Week 8 Project: Analysis of Effects of Population on Crime

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**Abstract**

The Week 8 Final Project uses a dataset extracted from the FBI-UCR website for the year of 2012 on populations less than 250,000. The 2012 crime dataset was submitted to UCR by various US County Police Departments. The 261 different counties from around the United States includes 12 variables: population, violent crime, murder and manslaughter, forcible rape, robbery, aggravated assault, property crime, burglary, larceny, theft, motor vehicle theft as well as the latitude and longitude of the counties that submitted data. This paper covers the questions: Does population size effect crime rates? What impact does population have on crimes? How does population size effect different variables of crime?

**Background**

There’s no question that there’s a wide variety of crime that occurs daily throughout the United States. It’s an assumption that more crime occurs in locations with larger populations because it’s a plausible explanation. By focusing on locations where the population is smaller, we’re able to see better with this assumption is true. The case study covers a variety of different crimes of violent crime. Violent crimes are those that involve force or threat of force and is composed of four offenses: murder and manslaughter, forcible rape, robbery, and aggravated assault. In 2010, an estimated 1,246,248 violent crimes occurred nationwide (FBI, 2011). Other crimes that are covered in the dataset include burglary, larceny/theft, and motor vehicle theft. The charts were created in Excel.

**Figure 1: Violent Crime Total by Population**

Chart, scatter chart

Description automatically generated

Figure 1 shows a scatterplot of violent crime total by county population. Majority of the populations follow the trend-line showing that as the population size increases so does the violent crime total. There are three outliers indicated by the red dots that doesn’t follow that pattern. The Flint City Police Department in Michigan is the biggest outlier with only a population of 101,632, it has a total of 2,774 violent crime cases. Flint is in the 7th percentile for safety, meaning 93% of cities are safer (Crime Grade, n.d). On average, a crime occurs every 43 minutes in Flint, which can justify why the Flint City Police Department is the biggest outlier.

Counties with populations under 115,000 saw the most violent crime cases compared to the larger populations.

**Figure 2: Armed Robbery Totals by State**

Chart, bar chart

Description automatically generated

Figure 2 is a bar chart showing armed robbery totals by state. Out of the 214 police departments the dataset recorded, counties in the same state were summed together to get armed robbery totals by state. Overall, California showed the highest armed robbery total (10,676) followed by Florida (4,714). North Dakota has the lowest total (46), followed by Minnesota (55). Illinois, Montana, New Hampshire, Oklahoma, and Tennessee also showed the lowest armed robbery totals shown by their corresponding bar on the chart, barely showing above the zero marker. The bar chart concludes that the higher populations showed higher armed robbery totals.

**Figure 3 & 4: Murder/ Manslaughter & Rape by 5 Highest and Lowest Populated States**

Chart, line chart

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Chart, line chart

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Figure 3 and 4 show murder / manslaughter and rape totals by the five top and smallest populous states. The top five states include California, Texas, Florida, Arizona, and Virginia while the smallest include Montana, Minnesota, North Dakota, New Jersey, and South Dakota. The top chart, top five most populous states, shows a steady decrease in forcible rape as the population decreases from the most populous. Murder/manslaughter also shows a decrease as the population decreases from the most populous expect for Virginia where it increases. The bottom graph, the five least populous states, shows an increase after Minnesota, for forcible rape. Showing that as the population increase so does the amount of forcible rape cases. Between both charts, the murder/manslaughter sum is significantly smaller than all the states with smaller populations. The fifth smallest state, South Dakota, compared to the largest, California, shows a 969.8% change in forcible rape.

**Conclusion**

Based on the information provided, certain crimes occur more often with higher populations. When looking at violent crime totals by population size for each of the counties that submitted data, majority of the counties followed the trend line showing that as population increases so does the violent crime total. Although, some outliers did occur showing that a few smaller populations saw more violent crimes. Some causes for these outliers could be poverty level, location, or level of police presence. Armed robbery totals by state, show that higher populations have higher armed robbery totals. Those with smaller populations shows lower totals than the average of 241. The murder/manslaughter sum is significantly smaller in the least five populous states than all the top five. A steady decrease occurred in forcible rape in the top five most populous states as the populations decreased. Contradicting to this, in the least five populous states increased in the total of forcible rape totals as the population increased.

**Works Cited**

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