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 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.

Descriptive Stats:
- Burglary Clearance Rate
  - Mean: 12.9%
  - Min: 5.3%
  - Max: 30%
  - Std. Dev.: 4.4

Descriptive Stats:
- Robbery Clearance Rate
  - Mean: 30.6%
  - Min: 0%
  - Max: 40%
  - Std. Dev.: 11.3

This bolstered the hypothesis that clearance rates vary randomly across space and thus the 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.

OLS Model #1:
- Burglary Clearance Rate = f (all demographic variables)
- R²: 0.035
- Pr>F: 0.523
No explanatory variables were statistically significant

OLS Model #2:
- Robbery Clearance Rate = f (all demographic variables)
- R²: 0.048
- Pr>F: 0.745
No explanatory variables were statistically significant

OLS Model #3:
- Burglary Clearance Rate = f (all demographic variables, Number of Burglaries)
- R²: 0.037
- Pr>F: 0.691
No explanatory variables were statistically significant

OLS Model #4:
- Robbery Clearance Rate = f (all demographic variables, Number of Robberies)
- R²: 0.008
- Pr>F: 0.829
No explanatory variables were statistically significant