Tableau II Exercises

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Exercise 1: Import and Merge Data

1. Click on **Connect > To a File > Text File**

2. Open **IPEDS_2018.csv**

3. Look at the **Files** pane on the left. Tableau sees that you have another spreadsheet in the same location as your original data source.

4. Drag **university_websites.csv** from the **Files** pane to the open area at the top. This tells Tableau that you want to create a **relationship** between your two data sources.

5. There is a problem creating the relationship. Look at the box in the lower left that says **Select matching fields to create this relationship**.

6. Under the **IPEDS column** in the box, search for the **Institution Name field** and select it. In the **websites column**, select **School Name.**

7. Tableau now shows the columns in your **second data source**. Click on the **rectangle at the top labeled IPEDS** to see the columns from your **first data source**.

8. How do we know that our data merged successfully? At the bottom, click on the **Sheet 1 tab**. Look at your **data pane** on the left. Find the **Institution Name** variable and drag it to your **rows shelf**.

9. Scroll toward the bottom of your **data pane** to find the **URL pill** and drag it into the **rows shelf** to the **right** of **Instution Name**. This table shows us that our Institutions have been connected to our URLs and our relationship was set up correctly.

10. Drag both pills **out** of the rows shelf to remove them.

Exercise 2: Create Groups

1. In your **Data** pane, right-click **Carnegie Classification** and select **Create > Group...**

2. A pop-up window appears. In the **Field Name** text box, type **School Type**.

3. Select all of the **Associate's categories** by clicking on the first item, holding down the shift key, and clicking on the last item. Now, click the **Group button**. Rename the group **Associate's**.

4. Do the same for the **Baccalaureate**, **Doctoral** and **Master's** categories.

5. Check the box at the bottom next to **Include Other**.

6. Click **OK**.

7. You now have a new variable in the **Data pane** called **School Type**. Drag **School Type** from **Data** to **Rows**.

8. **Scroll down** to the bottom of your **Data** pane.

9. Drag *ipeds_2018.csv (Count)* from **Data** to **Columns**. A bar chart appears.

10. You can also use groups as a way of **labeling and organizing** your data. **Scroll back to the top** of your **Data** pane.

11. Drag **Carnegie Classification** to the **right** of **School Type** on your **Rows** shelf. Your data is now broken down by Carnegie Classification, but organized by School Type.

12. Roll over the **School Type** pill in the **rows** shelf and click on the **arrow**.

13. From the menu, select **Sort**.

14. Under **Sort By**, select **Manual**. Click on the different categories and use the arrow buttons to rearrange them.

15. **Right click** on the **Sheet 1** tab at the bottom and select **Rename Sheet**. Change it to **School Types**.

Exercise 3: Create a Set

2. In your **Data** pane, right click on **Unit ID** and select **Create > Set...**

3. A pop-up window appears. In the **Name** text box, type **Competitiveness**.

4. Click on the **Condition** tab and select **By field**.

5. In the **large dropdown menu**, **scroll down** and select **Percent admitted - total**.

6. Click on the **=** dropdown menu and change it to **<=**

7. Change the **0** in the text box to **40**.

8. We are telling Tableau to **create a set of schools whose percent admitted is less than or equal to 40**.

9. Click on **OK**.

10. Drag **Competitiveness** from **Data** to **Rows**.

11. **Scroll down** to the bottom of your **Data** pane.

12. Drag *ipeds_2018.csv (Count)* from **Data** to **Columns**. A bar chart appears.

13. Tableau is telling us **how many schools are in and out of our set**.

14. **Right click** on **In** and select **Edit Alias**. Change it to **Competitive**.

15. **Right click** on **Out** and select **Edit Alias**. Change it to **Non Competitive**.

16. **Right click** on the **Sheet 2** tab at the bottom and select **Rename Sheet**. Change it to **Competitiveness**.

Exercise 4: Create an Interactive Menu to Explore Different Variables

2. Drag the **State abbreviation** pill into the center of the sheet. A symbol map appears. Let's change it to a filled map.

3. Go to your **Marks** pane and change the **dropdown menu** at the top from **Automatic** to **Map**.

4. Drag **Percent of first-time undergraduates – foreign countries** from the **Data** pane into the **Color** box on the **Marks** pane.

5. What if we want to look at **in-state undergrads** instead of international ones? Drag the **in-state** variable into the Color box on your **Marks** pane. The map changes.

6. Do the same with **out-of-state** and **residence unknown** variables. This works fine for us in Tableau, but what if **someone else** is viewing this on a **website**? How can they switch out the variables themselves?

7. Above the **scrollbar** in your **Data** pane is a **down arrow**. **Click on it**.

8. Select **Create Parameter ...**

9. Change the **Name** to **Undergrad Residence**.

10. Change the **Data type** to **String**.

11. Next to **Allowable values**, select **List**.

12. For the first item in our list, under **Value**, type **% foreign**.

13. Type in the **remaining items** in our list in **separate lines**: **% in state, % out of state, % unknown**

14. Click **OK**. Be sure to **clear your search** in the **Data** pane if you have one.

15. You now have a **Parameters pane** in the bottom left. Right-click **Undergrad Residence** and select **Show Parameter Control**. A dropdown list appears on the right of your screen. Select an item in the list. Nothing changes!

16. Click on the **down arrow** at the **top right** of your **Data** pane and select **Create Calculated Field...**

17. Name it **Undergrad Residence Control**

18. Type in the following code:

    CASE **[Undergrad Residence]**
    WHEN '% foreign' THEN **[Percent of first-time undergraduates - foreign countries]**
    WHEN '% in state' THEN **[Percent of first-time undergraduates - in-state]**
    WHEN '% out of state' THEN **[Percent of first-time undergraduates - out-of-state]**
    WHEN '% unknown' THEN **[Percent of first-time undergraduates - residence unknown]**
    END

19. Click **OK**.

20. Scroll down to the bottom of your **Measures** pane and drag **Undergrad Residence Control** into the **Color** box on your **Marks** pane.

21. So far, we've been **adding up** the percentages for **every school in a state** together. Let's use the **average** percentage instead. **Right click** on the **Undergrad Residence Control** pill in the **Marks** pane. Select **Measure > Average**.

22. Change the selection for your **Undergrad Residence** dropdown menu. Now the map changes!

Exercise 5: Add Specific Locations and Customized Tooltips to the Map

1. To map individual locations in Tableau, you need to have the **latitude** and **longitude** for each location as part of your data set. When combining individual locations with generalized locations, you will need to use **multiple map layers**.

23. Before we can add latitude and longitude as a new layer on the map, we'll need to create a **calculated field** to combine them. Click on the **down arrow** at the **top right** of your **Data** pane and select **Create Calculated Field...**

2. Name it **Locations**.

3. Type in the following code:
   MAKEPOINT(**[Latitude location of institution]**, **[Longitude location of institution]**)

4. In the **Data** pane, find **Locations** and drag it onto the map. The **Add a Marks Layer** box appears. Drag the Locations pill onto the box.

5. Look at your **Marks pane**. There are now **two different tabs**, one for each layer.

6. **Roll over** the individual locations. Notice that they **are all highlighted at once** and we have **no tooltip**. This is because Tableau doesn't know what **level of detail** to use for these locations.

7. With the top tab of your **Marks** pane open, Drag **Unit ID** onto the **Detail** box and roll over the locations again. We can now see each of their tooltips. Right now, the tooltips aren't very informative. Let's add some more information.

8. Drag **Institution Name** from **Data** to the **Tooltip** box in the **Marks** pane.

9. **Roll over** a school location again. Now we can see the school name.

10. Drag **Control of Institution** from the **Data** pane into the **Color** box on the **Marks** pane to give our school locations different colors.

Exercise 7: Add a Worksheet Action to the map

1. Scroll down to the bottom of the **Data** pane.

2. Drag the **URL** pill from the **Data** pane to the **Details** box on the **Marks** pane. Nothing happens visibly, but we have now attached the URL data to this sheet.

3. Our tooltips are now getting a bit cluttered. To edit them, click on the **Tooltip** box in the **Marks** pane. Delete everything except for **<ATTR(Institution Name)>.**

4. Change the **dropdown menu** from **Responsive** to **On Hover**. We need to do this if we want clickable links to appear in the tooltips. Click **OK**.

5. In the menu at the top, go to **Worksheet > Actions...**

6. Click **Add Action > Go to URL...**

7. Click on the **Insert button** next to the **Name** text box and search for **URL**. Click on it.

8. There is another text box under **URL** at the bottom. Click the **Insert button** next to it and select search for **URL.** Click on it, then click **OK.**

9. Click **OK** again.

10. Roll over a location on your map. The website link is now clickable!

Exercise 8: Create a Dashboard and edit Dashboard Actions

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2. On the left is a menu for **Size**. Click on it to get a pop-up box.

3. Inside the pop-up box is a menu called **Range**. Click on it and select **Automatic**.

4. Drag **Undergrad Residence** from the **Sheets** pane on the left into the **blank area** at the center.

5. Drag in the **School Types** sheet **under** Undergrad Residence.

6. Drag **Competitiveness** to the right of **School Types**.

7. Resize your visualizations and move your legends and parameter closer to the visualizations they correspond with.

8. Click on the **By State map** so that it has a **grey border** around it. Click on the **filter icon**.

9. Click on a state in the **By State map** to filter the data.

10. There is a problem! **Our filter isn't working correctly**. This can happen when we are using **both generalized and specific locations** on the same map. To fix the filter, we will need to **edit** our **dashboard action**.

11. In the menu at the top, go to **Dashboard > Actions...**

12. Click on **Filter 1 (generated)** and select **Edit…**

13. Change the **Name** to **State Filter.**

14. Look at the **Filter** section at the bottom of the pop-up window. Note that we are using **All Fields** in the filter. **This is the cause of the problem**. We **only** want to use the **State Abbreviation** field.

15. Click on **Selected Fields**, the press the **Click to add** button.

16. Search for **State Abbreviation** and click on it.

17. Click **OK** twice.

18. Now click on a state in the map. The school types and competitiveness charts are filtered by that state.