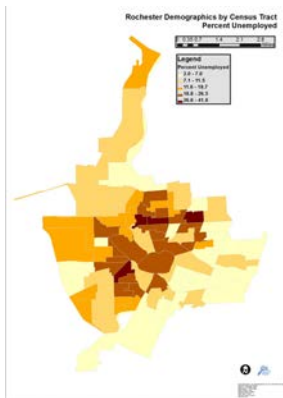
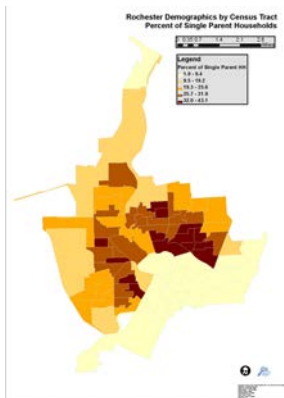
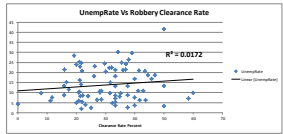
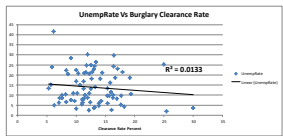


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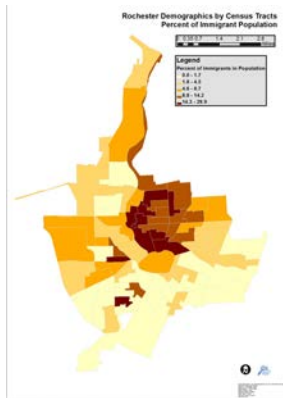
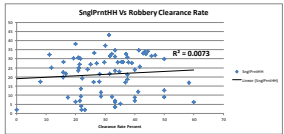
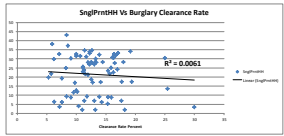
## Demographics and Crime Clearance Rates in Rochester



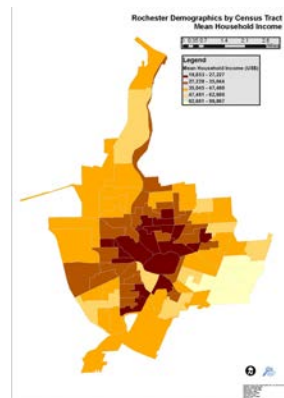
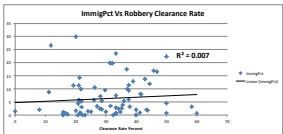
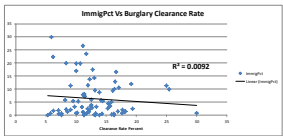
Variable #1: Unemployment Rate



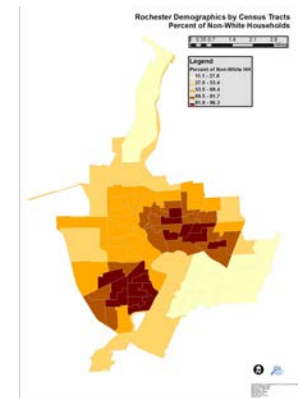
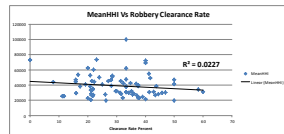
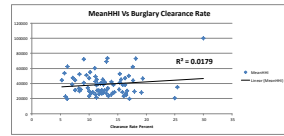
Variable #2: % of Single Parent HH



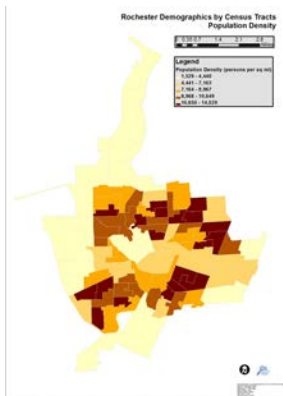
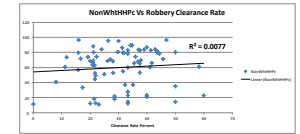
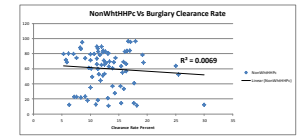
Variable #3: % of Immigrant Population



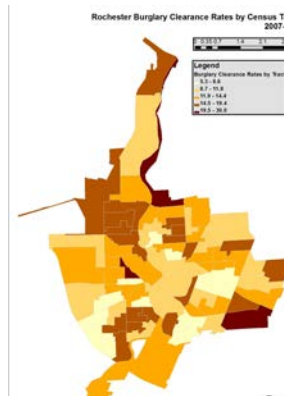
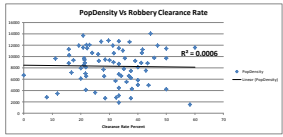
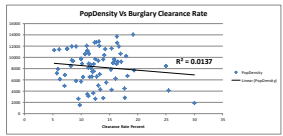
Variable #4: Mean HH Income



Variable #5: % of Non-White HH

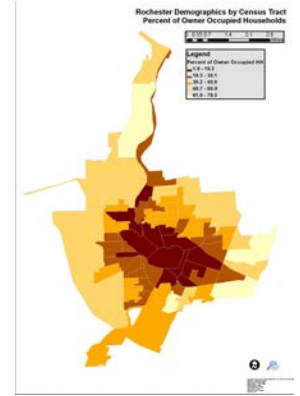
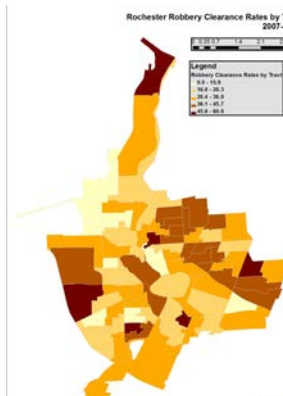


Variable #6: Population Density

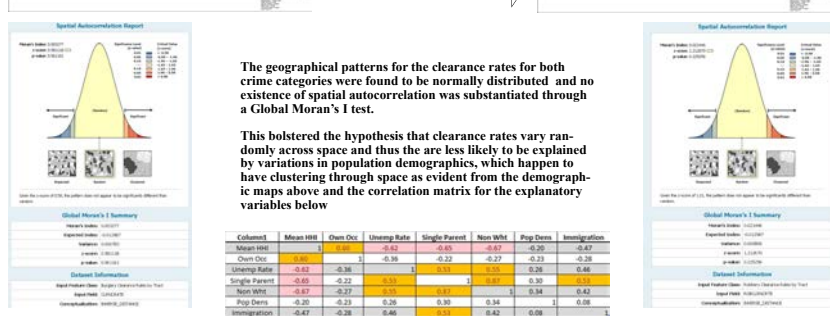
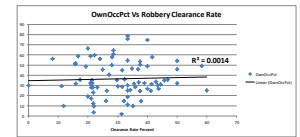
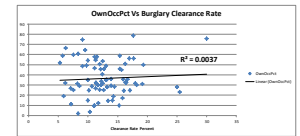


Descriptive Stats:  
Burglary Clearance Rate  
Mean: 12.9%  
Min: 5.3%  
Max: 30%  
Std. Dev.: 4.4  
National Average: 11.95%  
Average for Cities similar in population size: 11.2%

Descriptive Stats:  
Robbery Clearance Rate  
Mean: 30.6%  
Min: 0%  
Max: 60%  
Std. Dev.: 11.3  
National Average: 25.95%  
Average for Cities similar in population size: 25.95%



Variable #7: % of Owner Occupied HH



The geographical patterns for the clearance rates for both crime categories were found to be normally distributed and no existence of spatial autocorrelation was substantiated through a Global Moran's I test.

This bolstered the hypothesis that clearance rates vary randomly across space and thus are less likely to be explained by variations in population demographics, which happen to have clustering through space as evident from the demographic maps above and the correlation matrix for the explanatory variables below

The purpose of this study was to explore the strength of the relationship between crime clearance rates and demographic variables and how well the clearance rates in a geography could be explained by the demographics of the population residing in the same geography. We chose the City of Rochester, NY for our study. The crime categories considered were Burglary and Robbery. Seven demographic variables were considered: mean household income, percent of owner occupied houses, percent of single parent households, percent of non-white households, unemployment rate, percent of immigrant population, and population density. The level of geographic resolution was at the census tract level. The results of the linear regression analysis showed that clearance rates for either robbery or burglary could not be explained by demographic variables alone at all. None of the explanatory demographic variables on their own had any significant explanatory power in the explaining the variation in the dependent variables—the clearance rates of robbery and of burglary. Also, ordinary least square models as a whole, comprising all the demographic variables could not explain for any significant variation in the clearance rates for either of the crime categories. The addition of a "workload" variable didn't bring about a change in the explanatory power either.

OLS Model #1:  
Burglary Clearance Rate = f (all demographic variables)  
 $R^2$ : 0.035  
 $Pr > F$ : 0.923  
No explanatory variables were statistically significant

OLS Model #2:  
Robbery Clearance Rate = f (all demographic variables)  
 $R^2$ : 0.058  
 $Pr > F$ : 0.743  
No explanatory variables were statistically significant

OLS Model #3:  
Burglary Clearance Rate = f (all demographic variables, Number of Burglaries)  
 $R^2$ : 0.037  
 $Pr > F$ : 0.951  
No explanatory variables were statistically significant

OLS Model #4:  
Robbery Clearance Rate = f (all demographic variables, Number of Robberies)  
 $R^2$ : 0.059  
 $Pr > F$ : 0.829  
No explanatory variables were statistically significant

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John McCluskey, CPSI, RIT