Research Proposal

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Title: Investigate the Relationship among Education Level, Income, Employment Rate, and Crime Rate in Chicago from a Spatial Aspect

It is well-known that Chicago is not a safe city. The city's overall crime rate, especially the violent crime rate, is higher than the US average. Chicago was responsible for nearly half of 2016's increase in homicides in the US, though the nation's crime rates remain near historic lows. Thus, we want to investigate which variables are correlated with the crime rate in Chicago. This paper will let readers understand both statistically and spatially what triggers the crime.

Three datasets were chosen to include in the project:

First of all, the crime data from Chicago Data Portal is selected (link: <https://data.c-ityofchicago.org/P-ublic-Safety/Crimes-2001-to-present/ijzp-q8t2> ). It reflects reported incidents of crime (with the exception of murders where data exists for each victim) that occurred in the City of Chicago from 2001 to present, minus the most recent seven days. Data is extracted from the Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system.

Secondly, the Public health and socio-economic indicators dataset is selected, which is imported from the Geoda Center, which is the Public health and socio-economic indicators for the 77 community areas of Chicago, IL, 2014. (link: <https://geodacen-ter.github.io/data-and-lab//comarea_vars/>).

Finally, we selected the Chicago community areas data set from Chicago Data Portal. The dataset was imported from Chicago Data Portal. It is a boundary file for the community areas. (link: <https://data.cityofchicago.org/Facilities-GeographicBoundaries/Boundaries-Community-Areas-current-/cauq-8yn6> ).

We are targeting the following research questions:

Q1: Is there a statistical relationship between crime rate versus education level, unemployment rate, and income level?

Q2: Is there a spatial correlation with respect to the variables of interest?

For the first question, I will use linear regression model to examine the relationship. And for the second question, I will use spatial autocorrelation test to examine the relationship.

Reference

Chicago Driving Uptick in Murders; National Crime Rate Stays Near 'Historic Lows'. (n.d.). Retrieved from https://www.usnews.com/news/articles/2016-09-19/chicago-drives-uptick-in- murders-national-crime-rate-stays-near-historic-lows

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