**Determining Rate of Violent Crime by Public Institutions**

Introduction

In 2023, New York City public parks and greenspaces were elevated and revamped with safety and healthier lifestyles as the goal for the community. This was seen through bike trails, wildlife, scenic views, planted trees, community gardens, and open spaces.

In November of the same year, it was announced that most New York City Libraries would be closed on Sundays along with reduced funding for materials, programs, and building repairs. Public libraries provide access to books, materials, programs and classes for all ages, free Wi-Fi and computers, as well as a safe place for those in the community.

Objectives

To understand the relationship between violent crimes (specifically rape, murder/manslaughter, and robbery) in New York City and the proximity to public institutions, we examined violent offenses committed in each of the five boroughs of NYC: Brooklyn, Bronx, Manhattan, Queens, and Staten Island, within a one-mile radius of public libraries and parks (public areas). Coordinates of committed violent crimes were collected and analyzed from the NYC Complaint Data Historic (2023) along with coordinates of public libraries and parks, obtained from the NYC Capital Planning Explorer. The data was then run through a series of tests to identify if any statistical significance could be determined. The purpose of this research is to discover if there is a correlation between where violent crimes are committed and public areas.

Research Questions

1. Does proximity to public areas affect where violent crimes are committed?
2. If there are cases where crime rates are higher, in which public areas and boroughs?
3. In which public areas are rape, robbery, and murder/manslaughter more likely to occur?

Methodology

Data was collected from the sources below. OpenData was used to obtain data on types of crimes committed in New York City. Capital Planning provided data on public facilities and the Census API was used for demographic data.

* [https://opendata.cityofnewyork.us/data](https://opendata.cityofnewyork.us/data/)
* <https://capitalplanning.nyc.gov/>
* <https://api.census.gov/data/2022/acs/acs1/spp>

The team used GeoPandas to identify the distance between where crimes were committed in proximity to public libraries and park outdoor spaces. ArcGIS Pro enabled us to map the data points by density per borough and New York City as a whole. SciPy and NumPy assisted with running statistical algorithms to identify significant data points.

Results

For Brooklyn, the Bronx, and Manhattan, the mean number of **all crimes** within a one-mile radius of **all public institutions** is significantly lowerthan the mean number of all crimes within a one-mile radius of a random location across all categories of crime.

In Queens, the mean number of robberies within a one-mile radius of all publicinstitutions was significantly lower than the mean number of robberies within a one-mile radius of a random location. The mean number of all crimes within a one-mile radius of a library was significantly lower than the mean number of all crimes within a one-mile radius of a random location. The mean number of robberies within a one-mile radius of a park was significantly lower than the mean number of robberies within a one-mile radius of a random location.

For Staten Island, the mean amount of murder/manslaughter and total crime was significantly *lower* around libraries and the same can be said about robbery and total crime around outdoor public places.

Overall, both public libraries and outdoor spaces appear to impact decreasing crime rates in New York City.

T-Test Results

