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# WORLD SUICIDE RATE ANALYSIS

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## INTRODUCTION

Suicide is an intentional act of killing oneself. Various reasons such as depression, disorders, financial difficulties, relationship issues, bullying and blackmail are few of the major reasons which forces a person to commit suicide. There are various ways in which a person can commit suicide. As per statistics suicide is the 3rd leading cause of death worldwide for 15-24 years old age group people and also on an average, 1 person dies by committing suicide every 16 minutes and in US alone almost 38000 people kill themselves. Helpline numbers have been setup throughout the world for people who feel depressed and have suicidal thoughts. Various data sets considered for this report includes details of suicide count country wise, happiness index, substance abuse and GDP.

## COUNTRY WISE SUICIDE ANALYSIS

Russian Federation tops the list with 1209742 suicides for the period - 1985 to 2016. Even though Russian Federation tops the list, it has been observed that the year wise suicide count has dropped considerably over the period from 1989 to 2015. The count has dropped from whopping 37921 in 1989 to 25423 in 2015. This decrease in suicide count can be attributed to the rise in GDP rate of Russian Federation. The GDP of Russian Federation has sky rocketed to 1,368,400,705,491\$ in 2015 from a mere 506,500,173,960\$ in 1989.

The Country Wise Suicide Map has the information of Suicide count per 100K population which are aligned to the respective countries. It is observed that top 10 countries with the highest suicide count is 200 times more than the total suicide count of rest of the countries put together.

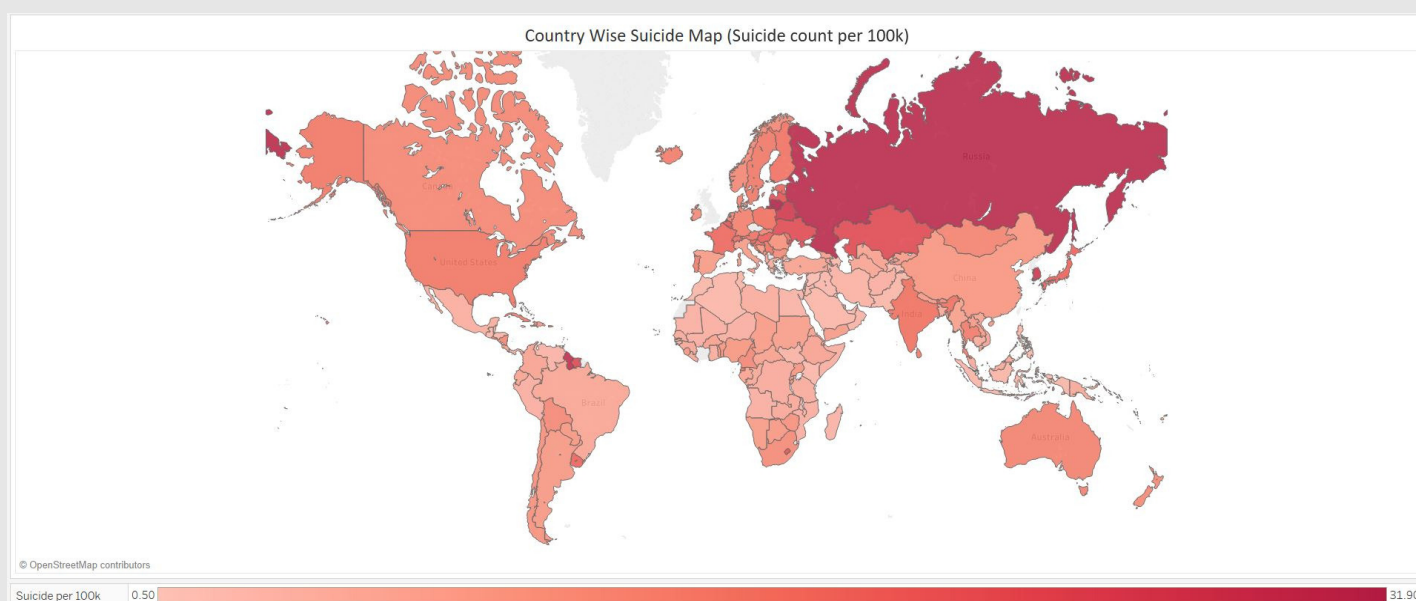


Figure 1 : Country Wise Suicide Map

Country Wise Suicide Count

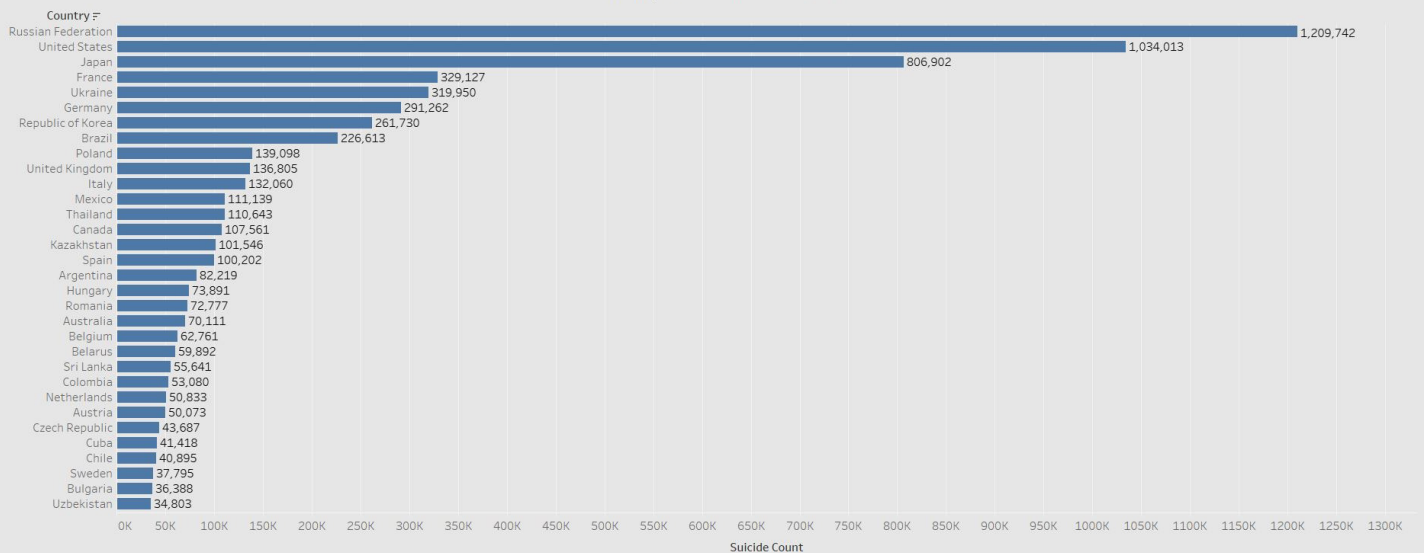


Figure 2: Country Wise Suicide Count

## SUICIDE COUNT - YEAR WISE

Due to various initiatives from World Health Organization and various other Organizations around the world, the overall suicide count around the world has decreased considerably. The overall suicide count was on a constant rise from the years 1985 to 1999 where it peaked with total suicide count around the world adding up to 256119. Slow decline is suicide count was observed from the years 1999 to 2016 which might be due to various factors such as GDP or happiness Index

Even though overall suicide count of the world has reduced a little over the past 20 years, it's not the same for United States. As per a study conducted by CDC, the number of deaths by suicide has increased by 25 % in the past two decades in United States alone and is said to increase multi fold in the upcoming years. As per the study, loneliness and economic factors are the main reasons due to which people commit suicide.

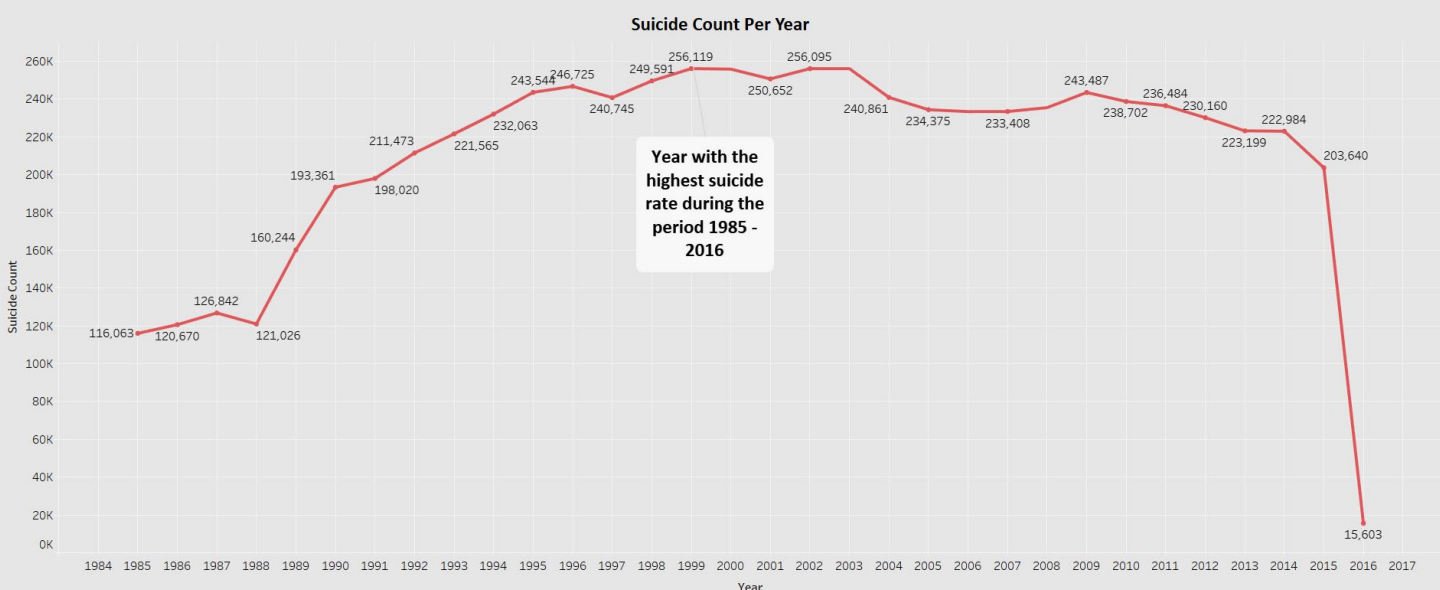


Figure 3: Suicide Count Year Wise

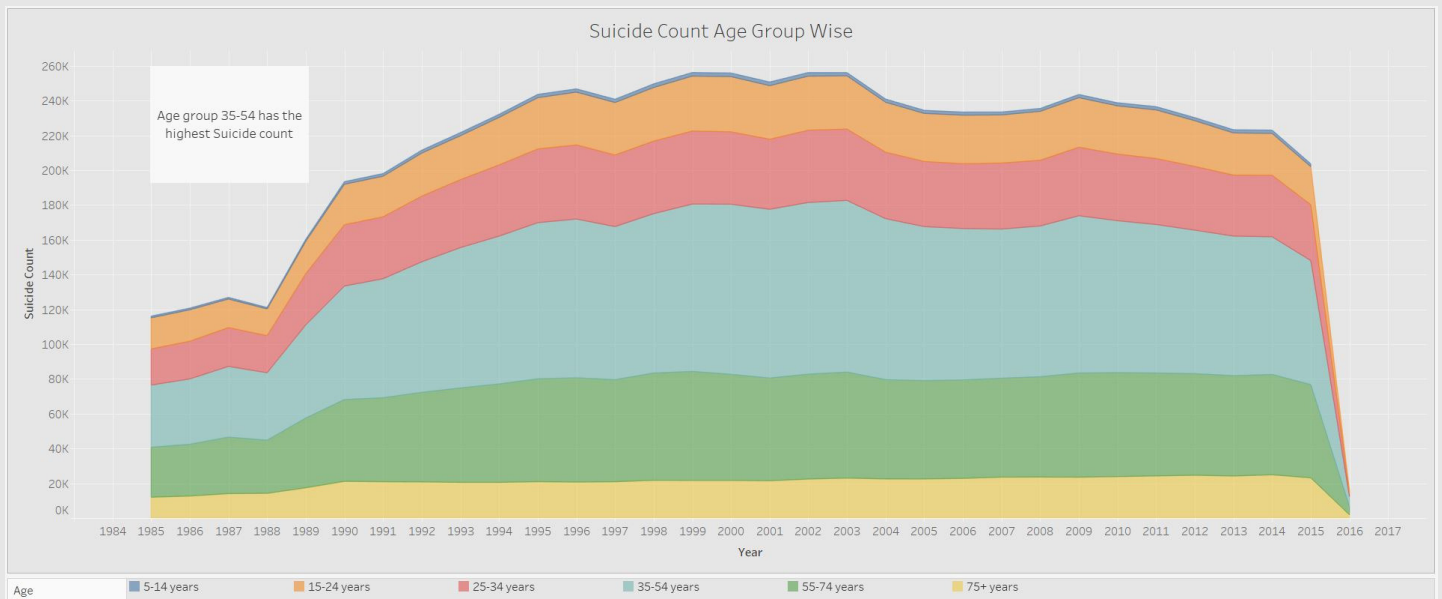


Figure 4: Suicide Count: Age Group Wise

## SUICIDE COUNT: AGE GROUP WISE

The Age category has been divided into 6 classes namely, 5-14 years, 15-24 years, 25-34 years, 35-54 years, 55-74 years and 75+ years. The people belonging to the age groups 15-24 years, 25-34 years and 35-54 years are the most prone ones to commit suicide as they are the ones who experience depression, financial crisis and relationship heartbreaks which are the major factors which leads a person into suicidal thoughts.

As expected, it is observed that people from the age group 35-54 years have committed suicide the most. People from age group 25-34 years have the second highest suicide count. It is also observed that men have higher suicide count than women in all the age groups.

Men of all the age groups have done 200% more suicide attempts than women of all the age groups. This is quite obvious as men are accustomed to more pressure than women and the main reason is that men are reluctant to share their feeling or to get help when required. Men are more vulnerable to commit suicide than women. Few factors which makes men vulnerable are poor mental health, poor at relationships, poor lifestyle and insecure jobs.

More awareness must be created and more depression care centers must be setup in order to help men with suicidal thoughts to get out of depression.

Suicide Count Comparison - Age and SEX wise

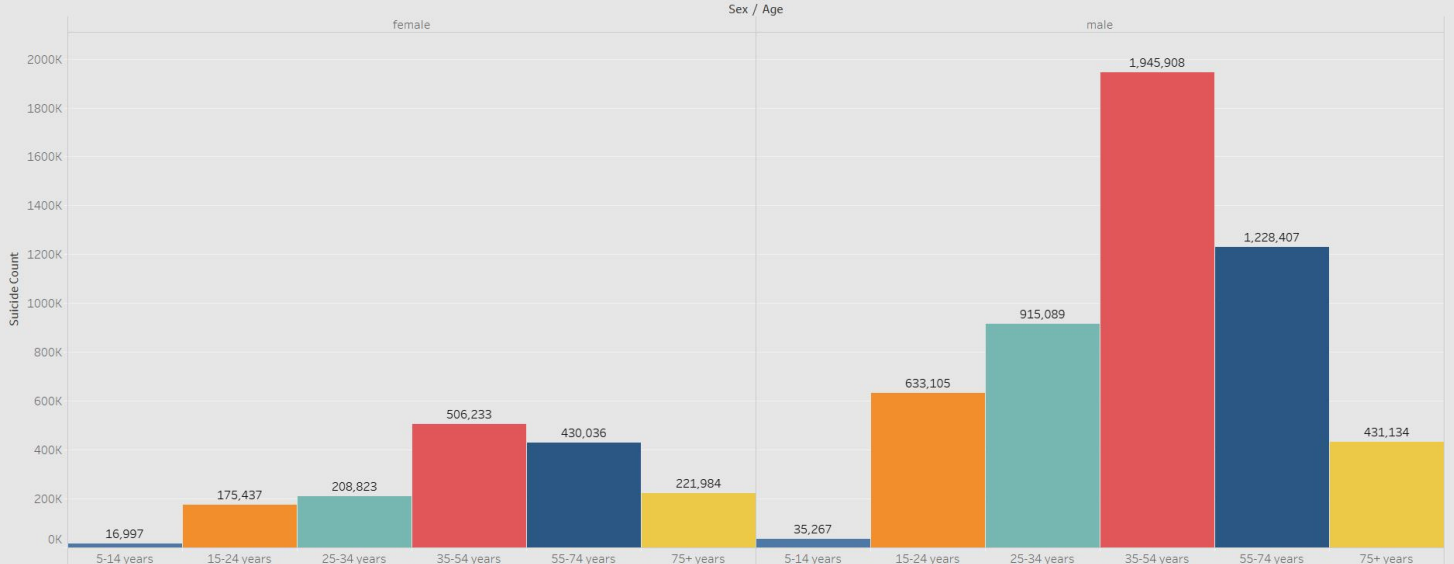


Figure 5: Suicide Count: Age and Sex wise

## MAJOR CAUSES OF DEATHS IN UNITED STATES OF AMERICA:

Let's Deep Dive into the statistics about suicides in United States of America!

As mentioned earlier, it's been reported that suicides in US alone has increased by more than 25% in the last 20 years. Even though major causes of death have come from unintentional injuries or accidents, suicides have been the reason of almost 1.70% of all deaths reported in US for the year 2017. Even though 1.70% sounds small when compared to a 26% death due to

accidents, 1.70% is equivalent to almost 46653 deaths out of the total 2,744,248 deaths in US for the year 2017. Major types of suicide are by firearms, poisoning, drug abuse and suffocation.

Causes of Deaths in USA in 2017 (in Percentage)

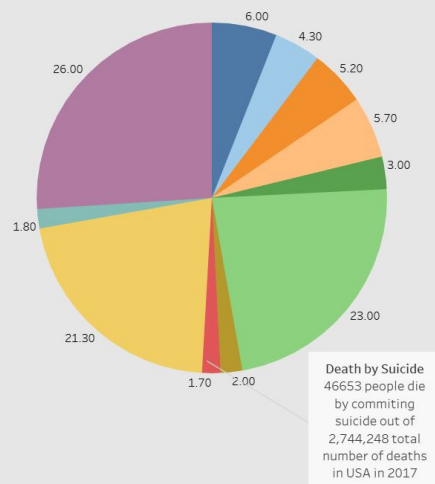


Figure 6: Causes of death in USA in 2017

Methods used to commit suicide

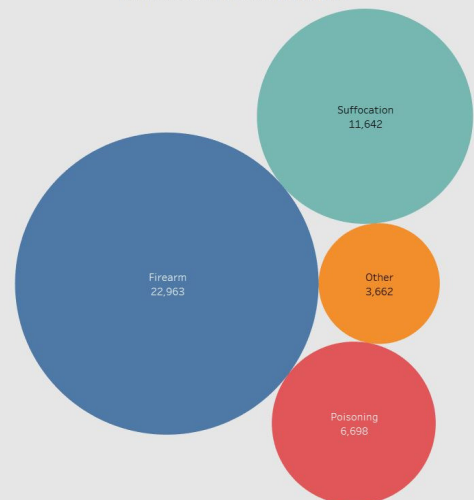
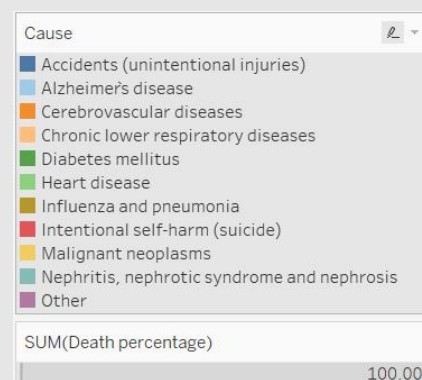


Figure 7: Methods used to commit suicide



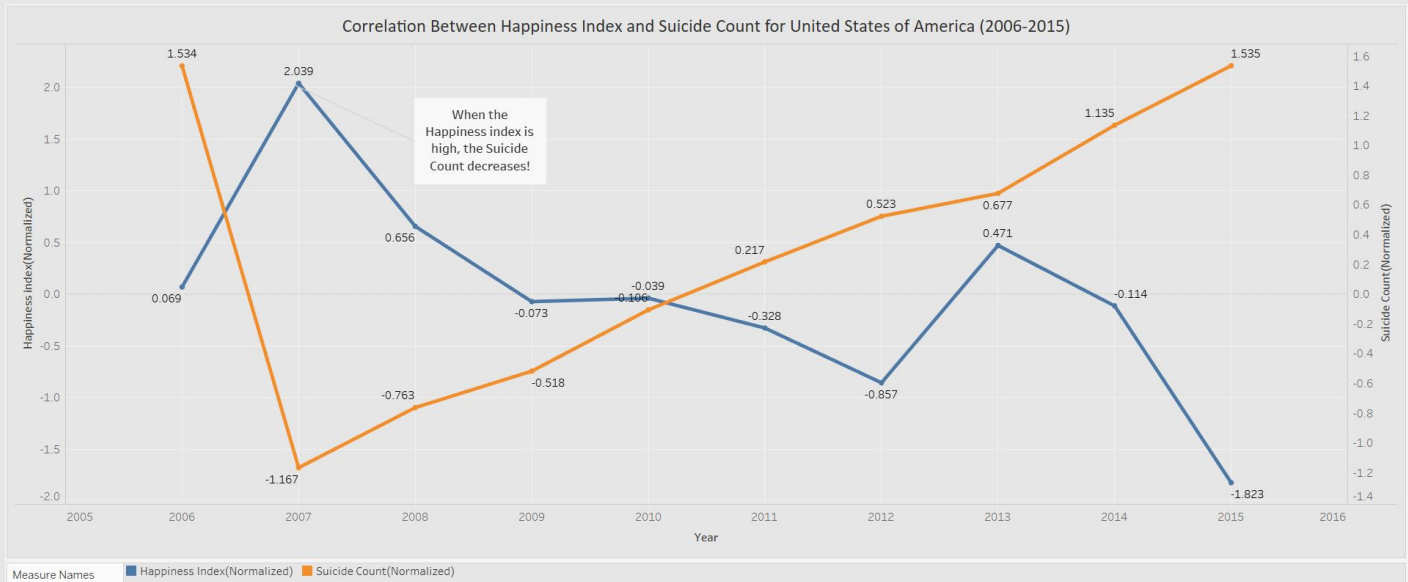


Figure 8: Correlation between happiness index of a country and suicide count.

## CORRELATION BETWEEN NUMBER OF SUICIDES IN UNITED STATES AND HAPPINESS INDEX OF UNITES STATES

Various factors such as depression, anxiety, no job satisfaction, bad relationships, excessive drug usage, financial status are few of the factors which influence a person to get suicidal thoughts.

Among these factors, a few can be taken care by the government in order to reduce the number of suicide counts. Better infrastructure can be provided. More jobs can be created and some schemes can be created to provide food and shelter to the poor in order to protect them from going into depression.

As observed from the graph, from years 2005 to 2015, in United States of America, the suicide count has decreased whenever the happiness index of the country has improved. There is a correlation between the happiness index of a country and the number of suicide count of the country.

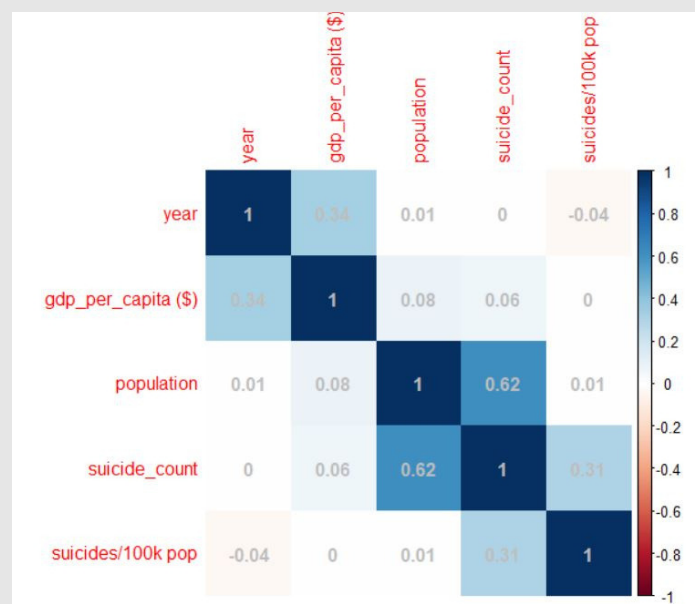


Figure 9: Correlation matrix

Other factors which have correlation with the increase and decrease in suicide counts are the population of a country and GDP of the country. Various other parameters which has correlation with the suicide counts are Education level, Unemployment, less physical activity, marriage, obesity, smokers and drinkers.

In general, Men are more vulnerable to commit suicide than women. As per statistics taken in 2016, 21% of the men are highly



Death rate for Suicide in US by Gender(2000-2016)

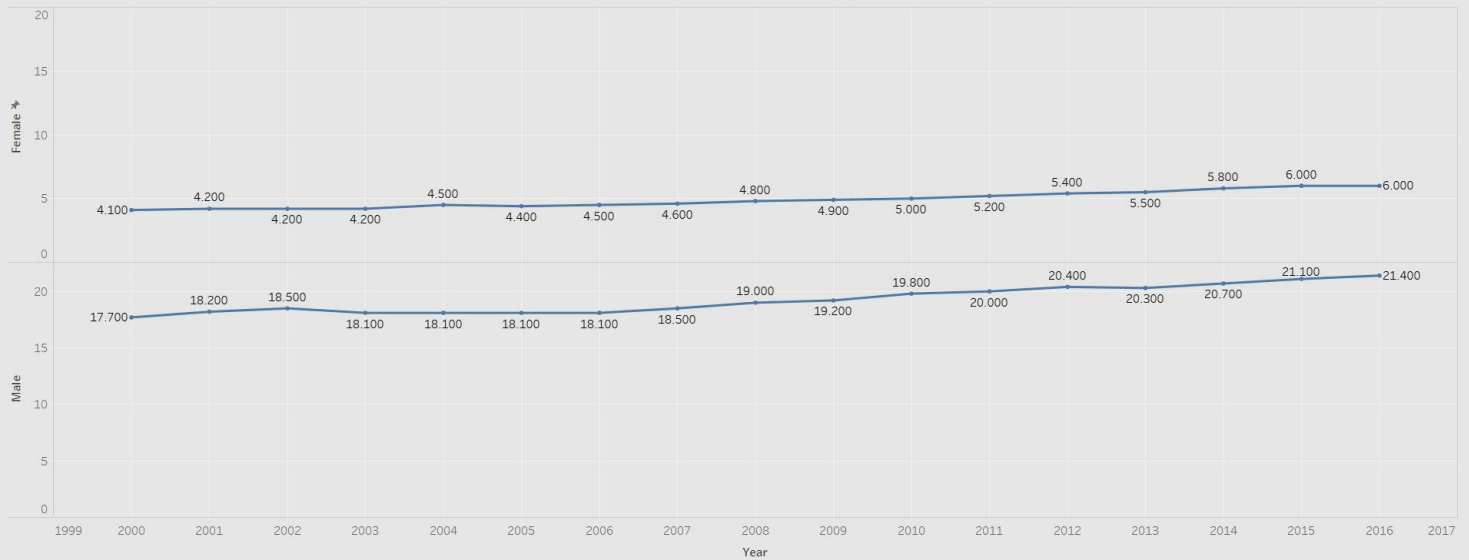


Figure 10: Gender wise suicide percentage in US

susceptible to commit suicide while only 6% women in US are likely to attempt suicide. One of the important reasons being, men doesn't open up about their feelings.

These correlation matrices can be used as an index to find out the how much each factor play an role is a person getting suicidal thoughts.

The government or any organization can use this to statistics to gain insight and work towards setting up health centers to help people with suicidal thoughts.

## STATES WITH THE HIGHEST SUICIDE RATE IN UNITED STATES OF AMERICA

Montana is the state with the highest suicide rate with 26 per 100000 suicide count. Montana is followed up by Alaska, Wyoming, New Mexico, Utah, Nevada, Idaho, Oklahoma, Colorado and South Dakota with 25.400 per 100000, 25.200 per 100000, 22.500 per 100000, 21.800 per 100000, 21.400 per 100000, 21.300 per 100000, 20.900 per 100000, 20.500 per 100000 respectively.

US States with the highest Suicide Rates(Suicides per 100,000 population)

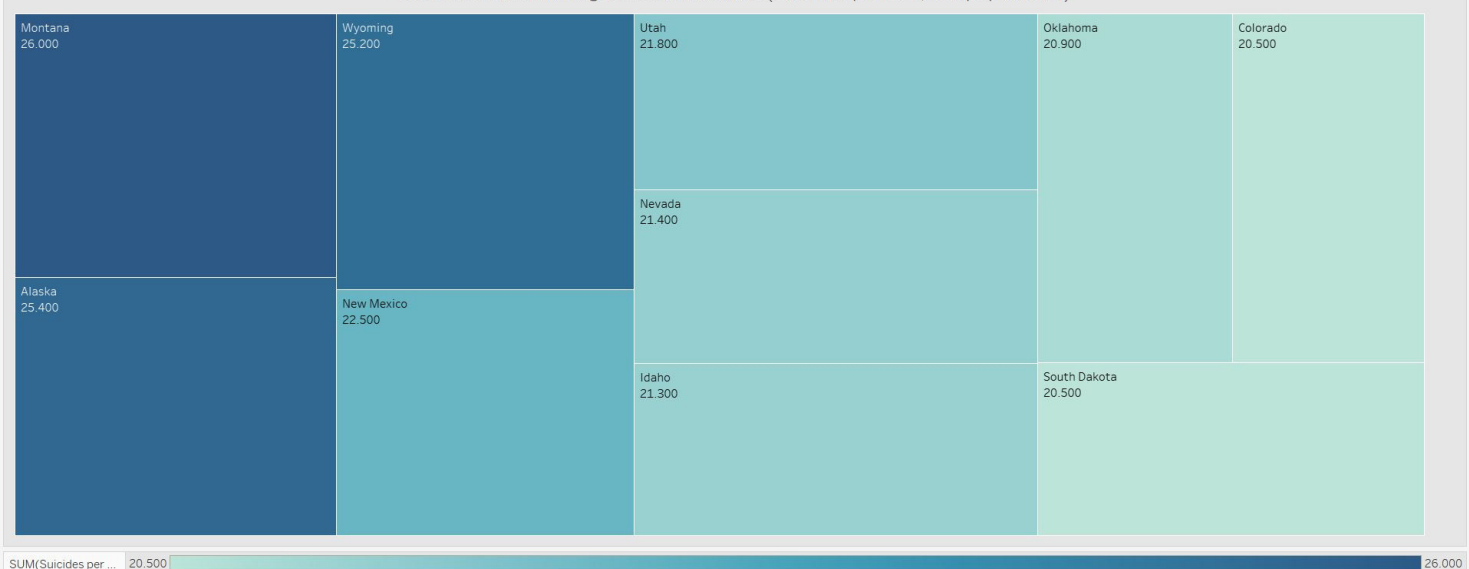


Figure 11: State wise suicide count in US

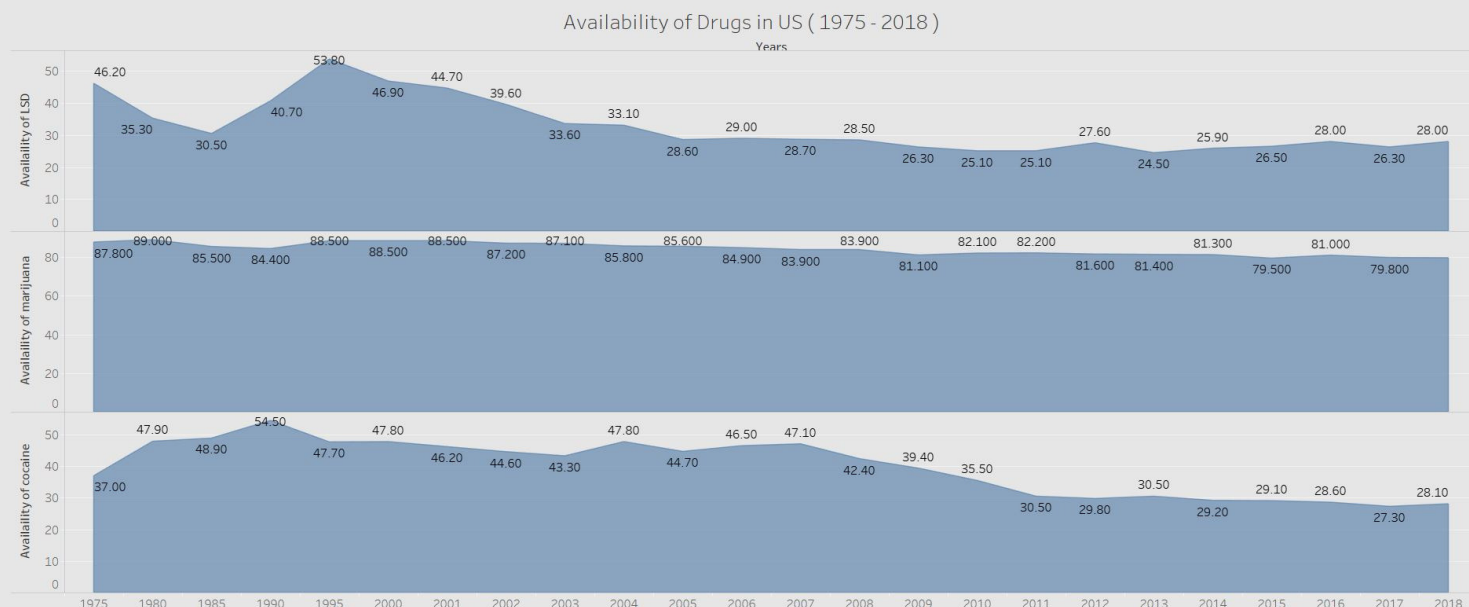


Figure 12: Availability of Drugs in US

## INFLUENCE OF DRUGS IN GETTING SUICIDAL THOUGHTS

Another major factor which puts a person into suicidal thoughts are consumption of drugs. A study performed in 2004 found that people who consume drugs have 10 to 14 times higher chance of having suicidal thoughts. As per statistics, suicides due to drug consumption have increased by 41% during the period 2004 to 2011 and it has been predicted that deaths from suicide among people who consume alcohol and drugs could account for more than 1.6 million deaths in the upcoming years.

Let's look at the statistics about the most easily available drugs in United States of America. LSD, Marijuana and Cocaine are the most available drugs in the US. The availability of these drugs in the hands of people of age groups 15 to 54 years were in peak during the years 1990 to 2000 during which most number of suicides occurred. Ever since then, the government have taken preventive measures in eradicating these drugs.

In the year 2018, the drug availability have considerably reduced when compared to the years 1990-2000. In 2018, the availability of LSD, Marijuana and cocaine have gone down to 28%, 79% and 28% respectively

## CONCLUSION

Suicide is the 10th leading cause of death world-wide and major factors that leads a person into having suicidal thoughts are depression, anxiety, heartbreaks, drugs and job satisfaction. In US alone, Suicide causes 1.70 % of the overall deaths. Until now, various actions have been taken by governments, social communities and non-governmental organisations to tackle people from attempting suicide. These prevention measures include forming a telephonic helpline, spreading social awareness, eradicating the supply of harmful drugs, reducing cyber bullying, arranging counselling sessions and by prescribing anti-depressant medications by doctors. Recent study by the Mental Health America has reported that 68% of people tend to visit a doctor a month



before attempting suicide and 38% in that population pay a visit before a week of suicide attempt. This is one of the way by which these people call out for help. Thus, suicide rates can be minimized substantially only when we start to listen attentively to these people and instantly take action to help them come out of it.

## APPENDIX

Figure 1

Map Chart is used to show the amount of suicide in each country and the color indicates the value range. Map chart is selected since the data contains country wise data.

Figure 2

Horizontal bar graph is used to further compare the differences in suicide counts in each country. Horizontal bar graph is selected as we are comparing suicides counts for different countries.

Figure 3

Single line graph is used to show the amount of suicides committed each year during the period 1985–2016. Single line graph is selected as year wise data is being used.

Figure 4

Stacked 100% Area graph is used to compare the suicide counts among different age groups, namely 5–14 years, 15–24 years, 25–34 years, 35–54 years, 55–74 years. Area graph is selected for this as we are showing the composition which is changing over time.

Figure 5

Side by side bar chart is used to compare the number of suicide counts among different age groups, sex wise. Side by side bar chart is used as we are comparing many items of few categories

Figure 6

Pie chart is used to see the composition of causes of deaths in US in the year 2017. Pie chart is selected for this as we are checking the composition of static elements

Figure 7

Bubble Chart is used to check out the methods by which people commit suicide and to check which one causes the maximum death. Bubble chart is used for this task as we are checking the composition of static elements.

Figure 8

Line graph is used to compare the Suicide count and happiness index for the years 2006 to 2015. Line graph is selected for this task as we compare to entities over a period of time.

Figure 9

Correlation matrix is used to find the correlation between different elements.

Figure 10

Side by side line graph is used to compare gender wise suicide percentage in US. Line graph is selected for this task since we are comparing two entities over a period of time

### Figure 11

Tree maps are used to see the composition of number of suicides among the states of US.

### Figure 12

Side by side area graph is used to see the availability of different drugs in US over time. Side by side area graph is selected as we compare the composition over time.

## DATA SOURCES

<https://www.kaggle.com/russellyates88/suicide-rates-overview-1985-to-2016>

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<https://www.statista.com/statistics/560197/number-of-us-suicide-deaths-by-method/>

<https://www.statista.com/statistics/208467/availability-of-cocaine-as-perceived-by-us-12th-graders-since-1975/>

<https://www.statista.com/statistics/208462/availability-of-marijuana-as-perceived-by-us-12th-graders-since-1975/>

<https://www.statista.com/statistics/208470/availability-of-cocaine-as-perceived-by-us-12th-graders-since-1975/>

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<https://en.wikipedia.org/wiki/Suicide>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4499285/>

<http://www.stopsuicide.ie/suicide-myths-and-facts/>

## TOOLS USED

Data processing – RStudio and MS Excel  
Visualization – RStudio and Tableau