Tableau Server Training

FACULTY WORKBOOK EXERCISES

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Exercise 1: Connect to Data Source

1. Click on the **Create Workbook** button.
2. Select **MockUNCData_Faculty**
3. Click **Add data source**

Exercise 2: Create a Group

1. Groups can be used to create **new dimensions** based on other dimensions. In your **Dimensions** pane, right-click **Position** and select **Create > Group...**
2. A pop-up window appears. In the **Field Name** text box, type **Rank**.
3. In the **Find** text box at the bottom of the window, type **assistant** and press **Enter**. All positions with the word "assistant" in them are highlighted.
4. Click on the **Group** button. Rename the group to **Assistant Professor**.
5. In the **Find** text box, type **associate** and press **Enter**. Click on the **Group** button. Rename the group to **Associate Professor**.
6. In the **Find** text box, type **instructor** and press **Enter**. Click on the **Group** button. Rename the group to **Instructor**.
7. Use the **CTRL** key to highlight **Adjunct Professor**, **Clinical Professor**, **Professor**, and **Research Professor**. Click on the **Group** button. Rename the group to **Professor**.
8. Click on the **X** at the top right of the window.
9. You now have a new variable in the **Dimensions** pane called **Rank**. Drag **Rank** from **Dimensions** to **Rows**.
10. Drag **Salary** from **Measures** to **Columns**. A bar chart appears. Right click on **SUM(Salary)** in **Columns** and select **Measure > Average**.
11. You can also use groups as a way of **labeling and organizing** your data. Drag **Position** to the **right** of **Rank** on your **Rows** shelf. Your data is now broken down by Position, but organized by Rank.
12. **Right click** on the **Sheet 1** tab at the bottom and select **Rename**. Change it to **Salary**.
13. **SAVE YOUR WORK!** Click on File from the menu at the top and select **Save As…**
14. Save your workbook in the **Default** folder as **(Your Name) Faculty Workbook**.

Exercise 3: Create a Calculated Field With Simple Math

1. Another way to create a new variable in Tableau is to use a **Calculated Field**. From the top menu, select **Analysis > Create Calculated Field**.
2. Change the name at the top of the window from **Calculation1** to **Monthly Salary**.
3. In the area below, type the following:

   [Salary] / **[Months]**

4. We are dividing salary by months for each faculty member . Press the **OK** button.
5. Drag Monthly Salary from Measures and drop it to the right of **AVG(Salary)** on the **Columns** shelf.

6. Right click on **SUM(Monthly Salary)** in **Columns** and select **Measure > Average**. You can now see bars for both Salary and Monthly Salary.
7. Drag **AVG(Monthly Salary)** off of the **Columns** shelf. We will come back to it later.
8. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 4: Create a Calculated Field With a Function

1. Let's create a field that calculates the number of years each faculty member has been working. To do that, we'll need to use a **date function**.
2. From the top menu, select **Analysis > Create Calculated Field**.
3. Change the name at the top of the window from **Calculation1** to **Years of Service**.
4. In the area below, type the following:

   2019 - **YEAR([Hire Date])**
5. We are using the **YEAR()** function on **[Hire Date]**. Press the **OK** button.
6. To see a list of available functions in Tableau, go to **https://help.tableau.com/current/pro/desktop/en-us/functions.htm**.
7. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 5: Create a Calculated Field With Conditionals

1. Let's create a field that determines if a faculty member is eligible for retirement benefits based on their FTE. To do that, we'll need to use **conditionals**.
2. From the top menu, select **Analysis > Create Calculated Field**.
3. Change the name at the top of the window from **Calculation1** to **Retirement**.
4. In the area below, type the following:

   IF **[FTE]** >= 0.75 THEN "Eligible"

   ELSE "Not Eligible"

   END
5. If a faculty member's FTE is equal to or greater than .75, our new field will say "Eligible". Otherwise, it will say "Not Eligible". Press the **OK** button.
6. Let's see our new field in action! Drag **Retirement** from **Dimensions** into **Filters**. We can now filter our faculty members by **Eligible** and **Not Eligible**.
7. In the **Filters** pane, **right click** on **Retirement** and select **Remove**. We will come back to it later.
8. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 6: Create an Interactive Menu to Explore Different Variables

1. What if we want to look at **Current Annual Leave** instead of salary? Drag the **Current Annual Leave** pill **OVER** the pill for **AVG(Salary)** in your **Columns** shelf. The chart changes.
2. Do the same with **FTE, Monthly Salary** and **Years of Service** variables. This works fine for Creators and Explorers, but what if a **Viewer** is using this visualization? How can they switch out the variables themselves?
3. At the top of your **Dimensions pane**, next to the **magnifying glass,** is a **down arrow**. **Click on it**.
4. Select **Create Parameter ...**
5. Change the **Name** to **Select Field**.
6. Change the **Data type** to **String**.

7. Below **Allowable values**, select **List**.
8. For the first item in our list, under **Value**, type **Salary**.
9. Type the **remaining items** in **separate lines**. The list should look like this:

   Salary

   Monthly Salary

   Current Annual Leave

   FTE

   Years of Service
10. Click **OK**.
11. You now have a **Parameters pane** in the bottom left. Right-click **Select Field** and select **Show Parameter Control**. A dropdown list appears on the right of your screen. Select an item in the list. Nothing changes! We need to create a **calculated field** to make it work.
12. Click on the **down arrow** at the **top right** of your **Dimensions** pane and select **Create Calculated Field...**
13. Name it **Field Control.** Type in the following code:

    CASE **[Select Field]**

    WHEN "Salary" THEN **[Salary]**

    WHEN "Monthly Salary" THEN **[Monthly Salary]**

    WHEN "Current Annual Leave" THEN **[Current Annual Leave]**

    WHEN "FTE" THEN **[FTE]**

    WHEN "Years of Service" THEN **[Years of Service]**

    END

14. Click **OK**.
15. Drag **Field Control** OVER the current pill in the **Columns** shelf. **Right click** on it and select **Measure > Average**.
16. Change the selection for your **Select Field** dropdown menu. Now the chart changes!
17. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 7: Create a Dynamic Chart Title

1. We have a problem. We can now show **more than just salary information** on this chart, but the **title** at the top still says **Salary**. How can we fix that?
2. **Double click on the title**. A text editor appears. Currently, it is set to display the name of the sheet as the title of the chart. **Highlight <Sheet Name> and press Delete**.
3. From the **Insert** menu at the upper right, select **Parameters.Select Field**.
4. Click **OK**.
5. Make a new selection from the **Select Field Menu**. The title now changes as well!
6. **Right click** on the **Salary** tab at the bottom and select **Rename**. Change it to **Bar Chart**.
7. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 8: Create a Reference Line

1. At the top of the **Data** pane, click on the **Analytics** tab.

2. Under **Custom**, locate **Reference Line**. Drag **Reference Line** onto your sheet, but don't release it yet. Three boxes appear. Drop it over the **Table** box.
3. Under **Computation**, select **Median**.
4. Under **Label**, select **Custom**.
5. In the **Custom Label** box, type **Median Avg:** . Click on the **down arrow** and select **Value**. Your reference line should now be labeled with the **Median Avg. Salary**.
6. Note that the reference line can be applied to **different partitions in your data**. At the top of the window, click the **Pane** radio button to see the median average salary for each **rank**. Click on the **Table** button to see the Median Avg Salary for **all ranks**.
7. Click on the **X** at the top right of the window.
8. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 9: Create a Dot Plot with Customized Tooltips and a Trend Line

1. Next to the **Bar Chart** tab, click the **New Worksheet** icon. 
2. Drag **Salary** from **Measures** to **Columns**.
3. Drag **Years of Service** from **Measures** to **Rows**.
4. Drag **Employee ID** from **Dimensions** to **Detail** on the **Marks** pane.
5. Click **Shape** and choose the **solid circle**.
6. **Roll over** a few of the dots. The **tooltip** shows us **Employee ID**, **Years of Service** and **Salary**. What if we want more information?
7. Drag **Position** onto the **Tooltip box** in the **Marks** pane. Do the same for **Department** and **FTE**.
8. **Roll over** some of the dots again. **FTE** really has a lot of decimal places! Let's fix it.
9. Right-click on **SUM(FTE)** in the **Marks** pane and select **Format Number...** Click the radio button next to **Number**. **Decimal Places** now reads **2**. When we roll over the dots again, FTE only has 2 decimal places.
10. At the top of the **Data** pane, click on the **Analytics** tab.
11. Under **Model**, locate **Trend Line**. Drag **Trend Line** onto your sheet and drop it over the **Linear** box.
12. Roll over the **trend line** and note that the tooltip shows us the **linear equation**, **R-squared** and **P-value**.
13. **Right click** on the **Sheet 2** tab at the bottom and select **Rename**. Change it to **Salary vs. Service**.
14. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 10: Create a Pie Chart with Percentages

1. Next to the **Salary vs. Service** tab, click the **New Worksheet** icon. 
2. Hold down the **CTRL key** and click on **Retirement** in **Dimensions** and **Number of Records** in **Measures** so that both pills are selected at the same time.
3. Click on the **Show Me tab** in the upper right and select the **Pie Chart.**
4. The chart is small. Make it larger by clicking on the **Fit icon**  at the top right and select **Entire View**.
5. Drag **Number of Records** from **Measures** to the **Label** box in the **Marks** pane.
6. Drag **Retirement** from **Dimensions** to the **Label** box in the **Marks** pane.
7. What if we want to see **percentages** instead of **total numbers**? Locate the pill in the **Marks** pane labeled **SUM(Number of Records)** next to the **Label icon**. Right click on it and select **Quick Table Calculation > Percent of Total**.
8. **Right click** on the **Sheet 3** tab at the bottom and select **Rename**. Change it to **Retirement**.

9. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 11: Create a Map

1. Next to the **Retirement** tab, click the **New Worksheet** icon. 
2. In the **Dimensions** pane, click the arrow next to the **State, City hierarchy**. Now you can see the **State and City** fields separately.
3. Hold down the **CTRL key** and click on **City** in **Dimensions** and **Number of Records** in **Measures** so that both pills are selected at the same time.
4. Click on the **Show Me tab** in the upper right and select the **Bubble Map**.
5. **Zoom in/ou**t on the map and **adjust the Size** of the bubbles in the **Marks** pane until you are happy with the way they look.
6. **Make the bubbles easier to see using the Color box** in the **Marks** pane. One technique is to **reduce the opacity** of the bubbles and add a **dark border**.
7. Drag **City** from **Dimensions** onto the **Label** box.
8. **Right click** on the **Sheet 4** tab at the bottom and select **Rename**. Change it to **Employment by City**.
9. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 12: Create a Table

1. Next to the **Employment by City** tab, click the **New Worksheet** icon. 
2. Drag **Employee ID** from **Dimensions** onto **Rows**.
3. Drag **Department** from **Dimensions** and drop it to the right of **Employee ID.** Do the same with **Position**.
4. Drag **Salary** from **Measures** to the **Text** box in the **Marks** pane.
5. Right-click on **SUM(Salary)** in the **Marks** pane and select **Format Number…**Change the **Number Type** to **Currency** and the **Decimal Places** to **0**.
6. At the top of the **Data** pane, click on the **Analytics** tab.
7. Under **Summarize**, locate **Totals**. Drag **Totals** onto your sheet and drop it over the **Column Grand Totals** box.
8. If we **scroll down to the bottom** of the table, we can now see a **Grand Total** for faculty salary.
9. **Right click** on the **Sheet 5** tab at the bottom and select **Rename**. Change it to **Faculty**.
10. **SAVE YOUR WORK!** Click on **File > Save**.

Exercise 13: Create a Line Chart

1. Next to the **Faculty** tab, click the **New Worksheet** icon. 
2. Drag **Hire Date** from **Dimensions** to **Columns**
3. Drag **Number of Records** from **Measures** to **Rows**.
4. **Right click** on the **Sheet 6** tab at the bottom and select **Rename**. Change it to **Employment Over Time**.

Exercise 14: Create a Dashboard for Faculty Metrics

1. Near the tabs at the bottom, click the **New Dashboard icon.** 
2. Drag **Bar Chart** from the **Sheets** pane on the left into the **blank area** at the center.
3. Drag in **Salary vs. Service** and drop it **below** the **Bar Chart**.
4. Drag in **Retirement** and drop it to the **right** of **Salary vs. Service**.
5. Move **Select Field** and **Department** to the **top** of the dashboard.

6. Click on the **down arrow icon**  for the **Department filter**. Select **Apply to Worksheets > All Using This Data Source**.
7. Move the **Retirement** color legend below the **pie chart** and **adjust the size**.
8. Click the **X** icon on the **Number of Records legend**.
9. **Right click** on the **Sheet 6** tab at the bottom and select **Rename**. Change it to **Employment Over Time**.

Exercise 15: Create a Dashboard for the Faculty Map

1. Near the tabs at the bottom, click the **New Dashboard icon.** 
2. Drag **Employment by City** from the **Sheets** pane on the left into the **blank area** at the center.
3. Drag in **Faculty** and drop it **below** the **Map**.
4. Since our map bubbles have **tooltips** and **labels**, the **Number of Records legend** isn't really necessary. Click the **X** icon on the legend to **remove it**.
5. Select your **Employment by City** sheet and click on the **use as filter icon**  .
6. Click on the **down arrow icon**  for the **Faculty** sheet. Select **Fit > Fit Width**.
7. Move the **Retirement** color legend below the **pie chart** and **adjust the size**.
8. Click the **X** icon on the **Number of Records legend**.
9. **Right click** on the **Sheet 6** tab at the bottom and select **Rename**. Change it to **Faculty Map**.

Exercise 16: Create a Story

1. Near the tabs at the bottom, click the **New Story icon.** 
2. In the **Sheets** pane on the left, **double click** on **Faculty Metrics**.
3. Click on the **box** at the top labeled **Add a caption** and change it to **Faculty Metrics**.
4. In the top left, under **New story point**, click the **Blank button**.
5. In the **Sheets** pane on the left, **double click** on **Faculty Map**.
6. Click on the **box** at the top labeled **Add a caption** and change it to **Faculty Map**.
7. Click on the **Blank** button again.
8. **Double click** on the **Employment Over Time** sheet and change the caption at the top to **Employment Over Time**.
9. You now have multiple dashboards and sheets that the user can **navigate through** using the boxes at the top. The boxes don't have to contain labels. They could also contain important information about the data, such as "The median average salary for faculty is $142K".
10. Click the **Layout tab** at the top of the **Story pane**. Notice the **other options** available for navigation.
11. **Right click** on the **Sheet 6** tab at the bottom and select **Rename**. Change it to **Faculty Story**.
12. **SAVE YOUR WORK!** Click on **File > Save**.