

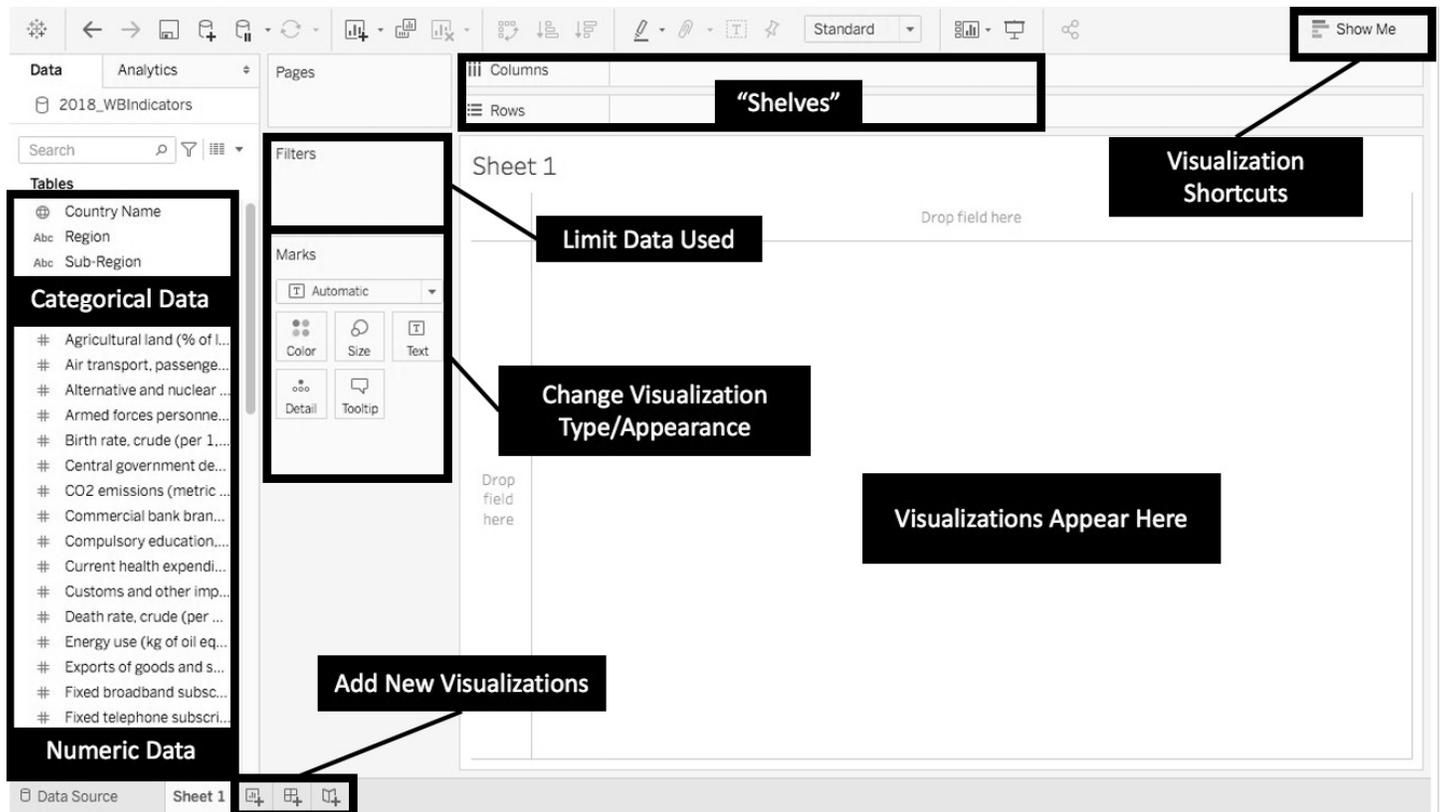
Tableau I Exercises

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Exercise 1: Import Data

1. Click on **Connect > To a File > Microsoft Excel**
2. Open **WB_Indicators_2023.xlsx**
3. The **Data Source** tab now displays the contents of your spreadsheet.
4. Clicking on the **icon over a column** allows you to change the **data format**.
5. Clicking the **down arrow over a column** gives you **more options**.
6. Click on the **Sheet 1** tab at the bottom.

Tableau Interface



Exercise 2: Create a Bar Chart

1. Drag **Country Name** from the **Data** pane to the **Columns** shelf.
2. Drag **Individuals using the Internet** from the **Data** pane to the **Rows** shelf. A bar chart appears.
3. Roll over one of the bars. Do the numbers make sense? Something is off. Tableau is **ADDING** up the numbers for all of the different years in the dataset.
4. Drag **Year** from the **Data** pane to the **Filters** box.
5. Click on **Years** and select **Next**. Check the box next to **2008** and click on **OK**.
6. Roll over a bar again. The numbers now represent **only** the percentage for **2018**.

7. Right click on the **Years** pill in the **Filters** box and select **Show Filter**.
8. Look at the **interactive filter** to the right of your visualization. Check and uncheck the years you want to look at.
9. Click on the **downward arrow** at the top right of the **interactive filter** and select **Single Value Dropdown** from the menu. This makes it easier to select one year at a time.
10. The bar chart is difficult to read. Click the **Swap Rows and Columns icon**  to make the bar chart **horizontal**.
11. Let's make it easier to see the countries with the **highest and lowest** internet use. Click the **Sort Descending icon**  icon.
12. Now let's add some more information to the visualization. Drag **Region** from the **Dimensions** pane to the **Color** box in the **Marks** pane. A legend appears on the right.
13. Click on the **Color** box in the **Marks** pane.
14. Click **Edit Colors**.
15. Under **Select Color Palette**, use the dropdown menu to find a palette that you like.
16. Click on **Assign Palette** to automatically use the first colors in the palette.
17. To **select colors individually**, click one of the **Data Items** on the left, then click on the color you want it to use.
18. Click **OK**.
19. **Right click** on the **Sheet 1** tab at the bottom and select **Rename Sheet**. Change it to **Internet**.

Exercise 3: Create a Bubble Chart

1. Next to the **Internet** tab, click the **New Worksheet icon** .
2. Click on **Life Expectancy at birth, total** in the **Data** pane.
3. Find **Population: Ages 65 and above**, also in the **Data** pane. Hold down the **CTRL key** (or **command** if you have a mac) and click on it. **Both pills** should now be highlighted.
4. Click on the **Show Me** tab in the upper right and select the **Scatterplots graph** which should be outlined with an orange box.
5. Our scatterplot only has one circle! How can we fix it?
6. Drag **Country Name** from the **Data** pane to the **Details** box in the **Marks** pane. We now have a bubble for every country!
7. **Roll over** one of the bubbles. Does something seem off about those numbers? Tableau is **ADDING** up the numbers for all of the years in the dataset once again.
8. Click the **Internet** tab at the bottom.
9. Right click **YEAR(year):2018** in the **Filters** box and select **Apply to Worksheets > All Using This Data Source**.
10. Click the **Sheet 2** tab at the bottom.
11. Roll over a bubble again. The tooltip shows us **only** the numbers for **2018**.
12. Let's add some more information to the graph. Drag **Current health expenditure per capita** from the **Data** pane to the **Size** box in the **Marks** pane. A **legend** appears on the right. If you can't see the legend, click on the **Show Me** tab.
13. Click the **Size** box in the **Marks** pane and change the bubble sizes to your liking.
14. Click the **Shape** box and change the symbol to a **filled circle**.
15. Click the **Color** box and reduce the **Opacity** to 50%.
16. Drag **Country** from the **Data** pane to the **Label** box.
17. **Right click** on the **Sheet 2** tab at the bottom and select **Rename Sheet**. Change it to **Health**.

Exercise 4: Create a Map

1. Next to the **Health** tab, click the **New Worksheet** icon. 
2. Drag **Country Name** from the **Data** pane directly onto the sheet.
3. Drag **Fuel Exports** from the **Data** pane to the **Size** box in the **Marks** pane.
4. **Roll over the map** and click on the **Search icon**  in the upper left. Type in the name of a country and press Enter. The map should **zoom** to that country.
5. To return to the full map, click on the **pushpin icon**. 
6. **Click and drag** on the map. Note that you are **selecting multiple data points** this way. Click on an **empty area** of the map to **deselect**.
7. Click the **Arrow icon**  in the **map controls** and select the **Pan icon** . You can now **move the map around** by **clicking and dragging** on it.
8. In the top menu, select **Map > Map Layers**.
9. Use the various controls to change the appearance of the map to your liking. Click the **X** at the top right of the pane when you're done to close the map layers.
10. Click on **Show Me > Filled Maps** (located next to the symbol maps).
11. **Right click** on the **Sheet 3** tab at the bottom and select **Rename Sheet**. Change it to **Fuel**.

Exercise 5: Create Two Charts in One Worksheet

1. Next to the **Fuel** tab, click the **New Worksheet** icon. 
2. Drag **Year** from the **Data** pane to **Columns**.
3. Drag **Fixed Broadband Subscriptions** from the **Data** pane to **Rows**.
4. Only one year of data is currently visible because the **Years filter** from the **Internet sheet** is still being applied to this visualization.
5. Click the **Internet** tab at the bottom.
6. Right click **YEAR(year):2018** in the **Filters** box and select **Apply to Worksheets > Selected Worksheets**.
7. Uncheck **Sheet 4** and click **OK**.
8. Click the **Sheet 4** tab at the bottom. Since the years filter is no longer applied to this worksheet, we can now see all of the years in our line chart.
9. What if we want to compare broadband usage to telephone usage? Drag **Fixed Telephone Subscriptions** from the **Data** pane to **Rows** and drop it **to the right** of your pill for broadband. A **second line graph** appears below the first one.
10. Something else has changed. The **Marks** pane now has three different tabs inside of it. The **top tab** is labeled **All** and controls the marks for both graphs at the same time. Click on **Color** and change it to green. Both line graphs are now green.
11. Click on the **middle tab** in the **Marks** pane. This tab controls our graph for broadband. Click on **Color** and change it to purple. Now the top graph is purple and the bottom graph is green.
12. Click on the **bottom tab** in the **Marks** pane. This tab controls our graph for telephones. There is a **dropdown menu** at the top of the pane which is currently set to **Automatic**. Click on it and select **Bar**. The bottom graph is now a bar chart.
13. Now combine the two charts into one. Right click **SUM(Fixed Telephone Subscriptions)** in **Rows** and select **Dual Axis**.
14. The bars are overlapping the line. If you want the line on top, select **SUM(Fixed Telephone Subscriptions)** and drag it in front of **SUM(Fixed Broadband Subscriptions)**.
15. We now have a serious problem. There are two different vertical axes on the left and right side of the chart, and they are using **different scales**. This is very **misleading**.

16. **Right click** on **one of the vertical axes** and select **Synchronize Axis**. Both axes are now using the same scales.
17. There is another problem. **Roll over** one of the bars. Telephone subscriptions are supposed to be **per 100 people**, but the **numbers are very large**. Tableau is **ADDING** up the numbers for all of the **countries** in the dataset.
18. Right click **SUM(Fixed Telephone Subscriptions)** in **Rows** and select **Measure > Average**. Do the same for **SUM(Fixed Broadband Subscriptions)**.
19. **Roll over** one of the bars again. The number now reflects the **Average** number of telephone subscriptions per 100 people in all countries for that year.
20. **Right click** on the **Sheet 4** tab at the bottom and select **Rename Sheet**. Change it to **Communication**.

Exercise 6: Create a Dashboard

1. Near the tabs at the bottom, click the **New Dashboard icon**. 
2. On the left is a menu for **Size**. Click on it to get a pop-up box.
3. At the very top of the pop-up box is a **dropdown menu**. Click on it and select **Automatic**.
4. Drag **Fuel** from the **Sheets** pane on the left into the **blank area** at the center.
5. Drag your **Internet** sheet over the map, but **don't release the mouse button**. Watch the **highlighted areas** on the dashboard. **Position the sheet below** your map.
6. Drag the **Communication** sheet over and position it **to the right** of your **Fuel** sheet.
7. Drag the **Health** sheet over and position it **to the right** of your **Internet** sheet.
8. Click on each of the charts that are now in your dashboard. Notice that a **grey border** appears around them. Notice there are **icons** attached to the grey border.
9. Notice that your **legends** appear on the dashboard with your charts. They are located in the **column on the right**.
10. Click on one of your **legends**. The **grey border** appears around it. Click on the **tab** in the **top center** of the **grey border** and **drag** to move the legend. Rearrange your legends so they are closer to their corresponding charts.
11. Click on the **Internet sheet** and on the **down arrow icon**.  A menu appears. Select **Filters > Year of Year**.
12. The filter appears on the right side of your dashboard. **Double click** the **Title** to change it.
13. Click the **down arrow icon**  for the **filter** and select **Single Value (dropdown)**.
14. Move the filter to the top of the dashboard. Select different years and watch all the visualizations change at once.
15. Let's add another filter. Select your map and click on the **use as filter icon** .
16. Click on one of the countries in the map. **All data** in the dashboard is now **filtered** based on the country you selected on the map.

Exercise 7: Uploading to Tableau Public

If you are using *Tableau Public*

1. Go to **File > Save to Tableau Public As...**
2. Type in your **email and password**.
3. Click on **Sign In**.
4. Under **Workbook Title**, give your workbook a name and click **save**.

If you are using *Tableau Desktop*

1. Click on the **Data Source** tab in the lower left.
2. In the upper right, under **Connection**, select **Extract**.
3. Click on the **Dashboard I** tab.
4. A window will pop up, allowing you to **select the location of your extract**. It doesn't matter where you decide to save it.
5. Go to **Server > Tableau Public > Save to Tableau Public...**
6. Type in your **email and password**.
7. Click on **Sign In**.
8. Under **Workbook Title**, give your workbook a name and click **save**.