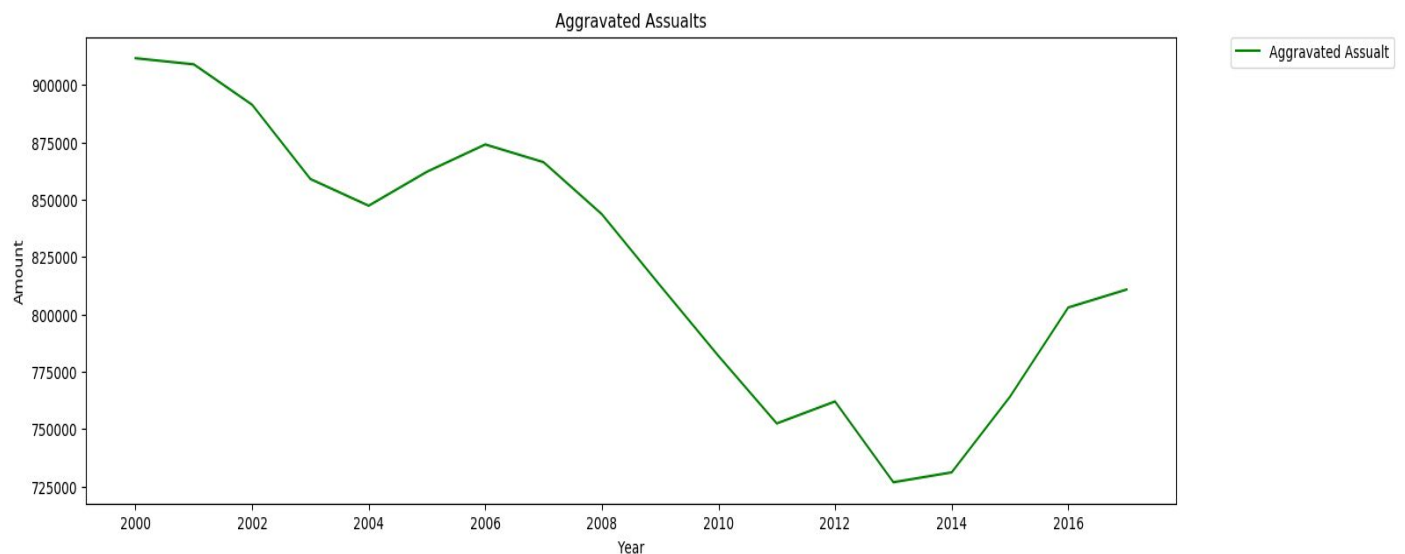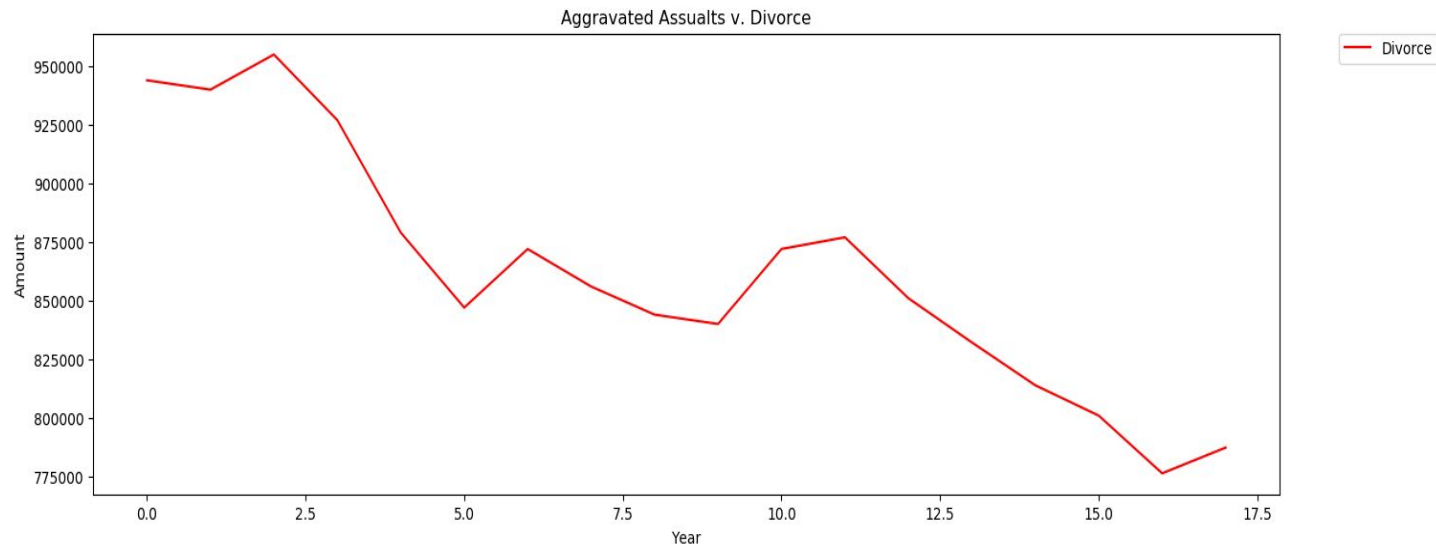# Assault and Divorce Visualization Report

From the days 23rd to the 28th of February, I worked on multiple visualizations, most regarding the possible correlation between the rates of Aggravated Assualt and Divorce in the United States from the years 2000 to 2016. Below are the graphs:
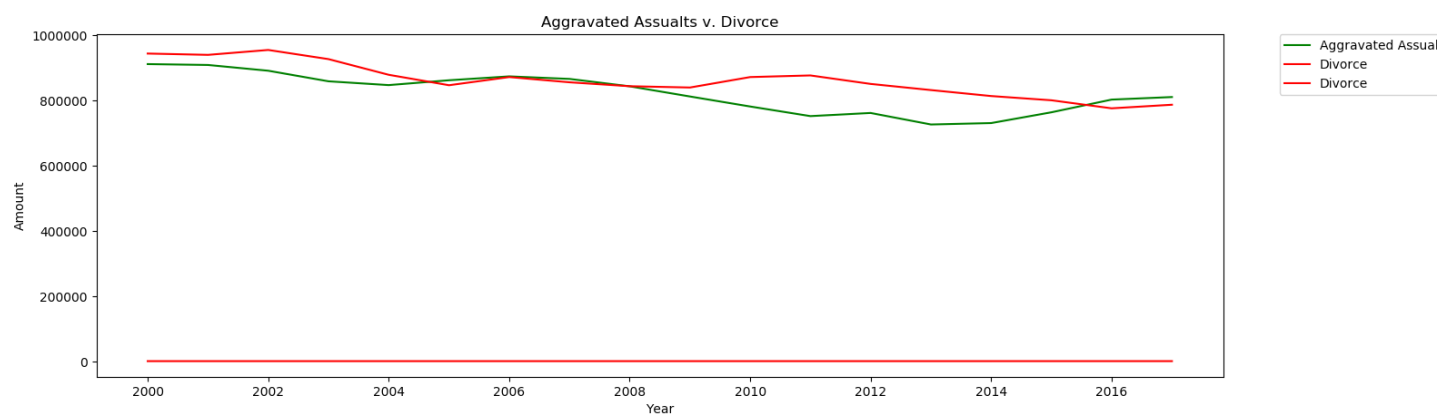

[Fig 1]: Change in the number of aggravated assault over time

In the first graph, a reader can see that the number of Aggravated Assaults cases is on the y-axis, while the years in which a specific number of cases happened are on the x-axis. This graph is created on the data over the span of 17 years, 2000 to 2017. The graph shows that over the years, the rate of aggravated assaults has gone done, possible because of stricter rules regarding the treatment of aggravated assaults. Unfortunately, the rate gradually increases from 2014. If one looks at the figure below, they can see that around a similar time, the rate of divorces also increases. It could be a possible outcome of a partner abusing or assaulting another. These cases can occur during a marriage, prompting the divorce, or after it, in a fit of rage. Either way, both rates fell around the same time and increased around the same time.
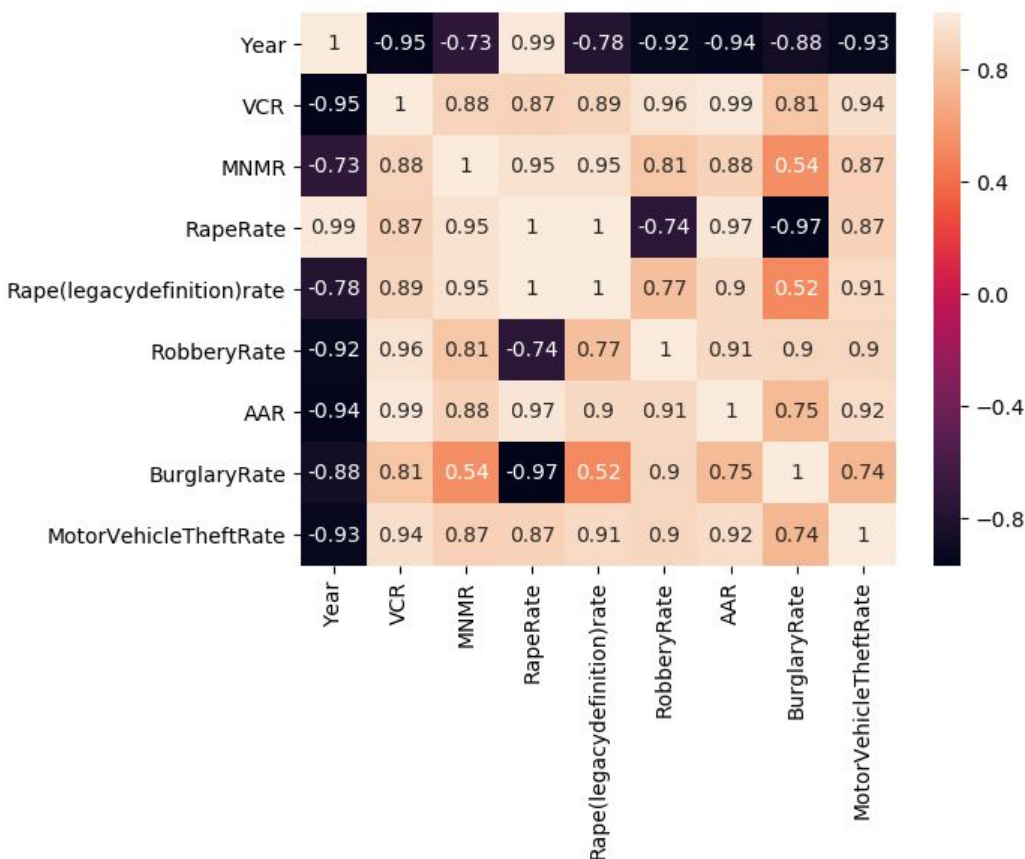
[Fig 2]: Change in the number of divorces over time

In the second graph, a reader can see that this a graph that depicts the rate of Divorce over 17 years, from 2000 to 2017. The number of divorces is on the y-axis, and on the x-axis is the year. The graph shows that over the years, the rate of divorces has greatly dropped, around the same time as when the rate of aggravated assaults has dropped. Suffice to point out, the divorce rate has started increasing again, and if one refers back to the previous graph, they will notice that the rate of aggravated assaults have also been on the rise. This could be a consequent effect of the growing divorce rate. People tend to react physically before, during, and after a divorce proceeding, which contributes to the rising numbers.

[Fig 3]: Changes in both Divorce and Aggravated Assault over time

In the third graph, a reader can see that both data sets containing the number of assaults and divorce have bet combined then plotted. This plot, like the other two, represent the number of both variables over the duration of 16 years, from 2000 to 2016. In this plot, the red represents the data set for assaults and the green represents the data set for divorce. As one can see, the time frame of 2004 to 2009, the lines from both variables are intersecting and also forming the same line. That suggests that the numbers and/or the likelihood of someone being divorced and being attacked by their ex-partner or being attacked then divorced are deeply correlated. The same pattern continues in the year 2015, where both lines intersect and then become parallel. On the y-axis is the number of both assaults and divorces, and the years, which are the same, are on the x-axis. The only timeframe where the lines are relatively uncorrelated is from 2009 to 2015. Other than that, the lines are very close to each other.

[Fig 4]: Heatmap correlations between multiple crimes

In the heatmap above, it represents a new data set that has data from 1998 to 2017, which has all the types of crimes reported in that timeframe. In the heatmap, if one looks, the data that is most correlated is Aggravated Assault and Rape and Violent Crime Rate(VCR) and Aggravated Assault Rate. The key to some of the abbreviations is as below:

1. *VCR: Violent Crime Rate*
2. *MNMR: Murder and Nonnegligent Manslaughter*
3. *AAR: Aggravated Assault Rate*

The possible correlations hint how possible a certain crime can happen after another crime. For example, there is a high likelihood that someone who gets assaulted will get raped, or be a victim of a violent crime. This way, the police and/or prosecutors can determine how likely someone will be a victim of not one, but two crimes.

Links for Reference:

1. *Crime Rate and Aggravated Assault Data:*
   https://ucr.fbi.gov/crime-in-the-u.s/2017/crime-in-the-u.s.-2017/topic-pages/tables/table-1
2. *https://www.divorcemag.com/articles/us-divorce-statistics-and-divorce-rates-2000-2017*