

Power BI Lab Day 4 Document

Writer: I&D Microsoft

Initials entity:

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POWER BI LAB DOCUMENT

DAY 4- LAB 1

Version	Author	Comment	Reviewed By	Date
V 1.0	I&D Microsoft	Initial draft	Moupiya Das	

Pre-requisites

Installed and working Power BI Desktop setup.

Environment Setup

1. Installing Power BI Desktop

Power BI Desktop lets you create a collection of queries, data connections, and reports that can easily be shared with others. Power BI Desktop integrates proven Microsoft technologies – the powerful Query engine, data modeling, and visualizations – and works seamlessly with the online Power BI service. You will need to download and install Power BI desktop to perform the labs in this course.

1.1 Which version to install?

- If you have a 32 bit machine, you need to install the 32bit Power BI Desktop.
- If you have a 32 bit Office installed (regardless of your machine), you need to install the 32 bit Power BI Desktop.
- Otherwise, you can install the 64 bit PBI Desktop.

1.2 Minimum requirements

- Windows 7 / Windows Server 2008 R2, or later
- .NET 4.5
- Internet Explorer 9 or later

1.3 Download and install Power BI Desktop

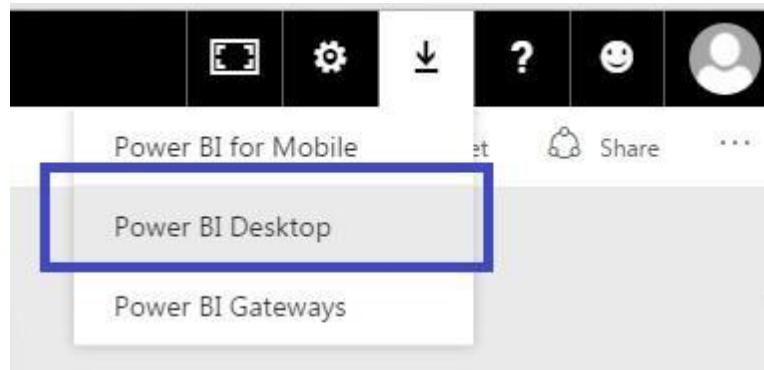
You can download and install the latest version of Power BI Desktop in two ways,

1. Directly from Microsoft link, <http://go.microsoft.com/fwlink/?LinkId=521662>

Note: To select which version to download, go to <https://www.microsoft.com/en-us/download/details.aspx?id=45331> and select appropriate version.

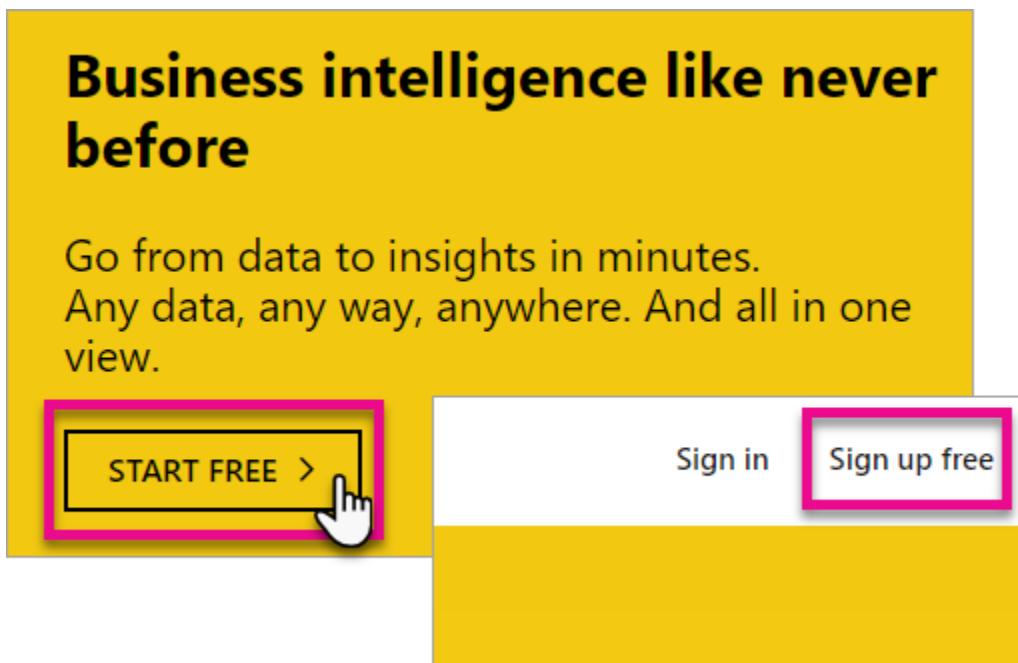
2. Or, from Power BI Service site, <https://app.powerbi.com/>, i.e., in Power BI, click the Downloads > Power BI Desktop.

2. Get Excel Data File: AdventureWorksDatabase.xlsx



3. Signing Up for Power BI Service

1. Browse to powerbi.com.
2. Select **Start Free** or **Sign up free**.



3. On the get started page, select **Try Free >** under Power BI.

Power BI

Cloud collaboration and sharing

Use Power BI Pro to share and distribute reports with others, without any complicated setup. Get started now with a free 60-day trial of Power BI Pro.

TRY FREE >



4. Enter the email address you are signing up with, and then select **Sign up**. Be sure your email address is allowed for sign up. For more information about what email address you can use, see [What email address can be used with Power BI](#).

Get started

adam@contoso.com

Sign up →

5. You will get a message indicating to check your email.

Great! Go check
your email.

To finish signing up, click the link in the mail from Office 365.

Didn't get the mail? Check your spam folder or resend the mail

6. Select the link within the email to verify your email address. This will bring you back into the sign up flow. You may need to supply some additional information about yourself.
7. You will then be taken to <https://app.powerbi.com> and you can begin using Power BI as a free user.

Lab Overview

1. Working with Various Charts/Visuals:

- Bar Chart
- Line Chart
- Combo Chart
- Gauges and Single Number Chart
- Tabular Charts
- Pie Chart
- Waterfall and Funnel Chart
- Scatter Object
- Filtering
- Sorting
- Grouping
- Bookmarks and Selection Panes

2. Working with Power BI:

- Shapes Text Boxes and Images
- Show Categories with No data
- Page Layout and Formatting
- Complex interactions between visualizations
- Visual Hierarchies
- Category Options
- Custom Visuals

Case Scenario

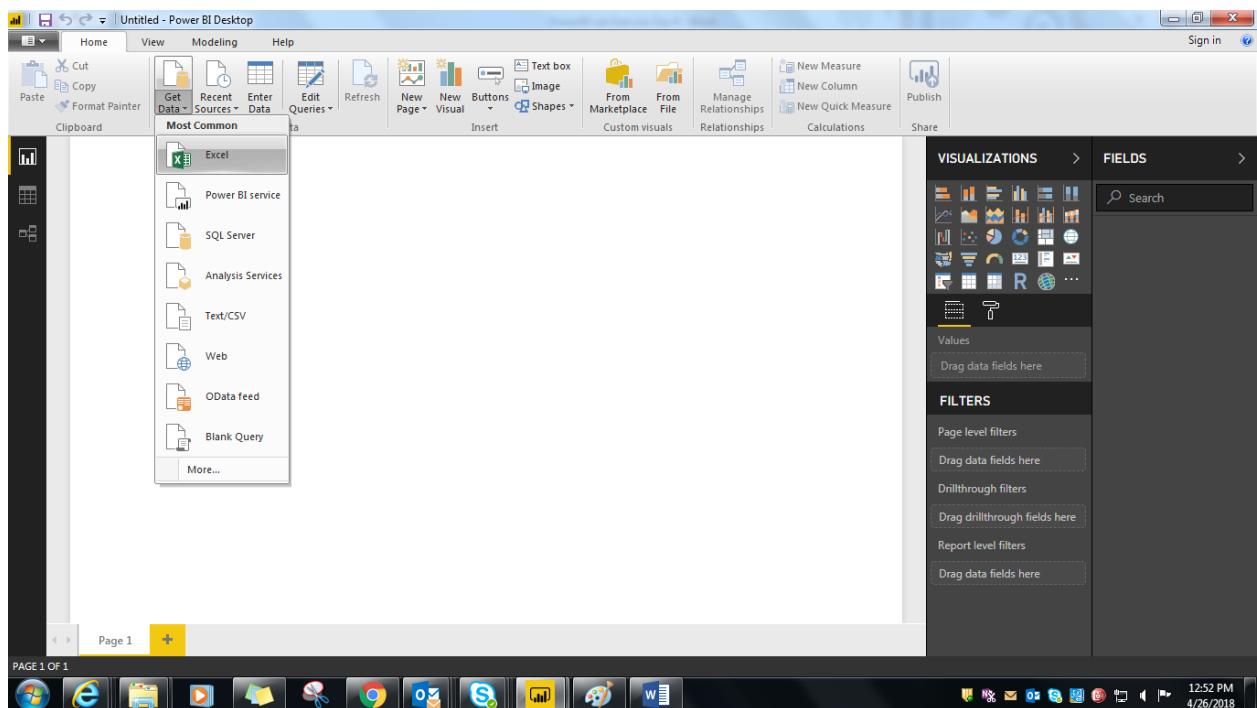
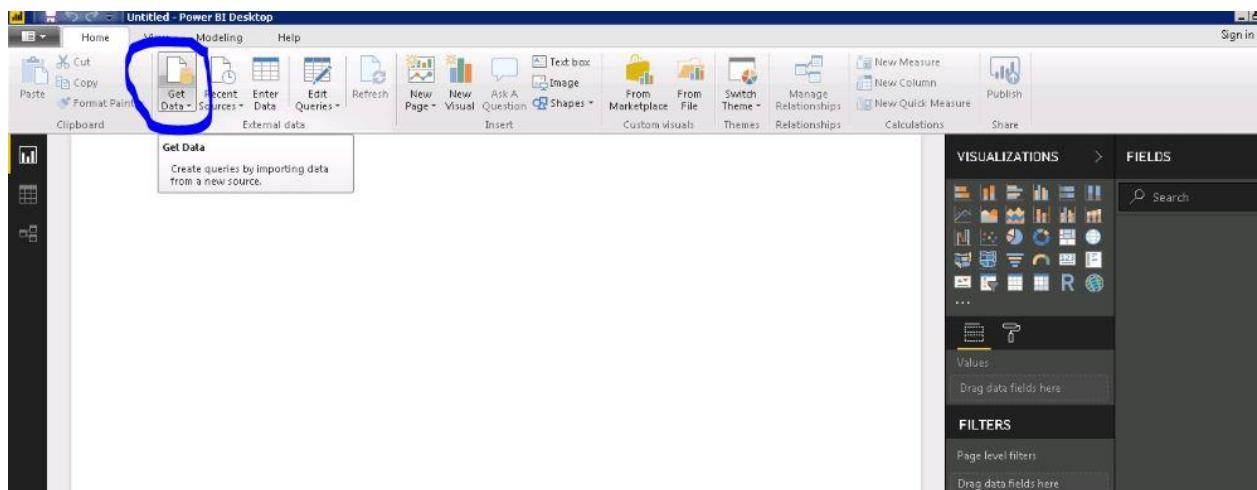
- Load AdventureWorksDatabase.xlsx file into Powerbi Desktop and prepare data model setting up relationships.
- Create measures/Hierarchy as per requirement.
- Use various visualizations like charts, Slicers, Filters and others to plot good reports.
- Create complex and interactive reports.
- Create reports with Custom visuals.
- Learn various Visualizations and their scopes and uses.
- Covered almost all important visual like- Bar Chart, Line Chart, Combo Chart, Gauges and Single Number Chart, Tabular Charts etc.
- Use various format properties for each visuals for better look and feels.

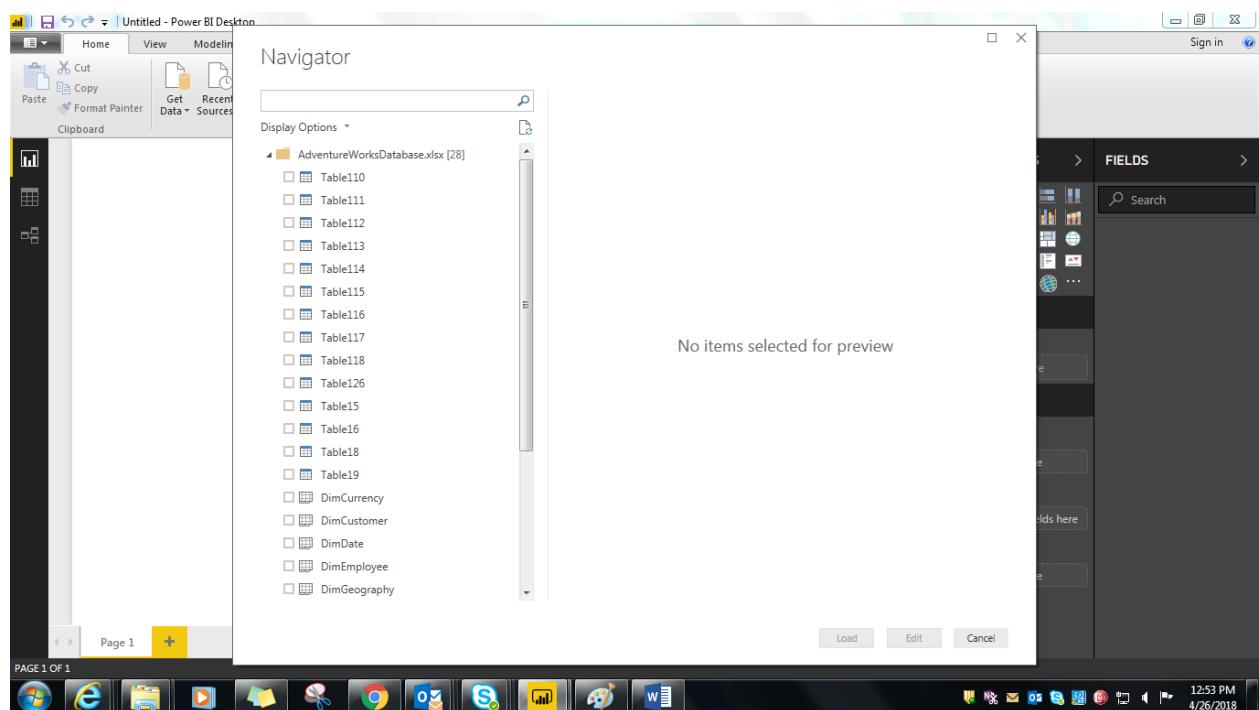
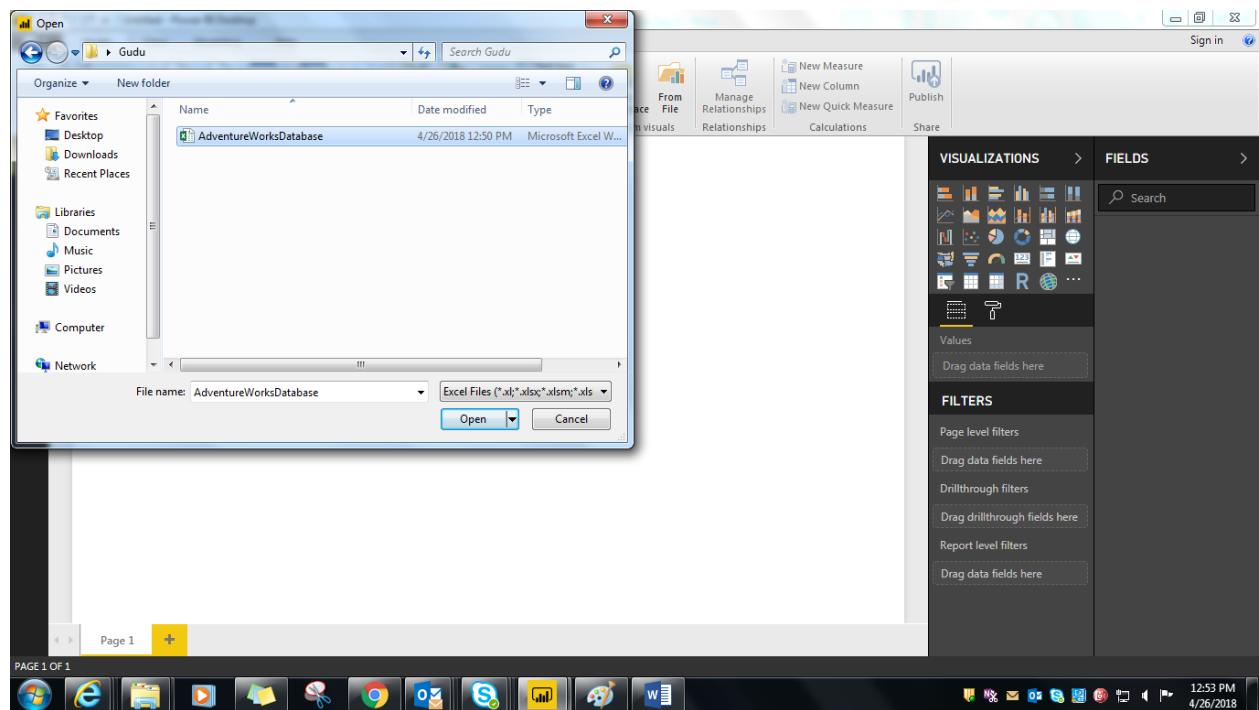
Table of Contents

Table of Contents	7
1. Import Data:	8
2. Bar Chart	12
3. Line Chart	16
4. Combo Chart	18
5. Gauges and Single Number Chart.....	25
6. Tabular Charts:	32
7. Pie Chart:.....	39
8. Waterfall and Funnel Chart:.....	44
9. Scatter Object Chart:	49
10. Filters:	53
11. Page Layout and Formatting:	55
12. Sorting:.....	57
13. Grouping:	60
14. Shapes, Text Boxes and Images:.....	67
15. Bookmarks and Selection Panes:.....	72
16. Show Categories with No data:	78
17. Visual Hierarchies:	81
18. Custom Visuals:	85
19. Complex interactions between visualizations:.....	92

1. Import Data:

1. Start with a blank Power BI Desktop file.
2. Click on Get Data option in the 'Home' tab.





Visuals - Power BI Desktop

View Modeler Data Sources

Navigator

Display Options

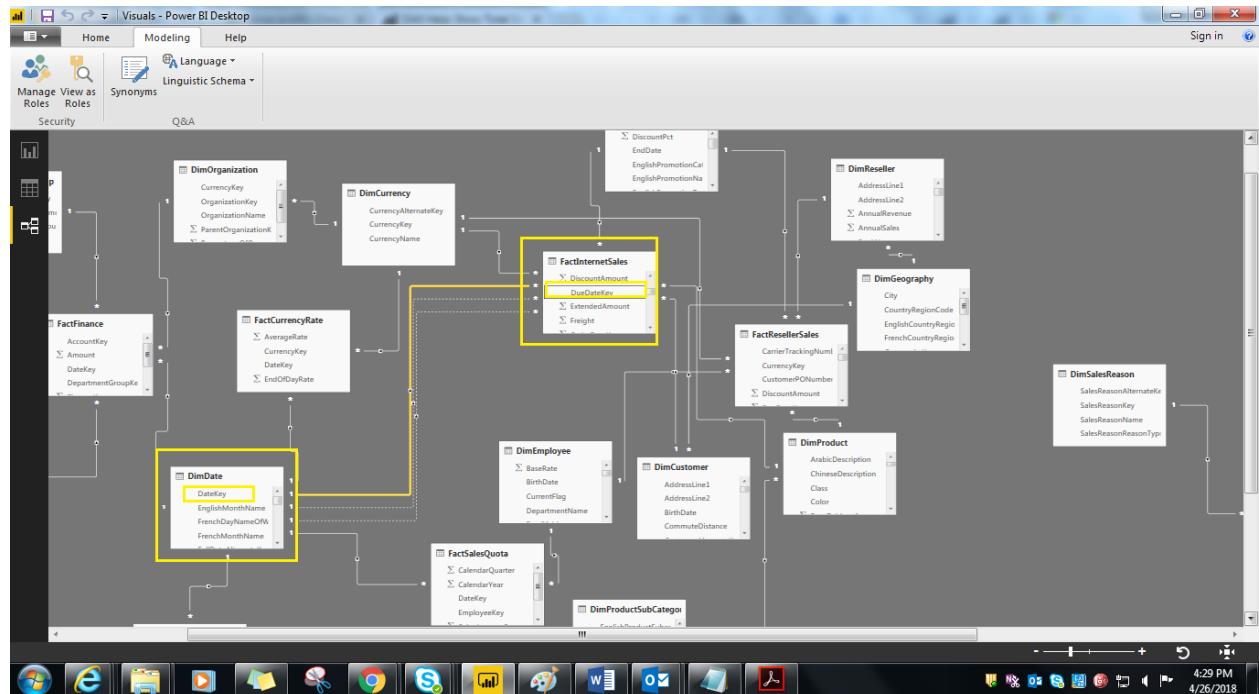
ProspectiveBuyer

AddressLine1	AddressLine2	BirthDate	City	Education	EmailAddress	Fin
1121 Boynton Avenue	null	9/22/1948 12:00:00 AM	Issaquah	Partial Hi	tdeng@northwindtraders.com	Toi
1157 Chilpancingo Pk.	null	4/21/1960 12:00:00 AM	Colma	Partial Co	bprasad@alpineskihouse.com	Bri
1246 Glenside Ct.	null	4/14/1947 12:00:00 AM	La Jolla	High Schoo	bdeng@cohovineyard.com	Bri
1278 Holly Oak Drive	null	9/22/1971 12:00:00 AM	San Gabriel	Partial Hi	mjmenez@contoso.com	Mli
1314 Greenview Court	null	4/14/1937 12:00:00 AM	Colma	Graduate D	afernandez@alpineskihouse.com	Ad
1509 Orangewood Ave.	null	10/28/1940 12:00:00 AM	Colma	Bachelors	dgao@alpineskihouse.com	Da
1568 Delta Fair Blvd.	null	2/4/1946 12:00:00 AM	Columbus	Partial Co	ayang@consolidatedmessenger	Air
1663 Park Glen Court	null	2/11/1967 12:00:00 AM	Lakewood	Bachelors	hliu@cohovineyard.com	He
174 Carlotta	null	11/18/1946 12:00:00 AM	Colma	Bachelors	kma@alpineskihouse.com	Kai
1745 Marina Hill Pkwy.	null	3/28/1957 12:00:00 AM	Glendale	High Schoo	mjames@cohovineyard.com	Me
1754 Polk Street	null	1/9/1970 12:00:00 AM	Lebanon	Partial Hi	bmoreno@humongousinsurance.com	By
1769 Lulin Cr	null	8/24/1953 12:00:00 AM	Colma	Bachelors	jxie@alpineskihouse.com	Jor
1926 Gill Dr.	null	2/7/1970 12:00:00 AM	Colma	Partial Hi	schande@alpineskihouse.com	Shi
2000 300th Street	null	2/26/1971 12:00:00 AM	Denver	High Schoo	ktang@contoso.com	Kal
20500 S.w. 2512th Ave	null	9/15/1967 12:00:00 AM	Miami	Bachelors	cserrano@consolidatedmessenger	Cri
22589 West Craig Road	null	11/9/1971 12:00:00 AM	North Las Vegas	Partial Hi	tshen@fabrikam.com	Tei
2309 Mt. Olivet Ct.	null	11/6/1972 12:00:00 AM	Ballard	Partial Hi	mcai@lucernepublishing.com	Ma
2406 Kane Circle	null	9/19/1971 12:00:00 AM	W. Linn	Partial Hi	mkapoor@ltwareinc.com	Ma
2425 Notre Dame Ave	null	5/15/1947 12:00:00 AM	Gold Bar	High Schoo	rgutierrez@northwindtraders.com	Ro
2427 Kaywood Drive	Unit C	7/17/1962 12:00:00 AM	Cedar City	Partial Co	mwhite@lucernepublishing.com	Me

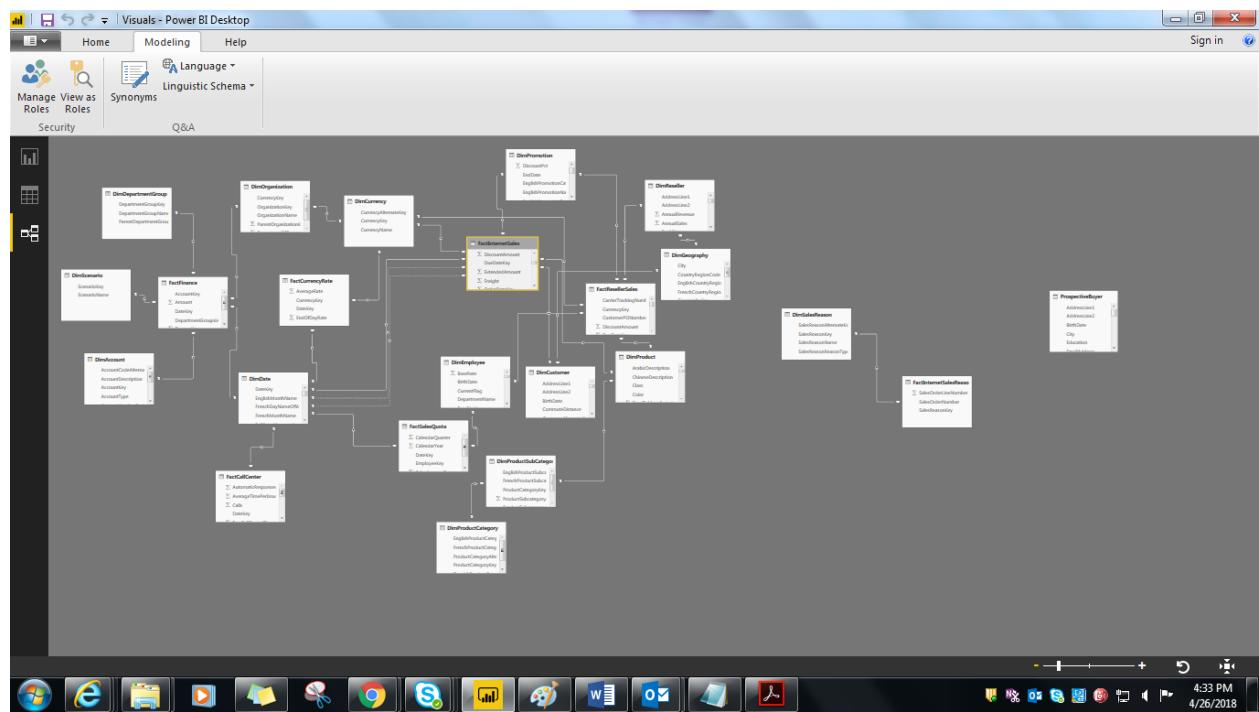
The data in the preview has been truncated due to size limits.

Load Edit Cancel

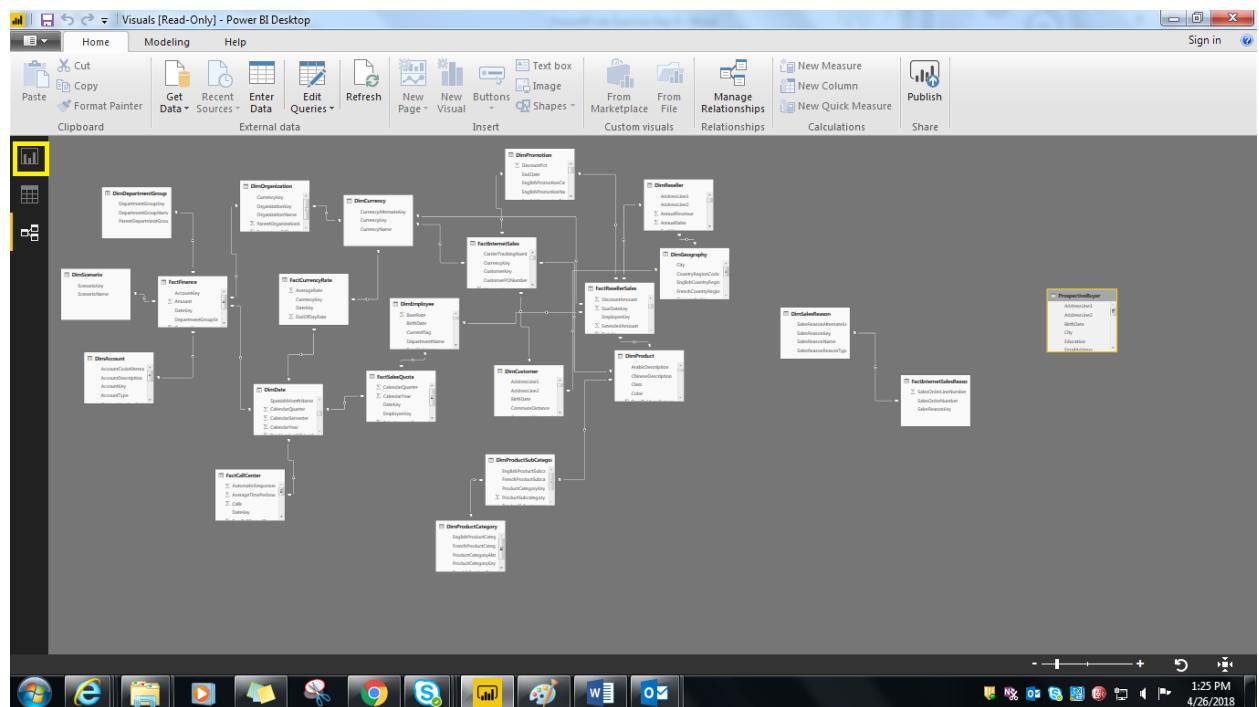
Create Relationship between DimDate(DateKey) and FactInternetSales(DueDateKey) table:

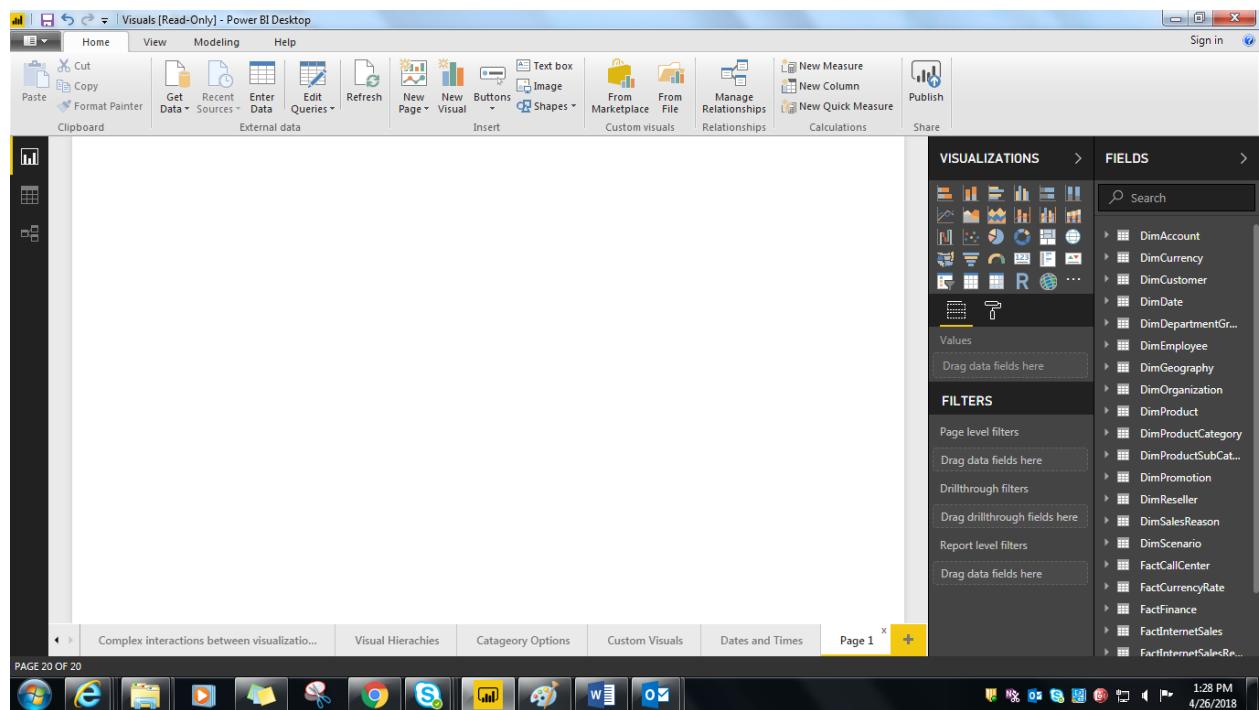


Now we can see model is prepared:



Go to Report View:

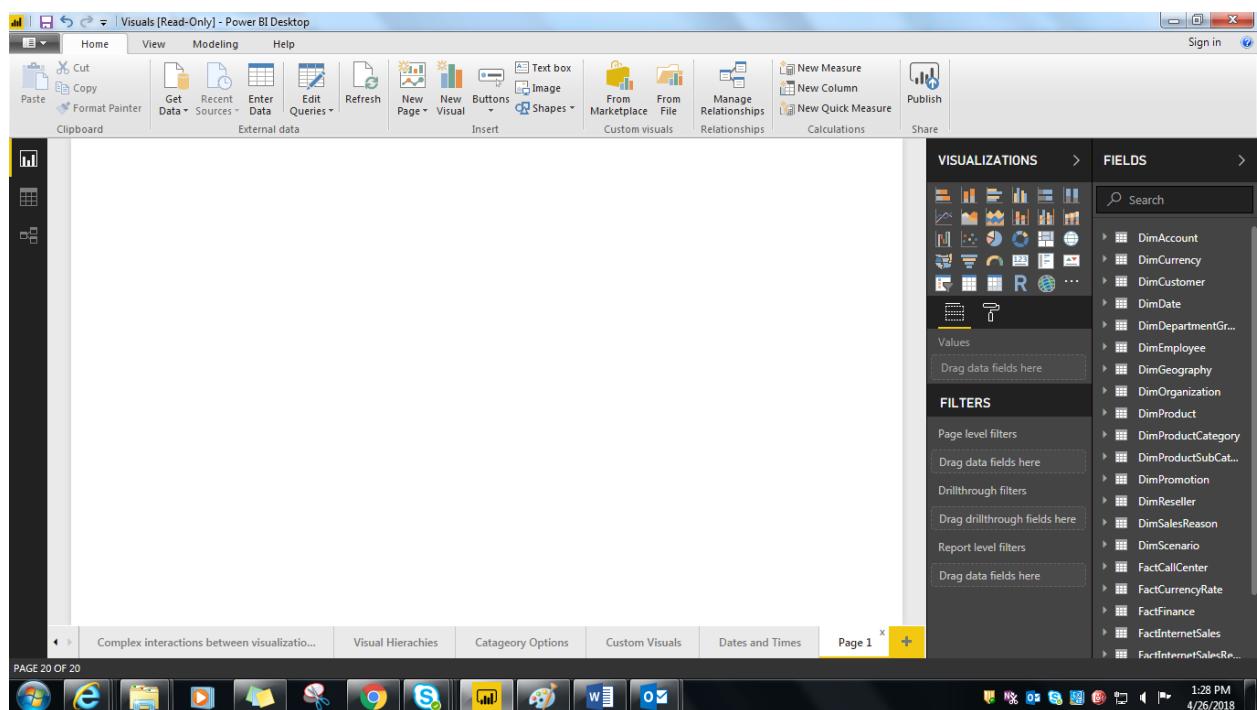




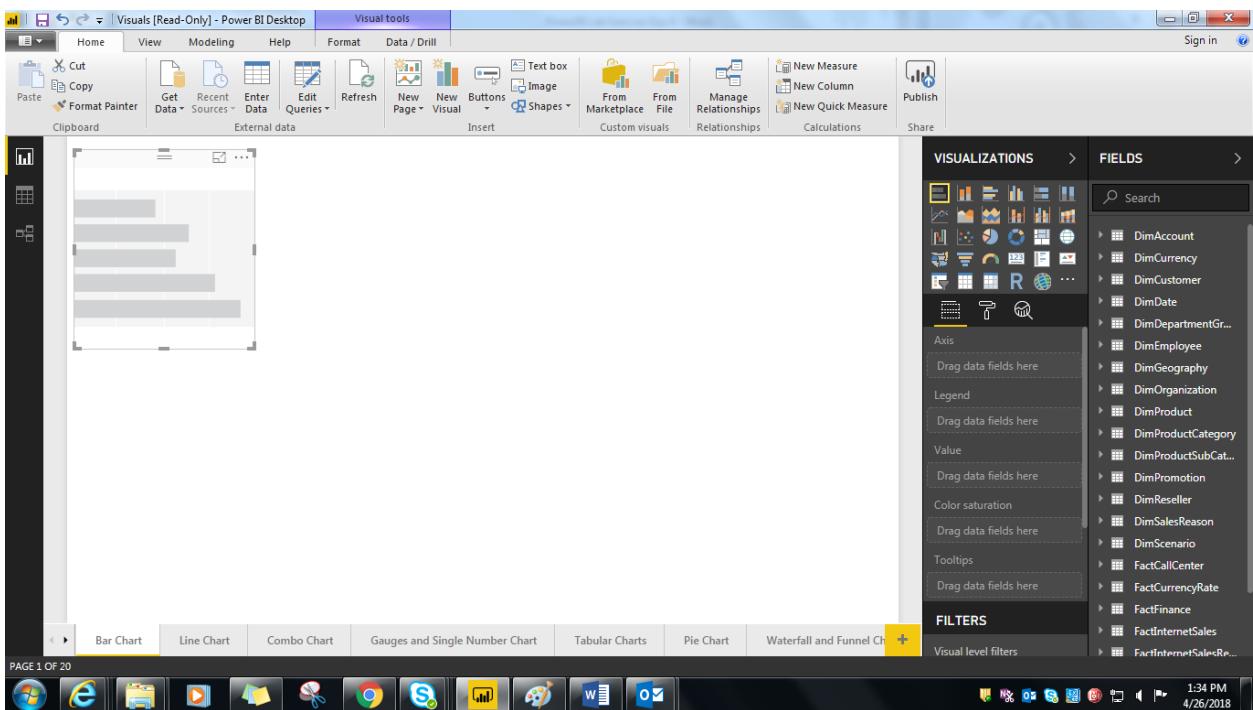
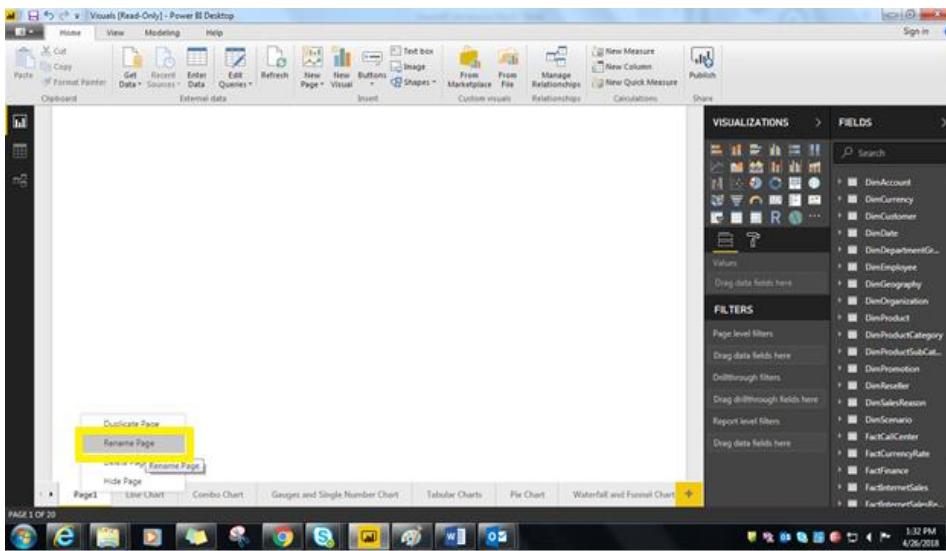
Start working with different available visuals:

2. Bar Chart

Start with a blank Power BI Desktop file.



Right click on blank Page and Rename the page with selected visual name like: Bar Chart



Lab Exercise: Create Bar chart for “**SalesAmount by EnglishProductNameName**”

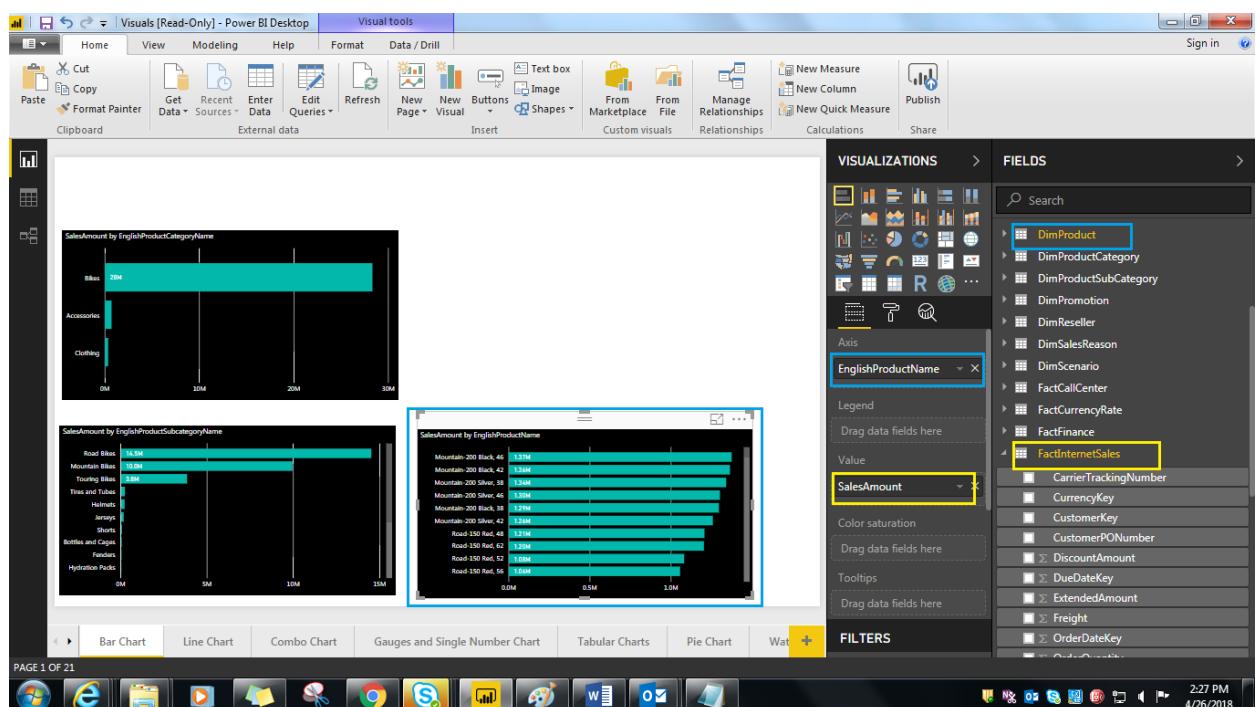
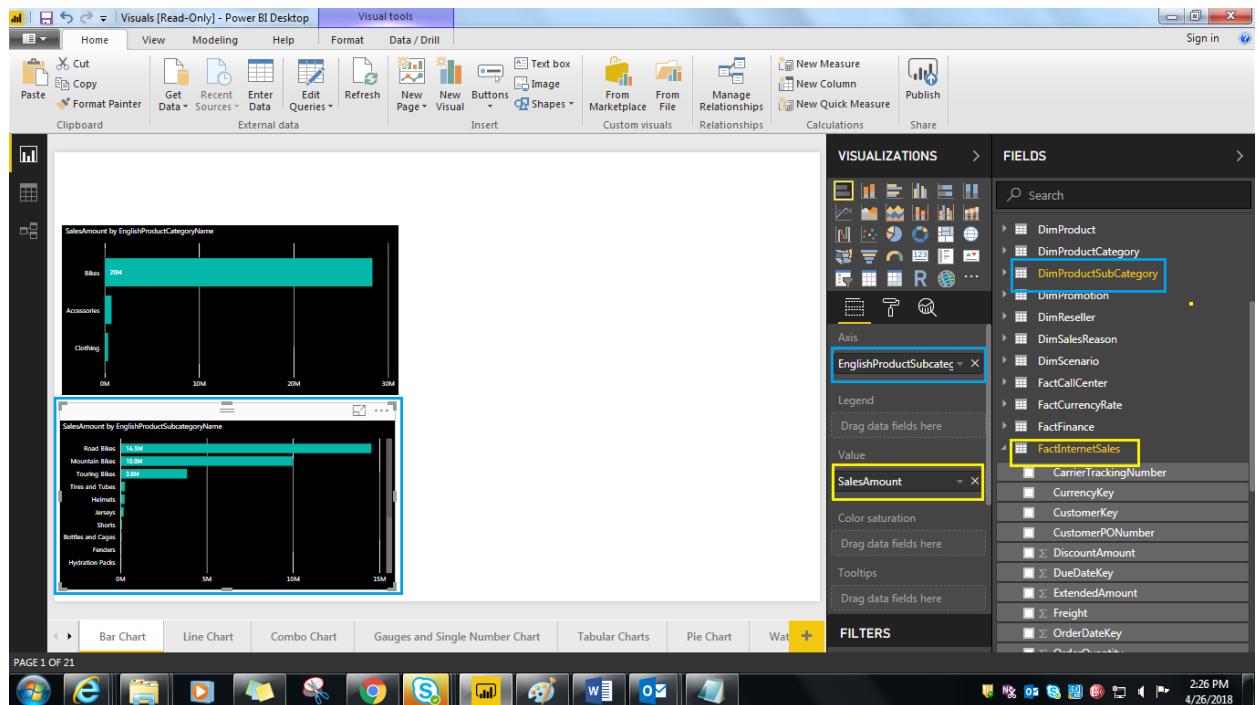
Select relevant Axis column and Value column as below:

The screenshot shows the Power BI Desktop interface. On the left is a bar chart visual titled "SalesAmount by EnglishProductCategoryName". The Fields pane on the right lists several dimensions and measures. Two specific items are highlighted with yellow boxes: "EnglishProductCategoryName" under "Dimensions" and "SalesAmount" under "Measures".

Apply some formatting options on visuals:

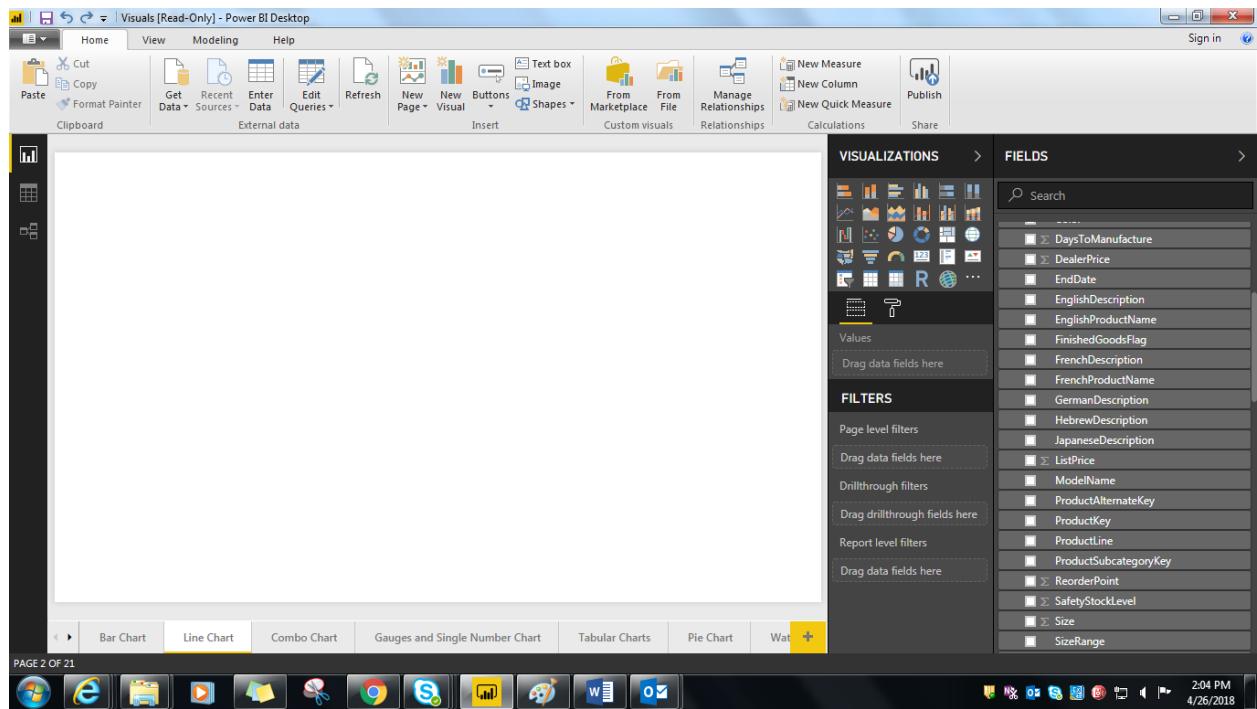
The screenshot shows the Power BI Desktop interface with the Format pane open on the right side of the screen. The Format pane is expanded to show various visual settings like General, Y-Axis, X-Axis, Data colors, Data labels, Plot Area, Title, and Font color. The "EnglishProductCategoryName" dimension and "SalesAmount" measure are still highlighted in the Fields pane. The Format pane also has a "Format" button highlighted with a yellow box.

Lab Exercise: Create Bar chart for “SalesAmount by EnglishProductSubcategoryName” and “SalesAmount by EnglishProductName”.



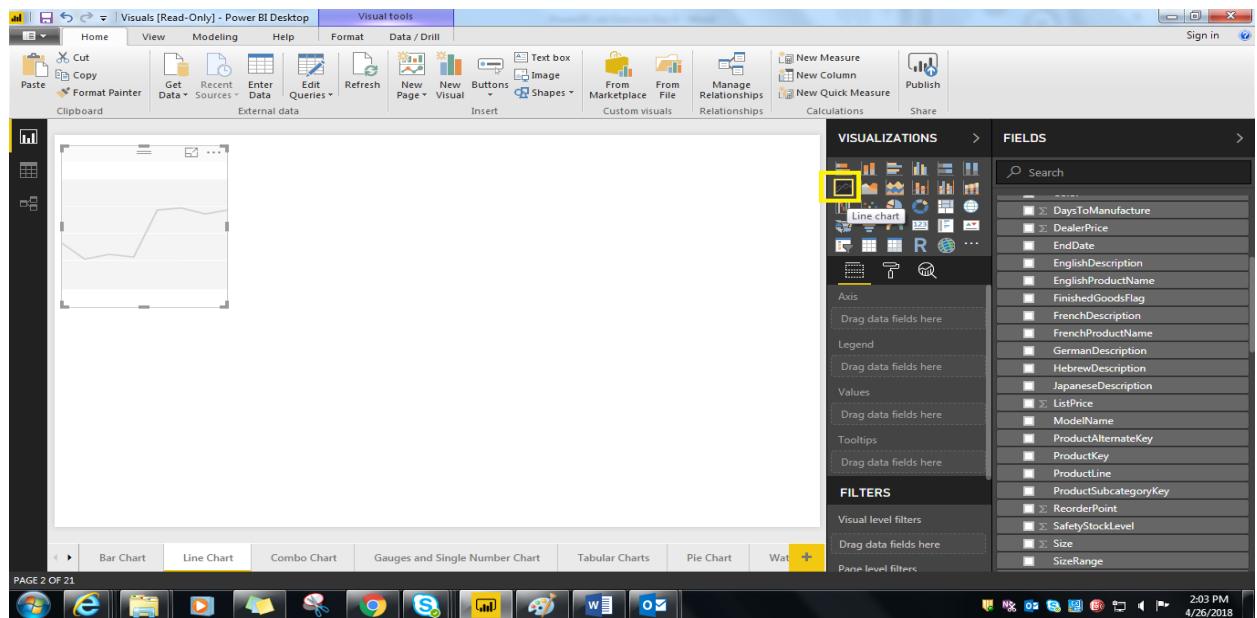
3. Line Chart

Start with a blank Power BI Desktop file.

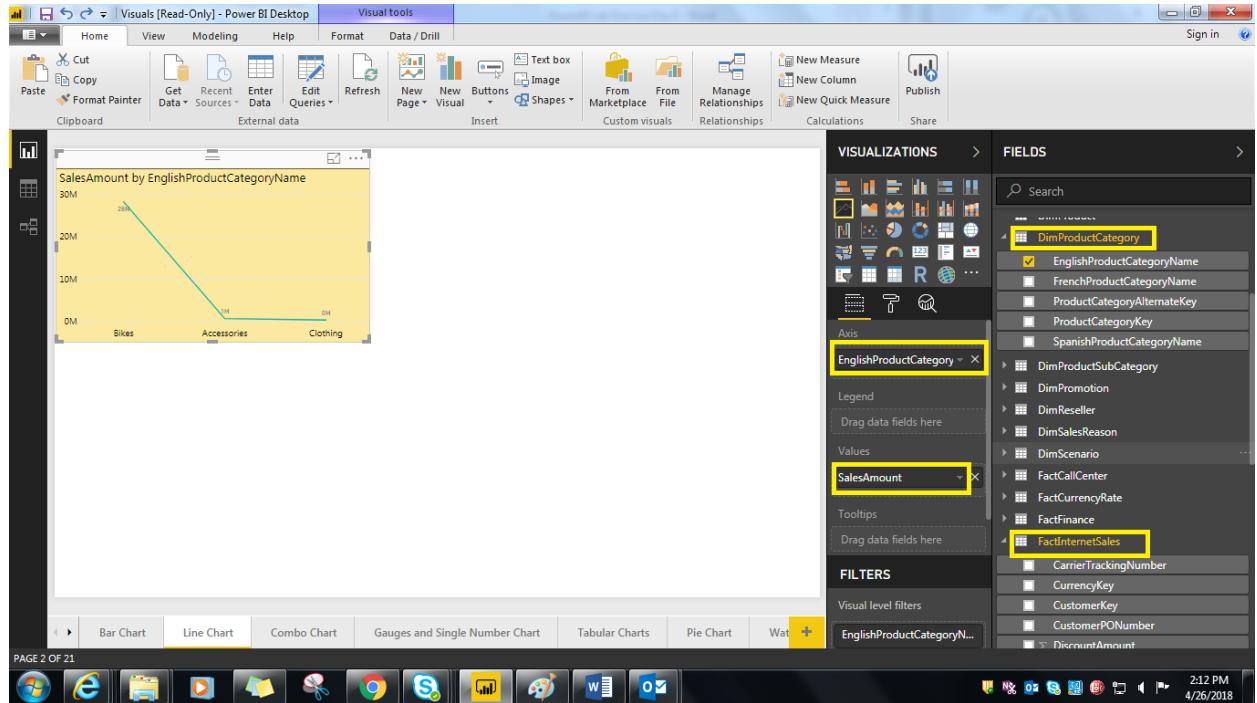


Lab Exercise: Create Line chart for “SalesAmount by EnglishProductcategoryName”

Select Line chart from Visualizations:

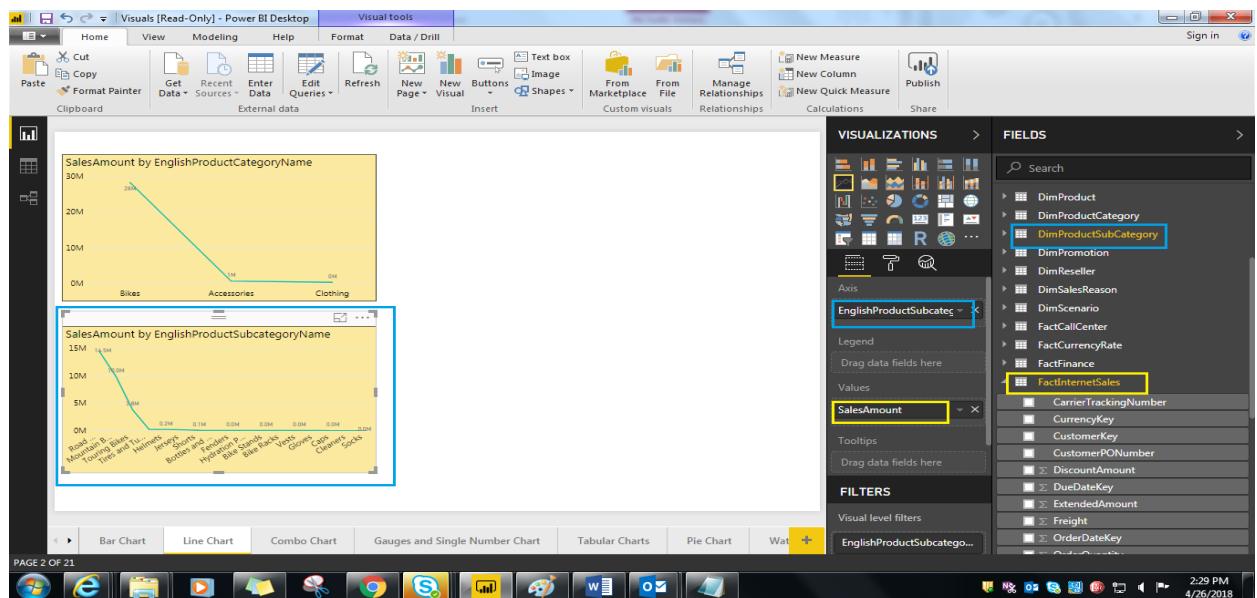


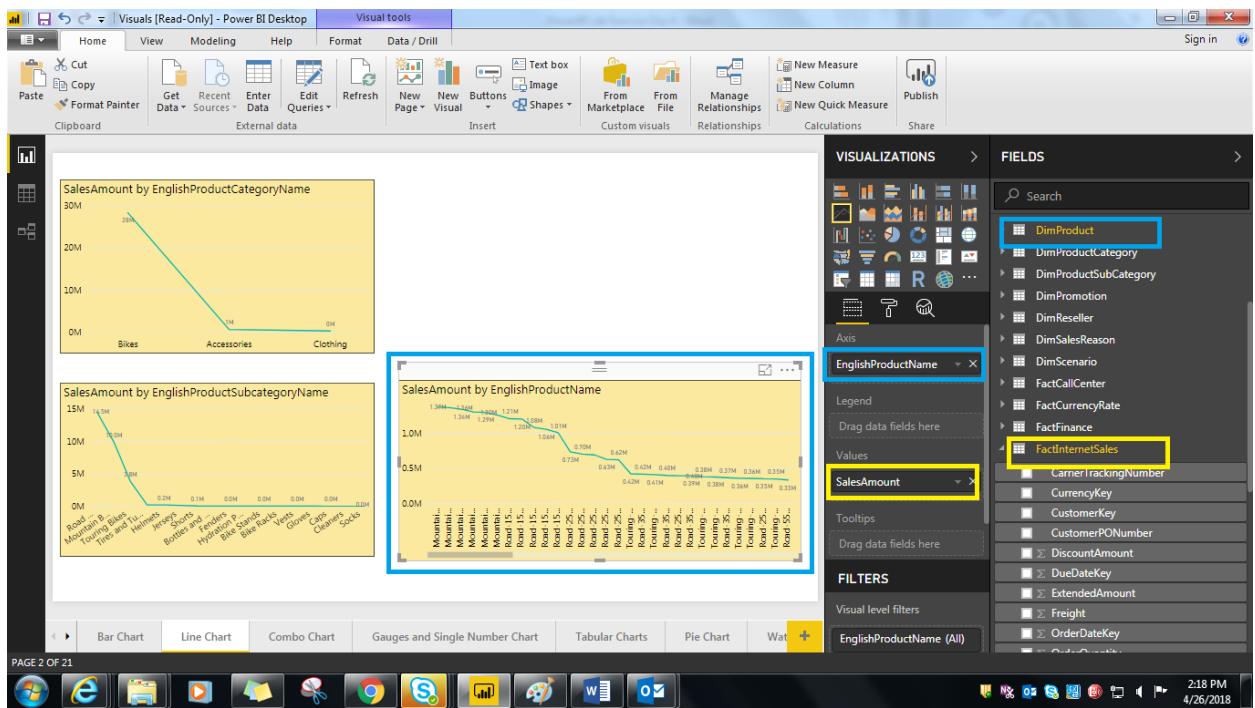
Select Axis and Value fields from respective tables as below and apply some formatting:



Lab Exercise: Create Line chart for “SalesAmount by EnglishProductSubcategoryName” and “SalesAmount by EnglishProductName”.

Select Axis and Value fields from respective tables as below and apply some formatting:



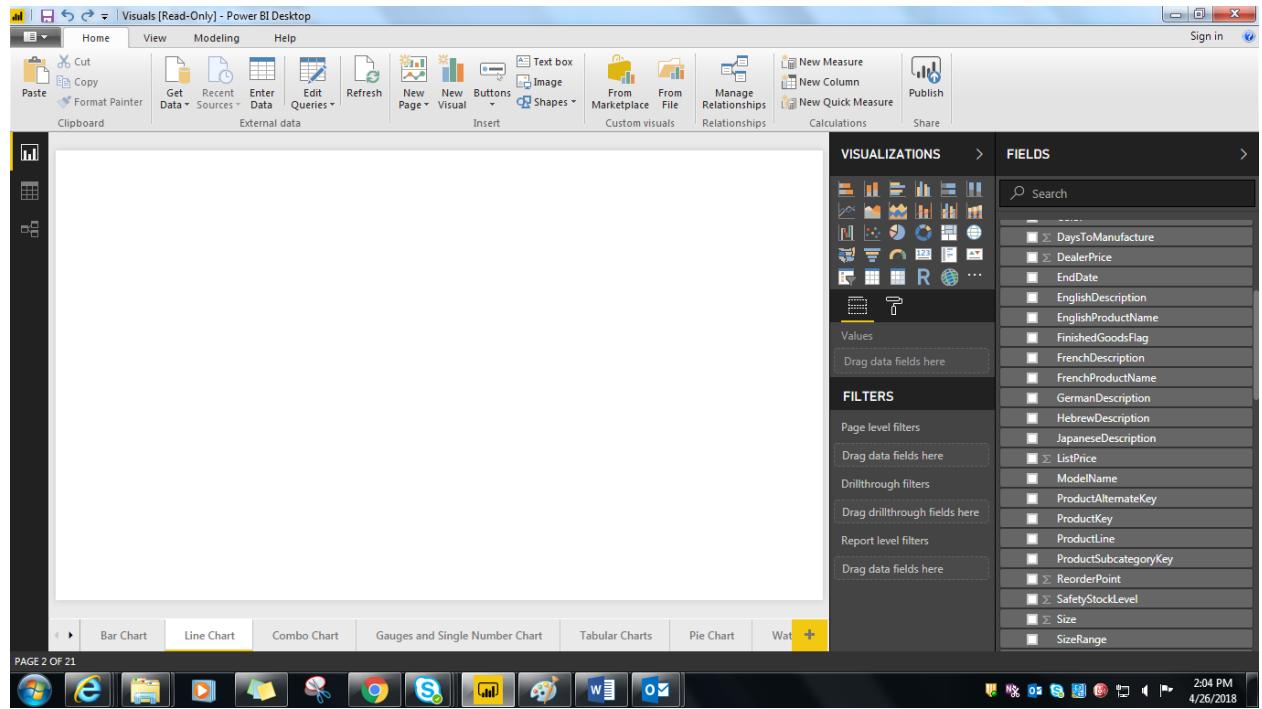


4. Combo Chart

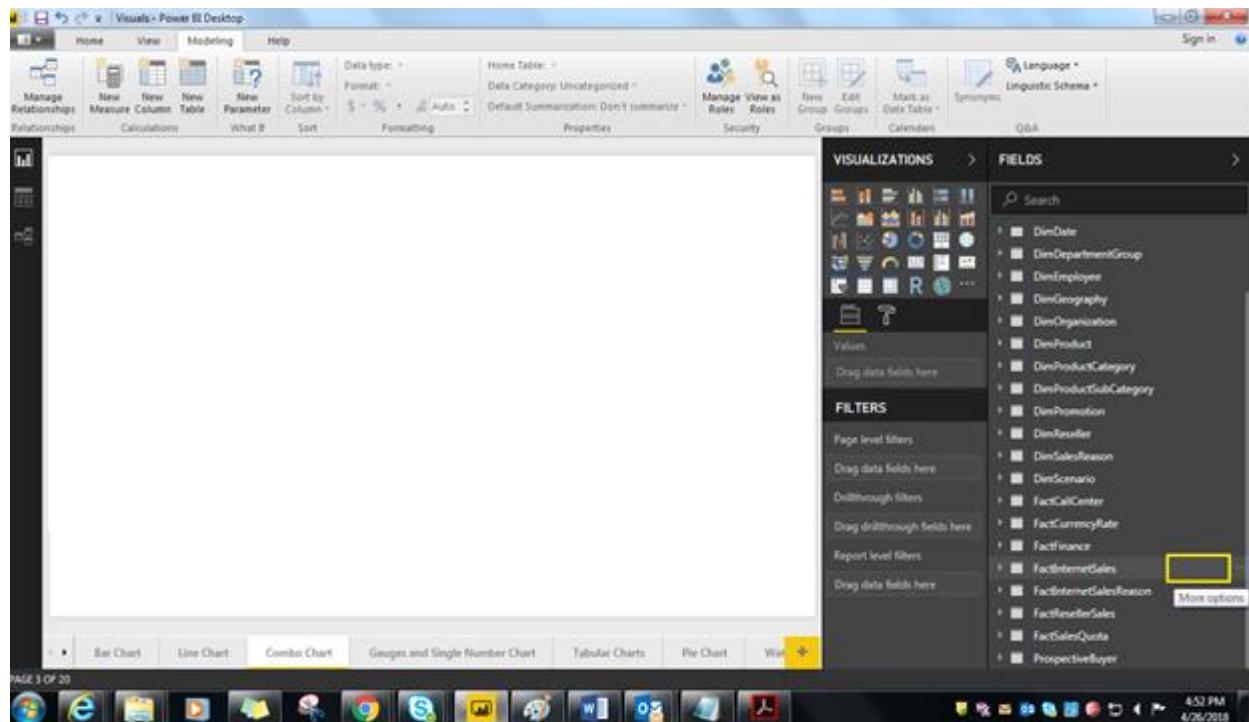
In Power BI, a combo chart is a single visualization that combines a line chart and a column chart. Combining the 2 charts into one lets you make a quicker comparison of the data.

Lab Exercise: Create a Combo chart for showing “**SalesAmount**, **TotalProductCost** and **GrossProfit%** by **CalendarYear**”.

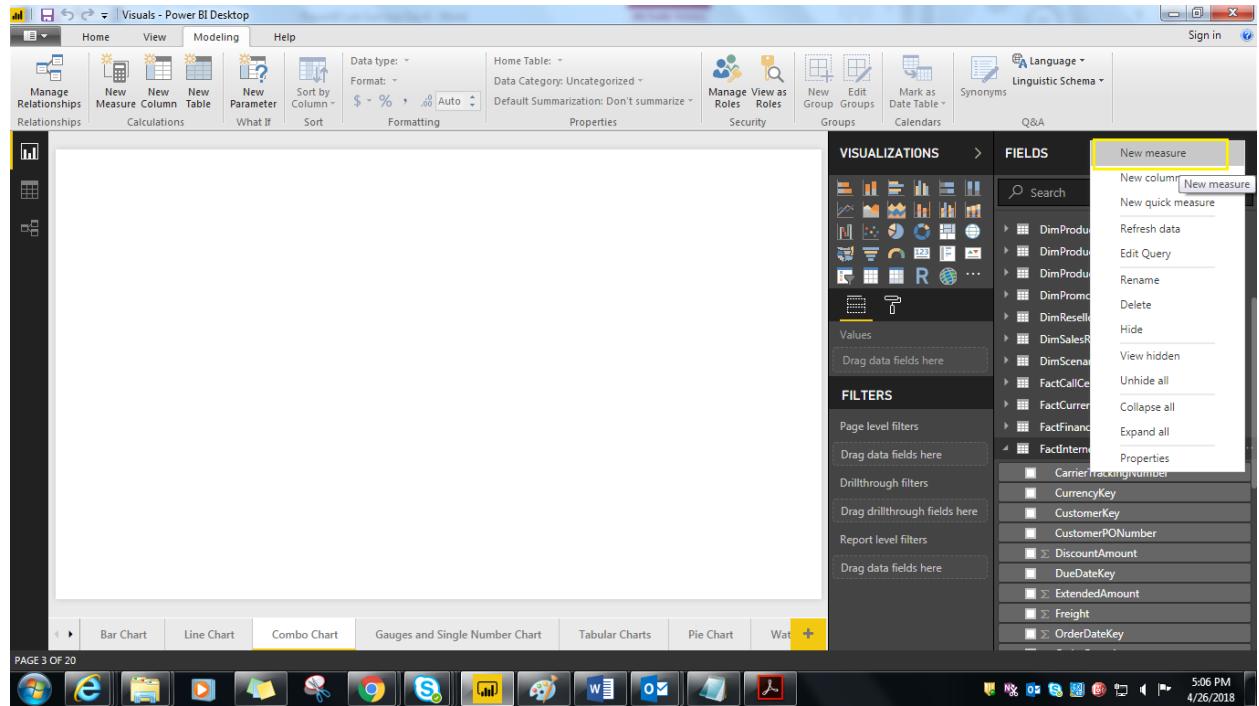
Start with a blank Power BI Desktop file.



Create a measure.

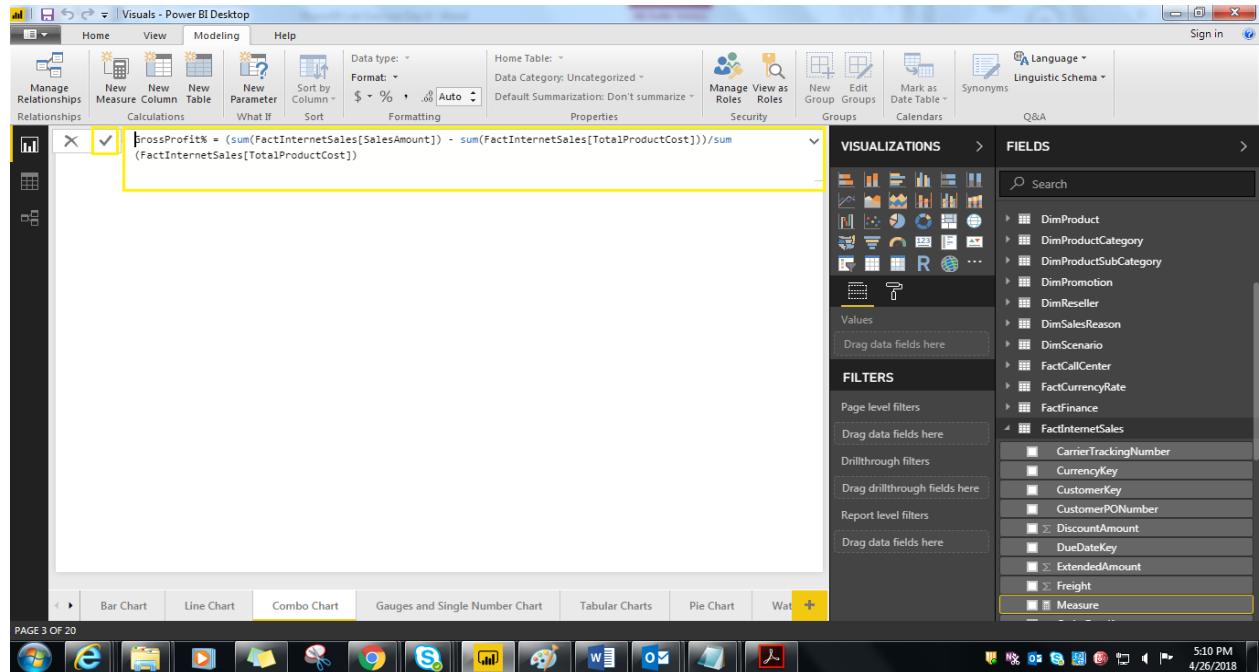


Click on “New Measure”:

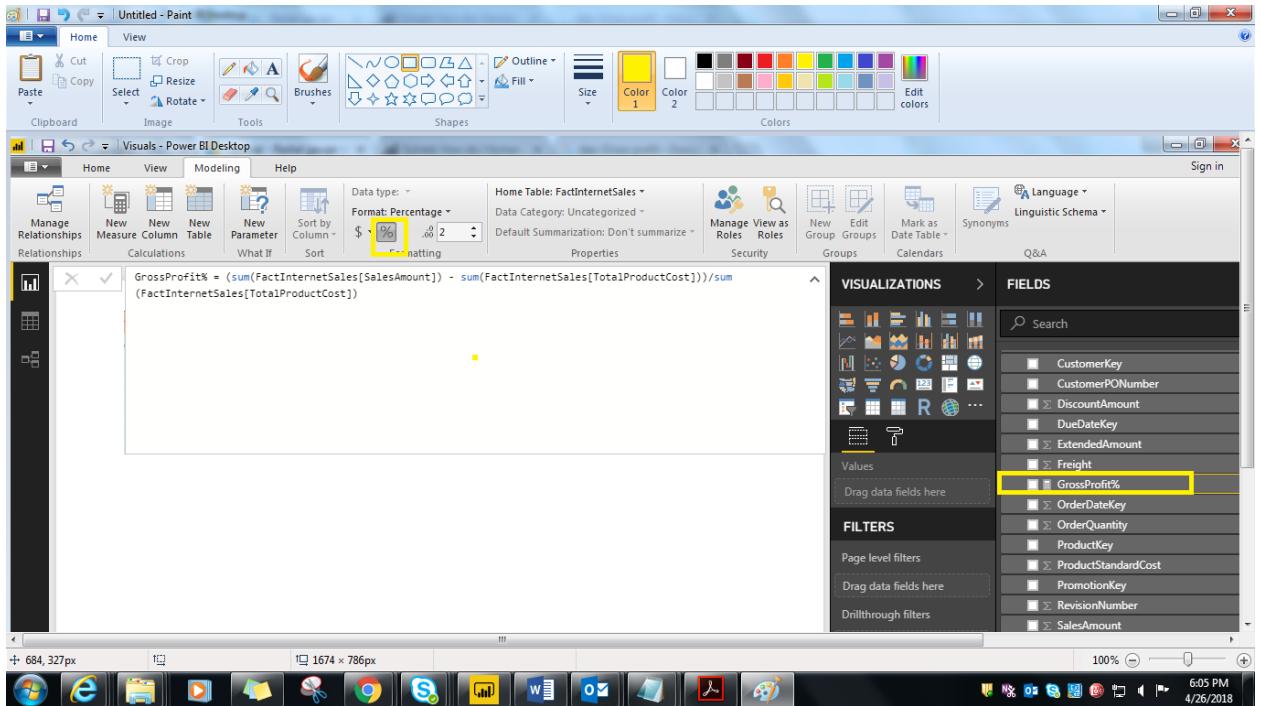


Copy the below formulae and paste in formula bar and click on check option:

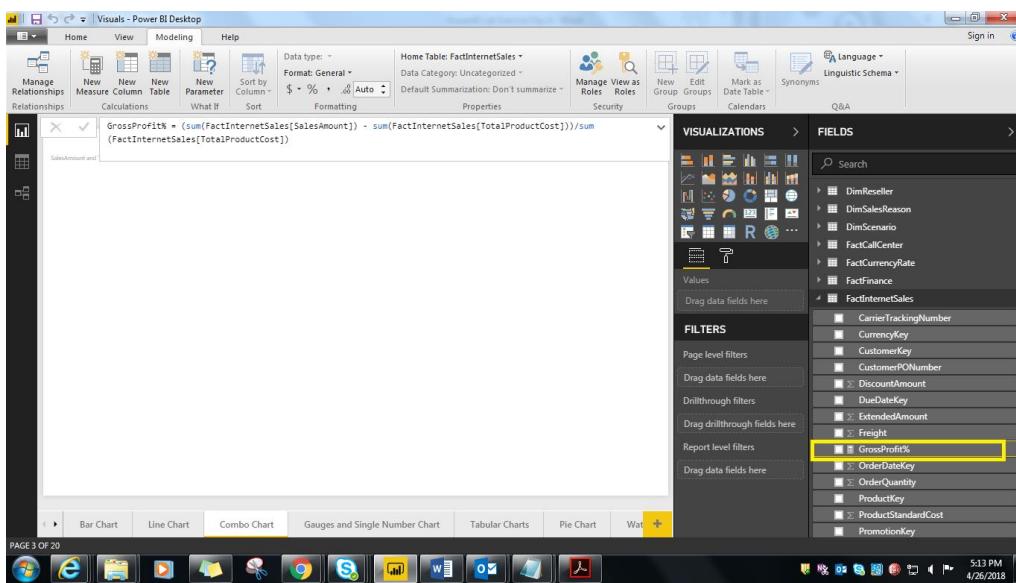
GrossProfit% = (sum(FactInternetSales[SalesAmount]) - sum(FactInternetSales[TotalProductCost]))/sum(FactInternetSales[TotalProductCost])



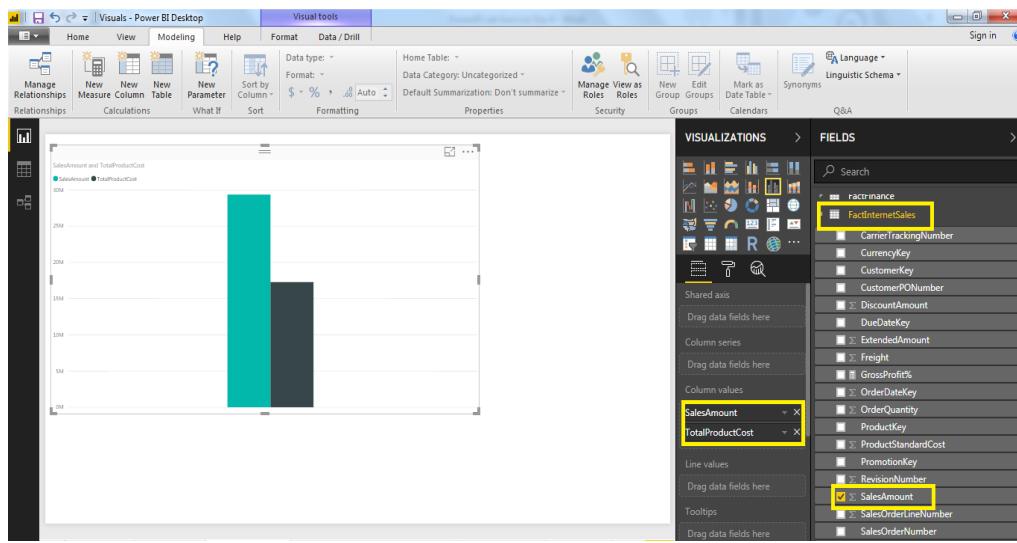
Apply percentage format to measure:



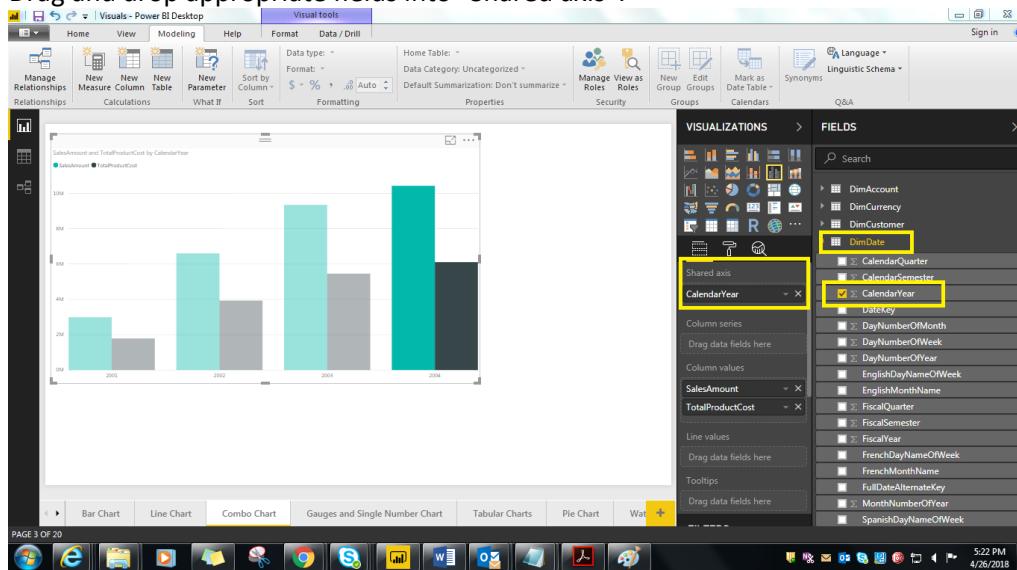
Measure is created:



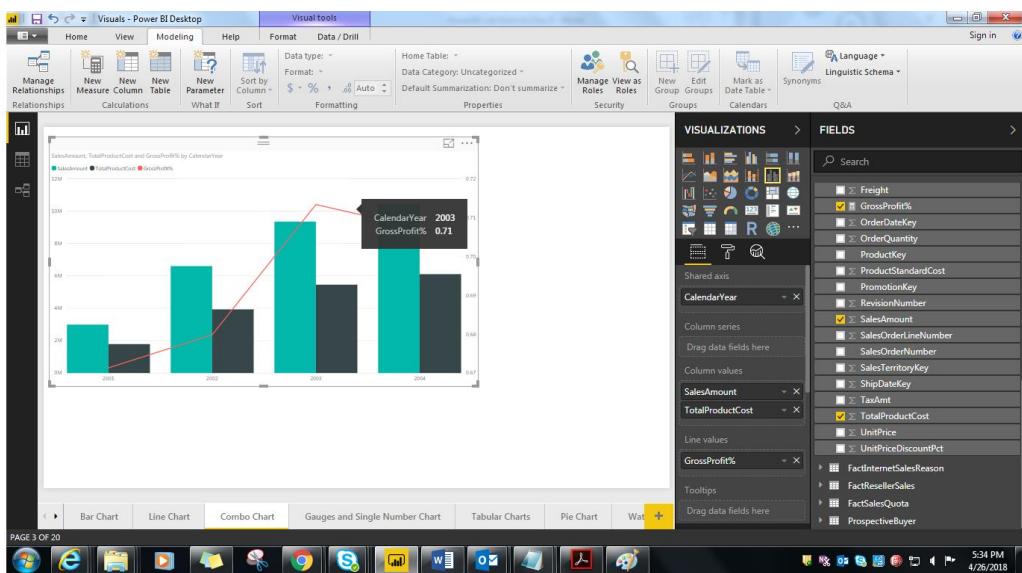
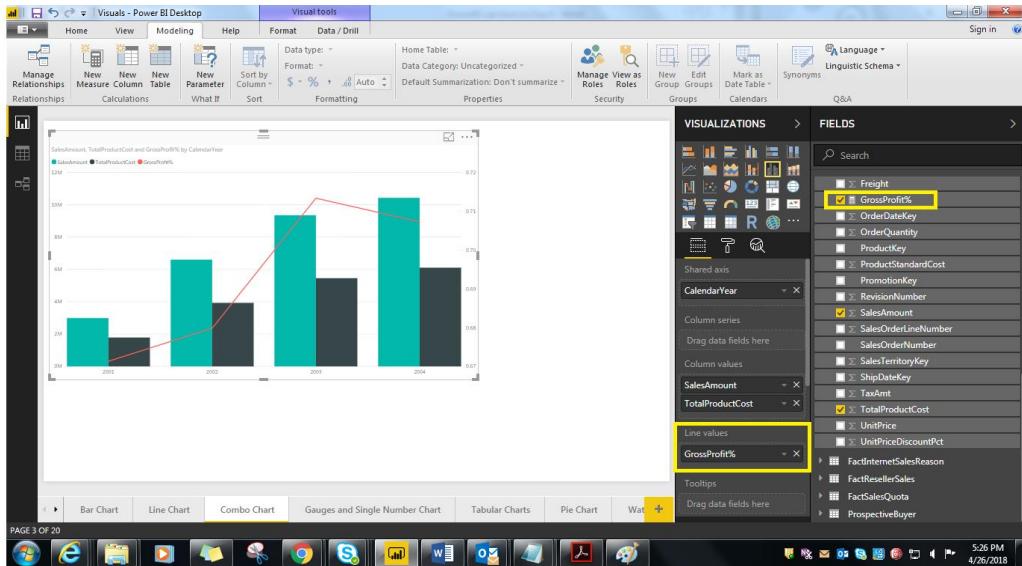
Drag and drop appropriate fields into “Column values”:



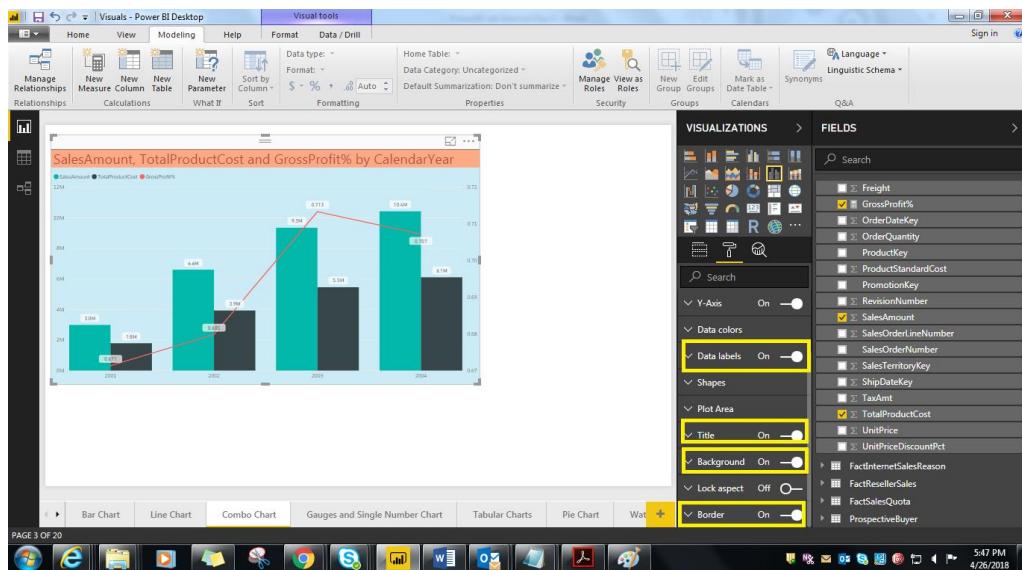
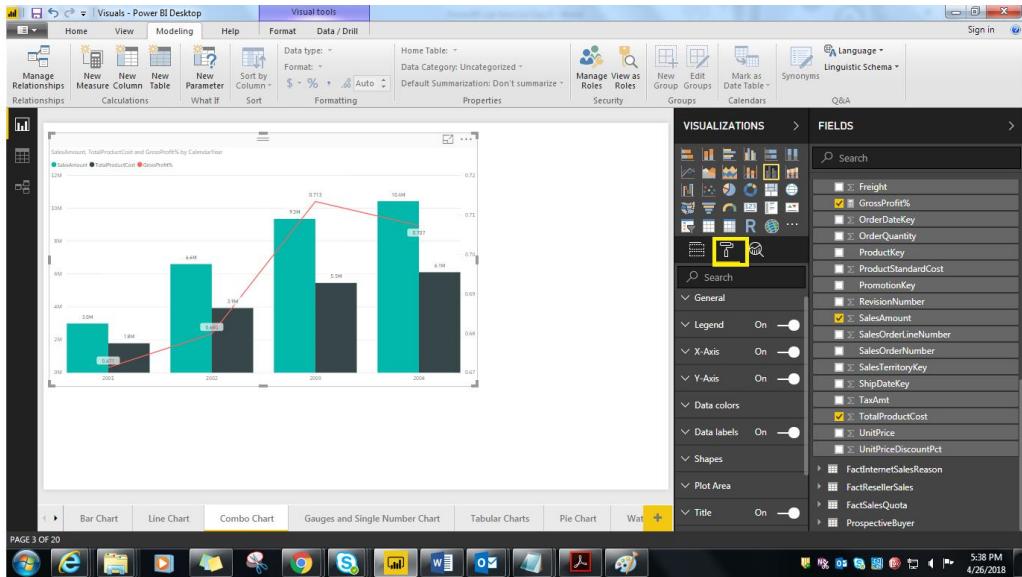
Drag and drop appropriate fields into “Shared axis”:



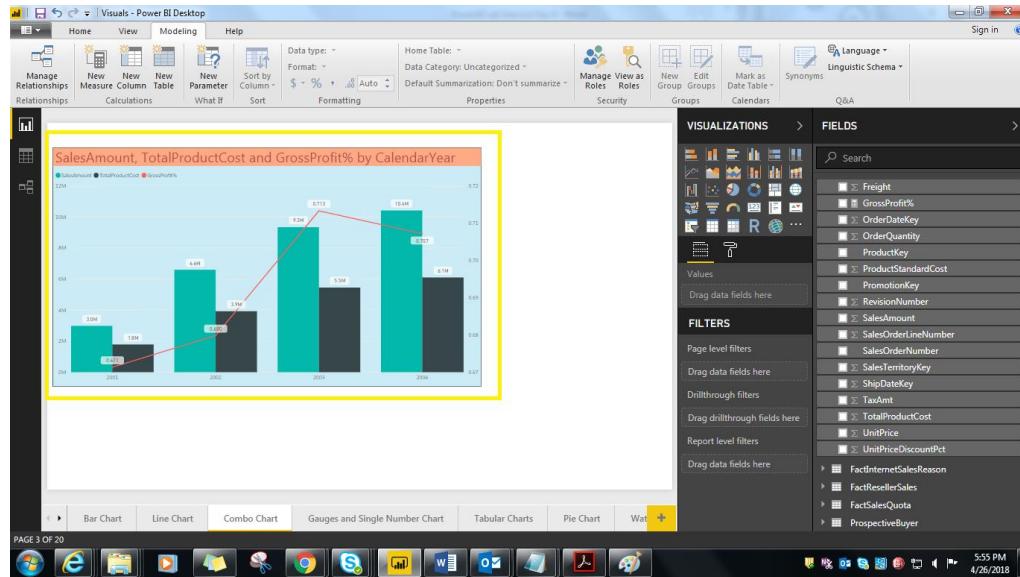
Drag and drop “Grossprofit%” measure into “Line Values”:



Apply some formatting like Data label, Background etc...



Finally we can see the below Combo chart:

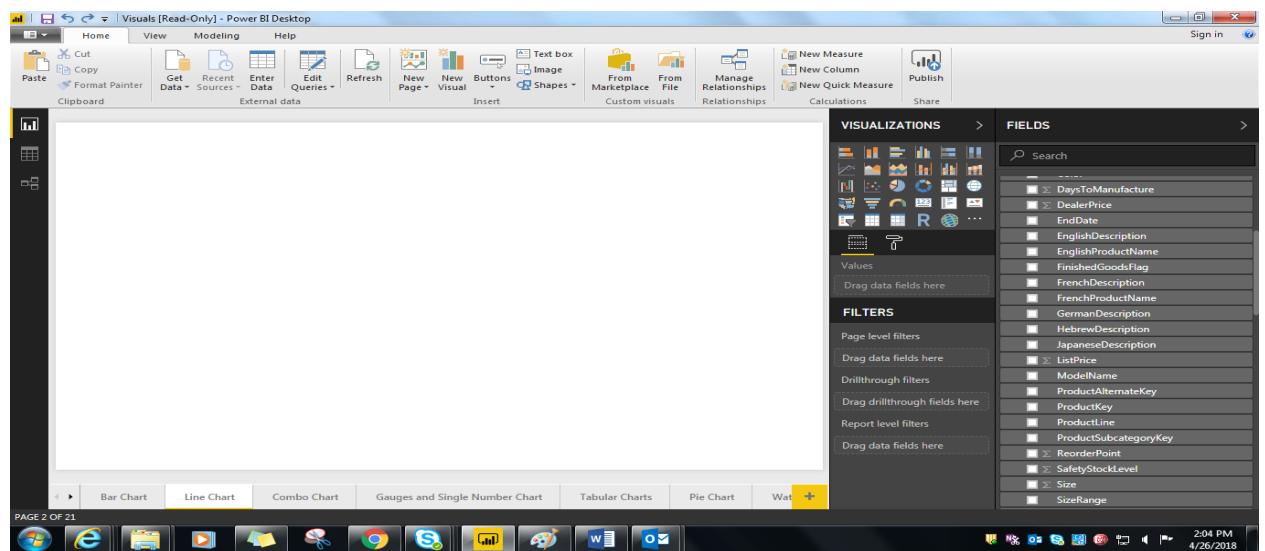


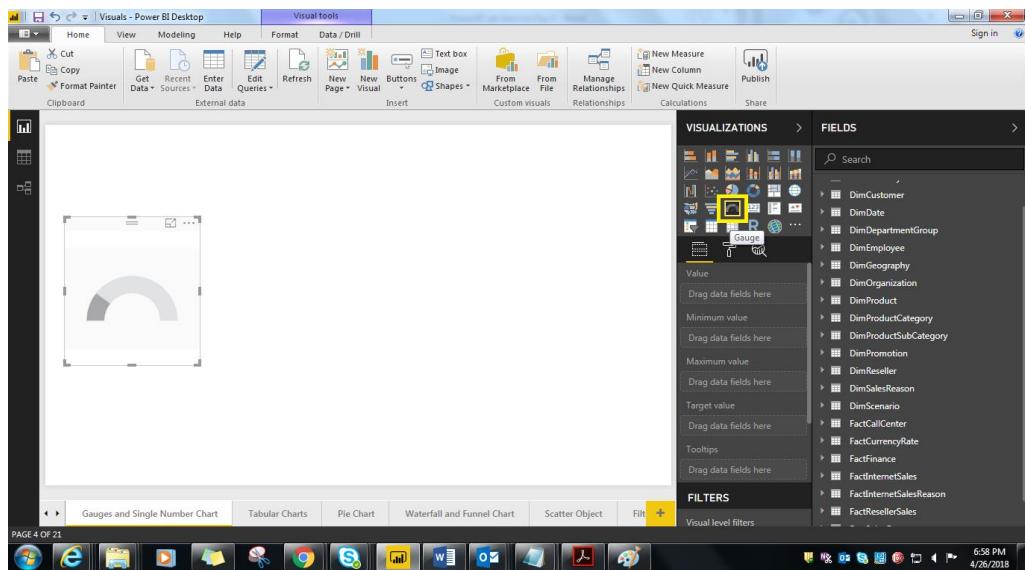
5. Gauges and Single Number Chart

A radial gauge chart has a circular arc and displays a single value that measures progress toward a goal/KPI.

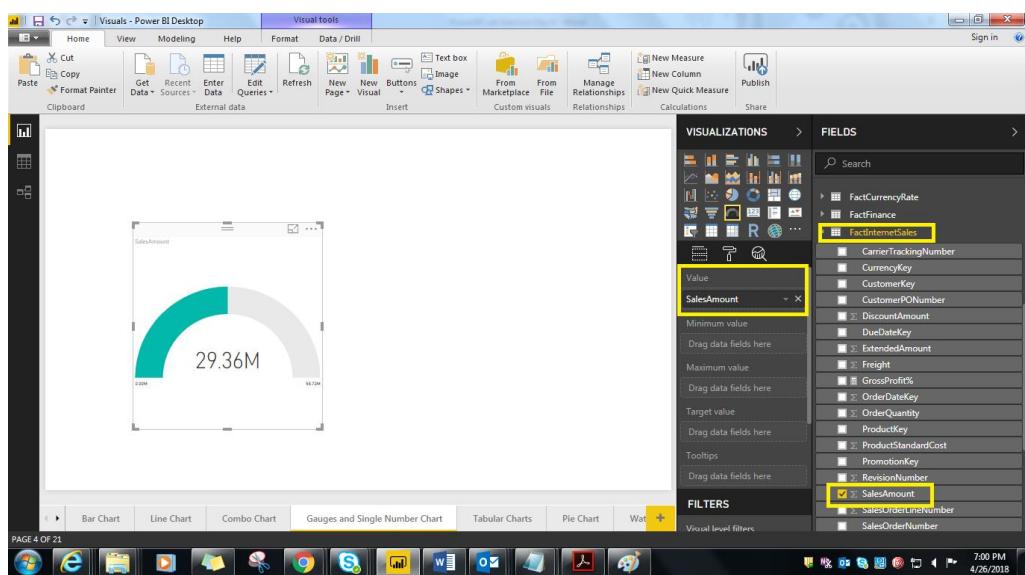
Lab Exercise: **Create Gauge chart for “SalesAmount”.**

Start with a blank Power BI Desktop page:

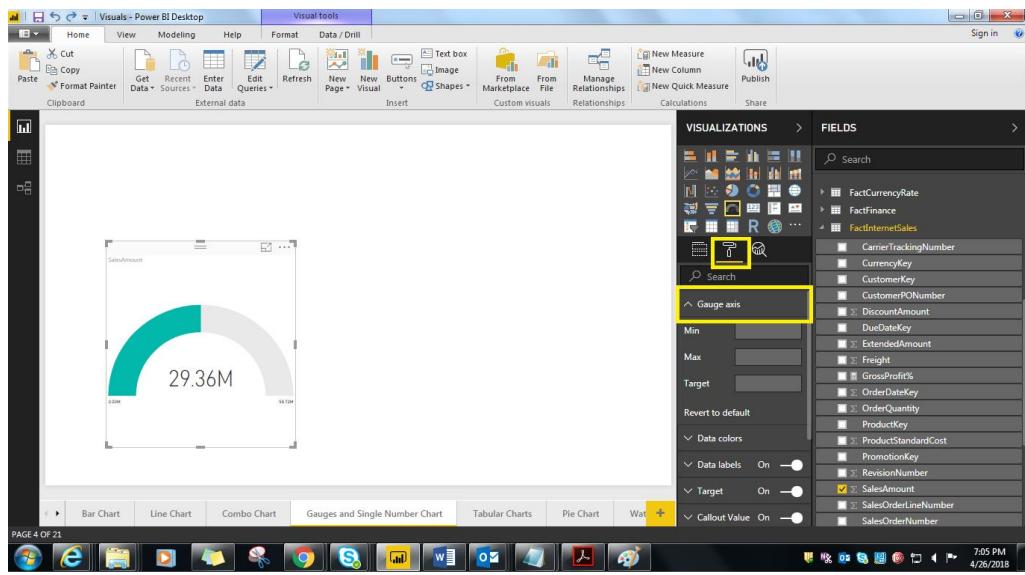




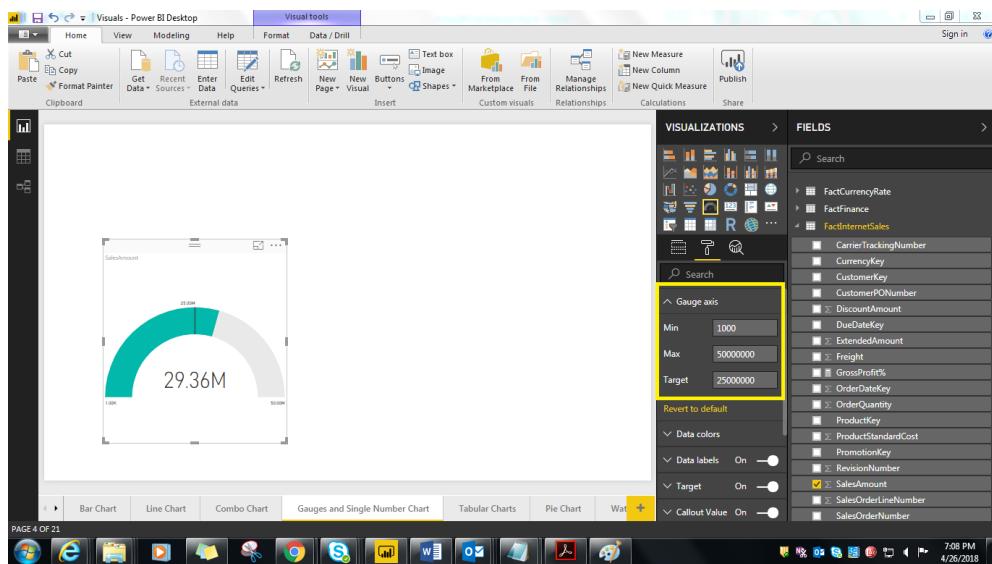
Drag and drop “SalesAmount” into “Value”:



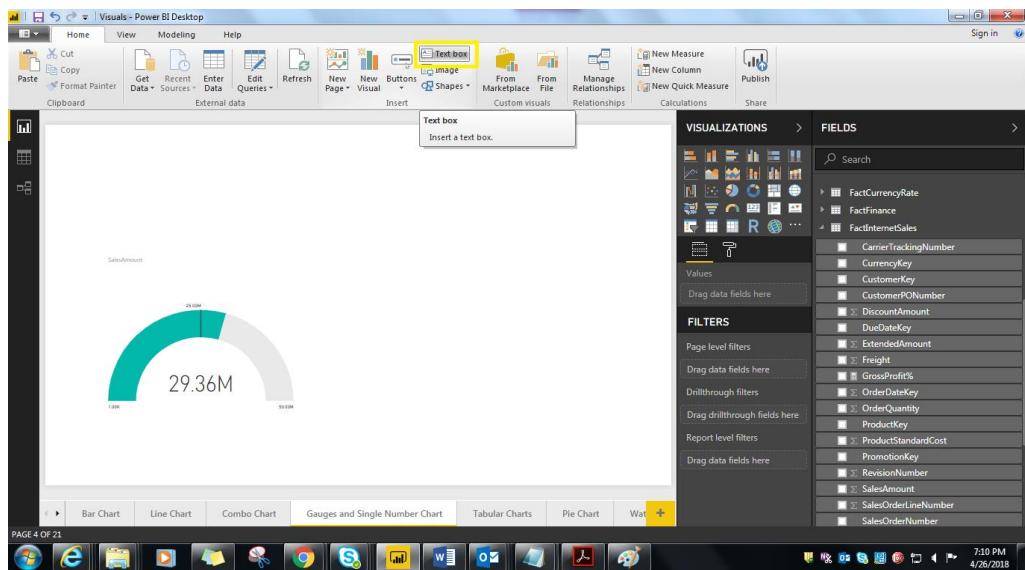
Go to “Gauge axis”:



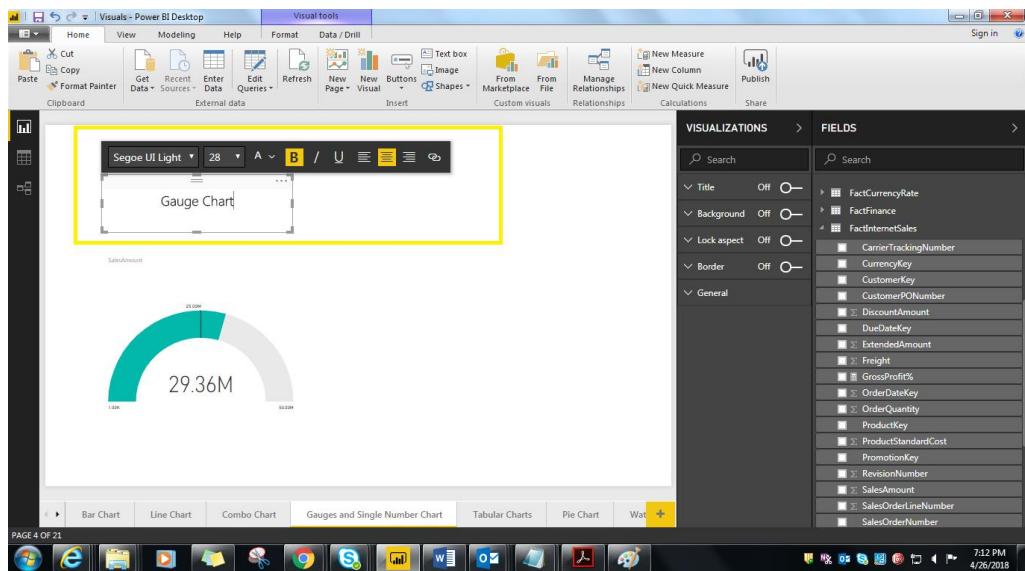
Define Min, Max & Target values:



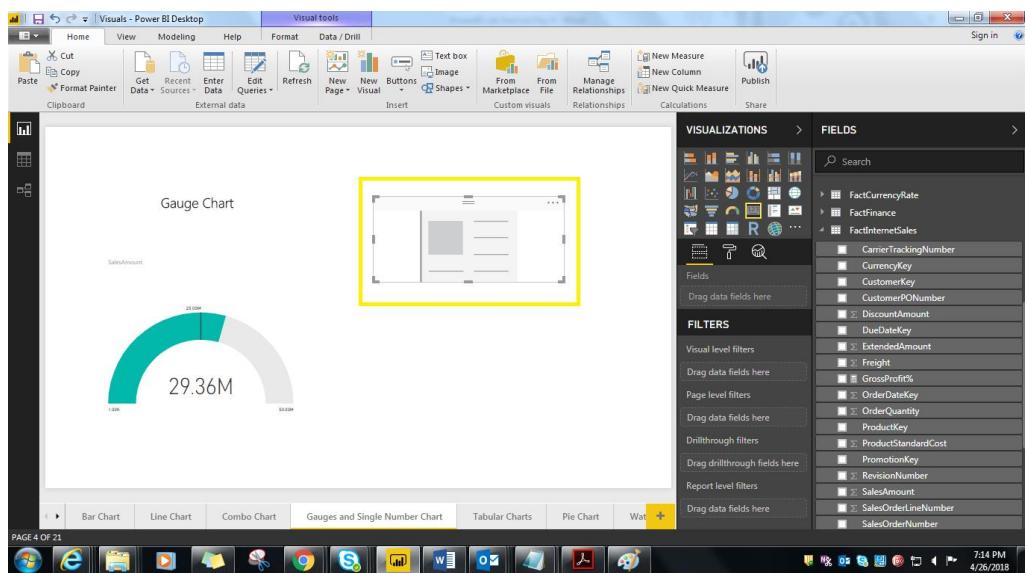
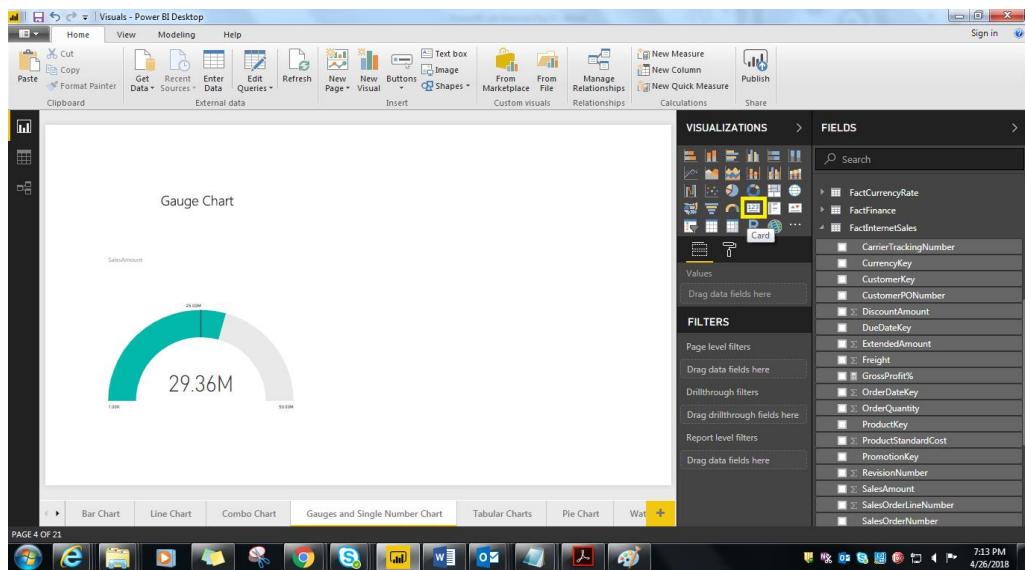
Take a Text box:



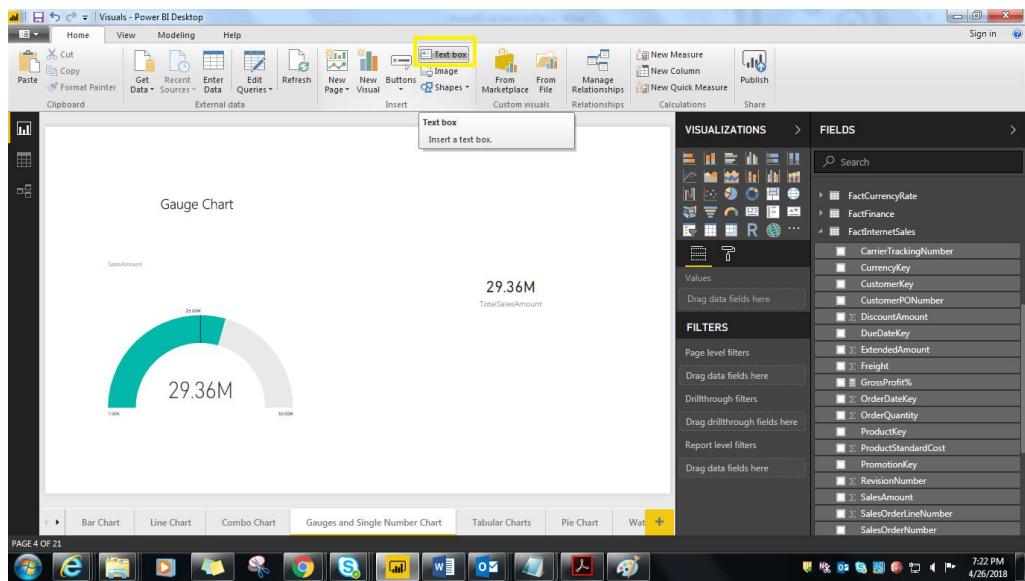
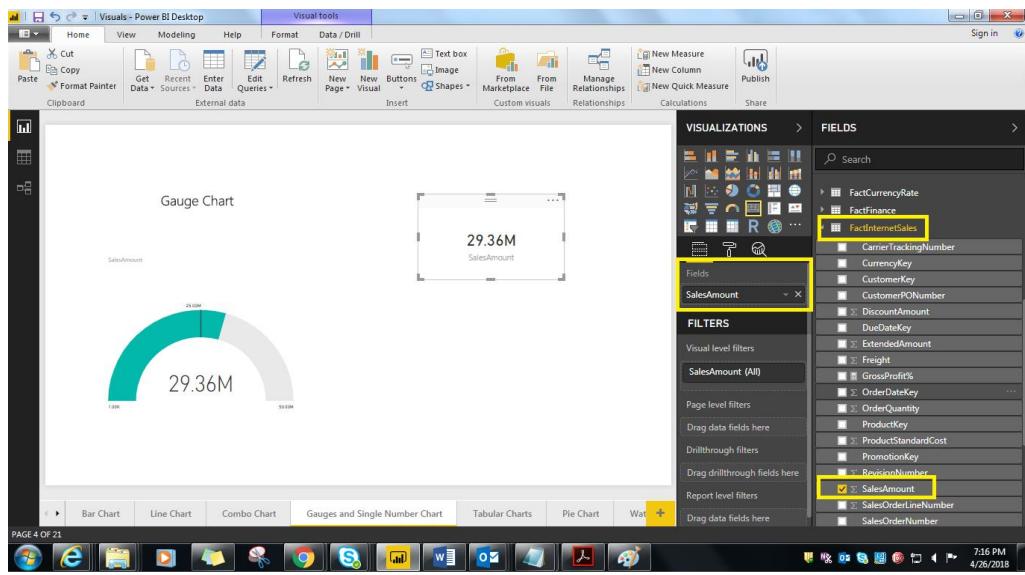
Give the report name in the Text box:



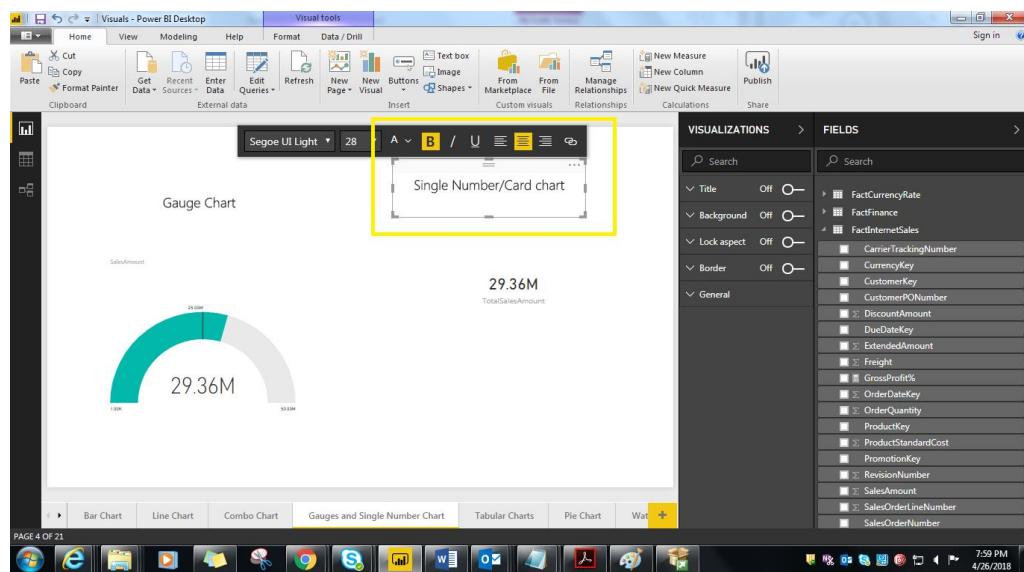
Take Card chart from the Visualizations:



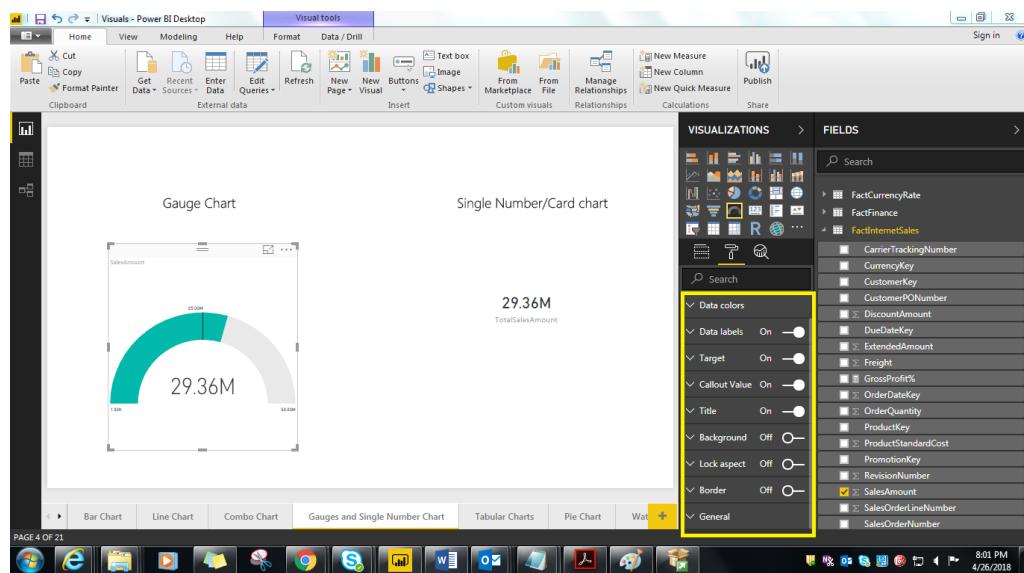
Drag and drop "SalesAmount" field:

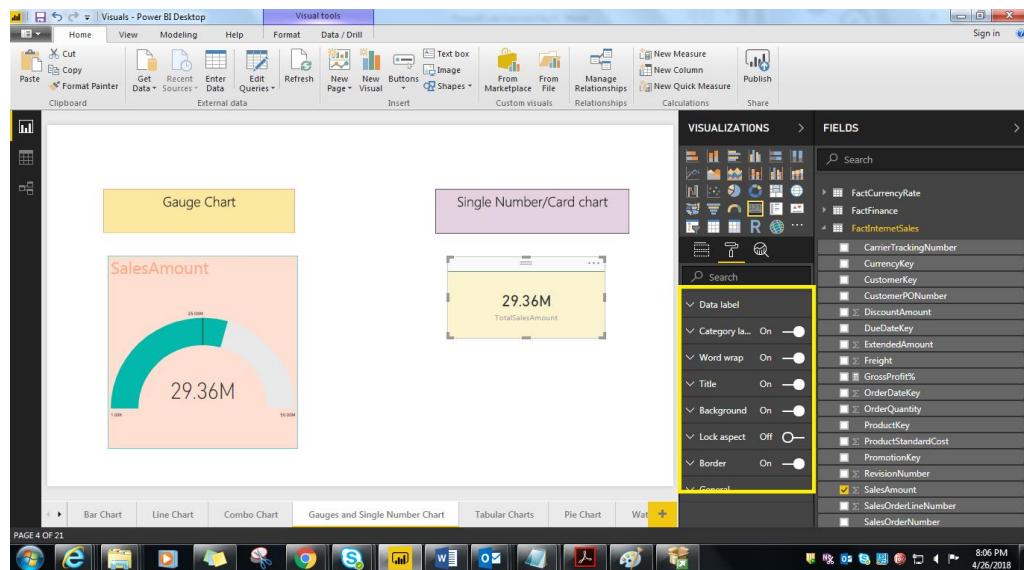
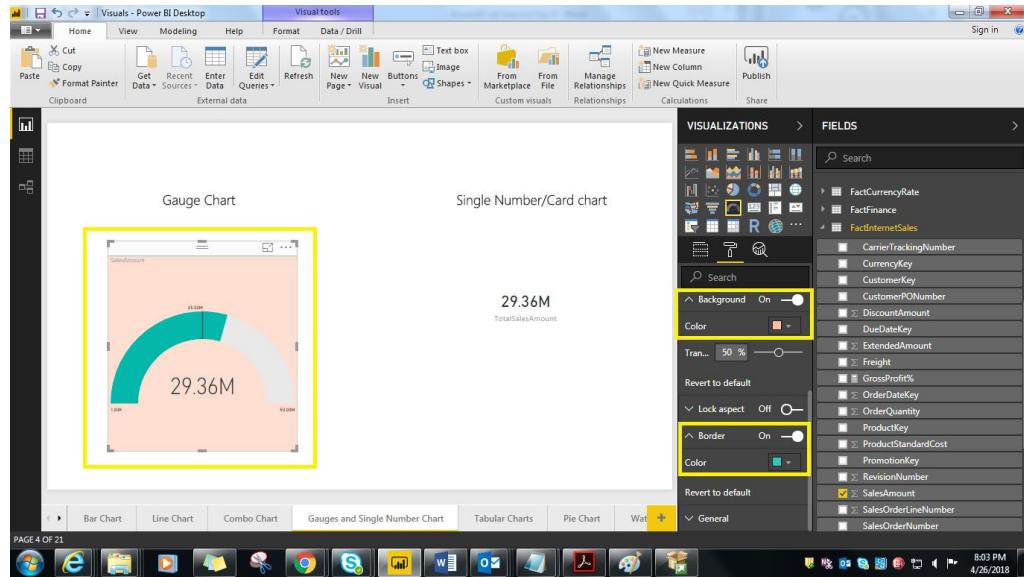


Give the report name in the Text box:



Apply some formatting:

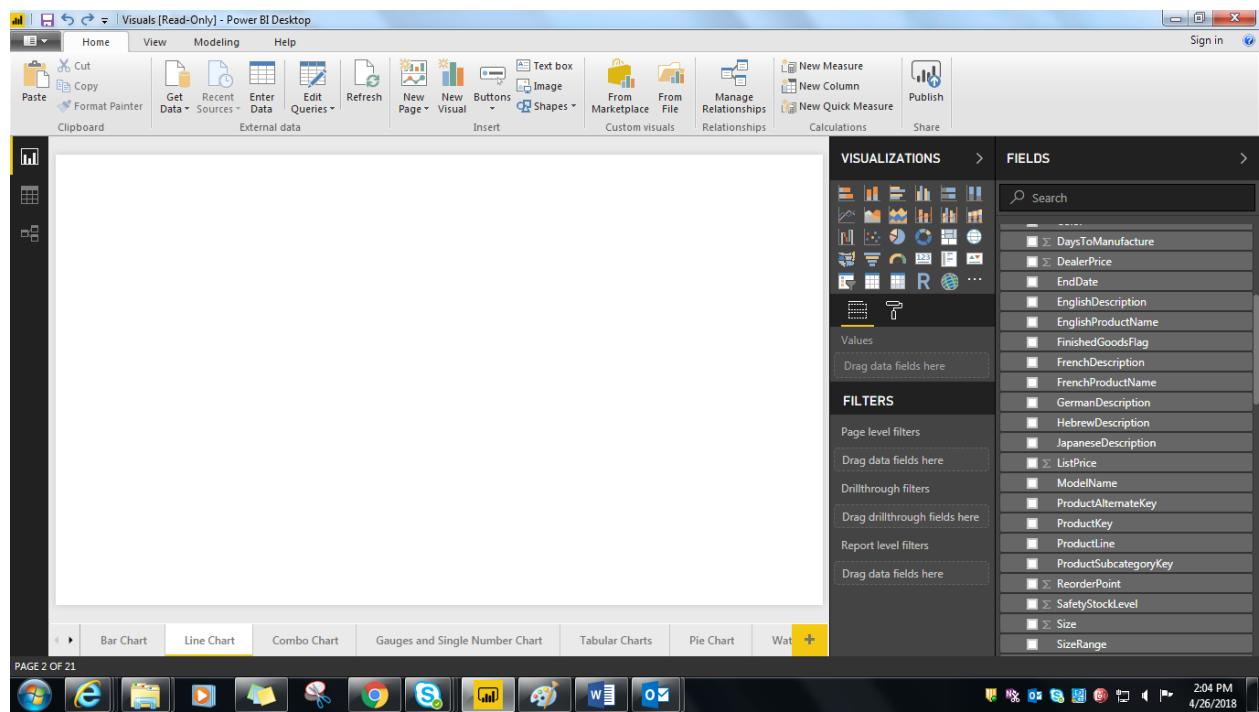




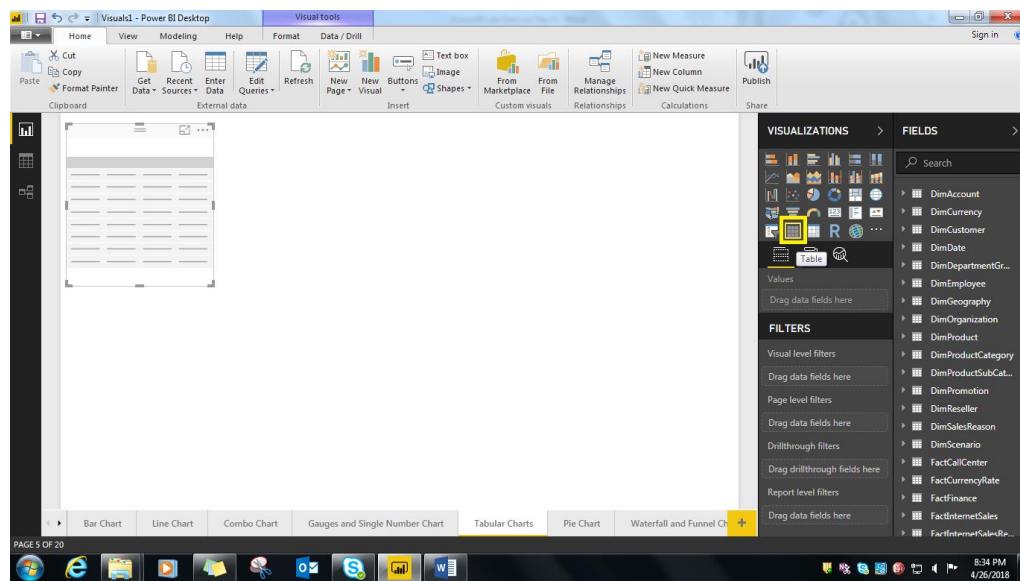
6. Tabular Charts:

Lab Exercise: Create Tabular report for “dealer Price by ProductCategoryName, ProductSubCategoryName, ProductName, Class, Style and Modelname”.

Start with a blank Power BI Desktop page:



Go to “Table” in Visualizations:



Drag and drop appropriate “fields” into “Values”:

The screenshot shows the Power BI Desktop interface. On the left, a Tabular Chart visual displays a list of products with columns: Class, DealerPrice, EnglishProductName, ModelName, Style, EnglishProductCategoryName, and EnglishProductSubcategoryName. The data includes various items like 'All Purpose Bike Stand', 'AWC Logo Cap', and 'Chain'. The total value is listed as 177,195.88. On the right, the Fields pane is open, showing the 'DimProduct' table with fields such as Class, DealerPrice, EnglishProductName, ModelName, Style, EnglishProductCategory, and EnglishProductSubcategory. Several fields are selected, indicated by yellow boxes around their names in the list.

Select “Slicer” from the Visualizations:

This screenshot is similar to the previous one but focuses on the Visualizations pane. The 'Slicer' icon is highlighted with a yellow box in the list of visualization types. The rest of the interface, including the Tabular Chart and Fields pane, remains the same as in the first screenshot.

Drag and drop appropriate field:

The screenshot shows the Power BI Desktop interface. On the left, there is a table visualization with columns: Class, DealerPrice, EnglishProductName, ModelName, Style, EnglishProductCategoryName, and EnglishProductSubcategoryName. The table contains numerous rows of product data. On the right, the 'FIELDS' pane is open, showing a list of dimensions and their sub-categories. A specific dimension, 'DimProductCategory', is selected and highlighted with a yellow box. Underneath it, the 'EnglishProductCategory' field is checked. The status bar at the bottom right indicates the time as 8:44 PM and the date as 4/26/2018.

Enable “Select All” option:

This screenshot shows the same Power BI Desktop interface as above, but with a different focus. The 'Selection Controls' section in the 'FIELDS' pane is highlighted with a yellow box. It includes options for 'Show *...' (On) and 'Single S...' (Off). The 'DimProductCategory' dimension is still selected in the list. The status bar at the bottom right shows 8:47 PM on 4/26/2018.

Drag and drop appropriate fields:

The screenshot shows the Power BI Desktop interface. On the left, there is a table visual displaying product data with columns: Class, DealerPrice, EnglishProductName, ModelName, Style, EnglishProductCategoryName, and EnglishProductSubcategoryName. The data includes various items like 'All Purpose Bike Stand', 'Bike Wash', 'Cable Lock', etc. On the right, the 'FIELDS' pane is open, showing a tree view of dimensions and measures. A yellow box highlights the 'EnglishProductSubcategoryName' node under 'Values'. The status bar at the bottom indicates 'PAGE 5 OF 20' and the date '4/26/2018'.

Enable “Select All” option:

This screenshot shows the same Power BI Desktop interface as above, but with a different focus in the Fields pane. A yellow box highlights the 'Select All (Blank)' checkbox under the 'General' section of the 'Selection Controls' group. The status bar at the bottom indicates 'PAGE 5 OF 20' and the date '4/26/2018'.

Drag and drop Slicer and appropriate fields into it:

The screenshot shows the Power BI Desktop interface with the 'Visuals1 - Power BI Desktop' window open. The ribbon at the top includes Home, View, Modeling, Help, Format, Data / Drill, and a sign-in button. The left sidebar contains various icons for clipboard operations like Cut, Copy, Paste, and Insert. The main area displays a table of product data with columns: Class, DealerPrice, EnglishProductName, ModelName, Style, EnglishProductCategoryName, and EnglishProductSubcategoryName. The Fields pane on the right lists dimensions and measures. A yellow box highlights the 'EnglishProductName' field under the 'EnglishProductCategoryName' node. Another yellow box highlights the 'EnglishProductName' node itself.

Enable “Select All” option:

This screenshot is similar to the one above, but it shows the 'Selection Controls' section expanded in the Fields pane. A yellow box highlights the 'Show "S..."' toggle switch, which is set to 'On'. Another yellow box highlights the 'EnglishProductName' field under the 'EnglishProductCategoryName' node. A third yellow box highlights the 'EnglishProductName' node itself.

Drag “Text box”:

The screenshot shows the Power BI Desktop interface. The ribbon at the top has a 'Text box' icon highlighted with a yellow box. The main area displays a tabular chart with data from the 'EnglishProductSubcategoryName' table. The Fields pane on the right lists various product categories like 'Accessories', 'Bikes', 'Clothing', etc. The status bar at the bottom shows '9:01 PM 4/26/2018'.

Write “Report name” in Text box:

This screenshot shows the same Power BI Desktop environment as the previous one, but the title of the visual has been changed to 'Tabular Charts'. The 'Text box' icon in the ribbon is also highlighted with a yellow box. The visual content and Fields pane remain the same.

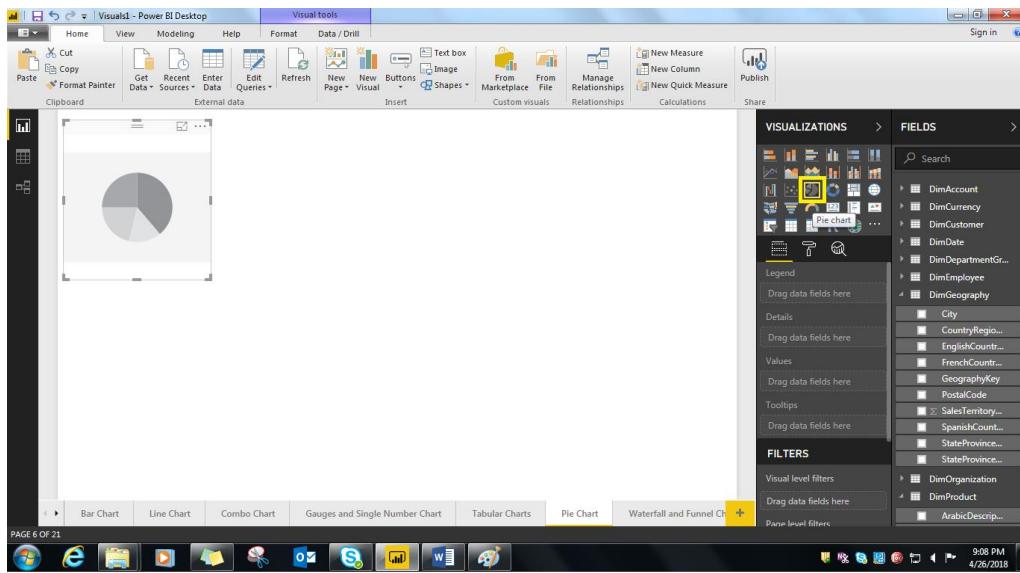
Do the formatting for all Visuals and the final report looks like below:

7. Pie Chart:

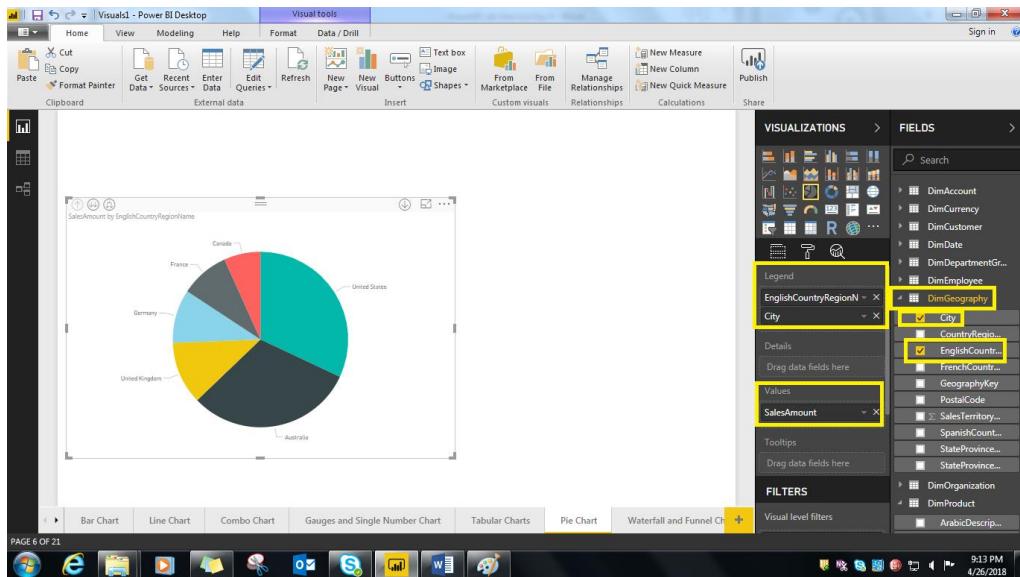
Lab Exercise: Create a Pie chart for “Sales amount by CountryRegionname and City”

Start with a blank Power BI Desktop page:

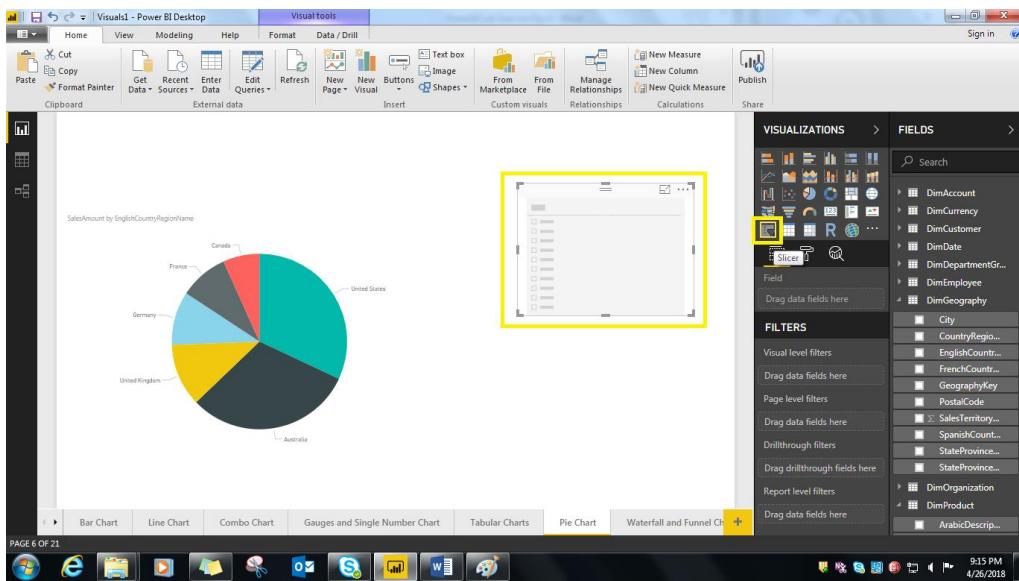
Drag and drop "Pie chart":



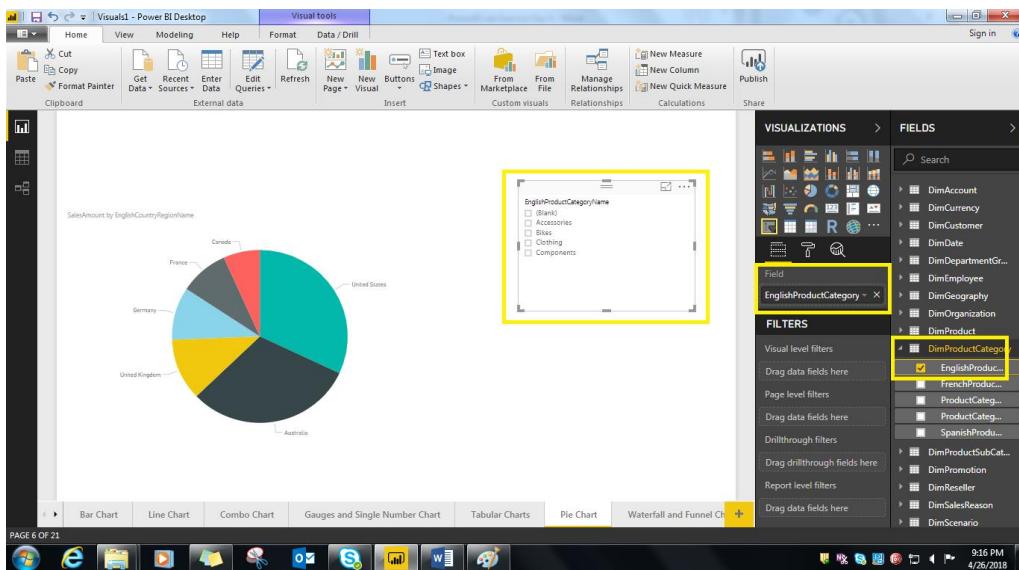
Drag and drop appropriate fields:



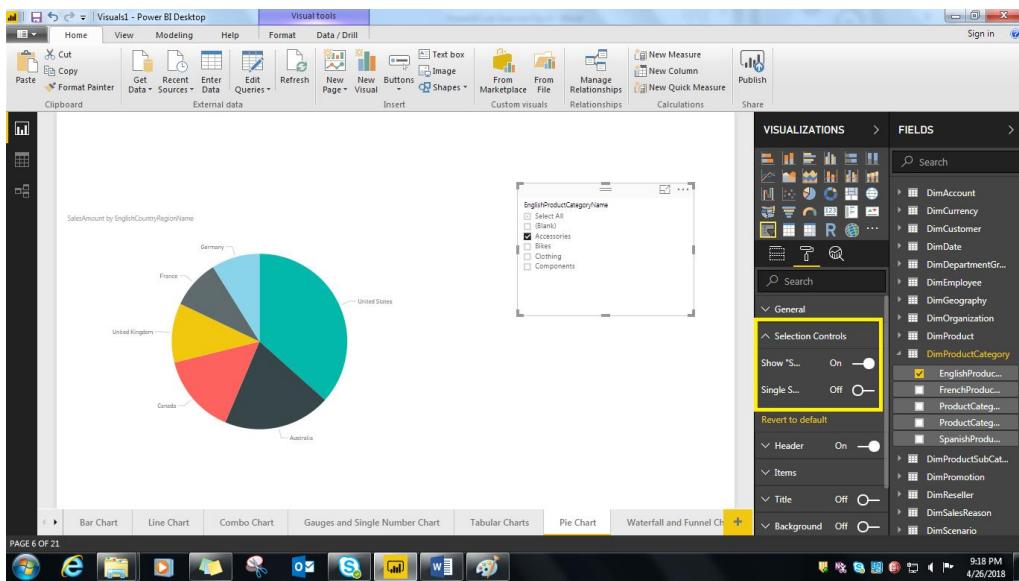
Drag and drop Slicer:



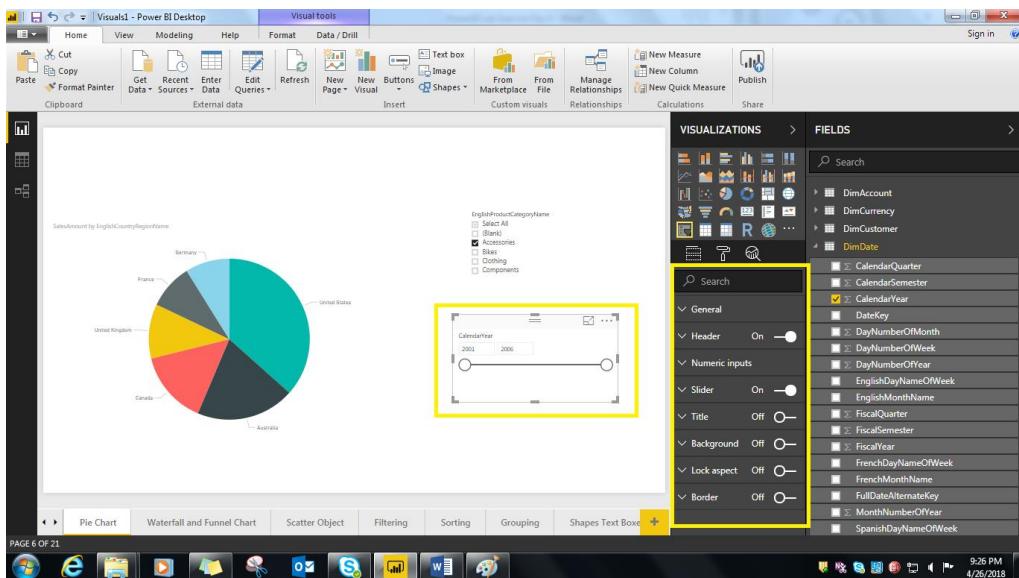
Drag and drop appropriate fields:



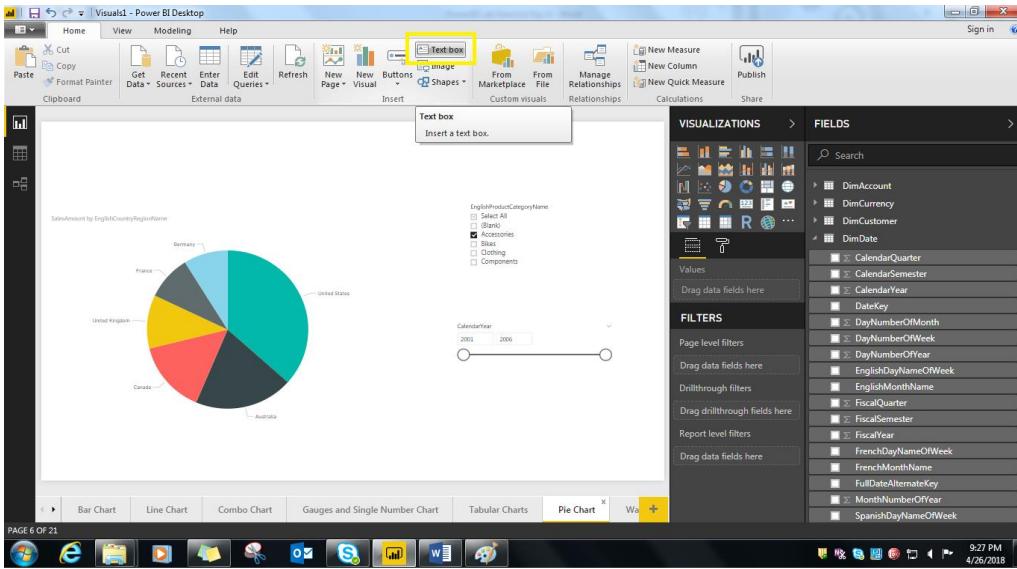
Enable “Select All” option:



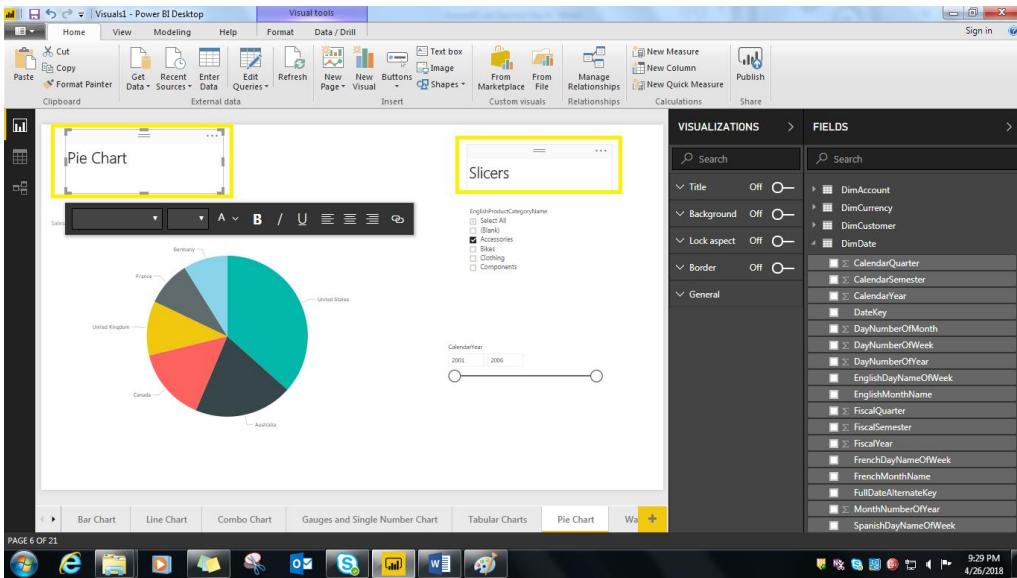
Take another Slicer and drag and drop appropriate fields:



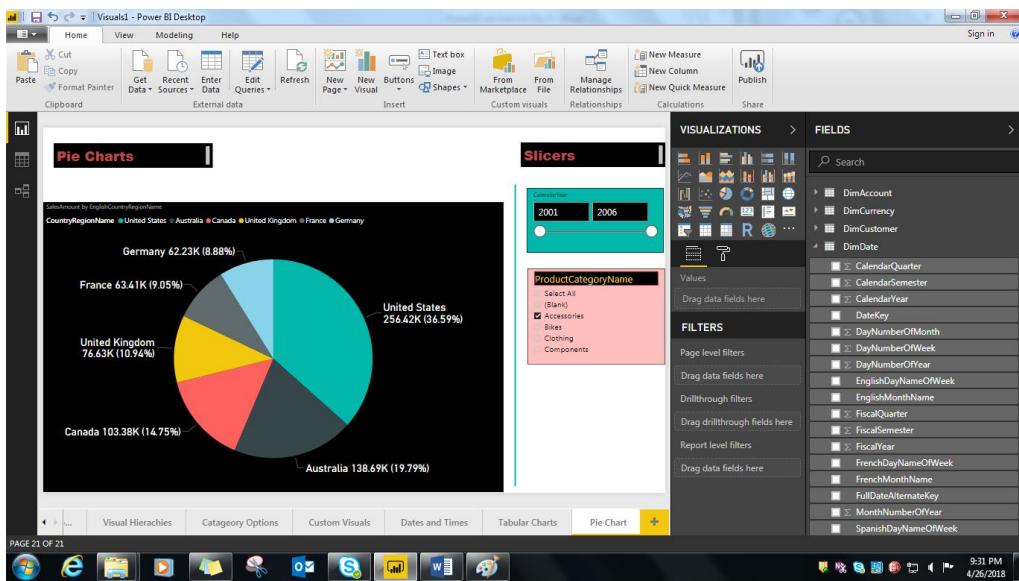
Drag and drop Text box:



Give report names in the Text box:

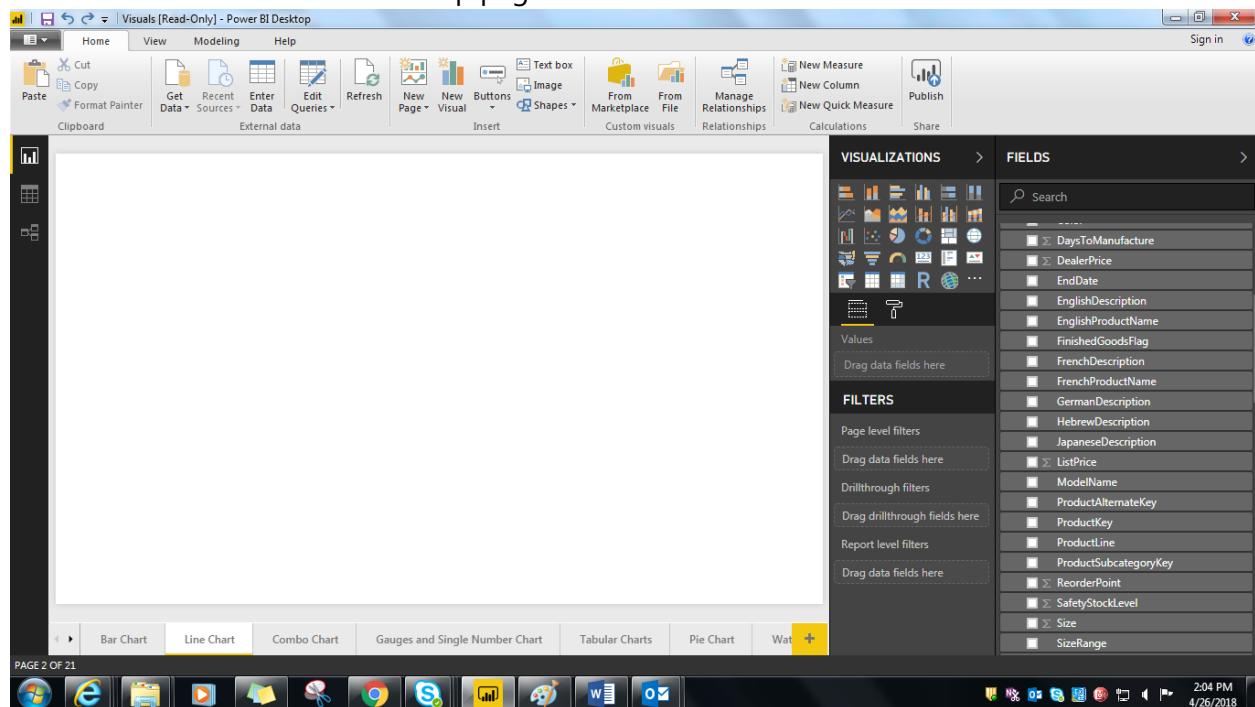


Apply some formatting and final report looks like below:

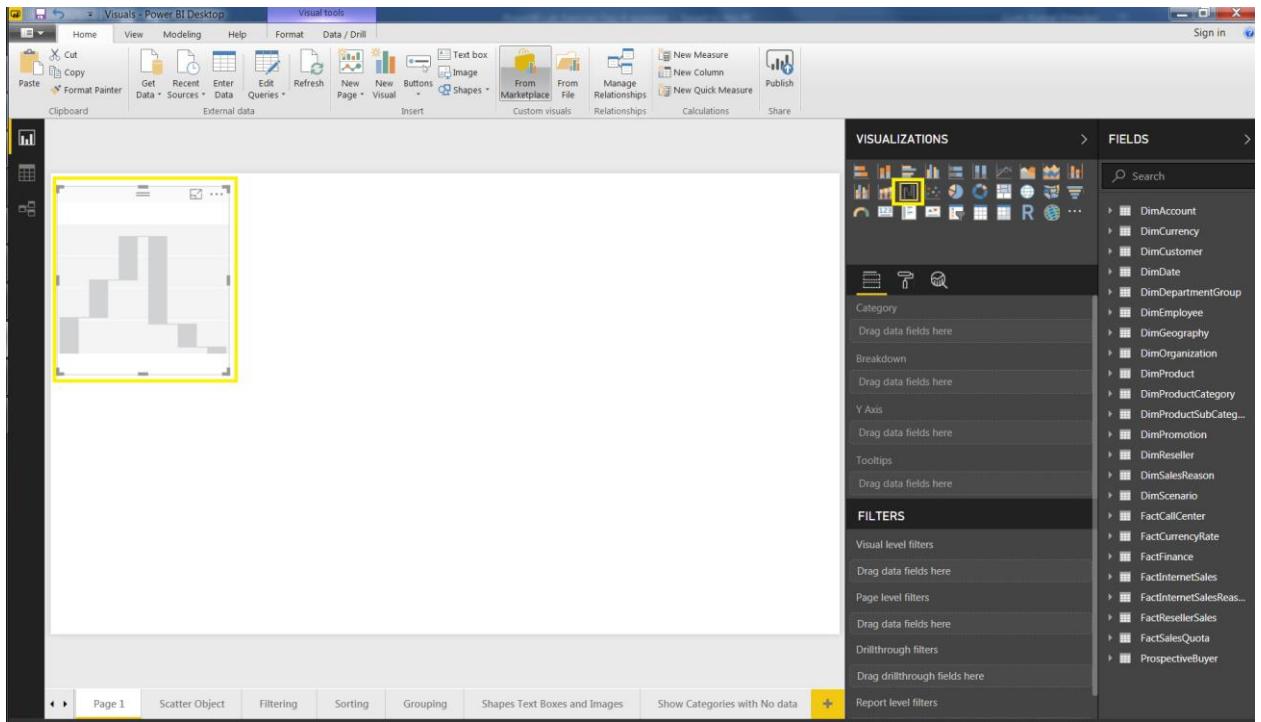


8. Waterfall and Funnel Chart:

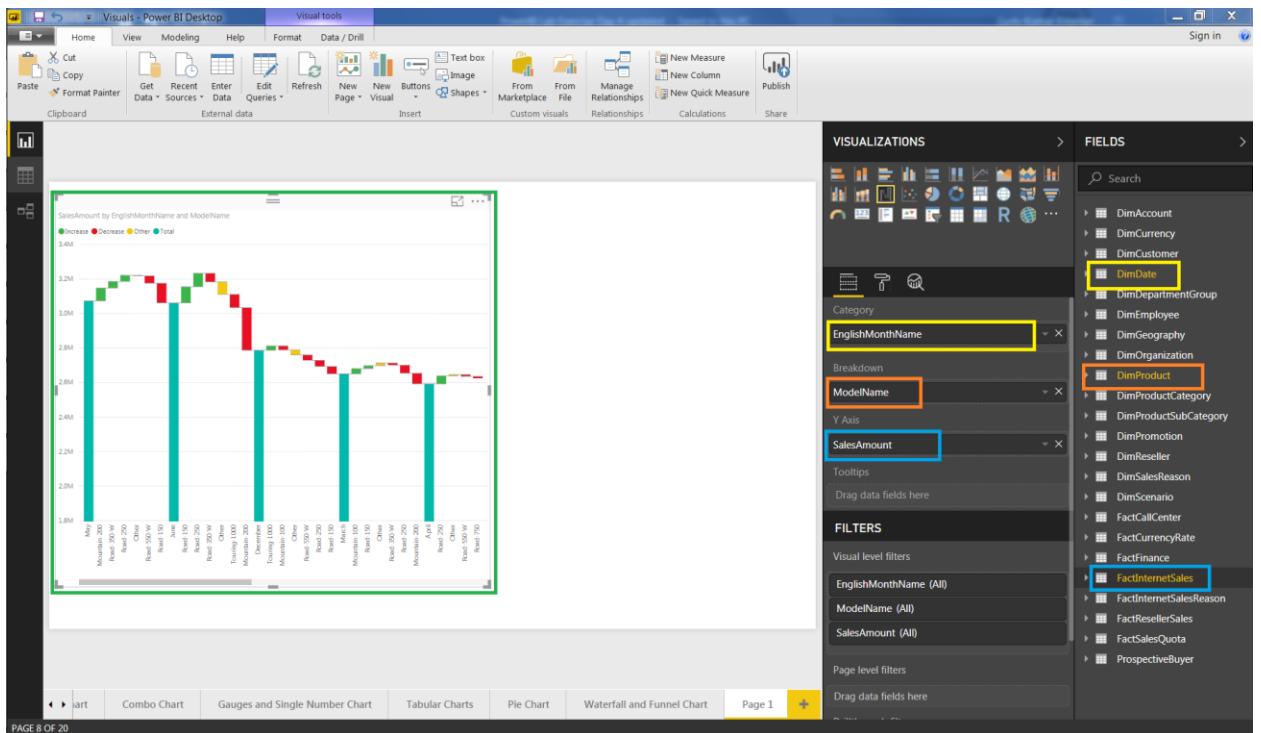
Start with a blank Power BI Desktop page:



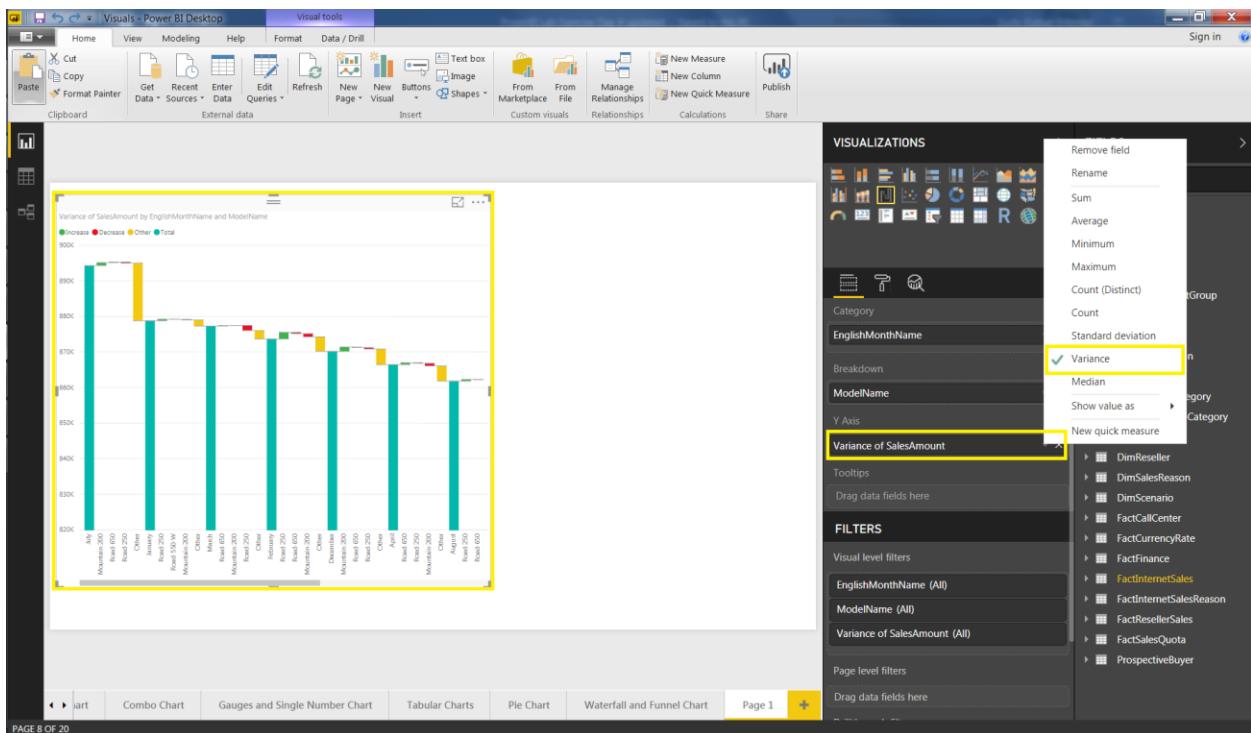
Go to Visualizations and select "Waterfall":



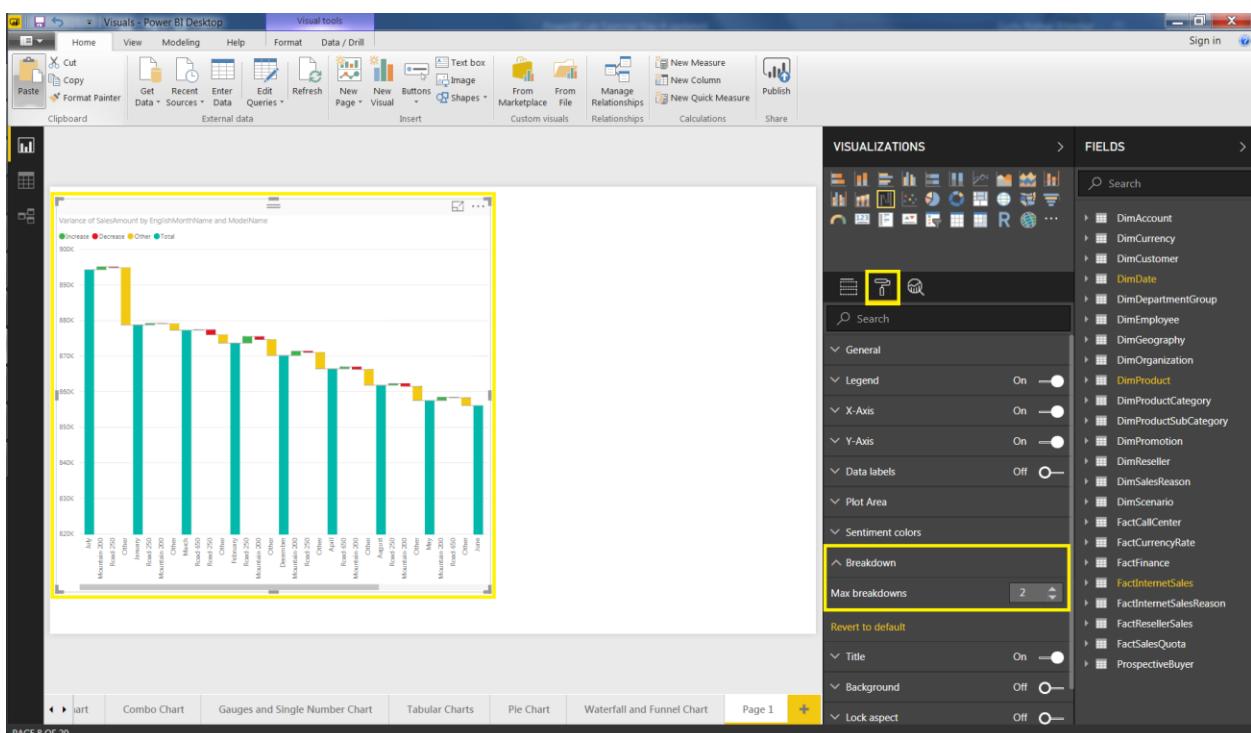
Choose field accordingly as below from their respective tables:



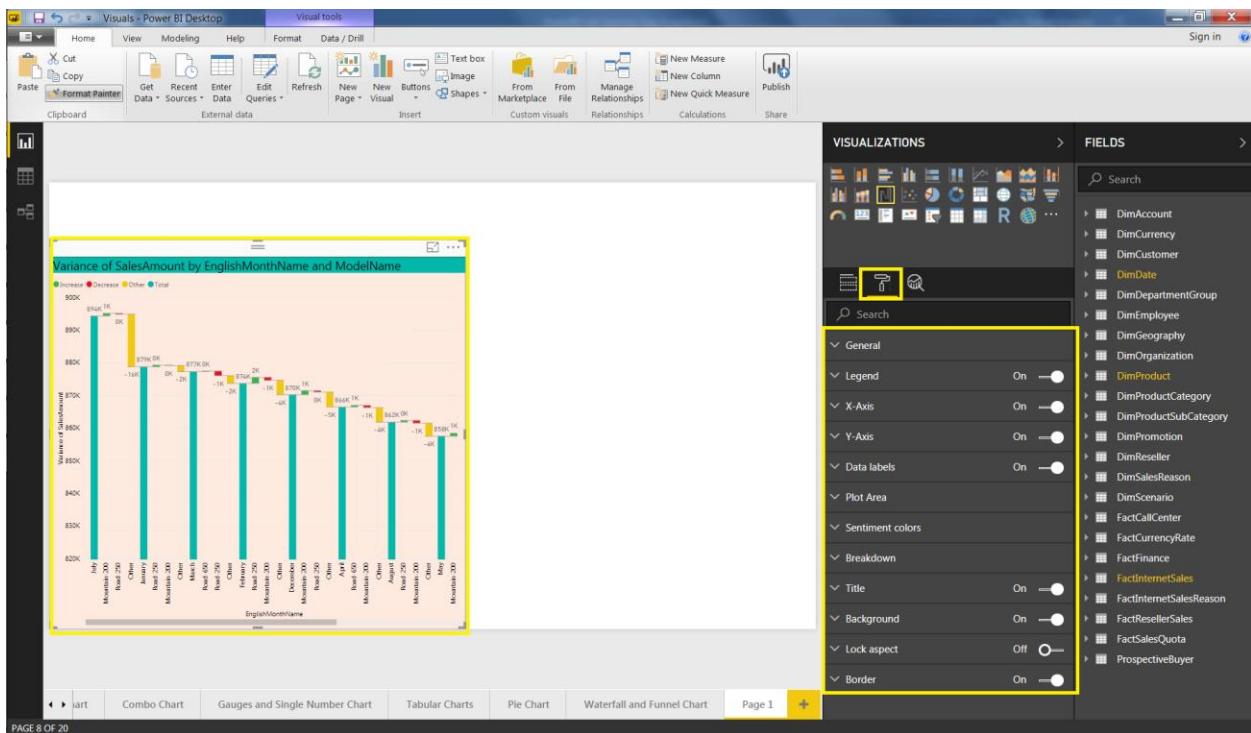
Apply Variance on SalesAmount:



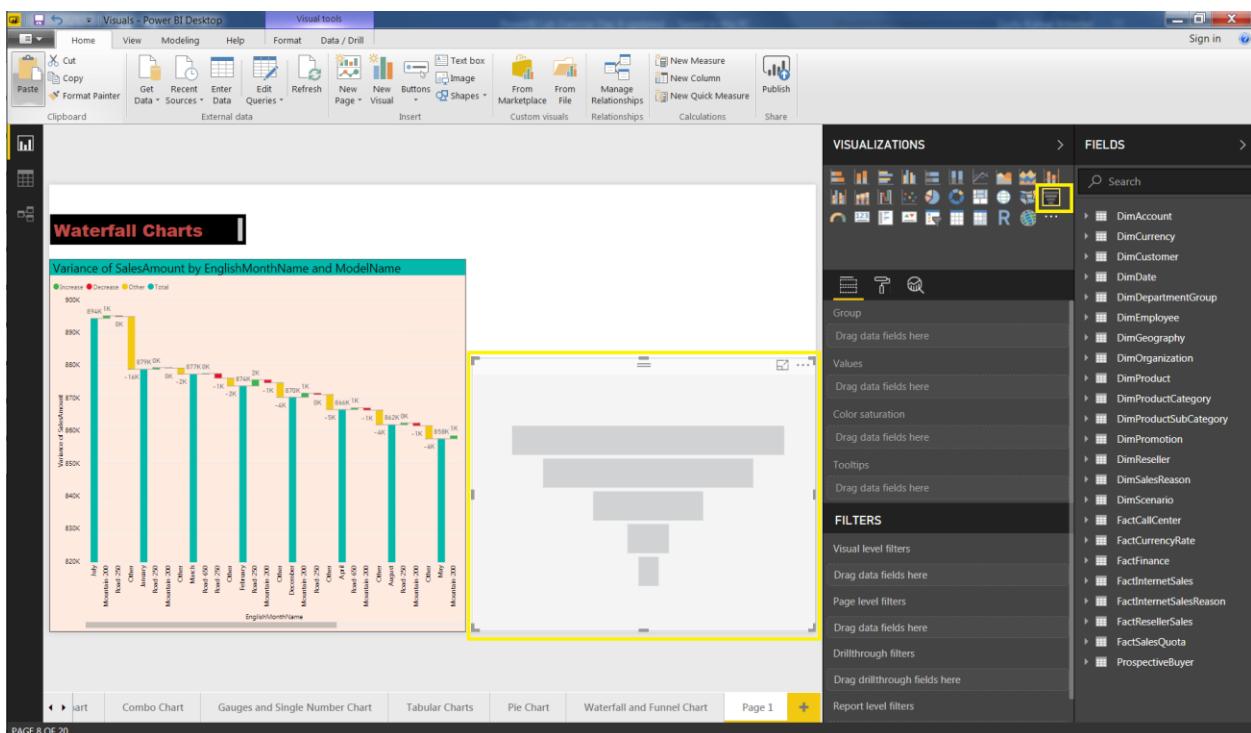
Apply Breakdown value “2”:



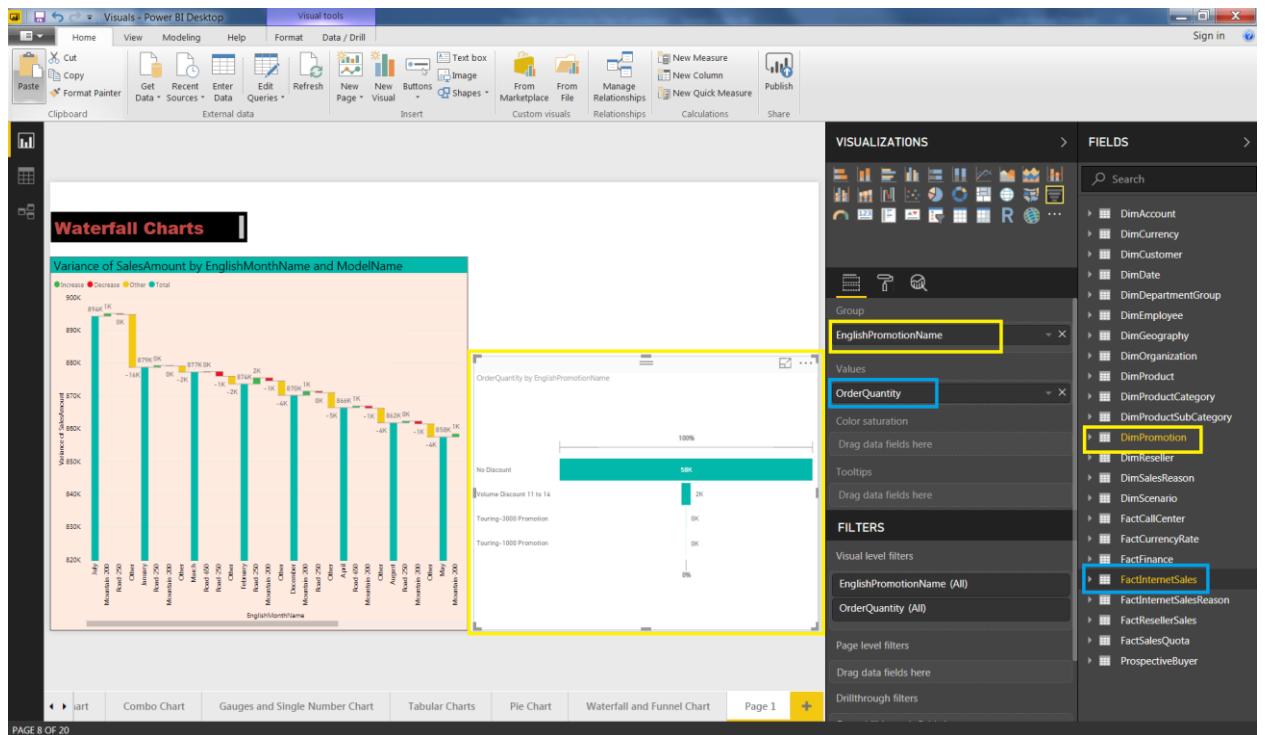
Apply some formatting options as below:



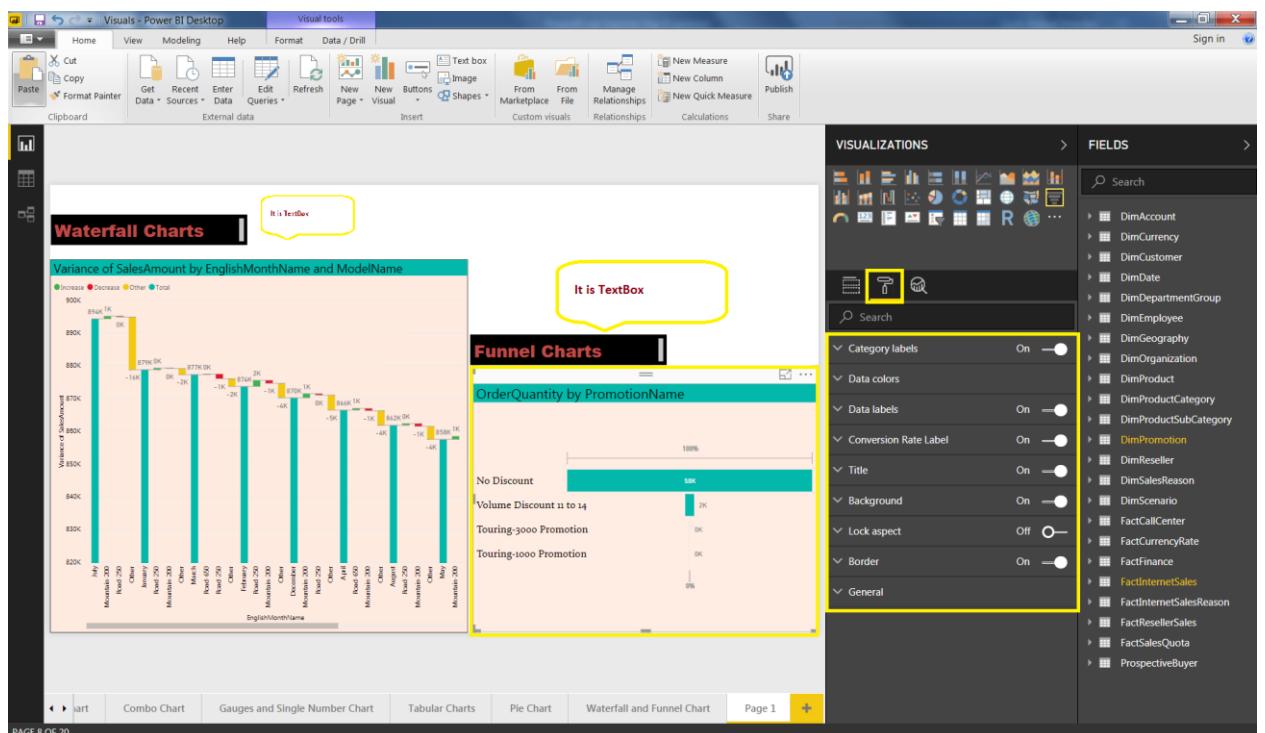
Select “Funnel” from Visualizations:



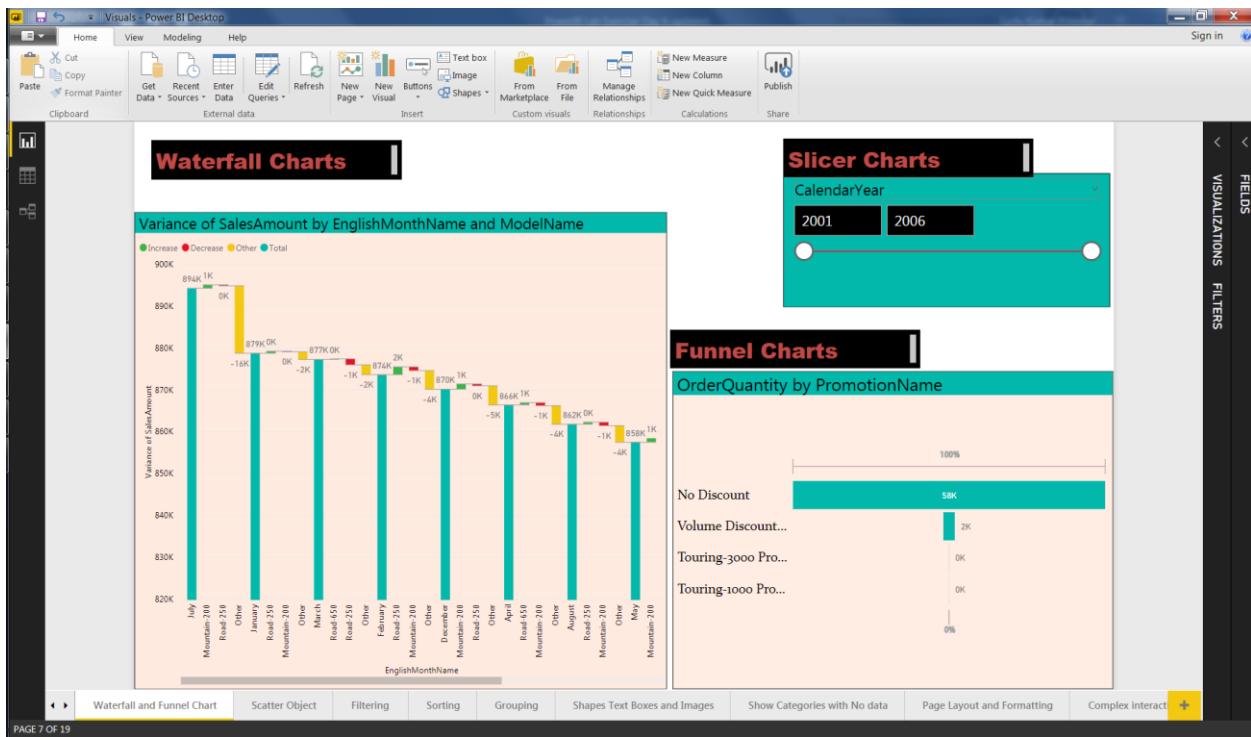
Choose field accordingly as below from their respective tables:



Apply required formatting as below:

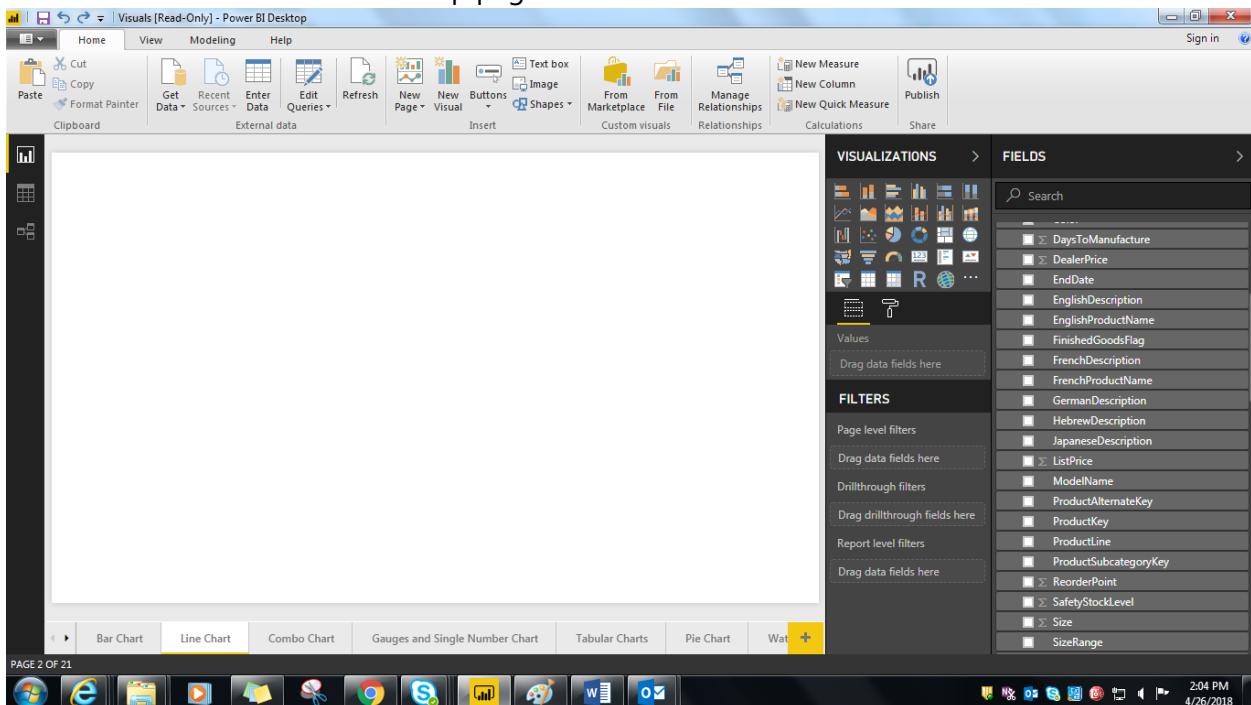


The final report looks as below:

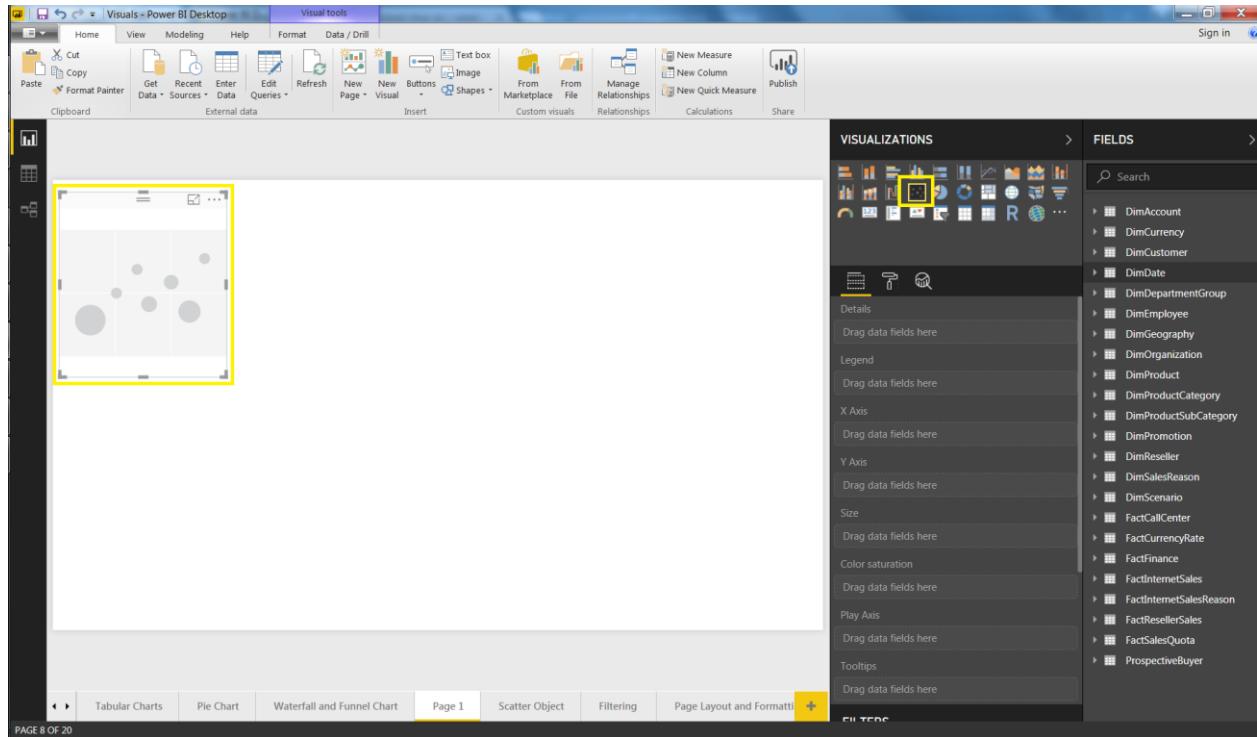


9. Scatter Object Chart:

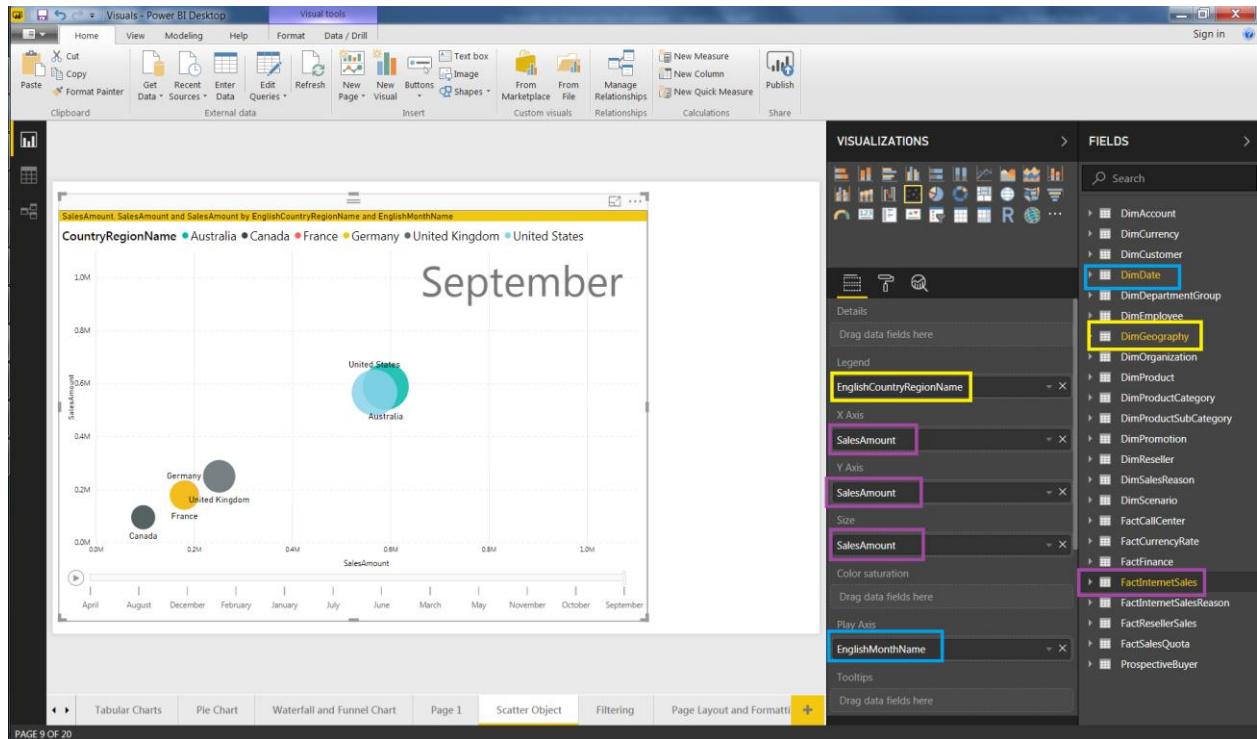
Start with a blank Power BI Desktop page:



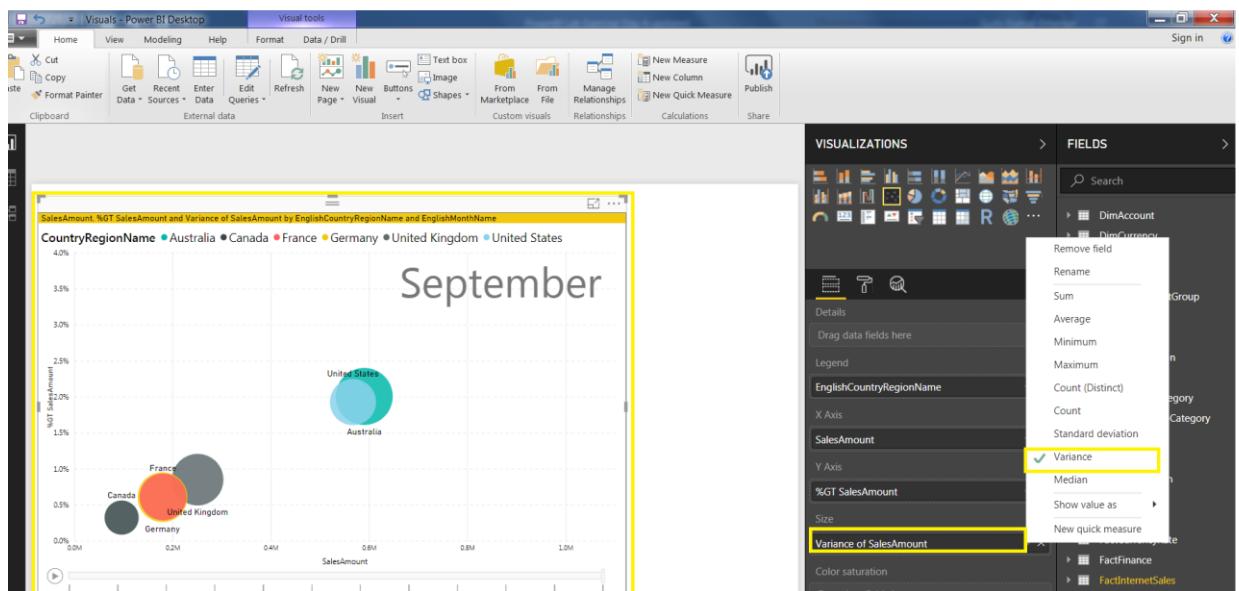
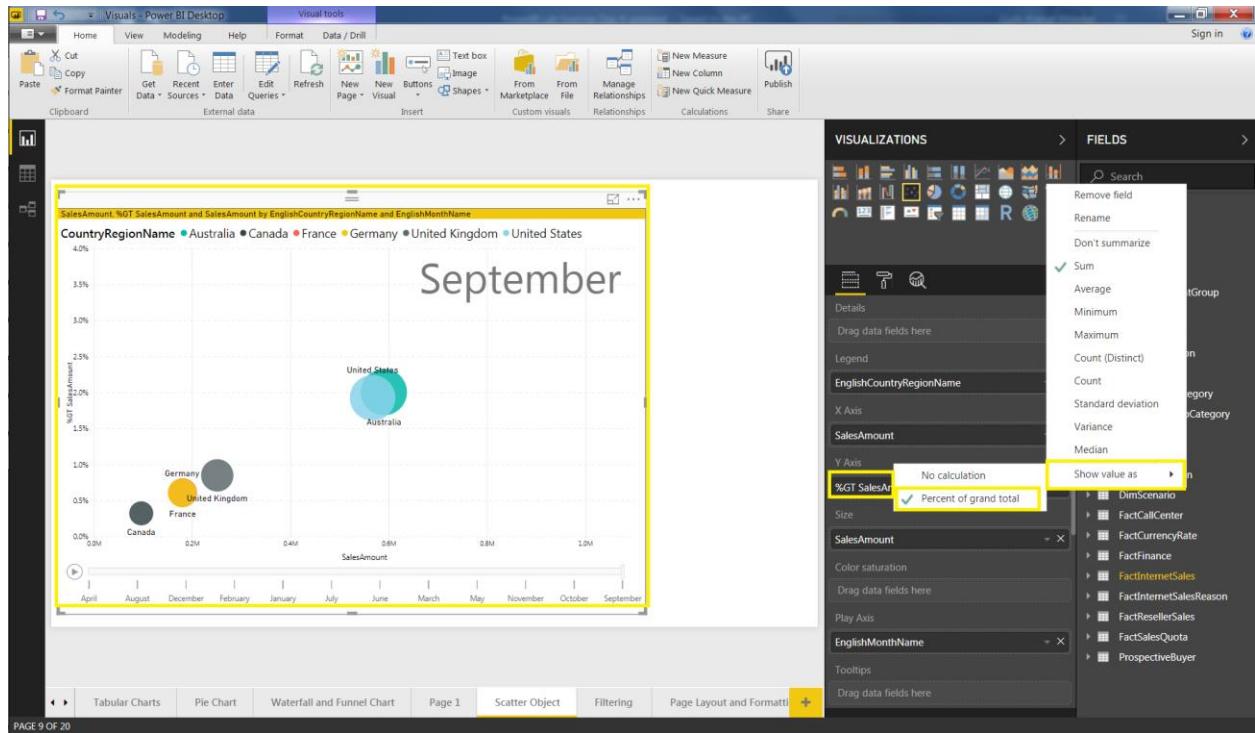
Go to Visualizations and select "Scatter":



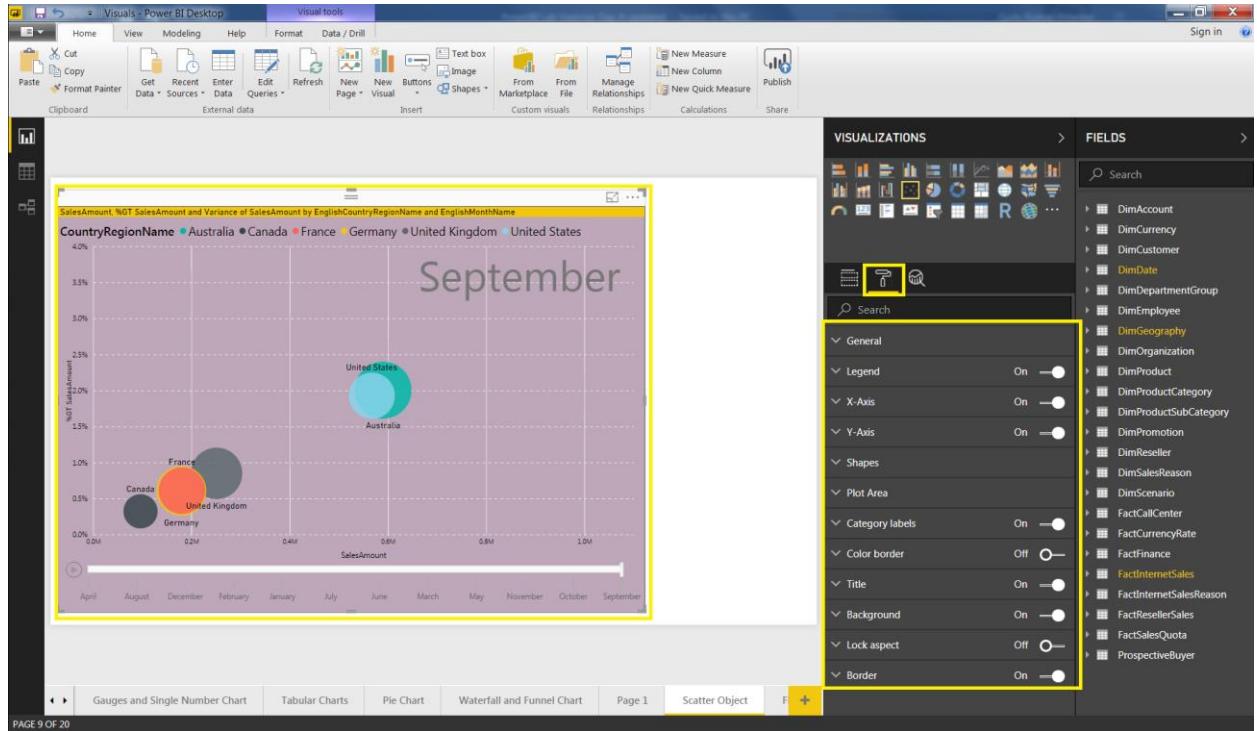
Choose field accordingly as below from their respective tables:



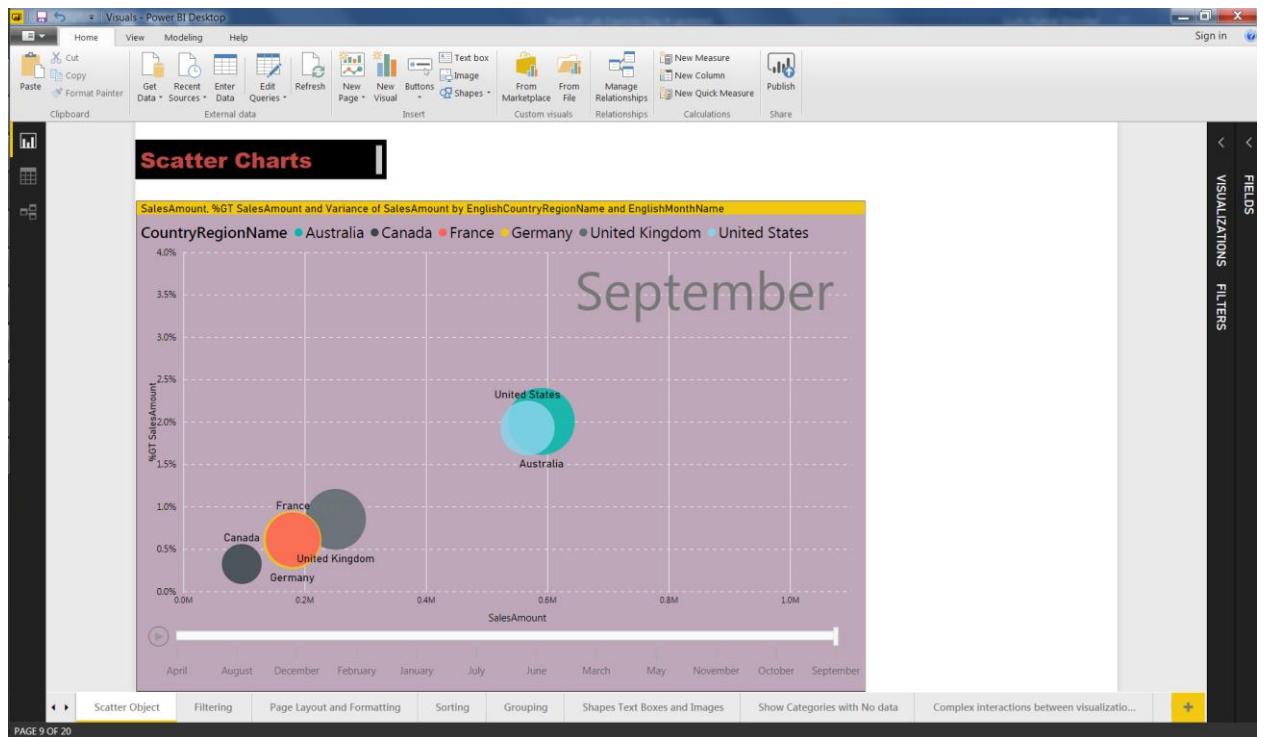
Apply Variance, %Gross Total on SalesAmount as below:



Apply some formatting options as below:

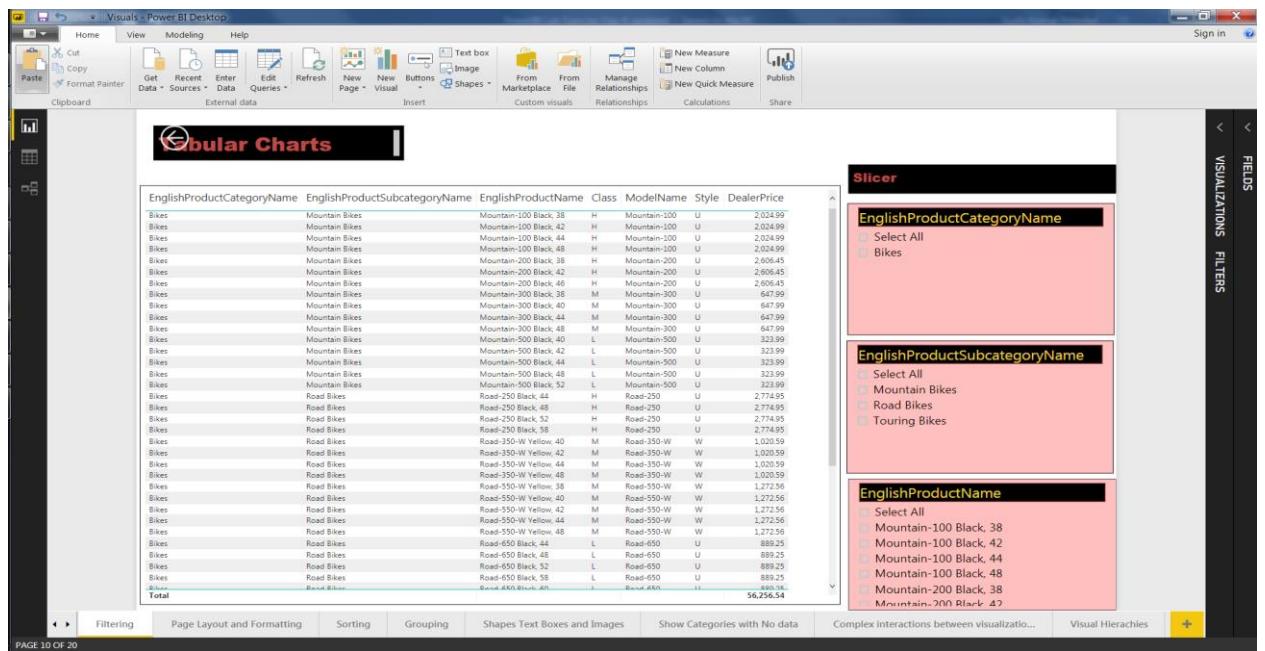


The final report looks as below:



10. Filters:

Use above existing Tabular Chart report:



Select "Tabular Chart" and apply Filters at different level: **Visual Level Filter**, **Page Level Filter**, **Drillthrough Filter** and **Report Level Filter**

The screenshot shows the Power BI Desktop interface with a Tabular Chart visual selected. The chart displays a table of product data with columns: EnglishProductCategoryName, EnglishProductSubcategoryName, EnglishProductName, Class, ModelName, Style, and DealerPrice. Three Slicer controls are visible on the right side of the chart:

- Slicer 1:** EnglishProductCategoryName, with options: Select All, Bikes.
- Slicer 2:** EnglishProductSubcategoryName, with options: Select All, Mountain Bikes, Road Bikes, Touring Bikes.
- Slicer 3:** EnglishProductName, with options: Select All, Mountain-100 Black, 38, Mountain-100 Black, 42, Mountain-100 Black, 44, Mountain-100 Black, 48, Mountain-200 Black, 38, Mountain-200 Black, 42.

The **FILTERS** pane on the right is open, showing the following filters applied:

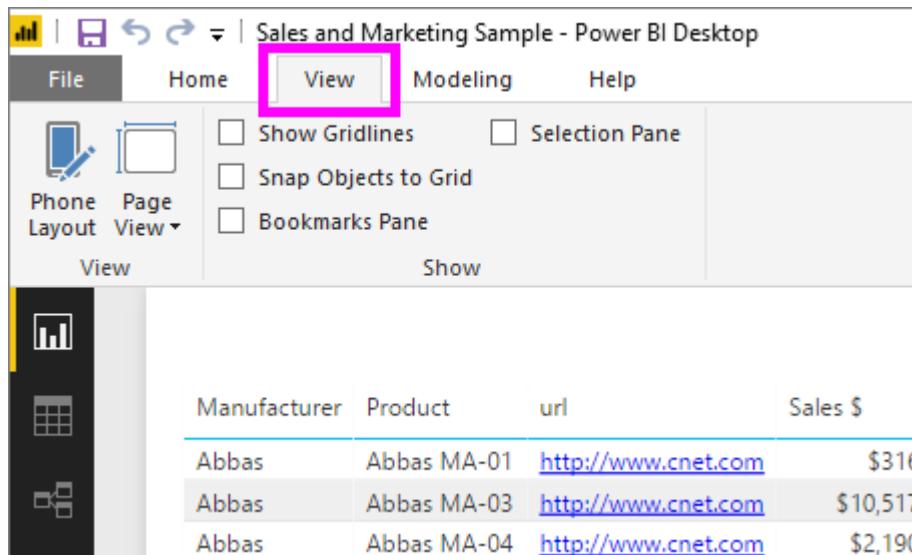
- Visual level filters:**
 - Class: is H or L
 - DealerPrice (All): EnglishProductCategoryName is Bikes
 - EnglishProductCategoryName: is Bikes
 - EnglishProductName: is Mountain-100 Black, 38, Mountain-100 BL...
 - EnglishProductSubcategoryName: is Mountain Bikes or Road Bikes
 - ModelName: is Mountain-200
 - Style (All): EnglishProductCategoryName is Mountain Bikes or Road Bikes
- Page level filters:**
 - Color: is Black or Yellow

The screenshot shows the Power BI Desktop interface with the same Tabular Chart visual selected. The **DRILLTHROUGH FILTERS** pane on the right is now open, showing the following filters applied:

- Drillthrough filters:**
 - EnglishProductCategoryName: is Bikes
 - EnglishProductName (All): EnglishProductCategoryName (All)
 - EnglishProductSubcategoryName (All): EnglishProductCategoryName (All)
- Report level filters:**
 - FiscalYear: is 2007

11. Page Layout and Formatting:

In Report view, select the **View** tab to open Page view settings as well as phone layout settings.

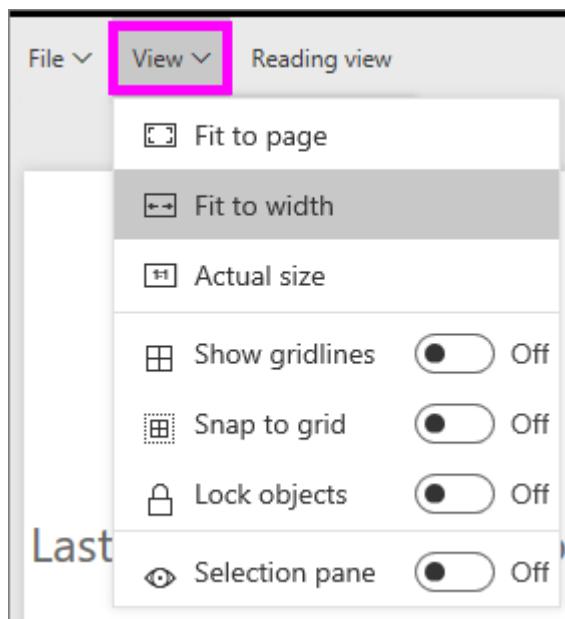


The screenshot shows the Power BI Desktop interface with the 'Sales and Marketing Sample - Power BI Desktop' report open. The ribbon at the top has 'File', 'Home', 'View' (which is highlighted with a pink box), 'Modeling', and 'Help'. Below the ribbon, there's a toolbar with icons for Phone, Page, Layout, and View. The 'View' section of the ribbon contains several options with checkboxes: 'Show Gridlines', 'Selection Pane', 'Snap Objects to Grid', and 'Bookmarks Pane'. A 'Show' button is also present. The main area displays a table with columns: Manufacturer, Product, url, and Sales \$. The data rows show 'Abbas' as the manufacturer for three different products (MA-01, MA-03, MA-04) with their respective URLs and sales values.

Manufacturer	Product	url	Sales \$
Abbas	Abbas MA-01	http://www.cnet.com	\$316
Abbas	Abbas MA-03	http://www.cnet.com	\$10,517
Abbas	Abbas MA-04	http://www.cnet.com	\$2,190

In Power BI service (app.powerbi.com)

In Power BI service, open a report and select **View** from the upper left menubar.



The screenshot shows the Power BI service interface with a report open. The top navigation bar includes 'File', 'View' (which is highlighted with a pink box), and 'Reading view'. A dropdown menu under 'View' is open, showing several options with checkboxes: 'Fit to page', 'Fit to width' (which is selected and highlighted in grey), 'Actual size', 'Show gridlines' (with a toggle switch set to 'Off'), 'Snap to grid' (with a toggle switch set to 'Off'), 'Lock objects' (with a toggle switch set to 'Off'), and 'Selection pane' (with a toggle switch set to 'Off').

Page View settings are available in both [Reading view](#) and [Editing view](#). In Editing View, a report owner can assign page view settings to individual report pages, and those settings are saved with the report. When colleagues open that report in

Reading view, they see the report pages display using the owner's settings. In Reading view colleagues can change *some* of the Page view settings, but the changes are not saved when they exit the report.

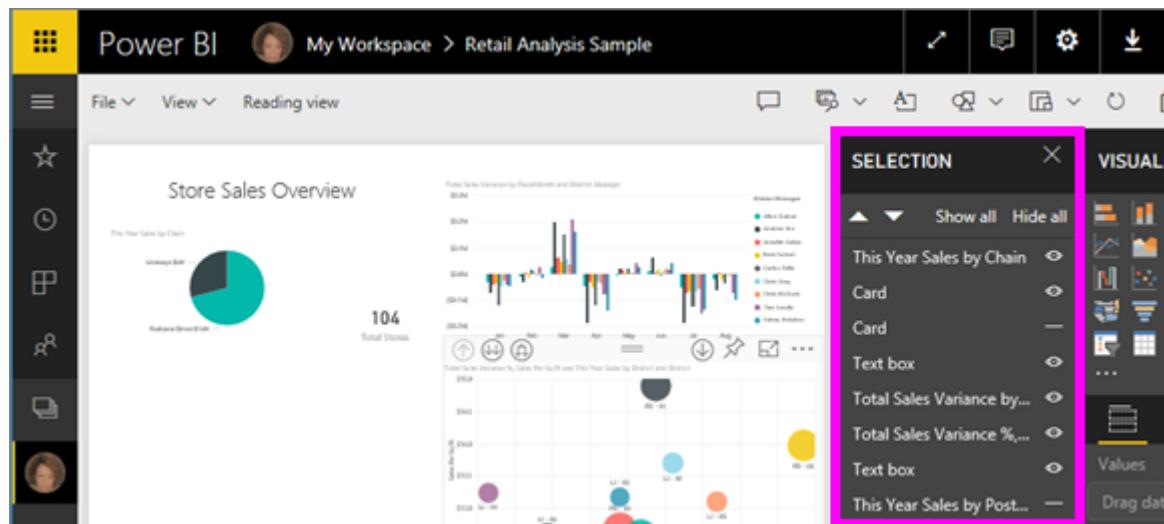
Page view settings

The first set of *Page view* settings control the display of your report page relative to the browser window. Choose between:

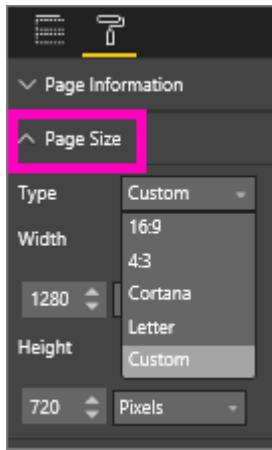
- **Fit to Page** (default): contents are scaled to best fit the page
- **Fit to Width**: contents are scaled to fit within the width of the page
- **Actual Size**: contents are displayed at full size

The second set of *Page view* settings control the positioning of objects on the report canvas

- **Show gridlines**: turn on gridlines to help you position objects on the report canvas
- **Snap to grid**: use with **Show gridlines** to precisely position and align objects on the report canvas
- **Lock objects**: lock all objects on the canvas so that they cannot be moved or resized
- **Selection pane**: the Selection pane lists all objects on the canvas and you can decide which to show and which to hide



Page Size settings

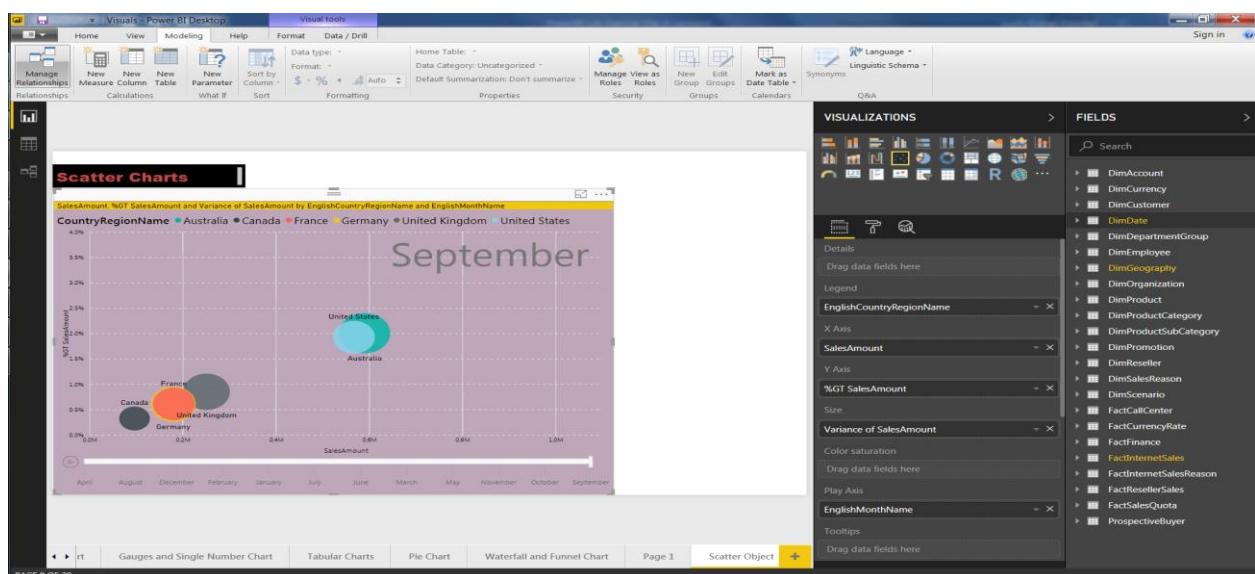


Page Size settings are only available for report owners. In Power BI service (app.powerbi.com), this means being able to open the report in [Editing view](#). These settings control the display ratio and actual size (in pixels) of the report canvas.

- 4:3 ratio
- 16:9 ratio (default)
- Cortana
- Letter
- Custom (height and width in pixels)

12. Sorting:

Use the “Scatter Chart Report”:



Months are not in sorted order:

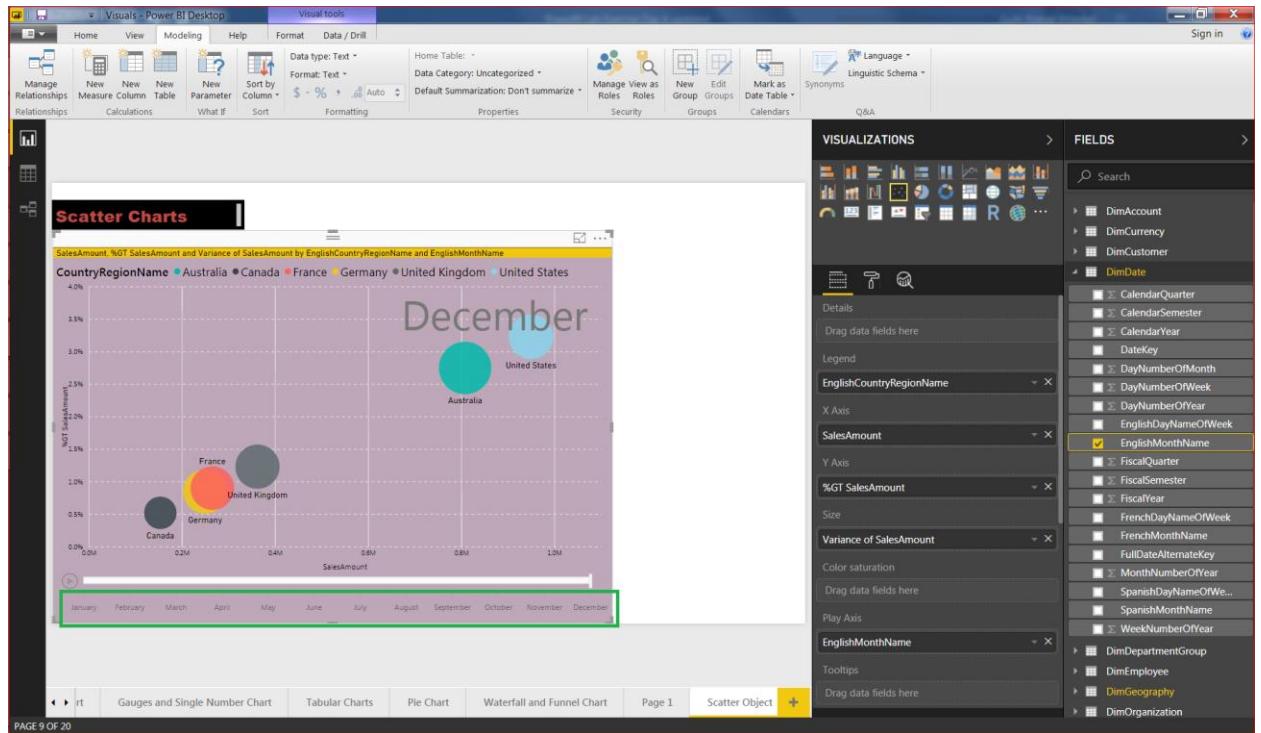
The screenshot shows the Power BI Desktop interface with a scatter chart titled "Scatter Charts". The chart displays SalesAmount, %GT SalesAmount, and Variance of SalesAmount by EnglishCountryRegionName and EnglishMonthName. The x-axis is labeled "SalesAmount" and ranges from 0.2M to 1.0M. The y-axis is labeled "%GT SalesAmount" and ranges from 0.0% to 4.0%. Data points represent countries: United States (large teal circle), Australia (medium teal circle), Canada (small dark grey circle), France (medium orange circle), Germany (small dark grey circle), United Kingdom (small dark grey circle), and United States (small dark grey circle). A red oval highlights the month names on the x-axis: April, August, December, February, January, July, June, March, May, November, October, September. A red callout box points to the month names with the text "See the Monthname which does not look in correct order". The ribbon at the top has the "Modeling" tab selected. The Fields pane on the right lists various dimensions and measures, including EnglishMonthName.

Use this option: Sort using the Sort by Column button

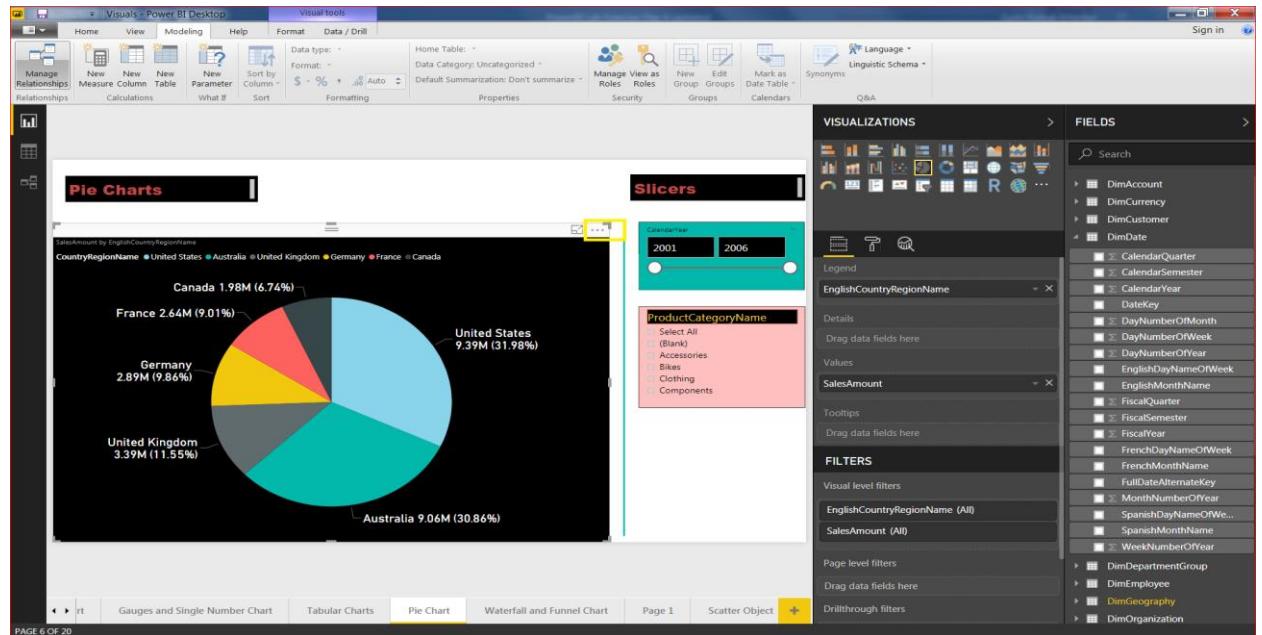
This screenshot shows the same Power BI Desktop setup as the previous one, but with the "Sort by Column" button in the ribbon highlighted in yellow. The scatter chart now displays the months in a sorted order: April, August, December, February, January, July, June, March, May, November, October, September. The red oval and callout box from the previous screenshot are no longer present. The ribbon now has the "Sort by Column" button highlighted. The Fields pane remains the same, showing the EnglishMonthName dimension.

Go to “Sort by Column”-> and select “MonthNumberOfYear”

Now, we can see Month will looks in sorted order:



Use this option: Selecting the sort order - smallest to largest, largest to smallest in Visuals:



Click on eclipses(.....) and select appropriate column name to apply sorting:

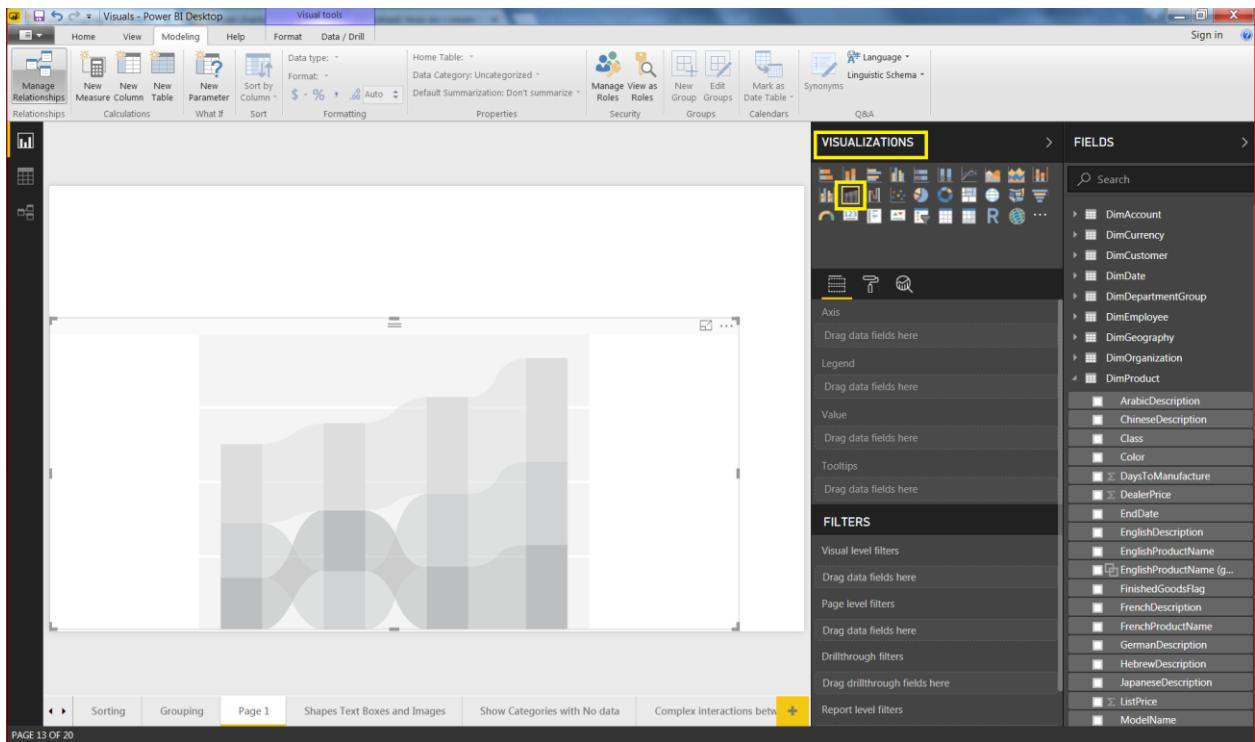
The screenshot shows a Power BI Desktop interface with a pie chart visual titled "Pie Charts". The chart displays SalesAmount by EnglishCountryRegionName. A context menu is open over the chart, specifically on one of the slices, showing sorting options like "Sort By EnglishCountryRegionName" and "Sort By SalesAmount". The "FIELDS" pane on the right lists various dimensions and measures.

13. Grouping:

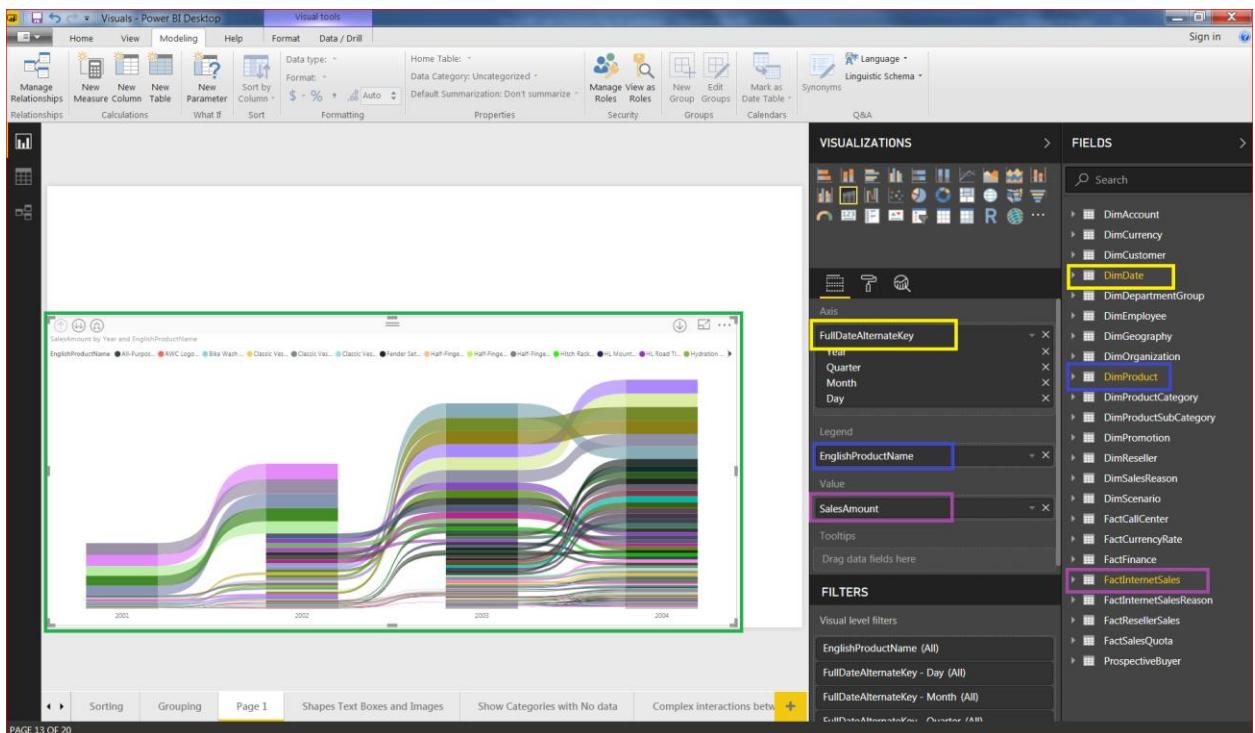
Start with a blank Power BI Desktop page:

The screenshot shows a Power BI Desktop interface with a blank page. The ribbon at the top includes Home, View, Modeling, Help, and various tool icons. The "FIELDS" pane on the right is visible, listing various dimensions and measures.

Go to Visualization and select “Ribbon Chart”



Choose the fields as follows as below:

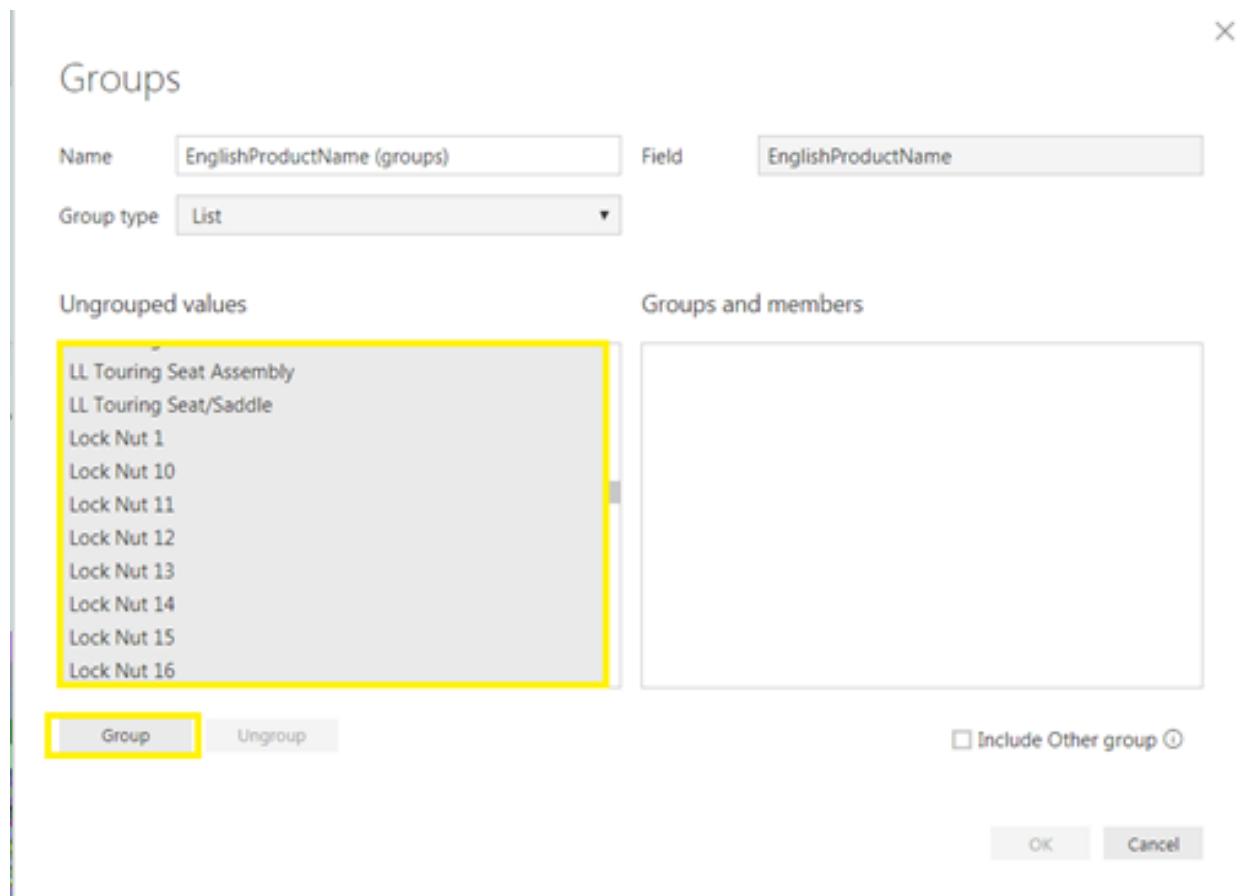


Create a “**Group**” on “EnglishProductName”:

The screenshot shows the Power BI Desktop interface with a treemap visualization titled "SalesAmount by Year and EnglishProductName". The visualization displays data from 2001 to 2004, categorized by EnglishProductName. A context menu is open over the "EnglishProductName" legend item, with the "New Group" option highlighted.

The screenshot shows the "Groups" dialog box in Power BI Desktop. The "Name" field is set to "EnglishProductName (groups)". The "Field" dropdown is set to "EnglishProductName". The "Group type" dropdown is set to "List". The "Ungrouped values" section lists various product names. The "Groups and members" section is currently empty. At the bottom, there are "Group" and "Ungroup" buttons, an "Include Other group" checkbox, and "OK" and "Cancel" buttons.

Select the values in “**Ungrouping**” to create a group:



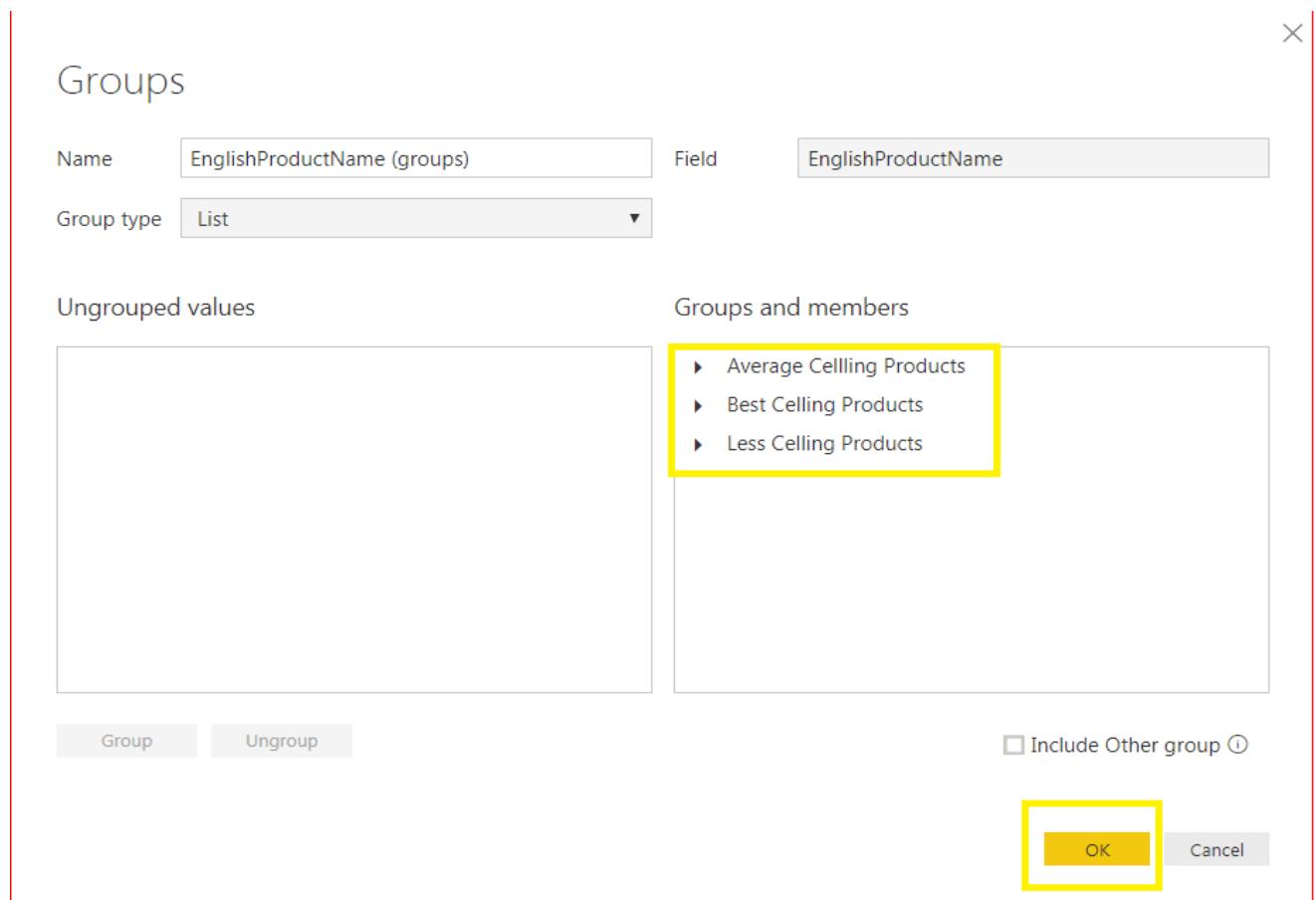
We will get new Group in “**Groups and members**”:

The screenshot shows the 'Groups' dialog box in Power BI. At the top, there are fields for 'Name' (set to 'EnglishProductName (groups)') and 'Field' (set to 'EnglishProductName'). Below these, the 'Group type' is set to 'List'. The main area is divided into two sections: 'Ungrouped values' on the left and 'Groups and members' on the right. The 'Ungrouped values' section contains a list of items: Lock Washer 1, Lock Washer 10, Lock Washer 11, Lock Washer 12, Lock Washer 13, Lock Washer 2, Lock Washer 3, Lock Washer 4, Lock Washer 5, and Lock Washer 6. The 'Groups and members' section contains a single group named 'Adjustable Race & All-Purpose Bike Stand & AWC L...', which is expanded to show its members: Adjustable Race, All-Purpose Bike Stand, AWC Logo Cap, BB Ball Bearing, Bearing Ball, Bike Wash - Dissolver, Blade, Cable Lock, and Chain. At the bottom of the dialog, there are buttons for 'Group' (disabled), 'Ungroup', and 'OK' (highlighted with a yellow box). There is also a checkbox for 'Include Other group'.

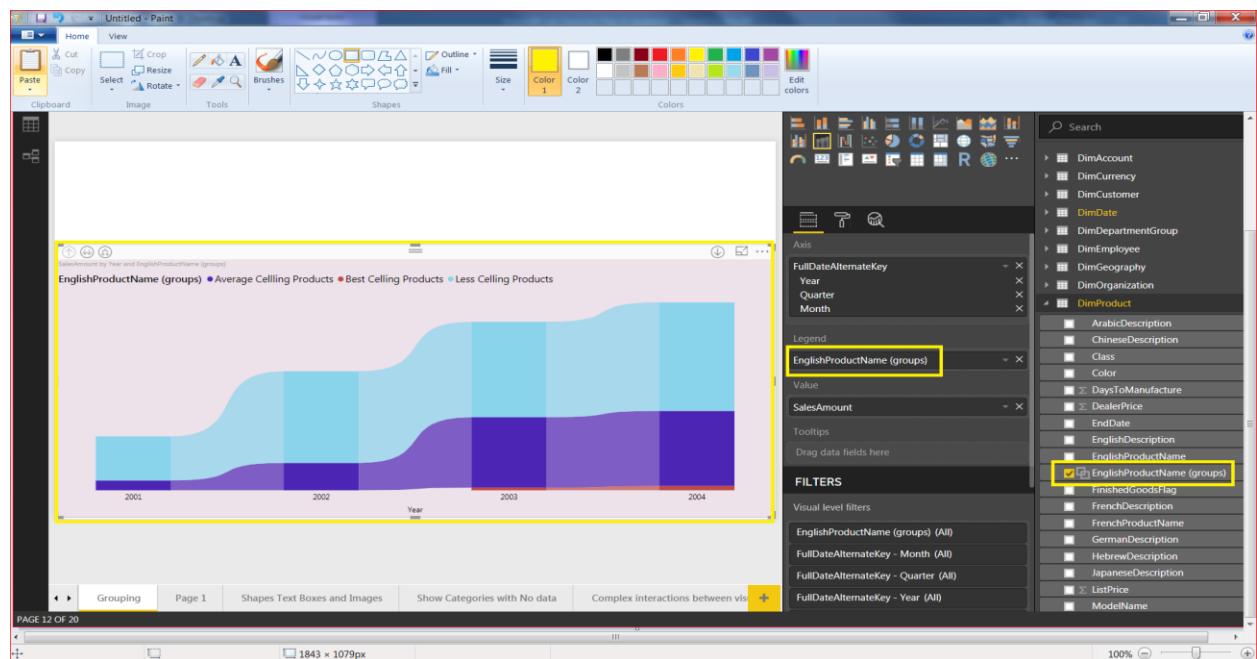
Rename the group as “Best Selling Products”:

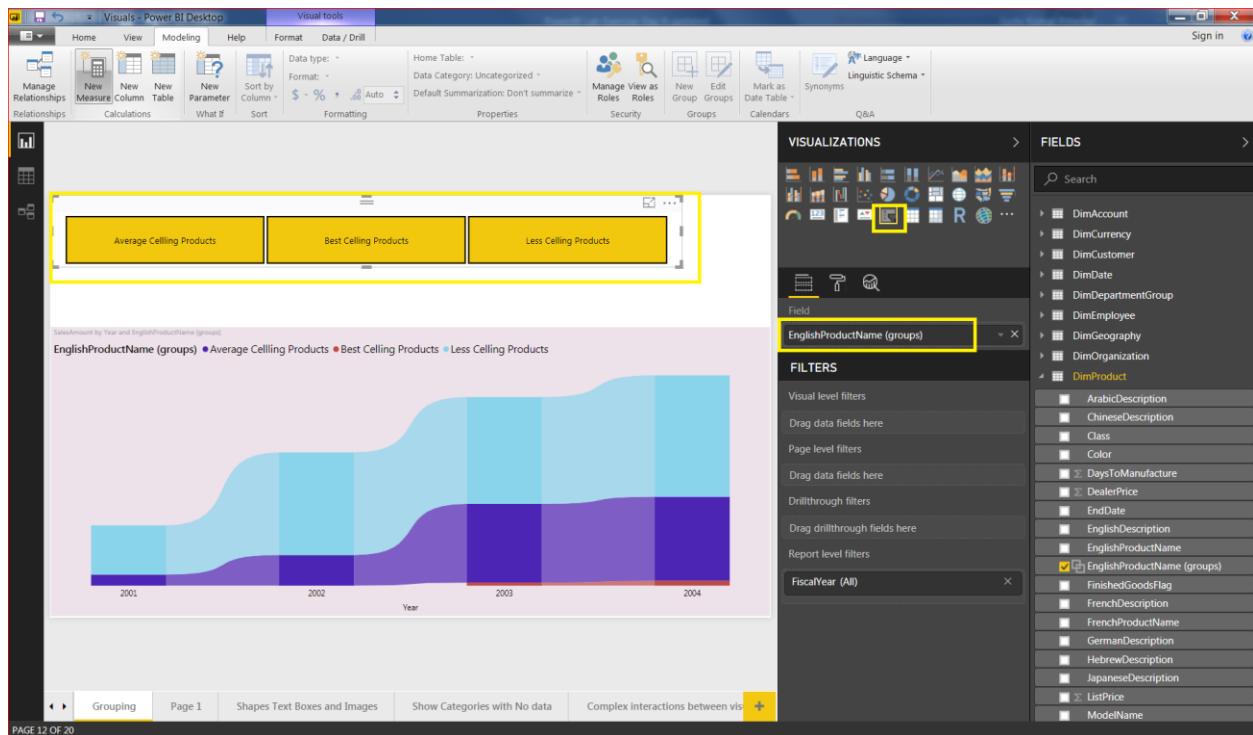
The screenshot shows the 'Groups' dialog box in Power BI. At the top, there are input fields for 'Name' (set to 'EnglishProductName (groups)') and 'Field' (set to 'EnglishProductName'). Below these, the 'Group type' is set to 'List'. The main area is divided into two sections: 'Ungrouped values' on the left and 'Groups and members' on the right. The 'Ungrouped values' section contains a list of items: Lock Washer 1, Lock Washer 10, Lock Washer 11, Lock Washer 12, Lock Washer 13, Lock Washer 2, Lock Washer 3, Lock Washer 4, Lock Washer 5, and Lock Washer 6. The 'Groups and members' section contains a list of items under a heading 'Best Selling Products': Adjustable Race, All-Purpose Bike Stand, AWC Logo Cap, BB Ball Bearing, Bearing Ball, Bike Wash - Dissolver, Blade, Cable Lock, and Chain. A yellow box highlights the 'Best Selling Products' heading. At the bottom of the dialog, there are buttons for 'Group', 'Ungroup', and 'OK' (which is highlighted with a yellow background), along with a checkbox for 'Include Other group'.

Similarly create 2 more groups: **Average Selling Products**, **Less Selling Products**



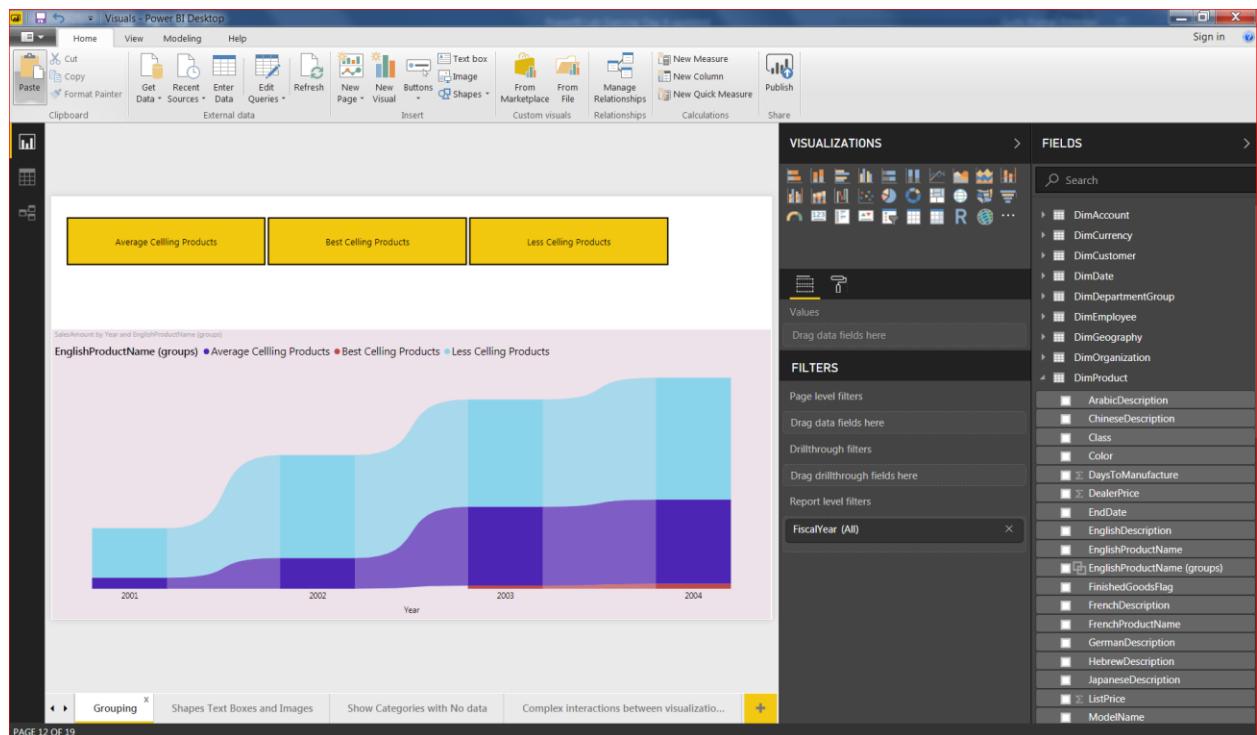
Use these 3 groups in Visuals as below: **Ribbon Chart, Slicer**





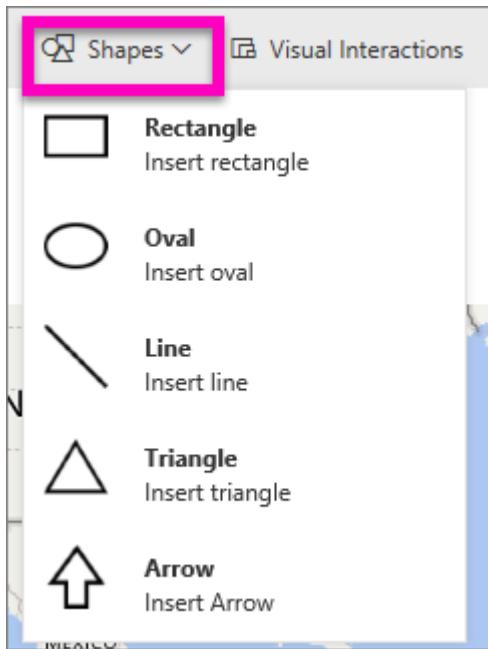
14. Shapes, Text Boxes and Images:

Use the same report:



Add a shape to a report

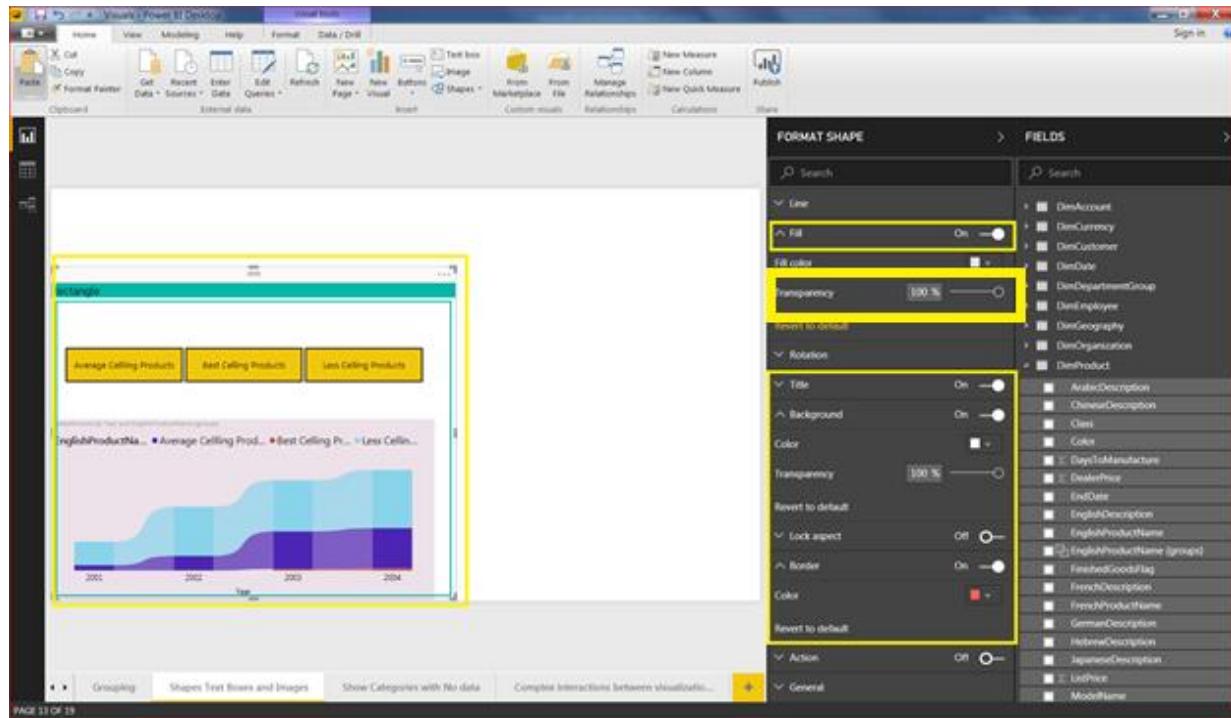
1. Place your cursor anywhere on the report canvas and select **Shapes**.



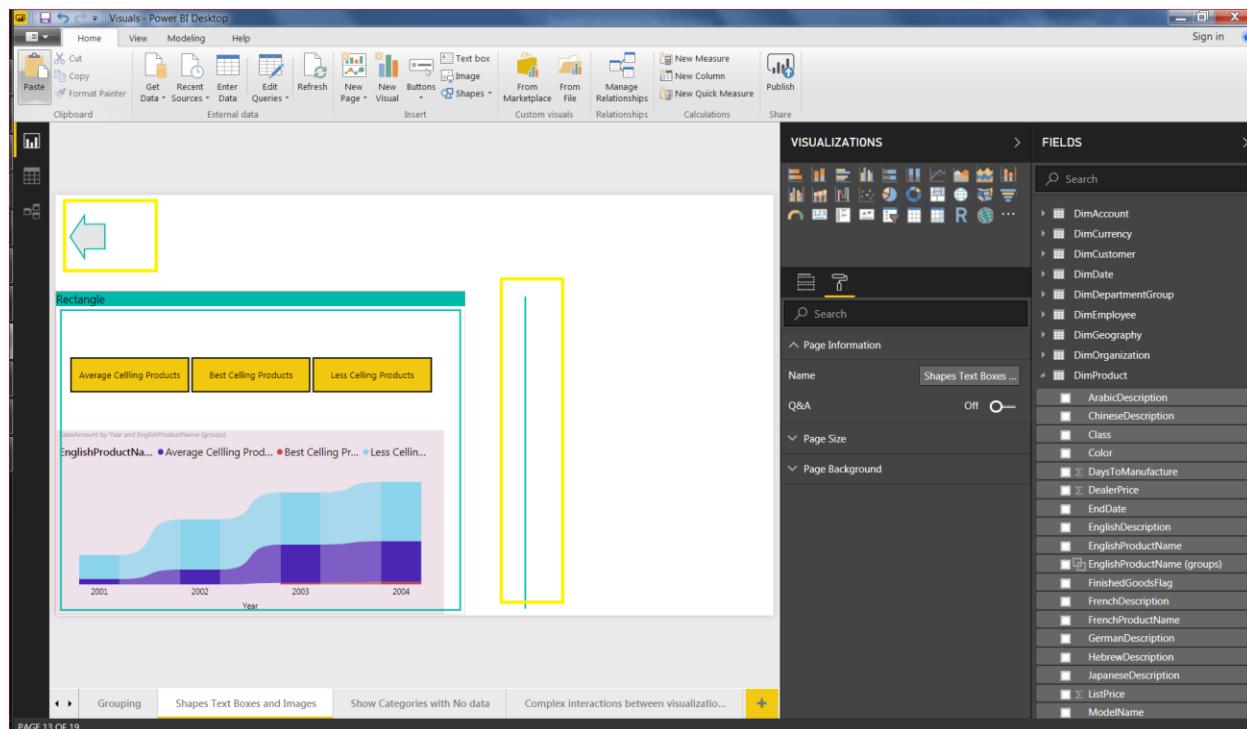
Select and bring “**Rectangle**” from Shapes:

This screenshot shows the Power BI Desktop interface. The ribbon at the top has tabs like Home, View, Modeling, Help, Format, and Data / Drill. The 'Format' tab is currently selected. On the far right of the ribbon, there's a 'Shapes' button with a yellow box around it. The main area shows a single gray rectangle selected with a yellow border. In the bottom right corner of the screen, there's a 'Format Shape' pane with two tabs: 'FORMAT SHAPE' and 'FIELDS'. The 'FORMAT SHAPE' tab is active, showing settings for 'Line', 'Fill', 'Rotation', 'Title', 'Background', 'Lock aspect', 'Border', 'Action', and 'General'. The 'FIELDS' tab lists various dimensions and measures from the data model, such as DimAccount, DimCurrency, DimCustomer, etc. The status bar at the bottom shows 'PAGE 13 OF 19'.

Do some formatting like:

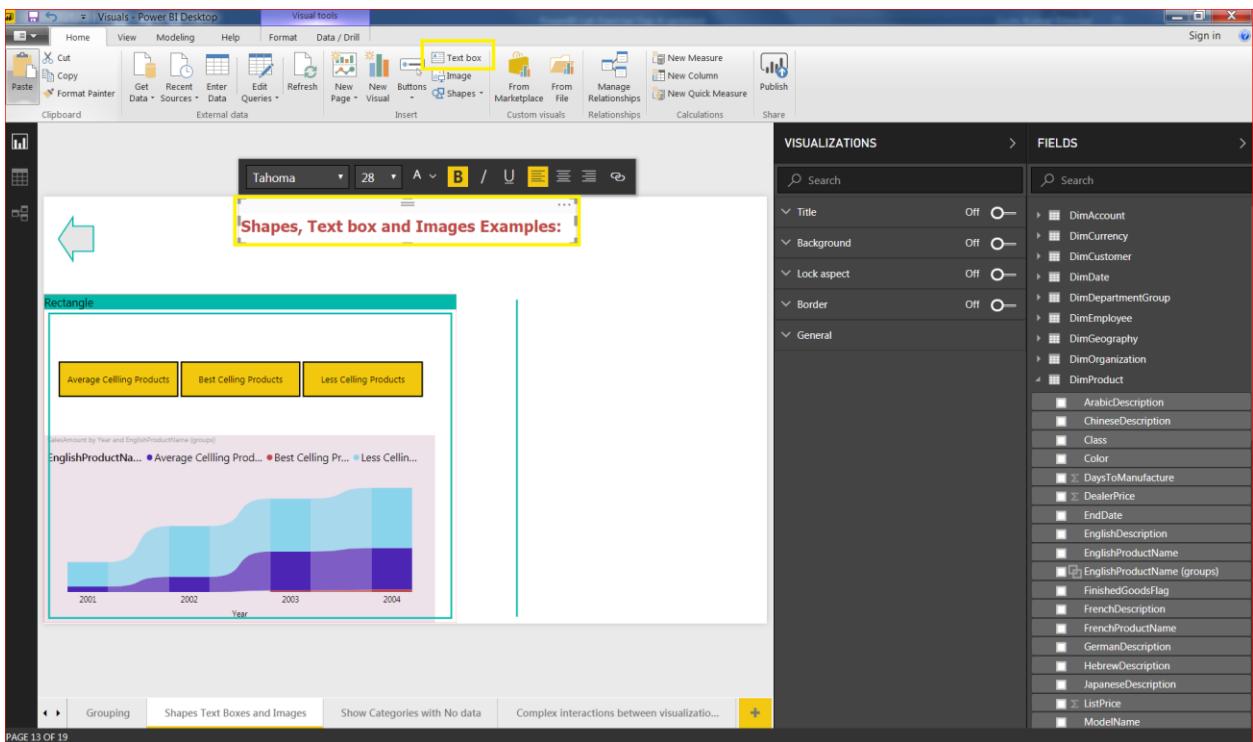


Use Arrow and Line



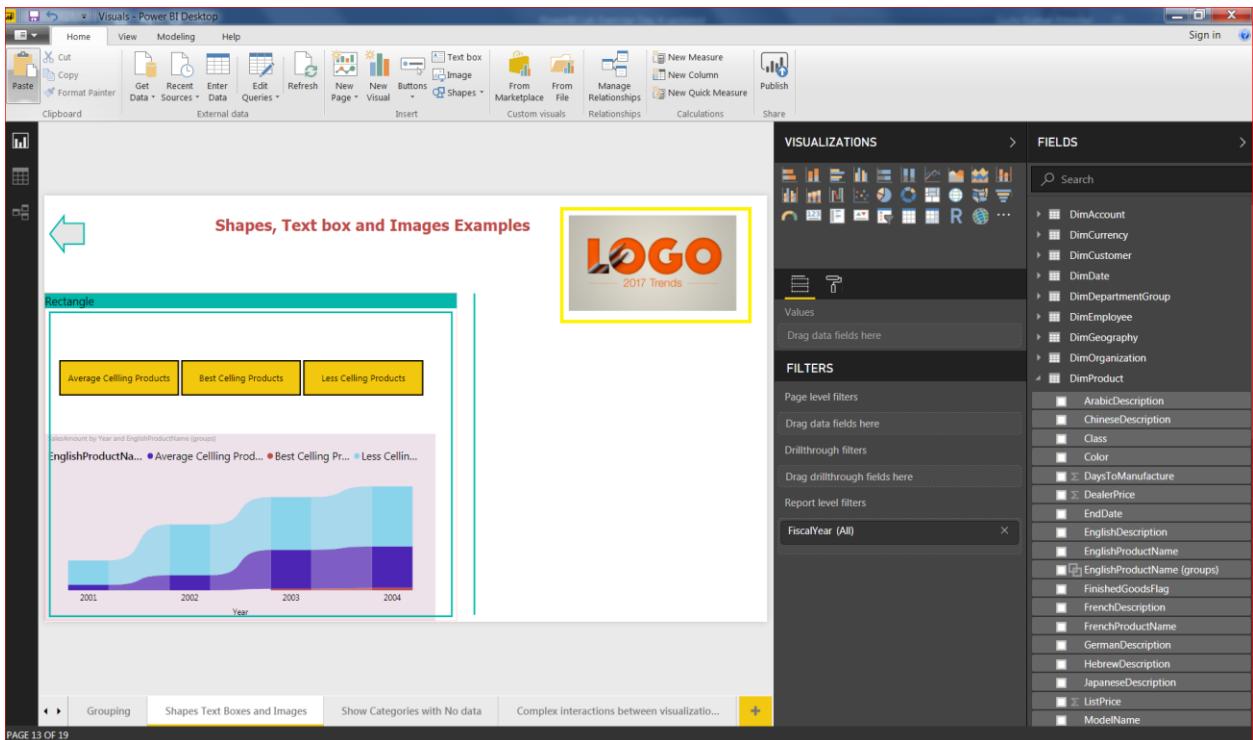
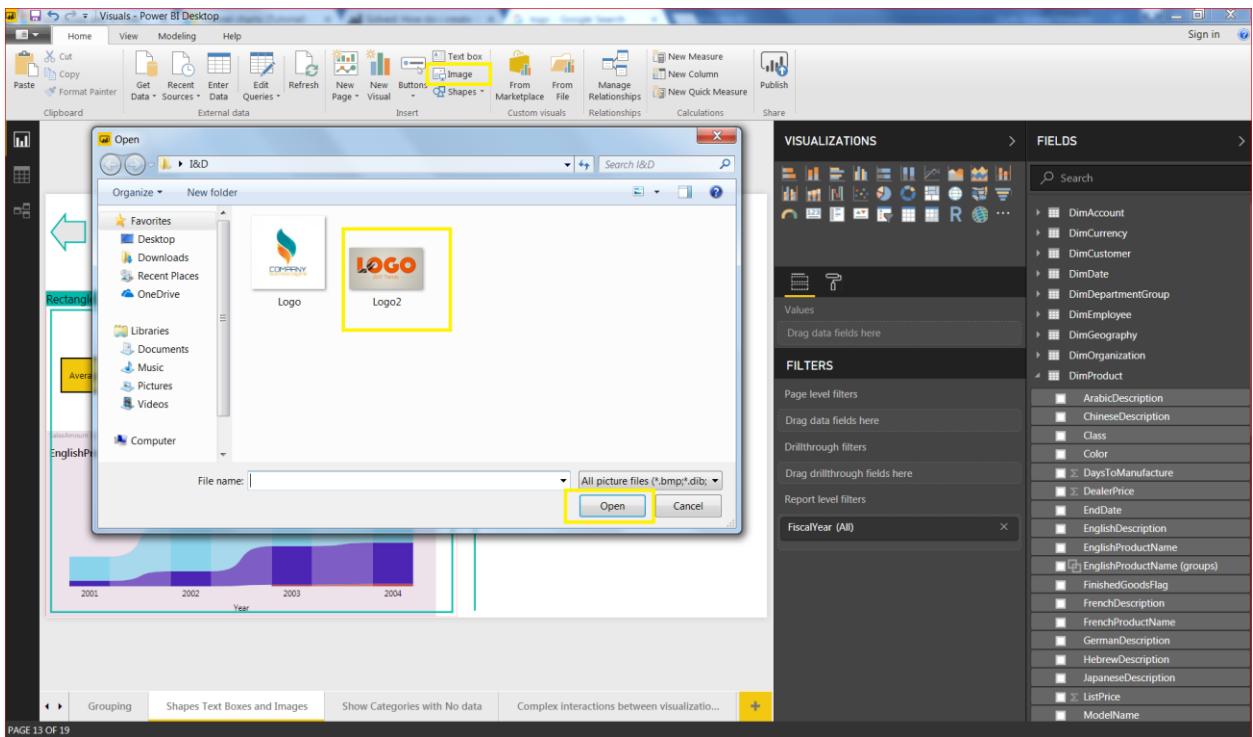
Add a Text box to a report

Use Text box for header and other purpose:



Add a Images to a report

Use for Logo or report purpose:



15. Bookmarks and Selection Panes:

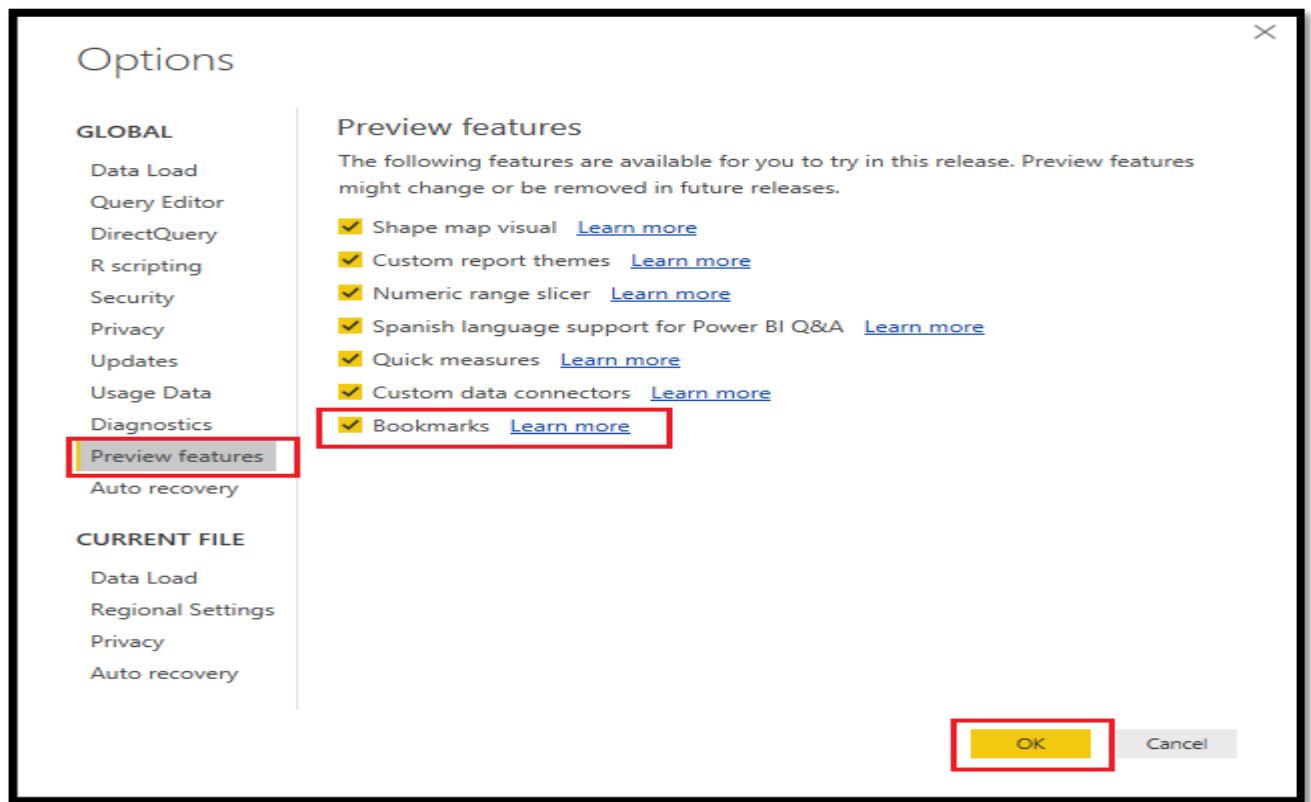
Prerequisites to enable this feature

- Latest version of Power BI Desktop
- Enable Preview Feature for bookmark

Step 1

Make sure the Bookmark Preview feature is enabled. To check, go to File > Options and Setting > Option > Preview Feature > Bookmark.

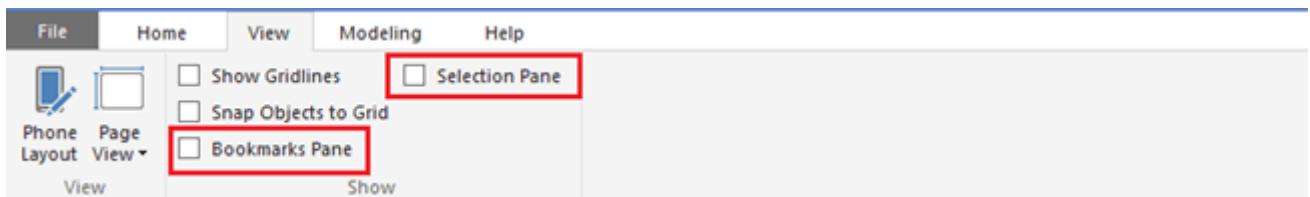
Make sure that the "Bookmarks" option is checked.



Step 2

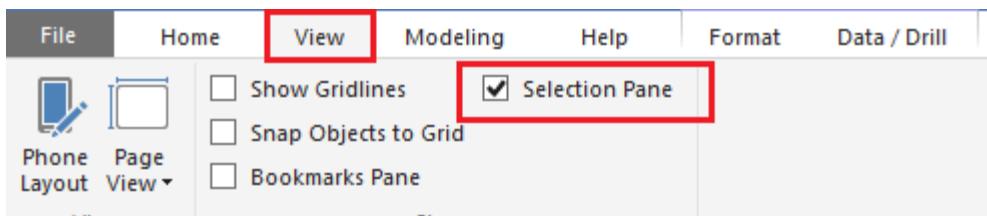
If we have enabled this option, it provides us two panes under View option.

1. Bookmark Pane
2. Selection Pane

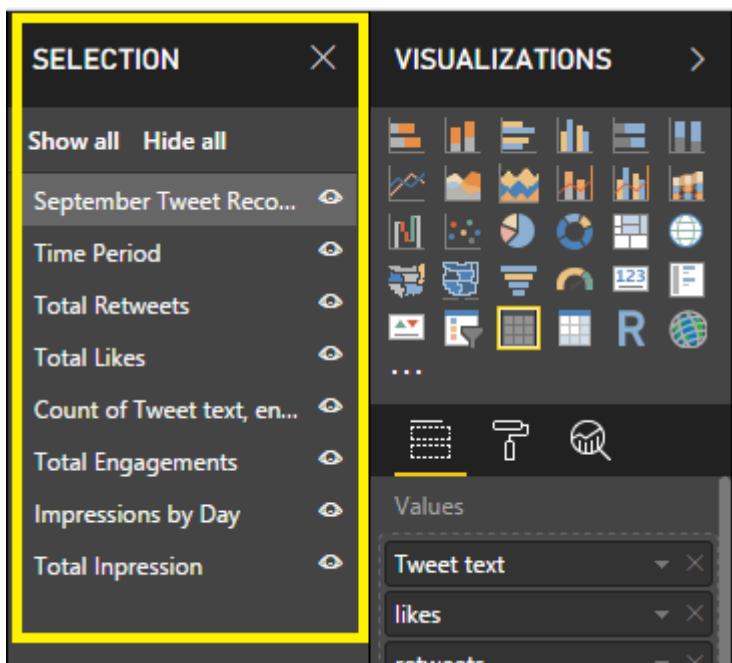


Step 3

Go to View > Check "Selection Pane".



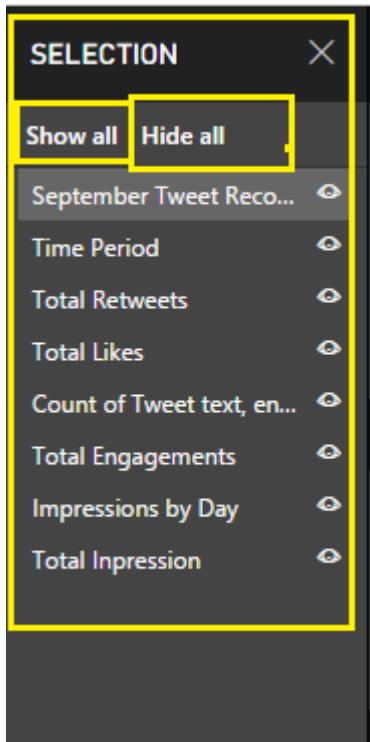
It will add the Selection pane just after the Visualizations tab.



Step 4

If we observe, the selection pane has two options.

- Show All – Used to show all visuals
- Hide All – Used to hide all visuals
- Along with this, it is showing all available visuals with visibility (glass icon right side) – We can hide specific visuals using this glass icon.



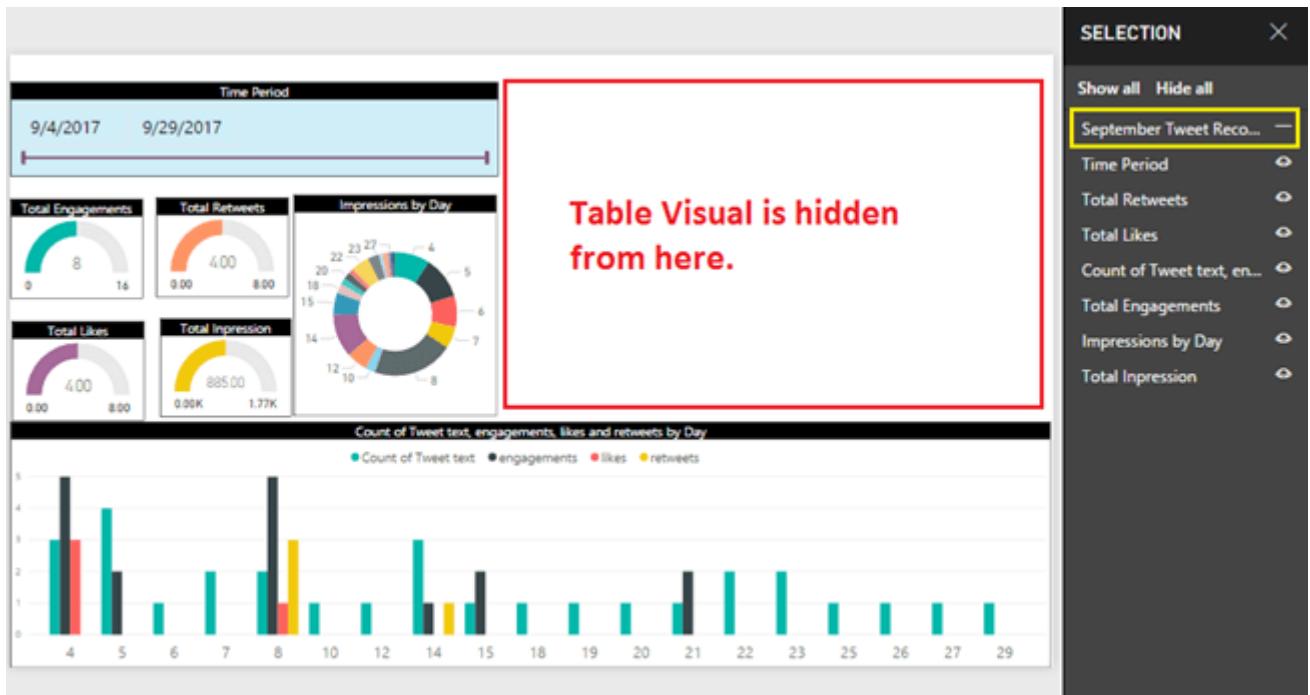
Step 5

Now, I want to hide the able visual.

So, I will close visibility icon of “September Tweet Records”. So, my table visual is now in hidden mode and my glass icon is converted into minus (-) icon.



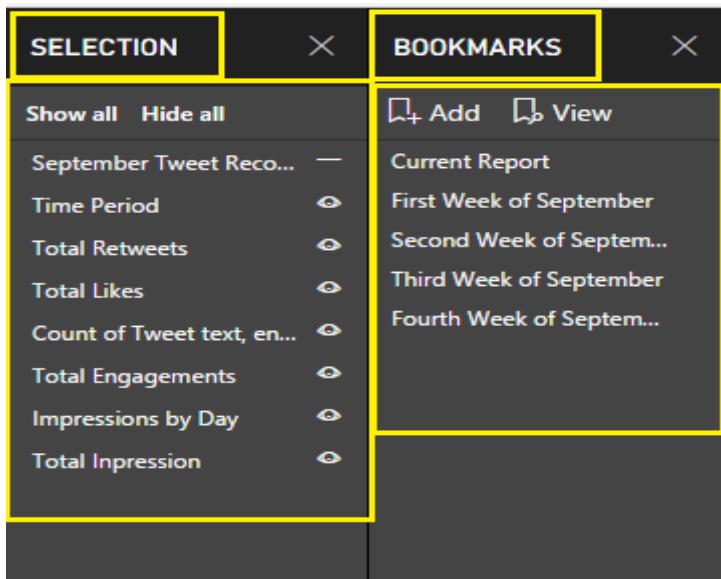
If we want to show it again, click on (-) icon. The visual will appear.



Step 6

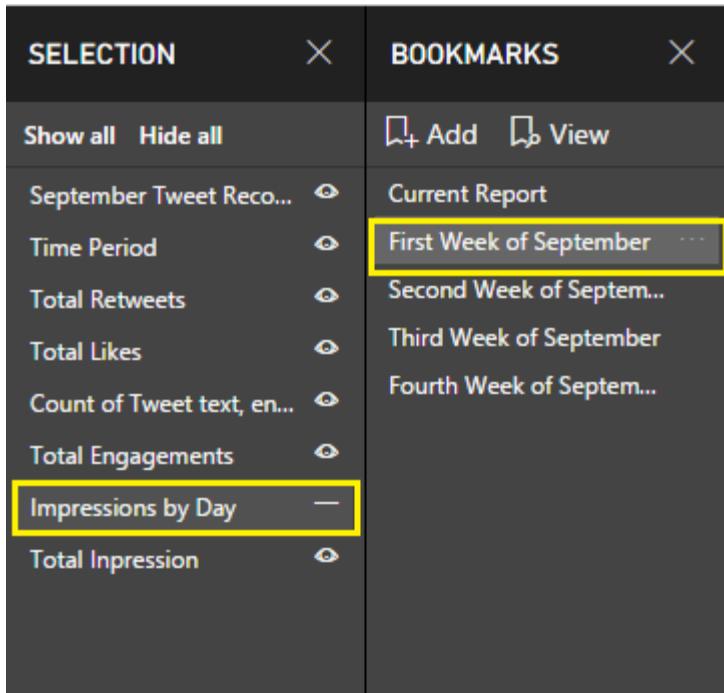
For better understanding and use of this Selection pane feature, let's combine this feature with Bookmarks pane. Power BI shows Selection pane with all available visuals for each bookmark.

For every bookmark, we can hide and show visuals.

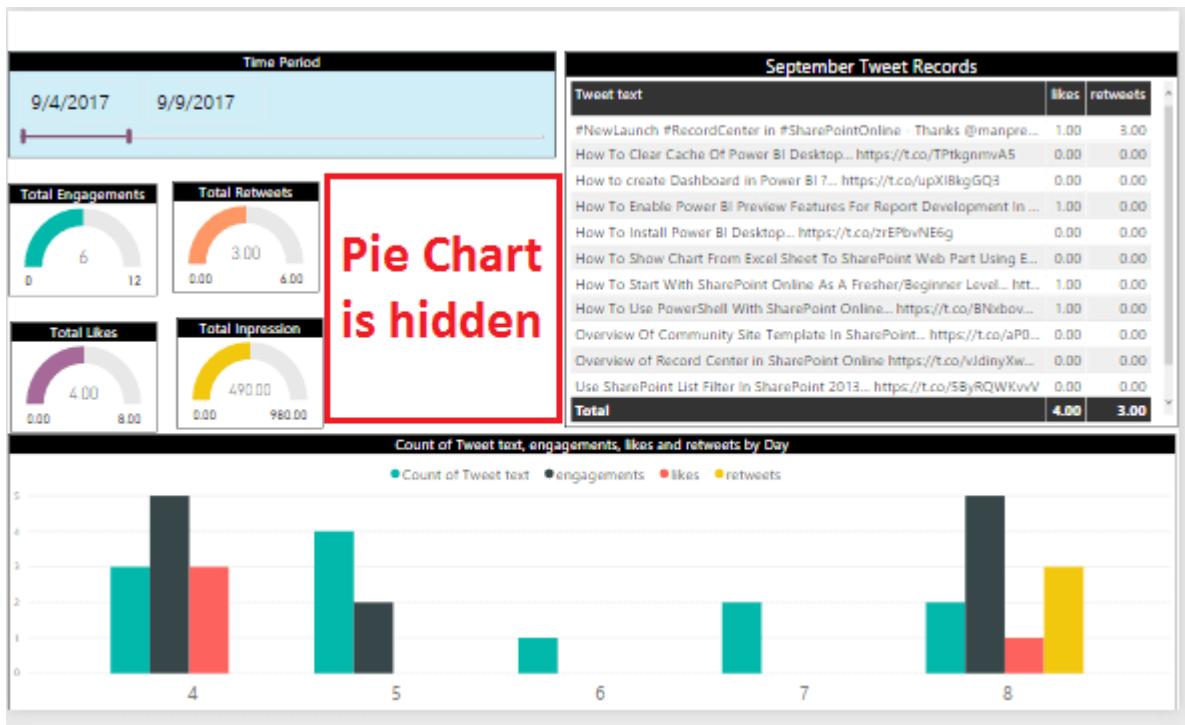


Step 7

Now, for the first bookmark, let's hide the table visual.



For the second bookmark, let's hide pie chart.



Remember: For each bookmark, it will not remember its previous state which means if we move to the next slide, the previous slide's visuals are automatically shown.

Step 8

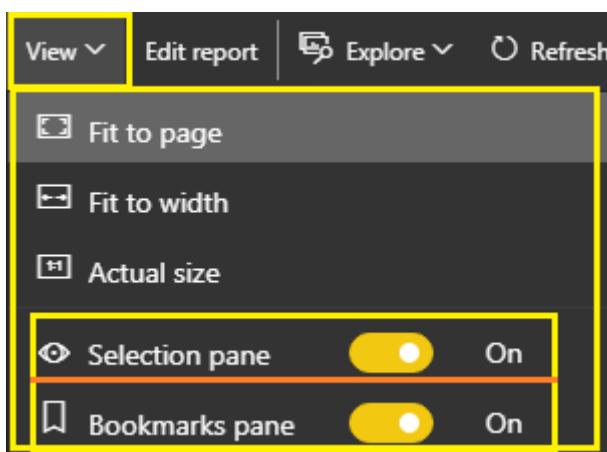
Selection Pane remembers its state at page level.

Bookmark pane remembers its state at page level as well as at the report level.

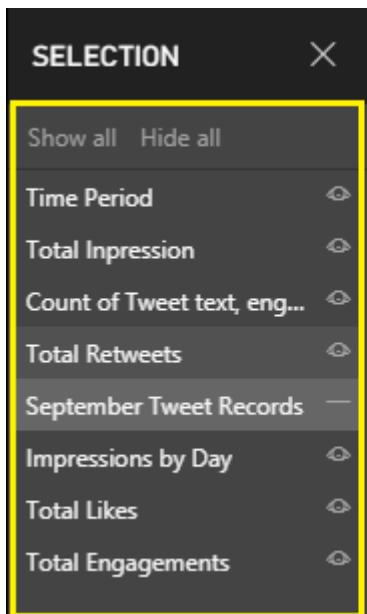
Step 9

Let's publish a report. Now, let's enable bookmark pane in Power BI published report.

Click View > Enable Selection Pane.



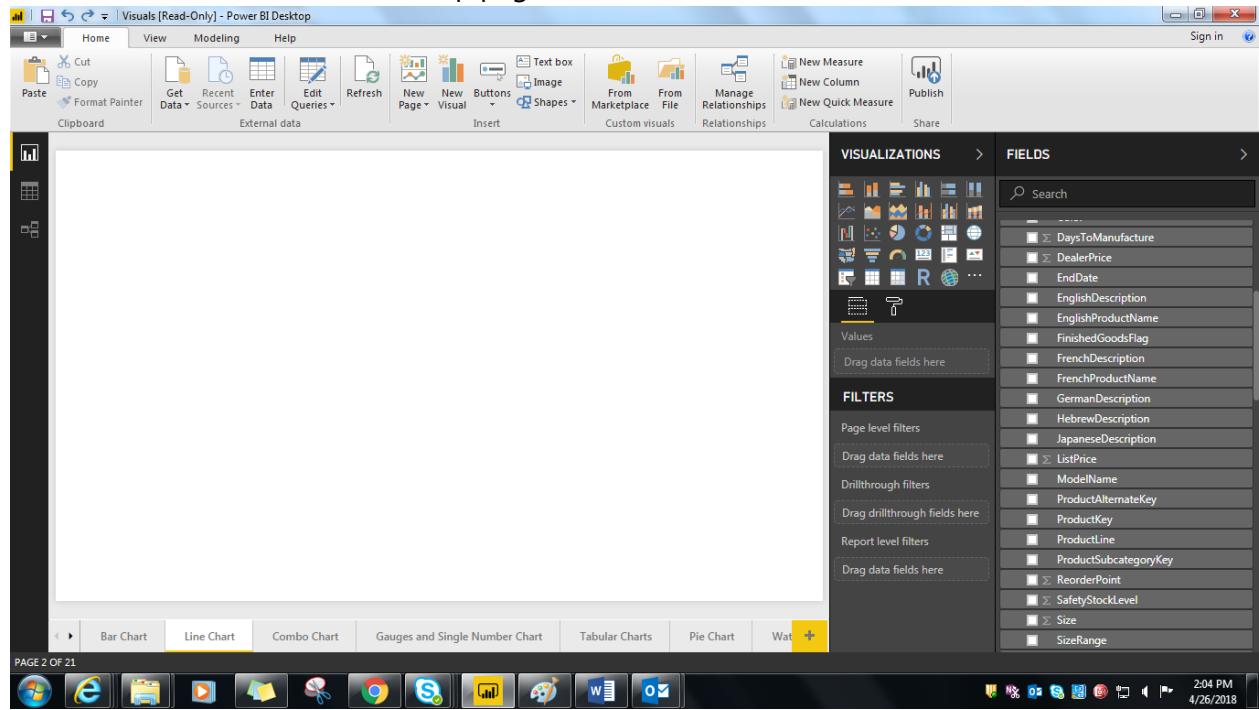
It will add a Selection pane. But here comes one limitation that I face, i.e., it will not provide the feature of show or hide visuals after publishing a report.



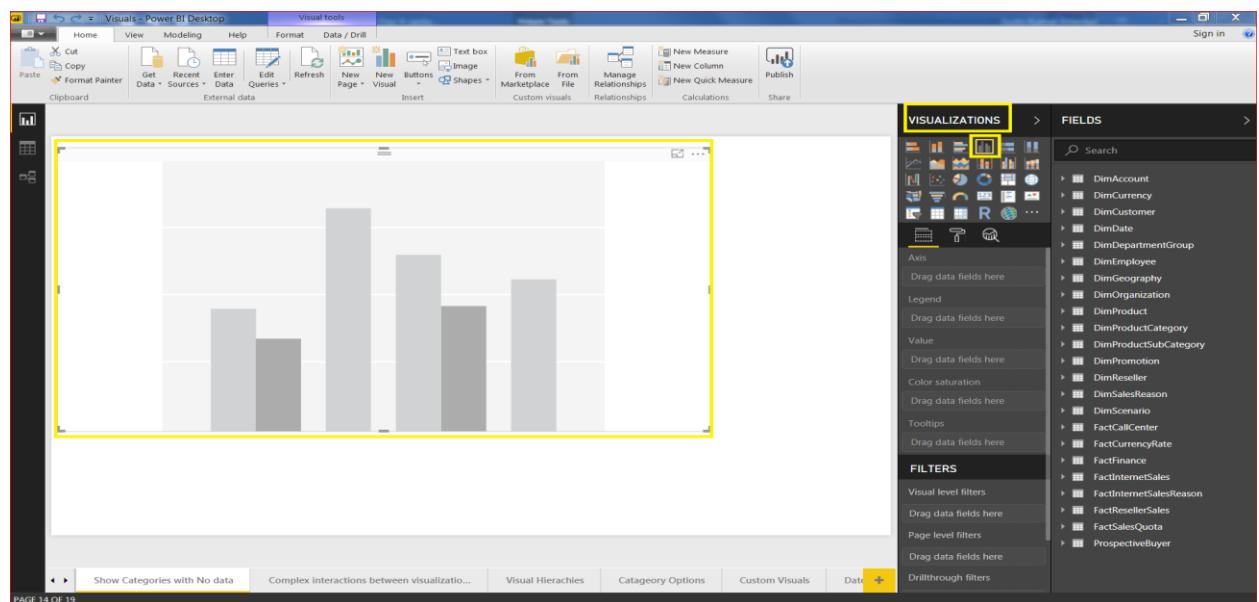
For online
Version
Selection
Pane's icon are
disabled

16. Show Categories with No data:

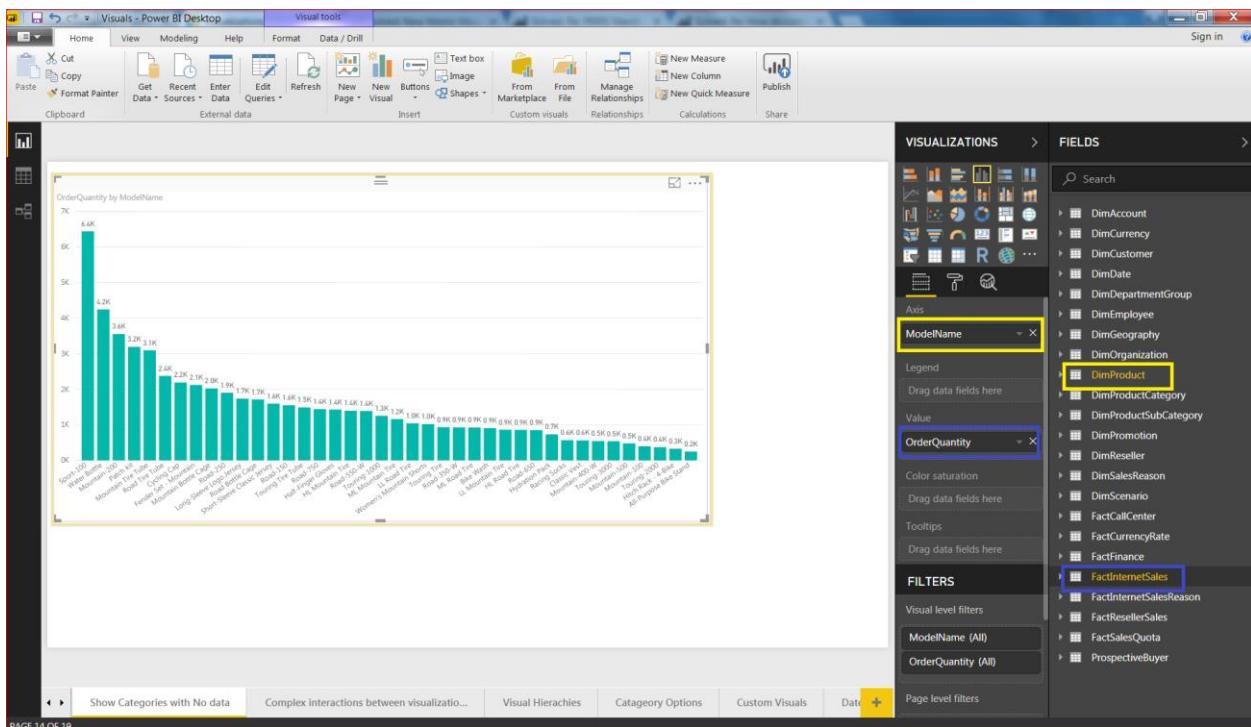
Start with a blank Power BI Desktop page:



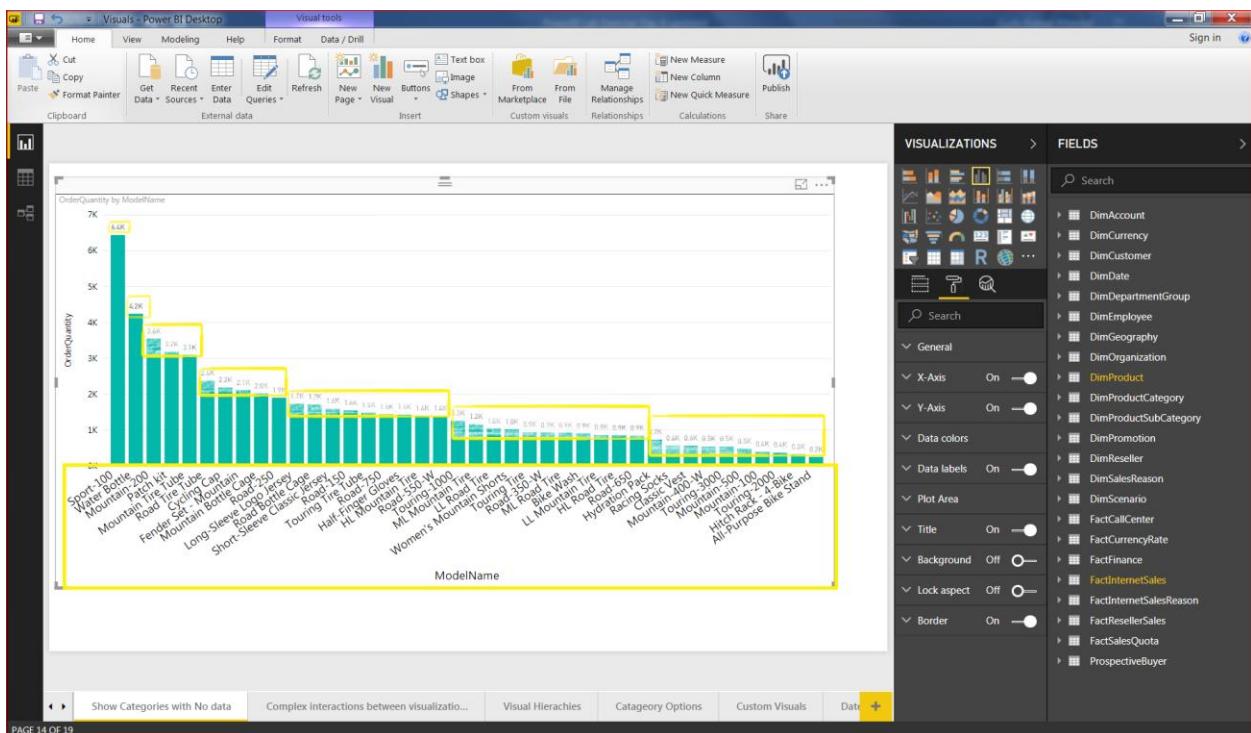
Go to Visualization and select “Clustered Column Chart”:



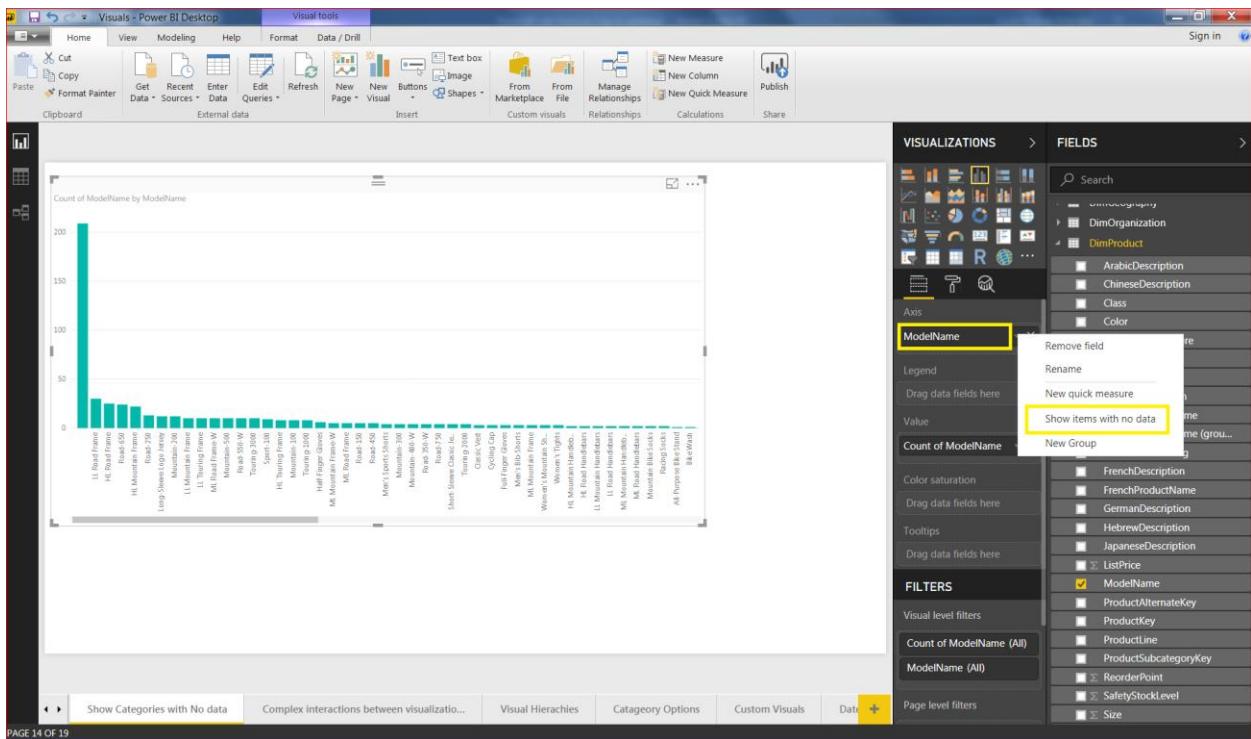
Choose the fields as follows as below:



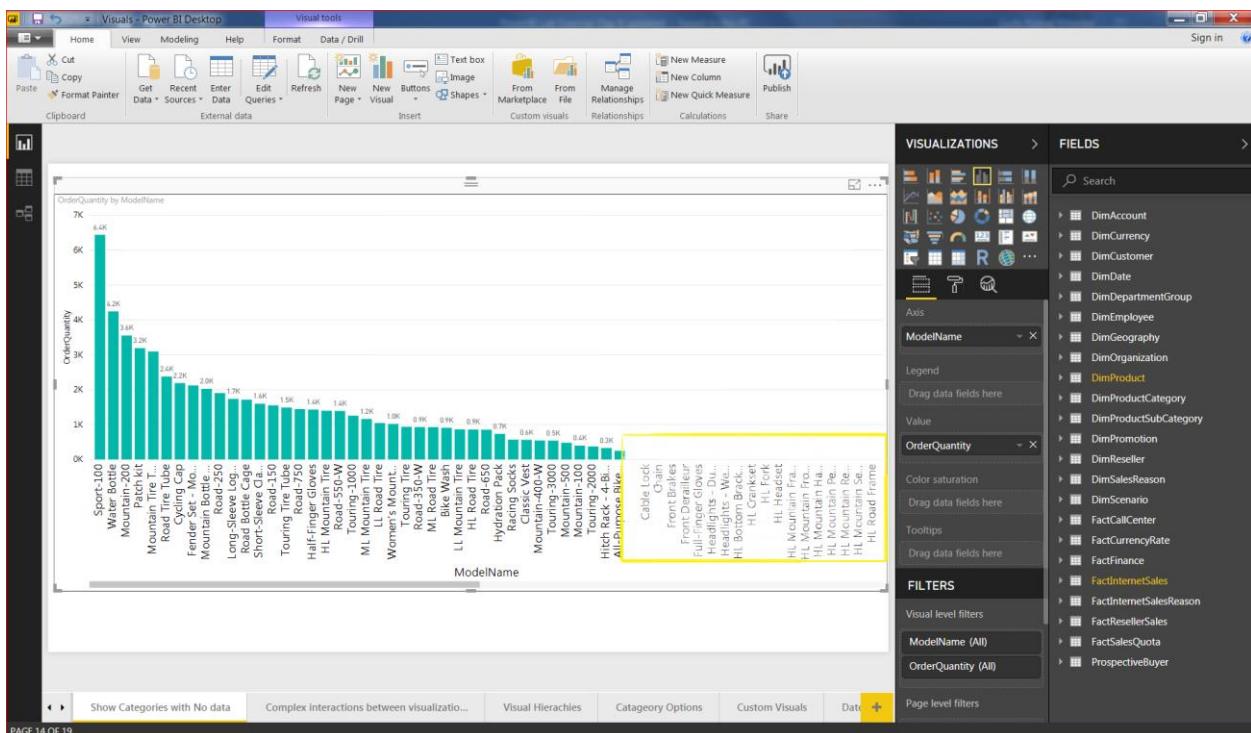
We can see there are no ModelName in X-Axis with zero values:



Go to Axis and click on ModelName column and select “Show Items with no data”:

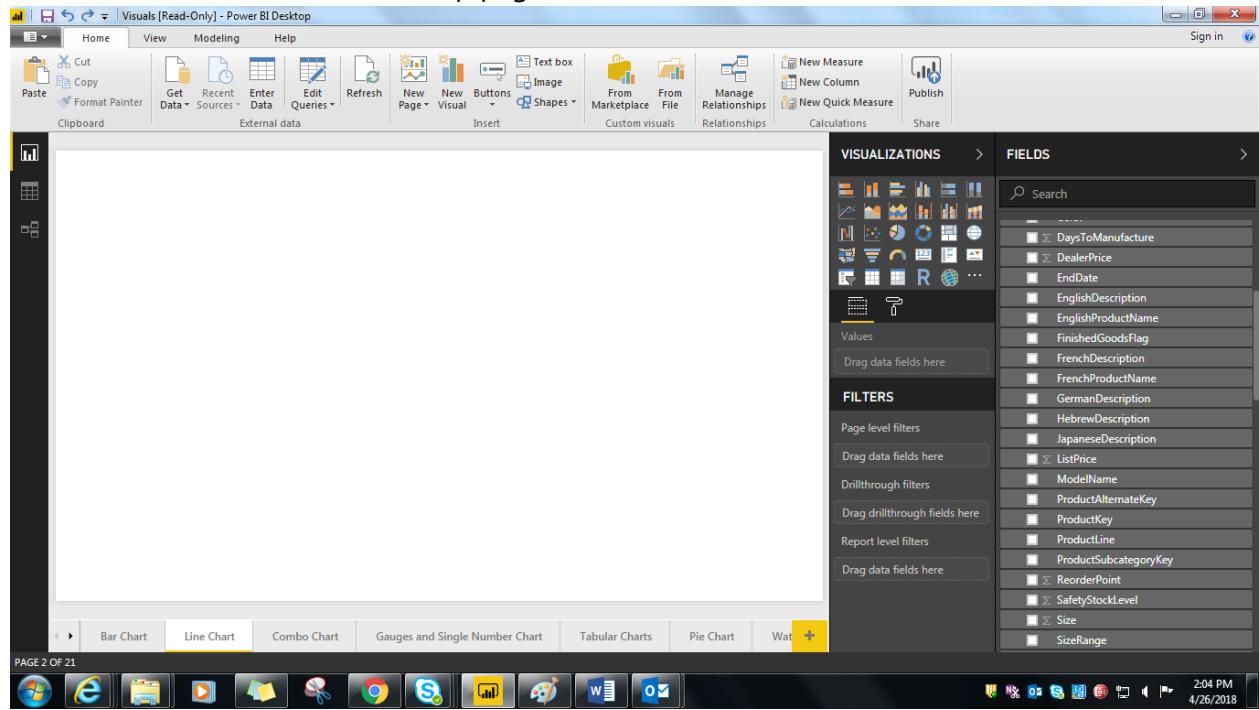


After setting this property we can see there are some Models with no values:

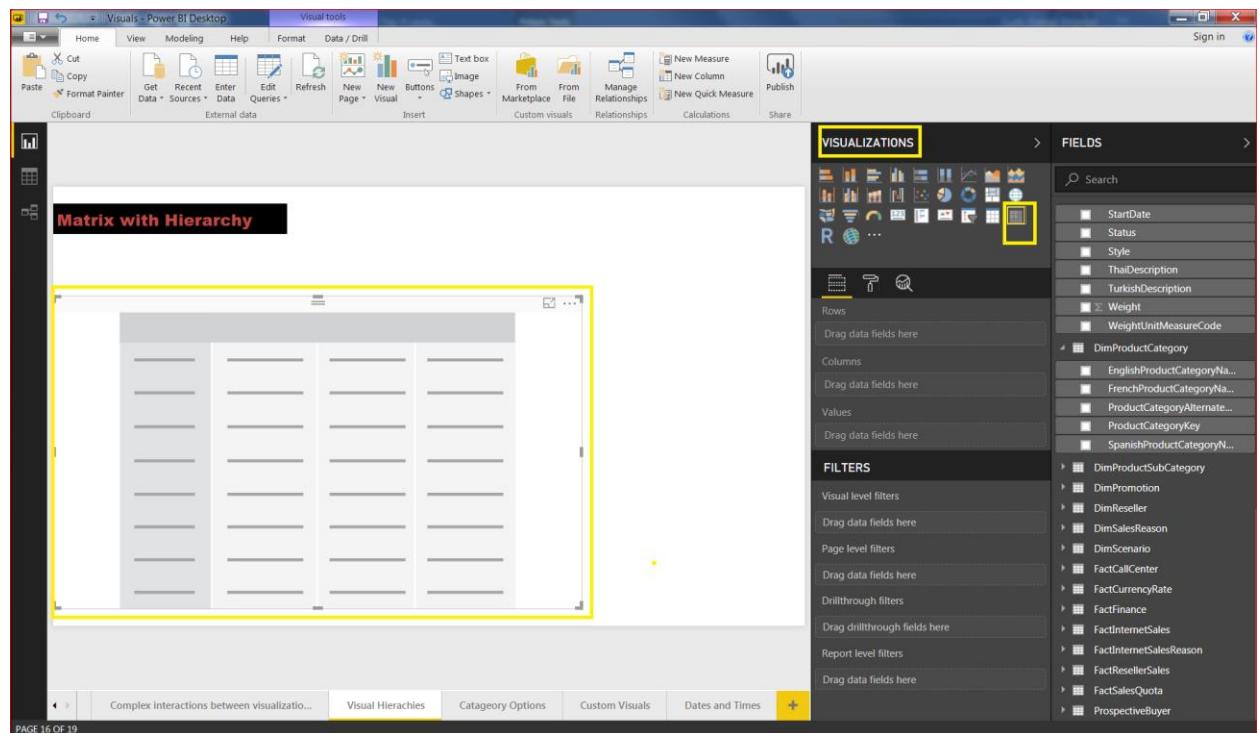


17. Visual Hierarchies:

Start with a blank Power BI Desktop page:



Go to Visualization and select “Matrix”:



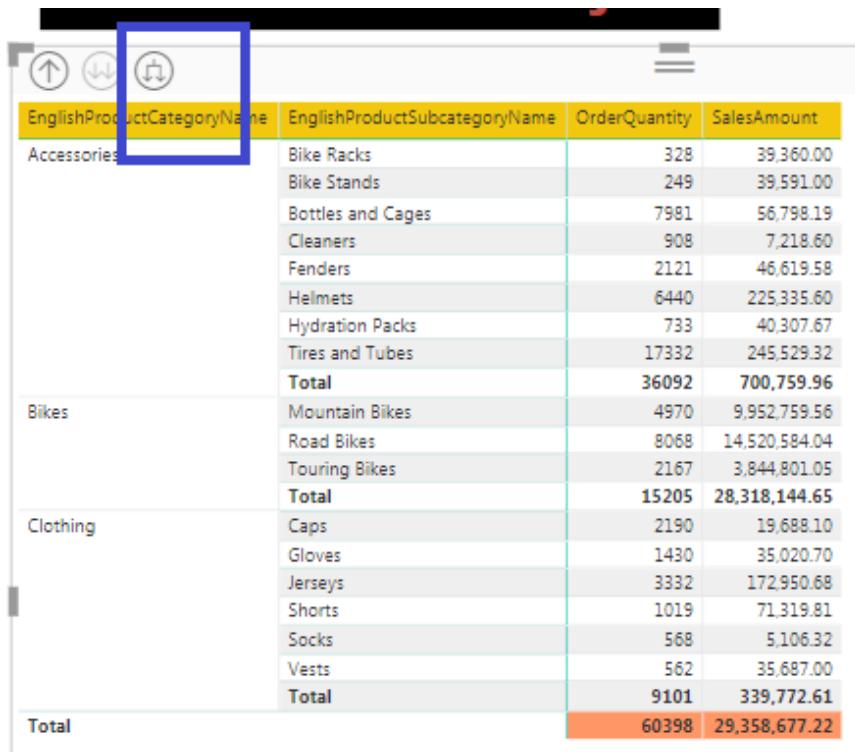
Choose the fields as follows as below:

The screenshot shows the Power BI Desktop interface. On the left is a matrix visual titled "Matrix with Hierarchy" displaying sales data. The Fields pane on the right is open, showing the selected fields: EnglishProductCategoryName, EnglishProductSubcategoryName, ModelName, Style, OrderQuantity, and SalesAmount. These fields are highlighted with yellow and pink boxes. The Filters section at the bottom of the Fields pane also has some items highlighted.

Go to format and set off to “Stepped Layout”:

The screenshot shows the Power BI Desktop interface with the format pane open on the right. In the format pane, the "Outline" section has "Stepped layout" set to "Off". This setting is highlighted with a yellow box. A red arrow points to the "Hierarchy" symbol in the matrix visual, with the text "Click on the Hierarchy symbol to go to next level" above it. The matrix visual itself is shown with a pink border.

Click on the highlighted Hierarchy symbol to go to next level:



EnglishProductCategoryName	EnglishProductSubcategoryName	OrderQuantity	SalesAmount
Accessories	Bike Racks	328	39,360.00
	Bike Stands	249	39,591.00
	Bottles and Cages	7981	56,798.19
	Cleaners	908	7,218.60
	Fenders	2121	46,619.58
	Helmets	6440	225,335.60
	Hydration Packs	733	40,307.67
	Tires and Tubes	17332	245,529.32
	Total	36092	700,759.96
Bikes	Mountain Bikes	4970	9,952,759.56
	Road Bikes	8068	14,520,584.04
	Touring Bikes	2167	3,844,801.05
	Total	15205	28,318,144.65
Clothing	Caps	2190	19,688.10
	Gloves	1430	35,020.70
	Jerseys	3332	172,950.68
	Shorts	1019	71,319.81
	Socks	568	5,106.32
	Vests	562	35,687.00
Total		9101	339,772.61
Total		60398	29,358,677.22

Go to lowest level of data while clicking on the same symbol:

The screenshot shows a Power BI report interface with a red border around the data table. The table has the following structure:

EnglishProductCategoryName	EnglishProductSubcategoryName	ModelName	Style	OrderQuantity	SalesAmount
Accessories	Bike Racks	Hitch Rack - 4-Bike		328	39,360.00
			Total	328	39,360.00
		Total		328	39,360.00
	Bike Stands	All-Purpose Bike Stand		249	39,591.00
			Total	249	39,591.00
	Bottles and Cages	Total		249	39,591.00
		Mountain Bottle Cage		2025	20,229.75
			Total	2025	20,229.75
		Road Bottle Cage		1712	15,390.88
			Total	1712	15,390.88
	Cleaners	Water Bottle		4244	21,177.56
			Total	4244	21,177.56
		Total		7981	56,798.19
Components	Fenders	Bike Wash		908	7,218.60
			Total	908	7,218.60
		Total		908	7,218.60
	Helmets	Fender Set - Mountain		2121	46,619.58
			Total	2121	46,619.58
	Hydration Packs	Total		2121	46,619.58
		Sport-100		6440	225,335.60
			Total	6440	225,335.60
	Tires and Tubes	Total		6440	225,335.60
		Hydration Pack		733	40,307.67
			Total	733	40,307.67
		Total		733	40,307.67
Wheels	Tires and Tubes	HL Mountain Tire		1396	48,860.00
			Total	1396	48,860.00
		HL Road Tire		858	27,970.80
			Total	858	27,970.80
		LL Mountain Tire		862	21,541.38
			Total	862	21,541.38
		LL Road Tire		1044	22,435.56
			Total	1044	22,435.56
		ML Mountain Tire		1161	34,818.39
			Total	1161	34,818.39
	Wheels	ML Road Tire		826	22,140.74
			Total	826	22,140.74
		Total		4129	120,930.71
		ML Total		4129	120,930.71

18. Custom Visuals:

To use Custom Visuals us the below link to download:

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

The screenshot shows the Microsoft AppSource interface. The search bar at the top contains the query "Power BI visual". Below the search bar, there are several filters: "Add-Ins" and "Power BI visual" are selected, while "Cloud", "Mobility", and "Productivity" are not. The results section is titled "App results (150)". There are five visible app cards, each with a thumbnail, title, developer, price, and a "Get it now" button.

App	Developer	Description	Price	Action
Gantt Chart by MAQ Software	By MAQ LLC	Gantt chart with a grid that provides details of a task and additional key performance indicators.	Free	Get it now
ChartAccent - LineChart	By Donghao Ren	A line chart with rich annotation features for your presentation.	Free	Get it now
Time Brush Slicer	By Microsoft Corporation	A powerful visual that allows for the analysis of numerical data over time.	Free	Get it now
User List by CloudScope	By CloudScope	User List displays lists of users, organizations or other data using Twitter styles	Free	Get it now

I will download some visuals which are not available in PowerBI Visualization pane:

Gantt Chart,

HeatMap

Click on “Got it Now”:

This screenshot is identical to the one above, but the "Get it now" button for the "Gantt Chart by MAQ Software" app is highlighted with a yellow box.

It will ask for powerbi account and provide:

The screenshot shows the Microsoft AppSource interface. A modal dialog box is open, prompting the user to switch to their work or school account. The dialog contains the following text:
Switch to your work or school account
The app you have selected (Gantt Chart by MAQ Software) requires a work or school account. To continue, please enter the email address associated with your work or school account.
You will be automatically logged out from your Microsoft account(gudu.kumar@capgemini.com) on AppSource.
Work or school account: (This input field is highlighted with a yellow box.)
Sign in
Don't have an account? [Sign up for a free account](#)
In the background, other app cards are visible:
- Infographic Designer by CloudScope: Free, Get it now.
- Ring Chart by MAQ Software by MAQ LLC: Previewed.
- Image Grid by Fredrik Hedenström: Previewed.
- Network Navigator Chart by DataKinetics: Previewed.
- Hierarchy Chart by Akvelon by Akvelon: Previewed.

The screenshot shows the Microsoft AppSource interface with a modal dialog box titled "One more thing ...". The dialog contains the following text:
Gantt Chart by MAQ Software
By MAQ LLC
I agree to the provider's [terms of use](#) and [privacy policy](#) and understand that the rights to use this product do not come from Microsoft, unless Microsoft is the provider. Use of AppSource is governed by separate [terms](#) and [privacy](#)..
You're signed in as Gudu Kumar-External (gukumar@external.technip.com).
A blue "Continue" button is at the bottom of the dialog, which is also highlighted with a yellow box.

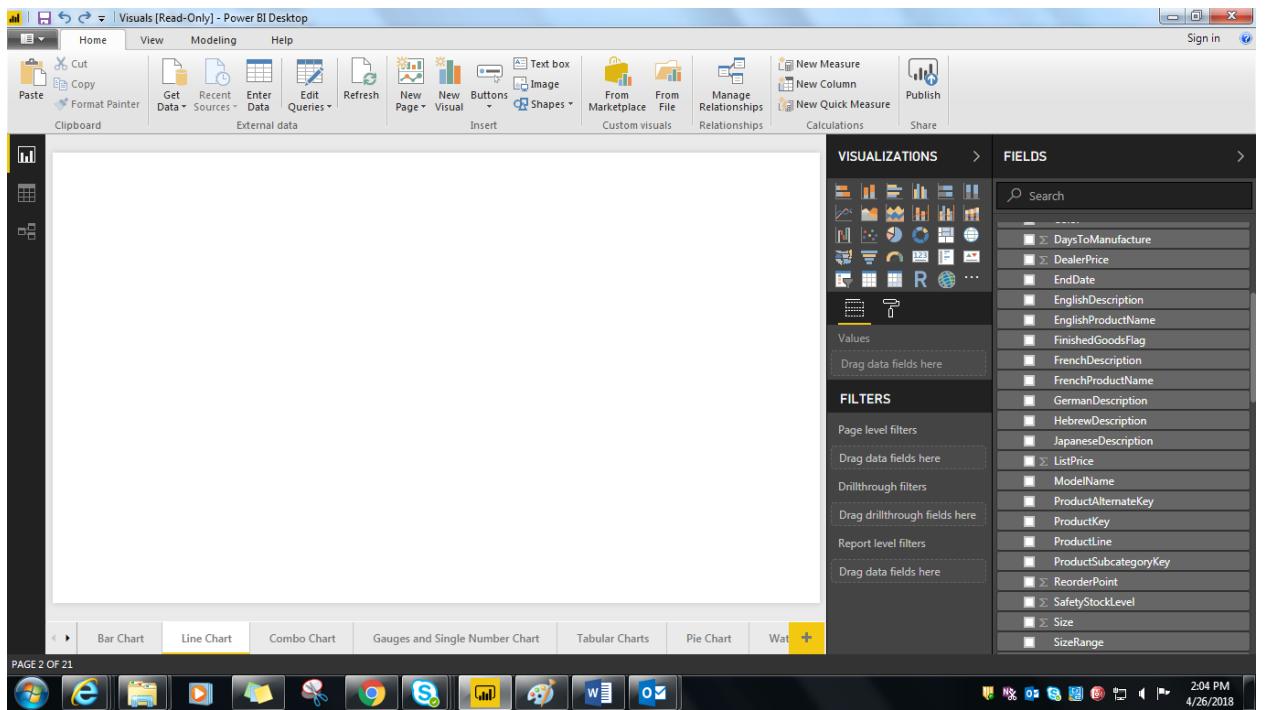
The screenshot shows the Microsoft Office Store interface. At the top, there's a Microsoft logo and a navigation bar with links for 'Office Store', 'Add-ins', 'Templates', and 'Support'. Below the navigation bar, the text 'Step 1: Download Table Heatmap' is displayed. A yellow rectangular box highlights the text 'Select to download Table Heatmap' next to a small icon of a heatmap grid.

And save to my location folder:

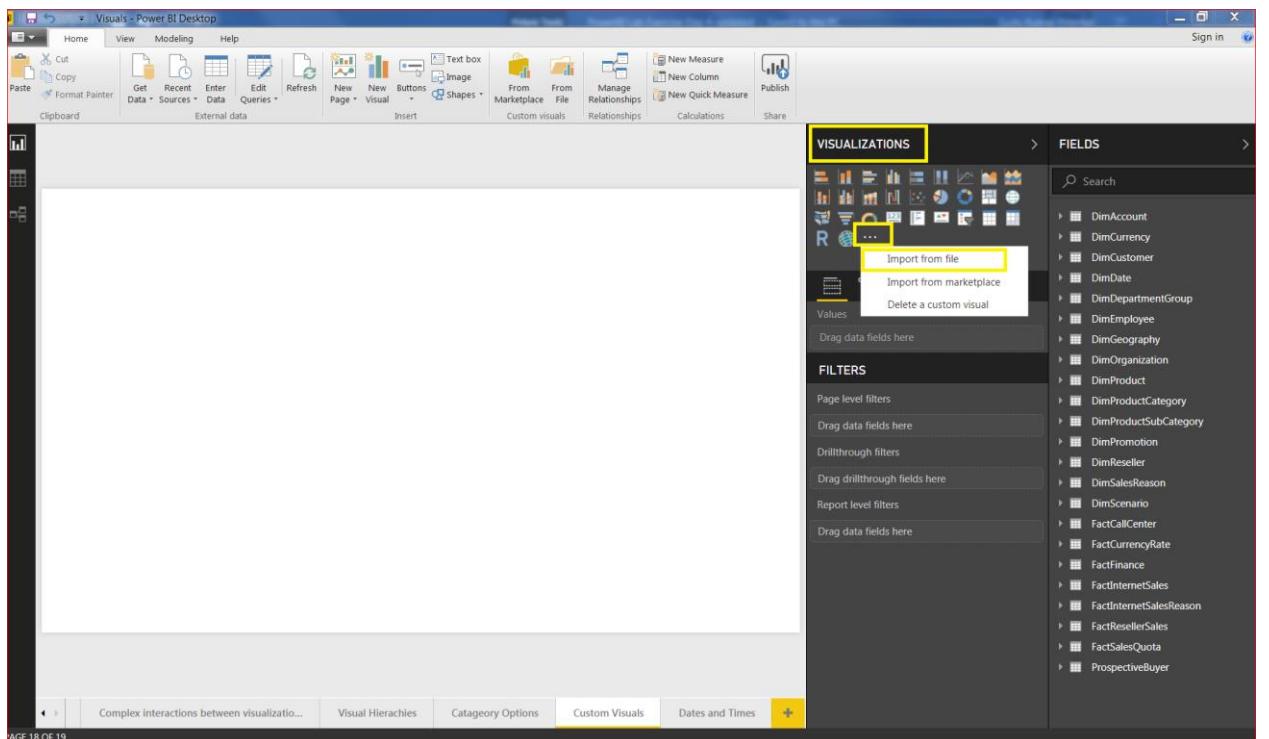
The screenshot shows a Windows File Explorer window. The path 'I&D > Custom Visuals' is visible in the address bar. The left sidebar shows icons for 'Favorites', 'Desktop', 'Downloads', 'Recent Places', 'eDrive', 'Pictures', and 'Documents'. The main pane displays a list of files with columns for 'Name', 'Date modified', 'Type', and 'Size'. Two files are listed: 'GanttChartByMAQSoftware.3.1.1.0' (modified 4/27/2018 12:34 PM, Microsoft Power B..., 621 KB) and 'TableHeatMap.1.3.4.0' (modified 4/27/2018 12:43 PM, Microsoft Power B..., 574 KB).

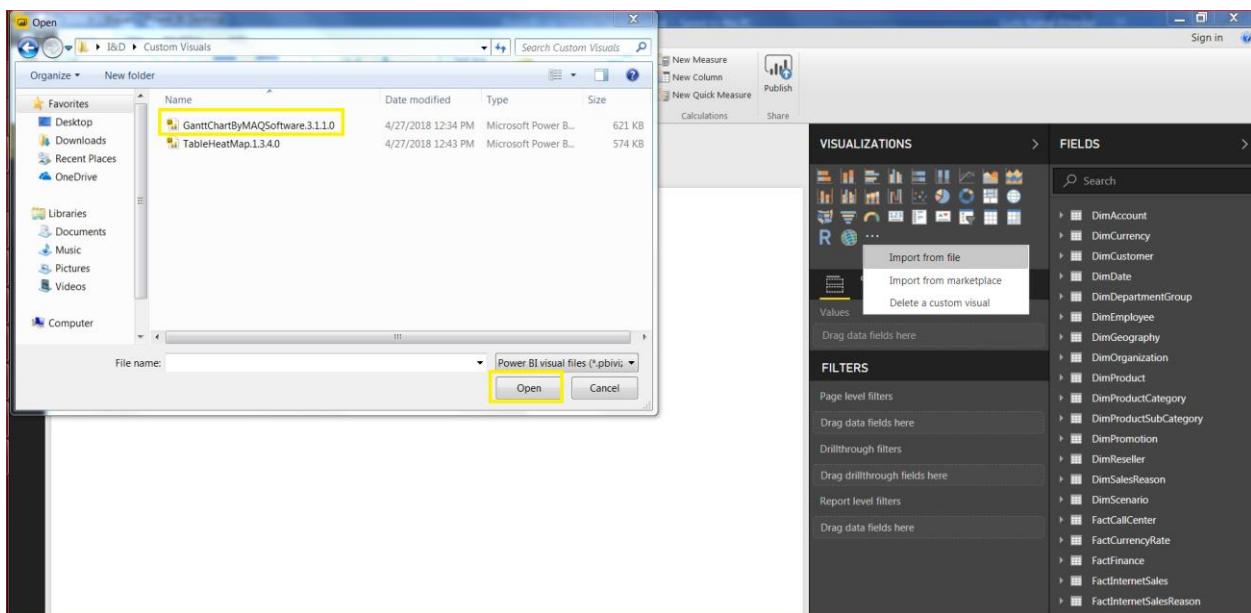
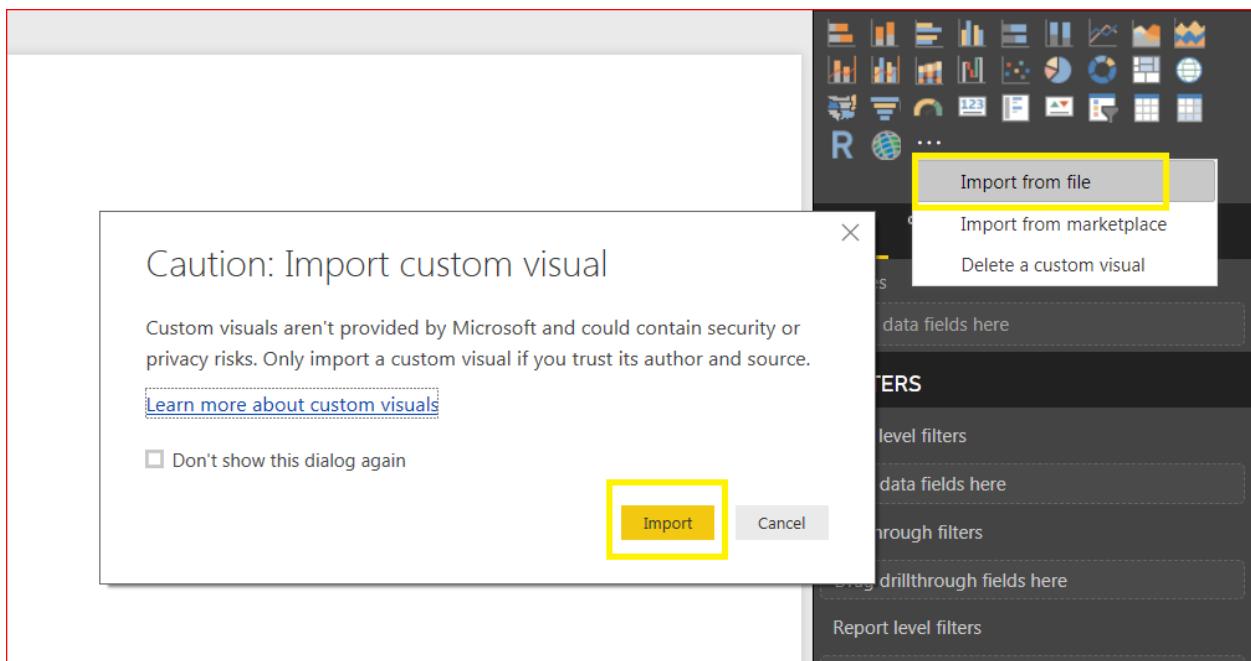
Name	Date modified	Type	Size
GanttChartByMAQSoftware.3.1.1.0	4/27/2018 12:34 PM	Microsoft Power B...	621 KB
TableHeatMap.1.3.4.0	4/27/2018 12:43 PM	Microsoft Power B...	574 KB

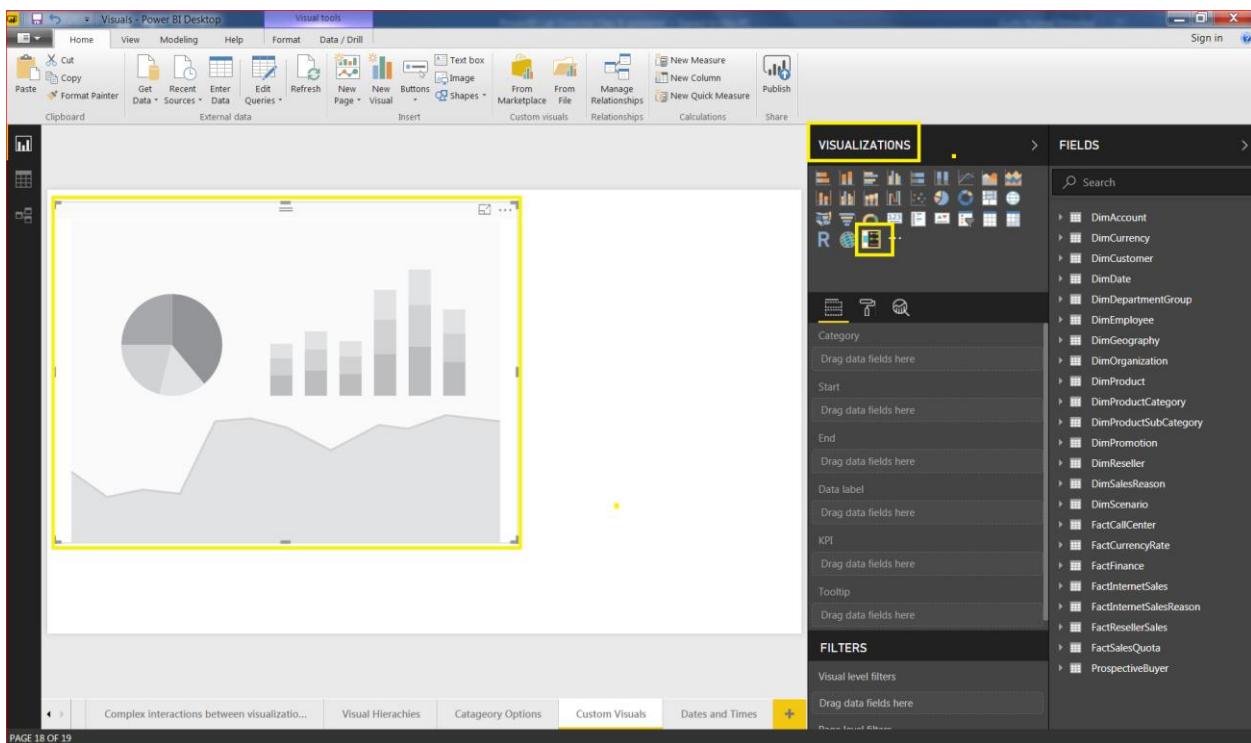
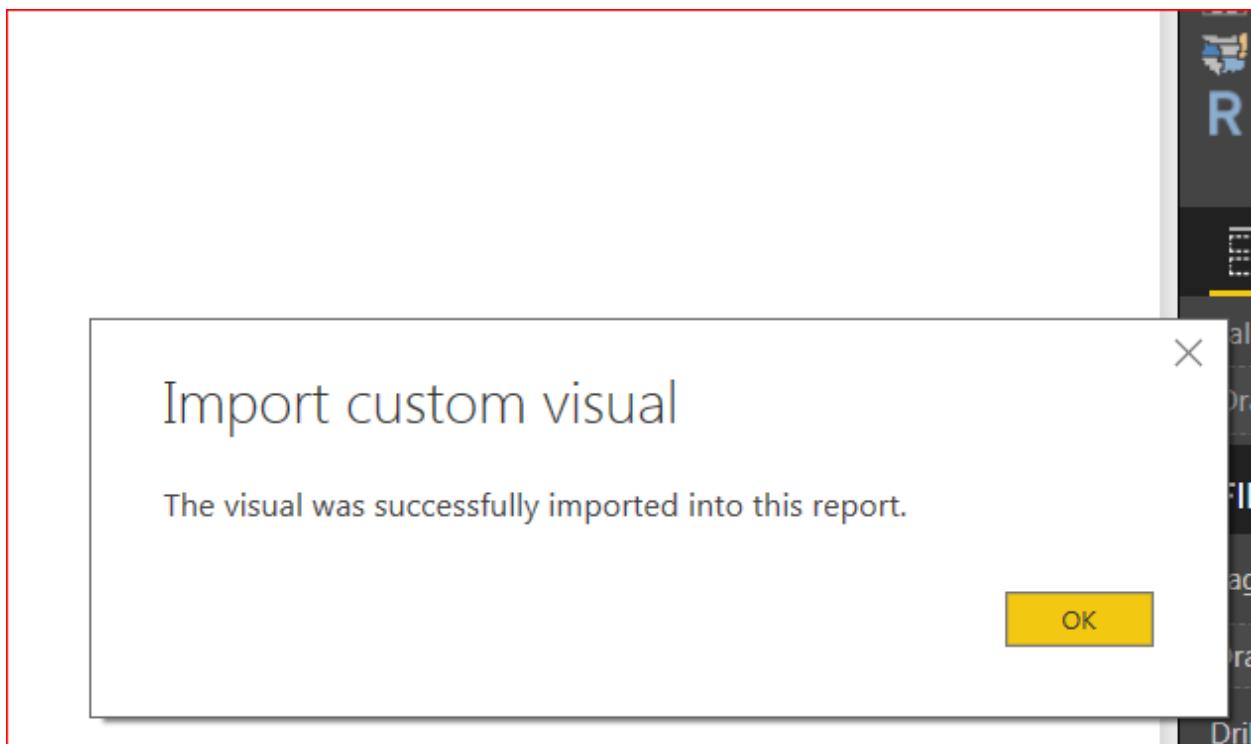
Start with a blank Power BI Desktop page:



Go to Visualization and click on “Import from file”:







Choose the fields as follows as below:

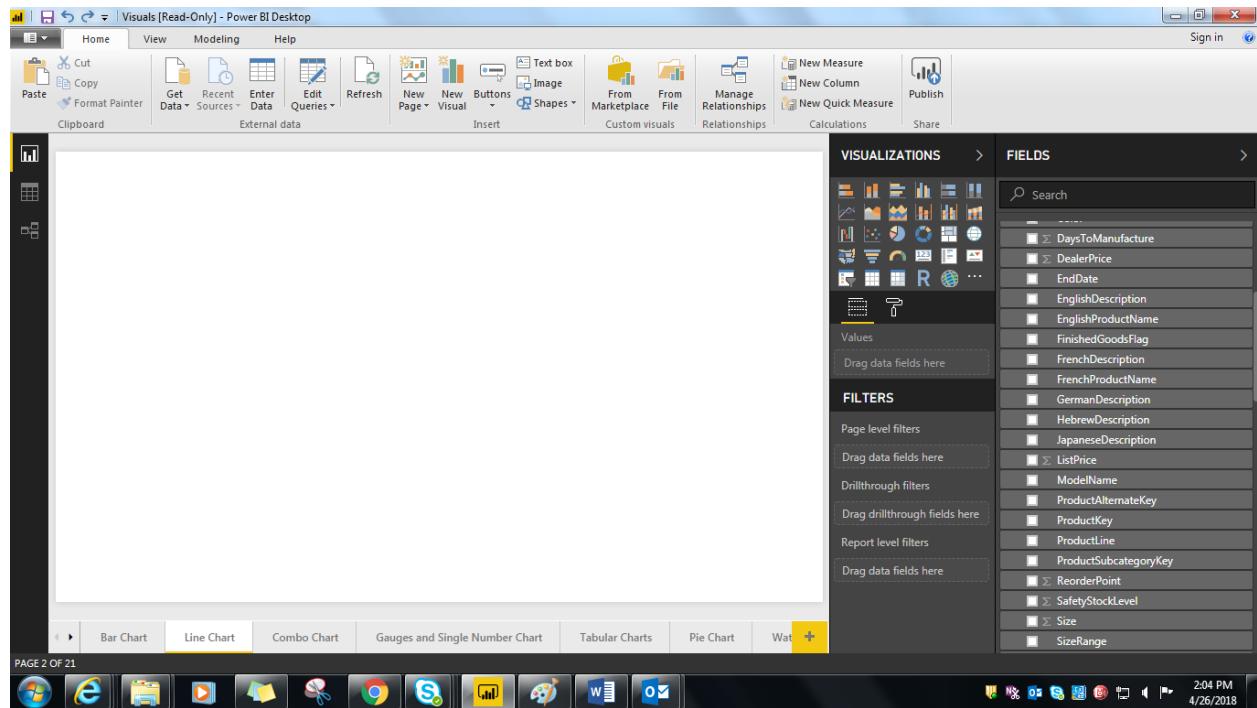
The screenshot shows the Power BI Desktop interface. On the left is a Gantt chart titled "Gantt Chart: Earliest StartDate, Earliest EndDate and OrderQuantity by ModelName". The chart displays various bicycle components like "All-Purpose Bike Stand", "Bike Wash", "Chain", etc., with their start and end dates and order quantities. On the right is the "FIELDS" pane, which lists dimensions and measures. The fields selected for the visualization are highlighted with yellow boxes: "ModelName", "Earliest StartDate", "Earliest EndDate", "OrderQuantity", and "FactInternetSales". Other fields like "DimProduct" and "FactInternetSalesReason" are also visible in the list.

Go to format set the property as below:

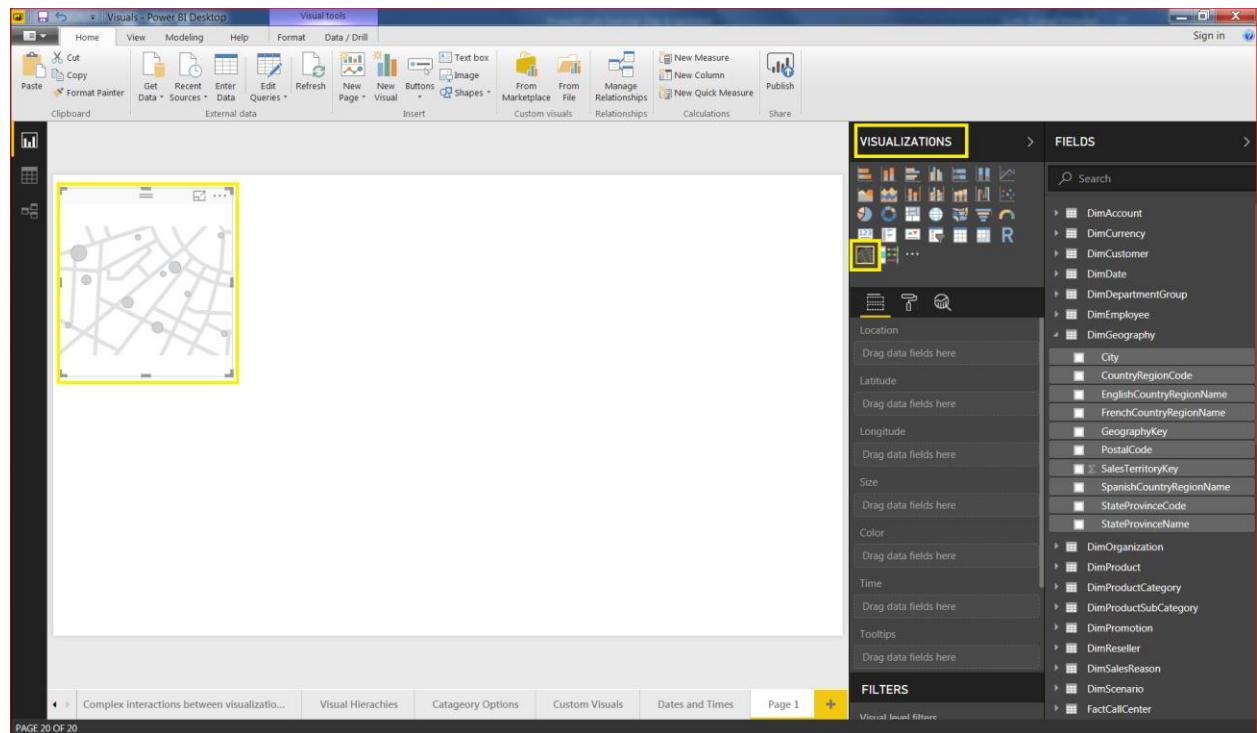
This screenshot shows the same Power BI Desktop interface with the Gantt chart visualization. The focus is on the "FORMAT" tab of the ribbon, specifically the "BARS FORMATTING" section in the "VISUALIZATIONS" pane. The "Show All" button is highlighted with a yellow box. Below it, individual bars for "Bar 1" through "Bar 7" are listed, each with a color swatch and a dropdown menu icon. This indicates that each bar's format properties can be individually customized.

19. Complex interactions between visualizations:

Start with a blank Power BI Desktop page:



Take Map from Visualization:



Choose the fields as per below:

The screenshot shows the Power BI interface with two main panes: 'VISUALIZATIONS' on the left and 'FIELDS' on the right.

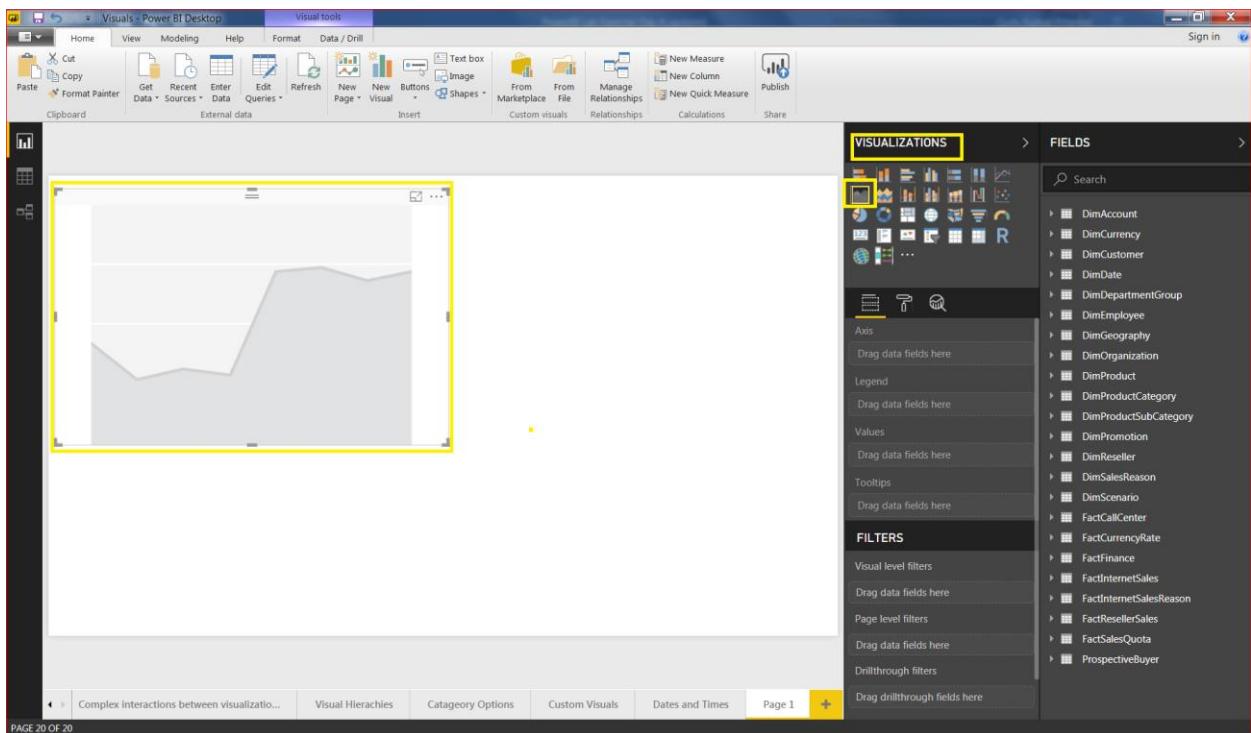
VISUALIZATIONS pane:

- Shows various chart icons: Bar, Line, Area, Stacked Bar, Stacked Line, Stacked Area, Treemap, Map, Gantt, and Radar.
- Selected visualization: Area Chart (highlighted with a yellow border).
- Fields assigned to the visualization:
 - Location: City (highlighted with a yellow border)
 - Longitude: EnglishCountryRegionName
 - Size: SalesAmount (highlighted with a blue border)
 - Color: SalesAmount (highlighted with a blue border)
- Other sections: Latitude, Drag data fields here, Size, Color, Time, Drag data fields here, Tooltips, Drag data fields here, and FILTERS.

FIELDS pane:

- Search bar: Search
- List of fields:
 - DimAccount
 - DimCurrency
 - DimCustomer
 - DimDate
 - DimDepartmentGroup
 - DimEmployee
 - DimGeography (highlighted with a yellow border)
 - DimOrganization
 - DimProduct
 - DimProductCategory
 - DimProductSubCategory
 - DimPromotion
 - DimReseller
 - DimSalesReason
 - DimScenario
 - FactCallCenter
 - FactCurrencyRate
 - FactFinance
 - FactInternetSales (highlighted with a blue border)
 - FactInternetSalesReason
 - FactResellerSales
 - FactSalesQuota
 - ProspectiveBuyer

Take "Area Chart":

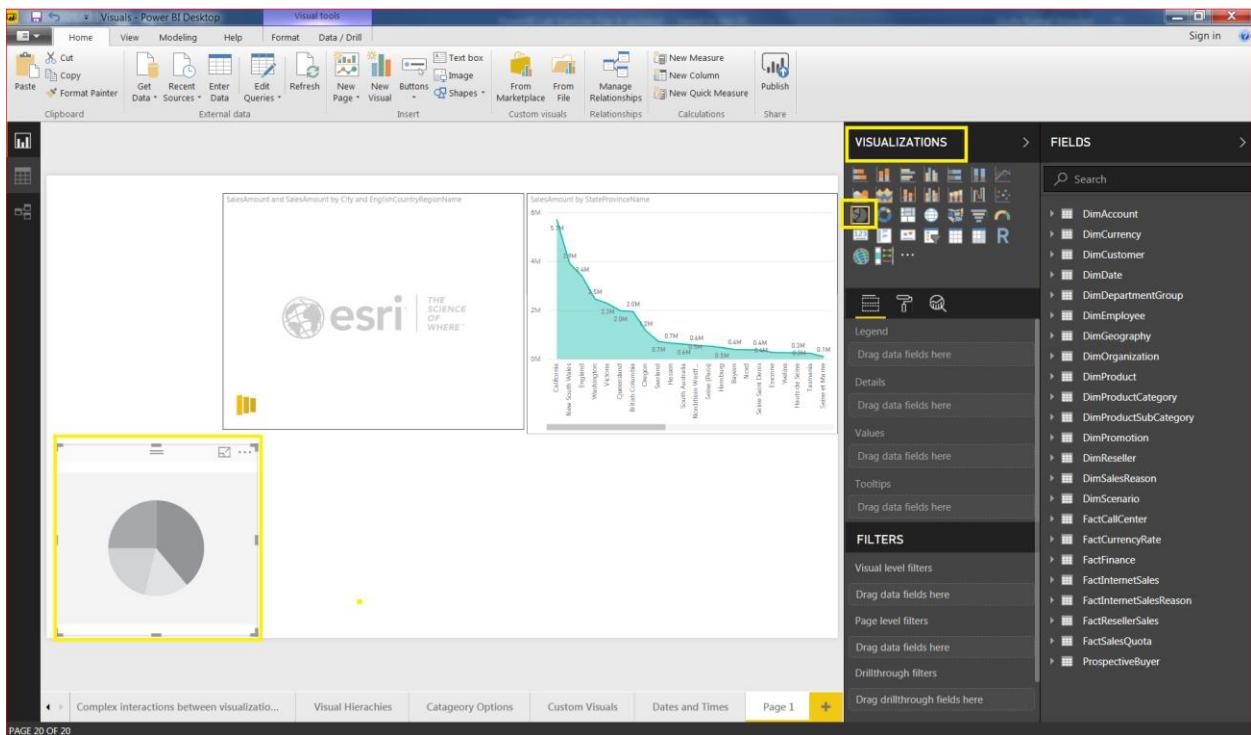


Choose the fields as per below:

This screenshot shows the Power BI Fields pane with several fields highlighted. The Axis section has 'StateProvinceName' highlighted with a yellow box. The Values section has 'SalesAmount' highlighted with a blue box. In the FILTERS section, 'DimGeography' is highlighted with a yellow box, and 'FactInternetSales' is highlighted with a blue box. A red box highlights the entire list of fields on the right side of the pane.

- DimDepartmentGroup
- DimEmployee
- DimGeography**
- DimOrganization
- DimProduct
- DimProductCategory
- DimProductSubCategory
- DimPromotion
- DimReseller
- DimSalesReason
- DimScenario
- FactCallCenter
- FactCurrencyRate
- FactFinance
- FactInternetSales**
- FactInternetSalesReason**
- FactResellerSales
- FactSalesQuota
- ProspectiveBuyer

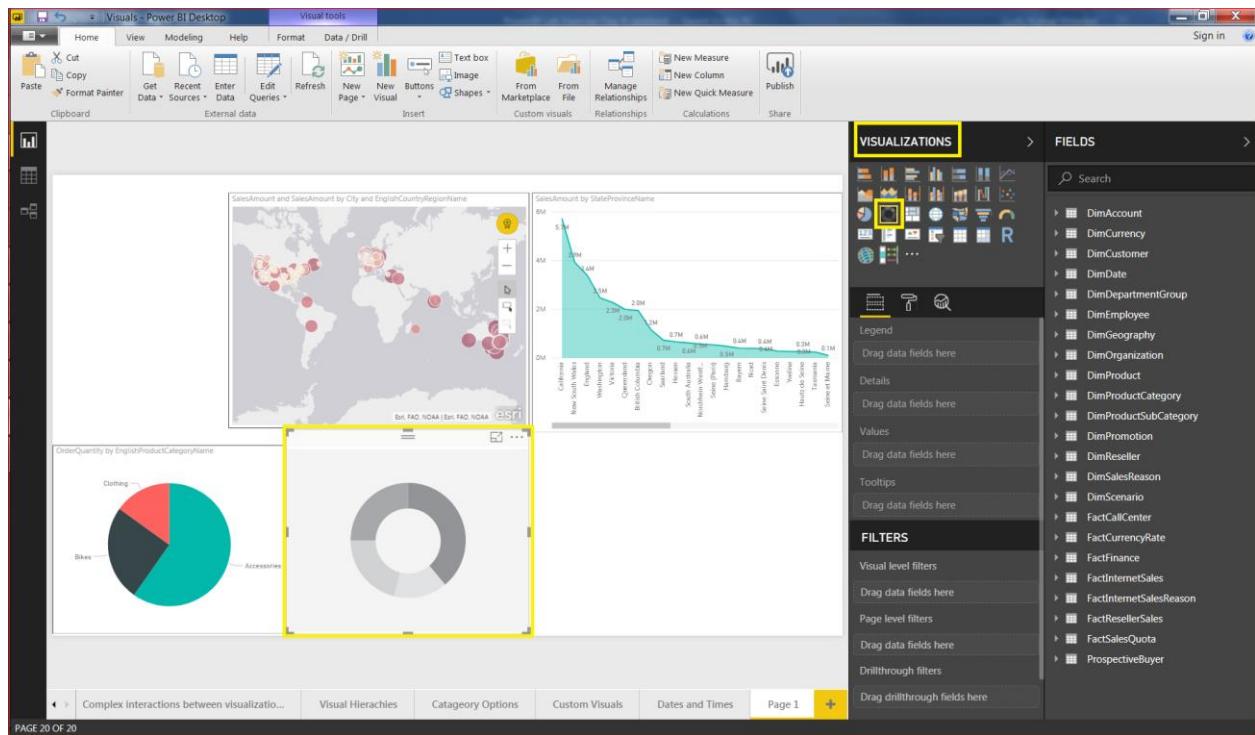
Choose “Pie Chart” from Visualization:



Choose the fields as per below:

Dimensions
DimDepartmentGroup
DimEmployee
DimGeography
DimOrganization
DimProduct
DimProductCategory
DimProductSubCategory
DimPromotion
DimReseller
DimSalesReason
DimScenario
FactCallCenter
FactCurrencyRate
FactFinance
FactInternetSales
FactInternetSalesReason
FactResellerSales
FactSalesQuota
ProspectiveBuyer

Choose “Donor Chart” from Visualization:

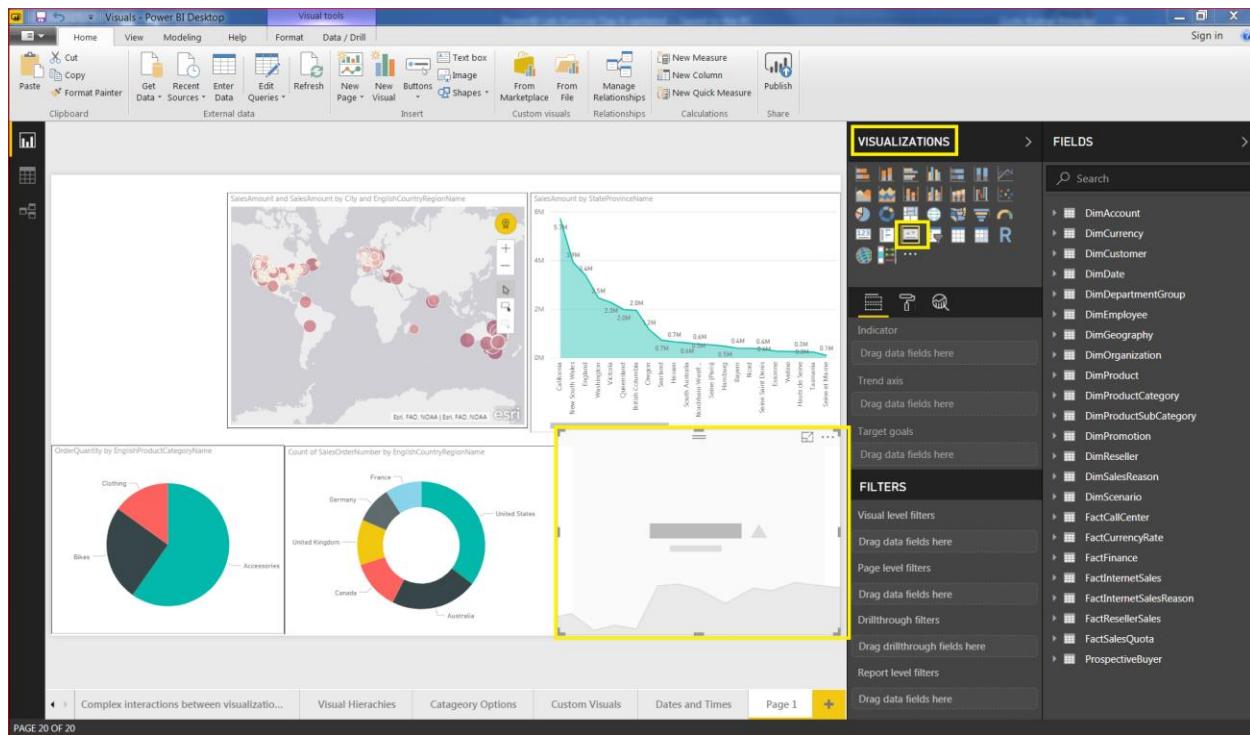


Choose the fields as per below:

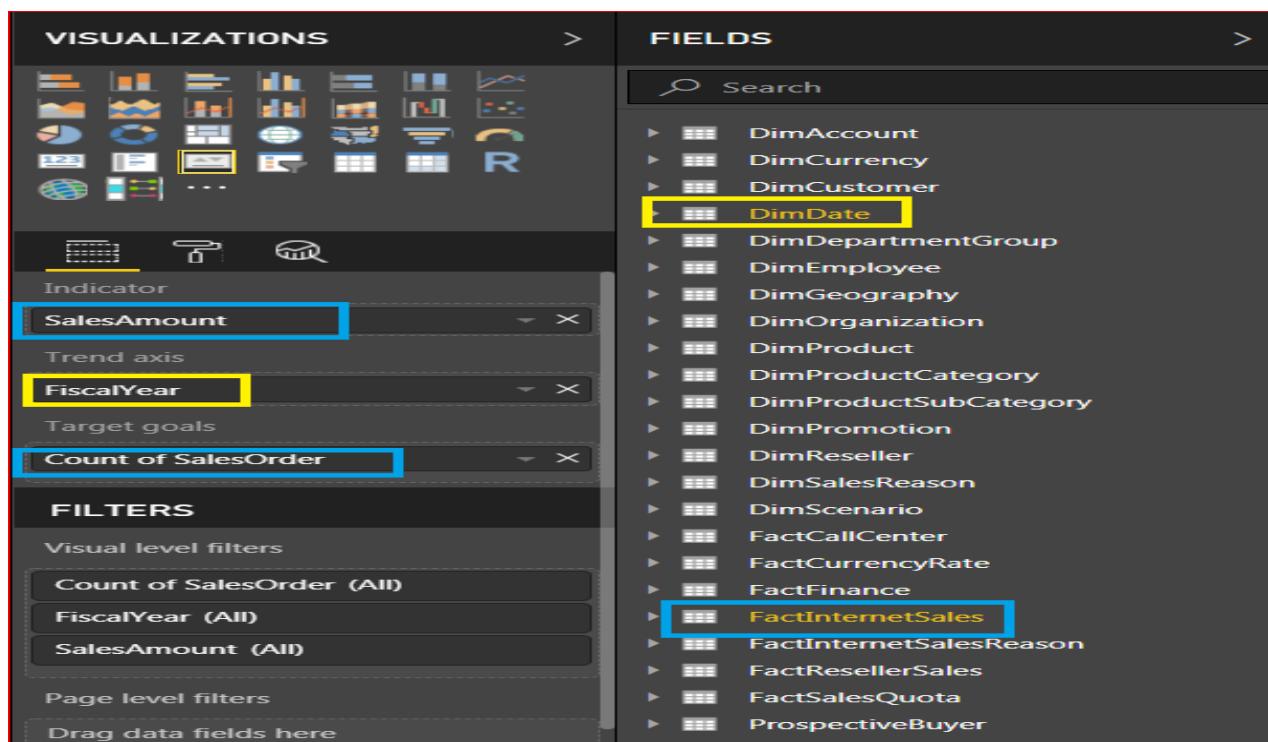
The screenshot shows the Power BI Fields pane with several fields selected. The selected fields are highlighted with red boxes: EnglishCountryRegionName, Count of SalesOrderNumber, DimGeography, FactInternetSales, and FactInternetSalesReason. The Fields pane also shows other dimensions and facts listed on the right.

Selected Fields
EnglishCountryRegionName
Count of SalesOrderNumber
DimGeography
FactInternetSales
FactInternetSalesReason

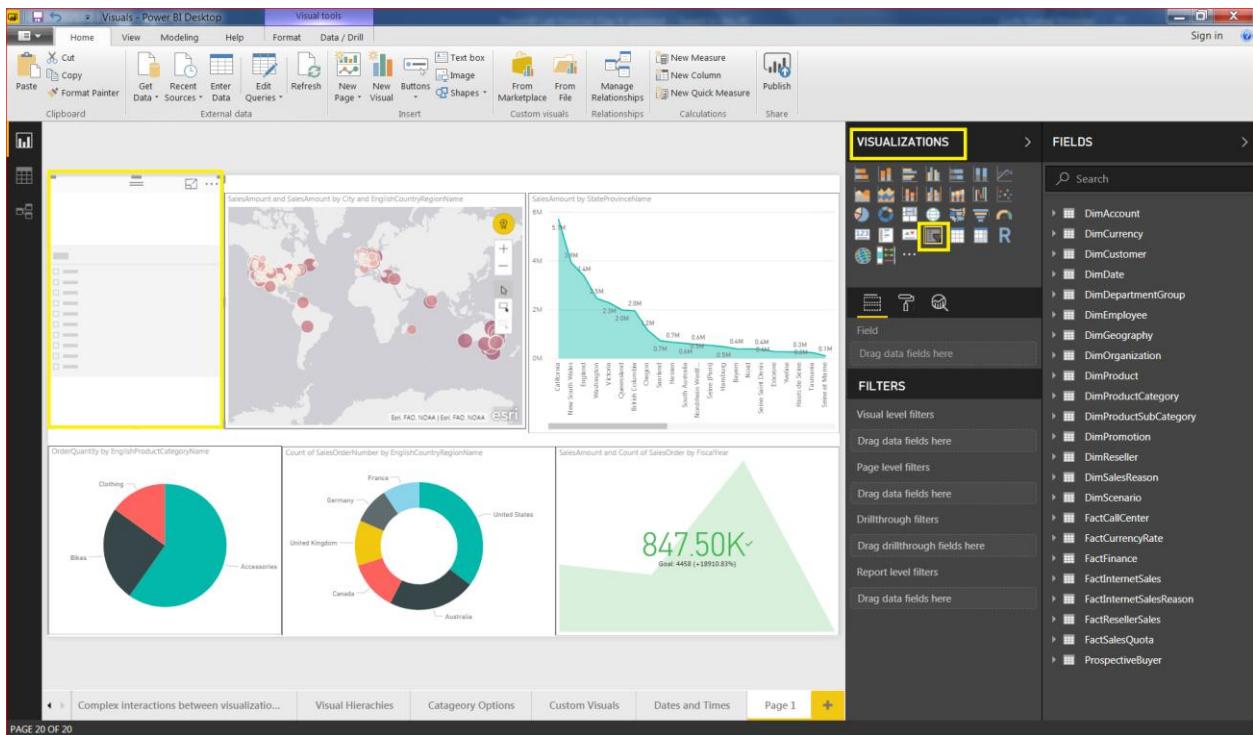
Choose “KPI Chart” from Visualization:



Choose the fields as per below:



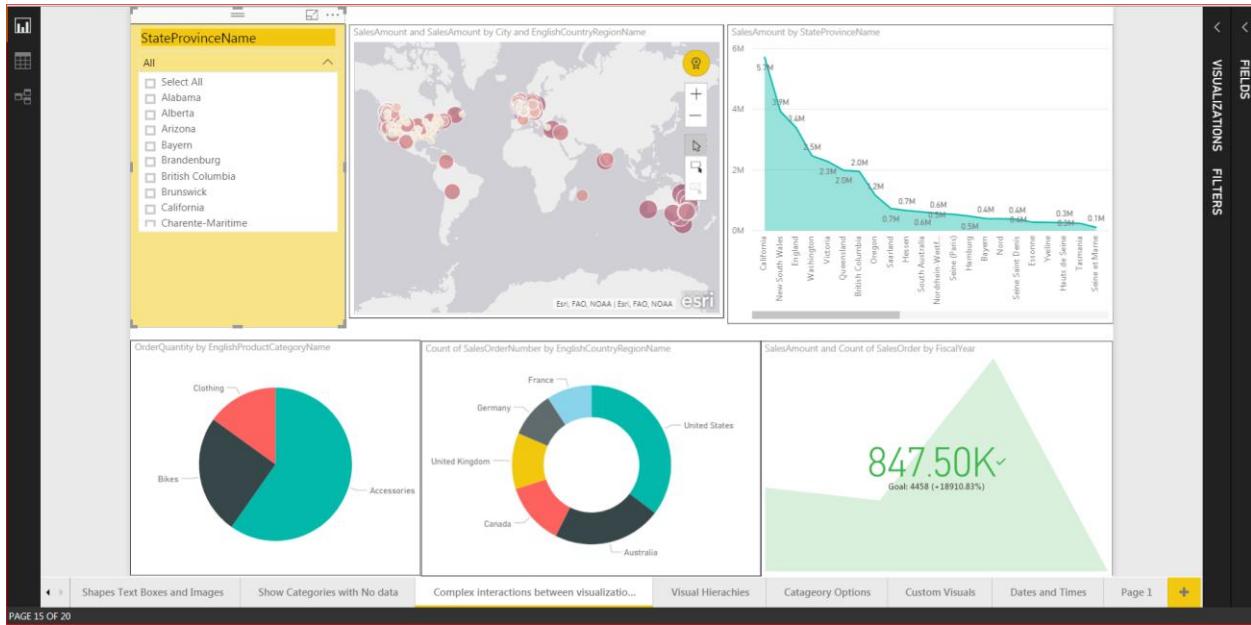
Choose “Slicer” from Visualization:



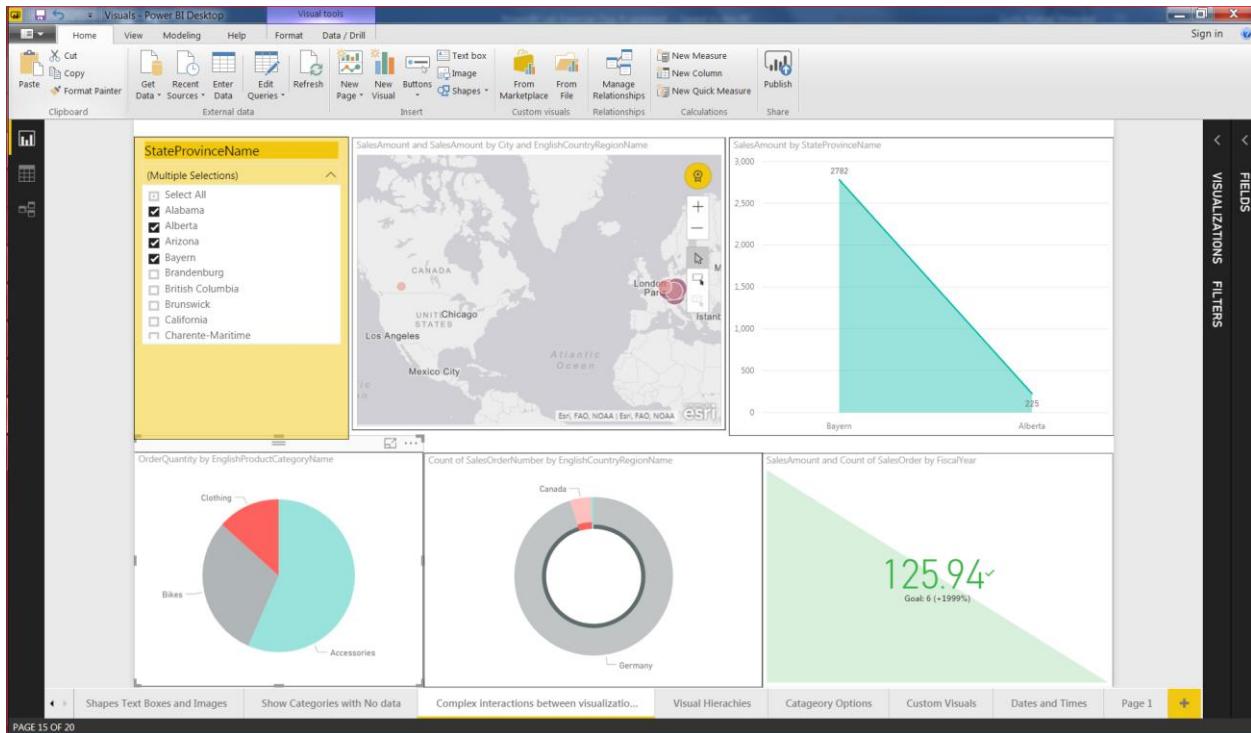
Choose the fields as per below:

This screenshot shows the "FIELDS" pane in the Power BI interface. A red box highlights the "DimGeography" entry in the list of available fields. The "VISUALIZATIONS" pane on the left shows a "Slicer" icon selected. In the "FILTERS" section of the "VISUALIZATIONS" pane, the field "StateProvinceName" is selected and highlighted with a yellow box.

Finally Report looks as below:



We can check report interactions among different visuals while selecting value from Slicer/visuals:



Summary

In this exercise,

1. We have learnt various Visualizations and their scopes and uses.
2. We have covered almost all important visual like- Bar Chart, Line Chart, Combo Chart, Gauges and Single Number Chart, Tabular Charts etc.
3. We saw how visuals interact among itself throughout report.
4. We saw various format properties for each visuals.