

# DATA ANALYTICS

**Power BI**



## Rahadian Nopriantoko, S.Si., M.Si.

- Alumni S1 & S2 Universitas Indonesia
- Dosen di Universitas Indonesia 2016-2018 & Universitas Krisnadwipayana 2018-Sekarang
- Selain dosen juga berkhidmat sebagai profesional, konsultan, instruktur, trainer, dan mentor
- Dapat dihubungi via WA **0813 12000 913** dan Email **RahadianN@unkris.ac.id**

**Assalamualaikum. Wr. Wb.**

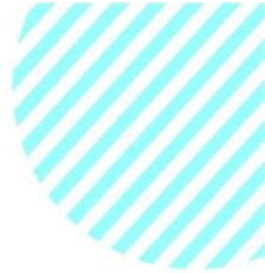


## Outline Materi

1. Tentang Data Analytics
  2. Pengenalan Power BI
  3. Power BI Dekstop
  4. Persiapan dan Transformasi Data
  5. Pengolahan Data
  6. Membuat Visualisasi
  7. Deployment Visuals
  8. Modeling
  9. Pengenalan DAX
  10. Publishing and Sharing
  11. Power BI Service
  12. Guidance and Tips
- #Dan lain seterusnya untuk level Intermediate - advance**



# Agenda



- 1. Tentang Data Analytics**
- 2. Pengenalan Power BI**
- 3. Power BI Desktop**
4. Persiapan dan Transformasi Data
5. Pengolahan Data
6. Membuat Visualisasi
7. Deployment Visuals
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# TENTANG DATA ANALYTICS





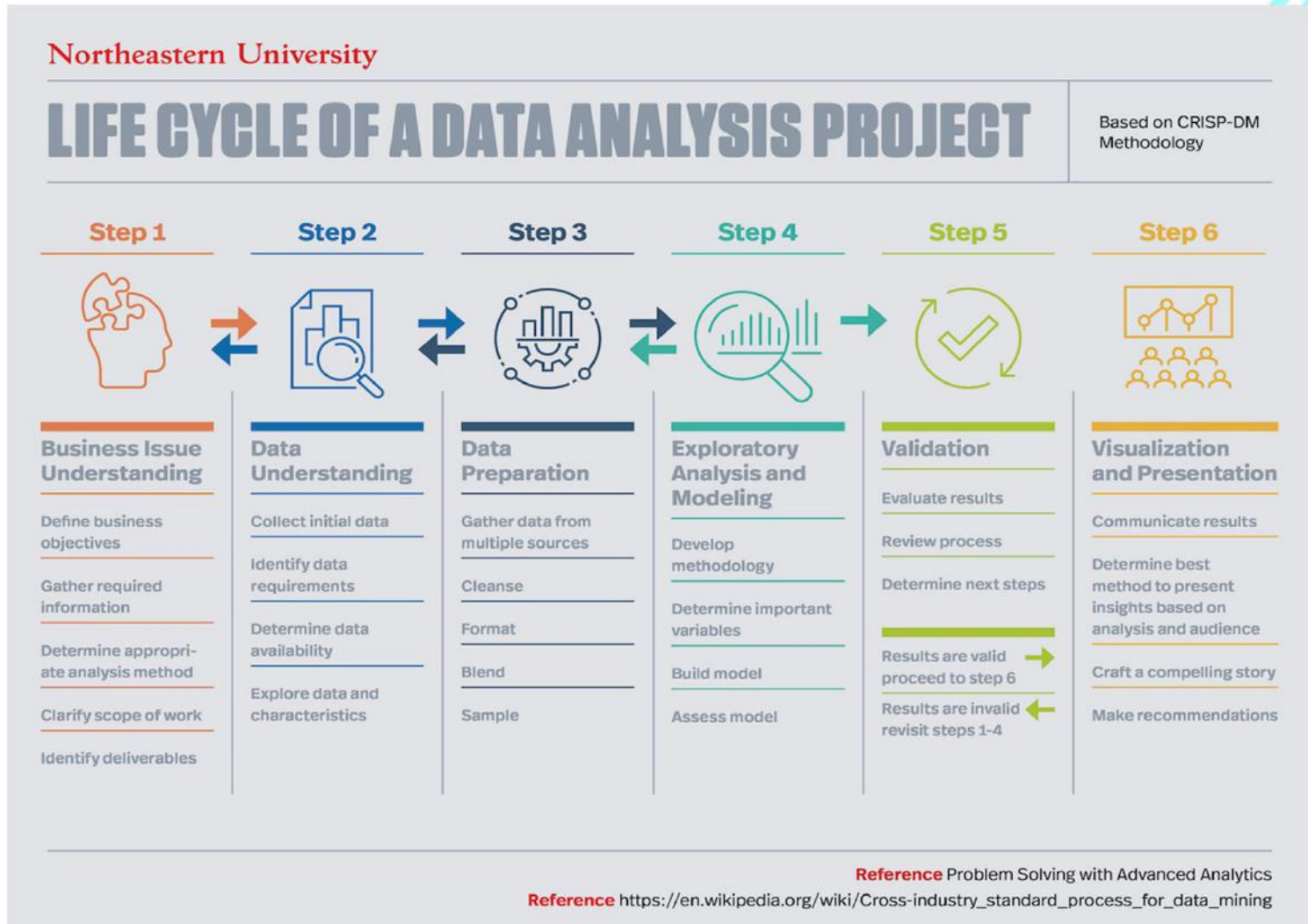
# PENGERTIAN DATA ANALYTICS

Data analytics adalah aktivitas menganalisa data yang berasal dari berbagai sumber, dengan jenis dan ukuran yang berbeda untuk mendapatkan “kesimpulan”.

Hasil kesimpulan yang didapatkan akan membantu institusi untuk memutuskan keputusan bisnis berdasarkan data yang tersedia, yang dapat membuat hasil keputusan lebih efektif dan akurat untuk kemajuan bisnis kedepannya.

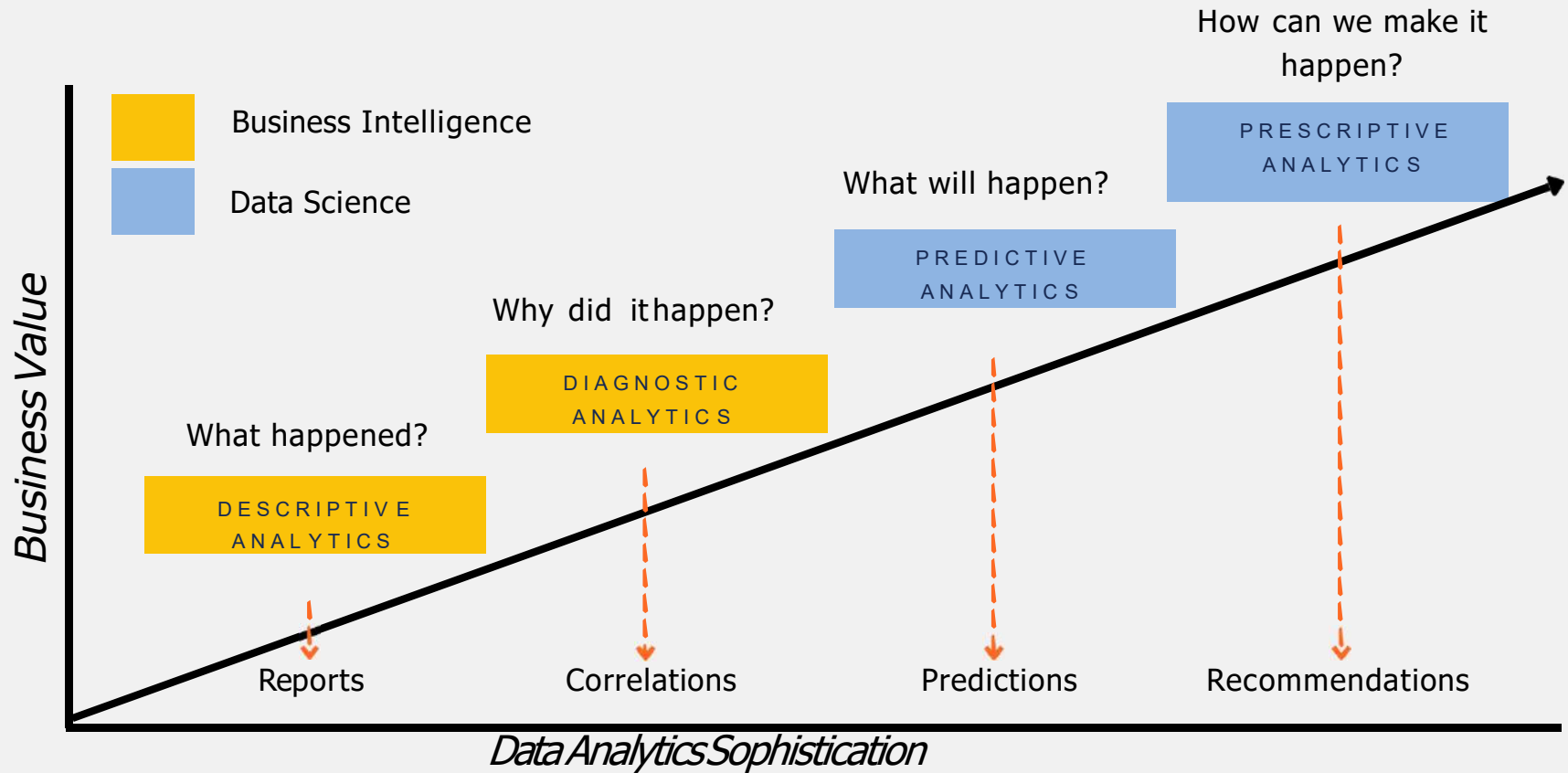


# DATA ANLYTICS LIFECYCLE





# Data Analytics Quadrant

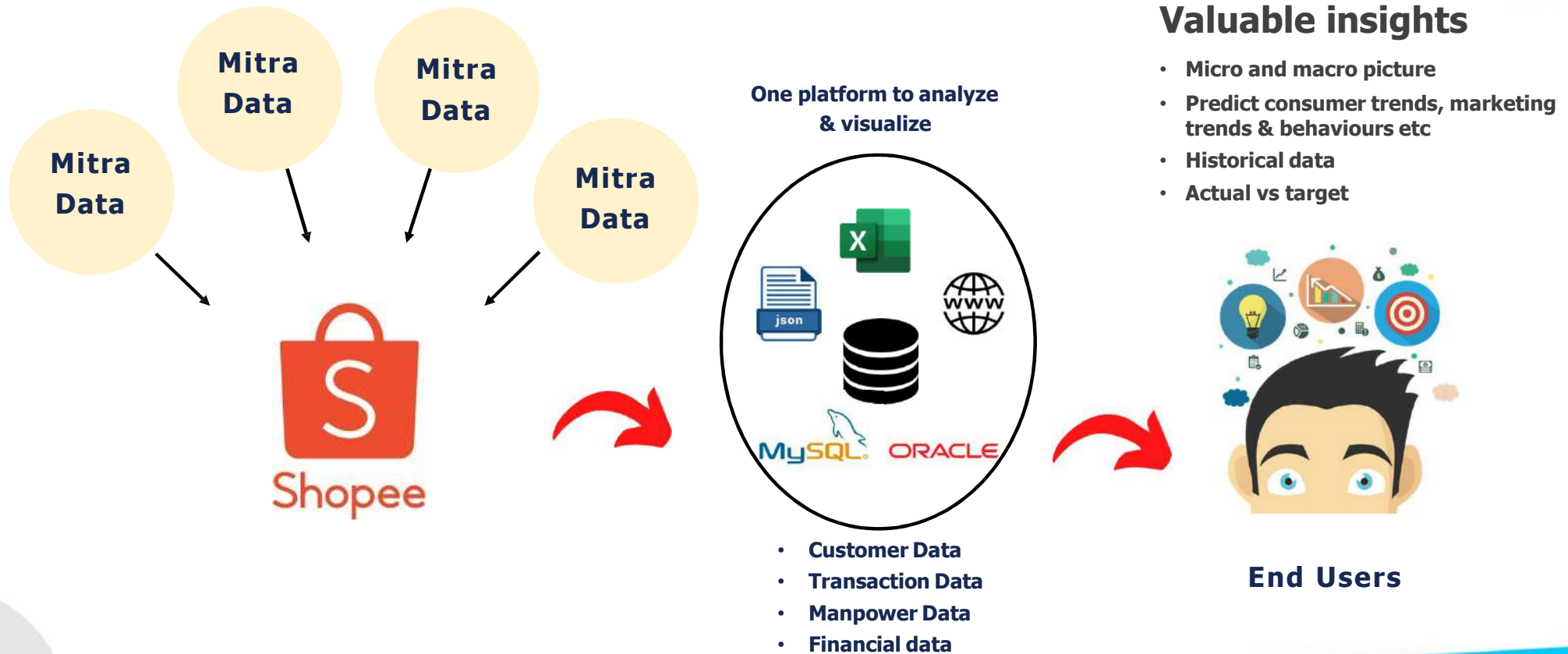


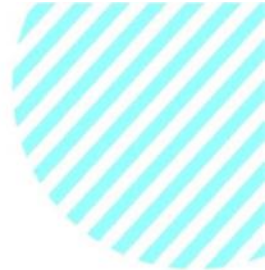




# How Business Intelligence Platform

Solve the problem in industry





# Benefits of Business Intelligence Tools

Intuitive  
Dashboards



Data-driven  
business



Governed  
data



Faster  
Analysis



Increased  
Competitive  
Advantage



Improved  
Customer  
Experience



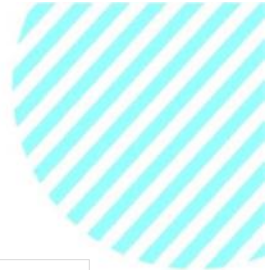
Organizational  
efficiency










# Top 5

## Business Intelligence Tools



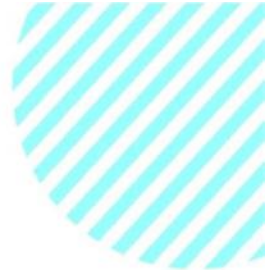
	 Power BI	 Tableau	 Qlik Sense	 SAP	 Cognos Analytics
<b>KNOW AS</b>	Power BI	Tableau	Qlick Sense	SAP Analytical Cloud	IBM Cognos Analytics
<b>RELEASED</b>	2015	2003	1994	2015	2009*
<b>FOUNDERS</b>	<ul style="list-style-type: none"> <li>• Thierry D'Hers</li> <li>• Amir Netz</li> <li>• Ron George</li> </ul>	<ul style="list-style-type: none"> <li>• Christian Chabot</li> <li>• Chris Stolte</li> <li>• Andrew Beers</li> <li>• Pat Hanrahan</li> </ul>	<ul style="list-style-type: none"> <li>• Bjorn Berg</li> <li>• Staffan Gestrelus</li> </ul>	-	-
<b>DEVELOPER</b>	Microsoft	Salesforce Inc.	Qlick	SAP	IBM
<b>WEBSITE</b>	powerbi.microsoft.com	tableau.com	Qlick.com	Sap.com	ibm.com/products/cognos-analytics
<b>PRODUCTS</b>	Desktop and web-based	Desktop and web-based	Web-based	Web-based	Web-based



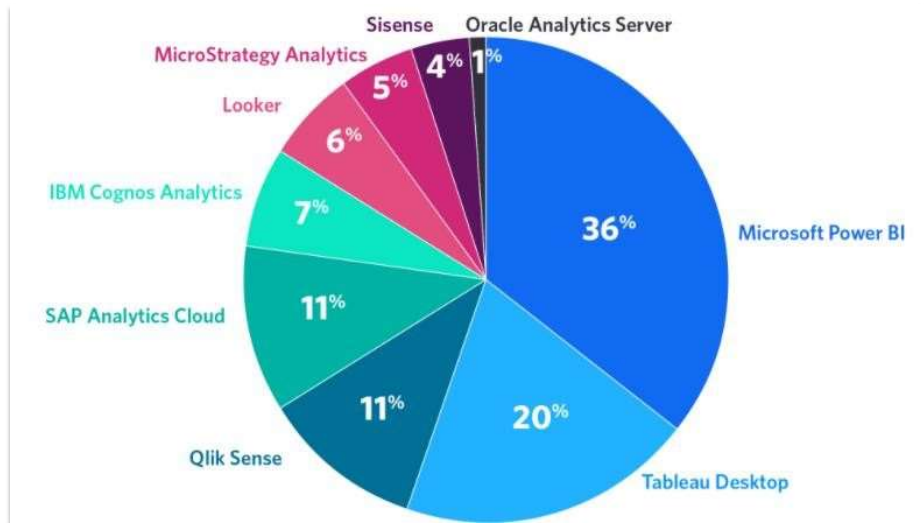


# Market Share

## Business Intelligence Tools



Source : **TrustRadius (2021)**

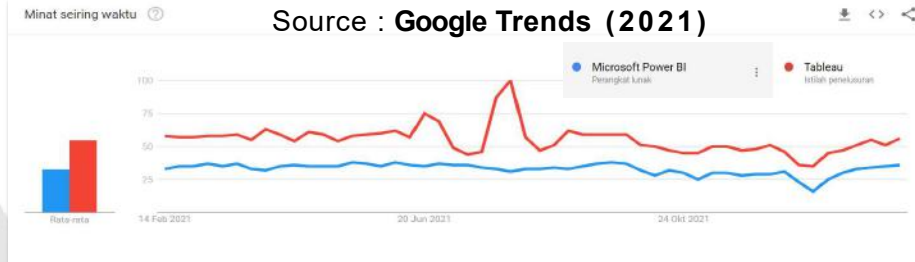


Source : **Gartner (2021)**

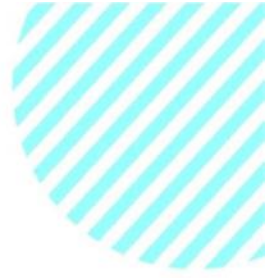
Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



Source : **Google Trends (2021)**



As of February 2021 © Gartner, Inc  
Source: Gartner (February 2021)



# PENGENALAN **POWER BI**





# Power BI

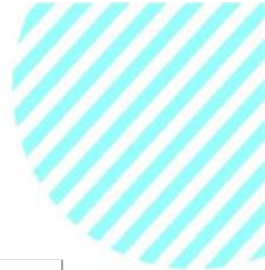
- Microsoft Power BI adalah kumpulan dari software services, apps, dan connectors yang bekerja sama untuk mengubah sumber data yang tidak berelasi ke dalam suatu insight yang koheren, interaktif, dan menarik secara visual.







# Ms. Power BI

## Compare to Tableau



	 Power BI	 tableau SOFTWARE
<b>COST</b>	± Rp 150.000/month/users	± Rp 980.000/month/users (Creator) ± Rp 168.000/month/users (Viewer)
<b>STRENGTH</b>	Flexibility and Development	Appearance and Interactivity
<b>TRANSFORM</b>	Use Power Query on the back end and linking data tables	Use Tableau Prep for transform data (quite cumbersome for handle data transformation)
<b>CALCULATION</b>	Can do extensive calculation using DAX	Easy to use quick measure but quite cumbersome for custom calculations
<b>VISUAL</b>	Flexibility to use custom visuals and relayouting visuals	Well-designed and focus on building visuals before turn into dashboard
<b>PRODUCTS</b>	Power BI Desktop, Power Bi Service, Power BI Mobile Apps, Power BI Gateway, and Power BI Report Server	Tableau products include Tableau Desktop, Tableau Server, Tableau Online, Tableau Vizable, Tableau Public, and Tableau Reader







# Ms. Power BI

## Compare Ms. Excel

### 1. Superior Connectivity

Power BI is much more complete than Excel in terms of connectivity. It can access and extract data from virtually any system or application and is designed to work in the cloud

### 2. Better for Governed Data

Power BI facilitates collaborative and manage datasets. Through Power BI Service, files can be published and all organization member can work with same datasets to create new reports

### 3. Automatic Update

One of the great advantages of Power BI is that it updates the data automatically, so that if a file contains changes in the data or new data, it will not have to be reloaded. In Excel, however, this should be refresh manually

### 4. Designed for Big Data

Power BI has the capacity to handle large amounts of data

### 5. Ideal for Dashboards and KPIs

Share the dashboard by link or embed to website. Users can easily access the dashboard from all device and any time

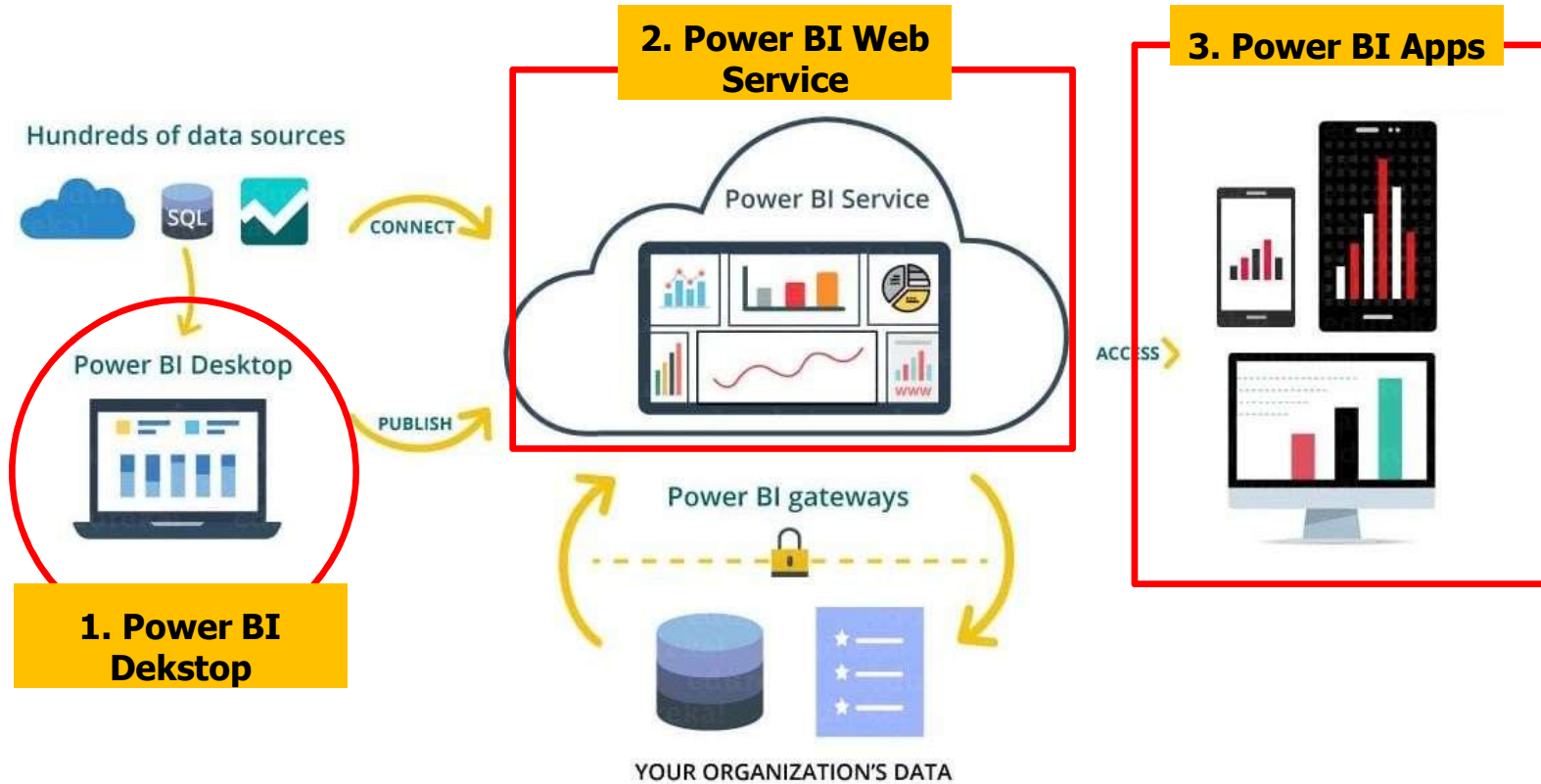
### 6. Easy to Share and Publish

Power BI is the ideal program for creating personalized and interactive dashboards. Power BI visualization are much more attractive and impactful. In addition, Power BI visuals can connect to data models and analyze data visually



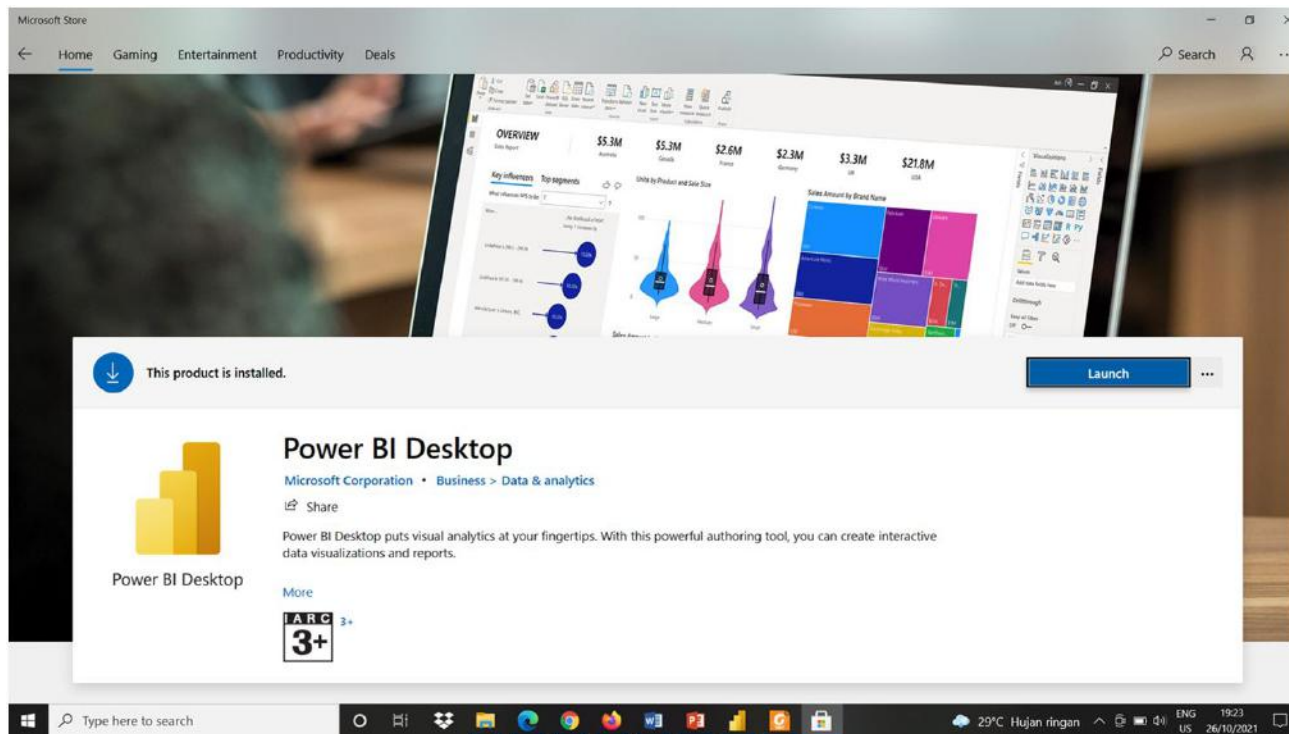


# Types of Ms. Power BI



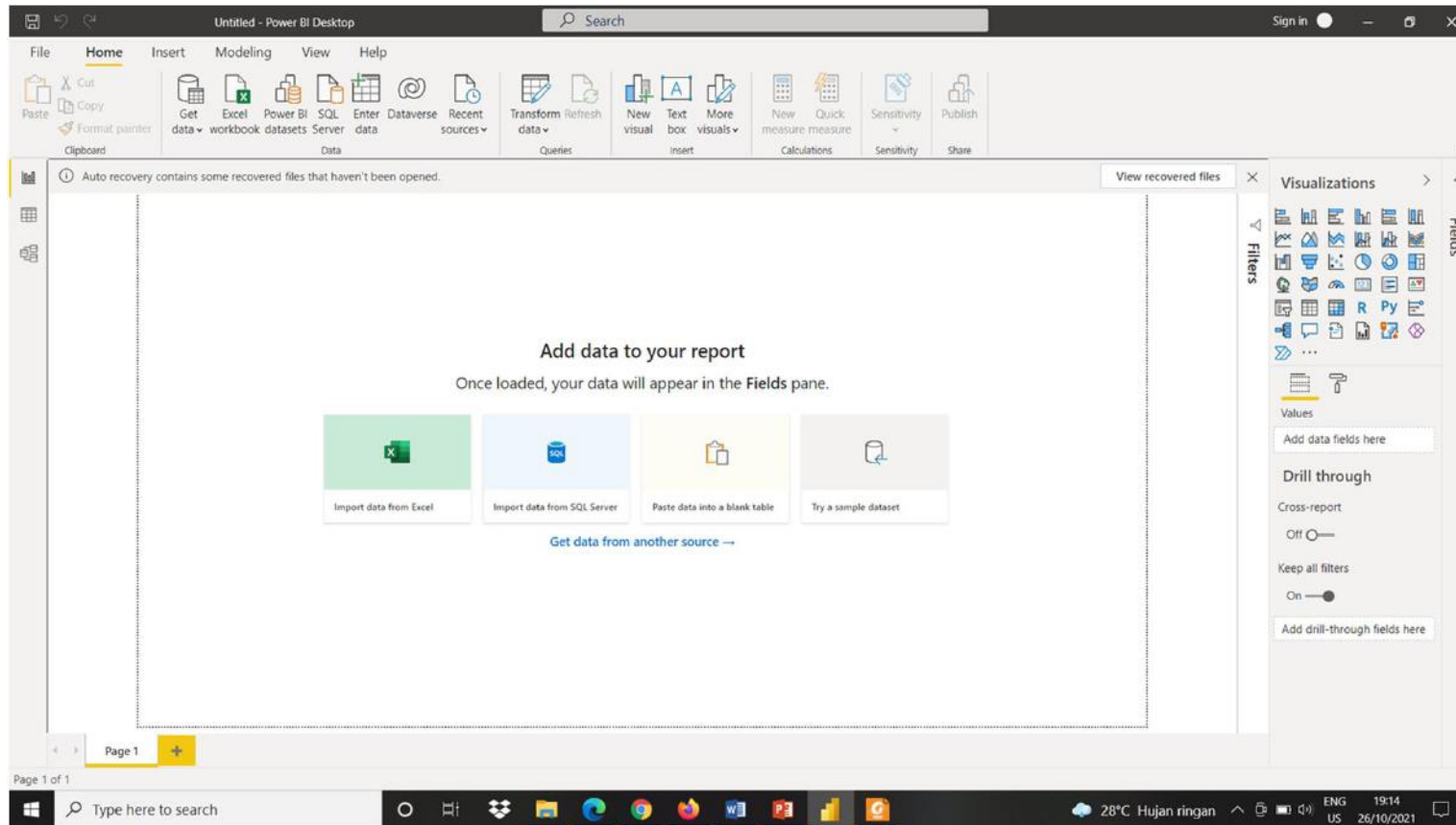
# INSTALASI POWER BI

- Microsoft Store -> Search Power BI Desktop



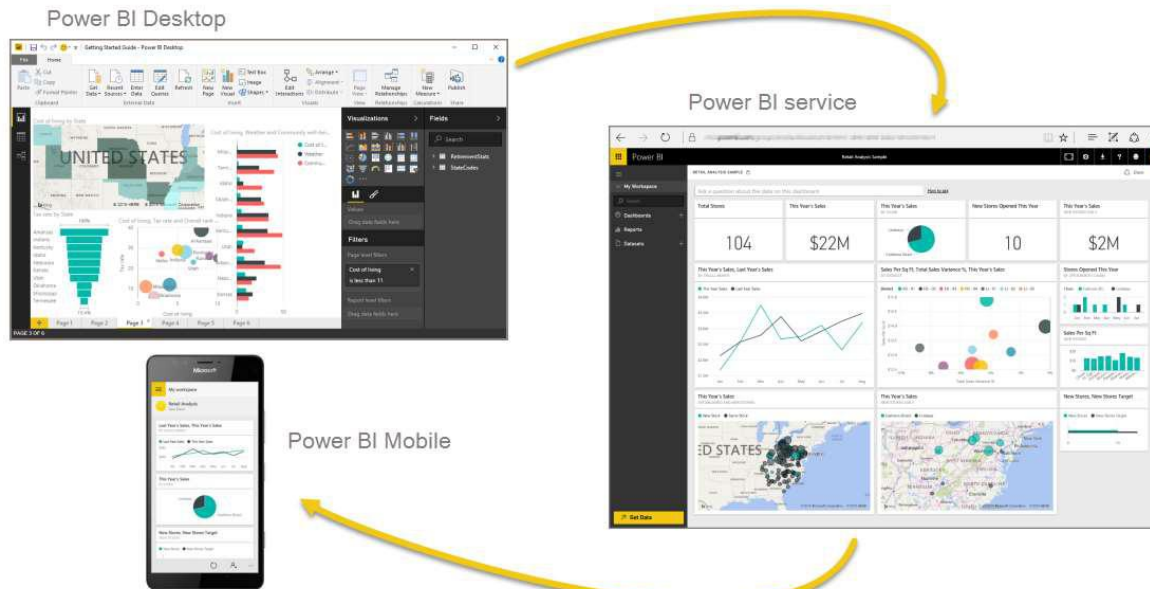


# POWER BI DESKTOP



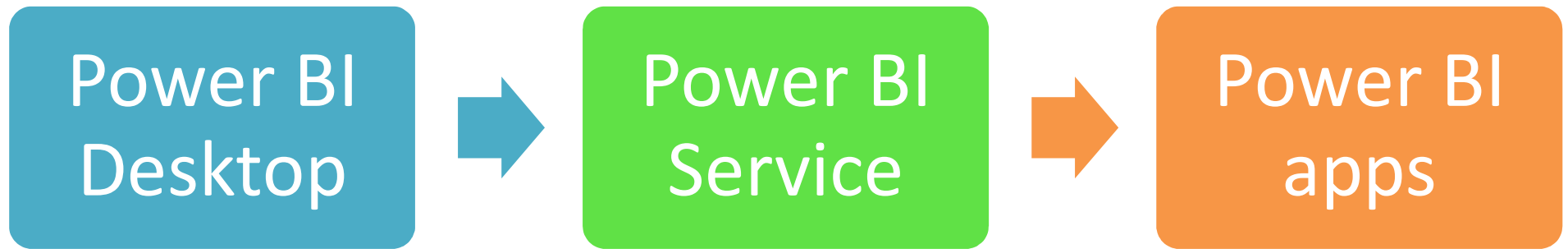
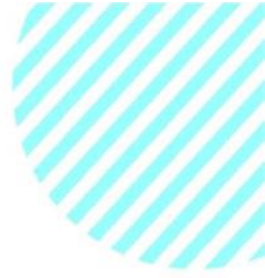
# Bagian Utama Power BI

- **Power BI Desktop** → yang akan kita gunakan
- Power BI service → layanan Saas (Software as a Service)
- Mobile Power BI apps → aplikasi untuk perangkat bergerak



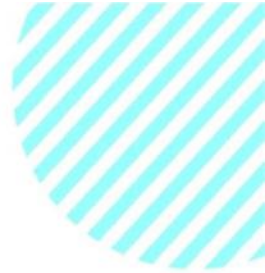


# Workflow dalam menggunakan Power BI





# Building block dalam Power BI



- **Dataset**  
Koleksi data yang dipakai Power BI untuk membuat visualisasi. Data dapat diperoleh dari Excel, JSON, web, dll.
- **Visualisasi**  
adalah representasi visual dari data, seperti grafik, peta warna, atau bentuk visualisasi yang lain.
- **Reports**  
Kumpulan visualisasi yang muncul di dalam satu atau beberapa halaman.
- **Dashboard**  
Kumpulan koleksi dari visualisasi di dalam suatu halaman yang dapat di-*share* ke orang lain.
- **Tiles**  
Elemen visualisasi tunggal di dalam report atau dashboard.

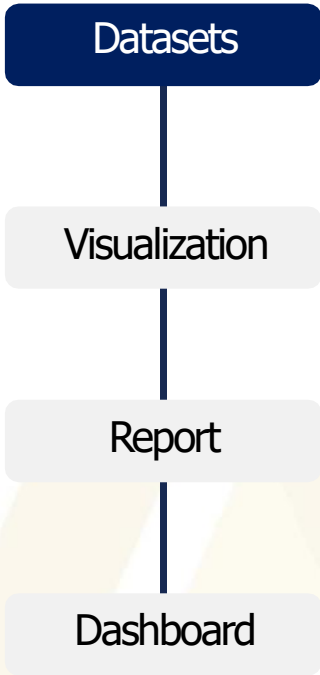




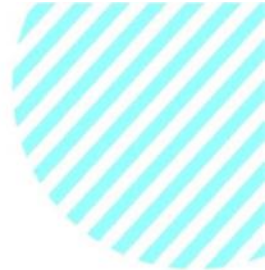
# Power BI

## Building Blocks

Datasets is a collection of data or information. It can be simple datasets or many combination of differencesources



ID	Zákazník	Zaměstnanec	Datum	Dodát	Odesláno	Přeprava	Dopravné	Jméno příjemce
10255	Richter Supermarkt	Dodsworth, Anne	pátek 12. července 1996	pátek 9. srpna 1996	pondělí 15. července 1996	Federal Shipping	3708,25	Richter Supermarkt
10263	Ernst Handel	Dodsworth, Anne	úterý 23. července 1996	úterý 20. srpna 1996	středa 31. července 1996	Federal Shipping	3651,5	Ernst Handel
10266	Wartian Herkku	Leverling, Janet	pátek 26. července 1996	pátek 6. září 1996	středa 31. července 1996	Federal Shipping	643,25	Wartian Herkku
10273	QUICK-Stop	Leverling, Janet	pondělí 5. srpna 1996	pondělí 2. září 1996	pondělí 12. srpna 1996	Federal Shipping	1901,75	QUICK-Stop
10276	Tortuga Restaurante	Callahan, Laura	čtvrtek 8. srpna 1996	čtvrtek 22. srpna 1996	středa 14. srpna 1996	Federal Shipping	346	Tortuga Restaurante
10277	Morgenstern Gesundkost	Fuller, Andrew	pátek 9. srpna 1996	pátek 6. září 1996	úterý 13. srpna 1996	Federal Shipping	3144,25	Morgenstern Gesundkost
10286	QUICK-Stop	Callahan, Laura	středa 21. srpna 1996	středa 18. září 1996	pátek 30. srpna 1996	Federal Shipping	5731	QUICK-Stop
10289	B's Beverages	King, Robert	pondělí 26. srpna 1996	pondělí 23. září 1996	středa 28. srpna 1996	Federal Shipping	569,25	B's Beverages
10293	Tortuga Restaurante	Davolio, Nancy	čtvrtek 29. srpna 1996	čtvrtek 26. září 1996	středa 11. září 1996	Federal Shipping	529,5	Tortuga Restaurante
10319	Tortuga Restaurante	King, Robert	středa 2. října 1996	středa 30. října 1996	pátek 11. října 1996	Federal Shipping	1612,5	Tortuga Restaurante
10320	Wartian Herkku	Buchanan, Steven	čtvrtek 3. října 1996	čtvrtek 17. října 1996	pátek 18. října 1996	Federal Shipping	864,25	Wartian Herkku
10325	Königlich Essen	Davolio, Nancy	středa 9. října 1996	středa 23. října 1996	pondělí 14. října 1996	Federal Shipping	1621,5	Königlich Essen
10333	Wartian Herkku	Buchanan, Steven	pátek 18. října 1996	pátek 15. listopadu 1996	pátek 25. října 1996	Federal Shipping	14,75	Wartian Herkku
10337	Frankenversand	Peacock, Margaret	čtvrtek 24. října 1996	čtvrtek 21. listopadu 1996	úterý 29. října 1996	Federal Shipping	2706,5	Frankenversand
10340	Bon app'	Davolio, Nancy	úterý 29. října 1996	úterý 26. listopadu 1996	pátek 8. listopadu 1996	Federal Shipping	4157,75	Bon app'



C2132    *fx*    2

	B	C	D	E	F	G	H
1	Year	Month	Month Name	Calendar Month	Births	Births Per Day	Births (Normalized)
2119	2004	1	January	1/1/2004	2,937	94.7	2842
2120	2004	2	February	2/1/2004	2,824	97.4	2921
2121	2004	3	March	3/1/2004	3,128	100.9	3027
2122	2004	4	April	4/1/2004	2,896	96.5	2896
2123	2004	5	May	5/1/2004	3,008	97.0	2911
2124	2004	6	June	6/1/2004	3,047	101.6	3047
2125	2004	7	July	7/1/2004	2,981	96.2	2885
2126	2004	8	August	8/1/2004	3,079	99.3	2980
2127	2004	9	September	9/1/2004	3,219	107.3	3219
2128	2004	10	October	10/1/2004	3,547	114.4	3433
2129	2004	11	November	11/1/2004	3,365	112.2	3365
2130	2004	12	December	12/1/2004	3,143	101.4	3042
2131	2005	1	January	1/1/2005	2,921	94.2	2827
2132	2005	2	February	2/1/2005	2,699	96.4	2892
2133	2005	3	March	3/1/2005	3,024	97.5	2926
2134	2005	4	April	4/1/2005	3,037	101.2	3037
2135	2005	5	May	5/1/2005	3,231	104.2	3127
2136	2005	6	June	6/1/2005	3,163	105.4	3163
2137	2005	7	July	7/1/2005	3,119	100.6	3018
2138	2005	8	August	8/1/2005	3,156	101.8	3054
2139	2005	9	September	9/1/2005	3,439	114.6	3439



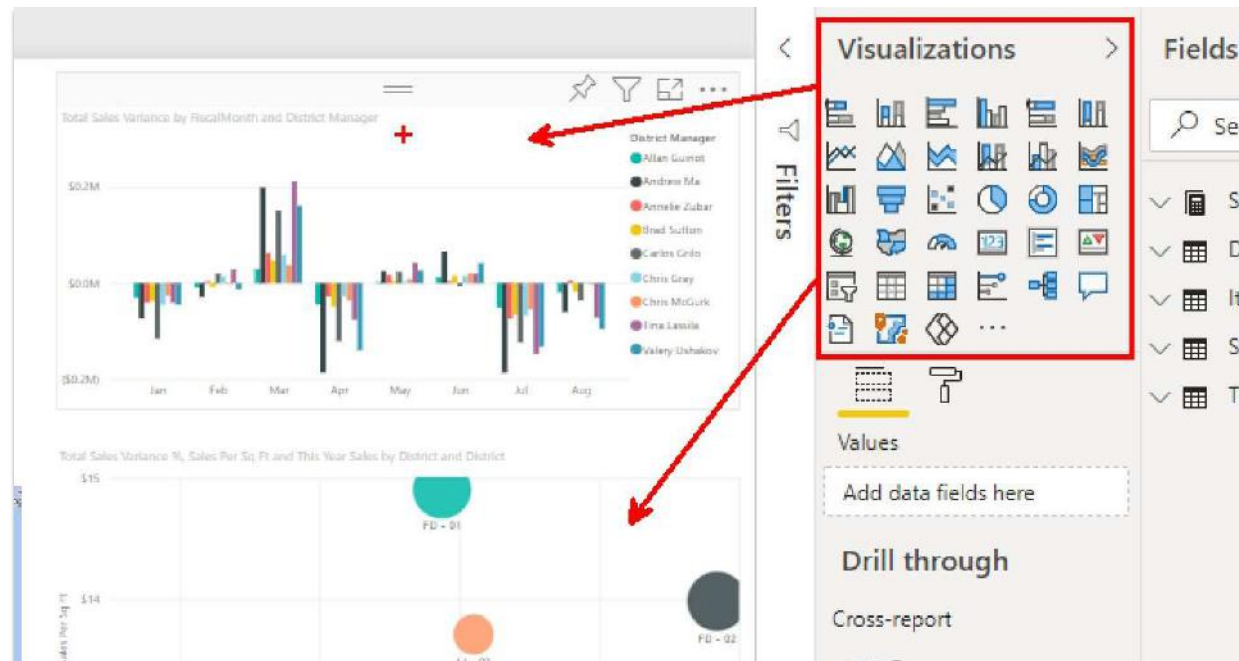
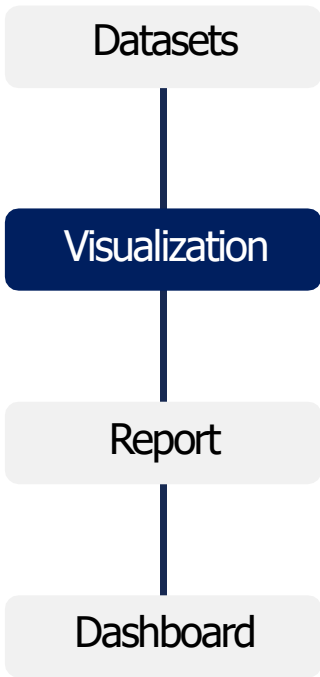


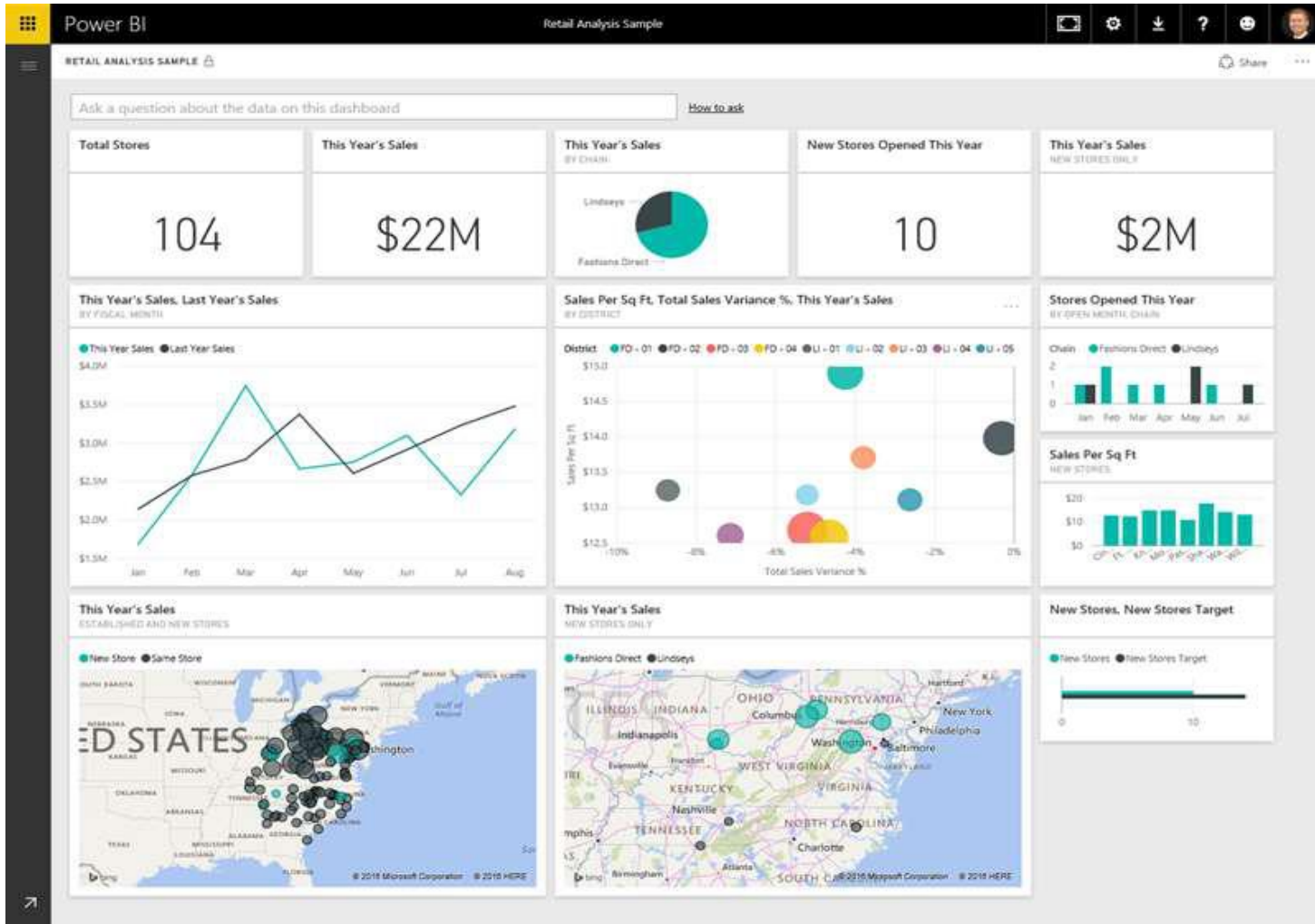
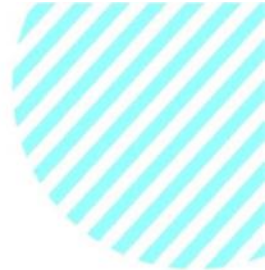
# Power BI

## Building Blocks

Visual representations of data. At this state, the most important is that every chart or graph has specific context and objective.

Example : Bar chart and Bubble Chart

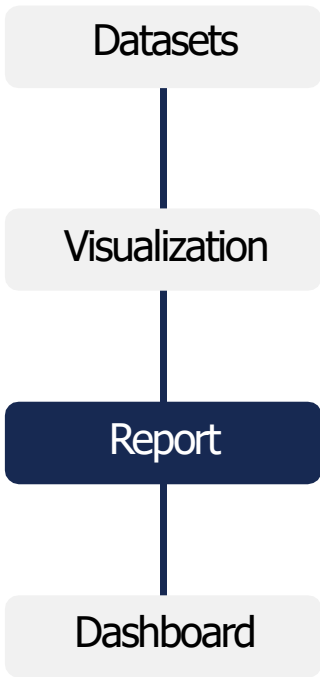


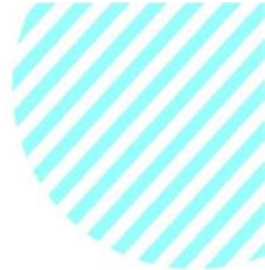


# Power BI

## Building Blocks

Report is a collection of visualizations that appear together on one or more pages.





Getting Started Guide - Power BI Desktop

File Home

Paste Copy Copy Paste Format Painter

Get Data Recent Sources Enter Data Edit Queries Refresh

New Page New Visual Text Box Image Shapes

Edit Interactions Arrange Alignment Distribute

Page View Manage Relationships New Measure Publish

Clipboard External Data Insert Visually View Relationships Calculations Share

Community well-being by State

Community well-being, Crime rate and Health care quality by State

State	Community well-being	Crime rate	Health care quality
HI	10	10	10
AZ	15	15	15
VT	5	5	5
IA	5	5	5
MN	5	5	5
CO	10	10	10
DE	10	10	10
MT	10	10	10
WA	10	10	10
CA	15	15	15
MD	10	10	10
OR	10	10	10
KS	10	10	10
MI	10	10	10
VA	10	10	10

Community well-being, Health care quality and Overall rank by State Code ...

State	Community well-being	Health care quality
HI	10	10
AZ	15	15
VT	5	5
IA	5	5
MN	5	5
CO	10	10
DE	10	10
MT	10	10
WA	10	10
CA	15	15
MD	10	10
OR	10	10
KS	10	10
MI	10	10
VA	10	10

Visualizations Fields

Search RetirementStats StateCodes

Values Drag data fields here

Filters Page level filters Community well-being is less than 16 Report level filters Drag data fields here

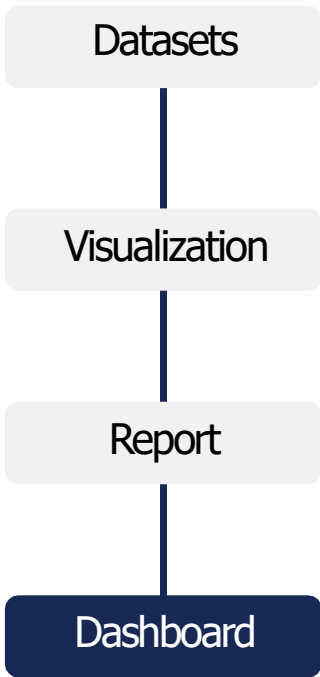
Page 1 Page 2 Page 3 Page 4 Page 5 Page 6

PAGE 5 OF 6

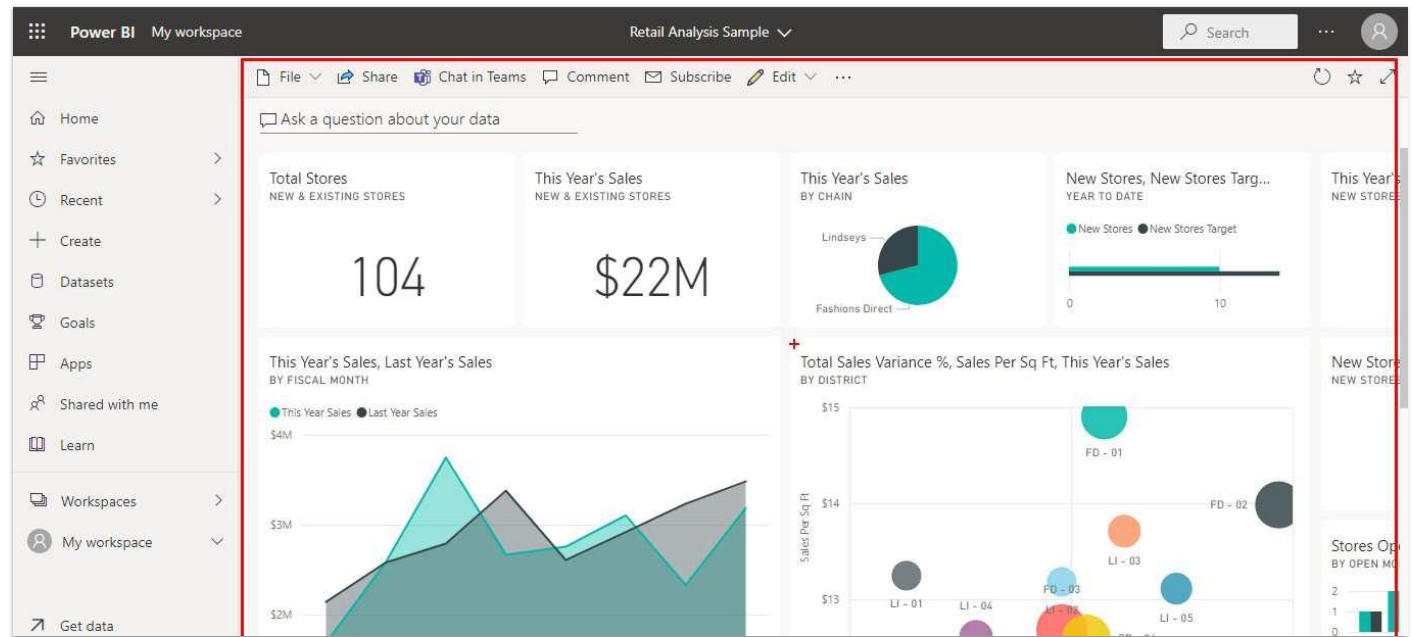


# Power BI

## Building Blocks



Dashboard is compressed version of many reports, contain the most important elements of reports to tell the story





# PENJUALAN PT. ABC

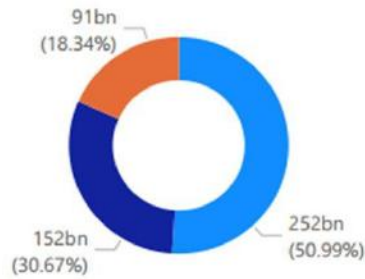
Kota ▼ Year ▼

All ▼  2017  2018  2019

## Latitude and Longitude



## Total Pendapatan by Kategori



## Total Pendapatan by Kelompok Produk



## Total Pendapatan and Penjualan Tahun Lalu by MonthName



495bn Total Pendapatan      161bn Total keuntungan

Total Pendapatan      Total keuntungan

32.52% Total margin keuntungan      15000 Total Jumlah

Total margin keuntungan      Total Jumlah

## Total Pendapatan and Total Biaya Iteration by Propinsi

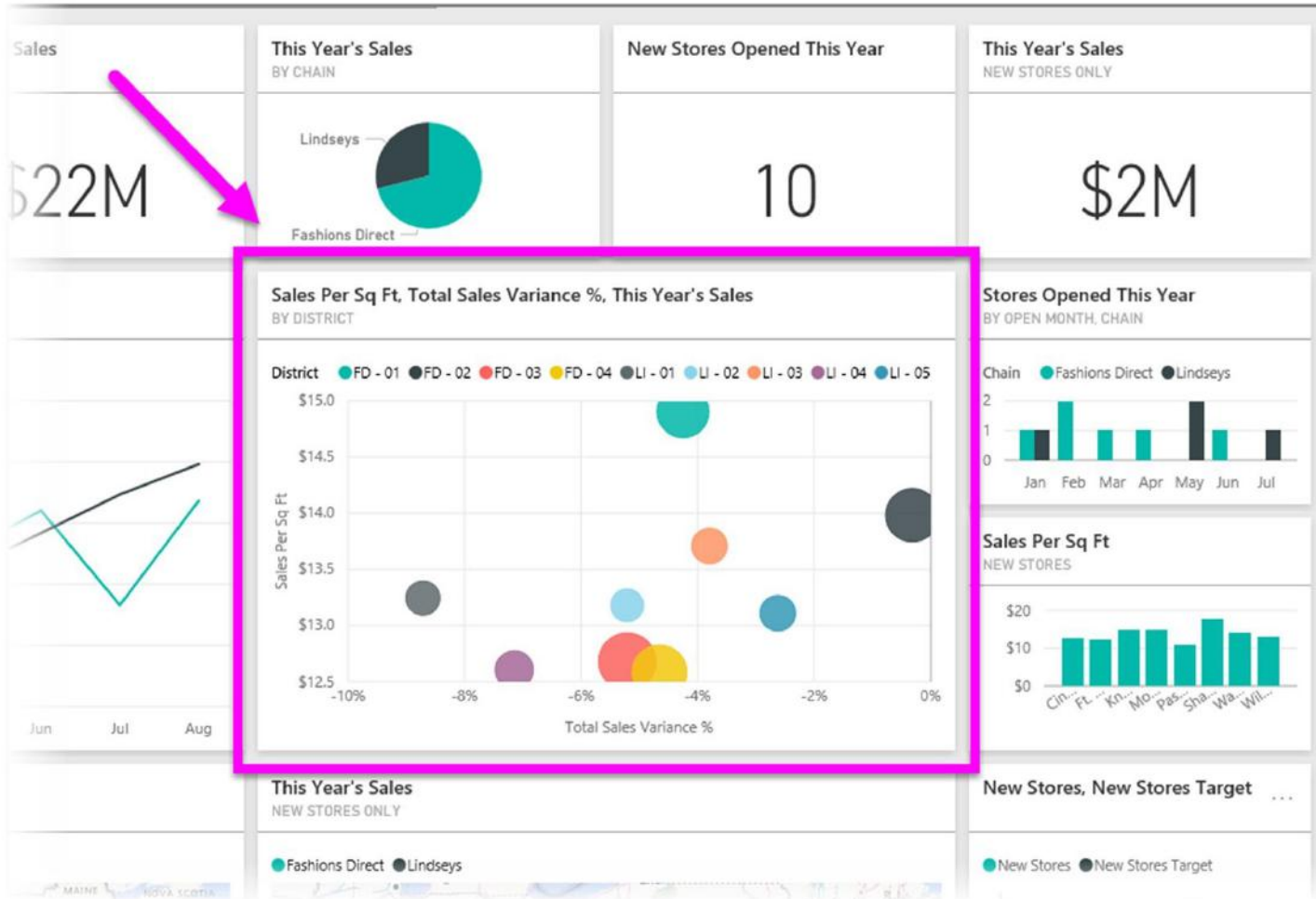


## Total Pendapatan and Total Biaya Iteration by Nama Produk





# Tiles



# Prepare

## The Good Data Checklist

 Each column must have a heading

 No blank heading

 No duplicate heading

 No merged cells

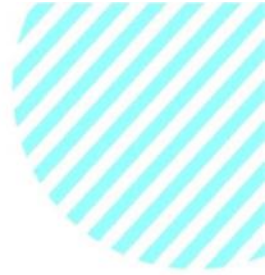
 No formula in headings

 One column – one meaning

 No blank cells







# POWER BI DEKSTOP





# UI of Power BI

Sign in account



## MENU

File Home Insert Modeling View Help External Tools

Paste Copy Cut Get data Excel Power BI SQL Server Enter data Datasource Recent sources Transform Refresh data Queries New visual Text box More visuals New Quick measure measure Calculations Sensitivity Publish Share

## Ribbons

To transform the visuals

## Views

- REPORT
- DATA
- MODEL

**CANVAS**

Add data to your report

Once loaded, your data will appear in the Fields pane.

Import data from Excel Import data from SQL Server Paste data into a blank table Try a sample dataset

Another option to connect the data source

**Filter Panel**  
Filtering data that show on canvas

**Visualization Panel**  
To visual the data or format it

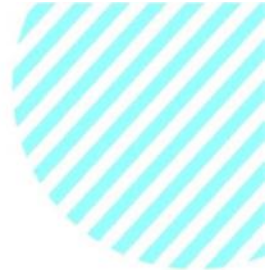
**Field Panel**  
Where the datasets come up





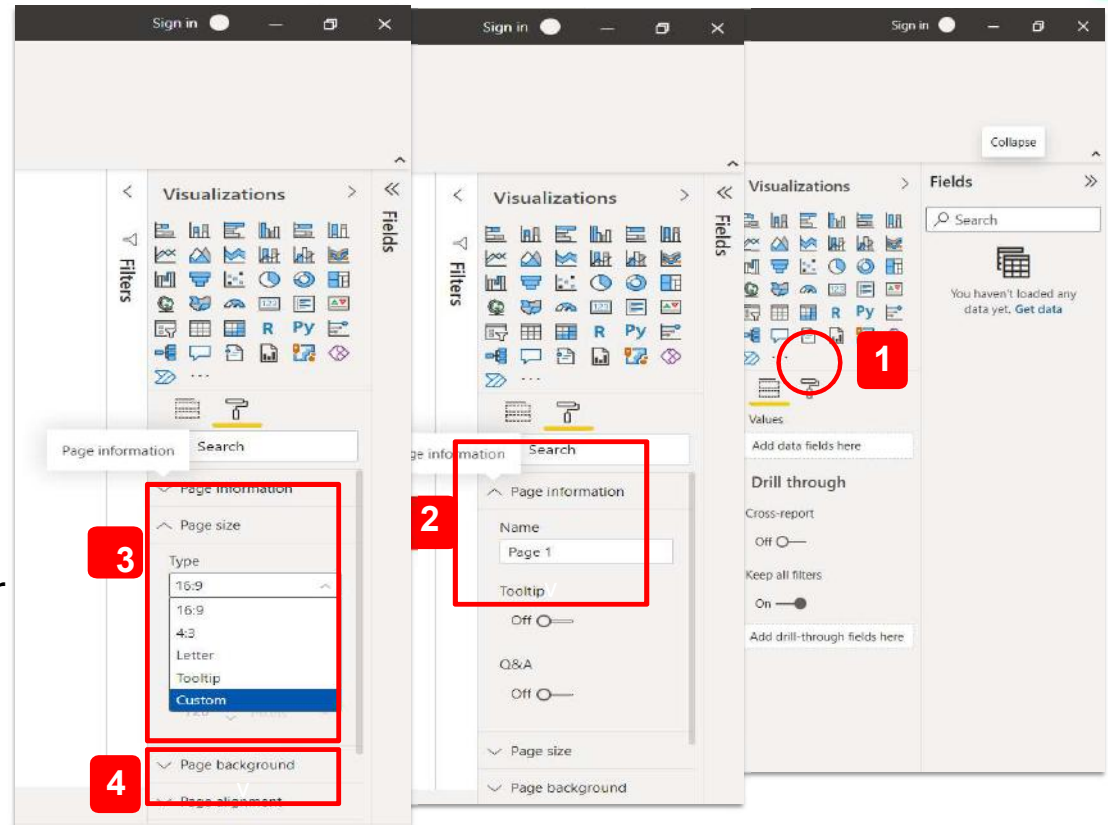
# How to Fomat Canvas

On Power BI Desktop



Before you spend of much time in project, we recommend you to complete the information, decide the size of canvas or the background. Here is the steps how to

1. Select the Format Button
2. On the top is information of the page, in here you able to rename the page, format the page as tooltip (we'll talk about it later), or as Q&A
3. The second is Page Size, where you can adjust the page size that suit with your requirements. The default of canvas Power BI is 16:9 ratio, but you can custom by select the option
4. Another format is Page Background to make you dashboard more stunning of Page Alignment



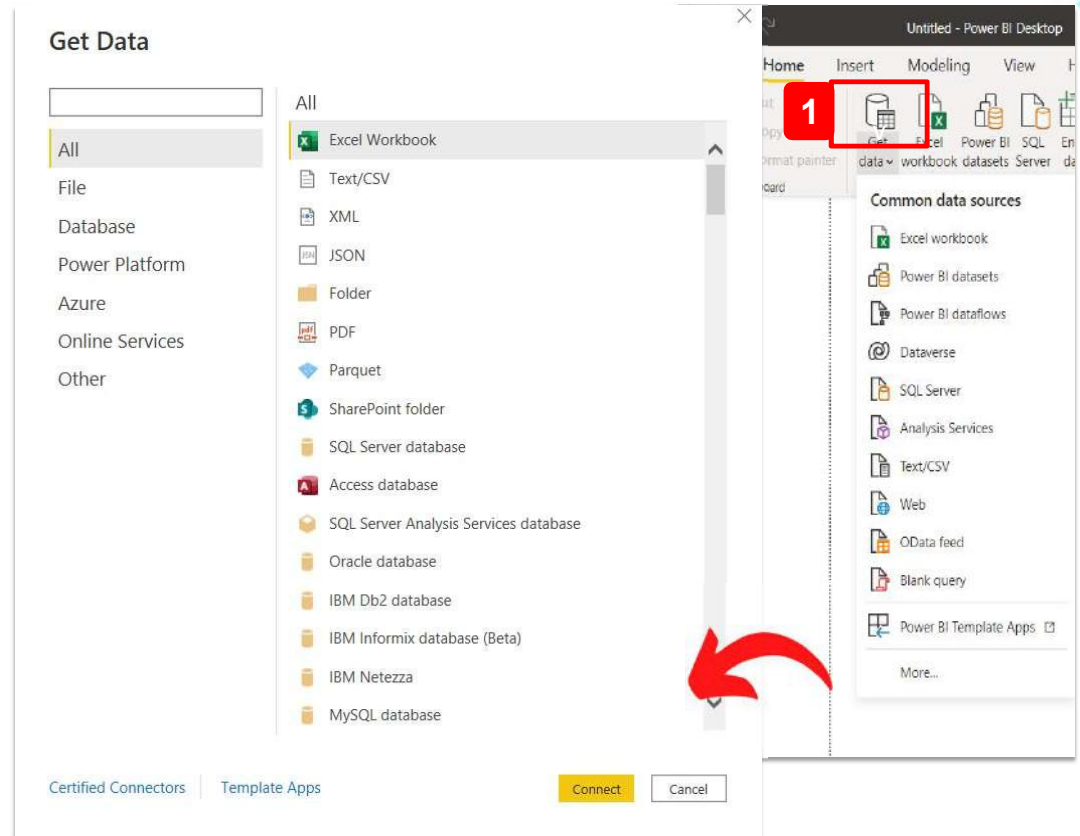
# Data Source Connectors

## On Power BI Desktop

With Power BI Desktop, you can connect to data from many different sources. For a full list of available data sources

You connect to data by using the **Home** ribbon. To show the **Most Common** data types menu, select the **Get data** button label or the down arrow

**In total there are 135 data connectors that available per January 2022**





- <https://powerbi.microsoft.com/en-us/learning/>
- <https://docs.microsoft.com/en-us/power-bi/guided-learning/>
- <https://community.powerbi.com/>
- <https://www.edx.org/course/analyzing-and-visualizing-data-with-power-bi>
- <https://vladmihalcea.com/database-table-relationships/>

TERIMA KASIH..  
SAMPAI JUMPA LAGI..  
WASSALAMUALAIKUM. WR. WB.



**0813 12000 913**

**| RahadianN@unkris.ac.id**



# DATA ANALYTICS

**Power BI**





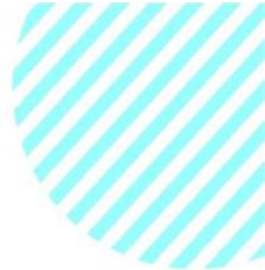
## Rahadian Nopriantoko, S.Si., M.Si.

- Alumni S1 & S2 Universitas Indonesia
- Dosen di Universitas Indonesia 2016-2018 & Universitas Krisnadwipayana 2018-Sekarang
- Selain dosen juga berkhidmat sebagai profesional, konsultan, instruktur, trainer, dan mentor
- Dapat dihubungi via WA **0813 12000 913** dan Email **RahadianN@unkris.ac.id**

**Assalamualaikum. Wr. Wb.**



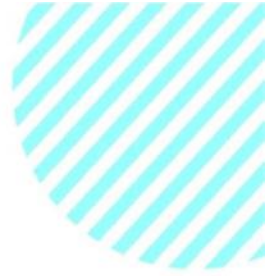
# Agenda



1. Tentang Data Analytics
2. Pengenalan Power BI
3. Power BI Dekstop
- 4. Persiapan dan Transformasi Data**
- 5. Pengolahan Data**
6. Membuat Visualisasi
7. Deployment Visuals
8. Modeling
9. Pengenalan DAX
10. Publishing and Sharing
11. Power BI Service
12. Guidance and Tips





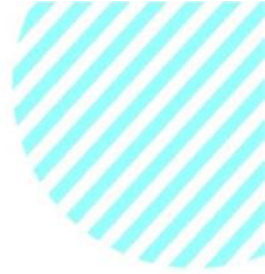


# PERSIAPAN **DAN TRANSFORMASI DATA**





# MENGAMBIL DATA



Ada 2 cara:

1. Melalui menu Home -> Get Data -> Pilih Jenis Datanya -> Connect -> Pilih datanya -> Ok

2. Transform Data -> New Source -> Pilih Jenis Datanya -> Connect -> Pilih datanya -> Ok -> Cek Datanya -> Close and Apply

Latihan:

Masukkan data Laporan Penjualan PT.ABC





# QUERY EDITOR

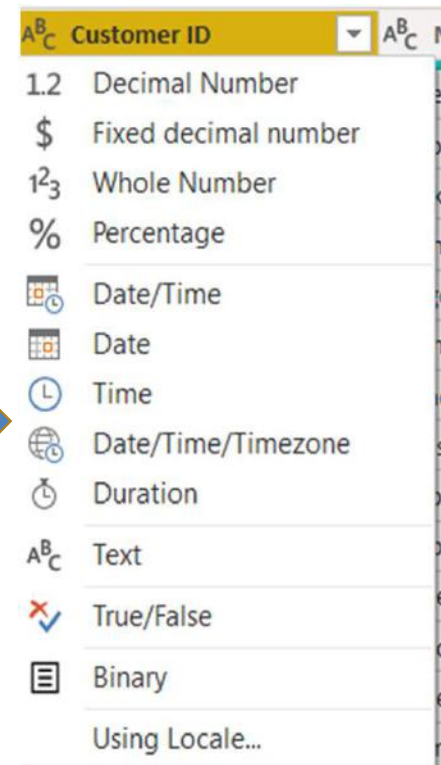
1. Mengganti nama tabel dengan cara klik 2x pada nama tabel, kemudian masukkan nama table yang baru.

Latihan:

- Ganti nama-nama table pada data Laporan Penjualan PT.ABC
2. Periksa kolom header pada table terdapat icon yang menandakan tipe data dari kolom tersebut.
    - Bila ingin mengganti tipe datanya, maka klik pada iconnya.
  3. Cek seluruh tipe data setiap kolom apakah sudah sesuai atau belum.
  4. Jika sudah sesuai, ke menu Home -> Close & Apply

Latihan:



Periksa tipe data semua kolom pada semua table Laporan Penjualan PT. ABC





# QUERY EDITOR LANJUTAN



- Data yang masuk ke dalam Power BI Desktop biasanya banyak yang berantakan dan perlu dirapikan.
  - Menu-menu yang penting:
    - New source
    - Remove column
    - Remove row
    - Split column
    - Transform:
      - Use first row as header
      - Data type
      - Split column
      - Queries : delete, rename, move to group, move down
- 
- 



### Latihan:

- Transform Data -> New Source -> Excel Workbook -> Budget PT.ABC -> cek table budget pada menu Navigator -> ok
- Pada applied steps, hapus langkah-langkah yang tidak dipakai
  - Changed type
  - Promoted headers
- Cek data
- Hapus baris dan kolom yang tidak digunakan / mengandung nilai null
  - Hapus 3 baris teratas
    - Remove rows -> remove top rows -> masukkan berapa rows
  - Hapus kolom yang tidak diperlukan
    - Klik kanan -> remove
    - Filter
- Merubah baris pertama menjadi header
  - Use first row as header
- Memindahkan kolom menjadi baris
  - Transform -> Unpivot Column
- Mengganti tipe data



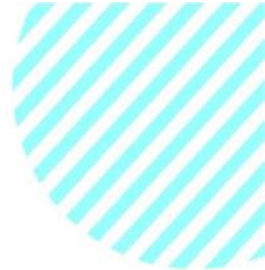
# Mengambil Data Webpage

- Pada tahap ini, kita akan belajar mengambil data yang berasal dari halaman web menggunakan Power BI.
- Kemudian kita akan melakukan *data shaping*
  - Mengubah format data agar sesuai dengan data yang disimpan
  - Memilih beberapa kolom untuk ditampilkan visualisasinya
- Sumber data:  
<https://www.bankrate.com/retirement/best-and-worst-states-for-retirement/>

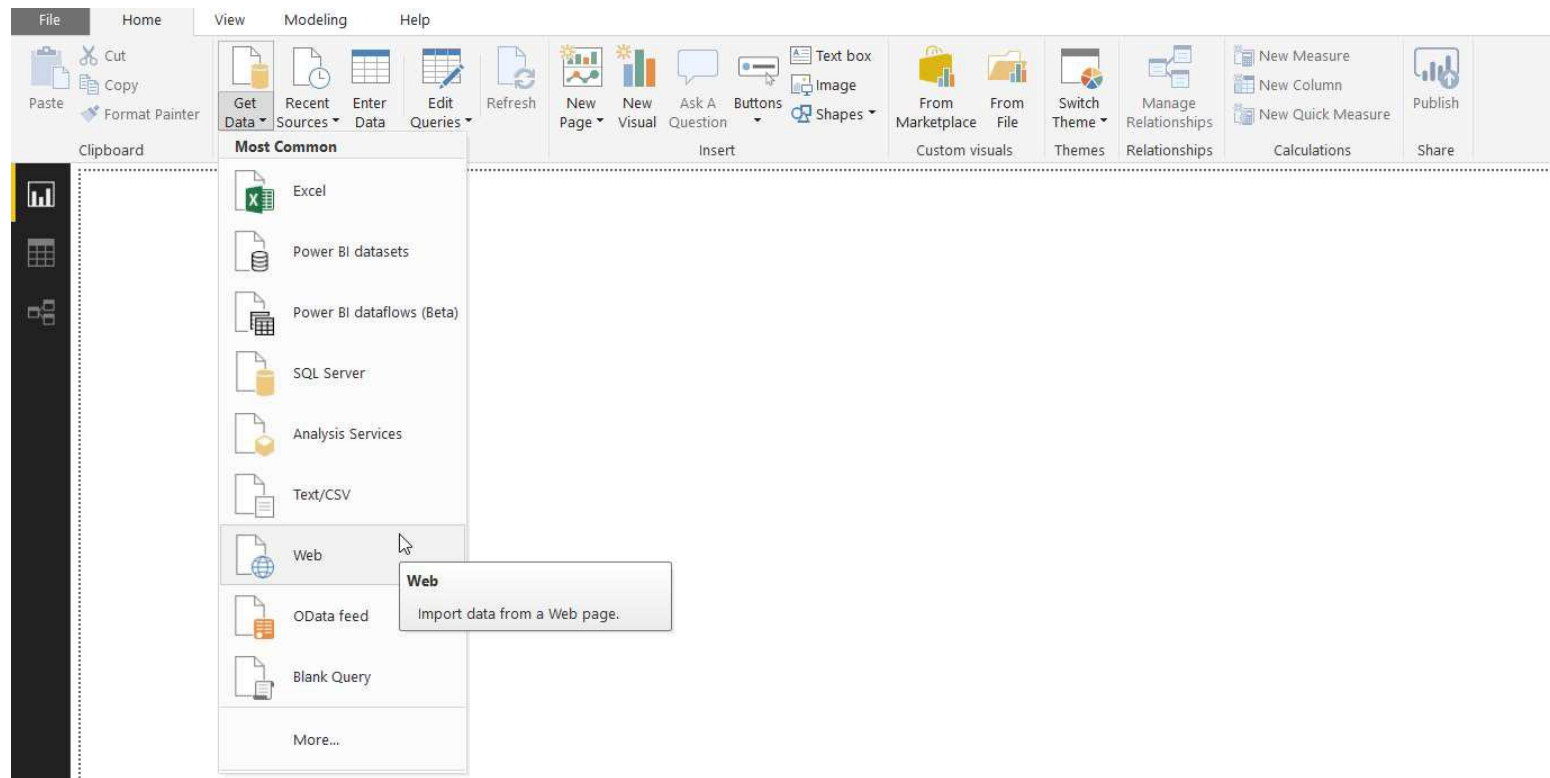




# Connect to Web on Power BI Desktop

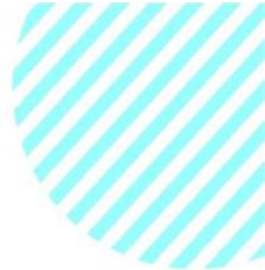


- Pilih menu **Get Data | Web**





# Connect to Web on Power BI Desktop



- Masukkan URL web ke dalam form untuk melakukan download data

From Web

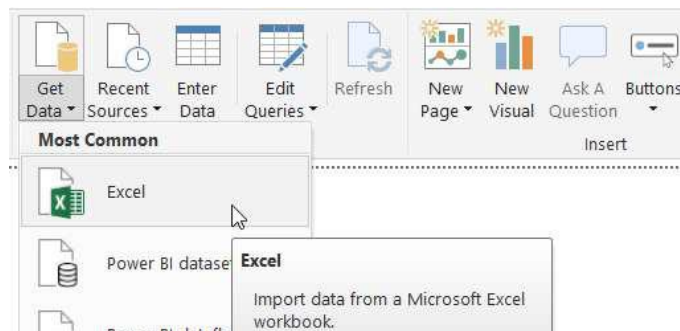
Basic  Advanced

URL

OK Cancel

# Mengambil Data File Excel

- Selain dari web, kita dapat mengimport file Ms Excel, Ms Access, JSON ke dalam Power BI
- File yang terimport akan menjadi sebuah tabel. Jika terdapat beberapa worksheet, maka akan terimport menjadi beberapa tabel.
- **Buat file Power BI baru.** Kemudian pilih menu **Get Data > Excel** dan pilih file **Canada.xlsx**





# Import Excel

- Hasil import

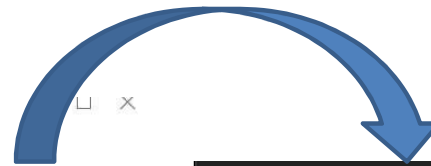
Navigator

Display Options

- Canada.xlsx [2]
  - Table1
  - CA Sales**

CA Sales

ProductID	Date	Zip	Units	Revenue	Country	Country
725	1/15/1999	H1B	1	115.4475	Canada	Canada
2235	1/15/1999	H1B	2	131.145	Canada	Canada
713	1/15/1999	H1B	1	160.0725	Canada	Canada
574	6/5/2002	H1B	1	869.1375	Canada	Canada
94	2/15/1999	H1B	1	866.25	Canada	Canada
609	2/15/1999	H1B	1	778.8375	Canada	Canada
2064	3/15/1999	H1B	2	976.395	Canada	Canada
714	1/15/1999	H1B	1	160.0725	Canada	Canada
826	5/31/2002	H1B	1	944.9475	Canada	Canada
2149	6/6/2002	H1B	2	871.395	Canada	Canada
992	2/15/1999	H1B	1	288.6975	Canada	Canada
726	1/15/1999	M4X	1	115.4475	Canada	Canada



**VISUALIZATIONS**

Name: CA Sales  
Storage mode: Import  
Last refresh: 10/22/2018 5:08:44 PM

**VALUES**

Add data fields here

**FILTERS**

Page level filters

Drag data fields here

Report level filters

**FIELDS**

Search

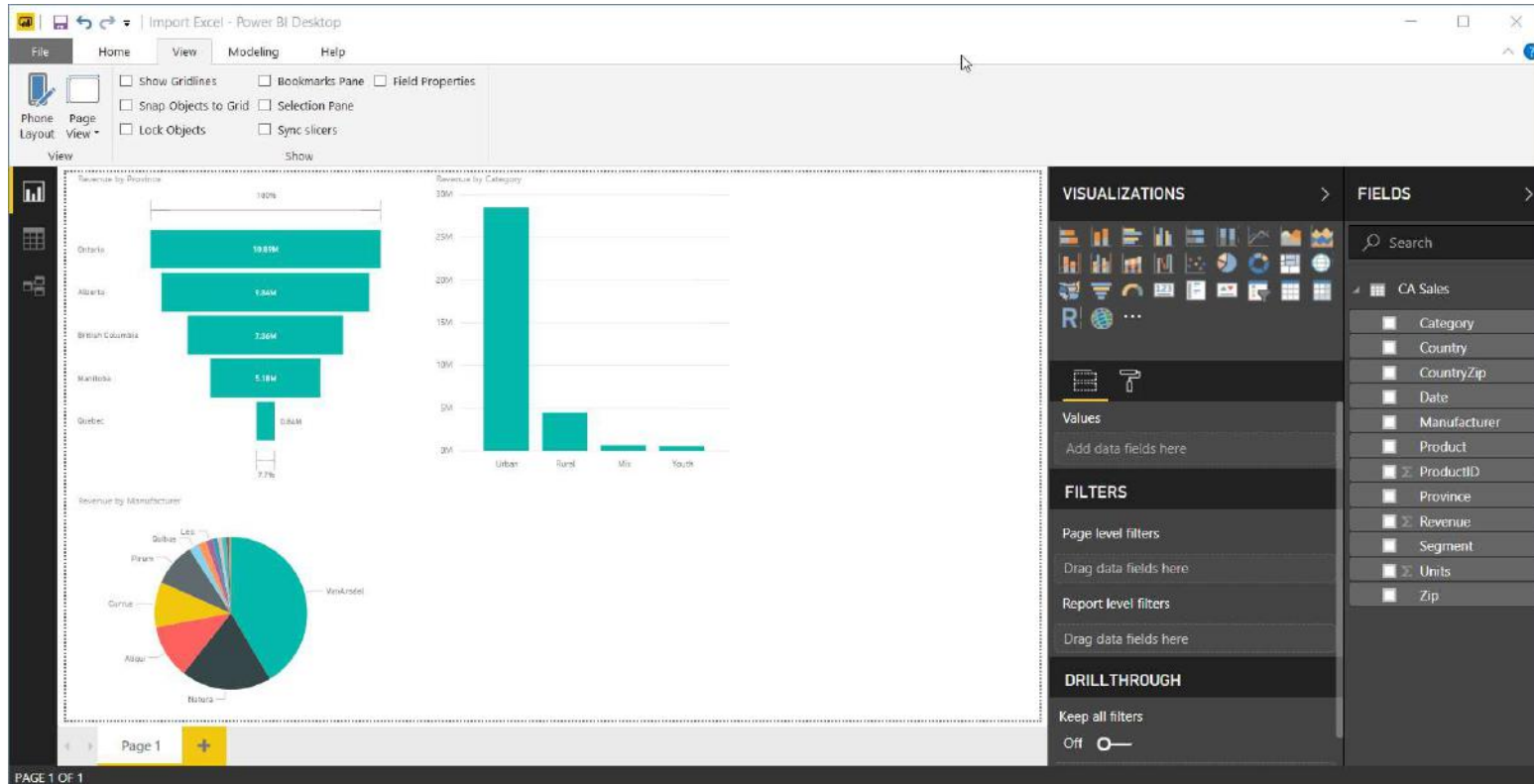
CA Sales

- Category
- Country
- CountryZip
- Date
- Manufacturer
- Product
- ProductID
- Province
- Revenue
- Segment
- Units
- Zip



# Import Excel

- Dari data tersebut, kita dapat melakukan berbagai visualisasi





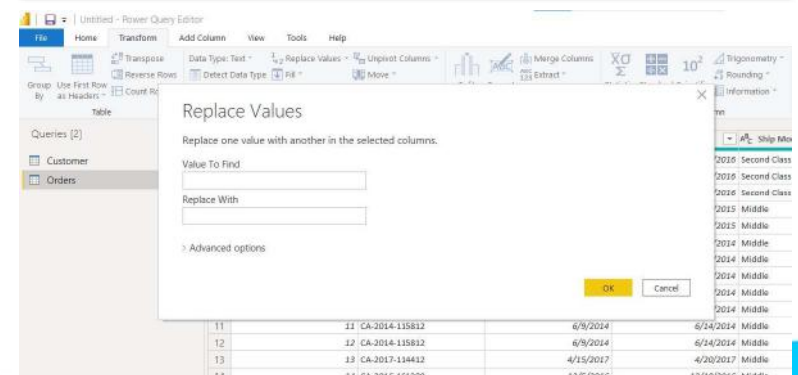
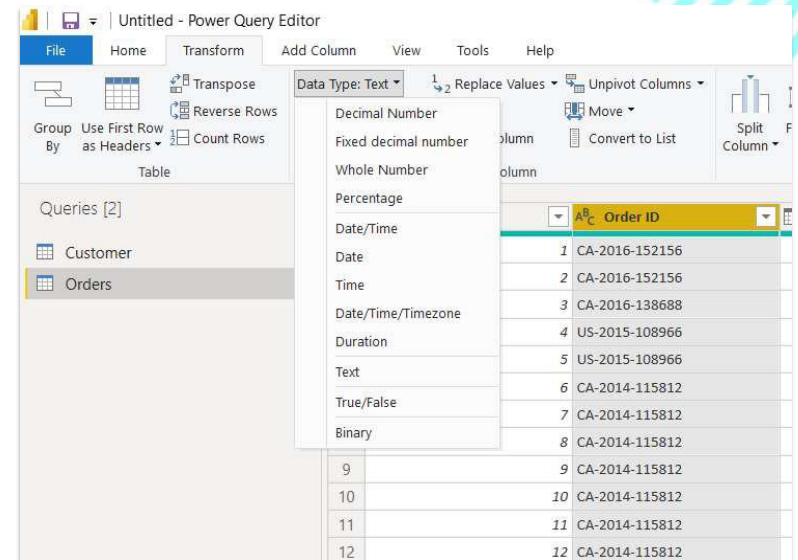
# Transform Data

On Power BI Desktop

The Query Editor in Power BI **is used to transform or edit data files before they are actually loaded** into the Power BI.

The Query Editor plays the role of an intermediate data container where you can **modify data by selecting rows and columns, splitting rows and columns, pivoting and unpivoting columns, etc.**

The changes made by the Query Editor in Power BI are not reflected in the actual dataset. Once you have pre-processed the data and have transformed it into the required format, you can load the data into the Power BI environment.



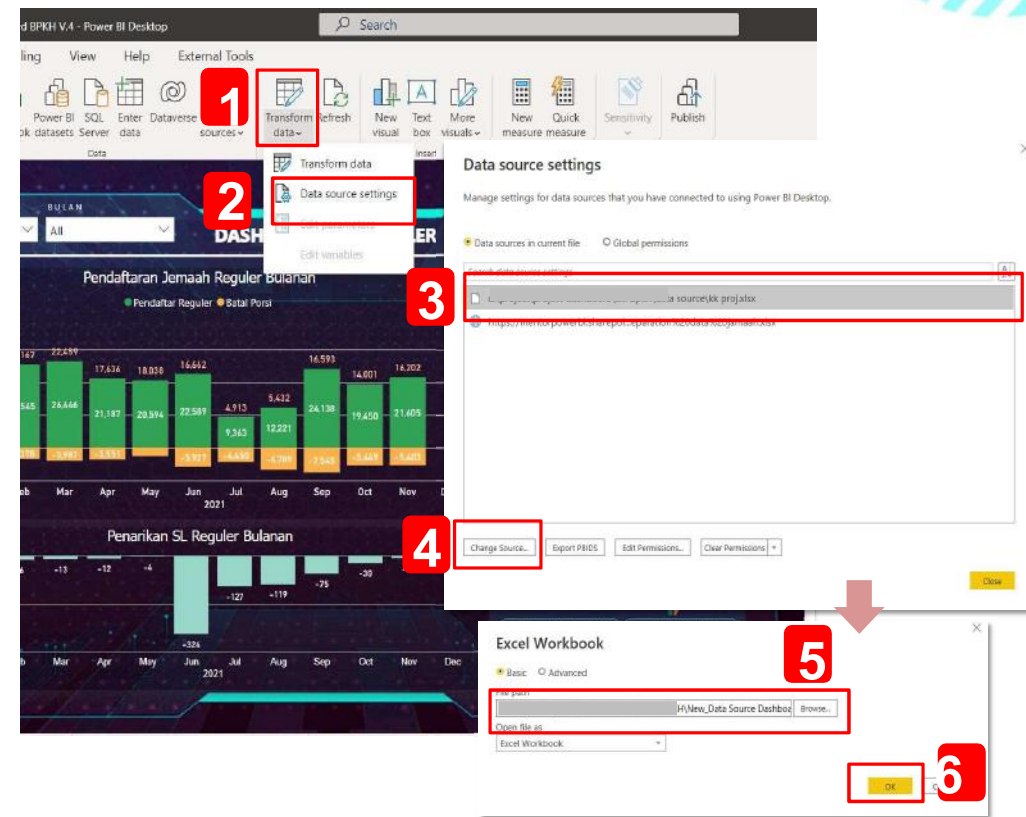


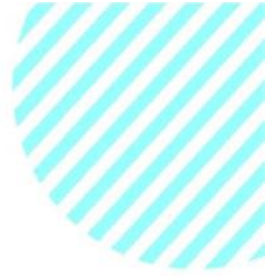


# How to Change Data Source Location

• If the data source location is changed for some reason, then you need to setup the new location. This is because when you refresh, Power BI will review the location path and file name. So to avoid error you need to do it.

1. Select Transform Data on Home Menu
2. Select Data Source Settings
3. Select the source data list that you want to change
4. Select Change Source
5. Select Browse to find the new location or file
6. OK





# PENGOLAHAN DATA





# Pengolahan Data (1)

- Pilih tabel yang diinginkan pada panel sebelah kiri. Di sini kita menggunakan “**Ranking of the best and worst states for retirement**”
- Klik tombol refresh pada pojok kanan atas apabila tabel tidak muncul.

The screenshot shows a software interface with a 'Navigator' panel on the left and a main data view on the right. The 'Navigator' panel includes a search bar, 'Display Options', and a list of tables. The table 'Ranking of best and worst states for retire...' is selected. The main view shows a table with columns: State, Overall rank, Cost of living, Crime, Culture, and Hi. A refresh icon in the top right corner of the table is highlighted with a red box.

State	Overall rank	Cost of living	Crime	Culture	Hi
South Dakota	1	19	21	10	10
Utah	2	25	22	15	15
Idaho	3	12	4	31	31
New Hampshire	4	43	1	5	5
Florida	5	27	33	26	26
Montana	6	23	26	7	7
North Carolina	6	12	29	40	40
Wyoming	8	28	9	16	16
Nebraska	9	17	18	25	25
Mississippi	10	1	23	48	48
Hawaii	11	48	35	5	5



## Pengolahan Data (2)

- Klik tombol “Edit” untuk masuk ke dalam mode **Power Query**

Texas	17	20	36	43
Delaware	19	32	40	24
North Dakota	20	29	17	14
Tennessee	21	7	45	36

< [Progress Bar] >

Add table using examples

Load Edit Cancel



# Pengolahan Data (3)

- Akan muncul tampilan Power Query seperti berikut.
- Pada langkah berikutnya, kita akan mengubah tipe data pada beberapa kolom agar sesuai dengan data yang disimpan pada kolom tersebut → *data shaping*.

The screenshot shows the Power Query Editor interface. The main area displays a table with the following data:

Rank	State	Overall rank	Cost of living	Crime	Culture	Health care quality
1	South Dakota	1	19	21	10	
2	Utah	2	25	22	15	
3	Idaho	3	12	4	31	
4	New Hampshire	4	43	1	9	
5	Florida	5	27	33	26	
6	Montana	6	23	26	7	
7	North Carolina	6	12	29	40	
8	Wyoming	8	28	9	16	
9	Nebraska	9	17	18	25	
10	Mississippi	10	1	23	48	
11	Hawaii	11	48	35	3	
12	Massachusetts	12	46	14	2	
13	Virginia	13	30	4	17	
14	Michigan	14	4	23	27	
15	Missouri	15	3	41	28	
16	Iowa	16	11	16	18	
17	Colorado	17	25	28	11	

The 'APPLIED STEPS' pane on the right shows the following steps:

- Source
- Navigation
- Changed Type

The status bar at the bottom indicates '9 COLUMNS, 50 ROWS' and 'PREVIEW DOWNLOADED AT 9:01 PM'.



# Pengolahan Data (4)

- Pada umumnya, Power BI akan **otomatis mendeteksi tipe data dari sebuah kolom**.
- Apabila ada **kesalahan deteksi**, maka **ubah tipe data kolom** dengan cara klik kanan kemudian pilih **Change Type**

The screenshot displays the Power BI Desktop interface. A data table is shown with columns: State, Overall rank, Cost of Living, Health care quality, Taxes, Weather, and Well-being. A context menu is open over the 'Cost of Living' column, with 'Change Type' selected. A sub-menu is open, showing 'Whole Number' as the selected data type. The 'QUERY SETTINGS' pane on the right shows the 'APPLIED STEPS' section with 'Changed Type' listed.

State	Overall rank	Cost of Living	Health care quality	Taxes	Weather	Well-being	
1 South Dakota	1	10	12	2	38	38	
2 Utah	2	15	10	8	32	32	
3 Idaho	3	31	8	20	41	41	
4 New Hampshire	4	9	5	7	43	43	
5 Florida	5	26	36	4	2	2	
6 Montana	6	7	19	6	45	45	
7 North Carolina	9	40	30	11	12	12	
8 Wyoming	8	22	1	46	46	46	
9 Nebraska	9	12	25	29	29	29	
10 Mississippi	10	26	24	5	5	5	
11 Hawaii	11	17	27	1	1	1	
12 Massachusetts	12	3	22	34	34	34	
13 Virginia	13	24	31	16	16	16	
14 Michigan	14	32	12	40	40	40	
15 Missouri	15	35	16	17	17	17	
16 Iowa	16	12	40	33	33	33	
17 Colorado	17	15	18	37	37	37	
18 Texas	17	44	13	4	4	4	
19 Delaware	19	6	25	18	18	18	
20 North Dakota	20	8	30	49	49	49	
21 Tennessee	21	46	14	13	13	13	
22 Maine	22	39	2	8	4	28	47
23 Indiana	22	9	30	42	38	9	25
24 Alabama	24	6	44	47	17	25	7
25 Kansas	25	14	31	34	32	23	19





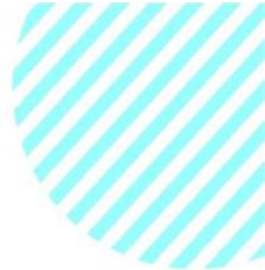
## Pengolahan Data (5)

- Kita akan menambahkan data singkatan **State** yang biasanya terdiri dari dua huruf.
- Untuk mendapatkan data singkatan tiap **State**, kita akan mengambilnya dari Wikipedia.

[https://en.wikipedia.org/wiki/List\\_of\\_U.S.\\_state\\_abbreviations](https://en.wikipedia.org/wiki/List_of_U.S._state_abbreviations)



# Pengolahan Data (6)



- Pada window **Power Query Editor**, pilih menu **New Source > Web**
- Kemudian masukkan link Wikipedia tersebut.

The screenshot shows the Power Query Editor interface. The 'From Web' dialog box is open, showing the URL [https://en.wikipedia.org/wiki/List\\_of\\_U.S.\\_state\\_abbreviations](https://en.wikipedia.org/wiki/List_of_U.S._state_abbreviations). Below the URL, a table of data is displayed:

10	Mississippi	10	1	23
11	Hawaii	11	48	35
12	Massachusetts	12	46	14
13	Virginia	13	30	4
14	Michigan	14	4	23

The 'Access Web content' dialog box is also open, showing the same URL and the option to use anonymous access. The 'Basic' level is selected for applying settings to the URL.



# Pengolahan Data (7)

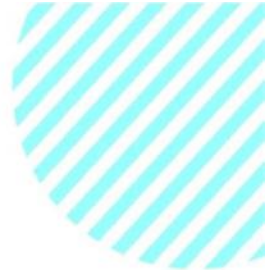
- Pilih tabel pertama, kemudian klik **OK**.

The screenshot shows a software interface with a 'Navigator' pane on the left and a 'Table View' pane on the right. The Navigator pane displays a list of tables from a Wikipedia page, with the first table selected. The Table View pane shows the content of the selected table, which lists ISO codes for various U.S. states and territories.

Header	Name and status of r
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Table
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Name and status c
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	United States of A
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Alabama
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Alaska
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Arizona
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Arkansas
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	California
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Colorado
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Connecticut
Codes: ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from ISO	Delaware



# Pengolahan Data (8)



- Lakukan data cleansing. Pada tahap ini, **hapus 3 baris teratas** karena data tersebut tidak dipakai.
- Caranya yaitu pilih menu **Remove rows > Remove Top Rows**.

The image shows a screenshot of the Power BI ribbon with the 'Remove Rows' menu open. A blue arrow points from the 'Remove Rows' menu to the 'Remove Top Rows' dialog box. The dialog box is titled 'Remove Top Rows' and contains the text 'Specify how many rows to remove from the top.' and a text input field with the number '3' entered. The 'OK' button is highlighted in yellow.

Remove Top Rows

Specify how many rows to remove from the top.

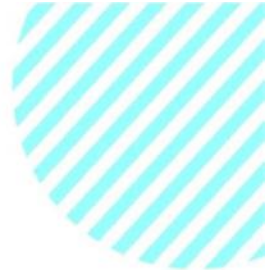
Number of rows

3

OK Cancel



# Pengolahan Data (9)



- Pada tahap berikutnya, **hapus 26 baris terbawah** karena data tersebut tidak dipakai.
- Caranya yaitu pilih menu **Remove rows > Remove Bottom Rows**.

The screenshot shows the Microsoft Excel ribbon with the 'Remove Rows' menu open. A blue arrow points from the 'Remove Bottom Rows' option in the menu to the 'Remove Bottom Rows' dialog box. The dialog box has a title bar 'Remove Bottom Rows' and a description 'Specify how many rows to remove from the bottom.' Below this is a text input field labeled 'Number of rows' with the value '26' entered. At the bottom right of the dialog are 'OK' and 'Cancel' buttons.

Remove Rows
Remove Top Rows
Remove Bottom Rows
Remove Alternate Rows
Remove Duplicates
Remove Blank Rows
Remove Errors

Remove Bottom Rows

Specify how many rows to remove from the bottom.

Number of rows

OK

Cancel

# Pengolahan Data (10)

- Filter data “**Federal district**” dari kolom **Name and status of region2**

The screenshot shows a data table with columns for 'Name and status of region' and 'Name and status of region2'. A dialog box is open over the table, displaying a list of states and the Federal District. The 'Federal district' option is selected, and the 'OK' button is highlighted.

ABC 123	Name and status of region	ABC 123	Name and status of region2	ABC 123	ISO
	United States				US
	Alabama				USA
	Alaska				840
	Arizona				US-AL
	Arkansas				US-AK
	California				US-AZ
	Colorado				US-AR
	Connecticut				US-CA
	Delaware				US-CO
	District of Columbia				US-CT
	Florida				US-DE
	Georgia				US-DC
	Hawaii				US-FL
	Idaho				US-GA

Sort Ascending  
Sort Descending  
Clear Sort  
Clear Filter  
Remove Empty  
Text Filters  
Search  
 (Select All)  
 Federal district  
 Federal State  
 State  
 State (Commonwealth)  
OK Cancel



# Pengolahan Data (11)

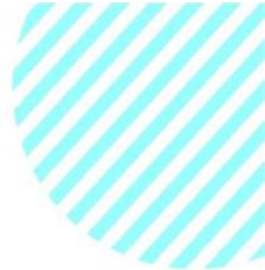
- Hapus kolom yang tidak diperlukan. Kita **hanya memerlukan kolom kedua dan kelima**.
- Pilih kolom-kolom lain **selain kolom kedua dan kelima** dengan cara **Ctrl + klik** kolomnya.
- Kemudian pilih menu **Remove Columns > Remove Columns**.

The screenshot shows a Query Editor window with a table of data. The table has three columns: 'Codes', 'Name and status of region', and 'ANSI'. The 'Remove Columns' menu is open, and the 'Remove Columns' option is selected. A blue arrow points from the 'Remove Columns' menu to the 'Remove Columns' option in the table.

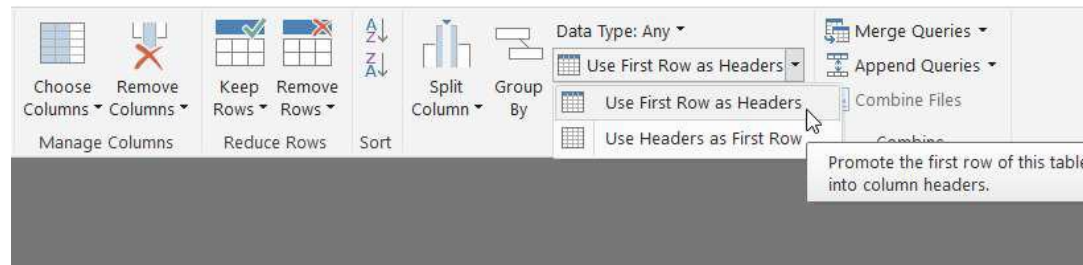
Codes	Name and status of region	ANSI
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	United States of America	US
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Alabama	AL
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Alaska	AK
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Arizona	AZ
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Arkansas	AR
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	California	CA
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Colorado	CO
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Connecticut	CT
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Delaware	DE
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Florida	FL
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Georgia	GA
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Hawaii	HI
ISOISO 3166 codes (2-letter, 3-letter, and 3-digit codes from I...	Idaho	ID



# Pengolahan Data (12)



- Ubah baris pertama sebagai header dengan memilih menu **Use first row as headers**



## Pengolahan Data (13)

- Ubah nama kolomnya menjadi **State Name** dan **State Code**
- Caranya dengan cara *double click* pada nama kolomnya

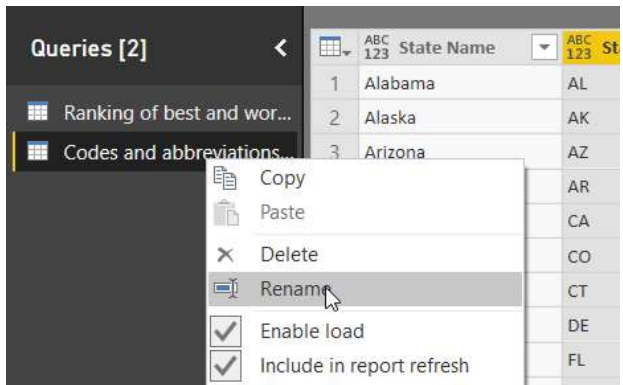
	ABC 123 United States of America	ABC 123 US
1	Alabama	AL
2	Alaska	AK
3	Arizona	AZ
4	Arkansas	AR
5	California	CA
6	Colorado	CO
7	Connecticut	CT
8	Delaware	DE



	ABC 123 State Name	ABC 123 State Code
1	Alabama	AL
2	Alaska	AK
3	Arizona	AZ
4	Arkansas	AR
5	California	CA
6	Colorado	CO
7	Connecticut	CT
8	Delaware	DE

# Pengolahan Data (14)

- Ubah nama tabel menjadi **StateCodes**.



The first screenshot shows a data table with a context menu open over the first row. The table has columns for 'State Name' and 'St'. The first row contains 'Alabama' and 'AL'. The context menu includes options: Copy, Paste, Delete, Rename, Enable load, and Include in report refresh. The 'Rename' option is highlighted.

ABC 123	State Name	ABC 123	St
1	Alabama		AL
2	Alaska		AK
3	Arizona		AZ
			AR
			CA
			CO
			CT
			DE
			FL

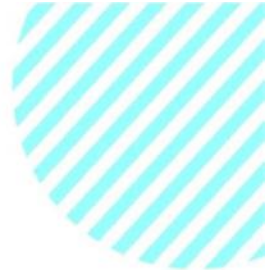
A blue arrow points to the second screenshot, which shows the same data table but with the table name changed to 'StateCodes' in the 'Queries [2]' pane.



ABC 123	State Name	ABC 123	St
1	Alabama		
2	Alaska		
3	Arizona		
4	Arkansas		
5	California		
6	Colorado		
7	Connecticut		



## Pengolahan Data (15)

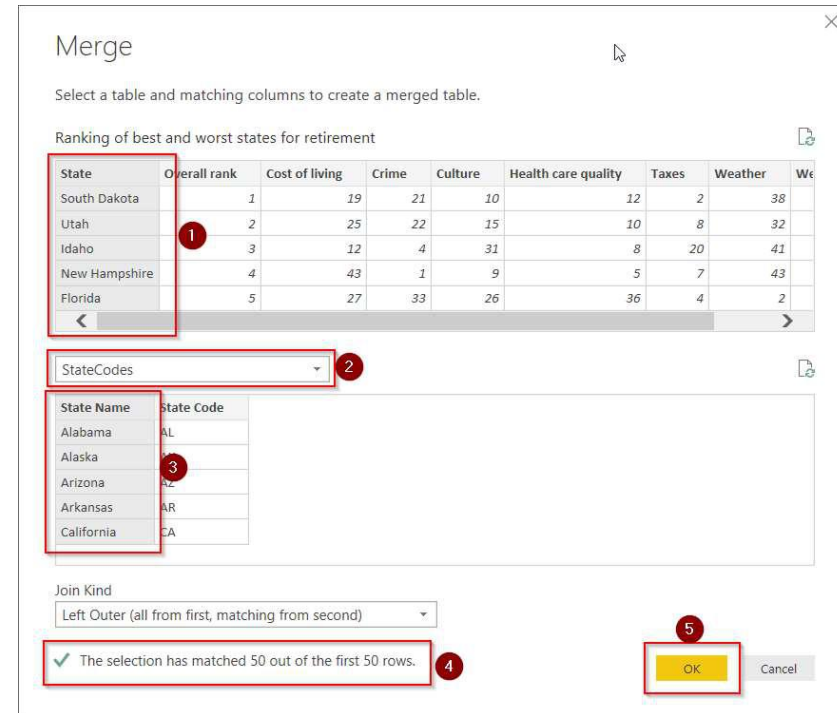
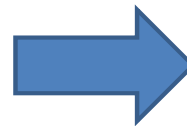
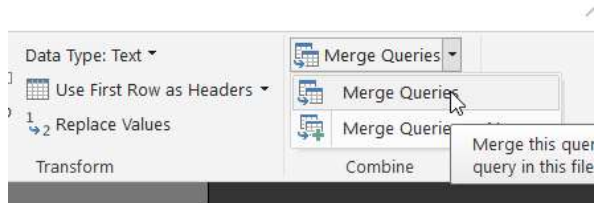


- Setelah kita memiliki **dua buah query** tersebut, kita dapat **menggabungkannya menjadi satu**.
- Mekanisme penggabungan
  - **Merging**  
Menambahkan **kolom** dari salah satu query ke query yang lain
  - **Appending**  
Menambahkan **baris** data dari satu query ke query yang lain



# Pengolahan Data (16)

- Pilih menu **Merge Query**
- Pilih query pertama dan klik kolom **State**
- Pilih query **StateCodes** dan klik kolom **State Name**





# Pengolahan Data (17)

- Klik tombol *expand* pada kolom yang ditambahkan.
- Hapus centang pada **State Name** dan **Use original column name as prefix**.

Search Columns to Expand

Expand  Aggregate

(Select All Columns)

State Name

State Code

Use original column name as prefix

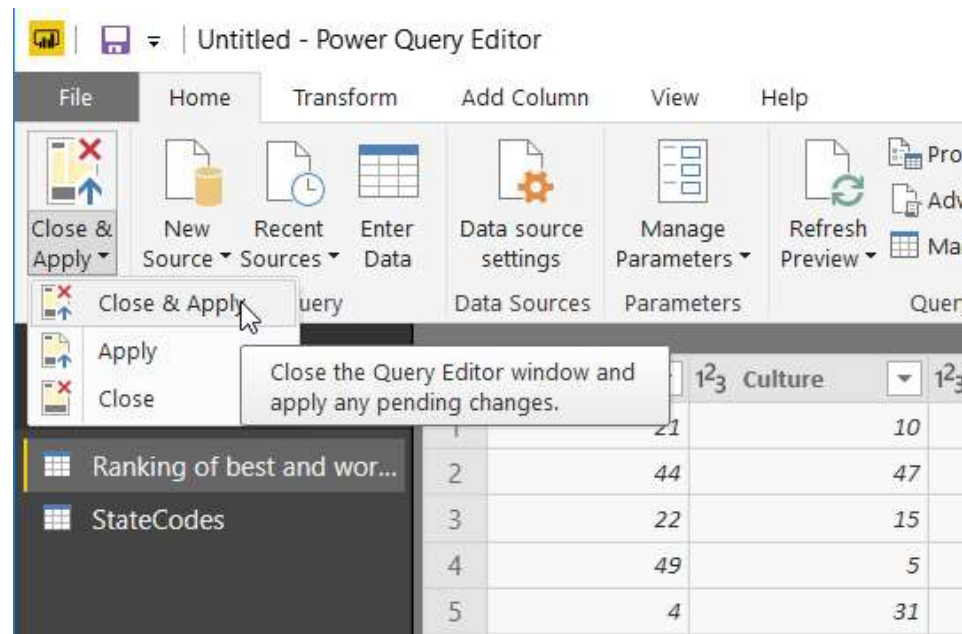
OK Cancel



her	1 <sup>2</sup> <sub>3</sub> Well-being	ABC 123 State Code
38	1	SD
7	38	AL
32	9	UT
50	25	AK
41	8	ID
11	15	AZ

# Pengolahan Data (18)

- Pilih menu **Close & Apply > Close & Apply** untuk menyimpan hasil edit query.





## Pengolahan Data (19)

- Pilih menu **File > Save As**
- Simpan project dengan nama “**Getting Started with Power BI Desktop.pbix**”



- <https://powerbi.microsoft.com/en-us/learning/>
- <https://docs.microsoft.com/en-us/power-bi/guided-learning/>
- <https://community.powerbi.com/>
- <https://www.edx.org/course/analyzing-and-visualizing-data-with-power-bi>
- <https://vladmihalcea.com/database-table-relationships/>



TERIMA KASIH..  
SAMPAI JUMPA LAGI..  
WASSALAMUALAIKUM. WR. WB.

**0813 12000 913 | RahadianN@unkris.ac.id**



# DATA ANALYTICS

**Power BI**



## Rahadian Nopriantoko, S.Si., M.Si.

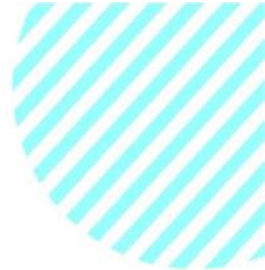
- Alumni S1 & S2 Universitas Indonesia
- Dosen di Universitas Indonesia 2016-2018 & Universitas Krisnadwipayana 2018-Sekarang
- Selain dosen juga berkhidmat sebagai profesional, konsultan, instruktur, trainer, dan mentor
- Dapat dihubungi via WA **0813 12000 913** dan Email **RahadianN@unkris.ac.id**

**Assalamualaikum. Wr. Wb.**



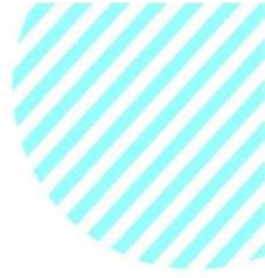


# Agenda



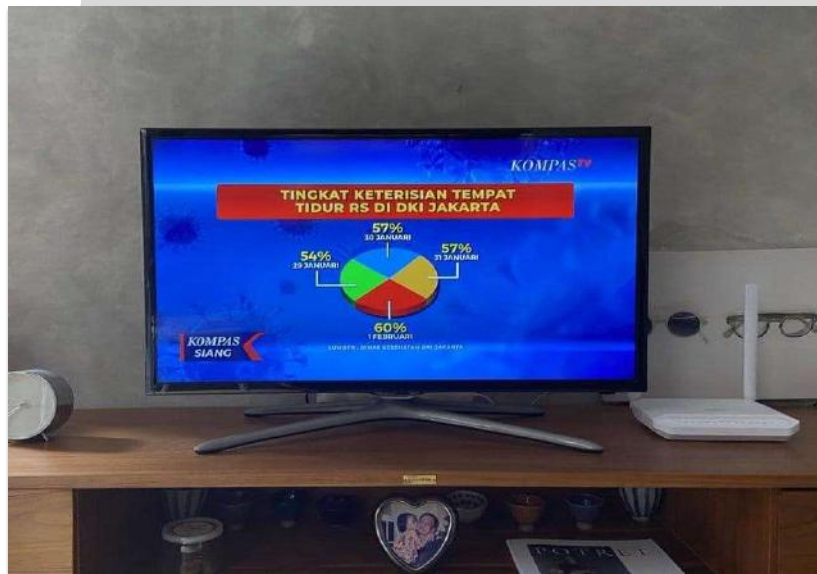
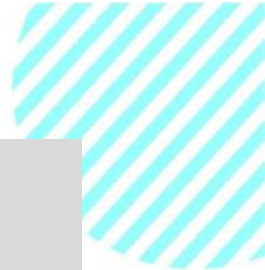
1. Tentang Data Analytics
2. Pengenalan Power BI
3. Power BI Dekstop
4. Persiapan dan Transformasi Data
5. Pengolahan Data
- 6. Membuat Visualisasi**
- 7. Deployment Visuals**
8. Modeling
9. Pengenalan DAX
10. Publishing and Sharing
11. Power BI Service
12. Guidance and Tips





# MEMBUAT VISUALISASI





## Is Data Viz easy?

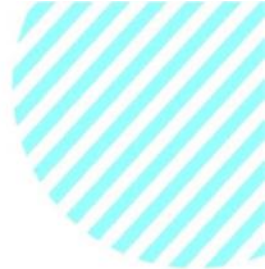
it's not simply as **easy** as just dressing up a graph to make it look better or slapping on the “info” part of an infographic.

**Effective data visualization is a delicate balancing act between form and function**



# Be a Data Visualizer

## The Mindset You Must Have



### 1. Understand The Context

As a Data Visualizer, often you will meet an ambiguous problems. To do deliver the right solutions, you have to gather information from the user about what they want and need.

### 2. Choose the Effective Visuals

There are tons ways to visualize your data. As Data Visualizer, you have to wisely choose the right and effective visuals to represent the data and tell the right story.

### 3. Focus Your Audience

In visuals, often you will found elements (suca as grid lines) that will distract your audiences (users). You have to remove that elements or, if necessary, add an element to focus your audience (like target line).

### 4. Think Like a Designer

Data Visualizer is a mix subject between data expertise and art. Besides you are an engineer, you have to have a mindset like a designer to deliver your story in your data.

### 5. Tell The Story

Visual is not always about showing a good visuals. You also have to tell the right story from your visuals. So that the visuals can speak the data the way we wanted to.

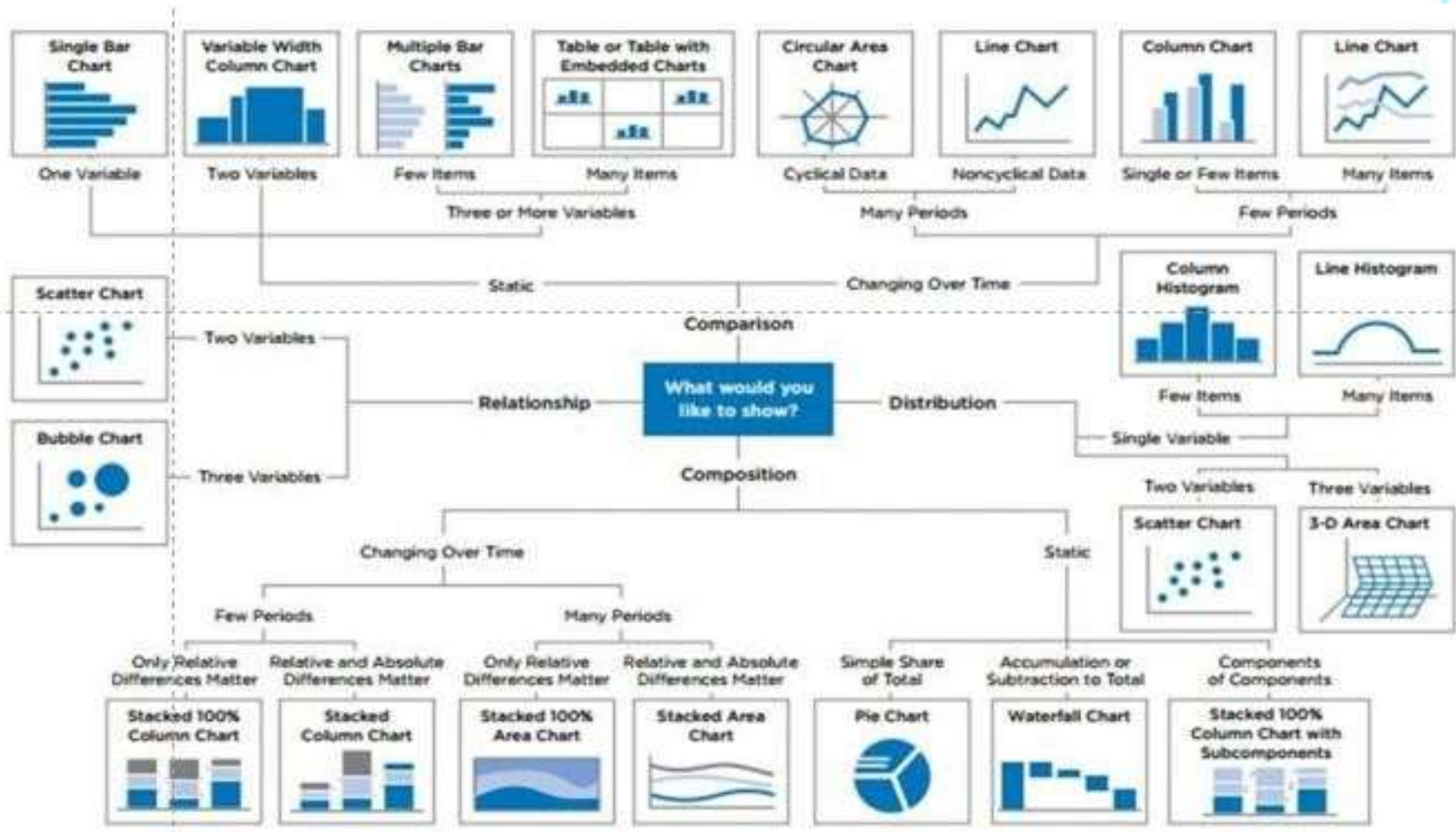
### 6. Putting it Together

From all the mindsets mentioned above, putting it together in yourself. Learn from the mistakes as more projects you handle and stay thirsty for a new knowledge.



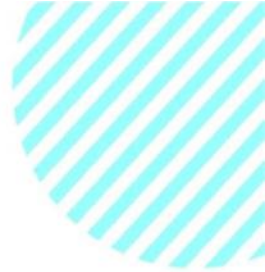
# Data Visualization

Use the Right Visuals





# Report Menu



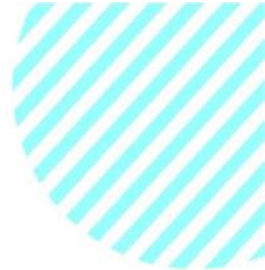
- Pada menu **Report** terdapat 5 bagian utama:
  1. Ribbon yang berisi menu-menu umum
  2. **Report** view, di mana visualisasi dibuat dan ditata
  3. **Pages** tab, untuk menambahkan halaman baru
  4. **Visualization** pane, untuk mengganti aspek visual (warna grafik, apply filter, dll.)
  5. **Field** pane, yang berisi elemen query yang dapat di-drag ke dalam **Report** ataupun **Filters**.







# Report Menu



The screenshot displays the Power BI Desktop interface with the following elements and callouts:

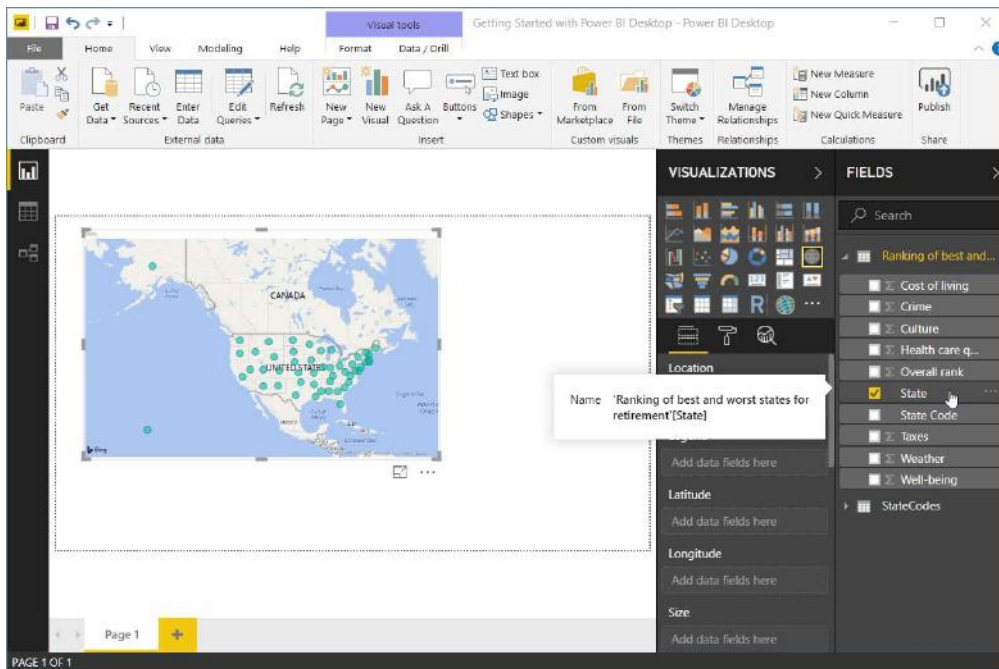
- 1**: A pink circle with the number 1 is positioned over the **Clipboard** group in the **Home** ribbon.
- 2**: A pink circle with the number 2 is positioned in the center of the report canvas.
- 3**: A pink circle with the number 3 is positioned over the **Page 1** tab and the **+** button in the bottom-left corner.
- 4**: A pink circle with the number 4 is positioned over the **Manage Relationships** button in the **Relationships** task pane.
- 5**: A pink circle with the number 5 is positioned over the **FIELDS** pane on the right side of the interface.

The interface includes a ribbon with **File**, **Home**, **View**, **Modeling**, and **Help** tabs. The **Home** ribbon contains groups for **Clipboard**, **External data**, **Insert**, **Custom visuals**, **Themes**, **Relationships**, **Calculations**, and **Share**. The **Relationships** task pane includes **Manage Relationships**, **Switch Theme**, and **Manage Relationships**. The **Visualizations** task pane shows various chart types and options like **Values**, **FILTERS**, and **DRILLTHROUGH**. The **Fields** task pane shows a search bar and data fields like **RetirementStats** and **StateCodes**.



# Membuat Visualisasi (1)

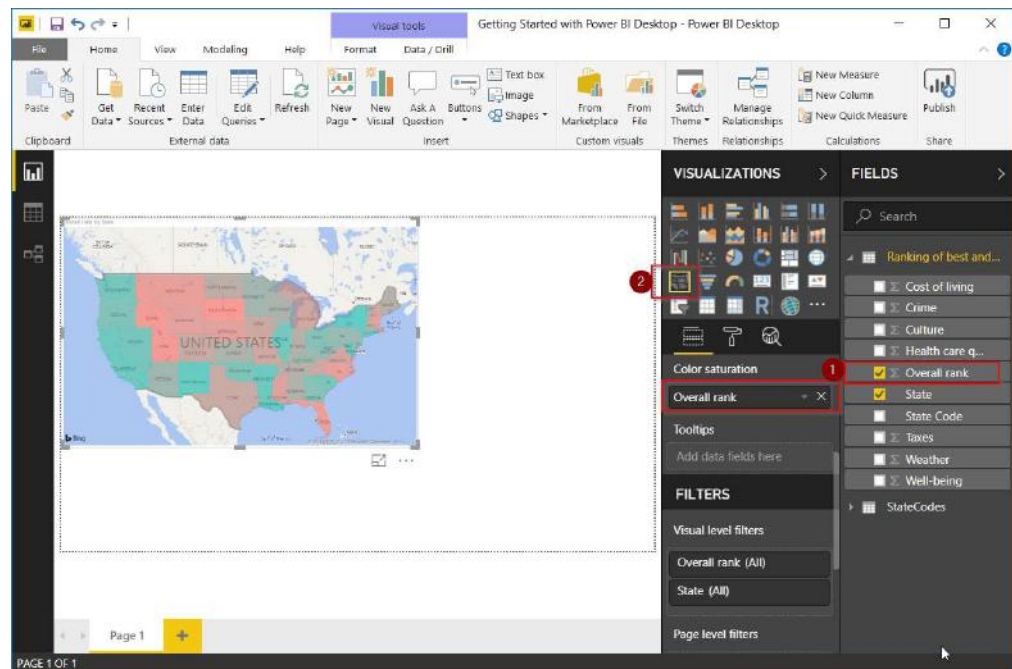
- Tambahkan sebuah **Fields** ke dalam **Report** view
- Caranya yaitu drag field **State** dari query Ranking ke area kerja



Secara otomatis, Power BI akan menampilkan peta sesuai dengan data kolom tersebut.

# Membuat Visualisasi (2)

- Tambahkan **Overall rank** dari **Fields** pane ke dalam **Color saturation** pada **Visualization** pane
- Kemudian ubah mode peta menjadi **Filled Map**



# Membuat Visualisasi (3)

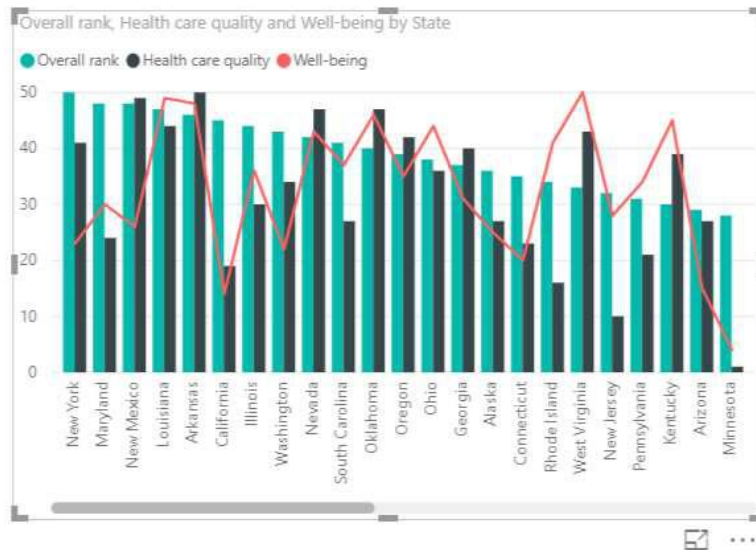
- Tambahkan visualisasi kedua dengan melakukan drag **State** dari Ranking query pada area kosong.
- Kemudian tambahkan **Overall rank**, **Health care quality**, dan **Well-being** ke dalam visualisasi tersebut.
- Ubah visualisasi menjadi **Line and clustered column**.





# Membuat Visualisasi (4)

- Pindahkan **Well-being** ke dalam **Line values**



**VISUALIZATIONS**

Health care quality

Line values

Well-being

Tooltips

Add data fields here

**FIELDS**

Search

Ranking of best and...

Cost of living

Crime

Culture

Health care q...

Overall rank

State

State Code

Taxes

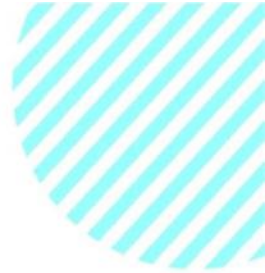
Weather

Well-being

StateCodes



# Visualisasi



- Power BI menyediakan banyak pilihan visualisasi data.
- Contoh:
  - Pie chart
  - Maps
  - Tabular format
  - Matrix
  - Waterfall
  - Funnels
  - Gauges
  - Dll.

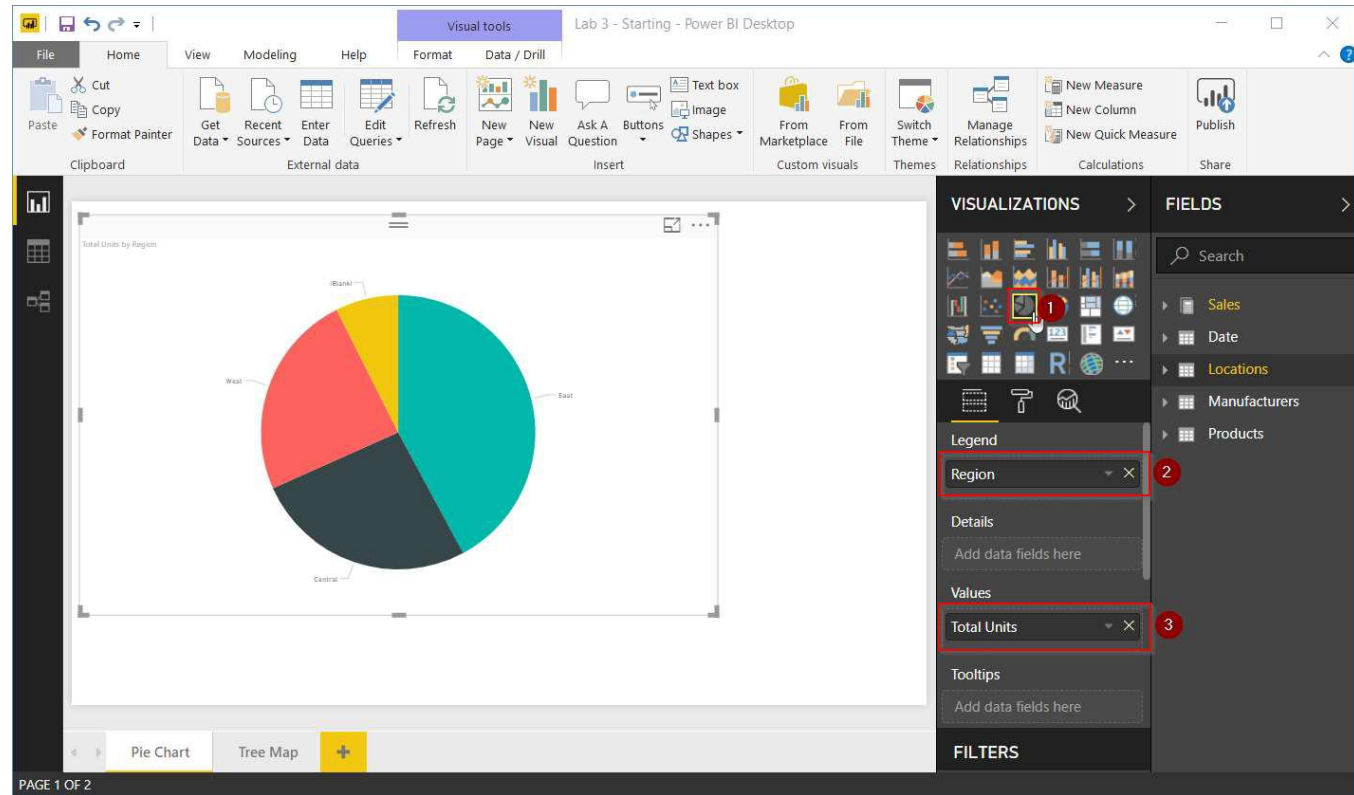






# Pie Chart

- Legend:  
**Locations.Region**
- Values:  
**Sales.Total Units**





# Tree Map

- Group:  
**Manufacturers.Manufacturer**
- Values:  
**Sales.Total Units**

Lab 3 - Starting - Power BI Desktop

Visual tools

File Home View Modeling Help Format Data / Drill

Paste Cut Copy Format Painter Get Data Recent Sources Enter Data Edit Queries Refresh New Page New Visual Ask A Question Buttons Image Text box From Marketplace From File Switch Theme Manage Relationships New Measure New Column New Quick Measure Publish

Clipboard External data Insert Custom visuals Themes Relationships Calculations Share

Visualizations

1

2

3

Group

Manufacturer

Details

Add data fields here

Values

Total Units

Color saturation

Add data fields here

Fields

Search

Sales

% Sales Mark...

% Units Mark...

LY Sales

LY Total Units

LY YTD Sales

LY YTD Total ...

Sales Var

Sales Var %

Total Sales

Total Units

Total Units Var

Total Units Var...

Total VanArsd...

Total VanArsd...

YTD Sales

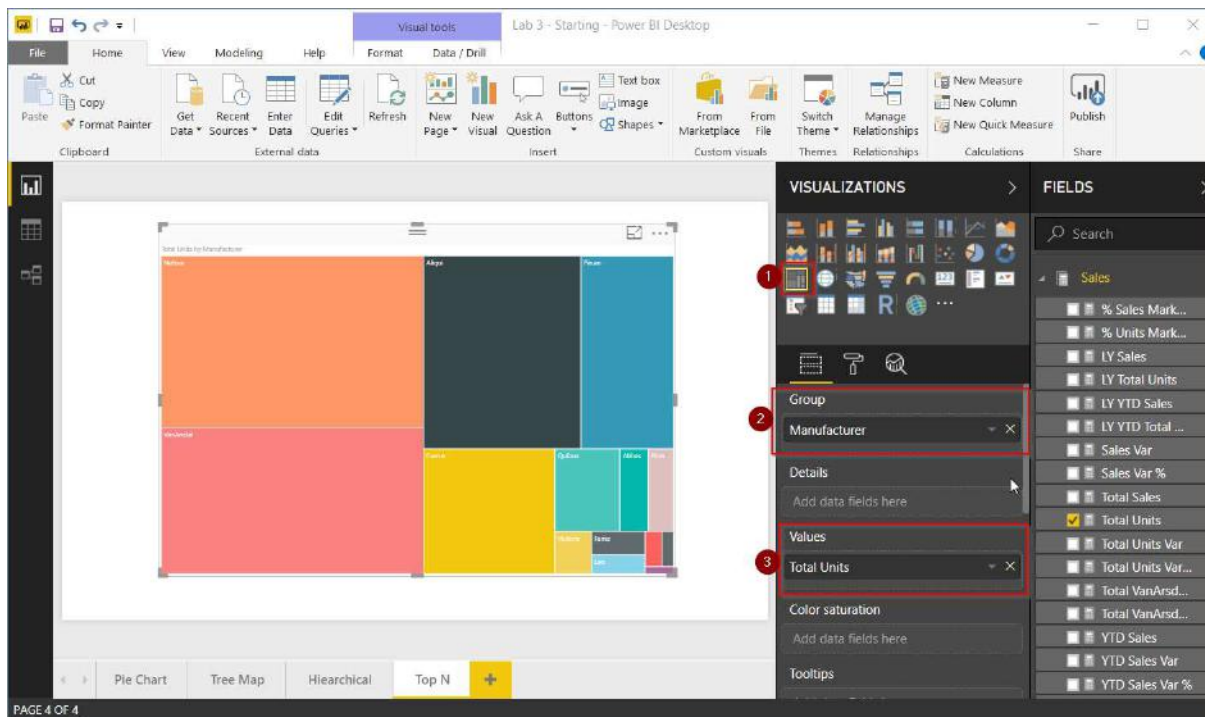
YTD Sales Var

Pie Chart Tree Map +

PAGE 2 OF 2

# Filter (including Top N)

- Dari visualisasi Tree Map yang sebelumnya kita dapat melakukan visualisasi dengan memilih **Top N** manufacturer.



# Filter (including Top N)

- Kemudian tambahkan filter **Top N (5)** dengan value **Total Units**

The screenshot displays the Power BI Desktop interface. The main area shows a visualization titled 'Total Units for Manufacturer' with a bar chart. The 'VISUALIZATIONS' pane on the right is open, showing the 'Filter Type' dropdown set to 'Top N'. The 'Show items' dropdown is set to 'Top' and the 'By value' dropdown is set to 'Total Units'. The 'Apply filter' button is highlighted with a red box and a number 4. The 'FIELDS' pane on the right shows the 'Sales' table with various measures, including 'Total Units' which is checked.

PAGE 4 OF 4

# Line and Stacked Column Chart

The screenshot shows the Power BI Desktop interface with a 'Line and Stacked Column Chart' selected. The chart displays 'Total Sales' as a line and 'Total Units' as stacked bars. The 'Visualizations' pane shows the following configuration:

- Shared axis: Year
- Column series: Add data fields here
- Column values: Total Sales
- Line values: Total Units
- Tooltips: Add data fields here

The 'Fields' pane shows the 'Sales' data source with the following fields:

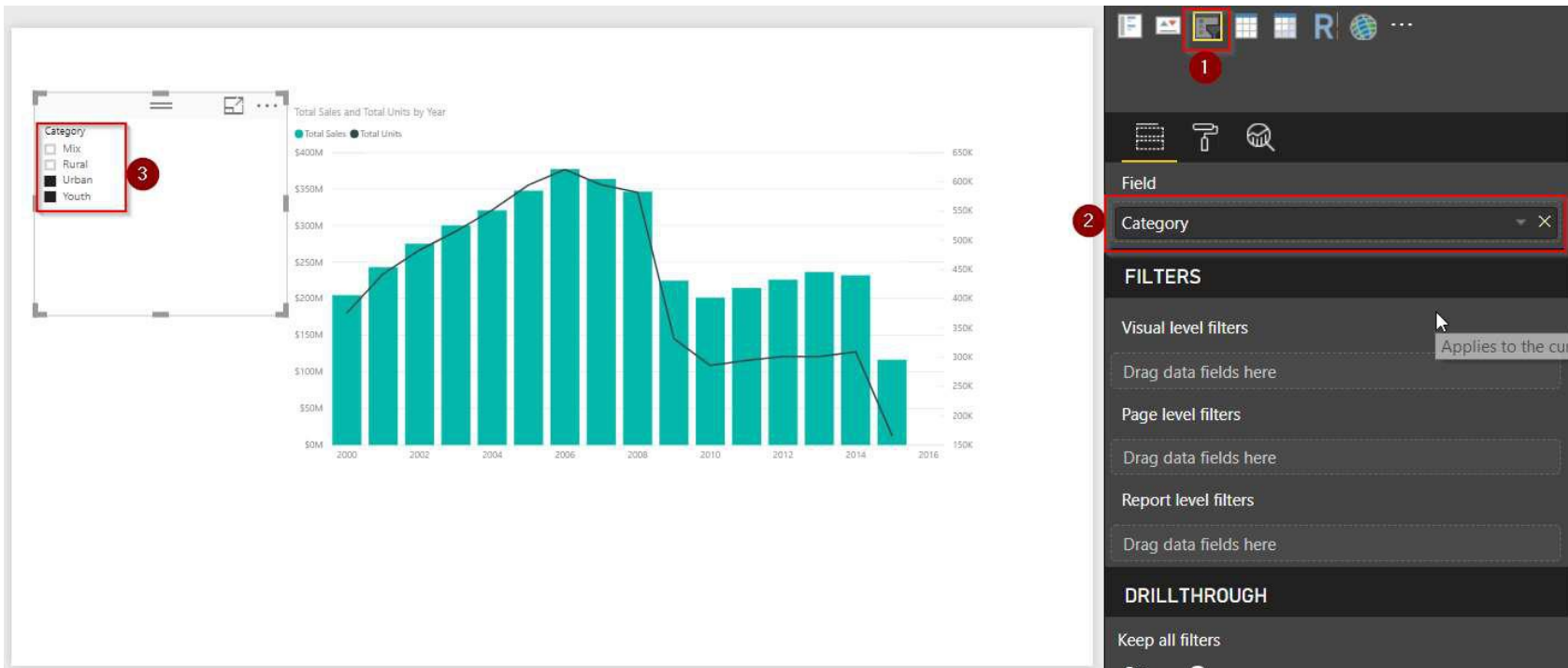
- % Sales Mark...
- % Units Mark...
- LY Sales
- LY Total Units
- LY YTD Sales
- LY YTD Total ...
- Sales Var
- Sales Var %
- Total Sales
- Total Units
- Total Units Var
- Total Units Var...
- Total VanArsd...
- Total VanArsd...
- YTD Sales
- YTD Sales Var
- YTD Sales Var %
- YTD Total Units
- YTD Total Unit...

PAGE 5 OF 5



# Slicer

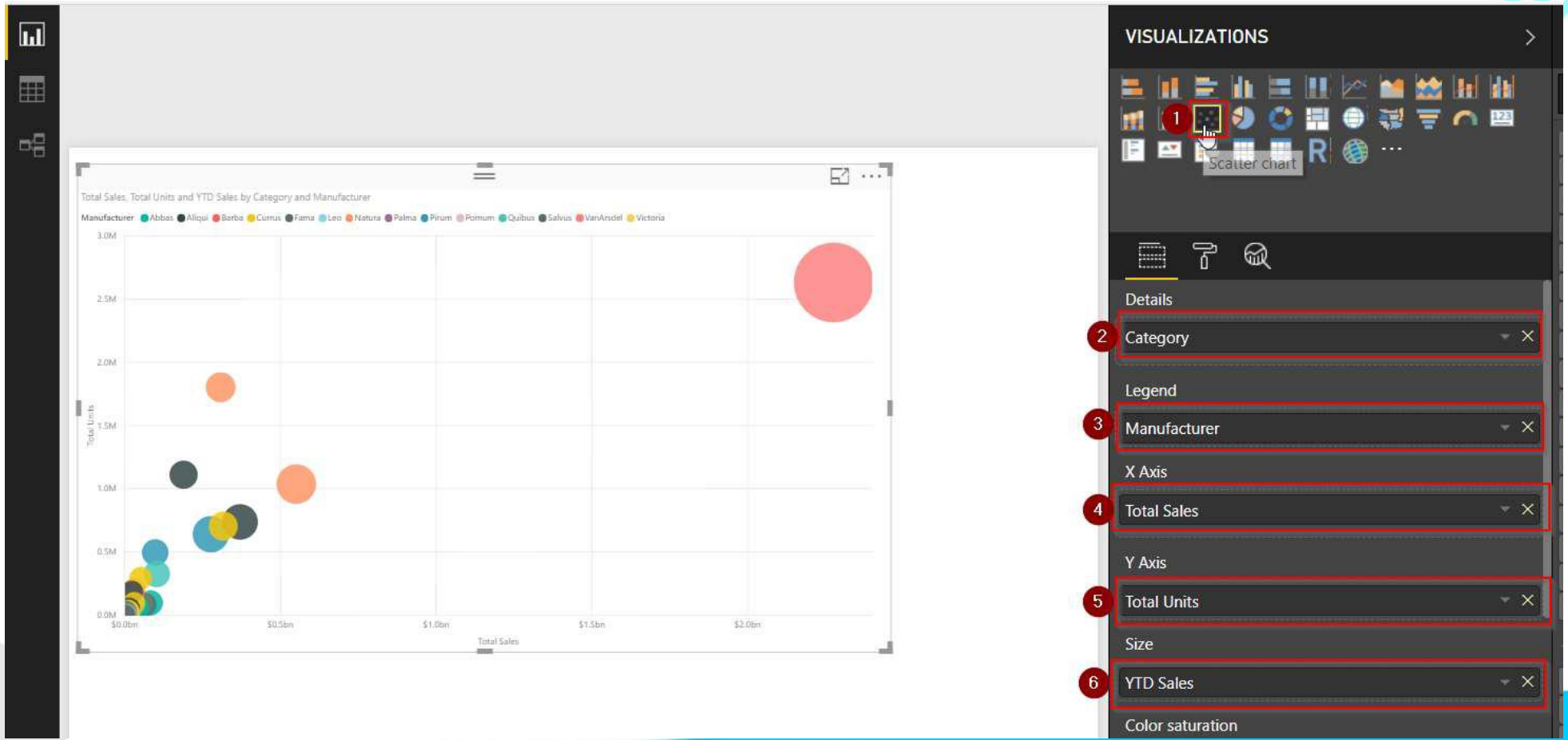
- Kita dapat menambahkan **Slicer** untuk menampilkan data sesuai dengan kategori yang dipilih.
- Untuk memilih beberapa slicer sekaligus, klik Ctrl + item slicer

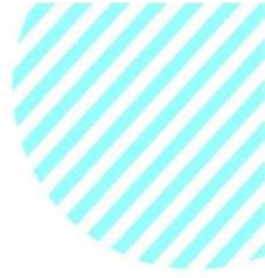






# Scatter Chart





# Deployment Visuals

Power BI Desktop



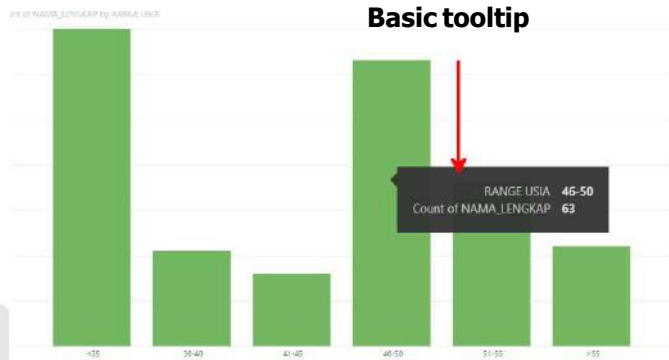


# Tooltip

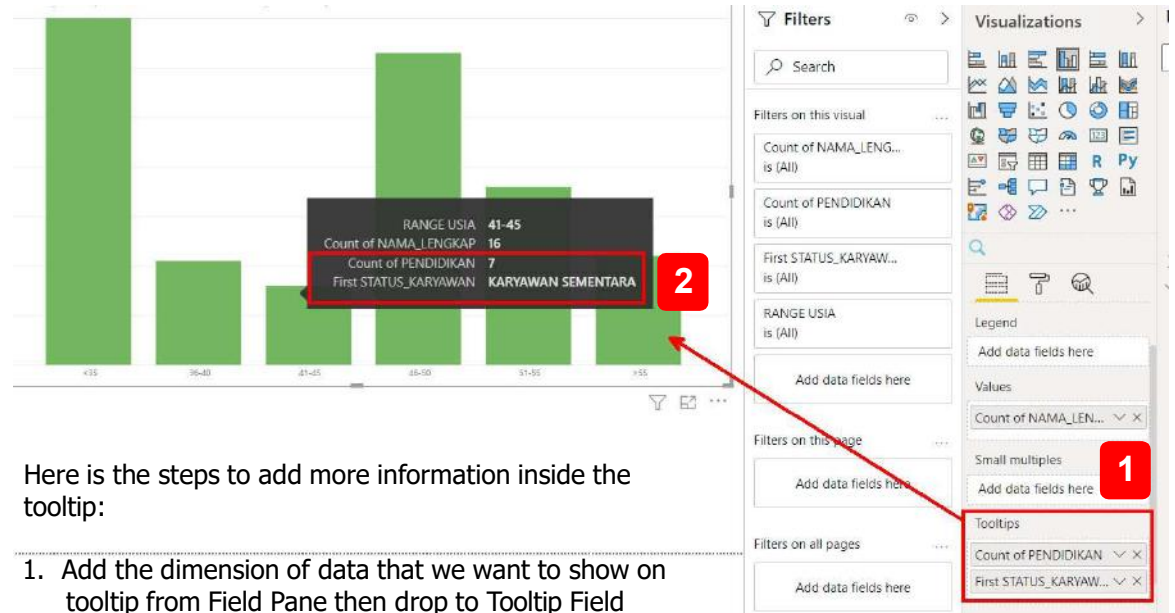
## Basic of Tooltip

**Tooltips appear when the cursor is hovering over a visual.**

- You can use tooltips so that they can provide contextual help like they hind and message to your report for decisions.
- Users usually don't work what they don't understand. Tooltips help the users to understand the complex features of the system.
- A tooltip will help to find our accurate data and assist them in form fields



**You are able to add more information inside Tooltip**

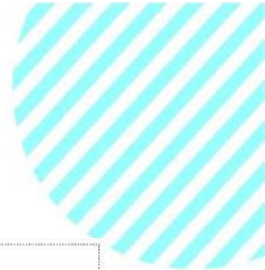
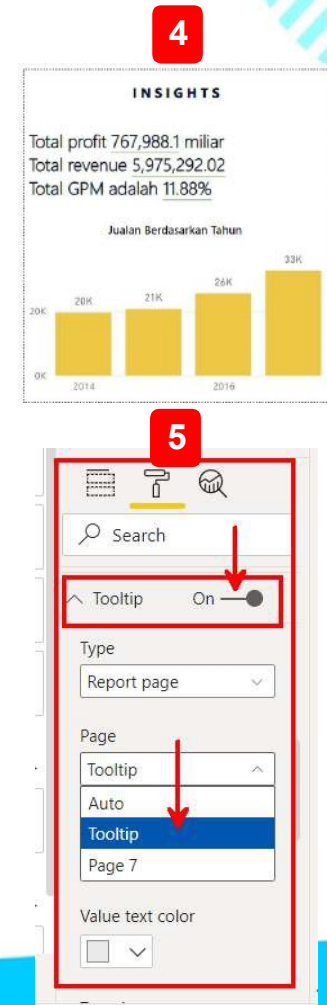
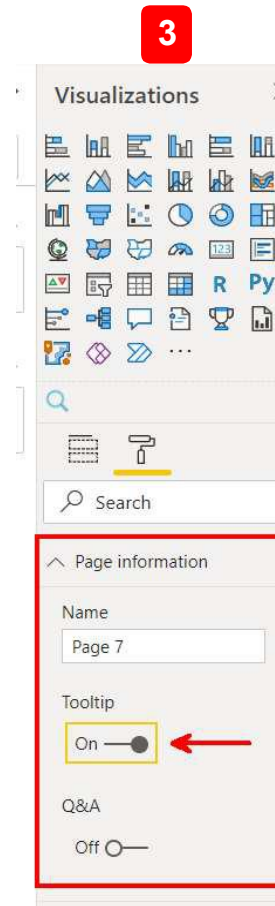
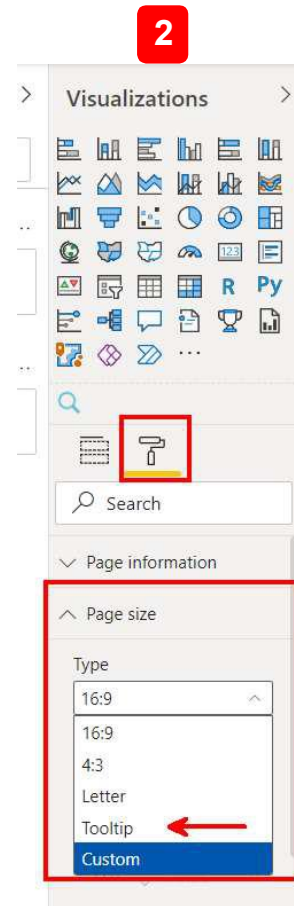
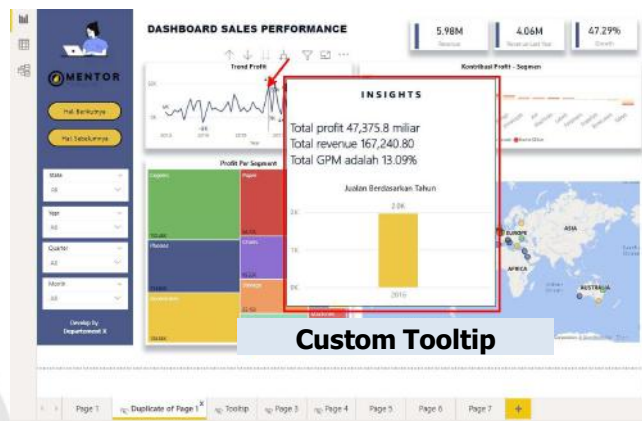




# Tooltip

## Create a Custom Tooltip

1. Create a new Page
2. Within that page, navigate to the Format pane and expand **Page Size**. Within Page Size, select **Type to be Tooltip**
3. Next, go to the Page Information section and make sure Tooltip is **set to on**
4. Now start building your Tooltip. **You can use any combination of visuals for that.** It's just like creating a report in Power BI
5. Finally, **apply this to the chart you want to use.** Navigate to your chart and select it. Now turn the Tooltip on and under Page select the Tooltip you just created





## Filter Panel

### Level of Filter Panel

Filters also refine the data; however, they are designed as a tool for developers to configure visuals before the dashboard is provided to consumers

There are three different kinds of filters, all of which are configured using the Filter's panel to the right of the canvas and include:

1. Filter level visual
2. Filter level page, and
3. filters that apply to all pages

Filters

Search

Filters on this visual ...

Realisasi is (All)

Target is (All)

Add data fields here

Filters on this page ...

Add data fields here

Filters on all pages ...

Add data fields here

1 Filter apply to visual

2 Filter apply to page (multi visuals)

3 Filter apply to all pages (multi pages)



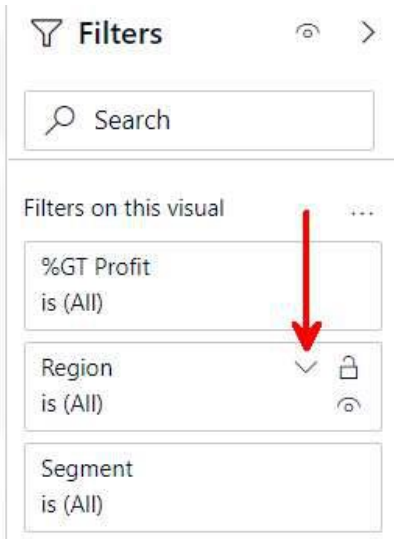
# Filter Panel

## Types of Filtering

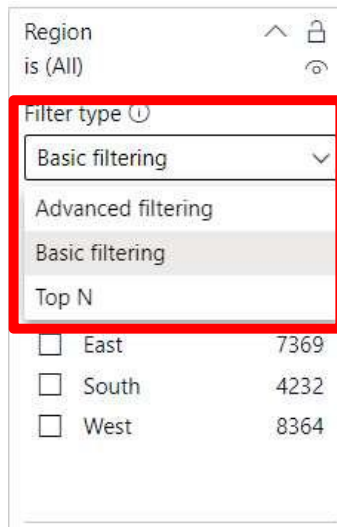
Configurations for filters are the same for each of the three kinds of filters. However, they are different depending on the datatype :

- String
- Number, or
- Date

Select the filter type by clicking on the dropdown box in the filter panel

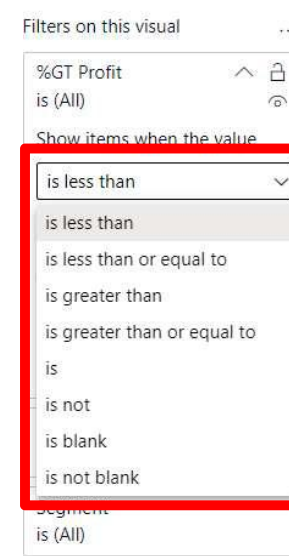


### Type of Filtering for String Values



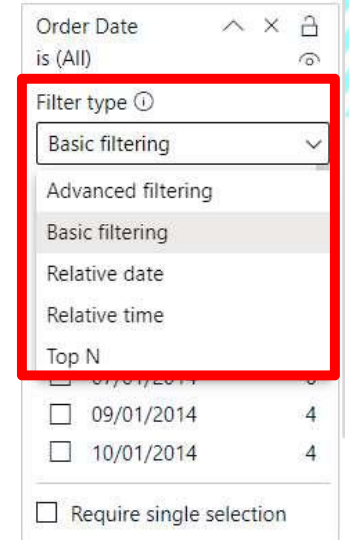
- **Advanced filtering:** filter based on custom string logic for the dimension.
- **Basic Filtering:** select which values of the dimension to include or exclude
- **Top N:** filter the dimension to the top (or bottom) value of N, based on another field from the field list. N is a variable that you will specify.

### Type of Filtering for Number Values



See the screenshot above for the list of customized logic that can be chosen when using a number value. Select any of these and then specify a variable to apply to the filter

### Type of Filtering for Date Values



- **Advanced, Basic, and Top N filtering** are available for date values.
- **Relative date:** filter based on a set variable for the options in the screenshot below based on days, weeks, months, or years.
- **Relative time:** filter based on a set variable for the options in the screenshot below based on hours and minutes



# The Magic of Navigation

There are two types of features which you can use as navigation tools. Use these two according to what you need in the report/dashboard!



- Save condition of a page/dashboard, so that user can access to this condition in the future.
- Can be used to capture a state that connected to an important insight for user.

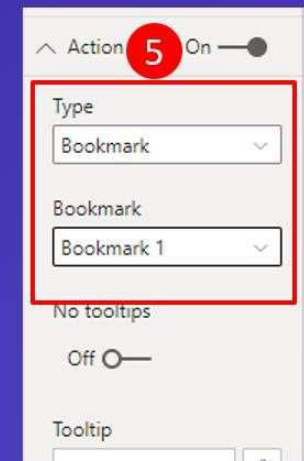
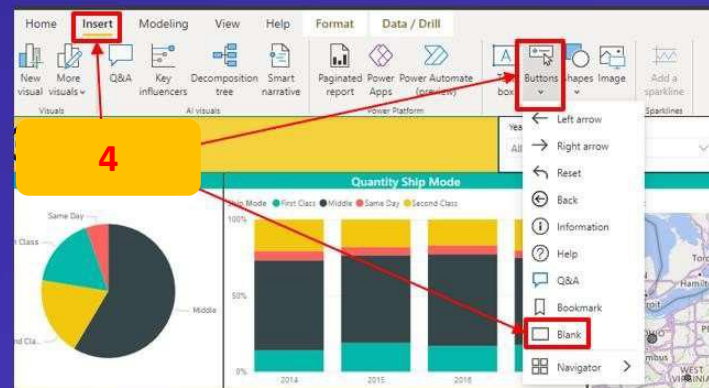
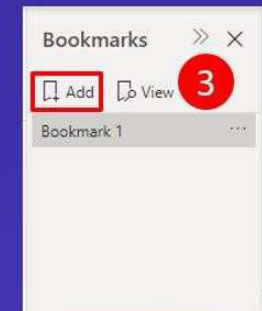
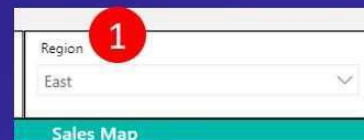
- A bookmark trigger that specialize to navigating user from a page to another.
- As the name imply, this feature can help you to navigate to another page in a dashboard.



# How to Make Bookmarks

To setup a Bookmarks button, here is the steps:

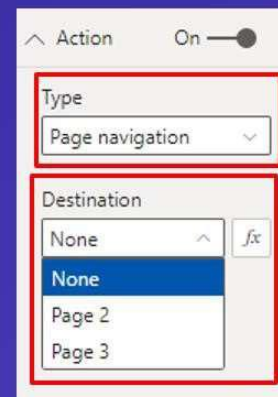
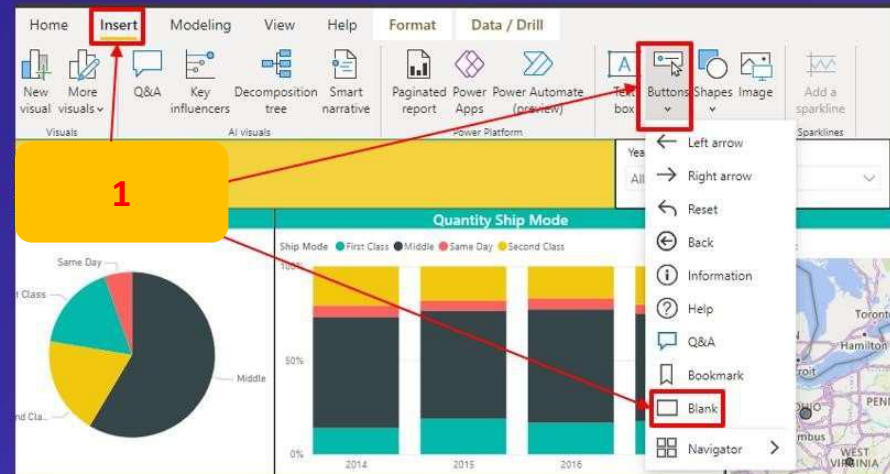
1. Set the state you want to book mark, e.g: Filtered visuals as East Region Data.
2. Click View, and choose Bookmarks Menu.
3. Click Add, and this condition will be marked as “Bookmark 1” (it can be renamed).
4. Now we will create the button to trigger the Bookmark Condition. To do that, click Insert then choose Buttons menu and choose Blank Button.
5. Click the button and set it up so that this button will trigger the “Bookmark 1” state.



# How to Make Page Navigation

To setup a Page Navigation button, here is the steps:

1. Create the button to Move to another page. To do that, click Insert then choose Buttons menu and choose Blank Button.
2. Click the button and set it up so that this button will trigger the Page Navigation.
3. Select the page that you want to be.





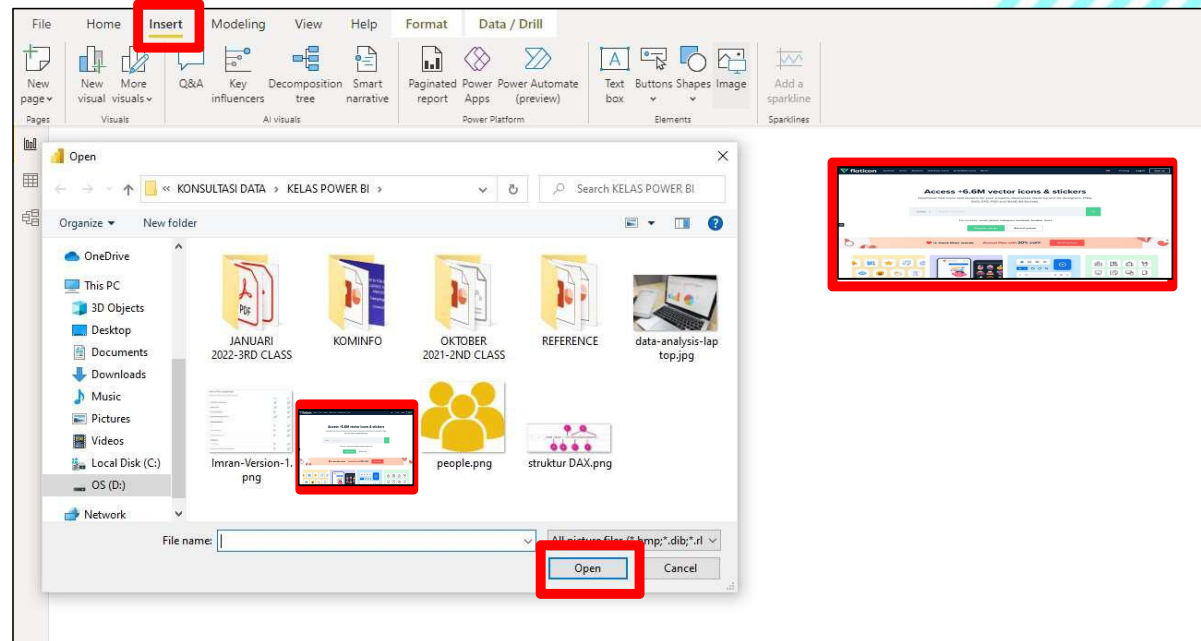
# Format Visual

## Insert Picture

You can also add a picture in your dashboard as simply as you could do in Microsoft Excel or Word.

1. Click Insert Menu and choose Image.
2. Browse and choose your picture file to be inserted in your dashboard, then click Open.
3. Adjust the size of your picture.

**Pictures and Icons also can be used as page navigation or bookmarks button.**



## Freepik.com

You can browse for more pictures or icons for free with these two websites:

1. <https://www.flaticon.com/>
2. <https://www.freepik.com/>

**Use it wisely and be aware about the copyrights of pictures and icons you used.**

## Flaticon.com



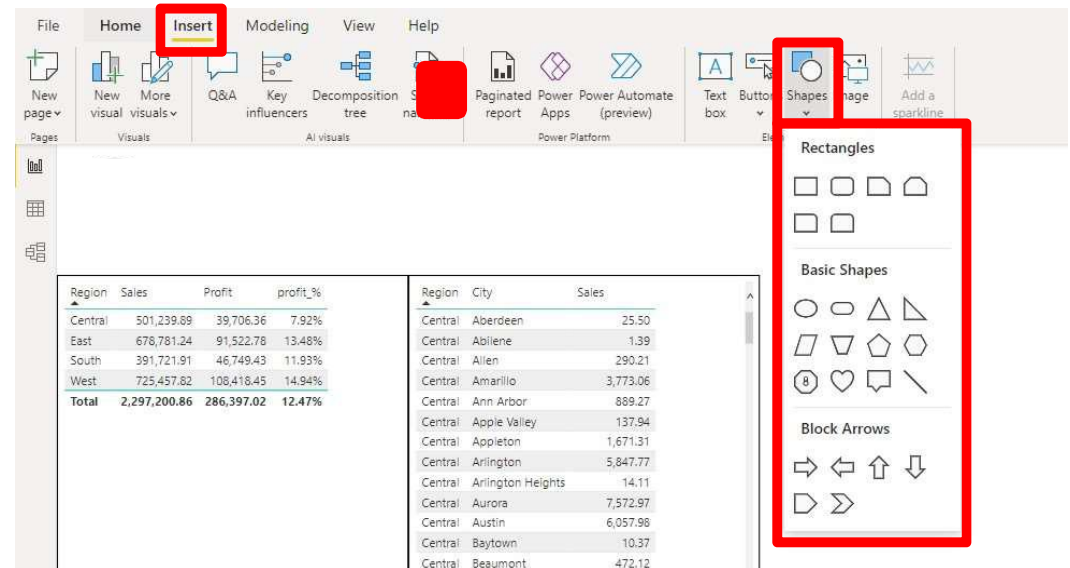


# Format Visual

## Add Shape

You add a shapes in your dashboard

1. Click Insert Menu and choose Shapes.
2. Choose the shape which you want to insert in your dashboard.
3. Adjust the size, the color, or the text you want to be inserted in your shape.
4. Shapes also can be used as page navigation or bookmarks button.







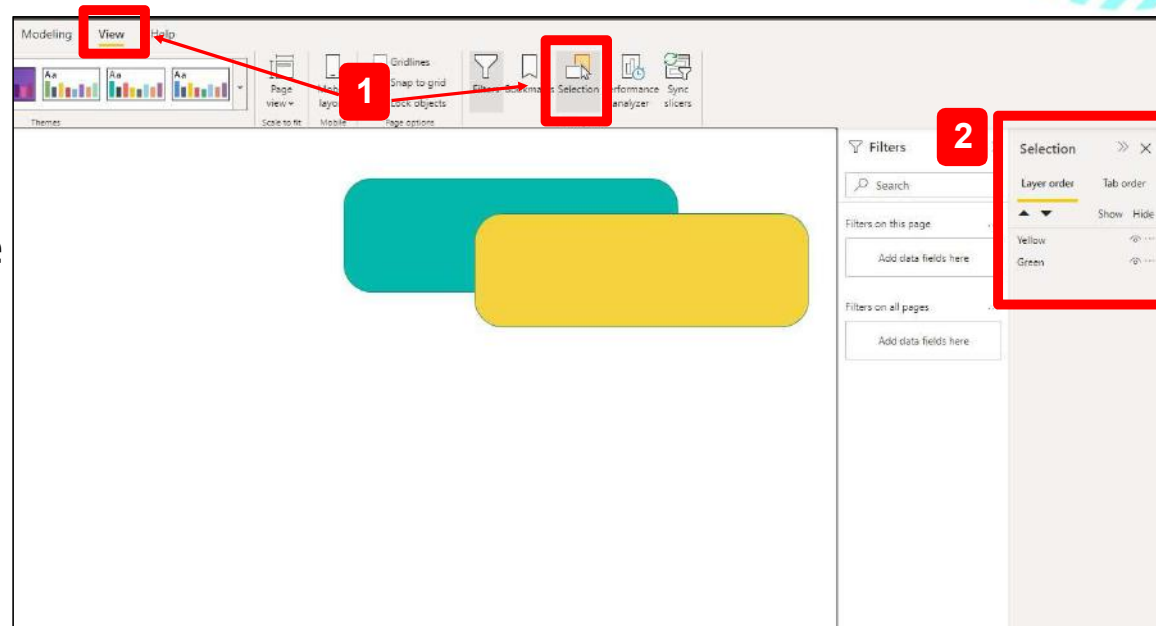
# Format Visual

## Manage Your Objects Order

Sometimes you have to deal with visuals or objects that overlap each other, and you can't see important information because of it. You can change the order of all your objects so that you can decide which object will be on top of another object.

1. Click View Menu and choose Selection.
2. In Selection panel you can drag which object will be on top of another.

Be aware that the order of objects in Selection panel determine the position of an object from another objects.





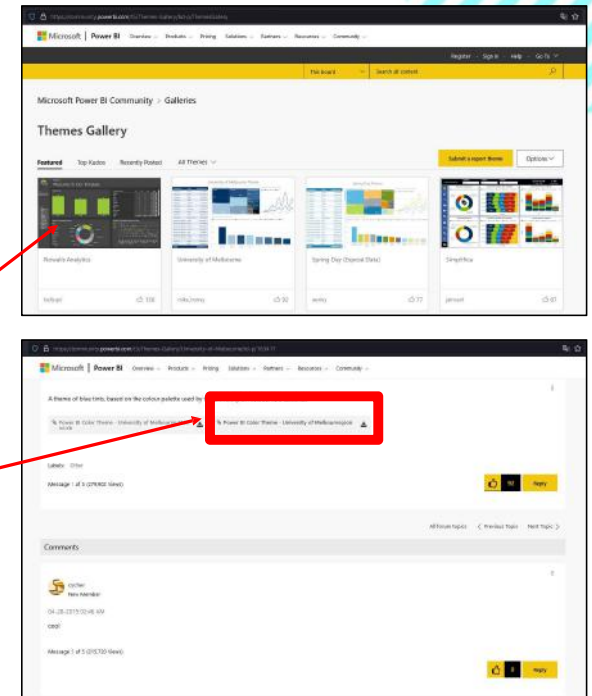
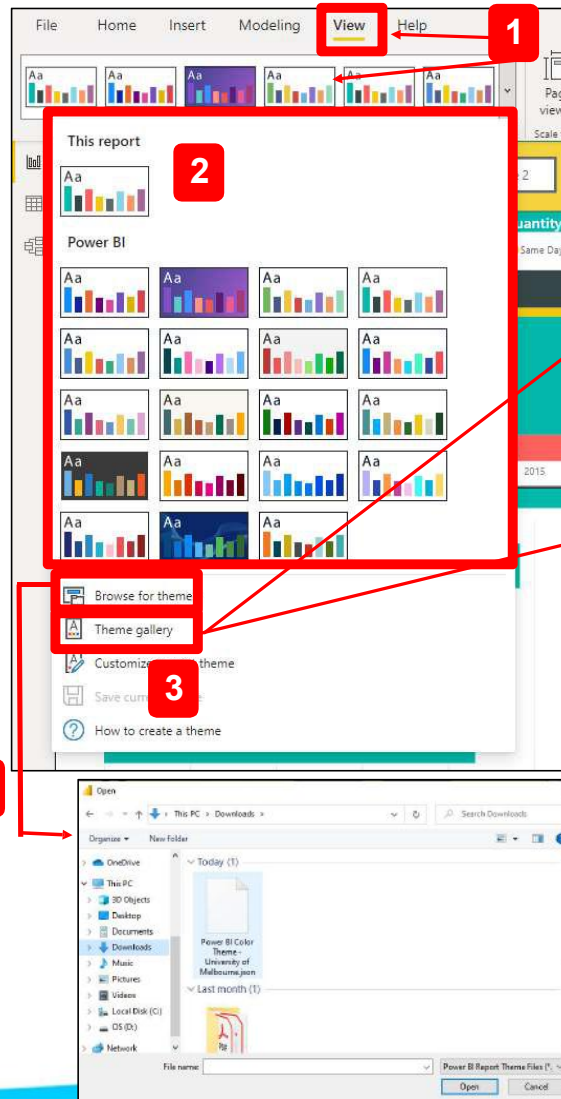
# Format Visual

## Change and Import Themes

In some cases, you want Power BI to determine the colors and fonts style theme of your dashboard

Power BI can help you to determine the color theme you can use or download for more themes:

1. Click View menu and click the theme box.
2. Choose your theme.
3. Check Theme gallery to download more theme options from community. Download the ".json" file type.
4. Install the new downloaded theme.





# Insert Summary

## Using Smart Narrative

The smart narrative visualization helps you quickly summarize visuals and reports. It provides relevant innovative insights that you can customize.

Use smart narrative summaries in your reports to **address key takeaways, to point out trends, and to edit the language and format for a specific audience.**

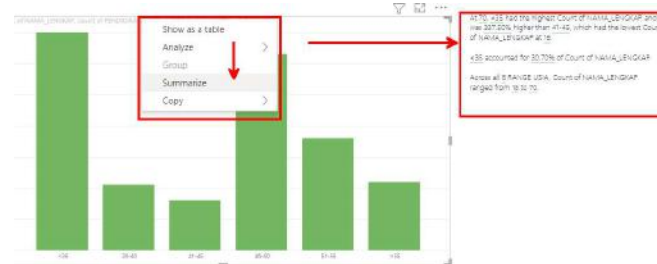
Your audience can use the summaries to understand the data, get to key points faster, and explain the data to others.

1. In the **Visualizations** pane, select the **Smart narrative** icon to automatically generate a summary. For example, in the sample file, smart narratives can automatically generate a summary of the report's visuals that address revenue, website visits, and sales



Smart Narrative

To generate a smart narrative of a visualization, right-click it and then select **Summarize**. For example, in the sample file, try summarizing a scatter chart that shows various transactions







# Insert Summary

## Custom The Smart Narrative

The smart narrative summary is highly customizable. You can edit or add to the existing text by using the text box commands. For example, you can make the text bold or change its color.

**INSIGHTS**

Total profit 767,988.1 miliar  
Total revenue 5,975,292.02  
Total GPM adalah 11.88%

Jualan Berdasarkan Tahun

OK 2014 2016

+ Value Review

# Value 3

Save Cancel

1. Click the Smart Narrative. The new tab will appear like above
2. Select the "(+) Value" to add dynamic value
3. Write the value that you want you to add
4. Rename the value
5. Select SAVE

**INSIGHTS**

Total profit 767,988.1 miliar

+ Value Review

Create a dynamic value that updates with your data

How would you calculate this value

total MTD profit

total MTD profit

total MTD **order** profit

total MTD **merge 1** profit

total MTD **YTD** profit

Show more

# Value 3

Save Cancel



## Concideration & Limitition

- Cards with non-numeric measures
- Tables, matrices, R visuals or Python visuals, custom visuals
- Cross-filtering out of a visual
- Renaming dynamic values or editing automatically generated dynamic values
- Summaries of visuals that contain on-the-fly calculations like QnA arithmetic, complex measures such as percentage of grand total and measures from extension schemas

TIPS :

**Combine Smart Narrative to the Tooltip**



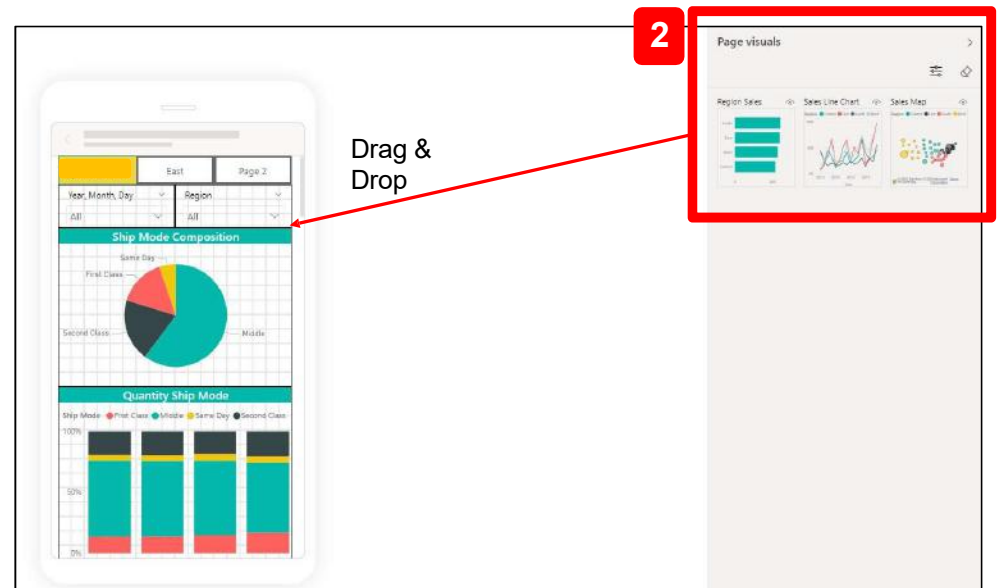
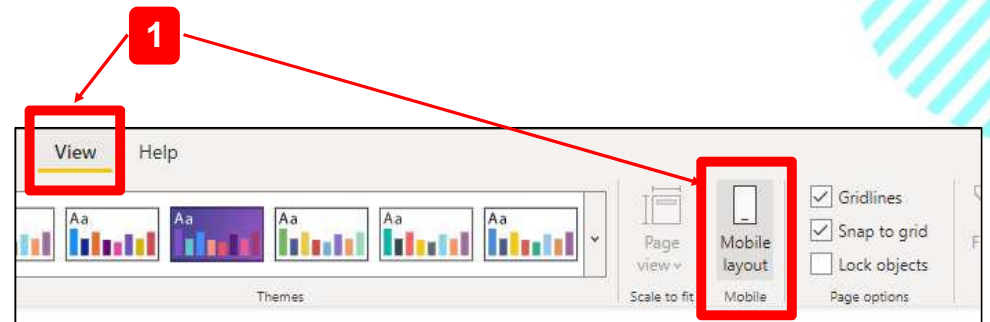


# Format Visual

## Make Mobile Layout

If you want your dashboard appear properly in mobile phone, you have to design your visuals in Mobile Layout.

1. Choose View menu then click Mobile Layout.
2. You will be directed in a new canvas which has been adapted to the appearance of the handphone. Drag your visuals to the canvas and adjust the size of the visuals.
3. This appearance will be triggered if you open your workspace in Power BI apps in your smartphone. (can be found in Play Store)





- <https://powerbi.microsoft.com/en-us/learning/>
- <https://docs.microsoft.com/en-us/power-bi/guided-learning/>
- <https://community.powerbi.com/>
- <https://www.edx.org/course/analyzing-and-visualizing-data-with-power-bi>
- <https://vladmihalcea.com/database-table-relationships/>

TERIMA KASIH..  
SAMPAI JUMPA LAGI..  
WASSALAMUALAIKUM. WR. WB.



**0813 12000 913**

**| RahadianN@unkris.ac.id**