D210 Data Dashboard and Storytelling

Western Governs University

Table of Contents

Part 1: Interactive Data Dashboard

A. Interactive Data Dashboard

The dashboard can be viewed online at this link:
https://public.tableau.com/shared/BN3CYK92P?:display_count=n&:origin=viz_share_link

A1. Data Sets

Internal:

```
file_path = "/Users/igmark/Desktop/WGU Data Files/D210_churn_clean.csv"
df = pd.read_csv(file_path)
```

External:

```
file_path = "/Users/igmark/Desktop/WGU Data Files/Telcom_churn.csv"
df = pd.read_csv(file_path)
```

(*Telco Customer Churn*, n.d.)

A2. Installation Instructions

- The dashboard can be viewed online at this link:

https://public.tableau.com/shared/36QJBDYMB?:display_count=n&:origin=viz_share_link

OR

- The dashboard can also be viewed by downloading Tableau Public. The following steps can be followed to download and install Tableau Public:
    1. Go to Tableau Public at: https://www.tableau.com/products/public/download
    2. Click on the "Download Tableau Public" button.
    3. Fill out the form that pops up with name, email address, and organization (if applicable). Then click "Download the App" button.
    4. Select the version of Tableau Public that is compatible with your operating system (Windows or Mac)
    5. Once the download is complete, double-click on the Tableau Public installer file to start the installation process.
    6. Follow the instructions provided by the installer to complete the installation.
    7. Once the installation is complete, launch Tableau Public
    8. On the start page, click on the "open workbook" button.
    9. A dialog box will appear prompting you to select the workbook file you want to open. Navigate to the folder where the file is saved.
    10. Select the file D210_FinalDashboard.twbx and click on the "open" button.

11. Tableau will now open the workbook, and you should see the file D210_FinalDashboard dashboard displayed on the screen.

A3. Navigation Instructions

Introduction

Once the dashboard is loaded the story can be viewed. There is an introduction of the presentation once is the first tab in the story. Use the top bar row of tabs to navigate between dashboards within the story.

Internal Findings

The next tab displays the visual findings of the internal churn data set. There are four graphs. The first graph is "Churn by State". This graph displays the telecom churn rate by state. Blue indicates the customer did churn and orange indicates the customer did churn. The next graph ('Age and Tenure by State') is the average age of tenure of customers who did not churn by state. The third graph titled "Income & Monthly Charge Relative to Churn" shows the income and monthly charges relative to the churn rate in each state. The last chart shows a comparison of churn factors including gender, tech support, and techie by age.

There are several ways to filter by the state on this dashboard. If you click on any one state on the "Churn by State" graph it will filter the other graphs to only show that state's information as well. For example, if you click NY and click on the blue "no" churned bar column then the average age by tenure on the graph "Age Tenure by State" will then only show the average age for NY. On the "Income & Monthly Charge Relative to Churn" map it will only show the state of NY. On the "Churn Factors," the information will filter by state if available. The average age and the average number of children can also be filtered on the "Age and Tenure by State" graph by using the sliders. There is an income filter slider that can be used on the map "Income & Monthly Charge Relative to Churn".

In the menu entitled "State," you can hover over the state of interest on the map, and that state's average income, average monthly charges, and number of churn for that state will be listed.

Internal vs External Findings

This dashboard includes churn findings from the internal and external data sets. The churn data includes KPI's for each data set and then used KPI from the combined data sets. The last table on the left side of the dashboard titled "Combined Churn" displays Monthly charge and tenure data in relation to churn (combined data sets). The right side of the dashboard includes scatter plots for the churn data. The customer data who churned and did not churn can be isolated on this dashboard. To do this click on any of the numbers in the KPI tables to give all churned ('yes') or all non-churned ('no') data. On the graph "Total Charges vs Monthly Charged in relation to Churn (External)" there is a monthly charge slider that can filter the charges by.

Gender

The next dashboard displays data regarding gender and churned data. The first bar chart displays the count of gender in the internal churn data set separated by gender type. The next bar chart displays this for the external gender data. The bar chart at the bottom of the dashboard includes combined churn values with a count by gender for the internal and external data sets. The customer data who churned and did not churn can be isolated on this dashboard. To do this click on one of the bars in the "Gender Comparison" graph to filter the dashboard for all churned ('yes') or all non-churned ('no') data. The average monthly charges are also visible on each bar chart. This can be seen by hovering over each bar.

Conclusion

The last dashboard displays the conclusions found from the data sets.

Part 2: Storytelling with Data

B. Panopto Storytelling with Data

Link to panopto presentation:
https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=0013440e-d5d4-4b73-8c8c-aff40168d854

Part 3: Reflection Paper

C1. Dashboard Alignment

Churn refers to the percentage of customers who discontinue using the service during a certain time period. For telecommunication companies churn rates can indicate how well the company is retaining customers and where they need to take steps to improve services or customer experience. By analyzing churn data from two different telecom services and identifying why customers are leaving, telecommunication data from multiple companies can be used to make improvements to the series and to take actions to reduce churn and increase tenure.

C2. Additional Data Set Insights

Data can be analyzed in relation to factors such as gender, income, monthly charges, location, age, children, tenure, techie, and tech support. Once patterns and trends have been identified stakeholders can use the information to improve customer retention efforts, target market efforts, and optimize pricing strategies.

C3. Decision-Making Support

When examining the Internal vs External dashboard there are two scatterplots entitled "Total Charges vs Monthly Chares" and "Bandwidth vs Tenure". Both of these scatter plots indicate a positive slope. This means that there is a positive relationship between the two variables plotted. When looking at the plot from the internal chart. The total charges and average monthly charges have a positive relationship. It would be important for executive leaders to examine why customers are leaving a service provider. By examining the relationship between total charges and churn, leaders can gain insights into whether customers who spend more money are more likely to churn. Leaders can gain insights into whether customers who have higher monthly charges are more likely to churn. By examining total charges vs monthly charges one can gain information to see if those customers who are spending more money each month are also using more services or having higher-end plans. This gives leaders marketing direction. There was also a positive relationship between bandwidth and tenure. This relationship can provide insight into whether customers who have higher bandwidth usage then to stay with the company for a longer period. Understanding this relationship will give leaders ability to tailor the company's offering to customers and ensure they are meeting the needs of the target market.

C4. Interactive Controls

When looking at the internal findings dashboard there are several filters that can be used to adjust the data on two of the graphs. Looking at the "Age and Tenure by State" graph. The filter for average age and average children can be adjusted so that data on the graph can only be seen for the desired data. One can then adjust the graph to only see the desired average age of tenure and average children per state. Also, when looking at the "Income & Monthly Charge" map the data on the map can be filtered by income. When using this filter, the state within the desired range will appear.

C5. Colorblindness

To make sure the dashboard is accessible for individuals with colorblindness the color-blind palate was used. (*5 Tips on Designing Colour-Blind-Friendly Visualizations*, n.d.)The colors chosen were used to highlight key information and draw attention to important data points. Colors were also used consistently throughout the dashboard for an easy-to-read design. A neutral background (white) was used to make the data stand out and reduce visual clutter.

C6. Data Representations

The map "Income & Monthly Charge Relative to Churn" indicates details regarding income and monthly charges relative to chur by looking at regional variations in customer behaviors and preferences. This data can reveal differences in income levels across different states to drive target marketing and determine the pricing of services and sensitivity.

The graph "Age and Tenure by State" can provide insights into regional variations in customer behavior and preferences regarding age, tenure, and churn rates by region. The data can provide insights into customer satisfaction levels in different states regarding customer loyalty and demographics. For example, younger customers may have a higher churn rate due to their tendency to switch providers more frequently while older customers may be more loyal.

C7. Audience Analysis

The data visualizations were formed and completed by understanding the audience and the audience's needs in reducing the churn of the telecom customers. The primary audience is executive leaders, managers, and department heads of the telecom organization. The audience's communication style was considered, and the data was formed in a way to engage and displays the essential points of the data. The data visualizations were kept simple and to the point (*Best Practices for Telling Great Stories*, n.d.). Data from two different telecom companies was used to understand market trends and establish industry benchmarks.

C8. Universal Access

Universal access to the presentation was provided by making the Tableau presentation easily assessable and easily readable. Simple and clear language was used to make the presentation easy to understand by all. Colors were chosen to provide sufficient contrast for increased attention. A clear front size and style were chosen for clear and easy-to-read. Appropriate data visualization was used to effectively communicate the message of churn factors. Labels were used on the charts/graphs to explain what the data represents and provide more context.

C9. Effective Storytelling

Tableau allows for data visualization through the use of interactive features. I utilized features such as filters to present the data for effective storytelling. For example, I used an interactive filter, slider, with age so the data could be viewed based on a specific age. Another element of effective storytelling used to engage the audience was choosing the right chart type and keeping it simple. I used scatter plots to show the most effective relationship between variables. I also used a map for increased visualization of data and bar graphs for easy comparison of the data.

D. Sources

Telco Customer Churn. (n.d.). www.kaggle.com.

https://www.kaggle.com/datasets/blastchar/telco-customer-churn

5 tips on designing colour-blind-friendly visualizations. (n.d.). Tableau. https://www.tableau.com/en-gb/blog/examining-data-viz-rules-dont-use-red-green-together

Best Practices for Telling Great Stories. (n.d.). Help.tableau.com. https://help.tableau.com/current/pro/desktop/en-us/story_best_practices.htm