

The Association Between Ghost Gun Usage and Neighborhood Disadvantage

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Introduction

- Ghost guns = firearms that can be ordered online as parts and constructed at home
 - Unserialized, untraceable
- Circumvent background checks
- Prior research connects neighborhood disadvantage and general gun violence
- Lack of research on ghost guns specifically



Carolyn Kaster/AP

Research Question

- Are ghost guns related to neighborhood disadvantage in the same way as general gun violence?

HYPOTHESES:

- Neighborhood disadvantage would be associated with higher ghost gun rates
- Neighborhood disadvantage would be associated with higher ghost gun rates for criminal incidents when compared to non-criminal incidents

Data

OUTCOME: Ghost Gun Rate

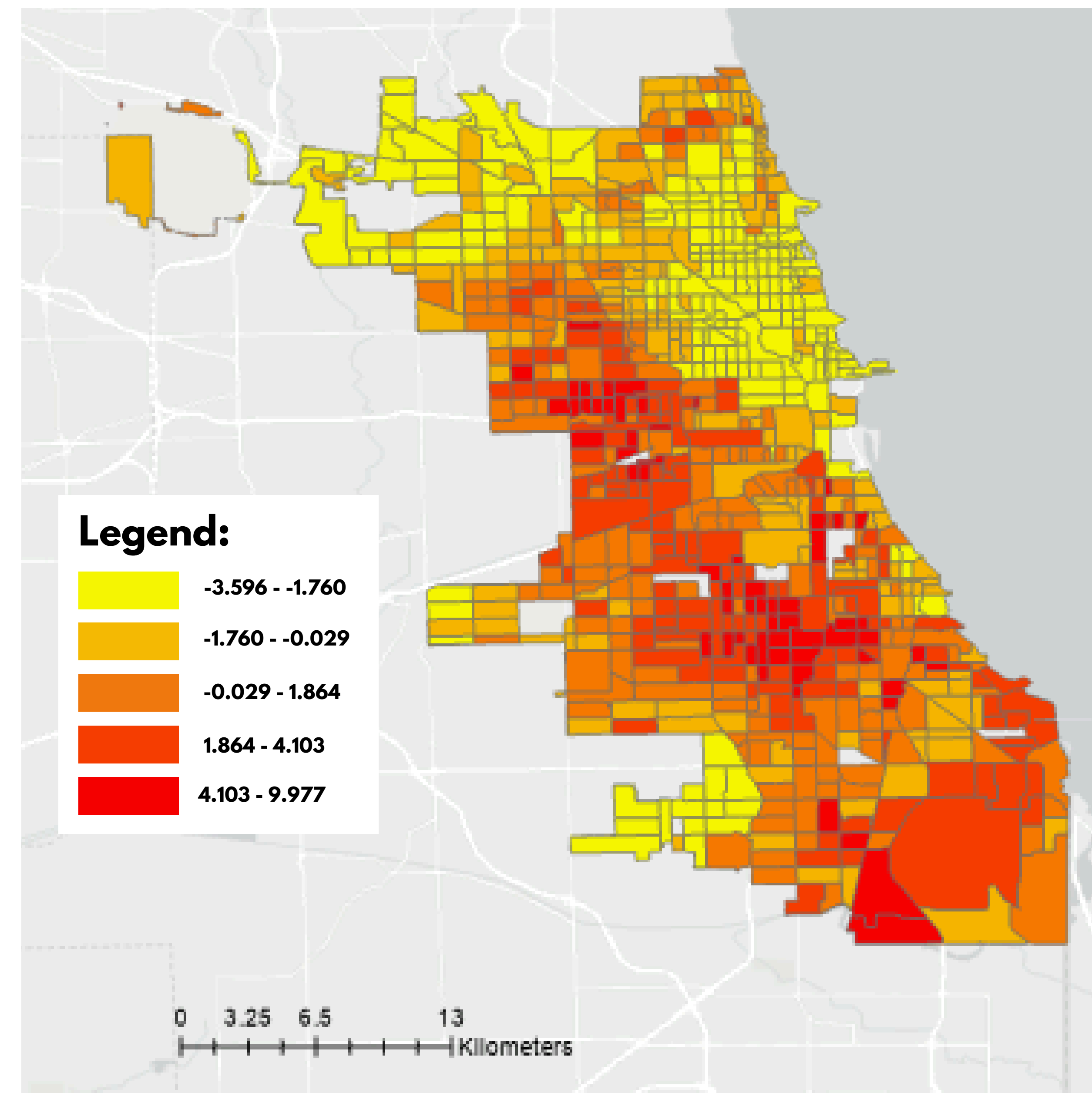
- Midwestern City Police Department
- $N = 2,242$ ghost guns 2020-2023
 - Criminal: $n = 2029$
 - Non-criminal: $n = 213$

EXPLANATORY: Neighborhood Disadvantage

- ACS 5-Year Estimates 2015-2019
- 836 Census Tracts
- Z-score sum = neighborhood disadvantage
 - Poverty rate
 - Employment rate
 - % of residents over 25 without a high school diploma

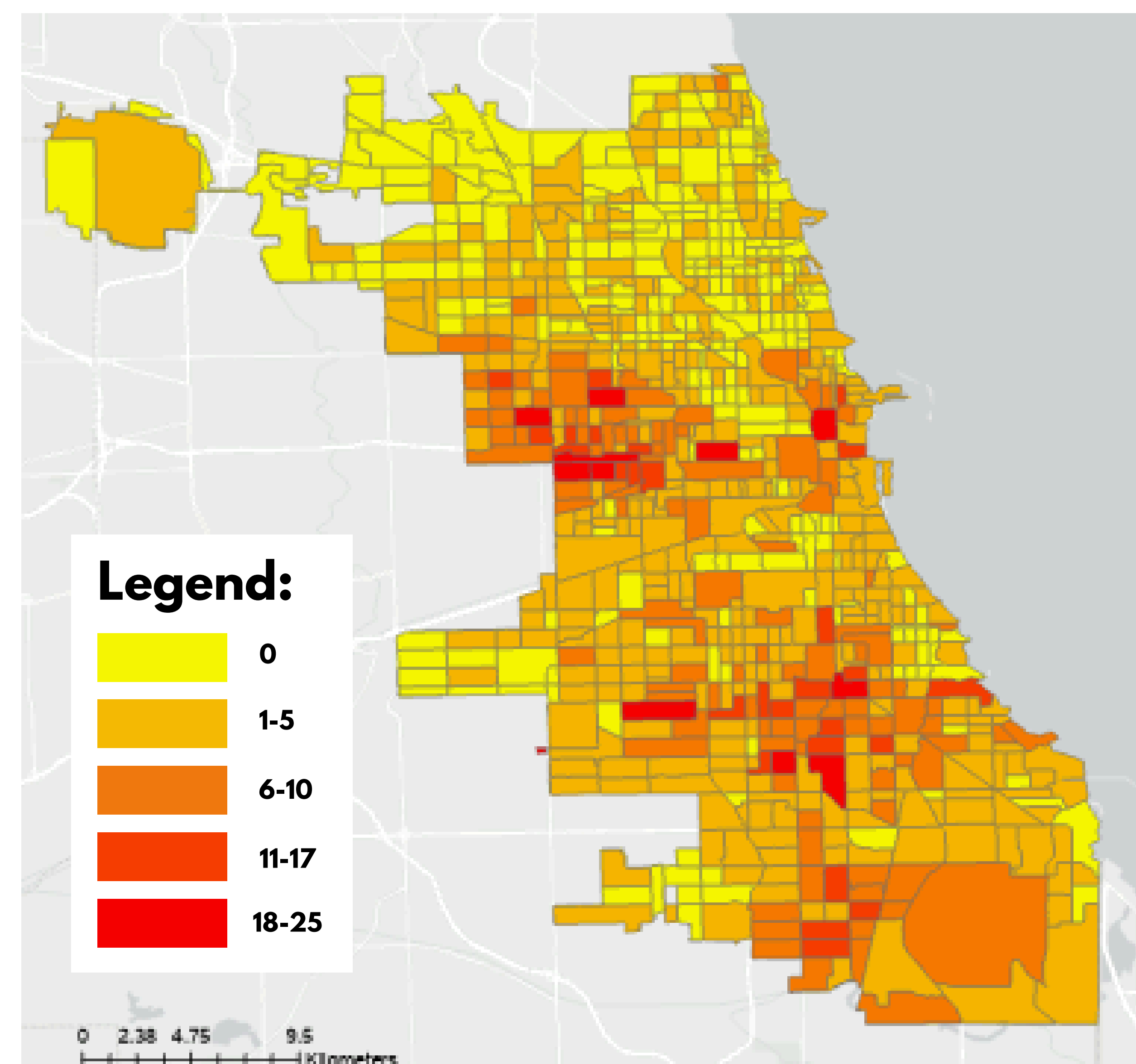
Ghost guns, like general gun violence, were more common in disadvantaged neighborhoods.

Neighborhood Disadvantage



Neighborhood disadvantage; 2015-2019 across 836 census tracts

Ghost Gun Rate



Ghost gun rate for all incidents: 2,242 ghost guns across 836 census tracts

Method

- Analyses conducted using RStudio, ArcGIS, and Stata
- Geocoded ghost gun incidents and mapped in ArcGIS
- Spatial join to find ghost gun rate per census tract separated by criminal and non-criminal incidents (outcome variables)
- Linear regression models using Stata to test Hypotheses 1 and 2
- Seemingly unrelated regression to test Hypothesis 2

Results

HYPOTHESIS 1:

- Neighborhood disadvantage was associated with higher rates of ghost guns ($p < 0.001$)

HYPOTHESIS 2:

- Neighborhood disadvantage was associated with higher ghost gun rates in criminal incidents when compared to non-criminal incidents ($p < 0.001$)

Support for both Hypotheses 1 and 2

Discussion

- Neighborhood disadvantage was associated with ghost guns in the same way as general gun violence in Midwestern City

LIMITATIONS:

- Lack of publicly available ghost gun data
- Limited generalizability to all cities

FUTURE DIRECTIONS:

- Include more cities around the US
- Include more control variables

RESEARCH IMPLICATIONS:

- If replicated, findings show that ghost guns follow the traditional theories of crime
 - Can be used to guide future research on ghost guns

POLICY IMPLICATIONS:

- Continue to support and uphold federal regulations for ghost guns
- Require serial numbers on all firearms and firearm parts at the state level
- Provide resources and support to decrease neighborhood disadvantage



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