

# HỆ HỖ TRỢ QUYẾT ĐỊNH

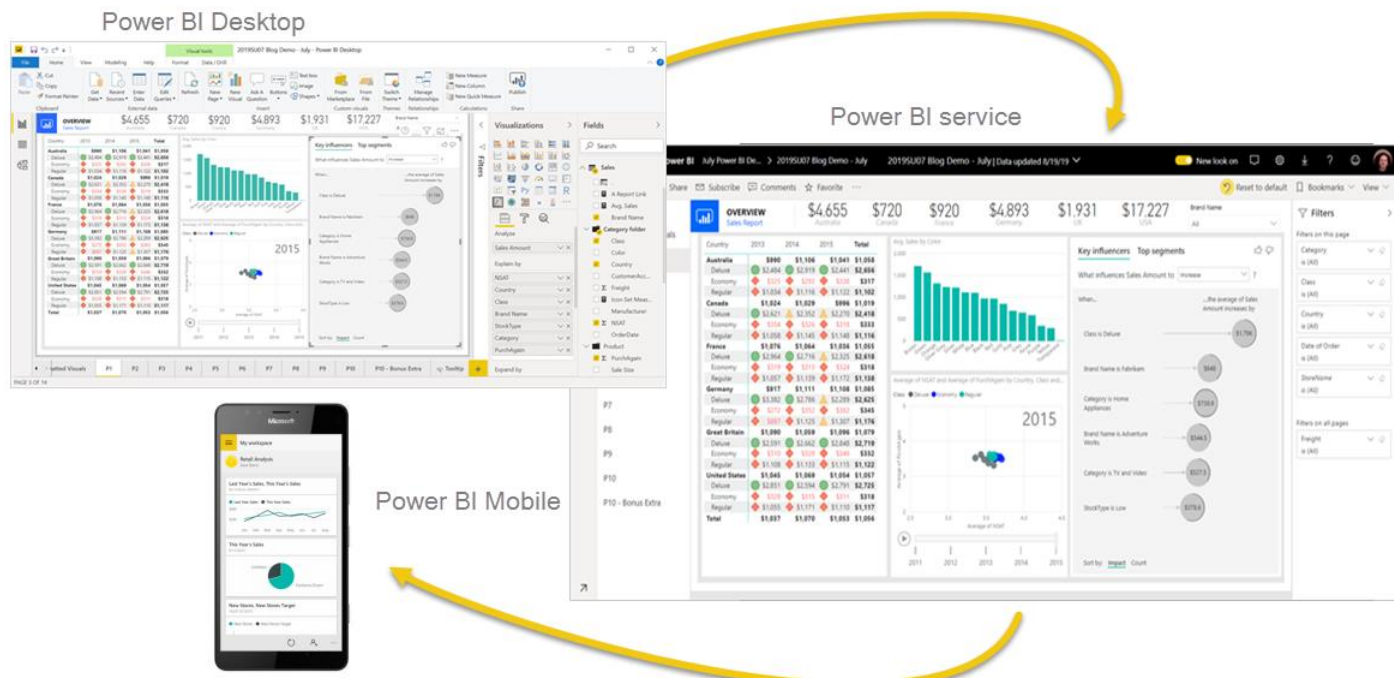
## Bài 12B: Giới thiệu PowerBI

# Nội dung

1. Giới thiệu chung về Power BI
2. Hướng dẫn sử dụng Power BI Desktop

# Power BI

- Tập các ứng dụng, dịch vụ chuyển dữ liệu từ các nguồn khác nhau thành thông tin/tri thức
- Gồm 3 thành phần:



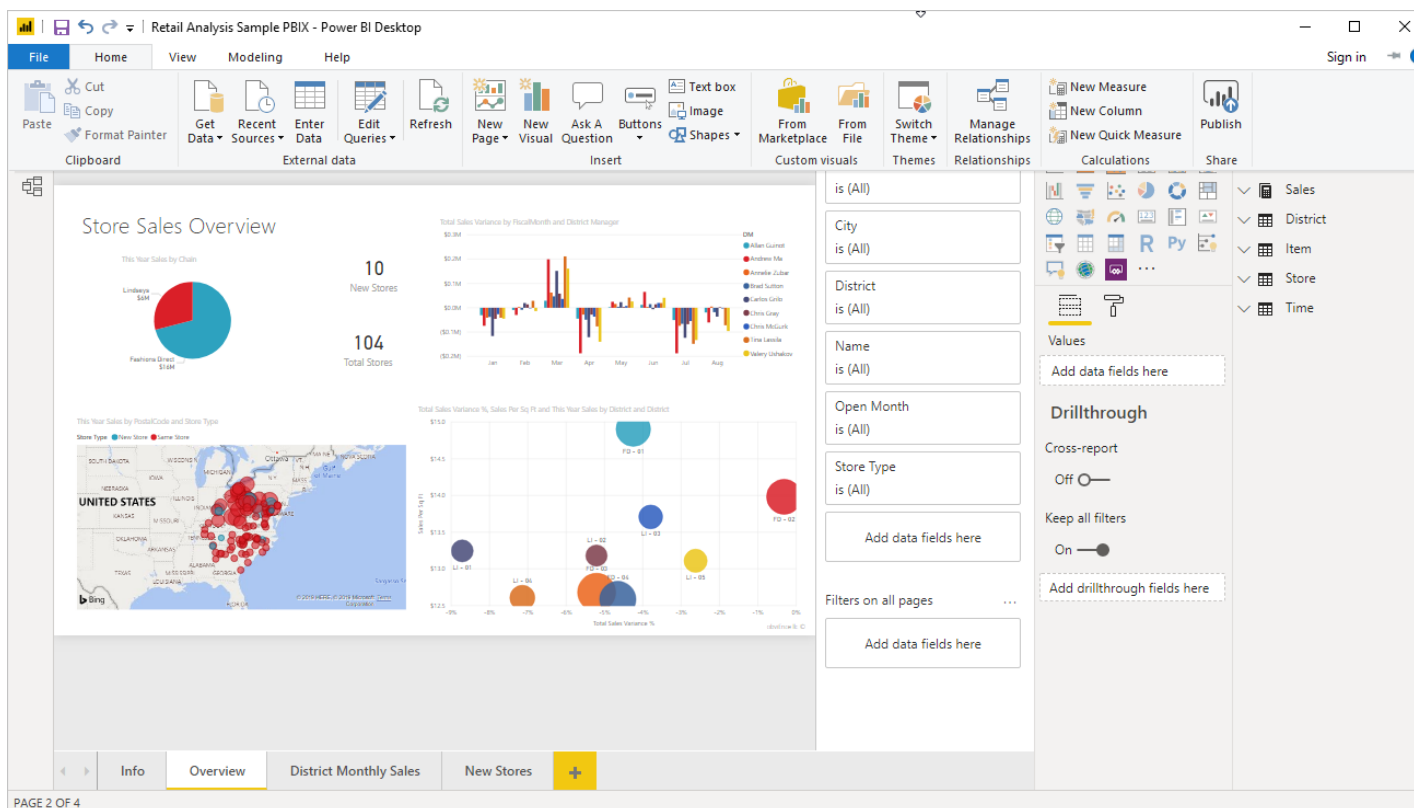
# Power BI

- Đối với doanh nghiệp lớn, có thể dùng máy chủ riêng sử dụng Power BI Report Server



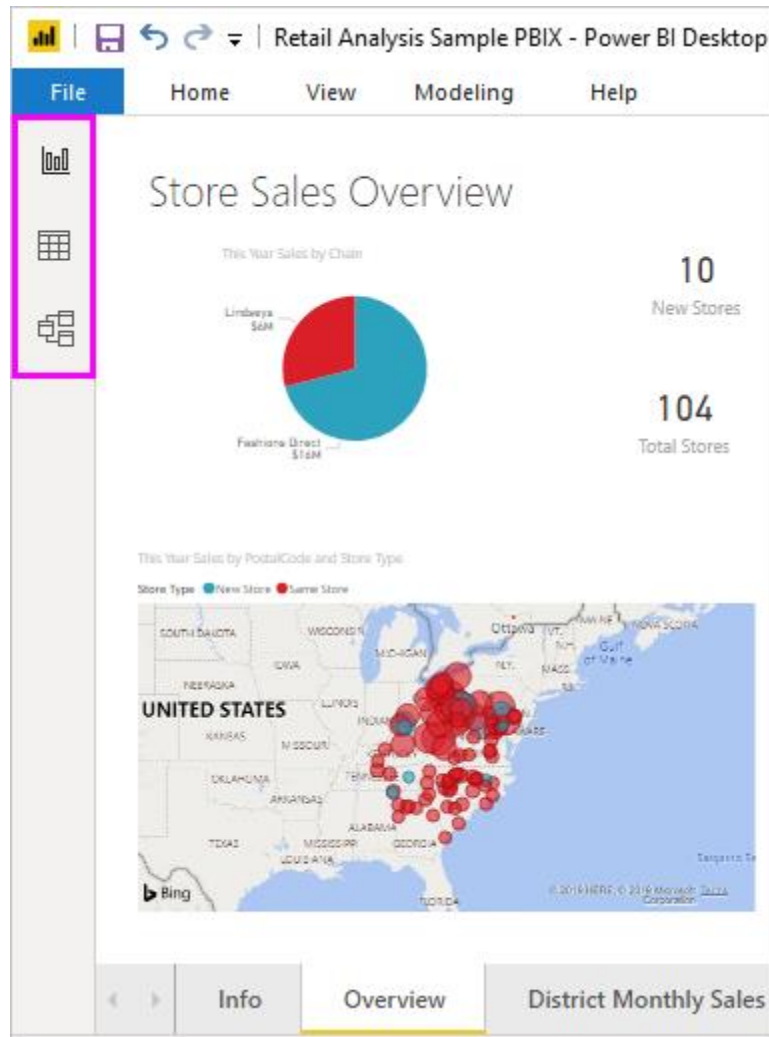
# Power BI Desktop

- Là ứng dụng desktop miễn phí cho phép kết nối, truyền đổi và trực quan hóa dữ liệu.
- Quy trình thông thường là dùng Power BI desktop để tạo reports rồi công bố trên Power BI service để chia sẻ với người dùng khác



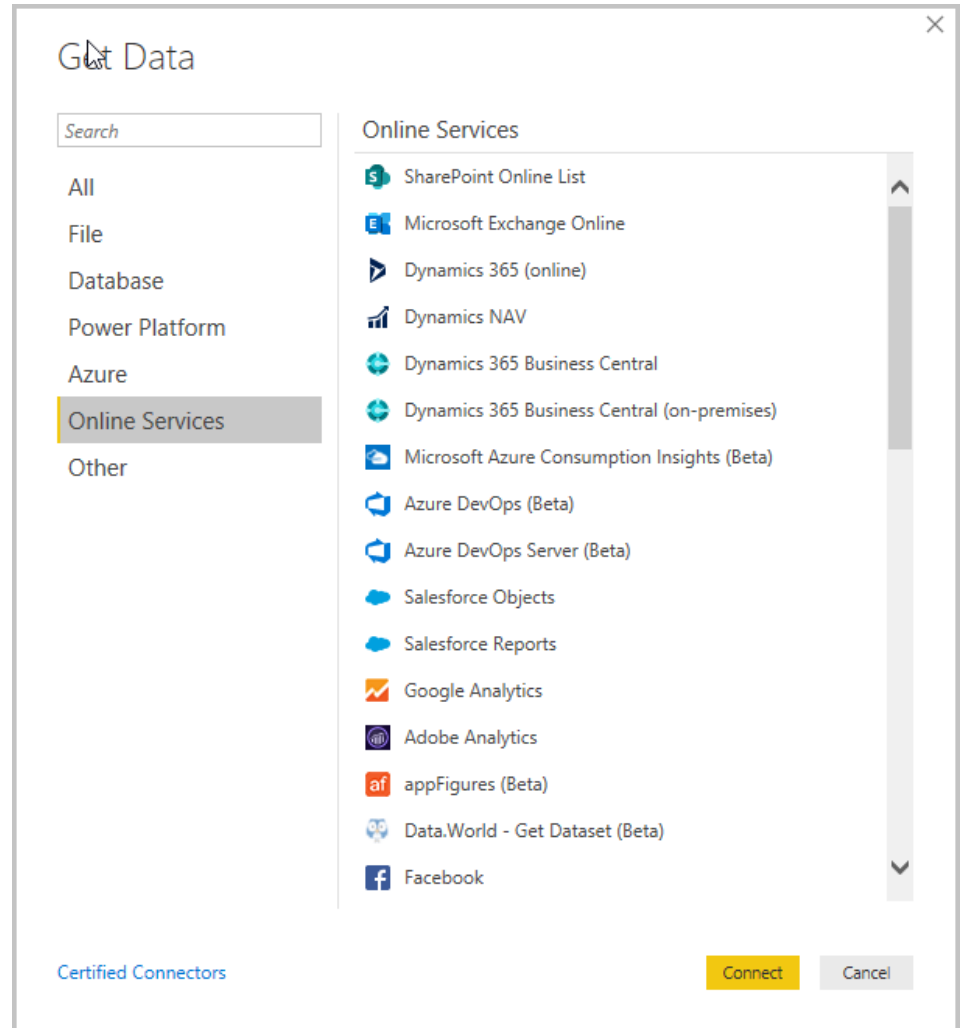
# Ba view trên Power BI desktop

- Report: tạo report.
- Data: xem các bảng, các giá trị đo
- Model: quản lý data model



# Kết nối dữ liệu

- Kết nối tới nhiều nguồn dữ liệu



# Chuyển đổi, làm sạch và tạo mô hình dữ liệu

- Sử dụng Power Query Editor

The screenshot displays the Power Query Editor window titled "Untitled - Power Query Editor". The ribbon at the top includes tabs for File, Home, Transform, Add Column, View, and Help. The Transform tab is active, showing various options like Close & Apply, New Source, Recent Sources, Enter Data, Data source settings, Manage Parameters, Refresh Preview, Properties, Advanced Editor, Manage, Choose Columns, Remove Columns, Keep Rows, Remove Rows, Sort, Split Column, Group By, Data Type, Use First Row as Headers, Replace Values, Merge Queries, Append Queries, and Combine Files.

The main area shows a table with the following data:

	State	Overall rank	Affordability	Crime	Culture
1	Nebraska	1	14	19	
2	Iowa	2	8	15	
3	Missouri	3	1	42	
4	South Dakota	4	17	23	
5	Florida	5	25	29	
6	Kentucky	6	9	9	
7	Kansas	7	7	39	
8	North Carolina	7	13	28	
9	Montana	9	16	31	
10	Hawaii	10	45	24	
11	Arkansas	11	4	46	
12	Wisconsin	12	20	15	
13	North Dakota	13	22	17	
14	Vermont	14	42	1	
15	New Hampshire	15	39	1	
16	...	...	...	...	...

The right-hand pane shows the "Query Settings" section with "Name" set to "Ranking of best and worst states for retire" and "All Properties" expanded. The "APPLIED STEPS" section shows "Source", "Navigation", and "Changed Type".

At the bottom, it says "7 COLUMNS, 50 ROWS" and "Column profiling based on top 1000 rows". The bottom right corner indicates "PREVIEW DOWNLOADED AT 7:10 PM".



# Power Query Editor

Untitled - Power Query Editor

File Home Transform Add Column View Help

Close & Apply New Source Recent Sources Enter Data Data source settings Manage Parameters Refresh Preview Advanced Editor Choose Columns Remove Columns Keep Rows Remove Rows Sort Split Column Group By Data Type: Whole Number Use First Row as Headers Replace Values Merge Queries Append Queries Combine Files Combine

Queries [1]

Best states for sun...

= Table.RemoveColumns(#"Removed Bottom Rows",{"Crime", "Culture", "Wellness"})

	State	Overall rank	Affordability	Weather
1	Hawaii	10	45	1
2	Florida	5	25	2
3	Louisiana	36	29	3
4	Texas	17	24	4
5	Georgia	28	19	5
6	Mississippi	19	6	6
7	Alabama	16	10	7
8	South Carolina	41	27	8
9	Arkansas	11	4	9
10	Arizona	38	33	10
11	Oklahoma	21	11	11
12	North Carolina	7	13	12
13	California	43	49	13
14	Tennessee	22	12	14
15	Kentucky	6	9	15
16	Delaware	32	30	16
17	Virginia	39	32	17
18	Maryland	50	47	18
19	Missouri	3	1	19
20	Kansas	7	7	20

Query Settings

**PROPERTIES**

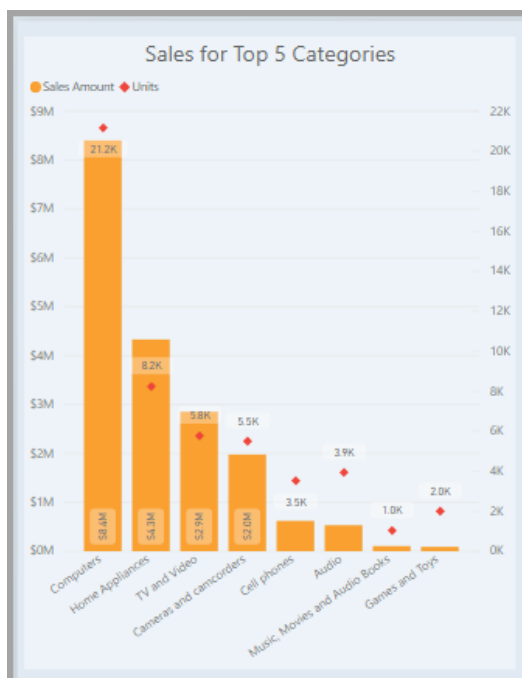
Name  
Best states for sunglass sales

[All Properties](#)

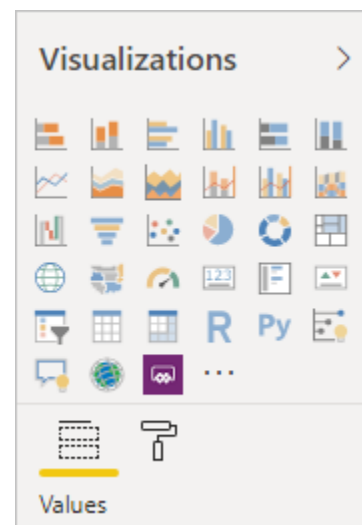
**APPLIED STEPS**

- Source
- Navigation
- Changed Type
- Sorted Rows
- Removed Bottom Rows
- Removed Columns**

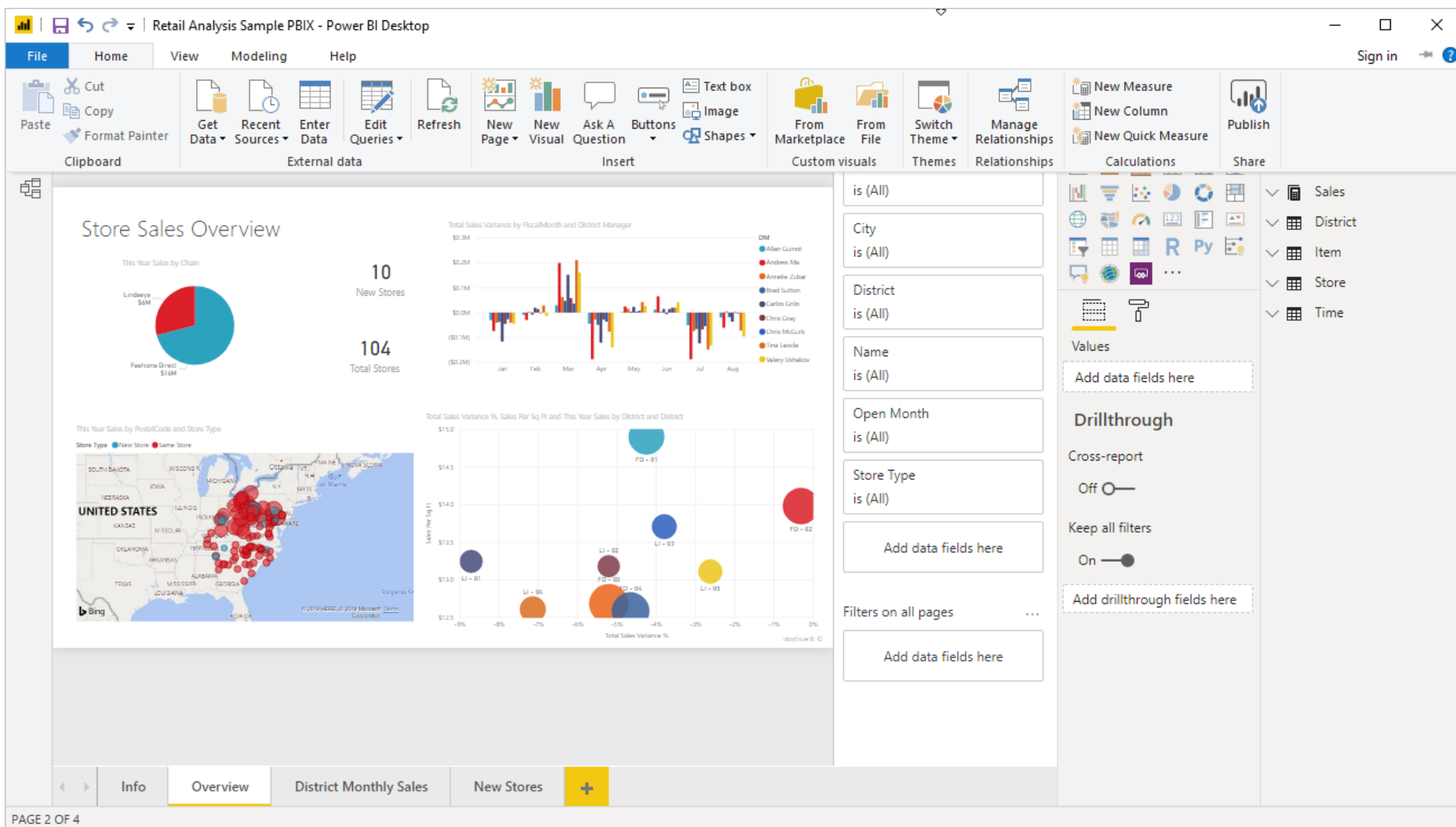
# Tạo biểu đồ



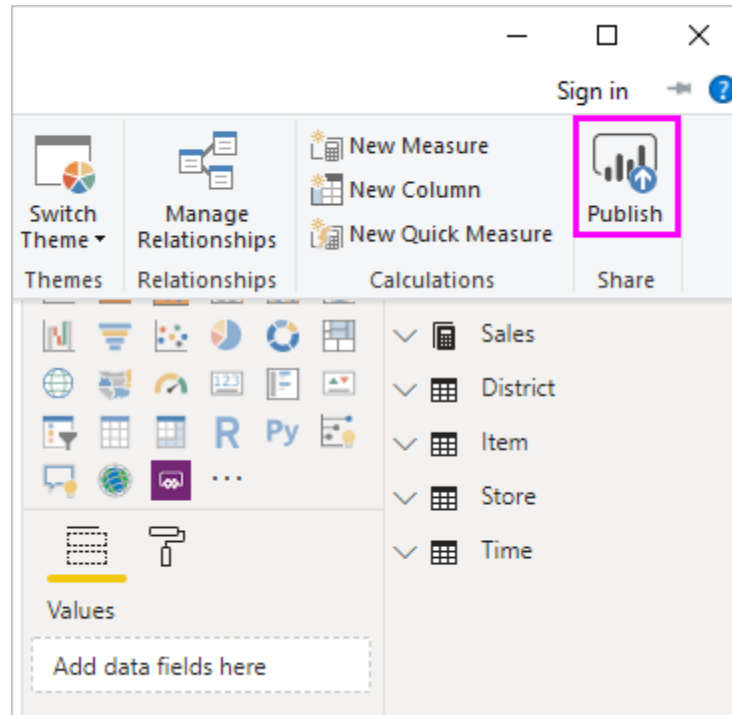
Nhiều loại biểu đồ



# Tạo report



# Chia sẻ report



# Power BI Service

The screenshot displays the Power BI Service home page. On the left, a navigation pane (1) contains links to Home, Favorites, Recent, Apps, Shared with me, Workspaces, and My workspace. The main header (2) shows 'Power BI Home' and a 'New look on' toggle. A search bar (3) is located in the top right. A welcome banner (4) greets the user with 'Good morning, MOD' and a 'Welcome to your Power BI home' message, accompanied by a 'Watch video' button. Below this, the 'Favorites + frequents' section (5) displays a grid of nine items, including 'Procurement Analysis Sample', 'My workspace', and various dashboards and reports. The 'Recents' section (6) shows a list of recently accessed items, such as 'Opportunity Analysis Sample' and 'Opportunity Analysis Sample PBIX'. The 'Workspaces' section (7) features a grid of workspace tiles, including 'My workspace', 'Business Development', and several departmental workspaces like 'DG-2000 Feedback', 'DG-2000 Product Team', 'Electronic Events', 'Engineering', 'Finance', 'HR', and 'IT'. A 'Get data' button is visible at the bottom left.

2 Power BI Home

3 Search

4 Good morning, MOD

5 Welcome to your Power BI home

6 Favorites + frequents

7 Recents

8 Workspaces

1

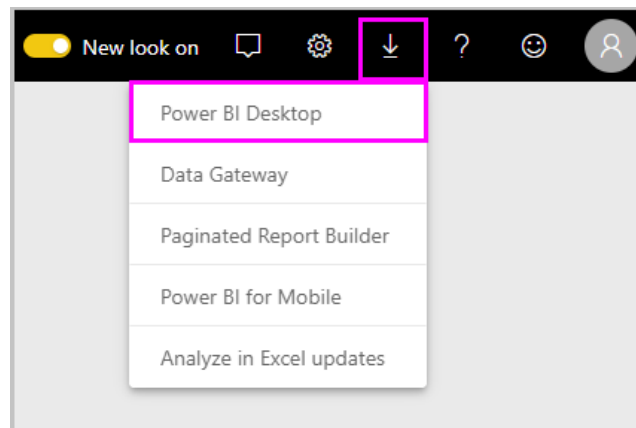
Get data

# Hướng dẫn sử dụng PowerBI desktop

- Download và cài đặt:
  - <https://powerbi.microsoft.com/en-us/desktop/>





- Hay từ Power BI Service (app.powerbi.com)





# Khởi động P.BI


## Power BI Desktop


 Get data


 Recent sources

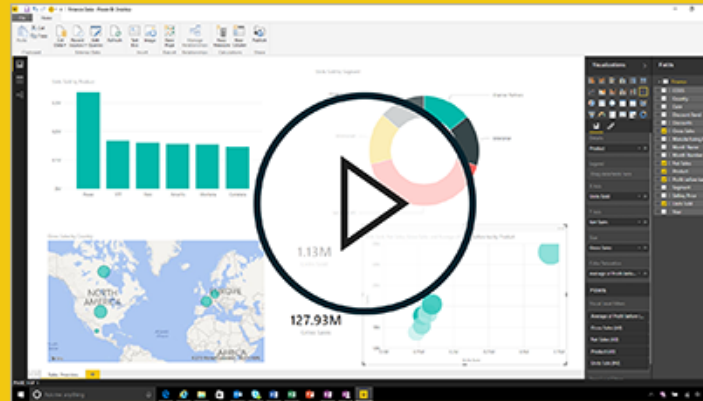
 Retail Analysis Sample PBIX...  
Documents

 Retail Analysis Sample PBIX...  
C: » Users » v-thepet » Downloads

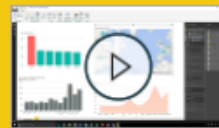
 Issues and Pull requests\_Gi...  
C: » Users » v-thepet » Documents...

 2019userstories1.pbix  
Documents

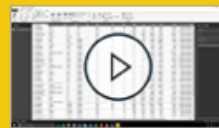
 Open other reports



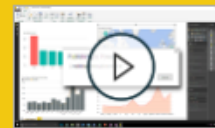
Getting started with Power BI Desktop



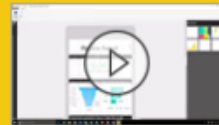
Building reports



Query view concepts



Uploading your reports



Create a Phone report

[VIEW ALL VIDEOS](#)

☒ Show this screen on startup

### WHAT'S NEW

Take a look at what's new and improved in Power BI in this month's update.

### FORUMS

Visit the Power BI Forum to ask questions or interact with other users in the Power BI community.

### POWER BI BLOG

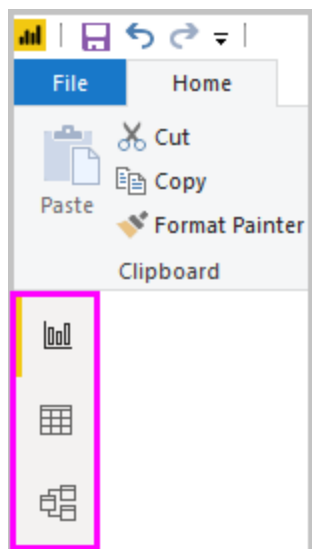
Keep up to date with the latest news, resources, and updates from the Power BI team.

### TUTORIALS

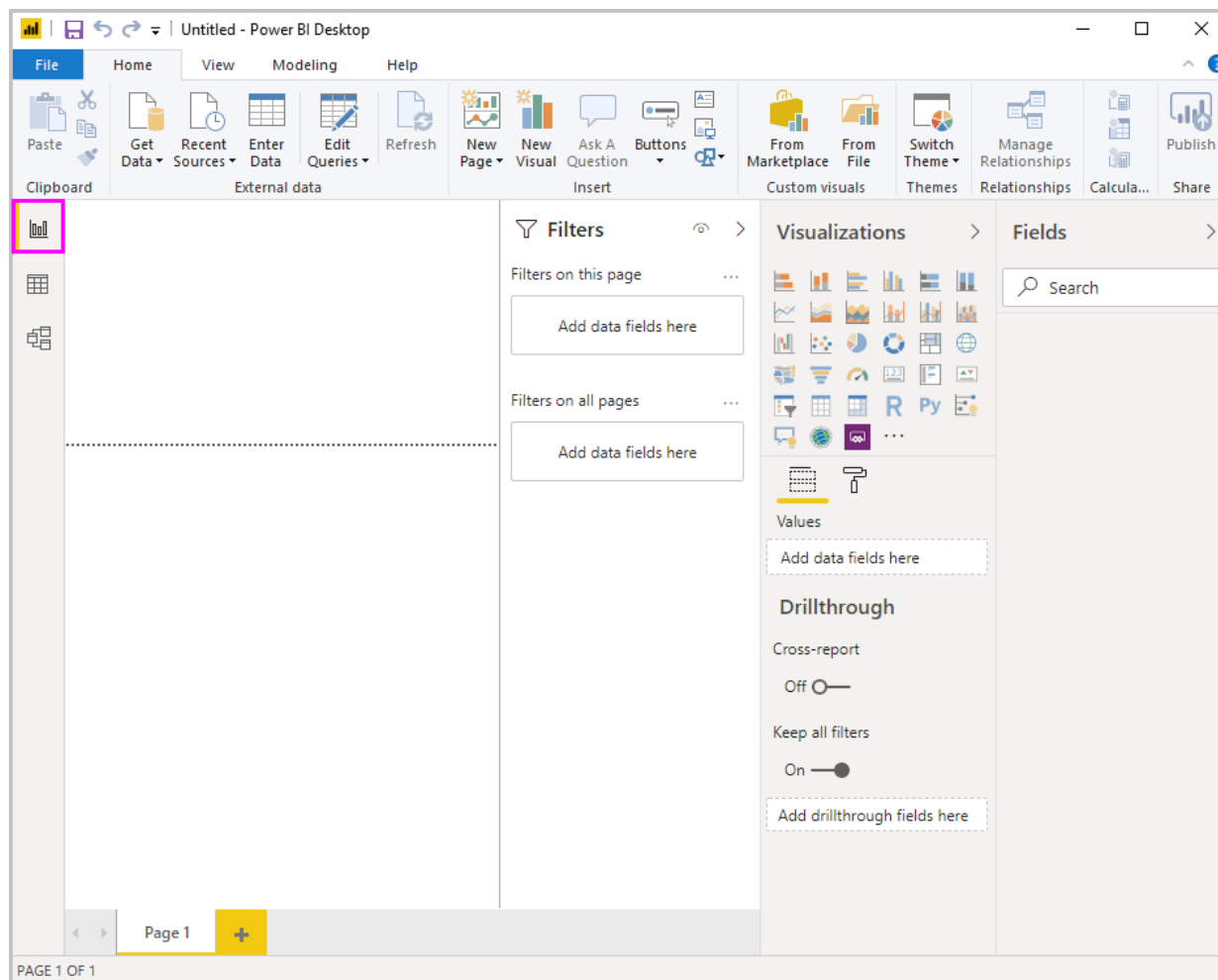
Ready to learn more about Power BI?

- [Get started with Power BI Desktop](#)
- [Download a sample](#)
- [Watch our training videos](#)
- [See what others have built](#)
- [All guided learning](#)

# Màn hình tạo report

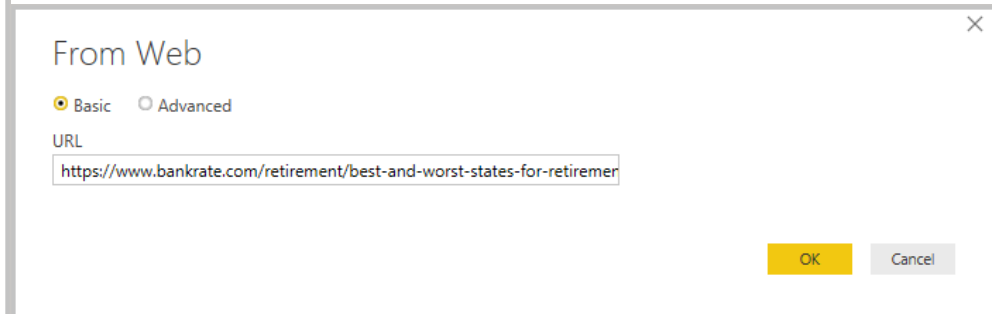
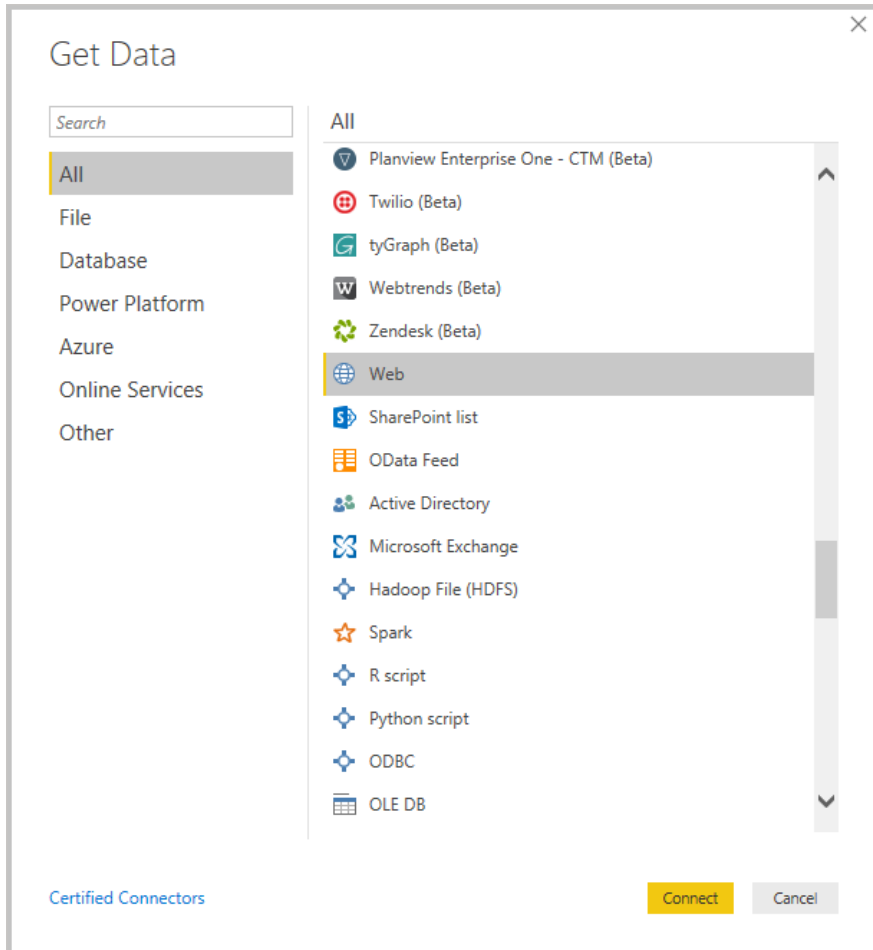


3 màn hình chính:  
report, data,  
relationship





# Kết nối với dữ liệu



*<https://www.bankrate.com/retirement/best-and-worst-states-for-retirement/>*

# Tải hay chuyển đổi dữ liệu

Navigator

Display Options ▾

https://www.bankrate.com/retirement/best-an...

☐ Document

☒ Ranking of best and worst states for retire...

Table View Web View

Ranking of best and worst states for retirement

State	Overall rank	Affordability	Crime	Culture	Wi
Nebraska	1	14	19	21	
Iowa	2	8	15	20	
Missouri	3	1	42	33	
South Dakota	4	17	23	12	
Florida	5	25	29	13	
Kentucky	6	9	9	46	
Kansas	7	7	39	37	
North Carolina	7	13	28	28	
Montana	9	16	31	2	
Hawaii	10	45	24	9	
Arkansas	11	4	46	39	
Wisconsin	12	20	15	17	
North Dakota	13	22	17	26	
Vermont	14	42	1	3	
New Hampshire	15	39	1	4	
Alabama	16	10	44	44	
Texas	17	24	37	50	
Idaho	18	15	4	30	
Mississippi	19	6	24	49	
Wyoming	20	23	9	13	
Oklahoma	21	11	41	43	

<

>

Add table using examples

Load Transform Data Cancel

# Thay đổi kiểu dữ liệu

The screenshot shows the Power Query Editor interface. The formula bar at the top displays the query: `= Table.TransformColumnTypes(Data0,{{"State", type text}},`. The 'State' column is selected, and a right-click context menu is open. The 'Change Type' option is highlighted, which has opened a sub-menu. In this sub-menu, the 'Text' data type is selected and checked. To the right, a 'Data Type: Text' dropdown menu is also visible, showing a list of available data types including Decimal Number, Fixed decimal number, Whole Number, Percentage, Date/Time, Date, Time, Date/Time/Timezone, Duration, Text, True/False, and Binary. The main data table lists 24 states with their corresponding 'Overall rank', 'Affordability', and 'Crime' values.

	State	Overall rank	Affordability	Crime
1	Nebraska			14
2	Iowa			8
3	Missouri			1
4	South Dakota			17
5	Florida			25
6	Kentucky			9
7	Kansas			7
8	North Carolina			13
9	Montana			
10	Hawaii			
11	Arkansas			
12	Wisconsin			
13	North Dakota			
14	Vermont			
15	New Hampshire			
16	Alabama			
17	Texas			
18	Idaho			
19	Mississippi			
20	Wyoming			
21	Oklahoma			
22	Tennessee			
23	Massachusetts			
24	Michigan			

# Áp dụng các bước chuyển đổi

1 <sup>2</sup> <sub>3</sub> Weather	1 <sup>2</sup> <sub>3</sub> Wel	PROPERTIES
		Name
		Ranking of best and worst states for retire
		<a href="#">All Properties</a>
		APPLIED STEPS
		Source *
		Navigation *
		Changed Type
		X Sorted Rows
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

# Loại bỏ 10 dòng cuối

The screenshot shows the Power Query Editor interface. The ribbon includes 'File', 'Home', 'Transform', 'Add Column', 'View', and 'Help'. The 'Remove Rows' button in the 'Transform' tab is highlighted, and its dropdown menu is open, showing 'Remove Bottom Rows' selected. A dialog box titled 'Remove Bottom Rows' is displayed, asking to specify the number of rows to remove from the bottom. The input field contains the number '10'. The background data table has columns: State, Overall rank, Affordability, and Crime. The 'Queries' pane on the left shows a list of states from 1 to 13.

Remove Bottom Rows

Specify how many rows to remove from the bottom.

Number of rows

10

OK Cancel

	State	Overall rank	Affordability	Crime
1	Hawaii	10	45	24
2	Florida	5	25	29
3	Louisiana			
4	Texas			
5	Georgia			
6	Mississippi			
7	Alabama			
8	South Carolina			
9	Arkansas			
10	Arizona			
11	Oklahoma			
12	North Carolina			
13	California			

# Loại bỏ cột

The screenshot shows the Power BI Desktop interface. The ribbon is set to the 'Query' tab. In the 'Manage Columns' group, the 'Remove Columns' button is highlighted with a pink box. A context menu is open over the 'Crime' column, with the 'Remove Columns' option selected. The data table below shows columns for Overall rank, Affordability, Crime, Weather, and Wellness.

Overall rank	Affordability	Crime	Weather	Wellness
10	45		1	9
5	25		2	31
36	29		3	25
17	24		4	13
28	19		5	44
19	6		6	40
16	10		7	31
41	27		8	50
11	4		9	34
38	33		10	29
21	11		11	35
7	13		12	33
43	49		13	19
22	12		14	35
6	9		15	24
32	30		16	41
39	32		17	42
50	47		18	37
3	1		19	27
7	7		20	21

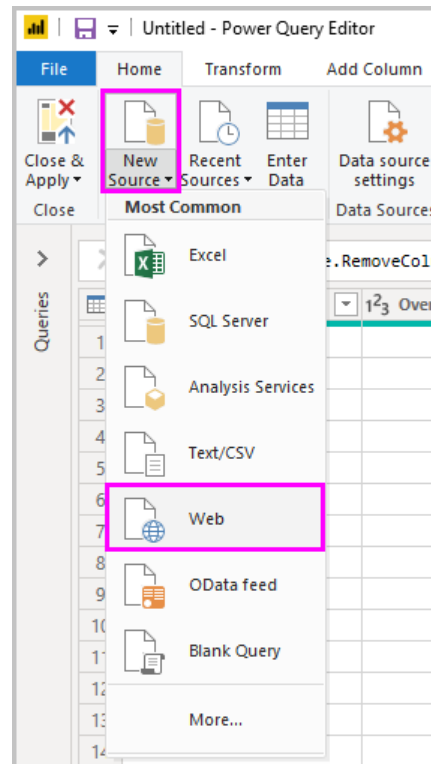
# Hiệu chỉnh các bước chuyển đổi

The screenshot displays the Power Query Editor window. The main area shows a table with 20 rows of data. The columns are: State, Overall rank, Affordability, and Weather. The 'Affordability' column is highlighted in yellow. The 'Query Settings' pane on the right shows the 'APPLIED STEPS' list, where 'Removed Columns' is the selected step.

	State	Overall rank	Affordability	Weather
1	Hawaii	10	45	1
2	Florida	5	25	2
3	Louisiana	36	29	3
4	Texas	17	24	4
5	Georgia	28	19	5
6	Mississippi	19	6	6
7	Alabama	16	10	7
8	South Carolina	41	27	8
9	Arkansas	11	4	9
10	Arizona	38	33	10
11	Oklahoma	21	11	11
12	North Carolina	7	13	12
13	California	43	49	13
14	Tennessee	22	12	14
15	Kentucky	6	9	15
16	Delaware	32	30	16
17	Virginia	39	32	17
18	Maryland	50	47	18
19	Missouri	3	1	19
20	Kansas	7	7	20

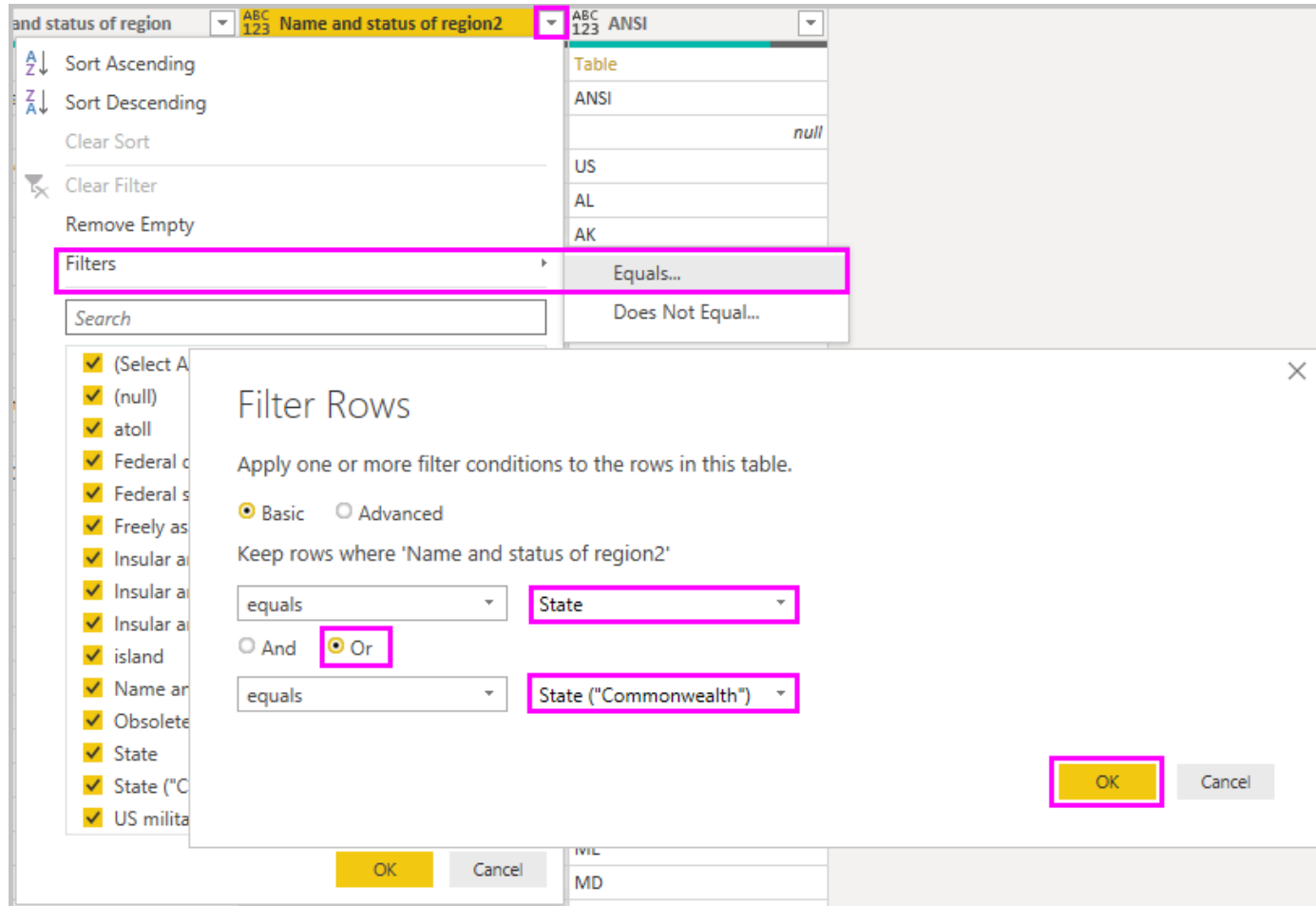
# Liên kết dữ liệu

- [https://en.wikipedia.org/wiki/List\\_of\\_U.S.\\_state\\_abbreviations](https://en.wikipedia.org/wiki/List_of_U.S._state_abbreviations)
- *Chọn Codes and abbreviations for U.S. states, federal district, territories, and other regions*





# Xóa cột và lọc



# Đổi tên cột

	ABC 123 State name	ABC 123 Status	ABC 123 Abbreviation
1	Alabama	State	AL
2	Alaska	State	AK
3	Arizona	State	AZ
4	Arkansas	State	AR
5	California	State	CA
6	Colorado	State	CO
7	Connecticut	State	CT
8	Delaware	State	DE
9	Florida	State	FL
10	Georgia	State	GA
11	Hawaii	State	HI
12	Idaho	State	ID
13	Illinois	State	IL
14	Indiana	State	IN
15	Iowa	State	IA
16	Kansas	State	KS
17	Kentucky	State ("Commonwealth")	KY

# Merge query

Editor

Choose Columns ▾ Remove Columns ▾ Manage Columns

Keep Rows ▾ Remove Rows ▾ Reduce Rows

Sort

Split Column ▾ Group By

Data Type: Text ▾

Use First Row as Headers ▾

Replace Values

Merge Queries ▾

Append Queries ▾

Combine Files

Combine

Merge

Select a table and matching columns to create a merged table.

Best states for sunglass sales

State	Overall rank	Affordability	Weather
Hawaii	10	45	1
Florida	5	25	2
Louisiana	36	29	3
Texas	17	24	4
Georgia	28	19	5

State codes

State name	Status	Abbreviation
Alabama	State	AL
Alaska	State	AK
Arizona	State	AZ
Arkansas	State	AR
California	State	CA

Join Kind

Left Outer (all from first, matching from second) ▾

☐ Use fuzzy matching to perform the merge

▸ Fuzzy matching options

OK Cancel

# Merge query

	State	Overall rank	Affordability	Weather	State codes
1	Hawaii	10	45		1 Table
2	Florida	5	25		2 Table
3	Louisiana	36	29		3 Table
4	Texas	17	24		4 Table
5	Georgia	28	19		5 Table
6	Mississippi	19	6		6 Table
7	Alabama	16	10		7 Table
8	South Carolina	41	27		8 Table
9	Arkansas	11	4		9 Table
10	Arizona	38	33		10 Table
11	Oklahoma	21	11		11 Table
12	North Carolina	7	13		12 Table
13	California	43	49		13 Table
14	Tennessee	22	12		14 Table
15	Kentucky	6	9		15 Table

123 Weather State codes

Search Columns to Expand

☒ Expand ☐ Aggregate

☒ (Select All Columns)

☐ State name

☐ Status

☒ Abbreviation

☐ Use original column name as prefix

OK Cancel

**PROPERTIES**

Name

Best states for sunglass sales

[All Properties](#)

**APPLIED STEPS**

Source

Navigation

Changed Type

Sorted Rows

Removed Bottom Rows

Removed Columns

Merged Queries

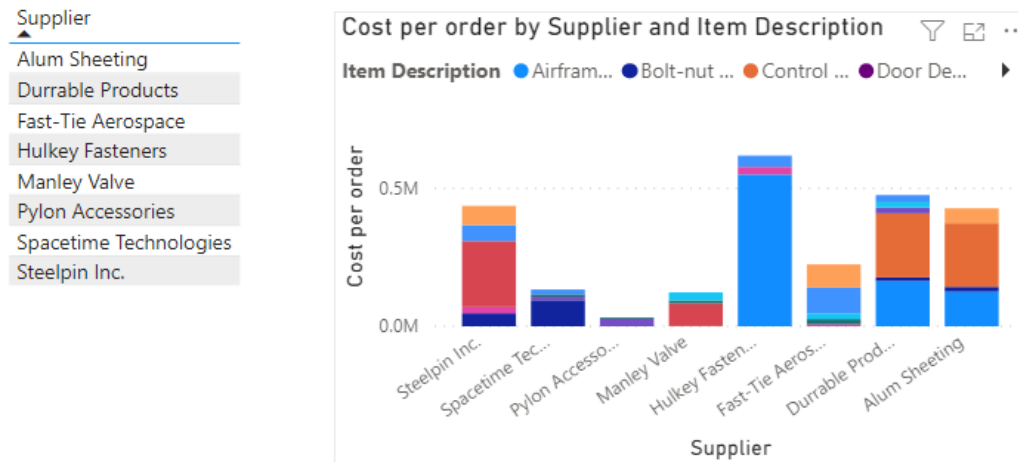
# Power BI desktop

- Theo tutorial

<https://docs.microsoft.com/vi-vn/power-bi/desktop-getting-started>

# Tạo report

- Sử dụng Purchase Orders.xlsx



Cost per order and Cost per order by Month

● Cost per order ◆ Cost per order

