

Property Crimes in Gentrifying Tracts of Brooklyn

Gentrification has been considered a large problem for urban policy and planning in New York City in the past two decades. The revitalization of poorer neighborhoods due to influxes of affluent residents has led to increasing rent prices and the displacement of low-income families and individuals (who are disproportionately minorities). As a neighborhood becomes more wealthy, it changes in other ways as well. New businesses move in due to increased interest and economic investment in the area. Cultural shifts occur – for better and worse, with both the mixing of different racial and socioeconomic groups, but also higher polarization between them. Oftentimes, crimes are greatly reduced in gentrified areas. However, due to the economic changes that come with the gentrification of a neighborhood, property crimes may actually increase. This could be due to a number of factors and sociological theories that will be discussed in the following section. This study will address this issue by examining the spatial relationship between property crimes and gentrified areas in New York City's borough of Brooklyn. It is expected that high-income and gentrified areas experience higher rates of property crimes than low-income areas.

Literature Review

There have been many studies researching the relationship between gentrification and crime since the 1980s. On one hand, crime might increase due to higher-income individuals moving to urban areas and becoming lucrative targets; conversely, crime might decrease in gentrified areas because lower-income people commit more crimes and are being displaced by middle-class citizens, who commit fewer crimes. Although previous studies put forth these theories and suggested that fear of crime remains high in gentrified neighborhoods, none had actually tested the effects of gentrification on crime rates until the mid-1980s. To study these effects, McDonald conducted a time-series analysis between 1970 and 1984 on fourteen gentrified neighborhoods in Boston, New York, San Francisco, Seattle, and Washington, D.C.¹ He found that gentrification leads to a decrease in personal crime, but has no significant effect on property crime.

Empirical evaluations of the relationship between gentrification and crime, however, have produced inconsistent findings, partly due to a narrow theoretical focus on social disorganization and a limited conceptualization of gentrification. Barton and Gruner conducted research to incorporate insights from the broken windows thesis, civic communities perspective, and defended community thesis to give a more complete understanding of the effect of gentrification on crime.² They proposed three pathways by which gentrification influences crime: first, gentrification disrupts social order and opportunities for criminal acts; second, gentrification increases crime because incumbent residents are unwelcoming and organize against newcomers; and third, residents' abilities to organize against crime mediate the influence of demographic changes on crime.

¹ McDonald, "Does Gentrification Affect Crime Rates?"

² Barton and Gruner, "A Theoretical Explanation of the Influence of Gentrification on Neighborhood Crime."

Some researchers have taken an ecologically theoretical approach to studying gentrification and crime. Covington and Taylor conducted a study looking at gentrification and crime from the perspective of human ecology, therefore focusing on change and neighborhoods in the context of the surrounding urban structure.³ Because areas that are more likely to gentrify due to the distribution of urban housing prices are the same areas where crime rates are high, gentrifying areas have higher crime rates and more entrenched criminal traditions. The researchers used census and crime data for 277 Baltimore neighborhoods from 1970 to 1980 to analyze the changes in larceny and robbery rates in appreciating neighborhoods. They found that robbery significantly increased and larceny decreased in gentrifying neighborhoods, and these results confirm human ecological theory by highlighting the negative effects of rapid change to neighborhoods in Baltimore.

Based on a framework of ecological dissimilarity, gentrification will also have different effects on crime depending on the neighborhood's racial composition. Papachristos, Smith, Scherer, and Fugiero studied the influence of gentrification on homicide and street robbery in Chicago, specifically by measuring the growth and spread of coffee shops as a symbol of gentrification.⁴ They used data from the US Census Bureau and the Chicago Police Department to analyze 341 neighborhood clusters as identified by the Project on Human Development in Chicago Neighborhoods. They found that gentrification is a racialized process in which an increase in the number of coffee shops is associated with both decreasing homicide rates for all neighborhoods, and increasing robbery rates in Black neighborhoods.

Disparities in income have also been shown to have a significant effect on crime rates in gentrifying areas. Incoming mixing causes competition in inner cities, which have more crime but better access. O'Sullivan examined this competition between different income groups in inner cities, and argued that gentrification is self-reinforcing partly because crime decreases due to the displacement of low-income individuals by higher-income individuals.⁵ He conducted a case study of gentrification in Portland, Oregon from 1990 to 2000, examining changes in racial and income composition and crime rates by using data from the US Census Bureau and the Portland Police Bureau. Results showed that the city's census tracts with the highest original crime rates had the largest changes in racial and income composition, and the largest decreases in four categories of crime: auto theft, burglary, assault, and robbery.

Another study by Kozey found, however, that contextual factors like collective efficacy and perceived neighborhood change may modify the relationship between gentrification and crime.⁶ She assessed whether gentrification is associated with lower levels of crime, and proposed mechanisms that may alter the effect, by using data from the US Census Bureau, the Project on Human Development in Chicago Neighborhoods, and the Chicago Transit Authority for the early 1990s. Results showed that gentrification is negatively associated with crime, and while collective efficacy further strengthens this effect, increasing perception of neighborhood change reduces it.

³ Covington and Taylor, "Gentrification and Crime: Robbery and Larceny Changes in Appreciating Baltimore Neighborhoods during the 1970s."

⁴ Papachristos et al., "More Coffee, Less Crime?"

⁵ O'Sullivan, "Gentrification and Crime."

⁶ Kozey, "Collective Efficacy, Threat, and Urban Change."

While theory suggests that gentrification decreases crime in the long run, however, anecdotal evidence shows that in the short term it actually increases crime. Lee, hypothesizing that this could be due to status differences between the new and old populations and increased opportunities for crime, examined the exogenous effect of the 1994 Northridge Earthquake in Los Angeles on gentrification of affected areas by middle- and high-income individuals due to federal financing incentives.⁷ Using LAPD crime data, Home Mortgage Disclosure Act data, and data on the earthquake damage from the Office of Emergency Services, he analyzed the effect of this specific instance of gentrification on crime. He found that gentrification increases assaults, robberies, and auto theft on a short-term basis.

Kirk and Laub also found that neighborhood changes like gentrification have a destabilizing influence that leads to short-term increases in crime, partly because residential migration undermines informal social control.⁸ They looked at previous studies to assess how methodological choices affect inferences about this relationship, and they argued that longitudinal data on neighborhood social and cultural processes and population migration was needed to study the association between neighborhood change and crime. They concluded that population change is both a cause and consequence of crime; that gentrification leads to short-term increases in crime and long-term decreases for property and violent crimes; and that public housing and increases or decreases in homeownership have different effects on crime rates.

One such study that used longitudinal data to assess the association between neighborhood change and crime was a 2011 study by Kreager, Lyons, and Hays, in which they compared changes in total, property, and violent crimes between revitalized Seattle neighborhoods and areas that remained disadvantaged during the 1980s and 90s.⁹ They hypothesized a curvilinear relationship in which crime varies across two different time periods. They used mortgage investment data from the Federal Financial Institutions Examination Council, the US Census Bureau, and the Seattle Police Department. They found that in its early stages, gentrification is associated with slight increases in crime, but crime modestly decreases as gentrification becomes more complete.

Before 2013, no study had conducted a time-series analysis of this association in New York City. Barton examined the effects of gentrification on the seven index crimes in 55 New York City sub-boroughs from 1980 to 2009.¹⁰ He used data from the US Census Bureau and the American Community Survey, qualitative data from The New York Times, and data on New York City crime from Infoshare Online and the Citywide Performance Report. Results showed that areas that experienced increased gentrification had significantly larger decreases in the violent crimes of assault, homicide, and robbery, and that this relationship held over time; however, he found limited support for a positive association between gentrification and property crime rates.

One study specifically regarding Brooklyn was conducted in 2011 by Houston, and examined the history of the neighborhood Bedford Stuyvesant and the demographic and economic changes that

⁷ Lee, “Gentrification and Crime.”

⁸ Kirk and Laub, “Neighborhood Change and Crime in the Modern Metropolis.”

⁹ Kreager, Lyons, and Hays, “Urban Revitalization and Seattle Crime, 1982–2000.”

¹⁰ Barton, “Gentrification and Crime in New York City 1980-2009.”

occurred there, as well as the changing crime rate.¹¹ She argued that gentrification can improve a community's ability to influence city agencies, and thus reduce crime, by increasing its population's political and economic resources. She used data from the FBI's Uniform Crime Report, the US Census Bureau, and historical accounts of Bedford Stuyvesant to assess the effect of gentrification on crime. She found that crime has decreased significantly in Bedford Stuyvesant since its urban renewal.

These studies, when taken together, span a wide array of urban areas, and present various different findings about crime rates in gentrifying places. Only some of the research provides evidence on crimes specific to property, like burglary and larceny. This study will examine several different types of property crimes occurring within a one-year span in Brooklyn, New York. Despite some evidence that crime rates decline in gentrified areas, especially over longer periods of time, this study hypothesizes that property crimes in particular are more highly concentrated in these areas. One reason for this could be that property values of not only homes and businesses, but of belongings like vehicles and personal items are likely to increase in these areas as well, due to the influx of wealthier residents, and are therefore more attractive targets for such crimes. The locations of property crimes will be spatially analyzed to see if clustering exists, and it is expected that there will be significant clustering in gentrified areas.

Methodology

Gentrification

This study used changes in median household income as a signifier of gentrification. Census tracts in Kings County (Brooklyn), New York were compared using American Community Survey data from the United States Census Bureau.¹² A tract was considered eligible to gentrify if its median household income in 2000 was in the bottom 40th percentile as compared to the other tracts in the county. Then, changes in median household income in these tracts from 2000 to 2015 (adjusted for inflation in the ACS data) were calculated. A tract is considered to have gentrified if the increase in median household income is in the top third percentile of all eligible tracts. This operationalization of gentrification is similar to the methodology utilized in previous research, like Freeman's study on residential mobility and displacement from 2005.¹³

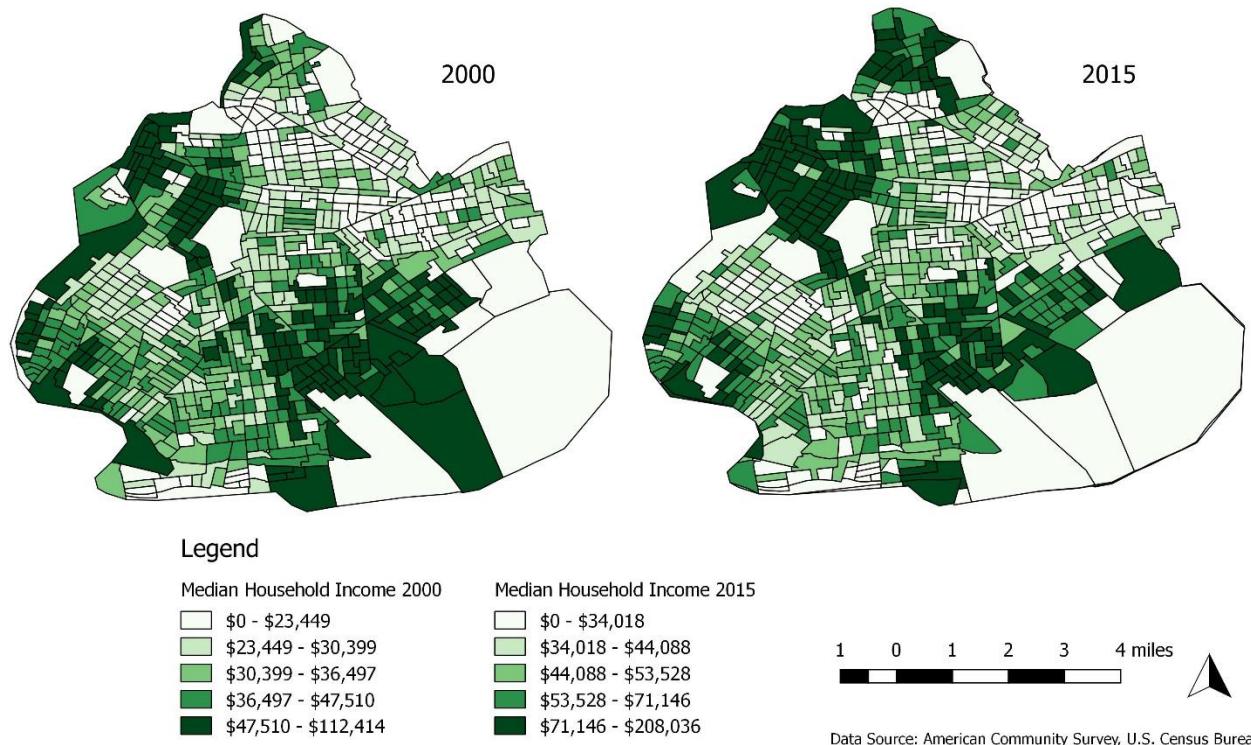
Two two-panel maps are presented on the next page. The first includes maps of the median household income of all Kings County census tracts in 2000 and 2015. The second includes a map for the change in income for tracts eligible to gentrify, and a map of dissolved boundary polygons of the gentrified tracts overlaid on 2015 median household income. This last map indicates not only the gentrified tracts (in red), but also tracts that might be considered currently gentrifying (in blue). The median household income in these tracts is in the 30th to 60th percentile range. While not fully gentrified according to the operational definition, these tracts do show increasing income, and could continue to increase in the next five to ten years, so they are included for further analysis. A discussion of changes in income and gentrification is included along with analyses of the other maps in the results section.

¹¹ Houston, "Gentrification Causes a Reduction of Crime in Bedford Stuyvesant."

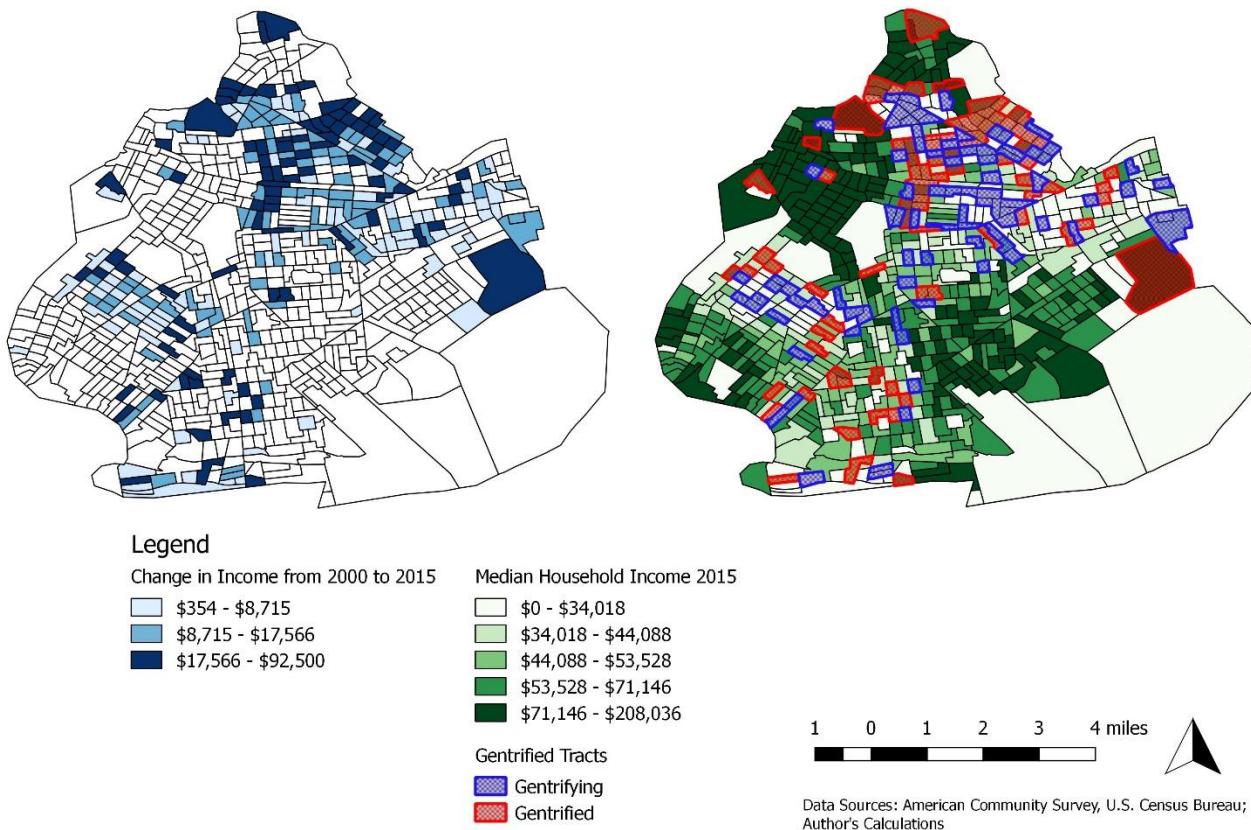
¹² United States Census Bureau

¹³ Freeman, "Displacement or Succession?"

Median Household Income in Brooklyn in 2000 and 2015 Census Tract Level, Kings County



Change in Income from 2000 to 2015 Signifying Gentrification



Property Crimes

Twelve property crimes are used in this study, not only because the point data would overwhelm the geographic space of the map, but in order to see any variance between different types of property crimes. The data are from the NYPD Complaint Data Historic from NYC OpenData, which includes all valid felony, misdemeanor, and violation crimes reported to the NYPD from the past decade.¹⁴ Only property crimes in Brooklyn with occurrence dates between January 1, 2015 and December 31, 2015 are analyzed. Each incident includes latitude and longitude coordinates of the occurrence location in the format of the Global Coordinate System, WGS 1984, decimal degrees (EPSG 4326). The twelve different property crimes include theft of property and damage to property, and are described in the table below. Descriptions are referenced from the New York State Penal Law:¹⁵

Property Crime	NY Penal Law Description
Grand Larceny Auto	Theft of a motor vehicle, excluding motorcycles, costing more than \$100
Grand Larceny of a Motorcycle	Theft of a motorcycle costing more than \$1,000
Commercial Burglary	Commercial Burglary: unlawfully entering a commercial building (like an office) with the intent to commit a crime
Residential Burglary	Unlawfully entering a residential building (a home) with the intent to commit a crime
Grand Larceny of an Unattended Non-Residential Building	Grand Larceny of an Unattended Non-Residential Building: theft of property exceeding \$1,000 from a commercial building or office building with no one present at the time
Grand Larceny of an Unattended Residence	Grand Larceny of an Unattended Residence: theft of property exceeding \$1,000 from a home with no one present at the time
Petit Larceny from a Building	Theft of property not exceeding \$1,000 from any building with no one inside
Shoplifting (both Petit and Grand Larceny)	Theft from an open store
Grand Larceny from a Person	Theft of property from off someone's person (like pickpocketing)
Bicycle Larceny (both Petit and Grand)	Theft of a bike
Truck Burglary	Unlawfully entering an enclosed motor truck or trailer with the intent to commit a crime
Arson	Starting a fire to intentionally damage a building

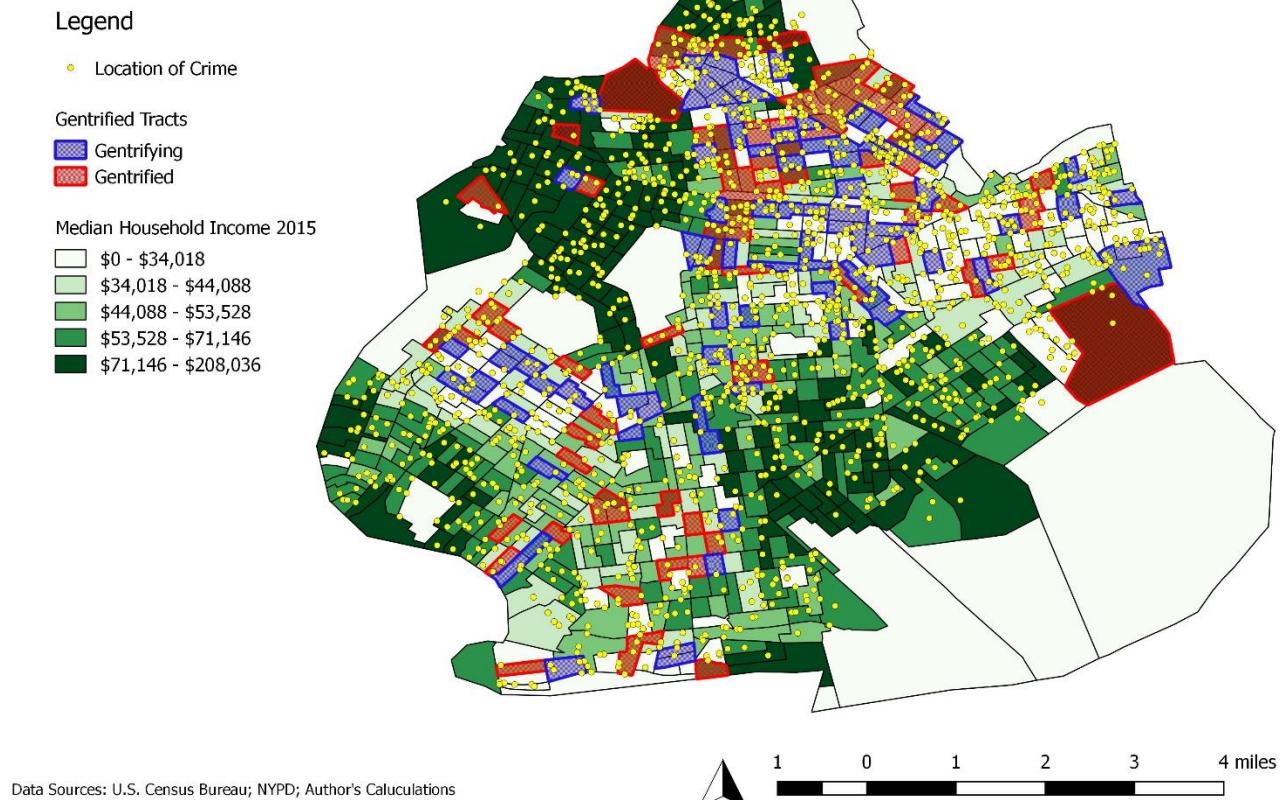
Clustering

Point locations for each category of property crime from 2015 are plotted on the map of 2015 median household income and gentrifying tracts. The maps are presented on the following pages, and a discussion of the visual analysis and statistical analysis of point clustering is presented in the following results section. Again, it is expected that crimes cluster in gentrified tracts.

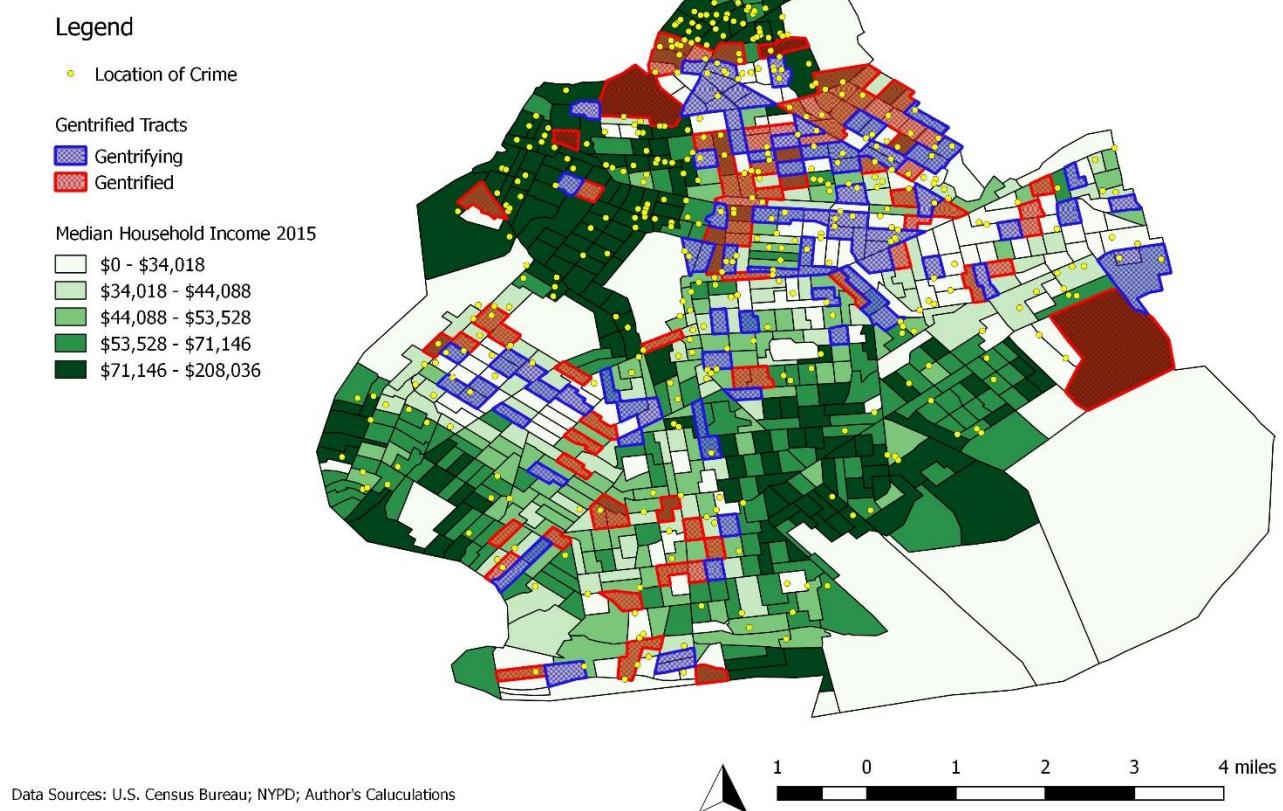
¹⁴ NYC OpenData, "NYPD Complaint Data Historic."

¹⁵ New York State Law, "Consolidated Laws of New York."

2015 Grand Larceny Auto



2015 Grand Larceny Motorcycle



2015 Commercial Burglary

Legend

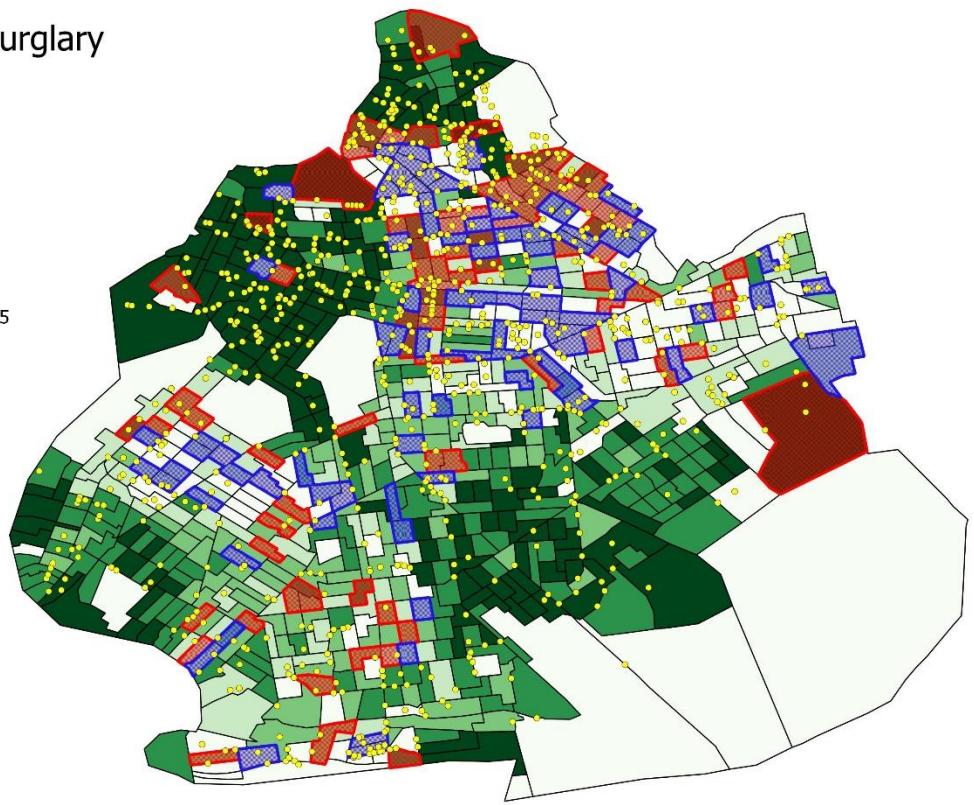
• Location of Crime

Gentrified Tracts

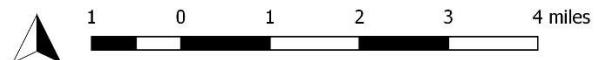
- Gentrifying
- Gentrified

Median Household Income 2015

- | |
|----------------------|
| \$0 - \$34,018 |
| \$34,018 - \$44,088 |
| \$44,088 - \$53,528 |
| \$53,528 - \$71,146 |
| \$71,146 - \$208,036 |



Data Sources: U.S. Census Bureau; NYPD; Author's Calculations



2015 Residential Burglary

Legend

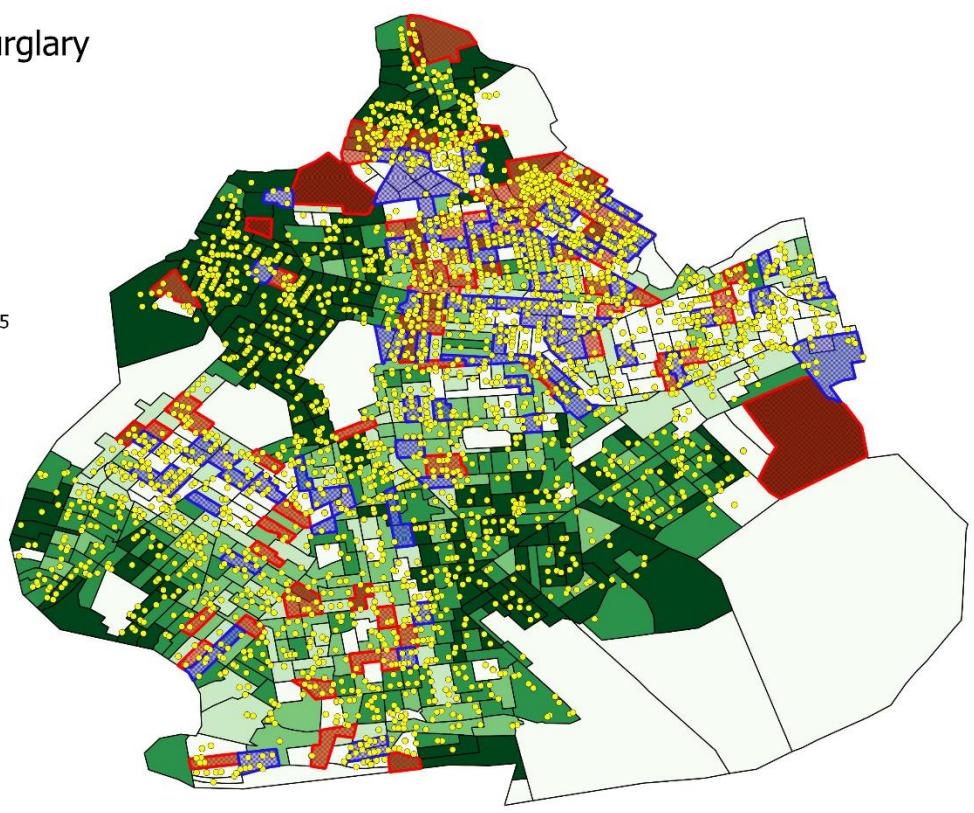
• Location of Crime

Gentrified Tracts

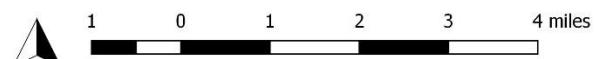
- Gentrifying
- Gentrified

Median Household Income 2015

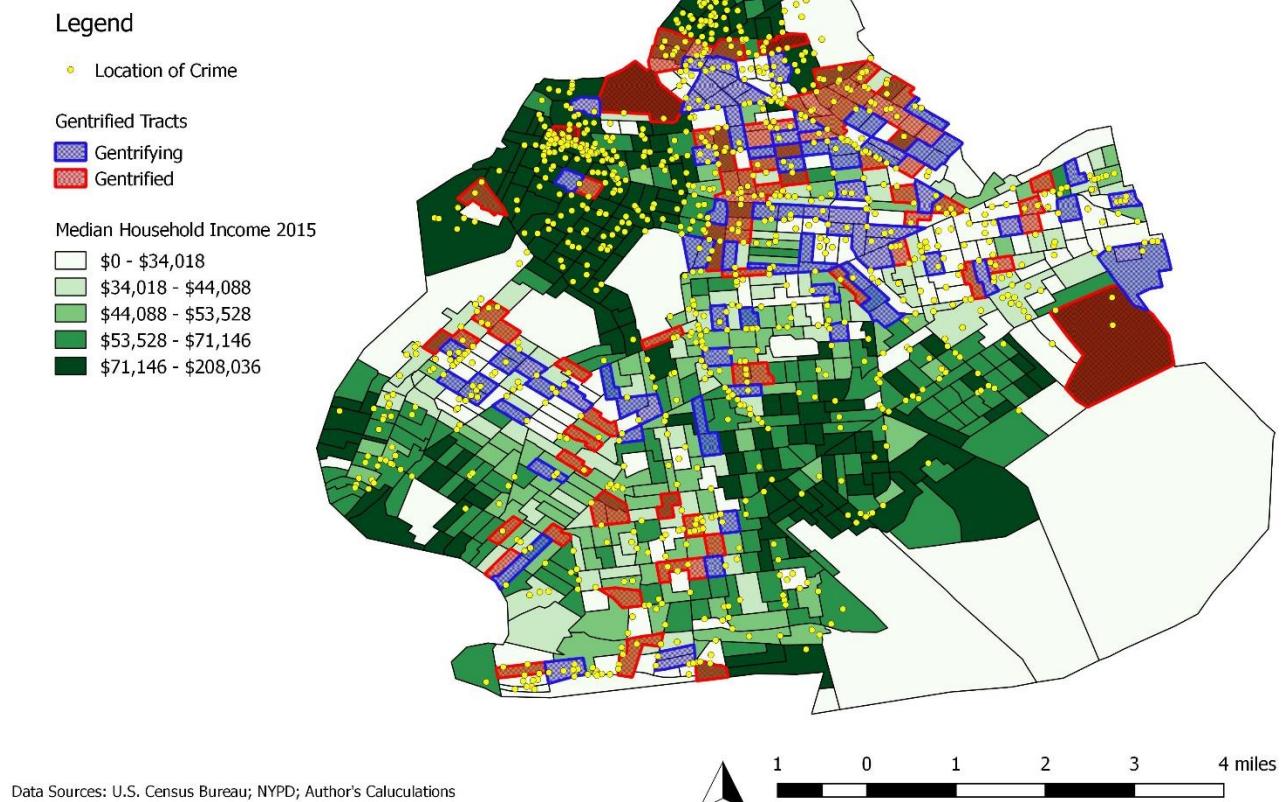
- | |
|----------------------|
| \$0 - \$34,018 |
| \$34,018 - \$44,088 |
| \$44,088 - \$53,528 |
| \$53,528 - \$71,146 |
| \$71,146 - \$208,036 |



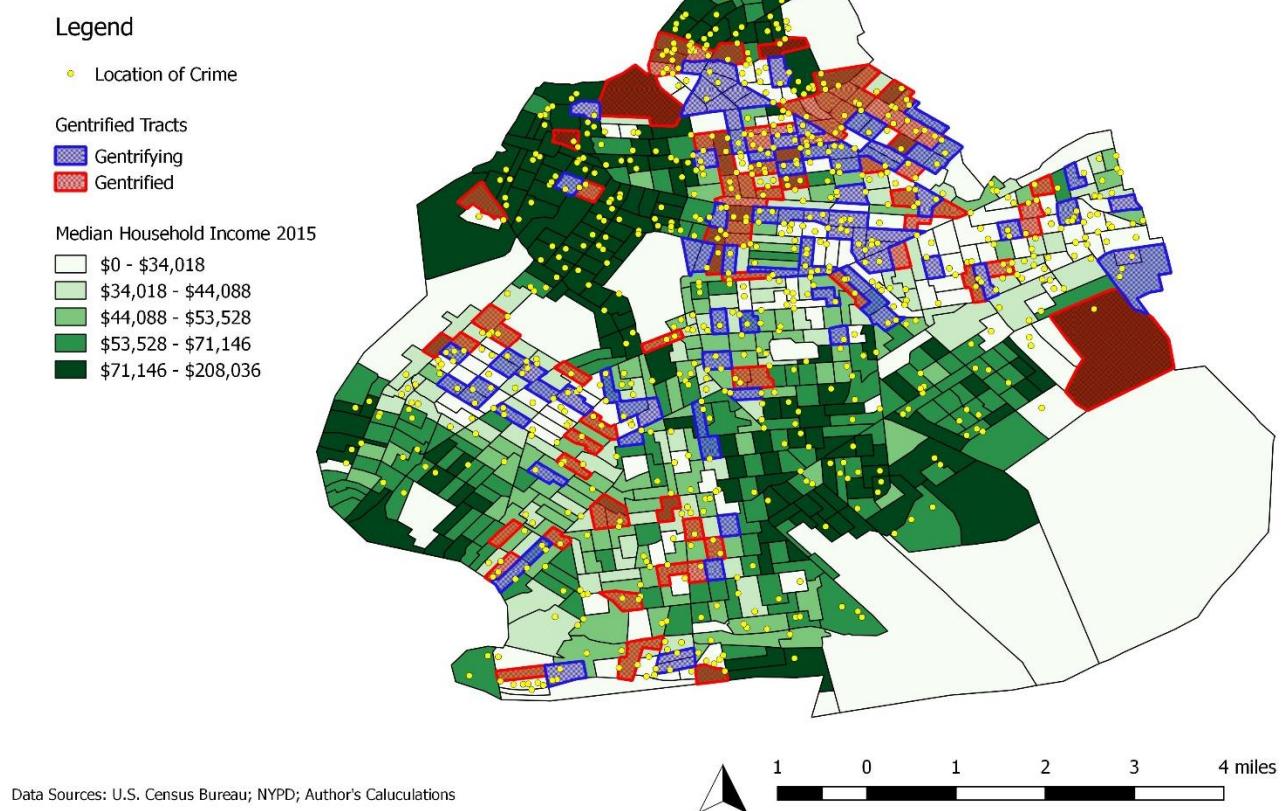
Data Sources: U.S. Census Bureau; NYPD; Author's Calculations



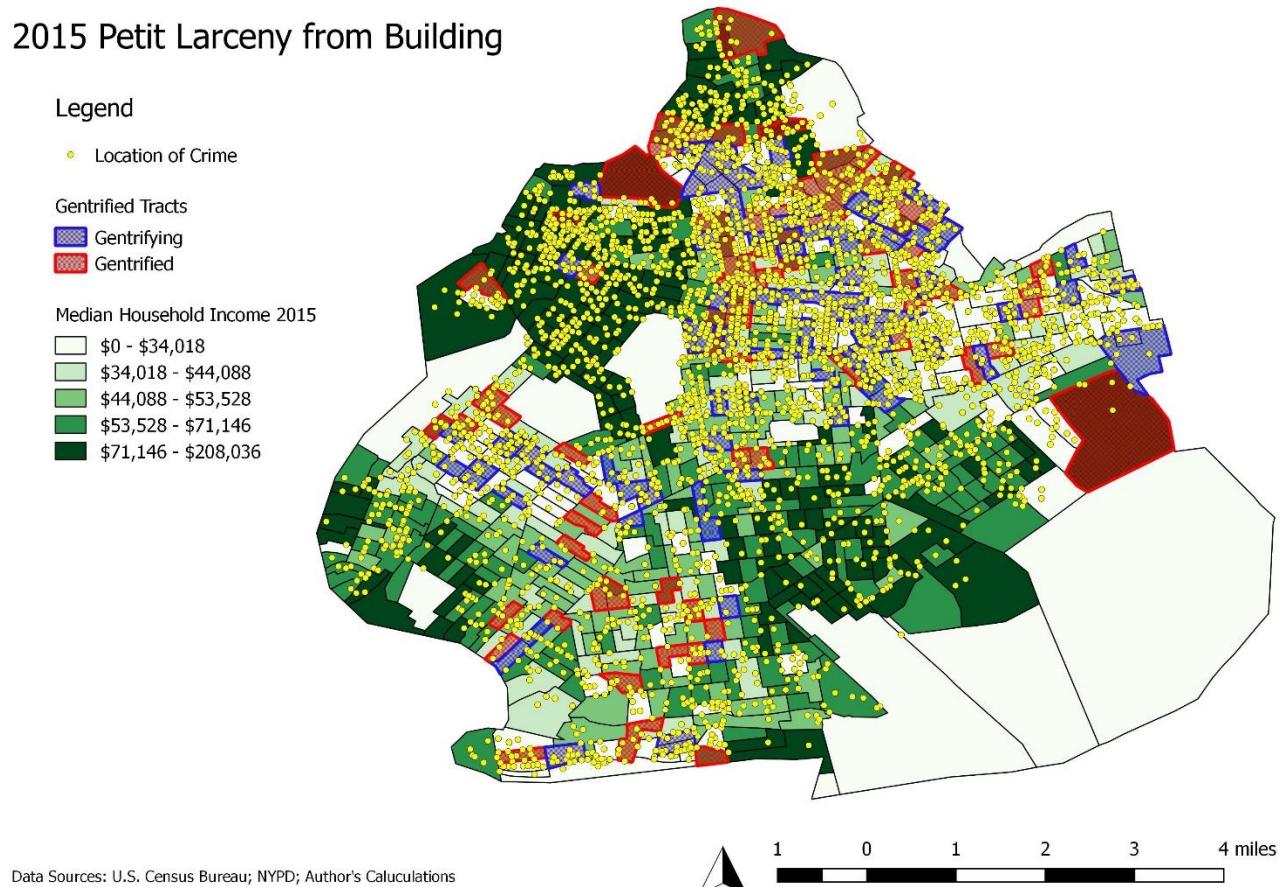
2015 GL Unattended Non-Residential Bldg



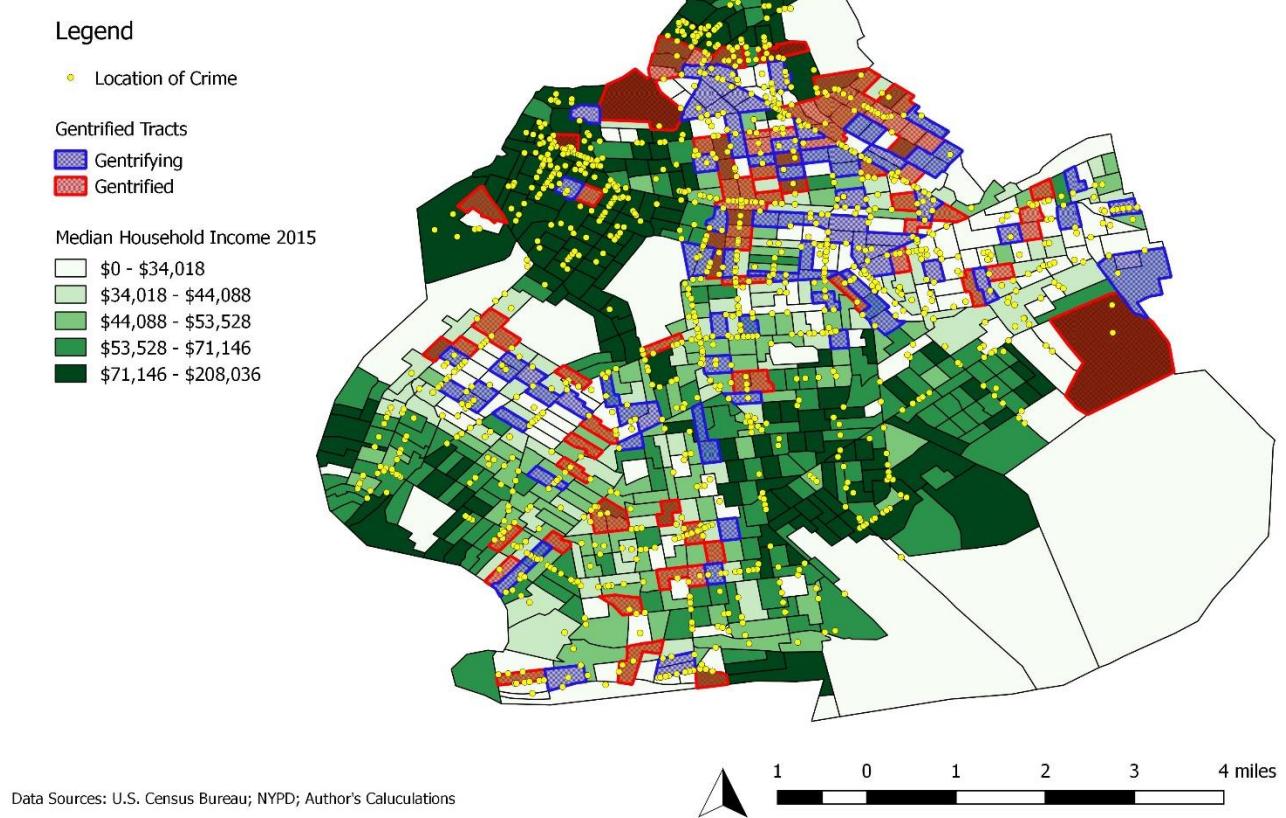
2015 GL Unattended Residence



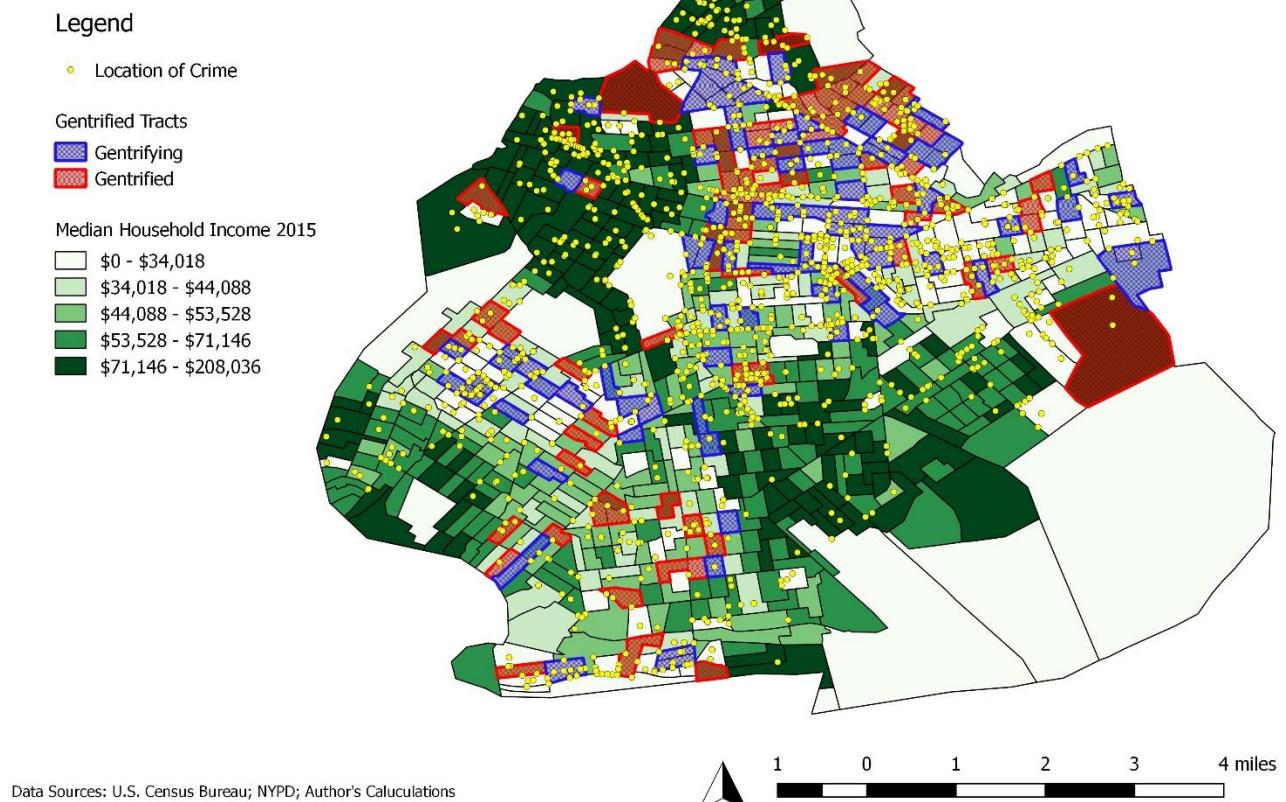
2015 Petit Larceny from Building



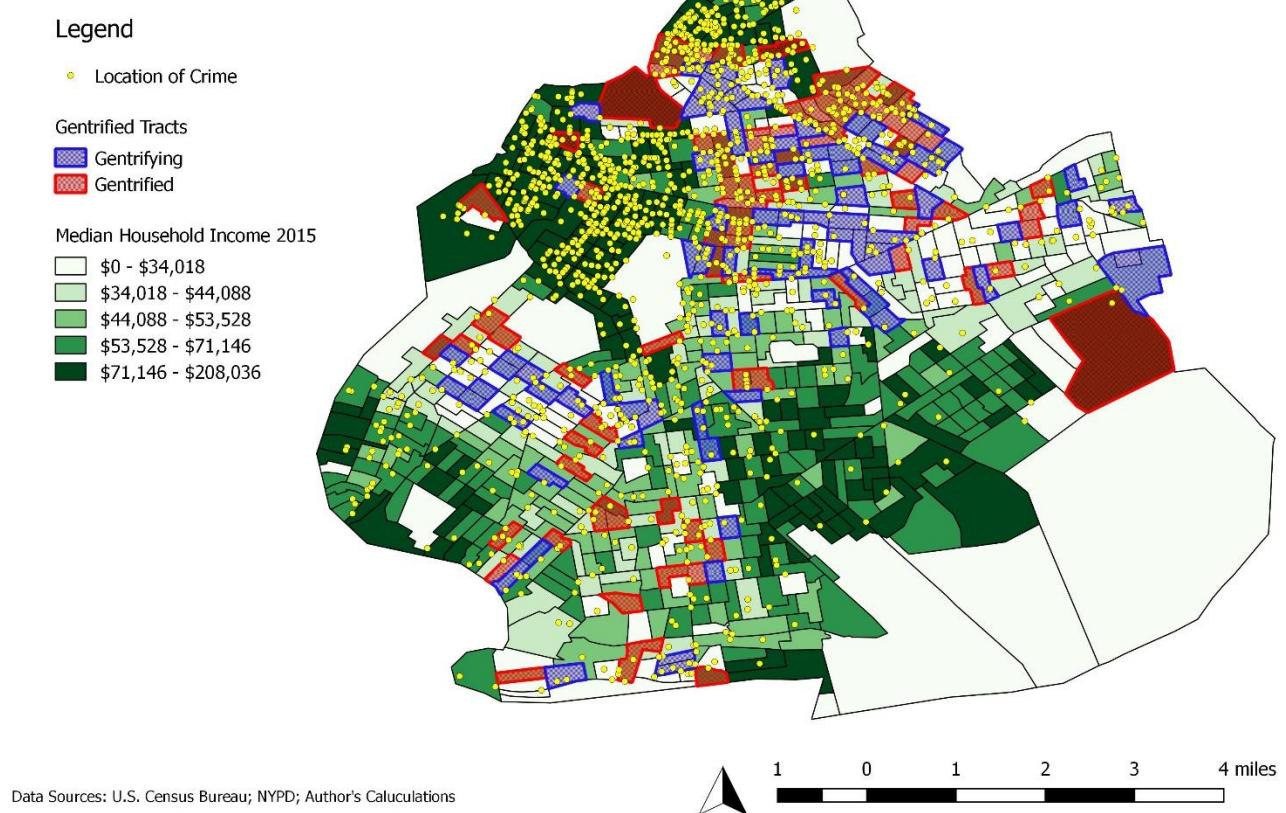
2015 Shoplifting



2015 Grand Larceny from Person



2015 Bicycle Larceny



2015 Truck Burglary

Legend

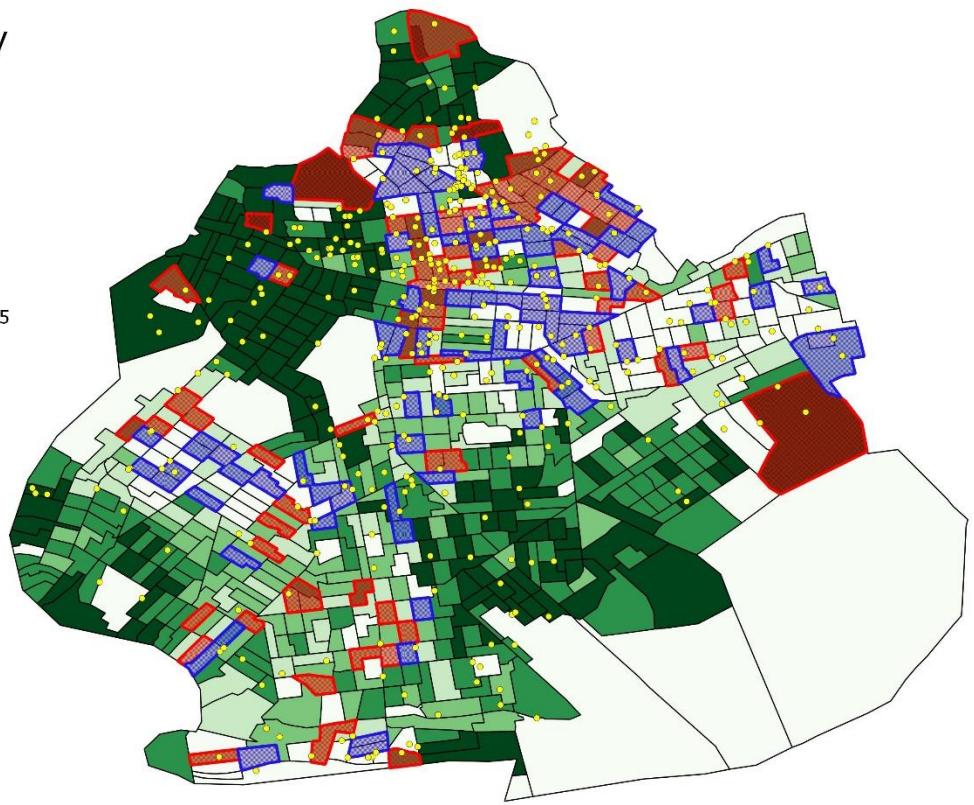
• Location of Crime

Gentrified Tracts

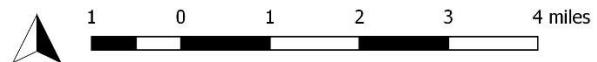
- Gentrifying
- Gentrified

Median Household Income 2015

- | |
|----------------------|
| \$0 - \$34,018 |
| \$34,018 - \$44,088 |
| \$44,088 - \$53,528 |
| \$53,528 - \$71,146 |
| \$71,146 - \$208,036 |



Data Sources: U.S. Census Bureau; NYPD; Author's Calculations



2015 Arson

Legend

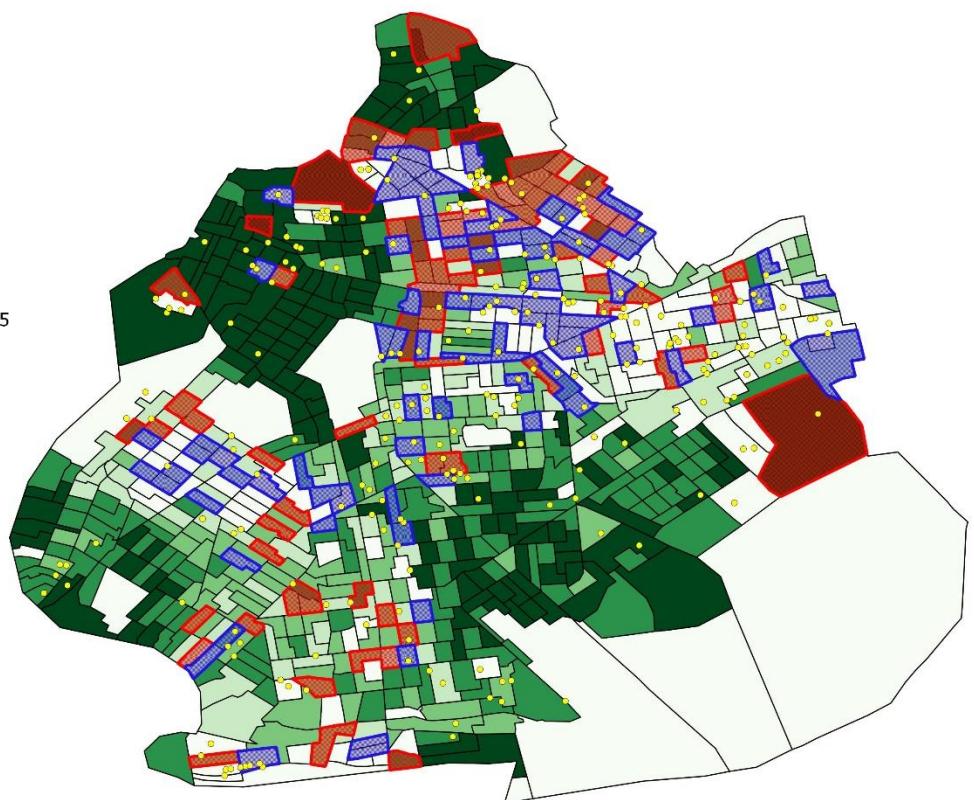
• Location of Crime

Gentrified Tracts

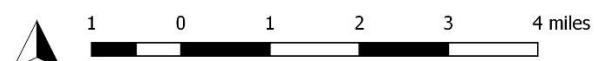
- Gentrifying
- Gentrified

Median Household Income 2015

- | |
|----------------------|
| \$0 - \$34,018 |
| \$34,018 - \$44,088 |
| \$44,088 - \$53,528 |
| \$53,528 - \$71,146 |
| \$71,146 - \$208,036 |



Data Sources: U.S. Census Bureau; NYPD; Author's Calculations



Results

Visual Analysis

Note: A map of Brooklyn neighborhoods from the New York City Department of City Planning is presented in the appendix in case visual reference is needed for the names of specific areas mentioned here.¹⁶

Looking at the first maps on 2000 and 2015 income, each quartile of income increased overall. However, looking at the distribution of income, some areas became much wealthier, like the northwestern area of the borough. This area includes tracts in the neighborhoods of Fort Greene, Park Slope, Windsor Terrace, Red Hook, and Gowanus, among others that were already very wealthy, like Brooklyn Heights. Southern Brooklyn also shows some big changes, with some tracts appearing to be in lower quartiles than they were before. However, some of this could be due to missing data for specific tracts, or changes in tract boundaries over the years.

Referring to the maps on income change and gentrification, very few tracts overall gentrified fully. The notable areas that did were mostly concentrated in Northeastern Brooklyn, and include tracts in the neighborhoods of Williamsburg, Greenpoint, Clinton Hill, Bedford-Stuyvesant, and Bushwick. A few tracts gentrified in East New York, but most of the surrounding area remains in the lowest percentile of median household income. Some sporadic tracts throughout Southwestern Brooklyn gentrified as well, in neighborhoods like Sunset Park, Borough Park, and Midwood.

Moving on to the property crime maps, many of them appear to show clustering in specific regions of Brooklyn, if not exactly specific gentrified tracts. The first map, showing the locations of grand larceny of motor vehicles, shows that no area of Brooklyn is without auto theft. It looks like there may be some slight clustering in the northwestern areas like Park Slope and Greenpoint, but it is difficult to tell if this would be significant without more in-depth statistical analysis. Grand larcenies of motorcycles, on the other hand, are less spread out over the borough. While these crimes do occur in the gentrified tracts, they are clustered more in areas that have the highest income, like Brooklyn Heights and parts of Williamsburg.

Commercial burglaries show clustering in high-income tracts, as well as minor clustering in some of the gentrified tracts (like in Bushwick and Bedford Stuyvesant). Residential burglaries are more normally distributed over the borough. The differences between these two crimes can partly be explained by the fact that many areas of Brooklyn are predominantly residential, like Ditmas Park and parts of Flatbush, and may not have as many businesses or office buildings to be burgled.

Grand larcenies of unattended non-residential buildings are clustered in high-income tracts in Northwestern Brooklyn. For many of the incidents, it is difficult to determine exactly which tract they lie in – they appear to be located along major roads, which might constitute tract boundaries. Grand larcenies of unattended residences show less evidence of clustering, as with residential burglaries.

¹⁶ New York City Department of City Planning.

There are many incidences of petit larceny from buildings. While they are spread over most of the borough, there is clustering in the northern half of the map. This includes areas of all income brackets – not just high-income or gentrified areas. The fact that there are much fewer points on the next map, for shoplifting, is probably due to the fact that the number of incidents at any particular location cannot be determined from these maps, as multiple incidents at the same location would still appear as only one point. So, even though it might be expected that there are many cases of shoplifting, they are occurring at the same stores over and over again. It is also clear on this map that stores are located along major roads, like Flatbush Avenue and Atlantic Avenue, for example. There is some clustering in the high-income areas of Park Slope and Greenpoint.

Grand larceny of persons shows clustering not only in high-income areas, but over all different income tracts in the northern and middle parts of the map. This middle area, approximately the neighborhoods of Prospect-Lefferts Gardens and Flatbush, is one which has not shown a high concentration of the other property crimes. There also appears to be a couple of small clusters in gentrifying tracts on the southwestern side of the borough in Sunset Park. Bicycle larcenies show some of the largest, most distinct clusters so far. They are concentrated in high-income tracts throughout Northwest Brooklyn, as well as in smaller clusters in gentrified tracts to the East, like Bedford Stuyvesant and Bushwick.

Burglaries of trucks and trailers show the most evidence so far of clustering in only gentrified tracts, as opposed to just clustering in high-income areas. They are clustered in the northern areas of Bedford Stuyvesant and Crown Heights/Prospect Heights. There also appears to be a tight cluster in a couple of tracts with either very low income, or no reported income data. Lastly, there are very few cases of arson compared to the other property crimes. There appears to be a small, tight cluster similar to the last one mentioned for truck burglary. Other than that and one or two other very small clusters, arson appears to be somewhat randomly distributed, but mostly over the northeastern quadrant.

Statistical Analysis

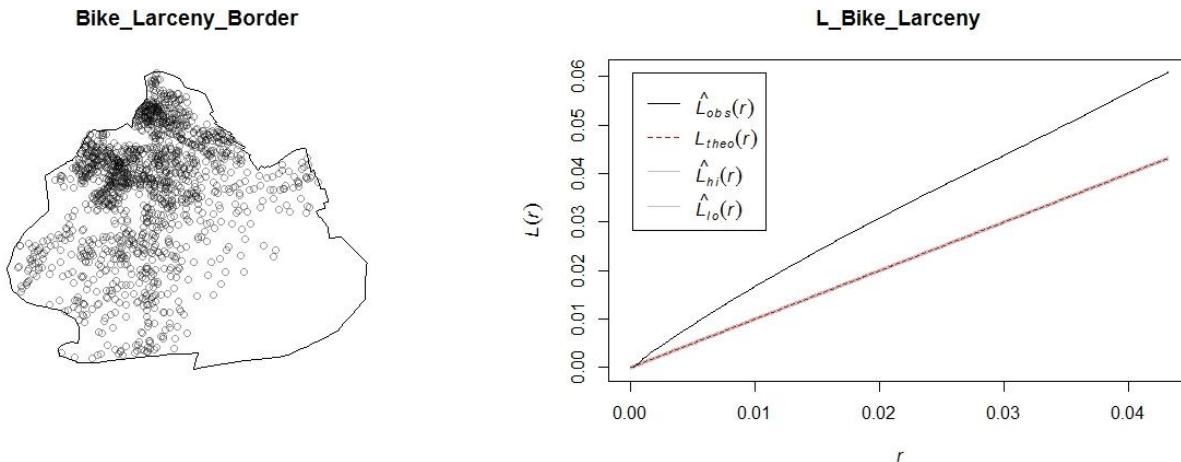
After visually assessing each map of the different property crimes, it appears that few of the property crimes cluster in gentrified tracts. It is more often the case that these crimes cluster in high-income areas as well. While many of the clusters are discernably large and dense on these maps, a test can be applied to lend statistical support to these findings. Ripley's K and L functions measure spatial homogeneity of point data, and running one of these functions will determine if there is statistically significant spatial clustering or dispersion of the data. The L function will be used, as it is a standardized form of the K function. It is defined as follows:

$$\hat{L}(h) = \sqrt{\frac{\hat{K}(h)}{\pi}} - h$$

where $L(h)$ equals zero if points are randomly distributed.¹⁷ Values higher than zero indicate spatial clustering, while values lower than zero indicate dispersion. Because the map for bike

¹⁷ Porter, "Point Data Visualization."

larceny clearly indicated large clusters of the point data, the L function for this data is shown below as an example, along with a basic plot of the point data across the surface of the county. The plots for the other eleven property crimes are given in the appendix, but results for each are discussed below.



The density of the point clustering is a little easier to see in this plot, and the output from the L function indicates that the data are significantly clustered. The red line on the plot indicates the null of $L(h)$ – or in this case, $L(r)$ – equaling zero, indicating a random distribution of points. Because the line of the observed values lies above this, the points are nonrandomly distributed and clustered. Examining the other plots of the L function (in the appendix) shows that the points for each of the property crimes are significantly clustered, and none of them are dispersed (which would mean the line of observed values falls below the expected line). Some are more significantly clustered than others – along with bike larceny, the L function on truck burglaries shows a larger deviation from the expected line; whereas the L functions on grand larceny auto, grand larceny of residences, and shoplifting, for example, fall closer to the expected values, indicating less significant clustering.

Discussion

The findings from these maps and analyses show that property crimes are not spatially homogenous throughout Brooklyn, but significantly cluster in tracts with higher median income, and sometimes in gentrified tracts. These results could possibly lend support to some of the sociological theories about the effects of gentrification and income disparities, like displacement, ecological dissimilarity, and incoming mixing. They could also inform policy and planning for urban areas trying to combat theft and property damage. There are limitations to this study, however, that must be addressed.

First, the operational definition of gentrification used here is not very robust. Other factors that could contribute to the gentrification of a neighborhood include things like educational attainment and property values, not just income. Also, the first people to gentrify a neighborhood are not necessarily high-income earners themselves (although hopefully the wide range of years

over which income change was calculated alleviates this issue). A better measure for gentrification would take into account several more factors than median household income.

Next, census tracts are not the ideal unit of measurement for gentrification, which is typically characterized by neighborhood changes. Tracts are much smaller units, and as shown in the maps, can have a lot of variation in income differences and gentrification across space. It would be better to characterize larger areas of neighborhoods and determine which areas are gentrifying and which have more crime.

Lastly, there are some factors that probably should have been accounted for which could affect the results. For example, the population in each tract: The location data accounts for every crime, not rates per amount of people, so it might just be that more crimes occur in places with more people. Similarly, certain of these crimes might disproportionately occur in certain areas for other reasons. For example, areas that are farther from public transportation in New York City might contain a higher number of bicycles and motorcycles, so more thefts of these items might simply reflect the fact that more of them are available to steal.

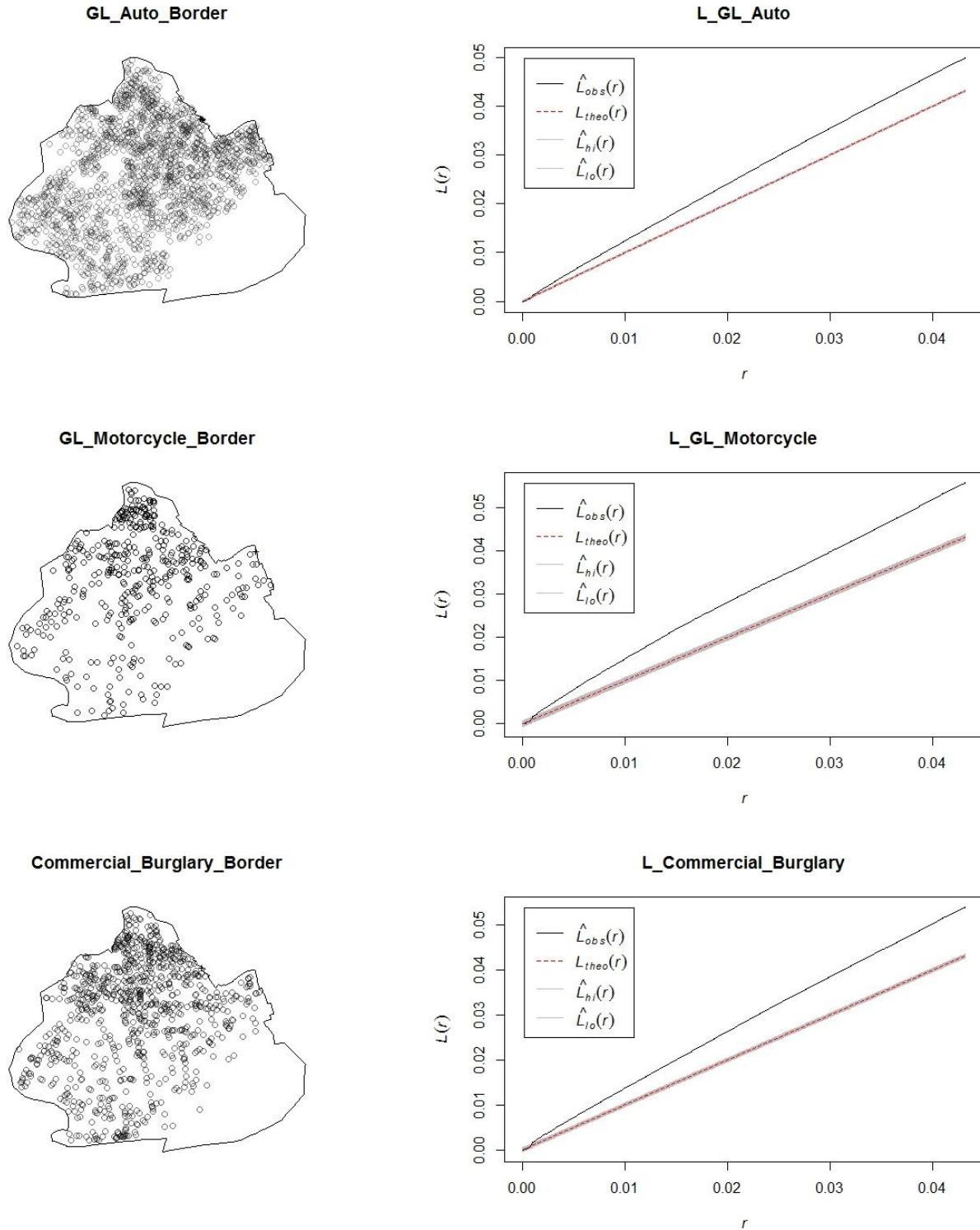
A next step to taking this research further could be a spatio-temporal analysis of gentrification and property crimes. While these results show evidence of clustering in high-income areas and gentrified tracts, it would be better to compare the rate of property crimes in these locations now with rates from the time when gentrified tracts were still considered low-income. This would confirm whether or not crimes simply happen in those tracts for reasons other than changes in income and property values. This type of study would also come closer to determining a causal relationship between gentrification and property crimes.

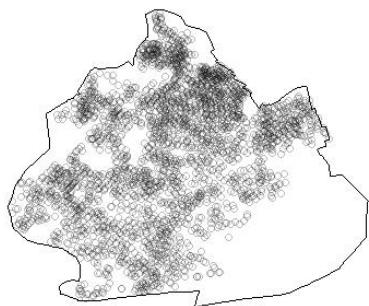
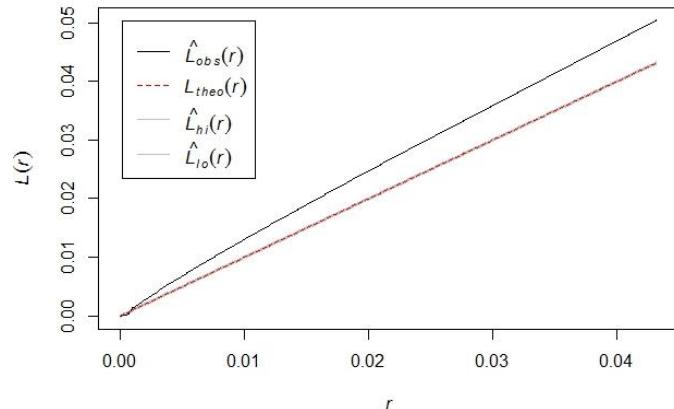
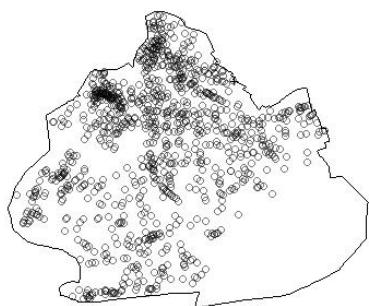
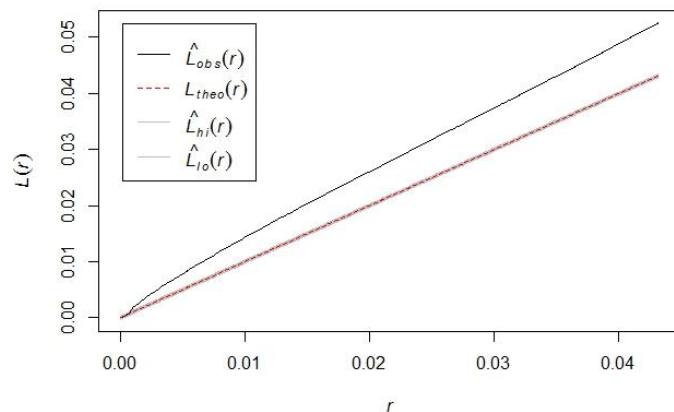
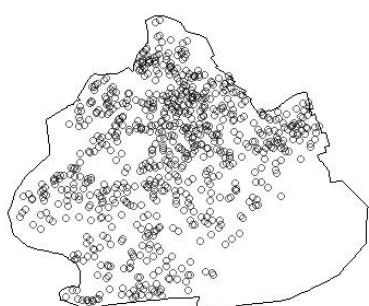
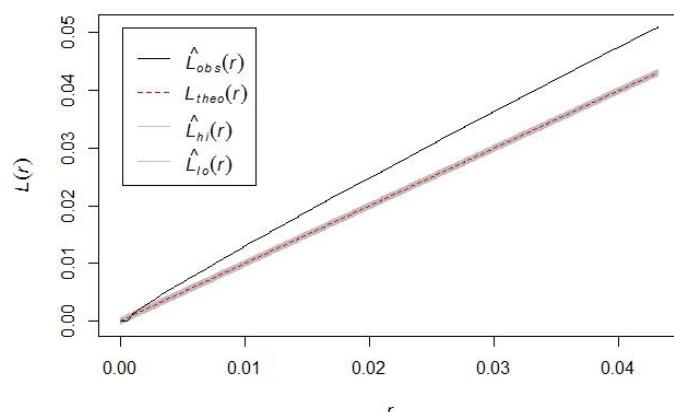
Appendix

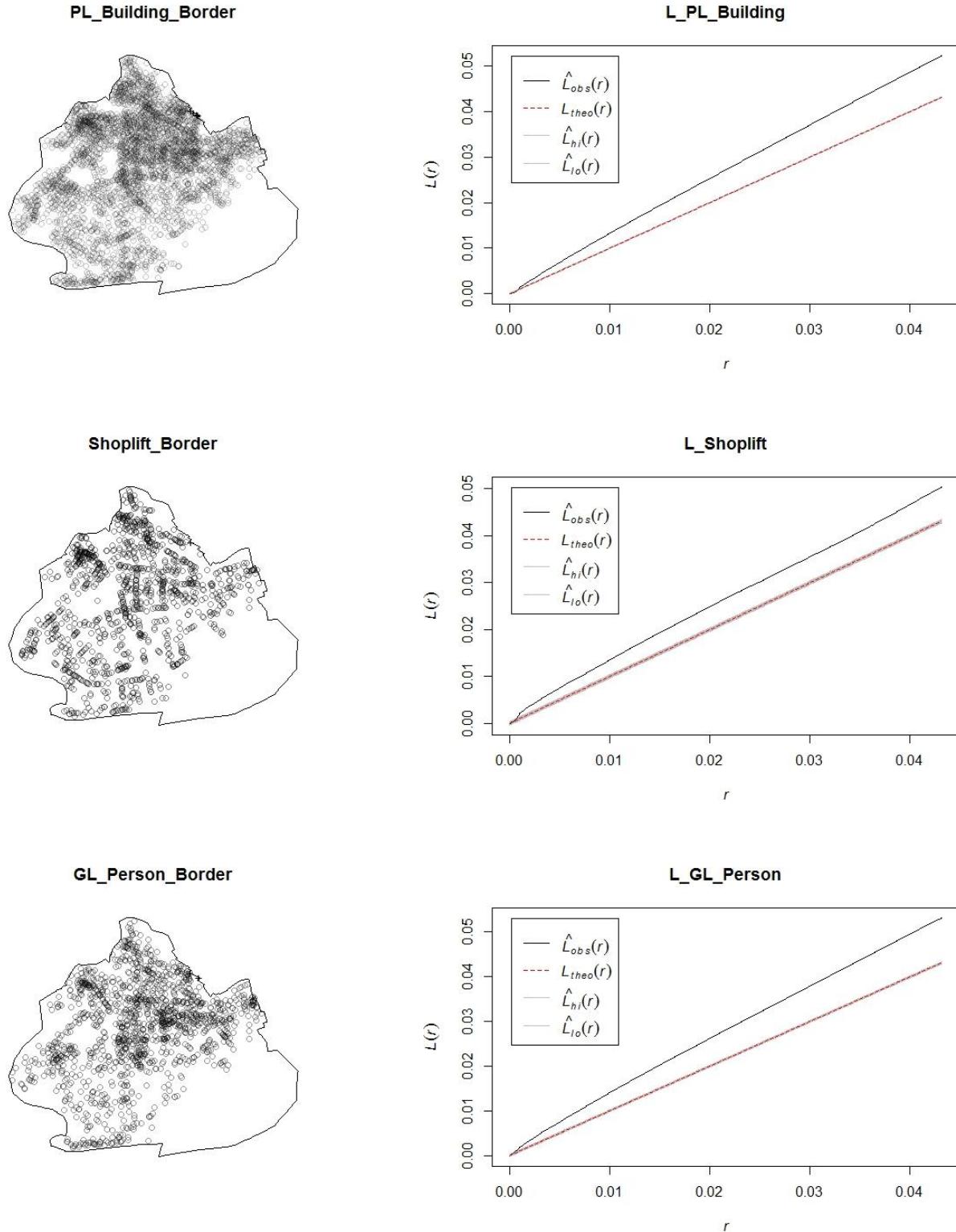
Map of Brooklyn Neighborhoods

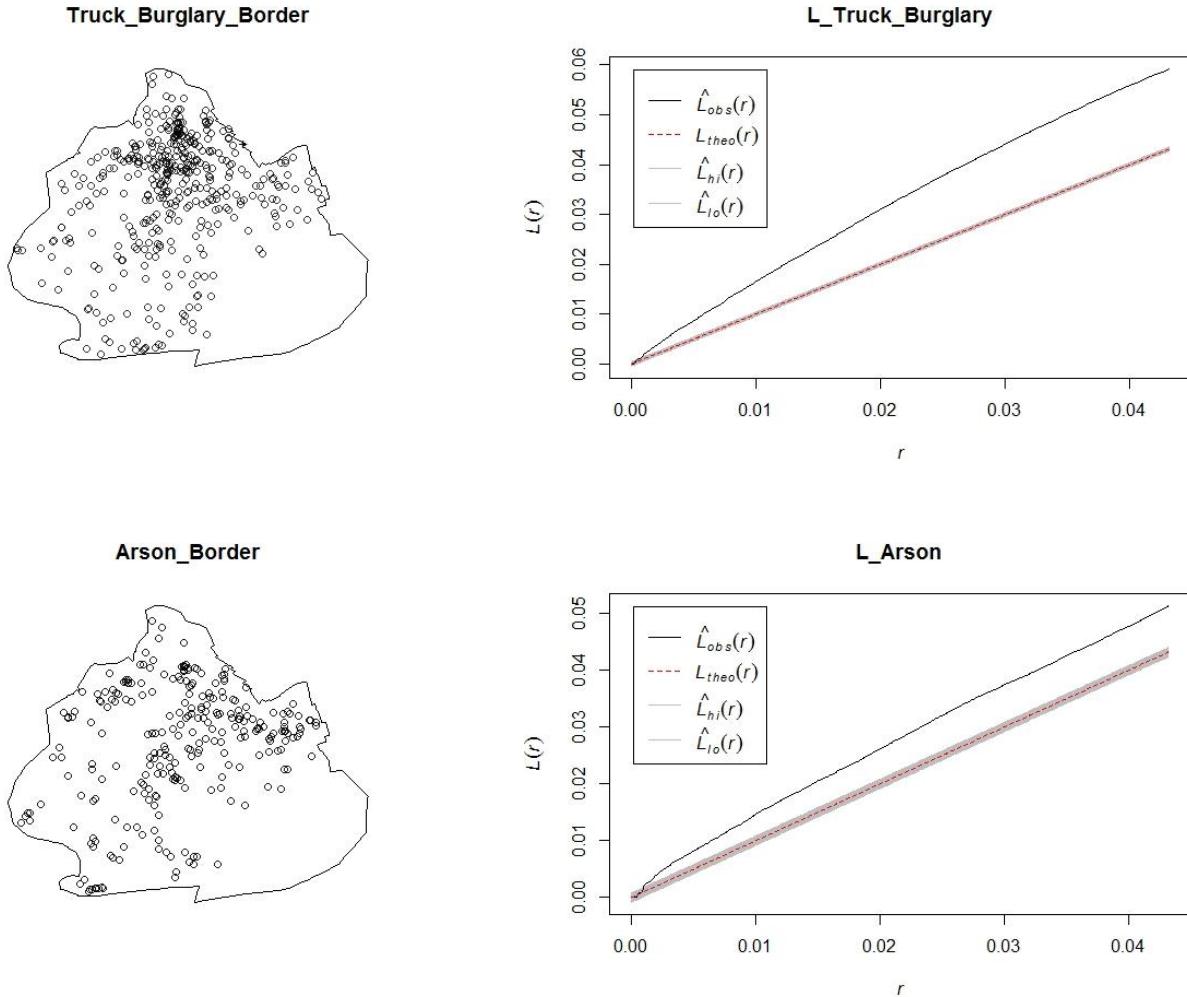


Cluster Plots and L Functions



Residential_Burglary_Border**L_Residential_Burglary****GL_Building_Border****L_GL_Building****GL_Residence_Border****L_GL_Residence**





Bibliography

- Barton, Michael S. "Gentrification and Crime in New York City 1980-2009." Ph.D., State University of New York at Albany, 2013.
- Barton, Michael S., and Colin P. Gruner. "A Theoretical Explanation of the Influence of Gentrification on Neighborhood Crime." *Deviant Behavior* 37, no. 1 (January 2, 2016): 30–46. doi:10.1080/01639625.2014.983004.
- Covington, Jeanette, and Ralph B. Taylor. "Gentrification and Crime: Robbery and Larceny Changes in Appreciating Baltimore Neighborhoods during the 1970s." *Urban Affairs Review* 25, no. 1 (September 1, 1989): 142–72. doi:10.1177/004208168902500109.
- Freeman, Lance. "Displacement or Succession? Residential Mobility in Gentrifying Neighborhoods." *Urban Affairs Review* 40, no. 4 (March 1, 2005): 463–91. doi:10.1177/1078087404273341.
- Houston, Terry Lynn. "Gentrification Causes a Reduction of Crime in Bedford Stuyvesant." M.A., Long Island University, The Brooklyn Center, 2011.
- Kirk, David S., and John H. Laub. "Neighborhood Change and Crime in the Modern Metropolis." *Crime and Justice* 39, no. 1 (2010): 441–502.
- Kozey, Kathryn Noe. "Collective Efficacy, Threat, and Urban Change: Examining Social Control Forces in Areas of Gentrification." Ph.D., University of Maryland, College Park, 2015.
- Kreager, Derek A., Christopher J. Lyons, and Zachary R. Hays. "Urban Revitalization and Seattle Crime, 1982–2000." *Social Problems* 58, no. 4 (2011): 615–39. doi:10.1525/sp.2011.58.4.615.
- Lee, Yan Y. "Gentrification and Crime: Identification Using the 1994 Northridge Earthquake in Los Angeles." *Journal of Urban Affairs* 32, no. 5 (December 2010): 549–77. doi:10.1111/j.1467-9906.2010.00506.x.
- McDonald, Scott C. "Does Gentrification Affect Crime Rates?" *Crime and Justice* 8 (1986): 163–201.
- New York City Department of City Planning. NYC Neighborhoods Map. Retrieved from <http://www1.nyc.gov/site/planning/data-maps/city-neighborhoods.page>
- New York State Law. "Consolidated Laws of New York." Retrieved from <http://ypdcrime.com/>
- NYC OpenData. "NYPD Complaint Data Historic." (November 15, 2016). Retrieved from <https://data.cityofnewyork.us/Public-Safety/NYPD-Complaint-Data-Historic/qgea-i56i>

O'Sullivan, Arthur. "Gentrification and Crime." *Journal of Urban Economics* 57, no. 1 (January 1, 2005): 73–85. doi:10.1016/j.jue.2004.08.004.

Papachristos, Andrew V., Chris M. Smith, Mary L. Scherer, and Melissa A. Fugiero. "More Coffee, Less Crime? The Relationship between Gentrification and Neighborhood Crime Rates in Chicago, 1991 to 2005." *City & Community* 10, no. 3 (September 2011): 215–40. doi:10.1111/j.1540-6040.2011.01371.x.

Porter, Jeremy. "Point Data Visualization." 2016.

United States Census Bureau. American Community Survey. Retrieved from <https://www.census.gov/acs/www/data/data-tables-and-toolsamerican-factfinder/>