Visualization of Unemployment Rate across USA

Mingxuan Luo u1266548 u1266548@utah.edu
Yulan Wang u1264235 youlan9115@gmail.com
Qing Ye u6007114 q.ye@utah.edu

1 Basic Info.

Project repository:
https://github.com/blackispower/Unemployment-in-USA

2 Background and Motivation.

Unemployment is describing the state that a person above some specified age is not in paid employment or self-employment and are currently available for work during the reference period. It is measured by the unemployment rate. Factors influencing unemployment rate may be caused by the recession of economy, new technologies, policies of the government and so forth.

We decided to visualize the unemployment rate across USA. We would like to reveal the trend of unemployment of specific regions (country- level, state-level and county- level) over time. We also want to look at the unemployment rate difference under the leadership with different presidents. We are interested in this topic because this is very relevant to our daily life.

3 Project Objectives.

3.1 The primary questions you are trying to answer with your visualization

3.1.1 Reveal the trend of unemployment of specific regions over time.

3.1.2 Explore and compare the country- level, state- level and county- level unemployment.

3.1.3 Find the regions with extremely high or low unemployment rate.

3.1.4 Look at the crime rate in different regions. Check whether there might be an relationship between crime rate and unemployment rate.

3.2 Things we could learn and accomplish. List the benefits.

3.2.1 Provide instructions for people to choose where to work, live and study.

3.2.2 Learn to design a visualization that could provide people with the information they need the most without any biases.

3.2.3 Practice our skills with JS and D3.

4 Data.

4.1 Unemployment rate:

Kaggle: https://www.kaggle.com/jayrav13/unemployment-by-county-us

Bureau of Labor Statistics https://data.bls.gov/timeseries/LNS14000000

4.2 Crime rate:

death penalty information center
https://deathpenaltyinfo.org/facts-and-research/murder-rates/murder-rates-by-state-by-region
https://deathpenaltyinfo.org/facts-and-research/murder-rates

5. Data Processing

The dataset provides us with the unemployment rate date in different counties across USA from 1990 to 2016. We need to preprocess the data to get aggregation of the data from county to state.
D3 could provide us with the function to sum up and average data.

6. Visualization Design.

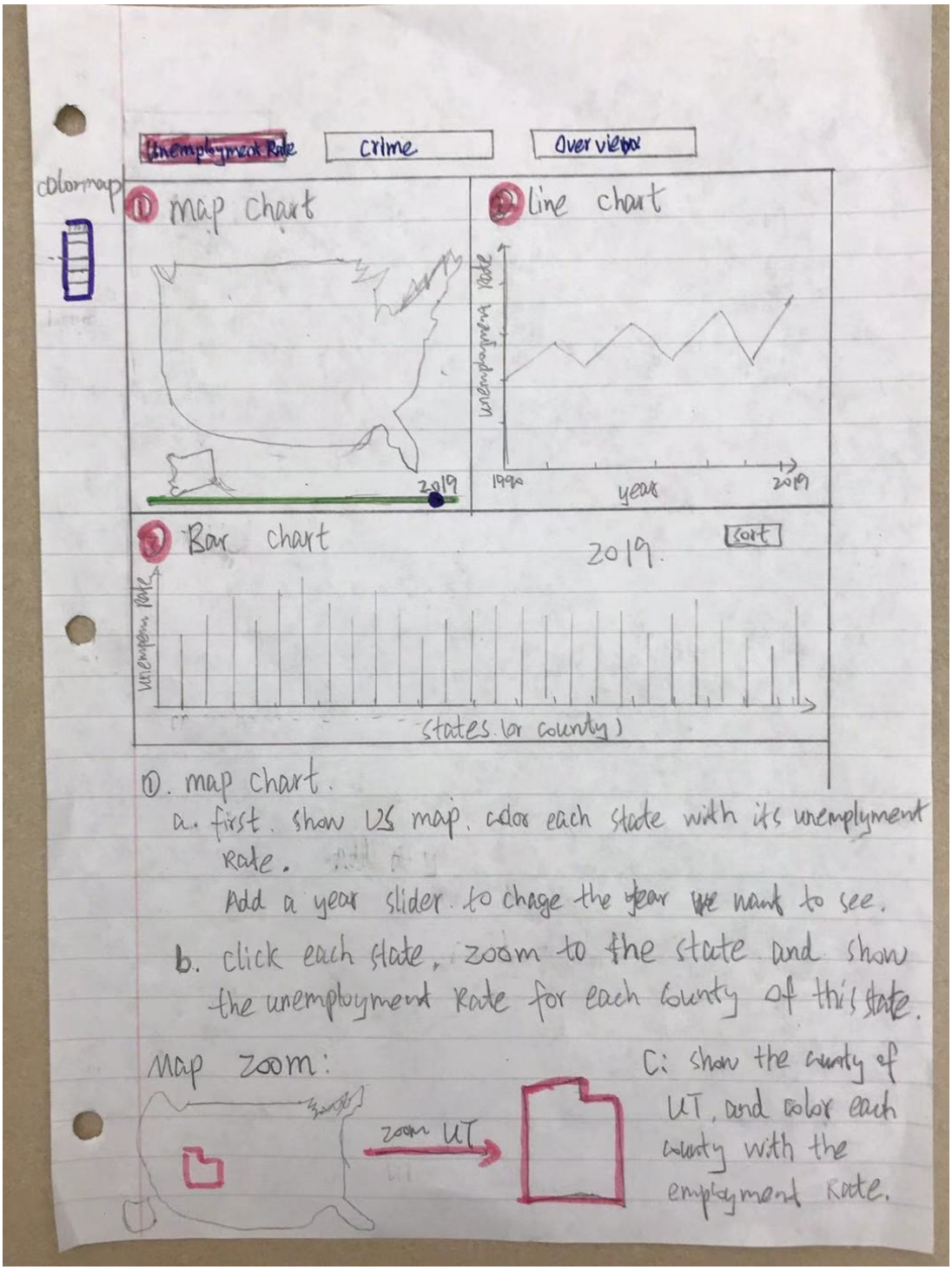
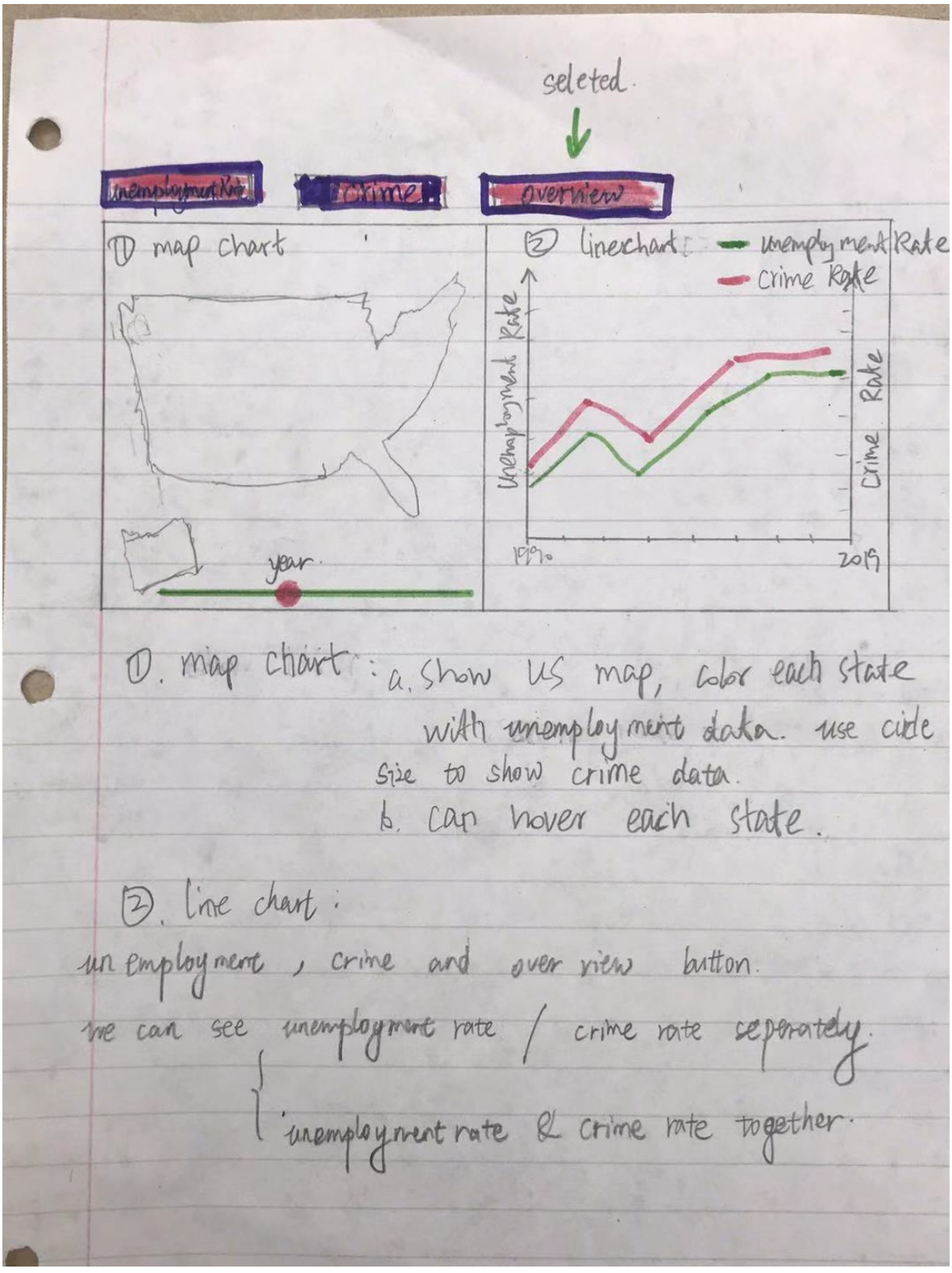

Unemployment Rate
crime
Over view
colormap
① map chart
② line chart
2019
1990
year
2019
③ Bar chart
2019.
sort
unemployment rate
states (or county)
① map chart.
a. first show US map, color each state with its unemployment Rate.
Add a year slider to chage the year we want to see.
b. click each state, zoom to the state and show the unemployment Rate for each county of this state.
Map zoom:
zoom UT
C: show the county of UT, and color each county with the employment Rate.

Figure 1



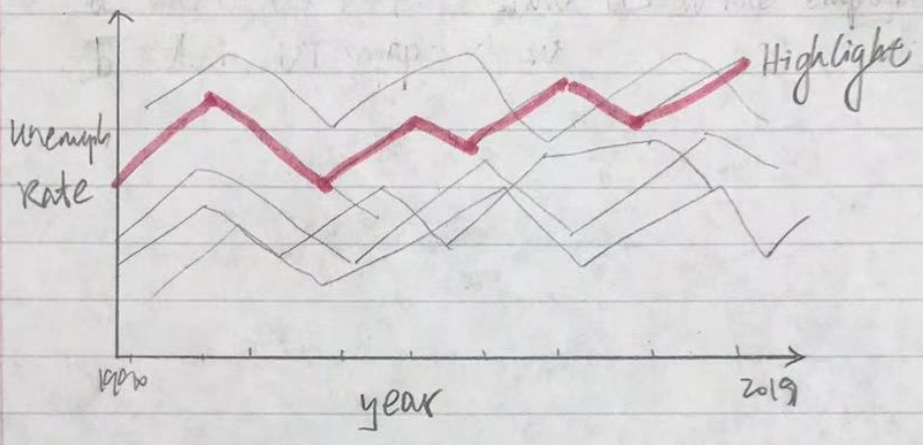
① map chart: a. show US map, color each state with unemployment data. use circle size to show crime data.
b. can hover each state.

② line chart:
unemployment, crime and over view button.
we can see unemployment rate / crime rate seperately.
{ unemployment rate & crime rate together.

Figure 2

② line chart.

show the Unemployment Rate change over year.



a. map chart: US. show all states unemployment Rate with dark color.

when hover one state at the map, highlight the chang line of the state on line chart.

b. zoom map chart to state. show all counties Unemployment Rate change data line with dark color.

Hover each county and highlight the line on line chart.

③ bar chart: can sort the chart ascending / descending

a. us map: show the unemployment rate in each state in selected year.

b. state map: show the unemployment rate in each county in selected year.

Figure 3

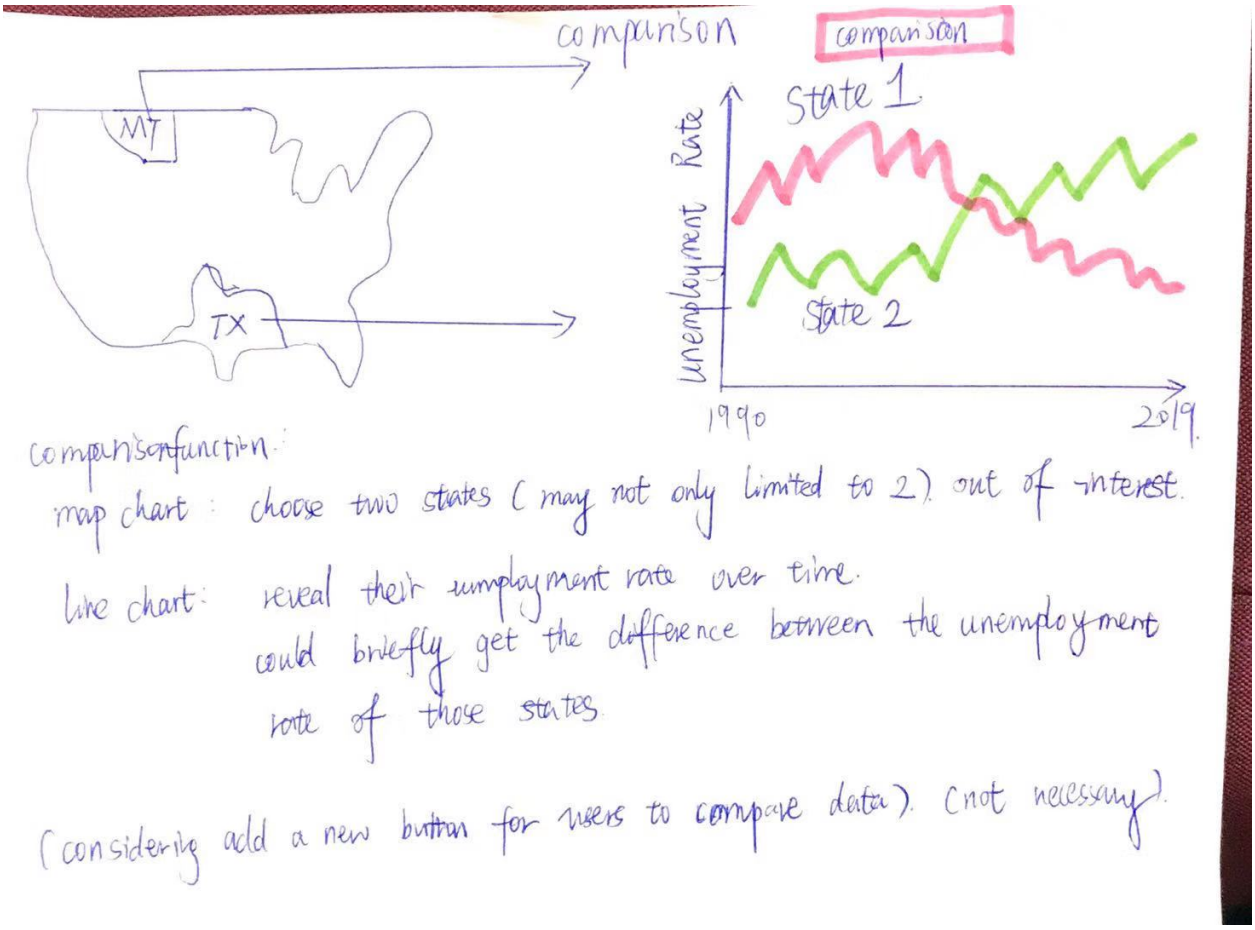


Figure 4

The overview of the visualization consists of three parts: map chart, line chart and bar chart, and can toggle between the unemployment rate, the crime rate and the combined view.

Map chart is coded by color, suggesting the rate of unemployment/crime rate in each state. And on the combined view, the color indicates the unemployment rate while the crime rate is represented by the size of a circle. A year slider on the bottom can switch between different years. A tool tip should appear on hover. If a state is clicked, the map would zoom in and

show a more detailed unemployment rate information in different counties. (Figure 1 -3).

Line chart for the first two view shows the change over the years and it would highlight the corresponding line for a state when hovering on a specific one. It changes into a scatter plot with X-axis and Y-axis showing the stastitics. When clicking on a state, because we only have data for unemployment rate for each county, the line chart only show changes for the unemployment rate for each county. A description box shows the crime rate and overall unemployment rate in the state. (Figure 1 -3).

Bar chart shows the comparison between states/counties for a specific year. Hovering on map or a bar would highlight each other. The whole chart could sort by alphabetic order or the statistics (Figure 1 -3).

Additional functions: we are thinking of let users to choose over 2 states to compare the unemployment rate of those states (Figure 4).

6.1 Must-Have Features.

Three views for the map chart and the corresponding functions in line and bar charts

6.2 Optional Features.

Zooming function for each counties' data.

7. Project Schedule.

7.1 Oct 20th - Oct 25th :

design visualization and wrap up proposal.

7.2 Oct 26th - Nov 1st :

get feedback from the professors, TAs and classmates in the peer review session. Improve the design and in the mean time, finish collecting the data.

7.3 Nov 2nd - Nov 8th (milestone):

get started to finish the basic functions of the visualization.

7.4 Nov 9th- Nov 15th:

check the basic functions to make sure no bugs exists and add more advanced functions

7.5 Nov 16th - Nov 22nd:

wrap up the coding part and make sure there's no big mistakes.

7.6 Nov 23rd – Nov 27th:

upload the visualization and record the demo video.