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Illicit Use on State Crime

The war on drugs initiative was started by the US to combat the use of drugs within the US. It was started by the Nixon administration in June 1971. The drug usage can contribute to the crime rates that each state has. Using the data given for 2018 by the Rocky Mountain and Drug Safety Center in tandem with data from the Federal Crime Bureau of Investigation, one can start to make sense of why this is the case. The data provided from this competition is a convenience sample that likely has many different biases.

In order to get a basis for demographic data, we plotted crime rate (*Figure 1*), education level (*Figure 2*), and average income by state (*Figure 3*). Due to the nature of the region maps we used, we are unable to see the D.C. area for any region maps used in this analysis. After we compared Figure 2 and Figure 3 to Figure 1, we saw that there could be a potential correlation between these demographics and crime rate. We thus conducted a Mann-Whitney U test between Figure 1 and 2 and Figure 1 and 3. There is significant statistical evidence to conclude that there is a correlation between these demographics and crime rate at 1% significance level. Figure 4 shows a heat map for the crime rate by state, scaled by usage of illicit drugs, not including opioids and cannabis due to the popularity of these drugs influencing the visualization of the other illicit drugs. Opioids (*Figure 5*) and cannabis (*Figure 6*) were then given their own visualization using a region map. They show the crime rate per opioid/cannabis users by state. Looking at Figure 4, D.C. has the highest overall highest crime rate scaled by illicit drug use compared to other states. North Dakota, New Hampshire, and Nebraska generally have very low crime rate. Coke accounts for a larger percentage of crime rate among all states alongside methamphetamines and LSD which are at a slightly lower rate. There are more states that have higher crime rates for cannabis users than opioid users, according to Figures 5 and 6. Comparing Figures 5 and 6 to Figures 2 and 3, there seems to be a negative correlation indicating that higher education or income levels lead to lower crime rates per opioid/cannabis user. Figures 7 and 9 show that higher education and income levels tend to favor other illicit drug usage. Figure 9 also shows that those with lower standard deviations of income tend to have higher opium and cannabis usage. Figure 8 has a bimodal distribution and shows that younger individuals tend to use opium more than older individuals, while it is the opposite for cannabis and other illicit drugs based on the peaks. Another way to look at drug usage in states is to look at the DAST-10 score, which is a measurement of drug abuse. Figures 10 and 11 show a measurement of DAST-10 and crime rate by state. From figure 10, we see that there is a higher likelihood of drug-related crimes in southern and southwestern states. Figure 11 shows a possible correlation between drug abuse and crime rate.

Because of the time limit of this competition, we were unable to account for the bias and further investigation into this subject should account for this. We should also attempt to normalize the data based on the whole population instead of just the sample size. Possible routes for further exploration are investigating into more specific locations or different countries, as well as looking at the evolution of this data over time.

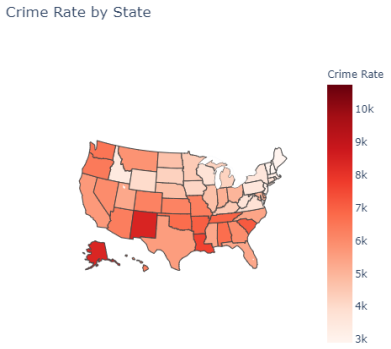

Figure 1

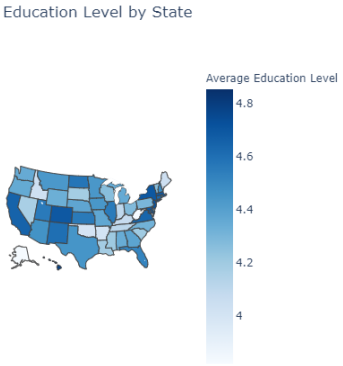

Figure 2

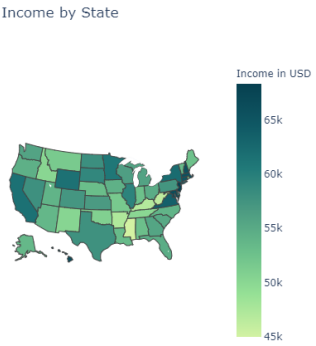

Figure 3

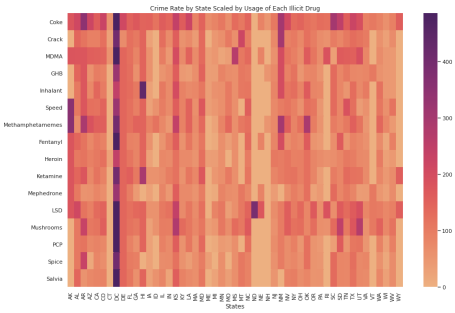

Figure 4

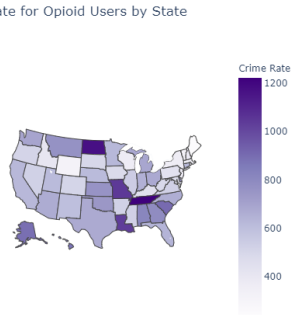

Figure 5

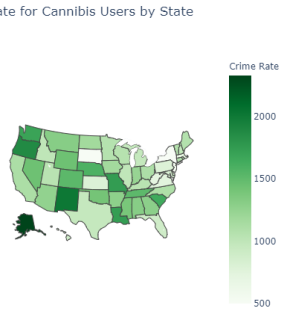

Figure 6

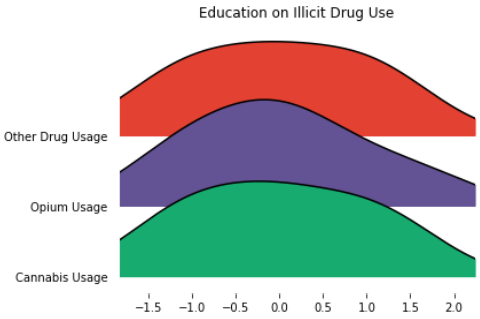

Figure 7

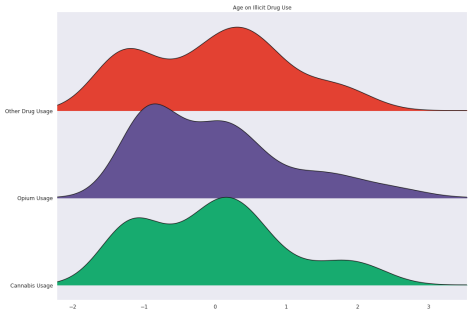

Figure 8

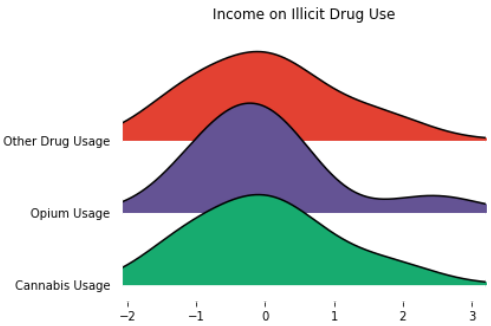

Figure 9

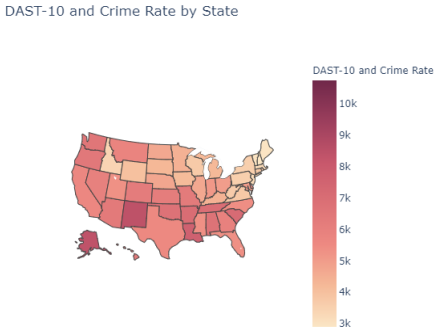

Figure 10

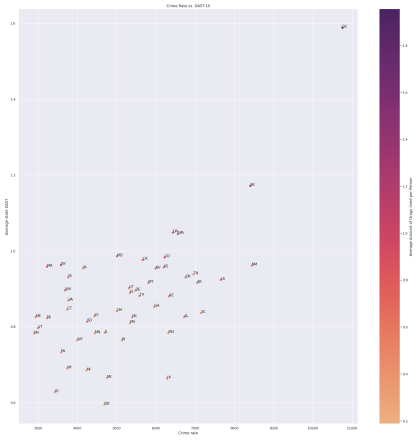

Figure 11