

Final Project Usability Study

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W209

Project: Occupations in the US

Visualization Prototype:

<https://tonytieger.github.io/prototype.html>

Task: *You are a student in sociology and are doing research on US employment by State and by Industry. Instead of going through the detailed dataset from the U.S. Bureau of Labor Statistics, you are presented a visualization tool that summarizes insights of the US Employment data. Your task is the following:*

Visualization 1 - Treemap

- Name 3 major occupation categories
- Find out the total number of people employed in Construction & Extraction Occupations over the 5 years in Colorado
- Understand which state has a large number of people employed in the “Computer and Mathematical Occupations” category and which state has a small number.

Result:

Some users took a while to figure out the first layer of boxes need to be clicked to get to the major occupation categories detail. But once they figured that out, they have no problem identifying the major occupation category in each state.

All users responded it's impossible to compare occupation categories across states without clicking through each state.

Visualization 2 – Bar chart

- Find the occupation with the highest mean income in Oregon in 2020
- If you are living in Texas and working in the Educational Instruction and Library field, how much would you expect to have earned in 2017?

Result:

All users can use the visualization and answer the above questions. This is a straightforward chart. One user suggested highlighting the top 5 ranked categories to direct attention.

Visualization 3:

- Which state or states has the most number of people employed in 2016?

- Do you think some states are doing better at getting their people employed than others?
- In the state that you are living in, which occupation's mean income has been increasing over time?

Result:

The choropleth is somewhat misleading because both Texas and California have similar colors. Since the color scale is out of total US population as supposed to state population, it's quite misleading in terms of which state has better employment opportunity than others.

Some users did not notice the click-on line chart can be highlighted when mousing over the lines, and also mentioned about the overfitted window and suggested re-adjusting the size.

Prioritized list of issues and changes:

- 1. Adjust the size of each visualization to improve alignment and avoid the need for scrolling on each single visualization**
- 2. More clear directions on how to use the treemap**
- 3. Re-consider the usefulness of the treemap and the amount of useful information it contains /overlap with the choropleth**
- 4. Highlight top 5 bars on the bar chart**
- 5. Either simplify the click on chart (to make it non-interactive) on the choropleth or change to another type of chart**
- 6. Change the metric on the choropleth**

Appendix - Participants Notes

Participant A:

Visualization 1

Q: Name 3 major categories.

A: Food Prep and Servicing Related, Office and Administrative Support, Sales and Related

(needed direction on how to use the treemap)

Q: How many people in Colorado are employed in Construction & Extraction Occupations over the 5 years?

A:130,190

Q: What state has a large number employed in the "Computer and Mathematical Occupations" category and what state has a small number?

A: Hard to see without clicking on every single state

Visualization 2:

Q: Find the occupation with the highest mean income in Oregon in 2020

A: Management Occupations

Q:If you are living in Texas and working in the Educational Instruction and Library field, how much would you expect to have earned in 2017?

A:\$51520

Visualization 3 :

Q:Which state or states has the most number of people employed in 2016?

A:Not a single state, hard to tell between Texas and California

Q: Do you think some states are doing better at getting their people employed than others?

A: Not necessarily as its not based on statewide population

Q: In the state that you are living in, which occupation's mean income has been increasing over time?

A: Almost all of them are increasing

General Feedback: Treemap is not familiar to people without a good data background so not many people are familiar with how to use it.

Participant B

Visualization 1

Q: Name 3 major categories.

A: Food Prep and Servicing Related, Office and Administrative Support, Sales and Related

Q: How many people in Colorado are employed in Construction & Extraction Occupations over the 5 years?

A:130,190

Q: What state has a large number employed in the "Computer and Mathematical Occupations" category and what state has a small number?

A: Hard to see without clicking on every single state

Visualization 2:

Q: Find the occupation with the highest mean income in Oregon in 2020

A: Management Occupations

Q:If you are living in Texas and working in the Educational Instruction and Library field, how much would you expect to have earned in 2017?

A:\$51520

Visualization 3 :

Q:Which state or states has the most number of people employed in 2016?

A:Texas and California

Q: Do you think some states are doing better at getting their people employed than others?

A: Not necessarily as its not based on statewide population

Q: In the state that you are living in, which occupation's mean income has been increasing over time?

A: Computer and Mathematics Occupations

Participant C

Visualization 1

Q: Name 3 major categories.

A: Food Prep and Servicing Related, Office and Administrative Support, Sales and Related

Q: How many people in Colorado are employed in Construction & Extraction Occupations over the 5 years?

A:130,190

Q: What state has a large number employed in the "Computer and Mathematical Occupations" category and what state has a small number?

A: Hard to see without clicking on every single state

Visualization 2:

Q: Find the occupation with the highest mean income in Oregon in 2020

A: Management Occupations

Q:If you are living in Texas and working in the Educational Instruction and Library field, how much would you expect to have earned in 2017?

A:\$51520

Visualization 3 :

Q:Which state or states has the most number of people employed in 2016?

A:Texas and California

Q: Do you think some states are doing better at getting their people employed than others?

A: (The user overthought about this question and said we cannot extrapolate from the data too much)

Q: In the state that you are living in, which occupation's mean income has been increasing over time?

A: Computer and Mathematics Occupations

General Feedback:

Text on treemap is small. Should highlight top 5 on bar chart, map chart get rid of the scroll.