MICROSOFT POWER-BI

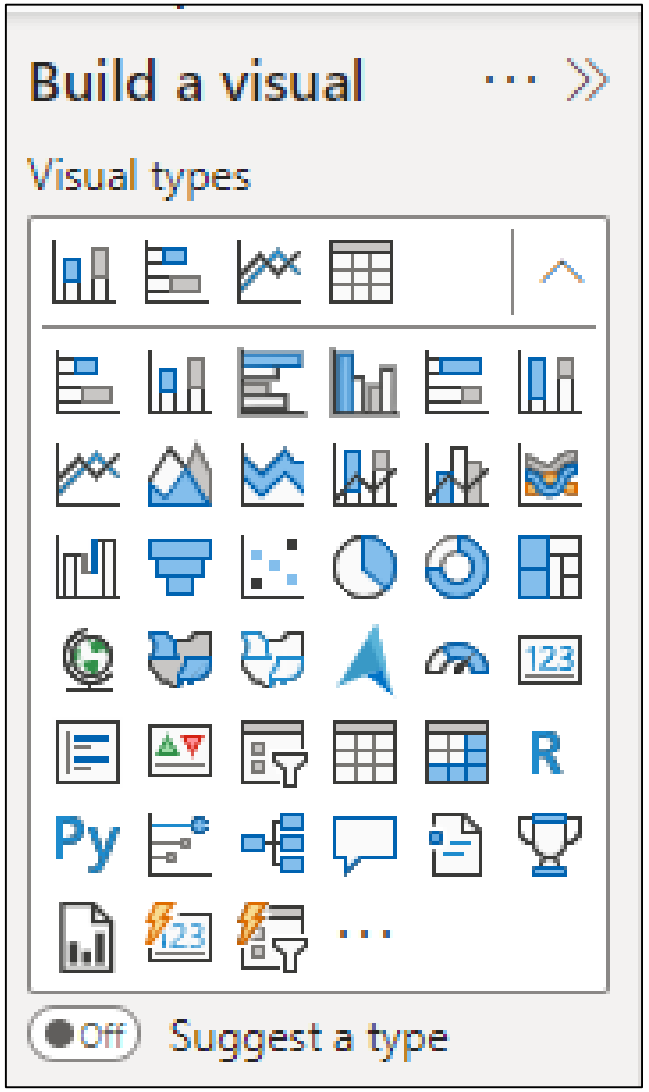
SERIES 6

VISUALIZATION

- MAYURI .D.

INTRO

- Visualizations, also called visuals for short, display insights that are discovered in the data.
- Data visualization is the process of converting raw information (text, numbers, or symbols) into a graphical format.
- A Power BI report might have a single page with one visual or it might have pages full of visuals. In the Power BI service, visuals can be pinned from reports to dashboards.
- There are many different visual types available directly from the Power BI Visualizations pane.

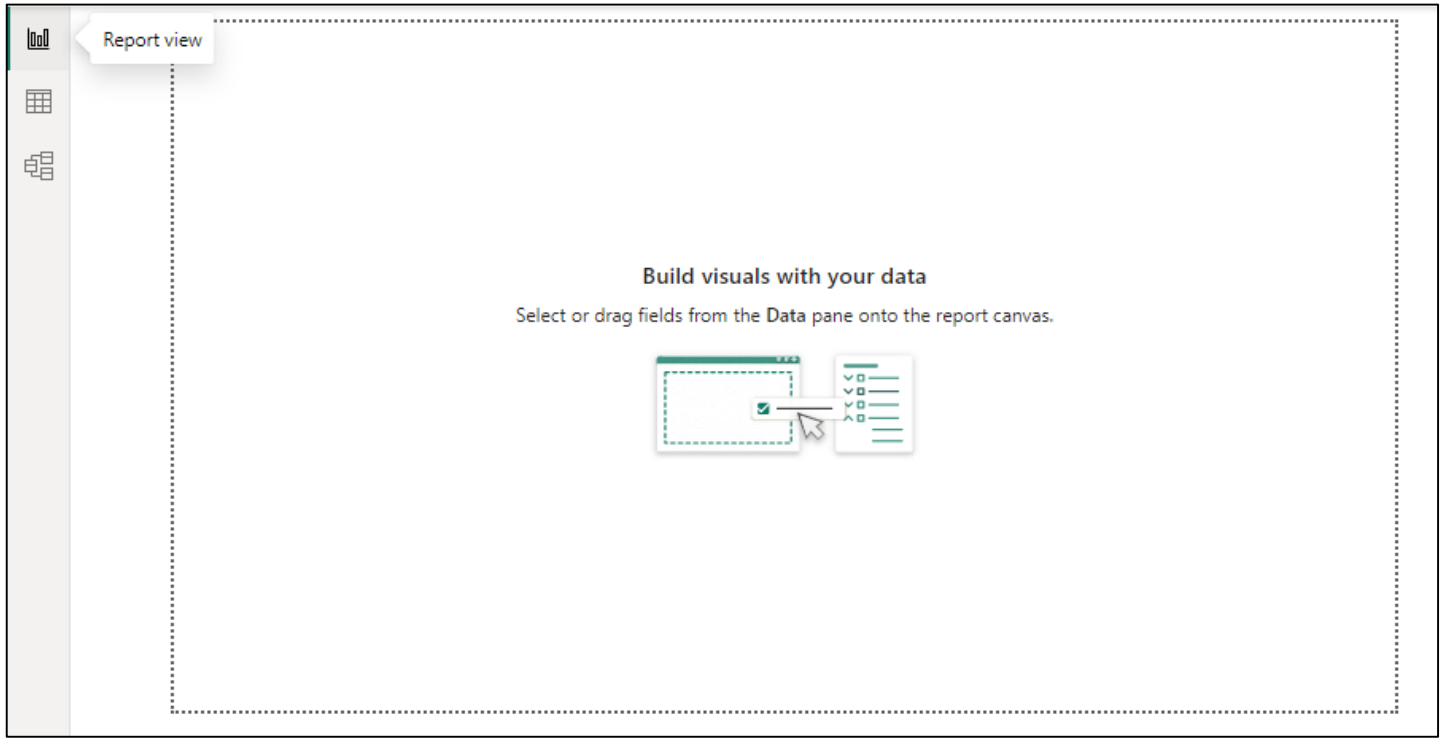


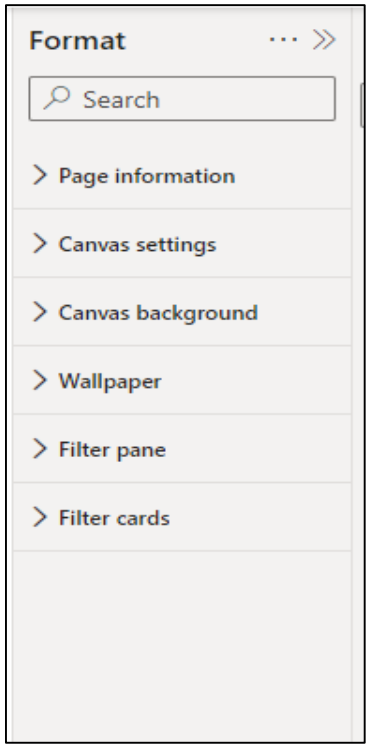
DASHBOARD CANVAS

Open Report view from left sidebar.
Dotted square is the place called canvas to create the dashboards or reports.

Format the canvas under FORMAT pane.

- Page information– name the page and select its type
- Canvas settings– size of report or select custom and define height width
- Canvas background– space inside the dotted square
- Wallpaper – space outside dotted square

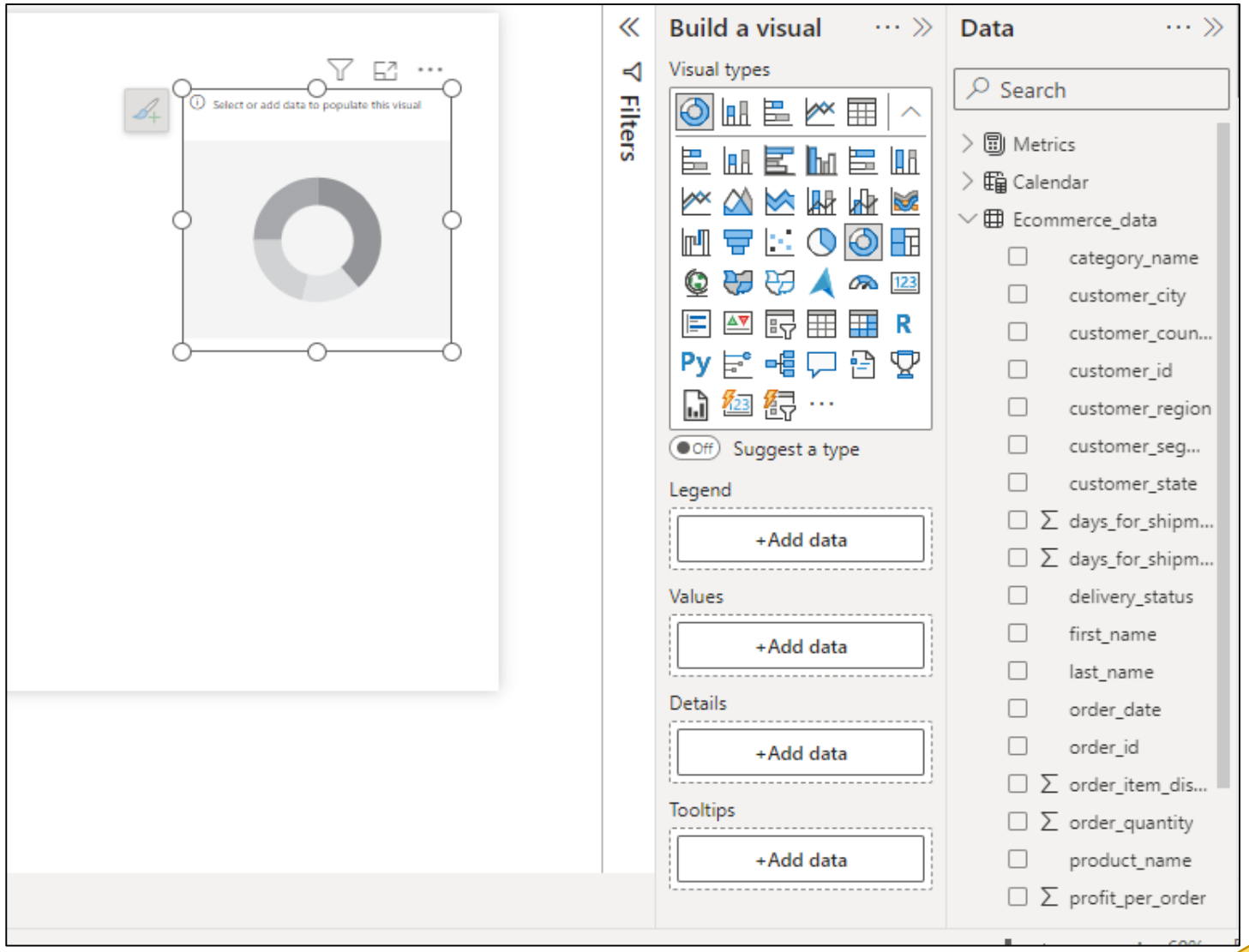




CREATE A VISUAL

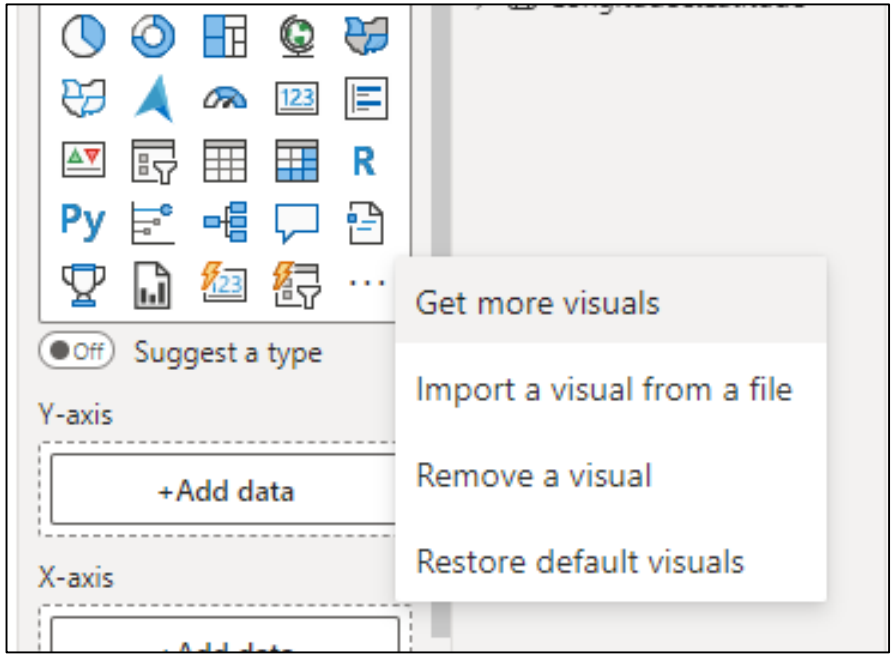
- Click on respected visual as per the required result.
- Add data fields gets activated
- Select the required columns from table, they automatically gets placed in the fields.

(Sometimes need to replaced them manually by just drag and drop)



ADD A VISUAL IN POWER-BI DESKTOP

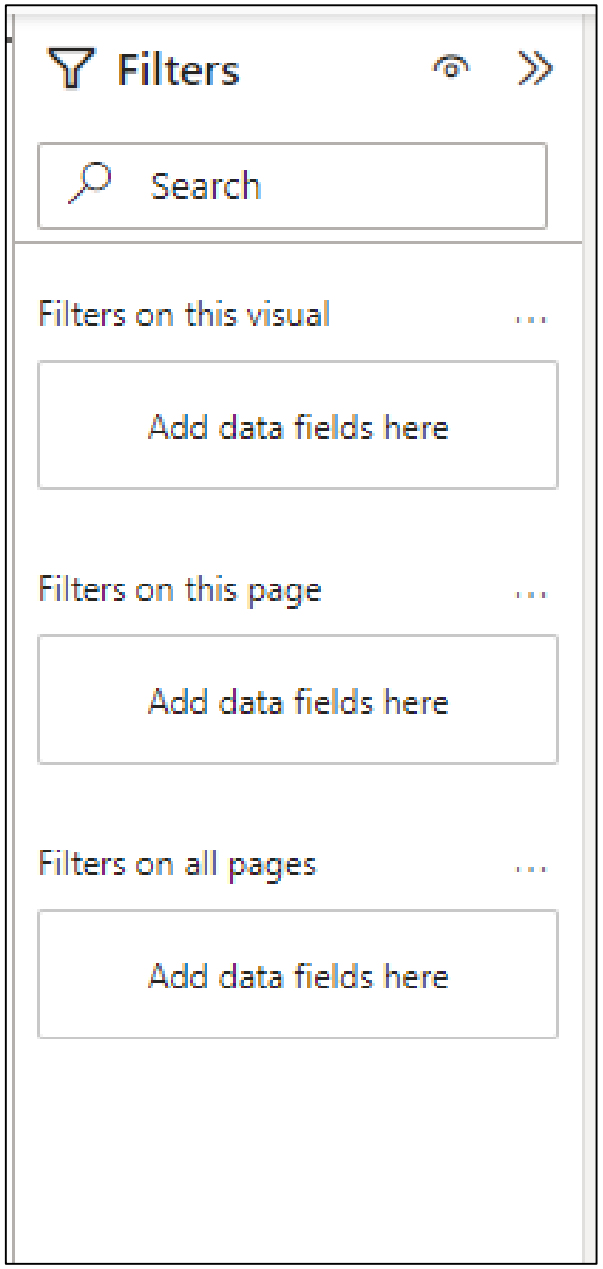
- Click on 3dots in visuals section under Visualization pane.
- Get more visuals: upload more visuals from Microsoft app-source. Once uploaded, right-click on resp. visual and pin it to visualization pane.
- Import a visual from a file : upload a visual from the file/folder from your device.
- Remove a visual : you can remove visuals.
- Restore default visuals: you can restore removed visuals.



POWER BI DESKTOP FILTERS

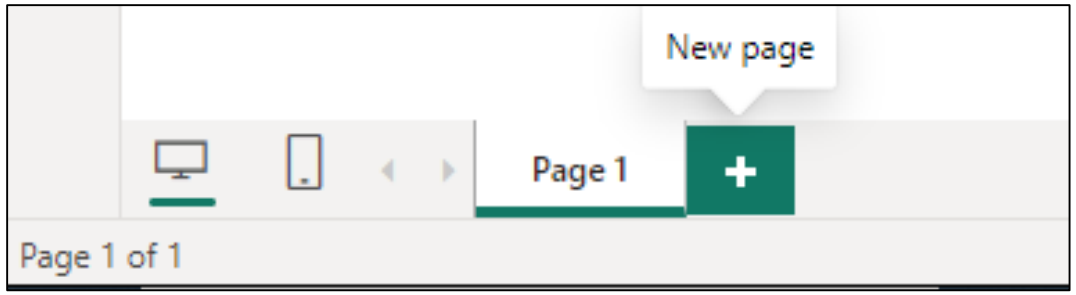
- Visual Level Filter: This gets applied to only to the active visual.
- Page Level Filter: This gets applied to all the visuals in the existing page.
- Report Level Filter: This gets applied to all the visuals in all the existing pages in the report.

(select any visual to activate visual level filter)



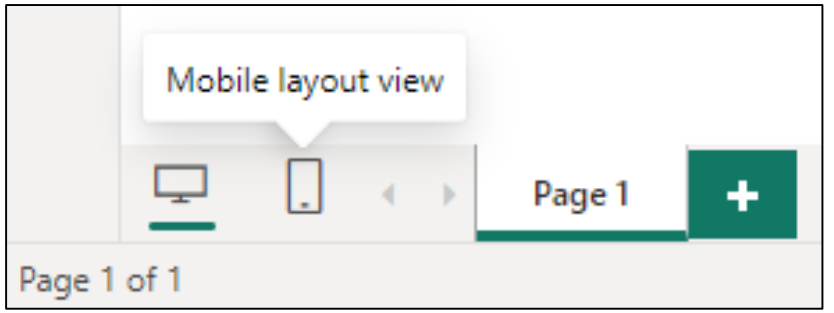
ADD NEW PAGES TO REPORT

Click on + icon to add pages
Double click on name to rename them.



DESIGN MOBILE VIEW

By default desktop view is on.
Click on mobile icon to view and edit mobile view of dashboard

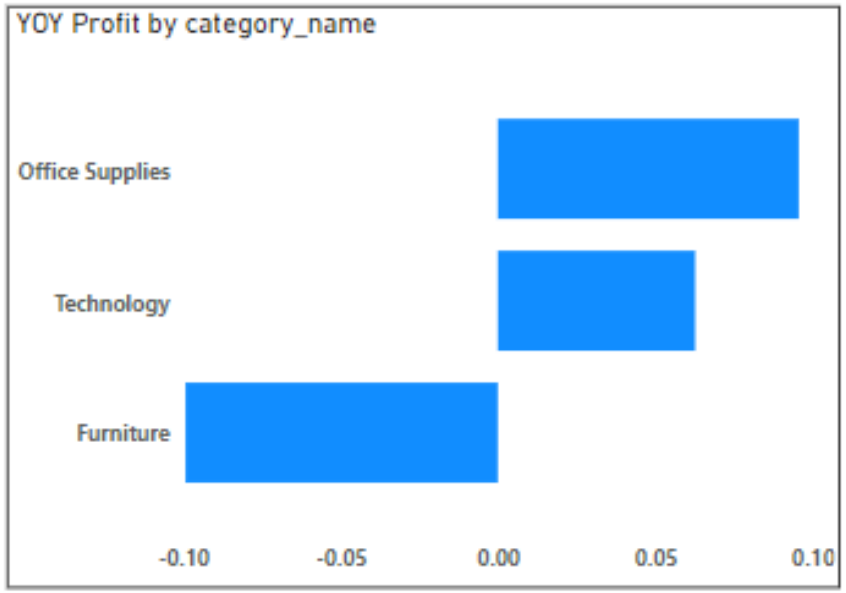


- **TYPES OF VISUALS**
- **WHEN TO USE WHICH VISUAL**
- **FORMATING OPTIONS**

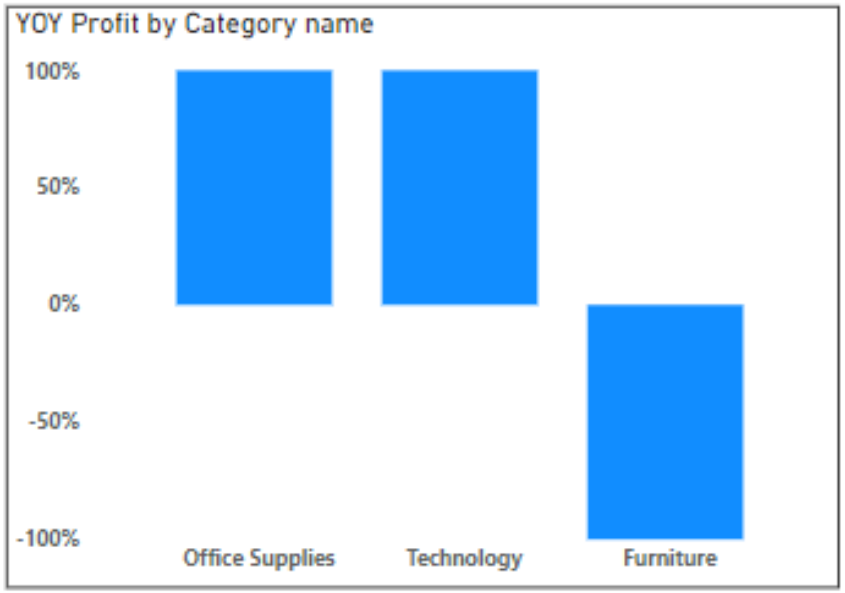
COLUMN AND BAR CHARTS

A bar/column chart represents categorical data with rectangular bars, their heights being proportional to the values displayed.

BAR



COLUMN



Use a bar chart for the following reasons:

- compare two or more values in the same category
- compare parts of a whole
- don’t have too many groups (less than 10 works best)
- understand how multiple similar data sets relate to each other

Don’t use a bar chart for the following reasons:

- you’re visualizing only has one value associated with it
- to visualize continuous data

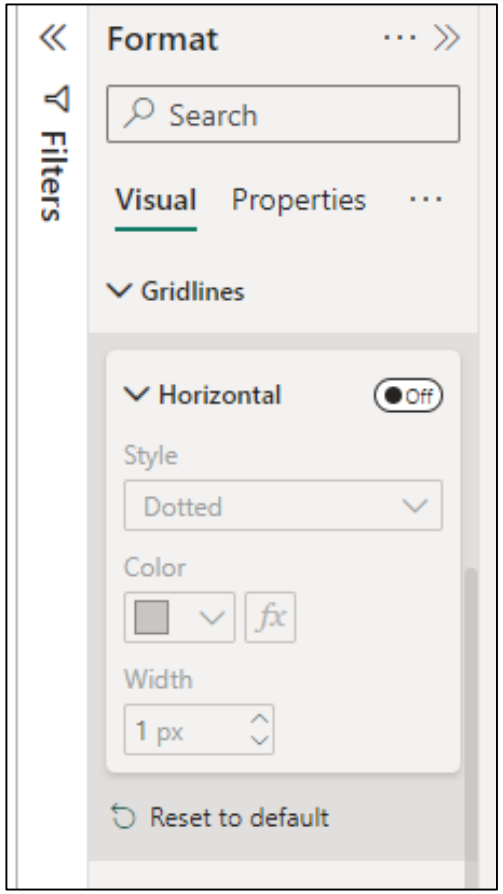
key design best practices:

- Use consistent colors and labeling throughout so that you can identify relationships more easily
- Simplify the length of the y-axis labels and don’t forget to start from 0 so you can keep your data in order

COMMON FORMATTING OPTIONS

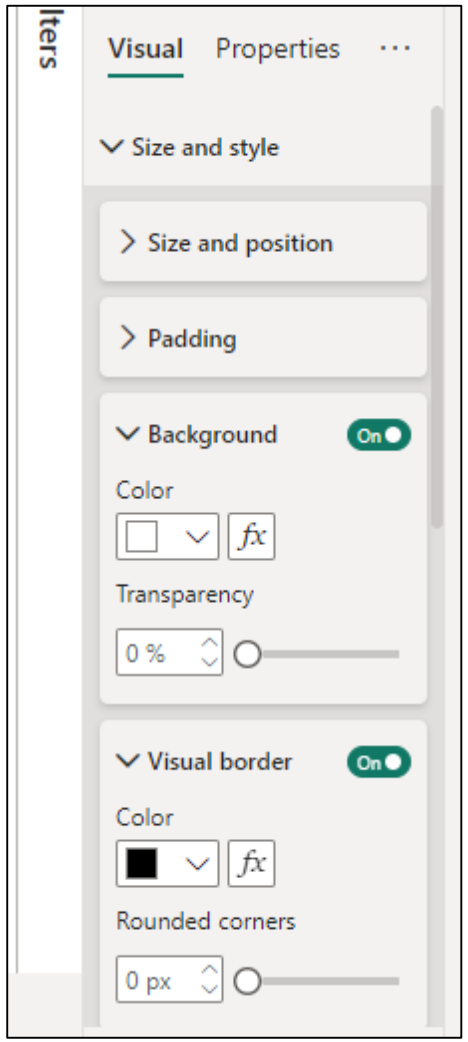
1. First remove background gridlines

Go to Format pane
→ visual
→ Gridlines
→ turn off horizontal/vertical



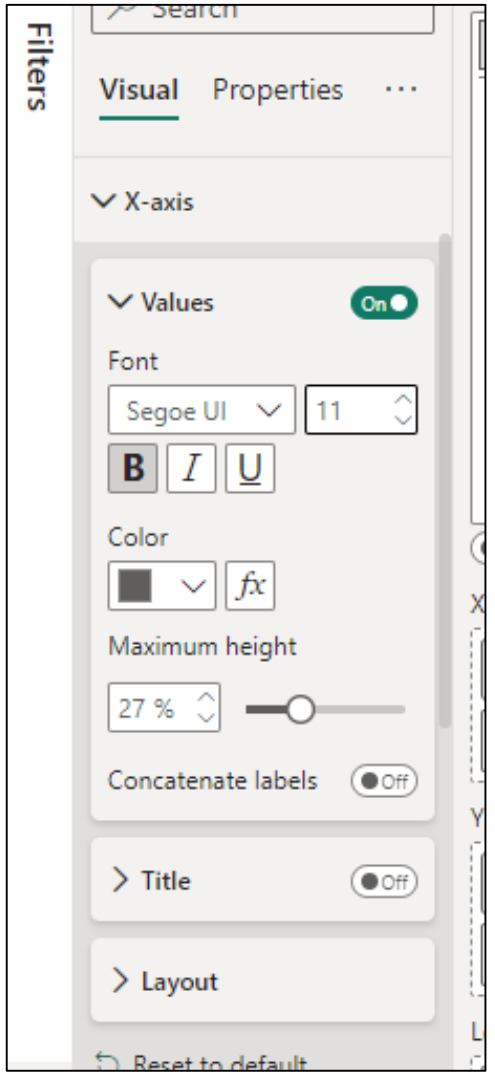
2. Apply border and background

Go to Format pane
→ visual
→ size and style
→ turn ON
→ Select your color



3. Edit X-axis and Y-axis

Go to Format pane
→ visual
→ X-axis/Y-axis
→ turn ON/OFF values and title (as per requirement)
→ Select font, size, bold, color, etc



4. Edit Title. Add subtitle, divider

Go to Format pane

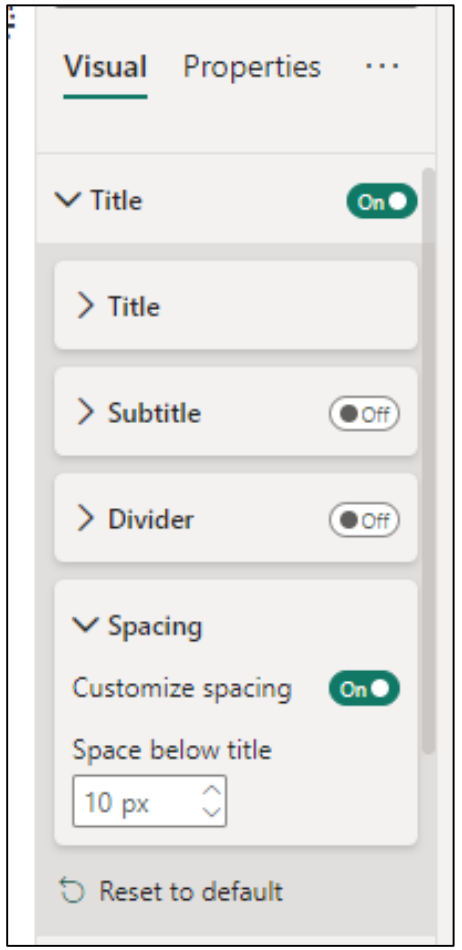
→ visual

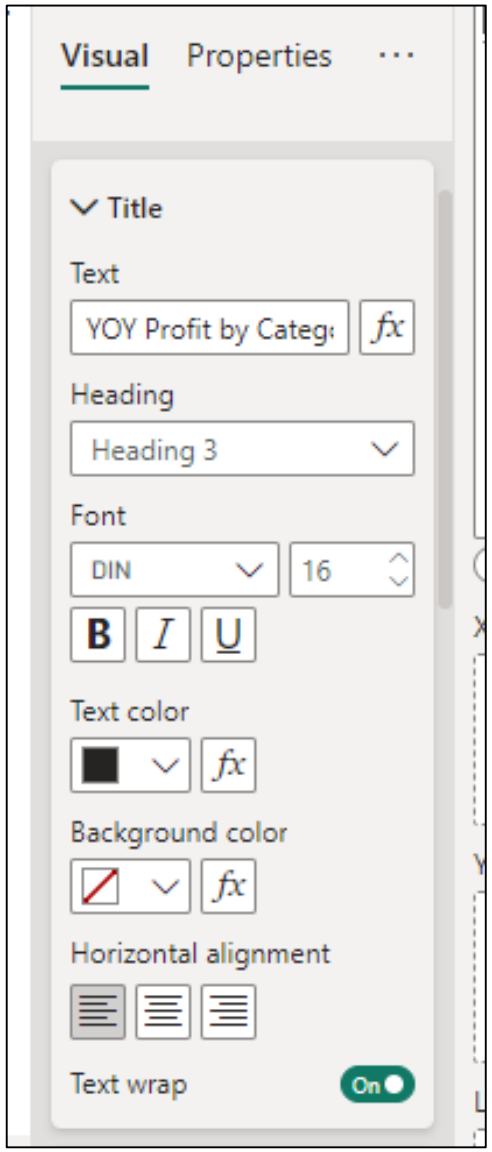
→ Title

→ turn ON/OFF title, subtitle, divider, spacing (as per requirement)

→ Edit your title

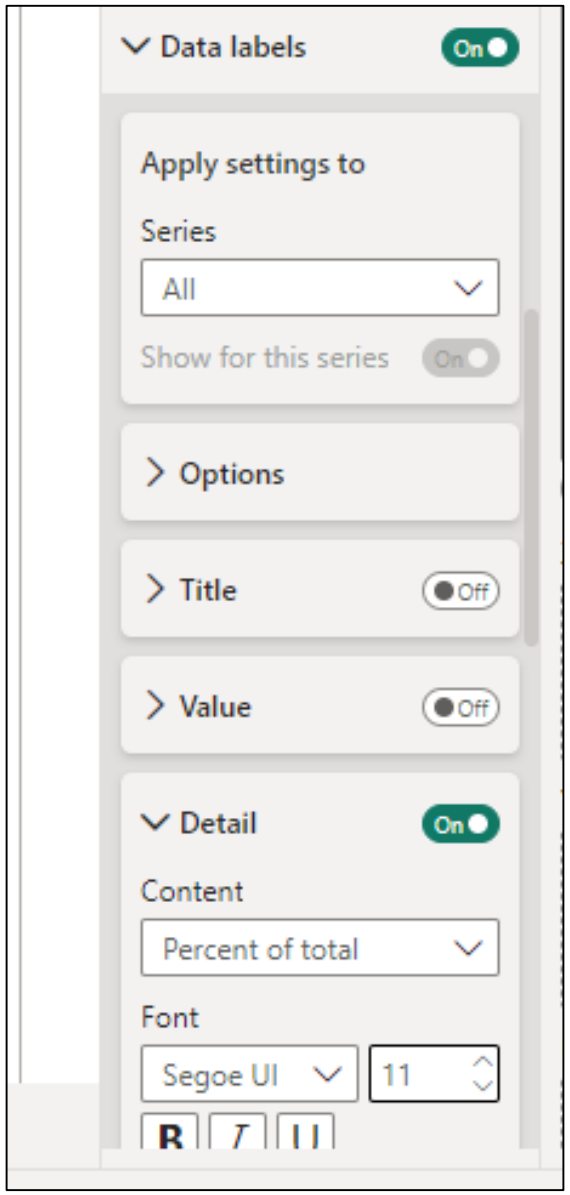
→ Select font, size, bold, color, etc





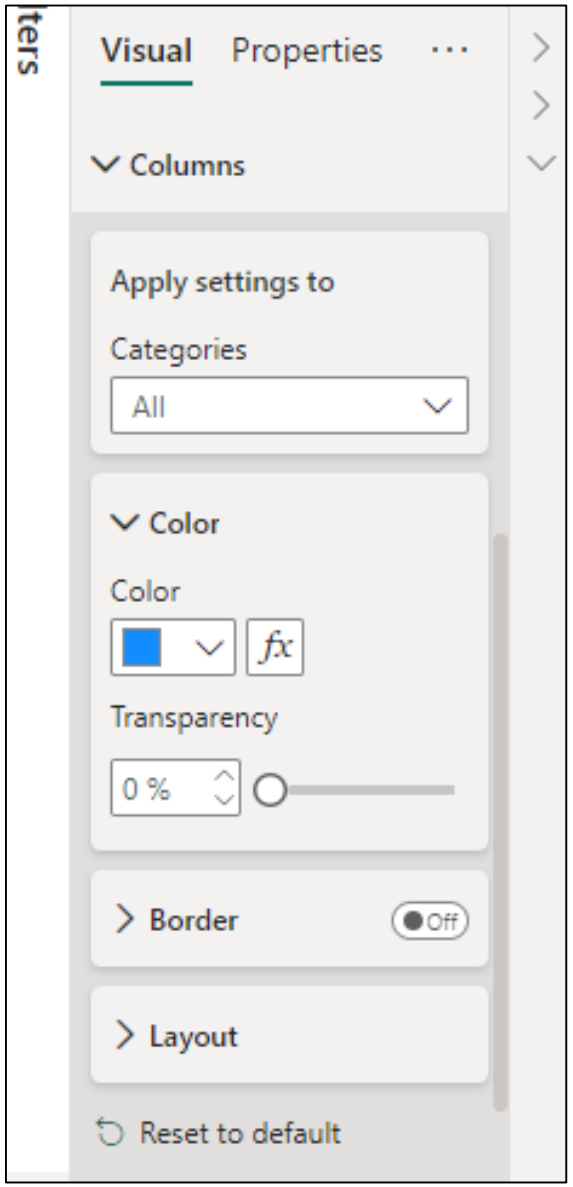
5. Data Labels (add values on the bars)

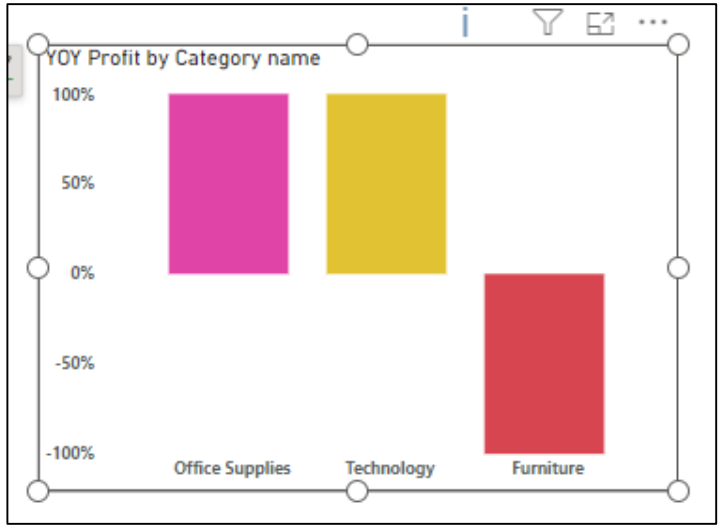
Go to Format pane
→ visual
→ Data Labels
→ turn ON/OFF Edit your title
→ Select font, size, bold, etc



6. Color each bars with different colors

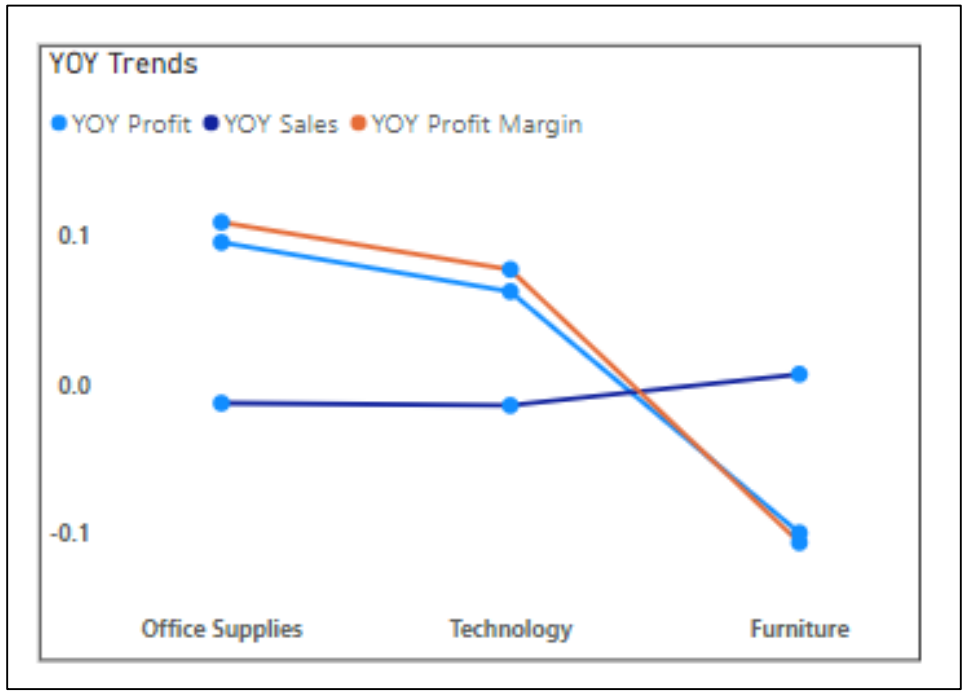
Go to Format pane
→ visual
→ Columns/ bars
→ Select bar category
→ Select color with 0 transparency
(select bars one by one to define colors, select ALL to apply one color to all the bars.)





LINE CHART

Line charts are used to show resulting data relative to a continuous variable - most commonly time or money.
The proper use of color in this visualization is necessary because different colored lines can make it even easier for users to analyze information.



Use a line chart for the following reasons:

- understand trends, patterns, and fluctuations in your data
- compare different yet related data sets with multiple series
- make projections beyond your data

Don’t use a line chart for the following reason:

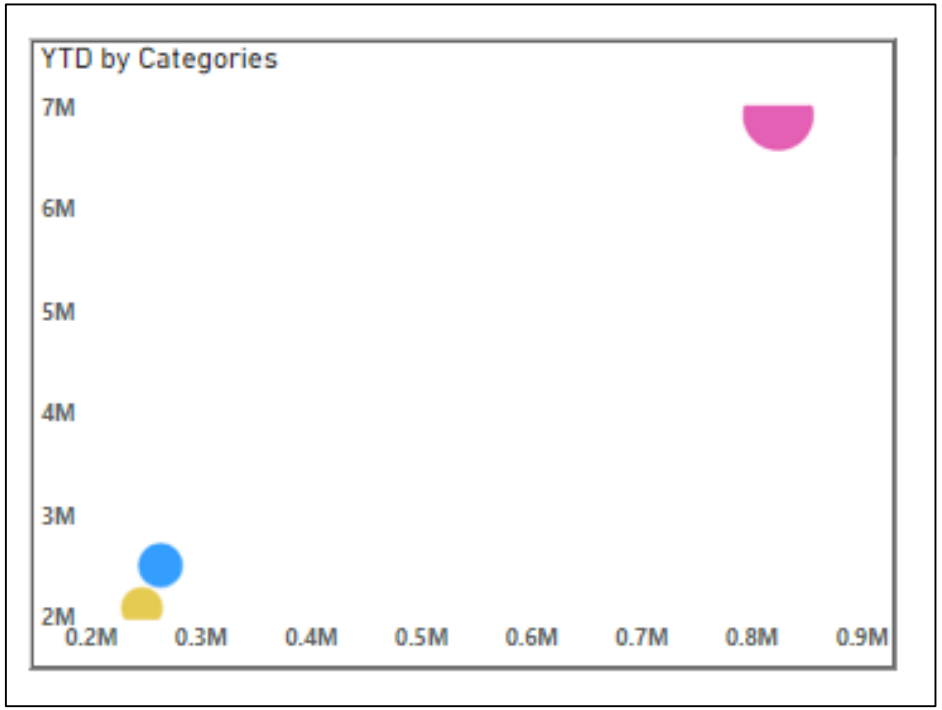
- demonstrate an in-depth view of your data

key design best practices:

- Along with using a different color for each category you’re comparing, make sure you also use solid lines to keep the line chart clear and concise
- To avoid confusion, try not to compare more than 4 categories in one line chart

SCATTER CHART

Scatterplots are the right data visualizations to use when there are many different data points, and you want to highlight similarities in the data set.
If the data forms a band extending from lower left to upper right, there most likely a positive correlation between the two variables.
If the band runs from upper left to lower right, a negative correlation is probable. If it is hard to see a pattern, there is probably no correlation.



Use a scatterplot for the following reasons:

- show the relationship between two variables
- compact data visualization

Don’t use a scatterplot for the following reasons:

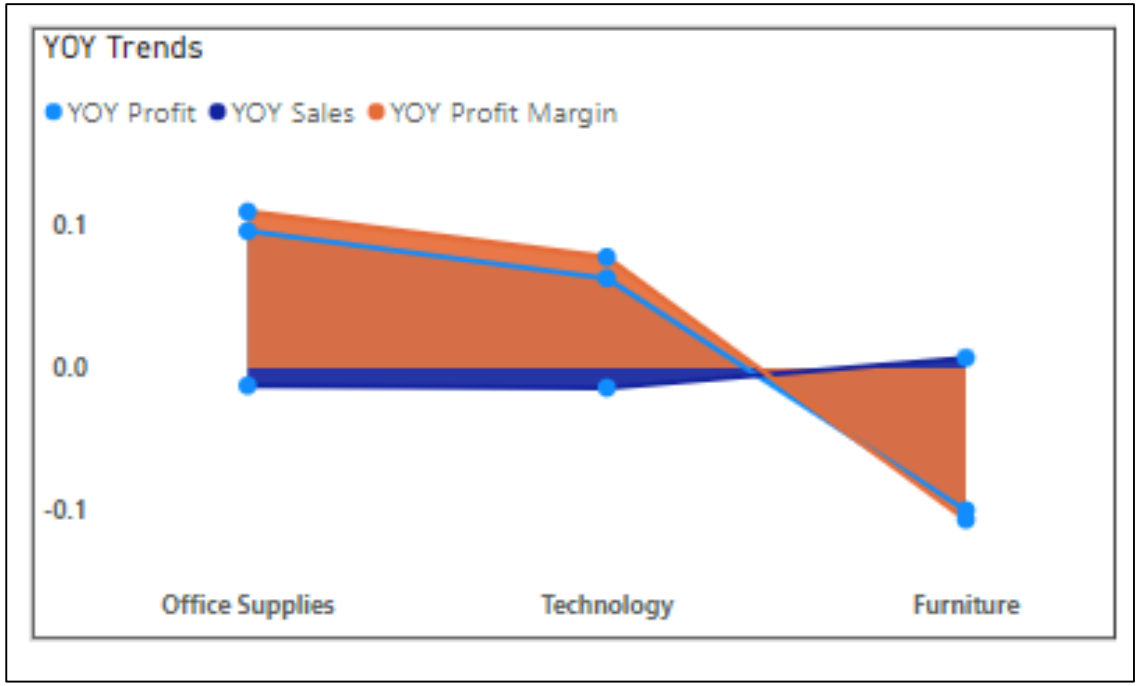
- rapidly scan information
- clear and precise data points

key design best practices:

- Although trend lines are a great way to analyze the data on a scatterplot, ensure you stick to 1 or 2 trend lines to avoid confusion
- Don’t forget to start at 0 for the y-axis

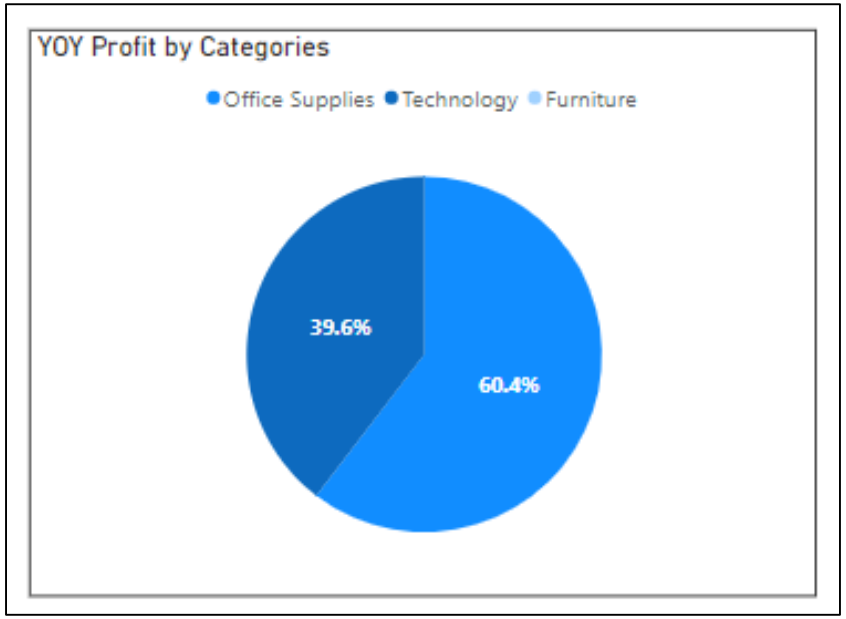
AREA CHART

An area chart is very similar to a line graph but may do a better job of highlighting the relative differences between items.
Use an area chart when you want to see how different items stack up or contribute to the whole.



PIE CHART

Pie charts are an interesting graph visualization. At a high-level, they're easy to read and understand because the parts-of-a-whole relationship is made very obvious



Use a pie chart for the following reasons:

- compare relative values
- compare parts of a whole
- rapidly scan metrics

Don’t use a pie chart for the following reason:

- precisely compare data

key design best practices:

- Make sure that the pie slices add up to 100%. To make this easier, add the numerical values and percentages to your pie chart
- Order the pieces of your pie according to size
- Use a pie chart if you have only up to 5 categories to compare. If you have too many categories, you won’t be able to differentiate between the slices

TABLE

If you’re someone who wants a little bit of everything in front of you to make thorough decisions, then tables are the visualization to go with. Tables are great because you can display both data points and graphics, such as bullet charts, icons, and sparklines. This visualization type also organizes your data into columns and rows, which is great for reporting

YOY Trends

category_name	YOY Profit	YOY Sales	YOY Profit Margin	YOY Qty
Office Supplies	0.10	-0.01	0.11	-0.07
Technology	0.06	-0.01	0.08	-0.08
Furniture	-0.10	0.01	-0.11	-0.09

Use a table for the following reasons:

- You want to display two-dimensional data sets that can be organized categorically
- You can drill down to break up large data sets with a natural drill-down path

Don’t use a table for the following reason:

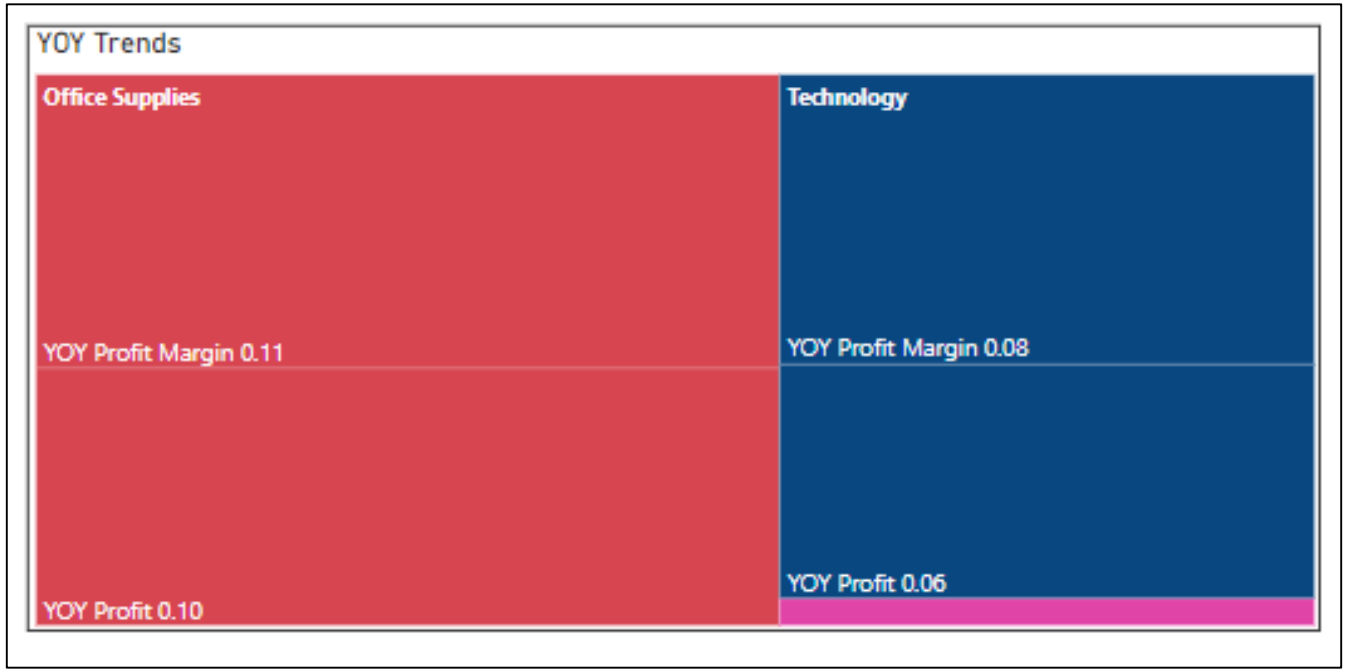
- You want to display large amounts of data

key design best practices:

- Be mindful of the order of the data. Make sure that labels, categories, and numbers come first then move on to the graphics
- Try not to have more than 10 different rows on your table to avoid clutter

TREE MAP

A treemap is a visual tool that can be used to break down the relationships between multiple variables in your data.
They can be used strictly as a presentation vehicle to show how your products roll up into different categories, for example.
A treemap can be broken down into 2-3 different layers to show the hierarchical relationship between items.



Use a treemap for the following reasons:

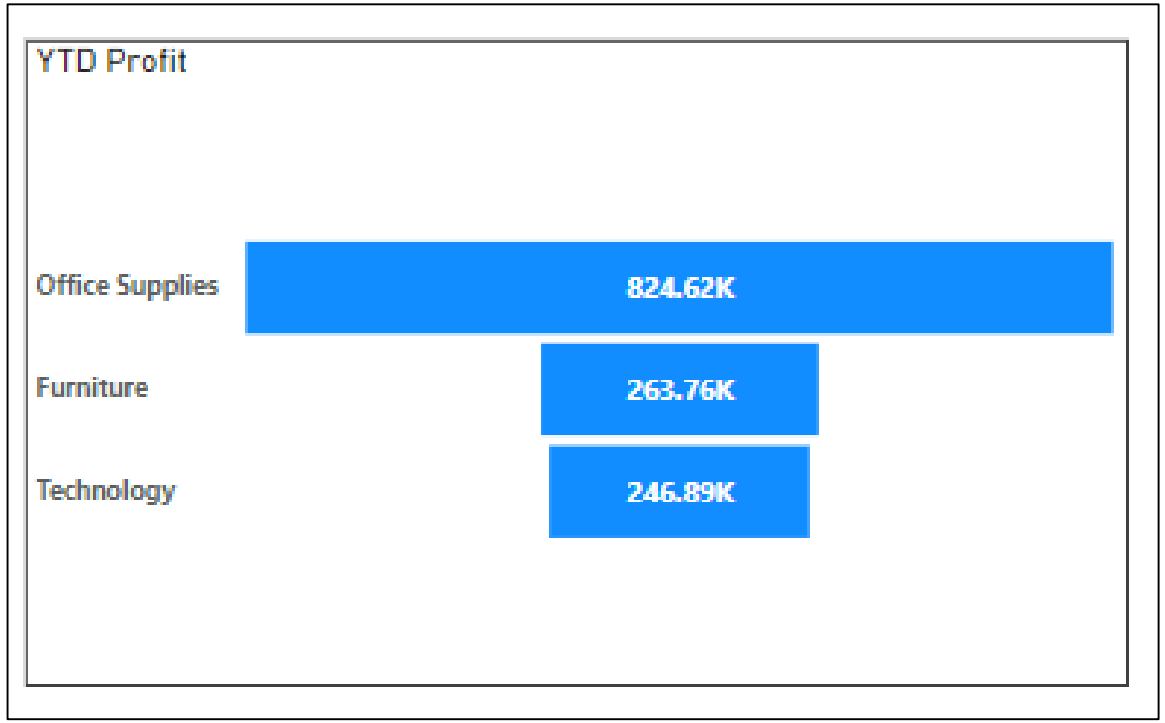
- display hierarchical data
- proportion of each category as a whole.

Don’t use a treemap for the following reason:

- there are too many categories or the data is not hierarchical

FUNNEL

A funnel chart is your data visualization of choice if you want to display a series of steps and the completion rate for each step.
This can be used to track the sales process, a marketing funnel or the conversion rate across a series of pages or steps.



Use a funnel chart for the following reason:

- To display a series of steps and each step’s completion rate

Don’t use a funnel chart for the following reason:

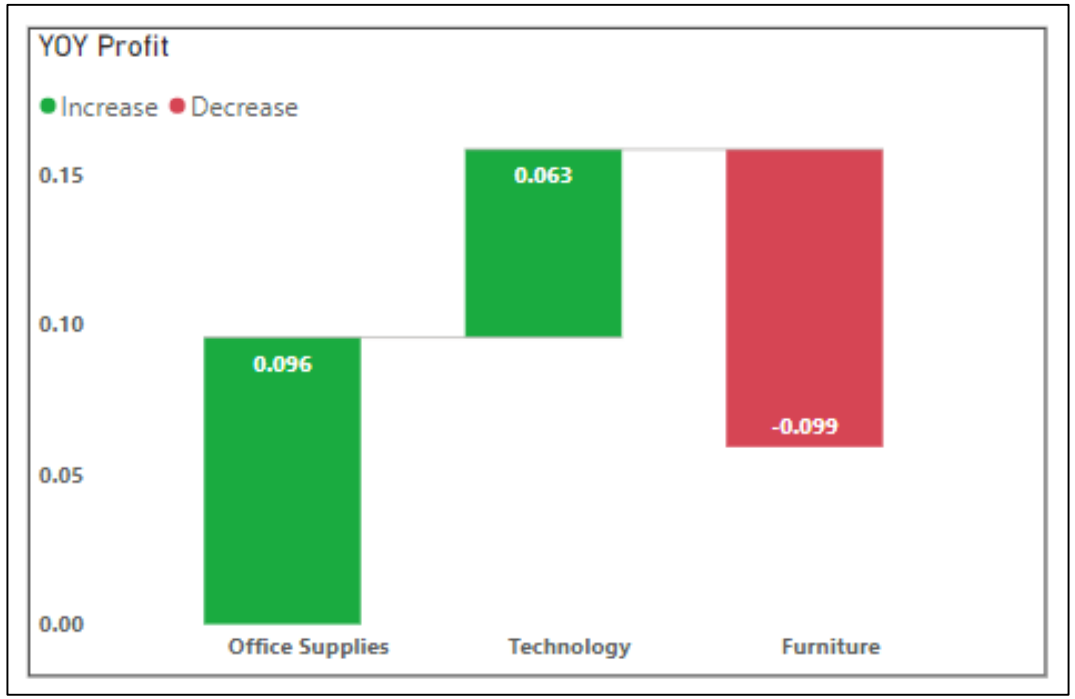
- To visualize individual, unconnected metrics

key design best practices:

- Scale the size of each section to accurately reflect the size of its data set
- Use contrasting colors or one color in gradating hues, from darkest to lightest as the size of the funnel decreases

WATERFALL CHART

A waterfall chart is an information visualization that should be used to show how an initial value is affected by intermediate values and resulted in a final value.
The values can be either negative or positive.



Use a waterfall chart for the following reason:

- To reveal the composition or makeup of a number

Don’t use a waterfall chart for the following reason:

- You want to focus on more than one number or metric

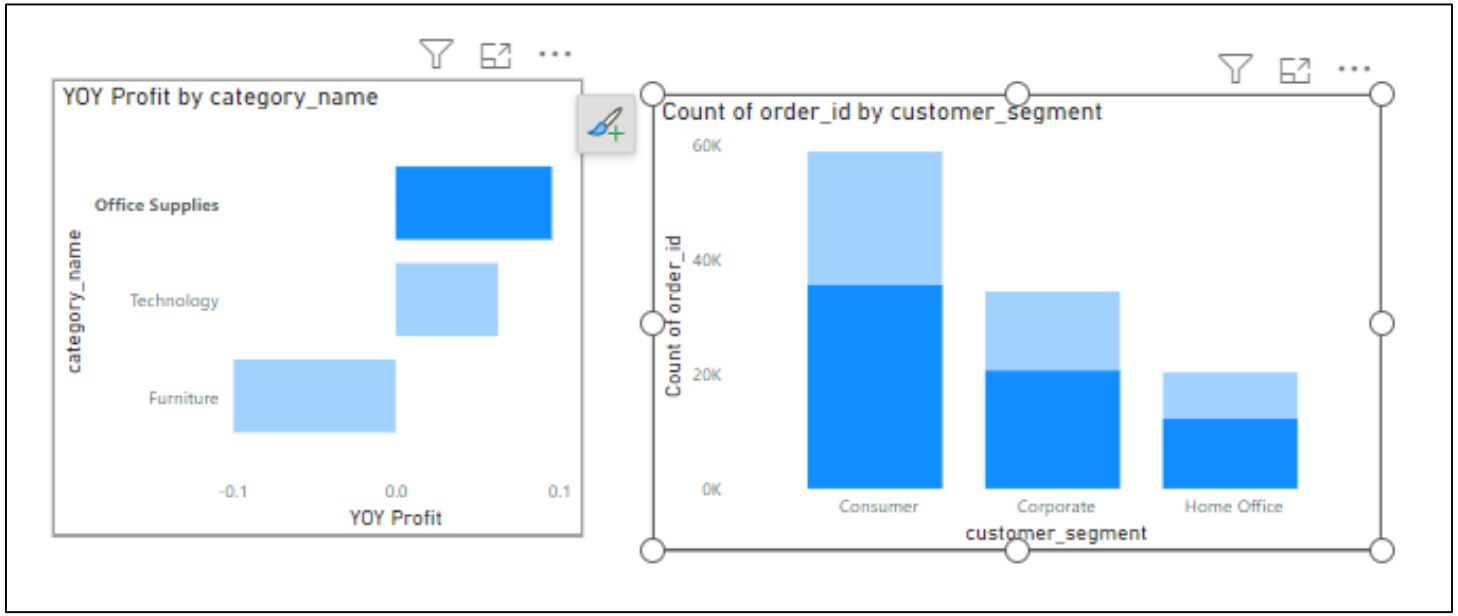
key design best practices:

- Use contrasting colors to highlight differences in data sets
- Choose warm colors to indicate increases and cool colors to indicate decreases

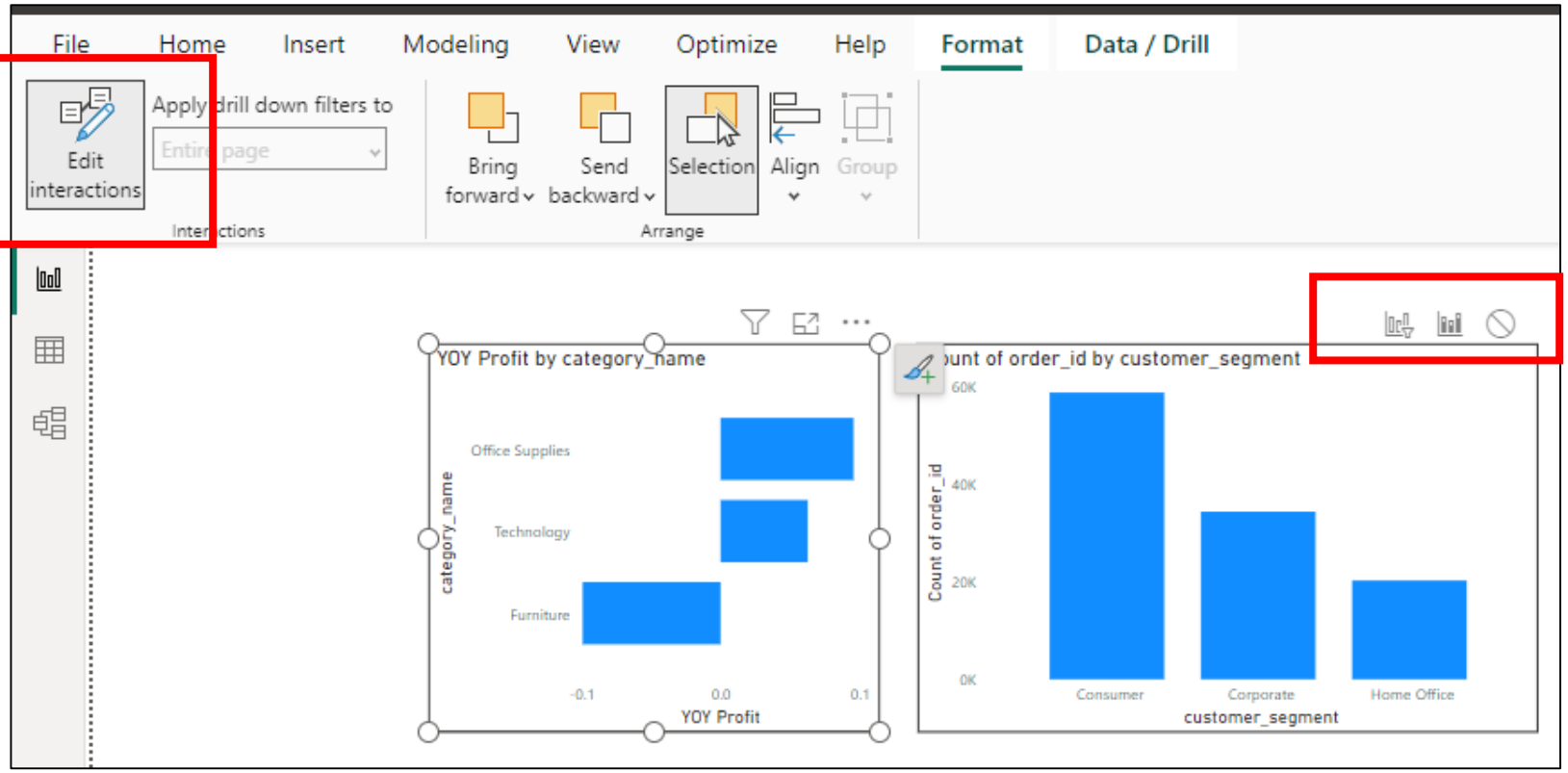
REPORT INTERACTIONS

By default, all the visualizations are connected to each other and filtering items in one visual will impact others too.
Through “Edit interactions” we can prevent certain visualizations to get filtered.

Here, when click on “office supplier” on bar chart, other chart changes color based on selected category. If you don’t want other charts to change color, use “Edit interactions”.



Remove filter: Select chart → format → edit interaction → none → edit interaction
Apply filter(no color change): Select chart → format → edit interaction → filter → edit interaction
Original (color change): Select chart → format → edit interaction → highlight → edit interaction



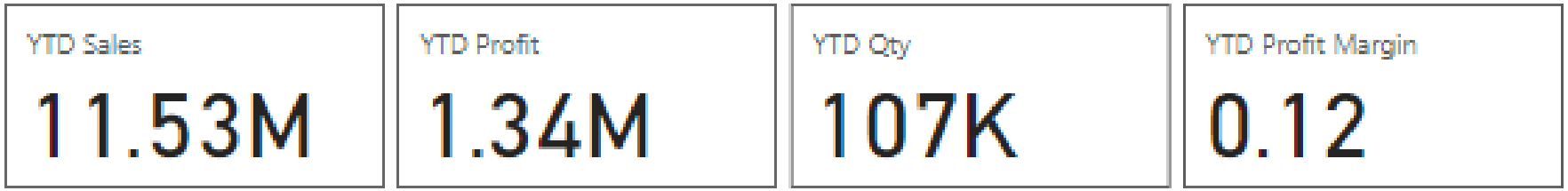
3 Options
- Filter
- Highlight
- None

PRACTICAL IMPLEMENTATION OF ECOMM SALES ANALYSIS PROJECT

To get the overall idea of a Ecomm sales, certain important metrics needs to be displayed.
This is achieved with the help of visual called “card” or “card(new)”.

Here, card(new) visual is used, displaying below metrics-

- YTD sales
- YTD profit
- YTD Qty
- YTD profit margin

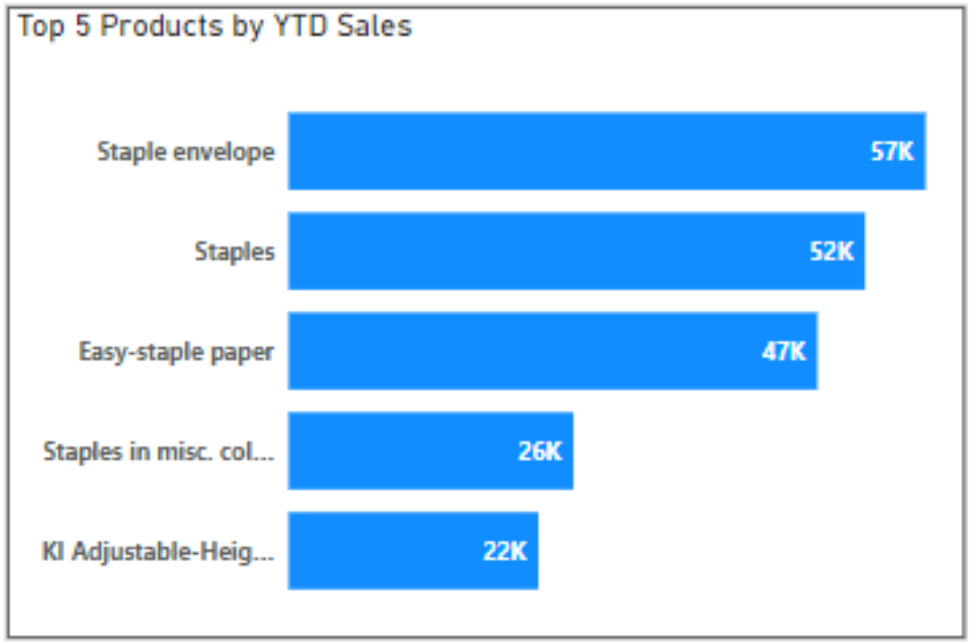


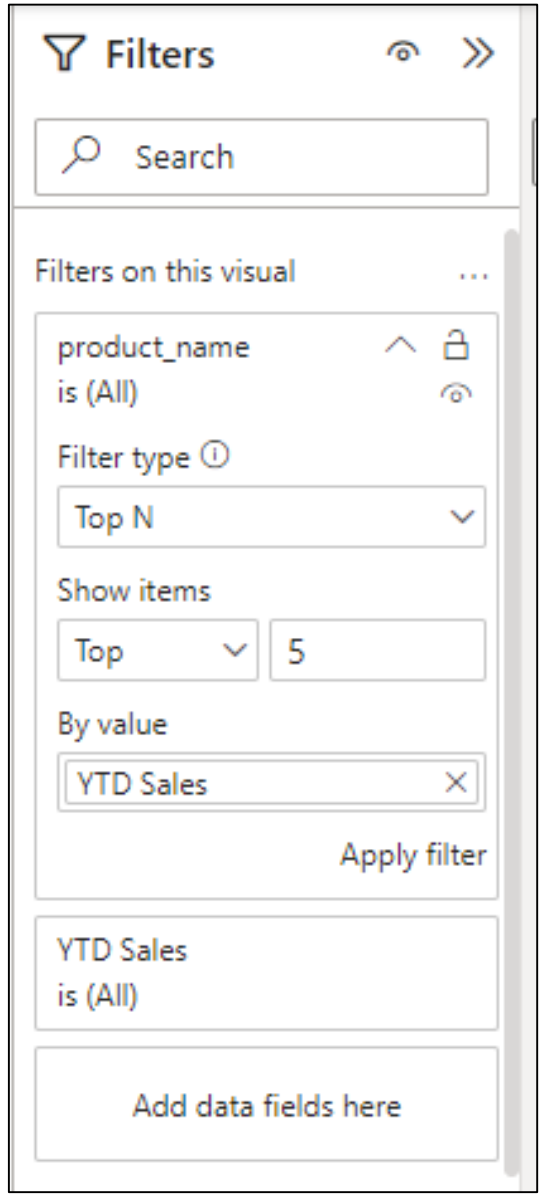
Format the font , size , etc under format pane. (this visual is still under process so it provides limited formatting options)

(You can even use “card” visual, you will need to edit each card separately or simply edit one card and do “format painter” to other cards so that all cards gets edited in one go)

To display Top 5 products by YTD sales

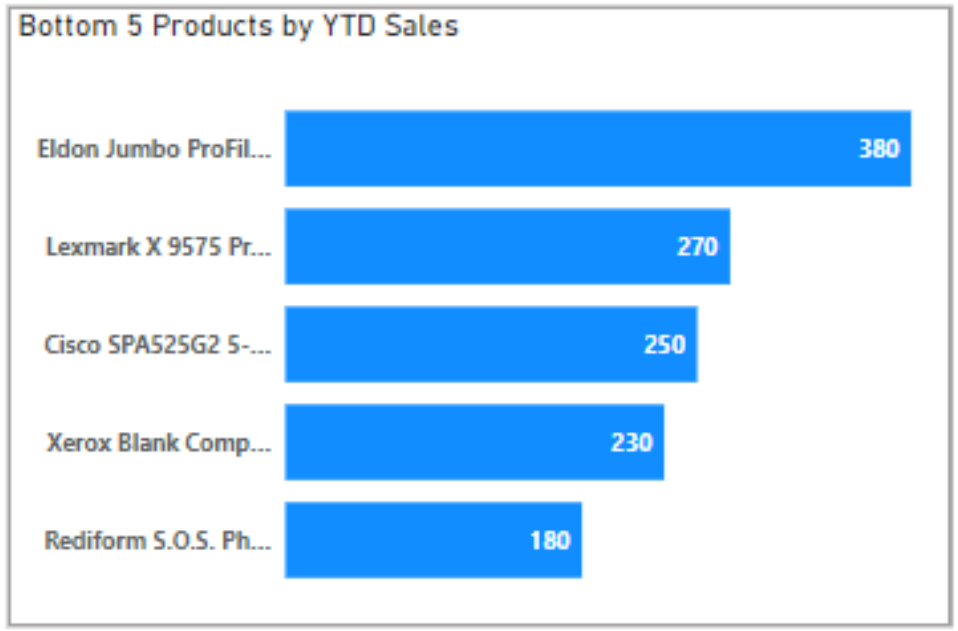
Use bar chart and insert fields – product name and YTD sales
In filter pane select type top N , items as top 5, by value YTD sales click apply filter

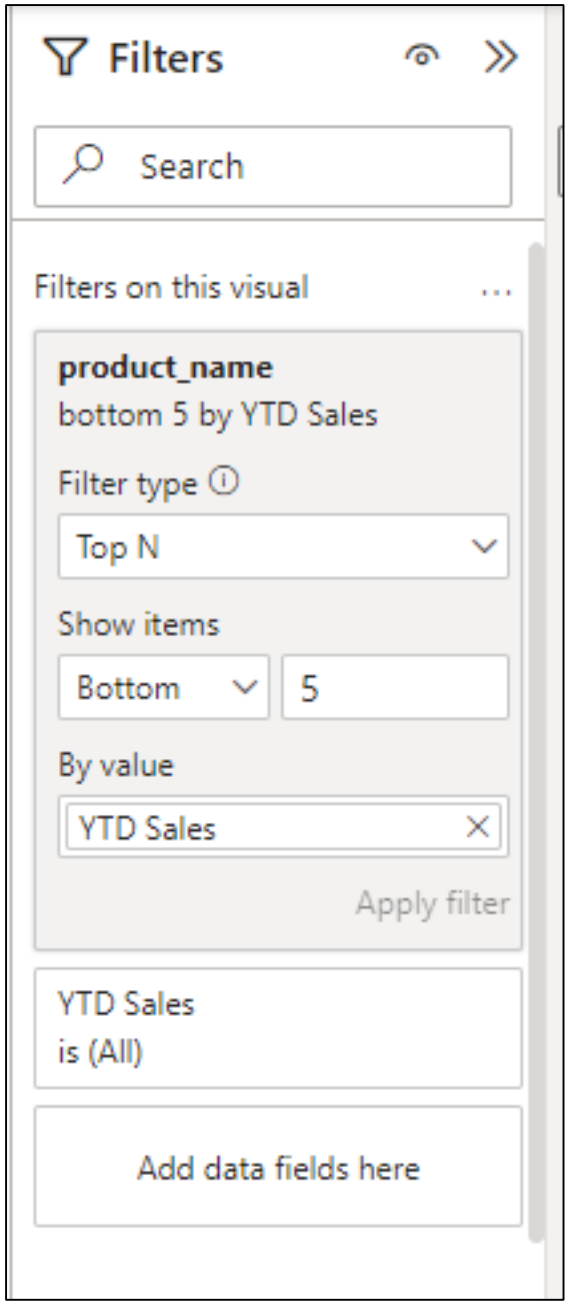




To display Bottom 5 products by YTD sales

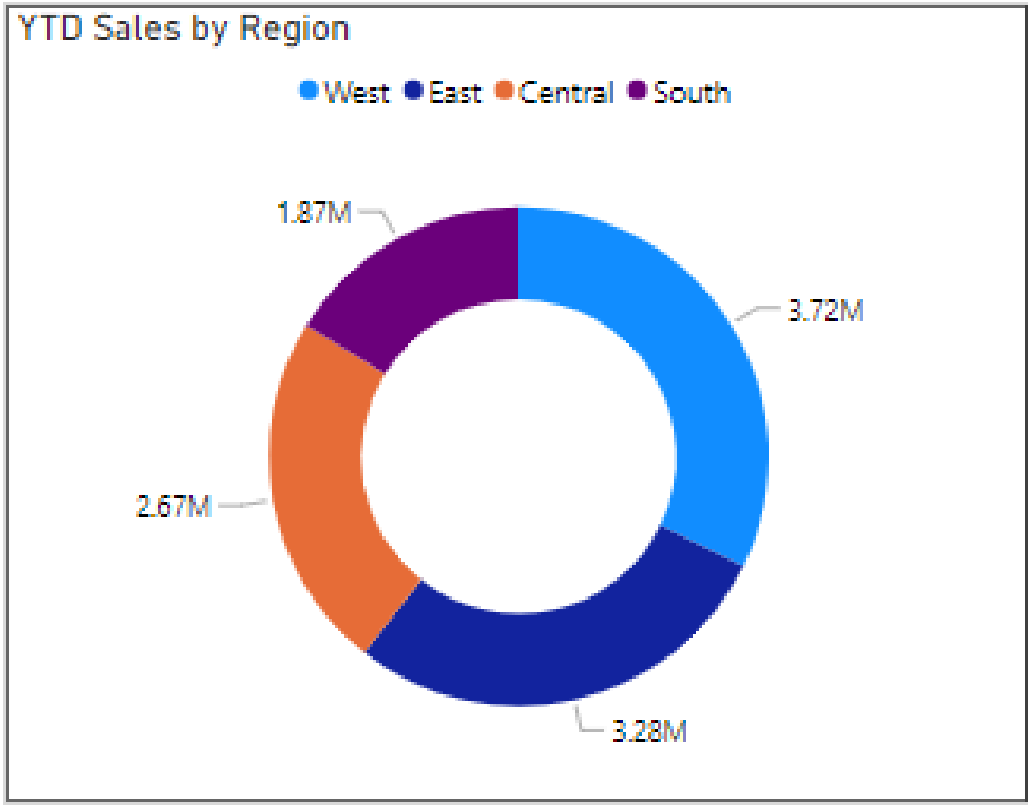
Copy and paste Top 5 products bar chart.
In filter change items from top to bottom.
Edit chart title.





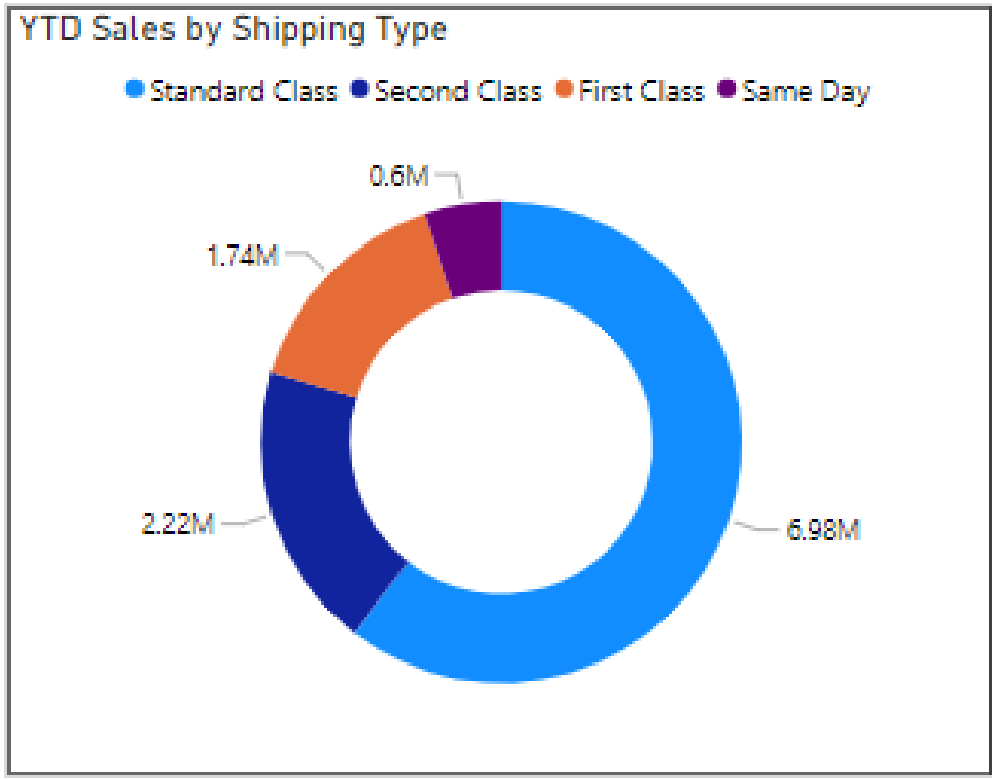
To display YTD sales by Regions

Select Donut chart
Take fields customer region and YTD sales
Edit the chart in Format pane



To display YTD sales by Shipping Type

Copy paste previous donut chart.
Remove regions field and select shipping type.
Edit title



Display tabular information

- Select table visual, select fields

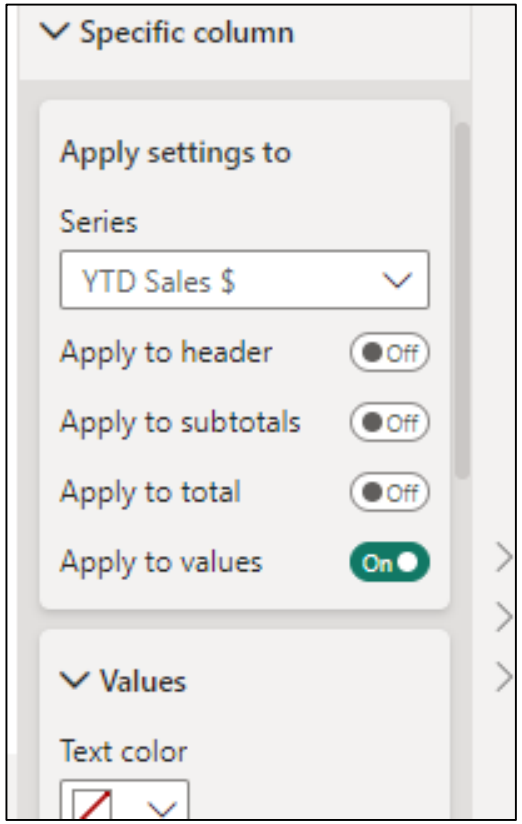
YTD sales, PYTD sales, YOY sales

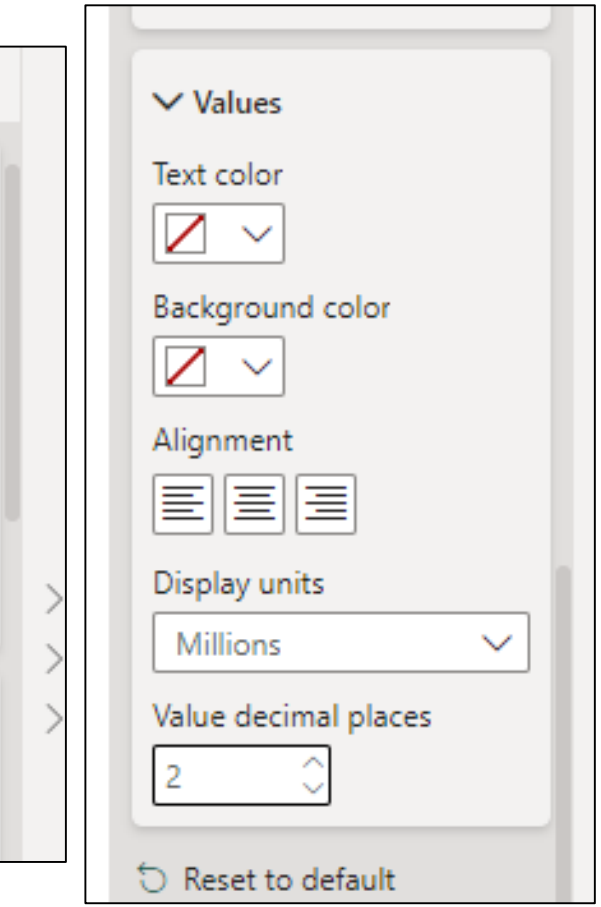
- Edit the decimal pt. and unit in

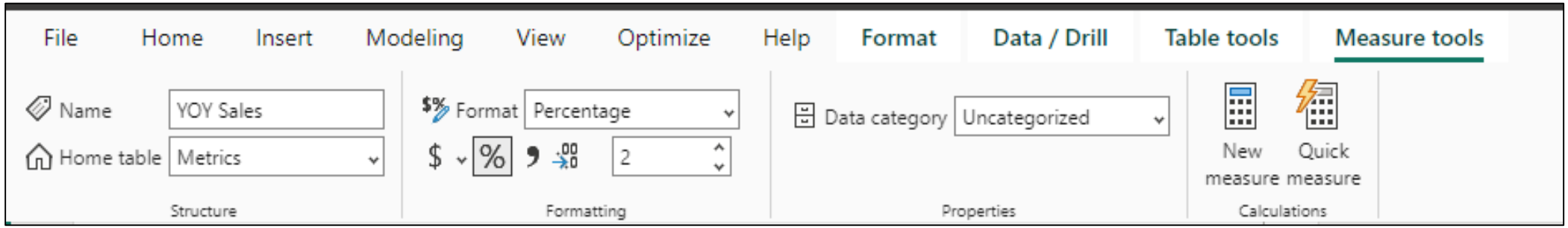
“format pane” –> specific column

- To display $ / %, click on measure name in “Data

pane”, “measure tools” tab opens select the format





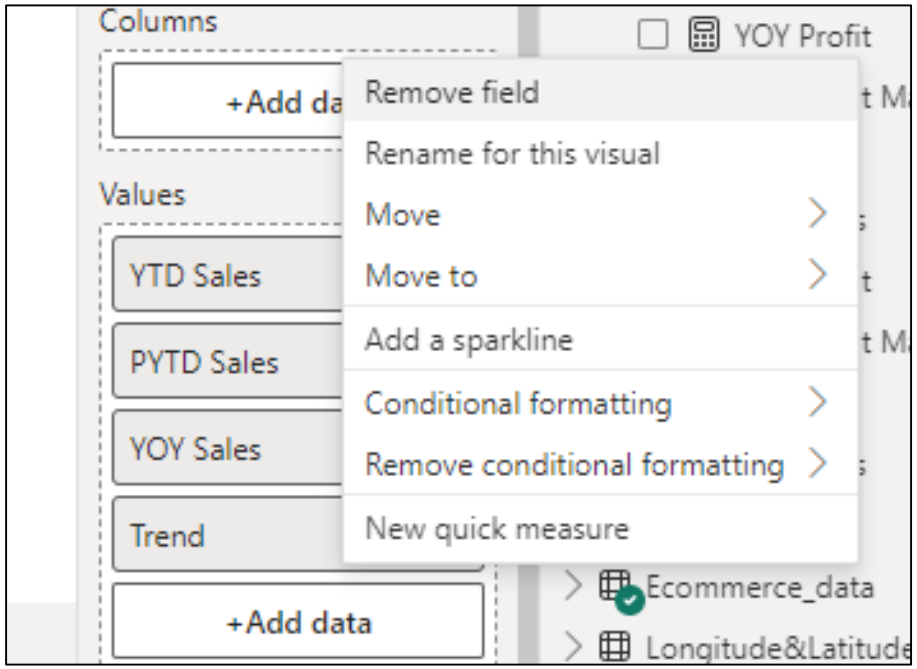


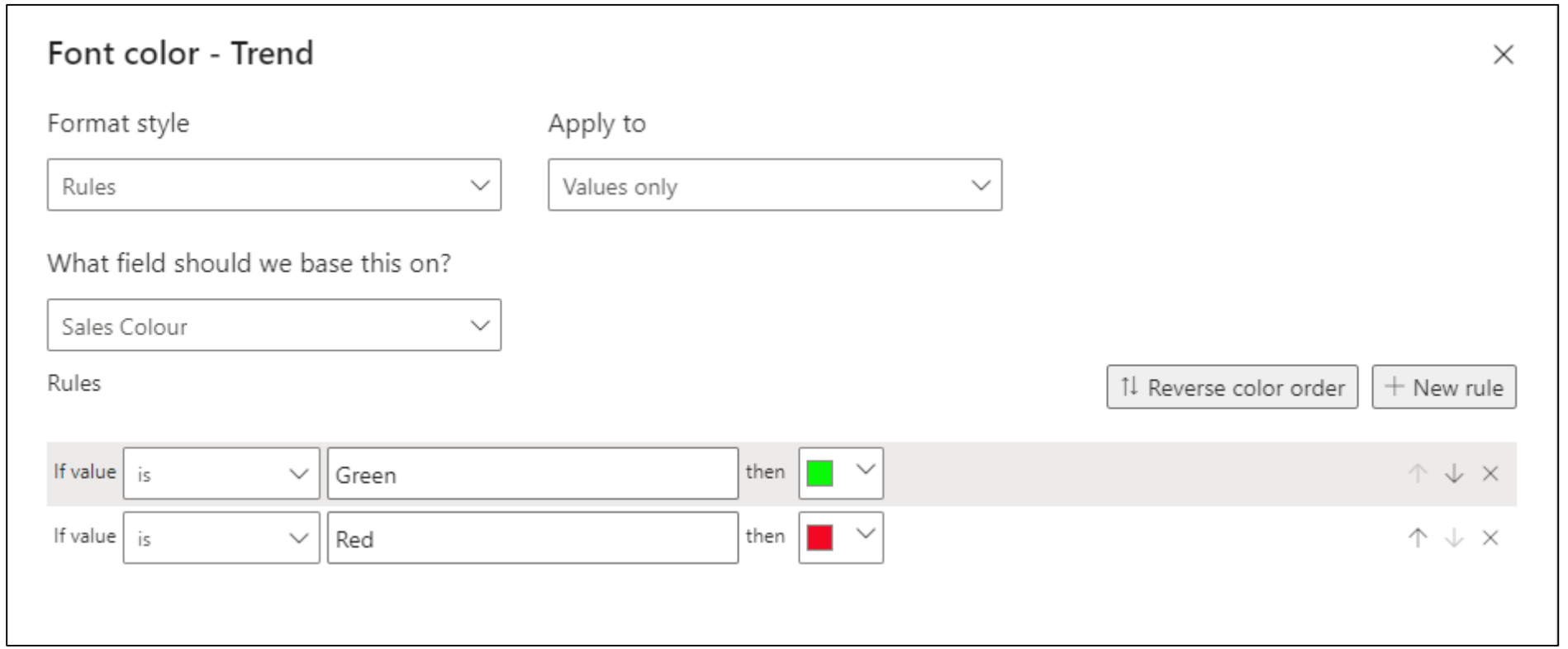
- Create 2 new measures—

Trend = var positive_icon = UNICHAR(9650)
var negative_icon = UNICHAR(9660)
var result = IF([YOY Sales]>0, positive_icon, negative_icon)
return result

Sales Colour = IF([YOY Sales]>0, "Green", "Red")

- Drag trend measure in fields
- Right click on trend →conditional formatting → font color

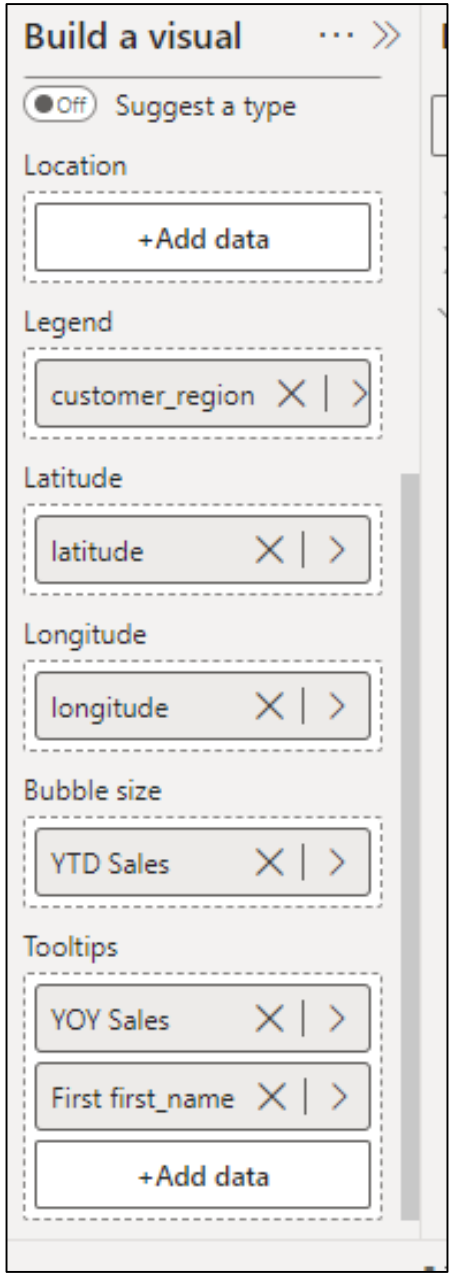




category_name	YTD Sales	PYTD Sales	YOY Sales	Trend
Furniture	$2.52M	$2.50M	0.73%	▲
Office Supplies	$6.92M	$7.00M	-1.22%	▼
Technology	$2.10M	$2.13M	-1.37%	▼

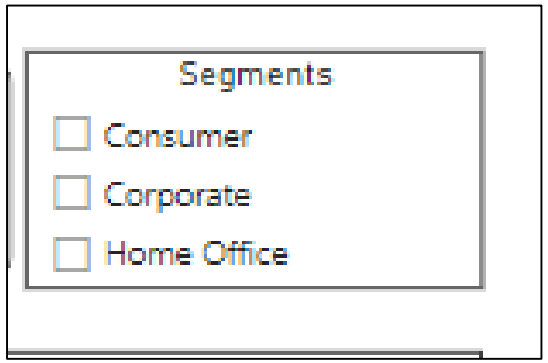
Create Map

Select Map visual
Select fields as shown
(map visual works only when network connectivity is ON)



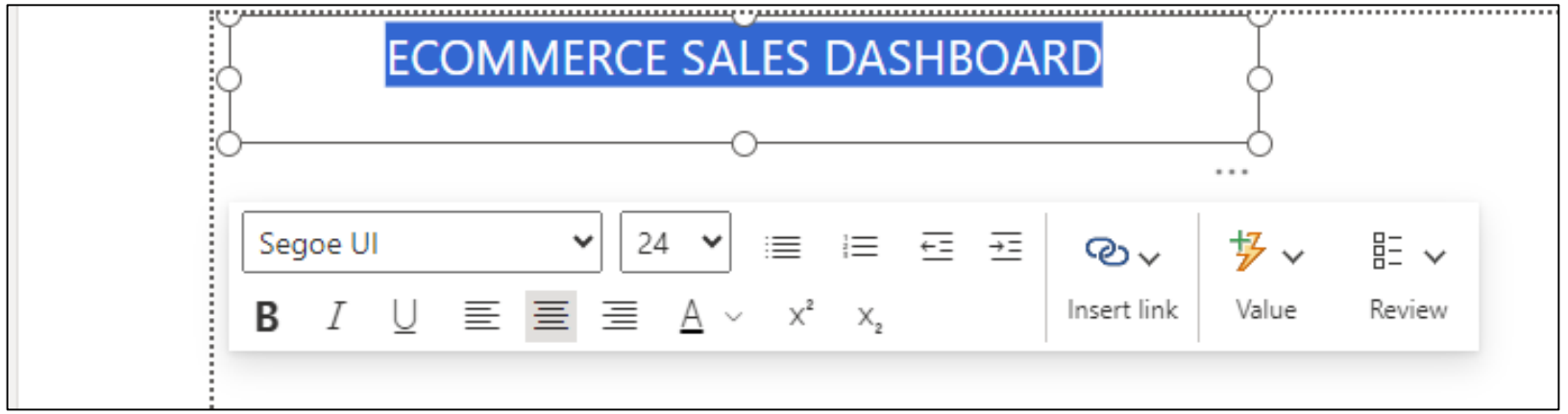
Create Filter

Select Slicer visual
Select fields as “customer segment”



Add dashboard title

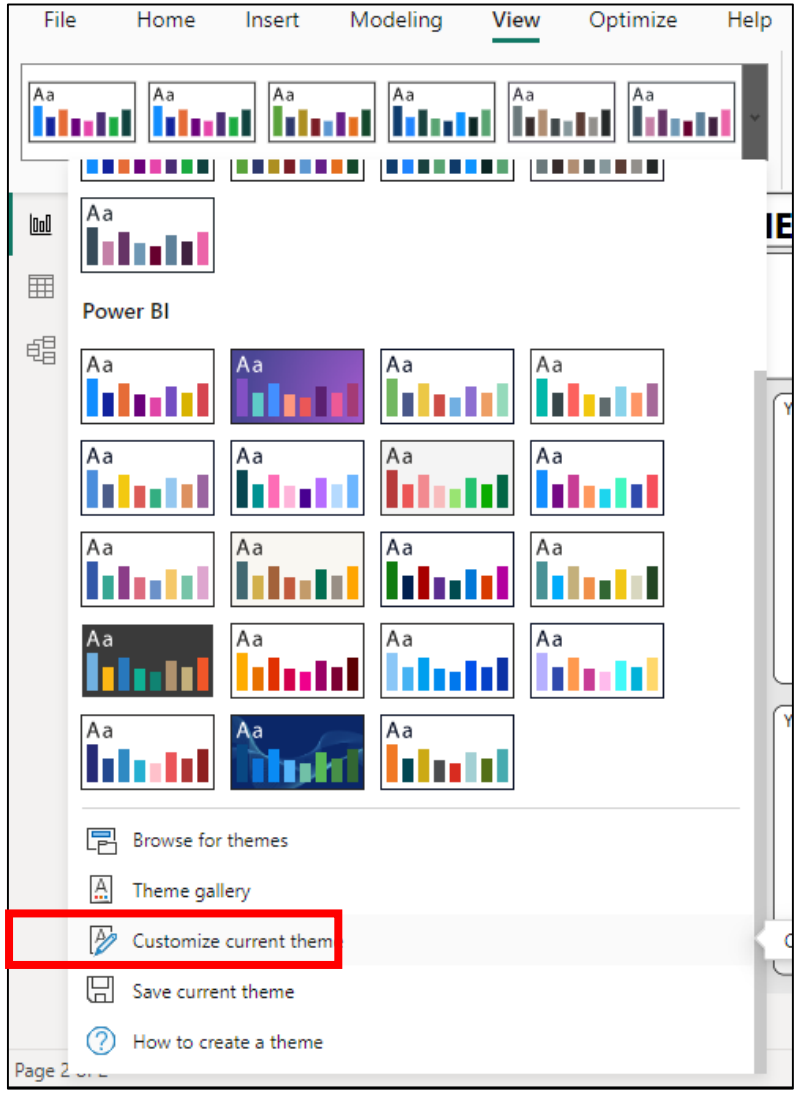
Select Text box under Home tab
Name your dashboard

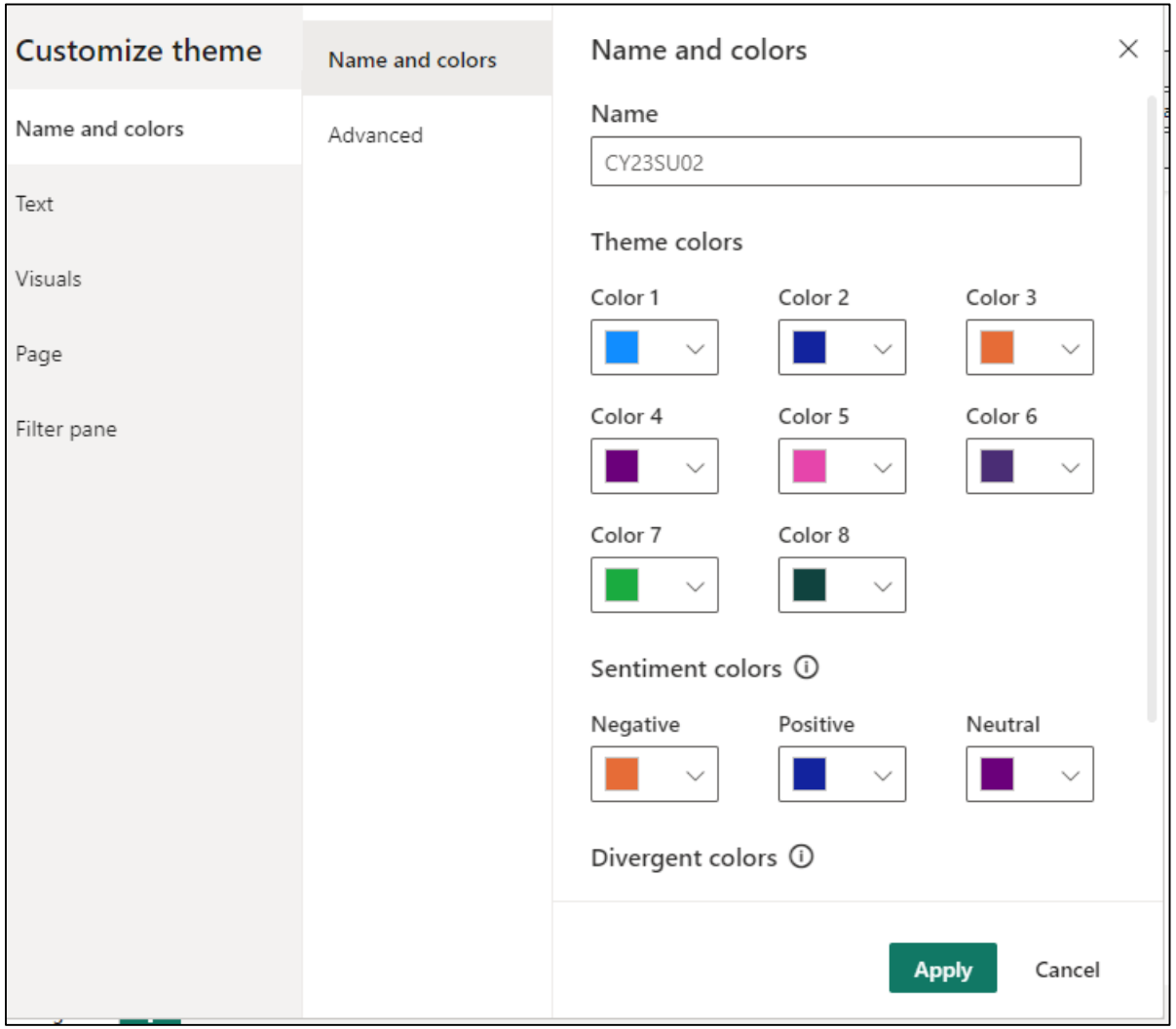


Dashboard Theme

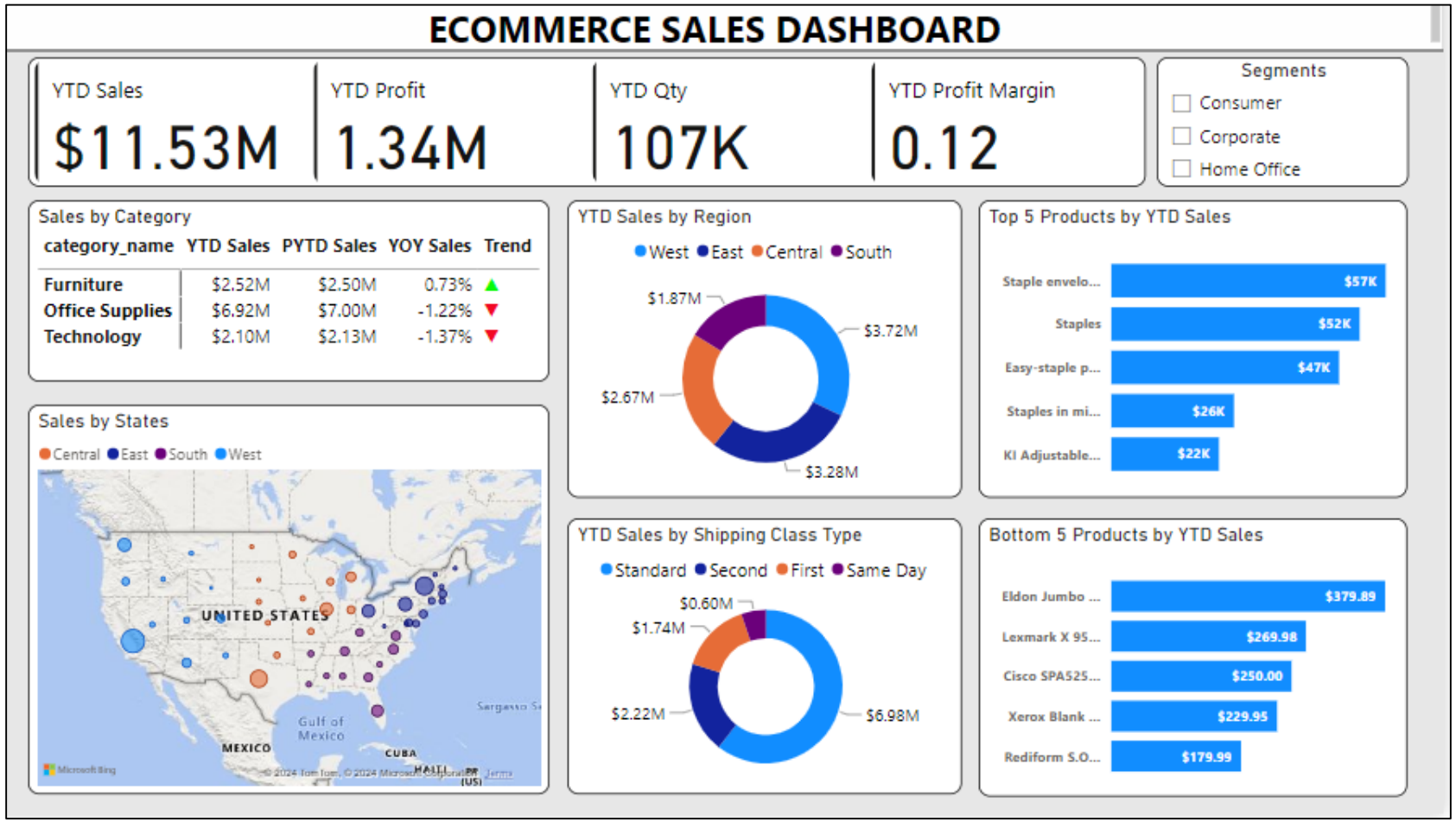
Existing theme: View → select from available options

Create theme: view → customize current theme → customize as per your choice.





Edit all the visuals and align them properly.
Below is the final dashboard.



THANK YOU

- MAYURI .D.