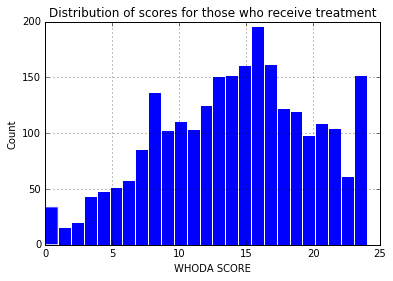
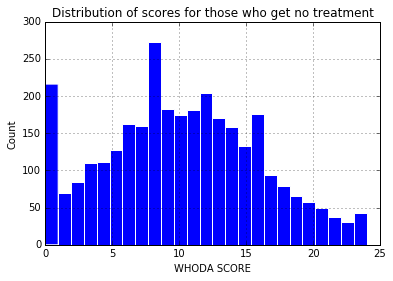
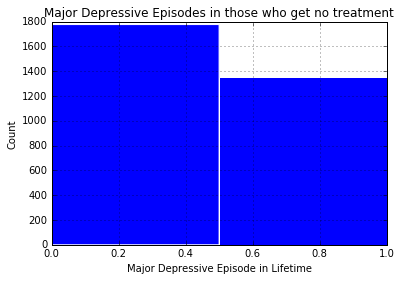
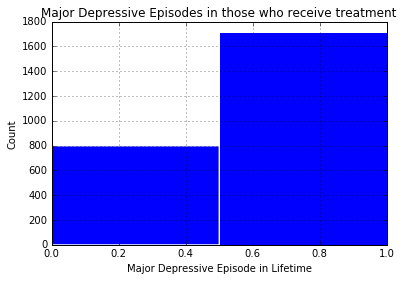
I went into this project with the goal of identifying characteristics of individuals with serious mental health problems who don’t receive treatment for them. Of the 55,000 or so observations in the 2014 National Survey on Drug Use and Health, I decided to look at a subset of about 5,500 individuals. This group of interest is the subset of adults who experienced serious psychological distress in the past year (measured by the K6 mental health diagnostic questionnaire within the survey). For this subset of adults living with serious psychological distress, my goal is to fit a logistic regression model to predict whether or not someone will receive treatment from a professional for their disorder.

My motivation for choosing to research mental health is to bring attention to the depths of these problems in the U.S. and to raise awareness for those who could benefit from getting treatment. There is more often than not a stigma associated with mental disorders in the United States, as most people have commonly held misconceptions that sufferers are dangerous, unpredictable, or somehow just “different”. People tend to hold these negative beliefs regardless of their age, exposure to mental health problems, or whether or not they know someone who is actually affected. Much of this stigma can be attributed to the low priority status of mental health within the healthcare industry and the depiction of persons with mental health disorders in the main stream media and entertainment industry. The social effects of this stigma serve to further reduce the quality of life of sufferers and hinder effective treatment and recovery from these disorders. Therefore if I can identify traits which raise a person’s likelihood of not seeking necessary treatment for mental disorders, we may be able to more easily identify people who need treatment and send them in the right direction.

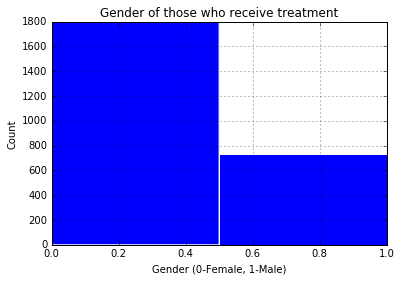
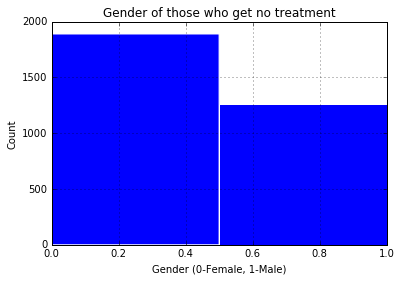
In my attempt to find variables which are predictive of someone experiencing serious psychological distress, I separated my subset into those who received treatment and those who did not. Using these two groups, I constructed histograms of my potential predictor variables and compared the distributions to each other and to the total sample’s distribution. As I created these exploratory plots, I noticed some substantial differences in the distributions of key variables explained with accompanying visuals below:



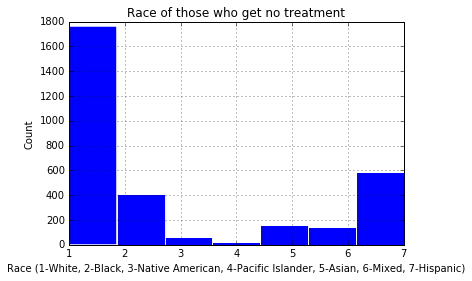
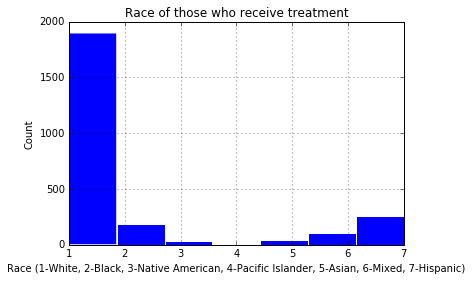
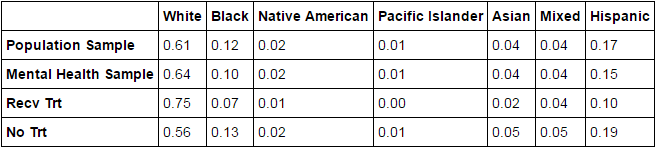
* People who receive mental health treatment tend to score higher on the WHODAS, presumably because their emotions, nerves, or mental health tend to have a more severe effect on their daily lives. This measure is similar to the K6 diagnostic questionnaire, which was also measured on a scale from 0-24. My sub-sample of adults experiencing serious psychological distress is composed of adults given a score of 13 or higher for the K6 questionnaire. It makes sense then that this similarly scaled variable would be useful for identifying those with the most severe symptoms, who are most likely to receive treatment.

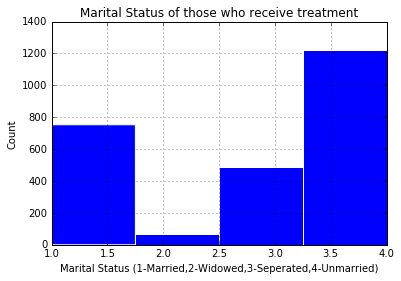
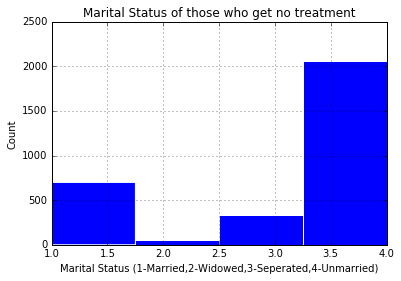


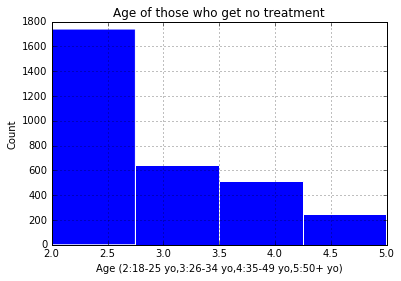
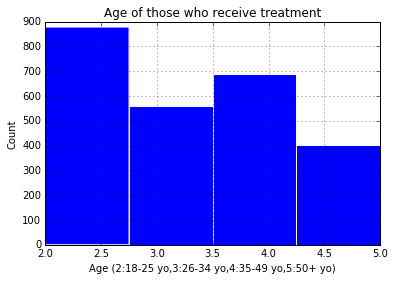
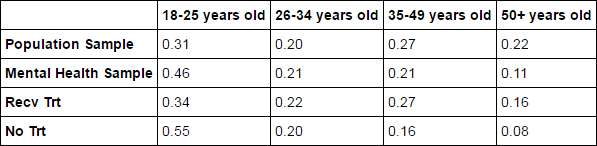
* Although it makes sense that people currently experiencing high levels of psychological or emotional impairment are likely to seek treatment, there are also people who have experienced severe trauma only at certain stages in their lives that wish to seek therapy or treatment retroactively. Of those experiencing serious psychological distress in the past year, 68% of those who receive mental health treatment have experienced a major depressive episode in their lifetime as opposed to only 43% of those who have not received treatment.



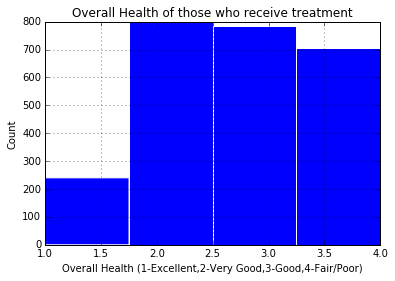
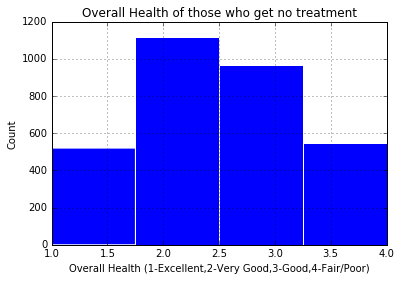
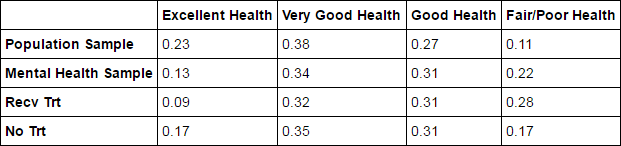
* So people are more likely to seek mental health treatment if they experienced some traumatic events in their lifetime, which seems fairly intuitive. With that in mind, when I took a look at the genders of adults in my sub-sample, I was shocked to see that 65% of those who experienced serious psychological distress in the past year were female. Among these individuals, 71% of those who received treatment for mental health in the past year were female while only 60% of those who get no treatment for mental health were female. A quick two-proportion z-test (z=8.63, p-value< .001) shows that this is quite the significant difference. My initial thought was that women must be experiencing more traumatic events or consistent psychological distress than men, which may be true. However more importantly, the difference in gender proportions seems to indicate that adult men who are experiencing serious psychological distress are significantly less likely to receive mental health treatment than their female counterparts. I can only speculate that this perhaps means men are more likely to under-report mental health symptoms or “tough it out” than women, for whom it is more socially acceptable in the U.S. to show emotions or vulnerability.



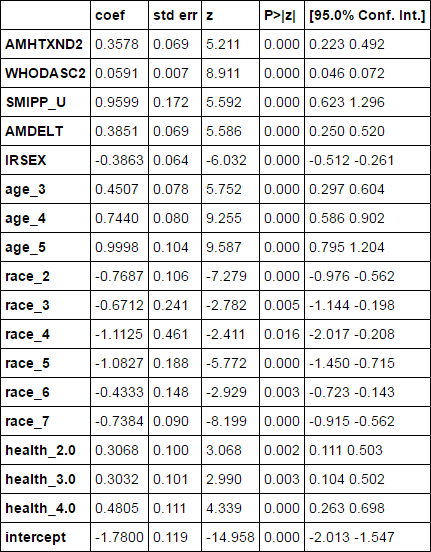
* While there seems to be a certain gender gap in mental health treatment, it would be surprising if there wasn’t a race gap in mental health treatment as well. When looking at the racial makeup of the entire survey population compared to the sample of adults experiencing serious psychological distress, there doesn’t seem to be a significant difference; which is a good sign for the legitimacy of my sample and indicates fairly consistent prevalence of mental health disorders between races as we should expect. However, when comparing the racial makeup between those who receive mental health treatment and those who don’t, there is a substantial difference in proportions. It seems to be the case that a much higher proportion of those who receive mental health treatment are White while a much higher proportion of those who receive no treatment are Black, Hispanic, or Asian. It is difficult to say why this is the case, but it is clear that a racial divide exists in access to treatment. This data speaks to a larger trend in the U.S. Healthcare system that Whites have better access to all forms of treatment than non-Whites.
* When looking through demographics to find possible predictors for my model, I discovered that adults who receive treatment for mental health are more likely to be widows, separated, or married. This means that a large proportion of those who do not get treatment for mental health are unmarried. It seemed a little unusual that all but the unmarried proportions were higher in the receive treatment group, which lead to me think that the age distributions of my survey sample may explain this difference, with younger adults being less likely to receive treatment.

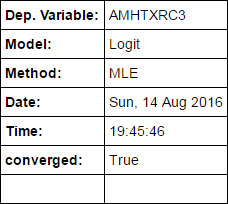
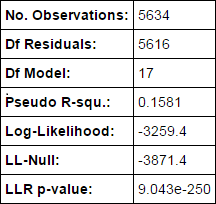


* 46% of the adults experiencing serious psychological distress in the past year are between the ages of 18 and 25, which is significantly higher than the 31% of the total survey sample they made up. However, there seems to be a distinct difference between the distributions of ages for those who receive treatment for psychological distress and those who don’t. Those who receive treatment have closer to representative distribution of ages, while those who don’t get treatment are mostly between the ages of 18 and 25. This could explain the distribution of marital statuses shown before and raises the question: Why are young people less likely to have their mental health problems addressed with treatment? It could have to do with the stigma associated with mental health, high stress that comes with school and work transitionary periods, or simply just a lack of individual resources for affording treatment.

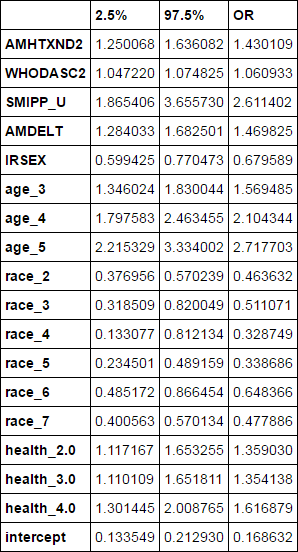


* The last variable I looked at that seemed to have a distinct difference in proportions between groups was the overall physical health of those experiencing serious psychological distress. Compared to the total survey sample, the overall physical health of those experiencing severe psychological distress was typically worse than average. Yet between those who did and did not receive treatment for their mental health, there was still a significant difference in overall physical health. While I was able to understand why a higher proportion of adults who had poor physical health would have received mental health treatment, it surprised me to see that the proportion of adults with excellent health was higher for those who did not get treatment. This could possibly mean that adults with excellent overall physical health are less likely to seek legitimate treatment for mental illness because they are otherwise in good health.

After analyzing my list of variables of interest and identifying the most promising predictors, I got to work on creating my logistic regression model. My binary and continuous variables were ready to go, but for my categorical race, age, and health variables, I created dummy indicators for individual effects. I had originally included marital status and education level when making my full model, but I believe its effects are mostly explained by age as well. The output for the full model fit with all significant predictors of interest is shown below:



The next step in the process is to check the usefulness of my model and decide how to reduce the number of variables to something more realistic to measure. I have also included this table listing the odds ratio and 95% confidence interval of the odds ratio for each variable in the full model.

The only variables included in the full model which were not mentioned previously are AMHTXND2, which is a binary indicator of whether or not an adult has a self-perceived need for treatment, and SMIPP\_U, which is a 0-1 continuous probability of an adult having a serious mental illness. These are both significant indicators and have accompanying histograms in the Python code Diagnostics in my GitHub repository. I did not choose to include them above because I believe they may be more difficult information to gather for new individuals and a reduced model would be most useful if it only included information that was relatively easy to determine.