D210 Representation and Reporting Performance Assessment

Part 1: Interactive Tableau Dashboard

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* Data has been integrated from both chosen datasets to show information about states and median household income levels.
* The different data representations are included in the interactive dashboard in the panels Key Performance Indicators, Churn by Gender, Churn by Area Type, Monthly Revenue by State, and Income Difference between Census and Churn.
* The different interactive panels are Churn by Gender, Churn by Area Type, Monthly Revenue by State, and Income Difference between Census and Churn.
* The metrics and KPI’s are in the Key Performance Indicators panel on the right showing Churn Median Income and Census Median Income. In the bottom right of the dashboard the bar/line graph shows the difference between the census and churn information. Information from both datasets is shown in the popup windows when hovering over a state on the map or a bar in the lower right of the dashboard.

**A1:**

The data sets used for this interactive Tableau dashboard are listed and linked below. Both datasets will be uploaded with Performance Assessment submission.

Link to Tableau Dashboard:

[E\_Colwell\_D210\_PA\_Dashboard | Tableau Public](https://public.tableau.com/app/profile/eric4451/viz/E_Colwell_D210_PA_Dashboard/E_Colwell_Executive_Dashboard_D210_PA?publish=yes)

Provided Dataset:

Churn Data and Dictionary Files

<https://access.wgu.edu/ASP3/aap/content/f9tjr8djg83jd8c3sdf8.zip>

Additional Dataset:

SAIPE State and County Estimates for 2021

<https://www2.census.gov/programs-surveys/saipe/datasets/2021/2021-state-and-county/est21us.xls>

**A2:**

The user needs to have Tableau Public installed to create worksheets and the interactive dashboard. Also have the chosen datasets downloaded and saved locally on their computer. Open Tableau Public and click ‘File’, then ‘New’. In the new window click ‘Connect to Data’, then click ‘Text file’. Locate the churn\_clean.csv file and double click it to open.

**Churn by Area Type worksheet:**

At the bottom, click ‘Sheet 1’. Right click ‘Sheet 1’ and rename it to Churn by Area Type. The columns for the dataset are located on the left of the window. Click and drag ‘Churn’ to Rows and ‘churn\_clean.csv(Count) to Columns. Now drag ‘Area’ to Color and ‘churn\_clean.csv(Count) to Label in the Marks box. In the toolbar at the top click the dropdown where it shows ‘Standard’ and select ‘Entire View’. Click the Color box, click the dropdown for Select Color Palette, and select Colorblind, click Assign Palette, then OK.

**Monthly Revenue by State worksheet:**

At the bottom to the right of ‘Churn by Area Type’ click to open a new worksheet. Right click and rename it ‘Monthly Revenue by State’. Drag ‘Latitude (generated)’ to Rows and ‘Longitude (generated)’ to Columns. Drag ‘State’ to Detail in the Marks box. Drag ‘Monthly Charge’ to Color. Click on the color box, click edit colors, click the dropdown and select Orange-Blue-White Diverging for a colorblind friendly palette. Next drag ‘Monthly Charge’ to Label. Drag ‘Monthly Charge’ to Tooltip. Click the dropdown on the SUM(Monthly Charge) that has the same symbol as the Tooltip. In the dropdown select ‘Quick Table Calculation’, then select ‘Rank’. Drag ‘Monthly Charge’ to Tooltip again, click the dropdown on the SUM(Monthly Charge) that doesn’t have a triangle. Hover over ‘Measure’ and select Average. Drag ‘Population’ to Tooltip. Drag ‘Income’ to Tooltip, click the dropdown, hover over ‘Measure’ and select Median. Click on the Tooltip to edit/format. I used Tableau Bold with a size 12 font and solid black color, then centered the text. You can rearrange the order how you see fit.

**Churn by Gender worksheet:**

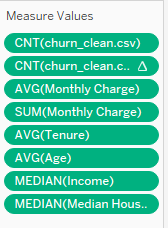
Open a new worksheet and rename it ‘Churn by Gender’. Drag ‘Churn’ to Rows, ‘Gender’ to Columns, and ‘churn\_clean.csv (Count) to Text in the Marks box. Change the view from ‘Standard’ to ‘Entire View’. Click the ‘Text’ box, click the … next to Text. In ‘Edit Label’, highlight <CNT(churn\_clean.csv)>, change the font to Tableau Bold, and the size to 16. Right click on ‘Yes’ in the main window, click Edit Alias, and change it to Churned. Right click on ‘No’ in the main window, click Edit Alias, and change to Loyal. Now right click ‘Churned’ and select Format. On the left of the screen, I changed the default font to Tableau Bold size 16 and the color to orange. Below the title, right click on ‘Churn’, select Format, then change the default font to Tableau Bold size 16 and the color to black. Now right click the heading ‘Female’, select Format, then change the default font to Tableau Bold size 16 and the color to black.

**Income Difference between Census and Churn worksheet:**

Open a new worksheet and rename it ‘Income Difference between Census and Churn’. This worksheet contains data from both datasets, so they must be connected. On the bottom left, click ‘Data Source’. At the top left next to ‘Connections’ click add, then locate and double click the other data source (my file is named est21us.csv). It will show up below files. Drag it to the right of ‘churn\_clean.csv’ in the open area and you will see a line connecting them. At the bottom, select the field ‘State’ for ‘churn\_clean.csv’. Select the field ‘F2’ for ‘est21us.csv’. F2 is the column that holds the State abbreviations. I had to open the second dataset in Excel to determine which columns were going to be needed. Next, go back the worksheet and the newly connected data is available. Right click on F2 and rename it to State Abb. Right click on F22 and rename it to Median Household Income. Drag ‘State Abb.’ to Columns, then drag ‘Median Household Income’ to Rows. On the left, scroll up and select ‘Income’ and drag to Rows. Make sure in goes to the right of ‘Median Household Income’. Click the dropdown for both fields in the Rows area, hover over measure and select ‘Median’. In the Marks box click on the MEDIAN(Median Household Income) tab. On the left under ‘Tables’, scroll down to ‘Measure Names’ and drag it to the Color box. A warning box will pop up. Select ‘Filter and then add’. Click ‘None’ then check the boxes for ‘Income’ and ‘Median Household Income’. Then ‘OK’. In the Marks box click on ‘MEDIAN(Income)’ and drag ‘Measure Names’ to the Color box. Click on the Color box, click on Edit Colors. Click the blue box, click Assign Palette, then ok. In the Marks area click All. Drag ‘Monthly Charge’ to the Tooltip box. Click the dropdown, hover over Quick Table Calculations and select Rank. Drag Income to the Tooltip box. Click the dropdown on SUM(Income), hover over Measure and select Median. Drag Median Household Income to the Tooltip box. Click the dropdown on SUM(Median Household Income), hover over Measure and select Median. Click on the Tooltip box. Highlight ‘Median Median Household Income:’ and type Census Median Household Income. Below that, highlight ‘Median Income:’ and type Churn Median Household Income. Highlight everything and change the font to Tableau bold size 12, then center justify.

**Key Performance Indicators worksheet:**

Open a new worksheet, right click and rename it Key Performance Indicators. Drag ‘Churn’ to Rows and ‘Measure Names’ to Columns. Drag ‘Measure Values’ to the Text box in the Marks area. Change the view from Standard to Entire View. In the Marks box, click on the ‘Measure Values’ dropdown and click Show Filter. On the right of the screen the ‘Measure Names’ filter is shown. Click the box next to (All), then click it again to deselect all. Check the boxes next to ‘Monthly Charge’, ‘Income’, ‘Tenure’, ‘Age’, and ‘Median Household Income’. Now, in the Measure Value area beneath the Marks area click the dropdown for SUM(Monthly Charge), hover over Measure and select Average. From the Tables area on the left, drag ‘Monthly Charge’ into the Measure Values area. In the Measure Values area click the dropdown for SUM(Tenure), hover over Measure and select Average. From the left, drag ‘churn\_clean.csv(Count) to the Measure Values box. In the Measure Values box, click the dropdown for CNT(churn\_clean.csv), hover over Quick Table Calculation and select Percent of Total. From the left, drag ‘churn\_clean.csv(Count) to the Measure Values box again. In the Measure Values box, click the dropdown for SUM(Income), hover over Measure and select Median. In the Measure Values box, click the dropdown for SUM(Median Household Income), hover over Measure and select Median. In the Measure Values box, click the dropdown for SUM(Age), hover over Measure and select Average. In the Measure Values box the values can be rearranged by dragging and dropping but be careful they don’t disappear. If they do just click the back arrow and try again. The screenshot below shows the order that I put them in.



At the top of the main window right click on the title ‘Key Performance Indicators’ and select Edit Title. Highlight <Sheet Name> and change the font to Tableau Bold size 18, underline, and the solid black color. In the Marks box, click the Text box, click the …, highlight <Measure Values>, change the font to Tableau Bold size 15, and the solid black color. In the table, right click the heading ‘Count of churn\_clean.csv’, select Edit Alias and change it to ‘# of Customers’. Right click the heading ‘% of Total Count of churn\_clean.csv along Table Down’, select Edit Alias and change it to ‘% of Customers. Right click the heading ‘# of Customers’, select Format, on left change the default font to Tableau Bold size 16, and solid black color. Right click on ‘Null’ in the left of the chart, select Format, on the left change the default font to Tableau Bold size 16, and solid black color. Right click on ‘Null’ again and select Exclude. In the Marks box, click the dropdown for ‘Measure Values’ and click ‘Show Filter’ to remove it from the screen.

**Interactive Dashboard:**

At the bottom, click the box to the right of the box used to open a new worksheet. This will open a blank Dashboard. Rename it to whatever you like. On the left, click the dropdown by ‘Size’, then the dropdown next to ‘Range’ and select Automatic. On the left the sheets that have been created are shown. Drag ‘Monthly Revenue by State’ onto the main area. Now drag ‘Income Difference between Census and Churn’ onto the main area to the right of the map. Now drag ‘Churn by Gender’ to the top left and drag ‘Churn by Area Type’ to the top right. Drag ‘Key Performance Indicators’ to the top so it shadows the top half of the main screen. In the bottom left below Objects, click on Horizontal and drag it to the top. Also, in the objects area, click on ‘Text’ and drag it into the empty box at the top. In the Edit Text window, the title can be whatever you like and format however you like and click OK. In the bottom right corner of the ‘Income Difference between the Census and Churn’ panel there is a small grey box that shows ‘2 nulls’. Click on it, click on ‘Filter Data’ in the window that pops up. In the ‘Income Difference between the Census and Churn’ panel there is a bar in the graph that is blank. On the orange line part of the graph above the blank bar hover to where the Tooltip window shows the State as US. Right click on that spot and select ‘Exclude’. On the right side of the screen click on the ‘Monthly Charge’ measure bar, then click the down arrow and select ‘Floating’. Now drag it to the right of the Monthly Revenue by State title. On the right, click on ‘Measure Names’, click the down arrow, and select ‘Floating’. Now drag it to the right of the Income Difference between Census and Churn title. Click in the empty window to the right and click the X to delete it. Click in a blank area of the ‘Monthly Revenue by State’ panel, then click the funnel shape on the right of the panel. Click in a blank area of the ‘Churn by Gender’ panel, then click the funnel shape on the right of the panel. Click in a blank area of the ‘Churn by Area Type’ panel, then click the funnel shape on the left of the panel. Click in a blank area of the ‘Income Difference between Census and Churn’ panel, then click the funnel shape on the left of the panel. Clicking the funnels have created the interactivity between the four panels.

**A3:**

After opening the interactive dashboard, you will see the Telecommunication Co. Executive dashboard at the top. Below that are the KPI’s (Key Performance Indicators). This is where most of the important information will be viewed. Below the KPI’s are the interactive controls for Churn by Gender (left), and Churn by Area Type (right). At the bottom of the dashboard are Monthly Revenue by State (left), and Income Difference between Census and Churn (right). I recommend scrolling to the bottom and maximizing the dashboard for best functionality.

**Churn by Gender Panel:**

This panel shows information about existing loyal customers and customers that have ended their service with the company or churned. If you click on the word Churned, you will see the information in the KPI’s change. If you want to see information about churned customers that are female, then click on the number below the female heading. You will now see information in the KPI’s pertaining to only customers that are female and have churned. To back to the original information just click the number below the female heading again.

**Churn by Area Type panel:**

This panel contains information about the area type where the customer resides (Urban, Suburban, or Rural), and operates similarly to the Churn by Gender panel. If you want to view information about existing customers that live in a suburban area, click on the orange area of the graph to the right of the word Loyal. To return to the original information click on the same orange area.

**Monthly Revenue by State panel:**

This panel contains an interactive map of the United States. There are controls on the left-hand side of the panel that allow zooming in and out as well as panning. You can also hold shift + click to pan around the map. You may need to zoom in on smaller states to be able to click on them. The map shows the monthly revenue for each state. If you hover over a state on the map a window will appear that shows the state abbreviation, the rank of the state in monthly charge revenue, average monthly charge, population, 2021 census median household income, and the churn database median household income. Then click on any selected state to see the KPI information for that state. Click on the state again to return to the original information.

**Income Difference between Census and Churn panel:**

This panel shows a bar/line graph of median income by state for the churn data and the Census data. The churn data is shown in the blue vertical bars and the Census data is shown in the orange line. If you hover over a bar it will show information that is also contained in the window of the Monthly Revenue by State panel. If you click on a bar in the graph it will have the same effect as clicking on a state on the map.