

## What charts or graph is right to use

Trend Analysis	Comparison	Correlation	Distribution	Part-to-Whole
One of the most frequently used methods for analyzing data is to track a trend over time. Some of the best visualizations for showing trends over time are line charts, area charts, and bar charts	Another method for analyzing data is comparison and ranking. We compare and rank countries, regions, business segments, salesmen and sports players based on one or a set of criteria. In many cases, this shows us where we are and how we are doing.	Relationship charts are suited to showing how one variable relates to one or numerous different variables. You could use this to show how something positively effects, has no effect, or negatively effects another variable. Running a simple correlation analysis is a great place to start in identifying Relationships between measures.	Distribution analysis is extremely useful in data analysis because it shows how your Quantitative values are distributed across their full quantitative range. Distribution charts help you to understand outliers, the normal tendency, and the range of information in your values.	There are occasions when you want to do a part-to-whole analysis. Although pie Charts are commonly used in this type of situation, we suggest you use them with displaying the values next to them as they are very hard to visualize by human eyes if the values are very close to each other.
Bar Graph	Bar Graph	Scatter Plot	Histogram	Pie Chart
Line Chart	Bubble	Bubble Chart	Line Chart	Donut Chart
KPI	Gauges	Line and Clustered Column Chart	Clustered Column Chat	Stacked column chart
Waterfall Chart	Column Chart	Line and Stacked Column Chart	Bar Chart	Stacked Bar Chart
Cards with States	Scatter Plot	Table Heat map	Box and Whisker	Waterfall chart
Area Chart	Dot Plot		Candlestick	Tree map
	Stacked Bar Chart			Heat map
Stacked Area Chart	Cluster Column			Stacked Area Chart
Candlestick	Cluster Bar Chart			Pyramid
Gantt	Stacked Column			Sunburst

# Bar Chart

Bar charts are one of the most common data visualizations. With them, you can quickly highlight differences between categories, clearly show trends and outliers, and reveal historical highs and lows at a glance. Bar charts are especially effective when you have data that can be split into multiple categories.

## Tips :

- \* Use a bar chart to show the values of several items at a single point in time
- \* The horizontal format make it easier to compare the values than a column chart
- \* Bar charts are good when you have a long series of labels.
- \* Include multiple bar charts and group them next to one another on your dashboard. This helps the viewer quickly compare related information instead of flipping through a bunch of spreadsheets or slides to answer a question.



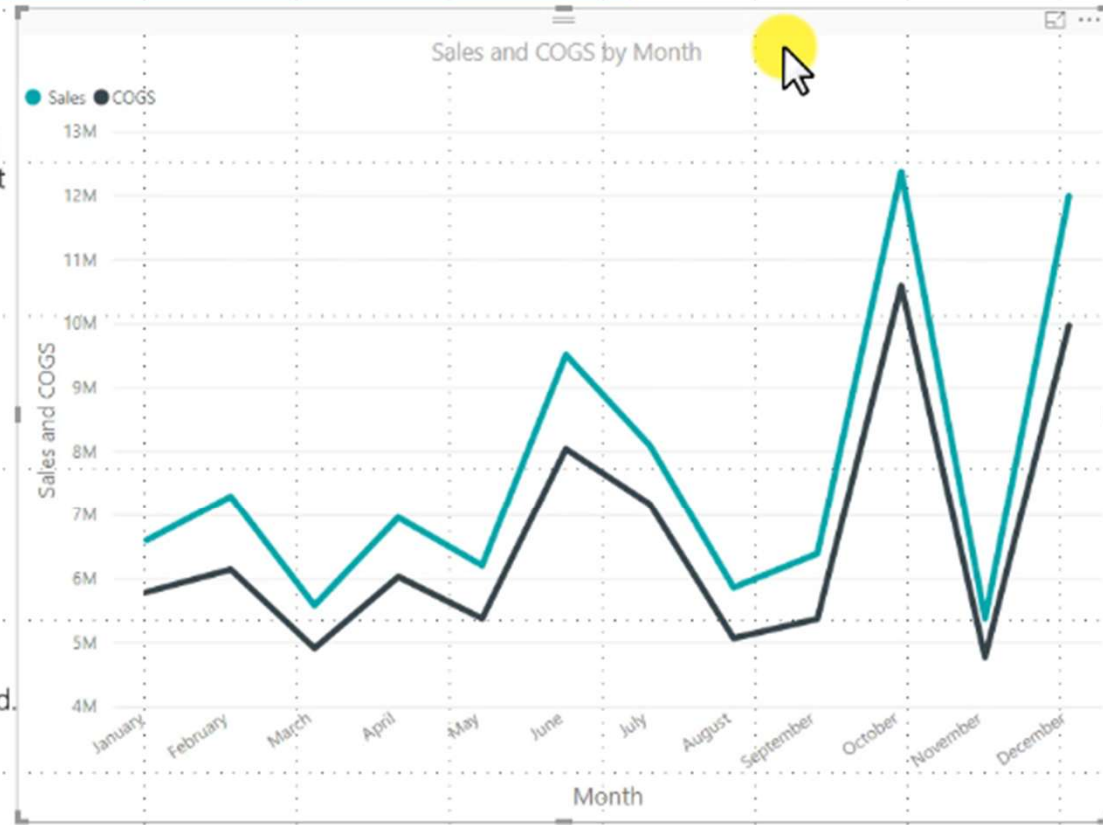
# Line Chart

This simple graph shows data over intervals with connected points

A line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by straight line segments.[1] It is a basic type of chart common in many fields. It is similar to a scatter plot except that the measurement points are ordered (typically by their x-axis value) and joined with straight line segments. A line chart is often used to visualize a trend in data over intervals of time – a time series – thus the line is often drawn chronologically.

Tips:

- \* keep it simple.
- \* Don't use a legend; directly label the series, instead.
- \* Emphasize what is important.
- \* Include zero baseline if possible.
- \* Label lines if possible
- \* Use the right height
- \* You don't have to start the Y-axis scale at zero; break the scale if you need.
- \* If you are comparing two time series with very different units of measurement, consider using a logarithmic scale.

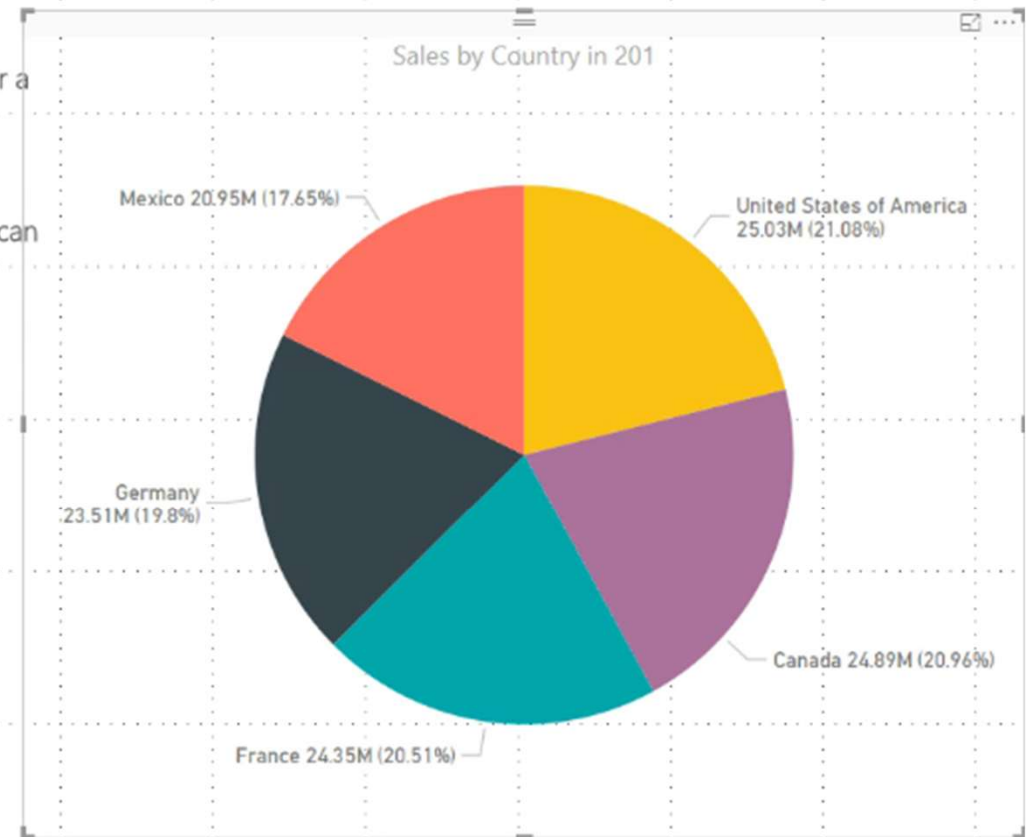


# Pie Chart

A pie graph (or pie chart) is a specialized graph used in statistics. The independent variable is plotted around a circle in either a clockwise direction or a counterclockwise direction. The dependent variable (usually a percentage) is rendered as an arc whose measure is proportional to the magnitude of the quantity. Each arc is depicted by constructing radial lines from its ends to the center of the circle, creating a wedge-shaped "slice." The independent variable can attain a finite number of discrete values (for example, five). The dependent variable can attain any value from zero to 100 percent.

## Tips :

- \* Visualize no more than 6 categories per chart.
- \* Don't use multiple pie charts for comparison.
- \* Make sure all data adds up to 100%
- \* keep it simple.
- \* Don't use a legend; directly label the series, instead.
- \* Emphasize what is important.





# Stacked Column Chart

Stacked bar charts are designed to help you simultaneously compare totals and notice sharp changes at the item level that are likely to have the most influence on movements in category totals. A stacked bar graph is a graph that is used to break down and compare parts of a whole. Each bar in the chart represents a **whole**, and **segments in the bar represent different parts or categories of that whole**.

## Tips:

- \* The point of a chart is to make data easier to read. Don't make your viewers' lives harder by visualizing in random order.
- \* Keep bar widths consistent. The space between them should be half the width of the bars themselves.
- \* Don't use 3D charts. Stick to 2-D to keep the data accurate.
- \* Horizontal bar charts work best when you have lots of different categories with wordy labels.
- \* Always have the y-axis start at zero; otherwise your data insights could be misinterpreted as more or less significant than they actually are.
- \* Use consistent colors. Too much variation will distract from the data. This is also a great opportunity to keep branding consistent.
- \* Keep Y-Axis labels short. Swap out unnecessary zeros for a unit of measurement to keep your chart from looking cluttered.
- \* Ditch the Grid lines. Grid lines are distracting and unnecessary when your goal is the bigger picture.
- \* Also keep labels concise and descriptive. And don't forget to include a source—this gives your data more credibility.
- \* Group or stack when necessary. You've designed a chart to save your viewers time, so don't make them sift through five different bar charts. Opt for one grouped or stacked chart depending on your data.
- \* Keep it simple, concise and clear. Concise and clear. Don't clutter them up with unnecessary data labels, legends, or other chart junk.
- \* Opt for something more colorful to keep your data from melding into the background.

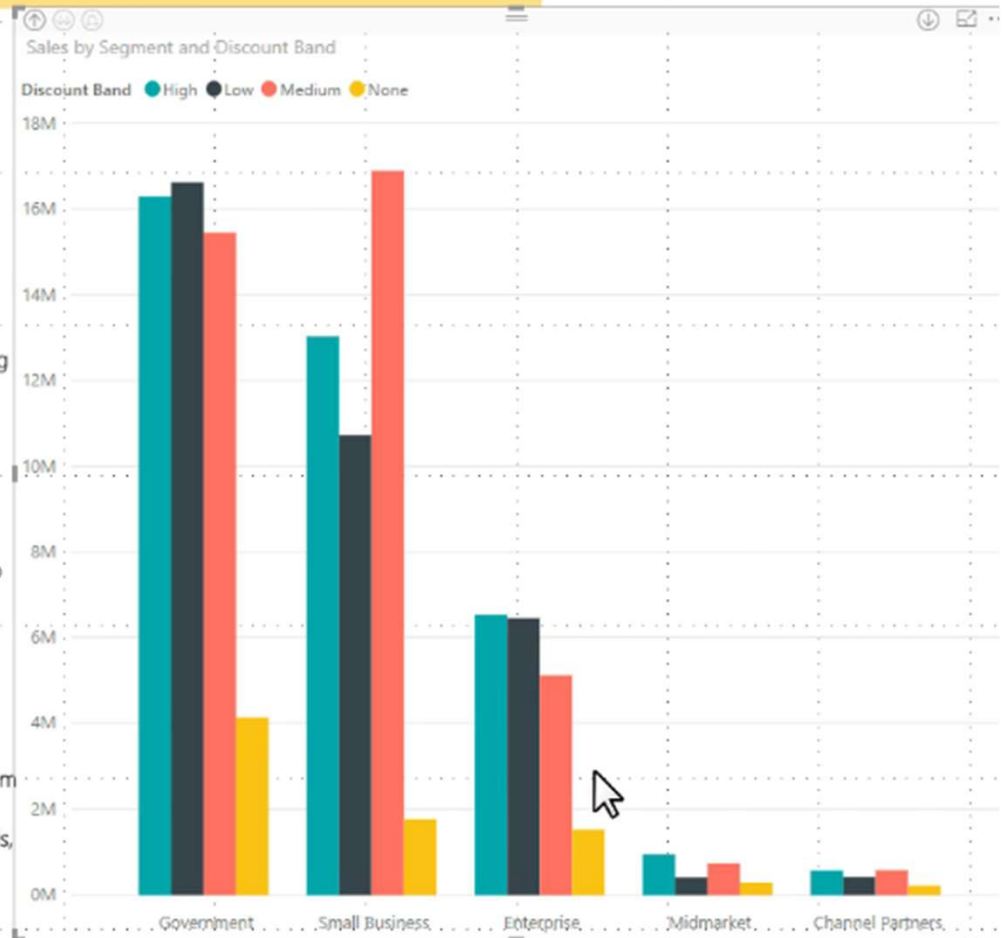


# Clustered Column Chart

A clustered column chart displays more than one data series in clustered vertical columns. Each data series shares the same axis labels, so vertical bars are grouped by category. Clustered columns allow the direct comparison of multiple series, but they become visually complex quickly. They work best in situations where data points are limited.

## Tips :

- \* The point of a chart is to make data easier to read. Don't make your viewers' lives harder by visualizing in random order.
- \* Keep bar widths consistent. The space between them should be half the width of the bars themselves.
- \* Don't use 3D charts. Stick to 2-D to keep the data accurate.
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# Area Chart

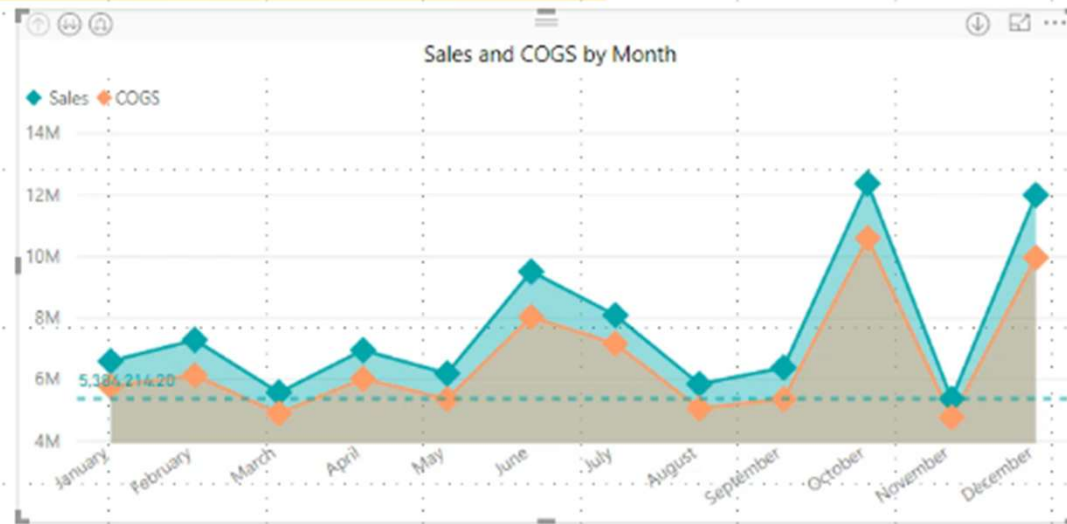
Area charts emphasize the magnitude of change over time, and can be used to draw attention to the total value across a trend. For example, data that represents profit over time can be plotted in an area chart to emphasize the total profit.

Basic area charts are a great choice:

- \* to see and compare the volume trend across time series
- \* for individual series representing a physically countable set

Tips:

- \* keep it simple.
- \* Don't use a legend; directly label the series, instead.
- \* Emphasize what is important.
- \* Include zero baseline if possible.
- \* Label lines if possible
- \* Use the right height.
- \* You don't have to start the Y-axis scale at zero; break the scale if you need.
- \* If you are comparing two time series with very different units of measurement, consider using a logarithmic scale.



# Scatter Chart

A scatter chart always has two value axes to show one set of numerical data along a horizontal axis and another set of numerical values along a vertical axis. The chart displays points at the intersection of an x and y numerical value, combining these values into single data points. Scatter plots are an effective way to give you a sense of trends, concentrations and outliers that will direct you to where you want to focus your investigation efforts further.

Scatter Charts are a great choice :

- \* to show relationships between 2 (scatter).
- \* to plot two groups of numbers as one series of xy coordinates.
- \* instead of a line chart when you want to change the scale of the horizontal axis
- \* to turn the horizontal axis into a logarithmic scale.
- \* to display worksheet data that includes pairs or grouped sets of values. In a scatter chart, you can adjust the independent scales of the axes to reveal more information about the grouped values.
- \* to show patterns in large sets of data, for example by showing linear or non-linear trends, clusters, and outliers.
- \* to compare large numbers of data points without regard to time. The more data that you include in a scatter chart, the better the comparisons that you can make.



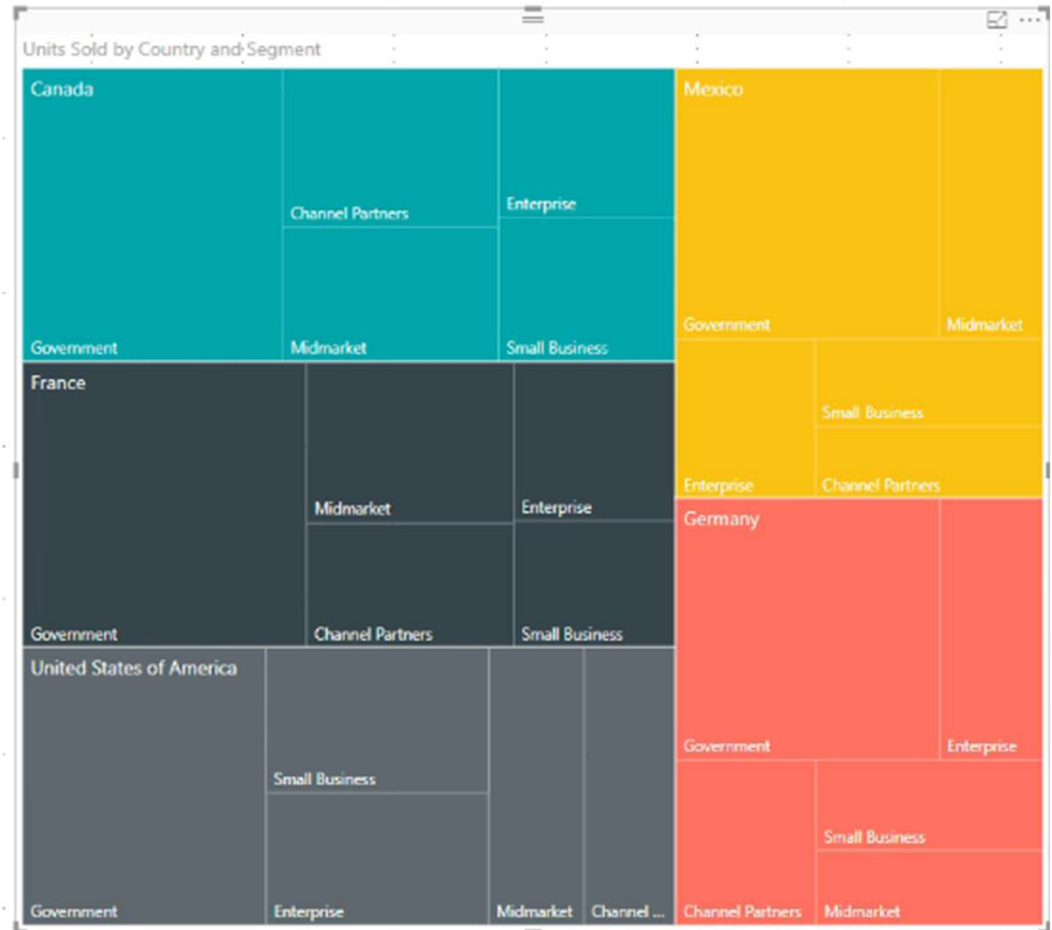


# Treemap Chart

Treemaps display hierarchical data as a set of nested rectangles. Each level of the hierarchy is represented by a colored rectangle (often called a "branch") containing other rectangles ("leaves"). The space inside each rectangle is allocated based on the quantitative value being measured, with the rectangles arranged in size from top left (largest) to bottom right (smallest). If you are looking to see your data at a glance and discover how the different pieces relate to the whole? Then treemaps are for you. These charts use a series of rectangles, nested within other rectangles, to show hierarchical data as a proportion to the whole.

Treemaps are a great choice:

- \* to display large amounts of hierarchical data.
- \* when a bar chart can't effectively handle the large number of values.
- \* to show the proportions between each part and the whole.
- \* to show the pattern of the distribution of the measure across each level of categories in the hierarchy.
- \* to show attributes using size and color coding.
- \* to spot patterns, outliers, most-important contributors, and exceptions.



# Funnel Chart

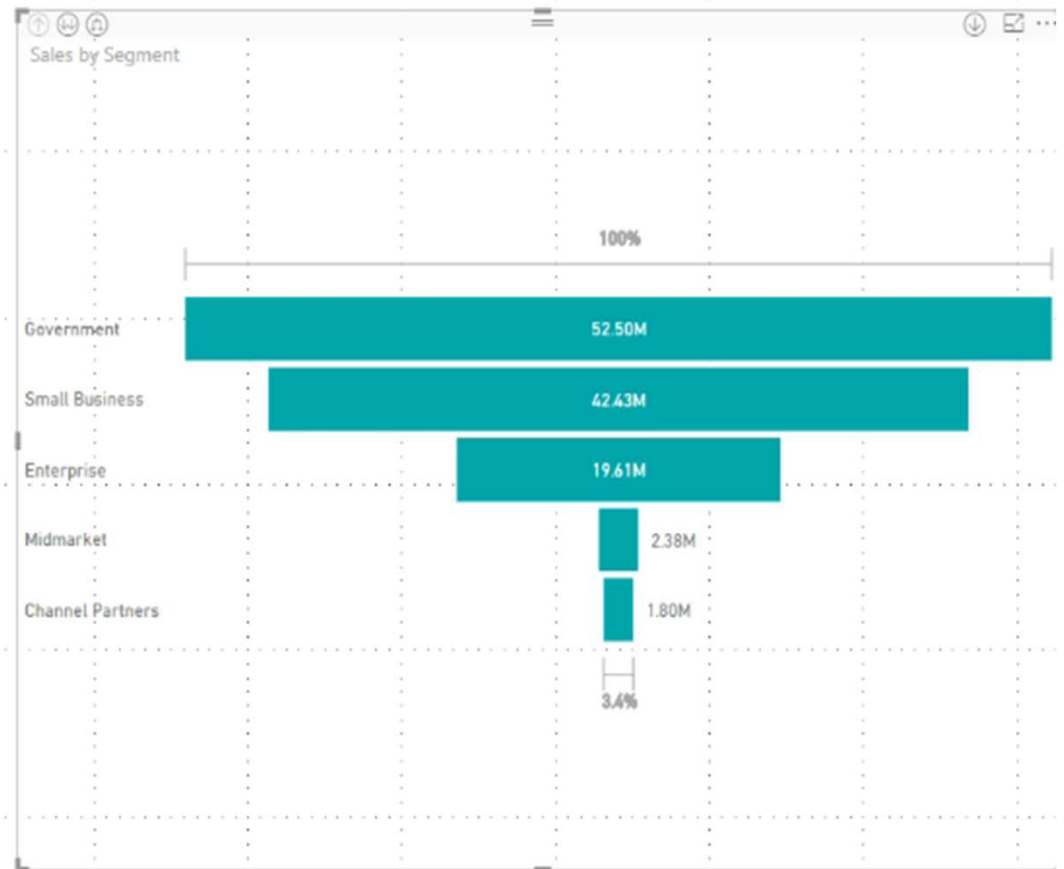
A funnel chart helps you visualize a linear process that has sequential connected stages. At a glance, the shape of the funnel conveys the health of the process you're tracking. Each funnel stage represents a percentage of the total. So, in most cases, a funnel chart is shaped like a funnel with the first stage being the largest, and each subsequent stage smaller than its predecessor.

Funnel charts are a great choice:

- \* when the data is sequential and moves through at least 4 stages.
- \* when the number of "items" in the first stage is expected to be greater than the number in the final stage.
- \* to calculate potential (revenue/sales/deals/etc.) by stages.
- \* to calculate and track conversion and retention rates.
- \* to reveal bottlenecks in a linear process.
- \* to track a shopping cart workflow.
- \* to track the progress and success of click-through advertising/marketing campaigns.

Funnel charts:

- \* Can be pinned from reports and from Q&A.
- \* Can be sorted.
- \* Support multiples.
- \* Can be highlighted and cross-filtered by other visualizations on the same report page.



# Cards

118,726.35K

Sales

Sometimes a single number is the most important thing you want to track in your Power BI dashboard or report, such as total sales, market share year over year, or total opportunities. This type of visualization is called a Card. As with almost all of the native Power BI visualizations, Cards can be created using the report editor or Q&A.

If you do not see a question box at all, contact your system or tenant administrator. If you are using Desktop and double-clicking empty space in a report doesn't open Q&A, you may need to enable it. Select File > Options and Settings > Options > Preview features > Q&A and restart Desktop.

## Sales by Country and Discount Band

Canada Country	High Discount Band	8,657,237.66 Sales	7.87% %GT Count of Sales	1.13M Units Sold
Canada Country	Low Discount Band	6,537,899.37 Sales	4.47% %GT Count of Sales	16.89M Profit
Canada Country	Medium Discount Band	7,865,428.36 Sales	6.08% %GT Count of Sales	Amarilla
Canada Country	None Discount Band	1,827,089.50 Sales	1.61% %GT Count of Sales	Carretera
France Country	High Discount Band	5,865,834.74 Sales	6.44% %GT Count of Sales	Montana
France Country	Low Discount Band	5,913,163.19 Sales	4.47% %GT Count of Sales	Paseo
France Country	Medium Discount Band	10,057,889.36 Sales	7.87% %GT Count of Sales	Velo
France Country	None Discount Band	2,517,285.00 Sales	1.25% %GT Count of Sales	VTT



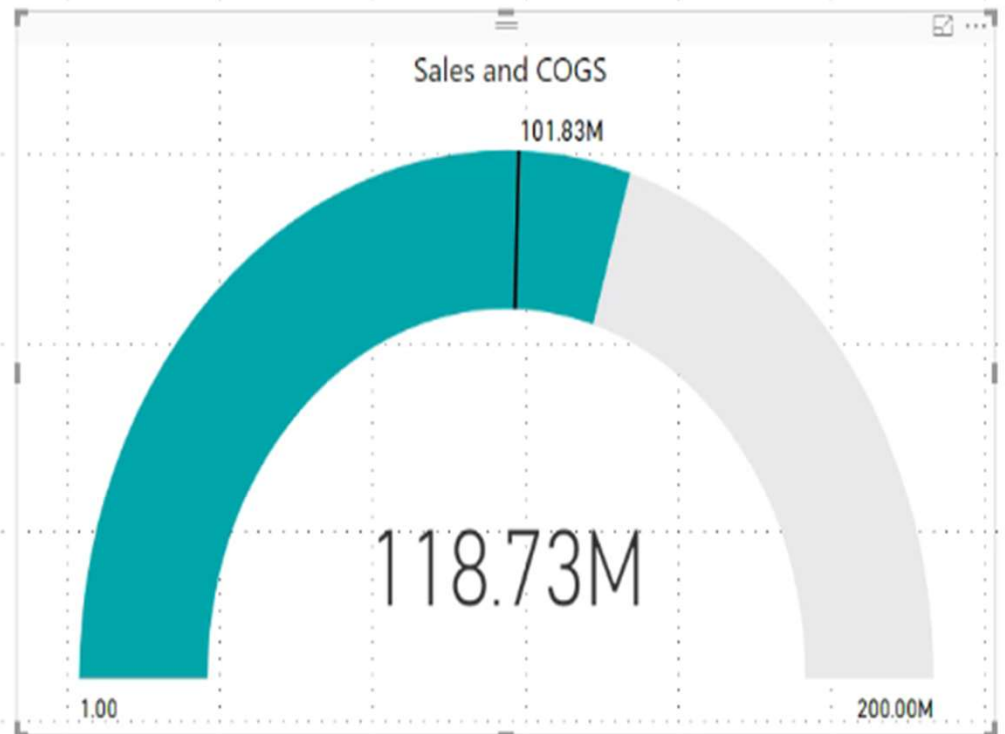
# GUAGE CHART

A radial gauge chart has a circular arc and displays a single value that measures progress toward a goal/KPI. The goal, or target value, is represented by the line (needle). Progress toward that goal is represented by the shading. And the value that represents that progress is shown in bold inside the arc. All possible values are spread evenly along the arc, from the minimum (left-most value) to the maximum (right-most value).

Till now we are discussing visualization comparing different categories and different values. Sometimes you want to track single value and metric that changes over time that shows you the progress towards particular target.

Radial gauges are a great choice to:

- \* show progress toward a goal.
- \* represent a percentile measure, like a KPI.
- \* show the health of a single measure.
- \* display information that can be quickly scanned and understood.





# KPIs

A Key Performance Indicator (KPI) is a visual cue that communicates the amount of progress made toward a measurable goal. A Key Performance Indicator (KPI) is based on a specific measure and is designed to help you evaluate the current value and status of a metric against a defined target. Therefore, a KPI visual requires a base measure that evaluates to a value and a target measure or value, and a threshold or goal.

KPIs are a great choice:

- \* to measure progress (what am I ahead or behind on?)
- \* to measure distance to a goal (how far ahead or behind am I?)

Till now we are discussing visualization comparing different categories and different values. Sometimes you want to track single value and metric that changes over time that shows you the progress towards particular target.

Sales and COGS by Month

17.37M✓  
Goal: 14.65M (+18.55%)

Units Sold by Month

155.31K



# Matrix

A matrix is a grid used to store or display data in a structured format. It is often used synonymously with a table, which contains horizontal rows and vertical columns.

While the terms "matrix" and "table" can be used interchangeably, matrixes (or matrices) are considered more flexible than tables. For example, tables generally have a fixed number of rows and columns, while the size of a matrix may change dynamically. The term "matrix" may also be used to refer to a table that has groups of columns within a single row.

Country	High	Low	Medium	None	Total
Canada	8,657,237.66	6,537,899.37	7,865,428.36	1,827,089.50	24,887,654.89
Channel Partners	176,064.48	58,194.12	196,473.54	60,432.00	491,164.14
Amarilla	67,177.56				67,177.56
Carretera	20,687.16	42,964.92	46,958.16		110,610.24
Montana			25,345.32	30,216.00	55,561.32
Paseo	65,928.72	15,229.20	53,646.12	30,216.00	165,020.04
Velo			34,315.32		34,315.32
VTT	22,271.04		36,208.62		58,479.66
Enterprise	1,604,403.75	1,576,062.50	367,587.50	419,437.50	3,967,491.25
Amarilla	180,416.25		191,231.25		371,647.50
Carretera	265,760.00	90,956.25			356,716.25
Montana				376,312.50	376,312.50
Paseo	172,151.25	792,991.25			965,142.50
Velo	215,550.00	357,812.50	176,356.25	43,125.00	792,843.75
VTT	770,526.25	334,302.50			1,104,828.75
Government	4,847,440.58	3,165,500.65	2,013,655.29	714,640.00	10,741,236.52
Amarilla	945,146.44	597,408.00	1,037,237.35		2,579,791.79
Carretera	281,053.50	1,013,516.12	5,217.03	32,370.00	1,332,156.65
Montana	771,587.30	31,840.62	26,431.99		829,859.91
Paseo	1,778,105.00	1,046,623.52	486,214.93	645,930.00	3,956,873.45
Velo	812,707.84	140,000.46	421,864.17		1,374,572.47
VTT	258,840.50	336,111.93	36,689.82	36,340.00	667,982.25
Midmarket	291,671.85	66,200.10	120,062.03	32,280.00	510,213.98
Amarilla	22,484.70		22,256.33		44,741.03
Carretera	85,990.80		40,100.40		126,091.20
Montana	29,670.00	28,324.80			57,994.80
Paseo	127,976.70	37,875.30		32,280.00	198,132.00
Velo	5,126.40		17,604.90		22,731.30
VTT	20,423.25		40,100.40		60,523.65
Small Business	1,737,657.00	1,671,942.00	5,167,650.00	600,300.00	9,177,549.00
Amarilla	229,104.00	563,304.00			792,408.00
Carretera	385,968.00		298,662.00		684,630.00
<b>Total</b>	<b>37,372,486.73</b>	<b>34,629,778.70</b>	<b>38,780,430.84</b>	<b>7,943,654.00</b>	<b>118,726,350.26</b>



# Table

A table is a grid that contains related data in a logical series of rows and columns. It may also contain headers and a row for totals. Tables work well with quantitative comparisons where you are looking at many values for a single category.

While the terms "matrix" and "table" can be used interchangeably, matrixes (or matrices) are considered more flexible than tables. For example, tables generally have a fixed number of rows and columns, while the size of a matrix may change dynamically. The term "matrix" may also be used to refer to a table that has groups of columns within a single row.

Country	Segment	Sales	COGS	Profit
Canada	Channel Partners	491,164.14	132,186.00	358,978.14
Canada	Enterprise	3,967,491.25	4,089,000.00	-121,508.75
Canada	Government	10,741,236.52	8,482,763.00	2,258,473.52
Canada	Midmarket	510,213.98	377,725.00	132,488.98
Canada	Small Business	9,177,549.00	8,276,750.00	900,799.00
France	Channel Partners	372,090.36	100,509.00	271,581.36
France	Enterprise	3,890,890.63	3,986,640.00	-95,749.38
France	Government	12,127,782.72	9,417,867.50	2,709,915.22
France	Midmarket	593,802.08	429,260.00	164,542.08
France	Small Business	7,369,606.50	6,638,875.00	730,731.50
Germany	Channel Partners	336,425.88	89,067.00	247,358.88
Germany	Enterprise	4,086,826.25	4,188,300.00	-101,473.75
Germany	Government	11,452,895.94	8,775,720.00	2,677,175.94
Germany	Midmarket	301,344.75	215,990.00	85,354.75
Germany	Small Business	7,327,848.00	6,555,875.00	771,973.00
Mexico	Channel Partners	234,379.08	63,489.00	170,890.08
Mexico	Enterprise	3,315,881.25	3,436,560.00	-120,678.75
Mexico	Government	9,791,599.38	7,752,440.00	2,039,159.38
Mexico	Midmarket	511,136.40	360,590.00	150,546.40
Mexico	Small Business	7,096,356.00	6,428,750.00	667,606.00
United States of America	Channel Partners	366,534.18	98,539.50	267,994.68
United States of America	Enterprise	4,350,605.00	4,525,740.00	-175,135.00
United States of America	Government	8,390,746.11	6,687,795.00	1,702,951.11
United States of America	Midmarket	465,385.88	338,215.00	127,170.88
United States of America	Small Business	11,456,559.00	10,384,500.00	1,072,059.00
<b>Total</b>		<b>118,726,350.26</b>	<b>101,832,648.00</b>	<b>16,893,702.26</b>

# Text Boxes, Image & Shapes

## Text box

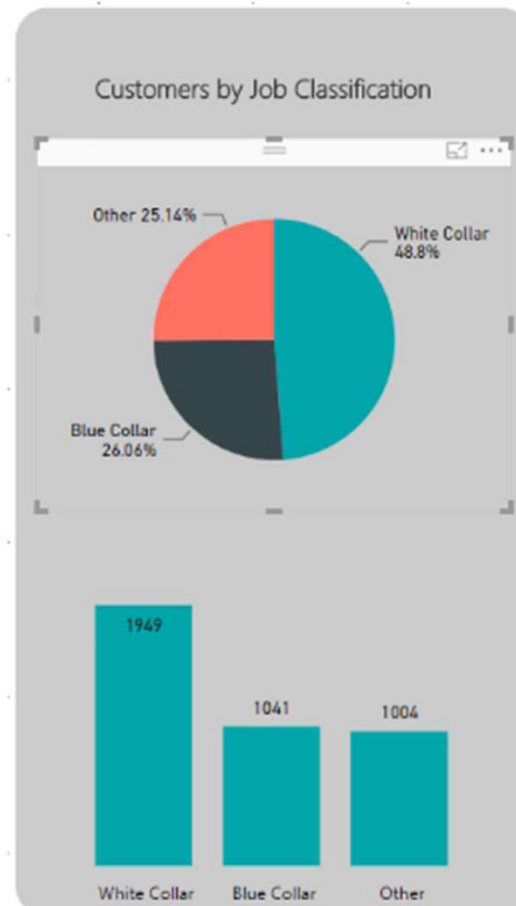
Sometimes the titles on visualizations aren't enough to tell the story. Add text boxes to communicate with the people viewing your reports. Text boxes can describe the report page, a grouping of visuals, or describe an individual visual. They can explain results or better define a visual, components in the visual, or relationships between visuals. Text boxes can be used to draw attention based on different criteria called out in the text box.

## Tips:

Create a text style guide and apply it to all pages of your report. Pick just a few font faces, text sizes, and colors. Apply this style guide to not only textual elements but to the font choices you make within your visualizations (see Titles and labels that are part of the visualizations, below). Set rules for when you'll use bold, italics, increased font size, certain colors, and more. Try to avoid using all capitalization or underlining.

## Shapes:

Shapes too can aid navigation and comprehension. Use shapes to group related information together, highlight important data, and use arrows to direct the eye. Shapes help readers understand where to start and how to interpret your report. In design terms, this is often referred to as contrast.



# of Customers

3994



1842

Females



2152

Males

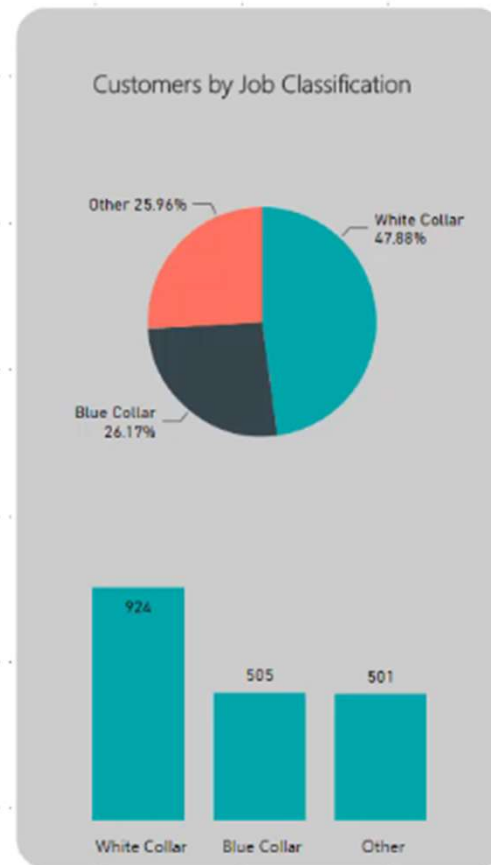


# Slicers

We use filters on the reports which are hidden on the field tab. When users are viewing the report they will not have access to it. For those times we like to put filters on the canvas which are known as slicers.

Slicers are a great choice in the following situations.

- \* To display commonly-used or important filters on the report canvas for easier access.
- \* To make it easier to see the current filtered state without having to open a drop-down list to find the filtering details.
- \* When you want to hide columns you don't need but still be able to use them to filter - this makes for narrower, cleaner tables.
- \* To create more focused reports - since slicers are floating objects you can put them next to the interesting part of the report you want your users to focus on.



Date Joined

5/23/2017

10/11/2017

education

- ☐ Select All
- ☐ unknown
- ☐ tertiary
- ☐ secondary
- ☐ primary

List

Dropdown

marital

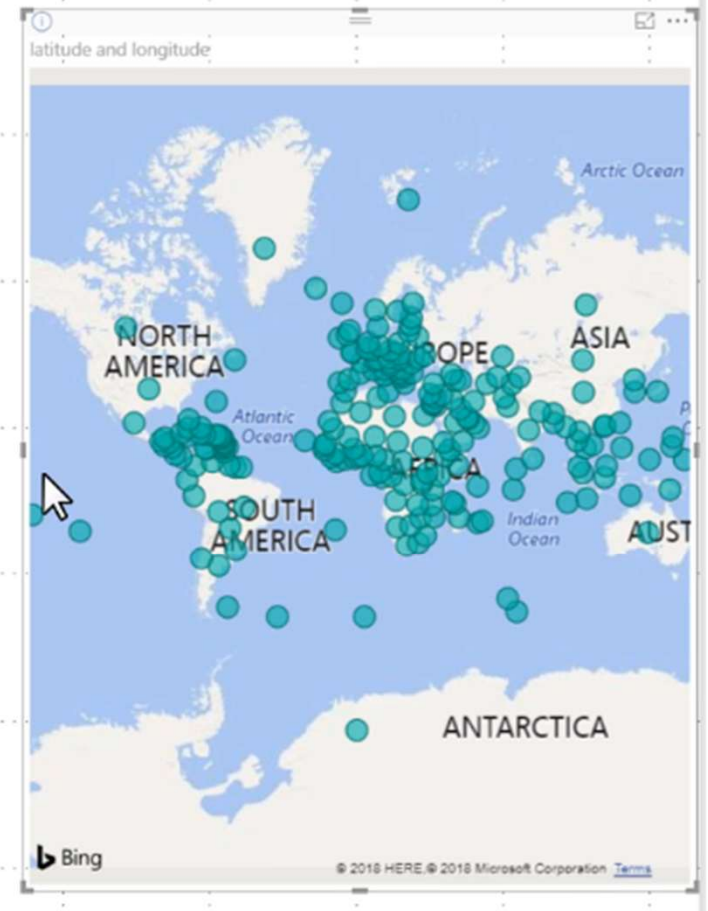
- ☐ divorced
- ☐ married
- ☐ single

# Maps

When you have any kind of location data – whether it's postal codes, states, abbreviations, country names, or your own custom geocoding – this information is most impactful when seen on a map. A map visually locates your data and gives you geographical context for your metrics. A map uses shading or tinting or patterns to display how a value differs in proportion across a geography or region. Quickly display these relative differences with shading that ranges from light (less-frequent/lower) to dark (more-frequent/more).

Tips : Use it

- \* to display quantitative information on a map.
- \* to show spatial patterns and relationships.
- \* when your data is standardized.
- \* when working with socioeconomic data.
- \* when defined regions are important.
- \* to get an overview of the distribution across the geographic locations.
- \* Use maps as a filter for other types of charts, graphs, and tables. Combine a map with other relevant data then use it as a filter to drill into your data for robust investigation and discussion of data.
- \* Layer bubble charts on top of maps. Bubble charts represent the concentration of data and their varied size is a quick way to understand relative data. By layering bubbles on top of a map it is easy to interpret the geographical impact of different data points quickly.



## Custom Visuals

Visuals display insights that have been discovered in the data. A Power BI report might have a single page with one visual or it might have pages full of visuals. Custom visuals extend that capability in power bi. By default around 30 visuals comes with it and at the point when this course is made there are over 150 custome visuals are available in the Custom Visual Library.

- \* Very easy to add in the power bi
- \* Developed by the community and Microsoft

URL

<https://appsource.microsoft.com/en-us/marketplace/apps?product=power-bi-visuals>

