



OPD ShotSpotter Contract Renewal

City Council Meeting

October 15, 2024



ShotSpotter in Oakland Police Department

ShotSpotter is a valuable tool for OPD that is imbedded in daily operations.

Rapid Response &
Situational Awareness



- ✓ Alerts received **within 60 seconds**
- ✓ Exact location with supporting audio and rounds fired
- ✓ Situational awareness for officer safety

Initial Scene
Investigation



- ✓ Identify victims and **Render Aid**
- ✓ Speak with witnesses
- ✓ Collect valuable evidence (shell casings, etc.)

Crime Lab Evidence &
Case Management



- ✓ Document findings from case
- ✓ Log **evidence for lab testing**
- ✓ Track Crime Gun findings and matches

Shooting Review &
CeaseFire



- ✓ **Support gun violence intervention activities**
- ✓ Weekly review of shooting investigations
- ✓ Collaboration on incidents and potential retaliation

Ongoing Gunfire
Intelligence



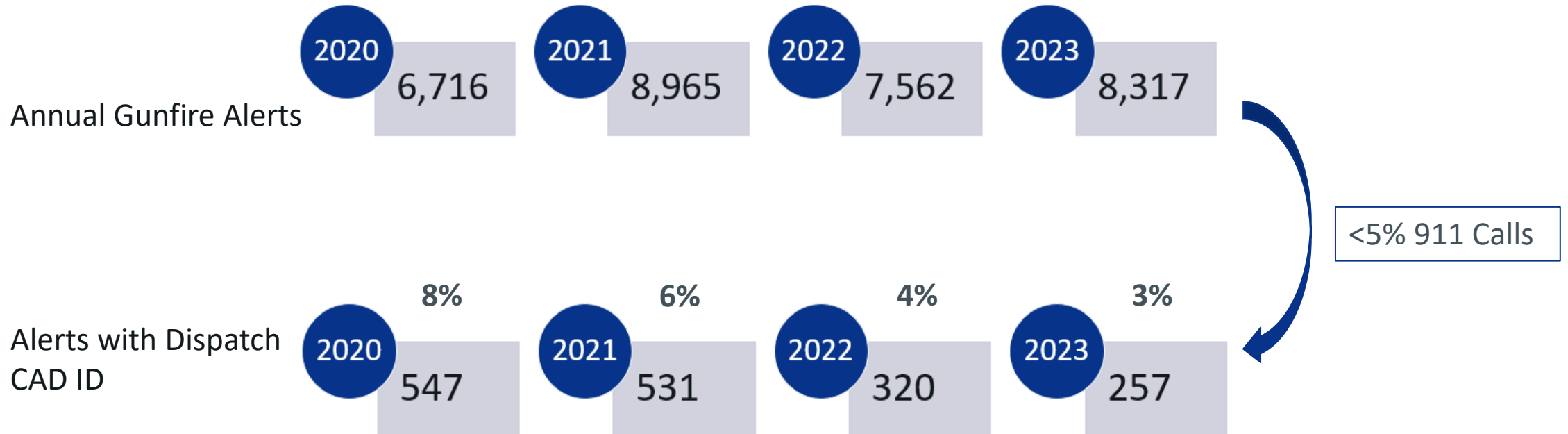
- ✓ **Data-driven strategies & resource deployment**
- ✓ Aggregate data for trends and patterns
- ✓ Intelligence to support investigations



Gunfire Activity in Oakland

More than 95% of Gunfire is not reported in the first 15 minutes or at all.

Without this critical tool for public safety, gun fire in Oakland would largely go unreported.



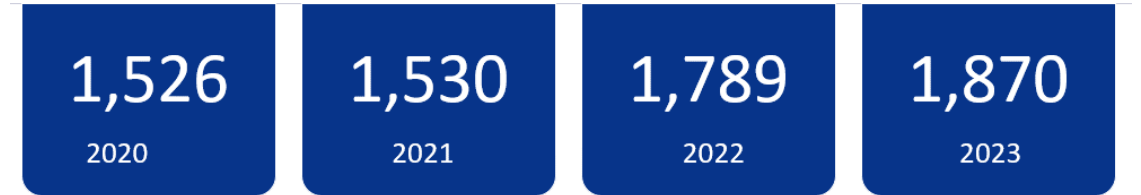


The Value to Oakland – Key Metrics

Non-fatal Victims associated with ShotSpotter Alert



Reports Taken



The absence of physical evidence does not indicate a false positive or that gunfire did not occur

700-1,000: Additional reports each year. Classified as Evidence Technician, Transport, Assignment Report or Administrative

Cost of Gun Violence



<https://costofviolence.org/oakland-ca/>



Data Sources		Oakland California				
CRIME SCENE	Subject: Police Response	Fire/EMT Transport	Scene Clean Up			
	Source	• Oakland Police Department Interview	• City of Oakland Adopted Policy Budget, Fiscal Year 2019-2021	• The National Cost of Gun Violence: The Price Tag for Taxpayers		
HOSPITAL	Notes	Initial OPD response to a homicide scene typically includes 12 Patrol, 1 Lieutenant, 2 Sergeants, and 2 Detectives. They remain on the scene for 5-6 hours. Initial OPD response to an injury shooting scene typically includes 6 Patrol, 1 Sergeant, and 2 Detectives. They remain on scene for 2-3 hours.	Fire & EMT Budget: \$169,585,818 Total Responses: 60,000 average Cost per response = \$2,826	\$2,500 is the national average cost for cleanup of crime scenes involving blood, based on NICJR analysis of actual costs from multiple cities.		
	Subject: Emergency Room / Surgery for Gun-Shot Victim	Source • 2020 National Trends and Cost Burden of Surgically Treated Gunshot Wounds in the US • 2021 Firearms Injuries: Health Care Service Needs and Costs				
CRIMINAL JUSTICE	Notes	Average cost of gunshot victims treated and released the same day: \$1,428 (ER base cost) Average cost of gunshot victims requiring surgery and hospital stay: \$87,097 (surgery cost) + \$56,092 (hospital stay and care) Average cost of gunshot victims requiring surgery, hospital stay, and release to outpatient care: \$144,617 (ER, surgery, rehabilitation)				
	Subject: Police Investigation	District Attorney & Public Defender	Court Process			
INCARCERATION	Source	• Police FY 2021-23 Proposed Policy Budget	• Salary Reports - Alameda County Human Resource Services • Alameda County Public Defenders Jobs	• Salary Reports - Alameda County Human Resource Services • Survey of Judicial Salaries, SALARY SCHEDULE		
	Notes	The cost of the police investigation is calculated by multiplying the average salary and benefits for officers assigned to the Homicide Division in Oakland by the average amount of time spent investigating homicides and injury shootings.	The cost of prosecution and defense is calculated by multiplying the average amount of time spent by attorneys and support staff by hourly salaries. DA: \$103/hour x 1087 hours for a homicide = \$111,961 plus support staff costs of \$5,973 = \$117,934 Public Defender: \$97/hour x 1087 hours for a homicide = \$105,439 plus support staff costs of \$5,973 = \$111,412 DA: \$103/hour x 155 hours for an injury shooting = \$15,965 plus support staff costs of \$814 = \$16,779 Public Defender: \$97/hour x 155 hours for an injury shooting = \$15,035 plus support staff costs of \$814 = \$15,849	The cost to the court system is calculated by multiplying the average amount of time spent by judges and court staff by hourly salaries. Judge: \$111/hour x 44 hours for a homicide = \$4,884 Court staff (combined hourly rate): \$136/hour x 44 hours for a homicide = \$5,984 Judge: \$111/hour x 6 hours for a non-fatal shooting = \$666 Court staff (combined hourly rate): \$136/hour x 6 hours for a non-fatal shooting = \$816		
VICTIM SUPPORT	Subject: Pre-Trial Incarceration	State Prison: Attempted Murder Case	State Prison: Murder Case			
	Source	• New Thinking in Community Corrections	• The 2020-21 Spending Plan, Judiciary and Criminal Justice • How much does it cost to incarcerate an inmate? • Corrections and Rehabilitation Budget	• The 2020-21 Spending Plan, Judiciary and Criminal Justice • How much does it cost to incarcerate an inmate? • Corrections and Rehabilitation Budget		
LOST REVENUE	Notes	Alameda County Department of Corrections budget: \$205,470,000 Average daily population: 2,000 Average daily cost per inmate: \$281 Average period of pretrial incarceration: 2 years \$281/day x years = \$205,470	California Department of Corrections and Rehabilitation annual cost to incarcerate an adult: \$106,131 Injury shooting conviction sentence: 9 years, subtracting pretrial time served \$106,131 x (9 years - 2 years) = \$742,917	California Department of Corrections and Rehabilitation annual cost to incarcerate an adult: \$106,131 Murder conviction sentence: 25 years, subtracting pretrial time served \$106,131 x (25 years - 2 years) = \$2,441,013		
	Subject: Victim Compensation	Social Service Benefits	Coroner's Office			
CRIME SCENE	Source	• What is Covered - CA Victim Compensation Board	• Supplemental Nutritional Assistance Program • Increases in TANF Cash Benefit Levels Are Critical to Help Families Meet Rising Costs	• MEMO TO ADOPT FEE SCHEDULE FOR CORONER'S BUREAU		
	Notes	The California Victim Compensation Board covers a number of expenses, including but not limited to: • Funeral and burial • Medical, dental treatment, and mental health treatment or counseling • Round trip mileage costs to medical, dental, or mental health appointments • Mental health counseling for minors who witness a violent crime • Home security installation or improvement • Relocation In Alameda County, the average award for victims of injury shootings and for families of homicide victims is \$70,000	A severely injured shooting victim often cannot return to work immediately. Since the victim and perpetrator may be major financial contributors to their households, many families may need to apply for social services support. CA SNAP = \$658 for family of 3 California TANF = \$1,119 for family of 3 This study estimates 1 year of assistance. \$1,777/mo x 12 months x 2 families = \$42,648	Alameda County body storage fee: \$333 Alameda County autopsy fee: \$4,000 Total cost = \$4,333		
HOSPITAL	Subject: Lost Tax Revenue: One Person Incarcerated	Lost Tax Revenue: Murder (Loss of Revenue for Two people)				
	Source	• CA Franchise Tax Board Personal Income Tax Booklet	• California City & County Sales & Use Tax Rates			
CRIMINAL JUSTICE	Notes	State income tax: 1.6% for the first \$20,800; 4% for the next \$9,197 Total annual income tax at \$30,000/year: \$694 Sales and use tax (county and state): 9.25% Total annual sales tax for person earning \$30,000/year and spending 1/3 of income: \$925 Total annual combined tax: \$1,619 Lost tax revenue for a 9-year sentence for attempted murder (\$1,619 x 9 years): \$14,571 If the shooting victim does not work for one year, an additional \$1,619 of revenue is lost. Total Lost Tax Revenue = \$16,190			State income tax: 1.6% for the first \$20,000; 4% for the next \$9,197 Total annual income tax at \$30,000/year: \$694 Sales and use tax: 9.25% Total annual sales tax for person earning \$30,000/year and spending 1/3 of income: \$925 Total annual combined tax: \$1,619 Lost tax revenue for a 25-year sentence for murder (\$1,619 x 25 years): \$40,475 Average murder sentence is 25 years; combined revenue loss for victim and perpetrator is at least \$80,950 (\$1,619 x 25 years x 2 people)	

Defining Accuracy

The absence of physical evidence does not indicate a false positive or that gunfire did not occur.

Lack of a Victim

Lack of Property Damage

Lack of Recovered Casings

Lack of a Filed Case



False Positive

Despite the lack of immediate evidence, the intelligence from shooting trends/patters have provided valuable insights.

Defining ShotSpotter Accuracy

90 % Contractually guaranteed accuracy

97 % Average across all customers

99 % Oakland 2023 Accuracy

Missed Incidents

An unsuppressed gunshot incident that meets reporting criteria but was not detected by ShotSpotter system

Misclassified Incidents

A detected and located incident, incorrectly classified by ShotSpotter. Misclassification types include: **False Positive** and **False Negative** incidents.

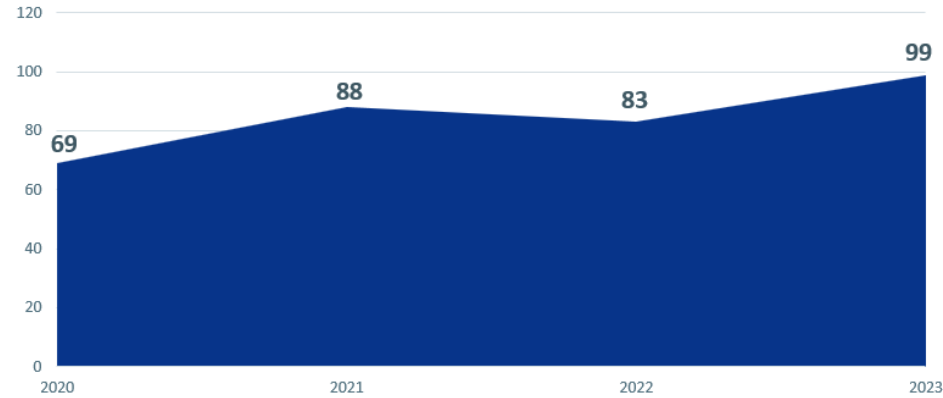
Mislocated Incidents

A gunfire incident correctly identified by ShotSpotter but produced with an inaccurate location greater than 25 meters (82 ft) from the confirmed shooting location.



The Value to Oakland – Key Metrics

Guns Recovered

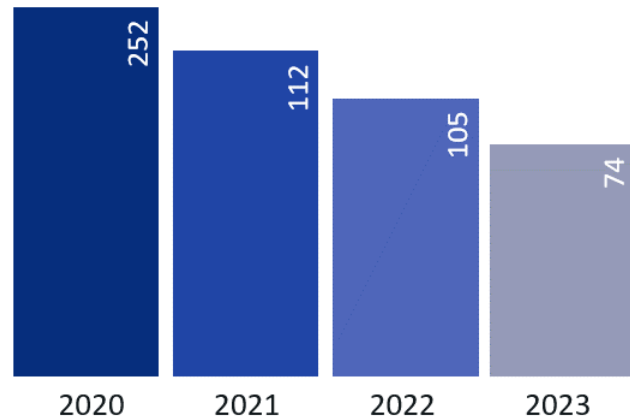


Crime Lab Matches

76% of lab requests are from a ShotSpotter alert

60% of NIBIN hits/leads are from a ShotSpotter alert

Arrests Associated with ShotSpotter Alerts



Crime Lab Requests

1,170
2020

1,108
2021

1,252
2022

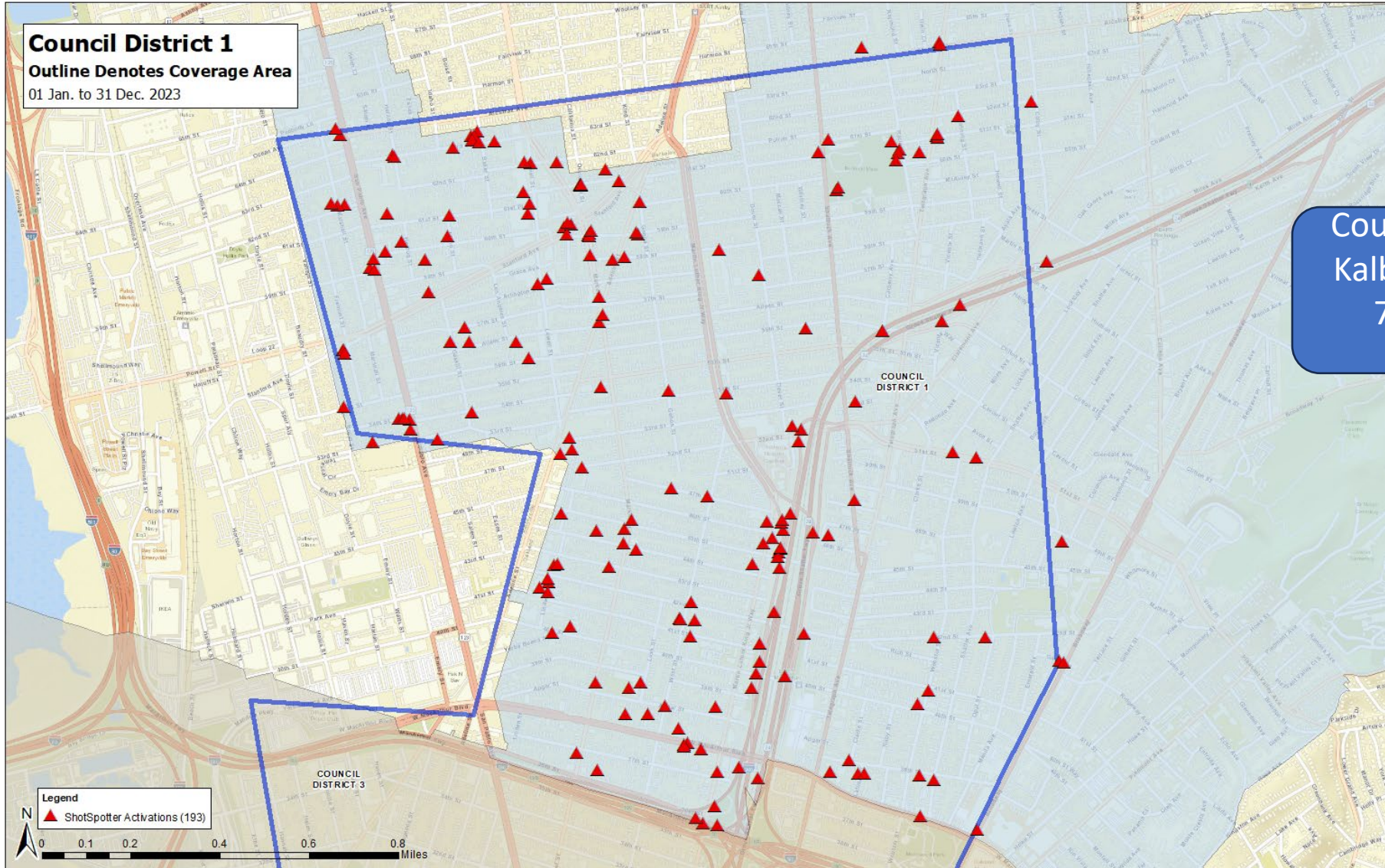
1,290
2023



Gunfire Activity in Oakland – District View

While illegal gunfire is a problem for the entire city, 85% of this activity is concentrated in 4 districts.

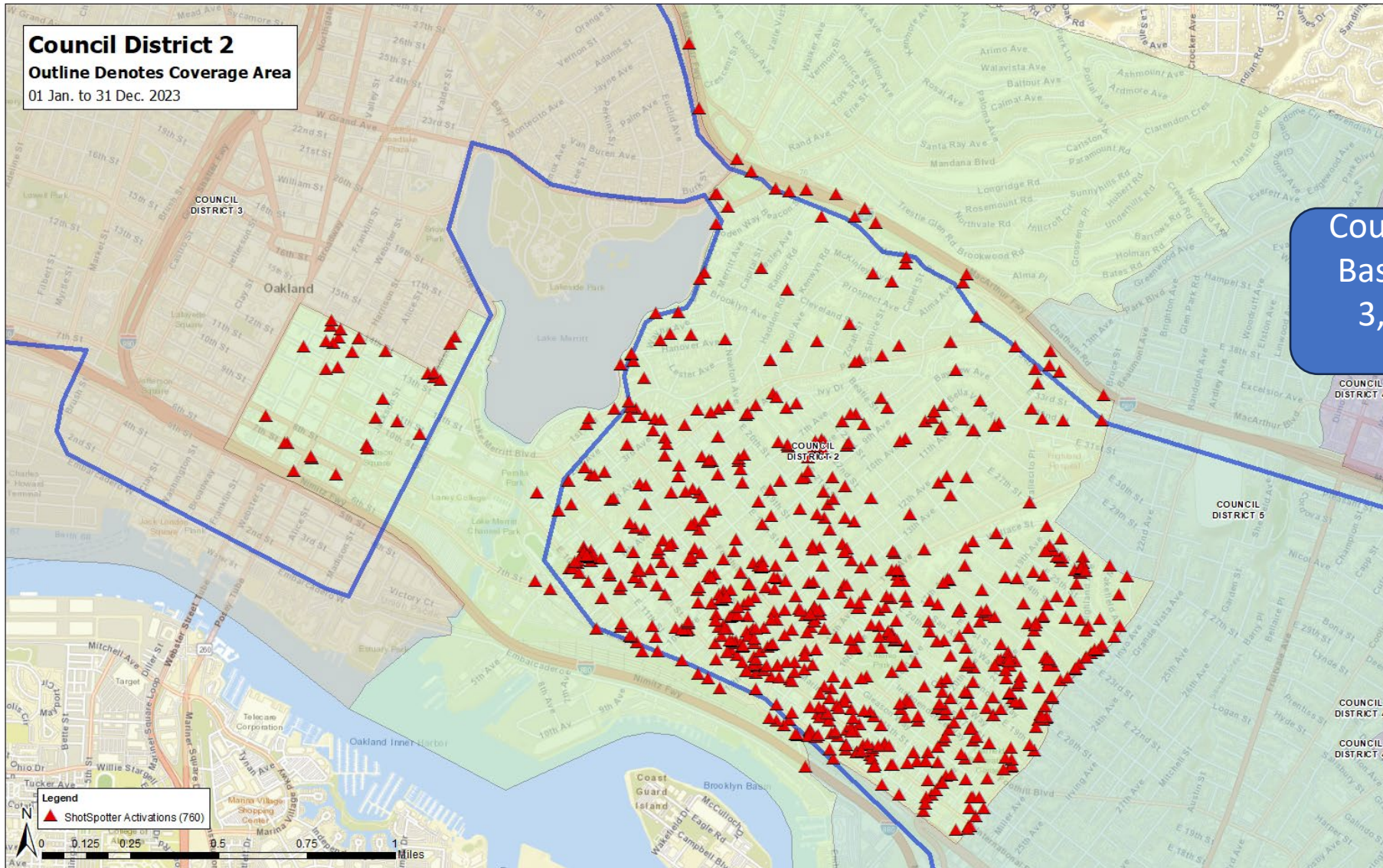
District	2020	2021	2022	2023	Total	
1-Kalb	170	187	149	194	700	2.3%
2-Bas	694	914	754	788	3,150	10.2%
★ 3-Fife	686	1,025	833	850	3,394	10.9%
4-Ramachandran	93	182	262	281	818	2.6%
★ 5-Gallo	1,364	1,706	1,267	1,443	5,780	18.6%
★ 6-Jenkins	1,713	2,419	2,105	2,273	8,510	27.4%
★ 7-Reid	2,001	2,442	1,964	2,272	8,679	31.2%
Total	6,721	8,875	7,334	8,101	31,031	



Councilmember
Kalb – District 1
700 Alerts
2.3%

District	2020	2021	2022	2023	Total
1-Kalb	170	187	149	194	700

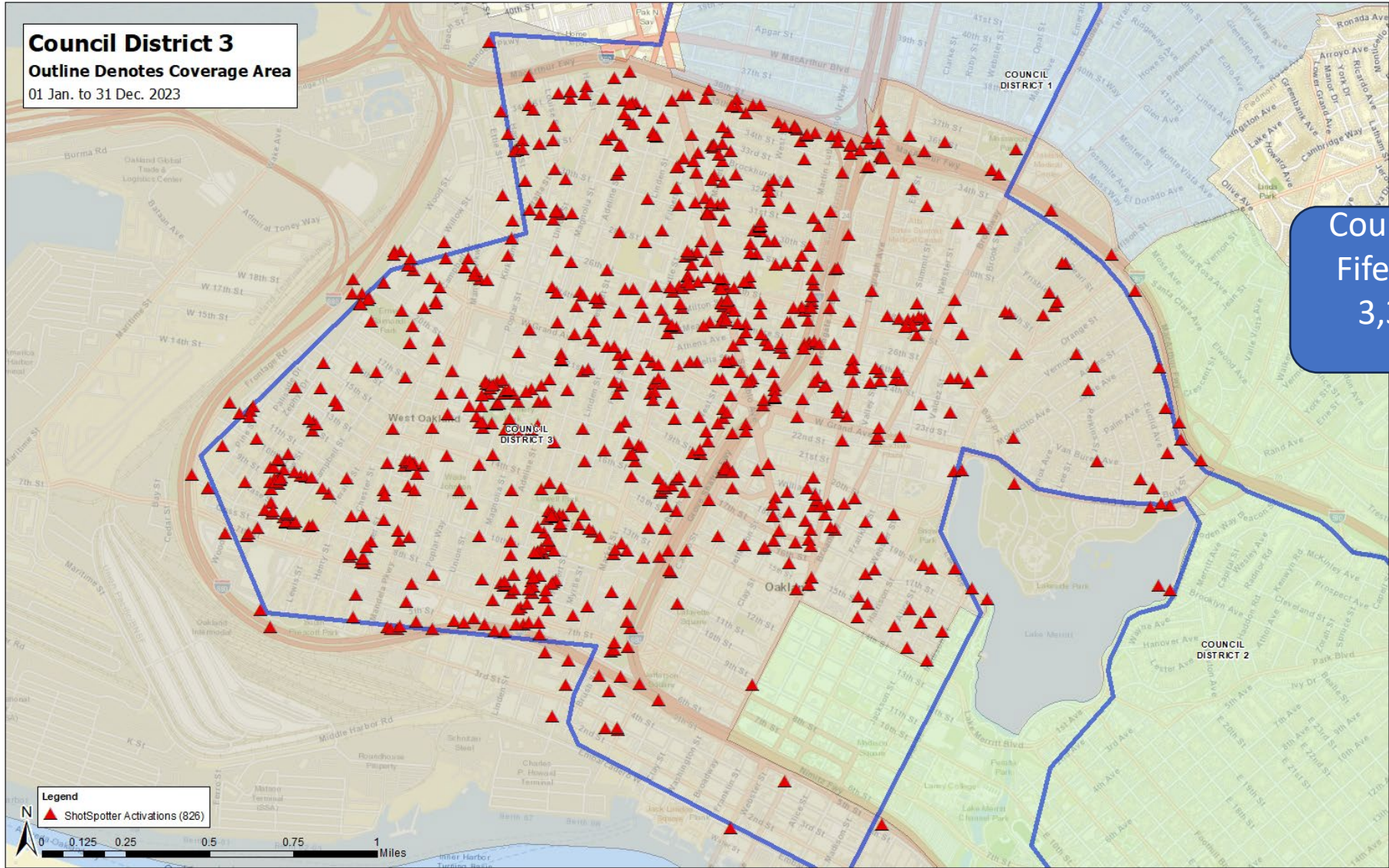
2.3%



Council District 2
Outline Denotes Coverage Area
01 Jan. to 31 Dec. 2023

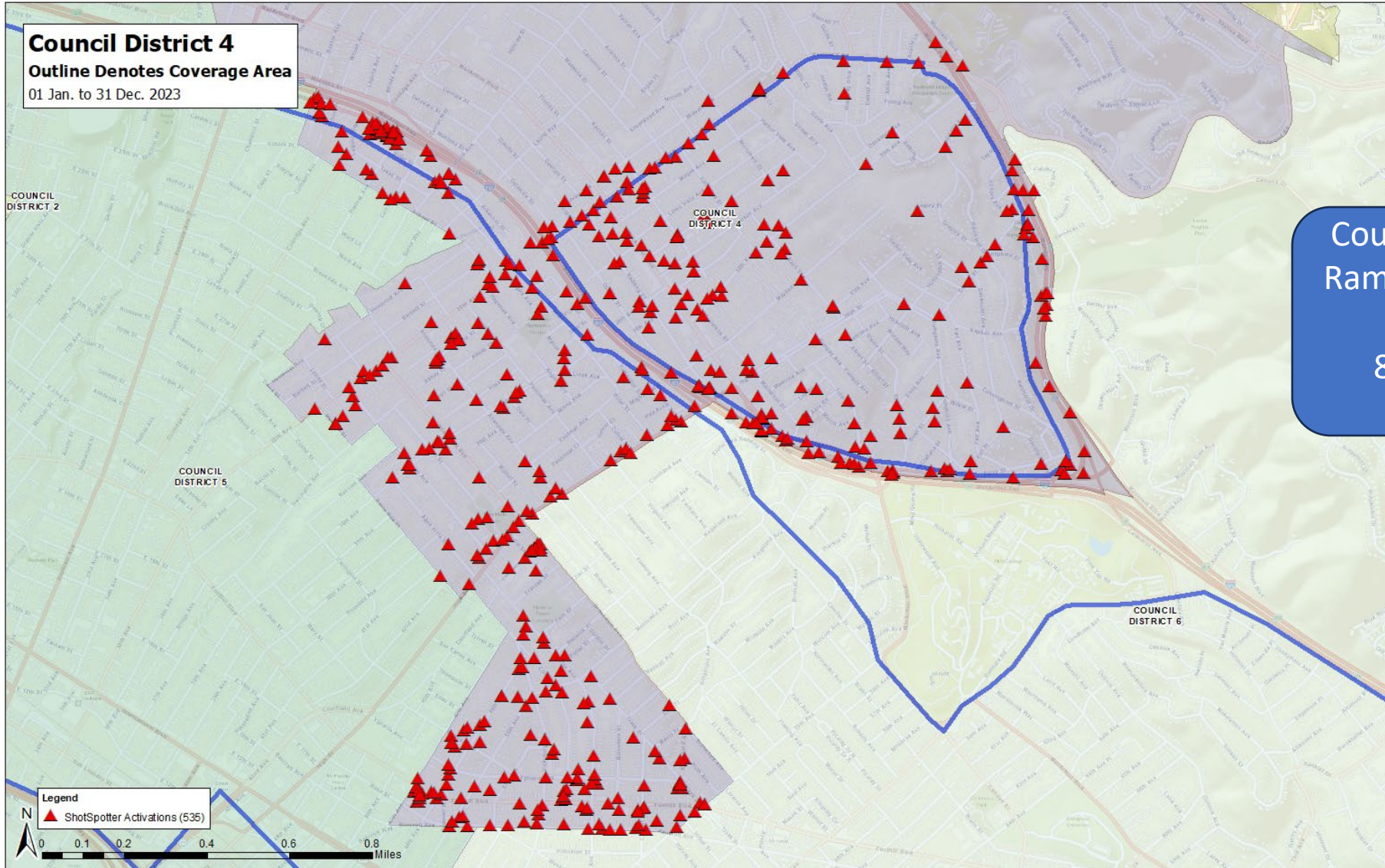
Councilmember
Bas – District 2
3,150 Alerts
10.2%

District	2020	2021	2022	2023	Total	
2-Bas	694	914	754	788	3,150	10.2%



District	2020	2021	2022	2023	Total
3-Fife	686	1,025	833	850	3,394

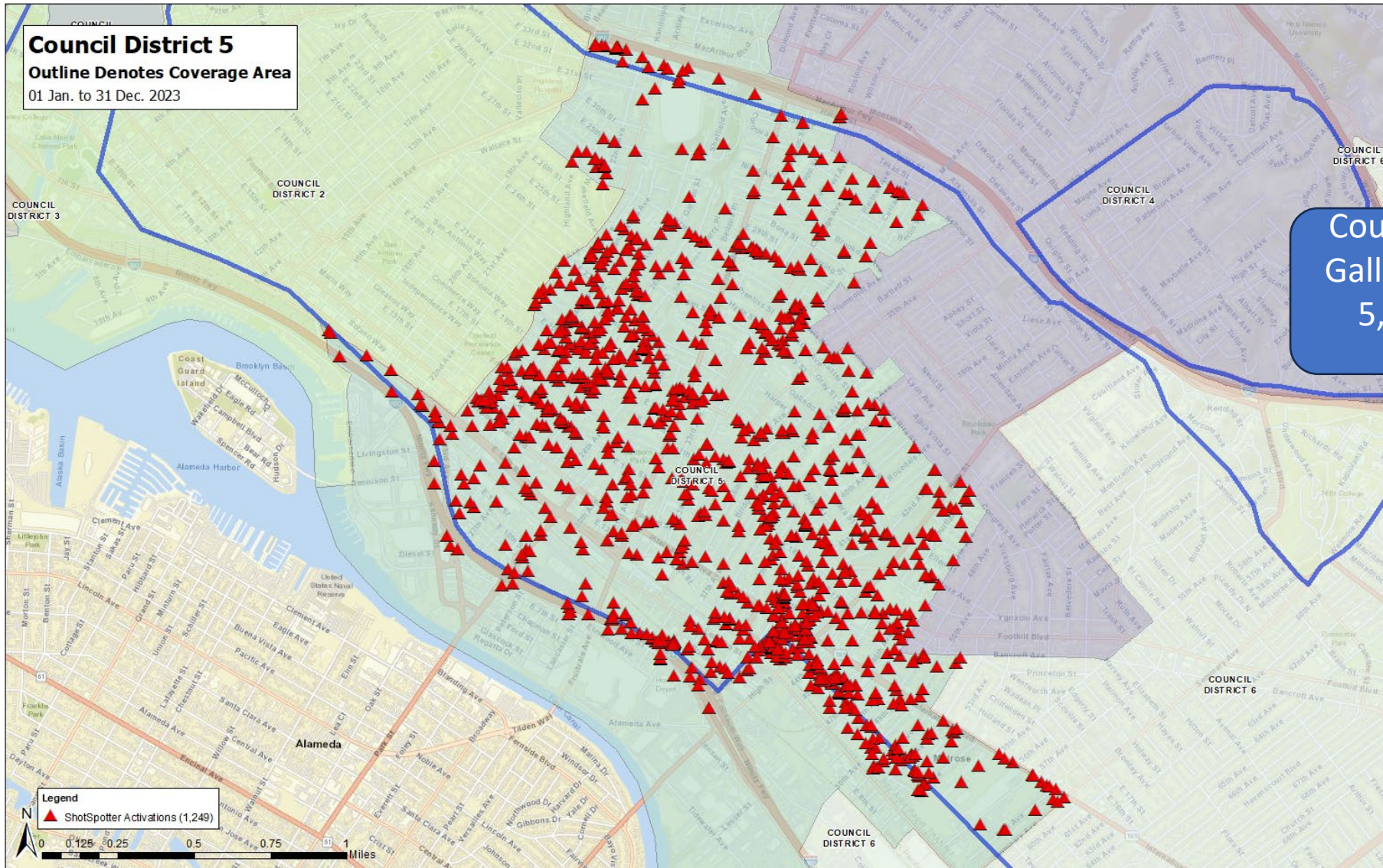
10.9%



Councilmember
Ramachandran –
District 4
818 Alerts
2.6%

District	2020	2021	2022	2023	Total
4-Ramachandran	93	182	262	281	818

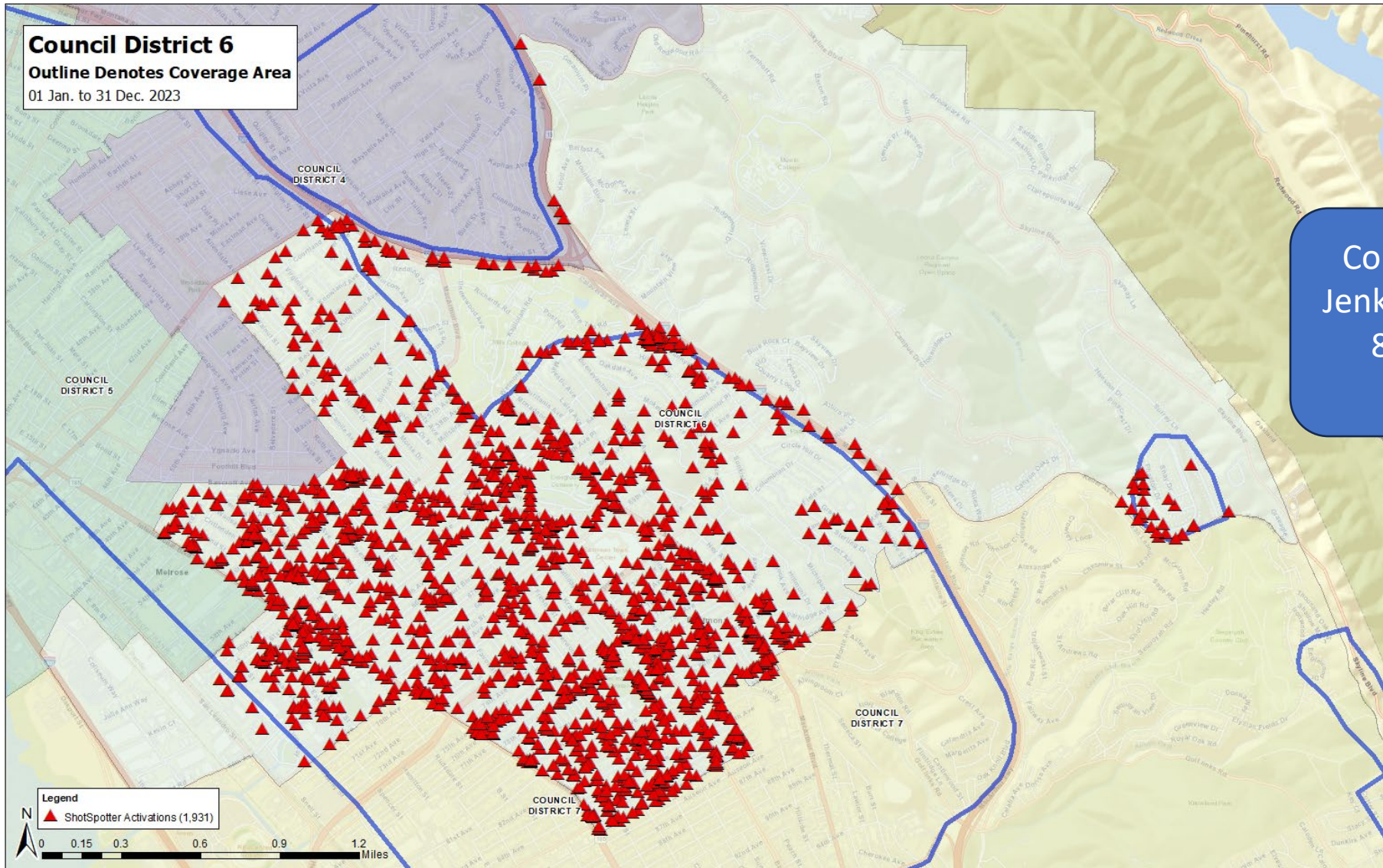
2.6%



Councilmember Gallo – District 5
5,780 Alerts
18.6%

District	2020	2021	2022	2023	Total
5-Gallo	1,364	1,706	1,267	1,443	5,780

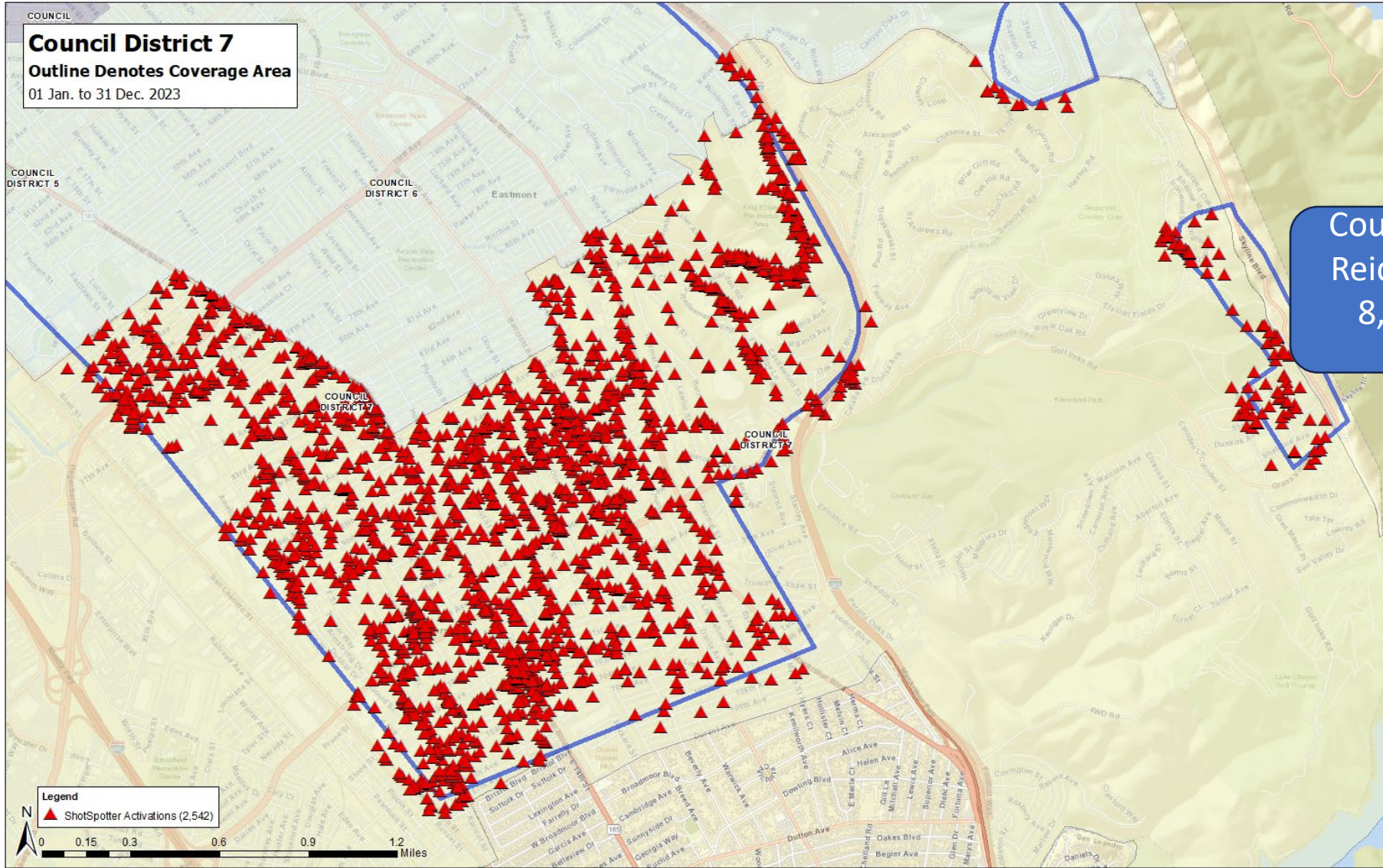
18.6%



Councilmember
Jenkins – District 6
8,510 Alerts
27.4%

District	2020	2021	2022	2023	Total
6-Jenkins	1,713	2,419	2,105	2,273	8,510

27.4%



Councilmember
Reid – District 7
8,679 Alerts
31.2%

District	2020	2021	2022	2023	Total
7-Reid	2,001	2,442	1,964	2,272	8,679

31.2%

Understanding ShotSpotter

The ShotSpotter acoustic gunshot detection technology is based on science.



1 Gun is fired

When a gun is fired, the sound of a muzzle blast radiates outward.

2 Gunshot is Detected and Located

Acoustic sensors are triggered by the impulsive sound. The sound is classified as a gunshot through a process of machine classification. Sound triangulation determines the precise location.

3 Gunshot is Reviewed

The data is relayed to the ShotSpotter Incident Review Center where analysts quickly audit the data and publish confirmed gunshots to police.

4 Police Respond

Alerts are sent to dispatch centers and patrol officers' smartphones and MDTs for immediate response. The entire process takes less than 60 seconds.

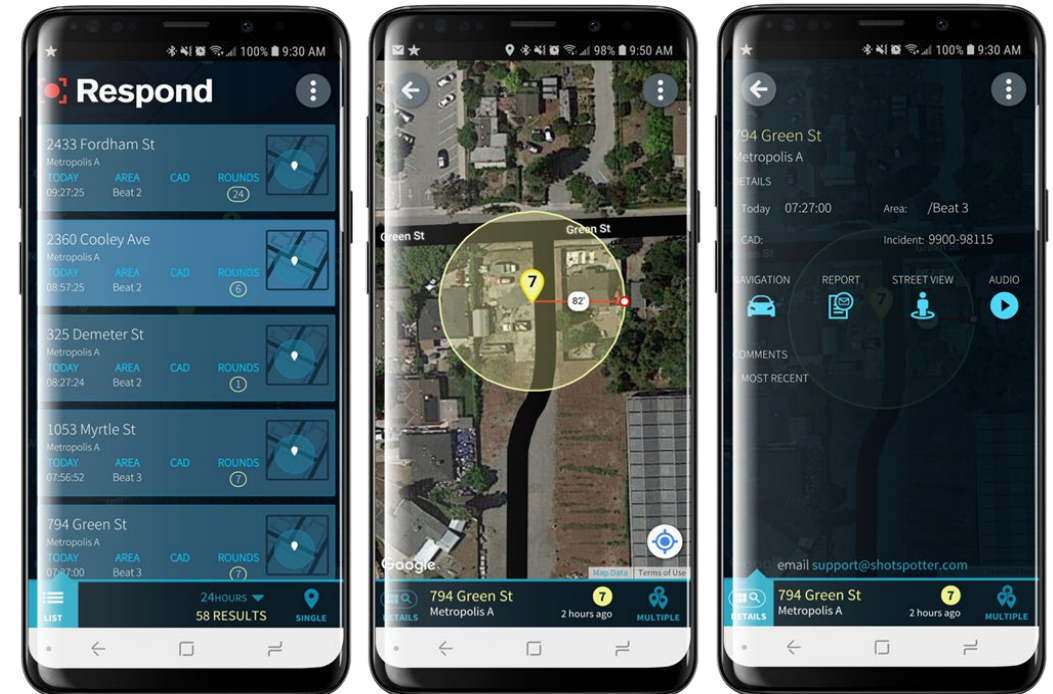
Understanding ShotSpotter

Specific location data and incident specifics are sent to offices within 60 seconds.

Patrol Car View



Cell Phone View





Setting the Record Straight

In previous meetings, several inaccurate claims were made about ShotSpotter.

Claim	Fact
“Many jurisdictions have declined to adopt the technology after pilots or have not to renewed upon expiration.”	Incorrect. More than 170 cities in the US use ShotSpotter (In the last 18 months: <ul style="list-style-type: none">• 136 existing municipalities renewed ShotSpotter• 40 new municipalities deployed ShotSpotter• 25 existing customers expanded their coverage areas
“80% of alerts do not lead to physical evidence – therefore fails 80% time.”	Incorrect metric. ShotSpotter is designed to detect gunfire <ul style="list-style-type: none">• Absence of physical evidence does not mean gunfire did not occur – ShotSpotter is accepted as digital witness• >95% or more of gunfire incidents do NOT get 911 call• In fact, evidence collection rates on 911 gunfire incidents without ShotSpotter– are even lower• ShotSpotter evidence collection rates up to 3x higher



Setting the Record Straight

Claim	Fact
"ShotSpotter is not accurate."	False. <ul style="list-style-type: none">• Contractually 90% accuracy• Across all customers, independently verified 97%• Oakland: 99%
"Studies show that ShotSpotter has no impact on crime."	Even though ShotSpotter is not designed to prevent gunfire, independent research* suggests: <ul style="list-style-type: none">• Response to gunfire significantly faster than those called into 911• 24% reduction in assaults and homicides• 26:1 ROI• After ShotSpotter goes live, fatality rates are about 4 percentage points lower in the areas with the technology.• In Chicago, "a 3-in-4 chance that the technology saves about 85 lives per year."

Sources: University of Chicago Crime Lab Study, September, 2024;

"The Impact of ShotSpotter in Winston-Salem, NC," July, 2024, Dennis Mares and Andrew Buettner, Center for Crime Science and Violence Prevention, Southern Illinois University



Summary

ShotSpotter is a valuable tool for OPD in that it provides valuable insight into illegal gun activity across Oakland that it otherwise would not be aware of.

The ShotSpotter Technology...

- ✓ helps render aid to victims and save lives
- ✓ enables faster and a more comprehensive response to criminal gunfire (less than 5% of which is reported by 911)
- ✓ assists in collecting evidence, apprehending criminals, and recovering illegal guns
- ✓ is a critical foundation that enables Operation Ceasefire
- ✓ is a force multiplier to support current OPD patrolling resources