

# Data Visualization:

## Does unemployment affect the suicide rate in the US?

**Team: YYDSCI**

Qiyun Zhang [qiyunzha@usc.edu](mailto:qiyunzha@usc.edu)

Chengyuan Zhou ([czhou690@usc.edu](mailto:czhou690@usc.edu))

Yuqi Xiao ([yuqixiao@usc.edu](mailto:yuqixiao@usc.edu))

# Introduction

In this project, we want to explore the relationship between the unemployment and the suicide rate in the US by applying data visualization techniques such as heatmap, timeseries to demonstrate our goal.

We will develop a web-based app to provide with data vividly for users to read and understand, and this can help to explore the result of the research question in an user-friendly way.



# Goal and Story

Story: We want to know whether the unemployment rate affects the suicide rate in different county of the US.

Goal: To explore and visualize the relation between suicide rate and unemployment rate. If not, what are other factors?

End user: People who are curious about the relationship between suicide rate and unemployment rate or people who are willing to know more about the insights of suicide rate/unemployment rate.

# Previous Work comparisons

## Previous work:

We have seen lots of infographics on suicide statistics as well as pure data presentation. However, there are few visualization on unemployment.

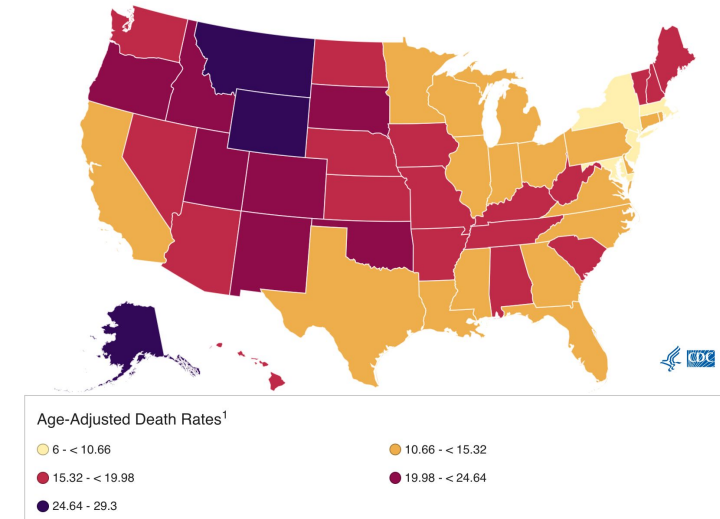
## Similarities:

As most visualization did, we will also have heat map that shows the differences among states.

## Difference:

We will primarily focus on interactions with data instead of pure visualization . Also, based on the visualization results, we can generate the conclusion of our research question.

Suicide Mortality by State



# Dataset

1. U.S. suicide rate by states, years  
(<https://www.cdc.gov/nchs/pressroom/sosmap/suicide-mortality/suicide.htm>)  
Time range: 2014-2016  
Number of instances: 50 states  
Number of datapoints: 150
2. U.S. unemployment rate by states, county, months, years  
(<https://www.kaggle.com/jayrav13/unemployment-by-county-us>)  
Time range: 2014-2016  
Number of instances: 50 states  
Number of datapoints: 102230

## Data wrangling:

Frist, we need to clean out the data we do not need. Second, we will apply Python (Pandas DataFrame) to do data integration of different resources. Third, we need to generate new features based on the raw data that can help to present the idea of our topic in a better way.

# Design Consideration



We've known many open source suicide rate data provider including CDC, but almost none of them provided insights regarding the potential link to other factors that may affect or correlate with suicide rate.

Our mission is to create a link from suicide rate to other statistics.

Graphic forms: heatmap, linechart, bubble cloud, bar chart, scatter plot

# Tools

## Version Control:

- Github

## Data cleaning, data integration, preprocessing:

- python, pandas lib

## Web App Data Visualization:

- React.js
- D3.js
- BootStrap
- HTML & CSS

## Presentation

- Sozi

## Documentation

- Google Doc



# TimeLine

Week 6 (9.29) - Project proposal

Week 7 (10.6)- Data cleaning and preprocessing

Week 8 (10.13) - Research & decide chart to use

Week 9 (10.20) - Development & documentation (heatmap)

Week 10 (10.27) - Development & documentation (time series)

Week 11 (11.3) - Development & documentation (user query)

Week 12 (11.10) - Development & documentation (charts)

Week 13 (11.17) - Preparation of project presentation

Week 14 (11.24) - Presentation & video & document **READY**

Week 15 (12.5) - Submission

(\*\*Note: Weekly meeting is also scheduled)



# Team

There are several subtasks that we need to do:

1. Data preprocessing and data cleaning
2. Basic data analysis regarding the relation between suicide rate and unemployment rate
3. Integration of data and visualization tools including React, D3, etc
4. User Interface design of the webpage
5. Drawing illustration images that will be inserted in to the webpage

All three team members will do the above tasks jointly. We want to make sure that everyone is engaged in the whole process, in which way we can learn from each other and each stage of the project.