



To: City Council, City of Fayetteville, NC  
Thru: City Manager's Office (CMO)  
From: Office of Strategic Performance & Analytics (SPA) | Fayetteville Police Department (FPD) | Office of Special Projects | Office of Community Safety (OCS) | SoundThinking (ShotSpotter)  
Date: April 2026  
Re: Evaluating the Wilson Center's ShotSpotter Program Evaluation and Findings

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## I. CITY COUNCIL'S REQUEST

The City Council directed staff to conduct a data review of ShotSpotter effectiveness, examining eighteen (18) months of activity across the three designated coverage zones. Specifically, Council requested that staff: compare ShotSpotter alerts with 911 calls for service; assess program productivity through evidence collection, victim identification, and arrest outcomes; and determine whether ShotSpotter provides measurable impact when deployed without a corresponding 911 call.

## II. SHOTSPOTTER AND COVERAGE ZONES

ShotSpotter uses acoustic sensors to detect potential outdoor gunfire, employing algorithms and human review to locate incidents within an ~80-foot radius and alert police typically within one minute. The system preserves only confirmed gunshot audio, purging other sounds. Over 100 cities across the United States have deployed the technology, including an estimated 15 to 20 cities on the East Coast and approximately four cities in North Carolina historically, though some have discontinued use due to cost or perceived inefficacy. The City of Fayetteville entered an agreement with SoundThinking (ShotSpotter's operator) in 2022, with coverage commencing September 26, 2023.

The Fayetteville Police Department (FPD) divides the City into three (3) primary response districts — *Campbellton, Central, and Cross Creek* — designed to facilitate equitable call distribution and strategic personnel deployment based on call volume and geographic proximity (FPD Policy Manual, 2025). One ShotSpotter zone was established within each district, selected due to their disproportionately high rates of gun violence relative to their geographic size; specifically, between January 2019 and March 2025, the three zones accounted for approximately 11.9% of citywide gunshot-related incidents despite covering only 3% of the City's land area. The three zones collectively cover approximately 2.93 square miles, or roughly 3% of Fayetteville's total land area of 95.5 square miles.

- **Campbellton Zone:** Along a section of the Murchison Road corridor (NC 210), near Fayetteville State University (1.04 sq. mi.).
- **Central Zone:** Situated within the Massey Hill neighborhood (0.87 sq. mi.).
- **Cross Creek Zone:** Located in west Fayetteville near South Reilly and Cliffsdale Roads (1.02 sq. mi.).

FPD has a formally documented response protocol for ShotSpotter alerts (FPD Policy Manual, 2025, Operating Procedure 11.23). All officers are required to log into the ShotSpotter application at the start of each shift and self-dispatch to any alert when not engaged in a higher-priority assignment. Upon arrival, officers must thoroughly search for evidence, secure any findings, canvass for witnesses and cameras, and document all responses in the computer-aided dispatch (CAD) system — including when no evidence is found. This documented protocol is the operational foundation that makes the Ground Truth Tracking

Workbook possible, and it also explains the fundamental data asymmetry in the Wilson Study: ShotSpotter responses generate far more detailed outcome data than 911-only calls, for which no equivalent procedure exists.

### III. PROJECT TEAM GOAL

A cross-functional Project Team was established comprising the Office of Strategic Performance & Analytics (SPA), the Office of Special Projects, the Office of Community Safety (OCS), the Fayetteville Police Department (FPD), and SoundThinking (ShotSpotter). The Project Team's framework is defined by three core objectives:

1. **Contextualize** the findings of the Wilson Center's (*the Wilson Center for Science and Justice at Duke Law*) independent evaluation of Fayetteville's ShotSpotter program; and
2. **Implement feasible and operationally sound solutions** based on the Study's findings and recommendations, where achievable within the program's (and the FPD's) operational and contractual abilities and constraints; and
3. **Provide relevant follow-up analysis** to the extent practicable within the analysis period and ShotSpotter contract renewal period — to supplement the Study's findings with current, Fayetteville-specific data.

*It is important to note that the Project Team's role is not to issue a formal recommendation for or against contract renewal. The findings, contextual analysis, and operational updates presented in this report are intended solely to equip City Council with the information necessary to make an informed determination on the renewal or nonrenewal of the ShotSpotter contract.*

### IV. ABOUT THE WILSON CENTER'S EVALUATION

The City of Fayetteville contracted the Wilson Center to conduct an independent evaluation of ShotSpotter's deployment across the three coverage zones. The Study examined an 18-month implementation period from September 26, 2023, through March 31, 2025, comparing that period against the 18 months preceding ShotSpotter's activation. Data sources included: (1) firearm-related 911 calls for service; (2) the ShotSpotter Ground Truth Tracking Workbook; and (3) supplemental public data from the Fayetteville Open Data Portal's crimes against persons dataset. The Wilson Study explicitly declined to offer a recommendation on contract continuation, stating: "This report does not offer a recommendation on whether the City should continue to use ShotSpotter. This report is intended to inform the decisionmakers, but not to advise them."

Notably, the Study affirms that *"The Fayetteville Police Department's operating procedures include an extensive documentation process for all ShotSpotter alert responses and the ShotSpotter system collects this information from responding officers and stores it in the ShotSpotter Ground Truth Tracking Worksheet."* This reflects positively on the FPD's operational rigor and provides an important foundation for the data review Council requested.

The Study's forward-looking language is contained in the Study's 'Executive Summary Conclusion' and 'Section K (Conclusions)' and can be organized into five actionable areas that the Project Team has used to frame its attention and work. These five areas are:

1. **Strategic Alert Prioritization:** Deprioritizing single-shot alerts lacking a corroborating 911 call may improve the efficient use of FPD resources, as these alert types consistently produce the lowest confirmation rates and evidence yields.

2. **Data Integration:** Better integration of data from ShotSpotter, 911 calls, police incident reports, and investigations would allow deeper evaluation insights and enable direct comparison of outcomes across alert types.
3. **Cost-Benefit Weighing:** The value of increased alerts and faster response times must be weighed explicitly against budgetary and opportunity costs. The Study frames this as a necessary consideration for any renewal determination.
4. **Improved Ground Truth Tracking:** The Study identified the absence of outcome-based closure fields in the Ground Truth database as a gap that, if addressed, would improve the accuracy and interpretability of alert confirmation data.
5. **Stakeholder Communication on Confirmation Rates:** The Study’s estimate that approximately 23.7% of ShotSpotter-only alerts met the study’s proxy criteria for a confirmed gunfire-related incident is the central data point requiring contextual understanding. Section **V.e** of this report addresses this finding directly.

## V. KEY FINDINGS FROM THE PROJECT TEAM

The following summarizes key findings from the Wilson Study and the Project Team's operational work, directly responsive to Council's request.

### a. *Alert Volume and Notification Patterns*

Citywide gunshot-related 911 call volume declined over the 18-month evaluation period, consistent with broader national trends. ShotSpotter, however, substantially increased the total number of gunshot-related notifications received by FPD within the coverage zones. Following implementation, ShotSpotter alert volumes in the zones exceeded 911 calls by a factor of 4.1 (compared to 2.7 in the pre-implementation period), averaging 43.5 ShotSpotter alerts per month versus 10.6 gunshot-related 911 calls per month in the same zones. In raw terms, the ShotSpotter period produced 685 ShotSpotter-only alerts and 106 ShotSpotter + 911 alerts within the zones, compared to only 88 resident-initiated 911-only calls within those same zones over 18 months — **meaning the vast majority of in-zone gunshot notifications (alerts) originated from ShotSpotter, not from residents (911 calls for service)**. The Wilson Study, however, notes this higher alert volume likely reflects both ShotSpotter’s increased sensitivity and some number of false alarms, and that the increased alert volume does not correspond to a greater number of confirmed gunshot-related incidents in the Open Data Portal — a meaningful distinction for assessing alert reliability.

### b. *Response Time: ShotSpotter Alerts vs. 911 Calls*

The Wilson Study found that **“Police dispatch and arrival are notably faster following ShotSpotter alerts compared to 911 calls alone, primarily because ShotSpotter notifications enabled quicker officer dispatch” (Wilson Center Study, p. 4)**. Specifically, dispatch times were over two minutes faster (approximately 135 seconds) for ShotSpotter alerts than for 911 calls alone, consistent across all three zones (Wilson Center Study, p. 44). ShotSpotter’s most notable effect occurs at the dispatch stage — reducing the time between alert receipt and officer dispatch — rather than in total officer arrival time (Wilson Center Study, p. 24).

FPD responds to reports of gunfire regardless of whether ShotSpotter, or any other relevant technology, is available and operational. ShotSpotter’s demonstrated value lies in improving both the dispatch speed and geographic precision of officer response. Regarding arrival times specifically, officers arrived on scene in approximately 422 seconds (~7 minutes) for ShotSpotter-only alerts, 375 seconds (~6 minutes) for ShotSpotter + 911 alerts, and 541 seconds (~9 minutes) for 911-only calls — a meaningful difference in

time-to-arrival that is directly downstream of faster dispatch (Wilson Center Study, p. 23). As of April 2026, the Fayetteville Police Department’s public-facing ShotSpotter Dashboard (powered by PowerBI) reports a **“Gunshot Detection and Location Performance” rate of 86%** (Fayetteville Police Department ShotSpotter Dashboard). This metric reflects the accuracy with which ShotSpotter locates detected gunfire; it is not a capture rate of all gunfire events within the zones. Together, faster dispatch, faster arrival, and 86% location accuracy constitute the core operational value proposition of the technology in the City of Fayetteville. The Study notes, however, that it was unable to assess whether faster response times resulted in improved investigative productivity or victim outcomes.

Additionally, the Study found that officers spent significantly more time on scene when incidents were reported through both ShotSpotter and 911 (~19 minutes) compared to incidents from a single notification source (~10–11 minutes for either ShotSpotter-only or 911-only). The Study suggests this likely reflects that combined-alert incidents are more serious or higher-severity in nature. This time-on-scene pattern has resource utilization implications that factor into the cost-benefit weighing Council should consider.

***c. Productivity: Evidence Collection, Victim Identification, and Arrests — ShotSpotter-Only vs. ShotSpotter + 911 Call***

This finding addresses Council’s core question on measurable impact. The Study found that productivity outcomes vary significantly depending on whether a ShotSpotter alert was accompanied by a 911 call. That data shows:

- **Shell Casing Recovery:** 52.5% of ShotSpotter alerts with a corresponding 911 call resulted in shell casing recovery, compared to 16.5% for ShotSpotter-only alerts (Wilson Center Study, p. 34).
- **Firearms Recovered:** 7.5% of ShotSpotter + 911 alerts resulted in firearm recovery, compared to 1.2% for ShotSpotter-only alerts (Wilson Center Study, p. 34).
- **Property Damage Found:** 22.1% of ShotSpotter + 911 alerts resulted in discovery of property damage, compared to 1.4% for ShotSpotter-only alerts — a ratio of ~16 to 1 (Wilson Center Study, p. 34).
- **Witness Location:** Witnesses were located in 28.4% of alerts with a corresponding 911 call, compared to 7.4% of ShotSpotter-only alerts (Wilson Center Study, p. 36).
- **Victim Identification:** Victims were identified in 12.3% of ShotSpotter + 911 alerts, compared to 0.5% of ShotSpotter-only alerts (Wilson Center Study, p. 37).
- **Aid Rendered to Victims:** First responders provided aid to victims in 9.3% of ShotSpotter + 911 alerts, compared to 0.4% of ShotSpotter-only alerts (Wilson Center Study, p. 38).
- **Homicides:** All homicides during the evaluation period occurred in cases where both ShotSpotter and a 911 call were received (3%). No homicides were identified in ShotSpotter-only cases (Wilson Center Study, p. 38).
- **Arrests:** Arrests were made in 9.8% of alerts with a corresponding 911 call, compared to 1.8% of ShotSpotter-only alerts. Overall, arrests were made infrequently across all zones (Wilson Center Study, p. 36).
- **Alert Confirmation Rate:** Using the Study’s proxy confirmation rate methodology, 67.2% of ShotSpotter alerts with a corresponding 911 call met the study’s criteria for a confirmed gunfire-related incident. For ShotSpotter-only alerts, this figure was approximately 23.7% (Wilson Center Study, p. 32).

The Wilson Study concludes: “Despite the high volume of ShotSpotter alerts, we do not have evidence that ShotSpotter-only notifications significantly improve police productivity or outcomes without corroborating 911 calls” (Wilson Center Study, p. 44). **This responds to Council’s question on measurable impact without companion 911 calls.** Additionally, 51.8% of ShotSpotter-only alerts involved detection of a single round, which are associated with the lowest evidence yields; the Study suggests deprioritizing such alerts as a potential resource efficiency measure.

Important limitation: The Wilson Center’s study did not have access to outcome data from 911-only calls (those not paired with a ShotSpotter alert). This prevents a direct productivity comparison between ShotSpotter alerts and standalone 911 calls – which is precisely the comparison Council’s request calls for. This structural data gap is addressed directly in **Section V.i** below.

#### **d. Crime and Incidence Trends**

Citywide gunshot-related incidents declined during the evaluation period, with average monthly incident counts decreasing from approximately 17.1 (pre-implementation) to 10.6 (post-implementation). However, the Wilson Study notes this decline predates ShotSpotter’s implementation, mirrors national and regional trends, and cannot be directly attributed to ShotSpotter. Incident levels within the ShotSpotter zones remained relatively stable throughout the ShotSpotter period relative to the broader citywide decrease, which the Study indicates does not suggest a deterrent effect attributable to ShotSpotter.

#### **e. Alert Confirmation Rate — Context and Interpretation**

The Wilson Center’s study, like most time-bounded evaluations, was necessarily shaped by the available data and the outcomes observable within its 18-month window — limitations the Study’s authors themselves transparently acknowledged. The Study estimated that 23.7% of ShotSpotter-only alerts met the Study’s proxy criteria for a confirmed gunfire-related incident. As the Study explains, this estimate was derived from available Ground Truth fields rather than from a single explicit confirmation-status field. It was necessarily limited to outcomes observable during the 18-month evaluation period. Following the study, the Project Team identified two data-structure issues relevant to how future confirmation rates should be interpreted: first, the pre-2026 Ground Truth workflow did not include a discrete status/closure framework that clearly distinguished “no finding,” “pending,” and later-developed outcomes (Gap 1); second, some investigative developments can occur after the original alert window, meaning a time-bounded analysis may not capture the full downstream value of every alert (Gap 2). For those reasons, the Study’s 23.7% alert confirmation rate figure should be understood as a reasonable study-period estimate based on the data then available, not as a full-lifecycle measure of alert outcome yield. The January 4, 2026, data enhancements are intended to improve the completeness and interpretability of future Fayetteville-specific confirmation metrics.

The Wilson Study also recommended that ShotSpotter-only alerts be assigned an official incident number (OCA) to improve outcome tracking. Following review, the FPD determined this approach is not operationally or administratively appropriate: assigning incident numbers to *potential* gunfire alerts absent a confirmed incident and investigation would produce a misleading increase in the City’s reported crime statistics. The data infrastructure enhancements in **Section V.f** represent the operationally sound alternative to achieving the same tracking objective, thus preserving data integrity and data governance.

#### **f. Data Infrastructure Enhancements**

Following the Wilson Study’s recommendations, the Project Team coordinated a structured implementation process between FPD and SoundThinking from October 2025 through January 2026. The

following enhancements went live on January 4, 2026 (go-live date), establishing the formal Phase 1 analysis start date:

1. **SoundThinking (ShotSpotter) Interface — “Alert Responded” and “Alert Pending”:** “Alert Responded” provides formal closure for officers who respond and find no evidence of gunfire (Gap 1). “Alert Pending” preserves the connection between an initial alert and any subsequent NIBIN match, arrest, or case development (Gap 2). The FPD determined this framework is operationally preferable to assigning incident numbers.
2. **FPD Internal Ground Truth Workbook — “Status” and “Offense Reported” columns:** Added concurrently, mirroring the SoundThinking interface. “Status” (open/pending/closed) tracks whether a future case has been tied to a ShotSpotter alert, aiding future investigations. “Offense Reported” mirrors the “Alert Responded” and “Alert Pending” options.
3. **Public-Facing FPD ShotSpotter Dashboard — “Crimes Reported from ShotSpotter Alerts”:** Added at go-live date to provide public alert-to-outcome visibility, consistent with internal operational changes and directly responsive to the Wilson Study’s data connectivity concern.

#### ***g. Community Safety Initiatives***

Stemming directly from the Wilson Study’s broader findings on gun violence and community impact in the City’s ShotSpotter zones, the Office of Community Safety (OCS) issued a formal Request for Proposals (RFP COF1516986) on February 10, 2026, for ***Safe Space Activations — trauma-informed, community-led events designed to support youth, young adults, and families in the designated zones.*** Up to four contracts at \$25,000 each (\$100,000 total), funded from local City sources, are anticipated, with activations running April through August 2026.

#### ***h. Limitations, Criticisms, and Comparative National Context***

The Wilson Center’s study identifies several limitations relevant to Council’s determination. The Study was unable to determine whether faster response times translated into saved lives or improved investigative results, due to absence of investigation outcome data. No cost data were available, preventing direct cost-effectiveness assessment. The Study also could not compare ShotSpotter outcomes to standalone 911 call outcomes due to the same data gap. Nationally, ShotSpotter has been subject to criticism related to equity — specifically, the disproportionate deployment of the technology in minority neighborhoods and associated surveillance implications. The Study does not address these as Fayetteville-specific findings, but they form part of the broader national context Council may wish to consider.

The Study surveyed eight independent city evaluations. From their analysis, the pattern is consistent nationally: ShotSpotter reliably improves dispatch times and alert volume, but rarely improves arrest rates, case clearance, or confirmed evidence recovery. The city of Chicago, IL declined to renew; New York City, Kansas City, St. Louis, and Omaha renewed despite mixed evidence. Durham, NC — also evaluated by the Wilson Center — did not renew following its 12-month pilot. Notably, the Philadelphia evaluation found a 259% increase in gunshot-related incidents post-ShotSpotter that was not matched by an increase in confirmed events.

#### ***i. What the Available Data Can and Cannot Tell Council***

Council’s directive asks whether ShotSpotter provides measurable impact when deployed without a corresponding 911 call. Answering that question definitively requires two things: outcome data for ShotSpotter-only alerts, and a comparable baseline showing what happens when FPD responds to a 911-only call for gunfire with no ShotSpotter alert. *The Wilson Center’s study could only satisfy the first requirement.*

The Study had detailed outcome data for ShotSpotter alerts through the FPD’s Ground Truth Workbook but had no equivalent outcome data for 911-only calls — because FPD’s documentation system for 911-only gunshot responses exists only in individual incident reports that were not accessible to the evaluators. The Project Team’s data infrastructure enhancements improve the completeness and accuracy of ShotSpotter alert outcome data, but do not create a parallel outcome dataset for 911-only calls. That asymmetry remains intact. Closing it fully would require either access to individual incident reports for 911-only gunshot responses, or a new parallel documentation mechanism for such calls — a separate operational initiative beyond the scope of this project.

What the data **can** tell Council is the following:

- **ShotSpotter-only vs. ShotSpotter + 911 calls:** On every productivity measure — shell casing recovery, witness location, victim identification, aid rendered, arrests, and confirmation rate — ShotSpotter alerts paired with 911 calls substantially outperform ShotSpotter-only alerts. These are documented, sourced findings from the Wilson Center’s study.
- **ShotSpotter-only vs. 911-only (proxy measure):** The one available cross-comparison — OCA (incident number) assignment rates — shows ShotSpotter-only alerts and 911-only calls performing at roughly equivalent rates (17.8% and 18.0%, respectively). The Study characterizes this as suggesting ShotSpotter-only alerts yield “at best equivalent rates” to 911 calls for confirmed gunshot events. This is a rough proxy, not a definitive comparison, and the Study explicitly acknowledges its limitations as such (Wilson Center Study, p. 31).
- **Direct productivity comparison (ShotSpotter-only vs. 911-only):** Not possible with the data available under the Wilson Center’s study or under this project as currently configured. Giving the time constraint of ShotSpotter’s notification of contract renewal/non-renewal requirement, the absence of this comparison is an inherent structural limitation of the available data ecosystem.

The Project Team believes Council needs to understand this boundary clearly, and that an honest accounting of what the evidence can and cannot support is essential to an informed determination — the data infrastructure necessary to answer it definitively (a comparable baseline showing what happens when FPD responds to a 911-only call for gunfire within the ShotSpotter zones with no ShotSpotter alert) does not yet exist in a form accessible to this evaluation.

## VI. PHASE 1 ANALYSIS FRAMEWORK AND CONTRACT DECISION TIMELINE

For a complete, holistic analysis, an evaluation would replicate the Study’s 18-month dataset — capturing outcomes that extend beyond the Phase 1 window, January 4, 2026 – June 30, 2026. City Council’s determination is bounded by the following critical dates:

1. **Phase 1 Data Collection Period:** January 4, 2026 – June 30, 2026.
2. **Administrative Report Delivery to Council for Review:** May 11, 2026.
3. **ShotSpotter’s 30-Day Renewal/Nonrenewal Notice Deadline:** August 26, 2026.
4. **ShotSpotter Contract Expiration:** September 27, 2026.

*This memorandum represents the Project Team's findings, contextual analysis, and operational adjustments compiled to inform City Council's determination on the renewal or nonrenewal of the ShotSpotter contract. The Project Team remains available to provide additional briefings, respond to Council questions, or conduct supplemental analysis as directed prior to the August 26, 2026, contract renewal or nonrenewal notice deadline."*