

How does ShotSpotter Technology Affect 911 Response Times?

Research Preview

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2/5/2025

Research Introduction

ShotSpotter Technology

- Gunshot detection
- Rationale: only 12% of gunfire reported (Carr and Doleac, 2017) → method to rapidly respond to others
- 150+ cities world-wide

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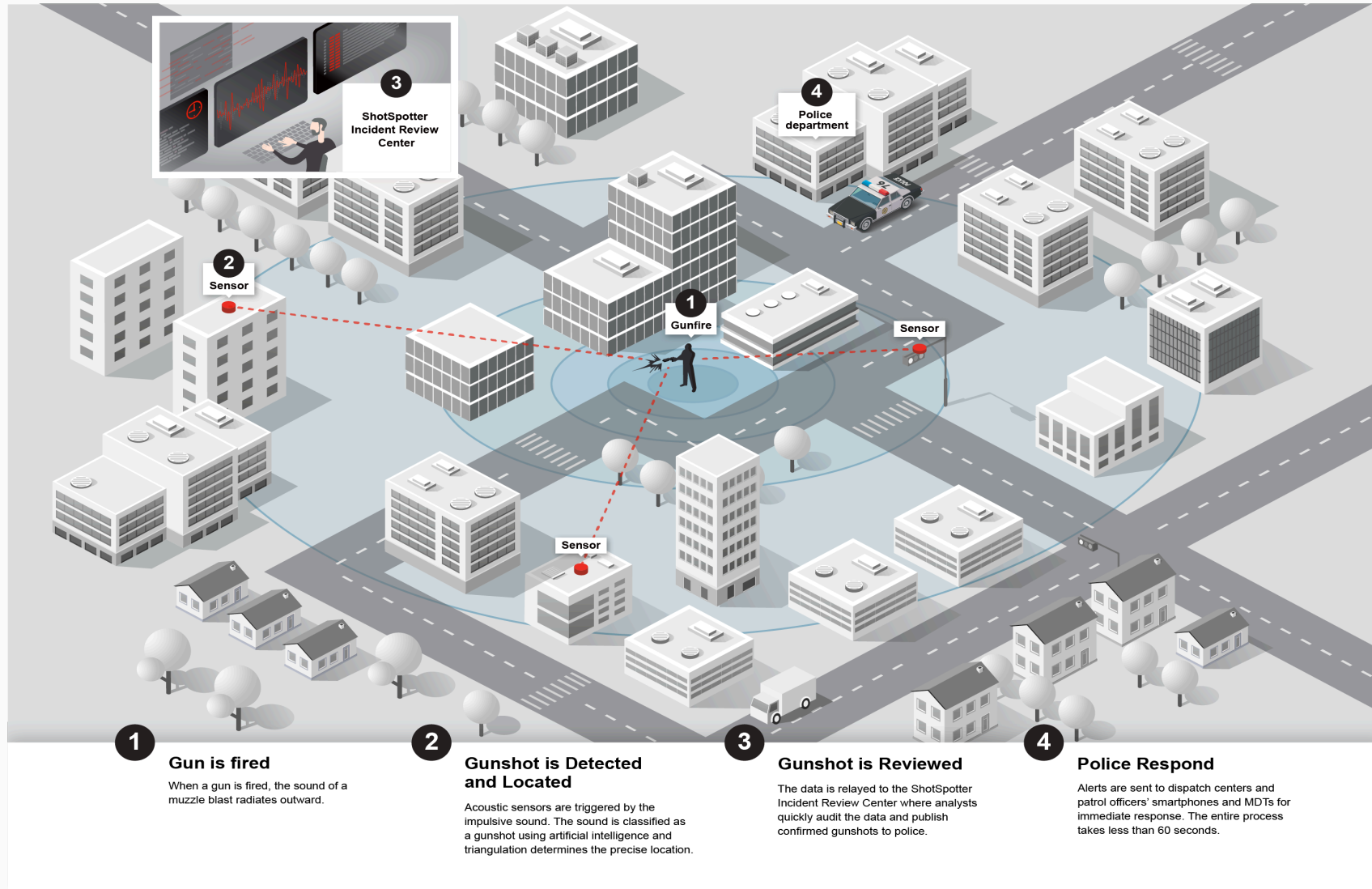
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Research Question:

How does the implementation of ShotSpotter technology affect 911 call response times?

- How does a police officer's scarce resource of time change? Will this affects their ability to rapidly respond to 911 calls? We study **Chicago**.

ShotSpotter Functionality



Why would ShotSpotter affect response times?

Resource-Intensive

- Respond to every detected gunfire
- **Chicago**: ~70 daily dispatches, 20 min.
- High priority: same as active shooter

Police Scarcity

- Fixed resources \Rightarrow trade-offs

Higher or Lower Response Times?

- Does proximity or time allocation prevail?

On an **average day** in Chicago,

there are roughly
**70 ShotSpotter-initiated
dispatches** that take **20
minutes** to investigate,
resulting in **75 hours of
officer time.**

Does this result in **unintended consequences?**

Why do we care about response times?

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Evidence

- Lower response times results in
 - Higher crime clearance (Blanes i Vidal and Kirchmaier 2018)
 - Less likelihood of an injury (DeAngelo et al. 2023)
- Rapid response → important component of investigation (College of Policing 2013)
- Health implications
 - Delayed treatment → worse patient outcomes (Wilde, 2013, Avdic, 2016)

Summary of the Paper

What is the natural experiment?

- Some police districts get the tech, others do not.
- Compare the trends on days with ShotSpotter to those without.

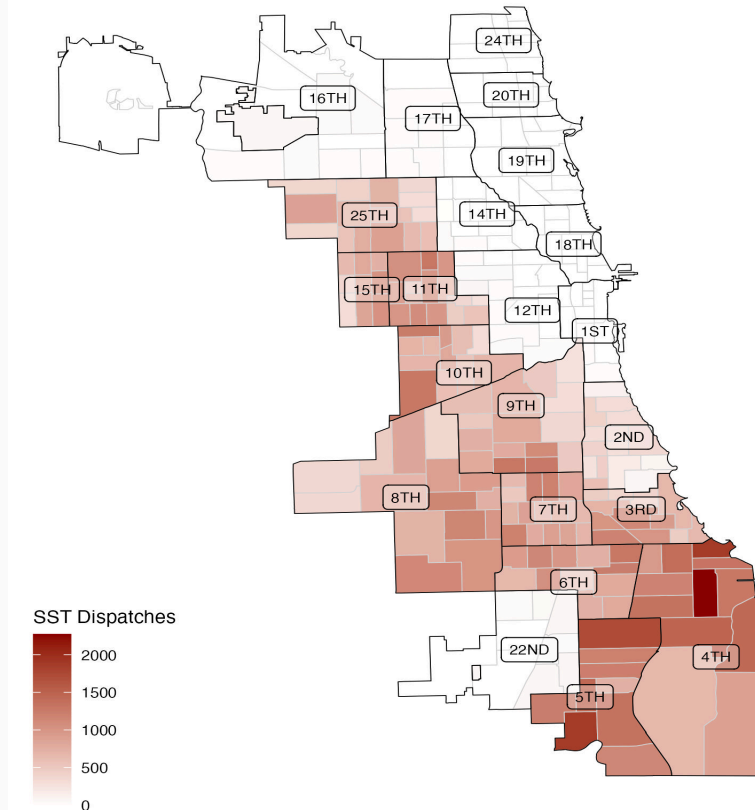
Data

- All 911 calls in Chicago from 2016-2022

Main Findings

- Increases in rapid response time by ~2 minutes!
- Less likelihood of arresting perpetrators because of this delay

Number of ShotSpotter Dispatches
Chicago (2016-2022)



If ShotSpotter was to come to your city, would
you want it implemented?

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Potential Response: Freedom of Information Acts.