter's high price tag and a lack of positive benefits.[15] Portland needs strategies targeting the increase in gun violence, but ShotSpotter is not the answer. As this report will show, the hypothetical benefits of ShotSpotter will have no impact on gun violence, but the incredibly real drawbacks of the technology will further victimize the very communities it purports to benefit.

Portland succumbs to ShotSpotter's marketing pressure

IN THE MIDST of Portland's increasing gun violence, ShotSpotter sold itself as a potential solution. According to City documents obtained via public records requests, ShotSpotter began aggressively marketing itself to the Portland Police Bureau (the Bureau) as early as fall 2021. Initially, Bureau leadership expressed skepticism that gunshot detection technology would help address gun violence.[16] However, text messages and emails obtained via public records requests demonstrate how ShotSpotter exploited the victims of Portland's gun violence to try to convince the Bureau to award them a lucrative contract. In fact, between November 2021 and October 2022, one ShotSpotter employee texted Portland Police Captain James Crooker over 65 times, often with messages like those seen in Figure 1. Unfortunately, these manipulative tactics by ShotSpotter worked and the Bureau began touting ShotSpotter as a solution to Portland's gun violence.[17]As a first step to bring ShotSpotter to Portland, Portland Police connected ShotSpotter's marketing team with the Focused Intervention Team Community Oversight Group (FITCOG), an advisory group appointed by the Mayor's Office and City Council to work with the Bureau on gun violence intervention strategies.[18] On December 16, 2021, ShotSpotter made a presentation to the FITCOG.[19] We requested minutes, video, and any presentation documents ShotSpotter provided to FITCOG, but were directed only to the meeting website, which included none of the materials requested.[20] Captain Crooker also encouraged FITCOG members to communicate with ShotSpotter directly, but to use

FIGURE 1: *Sample text messages from ShotSpotter employee Terri Green to Portland Police Captain James Crooker*

their personal emails to avoid public records (see Figure 2). After several of these closed-door conversations, presentations, and a trip to Tampa for some FITCOG members to see ShotSpotter in action,[21] in July 2022 the FITCOG made a formal recommendation to Mayor Ted Wheeler to implement a pilot project with ShotSpotter[22].

I'm aware there is some desire to coordinate a followup presentation for the FITCOG. I'll step back and let you coordinate that directly.

As we are all aware, Lt. Duilio, Edith Thrower and I are all public employees. We are subject to a number of rules and all our communications are subject to public information laws. The City of Portland is lucky to have a dedicated group of private citizens such as yourselves who serve as volunteers. As you make a determination about if/how to proceed, **I would encourage you to share your contact information directly if you are comforable doing so in order to communications amongst yourselves throughout this process.**

FIGURE 2: *Email from Captain James Crooker to FITCOG members (2 June 2022)*

After receiving the FITCOG's recommendation, the Mayor's Office initially stated they would bring a proposal to City Council to fund a ShotSpotter pilot program.[23] Controversially, the Mayor's Office said it would move forward with a sole source contract with ShotSpotter and not conduct a competitive process.[24] Even after a competitor (EAGL Technologies) reached out to the City and FITCOG requesting to present their technology as an option, the City and FITCOG both denied EAGL's request for a multitude of reasons, including not wanting to consider a competitor of ShotSpotter and that they were too far along in the process (see Figure 3). However, after the media reported on the controversial decision not to conduct a competitive process, the Mayor's Office walked that plan

All,

Here are a few quick points on this matter:

1. **They are a direct competitor of ShotSpotter.**
2. They have presented to PPB and only received a lukewarm response.
3. I met with one of their representatives after the ShotSpotter recommendation was moved forward. It was interesting but not impressive or convincing.
4. I have declined two meeting attempts by Joe Swan.
5. If you think you can overcome the capture of personal cellphone data and personal location capability...good luck.
6. **If you now want to advance a competitive system to ShotSpotter...good luck.**
7. **Personally, I will not now argue against an already staked out position.**

FIGURE 3: *FITCOG chair, stating reasons not to consider EAGL*

back, saying they would instead solicit bids from ShotSpotter and other gunshot detection companies.[25] While the process is now competitive, because ShotSpotter molded the City's interest in gunshot detection technology to only the services it provides, it is likely ShotSpotter will ultimately beat any competitors in the process.

Clearly, the process for bringing ShotSpotter to Portland has not been without controversy. Besides the concerns listed throughout this report, the City's desire for a ShotSpotter pilot appears to result from a strong pressure campaign from ShotSpotter itself, rather than an actual need for this technology.

The City of Portland is considering gunshot detection technology because ShotSpotter took advantage of rising gun violence and city leaders desperate to appear responsive to media pressure and community concerns. The FITCOG, Police Bureau, and Mayor's Office express a sincere desire to reduce the number of victims of gun violence. While the process to get to a pilot remains questionable, the primary question should be whether ShotSpotter technology would actually help address Portland's gun violence. As the next section makes clear, the answer is no.

ShotSpotter fails to improve community safety

SHOTSPOTTER CLAIMS GUNSHOT detection technology can help police make arrests, solve cases, and reduce or prevent shootings.[26] If that were true, we would expect to see arrest and case-solve rates increase while shootings and homicides decrease after jurisdictions implement ShotSpotter. However, when researchers look for evidence of ShotSpotter's positive effect on community safety, they find none. Part of the reason might be that the accuracy with which ShotSpotter identifies gunfire is lower than ShotSpotter likes to suggest. Or that merely detecting shots fired does nothing to aid police after the alert. Researchers do find a significant increase in police workload, but without much impact on community safety.

ShotSpotter does not accurately report shots fired

While ShotSpotter claims the technology identifies and alerts law enforcement to gunshots with a 97% accuracy level, researchers and jurisdiction experiences indicate ShotSpotter both under- and overreports shots fired. Underreporting means ShotSpotter failed to detect gunfire when it occurred. Even if the reported accuracy rate is true, it still means ShotSpotter misses a significant number of gun shots. For instance, the City of Chicago reported 466 gunfire incidents in a six-month timespan where ShotSpotter never detected a noise, failed to send an alert to police, or provided the police the wrong location.[27] These incidents include only those the police learned about through other means and filed a complaint about with ShotSpotter[28]; the real number of underreported shots is likely higher. Fall River, Massachusetts, chose to end its use of ShotSpotter technology due to its inaccuracy, including missing all seven shots fired in a 2018 murder in its downtown.[29] Fall River Police Chief Al Dupere expressed his frustration, saying, **"Even if nobody had gotten hit, it still missed all the gunshots. That's what we're paying them for."**[30]

ShotSpotter acknowledges that the 97% accuracy "guarantee" was created by the sales and marketing department.

Overreporting occurs when ShotSpotter sends an alert to law enforcement for a sound that turns out not to be gunfire (false positives). ShotSpotter has never allowed an independent audit of its technology to determine its true accuracy rate, though one study commissioned by ShotSpotter[31] found sounds including dumpsters, helicopters, fireworks, construction, church bells, and cars driving over potholes all triggered the technology.[32] ShotSpotter claims only 0.5% of all alerts are false positives.[33] However, the number of ShotSpotter jurisdictions reporting how frequently alerts led to no evidence of shots fired indicates the number is much higher. For example, San Diego officers marked 72 of 584 ShotSpotter alerts over four years as "unfounded," meaning officers found no evidence of any crime, such as shell casings.[34] Fall River found about half of all ShotSpotter alerts were false positives.[35] Even in research that ShotSpotter relies on for their marketing,[36] researchers remove July 4, December 31, and January 1 from their analysis because the likelihood of false positives (from fireworks) would have resulted in inaccurate research and conclusions.[37]

While ShotSpotter stands by their accuracy rating and continues to publicly criticize any studies to the contrary,[38] they also acknowledge that the 97% accuracy "guarantee" was created by the sales and marketing department, not based on an engineer's calculation. It also claims that its data are based on national averages and blames different numbers on law enforcement agencies' reporting or implementation. Even if true, the "97%" accuracy number touted to Portland by ShotSpotter will likely not be realized, due to both unreported gunfire and police responses to false positives. In the event that the inaccuracy rates above 80% reported by some cities are outliers, as ShotSpotter claims, Portland should not simply hope for the 97% accuracy touted by ShotSpotter.

ShotSpotter does not increase arrests, gun seizures, or case-solve rates

In theory, gunshot detection systems deploy law enforcement to the location of a crime quickly, enabling officers to apprehend the individual responsible for the crime or collect evidence that leads to their apprehension. In practice, law enforcement agencies realize few of these benefits. One reason, as discussed above, is that in many cases ShotSpotter either erroneously sends police to investigate fireworks or jackhammers or fails to alert police to gunshots at all. Another is that the reductions in response time are not sufficient to make a difference. Given the long response time the Bureau currently struggles with (an average of 24.6 minutes for a "shots fired" call), shaving even an optimistic estimate of a few minutes off response times would be unlikely to result in a meaningful change in investigatory opportunities, since shooters and witnesses would still be long gone. ShotSpotter's own contract language contains disclaimers about any reduction in gun violence, stating that ShotSpotter does not promise or imply that using the technology will

"result in the prevention of crime or hostile enemy action, apprehension or conviction of any perpetrator of any crime, … or prevent any loss, death [or] injury."[39]

Independent research consistently demonstrates ShotSpotter's lack of impact on actual crime. For example, one study looked at jurisdictions with ShotSpotter and those without from 1999 to 2016 and found ShotSpotter implementation made no difference in homicide rates, number of homicides "solved", or weapons charges.[40] This led the study authors to conclude, "there is a lack of evidence to support a return on investment (monetary or otherwise) from implementing [ShotSpotter] technology." Even research conducted by an agency funded by ShotSpotter found no effect on reported crime and no increase in gun-related or any other arrests, though it did find an increase in police workload.[41]

Only 10% of Shotspotter alerts led to a gun charge and over 70% of alerts led to no findings at all

Cities with ShotSpotter technology report similar results. For example, in Chicago, an Inspector General's report found that only 10% of ShotSpotter alerts ended with an individual being charged with a gun-related crime. In fact, the report found over 70% of ShotSpotter alerts resulting in no findings at all,[42] meaning no evidence, no suspects, and no arrests. Dayton, Ohio, chose not to renew their ShotSpotter contract after finding only 2% of deployments resulted in an arrest. After one year using ShotSpotter in San Antonio police had made only four arrests and seized seven weapons.[43] The San Diego Police Department stated that it only made two arrests due to a ShotSpotter alert after four years of using the technology.[44]

Research and the experiences of other ShotSpotter jurisdictions demonstrate that, in addition to responding to false alerts, Portland Police are likely to find that most ShotSpotter deployments make no difference in solving or preventing gun crime in Portland.

ShotSpotter significantly increases police workload

While there is little evidence to support ShotSpotter having any impact on crime, there is ample evidence that ShotSpotter significantly increases police workloads. As a logical consequence of installing ShotSpotter alert systems in some neighborhoods, police will be called to respond to more potential incidents. For instance, research conducted by an organization ShotSpotter provides funding to found ShotSpotter increased the number of incidents police responded to by four times.[45]

This significant increase in workload comes at a time when Portland Police claim to be overburdened and understaffed.[46] In November 2022, weeks after announcing a planned ShotSpotter pilot, the Police Bureau's annual report to Council stated that it did not have minimal staffing to respond to calls for service.[47] In fact, the Bureau has complained so much

Portland's average response time for "shots fired" went from under 8 minutes in 2019 to nearly 25 minutes in 2022, a 228% increase.

about its staffing problems that the Mayor said during the annual report presentation, "Let's stop talking about our inability to respond to crime in the community. Let's stop advertising to criminals that they are going to get away with it."[48] However, the Mayor did not refute the Bureau's claims. Community members and businesses already complain about a lack of timely police response to calls for service, including high-priority calls.[49] Even when illegal street racing closed major streets in Portland, the police failed to respond to calls reporting such incidents, claiming "critical understaffing".[50]

Portland Police are already finding difficulty responding to reports of gunfire. According to their own data, the average amount of time it takes the police to respond to a "shots fired" call increased from 7.5 minutes in 2019 to 24.6 minutes in 2022, a 228% increase.[51] Nearly 45% of "shots fired" response times are over ten minutes, and 4% take over two hours.[52]

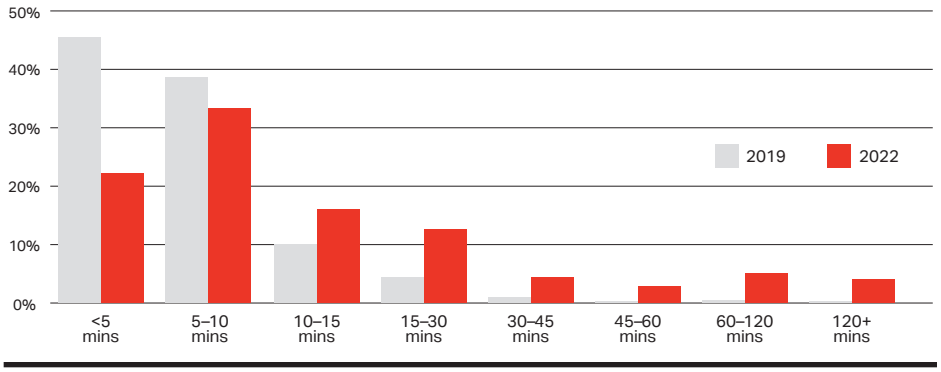


FIGURE X: *Portland Police response times to shots fired*

Given the Portland Police's current concern about understaffing, community reports of a lack of response, and the data clearly indicating the police are unable to respond to shots fired in a timely manner, it is difficult to understand how implementing a technology that will only increase demands for police time will provide any benefit to the community.

ShotSpotter risks civil rights violations

WHEN A CITY IMPLEMENTS SHOTSPOTTER, those neighborhoods and community members become subjects of audio surveillance. Beyond basic privacy concerns, the mere presence of ShotSpotter changes the relationship between that community and their government. Instead of the community inviting law enforcement in by calling 911, law enforcement responds to an automatic alert of a loud sound. As discussed above, this sound could be gunshots, or it could be fireworks, a car door slamming, or a jackhammer.[53] But police do not know the situation they enter after a ShotSpotter alert. Unlike a 911 call, ShotSpotter alerts provide no context, like whether anyone remained on the scene, how many people are there, who might be armed, or whether someone is injured. As a result, police enter every scene prepared for the worst. And when they do, they put the civil rights and safety of the community at risk.

ShotSpotter creates privacy concerns as the microphones listen 24/7

Gunshot detection technology is surveillance technology. ShotSpotter puts the community under constant surveillance with microphones that are always on.[54] This expansion of the surveillance state creates the potential for invasive government practices that violate an individual's privacy, and the consequences and potential impacts are unknown.

In 2019, ShotSpotter commissioned a privacy audit, conducted by The Policing Project, which receives funding from ShotSpotter and on whose board of directors ShotSpotter's CEO sits. The audit concludes that the risk of ShotSpotter being used for audio surveillance is low but not zero, because the technology is capable of picking up street noise (including conversations), the audio is recorded for a period of time, and ShotSpotter employees can review the recordings.[55] In response to the audit, ShotSpotter implemented several recommended privacy protec-

tions, including reducing the amount of time audio is stored, challenging subpoenas and other requests for audio beyond the gunfire, and making clear in policy documents and agreements with law enforcement the technology is not to be used for audio surveillance.[56] However, these strategies merely mitigate the risk that audio recordings are used for purposes other than gunshot detection; the risk still exists. Partial limits on how recordings are used do not dispel the uncomfortable knowledge that microphones are recording every sound.

Furthermore, the report notes, under most contracts, ShotSpotter owns the data it collects, including audio recordings. Thus, ShotSpotter can and does share that data with law enforcement and third parties. ShotSpotter's policies currently only allow it to share data related to a gunshot with law enforcement, including one second before and one second after the alerting sound.[57] The audit states that ShotSpotter does not currently share audio data with third parties (as of 2019), but that could change.[58] And since ShotSpotter, not the city, owns the data, the data can be shared with other entities, which not only compounds the privacy issues, but also raises other civil rights issues. For instance, ShotSpotter could choose to share audio or other data (including gunshot location data) with other law enforcement agencies (e.g., Immigration and Customs Enforcement) that use the data to target certain communities or insurance agencies that use the data to charge certain communities more in insurance.[59]

Oregon privacy law is clear: all parties to an in-person conversation must be warned before they can be recorded. Otherwise, the recording is illegal.[60] ShotSpotter's microphones record conversations as they record the sounds of the city – church bells, construction, cars driving over potholes, and, occasionally, gunshots. Parties to these conversations are not warned. On the contrary, ShotSpotter refuses to publicly disclose the locations of its microphones.[61]

The purpose of this law is to relieve Oregonians of the specter of being recorded in public places without their knowledge.[62] Therefore, the warning must be clear and unequivocal.[63] This law has exceptions to allow police to record people during face-to-face encounters, but concealed microphones that record all the time without a warrant are far outside these exceptions. In addition to civil liability, ShotSpotter and the City of Portland could be guilty of criminal conduct for surreptitiously recording conversations.[64]

ShotSpotter technology adds a level of surveillance and an infringement on the privacy of community members not currently seen in Portland. As the feeling of being furtively recorded on sidewalks and in parks proliferates, people will be less and less willing to talk freely in these places, changing the culture and livability of the city.

The mere presence of ShotSpotter in a neighborhood has directly increased the likelihood that random innocent community members will be stopped and frisked by police officers.

ShotSpotter alerts lead to indiscriminate stops and searches

The U.S. Constitution protects individuals from being stopped or searched by police unless they have a reasonable suspicion the person is participating in criminal activity. Case law based on Article I, Section 9, of the Oregon Constitution treats such encounters as seizures, and Oregon courts have developed robust restrictions on the length and scope of such stops. Unfortunately, when ShotSpotter alerts law enforcement of shots fired in a particular location, police can and do treat anyone in the vicinity with the suspicion (reasonable or not) that they were involved in an incident of gun violence.

For example, in Chicago, the Inspector General found that, while only 2% of ShotSpotter alerts led to a stop,[65] the mere presence of ShotSpotter in a neighborhood changed the way police interacted with the community. In fact, some officers reported that they would stop individuals simply because of their presence in a neighborhood the officer believed to have frequent ShotSpotter alerts.[66] Some officers even admitted to conducting protective pat downs (frisks) during a stop simply because they knew they were in a an area with ShotSpotter.[67] In other words, the mere presence of ShotSpotter in a neighborhood has directly increased the likelihood that random innocent community members will be stopped and frisked by police officers. To be clear, in Chicago these stops rarely led to arrests, meaning officers found no illegal weapons or evidence they had committed any crimes. In fact, in only 14% of stops conducted after a ShotSpotter alert (and only 0.3% of ShotSpotter alerts generally) did police actually find a weapon.[68]

After a ShotSpotter alert, police naturally approach a location expecting to encounter the aftermath of gun violence, including the perpetrators. However, police are likely to respond several minutes after the alert. Even if shots were fired, the shooter is likely to be the first to leave the area. And yet other cities demonstrate that officers will still use the alert itself as justification to stop anyone unlucky enough to be in the area. Just living, working, or passing through an area with ShotSpotter puts people at risk for being stopped and searched.[69] While such police behavior might be unconstitutional, community members subjected to the unconstitutional policing have little recourse. The best option to reduce this risk would be to avoid implementing the ShotSpotter technology that gives police the opportunity to use it as further means to subject the community to such unconstitutional policing.

Law enforcement can falsify ShotSpotter data to justify unconstitutional uses of force or false arrests

In order to mitigate some of the accuracy issues discussed above, ShotSpotter provides law enforcement the option to contact the company and ask them to review their initial assessment of an incident and potentially change it. This process has been used by law enforcement to falsify evidence that justifies their unconstitutional uses of force or false arrests.

For example, an officer responding to a late-night call for service in Rochester, New York, encountered Silvon Simmons, a Black man parked with his neighbor in his neighbor's driveway, having just returned from a trip to the store.[70] The officer, without identifying himself as a police officer, shined a bright spotlight at Simmons and began running toward him with his gun drawn. Simmons, who was not involved with the crime the officer was responding to, was unarmed, and had not made any threatening actions toward the officer, ran away from the officer. The officer fired four shots at Simmons's back as he was running away, three of which hit him in the back and upper leg. The officer claimed Simmons had shot at him first, despite finding only four shell casings and no gun on Simmons. ShotSpotter did not initially send an alert to the police for any of the shots fired. After the police informed ShotSpotter of the shooting, ShotSpotter then detected just the four shots from the officer. However, the Police Department then requested ShotSpotter look again. At that point, ShotSpotter amended their report to include a fifth shot. ShotSpotter's forensic report provided to the police reported five shots fired, though the judge in the case found that evidence unreliable. Simmons was charged with attempted aggravated murder, attempted aggravated assault on a police officer, and two counts of criminal possession of a weapon. Though he was eventually acquitted of all charges after spending 18 months in jail going through a full trial, Mr. Simmons's ordeal demonstrates the potential danger of ShotSpotter's willingness to alter their reports to fit the false narratives of cities that pay them millions of dollars.[71]

In another case, police accused a Chicago man of murder and left him in jail for nearly a year before a judge dismissed the case for lack of evidence. Michael Williams, a then 65-year old Black man, was driving when another car approached and fired into William's car, striking his passenger.[72] Williams then drove to the hospital, where the passenger died.[73] ShotSpotter's initial report provided an approximate location of a single "pop", which the report stated was accurate within 82 feet.[74] (ShotSpotter's AI categorized the pop as a firework with a 99% confidence level, though a ShotSpotter employee overrode that and reclassified the sound as a gunshot.[75]) Three months later, law enforcement arrested Williams for the murder. In response to the arrest and at the request of the police, ShotSpotter produced a "detailed forensic analysis" filed with the court, which changed the location of the alerting

A New York officer fired four shots at Simmons's back as he ran away. Three of those hit him in the back and upper leg. The officer claimed Simmons had shot at him first, despite finding only four shell casings and no gun on Simmons. ShotSpotter did not initially send an alert to the police for any of the shots fired. After the police informed ShotSpotter of the shooting, ShotSpotter then detected just the four shots from the officer.

However, the Police Department then requested ShotSpotter look again. At that point, ShotSpotter **amended their report to include a fifth shot.** ShotSpotter's forensic report provided to the police reported five shots fired, though the judge in the case found that evidence unreliable.

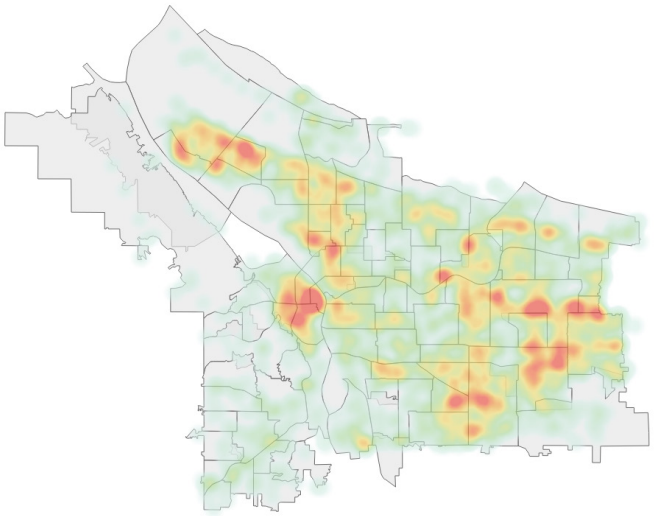
sound from the area in the initial report to a street one mile away, where, according to surveillance video, Williams was driving.[76] When William's defense challenged the ShotSpotter report, the prosecution chose to withdraw the ShotSpotter evidence rather than defend it.[77] Without the ShotSpotter report, prosecutors dismissed the charges, citing "insufficient evidence".[78]

ShotSpotter is incentivized by its lucrative contracts with law enforcement officers to, in the name of good customer service, provide law enforcement with the data and information they request. In court testimony explaining why ShotSpotter reclassified one alert from a helicopter to a gunshot, a ShotSpotter engineer said the company "trust[s] our law enforcement customers to be really upfront and honest with us."[79] This cozy relationship and lack of scrutiny from ShotSpotter increases the risk reports will be changed to match a police narrative, rather than report the facts of a situation.

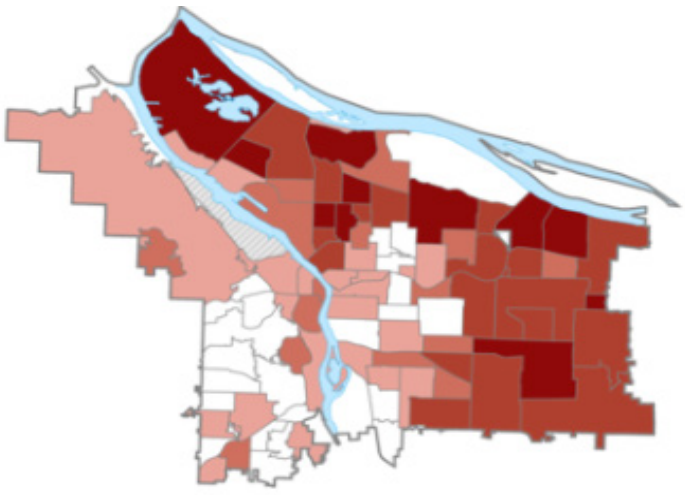
Communities of color primarily bear the negative impacts of ShotSpotter

As Mr. Williams, the man charged with murder based on insufficient and altered ShotSpotter reports, said after his release, "The only places these devices are installed are in poor Black communities… How many of us will end up in this same situation?"[80]

ShotSpotter (correctly) states that the local law enforcement agency selects the geographic location of the microphones based on crime data, i.e., where data suggests shots are currently being fired. However, the presence of ShotSpotter increases the level of surveillance in a com-



Portland shots fired heat map, with darker colors representing more shots fired in that geographic area (2022)[88]



Percent of population that is people of color, with darker red representing higher percentage of people of color (2021)[89]

FIGURE X: Heat map of shots fired in 2022, compared to neighborhood demographics

80% of Black Chicago residents live within ShotSpotter districts, while only 30% of White Chicago residents do.

munity, which can be particularly sensitive in communities of color. As a result, these communities are likely to experience increased police presence (from responding to alerts), increased "high crime" stereotyping, and increased negative, possibly deadly, encounters with police. In Chicago, for instance, ShotSpotter is deployed in 12 of 22 districts. Those 12 districts are also the ones with the highest Black and Latino populations. In fact, 80% of Black Chicago residents live within ShotSpotter districts, while only 30% of White Chicago residents do.[81]

The City of Portland has not released planned ShotSpotter locations, but it is likely that they will be placed in areas with high instances of reported gun violence. These locations also happen to be areas where houseless individuals, low-income families, and people of color live. We recognize that this means these populations are also more likely to be victims of the gun violence. But, because of all the evidence presented above, we believe these communities will receive no benefit to ShotSpotter implementation. Instead, the negative effects, including infringements on privacy, increased police stops and searches, and the potential for police violence, will be primarily felt by these already-vulnerable communities.

Recommendations

THE CITY OF PORTLAND can choose to address gun violence using evidence-based strategies. There is no evidence gunshot detection technologies have any demonstrable effect on gun violence. In fact, most research states that some of the most effective long-term methods to reduce gun violence are community-based, not more law enforcement. It would be irresponsible for the City to invest in ShotSpotter when those resources could be dedicated to implementing or expanding evidence-based strategies to reduce or end gun violence and its impact on communities.

To effectively address gun violence without risking the civil rights and safety of the community, the City of Portland should

1. *Not* pursue ShotSpotter or similar gunshot detection technology, for the reasons above.

2. Deploy law enforcement in a manner that reduces gun violence while lowering the risk of negative interactions with community members, including

    a. Improve response times to shots fired by reducing police workload on matters that can be better resolved without police, and
    b. Build trust in communities and with people most at risk of being impacted by gun violence to improve law enforcement ability to gather accurate and complete information after an incident.[82]

3. Fund community-centered solutions that address gun violence in the short and long-term, including

    a. Invest in community infrastructure (e.g. addressing vacant lots and abandoned buildings, increasing green space, and improving lighting),[83]

b. Provide financial resources and employment opportunities for youth and vulnerable people (e.g., summer jobs programs, financial support for formerly incarcerated people, housing vouchers).[84]

4. Partner with community organizations on violence intervention programs, including

   a. Hospital-based programs that serve patients who are victims of violence by connecting them to services and programs that reduce risk of retaliation and future violence,
   b. Community-based programs like Operation Ceasefire in Oakland, California,
   c. Conflict mediation programs,[85] and
   d. Creating alternative spaces, such as community centers and parks.[86]

5. Engage with community leaders, stakeholders, researchers and academics to determine which strategies are most effective at addressing and preventing gun violence in Portland.[87]

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