Links to Tableau Workbook

https://public.tableau.com/views/storyfinal/ExploringHCAHPSdata?:embed=y&:display_count=yes

Summary

The goal of this workbook is to create a dashboard (which may be one or more visualizations or even multiple pages/tabs) that will allow a user to quickly specify and then compare a set of hospitals using the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) data. The HCAHPS data contains surveys filled by patients to evaluate the service levels of hospitals across the nation. The survey contains 10 questions that evaluate hospital in different aspects, and the data can help patients select proper hospitals in the future. You can read about HCAHPS here: http://www.hcahpsonline.org/home.aspx

Design

Initial Design Decisions

Based on the purpose of the visualization, the graphs should be able to compare the hospital HCAHPS scores in different levels, including the state, county, city, zip codes, specific hospitals and HCAHPS questions. Thus, several types of graphs would be used, such as bar chart and heatmap. Colors and texts should be included in some of the graphs to help user better understand the meaning of the data.

Revisions Based on Feedbacks

Based on the purpose of the visualization, the graphs should be able to compare the hospital HCAHPS scores in different levels, including the state, county, city, zip codes, specific hospitals and HCAHPS questions. Thus, several types of graphs would be used, such as bar chart and heatmap. Colors and texts should be included in some of the graphs to help user better understand the meaning of the data.

Filters

Comprehensive filter sets were given, which let users be able to quickly and easily specify the set of hospitals to compare.

To be specific, all hospitals in a given state, county, or zip code can be compared. And the filters support “faceted search” which means that if a user selects Texas, then the filters for county and zip code should show only choices that are in Texas. Likewise, if a user selects a county, only zip codes in that county should be available to select for further focusing/filtering. All these filters were set as “multiple values (dropdown)”, so that people can easily filter the data by clicking and choose what they want from the dropdown lists. “Text search” function was also included in the filters so that people can easily search their targets from so many values. Also, filters can restrict the view to show one or more (including all) of the questions. For instance, a user may want to look only at

the question regarding patients who said they would definitely recommend the hospital. Or a patient may want to find hospitals based only on doctor and nurse communication.

Colors Coding

Colors. To help guide the user's assessment of individual scores for a given hospital and question, the color codes were used to distinguish better and worse performers.

For the bar chart in dashboard, set a target score which is 80, if the score exceeds 80, the color of the bar will be red. Otherwise, it will be blue. 80 is a quite fair score to differentiate good and not good performance. This contrast color coding plus the length of the bars can easily tell reader who is better who is worse. Exact scores were also shown after the bars.

For the heatmap in the dashboard, the red-blue diverging palette was used. Scores above 80 will be red and under 80 will be blue. The change of saturation will easily show the patterns of the score. Basically, similar scores have similar colors.

Usability

The visualizations are easy to interpret, all graphs have titles telling the themes of the graphs. And all elements in the graphs have legend, which let users easily understand what each visual element means.

The dashboard is easy to learn and easy to use. I put the instruction text box at the top of the dashboard, where the users will see it first. In the text box, I explained the instructions for using this dashboard, including how to use the filters, what does the score mean and how to tell which hospital performs better. A bar chart was arranged under the text box, which gives an overall rank of the hospitals and show the national average level. This gives an overview first. And the heatmap under the bar chart shows all hospitals' scores for all questions. Users can click the specific hospitals, questions, scores or hovering over them to see the detailed information, which satisfy the "details on demand" principle. All the filter mentioned previously can easily fulfill the rule of "zoom and filter".

Feedback:

From one reviewer

The overall graphs were good. Except that the bar chart has no clear headlines & legend. If there is some explanation like a bold headline then these charts would make sense.

For the heatmap of the chart is a good idea. My suggestion is that except for the color, detailed scores should be put into each cell, since the color palette cannot distinguish between very close scores. And the diverging color palette is better than the single-color palette.

For the heatmap of the chart is a good idea. My suggestion is that except for the color, detailed scores should be put into each cell, since the color palette cannot distinguish

between very close scores. And the diverging color palette is better than the single-color palette.

Except for comparing the average scores for all questions. The comparison between single questions in different regions should be also displayed, I suggest that add a bar graph to show these comparisons.

Post-feedback Design

Following the feedback from the reviewer, I made the following changes:

I added the titles and legends to all graphs.

I added the clearly labeled axis titles to all graphs.

I flipped the chart for comparing state average HCAHPS scores from vertical bar chart to horizontal bar chart.

I added a bar chart to show the comparisons between single questions in different regions.

I adjusted the colors in bar charts and the heatmap to better differentiate different scores. Text were also added.

Resources:

http://www.hcahpsonline.org/home.aspx
https://community.tableau.com/community/forums
https://stackoverflow.com/search?q=tableau