Project Assignment 4: Written Report [for undergraduate students]

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1. Design Justification [1 page max]

Choice of Visual Encodings

Our project focuses on sports equipment in Victoria. The dataset has 11 data dimensions and 196 data cases. We applied the D3.js and Vega-Lite in our data visualization through the Observable. Based on our data questions, we decided to choose subsets of data to visualize. First of all, we are interested in the distribution of sports equipment in Victoria. We designed a map to show the distribution in different areas and added markers to the map. It is clear to observe the quantity through zooming in and out the map. Secondly, we designed a line graph to solve our second data question about the number of new equipment installation changes in 37 years. To show more details in the line graph, we added the index function in the graph by clicking the cursor, which can show the number and date of the installation to make the information understandable. Our third data question is about the number of specific types of equipment changes over years. We designed bar graphs with multiple radio buttons to show different types of equipment and their installation amount for each year by clicking the radio button. We designed it because it is easy to observe the changes in the installation amount by the length. We also designed a pie chart to show more specific types of equipment and their amount. We encoded each type of equipment by colour, and added index functions to show the name and number by clicking the colour. At the first design of the third question, we designed a bar chart with ascending order of the amount of the equipment (See Appendix). However, there are 11 types of equipment. The width of the bar graph is kind of large and hard to compare the values. Thus, we changed to a pie chart with different colours to represent it would be clear to observe.

Layout & Interaction Design & Style

We designed a dashboard to combine the four graphs together and apply the same font family and size on each graph and title to make the dashboard clear and easy to observe. The four graphs take an average distribution on and dashboard from an overall visualization to a specific visualization. The graphs at the left part show the overall visualization of the installation number changes during the 37 years and the equipment distribution in Victoria. The graphs at the right part show the details about the installation number of different types of equipment. For the interaction design, we applied and designed a button for “Full Screen” to make the dashboard full screen. Also, zooming the map, index information by the cursor, and radio buttons are the interaction design in this visualization to make readers to easily understand the information from each graph. We hope the style of our data visualization is clear, readable, and informative. This is also the reason why we applied a dashboard to combine the four graphs because a dashboard can contain as much as possible information that we intend to show to readers. The four graphs are average distributed in the dashboard to make a clear and easy-to-read style. The colour of the pie chart was applied desaturated bright and dark colours to make a friendly and comfortable vision.

2. Reflection on Learning [1 page max]

During the learning of this semester, I have enjoyed learning about information visualization and I have spent a wonderful time in the class. First of all, I have learned a lot from the in-class activities and enjoy every discussion with my group members. They inspired me with ideas on designing the visualization, such as the star plot of one of the activities about tennis data visualization which provides me the idea of applying star plot for more than three data dimensions. Secondly, the visualization project during this class brings me the opportunity of working as a team. We shared ideas with each other to expand the design of the visualization. We decided to use D3.js on Observable as the implementation of data visualization. We figured out it together by self-study even though we were both new to using D3 and Observable. We also learned Vega-Lite and used it in one of the graphs in our data visualization. Moreover, the interim presentation also practiced my public speaking skills and provided good thoughts from the other team's presentations. Even though the discussion of the final presentation changed to the forum format, I still learned a lot from the reviews from my classmates. Their review and feedback have inspired me that some problems we should consider in our video report. After watching their video report, I was very impressed by their works and got good ideas. My favorite assignment is personal data visualization. This project goes through a complete data visualization from data collection to implementation, including data analysis, fast prototyping, and data presentation. We are required to use physical data visualization rather than use technical tools, which gives me thinking of comparison with two methods. Physical data visualization provides more creative ideas and is good to do fast prototyping. The drawbacks include the accuracy of each element and the limitation of materials. The final result of the assignment also makes me more understanding of myself. In addition, the edition of the video presentation also let me learn the edition skills. The most important thing I have learned in this course is that there is no such perfect or the best data visualization, and every data visualization needs to have rationales of the design and be honest with the data. It gives me a sense about data visualization is not only the simple way to convert the data to a graph, it is the way to look at the world from the perspective of data. We can get information from the visualization and make decisions from it. In addition, as the last course for my undergraduate student period, this course also inspired me in my future career. One of my dream jobs is user experience designer. From this course, I have a deeper understanding of human and computer science interaction includes the critiques and cognitive thinking of the interaction.

Appendix