Create Visualizations Part 2

Guage Chart

Used to track how a business is performing compared to its goals. A gauge chart has a **semicircular arc** that displays a single value that measures progress toward a goal. Other names are **speedometer**, **level indicator** or **scale**.

It requires a **minimum value**, a **maximum value** and a **target value**. The **target** is known as the **key performance indicator (KPI)** and is represented by a line or needle. The shaded arc represents progress toward that target.

Create and Format Guage Chart

1. Open **Guage.pbix** file
2. Click **Build Visual**
3. Click **Guage**  , the gauge visual should now the added to the report view.
4. Expand the **TransactionTable** to make the field listing visible
5. Click **Sales**, the sales field appears in the **Value box.**
    a. ***Notice*** *sales data appears in the visual*
6. Click on the **Guage chart**, selection handles appear.
7. Drag the **lower-right handle down** and to the right to **increase the size of visual**.
8. Click **Manufacturing Price** field in the **TransactionTable.**
    a. ***Notice*** *the* ***Manufacturing Price*** *field appears in the* ***Minimum Value box.***
    b. ***Notice*** *a* ***minimum value*** *is added to the visual.*
9. Click **Gross Sales**, Gross Sales appear in the **Maximum Value box**.
    a. ***Notice,*** *visual show* ***maximum value***
    b. ***Note,*** *you should now see the position of the data column in relation to* ***max and min*** *values.*
10. Click **Format Visual**
11. Click **Guage axis**, to expand this section.
12. Click **Target** and set the **target value**. Use **100000000**.
    a. ***Notice,*** *Target marker indicating the value above appears on the visual*
13. Click **colors**, to expand the section.
14. Click **Fill color**, **choose** the **fill color**. Select **lime green** for example.
15. Click **Target color** and then **choose** the **target color**. Select **Magenta** for example.
    a. ***Notice*** *the changes to the Guage visual.*
16. Set the **switch** on the **Data labels** heading to **ON.**
17. Click **Data Labels** to expand the section.
18. Click **Font**, select font type.
19. Click **Font size**, specify font size.
20. Click **Color**, select font color.

    a. ***Observe*** *the changes to the Data Labels based on your selection*.
21. Set the **switch** on the **Target Label** to **ON**
22. Click the **Target label** to expand section.
23. In the **Values section** repeat **steps 18 to 20** for the **target label**
24. Set the **switch** on the **Callout Value** heading to **ON.**
25. In the **Values** section, repeat **steps 18 to 20** for the **Callout Value**
    a. ***Observe*** *the change to the Callout Value*.
26. Click **Save**
27. Take a **screenshot.**
28. Click **Close**.

KPI VISUALS

The KPI visual tool can be used to show progress toward a measurable goal. Power BI allows you to create your own KPI visuals that highlight individual performance indicators.

When to use:

KPI visuals can be used when your data contains both actual performance details and target values attached to a time series. For example, a salespersons monthly sales figure and the target figures for those months.

Create and Format KPI Visual

1. Open the **KPI.pbix** file
2. Click **Build Visual**
3. Click **KPI**  , the KPI visual is added to the report view canvas.
4. Expand the **TransactionTable** to expose the fields.
5. Click **Gross Sales**, the field appears in the **Value box**.
6. Click **Sales, sales field** appears in the **Target box**.
    a. *Note* ***"Gross Sales and Sales"*** *appear in the visual's title.*
7. Expand the **DimDateTable** to expose the fields.
8. Click **Date**, the Date field appears in the **Trend Axis box**
    a. ***Notice****, the Date data appears in the in the visual*
    b. ***"Gross sales and sales*** *by Date" is the Title*.
9. Click on **the visual**, using the selection handle **expand the size** of the visual
10. Click **Format visual.**
11. Click **Visual**
12. Click **Callout Value**
13. Click **Font**, select font type.
14. Click **Color,** select color.
15. Click **Icons**. Notice the following:
    a. ***Switch Icon*** *to* ***ON****, icon should appear in the visual*
    b. ***Check mark*** *shows* ***good*** *performance,*
    c. ***Exclamation mark*** *shows* ***bad*** *performance*.
16. Click **Icon size**, increase the **icon size**, observe the change to the visual

17. Click **Trend axis**.
18. Click **Direction**, select either **High** is good or **Low** is good.
    a. *This tells Power BI how to interpret the Value and Target figures.*
19. Click **Good Color**, select the color for good performance.
20. Click **Neutral Color**, select the color for neutral performance.
21. Click **Bad Color**, select the color for Bad performance.
22. Click **Transparency**, adjust the transparency percentage.
23. Click **Target Label**
24. Click **Font**, select font type.
25. Click **Font size**, select font size.
26. Click **Font color**, choose a color, rename the Label to "Major Goal."
27. Click **Distance to goal**
28. Click **Style**, then click, **Value**, **Percent** or **Both** to format.
29. Click **Distance direction**, then click either **Increasing** is positive or **Decreasing** is positive
    a. ***Notice**, the Distance from goal section automatically picks up the font format from the Values section*.
30. **Include Date,** Click the **switch the Date** heading to **ON**.
31. Click **Date**
32. Repeat **steps 24 to 26** to format date.
33. Click **Save** and
34. Take a **screenshot**.
35. Click **Close**.

***Why use Trend Axis**: It allows you to specify colors for Good, Neutral and Bad. In so doing Power BI can apply the color to the chart to indicate how the field that forms your target for the KPI is trending.*

Matrix Visual

This visual shows the relationship between two or more variables in a data set. It's a tabular layout that enables you to pivot the data it contains and drill down through the layers of a data hierarchy

Create a Matrix Visual

1. Open the **Matrix.pbix**
2. Click **Build Visual**
3. Click the Matrix icon  under the set of visuals in the build visual pane.
4. Expand the **TransactionTable** to expose the fields.
5. Click **Sales**, sales field appears in the Value box, sales data appears in the visual
    a. By default, the Sum of the Sales data column is displayed.
6. Click **Country**, country field appears in the Rows box
    a. Notice, Country Data appears in the Matrix visual creating a 2 column table.
7. Click **Product**, product field now appears in the Columns box
    a. Notice, Product data appears in the Visual creating an 8 column table.
8. Click **the visual**, use the selection handles to expand visual revealing all columns.

9. Click **Save**
10. Take a **screenshot.**
11. **Use visual** in next exercise.

How to Create a drill through exercise?

1. **Note:** First you must have 2 or more fields in the Rows box in the Build Visual Tab of Visualizations pane.
2. Select an **appropriate field** from the field list
3. Drag **Field to the Row box** in the order you want them to appear in the drill down.
4. Click **Drill Down** icon to enable.
5. Then **drill down** to the data point that you want.
6. Click the **plus sign next to Canada** to expand section.
7. Take a **screenshot**.
8. Click the **minus sign next to Canada** to collapse section.
9. **Use chart** for the next exercise.

Format Matrix Visual

By applying one of 9 preset styles such as **Minimal**, **Contrast Alternating Rows** or **Condensed**. You can also apply **horizontal** and **vertical gridlines** as well as adjust **Row Padding** i.e. the amount of blank space between the rows. The following exercise takes you through these features.

1. Click the **Matrix visual**, selection handles appear.
2. Click **Format Visual**
3. Click **Visual**
4. Click **Style presets**.
5. Click the **drop-down** list showing options. **Select Minimal**.
6. Click **Grid**
7. Set the **switch** on the **Horizontal Gridlines** heading to **ON**.
    a. Notice the change.
8. Set the **switch** on the **Vertical Gridlines** heading to **ON**.
9. Click **Border**, to expand the border section.
10. Click **Section**, then choose the visual section you want to affect. Select Row Headers.
11. In the **Border Position l**ist, **select** which **borders** to display, **Top, Bottom, Left or Right**.
12. Click **Color,** select border color.
13. Click the **color Width** and specify the border width
14. Repeat **steps 10 to 13** to apply **any other border formatting** you want
15. Click **Options**
16. Click **Row Padding**, and set the amount of space between lines (***0 to 5,most to least compact)***
17. Click **Global font** size all column and row headers and cell elements
18. Click **Save.**
19. Take a **screenshot.**
20. **Use visual** for next exercise.

Format the Values and Column Headers for improved Readability

1. Click the **Matrix visual**, selection handles appear.
2. Click **Format Visual**
3. Click **Visual**
4. Click **Values**
5. Click **Font**, select font type
6. Click **Font size**, change font size.
7. Click **Text color**, change the text color
8. Click **background color**, then select color.
9. Click **Alternate text color**, then select color.
10. Click **Alternate background color**, then select color.
11. Set the **Text wrap switch** to **ON**, allowing values text to wrap.
12. Click **Column Headers**.
13. Click F**ont**, select font type.
14. Click **Font size**, choose font size.
15. Click **Text color,** select color.
16. Click **Background color,** select background color
17. In the **Header Alignment** area, select either **Left, Center** or **Right**, note the change.
18. In the **Title Alignment area**, select either **Left, Center** or **Right,** note the change.
19. Set the **Text wrap switch** to **ON**, allowing the column header text to wrap.
20. Click **Save**
21. Take a **screenshot**.
22. **Use visual** in next exercise.

Format the Row Headers

1. Click the **Matrix visual**, selection handles appear.
2. Click **Format Visual**
3. Click **Visual**
4. Click **Row headers**.
5. Click **Font**, select font type.
6. Click **Font size**, change font size.
7. Click **Text color**, change the text color
8. Click **background color**, then select color.
9. Set the **Banded row color** switch to **ON**.
10. In the **Header Alignment area**, select either **Left, Center** or **Right**, note the change in the Row headers
11. Set the **Text wrap switch** to **ON**, allowing the Row header **text to wrap**.
12. Set the **switch** on the **Column Subtotals heading** to **ON.**
13. Click **Column subtotals.**
14. Click the **Per column level** switch to **ON**. This enables the **Column Level drop-down list**.
15. Click **Column Level**, then click **All to apply to all columns** in this example. (Note you can also apply to individual columns also)
16. Click **columns**.

17. Set the **show subtotal** switch to **ON.**
18. Click the **Subtotal Label text box** and type a **different label** that's appropriate.
19. click **Values**.
20. Repeat **steps 5 to 8** to format the values.
21. **Review** the visual to ensure all changes are reflected.
22. Click **Save**
23. Take a **screenshot.**
24. **Use this visual** in the next section.

Format the Row Subtotals and Grand Totals

1. Click the **matrix visual.**
2. Click **Format Visual**
3. Click **Visual**
4. Set the **switch** on the **Row Subtotals heading** to **ON.**
5. Click **Row subtotals.**
6. Click the **Per row level** switch to **ON.**
7. Click **Row Level**, then **click All** or the **row level you want to affect**.
8. Click Rows.
9. Set the **Show subtotal** switch to **ON**.
10. Click the **Subtotal label text box** and type a label.
11. Click **Position**, then click **Top** or **Bottom**. Select **Bottom** for this exercise.
12. Click **Values**.
13. Click **Font**, select font type.
14. Click **Font size**, change font size.
15. Click **Text color,** change the text color.
16. Click **background color**, then select color.
17. Set the **Apply to labels** switch to **ON**. **Notice** the changes made.
18. Click **Column Grand Total** to expand the **Column Grand Total** section.
19. Repeat **steps 13 to 17** to apply formatting to the **column grand totals**.
20. Click **Row Grand Total** to expand the **Row Grand Total** section.
21. Repeat **steps 13 to 17** to apply formatting to the **row grand totals**.
    a. The **column grand totals** and **row grand totals** take on the formatting.
22. Click **Save**
23. Take a **screenshot.**
24. **Use this visual** in the next section.

Question: How do you remove the subtotal values from the matrix visual?

Format the Specific Column and Cell Elements

Customize certain columns that you want to highlight and add cell elements to make them more informative. Cell elements such as background color, data bars, icons and web url can be added.

Web URL function allows you to create a **clickable hyperlink in your reports** or dashboards that directs users to a specific web address (URL). This function is useful for adding interactivity to your

reports by enabling users to access additional information or external resources related to the data being displayed.

1. Click the **matrix visual**.
2. Click **Format Visual**
3. Click **Visual**
4. Click **Specific Column**
5. Click **Series**, then **select from the list**, the column to format.
6. Set the **Apply to header** switch to **ON**
7. Set the **Apply to subtotals** switch to **ON.**
8. Set the **Apply to values** switch to **ON.**
9. Click **Values**.
10. Click **Text color**, then select a text color.
11. Click **Background color**, then select a background color.
12. Click either **Left**, **Center** or **Right** for alignment.
13. Click **Display units** then select the units, **Thousands** for this exercise.
14. Click **Cell elements**.
15. Click **Series**, then click the **column to format**.
16. Set the **Background color** switch to **ON.**
17. Set the **Font Color** switch to **ON**.
18. Set the **Data bars** switch to **ON.**
19. Set the **Icons** switch to **ON**.
20. Set the **Web URL** switch to **ON**.
21. **Observe the visual** to ensure all changes are reflected.
22. Click **Save**
23. Take a **screenshot.**
24. Click **Close**.

Waterfall Charts

These are a type of bar graph that demonstrates the net change in value between two points. Waterfall charts shows how the initial values gradually increase and decrease over a series of values to reach the final value. It breaks down and show all the individual components that contribute to the net change in value.

The are sometimes referred to as ***Bridge charts*** because the initial and final vales touch the x-axis while the middle values float.

Create a Waterfall Chart

1. Open the **Waterfall.pbix** file
2. Click **Build Visual**
3. Click **Waterfall chart**  in the Build Visual pane.
4. Expand the **DimDateTable** to expose its field list.
5. Click **Date,** the **date field hierarchy** should appear in the **Category box.**

    a. ***Date field*** *should also appear in the waterfall chart visual in the report view*.
6. Click the **waterfall visual**, selection handles appear, use handles to expand visual.
7. Click **Sales**
    a. Sales field appears in the Y-axis box.
    b. Sales data appears in the waterfall chart.
8. Activate the **drill down arrow**.
9. Drill down to **Sales by Month**
10. Click **Save**
11. Take a **screenshot.**
12. Use chart for next exercise.

Note*: When to use of a waterfall chart?*

- When you need to illustrate visually how a starting value changes, through intermediate additions and subtractions, to a final value.

Format a waterfall Chart

1. Click the **waterfall chart** visual.
2. Click **Format Visual**
3. Click **Visual**
4. Click **Y-Axis** to expand section.
5. Click **Values** to expand Values section.
6. Click **Font,** select font type.
7. Click **Color,** select color.
8. Click **Display units**, change the units to ***Thousands***.
9. Click the **Switch axis position** to **ON**, Y-axis moves from left to right.
10. Click **Title**, to expand the title section.
11. Click **Font**, select font type.
12. Click **Font size**, change font size.
13. Click **Color**, change the color.
14. Click on **Range**.
15. Set the **Invert range switch** to **ON**, this changes range from **High** to **Low**
16. Click **Save**
17. Take a **screenshot.**
18. **Use chart** for next exercise.

Format the X-Axis and Legend

1. Click the **waterfall chart** visual, selection handles appears
2. Click **Format Visual**.
3. Click **Visual**
4. Click the **X-axis** to expand the X-axis Title section.
5. Click **Font**, select font type.
6. Click **Font size,** change font size.
7. Click **Color,** change the text color

8. Click **Title** to expand the chart Title section
9. Repeat **steps 5 to 7** to format the title.
10. Click **Background color**, select color to set the background color of the title.
11. Click the **Horizontal** alignment, select Center alignment.
12. Scroll down and click **Legend**
13. Click **Options**
14. Click **Position,** select the **Centre Right**, observe the change.
15. Click **Text**
16. Click **Font**, select font type
17. Click **Font size**, change font size.
18. Click **Color**, change the text color
19. Click **Save**
20. Take a **screenshot**
21. **Use the chart** for the next exercise.

Question: How do I change the Range for a waterfall chart?

Breakdowns in Waterfall Chart

The breakdown field breaks down each data point by subcategories, so you can see what contributes to each value. The number of breakdowns can be adjusted between 1 and the number of subcategories the breakdown field provides.

Add and Format Breakdowns

1. Open the **Waterfall Breakdown.pbix** file
2. Click the **waterfall chart visual**, selection handles appear.
3. Click **Build Visual**
4. Expand the **TransactionTable** to expand the field listing.
5. Click **Discount Category**, field appears in the **Breakdown box** in the Build Visual pane.
    a. *Discount Categories of **High, medium** and **Low appear** for each month on the X-axis*
    b. ***Notice** that each sub category has a separate bar that shows the results for that month*.
6. Click **Format Visual**
7. Click **Visual**
8. Click **Breakdown**
9. Click **Maximum breakdowns** and specify **2**
    a. *Each month now shows **three columns***
        i. *One column for each of the two largest subcategories for that month*
        ii. *One column for the remaining subcategories*

Question: what does **specify 1** in the breakdown in **step 9** do?

10. Take a **screenshot**
11. Click **Discount category,** this removes the Discount category filed from the Breakdown box.

    a. *The chart reverts to its previous form*.
12. **Take another screenshot**, this should show the **removal of Breakdown box data**.
13. Click **Save**
14. Click **Close.**

Question: *How do you change the column colors and widths in the breakdowns?*

Funnel Charts

A funnel chart is used to illustrate the flow of business processes. It displays categorical information arranged from largest to smallest value leading to the funnel shaped results, for example top 5 categories.

Create, format and Label Funnel Charts

1. Open the **Funnel.pbix file.**
2. Click **Build Visual**
3. Click **Funnel**, visual appears on the report view canvas.
4. Expand the **TransactionTable** to view the field listing.
5. Click **Country,** field appears in the **category box** and **data appears** in the Funnel visual
6. Click **the visual**, selection handles appear, use them to expand visual.
7. Click **Sales**, sales filed appears in the **Value box**, and data in the chart.
8. Click **Format Visual**
9. Click **Visual**
10. Click **Colors**
11. Click **Default,** select **color** this applies to all bars
    a. The **Fx** feature allows you to apply color scheme based on Rules or Field value.
12. Click **Show all** switch to **ON**
13. Click **each drop-down list** and **select a color** for each category.
    a. **Notice**, the Funnel should have different colors
14. Set the **switch** under **Data Labels heading** to **ON**
15. Click **Data Labels**, to expand data labels section.
16. Click **Values**, values section expands
17. Click **Font**, select font type.
18. Click **Font size**, select font size.
19. Click **Color,** select color.
20. Click **Display units**, change Auto to **Thousands**.
    a. **Observe and verify** all changes are reflected in the Chart
21. Click **Category Labels**, to expand the section.
22. Set the **Category label** switch to **ON**.
23. Click **Font**, select font type.
24. Click **Font size**, select font size.
25. Click **Color,** select color.
    a. ***Observe*** *the changes made to the chart*

26. Set the **Conversion Rate Labels** switch to **ON**
27. Click the **conversion rate labels**, to expand the section
28. Click **Font**, select font type.
29. Click **Font size**, select font size.
30. Click **Color,** select color.
31. Click **Save**
32. Take a **screenshot**.
33. Click **Close.**

***Question**: How does a Funnel chart show percentages on its bars?*

Pie Chart or Donut Chart

Shows the proportional relationship of segments to the whole. Pie chart is a circular statistical graph divided into sections representing various segments. A Donut chart illustrates the same view of the data as the pie chart with each segments being a percentage the sum of which equaling 100%.

Create Pie or Donut Chart

1. Open the **Pie.pbix** file
2. Click **Build Visual**
3. Click **Pie**  or **Donut chart**  from the **Build Visual Pane**,
    a. visual appears on the report view canvas
4. Expand the **TransactionTable** to expose the data field listing
5. Click **Sales**,
    a. Sales field appears in Value box
    b. Sales data appears in the visual creating an unsliced pie
6. Click **the visual**, selection handle appears, **drag handle down** to expand
7. Click **Country**,
    a. Country Field appears in the **details box**
    b. **Country data** appears in **the chart**, this time creating slices.
    c. Default **labels** appears.
    d. Default **legend** appears.
8. Click **Save**
9. Take a **screenshot**
10. **Use chart** for the next exercise.

Format a Pie or Donut Chart

1. Click on **the pie or donut chart visual**, selection handles appear.
2. Click on **Format Visual**.
3. Click **Visual**.
4. Set the **switch** on the **Legend heading** to **ON**

5. Click **Legend**
6. Click **text**
7. Click **font**, select font type
8. Click **Font size**, change the font size.
9. Click **Color,** select the text color.
10. Click **position**, note the different options. Select **Botton center**.
11. Click **Slices** to expand section.
12. In the **colors area**, click each **drop-down list**, then click the **color to apply.**
    a. The slice should take on the colors selected
13. Set the **switch** on the **Details heading labels** to **ON**.
14. Click **Details labels**.
15. Click **Position**, note the options, then select Inside.
16. Click the **Label Contents** and then click **All-detail labels**.
    a. **Notice**, that the labels move inside and display all details.
17. Click **values** to expand this section
18. Repeat **steps 7 to 9** to format the values.
19. Click **Rotation** to expand the rotation section.
20. Drag the **Rotation slider** to rotate the visual as far as you want. **Visual should rotate**.
21. Click **Save**
22. Take a **screenshot**
23. Click **Close.**

Treemap Chart

A treemap represents the categories in a dataset as colored rectangles arranged within a larger rectangle which represents the entire dataset. The size of the rectangles varies to indicate their values.

Create a Treemap Chart

1. Open the **Treemap.pbix** file
2. Click **Build Visual**
3. Click **Treemap**  in the **Build visual pane**.
    a. *Visual should appear on the canvas*
4. Expand the **TransactionTable** to expose the field listing
5. Click **Sales**
    a. **Sales field** appears in the **Vale box**
    b. **Sales data** appears in the **treemap visual** as a **blue rectangle**
6. Click the **treemap visual**, selection handles appear, **drag the handle down right** to expand
7. Click **Country**,
    a. **Country field** appears in the **category box**
    b. **Country data** appears in the **treemap visual**
    c. **NOTICE,** a separate rectangle for each of the 5 countries.

d. Click **Save**
e. Take a **screenshot.**
f. **Use this chart** for the next exercise.

Note: *What are treemap visuals good for?*

- It's a good tool for getting a quick visual comparison between categories in a dataset.
- For example, you might create a treemap visual to analyze the sales performance of your company's reps or visualize the different file types e.g. audio and video files taking up storage space.

Format a Treemap Chart

1. Click the **treemap visual**, selection handles appear.
2. Click **Format Visual**
3. Click **Visual**
4. Set the switch on the **legend heading** to **ON**, the legend appears on the visual.
5. Click **Position**, note the position options. Select **Top Center**.
6. Click **Text**
7. Click **Font**, select front type.
8. Click **Font size**, specify size.
9. Click **Color**, select a color,
    a. **Note**, the legend takes on the position and formatting.
10. Click **Colors**(different from above), to expand colors section.
11. Click **each category**, then select the **color.**
12. Set the **Data Labels** switch to **ON**
13. Repeat **steps 7 to 9** to format the **data labels**. **Observe** the changes.
14. Set the **switch** on the **category labels heading** to **ON**.
15. Click **Category Labels**, to expand the section.
16. Repeat **steps 7 to 9** to format the **category labels**. **Observe** the changes.
17. Click **Save**
18. Take a **screenshot**
19. Click **Close**.