Microsoft Power Platform

Power BI

Dashboard in a Day Lab 2

Contents

Introduction

This is lab two out of five labs in total. **Please continue to use your file after completing Lab 1.** If you are joining the DIAD at this point or were unable to complete Lab 1, please start this lab with the "Lab 1 solution.pbix" file you can find in the **Reports** folder.

In this lab you will learn how to:
- create a range of different charts.
- highlight and cross-filter.
- create new groups and hierarchies.
- add new measures to the model to do additional analysis.

The lab includes steps for the user to follow along with associated screenshots that provide a visual aid. In the screenshots, sections are highlighted with red or orange boxes to indicate the area the user needs to focus on.

> **Note:** This lab uses real, anonymized data provided by ObviEnce, LLC. Visit their site to learn about their services. This data is the property of ObviEnce, LLC and has been shared to demonstrate Power BI functionality with industry sample data. Any use of this data must include this attribution to ObviEnce, LLC.

Power BI Desktop – Data Modeling and Exploration

In this section, we will learn about the key parts of the Power BI desktop. We will model and explore the data and build visuals.

Power BI Desktop - Layout

Let's start with the main **Power BI Desktop** window and become familiar with the distinct sections available.
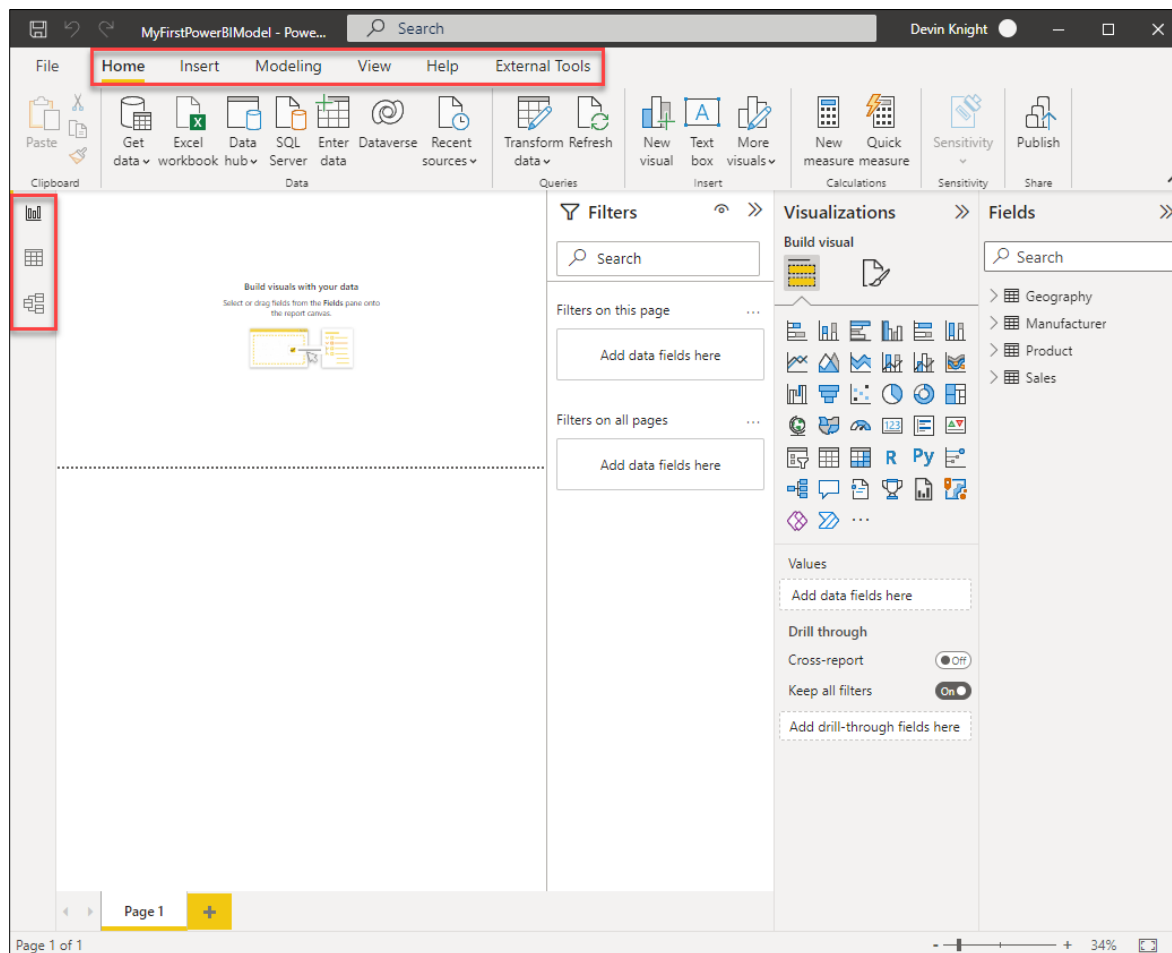

1. At the top of the window within the ribbon, you will see the **Home** tab where the most common operations you perform are available.

2. The **Insert** tab in the ribbon allows you to insert shapes, a text box or new visuals.

3. The **Modeling** tab in the ribbon enables additional data modeling capabilities like adding custom columns and calculating measures.

4. The **View** tab has options to format the page layout.

5. The **Help** tab provides self-help options like guided learning, training videos and links to online communities, partner showcases and consulting services.

6. On the left side of the window, you have three icons: **Report, Data** and **Model**. If you hover over the icons, you can see the **tooltips**. Switching between these allow you to see the data and the relationships between the tables.

7. The center **white space** is the canvas where you will be creating visuals.
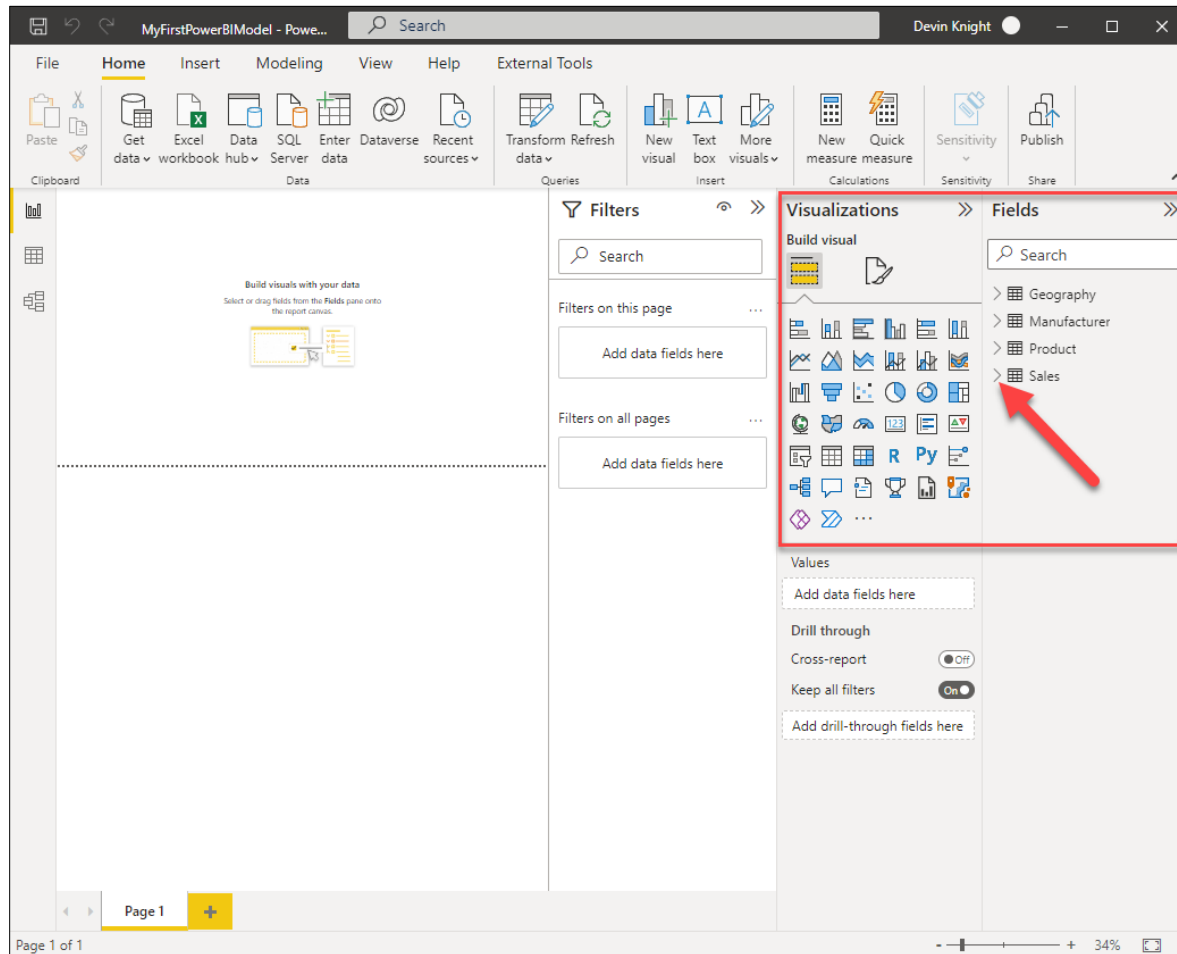
8. The **Visualizations** pane on the right-side of the window allows you to select visualizations, add values to the visuals, and add columns to the axis or filters.

9. The **Fields** pane is where you see the list of tables which were generated from the queries. By selecting the arrow next to a table name, you can expand the field list for that table.
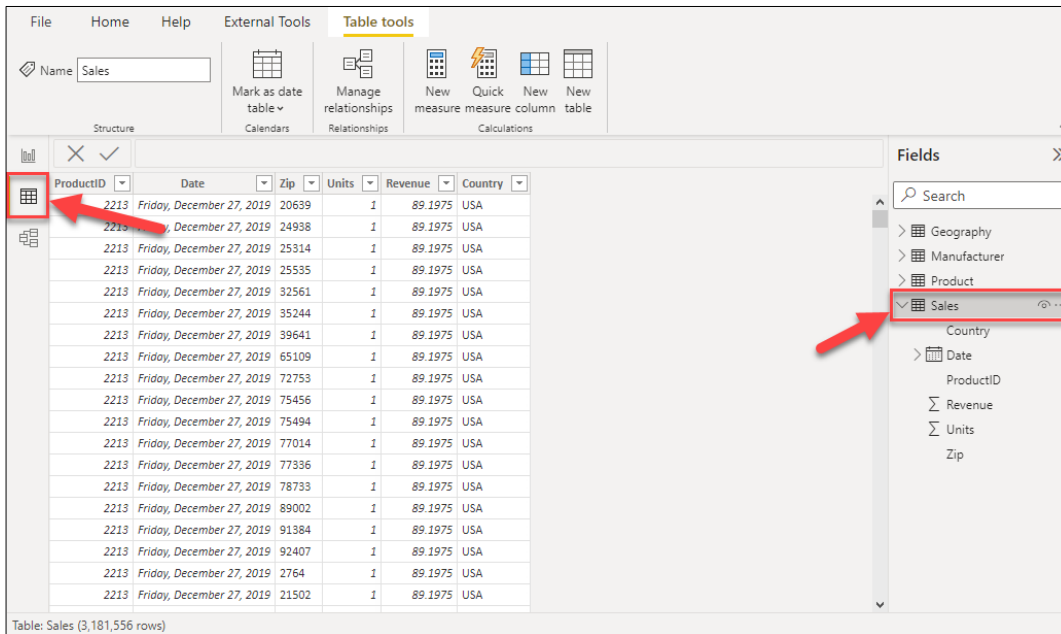
10. Select the **Data** view icon on the left side of the window. Select and expand the **Sales** table in the **Fields** pane as shown in the figure below. Scroll up and down to notice how fast you can navigate through over three million rows.
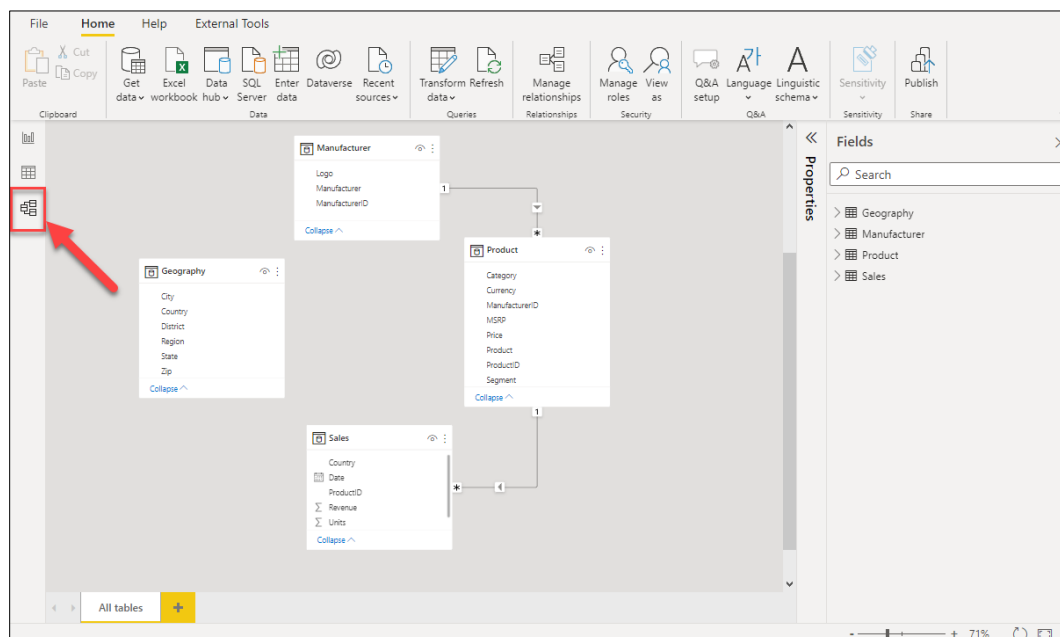
11. Select the **Model** view icon to the left of Power BI Desktop. You will see the tables you have imported along with Relationships. The Power BI Desktop can often automatically infer relationships between the tables.

   - A relationship is created between the **Sales** and **Product** tables using the **ProductID** column.

   - A relationship is created between the **Product** and **Manufacturer** tables using the **ManufacturerID** column.

Power BI supports multiple types of relationships:

- 1 to many

- 1 to 1

- Many to many

In this lab, we will be using the 1 to many type of relationship, the most common type of relationship. This means one of the tables involved in the relationship should have a unique set of values. We will create additional relationships later in this lab.

Drag and move the tables to appear as shown in the figure:

> **Note**: Tables may not appear as shown in the figure. You can zoom in and out of the **Relationship** models by dragging the zoom slider in the bottom right corner of the window. Also, if you want to ensure you are seeing all the tables, use the fit to screen ⛶ icon.
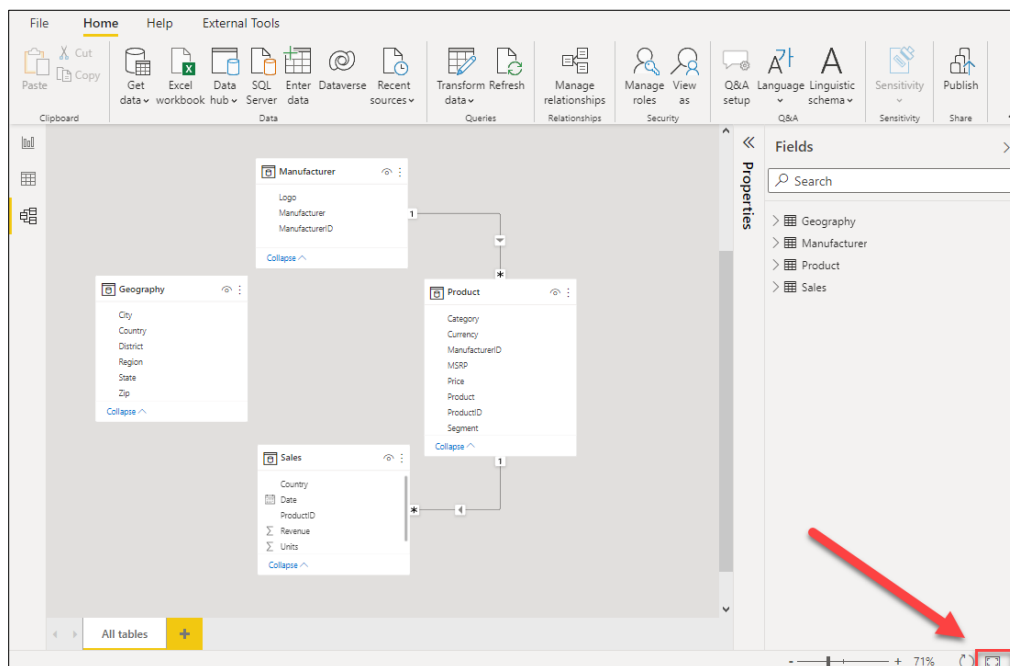
12. Select the **Search box** and notice the options available. The options change based on what you are viewing in canvas.
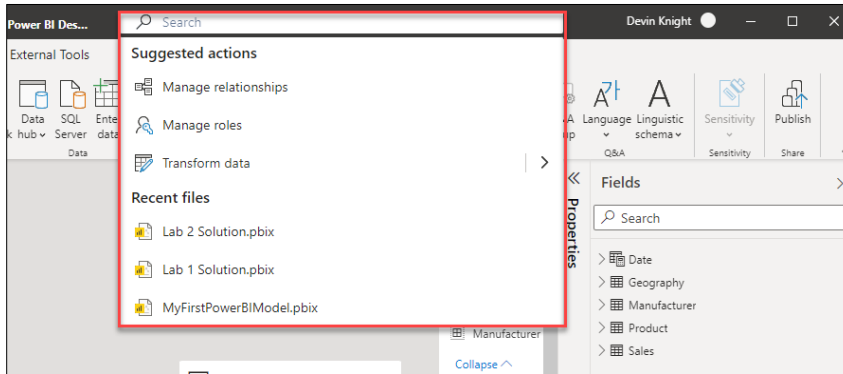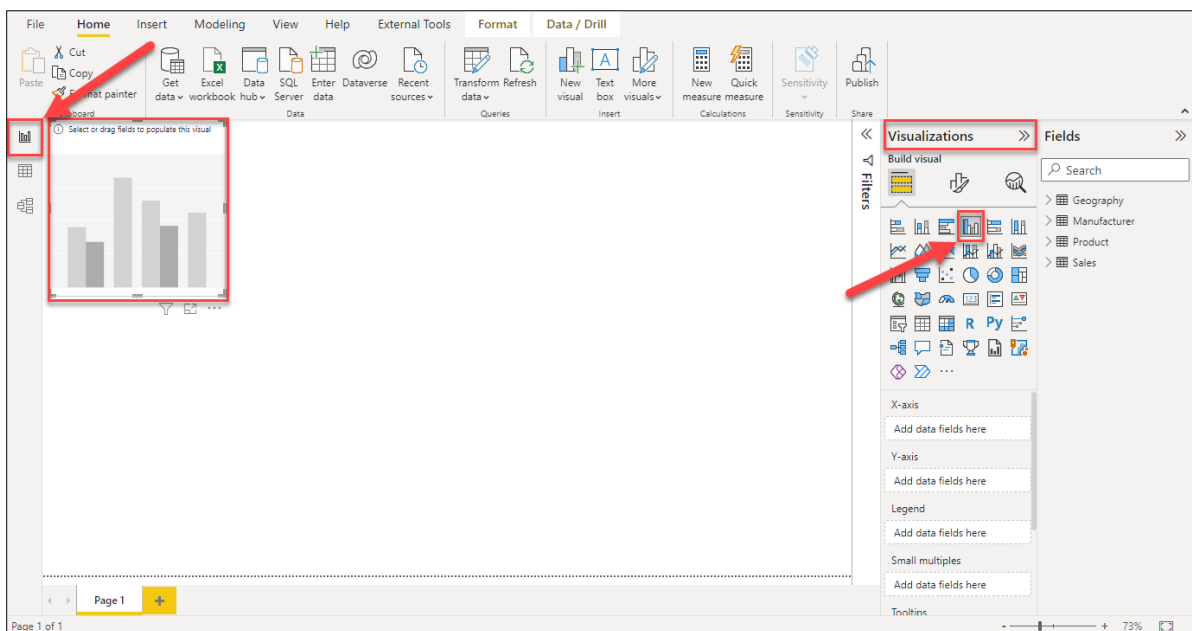
Power BI Desktop – Data Exploration

Now that we have loaded data, let's start with analyzing sales by country.

13. Select the **Report** icon to the left side of the Power BI Desktop to navigate to the **Report** view.

14. Select the **Clustered column chart** visual in **Visualizations pane** as shown in the figure below:

15. From the **Fields** pane, expand the **Geography** table and then select the **checkbox** next to the **Country** field.

16. From the **Fields** pane, expand the **Sales** table and then select the **checkbox** next to the **Revenue** field.

17. **Resize** the visual as needed by dragging the anchor points around the edges of the visual as shown below.
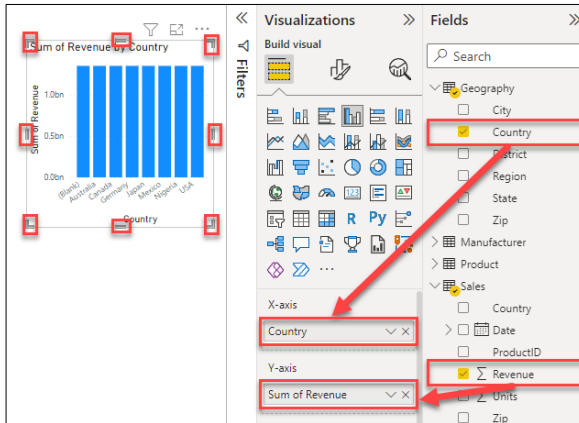
Notice that the **Sum of Revenue** of each country is the same. This is because there is currently no relationship between the tables used in the visual. Next, we will create a relationship between the Sales and Geography tables.

18. Select the **Model** icon on the left side of the Power BI Desktop to navigate to the **Model** view.

19. Our sales data is by Zip code, so we need to connect the **Zip** column from the **Sales** table with **Zip** column in the **Geography** table. You can do this by selecting, dragging, and dropping the **Zip** field in the **Sales** table on top of the **Zip** field in the **Geography** table.

    You will notice the **Create relationship** dialog opens with a warning message at the bottom stating the relationship has a many-many cardinality. The reason for the warning is that we don't have unique Zip values in the **Geography** table. This is because multiple countries could have the same Zip code. Let's concatenate the **Zip** and **Country** columns to create a unique value field.

20. Select **Cancel** in the **Create relationship** dialog box.
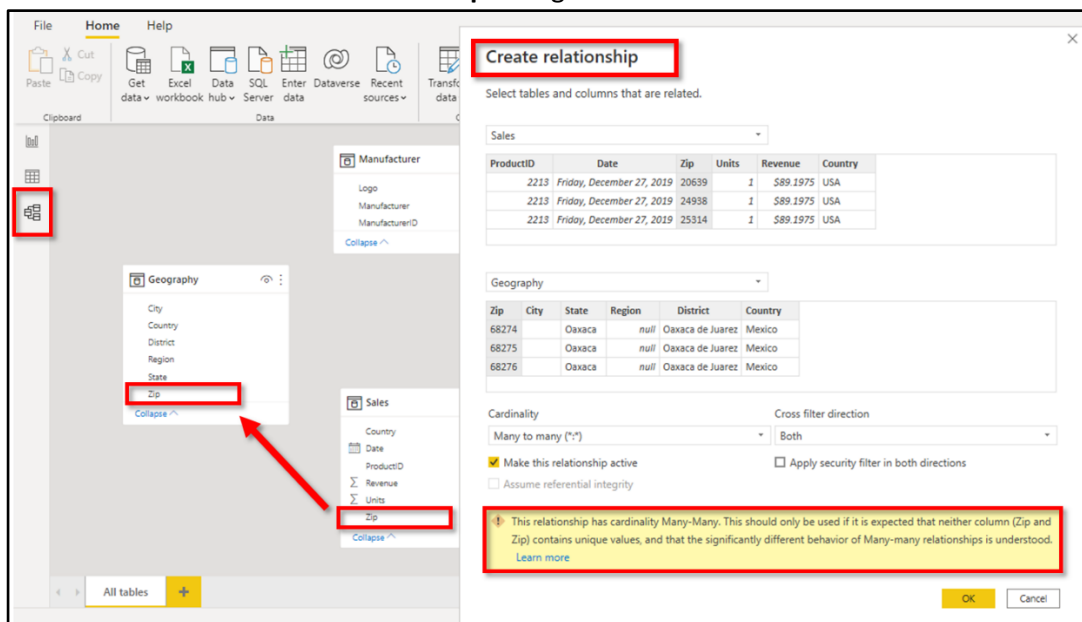

We need to create a new column in both the **Geography** table and the **Sales** table that combines the **Zip** and **Country** columns. Let's start by creating a new column in the **Sales** table.

21. Select the **Report** icon on the left side of the tool to navigate to the **Report** view.

22. In the **Fields** pane, hover over the **Sales** table name, then select the ellipses to the right of the table name. Choose **New Column** and you will then see a formula bar appear, as shown in the figure below, to help create this new column.
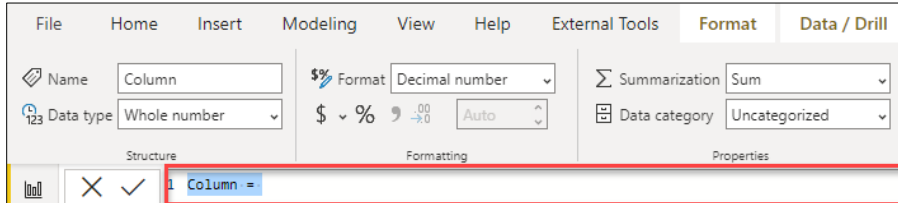
23. Now we are ready to combine the Zip and Country columns into a new column called **ZipCountry**, separated by a comma. To create this column called **ZipCountry**, type the following calculation in the formula bar editor:

**ZipCountry = Sales[Zip] & "," & Sales[Country]**
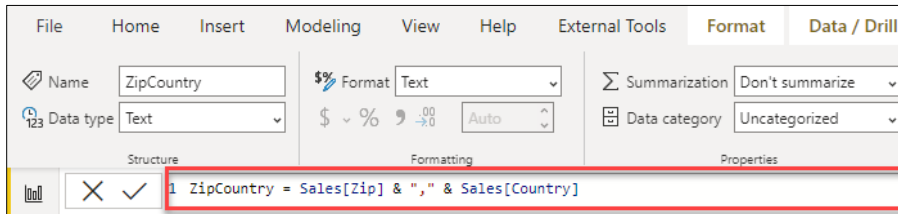
24. Once you are done entering the formula in the formula bar, press **Enter** on your keyboard or select the checkmark on the left side of the formula bar.

You will notice that IntelliSense appears guiding you to choose the correct column. The language you used to create this new column is called **Data Analysis Expression (DAX)**. We are connecting columns (Zip and Country) in each row by using the "&" symbol. The icon with an (fx), near the new column ZipCountry, indicates that you have a column containing an expression, also referred to as a calculated column.

> **IMPORTANT!**
>
> If you get an error creating a new column, make sure your Zip column is the Text Data Type.

Note: An alternative way to add a new column is by selecting the table, select **Table Tools** or **Modeling,** and then choose **New Column** from the ribbon.
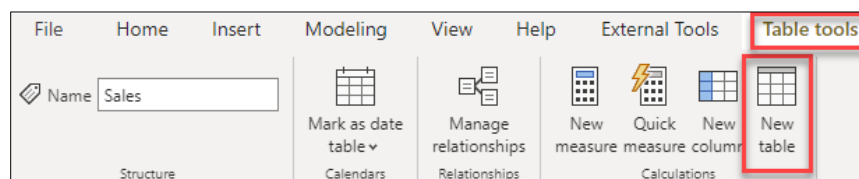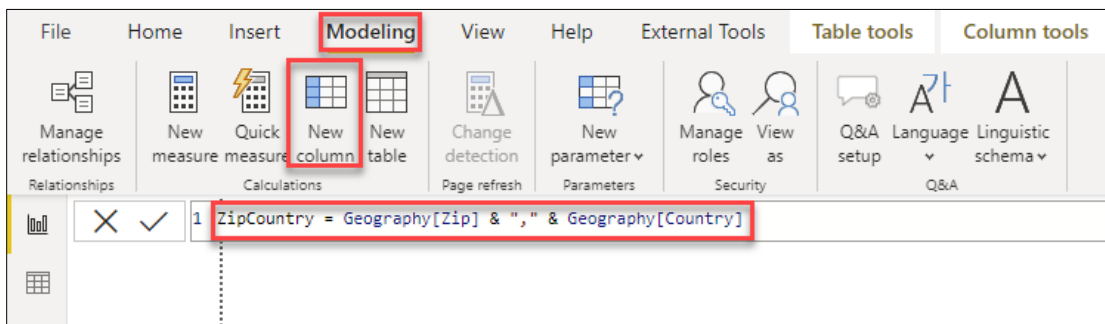
Let's use this method to create a **ZipCountry** column in the **Geography** table.

25. From the **Fields** pane, select the **Geography** table. Then from the ribbon, choose **Modeling**, and then select **New Column** as shown in the figure below:
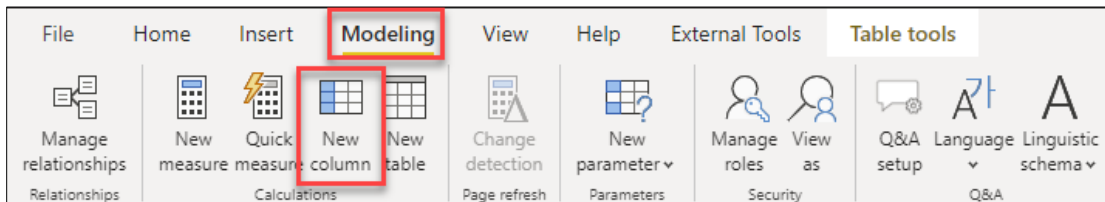
26. A formula bar now appears. Enter the following DAX expression in the formula bar:

**ZipCountry = Geography[Zip] & "," & Geography[Country]**

You will see a new column, **ZipCountry**, in the **Geography** table. The final step is to set up the relationship between the two tables using the newly created **ZipCountry** columns in each of these tables.

27. Select the **Model** icon on the left of the Power BI Desktop to navigate back to the **Model** view.

28. Drag and drop the **ZipCountry** field from the **Sales** table on top of the **ZipCountry** field in the **Geography** table.

> **Note**: If you do not see the **ZipCountry** column you may need to scroll down on the list of columns in each table.
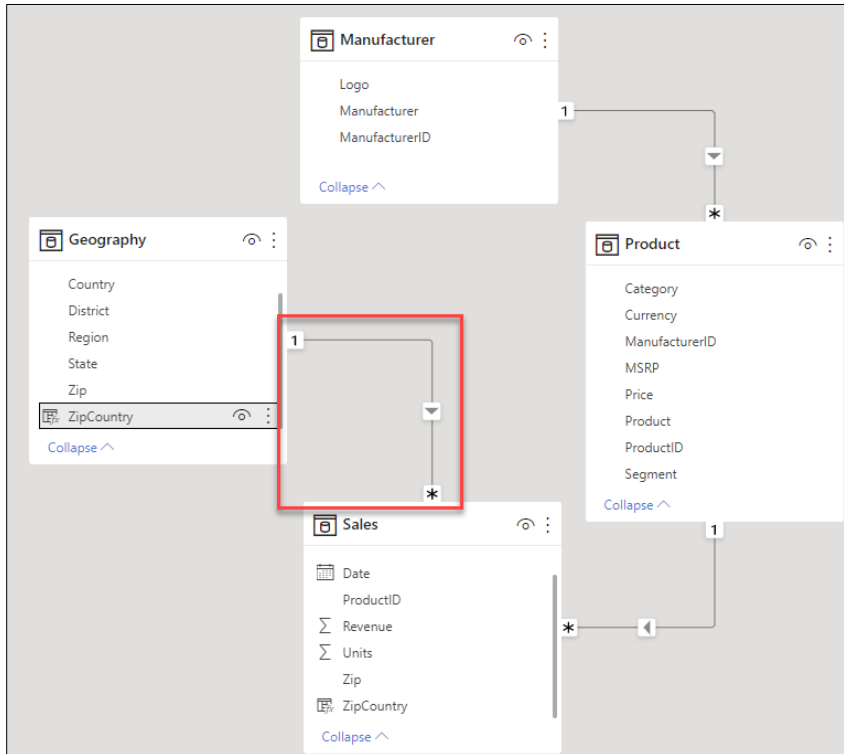
Now we have successfully created a relationship. The number "1" next to **Geography** indicates it is on the one side of the relationship and the "*" next to **Sales** indicates it is on the many side of the relationship.

29. Select the **Report** icon on the left of the Power BI Desktop to navigate back to the **Report** view.

Notice the clustered column chart that we created earlier. It shows different sales for each country or region. USA has the most sales, followed by Australia and Japan. By default, the chart is sorted by **Revenue**. In this next section we will begin to use the data model we have designed by exploring several data visualization components.

30. Select the **ellipse** on the top right corner of the visual (alternatively, the ellipse may be at the bottom of the chart). Notice there is an option to **Sort axis** by **Country**. Do not make any changes for now. Select the background of the report to close out the options menu.
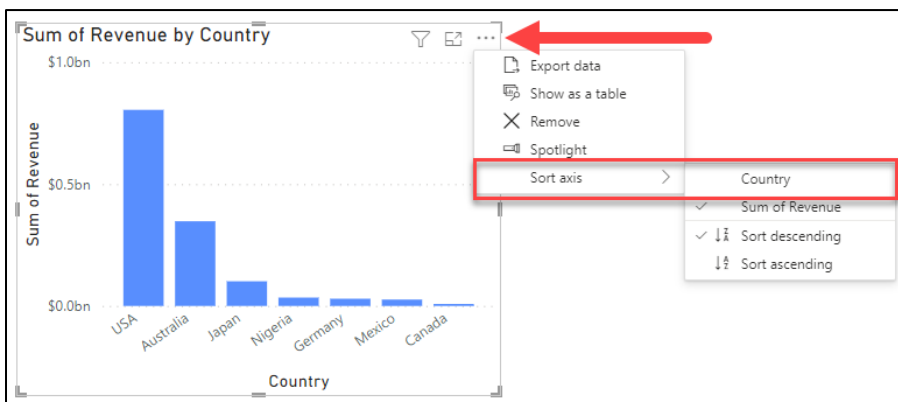
31. From the **Fields** pane, expand the **Manufacturer** table, and then drag and drop the **Manufacturer** column to the **Legend** section under **Visualizations**.
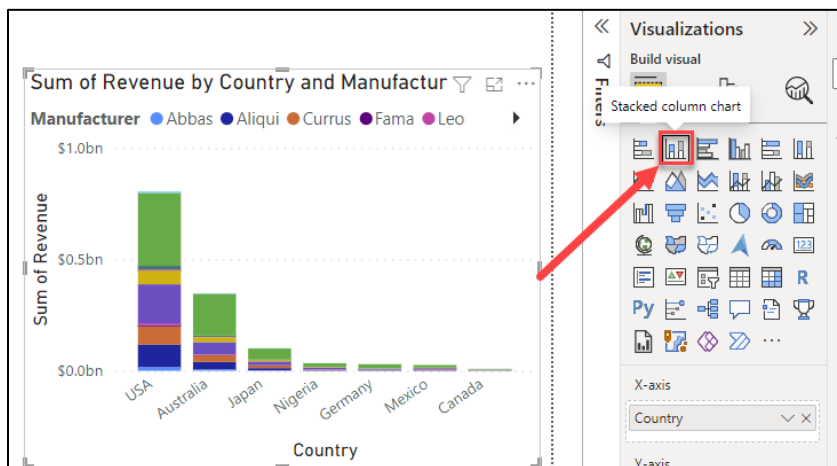
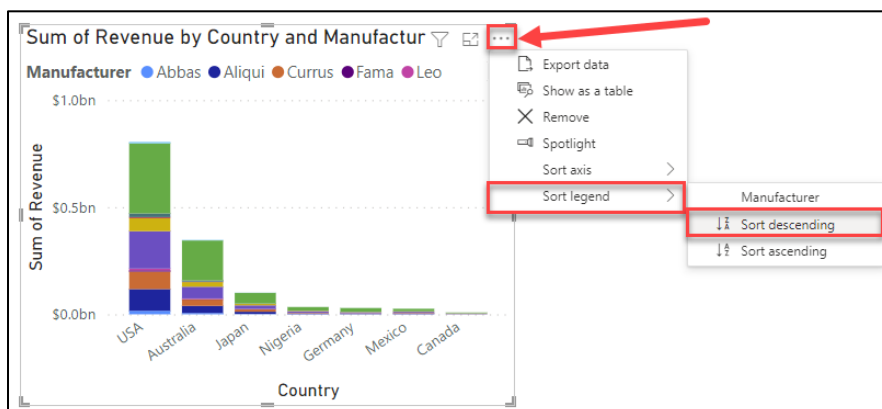32. **Resize** the visual as needed within the canvas.
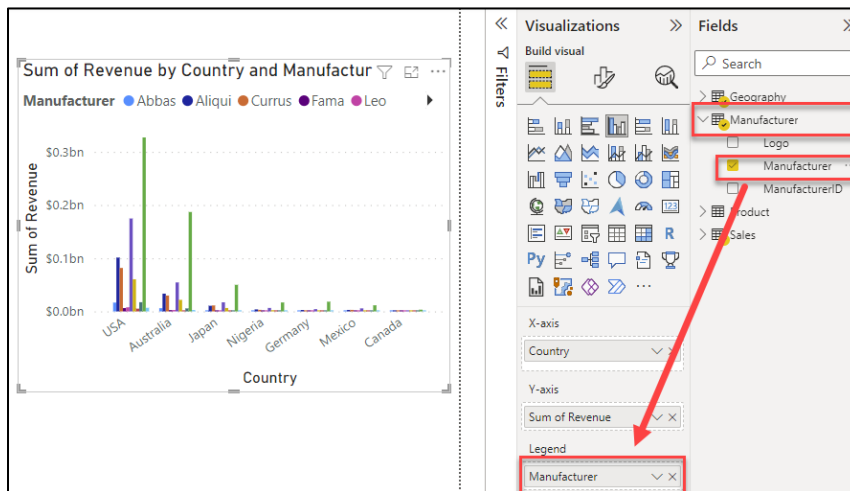
Now we can see the top manufacturers by country.

Now let's try different visuals to see which chart represents the data the best.

33. Change the chart to a **Stacked column chart** by choosing the visual type within the **Visualizations** pane.

34. Sort the legend in descending order using the same method you learned in step 30.

35. In the **Filters** pane, expand **Manufacturer** under the **Filters on this visual** section.

36. Using the **Filter type** dropdown menu, select **Top N**.

37. Enter **5** in the text box next to **Top**.

38. From the **Sales** table, drag and drop the **Revenue** field into the **By value** section.

39. Select **Apply filter** at the bottom of the Manufacturer section in the Filters pane to activate the filter.
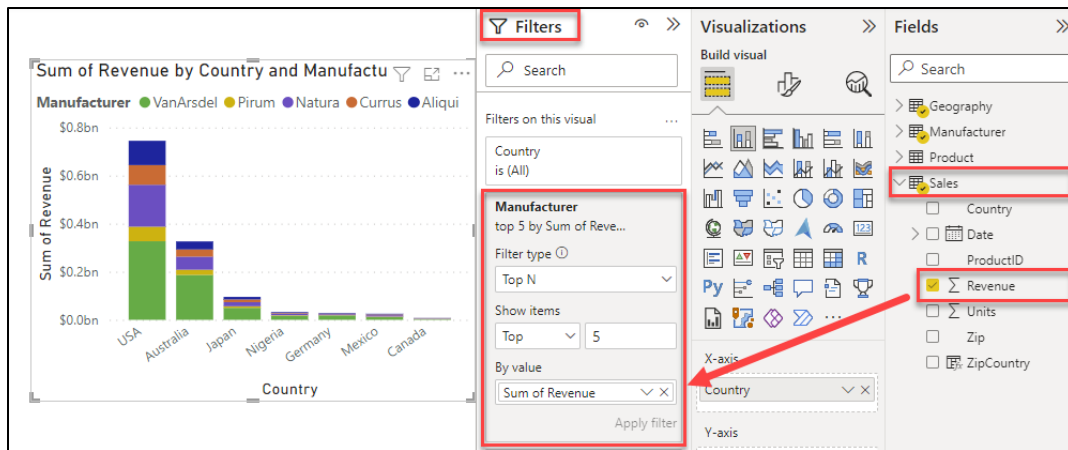

Notice that the visual is filtered to display the top five manufacturers by **Sum of Revenue**. We see that the manufacturer VanArsdel has a higher percentage of sales in Australia compared to other countries or regions.

We can now add total labels to the stacked visuals. Let's explore font formatting options
40. Select the **paint brush icon** in the Visualizations pane and then expand **X -axis**
41. Select the **Bold** and **Italic** options – feel free to try different formatting options in different areas. For the purpose of this lab, we will turn on Bold and Italic
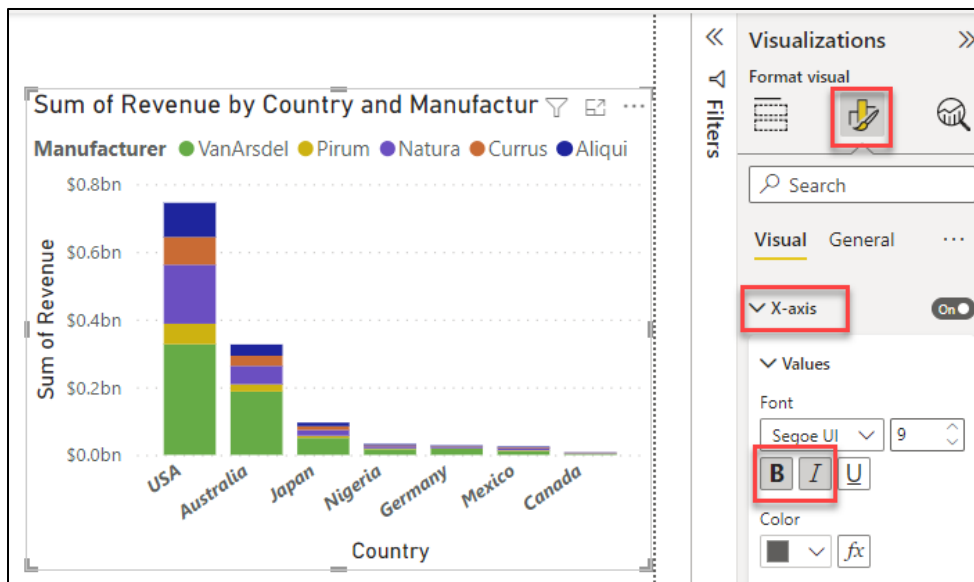
42. Navigate to the **Total labels** in the Visualizations pane and switch the setting to **On**.
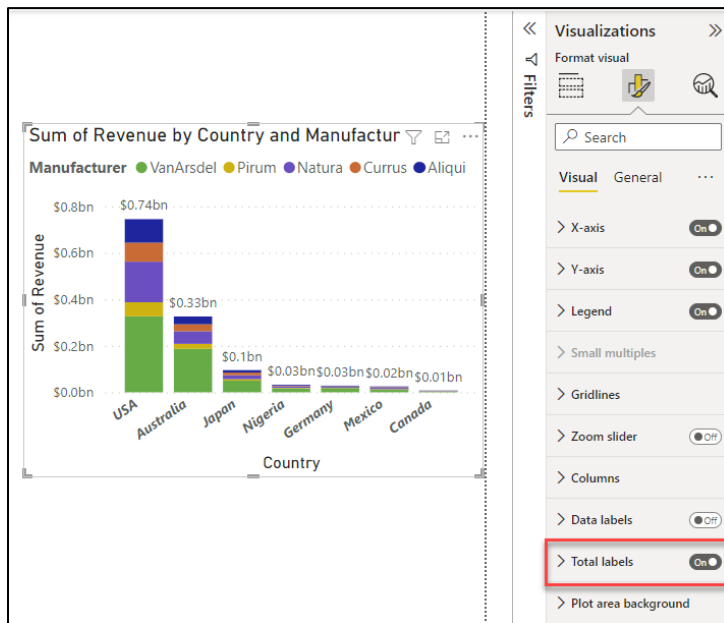

Notice the total labels now appearing above each of the columns in the column chart. Any of these properties can very easily be changed or turned on/off whenever you like. Now let's **remove** the total labels.

43. Select the **On/Off** toggle setting next to **Total labels** to switch the setting to **Off** again.

We are interested in the top five competitors by revenue. Let's group them so we don't have to add a filter to every visual. Before we do that, we'll remove the **Top 5** visual level filter we added earlier.

44. Begin with the **Stacked column chart** selected in the canvas.

45. Hover over and select the **Clear filter** icon (erase) next to **Manufacturer** field in the **Filters** pane.
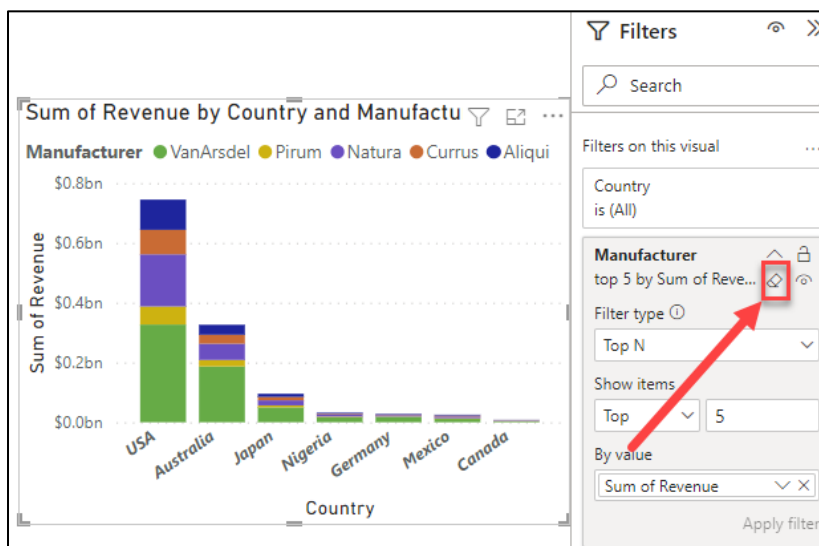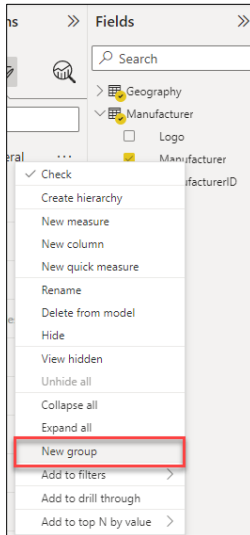
> **Note**: You will only see the eraser icon when you hover your mouse over the Manufacturer filter section

46. From the **Fields** pane, expand the **Manufacturer** table and right-click on the **Manufacturer** field.

> **Note**: Do not select the checkbox.

47. Select **New Group** from the options menu.

48. In the **Ungrouped values** section of the **Groups** dialog, using the **CTRL** key (to multi-select), choose **Aliqui, Currus, Natura**, and **Pirum**.

49. Select the **Group** button. Notice a new group is added in the **Groups and members** section.

50. Double-click the newly created group and rename it **Top Competitors**.

51. Select **VanArsdel** from the **Ungrouped values** section and select the **Group** button to create the **VanArsdel** group.

52. Select the checkbox **Include Other group**. This will create another **Other** group that includes all the other manufacturers.

53. Select **OK** to close the **Groups** dialog.
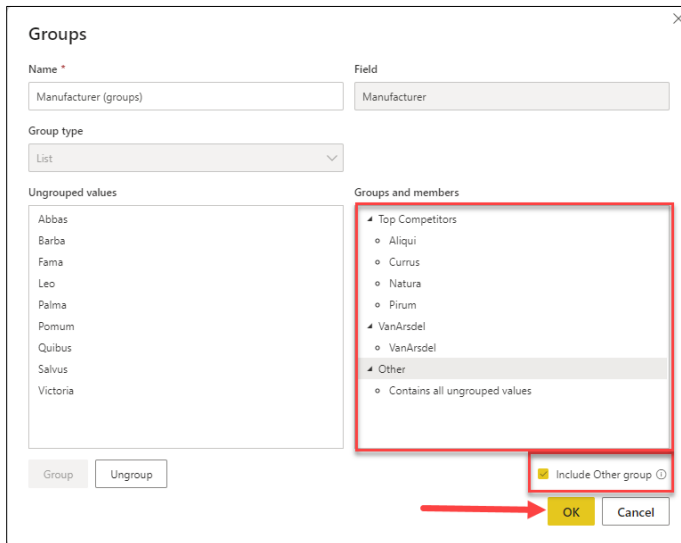
54. With the **Stacked column chart** selected in the canvas, select the **X** next to **Manufacturer** in the **Legend** section of the **Visualizations** pane. This will **remove** the Manufacturer.

55. From the **Fields** pane, drag and drop the newly created **Manufacturer (groups)** to the **Legend** section of the **Visualizations** pane. Now we can see that VanArsdel has nearly 50% share in Australia.
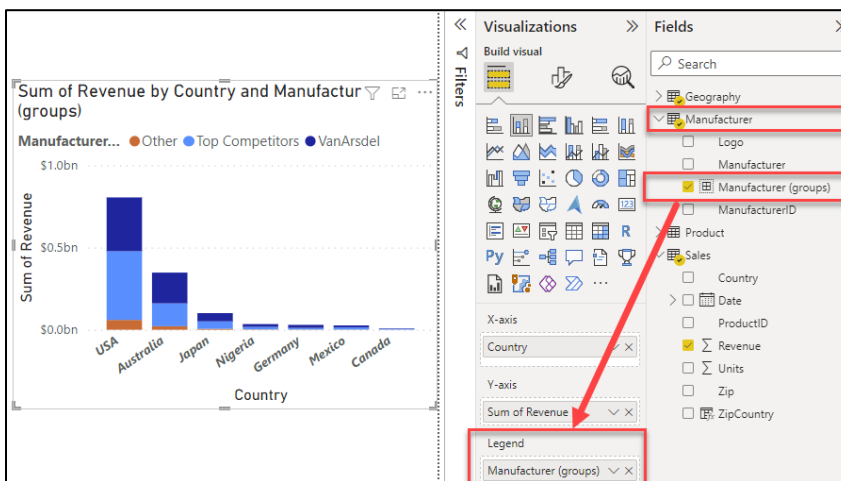
Note: It is ok if you notice that the colors used in your column chart are in a different order than what appears here. This can be adjusted by changed the Legend sort order as you saw in step 34.

56. Hover over one of the columns in the **Stacked Column Chart** and right-click.

57. Select **Show as a table** from the context menu. You will now be in **Focus** mode with the chart displayed on top and the data displayed below. Notice that VanArsdel has a large percent of the Australian market.
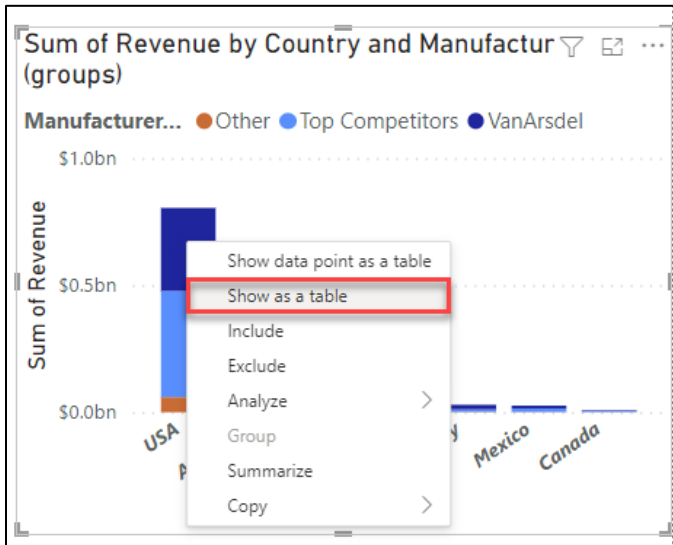
58. Use the icon in the top right corner of the chart to switch to the **vertical layout**. In this layout, you view the chart on the left and the data on the right in two separate panels.

59. Switch back to the horizontal layout and select **Back to Report** to navigate back to the **Report** canvas.
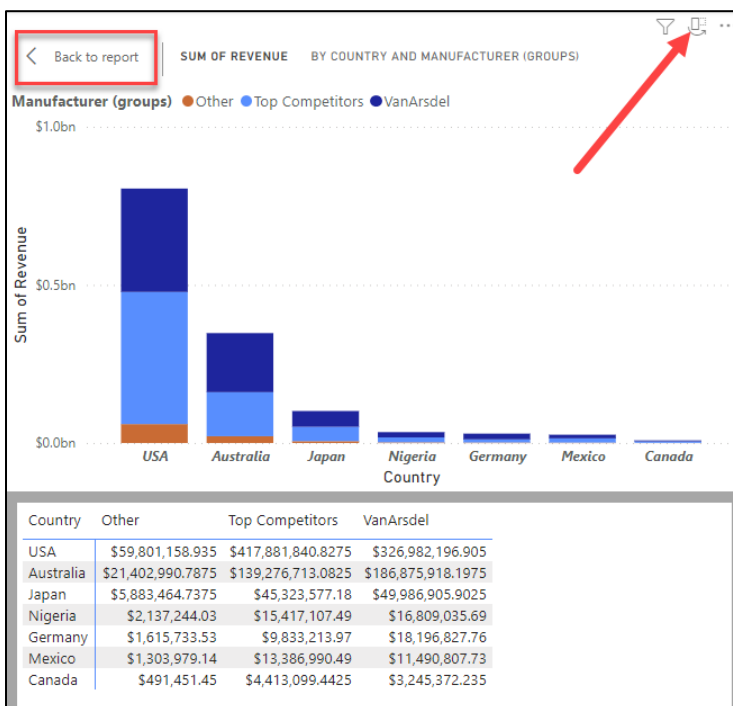

Note: You can similarly right-click on a column in the chart and select **Show data point as a table** to see records for a specific data point.

Now let's create a **Revenue by Manufacturer** visual.

60. Select the white space in the canvas. From the **Fields** pane, select the checkbox next to the **Revenue** field in the **Sales** table.

61. From the **Fields** pane, select the checkbox next to the **Manufacturer** field in the **Manufacturer** table.

62. From the **Visualizations** pane, select the **Treemap** visual.
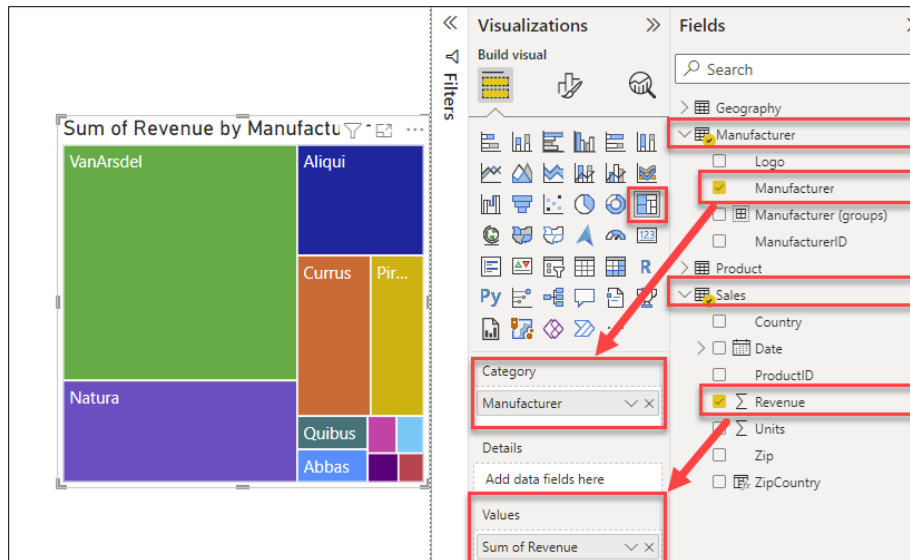
We now have **Sum of Revenue by Manufacturer**. Let's turn our attention to the interaction between the **Stacked Column Chart** and the **Treemap** visuals.

63. Within the **Treemap** visual, select **VanArsdel** and notice that the Stacked column chart is highlighting only the values related to VanArsdel. This confirms that VanArsdel has a large percentage of the Australian market.
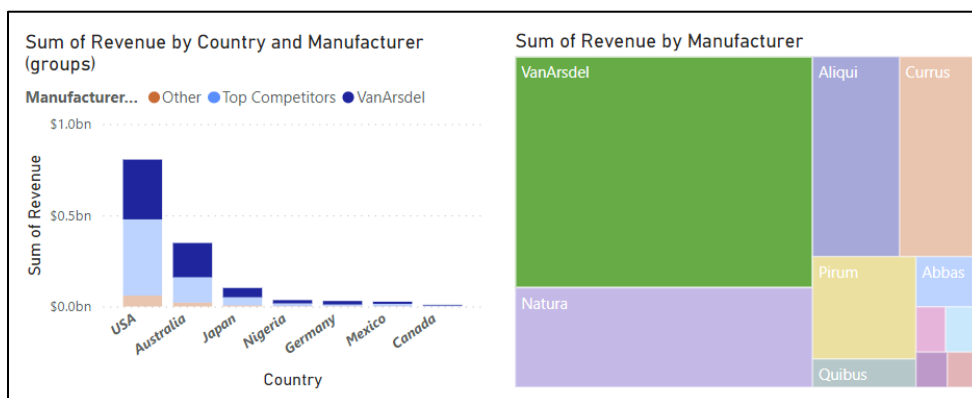
64. To **remove** the highlighting, select **VanArsdel** again.

This interaction between visuals is called **cross-highlighting**.

Previously, we added a **Top 5 Visual level** filter. Now let's add a filter to the **Page level**, so we are working with the Top Competitors and VanArsdel, and so we can filter out the other manufacturers.

Page-level filters apply to all visuals on the page. Visual-level filters apply only to a visual. Ensure the **Filters** pane is expanded/open.

65. From the **Fields** pane, drag and drop **Manufacturer (groups)** from the **Manufacturer** table to the **Filters on this page** box in the **Filters** pane**.**

66. Select both **Top Competitors** and **VanArsdel**.
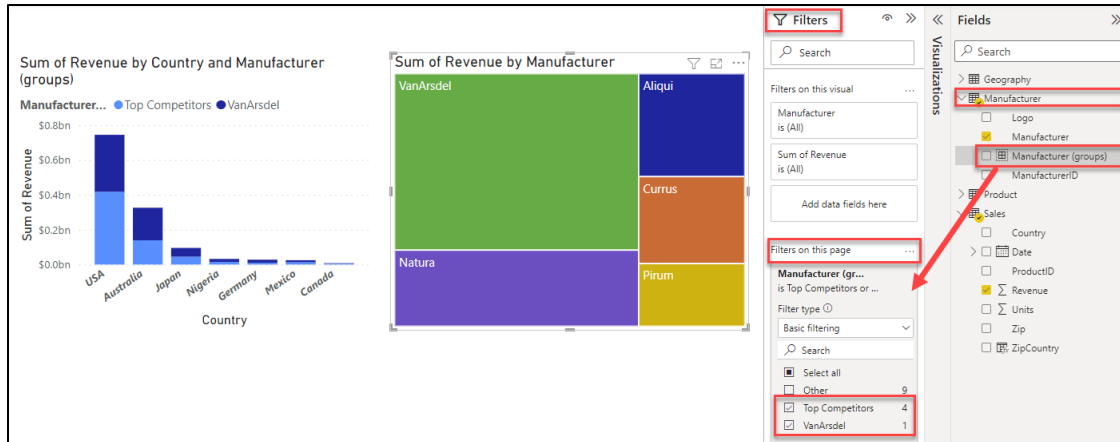
Now, let's add a visual that provides sales information over time

67. Begin by selecting the white space in the canvas.

68. Select the checkbox next to the **Date** field in the **Sales** table. Notice that a **Date Hierarchy** is created if you have **Auto date/time** turned on.

> **Note:** If you do not see the data hierarchy go to **File -> Options and settings -> Options -> Current file -> Data load -> Auto date/time)** to turn it on.

69. Select the checkbox next to **Revenue** in the **Sales** field.

70. Change the newly created visual to a **Clustered column chart**. Notice in the **X-axis** section, a date hierarchy is used. There are arrows on the visual header which are used to navigate through the hierarchy.
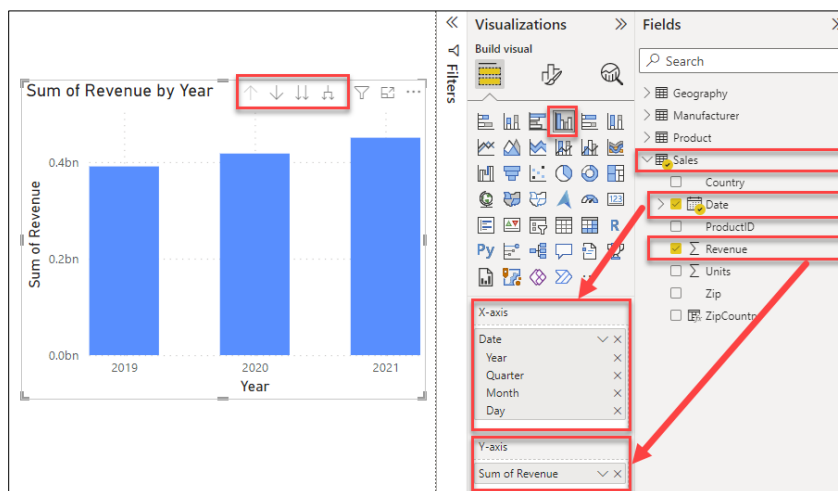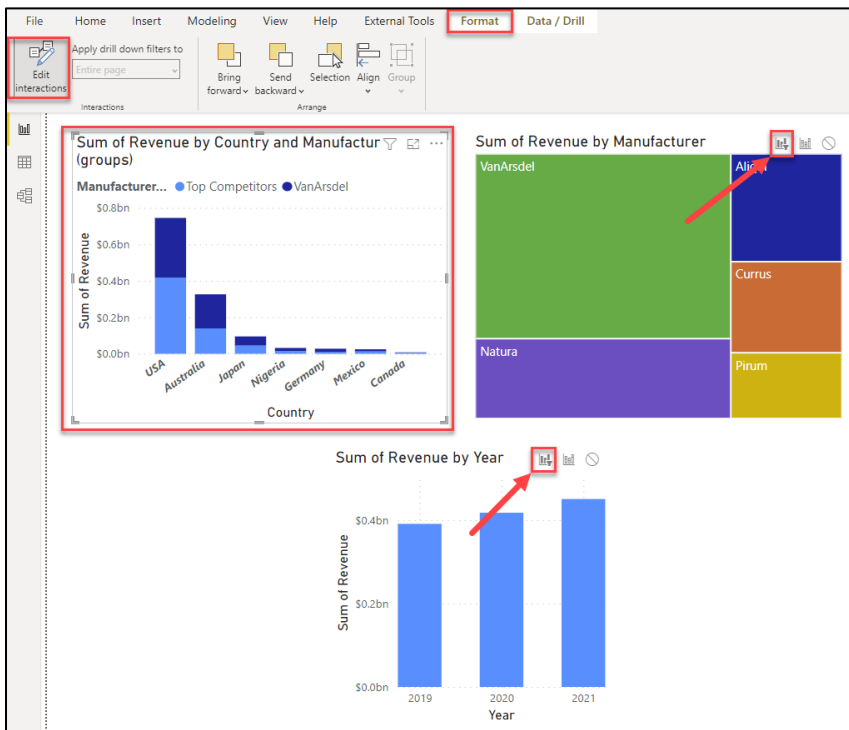
71. Select **Australia** from the **Sum of Revenue by Country and Manufacturer (groups)** visual.

72. With the **Sum of Revenue by Country and Manufacturer (groups)** visual selected, navigate to the **Format** tab in the ribbon, and then select **Edit Interactions**.

Notice in the top right corner of the other two visuals, new icons appear. These icons determine the interactive capabilities between the visual you have selected and all other visuals on the screen.

> **Note**: You will not see the Format tab if you do not select the **Sum of Revenue by Country and Manufacturer (groups)** visual first.
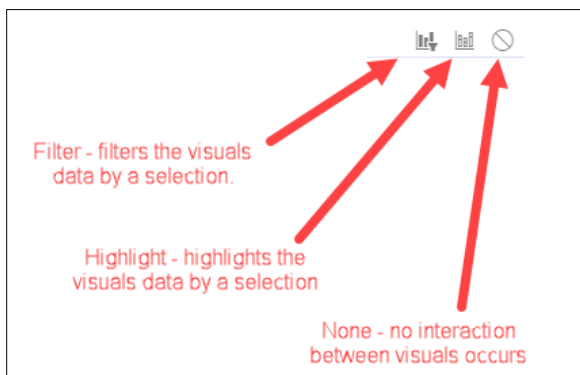
73. Select the **Filter icon** for both visuals.

Notice now in both **Sum of Revenue by Year** and **Sum of Revenue by Manufacturer**, data is filtered for Australia. Select Australia again to **deselect** the filter.

74. Now, select the **Sum of Revenue by Year** visual.

75. Next, select the **Filter** icon on the other two visuals.

76. Similarly, select the **Sum of Revenue by Manufacturer** visual (Treemap) and select the **Filter icon** on the other **two visuals**. Once you are done, all the visuals should be in filter mode.

77. With the **Sum of Revenue by Manufacturer** visual selected, navigate to the **Format** tab and unselect **Edit Interactions** to remove the icons.

78. Select VanArsdel in the **Sum of Revenue by Manufacturer** visual (Treemap).
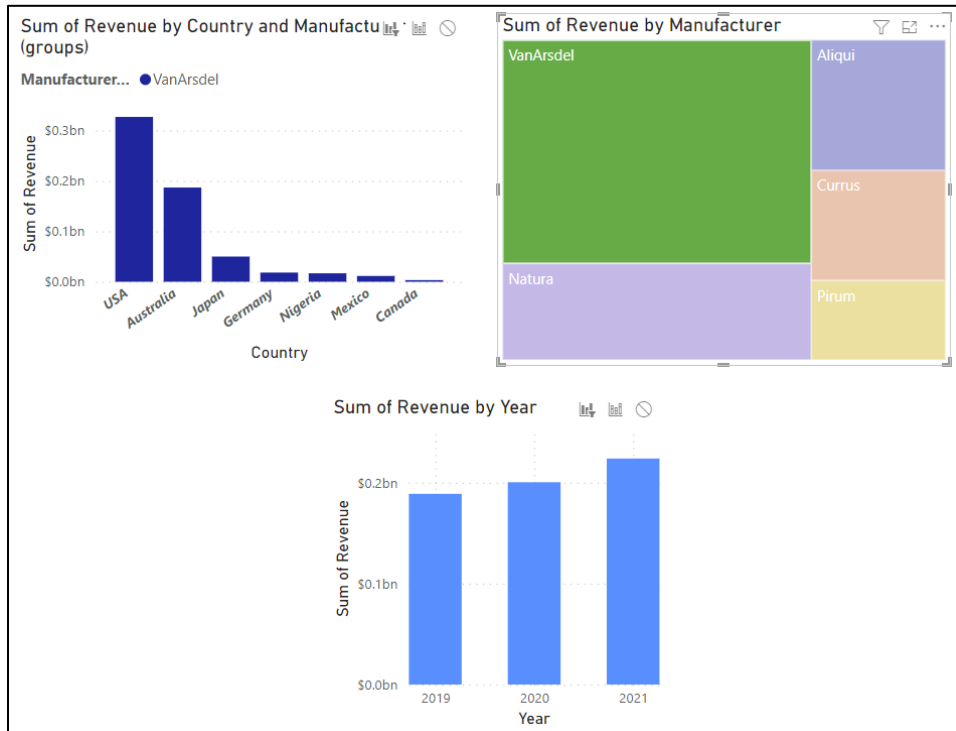
Note: If your screen does not match the figure above please edit your interactions. If the colors in the column chart are different that is ok.

We have already noticed that VanArsdel has a large share of the market in Australia. Let's see how VanArsdel has done over time in Australia.

79. Select the **Revenue by Country and Manufacturer (groups)** chart and remove **Manufacturer (groups)** from the legend by selecting the X.

80. Select **VanArsdel** in the **Sum of Revenue by Manufacturer** visual (Treemap).

81. Then hold the **CTRL** key (to multi-select) and select **Australia** within the **Sum of Revenue by Country** visual. This will multi-select both filters.

We have now filtered the charts by both VanArsdel and Australia. Looking at the results, we can see a spike in 2021 sales for VanArsdel in Australia. This spike in sales is intriguing, so let's investigate further.

82. Select the **down arrow** on the top of the **Sum of Revenue by Year** visual to enable the drill-down capability.
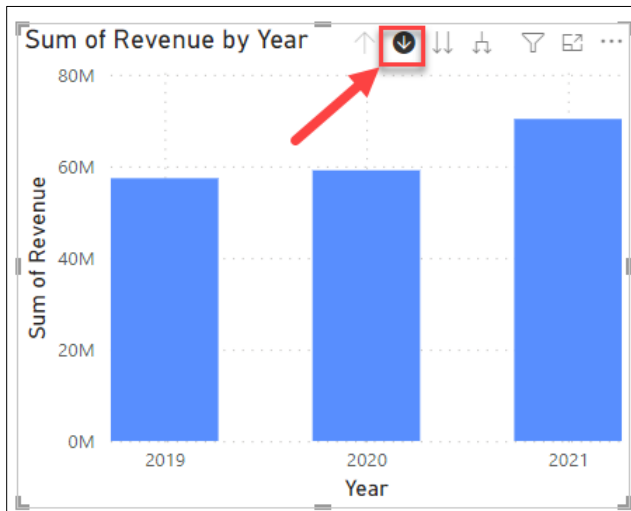
83. Select the **2021** column in the **Sum of Revenue by Year** visual.

Notice that you have drilled down to the quarter level of 2021. There was a big spike in the fourth quarter. Let's dig further.

84. Select the **double arrow icon** at the top of the **Sum of Revenue by Year** visual. This drills down to the next level of the hierarchy, which is the month.

The charts below are a before and after view of these steps: the chart to the left is the result of what you did in the first drill down on Year (step 83) and the chart to the right is the result of clicking on the double arrow drill down (step 84).
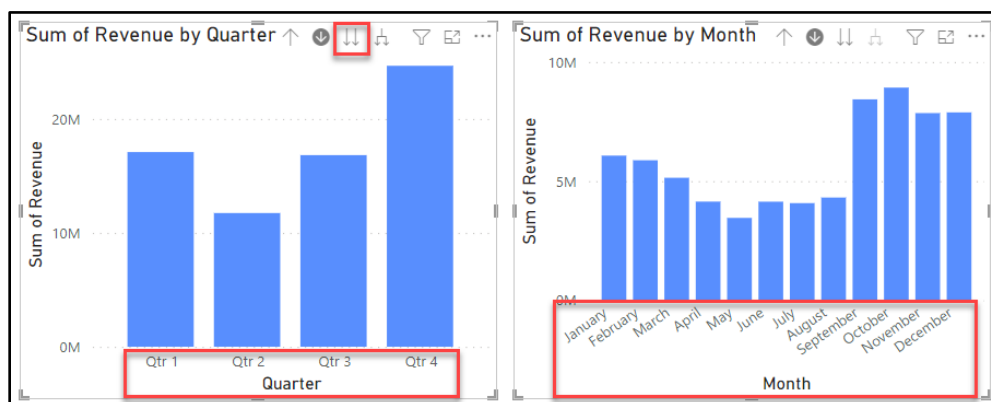
85. Select the **up-arrow icon** at the top of the **Sum of Revenue by Year** visual to drill back up to the **Quarter** level again.

86. Select the **drill up icon** a second time to go all the way back up to the **Year** level.

87. Select the **split arrow icon** at the top right of the **Sum of Revenue by Year** visual. This expands down to the next level of the hierarchy, which is quarters for *all* the years; not just 2021 like we did in step 83.

Notice that the fourth-quarter sales have always been high, but in 2021 there was a larger sales spike in the fourth quarter than usual.

88. Now let's expand down one more time to the **month** level. Select the **split arrow icon** at the top right of the **Sum of Revenue by Year** visual again. This expands down to the next level of the hierarchy; this shows revenue for **months** for all the years.

Below you will see figures of the final product. The figure on the left represents the result of step 87. The figure to the right is the final product that you should be seeing now. There is a lot of information in this visual and we must scroll left and right to compare values.
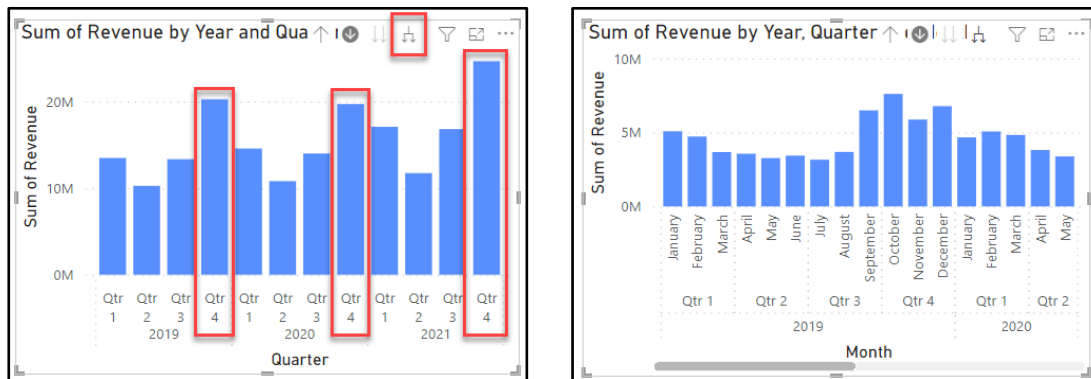
Power BI Desktop – Data Exploration Continued

Now that we've explored the data, let's add a **slicer** so we can filter by the manufacturers.

89. Select the white space in the canvas. From the **Fields** pane, select the checkbox next to the **Manufacturer** field in the **Manufacturer** table**.**

90. From the **Visualizations** pane, select the **Slicer** visual.

91. Here you will see a list of Manufacturers. Select **VanArsdel** and notice that all the visuals are filtered based on your selection.
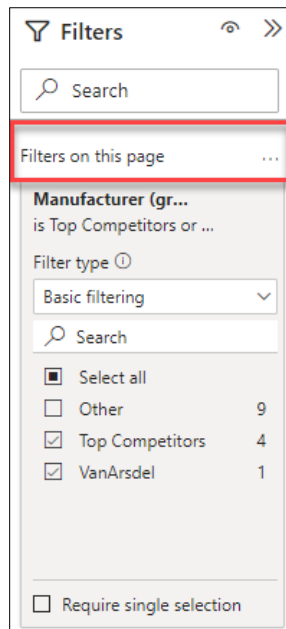
92. Hover over the top right corner of the **Slicer** visual and select the **down arrow**. Notice you have the option to change the slicer from a list to a dropdown.

93. Select **Dropdown**.

94. Then, select **VanArsdel** from the dropdown.
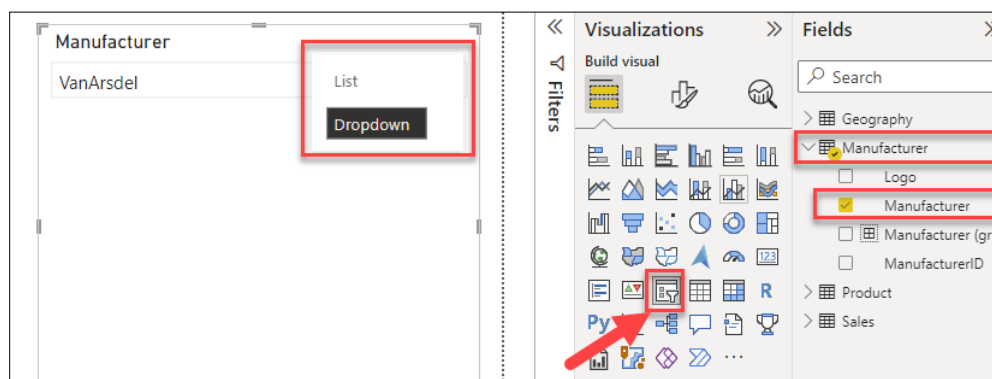
95. Confirm **Top Competitors** and **VanArsdel** are still selected in the **Manufacturer (groups)** filter in the **Filters** pane.
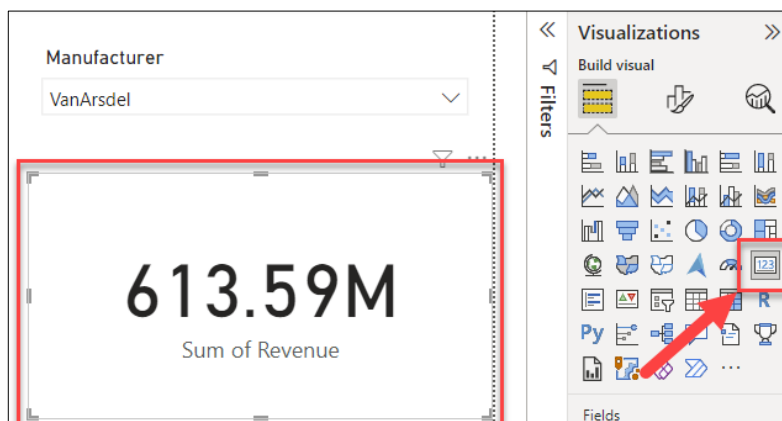

Note: There is a box for **Filters on all pages** in the **Filters** pane. If you have more than one report page, this is how you sync a filter for the whole file.

Now let's use the **Manufacturer** slicer to analyze one manufacturer at a time.

96. Begin by selecting the **Sum of Revenue by Manufacturer (**Treemap) visual.

97. From the **Visualizations** pane, select the **Card** visual.

The card visual gives us the **Sum of Revenue** as we filter and cross-filter the visuals.

Notice that all key dimensions are in tables with related attributes, except for the date. For example, **Product** attributes are in the **Product** table. **Manufacturer** attributes are in the **Manufacturer** table. Now let's create a **Date** table.

98. Navigate to the **Data** view by selecting the **Data** icon to the left of the Power BI Desktop.

99. From the ribbon, select **Table Tools**, then choose **New Table**.

Notice that a new table called "Table" is created in the **Fields** pane to the right of the Power BI Desktop and the formula bar opens at the top of your screen.

100. Enter the following formula in the formula bar, then hit **Enter** on your keyboard:

Date = CALENDAR(DATE(2014,1,1), DATE(2022,12,31))

 A **Date** table with a **Date** column is created.
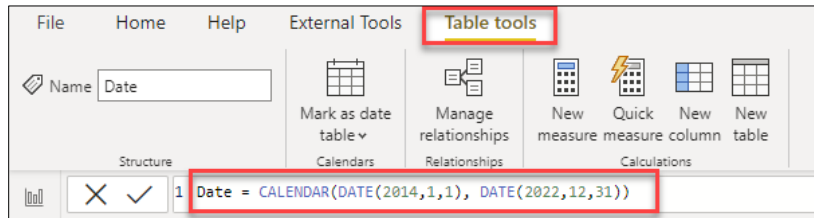
We are using two DAX functions: the **CALENDAR** function, which accepts the start and end data, and the **DATE** function, which takes the **year**, **month**, and **date** Fields.

For this lab, we will create dates from **2014 to 2021** (since we have data for those years). We can also add more **Fields** - such as **Year**, **Month**, **Week**, etc. - to this table by using additional DAX functions.

101. Select the **Date** field in the **Date** table.

Notice that the **Date** field is of the data type **Date/Time**. Let's change it to the **Date** data type.

102. From the ribbon, select **Column Tools**, choose **Data type**, and then select **Date**.
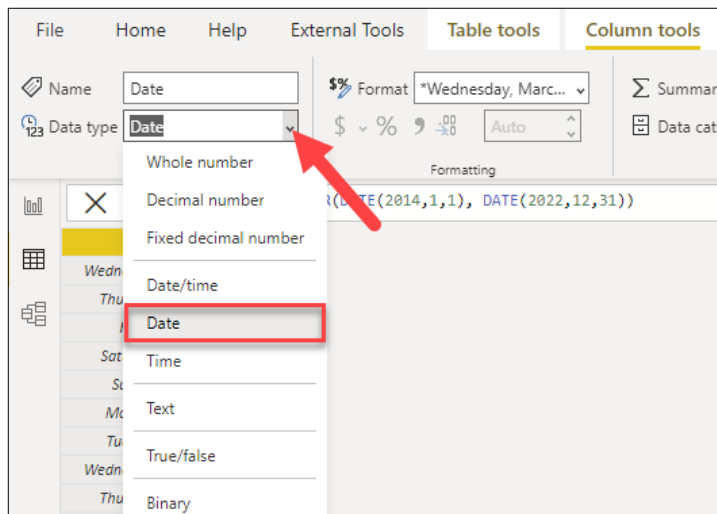
Next, we need to create a relationship between the newly created **Date** table and the **Sales** table.

103. From the ribbon, select **Column Tools,** and then choose **Manage Relationships**.

104. A **Manage Relationships** dialog box opens. Select the **New** button.

105. A **Create Relationship** dialog box opens. Select **Date** from the top dropdown menu.

106. Select **Sales** from the second dropdown menu.

107. Highlight the **Date** field in both tables.

108. Then, select **OK** to close the **Create relationship** dialog box.
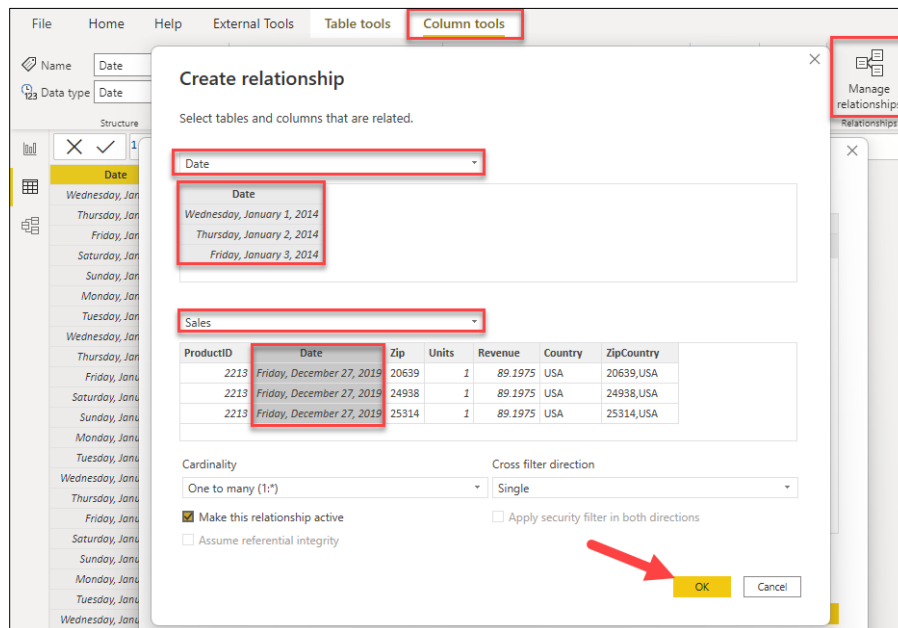

109. Select **Close** to close the **Manage relationships** dialog box.

110. Navigate to the **Report** view by selecting the **Report** icon to the left of the Power BI Desktop.

Notice that the **Sum of Revenue by Date** chart looks different. Let's fix it.

111. Select the **Sum of Revenue by Date** visual.

112. From the **X-axis,** select the "**X**" to remove the **Date** field.
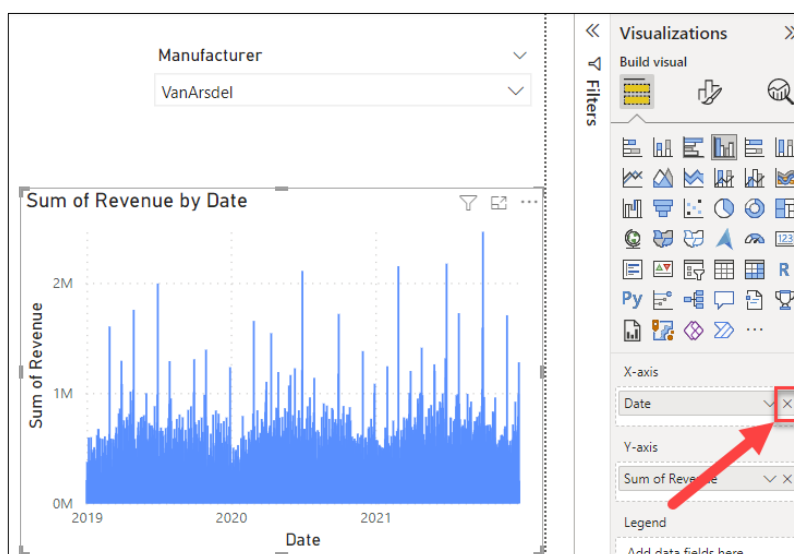
113. From the **Fields** pane, expand the **Date** table.

114. Now drag the **Date** field from the Date table to the **X-axis** section.

115. Select the **Drill up** button you learned about on step 86 until the visual appears as the visual below:
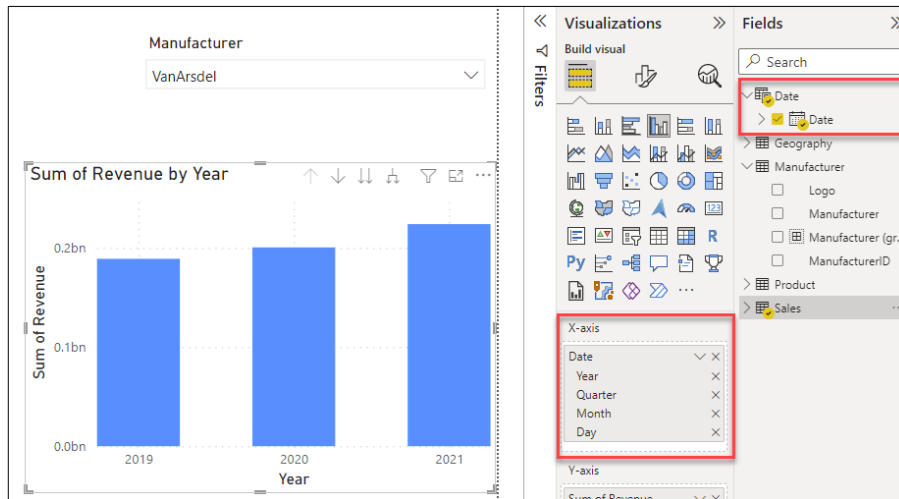
Notice that the new **Date** field behavior is like it was previously.

Since there are now two **Date** fields, it may be confusing to know which one to use. To accommodate this, let's hide the **Date** field in the **Sales** table.

116. From the **Fields** pane, hover over and select the **three dots** (the ellipse) next to the **Date** field in the **Sales** table. Then, select **Hide** from the context menu.
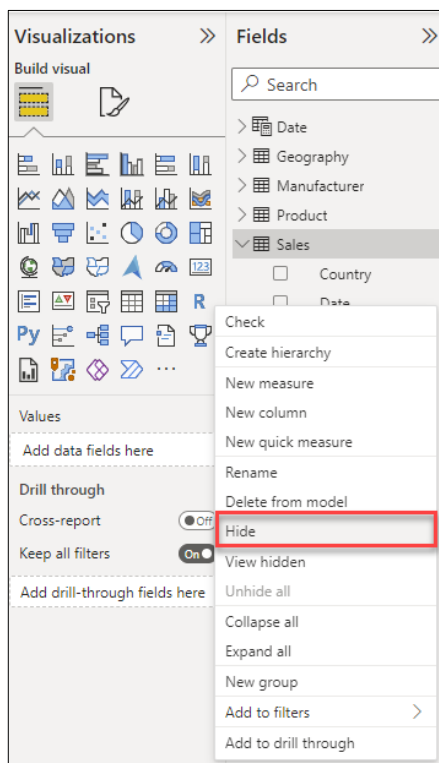
117. Using the same steps as in step 115, hide **Country**, **ProductID**, **Zip**, and **ZipCountry** within the **Sales** table as well.

118. Next, hide **ZipCountry** from the **Geography** table.

119. Then, hide **ManufacturerID** from the **Manufacturer** table.

120. Hide **ProductID** and **ManufacturerID** from the **Product** table.

> **Tip**: It is a best practice to hide fields that are not used in your report visuals. These fields are the basis of our relationships between each table so we should not delete them.

Now let's get back to our data story, Australia, VanArsdel and 2021. Let's check if the spike occurred in a specific region in Australia.

121. Select the **Sum of Revenue by Country** visual.

122. From the **Fields** pane, drag and drop the **State** field from the **Geography** table below the **Country** field in the X-a**xis** section of the **Visualizations** pane.

123. Drag and drop the **District** field below the **State** field in the **X-axis** section of the **Visualizations** pane.
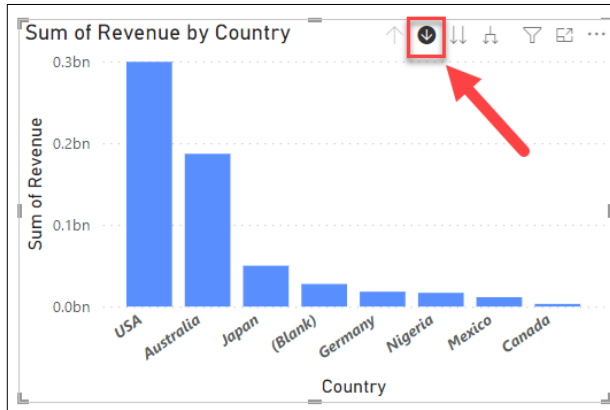
We have just created a hierarchy.

124. Select the up arrow in the header area of the visual twice to **Drill up** to the top level of the hierarchy again.
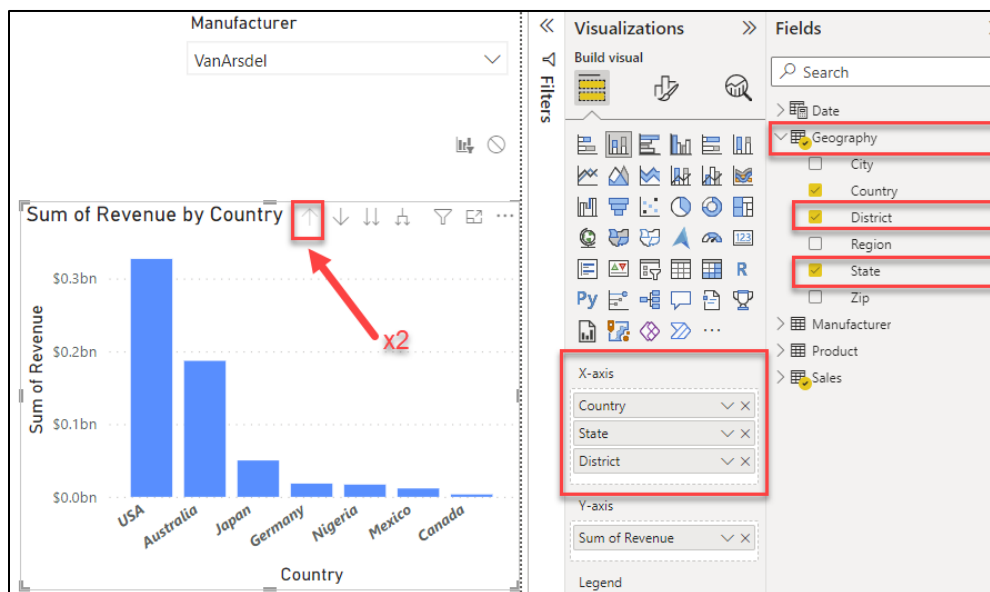
125. Make sure that **VanArsdel** is still selected in the **Manufacturer slicer**.

126. Enable **Drill mode** by selecting the **down arrow** of the **Sum of Revenue by Country** visual.

127. Select **Australia** to drill down to the **State** level.

128. From the **Sum of Revenue by Year** visual, select **2021** and notice what happens to the **Sum of Revenue by Country**.

129. Now, **Drill up** to the **Country** level again.

130. Select **2021** again in the **Sum of Revenue by Year** visual to undo the cross-highlighting.

131. **Disable** drill mode by selecting the down arrow again on the **Sum of Revenue by Country** visual.

Now let's analyze the data by product. We'll start by creating a product hierarchy.

132. From the **Fields** pane, select the **ellipse** next to the **Category** field in the **Product** table.

133. Select **Create Hierarchy**.
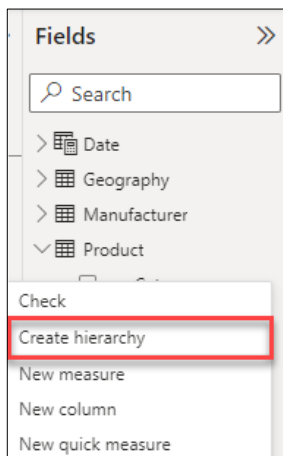
Notice that a new field called **Category Hierarchy** is created in the **Product** table.

134. Double-click **Category Hierarchy** and rename it to **Product Hierarchy**.
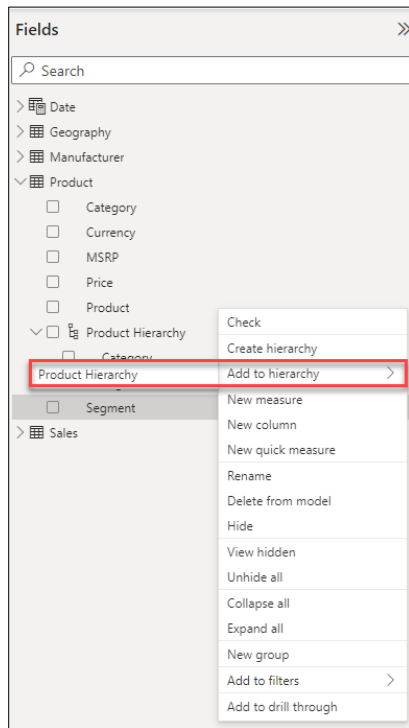
135. Select the **ellipse** next to **Segment**.

136. Select **Add to Hierarchy**, and then choose **Product Hierarchy**.

137. Select the **ellipse** next to **Product**.

138. Select **Add to Hierarchy**, and then choose **Product Hierarchy**.

We have now created a Product Hierarchy with the fields Category, Segment, and then Product.
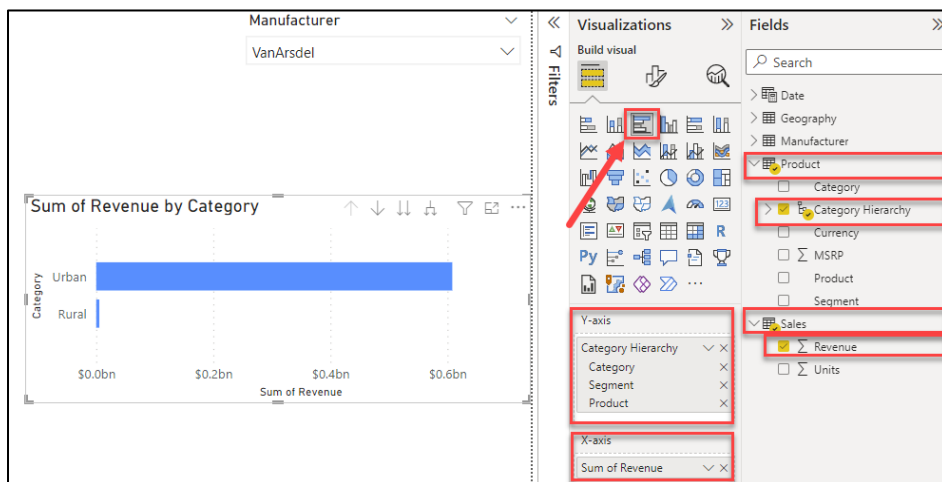

139. Select the white space in the canvas. From the **Visualizations** pane, select **Clustered bar chart**.

140. From the **Fields** pane, expand the **Product** table.

141. Select the checkbox next to the **Product Hierarchy**. Notice the complete hierarchy is selected.

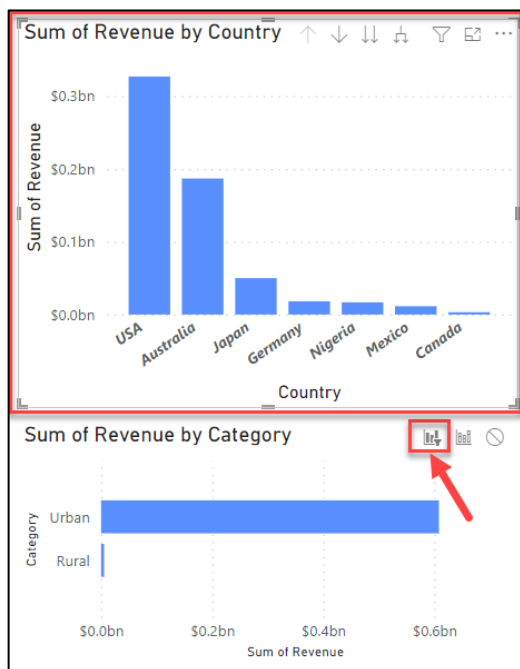142. From the **Fields** pane, expand the **Sales** table.

143. Select the checkbox next to the **Revenue** field.

Now, Let's edit interactions for the new chart.

144. With the **Sum of Revenue by Country** visual selected navigate to the **Format** tab and choose **Edit interactions**

145. Change the **Sum of Revenue by Category** visual to **filter**

Note: Review steps 72-73 if you need a review of how **Edit interactions** works.

146. Do the same thing with the **Sum of Revenue by Year** visual; change the interaction of the **Sum of Revenue by Category** to **filter**

147. We also need to change the interactions of the other charts. Select the **Sum of Revenue by Category** visual and change the **Sum of Revenue by Yea**r visual to a **filter** action.

148. Select the **filter** interaction on the **Sum of Revenue by Country** visual as well.

149. Select the **format** tab and choose **Edit interactions** to turn it off.

150. Navigate back to the **Sum of Revenue by Category** visual

151. Enable **drill-down** mode in the **Sum of Revenue by Category** chart by selecting the down arrow in the visual header.
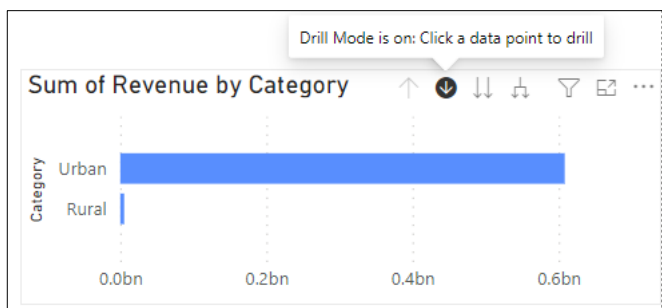

152. Select **Urban** to drill-down into the **Segment.** After drilling down into the Segment **disable drill down.**

153. Within the **Sum of Revenue by Country** visual ensure you are at the Country level, if you are not drill up to Country level then **disable drill down**.

154. Select **Australia** in the **Sum of Revenue by Country** visual

155. Then **Ctrl + Click** to multi-select **2021** from the **Sum of Revenue by Year** visual. Notice that the sales in the **Urban Extreme** segment are higher than the Urban **Convenience** and Urban **Moderation** segments.
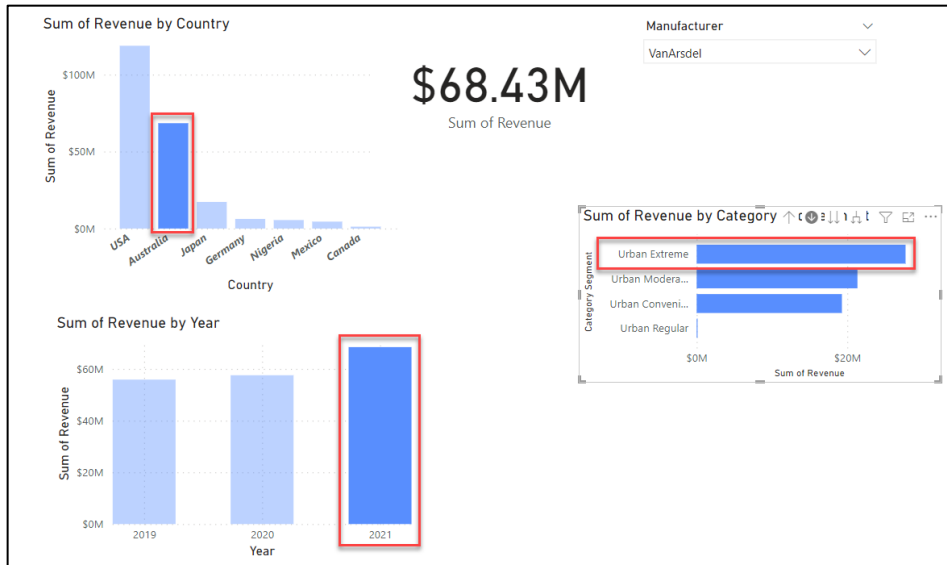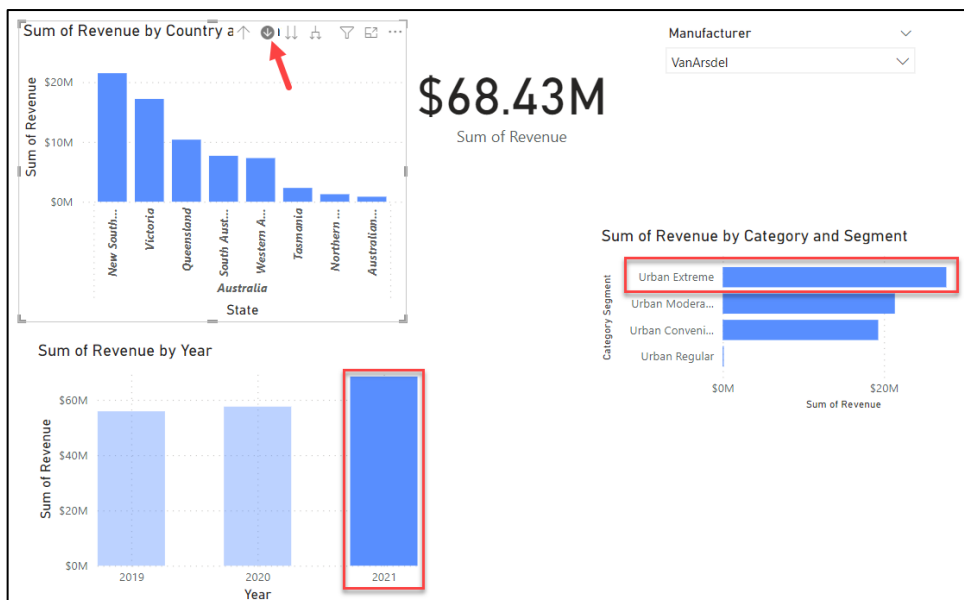

Let's investigate further…

156. Select the down arrow at the top of **Sum of Revenue by Country** visual to enable the drill down.

157. Select **Australia** to drill down to the **State** level.

If **2021** was unselected during this process, make sure to select it again as shown below.

158. **Disable drill mode** in the **Sum of Revenue by Category** visual

159. **Ctrl + Click** the **Urban Extreme** Segment in the **Sum of Revenue by Category and Segment** visual.

Notice that there is no significant spike in revenue by State.

160. Select **Urban Extreme** again to remove cross-filtering between the visuals.

161. **Drill up** to the **Category level** in the **Sum of Revenue by Category and Segment** visual.

162. **Drill up** to **Country** in the **Sum of Revenue by Country and State** visual

163. **Disable drill mode** in the **Sum of Revenue by Country** visual

164. Select the background of the **Sum of Revenue by Year** visual to ensure the visual is not still filtered.

Now let's add a Matrix visual so we can view the data in rows and columns. We can apply conditional formatting to the matrix visual to highlight the outliers.

165. Select the **Sum of Revenue by Category** Clustered bar chart and change it to a **Matrix** visual.
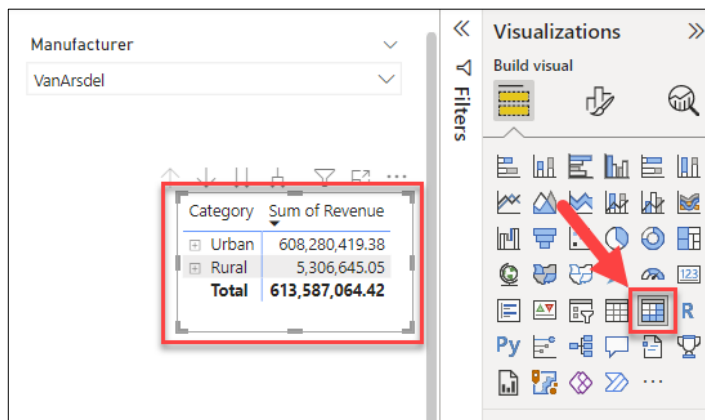
166. Select the **+** (plus sign) next to the **Urban** row to drill down.

Let's add a percent of the total field to the visual to give us a better perspective on the data.

167. With the **Matrix** selected navigate to the **Fields** pane.

168. From the **Fields** pane, drag and drop the **Revenue** field from the **Sales** table to below the existing **Sum of Revenue** field in the **Values** section. It will look like you have **Sum of Revenue** twice in the **Values** section.
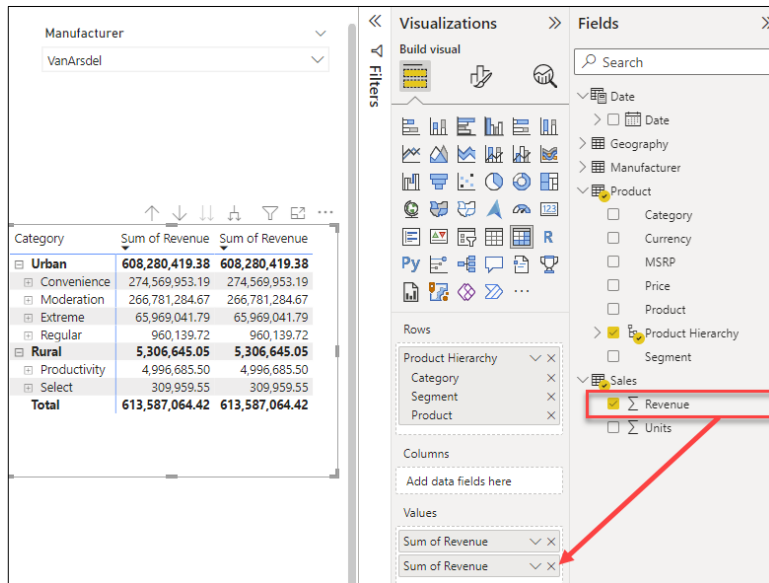
169. Select the **down arrow** next to the newly added **Sum of Revenue** field in the **Values** section.

170. From the menu, hover over **Show value as** and then select **Percent of grand total**.
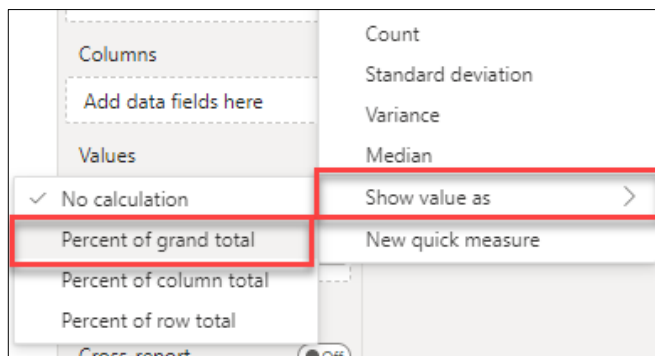
171. Drill up to **Category** level if you are not already there, then select **Enable drill mode** in the header of the **Matrix** visual

172. Now select **Urban** (the word, not the + sign)

173. In the **Sum of Revenue by Year** visual select the **2021** column and choose **Australia** in the **Sum of Revenue by Country** visual.

Now let's look at the **Extreme** category for Australia over time.

Notice that the **Extreme** segment has around 40% of the grand total.

Now let's drill down into the **Extreme Segment** to determine if a Product stands out.

174. In the **Matrix** visual, select the **Extreme** row (the word, not the + sign) to drill down to the Product level.

175. Resize the visual as needed.

176. Hover over the matrix visual and then select the ellipse in the top right corner.

177. Select **Sort By > %GT Sum of Revenue** and ensure that **Sort Descending** is also selected (this should be the default).

We can now see the top Products.

178. Ensure **2021** is selected in the **Sum of Revenue by Year** visual, and **Australia** in the **Sum of Revenue by Country** visual. Notice that Maximus UE-04 and 21 are the top products. Also, notice that Product Maximus UE-04 has nearly 7% of the grand total.
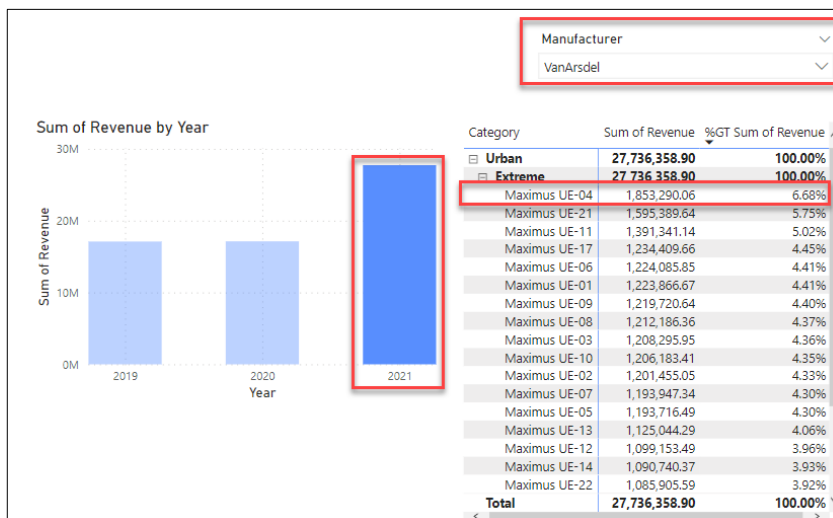
Earlier we created a calculated column named **ZipCountry**. Now let's create a **Percent Growth** calculated measure so we can compare sales over time. We are going to do this in two steps.

But first, what's the difference between a measure and a calculated column?

- A **Calculated column** is evaluated row by row. We extend a table by adding calculated columns.
- A **Measure** is used when we want to aggregate values from many rows in a table.

179. In the **Fields** pane, select the **Sales** table.

180. From the ribbon, select **Table Tools,** then select **New Measure**. A formula bar will appear.

181. Enter PY Sales = CALCULATE(SUM(Sales[Revenue]), SAMEPERIODLASTYEAR('Date'[Date]))
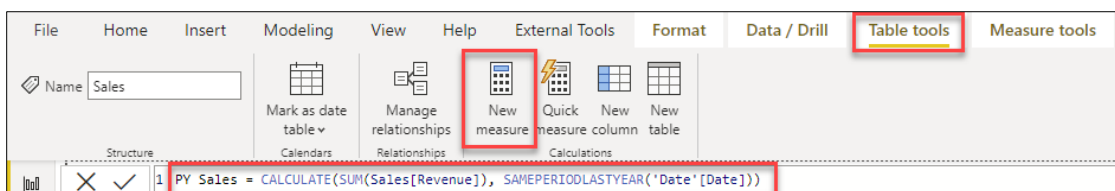
182. Select the checkmark to the left of the formula bar. You will see the **PY Sales** measure is created in the **Sales** table.
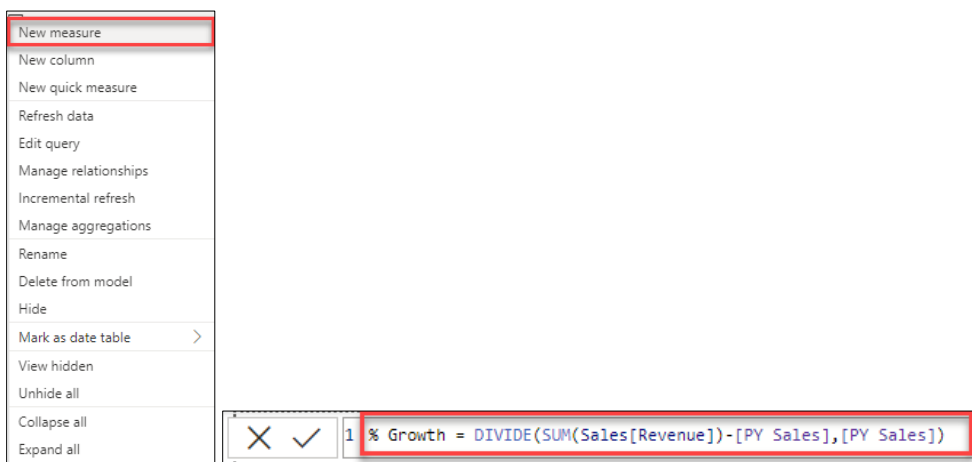
Let's create another measure using a different method.

183. In the **Fields** section, hover over the **Sales** table.

184. Select the **ellipse** in the right corner.

185. Select **New Measure** from the dialog box. A formula bar opens.

186. Enter % Growth = DIVIDE(SUM(Sales[Revenue])-[PY Sales],[PY Sales])

187. Select the checkmark next to the formula bar. You will see **% Growth** measure in the **Sales** table.

188. Select the **Matrix** visual again.

189. In the **Fields** section, select the checkbox next to the newly created **PY Sales** and **% Growth** measures in the **Sales** table. These measures should be added to the **Values** section of the **Matrix**.

190. Resize the **Matrix** to see these newly added fields.

Notice that the Fields need to be formatted.

191. From the **Fields** pane, select the **% Growth** field (the name not the checkbox).

192. From the ribbon, select **Measure Tools**, choose **Format**, and then select **Percentage.**

Tip: If your **% Growth** calculated measures shows as 0.00% at any point double check that you still have **2021** and **Australia** selected as filters from the other visuals.

193. Similarly, from the **Fields** pane, select the **PY Sales** field.

194. From the ribbon, select **Measure Tools**, choose **Format**, and then select **Currency,** if it isn't already formatted to **Currency.**

195. Similarly, from the **Fields** section, select the **Revenue** field.

196. From the ribbon, select **Measure Tools**, choose **Format**, and then select **Currency** if it isn't already formatted to **Currency**

197. Ensure that **Australia** is selected and in the **Sum of Revenue by Year** visual, **Ctrl + click** the **2021** column. Notice that Maximus UE-04 has nearly 158% growth compared to last year.
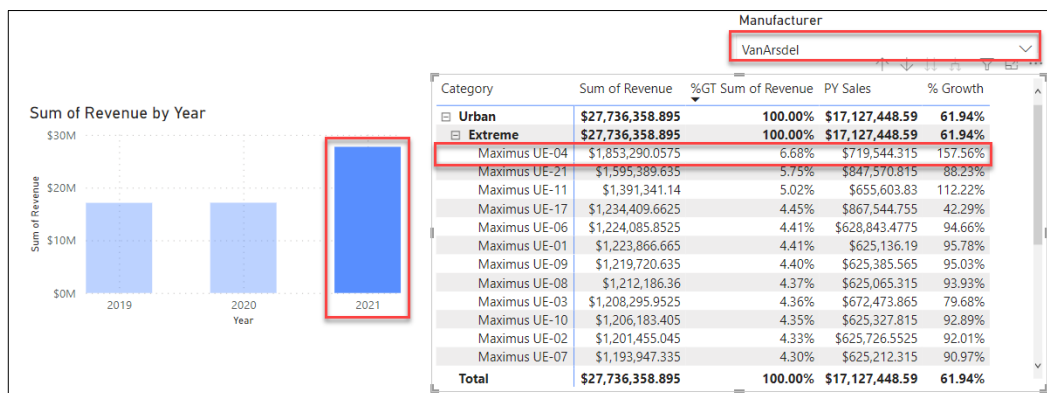
References

Dashboard in a Day introduces you to some of the key functions available in Power BI. In the ribbon of the Power BI Desktop, the Help section has links to some great resources.
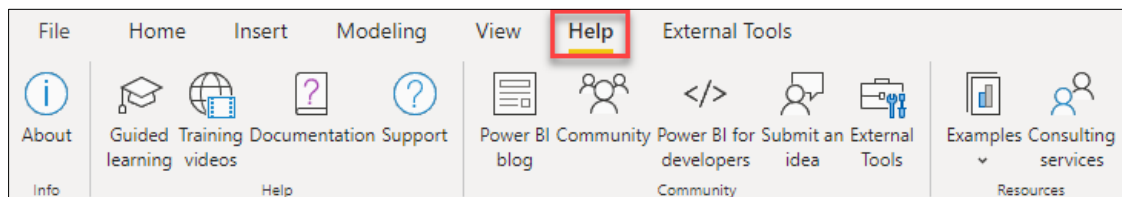
Here are a few more resources that will help you with your next steps with Power BI.

- Getting started: http://powerbi.com
- Power BI Desktop: https://powerbi.microsoft.com/desktop
- Power BI Mobile: https://powerbi.microsoft.com/mobile
- Community site https://community.powerbi.com/
- Power BI Getting started support page: https://support.powerbi.com/knowledgebase/articles/430814-get-started-with-power-bi
- Support site https://support.powerbi.com/
- Feature requests https://ideas.powerbi.com/forums/265200-power-bi-ideas
- New ideas for using Power BI https://aka.ms/PBI_Comm_Ideas
- Power BI Courses http://aka.ms/pbi-create-reports
- Power Platform https://powerplatform.microsoft.com/en-us/instructor-led-training/
- Power Apps Business Apps | Microsoft Power Apps
- Power Automate Power Automate | Microsoft Power Platform
- Dataverse What is Microsoft Dataverse? - Power Apps | Microsoft Docs

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