



**Data Manipulation and Reporting with  
Power BI**

## Learning Objectives

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By the end of this lesson, you will be able to:

- Understand the capabilities of Data and Relationship views
- Explore different data transformations
- Learn how to set up relationship using auto detect option
- Learn how to create user defined relationships
- Learn how to manage relationships between multiple tables

# Data View

- Data View enables you to inspect, explore, and understand the underlying data in the Power BI Desktop.
- With Data View, you're looking at your data after it has been loaded into the model.
- Before creating new columns or measures or identifying a data type or data category, it's helpful to see the actual data in a table.

The screenshot shows the Power BI Data View window. On the left, there is a vertical toolbar with icons for 'Modeling ribbon', 'Formulae bar', 'Data View icon', and 'Data grid'. The main area contains a table with columns: PatientID, Patient Name, Gender, and DOB. The table has 42 rows of patient data. To the right of the table is a 'Fields' list pane. The 'Modeling ribbon' and 'Data View icon' are highlighted with red boxes and blue arrows pointing to them. The 'Fields' list is also highlighted with a red box and a blue arrow pointing to it.

Modeling ribbon  
Formulae bar  
Data View icon  
Data grid

Fields list

PatientID	Patient Name	Gender	DOB
1	Tina Shall	Female	Friday, October 09, 1942
2	Chandrabhaga Koli	Female	Saturday, August 21, 1959
3	Ria Nalini	Female	Tuesday, January 18, 1924
4	Anchita Sita	Female	Wednesday, April 07, 1939
5	Leah Mith	Female	Tuesday, June 26, 2001
6	Isha Santi	Female	Sunday, July 07, 1974
7	VIDHUMATHI Rego	Female	Friday, March 10, 1979
8	Pavitra Dahl	Female	Wednesday, December 16, 2012
9	Abigail Kunal	Female	Saturday, March 05, 1985
10	Dilmaan Riaz	Female	Friday, December 19, 1967
11	Okhna Patel	Female	Monday, June 15, 1955
12	NID168	Female	Monday, November 02, 1942
13	Anushri Lail	Female	Monday, May 23, 1960
14	Dawn Kubra	Female	Saturday, November 13, 1971
15	Lavanya Raj	Female	Sunday, December 11, 1950
16	Prachi Niu	Female	Wednesday, July 12, 1988
17	PIYUSH NIKI	Female	Saturday, April 22, 1943
18	AngelaKodi	Female	Sunday, September 06, 2015
19	Tina Minal	Female	Saturday, August 10, 1981
20	Dia Vidoj	Female	Wednesday, August 17, 1927
21	Rohita Kumar	Female	Sunday, July 03, 1934
22	Crown Nanya	Female	Saturday, August 13, 1938
23	Prachi Neel	Female	Monday, November 11, 1986
24	Aruneshwar	Female	Thursday, October 01, 1981

Sumit Gupta

Manage Relationships  
New Measure  
New Column  
New Table  
Sort by Column  
Sort  
Data type: Format  
Home Table: Data Category: Uncategorized  
Default Summarization: Don't summarize  
Properties  
Manage View as Roles  
New Group  
Edit Group  
Formatting  
Search  
New Group  
Edit Group  
Security  
Groups

Fields

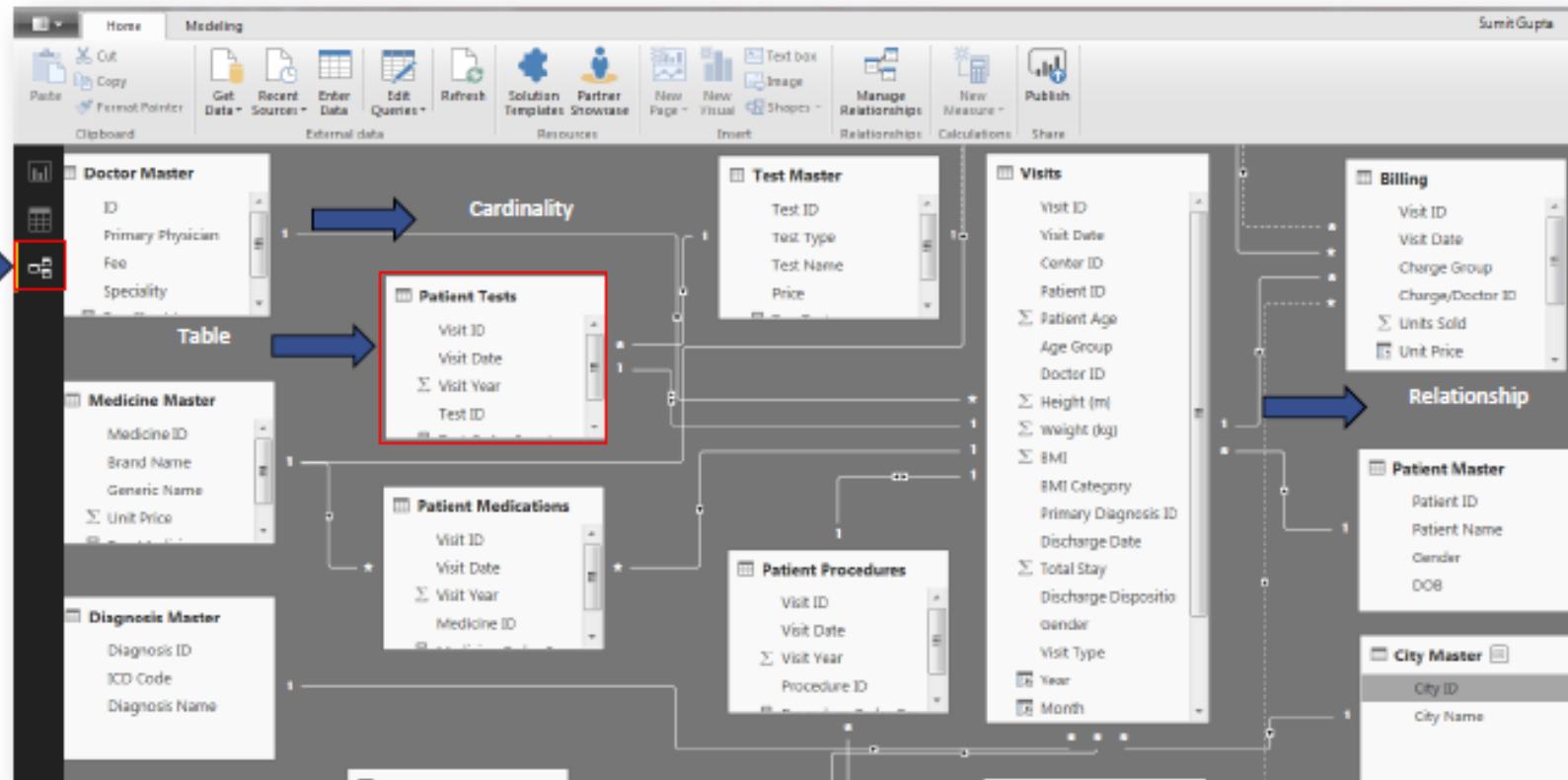
Search

- City Master
- Diagnosis Master
- Discharge Dispositu...
- Doctor Master
- Medicine Master
- Patient Master
  - DOB
  - Gender
  - Patient ID
  - Patient Name
- Procedure Master
- Test Master

# Relationship View

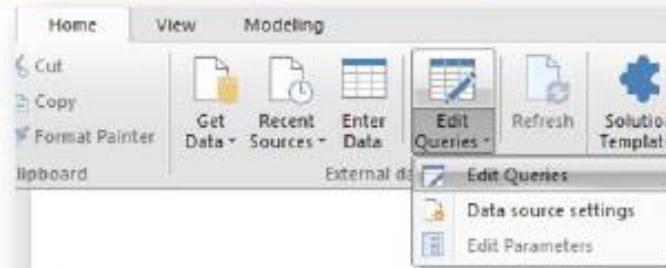
Relationship View shows all of the tables, their associated columns, and the relationships in your model. This can be especially helpful when your model has tables coming in from varied data sources and you wish to build a complex relationship between them.

Relationship view icon

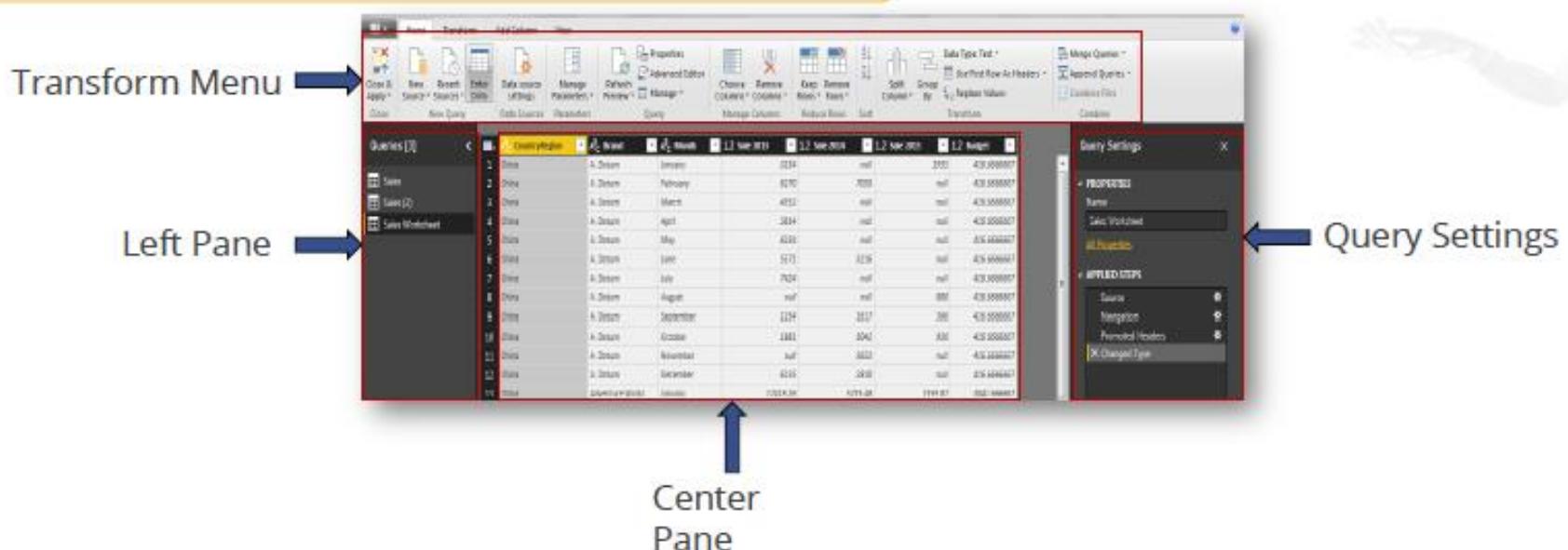


# Getting Familiar to Query Editor

You can use the Navigator window, or Home tab to launch the Query Editor.



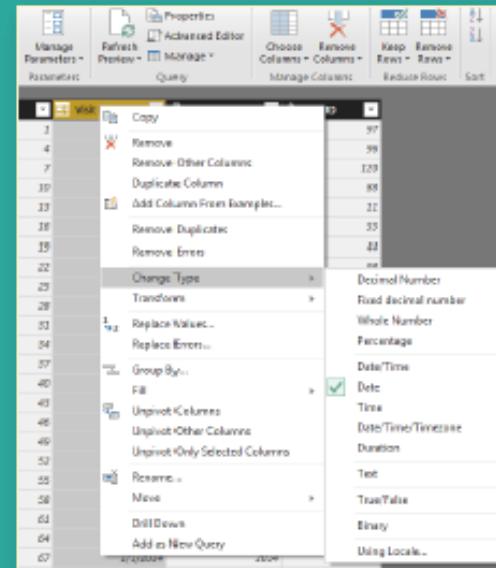
You can use the Query Editor to clean and transform your data.



# Shaping Data – Change Data Type

As soon as the data is imported in Power BI, the system automatically attempts to convert the data type of the source column into a data type that better supports more efficient storage, calculations, and data visualization. For example, a column without any fractional values would be converted to a “Whole Number” data type by Power BI Desktop. Following are the data types supported in Power BI:

- Decimal number
- Fixed decimal number
- Whole number
- Percentage
- Date/Time
- Date
- Time
- Date/Time/Timezone
- Duration
- Text
- True/False



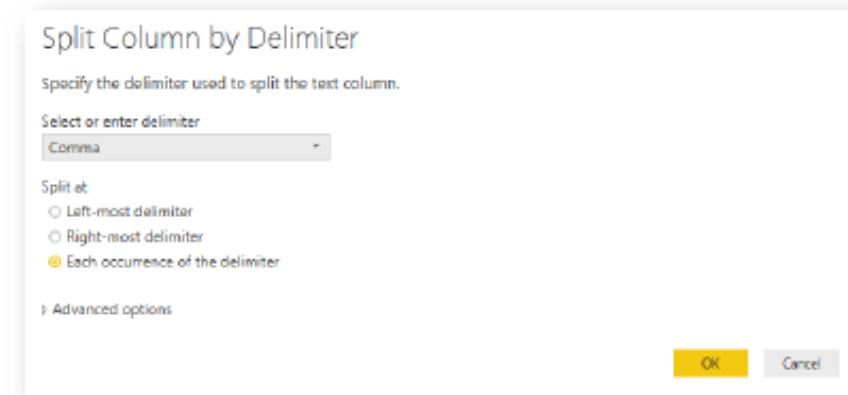
# Shaping Data – Split Columns

Power BI allows you to split a column either by,

- Delimiter

There are additional options available as well to split at the,

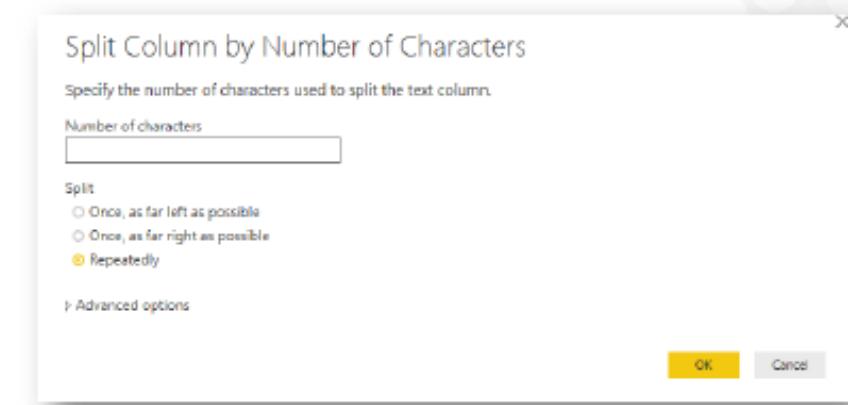
- ✓ Left most delimiter
- ✓ Right most delimiter or
- ✓ Each occurrence of the delimiter



- Number of characters

Power BI allows you to split a column by number of characters either,

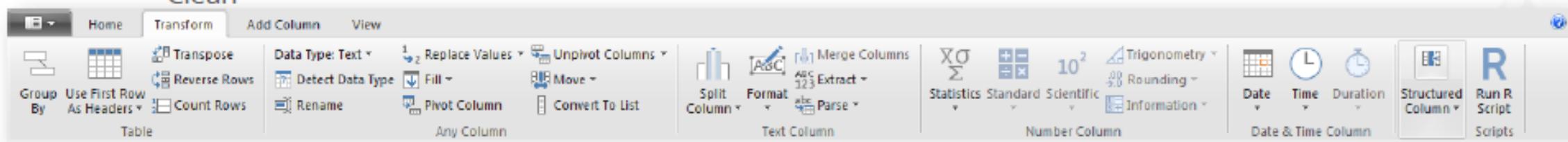
- ✓ Once as far left as possible
- ✓ Once as far right as possible or
- ✓ Repeatedly



# Shaping Data – Text Transforms

Following are some of the commonly used text transformations available in Power BI:

- Lowercase
- Uppercase
- Capitalize each word
- Trim
- Clean



- Reverse rows

## Shaping Data – Applied Steps

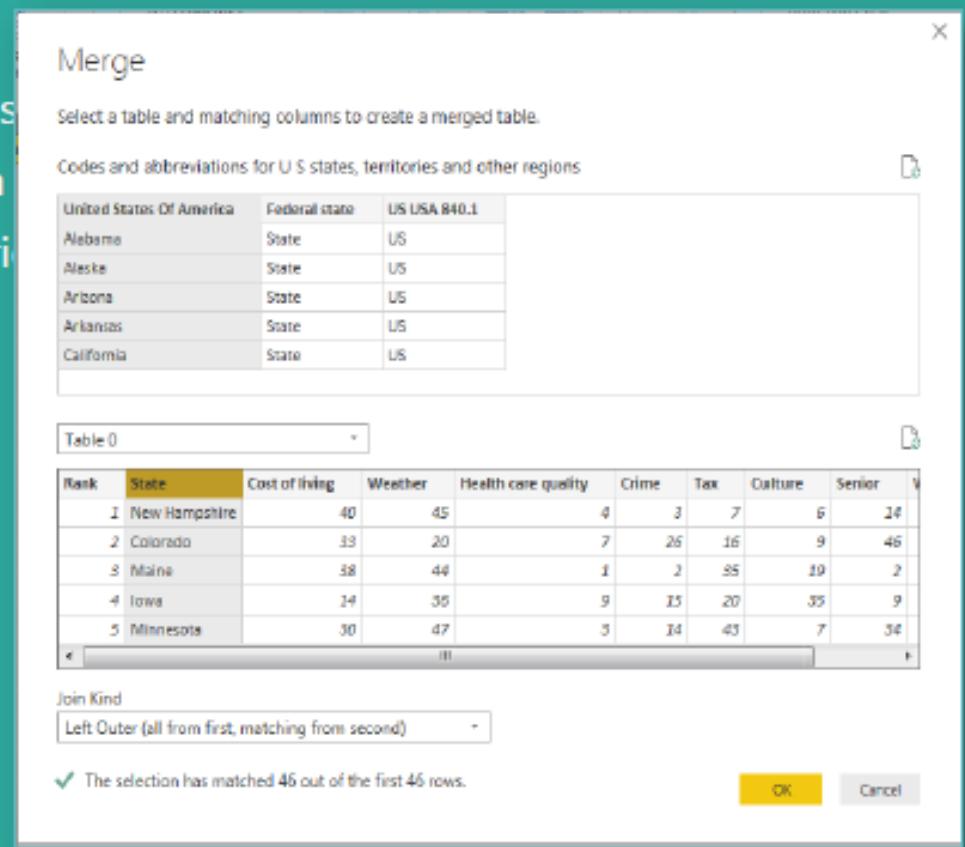
You can apply different transformations, such as renaming columns or tables, changing text to numbers, removing rows, and so on to shape your data. You can use the Query Editor to shape your data.



# Combine Data — Merge Queries

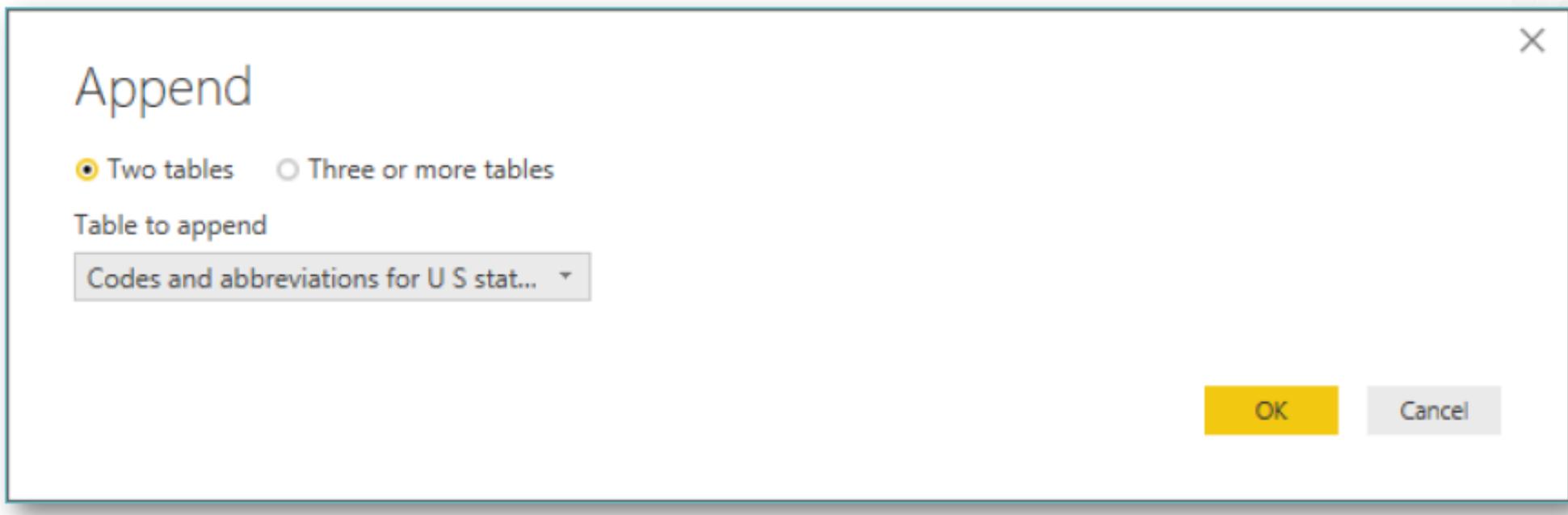
You can merge the queries when you want to add one or more columns to another query. There should be joining or matching criteria between two queries. Following are the types of joins available for merging queries.

- Left outer join
- Right outer join
- Full outer join
- Inner join
- Left anti join
- Right anti join



## Combine Data — Append Queries

- You can append queries when you want to add one or more rows to an existing query.
- Using the “Append Queries” option, you can append different set of data rows coming in from different queries.
- It's important to have the same number and name of columns for this option to work accurately.



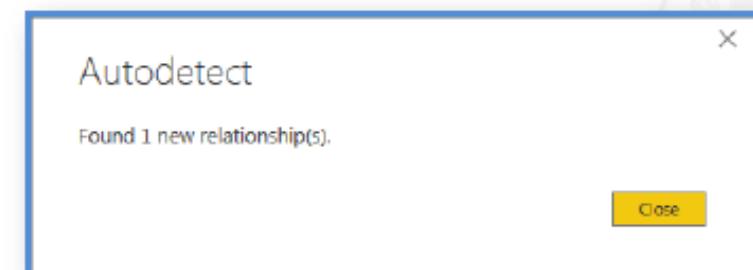
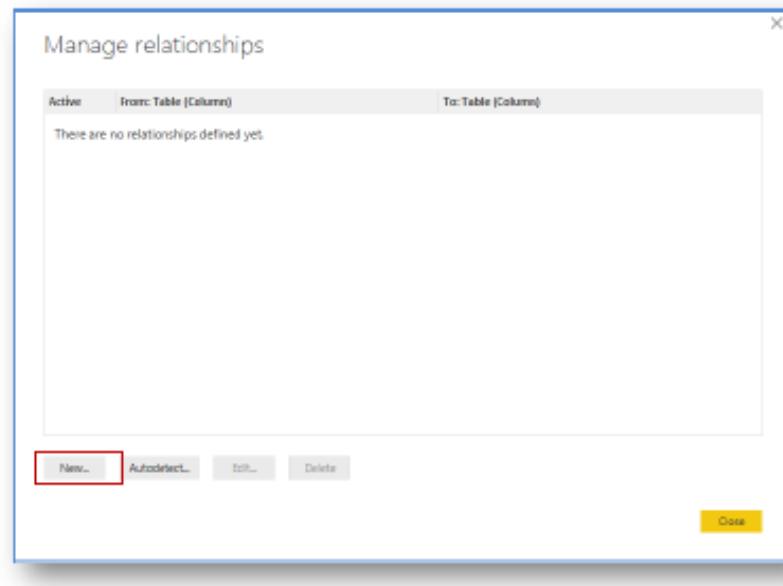
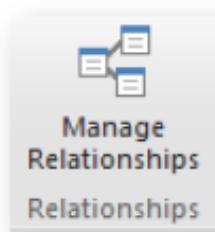
## Why to Set up Relationships?

- When you work on multiple tables, chances are you're going to do some analysis using data from all those tables.
- You must set up relationships between those tables in order to calculate results and display the correct data in your dashboards. Power BI Desktop makes creating those relationships easy.
- Power BI Desktop allows you to set up relationships using two ways.
- You can use automatic, or manual method to create relationships between multiple tables.



# Auto Detect Relationship

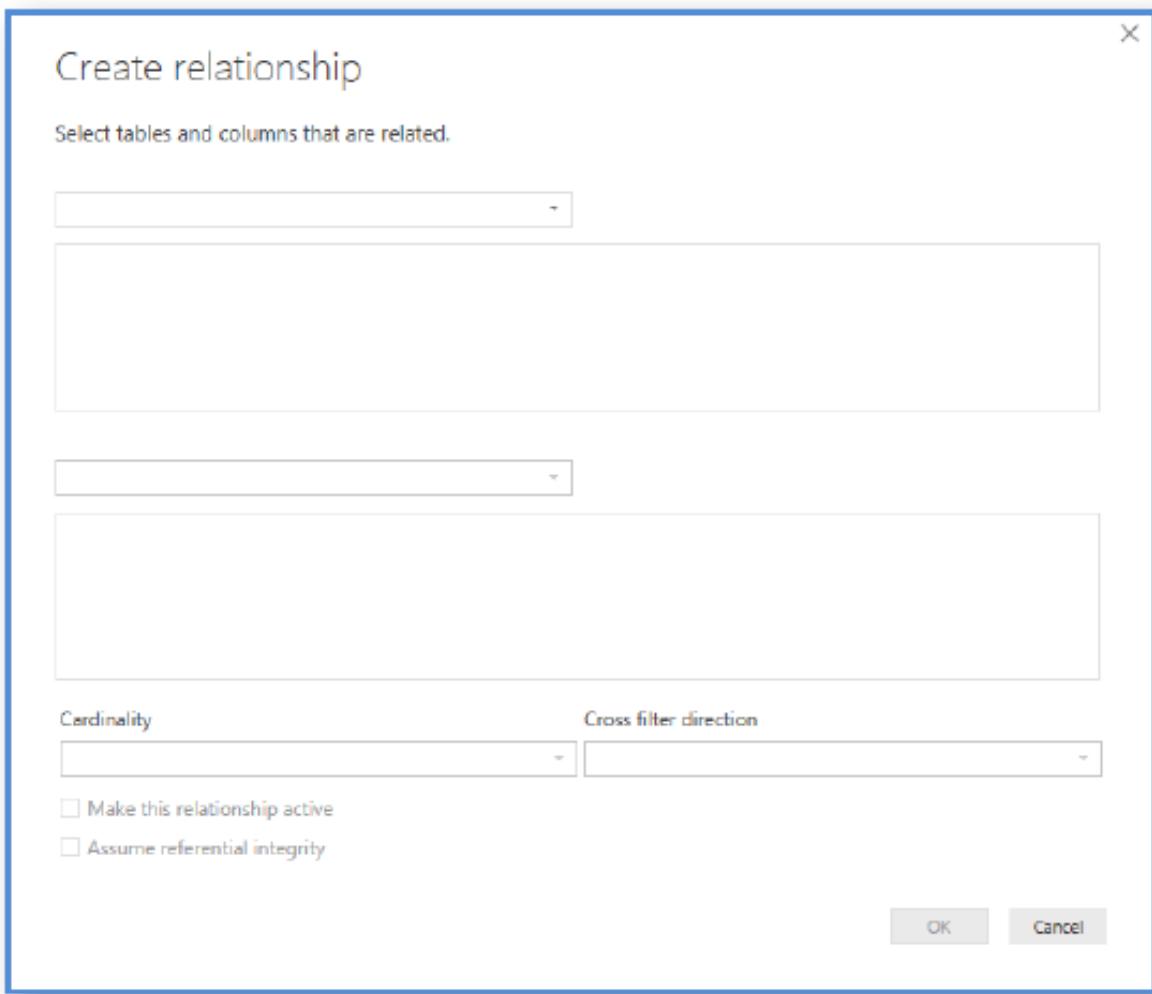
- When you query multiple tables at the same time, Power BI Desktop tries to find and set relationships for you.
- Power BI Desktop looks at column names in the tables you are querying to decide if there are any possible relationships. You use the manage relationship option to auto detect relationships.



# Custom Relationship

Steps to create a custom relationship are:

1. On the Home tab, select **Manage Relationships**.
2. In the **Manage Relationships** window, click **New**.
3. Use the drop-down list to select the columns you want to use in the relationship.
4. Click **OK**.



# Configuring Custom Relationship

When you set up or edit a relationship, you can configure different options such as cardinality and direction of cross filter.

Create relationship

Select tables and columns that are related.

CATEGORY

CATEGORY_ID	CATEGORY_NAME	DEPARTMENT_ID
1	Cell Phones & Accessories	1
2	Laptops	1
3	Cameras	1

SUBCATEGORY

SUBCAT_ID	SUBCATEGORY	CATEGORY_ID
1	SmartPhones	1
2	Headsets	1
3	Chargers	1

Cardinality      Cross filter direction

One to many (1:N)      Single

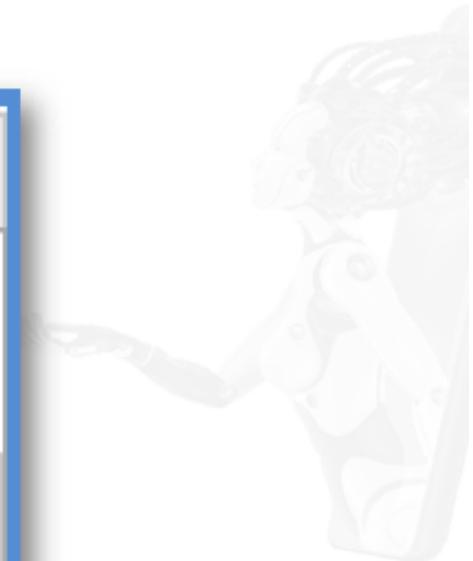
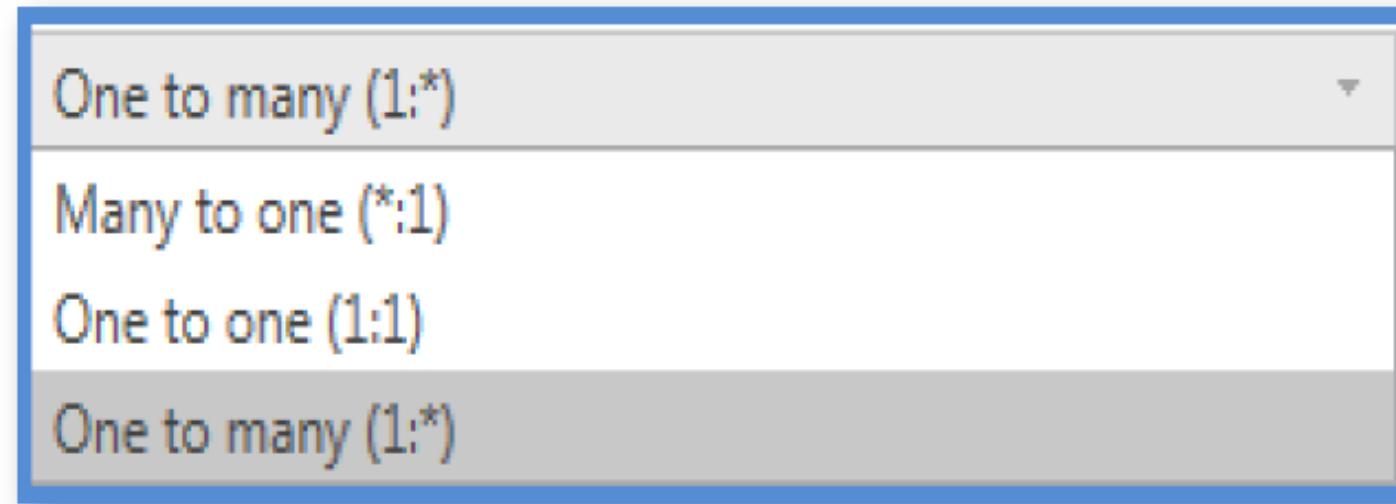
Make this relationship active  
 Assume referential integrity

OK Cancel



## Configuring Custom Relationship : Cardinality

- By default, Power BI Desktop configures the cardinality, and cross filter direction based on data in your tables.
- You can set the cardinality to many to one, one to many, or one to one.



## Configuring Custom Relationship : Cross Filter Direction

- You can configure cross filtering direction to single, or both.
- **Single** - In the single filter direction, filtering choices in connected tables work on the table where values are being aggregated.
- **Both** - The both filter direction considers both tables as a single table. This is the most commonly used, and default direction.

### Cross filter direction

Single

Single

Both

**Knowledge  
Check**

1

Which data combine option is used to club rows coming in from different queries?

- a. Append Queries
- b. Merge Queries

**Knowledge  
Check**

**2**

Is it possible to selectively undo an applied transformation?

- a. Yes
- b. No

**Knowledge  
Check  
3**

Can Power BI auto detect relationships between queries coming in from different data sources?

- a. Yes
- b. No

## Key Takeaways

Now, you are able to:

- Understand the capabilities of Data and Relationship views
- Explore different data transformations
- Learn how to set up relationship using auto detect option
- Learn how to create user defined relationships
- Learn how to manage relationships between multiple tables