D210 Performance Assessment

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Section A

1. The data sets used in the dashboard have been included in the submissions for this assignment. The provided dataset is called “churn_clean.csv”. The additional dataset used is called “ACSST1Y2022.S2801-Data.csv”.

https://data.census.gov/table/ACSST1Y2022.S2801?t=Telephone,%20Computer,%20and%20Internet%20Access&g=010XX00US$0400000

2. To access the Tableau dashboard use the following steps. Please note that the file has been saved as a packaged workbook so the data sources do not need to be imported separately.

1. Open Tableau Desktop.
2. Click “File” on the top ribbon of the program
3. Click “Open”
4. Navigate to the location of the file. The file name is “D210_Performance_Assessment.twbx”
5. Select the file and click “Open”
6. Select the “Dashboard” tab at the bottom to view the view the dashboard

Alternatively, the dashboard can be accessed using the tableau public link below.

https://public.tableau.com/app/profile/darian.gurrola4093/viz/D210_Performance_Assessment/Dashboard1?publish=yes

3.

The dashboard includes four visualizations. On the top left, there is a scatterplot which compares the percent of the households with cable, fiber optic, or DSL internet with the average tenure in each state. Each point on the scatterplot represents a US state. By hovering over a point, the viewer can compare the percent of households with cable, fiber optic, or DSL internet to the average tenure in that state.

On the top right, there is a bar chart that compares the percentage of households in the US with broadband internet to the percentage of customer households with broadband internet. Using the dropdown menu on the right pane, the user can select an income bracket and visualize the percentage of households with broadband internet in within the bracket. There are three income brackets to select from, “Household Income Less than $20,000”, “Household Income Between $20,000 and $74,999”, and “Household Income $75,000 or more”. Selecting one of these options will change the bar on the left, while the bar on the right will remain the same.

On the bottom left, there is a scatterplot which compares the percent of the households with tablets to the average amount of internet bandwidth used in each state. Each point on the scatterplot represents a US state. By hovering over a point, the viewer can compare the percent of households with at least one tablet to the amount of bandwidth used (in gigabytes).

On the bottom right, there is a heatmap of the United States. This map indicates the percentage of the telecommunications market that the company owns. States with a blue coloring have a relatively high market share, while state with orange coloring have a relatively low market share. Additionally, there is a control on the right which allows the user to filter the states on the map by the number of households. For example, an input of 10 would display the top 10 states with the largest number of households.

Lastly, there are two key performance indicators on the right pane. The first indicator, is the overall percentage of internet market share in the US. This was calculated as the number of customer households with Internet Service divided by the total number of households in the country, expressed as a percentage. The second metric is the overall percentage of the phone service market. This was calculated as the number of customers with phone service divided by the total number of households with cellular data, expressed as a percentage. Both key performance indicators are listed with a font size of 20 and a font color of blue.

Section B

Please click the link below to access the Panopto presentation:

https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=5f5c1a09-160d-4b55-b254-b14300f6c8b0

Section C

1.

For this assignment, I integrated data from the American Community Survey on the types of computers and internet subscriptions used by households in each US state. This data contains the totals and percentage of households that use various devices and services. The data is also segmented by income brackets. This aligns with the needs of the telecommunications company by allowing us to compare the company's performance relative to the larger telecom market. It also allows us to segment possible customers and compare them to the existing customer base.

2.

The external dataset contains variables such as "Broadband: Cable, Fiber Optic, or DSL (Percent)", "Household Income Less than $20,000: Without Internet Subscription", and "Household Income $75,000 or more: With a broadband Internet Subscription". These variables are useful because they allow company leadership to understand what types of services the general population is using. The variables also provide insight into how income might affect consumption habits. This understanding of the wider market could help the company continue to grow and attract new customers.

3.

One of the visualizations I created was a market share heatmap of the United States. By hovering over a particular state, the user can see the market share in that state. The market share was calculated as the number of customers with fiber optic or DSL internet divided by the number of households with fiber optic or DSL, expressed as a percentage. This heatmap allows executive leaders to see where the company is struggling the most to gain a foothold in the telecom market. This might allow them to increase the company's presence there by launching marketing initiatives.

Additionally, I created a bar chart that compares the percentage of broadband subscriptions in the selected income bracket to the percentage of telecom customers with broadband subscriptions. This visualization can give executives a better understanding of the how income influences subscriptions rates. By viewing the selections in the dropdown selector, we can see that households with greater income have higher subscription rates.

4.

I used two interactive controls for this dashboard. The first control I used was a dropdown select for the bar chart in the top right. The dropdown selector allows the user to select an income bracket and view the percentage of households with broadband subscriptions in that bracket. The user can then compare the selected income bracket's subscription percentage to the customer average.

The second control I used was for the map visualization. I created a parameter called "Top Number of States by Households". It allows to select the top states based on the number of households. For example, an input of 10 would display the top 10 states with the largest number of households. The user can input any value between 1 and 52.

5.

I designed my dashboard to be colorblind accessible by using an orange-blue palette for my market share map. This visualization originally had different shades of blue, but I changed this to make it easier to identify differences in the data. Blue and orange are considered a colorblind-friendly palette (Shaffer, 2016).

6. Explain how **two** data representations in your presentation support the story you wanted to tell.

The top left scatterplot supported the story I wanted to tell because it allowed us to look at one of the most important factors in retention, which is customer tenure. From the scatterplot we could see that in states with high rates of fiber optic and dsl subscriptions, customer tenure tends to be higher. This knowledge is very useful for the executive leaders because it gives them an idea of what states will likely have loyal customers into the future if we can crack the market there.

The heatmap helped support the story I wanted to tell because it gives the executives an understanding of where XYZ telecom is most successful. The telecommunications market as a whole is extremely saturated with hundreds of competitors vying for a greater share of the market. Despite XYZ

telecom's young age, they are still able to build a presence in certain areas of the US that are worth investing in further.

7.

I used audience analysis to tailor my message to the focus of executive leaders. I made sure that the message I was trying to send reflected their desire to improve customer retention, target new demographics, and see what regions of the country XYZ is most successful in.

8.

I designed the presentation for universal access by keeping the visualizations relatively simple and easy to understand. I used basic scatterplots, a heatmap, and a bar chart which only require a few variables to work. By keeping the visualizations simple, the viewer can better understand the relationship between the two datasets.

9.

Two effective elements of effective storytelling that I used were defining the characters of the story and setting the scene. In my story, the characters are established as American households and the telecom company. To set the scene, I spoke about the importance of internet access in daily life and created a background for the company. I also noted that the company's goal is to become a key player in the telecommunications industry. The two storytelling elements I used are recommended by Harvard Business School.

Section D.

Shaffer, J. (2016, April 20). 5 Tips on Designing Colorblind-Friendly Visualizations. *Tableau*. https://www.tableau.com/blog/examining-data-viz-rules-dont-use-red-green-together

Cote, C. (2021, November 23). DATA STORYTELLING: HOW TO EFFECTIVELY TELL A STORY WITH DATA. *Harvard Business School Online*. https://online.hbs.edu/blog/post/data-storytelling

U.S. Census Bureau. (2022). Types of Computers and Internet Subscriptions. *American Community Survey, ACS 1-Year Estimates Subject Tables, Table S2801*. Retrieved March 13, 2024, from https://data.census.gov/table/ACSST1Y2022.S2801?t=Telephone, Computer, and Internet Access&g=010XX00US$0400000.