

UNIVERSITY OF COLORADO BOULDER

Extra Credit Assignment

INFO 4602

Design and Effectiveness of Visualizations

Xinyi Zhang

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1 Part I: Designing an Experiment

The questions below describe the projected experiment which aims to test the effectiveness of design in a visualization.

1. Research Question

The experiment is aimed to find the importance of choosing a proper design in visualization.

2. Hypotheses

Visualization with a proper choice would be more effective. As the information in a single graph is limited, the design allows the visualization to provides enough information while keeps the graph looking nice. Since the data I choose to analysis is the earthquake in Italy, I believe geographic graph would be the best choice.

3. Independent Variables

More the experiment, I will use the same set of data to create three visualizations. The information in each graph would remain the same, and the axis would also be the same to make sure both graphs in each set are fair enough.

4. Dependent Variables/Measures

For each set of visualizations, I would ask the people to find information according to the graphs I provided. Then, I will ask them which graph in each set is easier for them to understand and find the proper solutions.

5. Control Variables

A detailed legend will be given to help participants compare those graphs.

6. Description of the Stimuli

The data I will use is the *Italy Earthquakes From 2016-08-24 to 2016-11-30*¹.

¹<https://canvas.colorado.edu/courses/16157/files/folder/Datasets?preview=815543>

7. Experimental Procedure

I will make the conclusion based on the response of questionnaire. I will count the number of participant's choices and calculate according to percentage.

8. Planned Analysis

I will make final conclusion based on response of questionnaire. I will count the number of participant's choices and calculate according to percentage.

2 Part II: Building the Apparatus

For the experiment, I designed a questionnaire <https://goo.gl/forms/ET99RFDwBKo8titf1> to support my hypotheses. The survey contains a scatter plot, a geographic graph, and a color map. Those questions I prompted includes:

1. In your opinion, which graph looks best in general?
2. Combining the information in the legend, which graph is more effective in telling information?
3. In your opinion, which graph is the best one illustrating the overall earthquake data?

3 Part III: Conducting the Study

Use your apparatus to collect data from at least 5 different people. In your document, provide a visualization of the resulting data that helps answer your research question and briefly describe what you find.

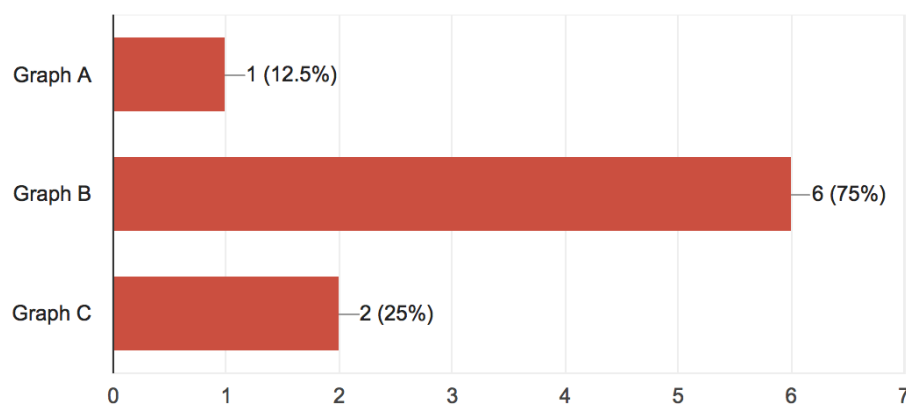


Figure 1: In your opinion, which graph looks best in general?

Evidence in the bar chart here shows the best appearance voted by the survey takers is Graph B, geographic visualization, with a approval rate of 75 percent. Surprisingly, there is one person think the scatter plot looks best.

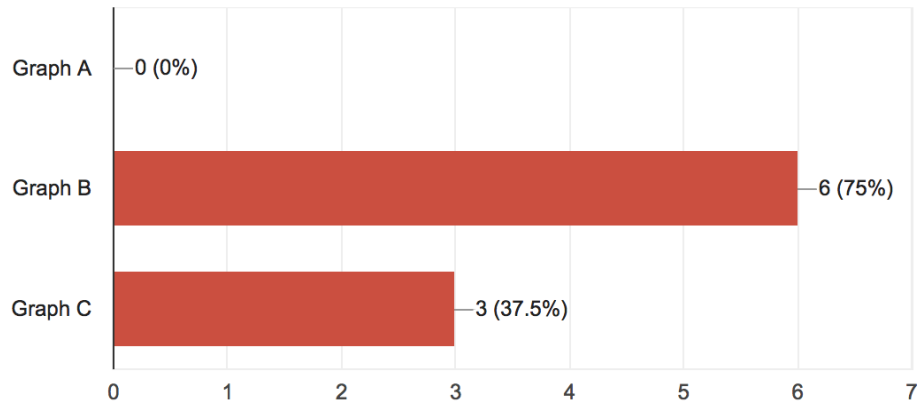


Figure 2: Combining the information in the legend, which graph is more effective in telling information?

As shown in the bar chart in Figure 2, the majority of people answering the survey preferred geographic visualization to get information in a more effective way.

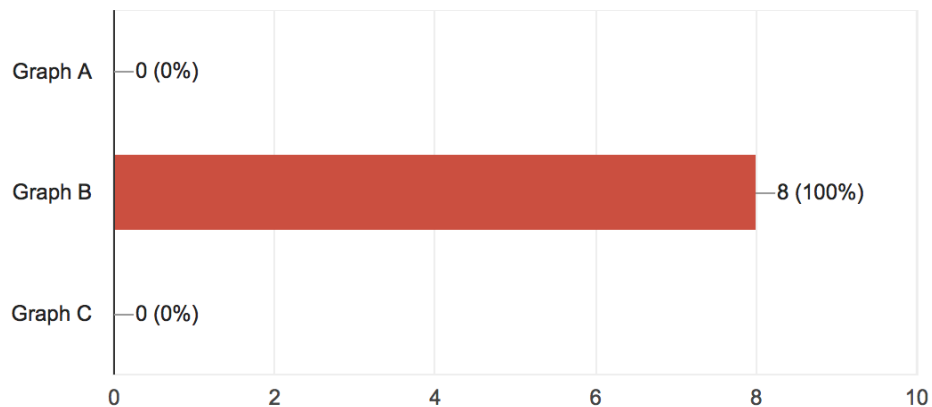


Figure 3: In your opinion, which graph is the best one illustrating the overall earthquake data?

For the Figure 3, it is obvious that geographic visualization is best one illustrating the overall earthquake data with no doubt.

4 Part IV: Inferential Analysis

My questionnaire gets eight response in total. From the result of the survey, we could find most people agree that the geographic graph looks best and can give information efficiently. Even though all these three visualizations are constructed based on the same data, we could still observe the significant differences between each design. The geographic graph not only illustrates the features of the earthquake through size and color but also visualizes the geography information accurately. The result of the experiment does match the hypotheses I made before.

We could not conclude a standard pattern of choosing a proper design based on this single data set; however, through the comparison, we could find that the design of the visualization is a critical factor for the viewer to understand a graph. A proper choice of design could help the visualization to be more effective and informative.