BACKGROUND:

- The United States has gone through many budget cuts in the past few years. A shortage of funding combined with an unstable economy can make allocation of government funding very important. Government funding isn’t included in this study, but showing areas of concern can help guide administrations to allocate more or less money to certain areas.

- There are numerous social issues that affect the United States. This study represents a brief overview of 5 of these issues that affect the United States. The variables that we will be looking into are: Property Crime, Violent Crime, High School Dropout Rate, DUI, and Foreclosure Rate. This study is the first phase of larger research project that will incorporate additional social concerns and compare the occurrence of such issues to the amount of governmental funding.

- One may be asking, “What exactly do these variables include?” Property crime made up of burglary, theft, motor theft, and arson while violent crime includes murder, rape, robbery, and assault. High School Dropout Rate is considered for populations above the age of 25 years. It also accounts for people who attain their GED, beyond what is considered the traditional years of high school. DUI is represented by the number of DU’s per 10,000 people for the year of 2009 and foreclosure rate was based upon the number of foreclosures for March of 2009.

- The data was all collected in the year of 2009. This data was collected at a county level, to help reveal a more detailed pattern. Although nearly 100% of county data was available, at times it was necessary to average state level data to complete the mapping.

OBJECTIVE:

- To determine if there are areas in the United States that have a higher frequency of social issues.
- To combine the data for five variables in an appropriate way so that each variable only accounts for 20% of the total. This total is then represented as a number between 0 and 1. Areas that are closer to 0 have lower frequencies of occurrence of the five represented social issues and areas closer to 1 have high frequencies of these occurrences.
- The data will be represented in a quantile format, in order to compare equal areas of counties to each other. Four categories will be included: very low, low, high, very high.

MATERIALS & METHODS:

- The first step in our research was to collect the data. All of the data was collected online from various government organizations, like the census bureau, and corporate organizations such as Realtytrac.

- Once this data was collected it was entered into the attribute table of the ArcGIS map that I created for this project. The counties template was accessed through the ArcGIS templates provided.

- The first step to adding data to the attribute table was to create a new field. When adding a new field it is important to make sure it is set to “float” and that proper parameters are set. Once all of the information was added for the first variable, I repeated this process for the other 4 variables. The last “field” added was the combination of the 5 variables. To make every variable had an equal part in the final map the following equation was used:

\[
\frac{[(\text{Variable/Highest Variable number})]1/5}{} + [(\text{Variable/Highest Variable number})]1/5
\]

- This was used for all 5 variables.
- This gives each county a number between 0 and 1.
- This combination variable can then reveal areas of concentration and disparity within the 5 variables.

DISCUSSION:

- Looking at the individual variables you see some initial patterns. High school dropout rate is one of the easiest patterns to see. Southern states have a much higher frequency of high school dropout rates compared to northern states. Property and violent crime both seem to have some concentration in the southeast, along with some areas the Rockies, namely Nevada. Foreclosure percentage is very low in the northwest and upper east coast, but fairly high everywhere else. DUI rate seems to have a more localized state pattern compared to the other variables.

- The combination map doesn't show a lot of clustering initially. There are some high concentrations in the Western Great Plains and southeastern United States. Overall though you do not see any definitive clustering in the United States for these 5 variables combined. Adding more variables to the future will help portray a better outcome for possible patterns, along with a map overlay of where government spending is allocated.

This data is still very valuable because it gives a guide to possible further research areas. Adding more variables will help show if the high concentration counties are truly in need of more government assistance. Looking at the general patterns given, it is very prom…

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