Geographic and Demographic Characters of Gun Violence in the U.S.

Introduction

Gun violence in the United States claims thousands of lives annually. During the pandemic, the country's gun violence is intensified due to economic distress and social isolation.

The project is going to address the following question:

1) What's the geographic distribution of the U.S. gun violence incidents?

2) Which counties have higher gun incident density? Are they associated with higher population density?

3) Do gun violence incidents cluster in certain geographic area? If so, do these incidents correlate with census-tract-level demographic varavariables?

Methodology

Step 1: Data Identification

1) **Vetcors:** U.S. County Boundaries, NY State and NJ State Census Ttract Boundaries.

Source: The U.S. Census Bureau - MAF/TIGER geo database

2) **Standalone Table**: U.S. gun violence incidents, 2020 population, household income, gender, and other demographic data.

Source: Gun Violence Archive, U.S. Census Bureau - 2019: ACS 5-year Estimates Subject Tables

Step 2: Integration and Mapping

1) **Geocode** the gun vilendce incidents on the US basemap

2) **Dissolve** the boundary of all counties

3) **Spatial Join** the gun violence incidents into each county

4) **Join** the population data table to counties' polygon

5) **Merge** to get a polygon of New York City area

-First select the counties from NY/NJ State Polygon then merge

6) **Clip** to get a point layer of incidents in NYC area

7) **Join** the demographic data tables to the merged polygon

Findings

Despite 13.1% (7,948) of the 60,649 matched records in geocoding process are initially tied, and the sample size concentrated in year of 2020 to 2021 is relatively samll, we found out:

1) People living in counties with higher population density are slightly more likely to be the victims of gun violence.

2) In New York City and its surrounding areas, the census tracts with more gun incidents or a higher gun violence incident density are associated with lower median household income, lower median age, and lower male population proportion.

References List:
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GIS Lab, Newman Library, Baruch CUNY. 2010 New York City Census Tracts. New York City, NY: Newman Library (Bernard M. Baruch College), 2010. https://geo.nyu.edu/catalog/nyu-245
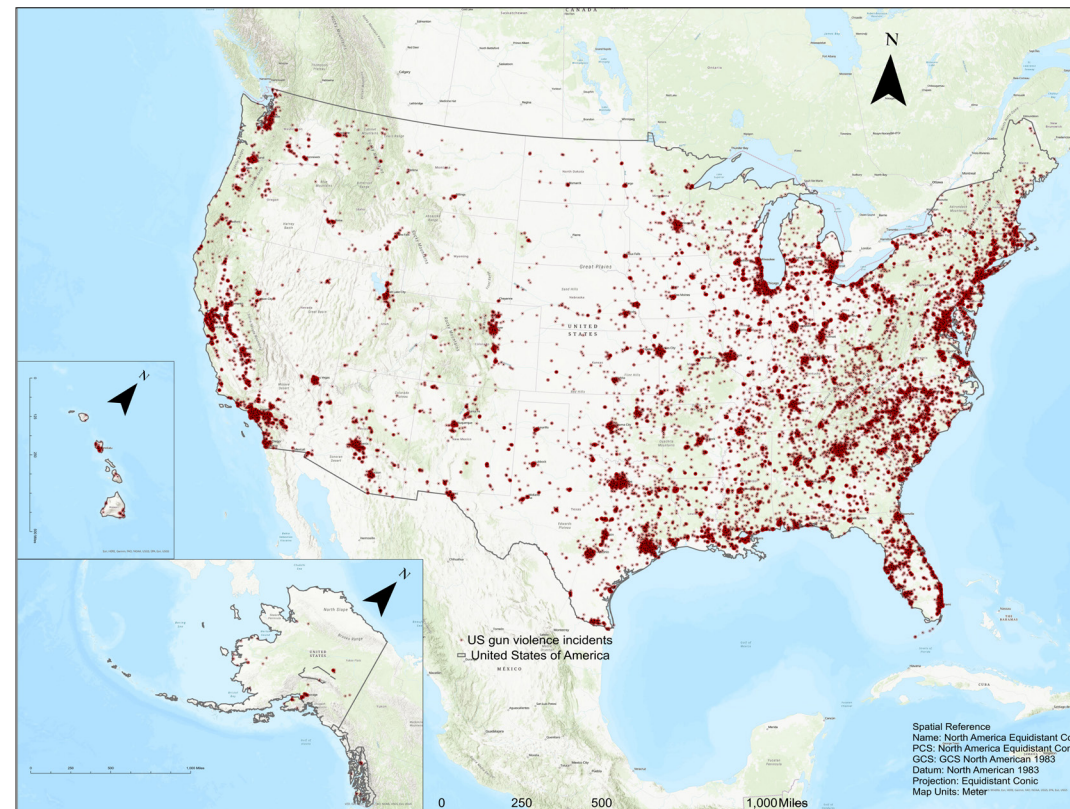
Figure 1. US Gun Violence Incidents, Oct 2020 to Oct 2021
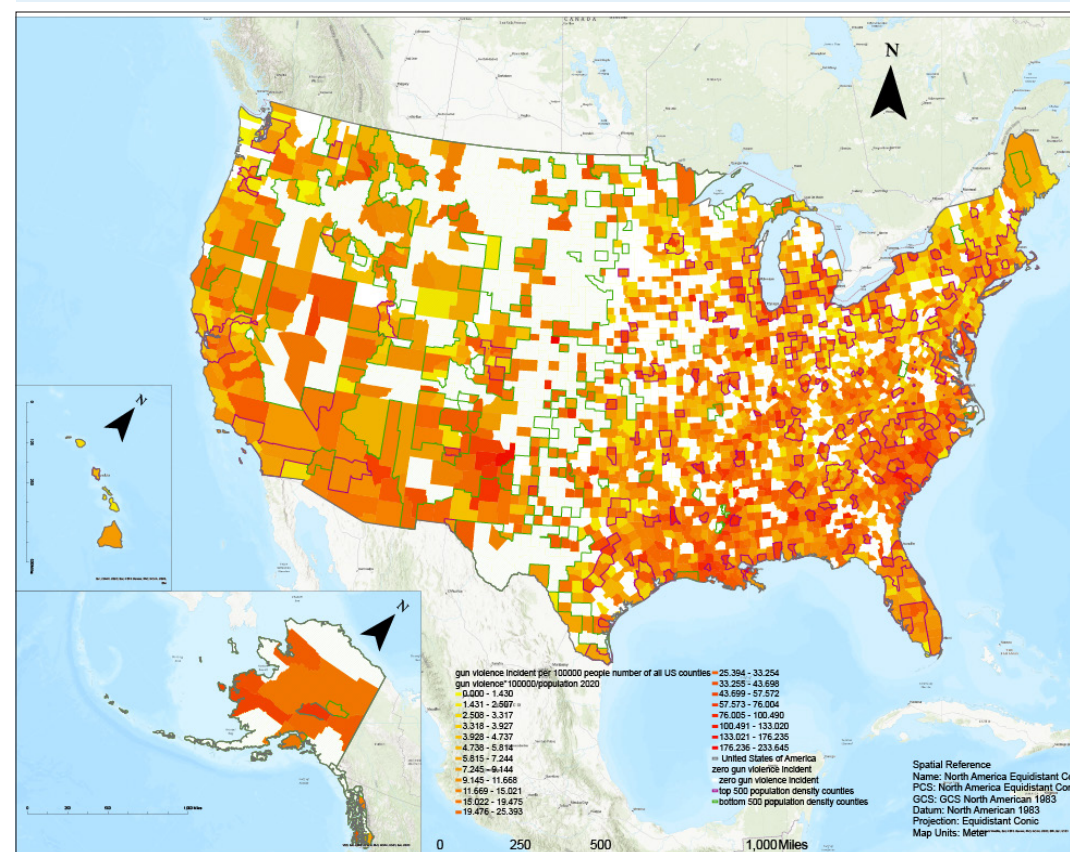

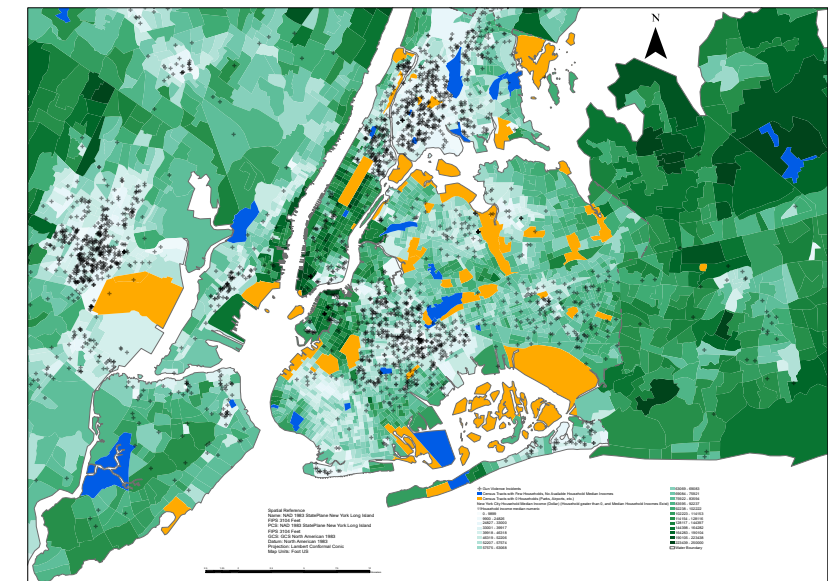Figure 2. Gun Violence Incidents per 100,000 people by Counties, 2020 to 2021

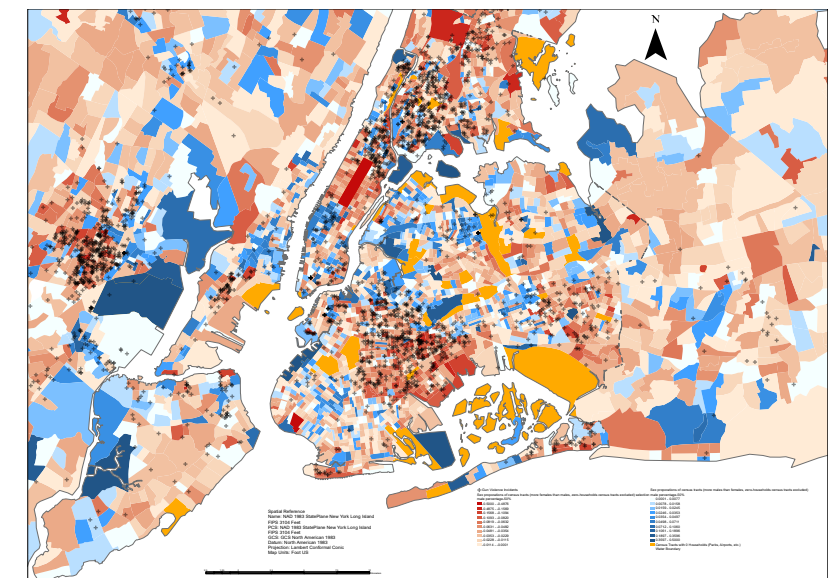Figure 3 , 2019 NYC Median Household Income by Census Tracts

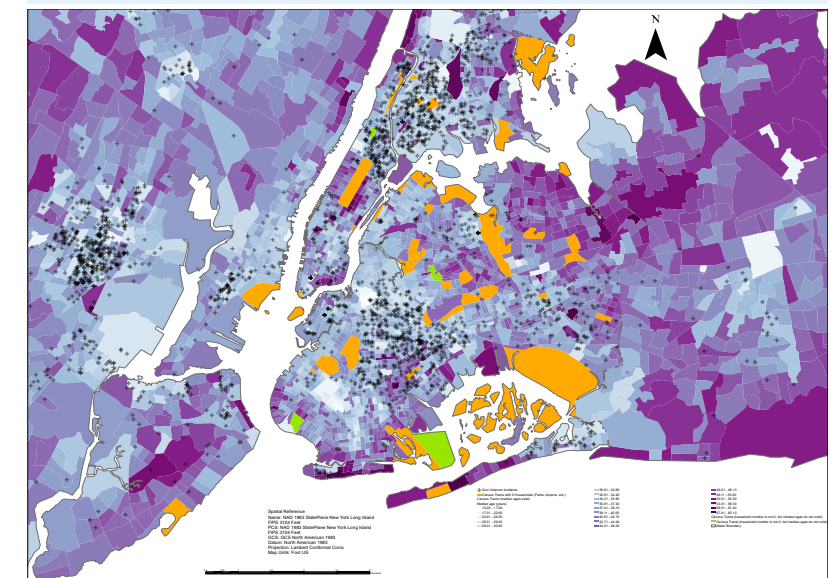Figure 4 , 2019 NYC and New Jersey Gender Ratio by Census Tracts

Figure 5 , 2019 NYC and New Jersey Median Age by Census Tracts