

Death and Suicide in the United States - Nikhil Vytla, Jackson McKenzie, Lucas Chen

Our team seeks to visualize mortality and death data provided by the National Center of Health Statistics in order to analyze impacts of death and potential for solutions regarding specific diseases/conditions in the United States. This dataset looks at the leading causes of death by state and also by year. Specifically, we will focus on the subset of suicide and correlated factors.

Analytical tools we used included R, Excel, and Tableau. Tableau provided us with the best data visualization. We developed various pivot tables in Excel to find summary statistics for the dataset and to find correlation for different factors related to suicide. We also implemented R to conclude corollary data, to apply regression, and to visualize the dataset.

Our general dataset insights provided much-needed clarification on specific historical and mortality trends within the United States. By providing a detailed look at the medical history of each state and paving the way for further insights, we decided to create a scalable, adaptable framework that provides deeper analysis on a disease-level basis. Our team chose to specifically focus on suicide through dataset comparison and external scientific research.

Two major takeaways are the fact that suicide rates are increasing in almost all states and that suicide is most prevalent in the Northwest corner of the United States. The states with the highest overall age-adjusted suicide rates between 1999 and 2016 were: Alaska, Wyoming, and Montana; whereas, the states/regions with the lowest overall age-adjusted suicide rates were: the District of Columbia, New Jersey, and New York.

Related to this insight is the implication that there appears to be a slight inverse correlation between state size and age-adjusted suicide rate. More simply put, suicide is more common in states with a smaller population. Looking at the 2016 suicide rates as a function of state population size along with a linear regression line yields an R^2 value of .1621.

Counterintuitively, the three states with the highest suicide rates reported lower rates of no leisure time, and vice versa. With regression, it was also determined that it was harder to predict the suicide rates of states with lower suicide rates in the future than states with higher suicide rates. This implies that states with higher suicide rates aren't doing anything about the suicides/are having less effective ways of combating suicide than states with lower suicide rates (*U.S. Department of Health & Human Services, 500 Cities: Local Data for Better Health*).

In conclusion, we believe that our framework for further disease-based analysis is effective. Looking at population density as a function of population size yields an even stronger inverse correlation between the suicide rate and population density - an R^2 value of .4616. Studies from the University of Montreal, Attikon University Medical Hospital, the University of Tokyo, and the University Pierre and Marie Curie provide strong corollary evidence that loneliness is statistically linked to higher rates of suicide, and we can conclude that loneliness, which is more prevalent in states with lower population densities, provides valid reasoning for higher rates of suicide.

Sources

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