Using Visualizations for Suicide Awareness

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ABSTRACT

UPDATED—23 October 2020. Suicide is a major public health problem around the world. The World Health Organization has said that more than 800, 000 people commit suicide each year, which is roughly one death every 40 seconds [2]. For context that is precisely the number of people who have died by contracting the Covid-19 virus so far (October 2020). In this paper, we are inspired to bring attention to this issue with a narrative story and interactive visualizations. We will help the readers evaluate what are the factors playing an important role in the deaths committed by suicide. With narrative visualization, we would like to raise awareness on suicide prevention and the fact that these deaths are in most cases preventable if we lend a helping hand.

Author Keywords

suicide prevention; data visualization; explorable explanation; idyll; d3.js; vega-lite

INTRODUCTION

Suicide is the second leading cause of death for adolescents and young adults aged 15-24, accounting for more deaths each year than all other natural causes combined. However, it is appalling how little the amount of resources and attention allocated to suicide prevention is. To many of us, suicide is thought to be committed by someone with a mental illness, or those that consume drugs and alcohol, and other preconceived biases. But, death by suicide is significantly more common to be generalized in that manner. Suicide is a very complex issue and it does not get enough public health attention.

We were inspired to work on this topic after we read a quote saying “suicide or depression does not end the pain. It passes it on to somebody else”. With this explorable explanation we try to bring to light how common death by suicide are. Our explorable explanation will allows users to search the data for trends and characteristics by personalized filters.

Our goal for Assignment 3 is to create narrative visualizations to address multiple aspects of suicide and promote public awareness that suicide is a global health problem. We would like to investigate the rate of suicide around the globe. Furthermore, we hope to determine whether age, gender, and location play a factor in suicide rate and also see if suicide prevention services make a difference. The dataset we will use is the “Total deaths by suicide and suicide rates per 100,000 people overall and by age group and sex” and "Death rates & absolute number of deaths from suicide". The dataset provided by Hannah Ritchie, Max Roser and Esteban Ortiz-Ospina [1]. It contains suicide rate measures, ranging from age and gender to suicide rate by countries etc., that were released from 1990 to 2017. We are looking to explore how much of a role the mentioned components play in general mental health. This will also lead to exploring mental health in the tech industry.

NARRATIVES VISUALIZATIONS

After exploring the dataset, we looked at several explorable explanations to determine how we would approach narrating our story. We decided to take the readers on a journey following our character Jacob. Jacob is relatable as he, like us, is a recent graduate and is working really hard towards his dreams and goals. However, instead of progressing in his career he gets laid off from his job and find himself in a position where he is unable to pay his bills and feels he might be homeless soon. Although this situation alone might not make Jacob suicidal, we talk about him because we want to shed light on how normal the symptoms or the path into being in a position to want to commit suicide is. As we established, suicide is a complex issue. Hence, it is not straightforward to draw insights from data and establish facts and trends. That’s why our approach is designed towards creating awareness and making people more proactive in finding information on suicide prevention. Our plan is to allow the readers to explore the data such that they can personalize filters and find data points that can show statistics on suicide rates that are more relevant to the reader’s characteristics such as where they reside, what their age is and what their habits are. We next want to see how suicide rates are related to the happiness across the countries.

To tell our interactive stories, we are going to make of Vega-Lite visualizations, and we will integrate them into a markup language using idyll. With Idyll, we can create a responsive and interactive explorable that can be run as desktop or mobile webapp.

The proposed implementations and solutions

We will use idyll for making our explorable explanation. We hope that our readers can explore the data to its maximum potential and help them understand what it’s trying to convey. The data contains the demographic information about global suicide rates. The following are the specific interactives that we plan on displaying:

1) Providing a line graph which shows the trend of suicide rates across all over countries. We have provided a selection box to filter the data by country and showing the data for that country. This will enable the readers to contextualize the data. We will provide statistical summary by showing the global average of suicide rates and the top ten countries that have historically had the most cases and make a slide bar to make readers see whether they had changed or not. However, there are the countries still show the high suicide rate than other countries. We average all the rate from 1990 through 2017 and show the top 10 countries that has the high average suicide rate during the period. To get readers attentions more, we have covered it until they click the button to see the result.
2) We use bar graph to analyze how suicide rates vary in different age groups. We also put a pie chart to make readers to see how largely each age group contributes to the total suicide rate. Similarly, we provided a selection box to select the country they are interested in and made a radio button to see the approximated proportion of each age group contributes to the total suicide rate in each country. We also fixed the scale for y-axis of bar graph to avoid violating expressiveness. In addition, for those who would like to see the summary of age vs. suicide rate, we will provide a check box to click and see the summary with box plot. Box plot will tell the readers almost every statistical information that reads want to know.
3) We will again use a bar graph to display how suicide rates vary between the genders. To make it responsive, we will add an interactive question and then display our visualization based on that question. Like we have done previously, we will give an option to the readers to filter the data by country of choice. In the last bar graph, we also fixed the scale for y-axis to avoid violating expressiveness.

LEARNINGS FROM DATA

The data we analyzed was concerning. The tragedy is that these losses could be prevented. Overall, we noticed an overall decrease in the suicide rates across the world, except for the United States. Logistically, there are gaps in our dataset. We have seen that males have higher rates of suicide, but we do not know which age groups these belong to. Hence, it could be that in one age group males must have highly dominated suicide rates, but in all others, women might have more cases. In future, I aim to do more processing so that the gaps in data can be filled and more insights can be generated if the data is related. I could also use other datasets such as happiness across countries, unemployment across countries and data about country GDP. These datasets would facilitate greater analysis. Also, to analyze how suicide rates have differed across years, in future I will add a timeline with major world events such as an economic crisis, housing crisis and pandemics to see how they affect suicide rates. However, since we are telling a story, our focus is more on the narration rather than analysis.

CONCLUSIONS

In conclusion, we looked at suicide from many angles and have learned that suicide is a preventable public health problem. In fact, there are many things we can do to help change the current situation! Together we can raise consciousness about how we can build a future where fewer people die from this tragedy. Throughout the assignment, we have also learned how powerful idyll is in its expressiveness and readability and how you can create high-quality narratives with the least amount of effort.

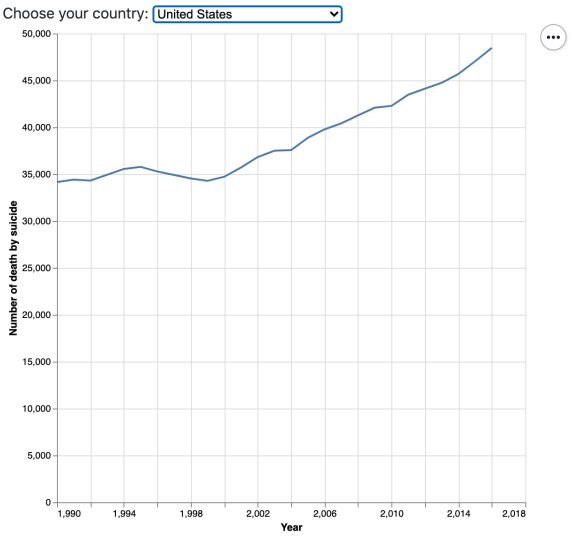

Figure 1. Example of Narrative Visualization

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[2] World Health Organization. Mental Health. https://www.who.int/mental_health/prevention/suicide/suicideprevent/en/

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