



D210 Representation and Reporting Performance Assessment, Task 1

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Part I: Interactive Data Dashboard

A1. Datasets

Please see the attached CSV files called “Churn_cleanAF.csv” and “IBM_cleanAF.csv” to view the data sources for the interactive data dashboard. The datasets reflect the WGU-provided telecommunication churn dataset and the secondary IBM telecommunication churn dataset provided by Kaggle.

A2. Dashboard Installation Instruction

Please see below for the step-by-step manual to install the dashboard. These steps guide the recreation of the attached dashboard and the installation of Tableau software.

1. Go to the Tableau website : <https://www.tableau.com/products/desktop/download>
2. Click on the download button for the version you want to install i.e., Windows or Mac.
3. Once the download is complete, open the downloaded file and follow the installation wizard prompts.
4. Once the installation is complete, launch Tableau.
5. Under the “Connect” panel, under the subsection “To a File”: Click on “Text file”.
6. Navigate to the cleaned WGU-provided churn CSV file, “Churn_cleanAF” and click Ok to load.
7. Once the Data source is loaded, drag the additional data source of the cleaned IBM-provided CSV file, “IBM_cleanAF” to the middle panel specifying “Need more data?” to include it in data sources.
8. In the lower panel, provide the relationship link on the “State” variable from the WGU telecommunication dataset equal to the “State” variable in the IBM telecommunication dataset.
9. Click “Add more fields” to add an additional relationship link on the “Gender” variable from the WGU telecommunication dataset equal to the “Gender” variable in the IBM telecommunication dataset.
10. On the Bottom Tab, Select “Sheet 1”
11. Right-click “Sheet 1” to rename. Rename to “WGU Customer Distribution of Internet Service, Churn Status”
12. From Data Panel: Drag the “Internet Service” variable from the WGU churn table to Columns.

13. From Data Panel: Drag the “Churn” variable from the WGU churn table to the Marks Panel: Color
14. From the Data Panel: Drag the “Churn_cleanAF.csv(Count)” variable from the WGU churn table to Rows.
15. From the Data Panel: Drag the “Churn_cleanAF.csv(Count)” variable from the WGU churn table to Marks Panel: Label
16. From the Data Panel: Drag the “Churn_cleanAF.csv(Count)” variable from the WGU churn table to Marks Panel: Tooltip
17. From the Data Panel: Drag the “Churn_cleanAF.csv(Count)” variable from the WGU churn table to Marks Panel: Detail
18. In the Marks Panel: Select and Click on the Dropdown arrow for the “Churn_cleanAF.csv(Count)” variable with the Detail category. Navigate to the “Add Table Calculation”.
 - a. Under Table Calculation; Calculation Type: Select “Percent of Total” and Under Compute Using: Select “Specific Dimensions” unchecking “Internet Service” then Close.
 - b. Change the Marks type for the “Churn_cleanAF.csv(Count)” with the Calculation variable with the Detail category to the Tooltip category. This is done by dragging the variable to Tooltip.
 - i. Hold the Ctrl button on the keyboard and click the “Churn_cleanAF.csv(Count)” with the Calculation variable with the Tooltip category and drag it to the Marks category Label.
19. From Data Panel: Drag the “Gender” variable from the WGU churn table to the Filter Panel.
 - a. Click “All”, then Click “OK” to select all values for this variable.
20. Format the Sheet as noted:
 - a. In the Marks Panel: Click “Color” and select Edit Colors.
 - b. Select the “Colorblind” Palette from the dropdown.
 - i. Click the “No” value from the Data Item Panel and Select the “Dark Gray 57606C” color in the palette.
 - ii. Click the “Yes” value from the Data Item Panel and Select the “Light Blue A3CCE9” color in the palette.
 - iii. Click OK.
 - c. In the Marks Panel: Click “Label” and make sure that “Show marks labels” and “Allow labels to overlap other marks” are checked.
 - i. Under the “Label Appearance” section: Select Alignment: Center, Font: Tableau Book.
 - ii. Under Text: Click the three “...” button for additional formatting of text.
 1. Highlight the <CNT(Churn_cleanAF.csv)> and Change the font size to 14, Bold, Color Black #000000, Center alignment.
 2. Put this (<% of Total CNT(Churn_cleanAF.csv)> within parentheses.

3. Highlight the (<% of Total CNT(Churn_cleanAF.csv)>) and Change the font to Tableau Light, font size to 9, Color "Black #000000", Center alignment.
4. Click OK
- iii. Under the Marks to Label: Select All
- d. In the Marks Panel: Click "Tooltip"
 - i. Highlight "Churn: " and change the font color to "Dark Gray #57606C".
 - ii. Highlight "Internet Service: " and change the font color to "Dark Gray #57606C".
 - iii. Change "Count of Churn_cleanAF.csv:" to read "# of Customers: ".
 - iv. Highlight "# of Customers:" and change the font color to "Dark Gray #57606C".
 - v. Remove "% of Total count of Churn_cleanAF.csv along Churn:"
 - vi. After the <% of Total CNT(Churn_cleanAF.csv)> , add "of" and insert <Internet Service>" changing the font color to "Dark Gray #57606C".
 1. Highlight "<% of Total CNT(Churn_cleanAF.csv)>"
 - a. Bold and Change Font to Black, #000000
 2. Click Ok
- e. Navigate to the Title, using the drop-down arrow Click Edit Title.
 - i. Remove <Sheet Name>
 - ii. Type in "WGU Company", enter for a new line, and type "Customer Distribution of Internet Service".
 - iii. Highlight all text and Change the Font color to Blue #1170AA and Center alignment.
 - iv. Highlight just the "WGU Company" and change the font size to 12.
 - v. Highlight just the "Customer Distribution of Internet Service" and change the font size to 10.
- f. Underneath the Title, Right-click on the Field label name "Internet Service" and "Hide Field Labels for Columns".
- g. Navigate to the Axis, using the dropdown arrow Click Edit Axis.
 - i. Remove the Axis Title of "Count of Churn_cleanAF.csv"
 - ii. Rename to "# of Customers" and Close.
21. Change the Worksheet view from "Standard View" to "Entire View".
22. Right-click the "WGU Customer Distribution of Internet Service, Churn Status" sheet and Click Duplicate.
23. Right-click the "WGU Customer Distribution of Internet Service, Churn Status(2)" sheet and Click Rename.
 - a. Rename the sheet to "IBM Customer Distribution of Internet Service, Churn Status".
24. Overwrite the WGU churn table variables in the sheet with the IBM churn table equivalent.
 - a. Drag the "internet Service IBM_cleanAF" variable to the Columns and drop it overlapping the previous "Internet Service" variable.

- b. Drag the "IBM_cleanAF.csv(Count)" variable to the Rows and drop it overlapping the previous "Churn_cleanAF.csv(Count)" variable.
 - c. Drag the "IBM_cleanAF.csv(Count)" variable to the Marks panel and drop it overlapping the previous "Churn_cleanAF.csv(Count)" variable with Marks category: Label.
 - d. Drag the "IBM_cleanAF.csv(Count)" variable to the Marks panel and drop it overlapping the previous "Churn_cleanAF.csv(Count)" variable with the Marks category: Tooltip.
 - e. Drag the "IBM_cleanAF.csv(Count)" variable to the Marks Panel and drop it on the Marks category: Detail.
 - i. In the Marks Panel: Select and Click on the Dropdown arrow for the "IBM_cleanAF.csv(Count)" variable with the Detail category. Navigate to the Add Table Calculation.
 - ii. Under Table Calculation; Calculation Type: Select "Percent of Total" and Under Compute Using: Select " Specific Dimensions" unchecking "Internet Service" then Close.
 - iii. Change the Marks type for the "IBM_cleanAF.csv(Count)" with the Calculation variable with the Detail category to the Tooltip category. This is done by Dragging the variable to Tooltip.
 - iv. Hold the Ctrl button on the keyboard and click the "IBM_cleanAF.csv(Count)" with the Calculation variable with the Tooltip category and drag it to the Marks category Label.
 - f. Remove the previous variables of "Churn_cleanAF.csv(Count)" with the Calculation variable from both Tooltips and Label.
25. If formatting is lost, Repeat steps 20a through 20c. with IBM Table equivalent.
- a. In the Marks Panel: Click "Tooltip"
 - i. Highlight "<Missing Field!>" after "Internet Service".
 - ii. Select Insert and toggle to "Internet Service IBM_cleanAF.csv"
 - iii. Highlight the newly inserted "Internet Service IBM_cleanAF.csv" and change the font color to Black #000000 and Bold
 - b. After the "# of Customers:", Select Insert and toggle to "CNT(IBM_cleanAF.csv)"
 - i. Highlight the newly inserted "CNT(IBM_cleanAF.csv)" and change font color to Black #000000 and Bold.
 - c. Click before the "of" in the fourth row of text.
 - d. Select Insert and toggle to "% of Total CNT(Churn_cleanAF.csv)"
 - i. Highlight the newly inserted "% of Total CNT(Churn_cleanAF.csv)" and change font color to Black #000000 and Bold.
 - e. Highlight "<Missing Field!>" after "of"
 - f. Select Insert and toggle to "Internet Service IBM_cleanAF.csv"
 - g. Click Ok
 - h. Drag the "Gender IBM_cleanAF" variable to the filter and drop it overlapping the previous "Gender".
 - i. Click "All", then Click "OK" to select all values for this variable.
 - i. Navigate to the Title, using the drop-down arrow Click Edit Title.
 - i. Remove "WGU" and type "IBM" in its place.

- ii. Highlight all text and Change the font color to Brown #C85200.
 - j. Underneath the Title, Right-click on the Field label name "Internet Service IBM_cleanAF.csv" and "Hide Field Labels for Columns".
 - k. Navigate to the Axis, using the drop-down arrow Click Edit Axis.
 - i. Remote the Axis Title of "Count of IBM_cleanAF.csv"
 - ii. Rename to "# of Customers" and Close.
26. Click on New Worksheet.
27. Right-click "Sheet 3" to rename. Rename to "WGU Addons"
28. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
- a. Click and select Create Parameter.
 - i. Rename the Parameter to "WGUMeasures"
 - ii. Select the Data type as "String".
 - iii. In the Allowable Values Select List.
 1. Click to add the following list of Values:
 - a. Online Backup, Online Security, Device Protection, Tech Support, Streaming TV, and Streaming Movies.
 - b. Click Ok.
29. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
- a. Click and select Create Calculated Field.
 - i. Rename Calculation to WGUCase
 - ii. In the main body text field: type the following:


```
CASE [WGUMeasures]
WHEN "Online Backup" THEN [Online Backup]
WHEN "Online Security" THEN [Online Security]
WHEN "Tech Support" THEN [Tech Support]
WHEN "Device Protection" THEN [Device Protection]
WHEN "Streaming TV" THEN [Streaming TV]
WHEN "Streaming Movies" THEN [Streaming Movies]
END
```
 - iii. Click Ok
30. Repeat step 28 but rename the new Parameter as "IBMMeasures".
31. Repeat step 29 but rename the new Calculated Field as "IBMCase".
- a. The main body text will also change to the following:


```
CASE [IBMMeasures]
WHEN "Online Backup" THEN [OnlineBackup (IBM cleanAF.csv)]
WHEN "Online Security" THEN [OnlineSecurity (IBM cleanAF.csv)]
WHEN "Tech Support" THEN [TechSupport (IBM cleanAF.csv)]
WHEN "Device Protection" THEN [DeviceProtection(IBM cleanAF.csv)]
WHEN "Streaming TV" THEN [StreamingTV (IBM cleanAF.csv)]
WHEN "Streaming Movies" THEN [StreamingMovies(IBM cleanAF.csv)]
END
```
32. In the Data Panel: Drag the "WGUCase" variable to Columns.
33. In the Data Panel: Drag the WGU Churn table variables, "Gender" and "Churn" to Rows
34. In the Data Panel: Drag the WGU Churn table variables, "State" and "Internet Service" to the Filter panel.

35. In the Data Panel: Drag the WGU Churn table variables, "Gender" to the Marks Panel: Color
- Format the Marks for color.
 - In the Marks Panel: Click "Color" and select Edit Colors.
 - Select the "Colorblind" Palette from the dropdown.
 - Click the "Female" value from the Data Item Panel and Select the "Brown #C85200" color in the palette.
 - Click the "Male" value from the Data Item Panel and Select the "Blue #1170AA".
 - Click the "Nonbinary" value from the Data Item Panel and Select the "Light Orange #FFBC79".
 - Click OK.
36. In the Data Panel: Drag Tenure to the Marks Panel: Tooltip.
- Click the Down Arrow to change Measure.
 - Toggle to "Measure: Sum "
 - Select "Average"
37. In the Marks Panel: Click "Label"
- Make sure that "Show marks labels" is checked.
 - Change Font to Tableau Book, Size 14 font, Bold and Select Automatic.
 - Change Alignment to Center and Middle.
38. In the Marks Panel: Click Tooltip
- Type "months" after <AVG(Tenure)>
 - Change "WGUCase" to "# of Customers with"
 - After "# of Customers with" Insert "WGU Measures" Parameter
39. Navigate to the Title, using the dropdown arrow Click Edit Title.
- Remove <Sheet Name>
 - Type in "WGU Addon Services Based On Churn/Gender"
 - Highlight "WGU Addon Services Based On Churn/Gender" and Change the following:
 - Font: Tableau Light
 - Font color: Blue #1170AA
 - Center Alignment
 - Font Size 14
 - Bold and Underline
40. Format the Rows
- Use the dropdown on "Gender" and Navigate to Format.
 - In the Format panel: Default Font change the following attributes.
 - Font: Tableau Book
 - Font Color: Blue #1170AA
 - Font Size: 10
 - Use the dropdown on "Churn" and Navigate to Format.
 - In the Format panel: Default Font change the following attributes.
 - Font: Tableau Semibold
 - Font Color: Brown #C85200
 - Font Size: 12
41. Remove the Column header.

- a. Right-Click “WGUCase” along the bottom axis
 - b. Uncheck “Show Header”
42. In the Data Panel under Parameters: Right-Click the WGU Measures
 - a. Toggle and Select Show Parameters
 - b. Select the “WGUMeasures” parameter card.
 - i. Click the dropdown arrow and change the list view to Single Value List.
43. Change Worksheet view from “Standard View” to “Entire View”.
44. Right-click the “WGU Addons” sheet and Click Duplicate.
45. Right-click “WGU Addons(2)” sheet and Click Rename.
 - a. Rename the sheet to “IBM Addons”.
46. Overwrite the WGU churn table variables in the sheet with the IBM churn table equivalent.
 - a. Drag the “IBMCase” variable to Columns, overlapping the previous “SUM(WGUCase)”
 - b. Drag “Gender (IBM_cleanAF)” to Rows, overlapping the previous “Gender”.
 - c. Drag “Churn (IBM_cleanAF)” to Rows, overlapping the previous “Churn”.
 - d. Drag “State (IBM_cleanAF)” and “InternetService(IBM_cleanAF)” to Filter
 - i. Select “All” and Click “OK” to include all of the values in each variable.
 - e. Drag “Gender (IBM_cleanAF)” to Marks Panel: Color, overlapping the previous “Gender”.
 - f. Drag “Tenure (IBM_cleanAF)” to Marks Panel: Tooltip, overlapping the previous “AVG(Tenure)”
 - i. Click the Down Arrow to change Measure.
 - ii. Toggle to “Measure: Sum “
 - iii. Select “Average”
47. If formatting was lost, format the sheet to match “WGU Addons” by following the following steps.
 - a. Repeat Step 35, excluding 35a, section v. for Nonbinary.
 - b. Repeat Step 41 for “IBM Case”
48. Navigate to the Title, using the drop-down arrow Click Edit Title.
 - a. Remove “WGU” and type “IBM” in its place.
 - b. Highlight all text and Change the font color to Brown #C85200.
49. Remove the WGU Parameters card.
 - a. Utilizing the dropdown arrow on the “WGUMeasures” in the Cards Panel: Click “Hide Card”.
50. In the Data Panel under Parameters: Right-Click the “IBMMeasures”
 - a. Toggle and Select Show Parameters
 - b. Select the “IBMMeasures” parameter card.
 - i. Click the dropdown arrow and change the list view to Single Value List.
51. Click on New Worksheet.
52. Right-click “Sheet 5” to rename. Rename to “Map of Monthly Charge”
53. In the Data Panel: Right-Click “State” under the WGU Churn table.

- a. Select Add to Sheet
54. Change the Marks type to "Map" in the Marks Panel.
55. Change "States" from the Marks: Detail category to Label by dragging to the Marks: Label.
56. Drag "Monthly Charge" from the WGU table to Color.
- a. Change the default calculation from SUM to Average.
 - i. Dropdown arrow on "SUM(Monthly Charge)"
 - ii. Toggle to "Measure: Sum"
 - iii. Toggle to "Average"
 - b. Format Numbers
 - i. Dropdown arrow on "AVG(MonthlyCharge)"
 - ii. Format
 - 1. Under the "Scale" subsection in Axis
 - a. Change Numbers format from Automatic to Currency (Standard)
 - 2. Under the "Default" subsection in Pane
 - a. Change Numbers format from Automatic to Currency (Standard)
 - c. Format Colors
 - i. In Marks Panel: Color Click Edit Colors
 - 1. Select Palette as Custom Diverging
 - a. Select the left Color as "Brown #C85200".
 - b. Select the right Color as "Blue 5FA2CE".
 - c. Select Stepped Color "8" Steps
 - d. Click Ok
57. Drag "Monthly Charge" from the IBM table to Detail.
- a. Change the default calculation from SUM to Average.
 - i. Dropdown arrow on "SUM(MonthlyCharge (IBM_cleanAF))"
 - ii. Toggle to "Measure: Sum"
 - iii. Toggle to "Average"
 - b. Format Numbers
 - i. Dropdown arrow on "AVG(MonthlyCharge (IBM_cleanAF))"
 - ii. Format
 - 1. Under the "Scale" subsection in Axis
 - a. Change Numbers format from Automatic to Currency (Standard)
 - 2. Under the "Default" subsection in Pane
 - a. Change Numbers format from Automatic to Currency (Standard)
58. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
- a. Click and select Create Calculated Field.
 - i. Rename Calculation to "IBM Header"
 - ii. In the main body text field: type the following:
IF SUM([MonthlyCharge (IBM_cleanAF.csv)]) > 1
THEN "IBM Avg. Monthly Charge: \$"
ELSE NULL

END

iii. Click OK

59. Drag "IBM Header" to Marks Panel: Tooltip

60. Format Tooltip

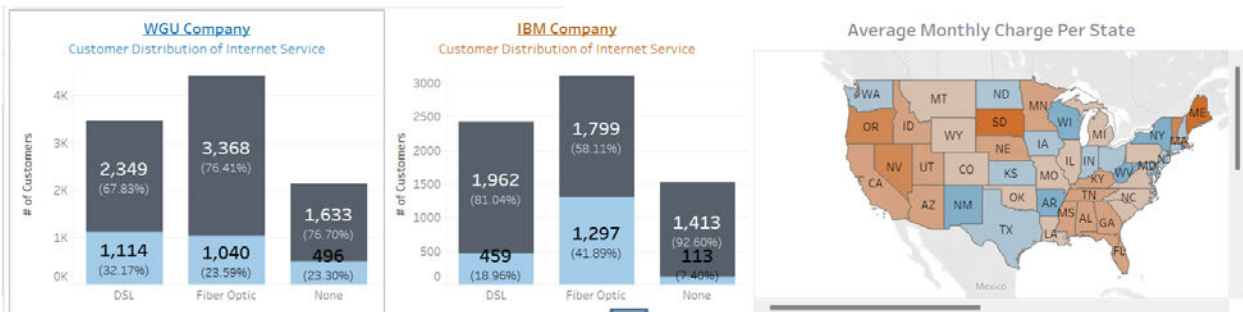
- a. In the Marks Panel: Click Tooltip
 - i. Highlight all text.
 1. Change Font Size to 12.
 - ii. Highlight "State:"
 1. Change Font Color: Dark Gray #57606C.
 - iii. Highlight "<State>"
 1. Change Font Color: Brown #C85200
 - iv. Delete "Avg. MonthlyCharge (IBM): <AVG(MonthlyCharge (IBM))>"
 - v. Change "Avg. Monthly Charge" to "WGU Avg. Monthly Charge"
 1. Highlight "WGU Avg. Monthly Charge: <AVG(Monthly Charge)>"
 - a. Change Font Color: Dark Gray #57606C.
 - vi. Remove "IBM Header:"
 - vii. Highlight "<AGG(IBM Header)>"
 1. Remove Bold from the font.
 2. Select after "<AGG(IBM Header)>" then toggle to "Insert".
 - a. Select AVG(MonthlyCharge(IBM cleanAF.csv)
 - b. Highlight "<AVG(MonthlyCharge (IBM cleanAF.csv))>"
 - i. Bold the font.
 - viii. Highlight "<AGG(IBM Header)><AVG(MonthlyCharge (IBM cleanAF.csv))>"
 1. Change Font Color: Dark Gray #57606C.
61. Navigate to the Title, using the dropdown arrow Click "Edit Title".
- a. Remove <Sheet Name>
 - b. Type in "Average Monthly Charge per State"
 - c. Highlight "Average Monthly Charge per State" and Change the following:
 - i. Font: Tableau Medium
 - ii. Font color: Gray #7B848F
 - iii. Center Alignment
 - iv. Font Size 14
62. Click on New Worksheet.
63. Right-click "Sheet 7" to rename. Rename to "JoinedCustomers"
64. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
- a. Click and select Create Calculated Field.
 - b. Rename Calculation to "TotalCustomers"
 - c. In the main body text field: type the following:
(COUNT([Churn_cleanAF.csv]) + (COUNT([IBM_cleanAF.csv])))
 - d. Click OK
65. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
- a. Click and select Create Calculated Field.
 - b. Rename Calculation to "ActiveAll"

- c. In the main body text field: type the following:
(SUM(IF [Churn] = "No" THEN 1 ELSE 0 END)) + (SUM(IF [Churn] (IBM_cleanAF.csv)) = "No" THEN 1 ELSE 0 END))
 - d. Click OK
- 66. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
 - a. Click and select Create Calculated Field.
 - b. Rename Calculation to "ActiveWGU"
 - c. In the main body text field: type the following:
IF ISNULL([ActiveAll])
THEN SUM(if [Churn]= "No" THEN 1 ELSE 0 END)
END
 - d. Click OK
- 67. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
 - a. Click and select Create Calculated Field.
 - b. Rename Calculation to "ChurnAll"
 - c. In the main body text field: type the following:
(SUM(IF [Churn] = "Yes" THEN 1 ELSE 0 END)) + (SUM(IF [Churn] (IBM_cleanAF.csv)) = "Yes" THEN 1 ELSE 0 END))
 - d. Click OK
- 68. In the Data Panel: Navigate to the Dropdown menu next to the Search field.
 - a. Click and select Create Calculated Field.
 - b. Rename Calculation to "ChurnWGU"
 - c. In the main body text field: type the following:
IF ISNULL([ChurnAll])
THEN SUM(if [Churn]= "Yes" THEN 1 ELSE 0 END)
END
 - d. Click OK
- 69. In the Data Panel: Drag the "TotalCustomers" variable to Marks Panel: Label
 - a. Format Label
 - i. Click the Label Category in the Marks Panel
 - 1. Select the "..." after the Text field.
 - a. Highlight all text and change font features.
 - i. Font: Tableau Light
 - ii. Font Size: 16
 - iii. Bold
 - iv. Font Color: Blue #5FA2CE
 - v. Center Alignment
 - b. Before the "<AGG(TotalCustomers)>"; Type: "Total of"
 - c. Hit Enter to bring "<AGG(TotalCustomers)>" to a new line.
 - d. After the "<AGG(TotalCustomers)>"; Hit Enter to start a new line and Type: "Customers".
 - e. Change the font features of "Total of" and "Customers".
 - i. Font Size: 14

- ii. Remove Bold from the text.
 - f. Click Ok
- 2. Alignment, Select Center and Middle
- 70. In the Marks Panel: Click Tooltip
 - a. Format Tooltip
 - i. Change "TotalCustomers" to "Total # of Customers"
 - ii. Click Ok
- 71. Change Worksheet view from "Standard View" to "Entire View".
- 72. Right-click the "JoinedCustomers" sheet and Click Duplicate.
- 73. Right-click the "JoinedCustomers (2)" sheet and Click Rename.
 - a. Rename the sheet to "JoinedActive".
- 74. Drag the "ActiveAll" variable to overlap the "AGG(TotalCustomers)" in the Marks panel.
- 75. Drag the "ActiveWGU" to the Marks Panel: Label
- 76. In the Marks Panel: Click Label
 - a. Format Label
 - i. Select the "..." after the Text field.
 - 1. Highlight all text and change font features.
 - a. Font Color: Brown #C85200
 - 2. After the "<AGG(ActiveAll)>"; Insert "AGG(ActiveWGU)"
 - 3. Before "Customers" type "Active "
 - 4. Remove the <AGG(ActiveWGU)> in the fourth row.
 - 5. Click Ok
- 77. In the Marks Panel: Click Tooltip
 - a. Format Tooltip
 - i. Change "Active All" to " Total # of Active Customers"
 - ii. After the "<AGG(ActiveAll)>"; Insert "AGG(ActiveWGU)"
 - iii. Delete the Second Row "ActiveWGU: <AGG(ActiveWGU)>"
 - iv. Click Ok
- 78. Right-click the "JoinedActive" sheet and Click Duplicate.
- 79. Right-click the "JoinedActive (2)" sheet and Click Rename.
 - a. Rename the sheet to "JoinedChurn".
- 80. Drag the "ChurnAll" variable to overlap the "AGG(ActiveAll)" in the Marks panel.
- 81. Drag the "ChurnWGU" variable to overlap the "AGG(ActiveWGU)" in the Marks panel.
- 82. In the Marks Panel: Click Label
 - a. Format Label
 - i. Select the "..." after the Text field.
 - 1. Highlight all text and change font features.
 - a. Font Color: Dark Gray #57606C
 - 2. Change "Active Customers" to "Customers have Left".
 - 3. Click Ok
- 83. In the Marks Panel: Click Tooltip
 - a. Format Tooltip
 - i. Change "Total # of Active Customers" to " Total # of Customers that Left".

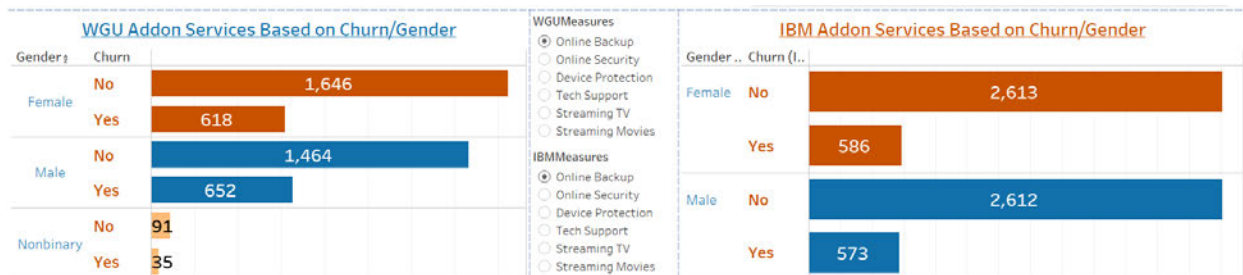
- ii. Click Ok
84. Click on New Worksheet.
85. Right-click "Sheet 9" to rename. Rename to "JoinedGender"
86. In the Data Panel: Drag "Gender" to Columns
87. Drag the "TotalCustomers" variable to Marks Panel: Label
88. Drag the "Gender" variable to Filters Panel
 - a. Select All
 - b. Click OK
89. Drag the "Gender" variable to the Marks Panel: Color
90. Underneath the Title, Right-click on the Field label name "Gender" and "Hide Field Labels for Columns".
91. In the Marks Panel: Click Label
 - a. Change Alignment to Middle Center
 - b. Click on the "..." after the Text field.
 - i. Highlight all text and increase the font size to 14.
92. In the Marks Panel: Click Tooltip
 - a. Change "TotalCustomers" to "Total # of Customers"
93. In the Columns: Click the dropdown arrow in Gender and Select Format.
 - a. On the Format Panel: Select the Header tab.
 - i. Change Default Font to Font Size 12
94. Click on New Dashboard
95. Right-Click on "Dashboard 1" to rename. Rename to "WGU vs IBM".
96. In the Dashboard Panel: Change Size to Automatic.
97. In the Objects Panel: Select Vertical Container and Drag it into the Dashboard.
 - a. Repeat this step until you have "3" Containers one on top of the other signifying 3 separate rows.
 - b. In the Objects Panel: Select Horizontal Container.
 - i. Drag it into the Dashboard and place it into the Bottom Vertical Container.
 1. Repeat this step until you have " 3" Containers in the Bottom Vertical Container signifying "3" separate columns.
98. Drag "JoinedGender" to Dashboard and place it into the Top Vertical container.
 - a. Right-Click and Hide Title
99. Drag "TotalCustomers" to Dashboard and place it to the right of "JoinedGender" in the Top Vertical container.
 - a. Right-Click and Hide Title
100. Drag "JoinedActive" to Dashboard and place it to the right of "TotalCustomers" in the Top Vertical container.
 - a. Right-Click and Hide Title
101. Drag "JoinedChurn" to Dashboard and place it to the right of "JoinedActive" in the Top Vertical container.
 - a. Right-Click and Hide Title
102. Drag "WGU Customer Distribution of Internet Service, Churn Status" to the Dashboard and place it in the Middle Vertical container.


103. Drag “IBM Customer Distribution of Internet Service, Churn Status” to the Dashboard and place it to the right of the “WGU Customer Distribution of Internet Service, Churn Status” in the Middle Vertical container.
104. Drag “Map of Monthly Charge” to the Dashboard and place it in the Middle container to the right of “IBM Customer Distribution of Internet Service, Churn Status”.
105. Remove the Legend Card for Gender by clicking the “X” on the Right side of the card.
106. Along with each of the items in the Top
107. Change the Legend cards for “Churn”, “Churn (IBM_cleanAF)” and “Avg. Monthly Charge” to Floating. Move them into the third container while resizing the other items.
108. Resize WGU and IBM Customer Distributions to be the same size by using the mouse to drag arrows along the edges of each container.
109. Resize the Map to be slightly larger than the previous two.
 - a. It should look like this:



110. Drag the Floating legend to their respective chart.
 - a. The Churn legend for “WGU Company” should be placed in the upper right corner above the “None” column.
 - b. The Churn legend for “IBM Company” should be placed in the same area on the “IBM” Chart.
 - i. Use the down arrow to Select “Edit Title”.
 - ii. Remove “(IBM_cleanAF)” from the text to leave only the word “Churn”.
 - c. The Avg Monthly Charge Legend for the map should be placed in the lower left corner of the chart.
111. Drag “WGU Addons” onto the Dashboard placing it into the Bottom Container into the first horizontal container.
 - a. Remove the Legend Card for Gender.
 - i. Select the Gender Card
 - ii. Clicking the “X” on the Right side of the card.
112. Drag “IBM Addons” onto the Dashboard placing it into the Bottom Container to the right of “WGUMeasures” in the Right Horizontal Container.
 - a. Remove the Legend Card for Gender
 - i. Select the Gender Card
 - ii. Click the “X” on the Right side of the card.

- b. Drag the “IBMMeasures” parameter card into the middle Horizontal Below “WGUMeasures”.
113. Resize the charts to ensure all font is visible and “WGU Addon” and IBM Addon” are the same size.
- a. It should look similar to this:



- b. Rename the “WGUMeasures” and “IBMMeasures” by clicking on the down arrow on each card and selecting “Edit Title”.
- Rename “WGUMeasures” to “WGU Addon Services” and center align the text.
 - Rename “IBMMeasures” to “IBM Addon Services” and center align the text.
114. Add Filters to add Interactions between items.
- a. Click “Use as a Filter”  on the following items:
- Joined Gender
 - WGU Addons
 - IBM Addons
 - Map of Monthly Charges
 - WGU Customer Distribution
 - IBM Customer Distribution
- b. Under “Dashboard” on the Main Ribbon
- Click Actions
 - Select Filter for WGU vs IBM (IBM Customer Distribution... ”
 - Select Edit
 - In the Target Sheets Subsection: Uncheck “WGU Addons” and “WGU Customer Distribution...”
 - Click OK
 - Select Filter for WGU vs IBM(WGU Customer Distribution...”
 - Select Edit
 - In the Target Sheets Subsection: Uncheck “IBM Addons” and “IBM Customer Distribution...”

A3. Dashboard Navigation

Please see below for a guide on the navigation features of the dashboard. Using these controls will allow for interactions between the various data representation shown in the dashboard.

1. Interactive Features of this dashboard are summarized with the following controls.
 - a. Click Navigation
 - i. Using Click on the “JoinedGender” variables of “Female”, “Male” or “Nonbinary” will Filter All representations to Show only Customers with the Selected Gender.
 - To Remove the Filter, Click on the Selected Gender again.
 - ii. Using Click on the “Map of Monthly Charges” will Filter All representations to Show only Customers within the Selected State.
 - IBM data will automatically Hide when any State excluding CA is selected.
 - Selecting multiple States can be completed by holding down the control key and clicking each needed state.
 - To Remove the Filter, Click on the Selected State again.
 - iii. Using Click on the “IBM Customer Distribution...” variables will Filter All representations excluding “WGU Customer Distribution...” and “WGU Addons” with the Selected “Internet Service” and “Churn” status.
 - WGU Only Worksheets will remain static and not hidden.
 - To Remove the Filter, Click on the Selected “Internet Service”/ “Churn” again.
 - iv. Using Click on the “WGU Customer Distribution...” variables will Filter All representations excluding “IBM Customer Distribution...” and “IBM Addons” with the Selected “Internet Service” and “Churn” status.
 - IBM Only Worksheets will remain static and not hidden.
 - To Remove the Filter, Click on the Selected “Internet Service”/ “Churn” again.
 - v. Using Click on the “WGU Addons” variables will Filter All representations with the Selected “Gender” status.
 - It will also Filter on “Churn” status on All Other Worksheets excluding “IBM Customer Distribution...” and “IBM Addon”.
 - To Remove the Filter, Click on the Selected “Gender”/ “Churn” again.
 - vi. Using Click on the “IBM Addons” variable will Filter All representations with the Selected “Gender” and “Churn” status.

- It will also Filter on "Churn" status on All Other Worksheets excluding "WGU Customer Distribution..." and "WGU Addon".
 - To Remove the Filter, Click on the Selected "Gender"/ "Churn" again.
- b. Hover Navigation
- i. Hovering Over Items will show each Worksheet Source Tooltip information.
 - WGU and IBM Addons service visualizations provide additional information on Average Tenure in Months per Selected Addon Service.
 - The Map hover will provide information about the monthly charge average per state.
- c. Radio Button Navigation
- i. Selecting the Radio Button options in IBM Measures will Filter the IBM Addon representation to allow for the visualization of the Churn and Gender of the customers that have the addon service selected.
 - ii. Selecting the Radio Button options in WGU Measures will Filter the WGU Addon representation to allow for the visualization of the Churn and Gender of the customers that have the addon service selected.

Part II: Storytelling with Data

B1. Panopto Video

The Panopto video provided a presentation of the data observed to an audience of data analytics peers and the executive board.

Please see attached Panopto video link. Link Found here:

[REDACTED]

[REDACTED]

Part III: Reflection Paper

C1. Explanation of Dashboard Function

The WGU churn data dictionary described the stakeholders' interest in retention efforts, customer engagement, and marketing strategies based on regional availability. One of the objectives for the created dashboard was to analyze which variables contributed to the customer churn rate. Variables analyzed were the specific gender, internet services, monthly charge, and any add-on services. This analysis allowed stakeholders to pinpoint contributing factors to provide insight into what areas should be focused on in terms of retention (Expert Panel, Forbes Agency Council, 2019).

Another purpose of the dashboard was to ascertain customer product engagement. Customer engagement was visualized within the add-on services. The dashboard allowed the organization to compare which services were more popular for each gender. In addition to this, the services provided insight into which gender had a higher likelihood of churn based on the add-on services selected.

Lastly, the dashboard map feature allowed for the information to be shown regionally. Selecting the multiple states that build the specific region could show a representation of the customers within it. If the organization wanted to just view data per specific state it was allowable as well. All of these purposes are aligned with the needs of the various executive leaders within the organization. The functions of the dashboard allowed for the telecommunication company to explore the various legacy data to utilize in marketing and sales efforts in a regional capacity in the future (Expert Panel, Forbes Agency Council, 2019).

C2. Additional Dataset Variables

The data represented in the WGU-provided churn dataset were based on customer identification that provided a picture as to why the customer has churned. The additional dataset selected was the IBM telecommunication data set. This data set was obtained via Kaggle (Unknown, n.d.). While researching comparable datasets on Kaggle, this IBM dataset stood out as it provided a strong comparison to the data noted within the WGU telecommunication dataset. This data file had many of the same variables as the WGU-provided data. The variables included “Online Backup”, “Online Security”, “Device Protection”, “Tech Support”, “Streaming TV”, “Streaming Movies”, “Churn”, “State”, “Tenure” and “Gender”. All of these variables provided an enhancement to the WGU telecommunication dataset. The enhancement was accomplished due to the ability to compare the WGU company against the IBM company. The comparison could pinpoint the various differences such as WGU data’s higher monthly charges and churn rate for specific services. Organizations in general utilize competitors’ information to try to ascertain a competitive advantage or gain insight into what products are thriving in their comparable market. IBM Company could be noted as an ideal competitor in the same market for this analysis.

C3. Data Representations

There were several different data representations in the dashboard. These representations could help the executive leaders support various decision-making techniques. In the visualizations, customers were broken into groups based on their specific reported gender. The gender groupings were combined for both datasets and summarized the total customers for both companies along the top portion of the dashboard. The WGU Addon Services and IBM Addon

Services provided KPIs regarding the additional services customers selected based on their gender. The executive panel or the users could glean insight into which services were popular per specific gender. This could provide marketing strategies on what promotions should be geared toward. The utilization of both these features as well as the interactive map could suggest services regionally as well.

For both of the datasets, IBM and WGU, the customer count who churned and did not churn was displayed. The churn data was represented as a Churn notation of “Yes” and also noted as “Customers that left”. The current customers were notated as a Churn representation of “No” as well as “Active Customers”. Within the WGU and IBM customer distributions, churn data was utilized across each internet service selection. The internet services were broken into two sections showing the total amount of customers who stayed with the company or left the company within the last month. The percentage of the total customers within the specific internet service was also notated. For example, out of the total 3,463 customers in the WGU company who selected DSL, there was 32.17% of customers who left the company. This was higher than the 18.96% noted by the IBM Company.

C4. Interactive Controls

The dashboard, “WGU vs IBM” utilized several interactive controls. One of the controls was filtering based on clicking on a specific state within the provided map. The map allowed the stakeholders to filter information based on a specific state to gain insight into different variables. For example, in the state of Washington, the stakeholders could note that there was an average monthly charge of \$175.58 across all Internet Services. This was further able to be filtered based on Internet Service by clicking on “DSL”, “Fiber Optic”, or “None” in the customer distribution

chart. Selecting “Fiber Optic” updated the average monthly charge to \$184.54. The second interactive control was the radio buttons to filter the add-on services. Selecting an add-on service updated the number of customers with the selected service. The stakeholders could visually see which add-on service had a higher churn rate dependent on their gender. For example, males had a higher churn rate in comparison to females with the same services for the WGU telecommunication company. Yet for the IBM telecommunication company, females had the higher churn rate in all add-on services excluding Streaming Tv and Streaming Movies.

C5. Accessibility

The “WGU vs IBM” dashboard was created with accessibility in mind. The accessibility feature was geared toward colorblindness. This was accomplished by using the “Colorblind” Palette to select colors that were geared toward individuals with color vision deficiency. Colorblindness is noted as the decreased ability to see certain colors (Crux Collaborative, n.d.). In the dashboard, the colors utilized were various shades of Blue, Gray, Brown, and Orange. People with colorblindness are least likely to see shades of Red and Green. These colors were avoided. Another aspect used was “Tooltips”. Tooltips allowed for information about the charts to be noted without the use of any colors.

C6. Storytelling Support

The two data representations that supported the story I wanted to present in my analysis were monthly charge KPI with churn visualizations and add-on service KPI. Upon analyzing the WGU and IBM combined datasets, the main points I was able to see were the different churn percentages in comparison to the monthly charges. The stacked bar chart provided an

instantaneous view of the customers of a selected internet service and their churn status.

Utilizing this with the map of monthly charges allowed the representation of whether the average monthly charges were higher or lower based on the customer's churn status. This was a useful observation as it provided a link between the two features for retention efforts. The add-on service KPI gave further insight as to both WGU and the IBM company services that had a higher count of customers leaving based on the additional services they selected. The horizontal bar chart provided a visualization for the organization to locate what services had a higher customer churn count. Both of these representations provided insight into how the WGU company stood in comparison with its market competitor, IBM.

C7. Explanation of Audience Analysis

The usage of audience analysis allowed the adaptation of the message presented. The executive board to whom the data analysis was being presented consisted of the Senior Vice President of Customer Experience(SVP), the Executive Vice President of Sales(EVP), and an executive panel of regional Vice Presidents. Each of these members had diverse needs in terms of what information they wanted to gain insight for.

The churn percentages with the average monthly charges would be particularly insightful for the Executive Vice President of Sales as he was interested in customer retention for active clients. It allowed him to focus efforts on areas that had higher numbers of clients leaving. The map with the monthly charges also allowed him to build where his regions align. It permitted further investigation of the clients in those areas.

The Senior Vice President for Customer Experience would be more interested in the insight gleaned from the add-on service charts as he could view what services to advocate for customer promotions. Utilizing both the WGU and IBM add-on charts would permit the SVP to compare the organization's services against its competitor. The comparison could provide brainstorming options to build on in regard to the specific gender of the customer and their tenure.

Lastly, the panel of regional Vice Presidents would focus on the interaction with the map feature. This would provide a further understanding of the other representations' values based on the region. It would allow them to provide the SVP and EVP additional support for any marketing or promotion policies.

C8. Universal Access

The data representation was made universally accessible to other users. Including the noted colorblind accessibility, the formatting of the size dashboard was set to automatic. This allowed the dashboard to automatically resize to any screen it was being viewed on including desktop and phone.

C9. Elements of Effective Storytelling

Elements of storytelling were utilized within the data analysis representation. According to Microsoft three primary elements of storytelling in data analysis are narrative, visuals that enlighten, and showing data that support (Microsoft, n.d.). Two elements that I utilized were noted as follows:

- Visuals that enlighten
- Narrative

I used visuals within my storytelling by creating multiple different representations of the data that would provide key points within my report. Narrative was used throughout my presentation to tell the story focusing on the key conclusions. These were the conclusions I wanted the stakeholders to take away from my overall analysis. Key points included a high churn rate with streaming services and a specific internet service retention comparison with the competitor company, IBM. These two elements assisted in an effective data story that was presented to the board of the WGU telecommunication company.

D. References

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