

Marijuana Legalization and Arrest Rates in Washington D.C., Colorado, and California

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Introduction

In the District of Columbia, Initiative 71 went into effect on February 26, 2015, legalizing the recreational use of cannabis. Similarly, Colorado Amendment 64 was passed in 2012 and went into effect in 2014, while California passed the Adult Use of Marijuana Act (Proposition 64) in 2016, which went into effect in 2018. Both laws legalized the possession of up to one ounce of marijuana for adults 21 years or older.

In this project, we study how arrest rates have changed following the legalization of marijuana from a state level, using Washington D.C., Colorado, and California. We chose these states specifically due to the extensive media coverage they have received surrounding legalization. We then compare and analyze our findings with national data. As a result of the comparison, we have discovered that although the legalization has decreased the arrests related to marijuana in certain states, the national cases of arrests related to marijuana stayed around the same level.

Analysis

Washington D.C. Arrest Rates: 2012-2019

Data used for our analysis of Washington D.C. is arrest data from the Metropolitan Police Department between January 1, 2012 to December 31, 2019. Variables of interest in our study include arrest year, arrest type, or type of offense committed, defendant race and defendant sex.

To understand our first question of how arrest rates have changed before and after legalization in Washington D.C. we calculated the total number of yearly arrests from our dataset and plotted these numbers as shown below in Figure 1.1. We can strikingly see that the number of marijuana related arrests between 2012 and 2015 is decreasing. It is important to note that the drug was decriminalized in 2014, which could explain the further drop seen in the number of arrests between 2014 and 2015. However, marijuana was legalized in early 2015, but we can observe a steady increase in the number of related arrests until about 2018, a deviation from the constant decline that we expected.

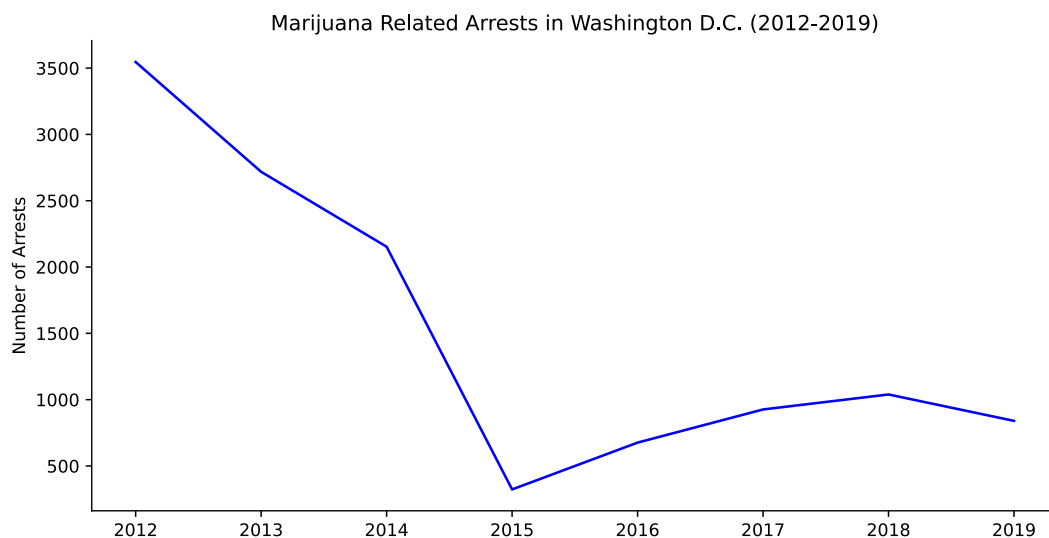


Figure 1.1: Total marijuana related arrests in Washington D.C.

Breaking down arrests by gender we can observe that a significant portion of total arrests are male. However, we can also see while the number of male arrests follows the same trends as total arrests, the decreasing trend also occurs with the number of female arrests between 2012 and 2015.

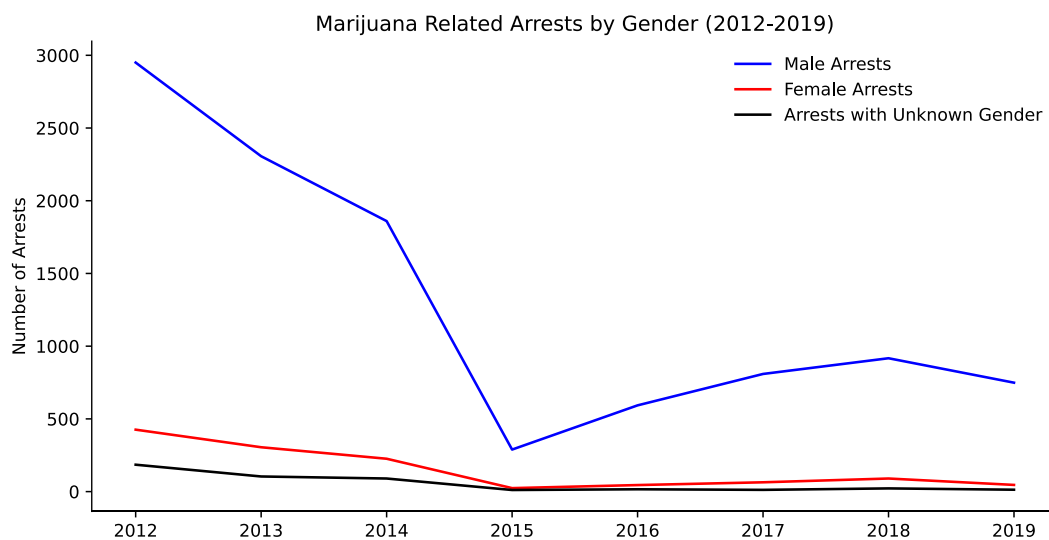


Figure 1.2: Marijuana related arrests in Washing D.C. by gender.

Unfortunately, we were unable to examine changes in marijuana related arrests by race in Washington D.C. as race data only began to be recorded beginning in 2018. However, in the one-year period between 2018 and 2019 Black arrests appear to be about four times higher than either White or Asian arrests.

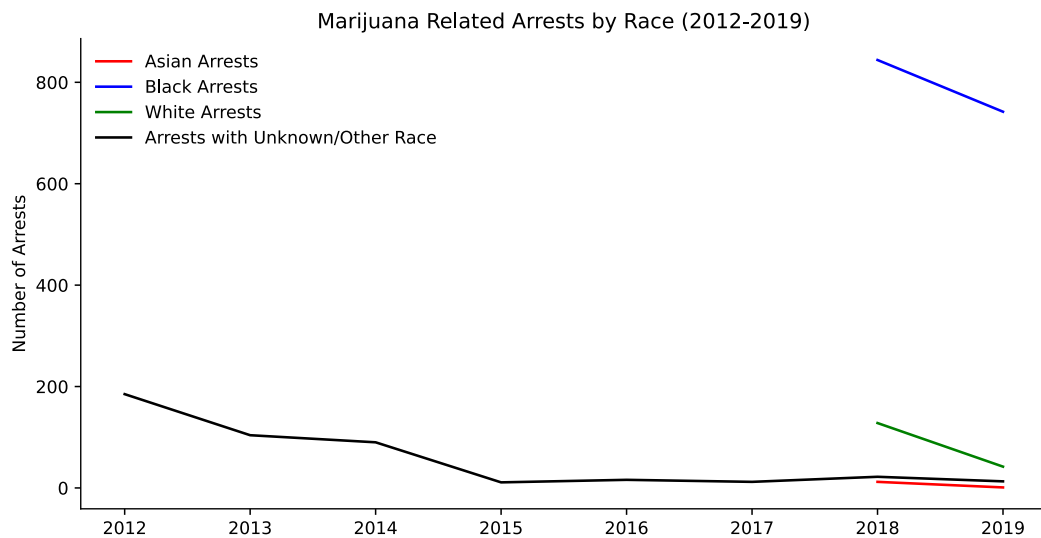


Figure 1.3: Marijuana related arrests in Washington D.C. by race.

Finally, when examining the arrest data by type, we can observe that before legalization in 2015, possession and possession with intent to distribute made up the majority of marijuana related arrests. After 2015, we can observe a significantly lower number of arrests for marijuana possession. It is also important to note that we see the same increased rate of change in decreasing possession arrests as we did in the number of total arrests from Figure 1.1.

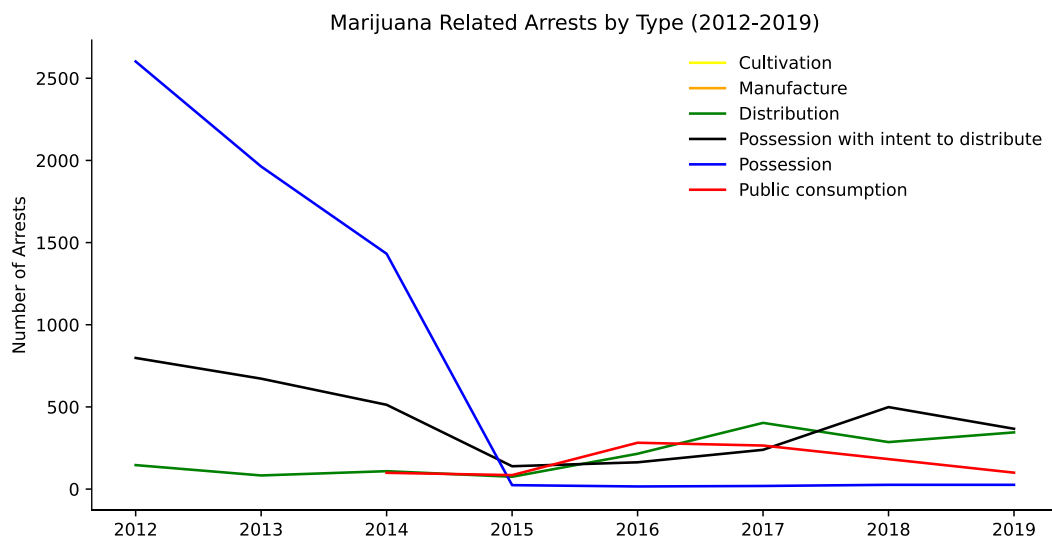


Figure 1.4: Marijuana related arrests in Washington D.C. by type.

Colorado Arrest Rates: 2012-2017

Data used for our analysis of Colorado is arrest data from the Colorado Bureau of Investigation's National Incident-Based Reporting System (NIBRS) between January 1, 2013 to December 31, 2017. Variables of interest in our study include arrest year, arrest type, or type of offense committed, defendant race and defendant sex.

To examine how arrest rates have changed before and after legalization we first plotted the total number of yearly arrests, as shown below in Figure 2.1. Marijuana was legalized in Colorado in December 2012. Although this Amendment did not go into effect until January 2014, it is clear that there was a sharp decrease in arrests between 2012 and 2013. The sharp decrease in arrests following legalization, even before the law took effect, is exactly what we expected. After 2013, arrest rates remained almost constant until 2017. This pattern is strikingly similar in each plot we created. As shown in Figures 2.1, 2.2, 2.3, and 2.4, it appears there was a significant decline in arrests between 2012 and 2013 followed by a steady rate throughout the next four years when looking at each of our variables: arrest year, arrest type, defendant race, and defendant sex.

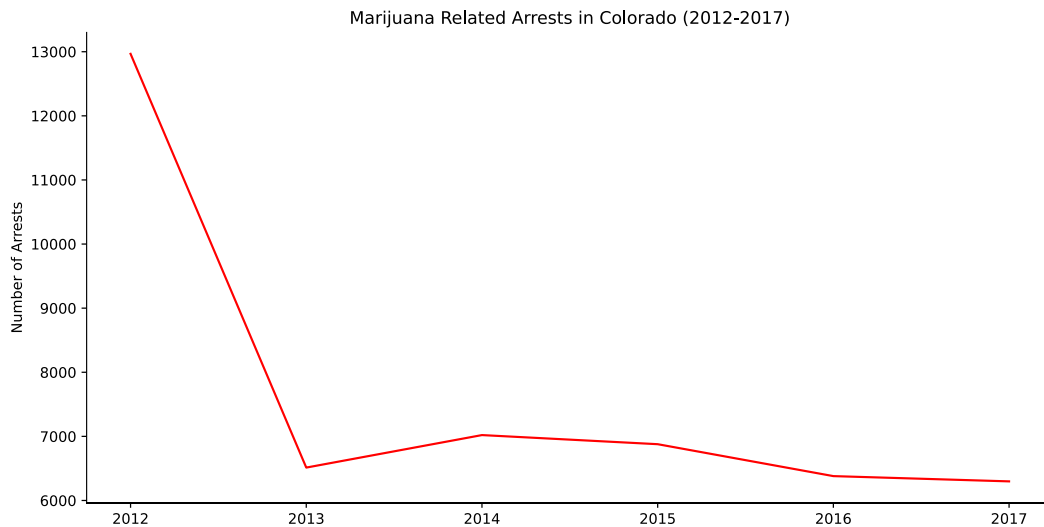


Figure 2.1: Total marijuana related arrests in Colorado.

Breaking down arrests by gender (Figure 2.2), we can observe that a significant portion of total arrests are male. However, female arrests follow the same trend as male. Both male and female arrests experienced a decrease between 2012 and 2013 and remained steady until 2017.

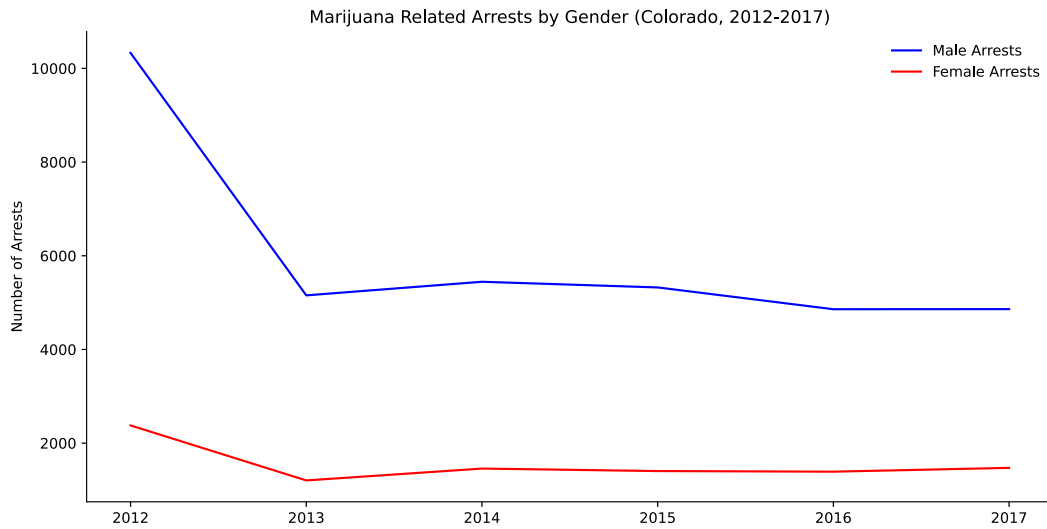


Figure 2.2: Marijuana related arrests in Colorado by gender.

Breaking down arrests by race (Figure 2.3), we can observe that a significant portion of total arrests are white. Asians had the lowest arrest rate each year, while African Americans and Hispanics displayed consistently similar rates. However, Hispanics had a slightly higher arrest rate each year. While Asian arrest rates are so low in Colorado that they do not show much of a trend, White, African American and Hispanic arrests all showed patterns consistent with our total data with a decrease between 2012 and 2013.

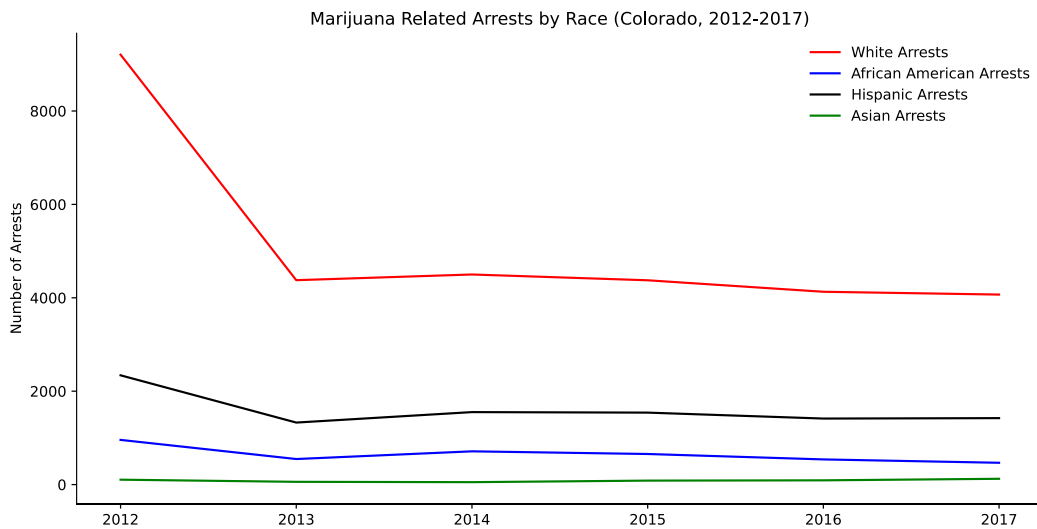


Figure 2.3: Marijuana related arrests in Colorado by race.

Finally, when observing arrest data by type of offense (Figure 2.4), we can see that possession made up the majority of marijuana related arrests from 2012 to 2017. All other types of offenses had significantly lower rates each year and appear relatively flat in the figure. Once again, this data follows the same trend as our total arrest data, displaying a significant decrease in possession arrests between 2012 and 2013.

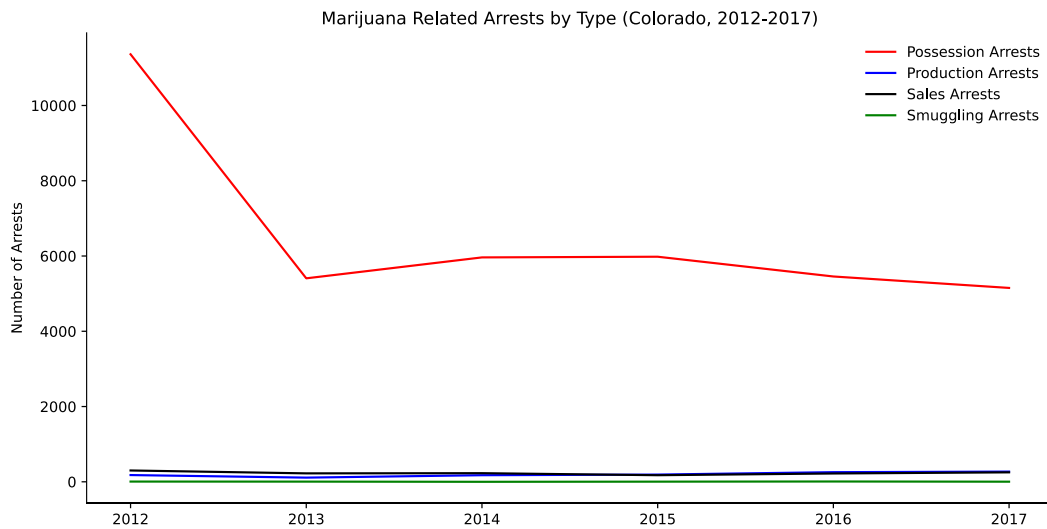


Figure 2.4: Marijuana related arrests in Colorado by type.

California Arrest Rates: 1974-2018

The chosen California data set is from the Uniform Crime Reporting (UCR) national dataset, which contains yearly arrest rate data from 1974 to 2018. Variables of interest include arrest year, arrest type, defendant sex, age, and race.

To examine how arrest rates have changed before and after decriminalization and legalization in California, we calculated the total number of yearly arrests from our dataset and plotted these numbers as a ratio of arrests to population shown below in Figure 3.1. Marijuana was decriminalized in California in 1975 and legalized in 2016. From the figure, we can see that there is an overall negative trend associated with marijuana arrest rates. Medical marijuana was legalized in California in 1996; however, it looks like the trend continues to increase from 1988 to around 2010, which does not follow what we expected. In 2010, California legislators reduced penalties for cannabis to a civil infraction, which is most likely why there is a sudden drop in marijuana arrests from 2010 onward to 2016. In 2016, there is another slight drop most likely due to the legalization of marijuana in 2016, which follows our reasoning.

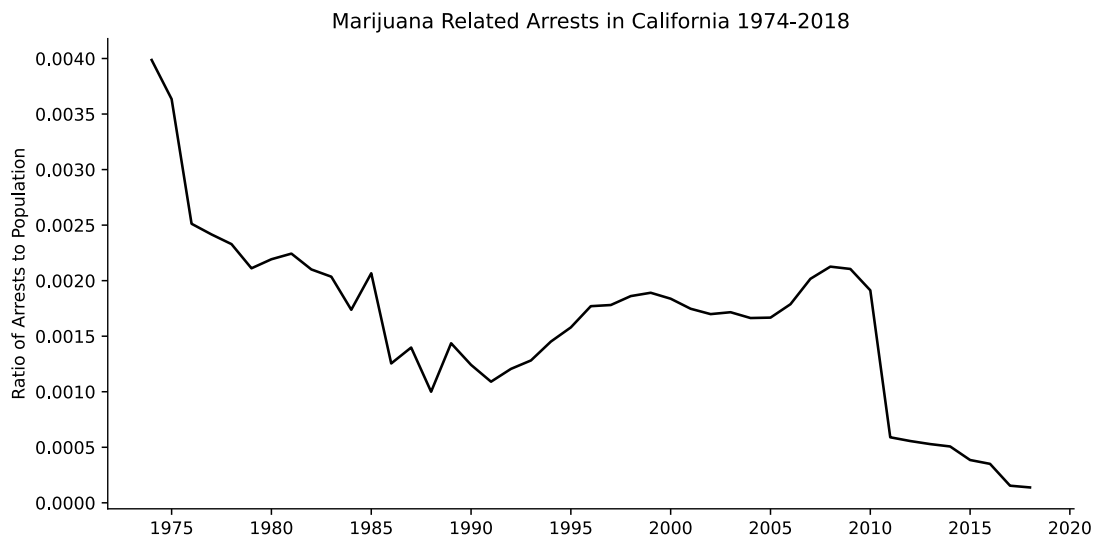


Figure 3.1: Total marijuana related arrests in California.

When evaluating arrests by type, we find that the distribution of cannabis follows a differing trend than the total arrest rates. We also find that the sale of cannabis arrests drops considerably from 1974 to 1977, while the possession arrest rate increases, shown below in Figure 3.2.

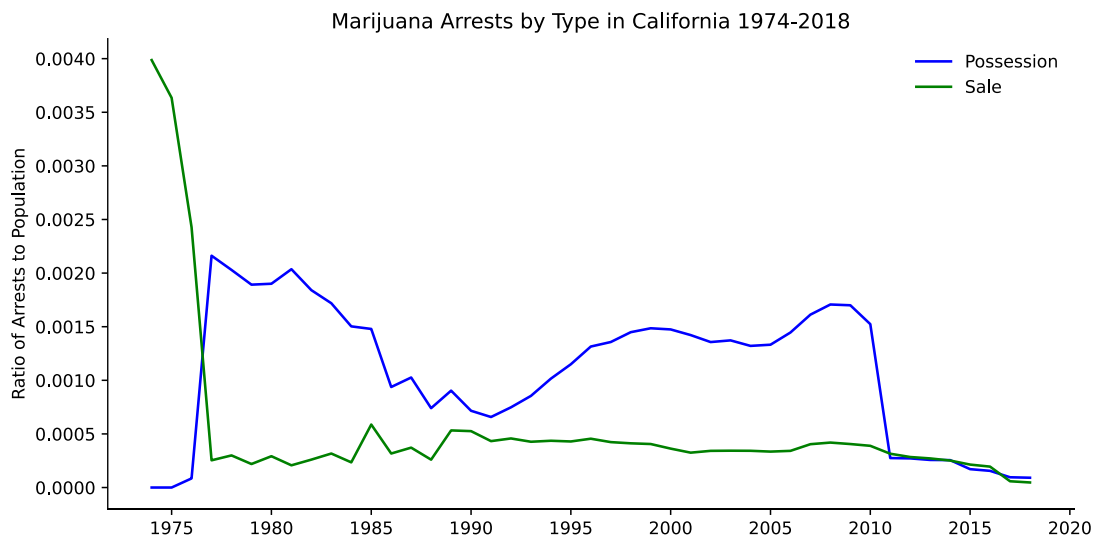


Figure 3.2: Marijuana arrests in California by type.

Analyzing arrests by gender, similar to both D.C. and Colorado, a considerable portion of arrests are male. However, female arrests rates follow the same trend as male, shown below in Figure 3.3.

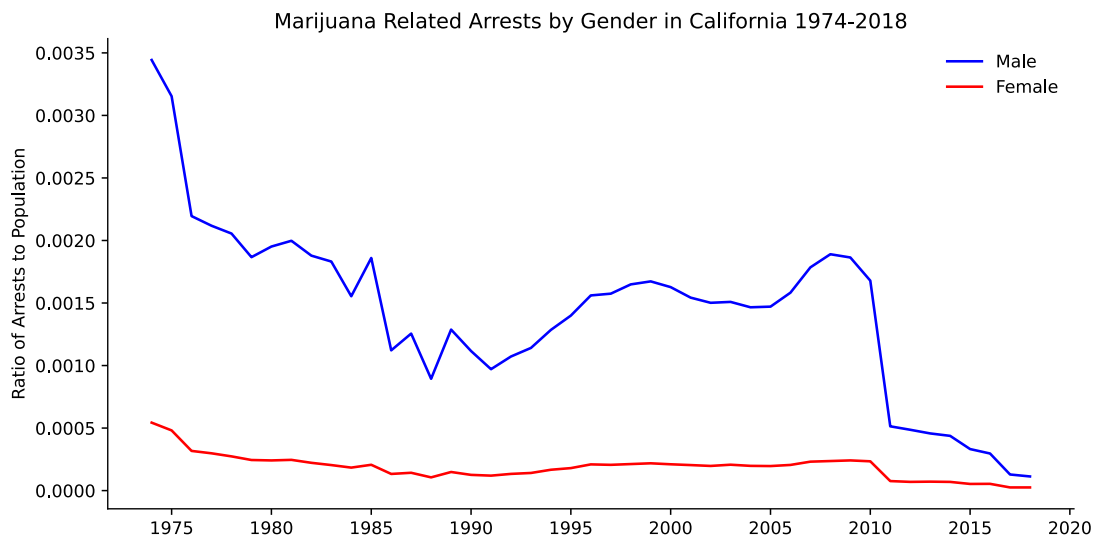


Figure 3.3: Marijuana related arrests in California by gender.

Viewing the arrest rates of juveniles and adults, we see that both follow the same trend. Adult arrest rates are significantly higher than juvenile arrest rates shown below in Figure 3.4.

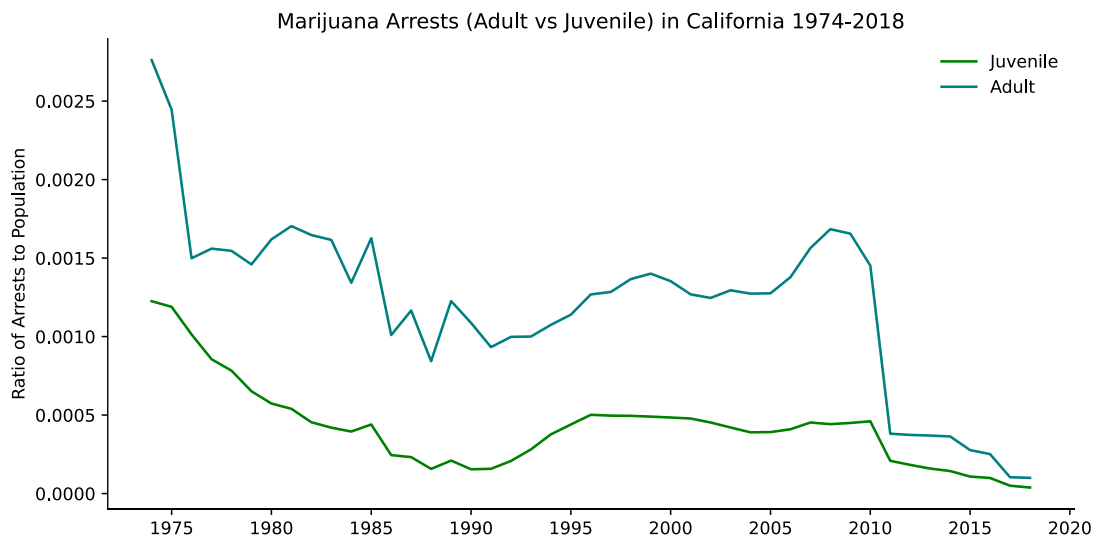


Figure 3.4: marijuana arrests (Adults vs Juvenile) in California.

Finally, when breaking down arrests by race, we observe that a significant portion of total arrests are white. Black arrest rates are below white arrest rates but follow the same trend as white arrest rates. Asians and Native American arrest rates hover around zero percent shown below in Figure 3.5.

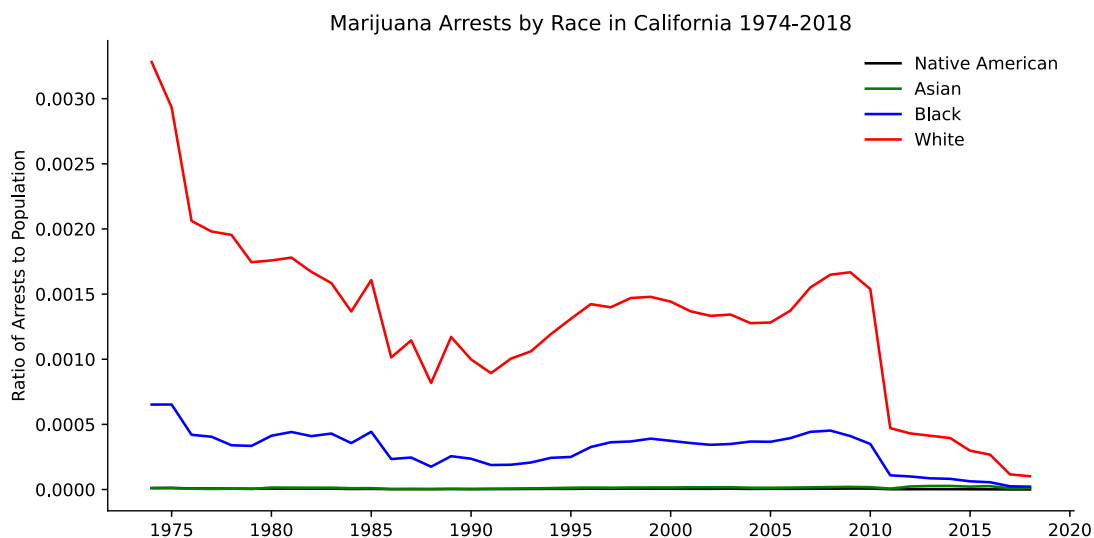


Figure 3.5: Marijuana arrests in California by race.

National Level Data

The first set of data used for national level study is from the Federal Bureau of Investigation's Crime Data Explorer. The data displays arrests for drug sale and possession offenses.

For the purpose of the study, we are examining how legalization or decriminalization of marijuana in certain states have affected the national level of arrests related to marijuana. From figure 4.1 and 4.2, we are observing that the total number of arrests related to marijuana sales is constantly decreasing, which are likely from the legalization of different states, including the district of Columbia, Colorado, and California. However, from the figure 4.3 and 4.4 we are observing that although there might be a temporary drop in arrests cases, both in 2012 due to legalization in Washington and Colorado and in 2015 when the District of Columbia legalized recreational usage of marijuana, the arrest cases showed increasing trend from 2016.

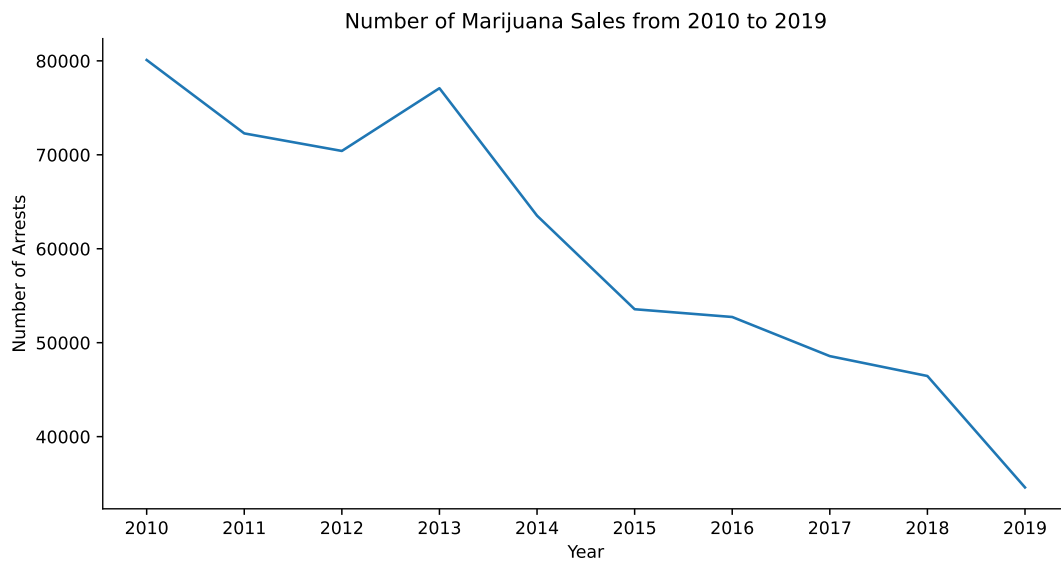


Figure 4.1: Number of marijuana sales from 2010 to 2019

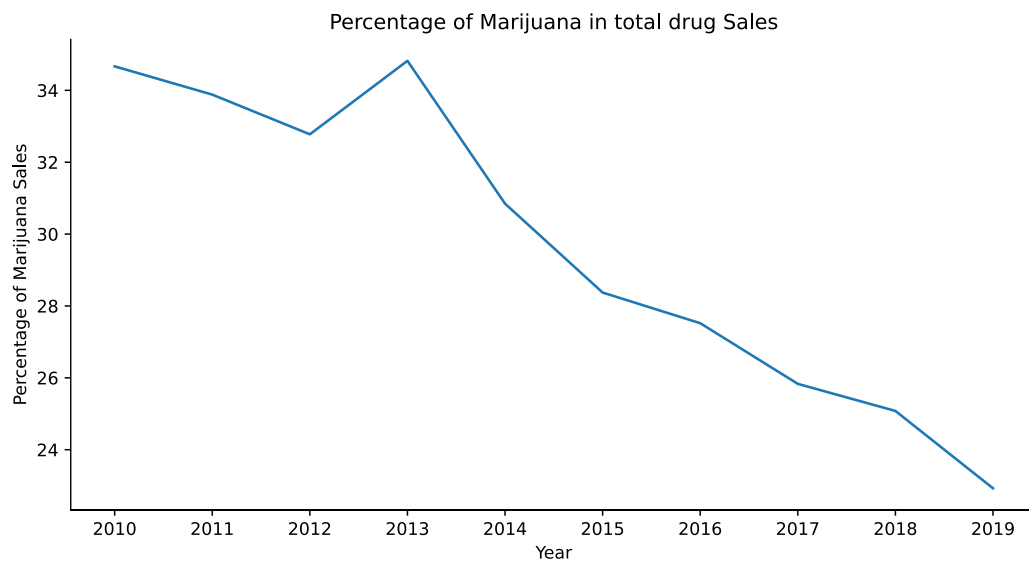


Figure 4.2: Percentage of marijuana sales in total drug sales cases.

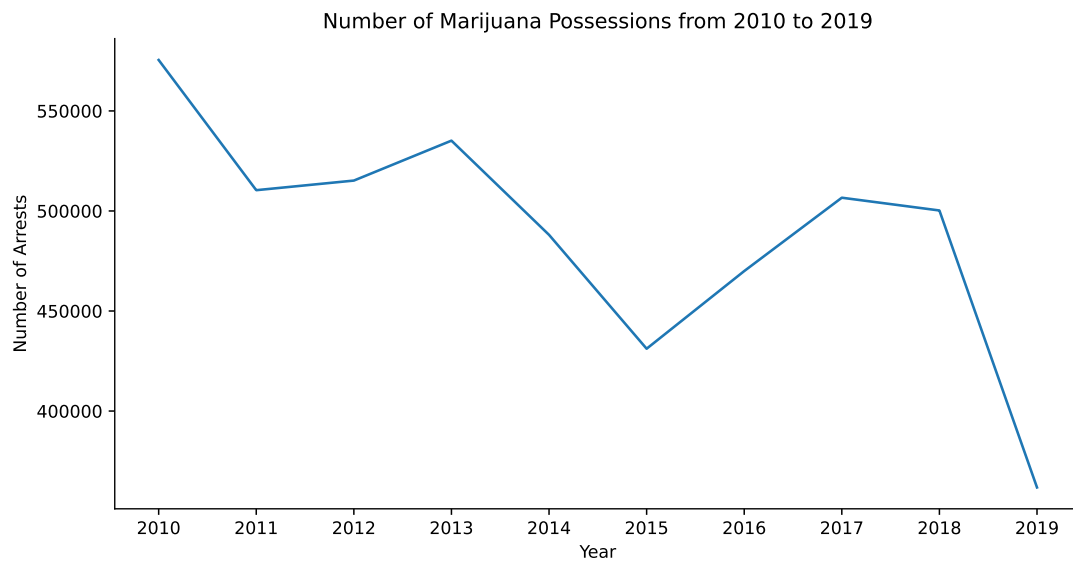


Figure 4.3: Number of marijuana possessions from 2010 to 2019.

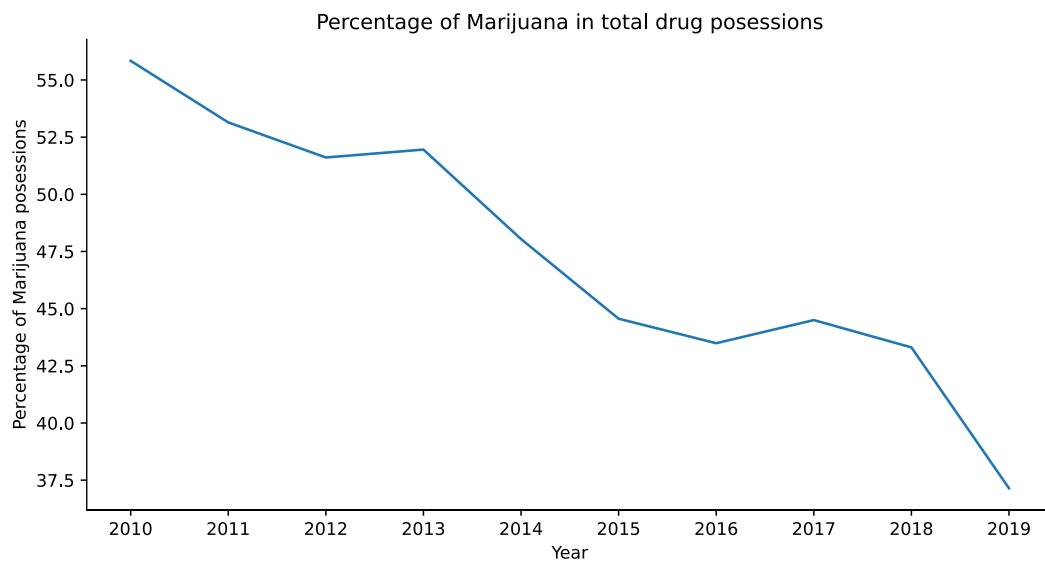


Figure 4.4: Percentage of marijuana possession in total drug possession cases.

The second set of data is from the FBI Uniform Crime Reporting Program (Crime in the United States) that has an estimated number of arrests from 2010 to 2019. We have extracted an estimated number of drug abuse arrests from the data for research purposes.

Bolstering the statement made with CDE data, although there are sudden drops in the estimated number of drug abuse arrests in 2011, 2013, 2015 respectively, but the number increases after a certain period has passed. This is observed in Figure 4.5.

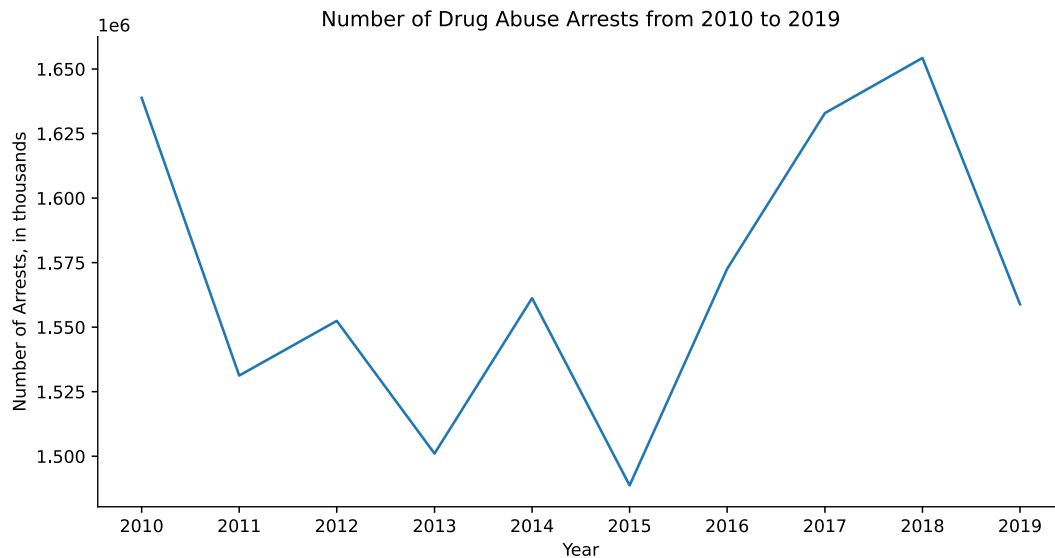


Figure 4.5: Number of national drug abuse arrests from 2010 to 2019.

Conclusions and directions for future research

In conclusion, unlike popular opinion that asserts that the legalization of marijuana would decrease the arrest cases at the national level, the arrest rates dropped temporarily and started to steadily increase until about 2018.

There are multiple research projects that could be done based on the project to further discuss the impact of marijuana legalization in several states. First, the reason for national arrests cases starting to climb again is not clear. If additional research could be done to further explain why the arrest cases recovered, that will improve our understanding on how legalization of marijuana can impact the total arrest rates. Secondly, from the heatmap below we can observe some of the state's adjacent to legalized states such as Idaho or Wyoming have more arrests cases after the legalization. The relationship could be further analyzed in additional research projects.

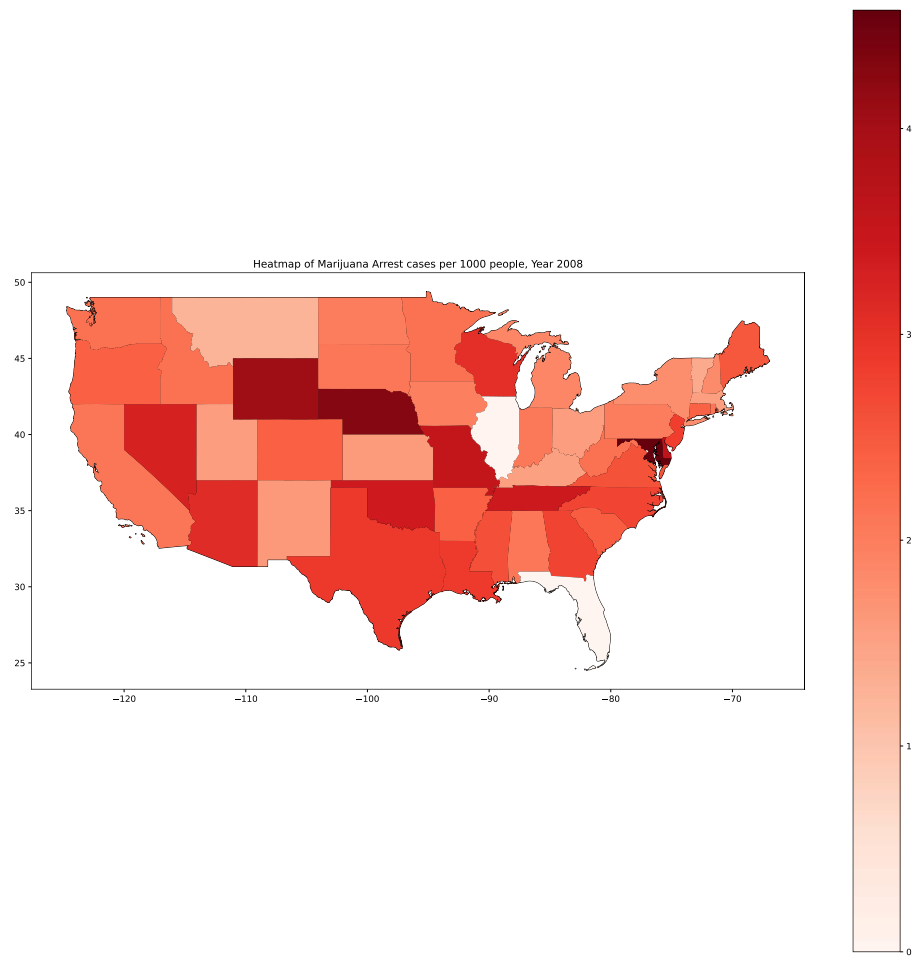


Figure 5.1: Heatmap of marijuana arrest cases per 1000 people, year 2008.

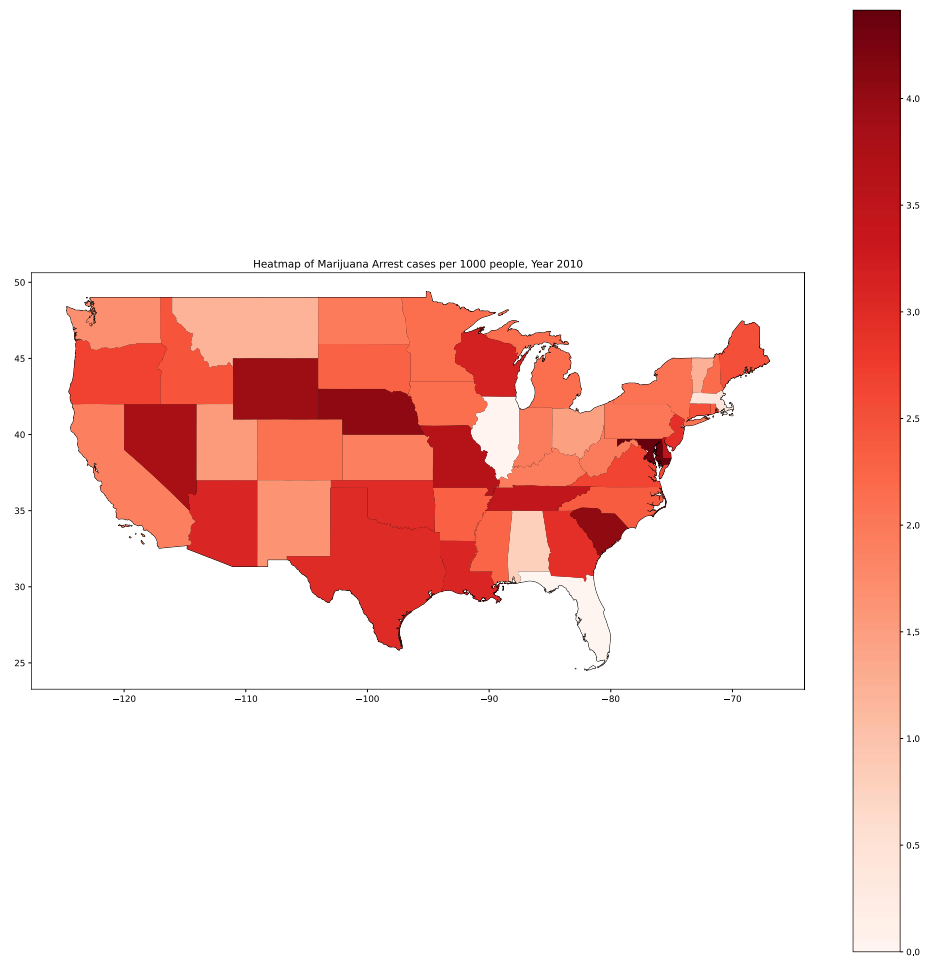


Figure 5.2: Heatmap of marijuana arrest cases per 1000 people, year 2010

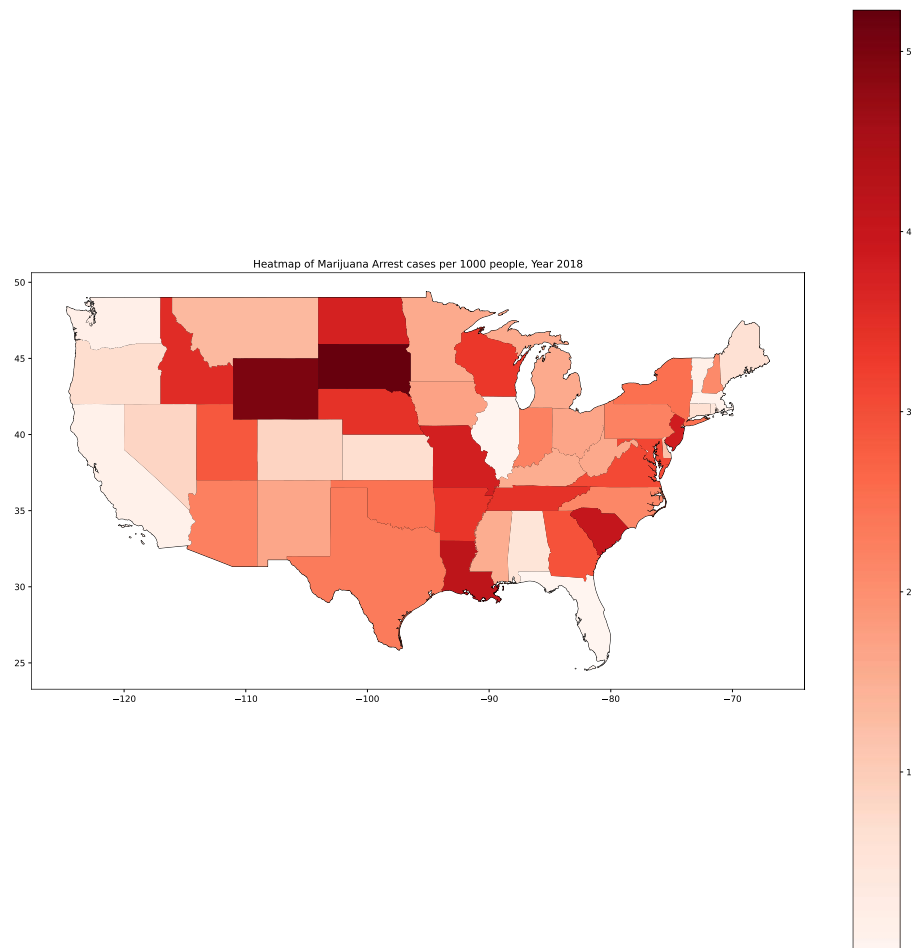


Figure 5.3: Heatmap of marijuana arrest cases per 1000 people, year 2018