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Drug Use

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Introduction

This report will test if there is significant evidence that shows any existing relationship between the uses of drugs from various age groups, if certain stages of life we see a trend of a popular drug, or if we can identify addiction or abuse in an age group. And overall I'll see what are some of the more common use of drugs are present in each of the said age groups

The data that I'll be using and analyzing illustrates the frequency of various drugs and alcohol being used based on age. The amount of drug usage is represented by the percentage of those who used the drug in the specified age group in the past 12 months, while the frequency is the median number of times a user used the item in the past 12 months. The age groups are listed as follows: 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22-23, 24-25, 26-29, 30-34, 35-49, 50-64, and 65+. In regards to analyzing data, it is commonly believed that the legalization of marijuana will lead to the use of “harder” and more dangerous drugs. This report will test if there is significant evidence of a relationship between the uses of gateway drugs(painkiller/weed) and use of other drugs within an age group. And overall i'll see what are some of the more common use of drugs are present in each of the said age groups

Data section:

The substances that we are going to focus on are alcohol, marijuana, cocaine, crack, heroin, hallucinogen, inhalants, pain relievers, oxycontin, tranquilizers, stimulants, meth, and sedatives.

The provided data has 2 types of values for each substance. The first type is the percentage of those in the age group who have used a substance in the past 12 months. The second type is the frequency where we have a median number of times a user has used a substance in a 12 month span.

Method section:

The data that I am using was from [National Survey on Drug Use and Health from the Substance Abuse and Mental Health Data Archive](http://www.icpsr.umich.edu/icpsrweb/content/SAMHDA/index.html).

I have divided the data to age groups in respect of school year. This starts with middle school ages being 12 year olds to 14 year olds. High school ages are from 15 year olds to 18 year olds, and the college age range is from 19-21 year olds. From there, we have professional life at 22 years old and higher. This generalization of “professional life” will help identify why the data is skewed at certain points of life.

I'll be testing various ways to see if a relationship occurs from marijuana use and other drug use. By comparing what are most common drugs being used by what age group and finding any related trends that carry over to the next age group by using a heatmap.

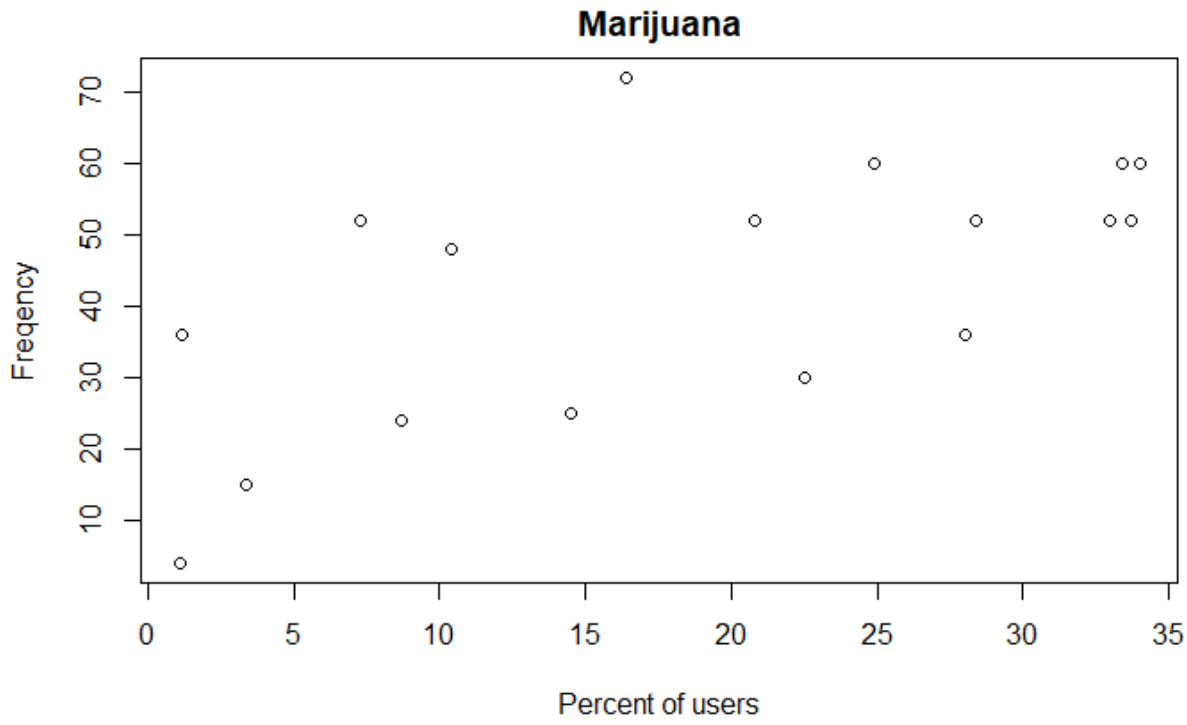
Beyond these relationships, we will also see what is popular among age groups and if a certain drug is present in an age group over another and if there's any drugs being used leading to other drugs for example if the use of crack leads to cocaine use or etc.

Analysis section:

As we look at our data, we can see a few relationships that exist within the dataset. First off, the relationship that we see is a high percentage of use for alcohol throughout all age groups. Looking closer, we see a huge spike in the figure of alcohol users, in the age group of 19-21. We could infer that there is a higher count of alcohol use, due to environmental factors such as colleges and the legal age to consume this drug. Of the data, alcohol is the only legal

drug for commercial use so we will see various relationships with this class of drug which will be bad to compare other drugs due to legal statuses. And due to the legal status of alcohol we can also see that with the availability of alcohol why younger ages are able to use and have a hold of alcohol due to it being easier whereas cocaine will be a harder drug to acquire.

Moving forward, as we look at marijuana, we see a general trend upwards. This may be due to the dataset being constructed in 2012 where marijuana has become more normalized and more popular across all age groups, but with the data we are able to graph an upwards trend as we did in alcohol. Which supports the idea of a high percent of users in an age group to a high frequency use in the age group.



We calculated the average of high school students, college students, and adult life and we can see some relationships. We have a spike in usage in college students, and from college to adult life we have a drop of up to 50% for most drug uses for all groups, except for alcohol and marijuana. We also see that we have a drop of use but almost the same amount of

frequency for the respective drugs, which could mean that there could be signs of drug addiction/abuse. For example meth in adult life has a user use percentage of .4% but a frequency of 40.7 which could be an indication of abuse or addiction. Below are the provided values for respective life stages

High school drug Average					
Alcohol Use 44.33%	Alcohol Frequency 13.25	Marijuana Use 24.68%	Marijuana Frequency 35.75	Cocaine Use 1.68%	Cocaine Frequency 5.25
Crack Use .15%	Crack Frequency 10.38	Heroin Use .20%	Heroin Frequency 44.38	Hallucinogen Use 4.32%	Hallucinogen Frequency 3.50
Inhalant Use 2.33%	Inhalant Frequency 4.12	Pain Reliever Use 7.35%	Pain Reliever Frequency 9.5	Oxycontin Use 1.25%	Oxycontin Frequency 5
Tranquilizer Use 3.2%	Tranquilizer Frequency 8.62	Stimulant Use 2.28%	Stimulant Frequency 8.12	Meth Use .42%	Meth Frequency 26.62
Sedative Use .38%	Sedative Frequency 12.38				

College drug Average					
Alcohol Use 72.5%	Alcohol Frequency 45.33	Marijuana Use 33.47%	Marijuana Frequency 57.33	Cocaine Use 4.6%	Cocaine Frequency 6.17
Crack Use .53%	Crack Frequency 8	Heroin Use .67%	Heroin Frequency 85	Hallucinogen Use 7.43%	Hallucinogen Frequency 3
Inhalant Use 1.43%	Inhalant Frequency 3	Pain Reliever Use 9.47%	Pain Reliever Frequency 12.33	Oxycontin Use 1.5%	Oxycontin Frequency 11
Tranquilizer Use 4.5%	Tranquilizer Frequency 7.17	Stimulant Use 3.8%	Stimulant Frequency 9.33	Meth Use .63%	Meth Frequency 39.67

Sedative Use .37%	Sedative Frequency 6.33	

Professional life drug Average*					
Alcohol Use 73.86%	Alcohol Frequency 52	Marijuana Use 15.63%	Marijuana Frequency 53.14	Cocaine Use 2.31%	Cocaine Frequency 10.71
Crack Use .4%	Crack Frequency 20.29	Heroin Use .43%	Heroin Frequency 100.36	Hallucinogen Use 2.24%	Hallucinogen Frequency 8.43
Inhalant Use .47%	Inhalant Frequency 5.29	Pain Reliever Use 5.79%	Pain Reliever Frequency 16.14	Oxycontin Use .83%	Oxycontin Frequency NA
Tranquilizer Use 2.86%	Tranquilizer Frequency 8.71	Stimulant Use 1.54%	Stimulant Frequency 64.43	Meth Use .39%	Meth Frequency 40.71
Sedative Use .24%	Sedative Frequency 30.36	Huge population group and also some values are errored so finding median might be a better values rather than average			

Results section:

As we refer back to the dataset from https://fivethirtyeight.com/, we see that a common reason for all of these existing relationships with each drug for the younger age group is because of the high and excitement. But, for the older age group, these drugs were used more for suppressing pain and or coping with various issues. We also found a relationship between college life and adult life, where the user percentage drops drastically but the frequency of use still remains high which could indicate a sign of addiction or abuse of the drug.

Conclusion

The relationships that are present in drug use and frequency is proportional where if we have a high usage we have a higher frequency in all age groups. There is also a higher use of all drugs in the age group of college students, we see it being the most experimental with using or trying different drugs. We do see a high use of alcohol and marijuana use in older age groups and as well as pain killers still being used and with high usage comes with higher frequencies.

Some recommendations from this research would be to modify the data set reported This could be done by implementing the ability to track the same user over a period of time, instead of surveying them once with the current data. Due to this gap, it brings uncertainty to conclude a correlation or a strong relationship between gateway drugs and stronger drug use, or if drug use is being carried over the course of a timeframe or life time or if the drug use was from an environmental influence like college parties or social events. Adding on, When using the heatmap, it was hard to see any correlations between any age group due to the way the data was collected and trying to clean the data was a task that would change the results too much so, this method was voided and looking for another method for seeking a deeper relationship in the data set that might be useful such as regression analysis where if we can predict using drug X we can see if there will be a increase in drug Y. Another suggestion could be providing more samples in each data group to get a better understanding and grasp of what the real relationship exists between age groups and we could also investigate if certain race or economic standings are most effective by what drugs.

Citations

[National Survey on Drug Use and Health from the Substance Abuse and Mental Health Data Archive](http://www.icpsr.umich.edu/icpsrweb/content/SAMHDA/index.html).

[How Baby Boomers Get High](http://fivethirtyeight.com/datalab/how-baby-boomers-get-high/)