Western Governors University

School of Technology, College of IT

Master of Science, Data Analytics

D210 Representation and Reporting

Performance Assessment

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A2. Installation Instructions:

To use or install this dashboard, simply navigate to the following "Tableau public" link. Tableau public allows users to view and interact with a dashboard and its elements.

https://public.tableau.com/views/Dashboard_D210_v2/ExecutiveDashboard?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

A3: Navigation Instructions:

General instructions:

To interact with the dashboard, use the various charts and filters to modify what is displayed on the dashboard. Click on elements within the charts, such as states on the map or segments in the donut chart, to filter the data accordingly. The filter panel at the top right is another way to filter the data just as if you were to click on individual elements.

Below are the specific instructions on how to interact with each of the charts found in the dashboard.

Churn by Region:

Hover over each donut to see the churn and retention rates for the individual regions. If you click on one of the donut charts, the dashboard will update and only include information pertaining to the selected region. Selecting multiple regions can be done in two ways. First, click on a region and then hold down the CTRL key while selecting another region. The alternate way to do this is to use the 'Region' drop-down menu in the dashboard's top right. By checking the box next to a desired region, the dashboard will update to include the information that pertains to the selected regions.

Churn by Age:

Each bar in the churn by age chart represents 5-year increments. If you hover your mouse pointer over a bar, you will see the number of customers in that specific age group. Likewise, clicking on the bar, or 'CTRL + clicking' on multiple bars, will filter the dashboard's data to only include what is relevant to the selected age bars.

Churn by Gender:

By hovering over a bar in the churn by gender chart, you can see the churn rate, the number of customers, and the percentage of the total customers represented by each gender. Just like in the other charts, clicking on a gender or CTRL-clicking on multiple genders will filter the dashboard to only include information that pertains to the selected genders.

Churn by Income:

Each bar in the churn by income chart represents $20,000 increments. By hovering over any of the bars in the chart, the churn rate, number of customers, and the percentage of

customers in the income group all become visible. Once again, by clicking on a bar or CTRL-clicking on multiple bars, the user can filter the data in the dashboard to include only the data relevant to the selected income groups.

Churn by State:

The churn-by-state chart is where most of the information is displayed. By hovering over a state, the user can see various statistics. These include the average tenure, churn rate, market penetration, population, and population change in the past year, as well as the total number of current customers alongside the number of churned customers. These statistics are accompanied by a description that helps explain what the statistics mean if this dashboard user is not technically savvy.

Like the other charts, clicking on or CTRL-clicking multiple states will filter the dashboard data to include only the relevant information. However, in the top right of the dashboard, the user can also select individual or multiple states and regions rather than clicking on each state or region on the map chart.

C1. Dashboard purpose and function

The overall goal of the three executive leaders mentioned in the data dictionary centers around understanding more about the customers and using that information to drive retention and recruitment efforts. This dashboard allows executives to use filters to create a customer profile that can be used to incentivize recruitment and reward loyal customers. I will explain these in more detail in section C3.

C2. Additional data insights

The additional dataset I incorporated provides the population of each state, which plays a crucial role in understanding the market dynamics. I calculated the total market penetration for each state and region by integrating this data. In this context, market penetration refers to the percentage of a state's population actively using the company's services. This is determined by dividing the total number of customers in each state by that state's total population.

For example, if a state has 1,000 customers and a population of 10,000, the market penetration would be 10%. This metric offers valuable insight into how effectively the company reaches potential customers within different regions. Analyzing the market penetration rates makes it easier to identify areas where the company has a strong customer presence or weak penetration. This information can help guide strategic decisions, such as where to focus marketing efforts or allocate resources.

C3. Data representations for decision making

The "Churn by State" map provides an executive-friendly overview of each state's churn rate, total customers, tenure, population, and market penetration. This interactive map allows leaders to hover over specific states for detailed insights. For instance, in Maryland, where the population exceeds 6 million, only 85 residents are customers. We can also see that the population has grown by 26.4% in the last year, while in the last month, the company lost 30.89% of its customers in Maryland. However, the customers who are not churning have an average customer tenure of just over two and a half years. This presents an opportunity for referral programs that could increase market penetration by encouraging happy customers to recruit new users.

C4. Interactive controls

Another chart I have included is a donut chart displaying the churn and retention rates of each of the four regions identified by the United States Census Bureau (U.S. Census Bureau, n.d.). Executives can use this chart to see the churn rate and retention rate for entire regions. In addition, the chart can be used as a filter. For example, if executives select the 'South' region, they will see a churn rate of 26.97%.

Using this information along with other filters, such as 'Churn by Age,' reveals even deeper insights. For example, the churn rate for non-binary customers aged 33-37 in the Northeast increases to 50%. This specific profile allows executives to focus on a customer group that represents a significant risk for churn, enabling them to develop targeted strategies for retention. This is an example of how using multiple charts together can build a detailed profile of a specific customer group and inform actionable decisions.

In addition to the ability to click on any state, region, or demographic to filter the data, I have included a multiple-selection dropdown menu for regions and states. Executives can use this to look at more than one region or state at a time, offering more flexibility in how they interact with the data.

C5. Colorblind Accessibility

Tableau offers a color palette called 'Color Blind' that consists of shades of blue, grey, orange, and brown because red-green color blindness is the most common (Cleveland Clinic, 2023). I used this palette wherever available to ensure accessibility for color-blind users. In cases where the palette wasn't available, I used similar colors to maintain visual consistency while sticking to the data viz rule mentioned by Jeffery Shaffer in the tableau blog: examining data viz rules, "Don't use red and green together" (Shaffer, 2016). This ensures that most users can interpret the dashboard effectively regardless of visual limitations.

C6. Data representations that support the story

When I combined the population data with the churn data, I identified two important insights using different data representations. First, I created a 'market penetration' field mentioned earlier, visualized in the 'Churn by State' map and displayed as a KPI. Executives can hover over each state to see the percentage of the population that are current customers. This reveals that the customer base in each state is remarkably small compared to the overall population.

The 'customer tenure' data is also displayed, showing how long customers tend to stay with the company. This data indicates that while the market penetration is low, those customers who do use the service are loyal, as evidenced by their long tenure. These two representations work together to tell a story: the company may not reach a large audience, but the customers it retains are highly satisfied. This presents an opportunity to leverage that loyalty by encouraging existing customers to refer new ones, which executives can explore further.

C7. Audience centered presentation

The data dictionary states that my audience includes both executive leaders and analysts. In my experience, executives typically focus on high-level insights, trends, and strategic implications without delving into technical details. At the same time, analysts prefer detailed data and technical explanations to support their analysis.

For executives, I focused on summarizing key insights with clear, non-technical language and intuitive visuals that highlight strategic metrics. For analysts, I included detailed tooltips, technical explanations, and options for deeper data exploration to cater to their analytical needs.

C8. Universal access

The data dictionary indicates that the audience consists of both executive leaders who may not have a technical background and a team of analysts who do have a technical background. To cater to both groups, I ensured that chart titles were descriptive, tooltips were informative, and the charts themselves were visually appealing and easy to understand. The tooltips include both technical data and summaries explaining the statistics in simpler terms, ensuring that executives can easily grasp the key insights.

Additionally, I used a consistent color scheme to represent churned and non-churned customers across different charts. I also included legends to clarify chart elements that may not be immediately intuitive. This ensures that the dashboard is accessible and useful to all audience members, regardless of their level of technical expertise.

C9. Engaging with storytelling

Rather than simply explaining how to use the dashboard, I engaged the audience by demonstrating its functionality through hands-on interaction with the charts and filters. By

creating a specific customer profile, I encouraged the audience to see how they could use the dashboard for their own decision-making. For example, when I identified the profile of females between 18-22 years old, living in the Midwest, with an income of $20,000 to $40,000, I discovered these individuals had a 39.47% churn rate. This personalized approach made the data more relatable and actionable, inviting the audience to explore similar insights and deepening their engagement.

External data source:

U.S. Census Bureau. (n.d.). NST-EST2023-POPCHG2020_2023 [CSV file]. https://www2.census.gov/programs-surveys/popest/datasets/2020-2023/state/totals/NST-EST2023-POPCHG2020_2023.csv

Other Sources:

Shaffer, J. (2016, April 20). Examining data viz rules: Don't use red and green together. Tableau. https://www.tableau.com/blog/examining-data-viz-rules-dont-use-red-green-together

Cleveland Clinic. (2023, March 17). Color blindness. https://my.clevelandclinic.org/health/diseases/11604-color-blindness