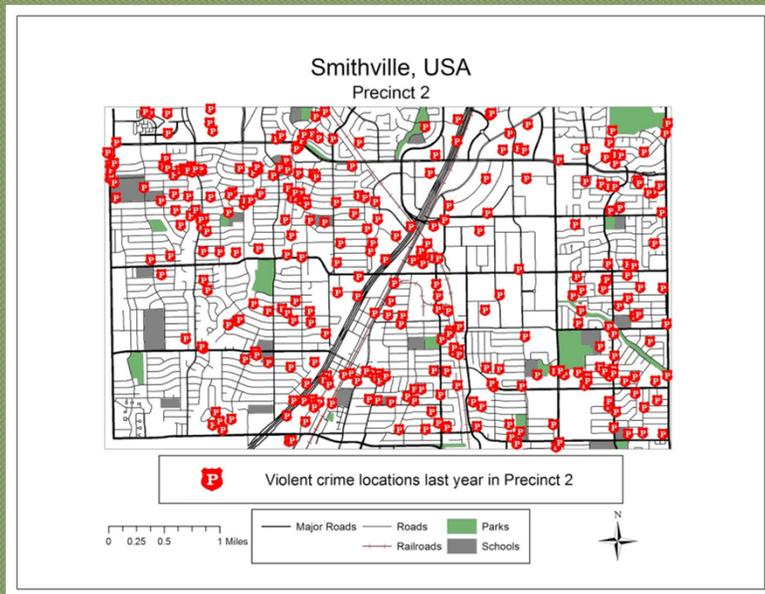


Putting Crime on the Map: The Impact of Aggregate Crime Counts Versus Dot and Density Maps on Citizen Perceptions

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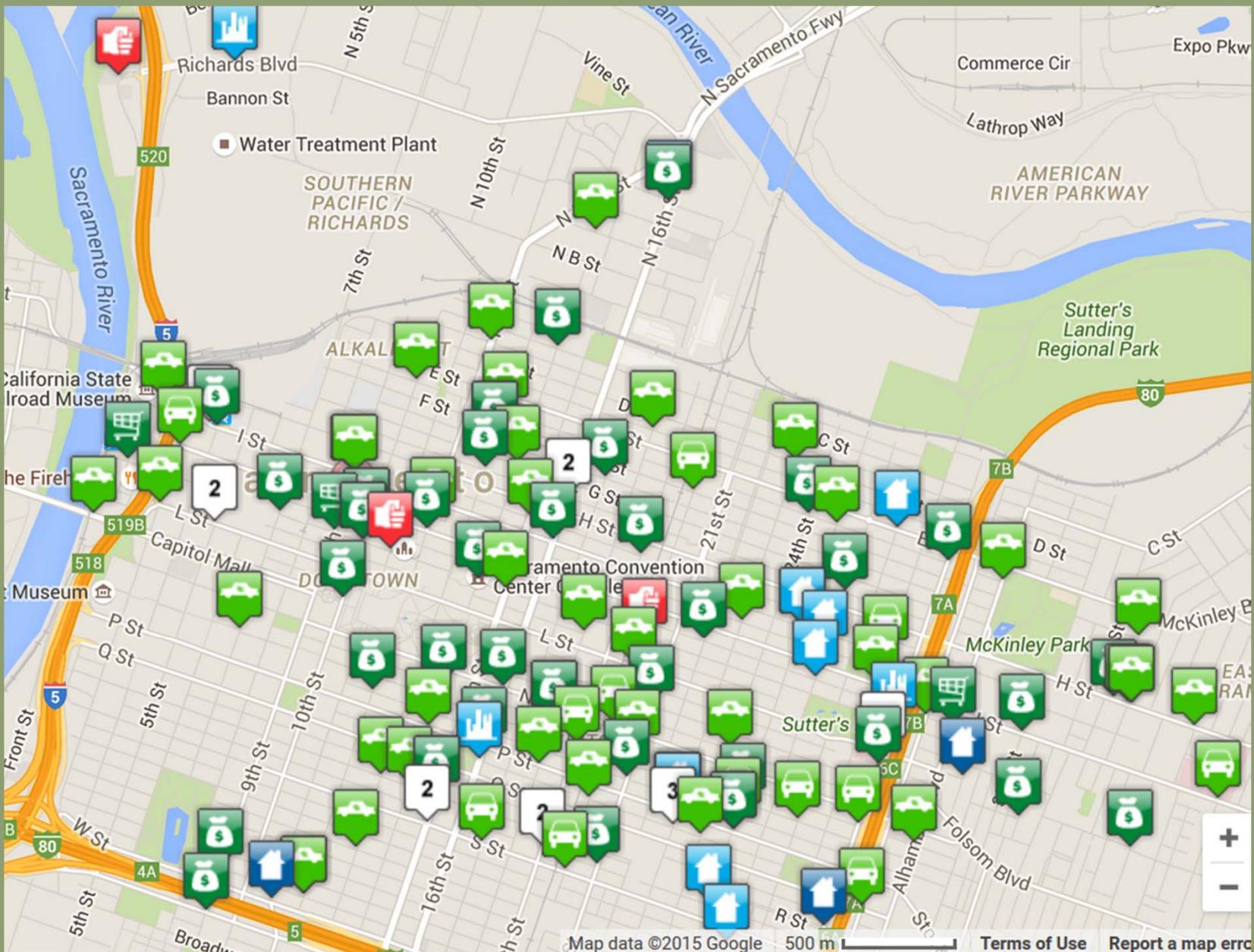


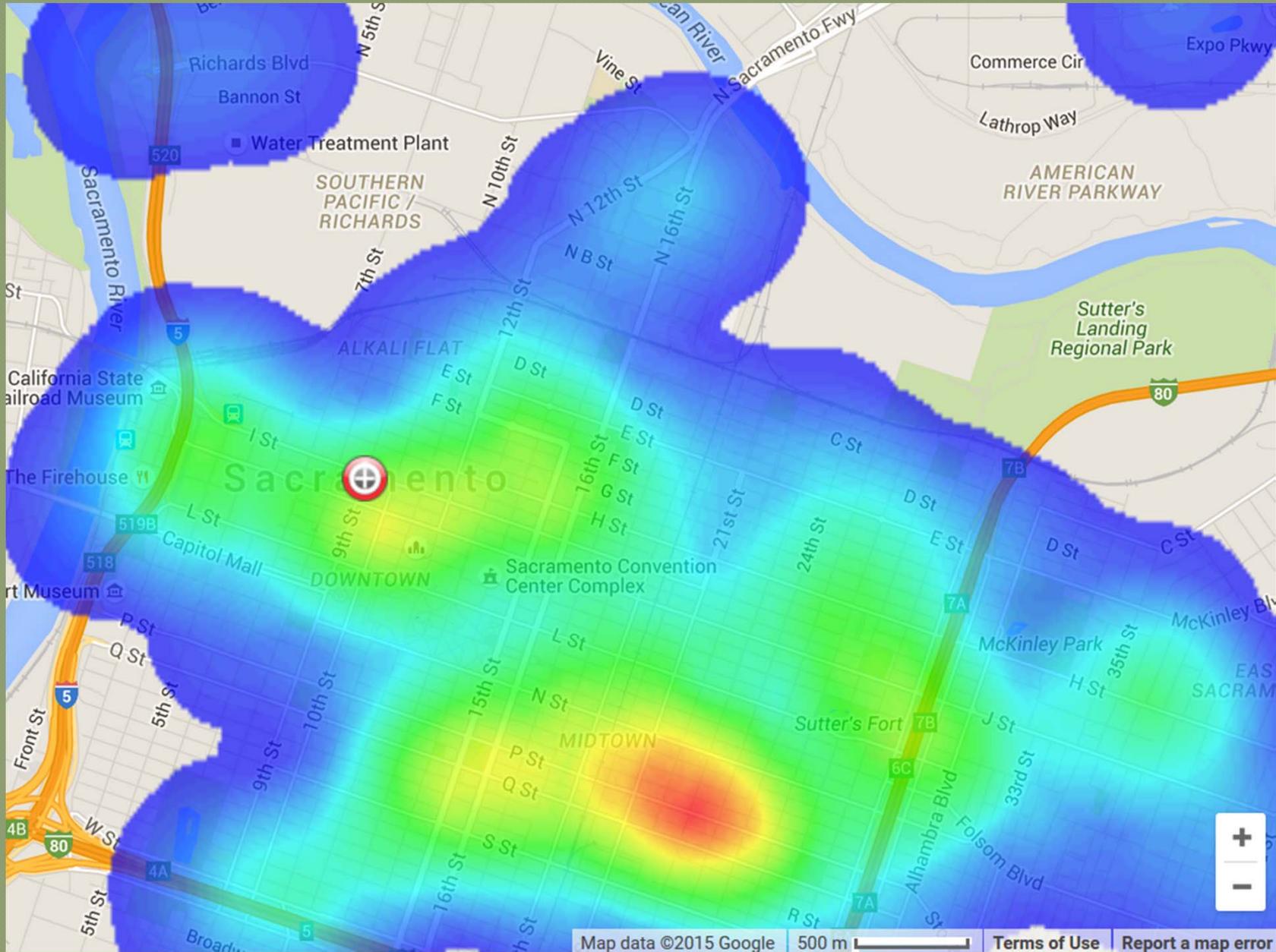
Background

- Advancements in technology and GIS capabilities have led more criminal justice agencies to utilize crime maps to communicate with citizens. (Chainey and Tompson, 2006; Wartell and McEwen, 2001)
- Crime maps are important for...
 - Police-Citizen Communication (Chainey and Tompson, 2012)
 - Transparency (Chainey and Ratliffe, 2005)
 - **Legitimacy**
- To date, only one published study examines how citizens feel about their police department and how fearful they are of crime after viewing a crime map of their area. (Groff et al. 2005)

DC Code Crime Rates (per 100,000)

| | 2013 | | 2014 | |
|-----------------------|---------------|--------------|---------------|--------------|
| Estimated Population | 649,111 | | 658,853 | |
| | Total | Rate | Total | Rate |
| Homicide | 104 | 16 | 105 | 16 |
| Sexual Abuse | 302 | 47 | 316 | 49 |
| ADW | 2,323 | 358 | 2,405 | 372 |
| Robbery | 4,085 | 629 | 3,368 | 521 |
| Violent Crime | 6,814 | 1,050 | 6,194 | 958 |
| Burglary | 3,375 | 520 | 3,187 | 493 |
| Motor Vehicle Theft | 2,682 | 413 | 3,141 | 486 |
| Theft from Vehicle | 10,166 | 1,566 | 11,352 | 1,756 |
| Theft Other | 12,938 | 1,993 | 14,670 | 2,269 |
| Arson | 35 | 5 | 26 | 4 |
| Property Crime | 29,196 | 4,498 | 32,376 | 5,008 |
| Total | 36,010 | 5,548 | 38,570 | 5,966 |

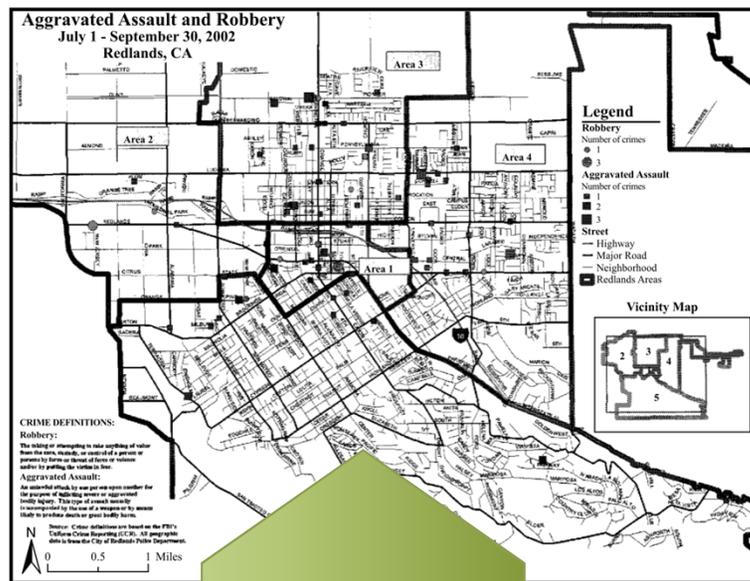




Prior Research

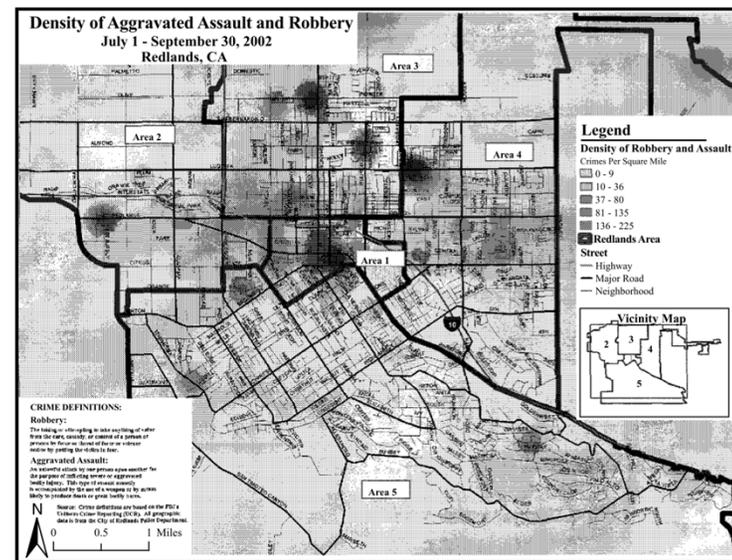
- Groff et al. (2005) examined fear levels in citizens of Redlands, CA after viewing various kinds of maps and data depicting crime across the Redlands area.

Appendix B: Treatment two: Graduated symbol map



Least Scary!

Appendix C: Treatment three: Density map



Current Study

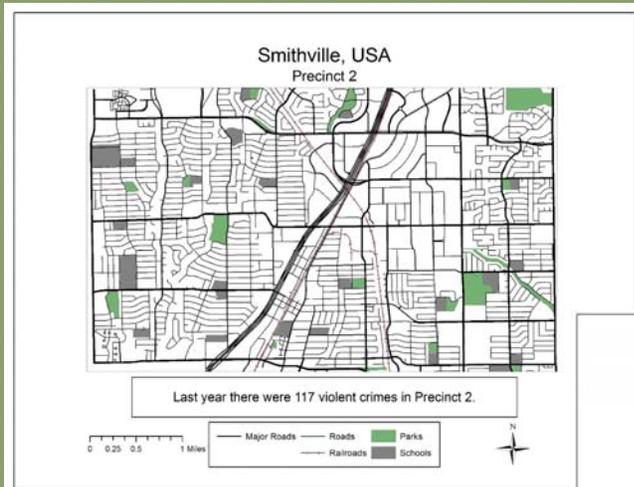
- To remove domain-specific prior knowledge, a hypothetical police precinct, dubbed “Smithville, USA,” was mapped using real crime data coordinated to a different area.
- Three types of maps were created:
 - Dot Density
 - Kernel Density
 - Tabular/Aggregate Data
- To test impact of crime level, low-crime and high-crime versions were created for each map type.

Dependent Variables:

Perceptions of Safety
Perceptions of Police Effectiveness
Neighborhood Trust

Hypotheses

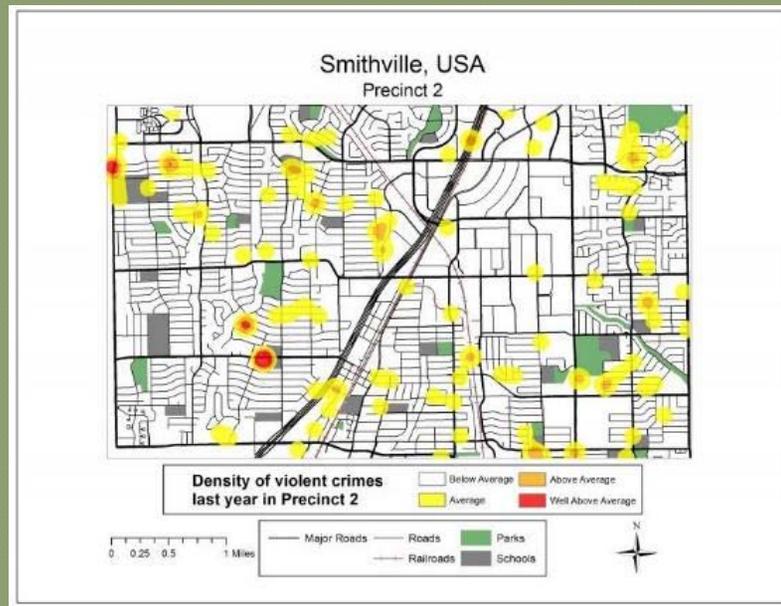
- 1) Maps with less contextual information will evoke more fear, fewer feelings of safety.



Hypotheses

- 2) Maps depicting greater levels of crime will result in greater levels of fear, lower levels of safety/trust.

Low Crime



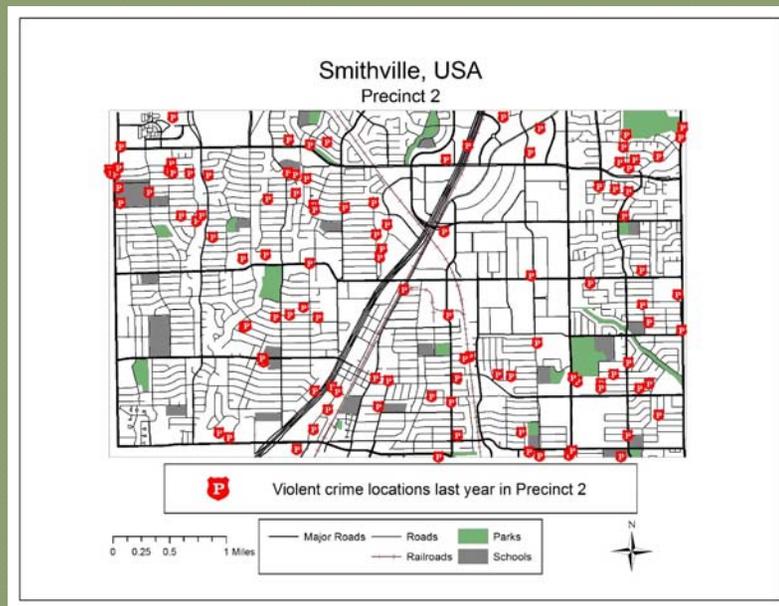
High Crime



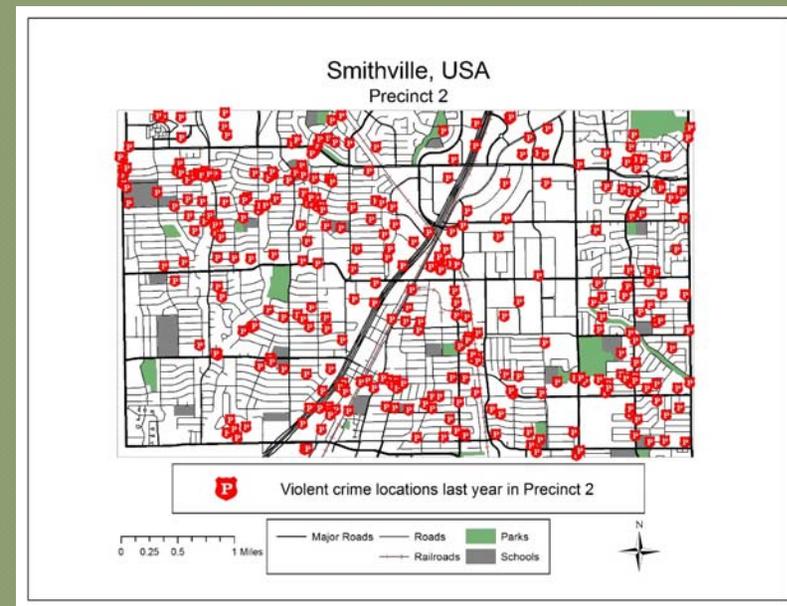
Hypotheses

- 2) Maps depicting greater levels of crime will result in greater levels of fear, lower levels of safety/trust.

Low Crime



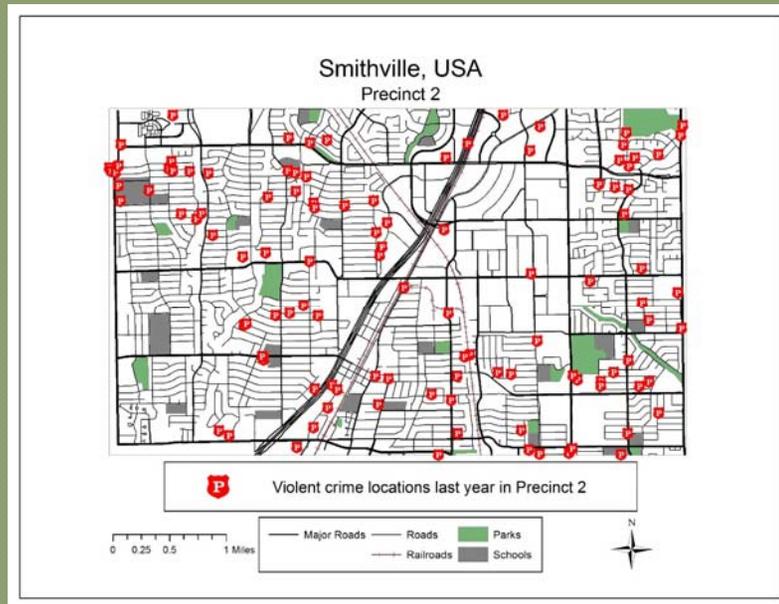
High Crime



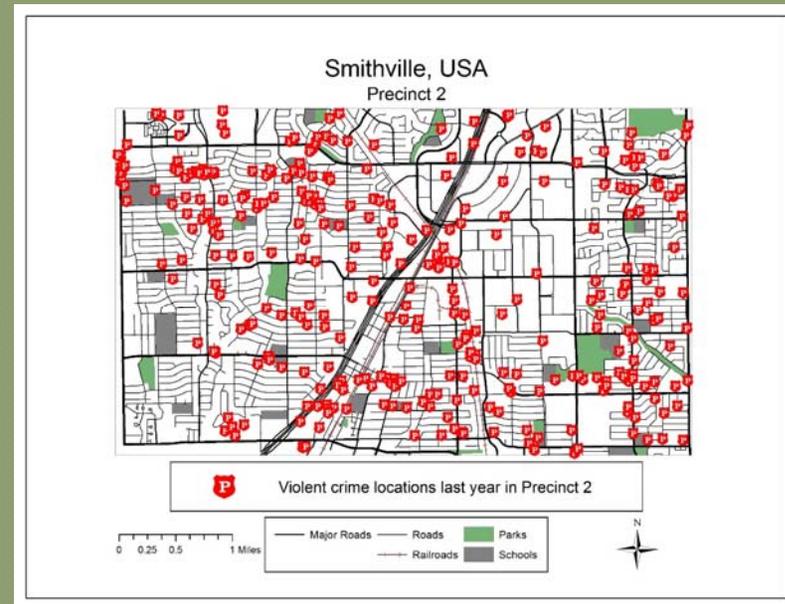
Hypotheses

- 3) Interaction effect between crime level and map type will be present.

Low Crime



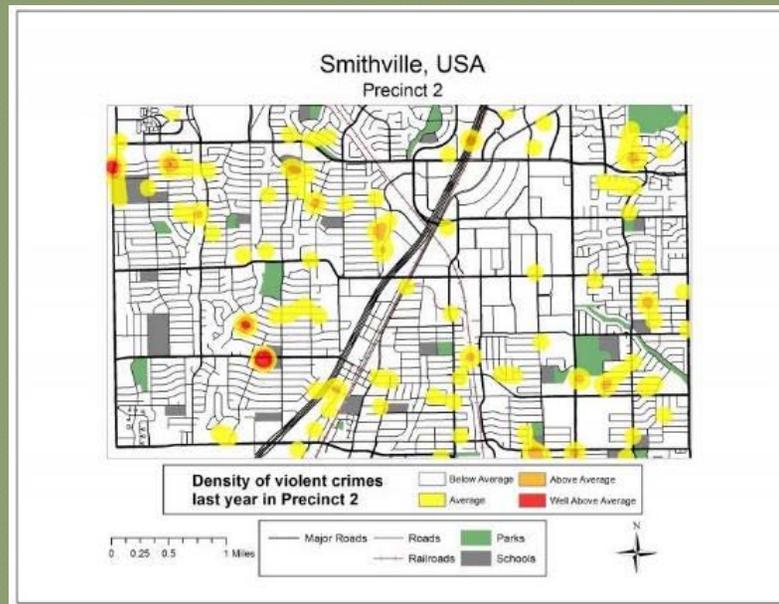
High Crime



Hypotheses

- 3) Interaction effect between crime level and map type will be present.

Low Crime



High Crime



Methods

- 2 Samples:
 - Students in a Criminal Justice course at PSU (161 respondents)
 - Community listserv of Neighborhood Watch partners in the Portland area (112 respondents)
- Both samples “snowballed,” asked to send survey to additional potential participants.
- Participants aged 18-65 years
 - 24.5% currently students
 - 20.1% racial/ethnic minorities

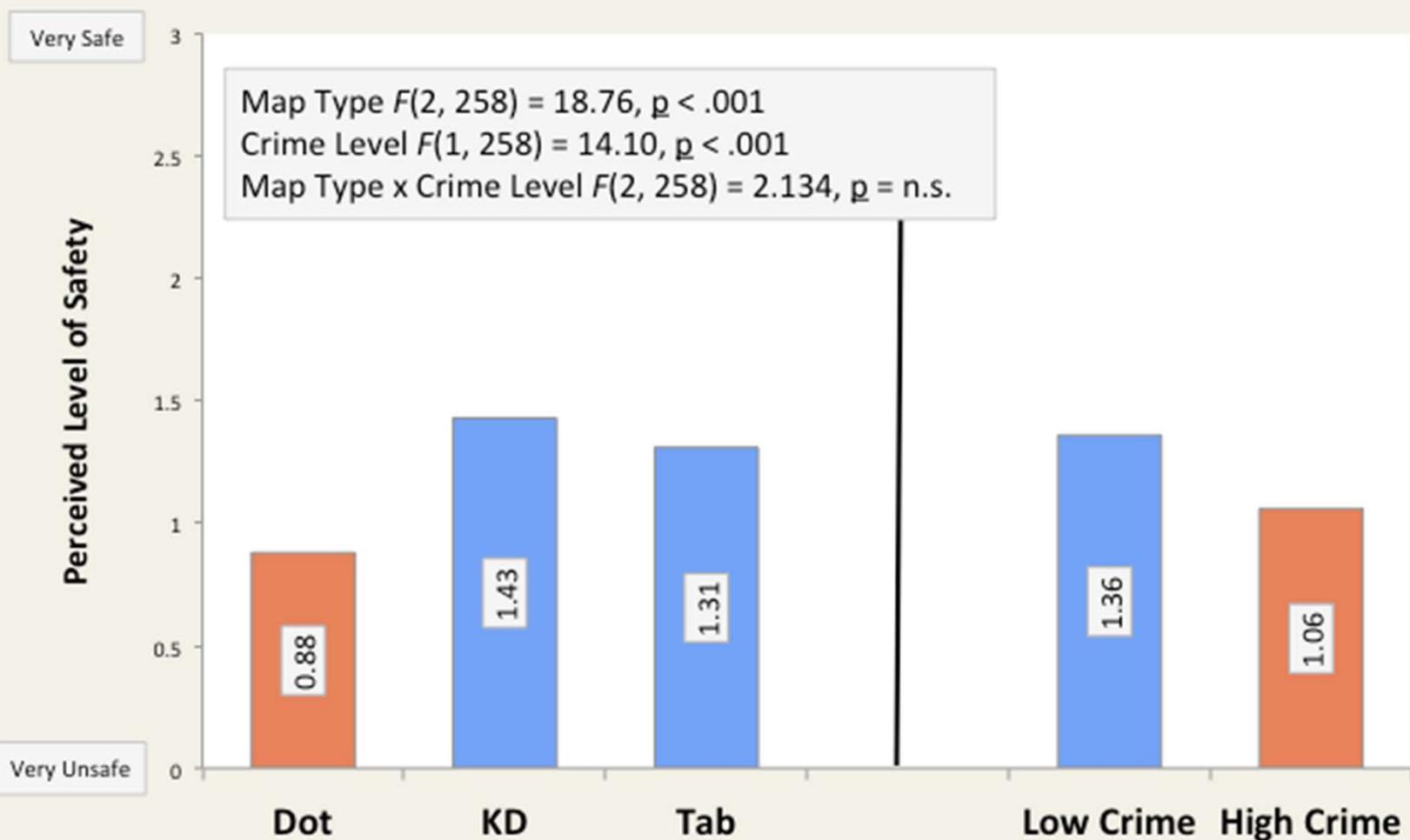
Methods

- Participants randomly assigned one of six map options.
 - Asked to imagine they live within precinct and PD has shared a crime report with them via the internet.
 - Crime Level (2) x Map Type (3)
- Survey consisted of 15 items meant to evaluate:
 - perceptions of safety
 - police effectiveness
 - neighborhood trust

Results – Perceptions of Safety

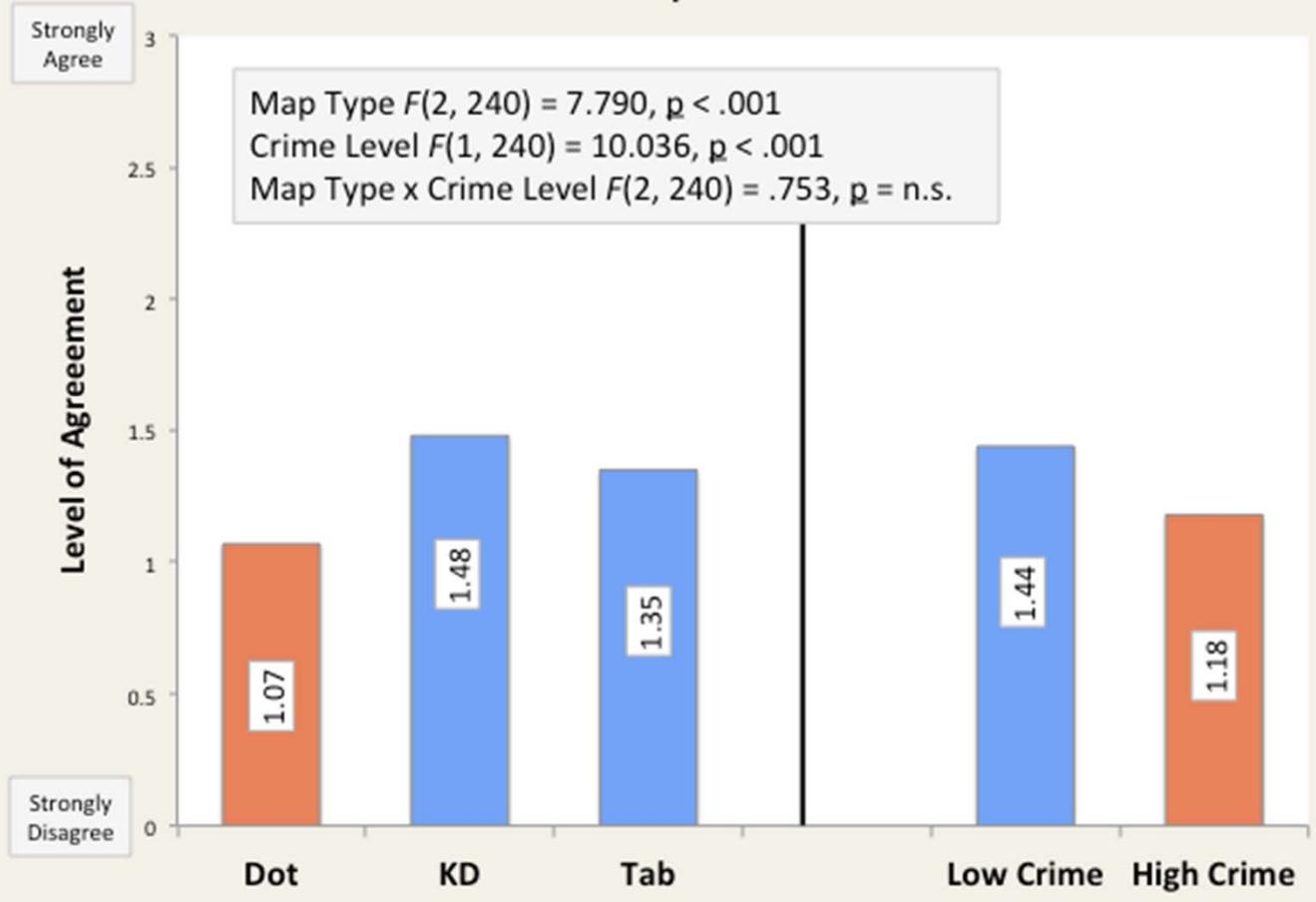
- Mean Perception of Safety measured via 4-part item:
 - How safe would you feel:
 - Walking alone during the day?
 - Walking alone at night?
 - Leaving your home unattended during a vacation?
 - Allowing your children to play outside?

Mean Perceived Level of Safety by Map Type and Crime Level

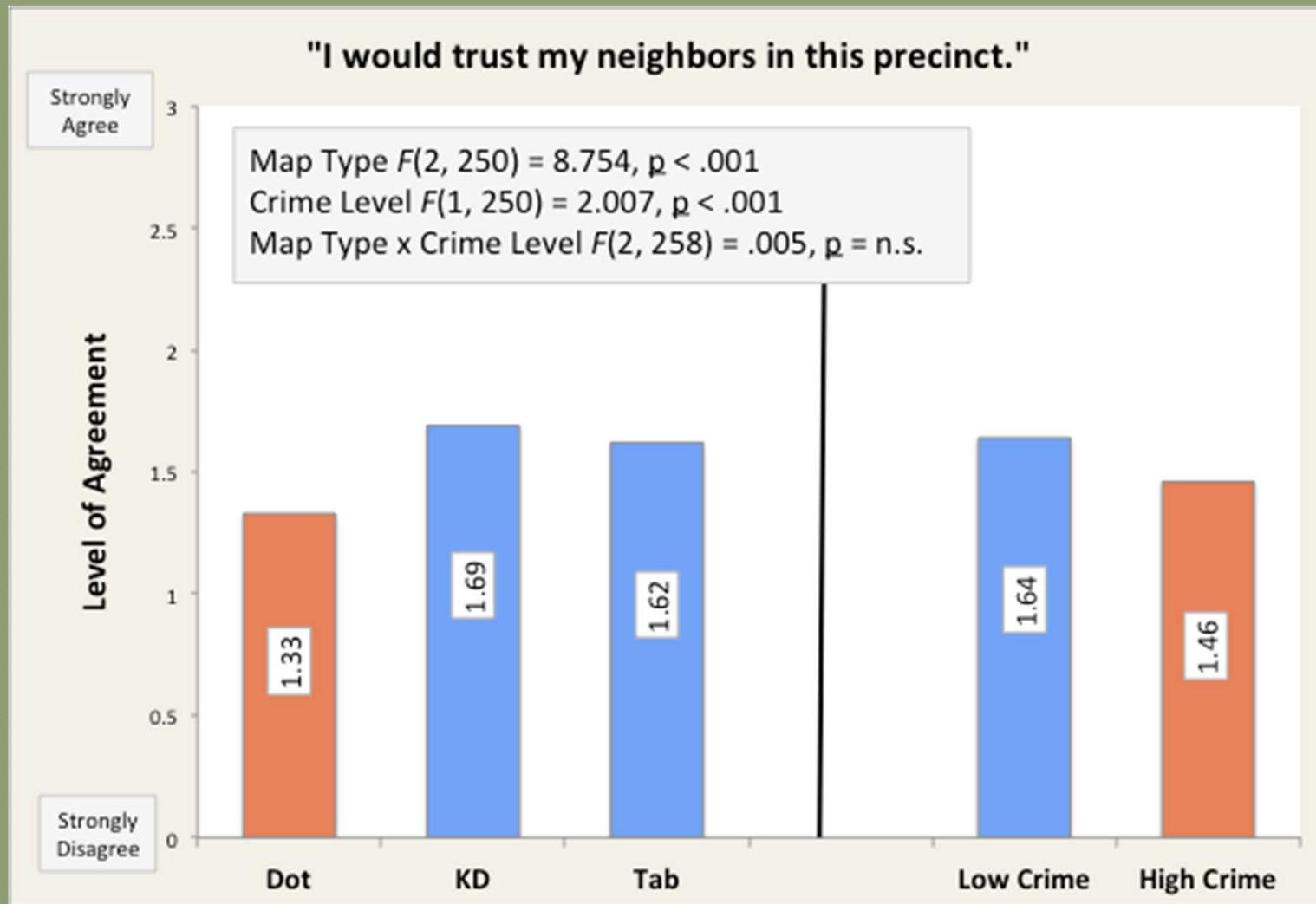


Results – Police Effectiveness

"I think the police department is doing a good job addressing crime in this precinct."



Results – Neighborhood Trust



Discussion

- 1) Map type influenced levels of fear and perceptions of safety.
 - Dot maps consistently had most negative effects.
- 1) Maps depicting greater levels of crime evoked higher levels of fear, less safety.
- 1) No interaction effect.

Implications

- Agencies should consider effects crime maps may have prior to release to public.
 - Beneficial communication tool, but with caveats.
- Agencies should seek feedback from citizens regarding impact of crime maps of their area.
- Agencies should consider impact of maps outside of criminal justice contexts.
 - Where do people want to live? Where do they want to congregate?

Future Research

- Methodology of Kernel Density maps
 - Decision-making regarding bandwidth and cell size
- Graduated Symbol vs. Kernel Density
 - Which is less scary??
- Dot Map symbolization
 - How do symbols, colors used impact perceptions?

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Thank you!