Team: Brenna Manning and Emily Wang
Audience: American Public at Large

The Unseen Impact of Substance Use & Abuse on Mental Health

This packet presents a more extensive report of the visualizations and insights from our Data Science CTW project.

About the Data and Project

This exploratory visualization project was done with data from the 2012 National Survey on Drug Use and Health. The data can be found at www.icpsr.umich.edu/icpsrweb/ICPSR/studies/34933. Both of us wanted to seize the opportunity to investigate mental health trends with a data-driven perspective. Both of us strongly believe that mental health needs to be talked about with more awareness and empathy within the public at large, and hope that these deliverables become an artifact for individuals and groups to discuss this topic more openly in various settings.

The feelings you don't see

Early on in our explorations, we plotted the frequencies of emotional levels of people who used various substances relative to drug-free respondents. The data that drove these visualizations came from the portions of the survey that asked about how often a respondent felt nervous, hopeless, restless, or depressed in the past thirty days. Unlike physical injuries that can't be ignored, such as a broken bone with a cast, a sprained ankle, or bruise, these emotions are often hidden from peers for maintaining professionalism in the workplace or lack of desire to communicate personal context to many peers at once.

It's clear from these visualizations that several stories may be occurring. In the graphs where the "Frequently" levels are strikingly similar to the "Never" levels, we guess that the substance usage has become "normal" for the respondent. On the other hand, people who are in the active process of quitting and experiencing symptoms of withdrawal, and people who use the substance as an occasional coping mechanism, are represented in the categories between Never and Frequently. On the other hand, perhaps these feelings are resulting because of the effects the substance has on the body (a different causation or "story"). Ultimately these graphs show that there is potential in investigating additional trends in respondent behaviors to understand these peaks. It is clear from every drug that we investigated that there is not a proportional trend of "use the drug more, feel a certain way more often." While we have extracted a brief number of high-level comments about the plots, all of the plots show a more complicated story that is worth investigating in further depth.
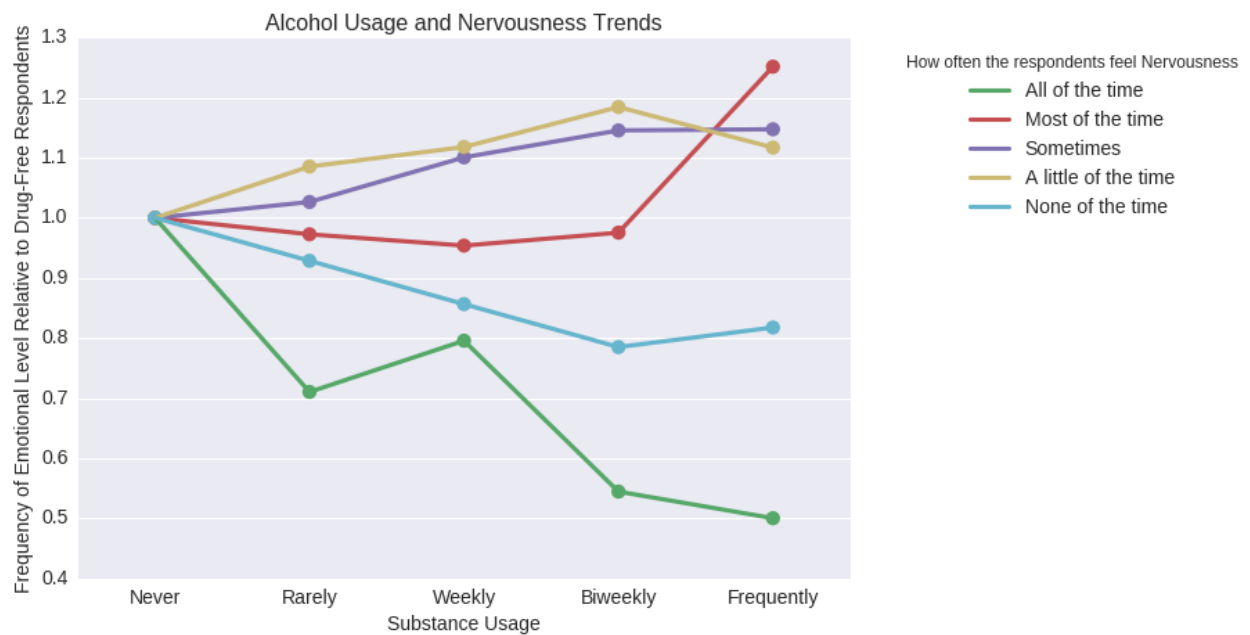
Alcohol

Points above 1.0 imply that there are more respondents in that substance usage bracket who feel that level of the emotion compared to the drug-free respondents. Points below 1.0 imply that there are less respondents in that substance usage bracket who feel that level of the emotion compared to the drug-free respondents.

In regards to depression, in all substance usage groups, there were more respondents who felt depressed a little of the time compared to alcohol-free respondents. For all other intensity levels, there were fewer respondents who felt depressed more of the time compared to alcohol-free respondents. To highlight this, the plot below shows how there are 50% fewer respondents who drink biweekly or frequently feel depressed all of the time compared to alcohol-free respondents.

Alcohol Usage and Hopelessness Trends
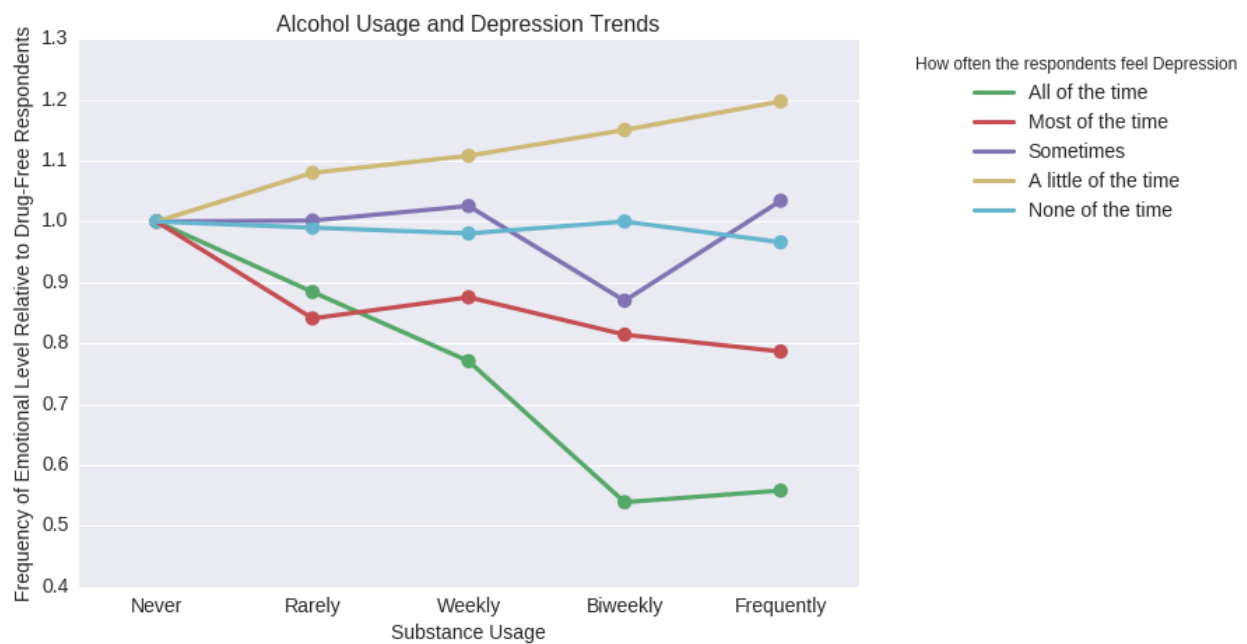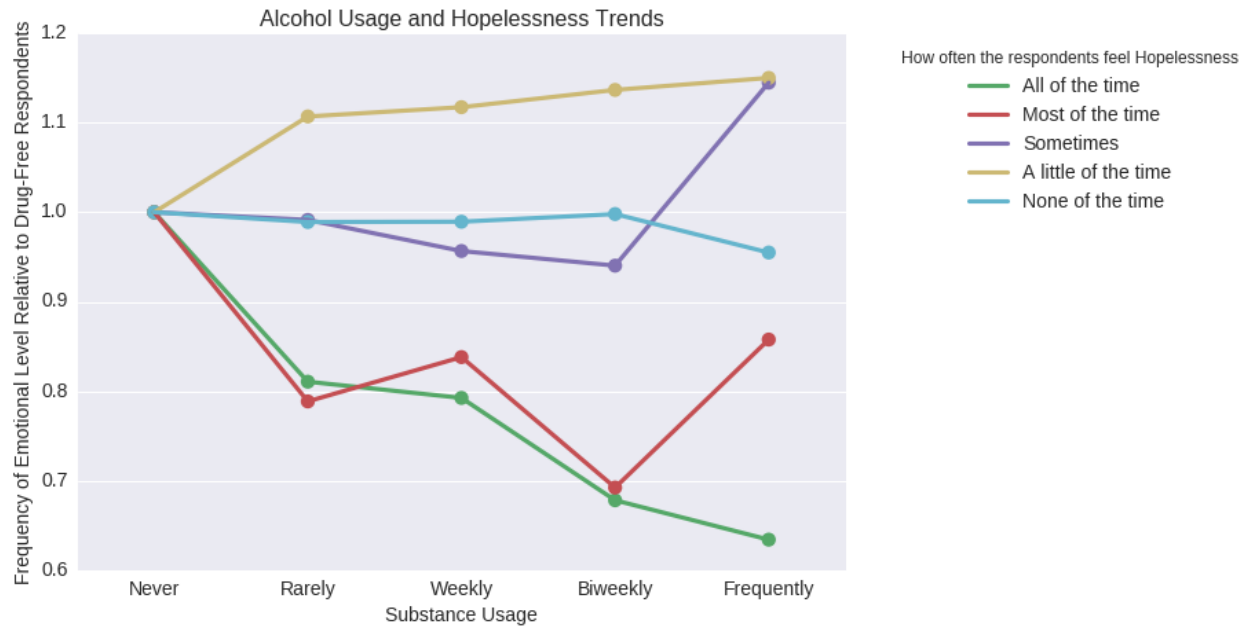
In the Nervousness and Restlessness plots below, there were relatively fewer drinkers who felt depressed none of the time and relatively fewer drinkers who felt depressed all of the time compared to non-drinkers.

Alcohol Usage and Nervousness Trends
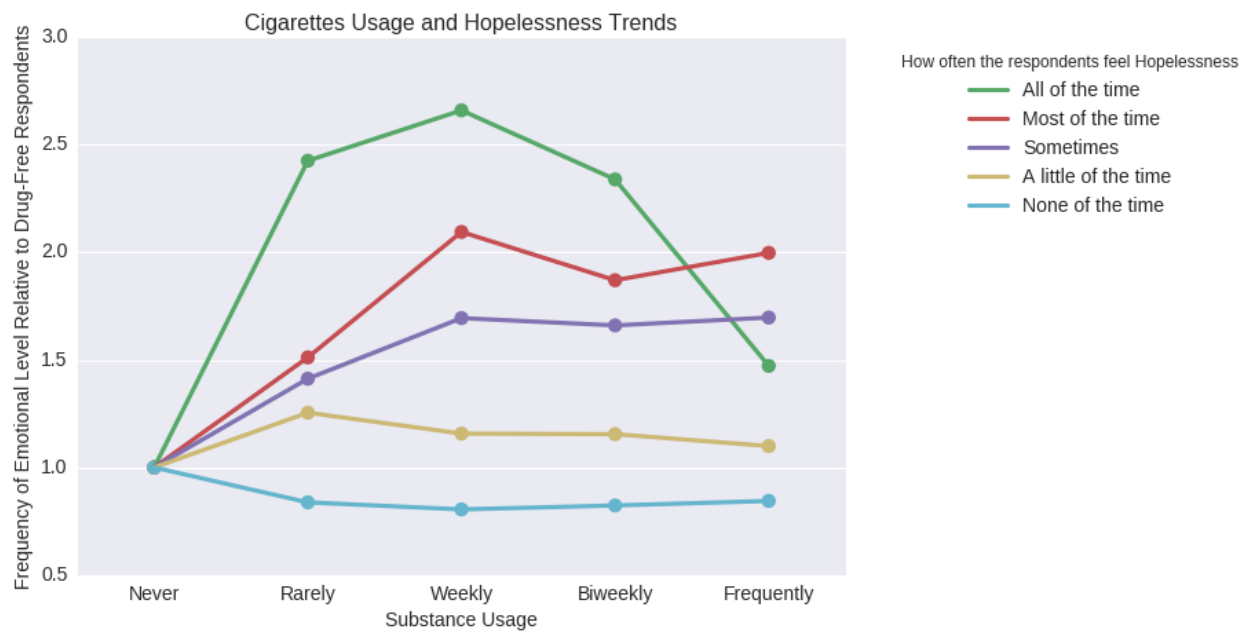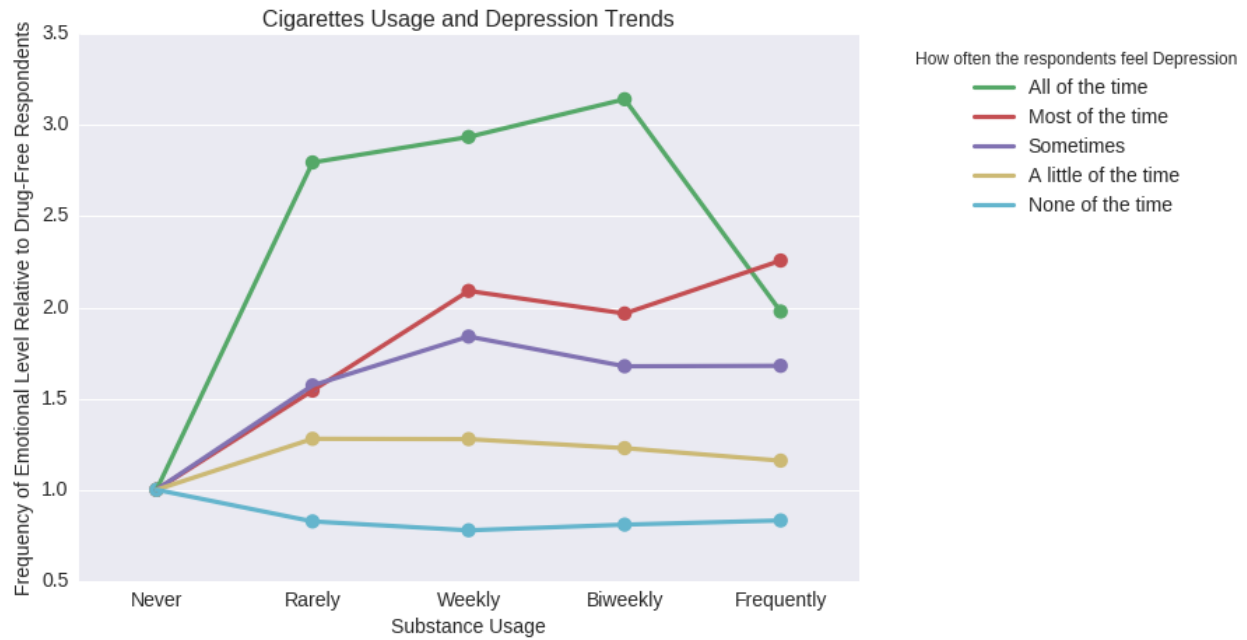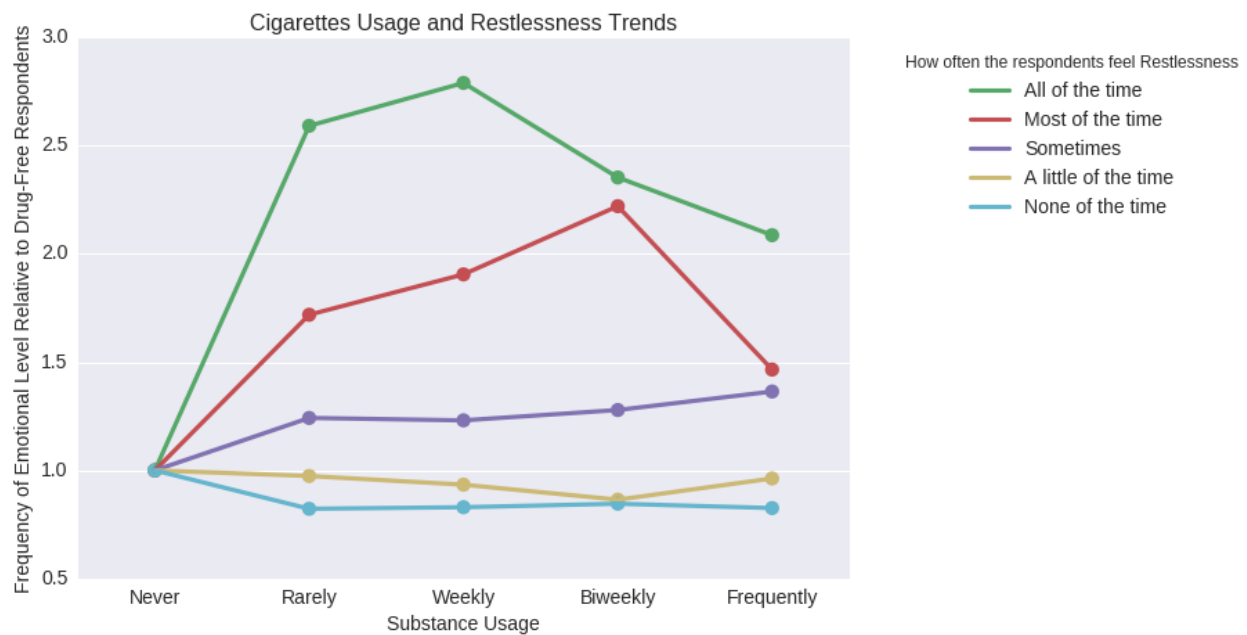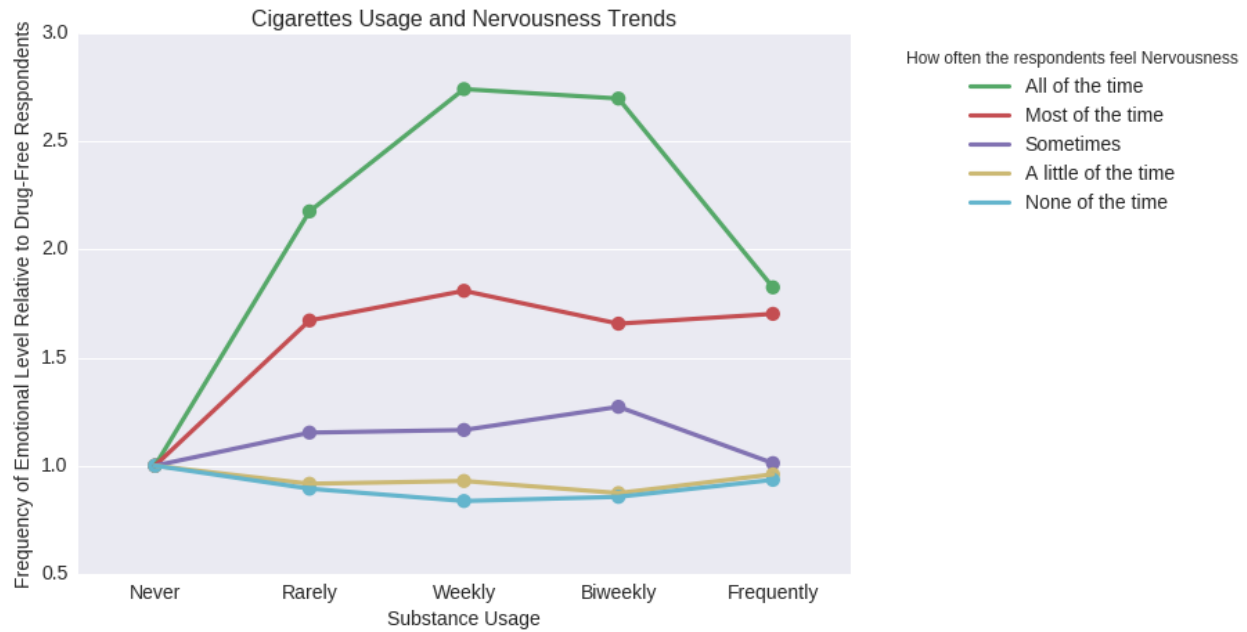
Alcohol Usage and Restlessness Trends
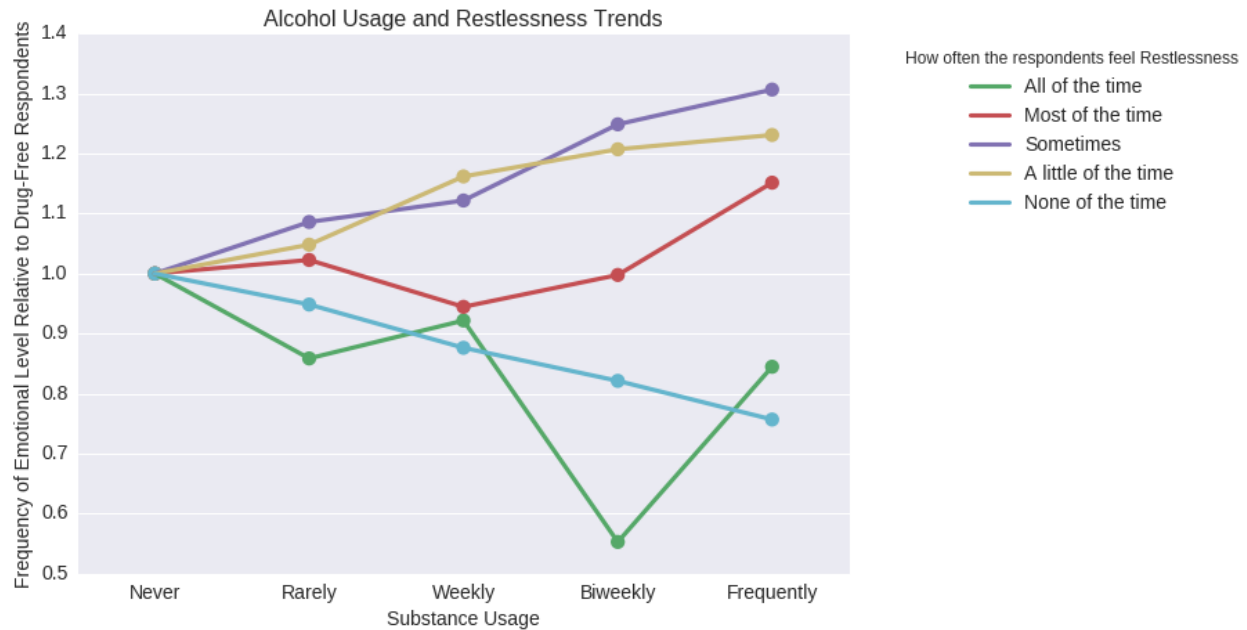
This difference in trends compared to other substances may be connected to how alcohol is generally a socially acceptable drug, whether it be at an establishment, family gathering, or cultural events. A combination of exploration into other features in the dataset and qualitative methods (interviews) of respondents is necessary to understand the different lifestyles between heavy drinkers, casual drinkers, and non-drinkers.

Cigarettes

The unique trend seen in the Cigarettes plots below is the nontrivial dip between biweekly smokers and frequent smokers who feel depressed, hopeless, nervous, and/or restless all of the time. This implies there is a significant difference between respondents who use cigarettes daily (drug abuse is part of their lifestyle) compared to those who use cigarettes often but likely as a coping mechanism or other situation.
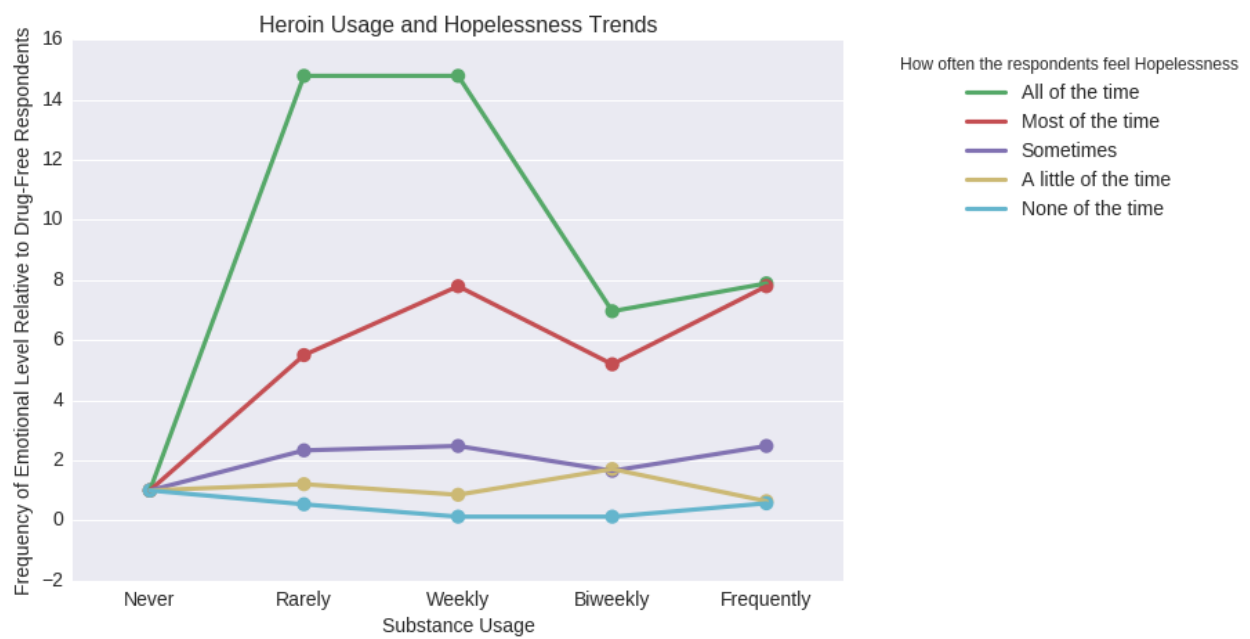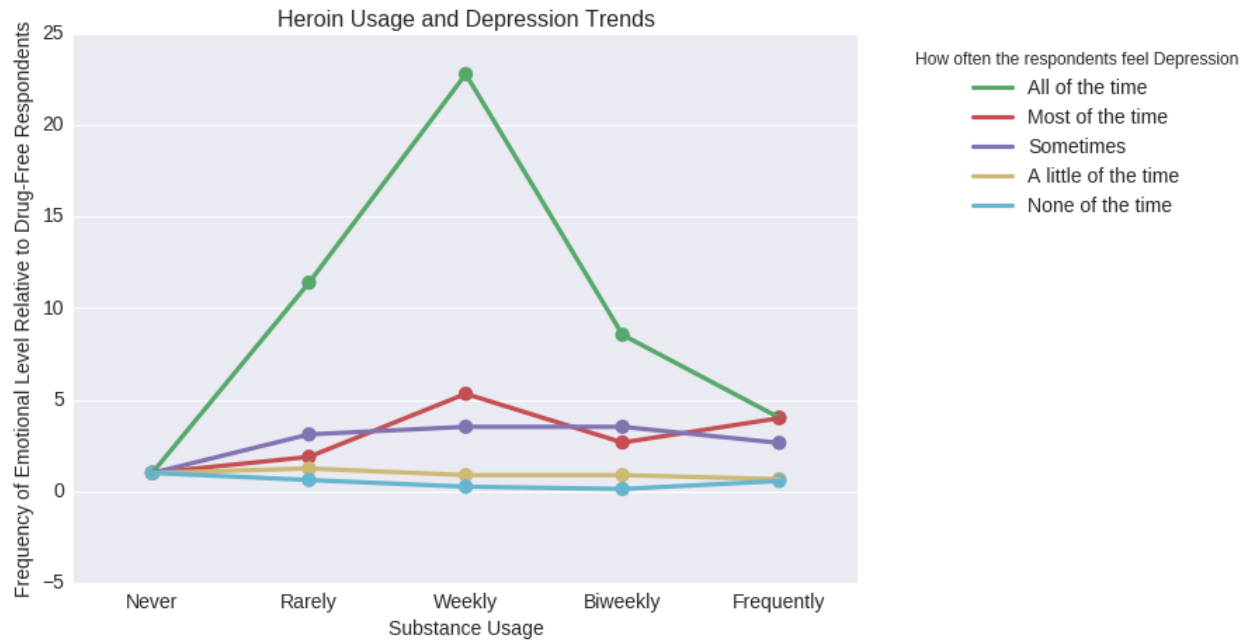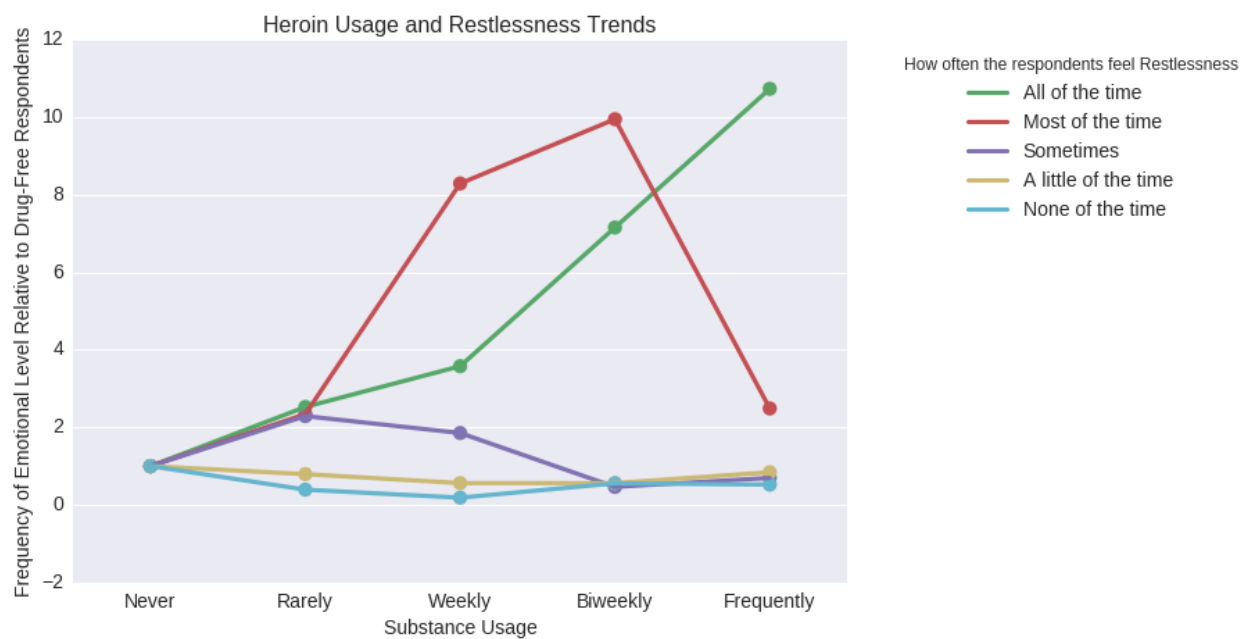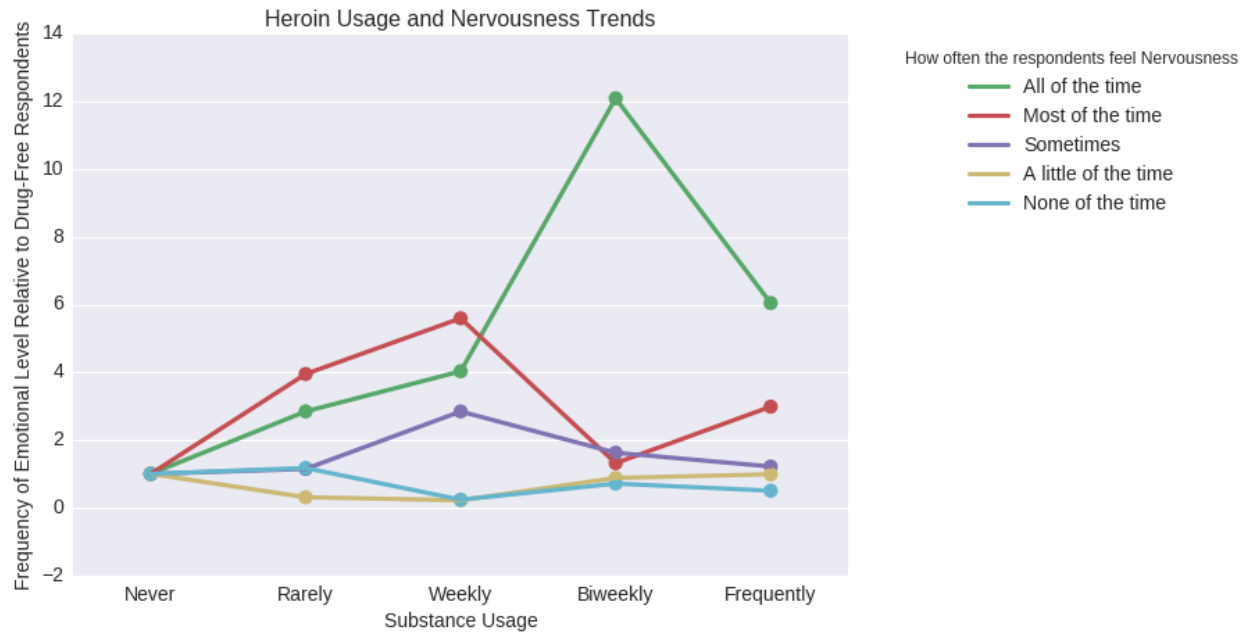
Cigarettes Usage and Depression Trends

Cigarettes Usage and Hopelessness Trends

Cigarettes Usage and Nervousness Trends

Cigarettes Usage and Restlessness Trends

Heroin

The emotional response trends among heroin users are varied; more investigation should be done to understand how the culture around Heroin may influence the frequencies of these emotional levels.

By far, the weekly heroin users have the most respondents who feel depressed, hopeless, nervous, and restless all of the time compared to those who do not use heroin.

Heroin Usage and Depression Trends

How often the respondents feel Depression
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Heroin Usage and Hopelessness Trends

How often the respondents feel Hopelessness
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Heroin Usage and Nervousness Trends

How often the respondents feel Nervousness
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Heroin Usage and Restlessness Trends

How often the respondents feel Restlessness
- All of the time
- Most of the time
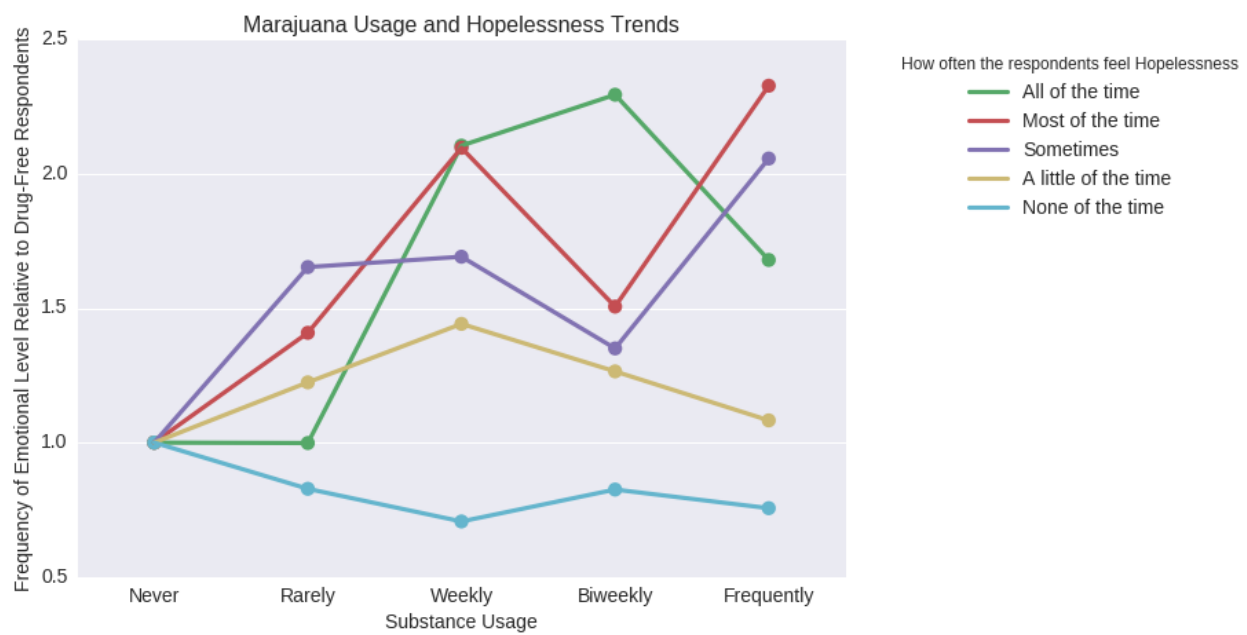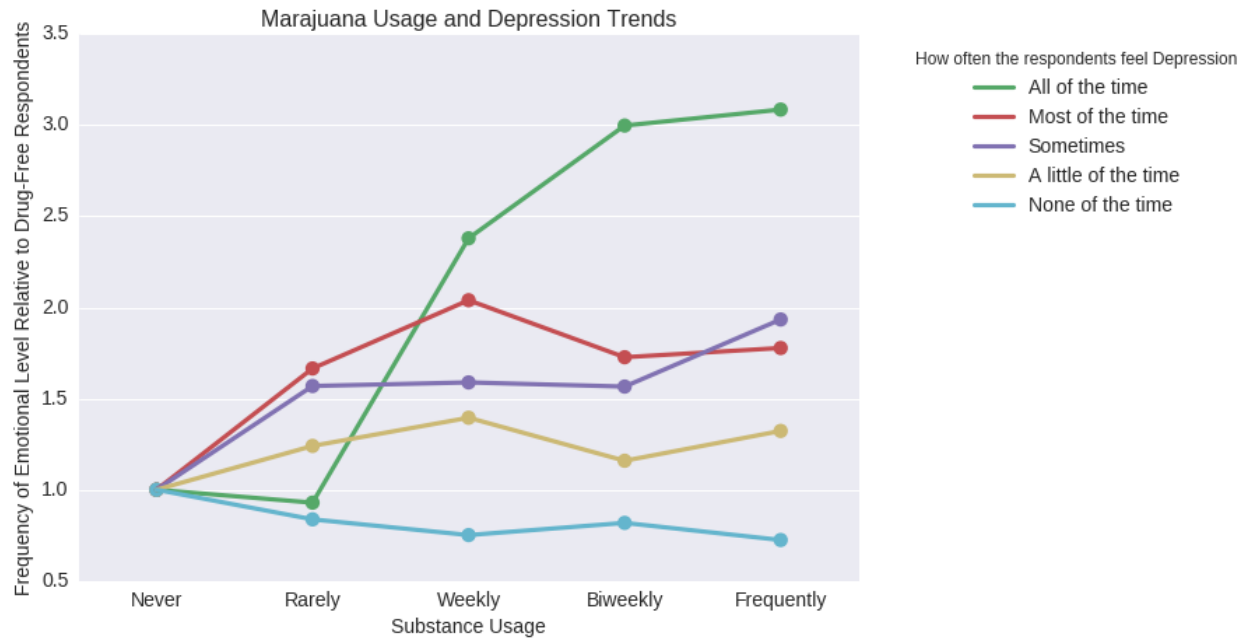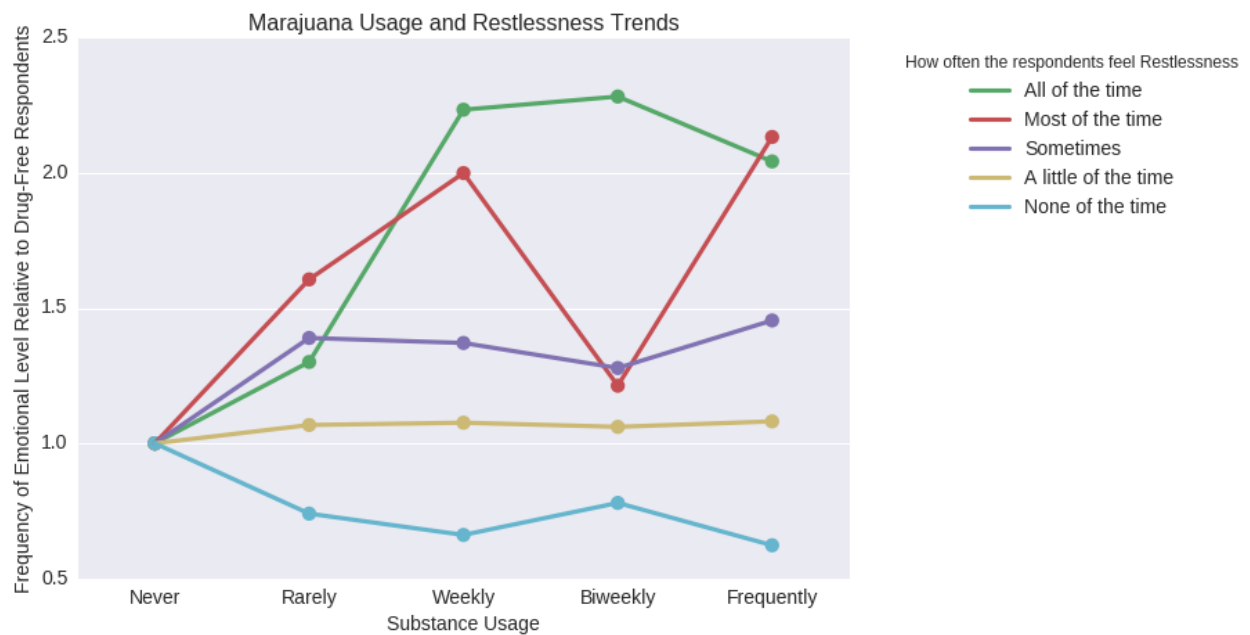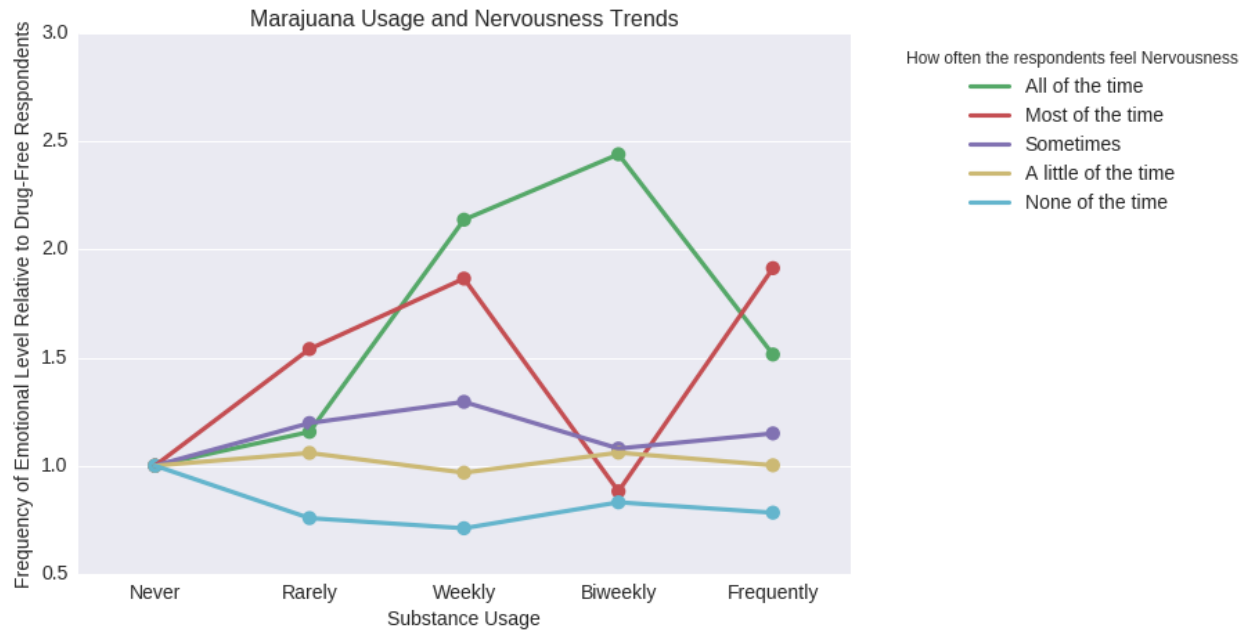- Sometimes
- A little of the time
- None of the time

Marijuana

The marijuana responses show an overall trend that the more a respondent uses marijuana, the more often they feel these negative emotions. All of the plots below except for the depression trends have an intense dip with the biweekly group.
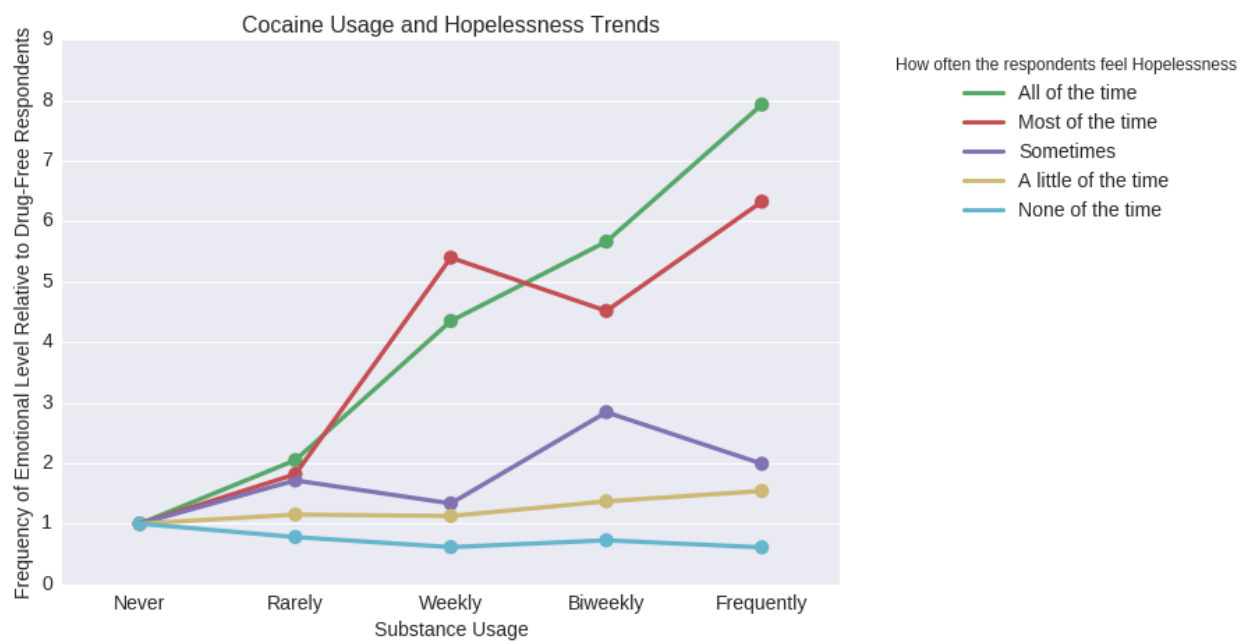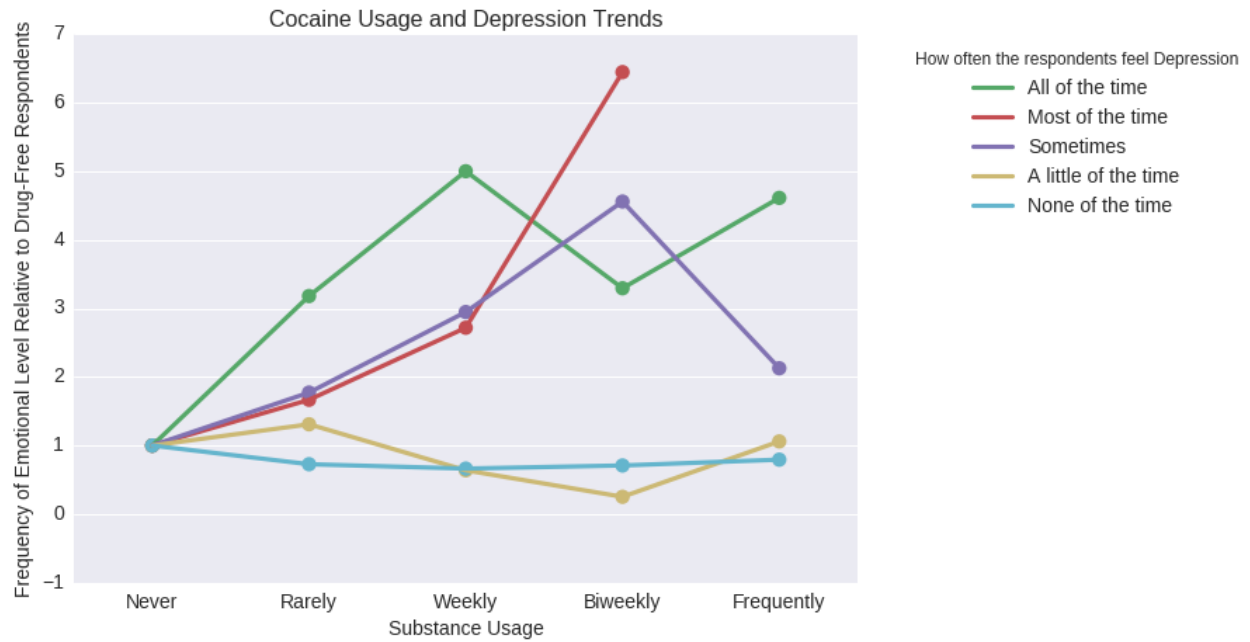
Marajuana Usage and Depression Trends

How often the respondents feel Depression
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Marajuana Usage and Hopelessness Trends

How often the respondents feel Hopelessness
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Marajuana Usage and Nervousness Trends

Marajuana Usage and Restlessness Trends
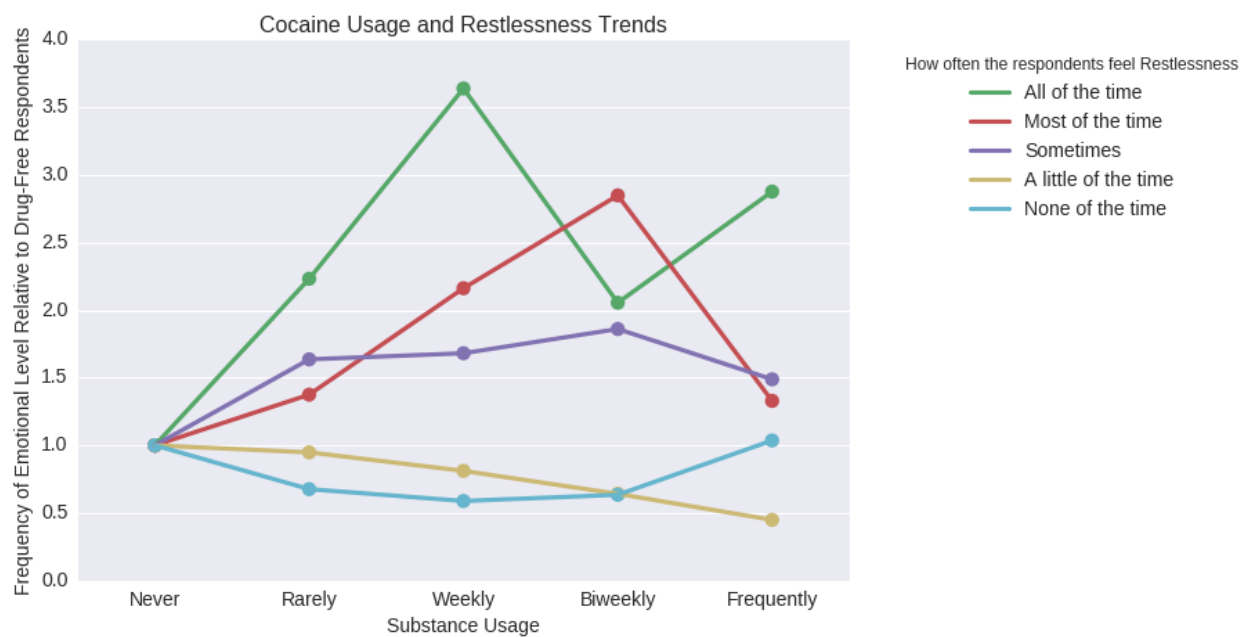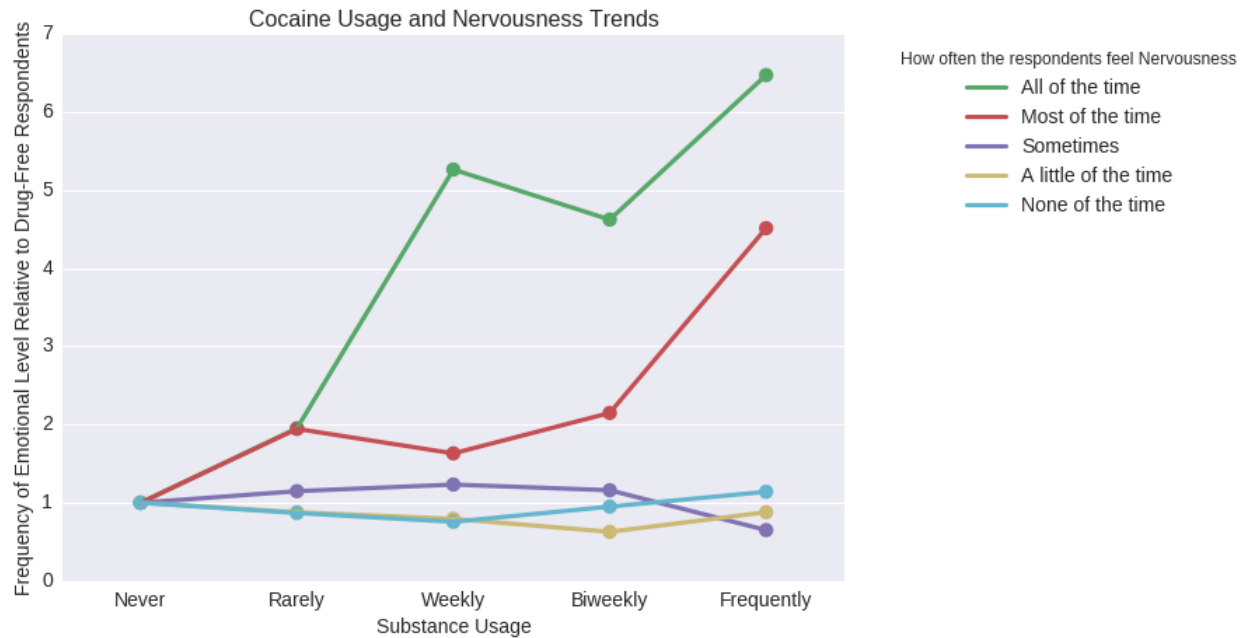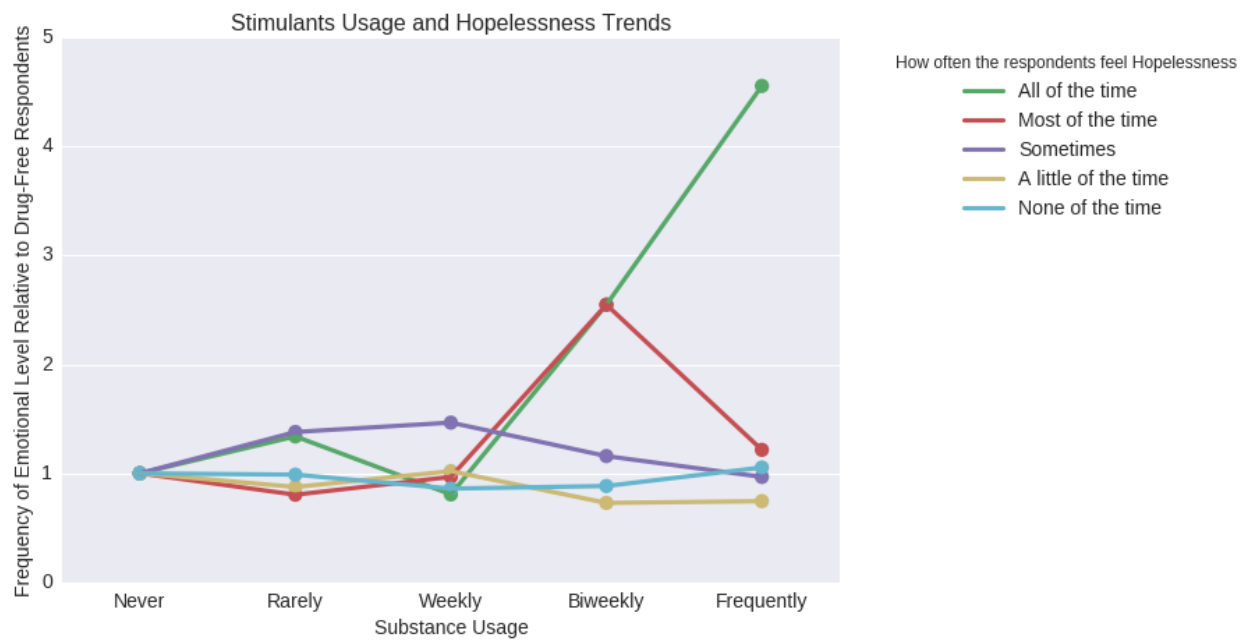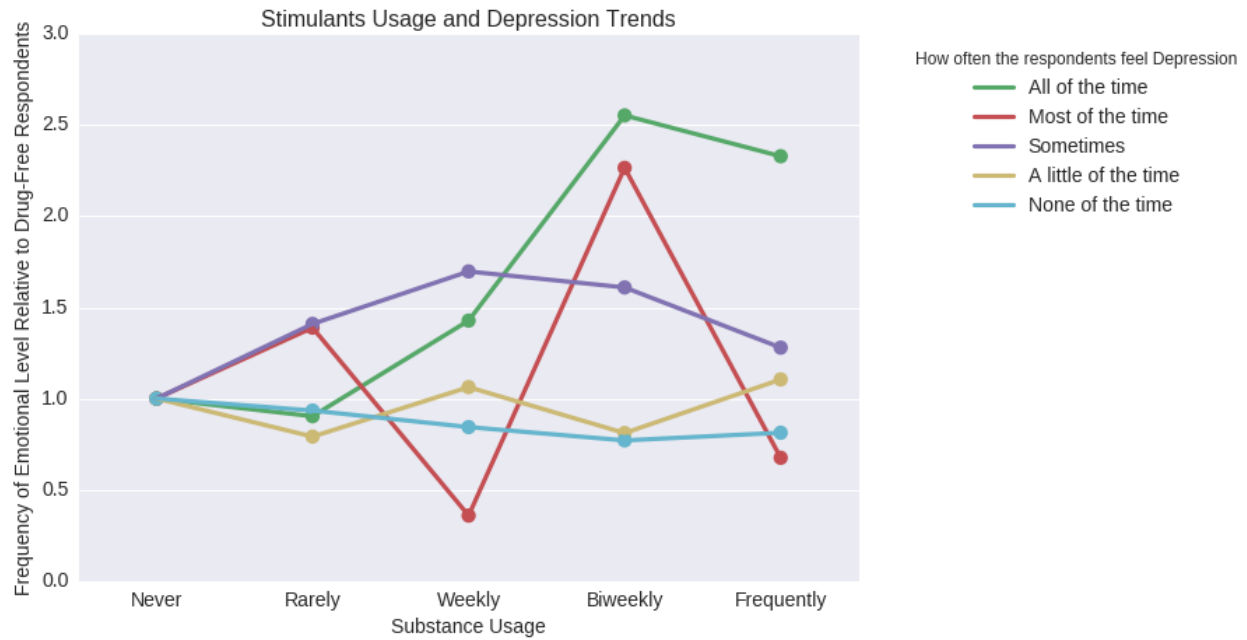
Cocaine

Cocaine appears to vary slightly between the emotions -- in general, the most frequent users are feeling these negative emotions more often compared to the less frequent users.

Cocaine Usage and Depression Trends

How often the respondents feel Depression
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Cocaine Usage and Hopelessness Trends

How often the respondents feel Hopelessness
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Cocaine Usage and Nervousness Trends
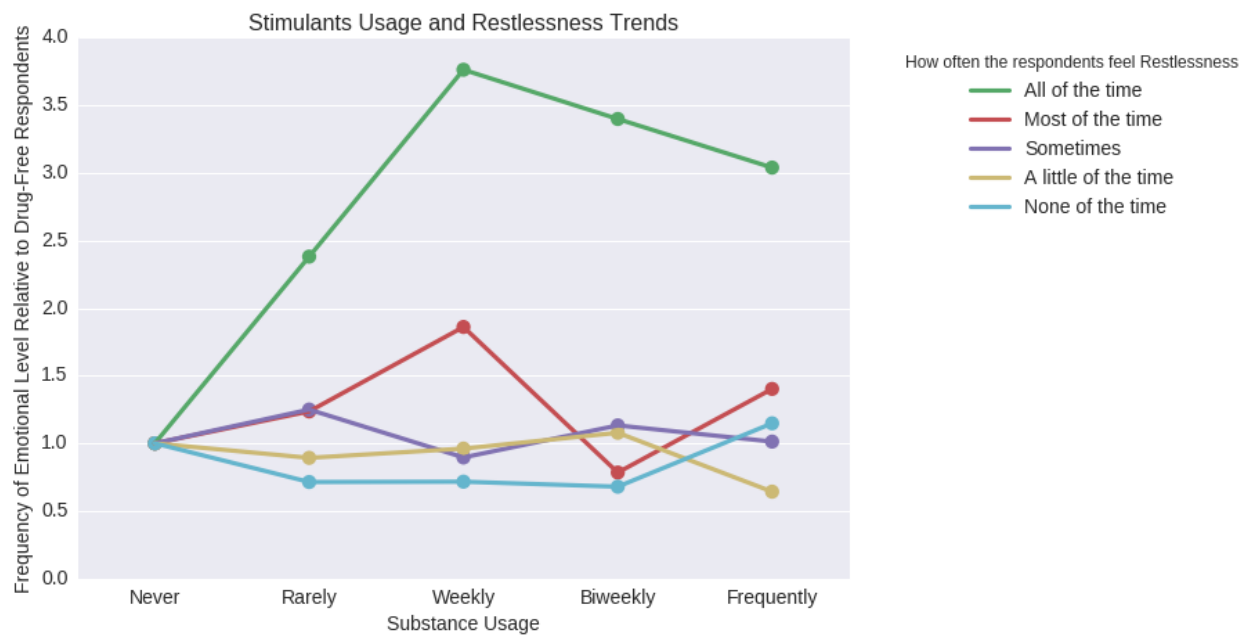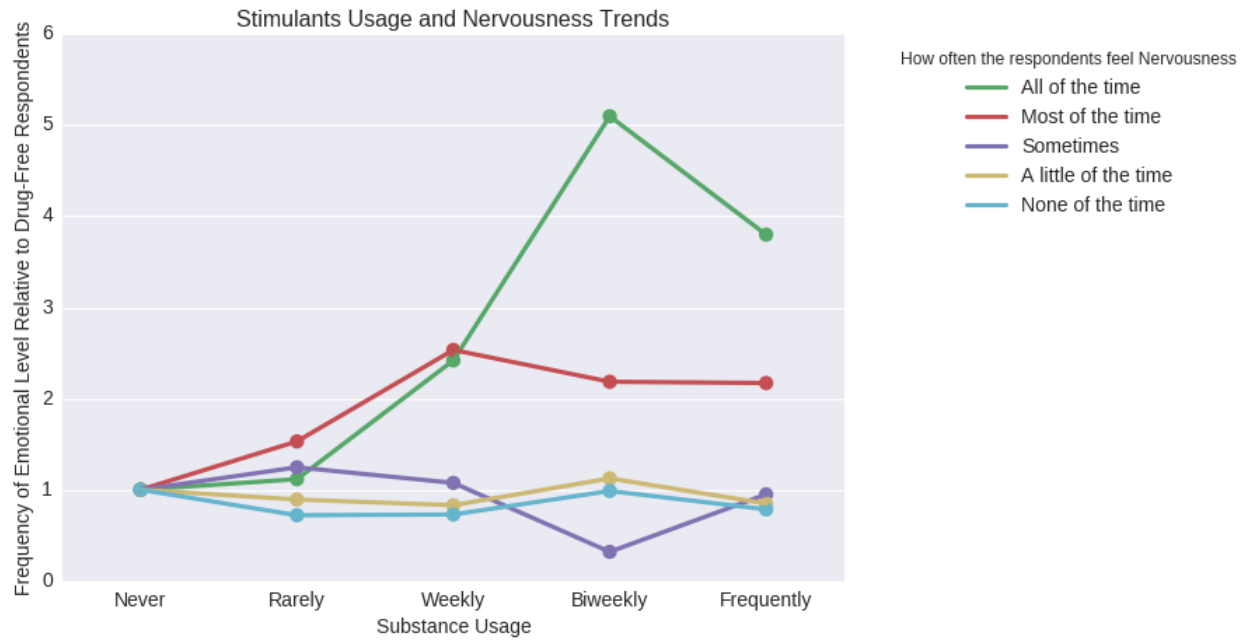

Cocaine Usage and Restlessness Trends

Stimulants

The emotional responses to stimulants vary from emotion to emotion -- people who use stimulants the most often tend to feel depressed often,

Stimulants Usage and Depression Trends

How often the respondents feel Depression
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Stimulants Usage and Hopelessness Trends

How often the respondents feel Hopelessness
- All of the time
- Most of the time
- Sometimes
- A little of the time
- None of the time

Stimulants Usage and Nervousness Trends

Stimulants Usage and Restlessness Trends
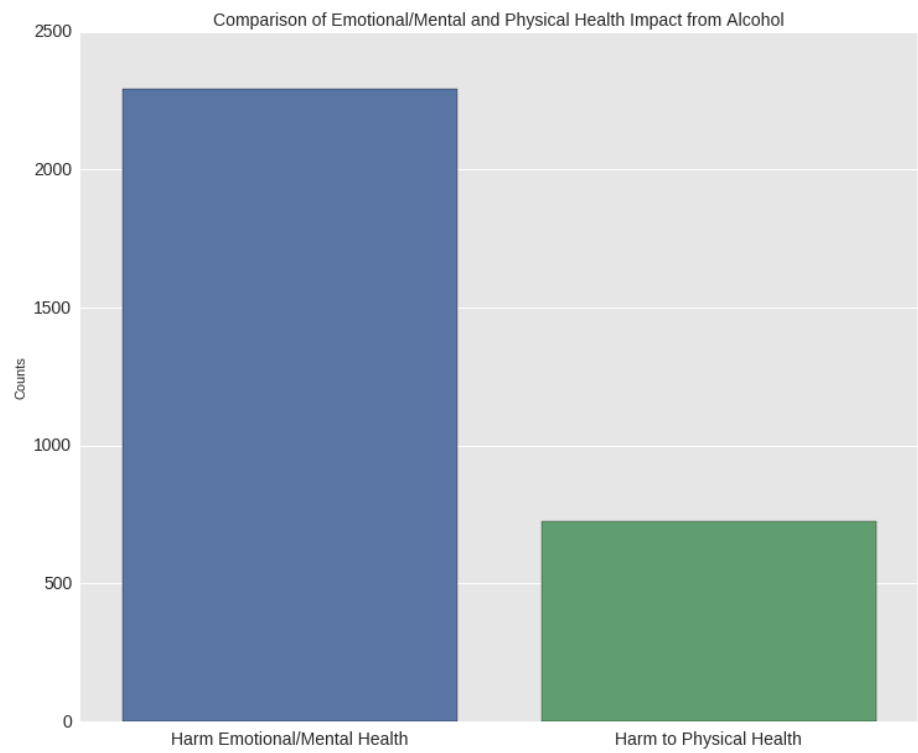
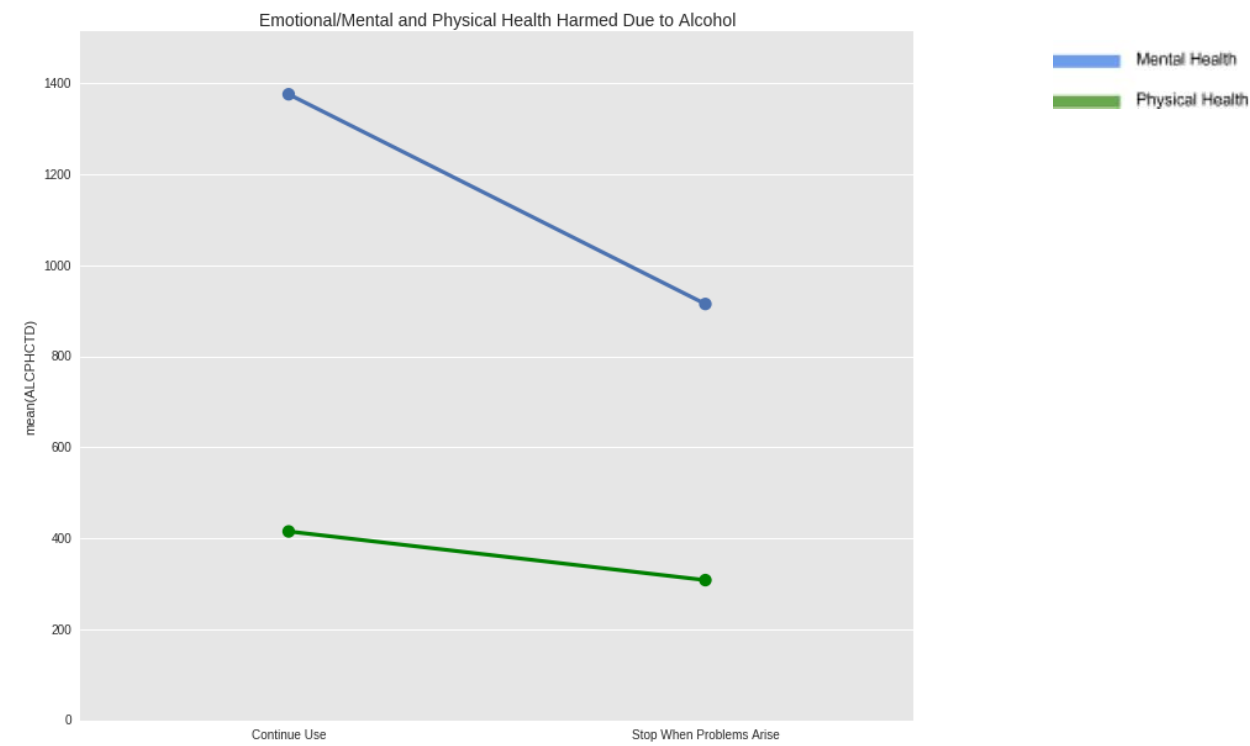# Mental Health Issues !== Physical Health Issues

Mental health and physical health problems present themselves in vastly different ways, and are perceived differently by many people in our society. Both mental and physical health are important to an individual's well being, but mental health issues tend to carry a greater stigma. Physical health issues are more obvious to others. People generally have a better understanding of physical health issues, how to recognize them, and what steps should be taken and when to improve physical health. On the contrary, mental health is far less tangible. It is infinitely harder to grasp what is happening inside a person's mind than it is to understand something you can see, or clearly see the physical impact of. This makes mental health issues harder to recognize and easier to hide if an individual has reason to. Often people will attempt to conceal mental health problems to avoid facing the stigma that may come with it. These problems tend to go ignored or untreated.

The impact of this distinction between societal perceptions of mental vs. physical health is evident in our visualizations showing how many respondents reported experiencing harm to their mental health and/or harm to their physical health due to a substance that they have used, and of those respondents, how many continued to use that same substance despite being aware of the harm it was doing to their physical or mental health.

This showed that for all the substances we researched, significantly more individuals reported experiencing harm to their mental health than harm to their physical health. For both mental and physical health issues people were more likely to continue using the drug than to stop, but the difference seen is always much steeper for mental health. We saw that a much smaller percentage of substance users experiencing mental health problems would stop using that substance than would for physical health.
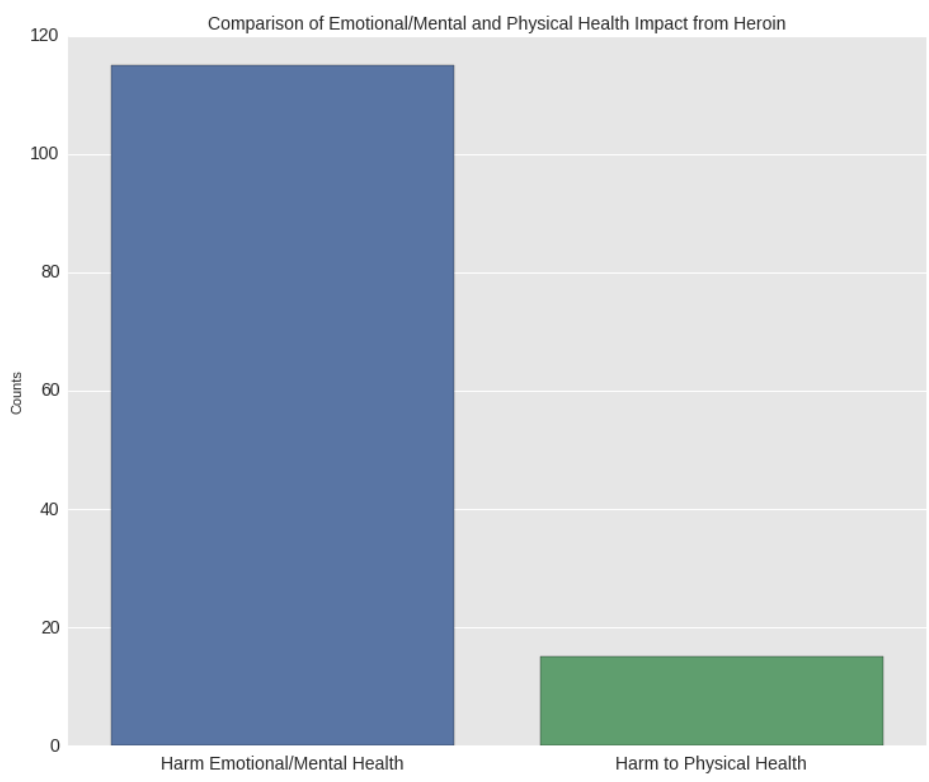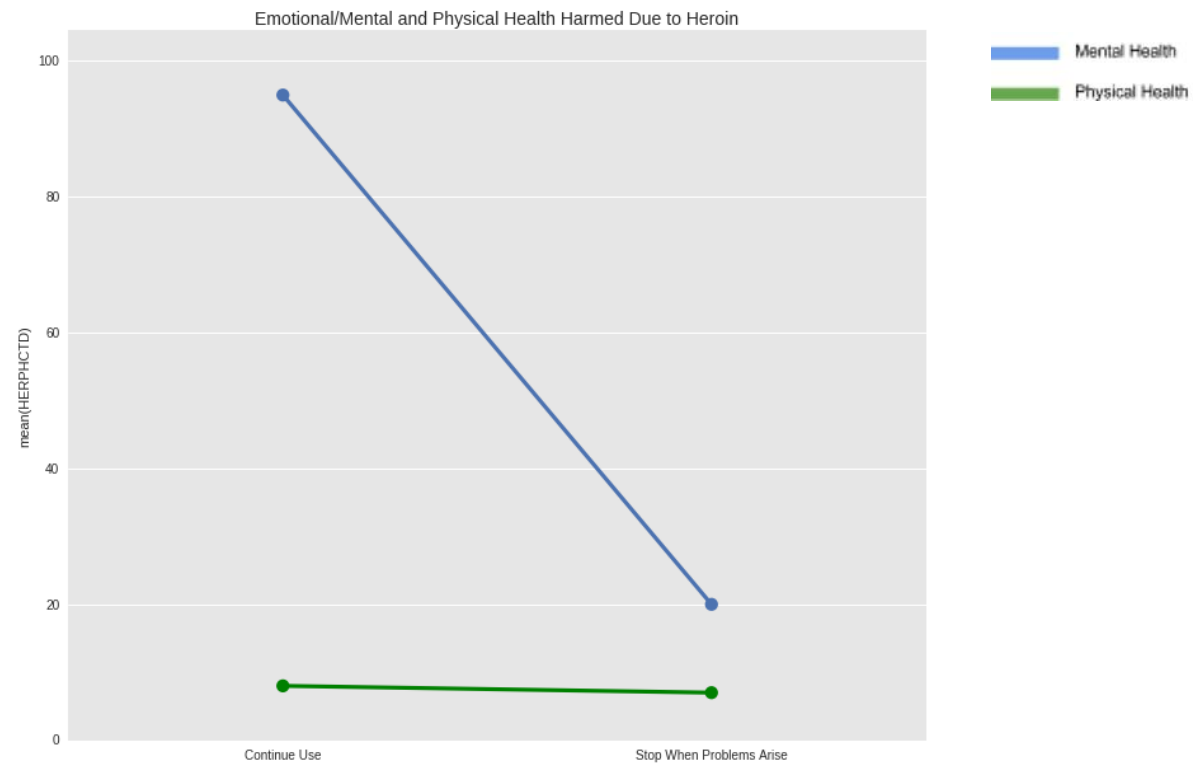
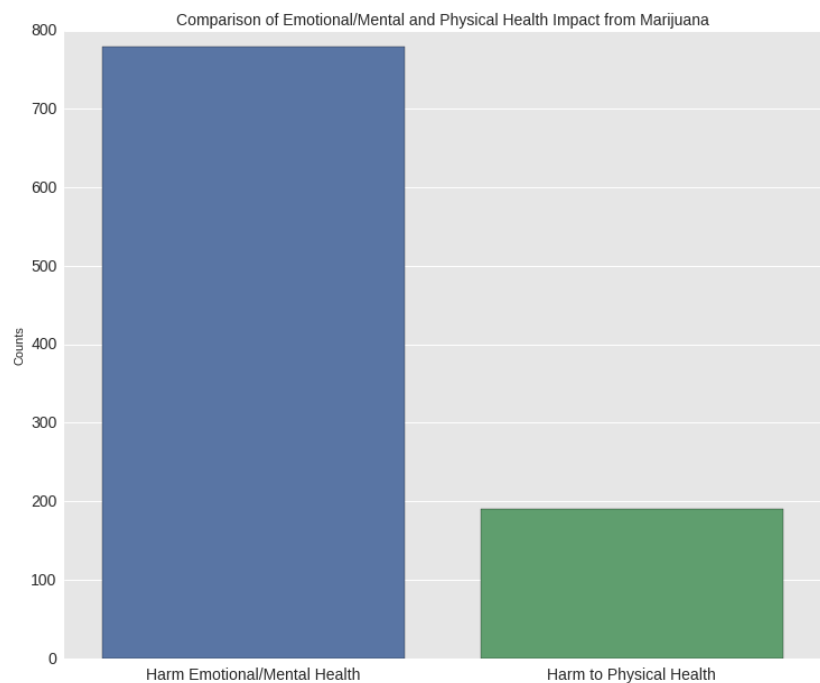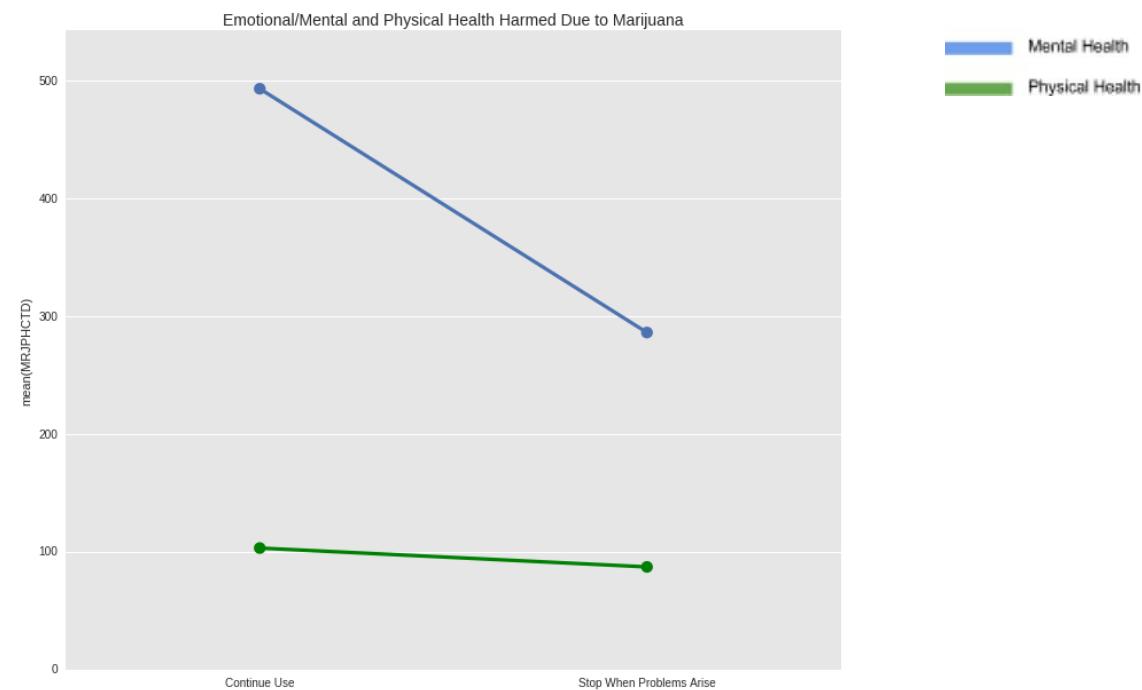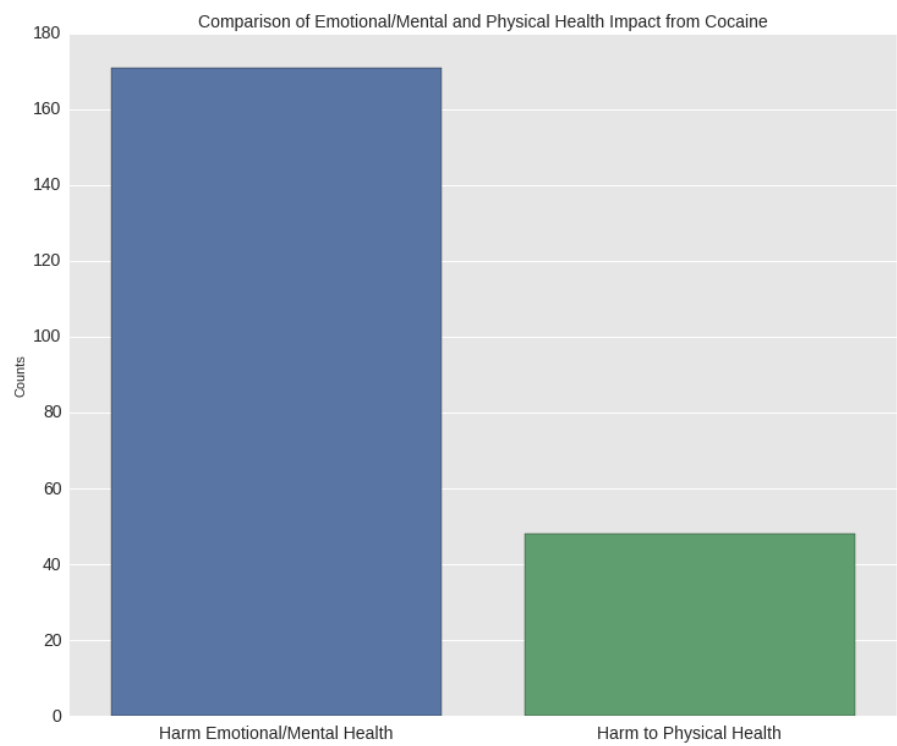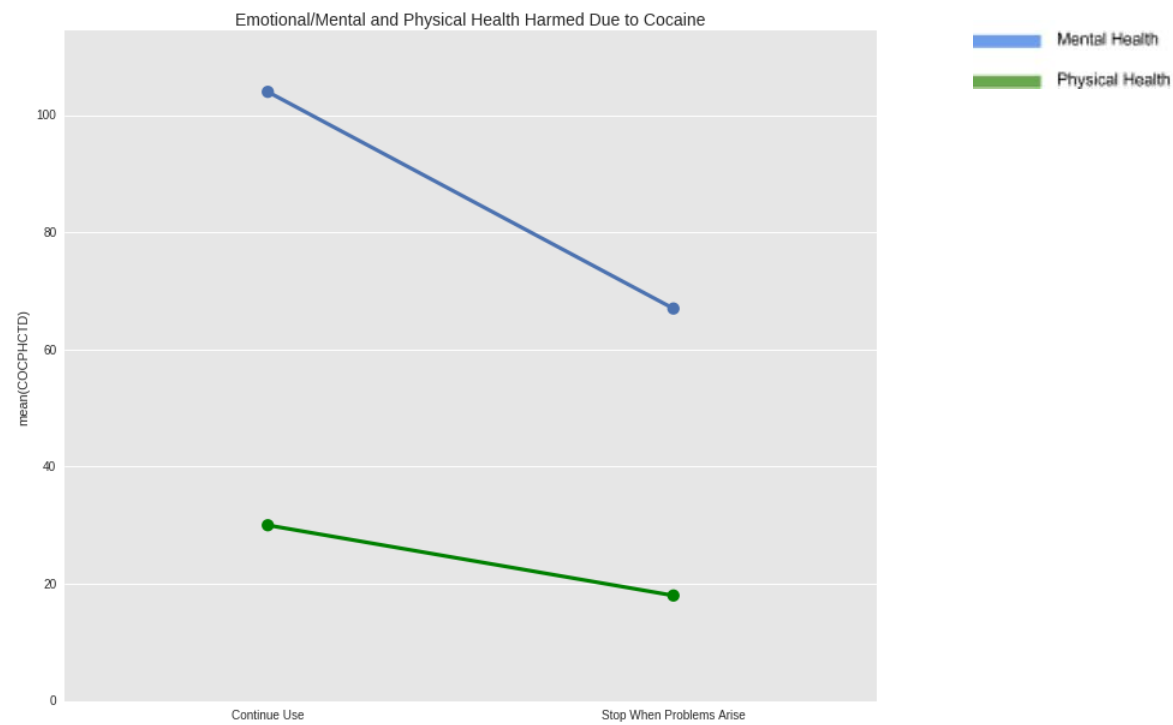These visualizations are shown in the sections below.

Alcohol

Emotional/Mental and Physical Health Harmed Due to Alcohol

Comparison of Emotional/Mental and Physical Health Impact from Alcohol

Heroin

Emotional/Mental and Physical Health Harmed Due to Heroin

Legend:
- Mental Health
- Physical Health

x-axis: Continue Use, Stop When Problems Arise
y-axis: mean(HERPHCTD)

Comparison of Emotional/Mental and Physical Health Impact from Heroin

x-axis: Harm Emotional/Mental Health, Harm to Physical Health
y-axis: Counts

Marijuana

Emotional/Mental and Physical Health Harmed Due to Marijuana

Comparison of Emotional/Mental and Physical Health Impact from Marijuana

Cocaine

Emotional/Mental and Physical Health Harmed Due to Cocaine

Legend:
- Mental Health
- Physical Health

Comparison of Emotional/Mental and Physical Health Impact from Cocaine

Stimulants

Emotional/Mental and Physical Health Harmed Due to Stimulants

Legend:
- Mental Health
- Physical Health

Comparison of Emotional/Mental and Physical Health Impact from Stimulants
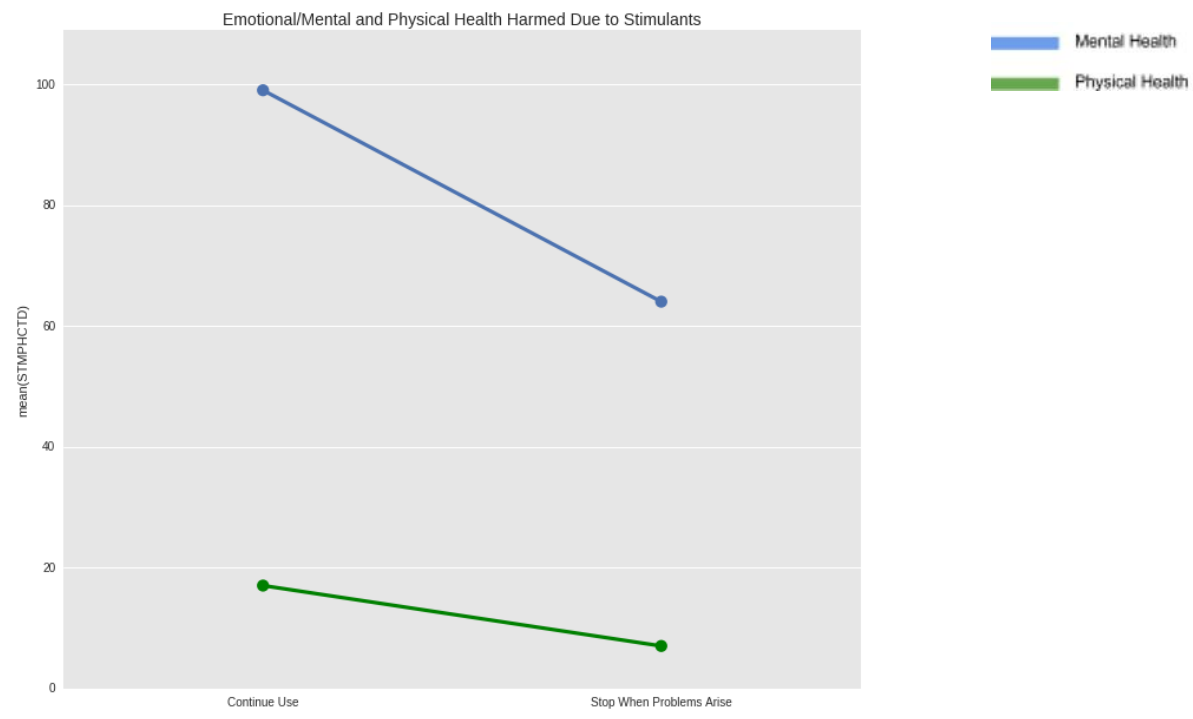
Why is this important? How does substance abuse and correlating emotional problems impact real people and their lives?

We looked into respondents who have made major sacrifices in their lives for the sake of substances, and what their emotional levels are.

In this section, we define "Important Activities" as doing important things in your life such as taking care of your children, going to work or school, and doing things you love and are passionate about.
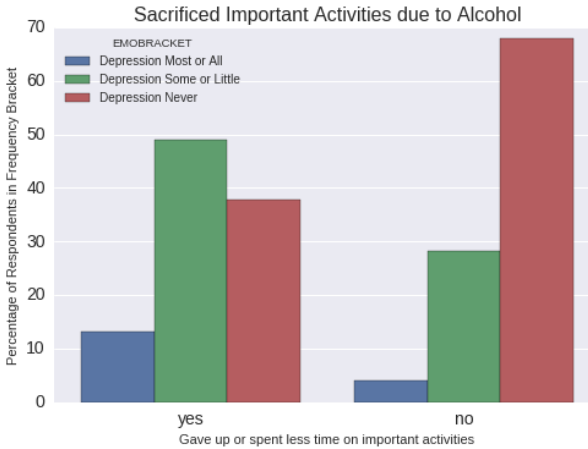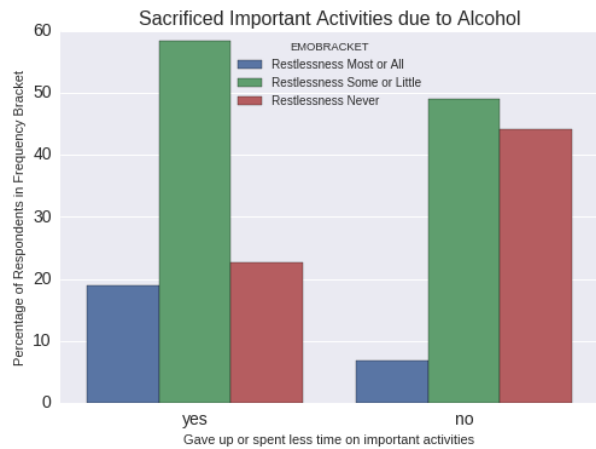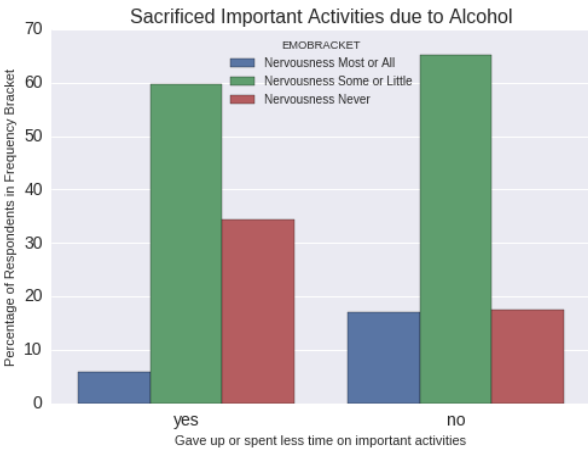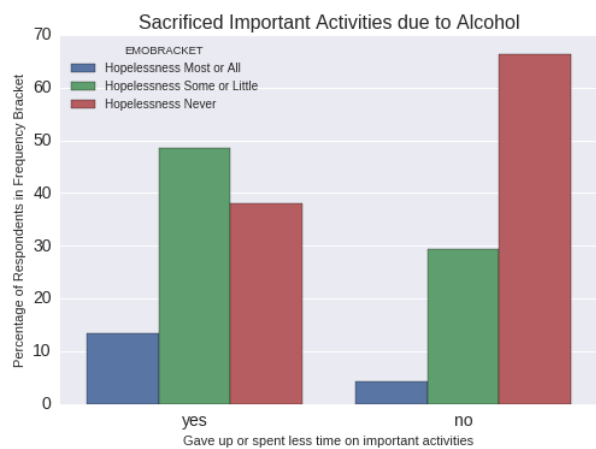
(Go to next page)

Alcohol

% Of Past Month Users Reporting Sacrificing Important Activites For Alcohol
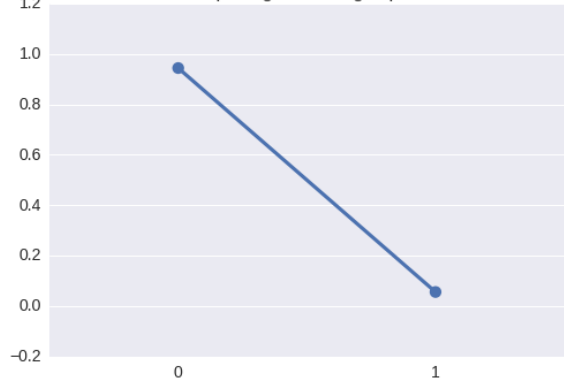
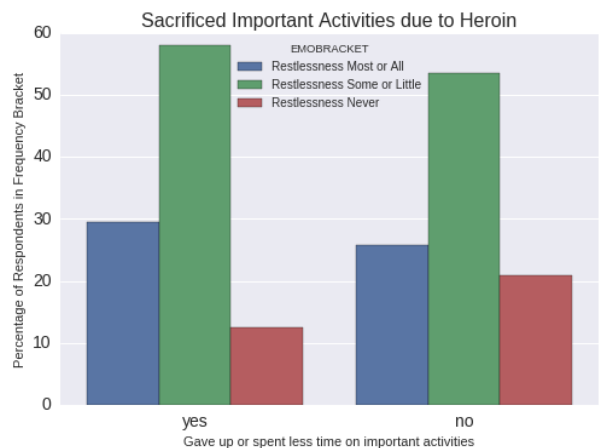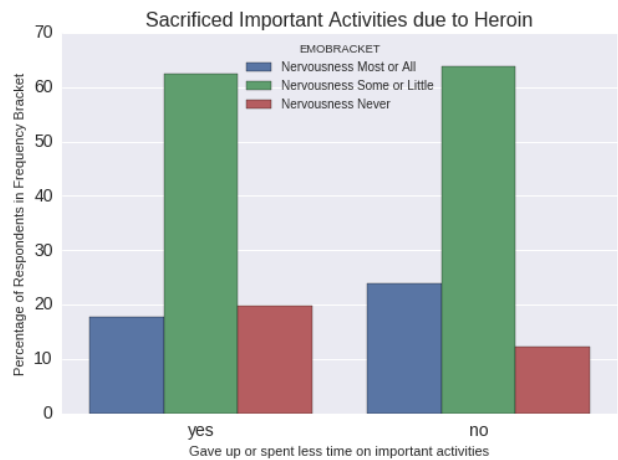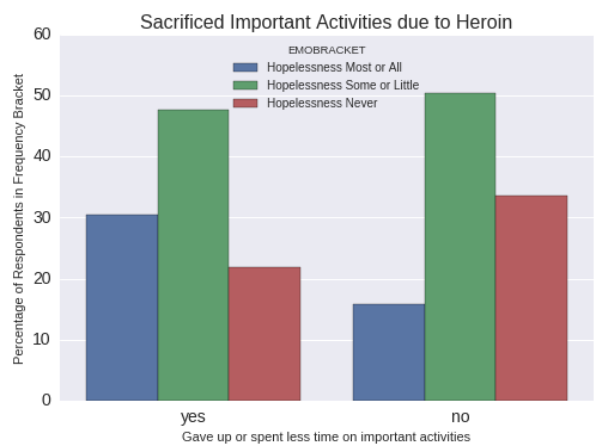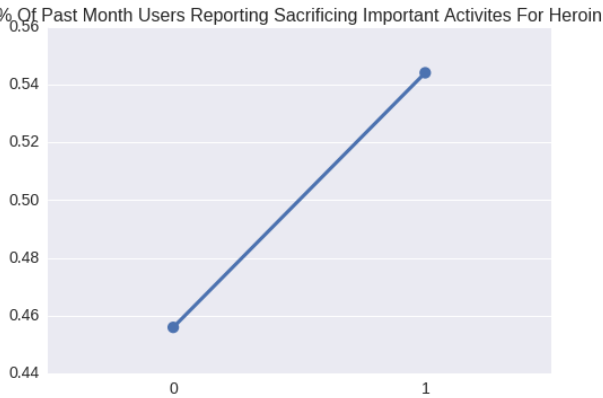The graph on the left shows that of all people who have ever used alcohol in the past month, most do not make this kind of sacrifice for the sake of alcohol. However, looking at those who do, and their emotional states in the graphs below is very telling. Individuals who sacrifice important life activities for alcohol tend to be more hopeless, restless, and depressed.

Sacrificed Important Activities due to Alcohol

EMOBRACKET
- Hopelessness Most or All
- Hopelessness Some or Little
- Hopelessness Never

Percentage of Respondents in Frequency Bracket

Gave up or spent less time on important activities

Sacrificed Important Activities due to Alcohol

EMOBRACKET
- Nervousness Most or All
- Nervousness Some or Little
- Nervousness Never

Percentage of Respondents in Frequency Bracket

Gave up or spent less time on important activities

Sacrificed Important Activities due to Alcohol

EMOBRACKET
- Restlessness Most or All
- Restlessness Some or Little
- Restlessness Never

Percentage of Respondents in Frequency Bracket

Gave up or spent less time on important activities

Sacrificed Important Activities due to Alcohol

EMOBRACKET
- Depression Most or All
- Depression Some or Little
- Depression Never

Percentage of Respondents in Frequency Bracket

Gave up or spent less time on important activities

Heroin

Unlike the corresponding visualization for alcohol, the graph on the left shows that of all people who have used heroin in the past month, the majority of these respondents have sacrificed important life activities for the sake of heroin. As stated, these important life activities are things like school, work, and taking care of children.The emotional states of these users who have made these sacrifices for heroin are interesting as well. Similarly to these visualizations for alcohol users, heroin users who have sacrificed important life activities for heroin tend to be more hopeless, restless, and depressed.
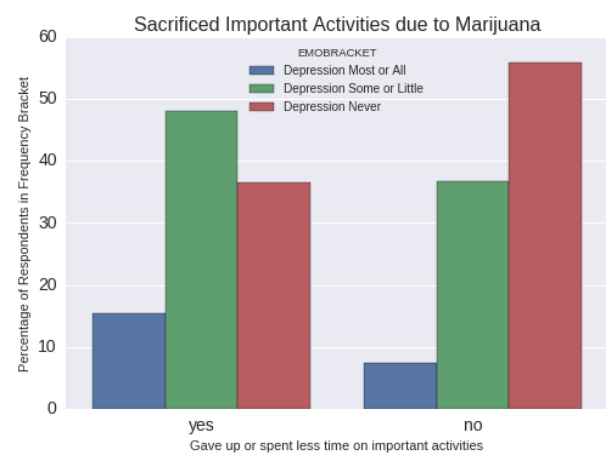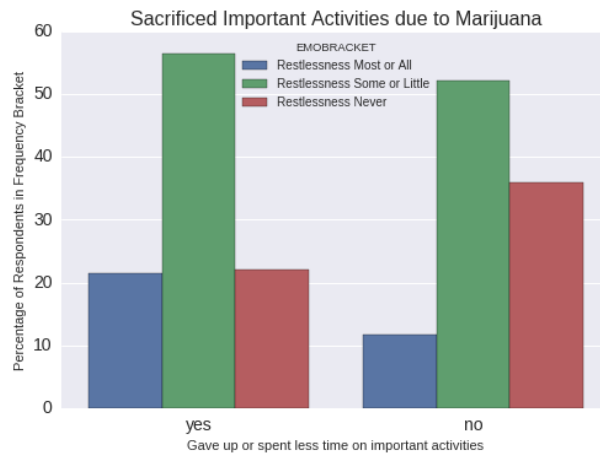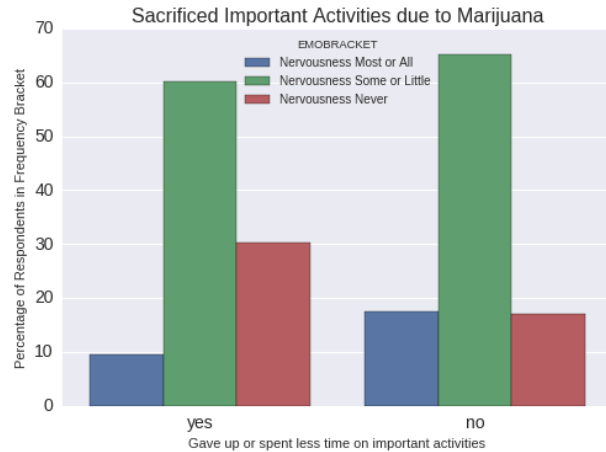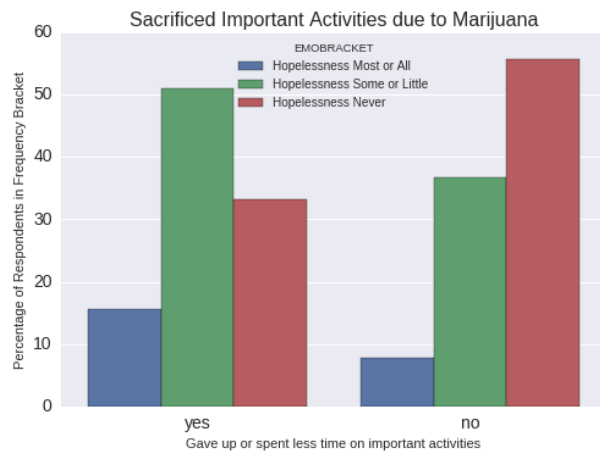

% Of Past Month Users Reporting Sacrificing Important Activites For Heroin

Sacrificed Important Activities due to Heroin

Sacrificed Important Activities due to Heroin

Sacrificed Important Activities due to Heroin


Sacrificed Important Activities due to Heroin
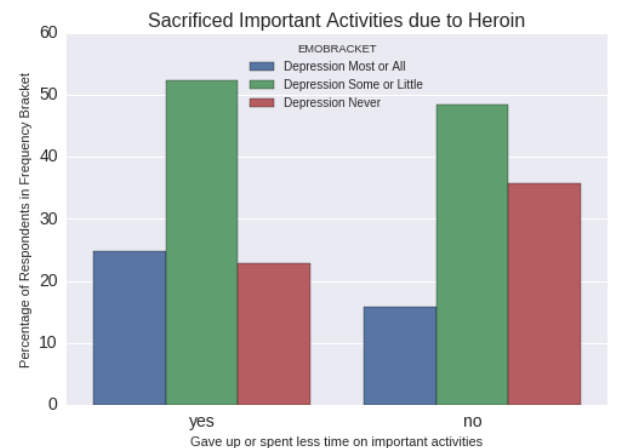
Marijuana

The behavior of the graph of whether respondents who have used marijuana in the past month sacrificed important life activities for the sake of marijuana is more similar to the behavior of the corresponding graph for respondents who have drunk alcohol. These both look very different from the same question asked of heroin users. This is likely because of the nature of the drugs. Alcohol and marijuana are more commonly used socially or casually, so people who use them are less likely to be making major sacrifices in their lives, while heroin is known to be incredibly addictive, and its use could easily interfere with everyday activities.


% Of Past Month Users Reporting Sacrificing Important Activites For Marijuana

Sacrificed Important Activities due to Marijuana

Sacrificed Important Activities due to Marijuana

Sacrificed Important Activities due to Marijuana
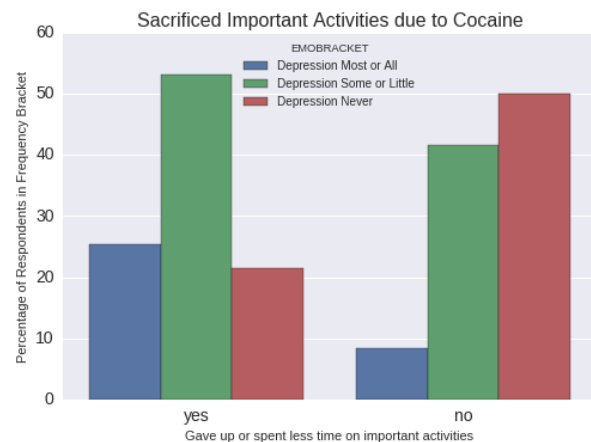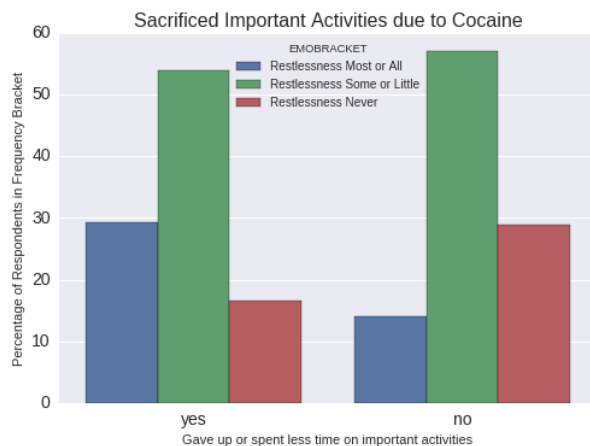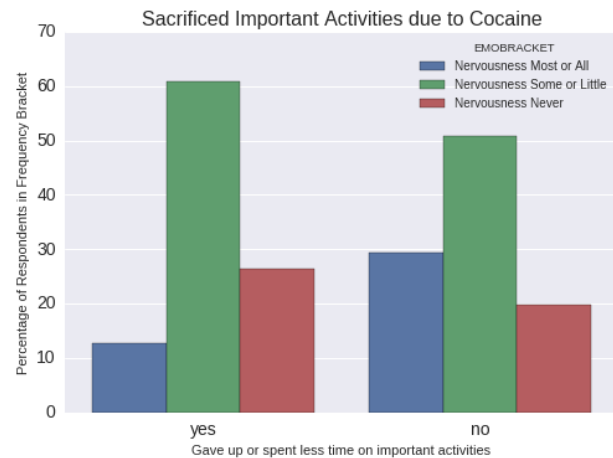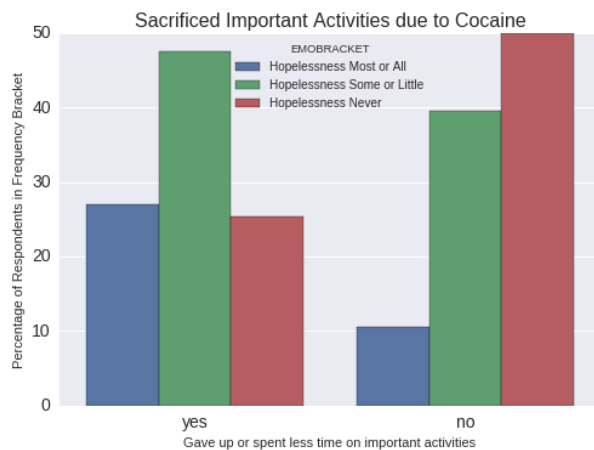

Sacrificed Important Activities due to Marijuana
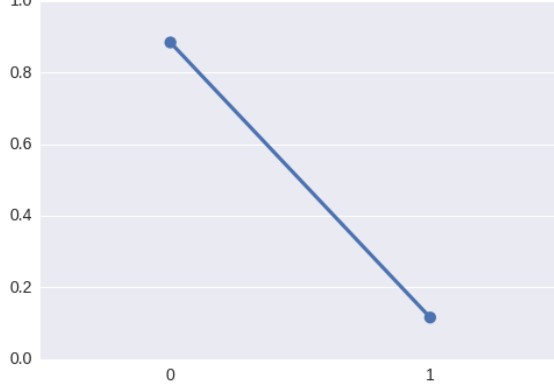
Cocaine

% Of Past Month Users Reporting Sacrificing Important Activites For Cocaine
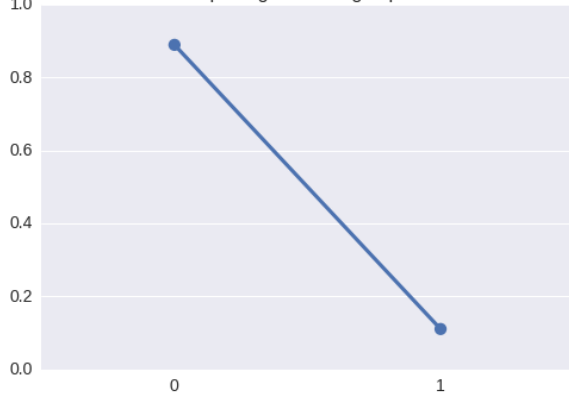
We see here that only about 10% of cocaine users sacrifice important life activities for the sake of cocaine. Those who do are significantly more hopeless, restless, and depressed, though surprisingly tend to be nervous less of the time compared to other cocaine users.


Sacrificed Important Activities due to Cocaine

Sacrificed Important Activities due to Cocaine

Sacrificed Important Activities due to Cocaine

Sacrificed Important Activities due to Cocaine

Treatment

What does substance abuse treatment do for people and why do people not get treatment for substance abuse when they need it?

We saw previously how people don't always act to combat mental health issues when they arise. Especially for those fighting substance abuse, many people do choose to seek help through formal mental health treatments. The visualization below shows the frequency of outcomes for individuals who have gotten treatment for substance abuse.

While many of these respondents are still in their treatment programs, the most frequent response was that a respondent had completed their program and had recovered. This shows how much seeking formal treatments tends to have a positive impact.
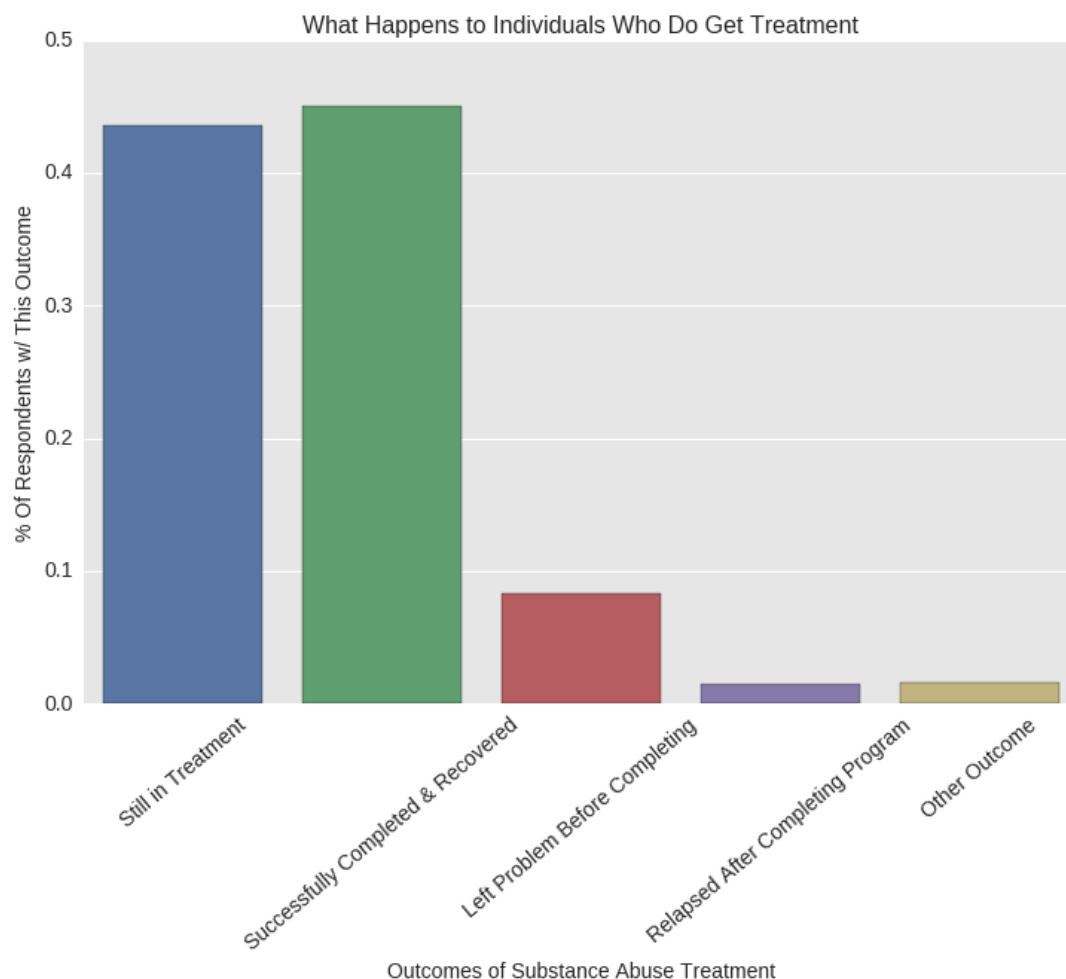
Here we see that the third most common outcome of treatment is to leave the program. Seeing how few people returned to their behavior of abusing substances after successfully completing the treatment, this is surprising. The visualization below breaks down some of the most common reasons for doing so.

The most people left because they had some sort of problem with the program. Some left either because they could not afford to continue or because of family reasons. About 2-3% of respondents who had entered these programs were unable to complete it because they returned to drugs again before they could finish.
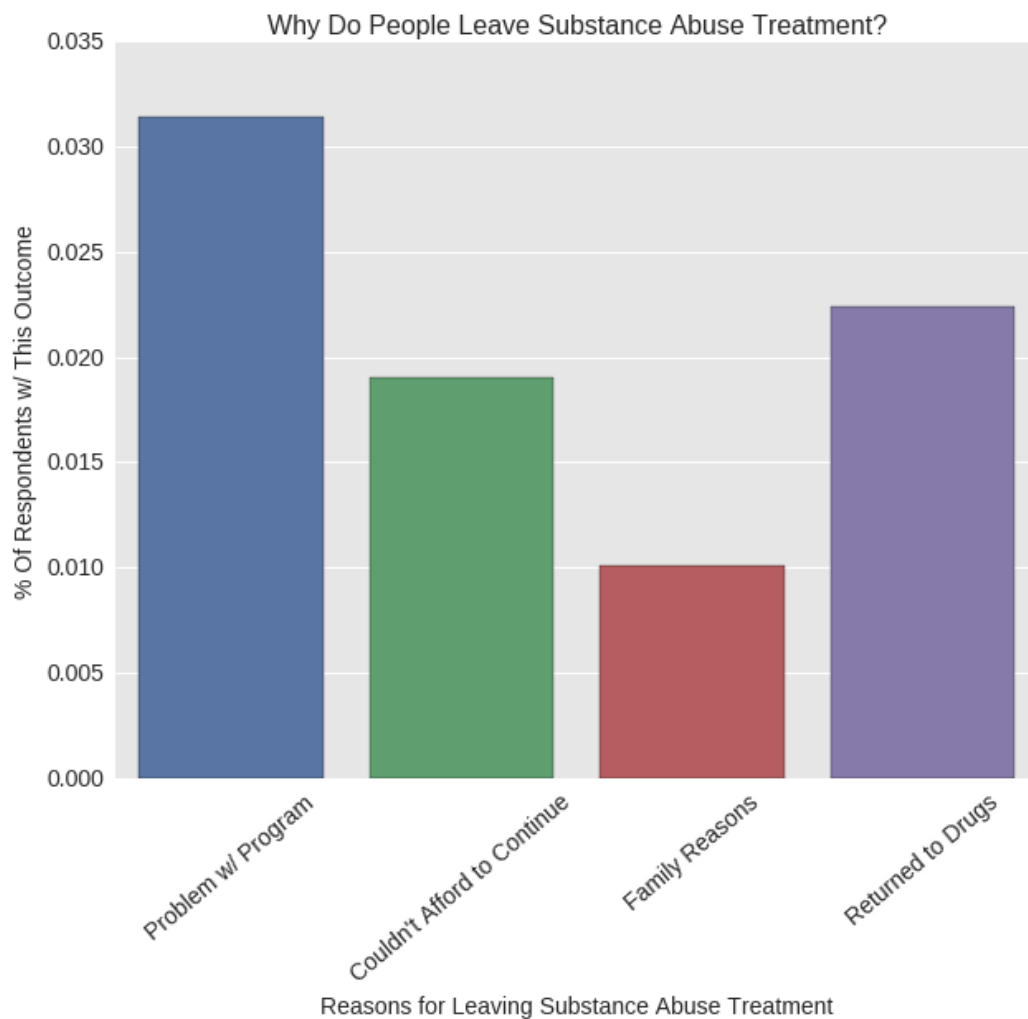

After seeing what reasons people have for leaving treatment, and remembering how few people who may benefit from treatment actually seek it out, another big question to explore is why do some individuals never get treatment in the first place.

What reasons do people give for not getting treatment for their substance abuse problem?

Sadly, by a large margin, the most common response to this question was that people do not get treatment because they cannot afford it. We saw this before as a reason many people give for why they leave treatment. Quality mental health care is too expensive for a large number of people who need it to have access to it.

The second most common response was that people thought they could handle it on their own. This is likely so prevalent because mental illness is stigmatized, and individuals may believe that if they admit they need help with mental issues, such as struggling with substance abuse, it would mean they were weak.

Reasons Respondents Who Needed Treatment Did Not Get It
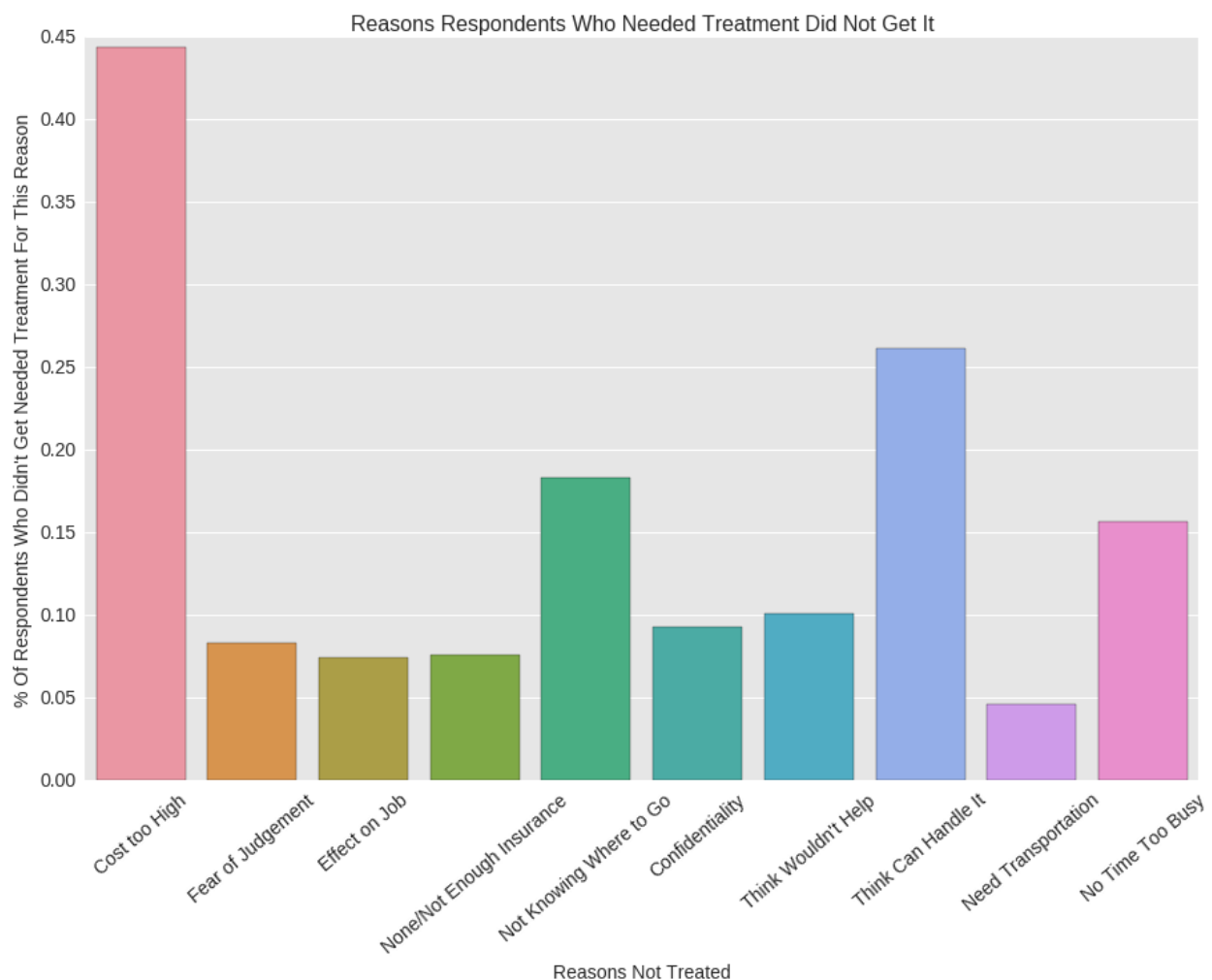
Limitations of Survey Data

While this survey data inspires us to ask many questions and plot trends at a large scale, it only provides a limited view of the culture (both as a community and as a personal lifestyle) of the respondents. Given unlimited time and resources, another step to be doing in parallel would be to apply qualitative methods to understand the complications of drug users' daily lives that can't be captured with survey questions. Having this qualitative analysis to either validate or inspire new questions of the dataset would be valuable for communicating to the audience at large about the people being represented by the data.

Potential Future Work

If we were to continue this project, we would like to explore more of the many features of this dataset that we did not get the chance to look into. The dataset we are using has far more features than we would have time to explore in a two week project. We would want to find and explore more axes of diversity within the dataset, as well as delve deeper into the ones we have explored here. We believe we have still only scraped the surface of what this dataset has to offer, and we think there are more meaningful trends to be discovered and insights to be made.