

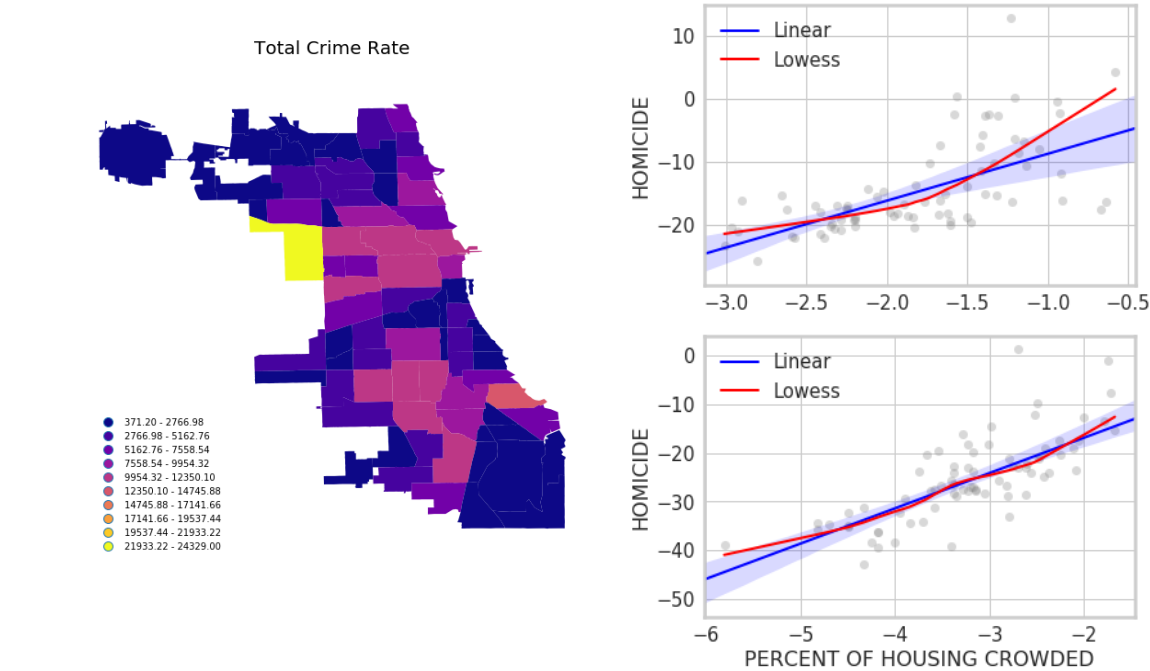
Socioeconomic Status Indicators and Crime Rates: a case study in Chicago

Xin Ding, MSEP candidate, Harris School of Public Policy

Introduction: The relationship between socioeconomic status and crime is an important topic for public policy. In this project, we conducted a statistical analysis using data from the City of Chicago to explore the potential correlation between different dimensions of socioeconomic status and crime rates at the community-level. By running a series of regressions, we found obvious correlations between them, and among the seven selected socioeconomic indicators, the crowded housing rate and the unemployment rate seems to matter more than the others.

Background: the City of Chicago’s data portal provided us with 30 types of crimes and we ended up picking 7 of them. They are Homicide, Weapons Violation, Theft, Kidnapping, Narcotics, Robbery, and Sex Offense. We also acquired data on 7 types of socioeconomic status indicators regarding: Percent of Housing Crowded, Percent of Households Below Poverty, Percent Aged 16+ unemployed, Percent Aged 25+ Without High School Diploma, Percent Aged under 18 or Over 64, Per Capita Income, and Hardship Index which is the generalization for the categories listed above.

Results: We generate 49 plots for each one-to-one relationships between 7 crimes chosen and 7 socioeconomic status indicators. There are almost some correlation within each one of them. Therefore we proceed to look at the fit of regression models for each type of crime.



HOMICIDE						
OLS Regression Results						
=====						
Dep. Variable:	Crime	R-squared:	0.386			
Model:	OLS	Adj. R-squared:	0.331			
Method:	Least Squares	F-statistic:	7.113			
Date:	Fri, 01 Dec 2017	Prob (F-statistic):	6.58e-06			
Time:	20:55:36	Log-Likelihood:	-235.70			
No. Observations:	75	AIC:	485.4			
Df Residuals:	68	BIC:	501.6			
Df Model:	6					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

Intercept	25.6777	4.606	5.575	0.000	16.486	34.869
Crowd	2.9963	1.685	1.778	0.080	-0.367	6.359
Poverty	1.0706	1.825	0.587	0.559	-2.570	4.712
Unemp	7.8629	2.757	2.852	0.006	2.362	13.364
Edu	-2.4730	2.265	-1.092	0.279	-6.992	2.046
Age	-3.8019	3.790	-1.003	0.319	-11.364	3.760
Income	-7.178e-06	0.000	-0.057	0.955	-0.000	0.000
=====						
Omnibus:	17.777	Durbin-Watson:	1.453			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	27.481			
Skew:	0.921	Prob(JB):	1.08e-06			
Kurtosis:	5.324	Cond. No.	2.29e+05			
=====						

Here is an example for the Homicide Model. As mentioned before in the intro part, the percent housing crowded and the unemployment rate over 16 are most significant across the 7 types of crimes we studied. The per capita income however, is not relative to the crime rates, which is the contrary to our original thoughts.

Analysis: One possible analysis is that most of the crimes in Chicago are related to gangster activities. Usually, having a stable day-time job means conflicts with being a part of gang. Therefore, only area with high unemployment rate can “support” the development of gangster activities. Higher percentage in Housing Crowded means higher likelihood for frictions among the tribes and gangs. They are more prone to conflicts. For my personal favorite, Per Capita Income, members in gangs may actually have very good income from illegal activities like drug and weapon deals, which offsets the general 'low income, high crime rate' trend.

Conclusion: The Socioeconomic status indicators and Crime Rates in Chicago are correlated. The poorer, worse, harder, tougher or by any means not so great community area tend to have higher crime rates, especially in the 7 types of crimes we discussed above. As shown in the map at the left, west side and south side Chicago have higher total crime rates (subtypes as well). The two most relevant indicators according to the study are, Percent of Housing Crowded, and the Percent Aged 16+ unemployed.