
DATA AND
ARTIFICIAL INTELLIGENCE
Data Manipulation and Reporting with
Power BI

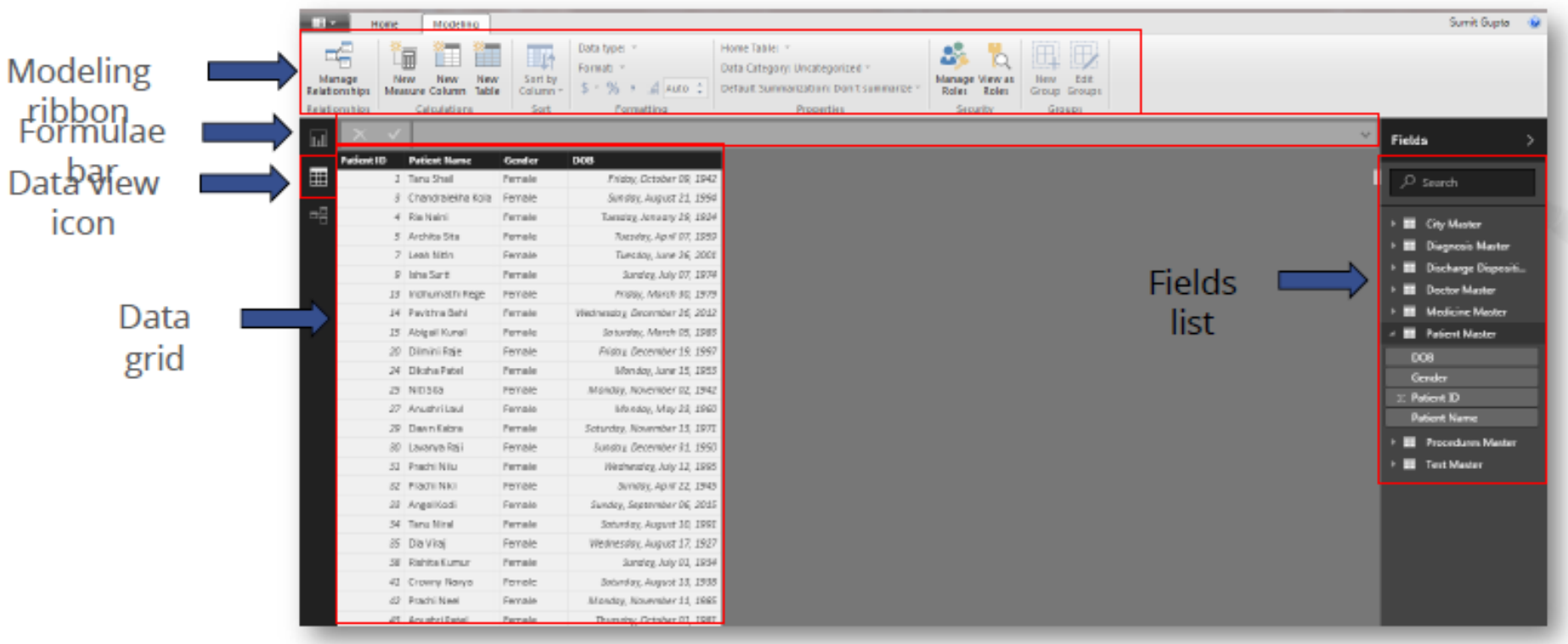
Learning Objectives

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

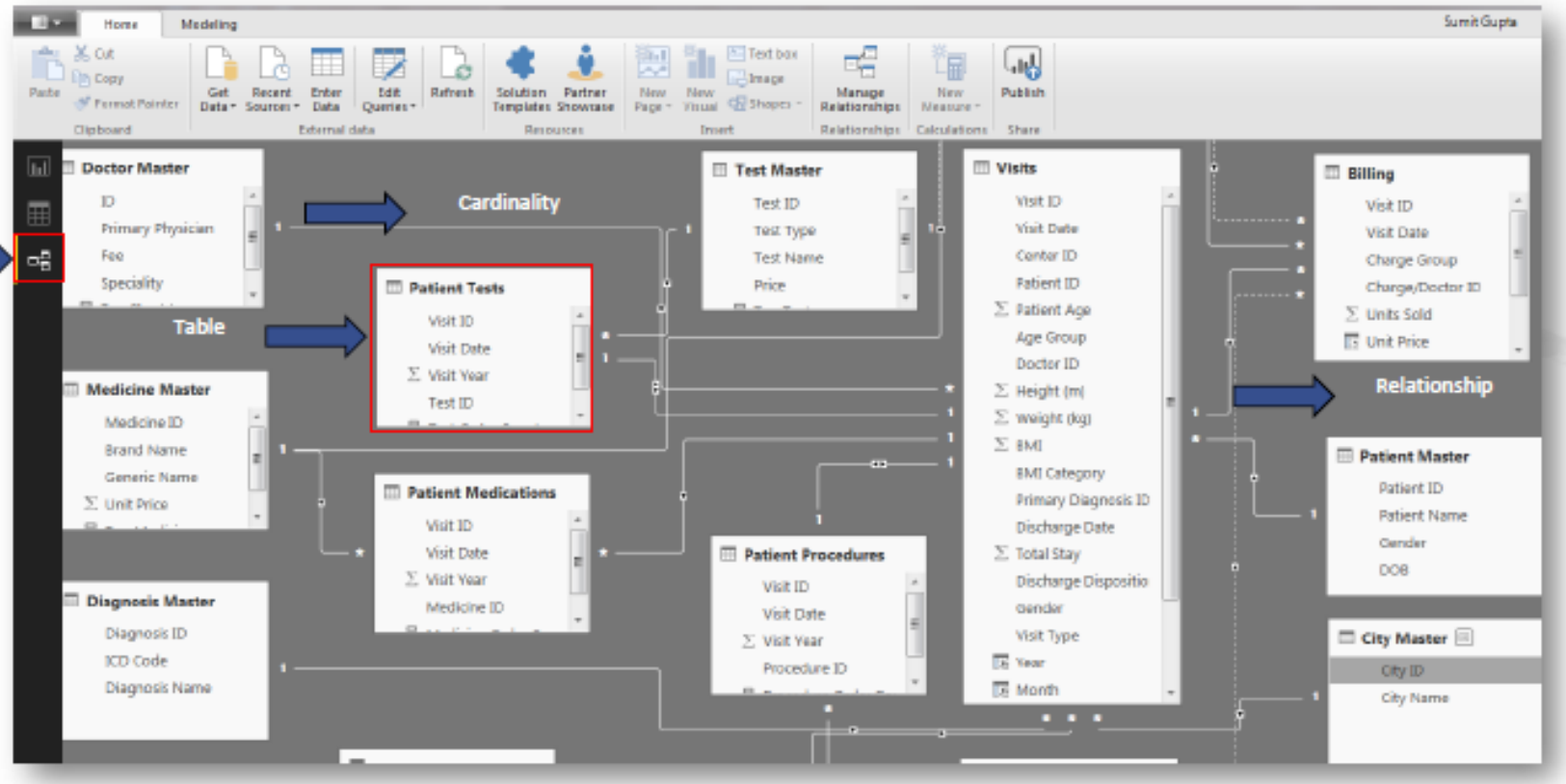
- Data View enables you to inspect, explore, and understand the underlying data in the Power BI Desktop.
- With Data View, you're looking at your data after it has been loaded into the model.
- Before creating new columns or measures or identifying a data type or data category, it's helpful to see the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



Relationship View

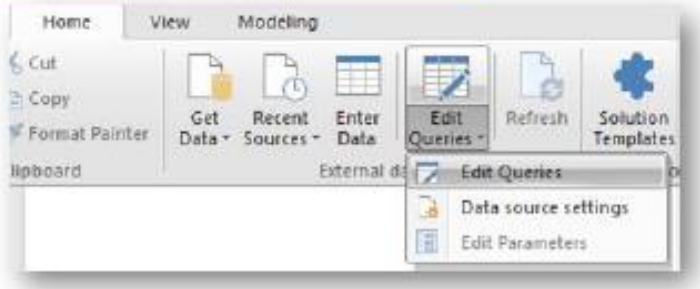
Relationship View shows all of the tables, their associated columns, and the relationships in your model. This can be especially helpful when your model has tables coming in from varied data sources and you wish to build a complex relationship between them.

Relationship view icon

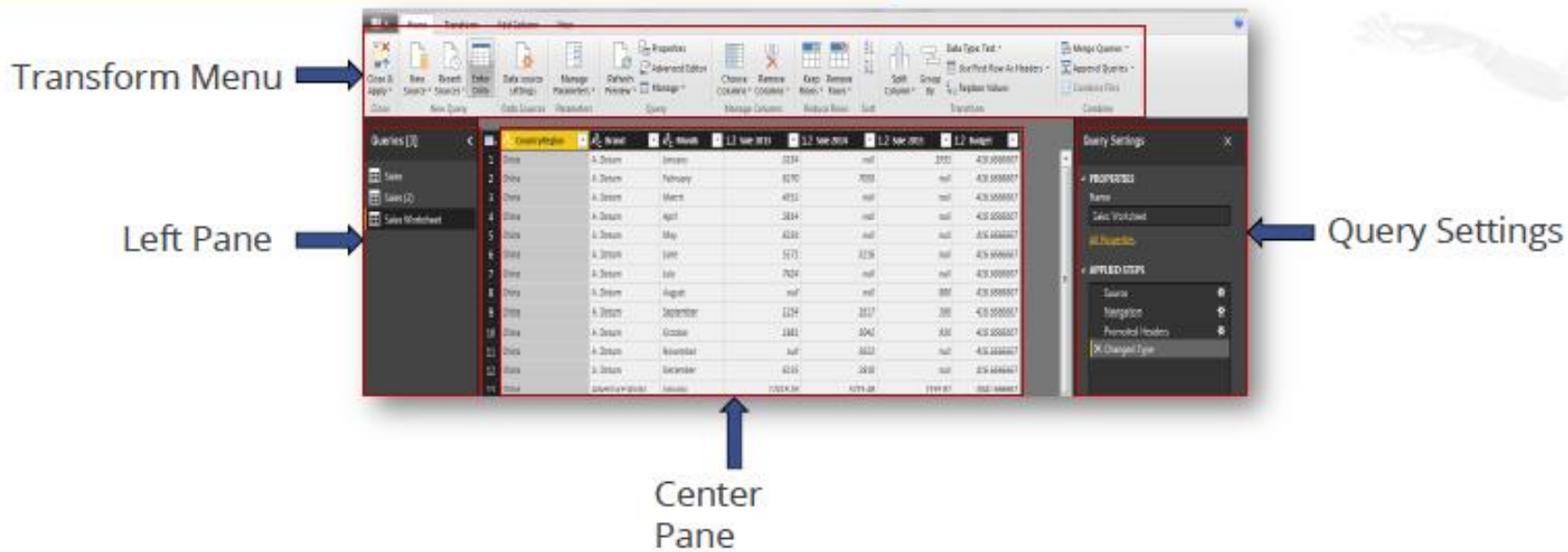


Getting Familiar to Query Editor

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



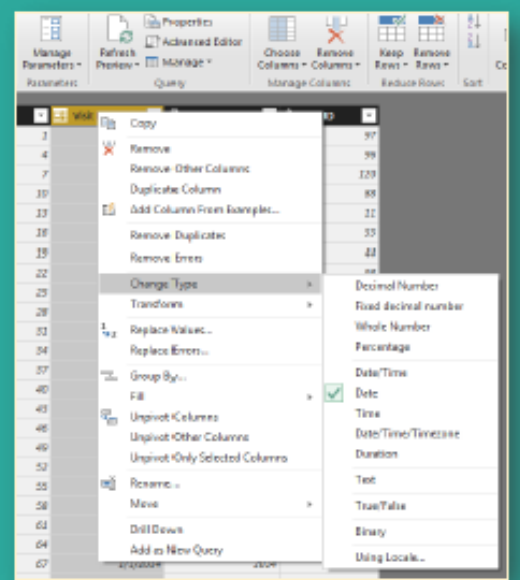
You can use the Query Editor to clean and transform your data.



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



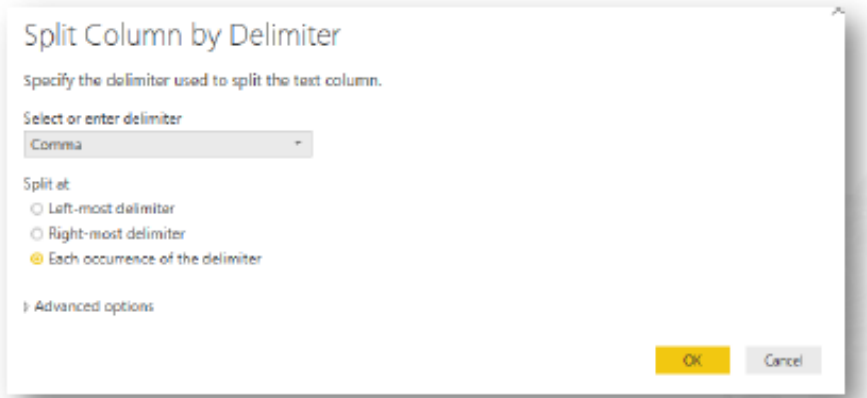
Shaping Data – Split Columns

Power BI allows you to split a column either by,

- Delimiter

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

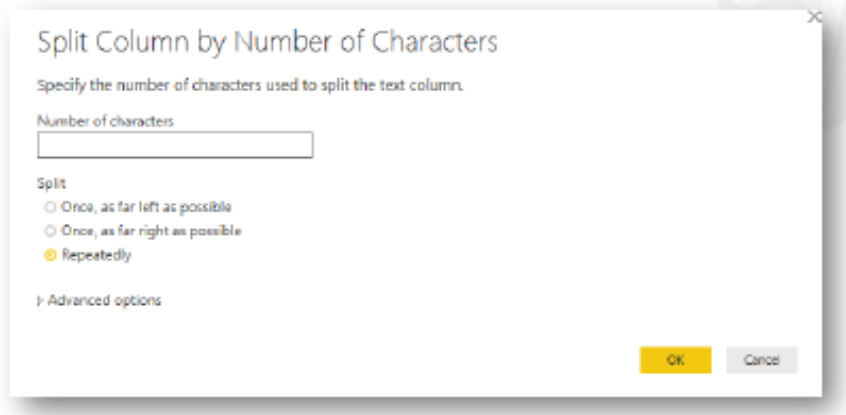
- ✔ Left most delimiter
- ✔ Right most delimiter or
- ✔ Each occurrence of the delimiter



- Number of characters

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

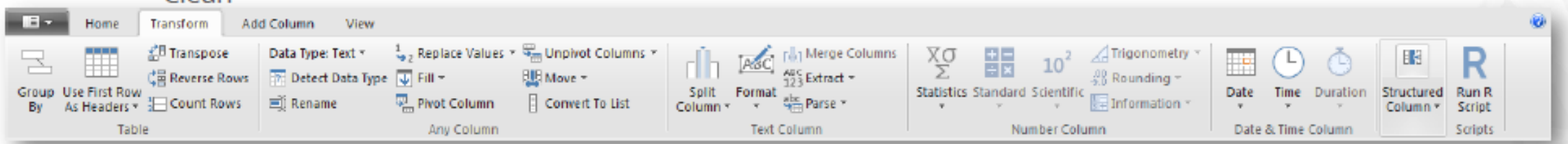
- ✔ Once as far left as possible
- ✔ Once as far right as possible or
- ✔ Repeatedly



Shaping Data – Text Transforms

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

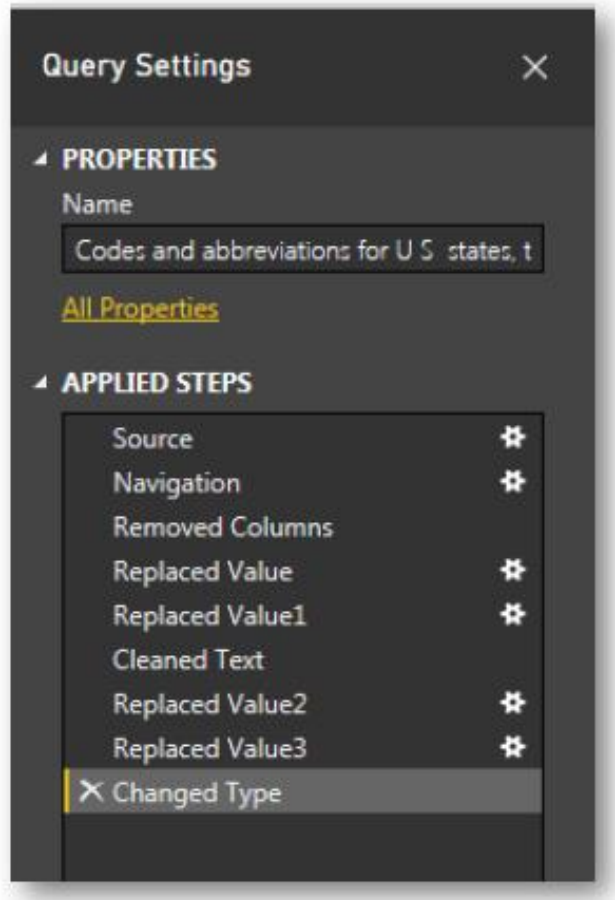
- Lowercase
- Uppercase
- Capitalize each word
- Trim
- Clean



- Reverse rows

Shaping Data – Applied Steps

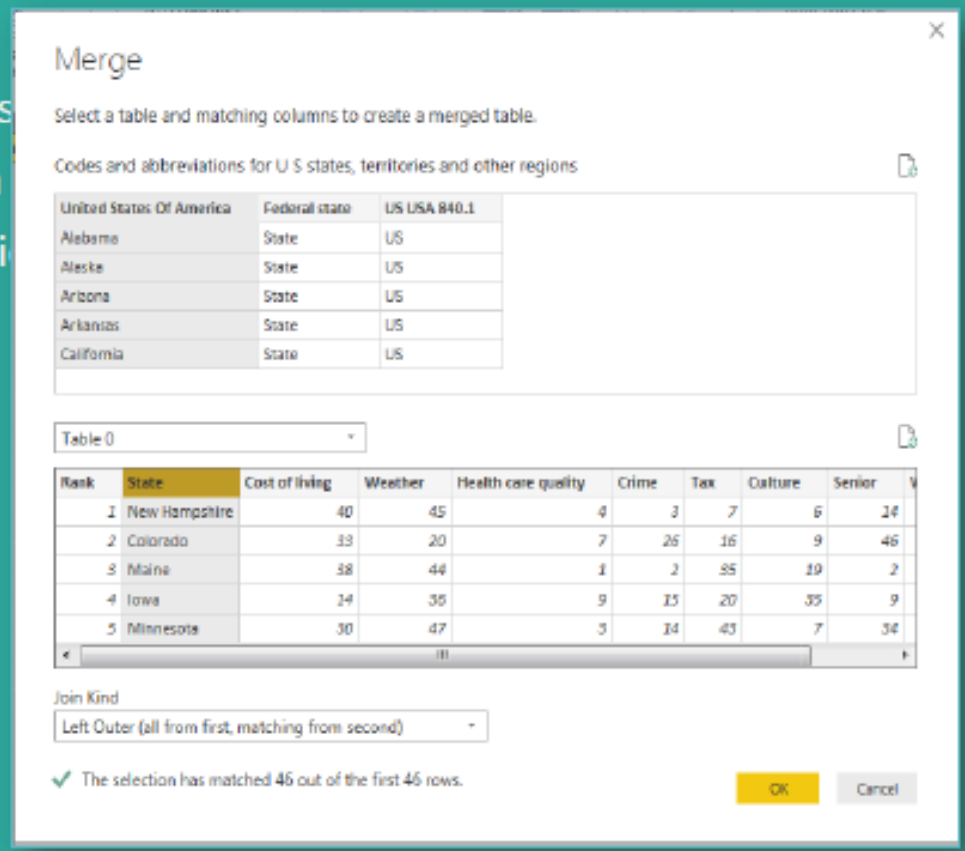
You can apply different transformations, such as renaming columns or tables, changing text to numbers, removing rows, and so on to shape your data. You can use the Query Editor to shape your data.



Combine Data — Merge Queries

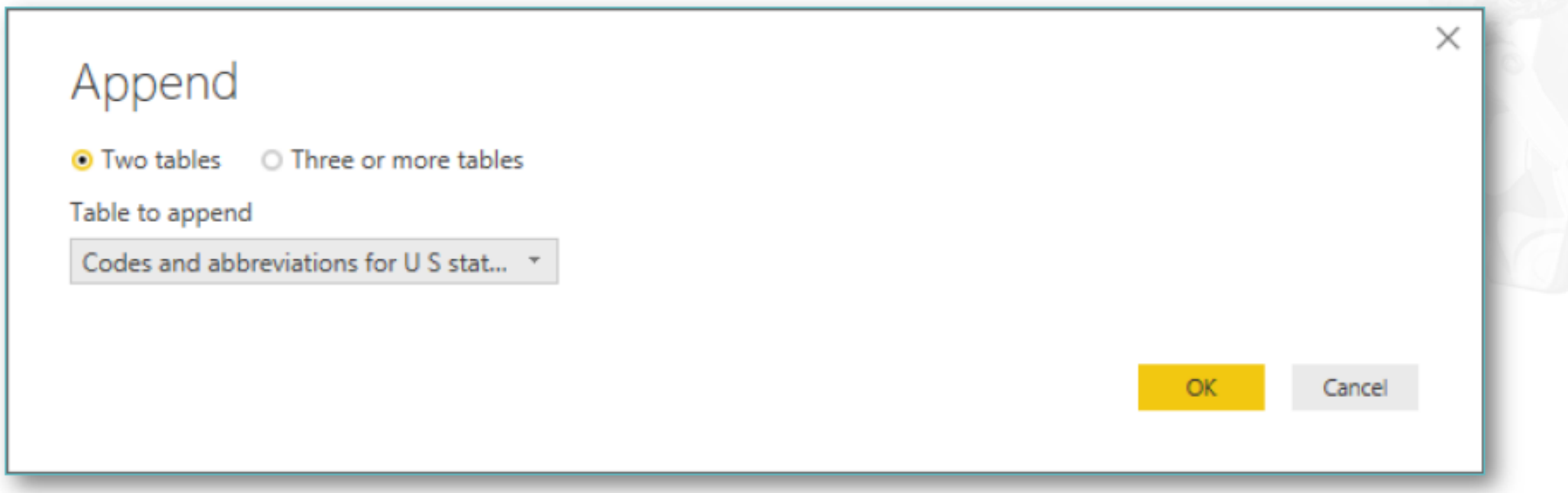
You can merge the queries when you want to add one or more columns to another query. There should be joining or matching criteria between two queries. Following are the types of joins available for merging queri

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



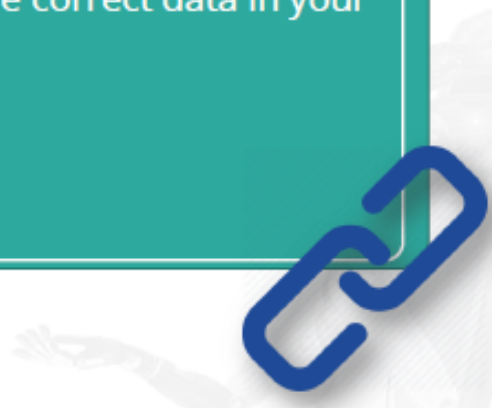
Combine Data — Append Queries

- 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.



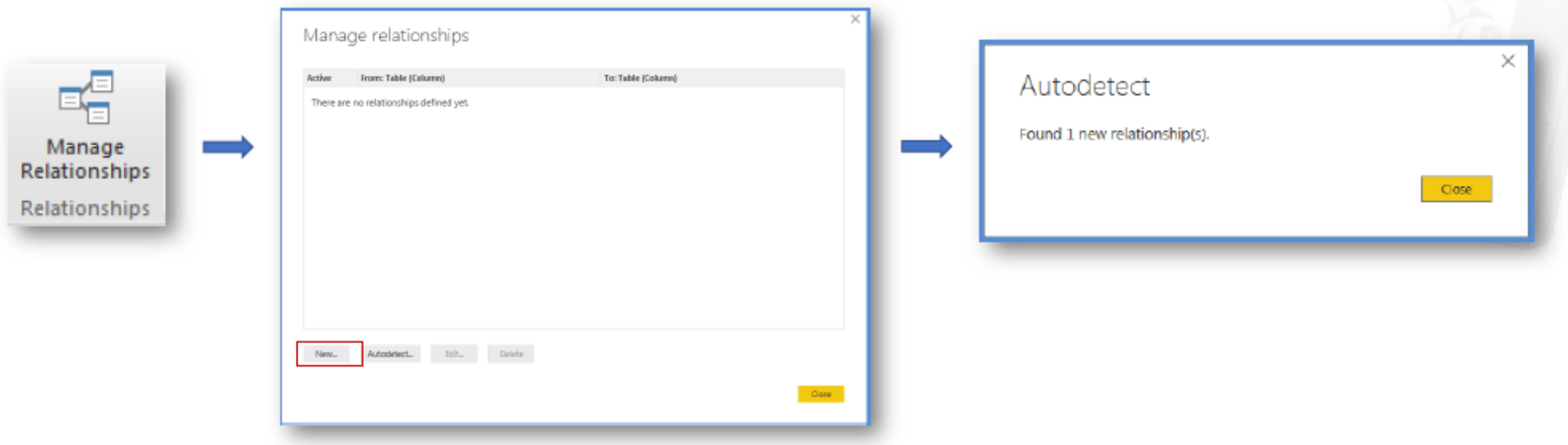
Why to Set up Relationships?

- 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

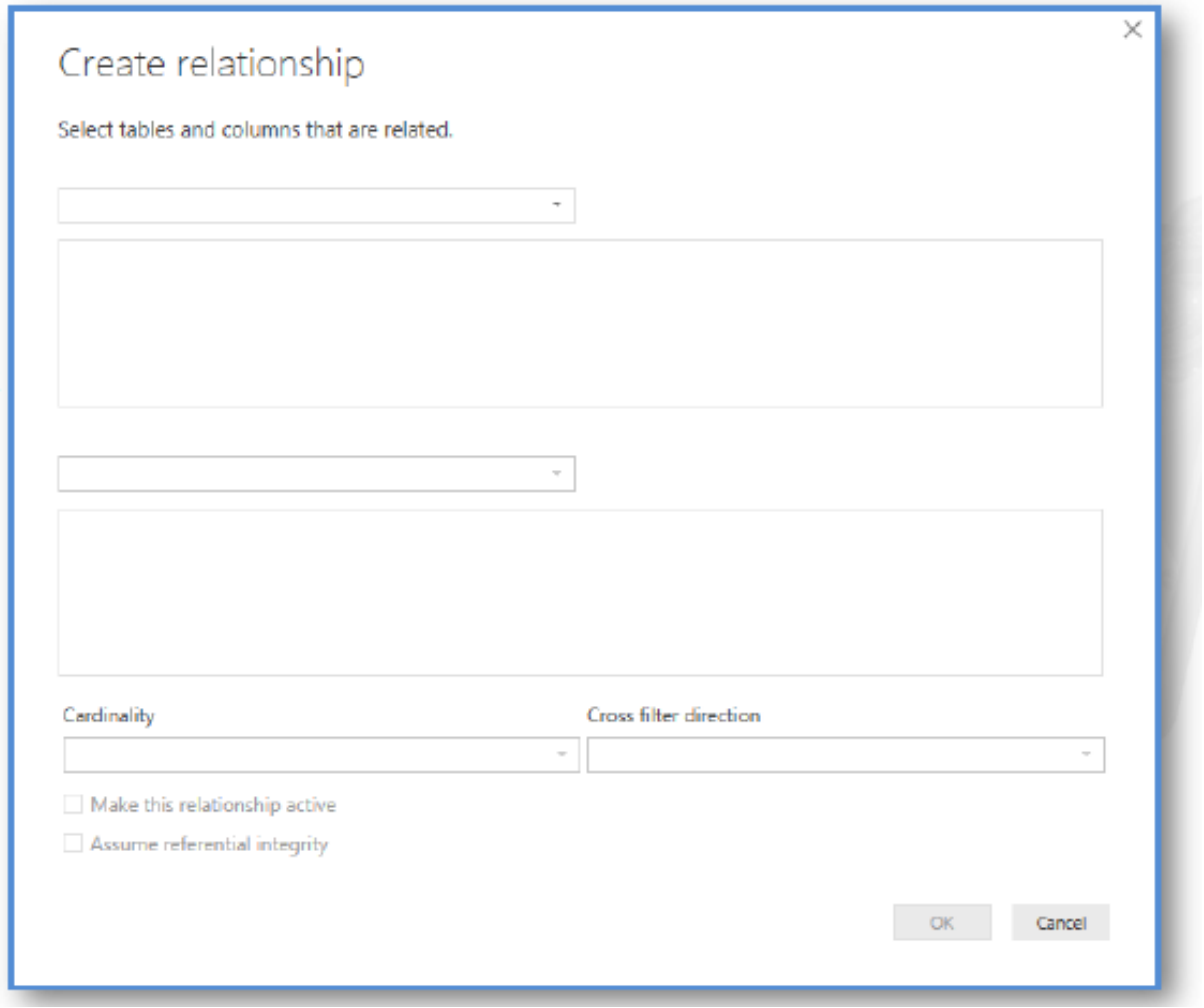
- When you query multiple tables at the same time, Power BI Desktop tries to find and set relationships for you.
- Power BI Desktop looks at column names in the tables you are querying to decide if there are any possible relationships.You use the manage relationship option to auto detect relationships.



Custom Relationship

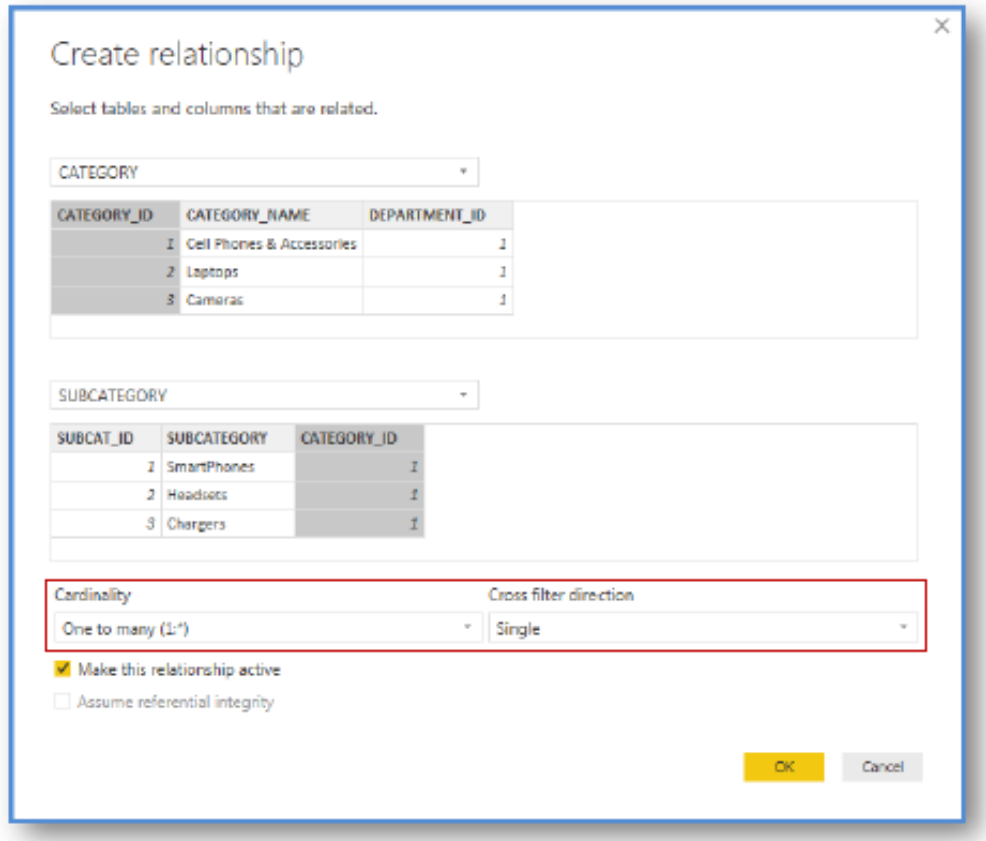
Steps to create a custom relationship are:

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**.



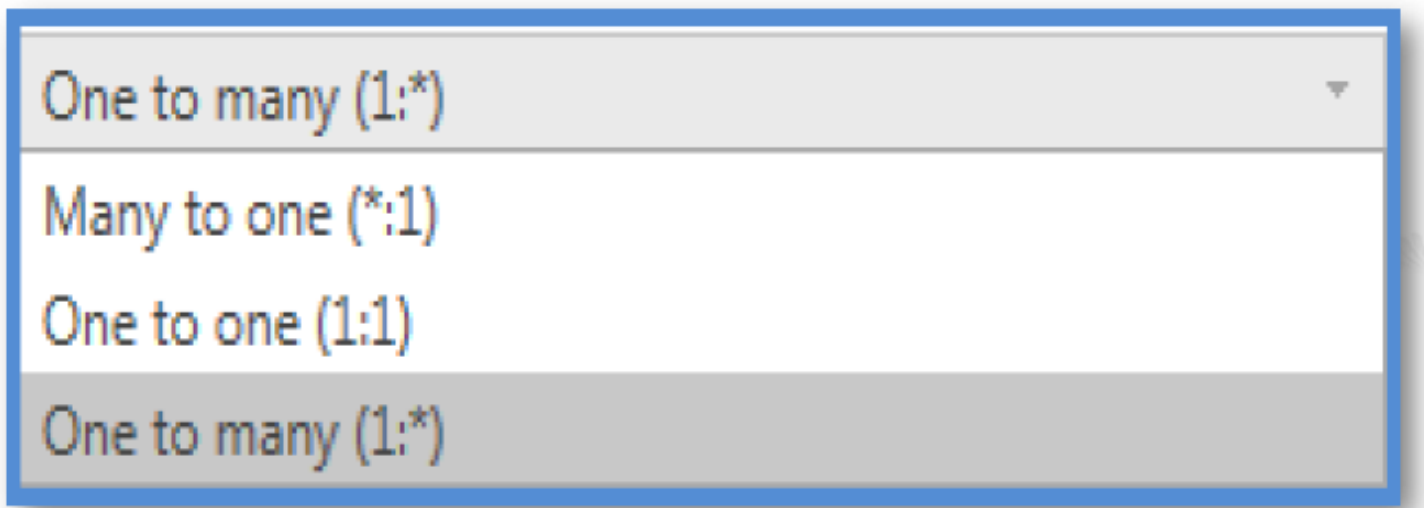
Configuring Custom Relationship

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



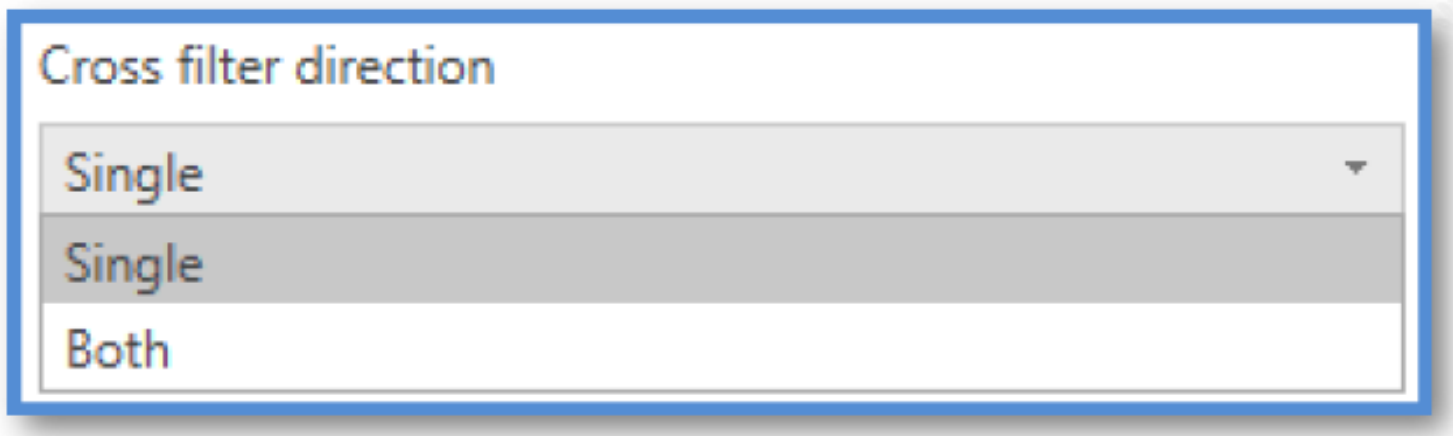
Configuring Custom Relationship : Cardinality

- 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.



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