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Prepare data in Power BI Desktop

aka.ms/PL300-2

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Agenda

- Get data in Power BI
- Clean, transform, and load data in Power BI

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Get data in Power BI

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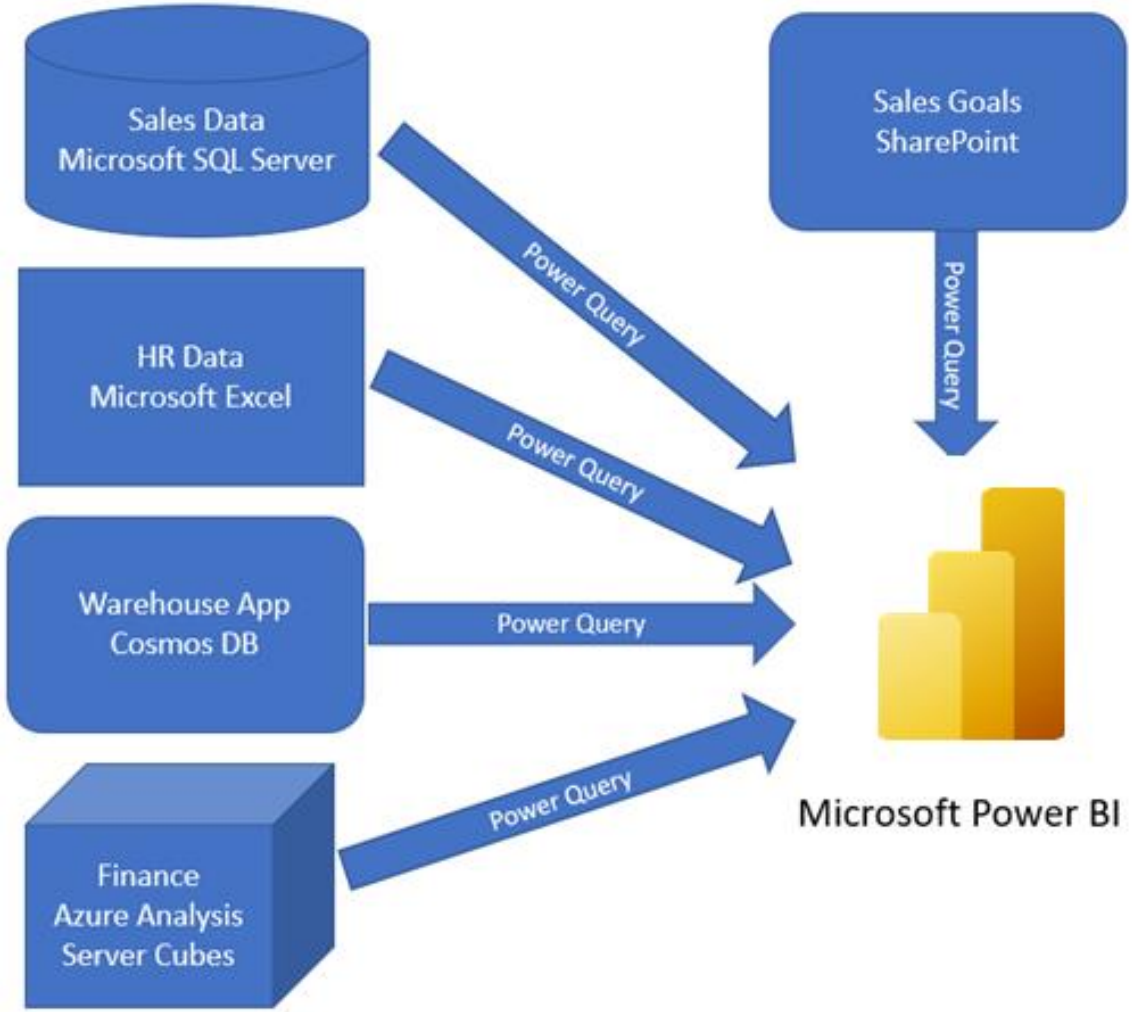
Combine all data into a single semantic model



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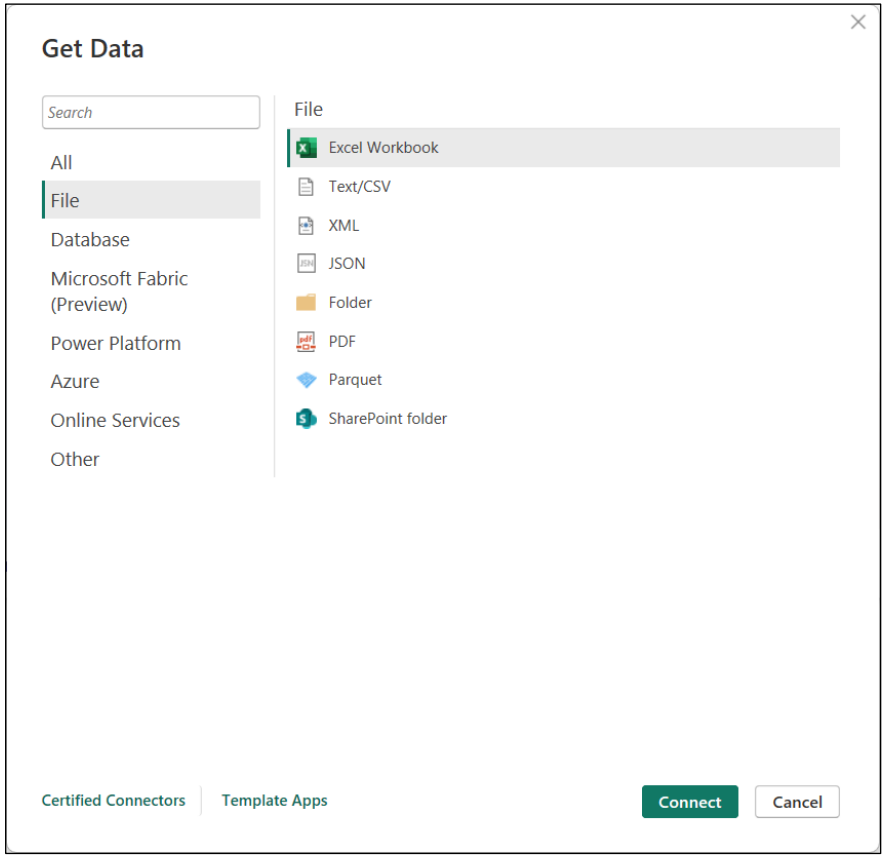
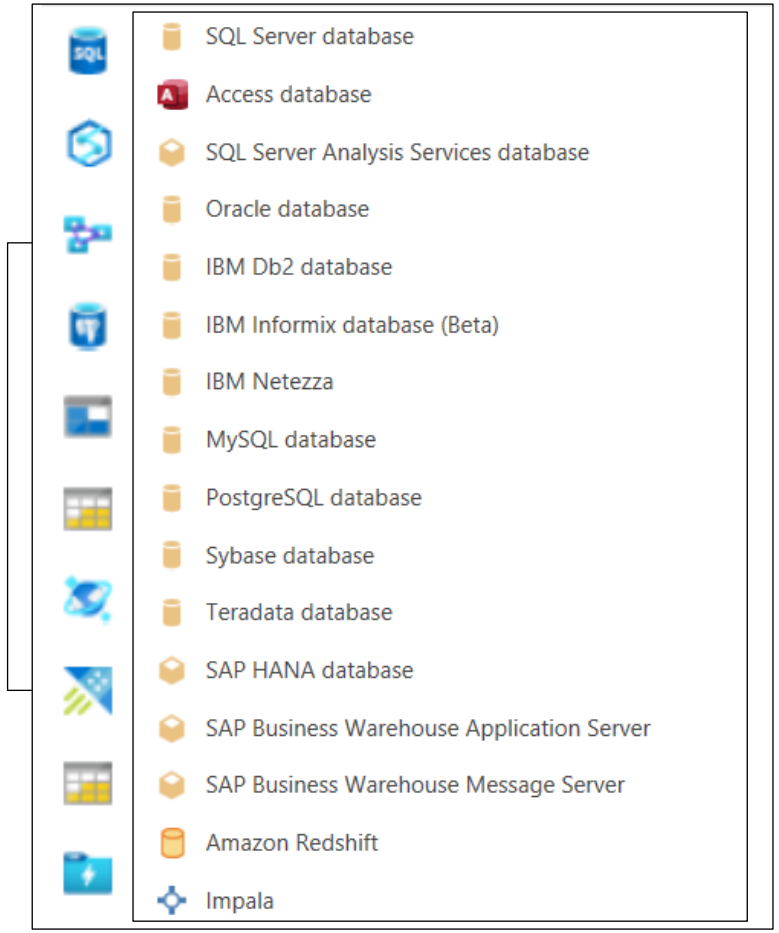
Get data from a wide variety of sources





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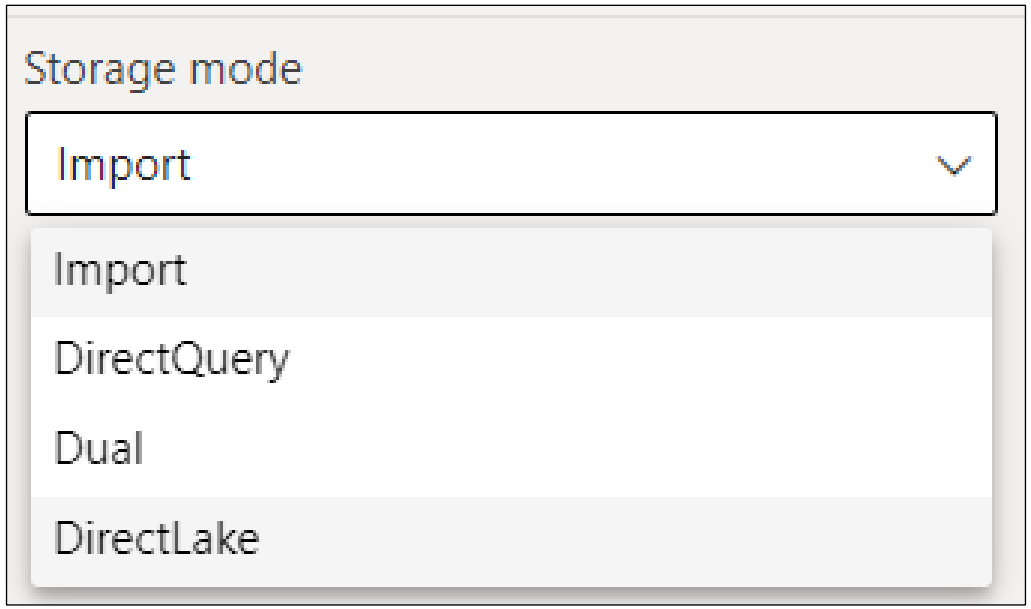
Select a storage mode

Storage mode affects

- Available transformations
- Report performance

**Not all sources support all modes*



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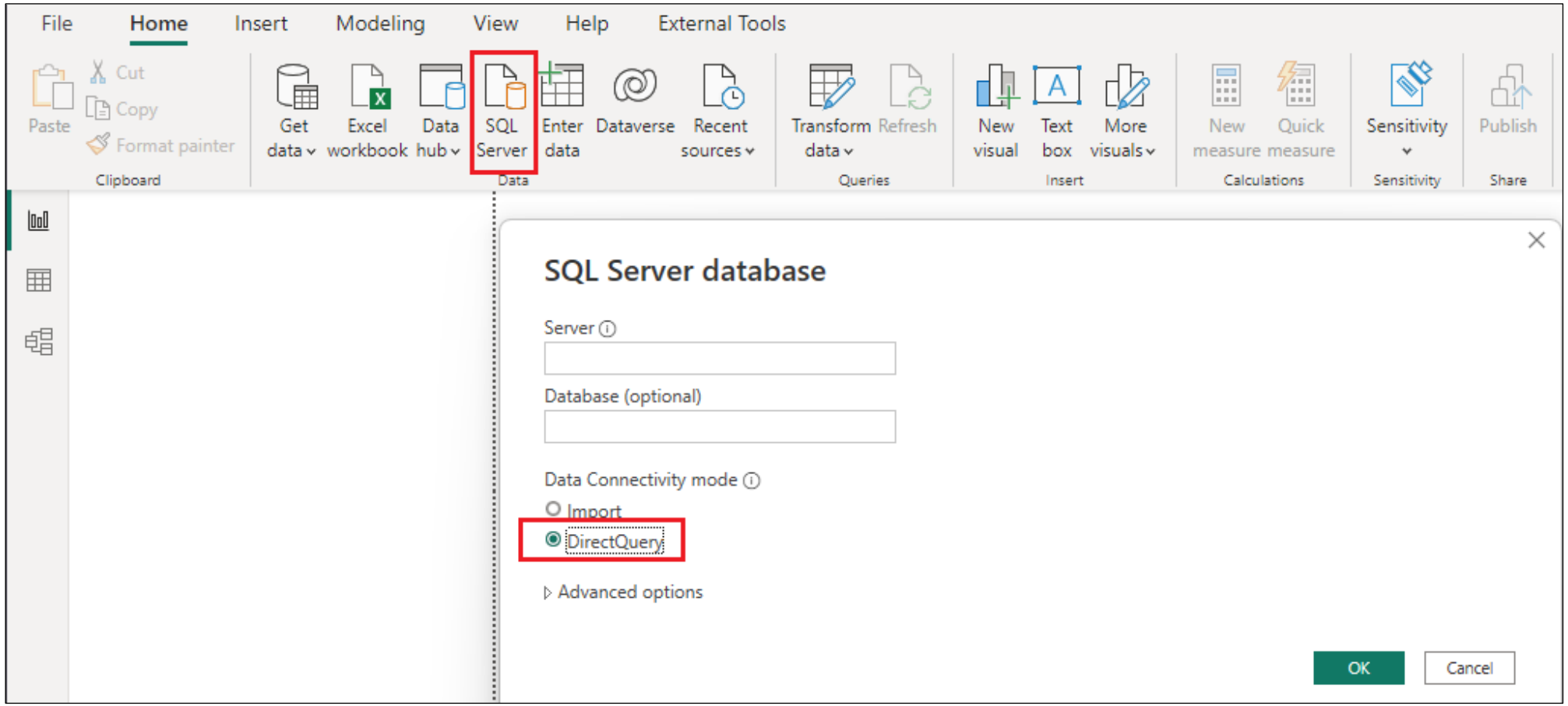
Introduction to DirectQuery



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Implications of using DirectQuery

Benefits

- Frequently changing data
- Need near real-time
- Large data volumes
- Multi-dimensional data

Limitations

- Dependent on data source performance
- Security between source and destination
- Limited modeling capabilities
- Limited transformation features

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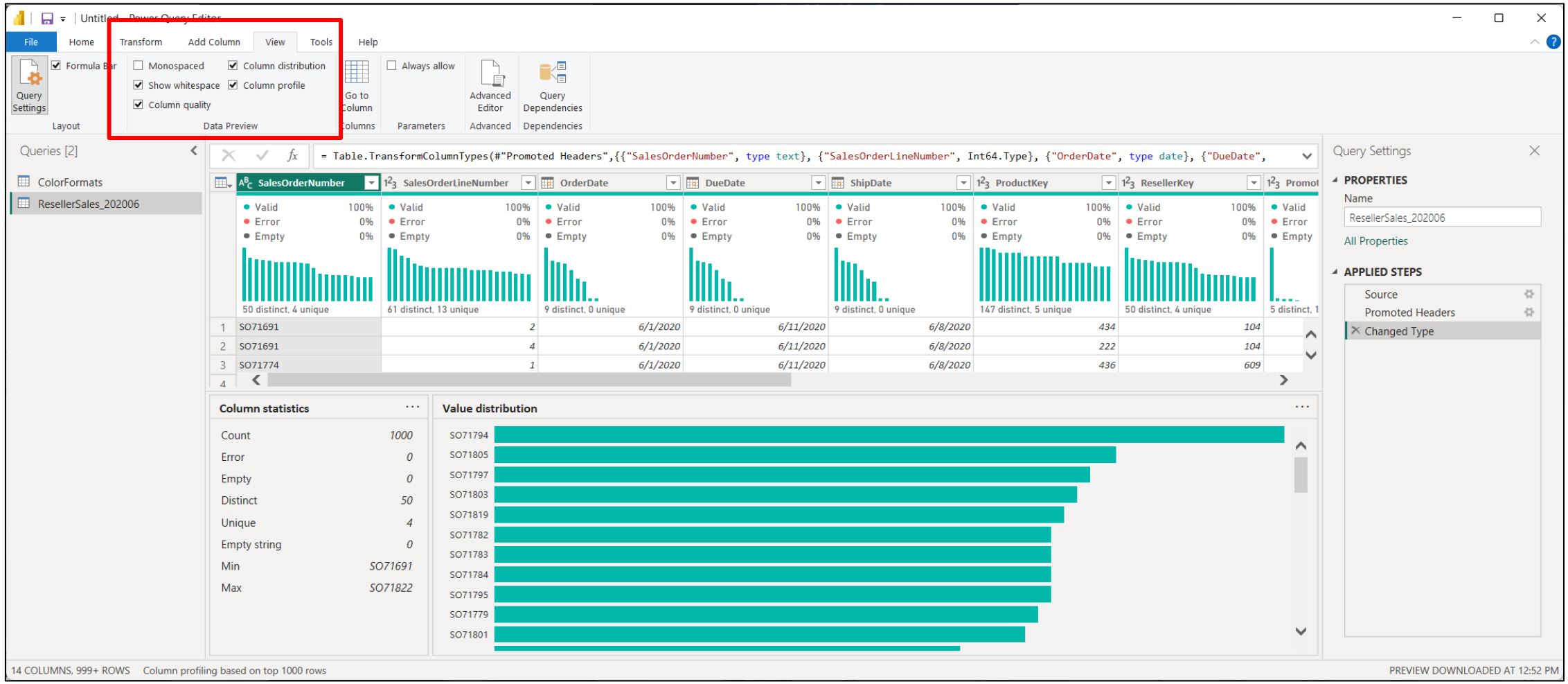
Data profiling options in Power Query Editor



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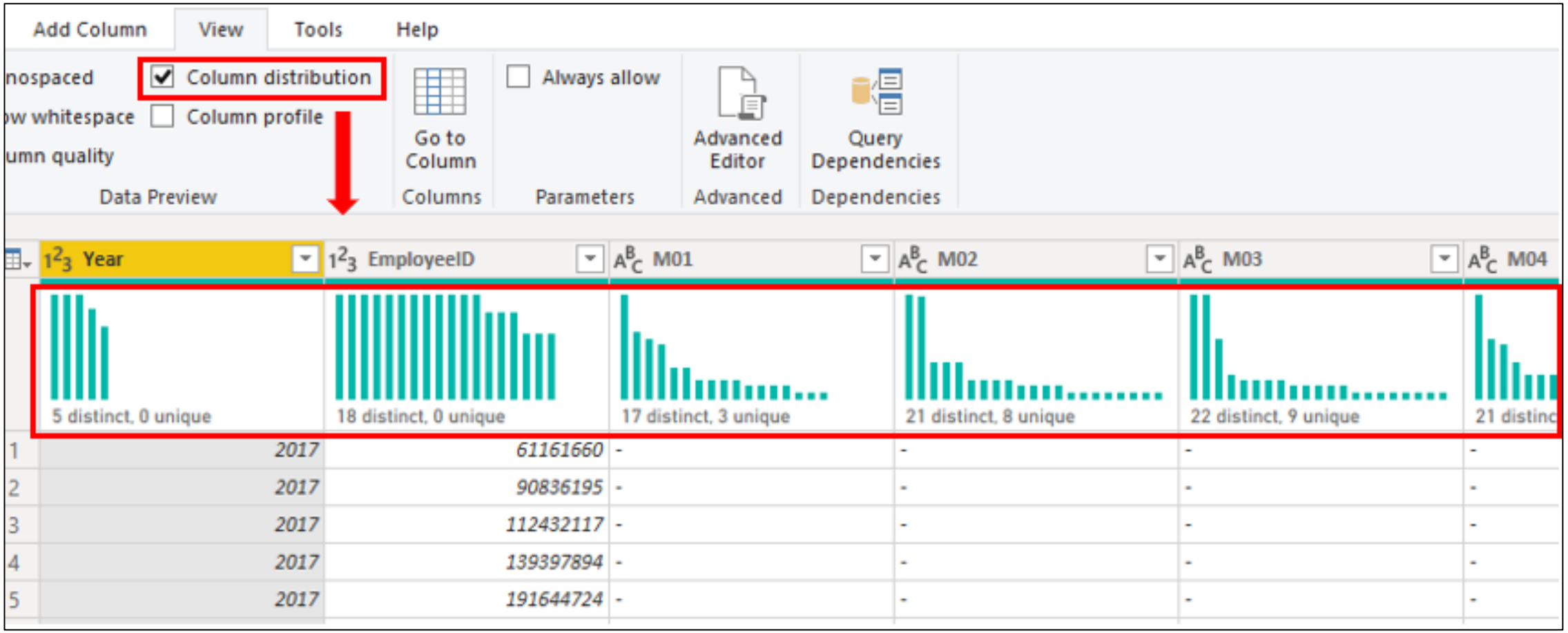
Determine cardinality of a column



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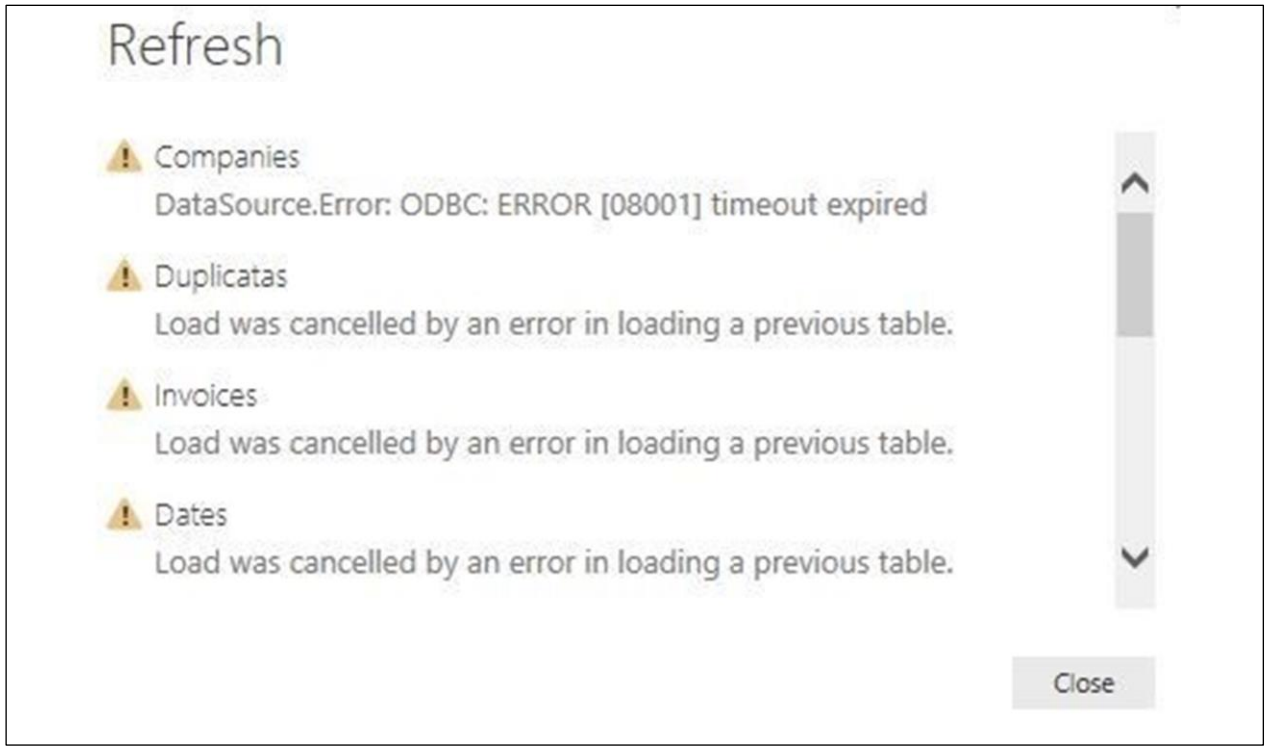
Data import errors

- Possible data load errors:
  - Query Timeout
  - Couldn’t find data formatted as a table
  - Could not find file
  - Data type errors



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Lab: Prepare data in Power BI Desktop (30 minutes)

Prepare Data | GitHub Exercise

This lab is designed to introduce you to Power BI Desktop application and how to connect to data and how to use data preview techniques to understand the characteristics and quality of the source data.

- Open Power BI Desktop
- Connect to source data
- Preview source data
- Use data profile tools

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Knowledge check: get data

When connecting to a SQL Server database to get data, what language should you use to extract data?

- ☐ DAX
- ☑ T-SQL
- ☐ MDX

How many rows are sampled in Power Query Editor by default?

- ☐ All
- ☑ 1000
- ☐ 100

What can you do to improve performance when you're getting data in Power BI?

- ☑ Remove unnecessary columns and rows
- ☐ Export database files to CSV to load
- ☐ Combine date and time columns into a single column

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Clean, transform, and load data

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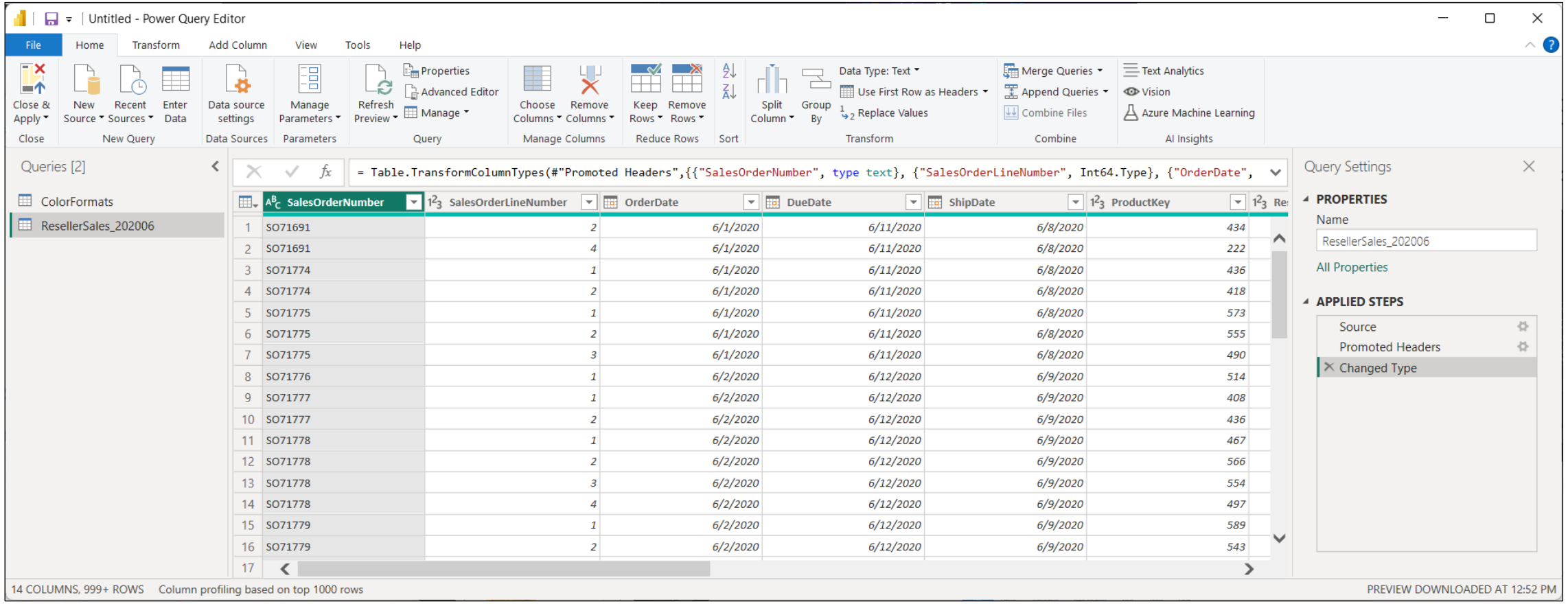
Transform data with Power Query Editor



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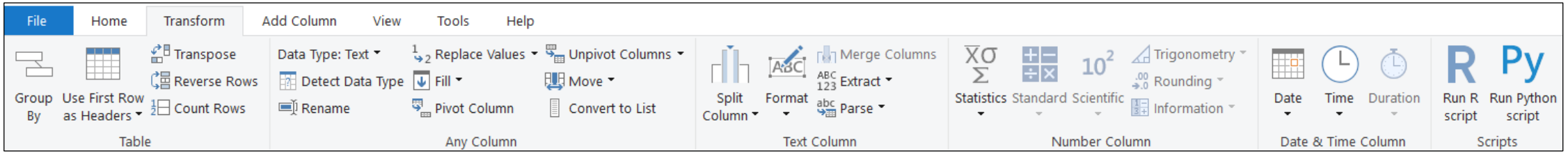
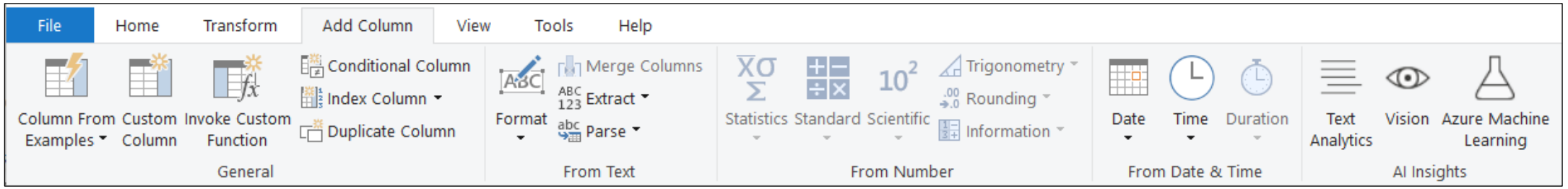
Common transformations

Transform columns, add new, split, extract, and more





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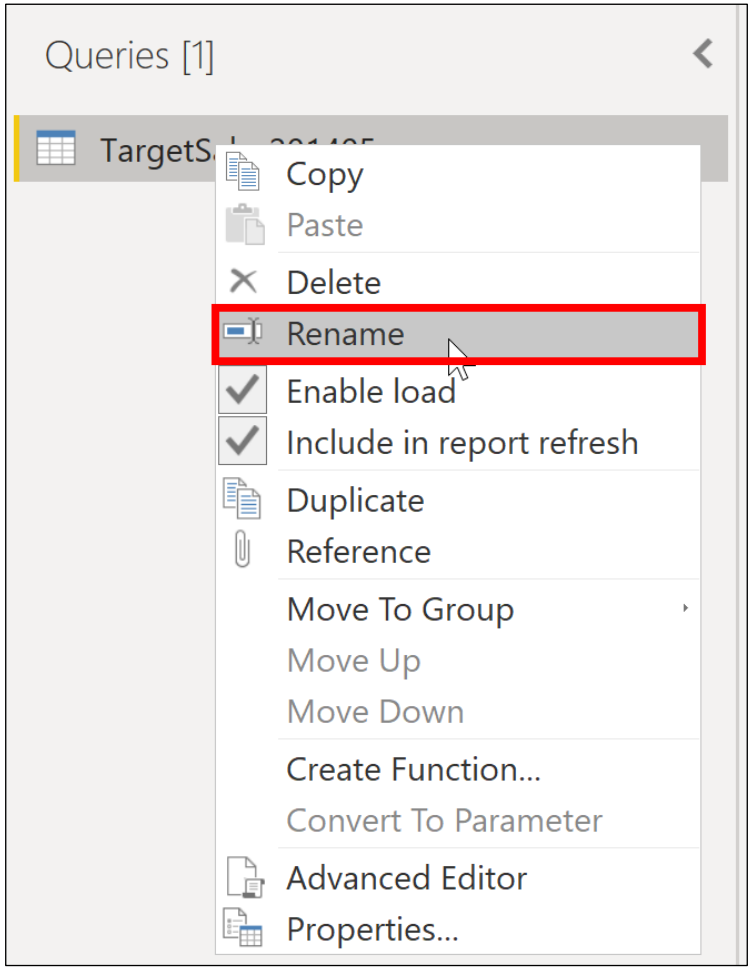
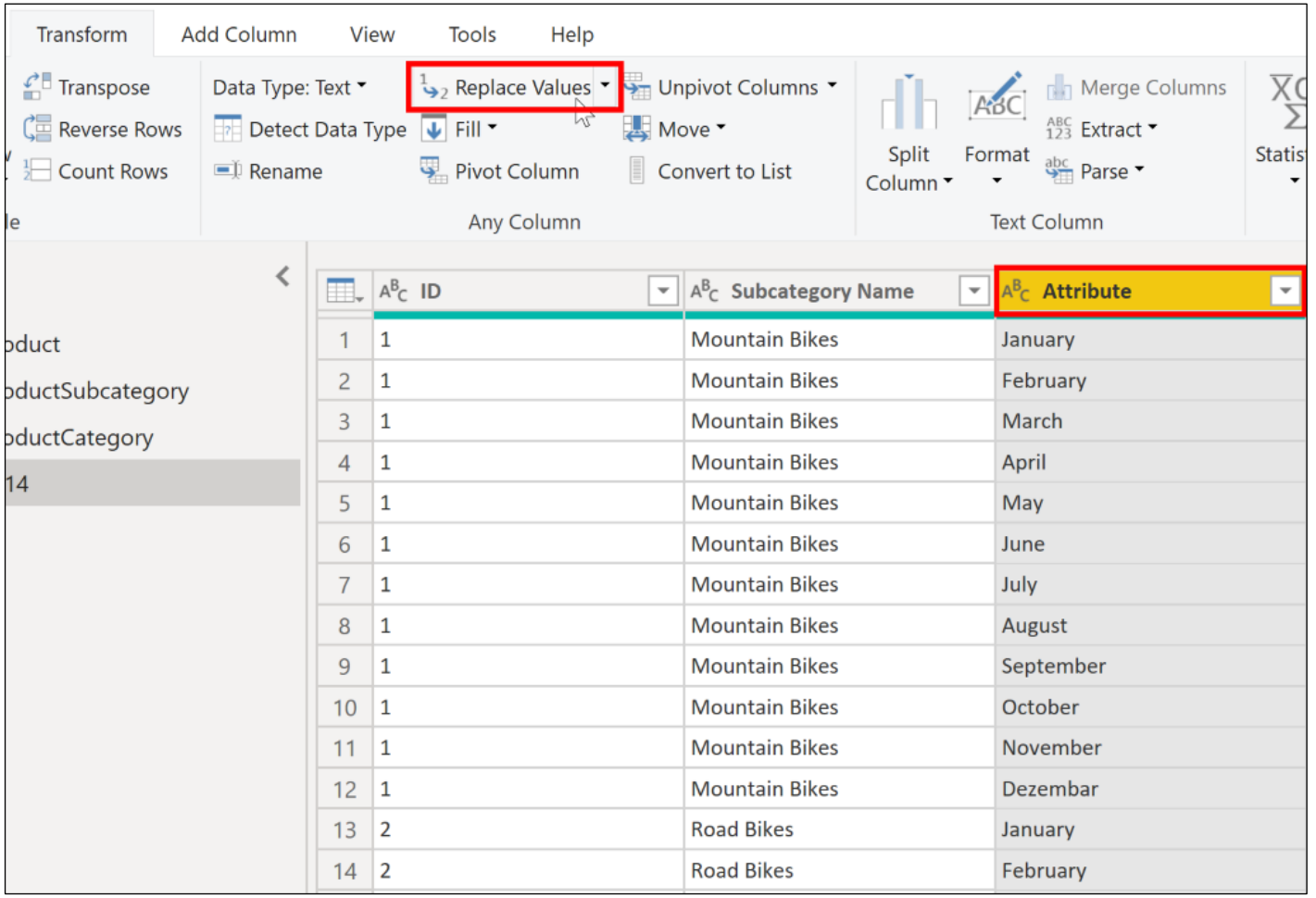
Choose user-friendly values





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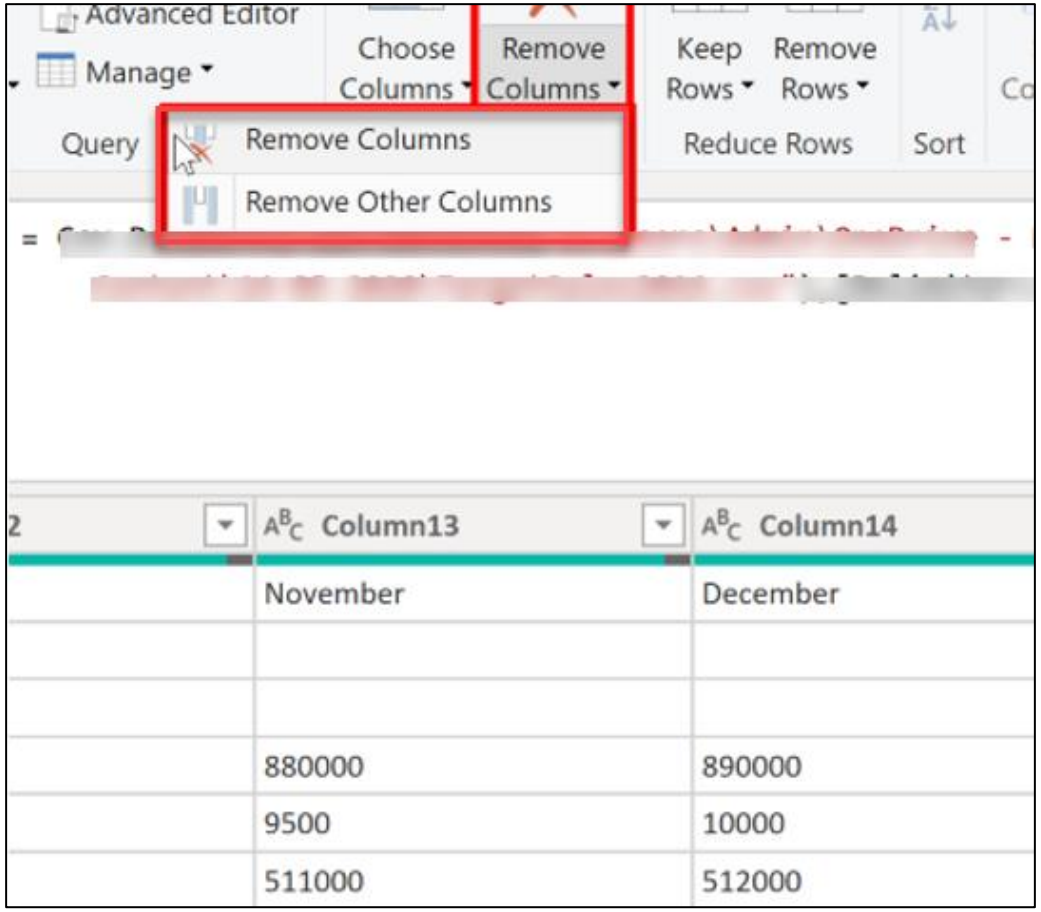
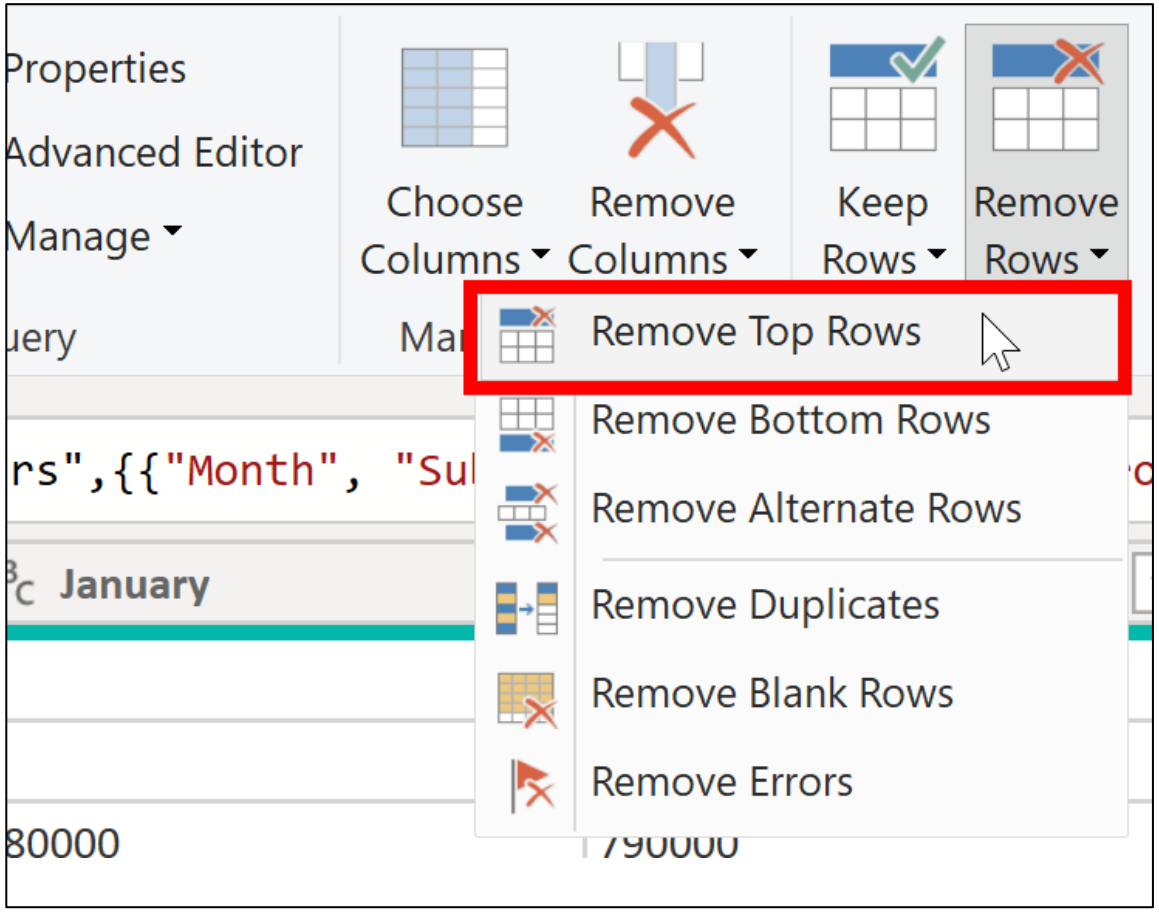
Shaping table structure





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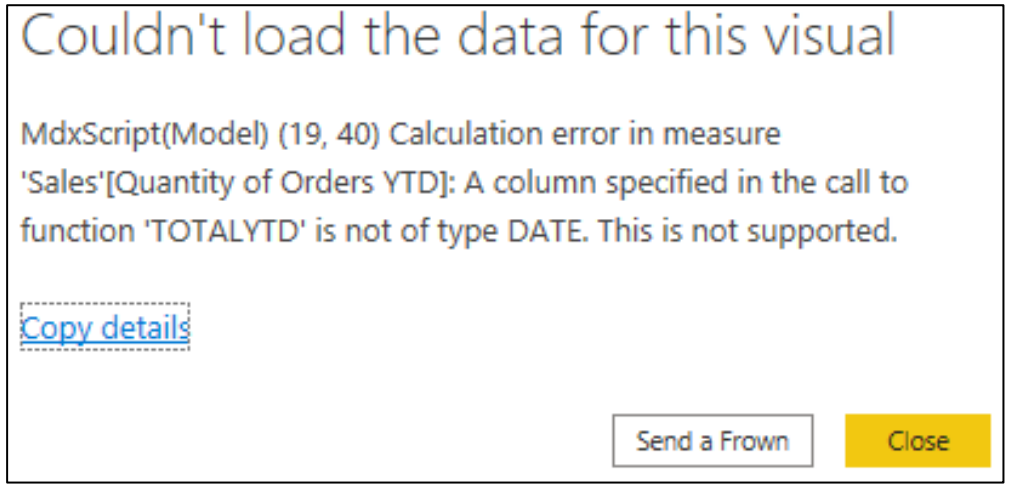
Evaluate and change column data types

SalesOrderNumber	OrderDate	TotalCost
SO43659	7/1/2017	2024.99
SO43659	7/1/2017	6074.97
SO43659	7/1/2017	2024.99
SO43659	7/1/2017	2039.99
SO43659	7/1/2017	2039.99
SO43659	7/1/2017	4079.98
SO43659	7/1/2017	2039.99
SO43659	7/1/2017	86.52
SO43659	7/1/2017	28.84
SO43659	7/1/2017	34.2



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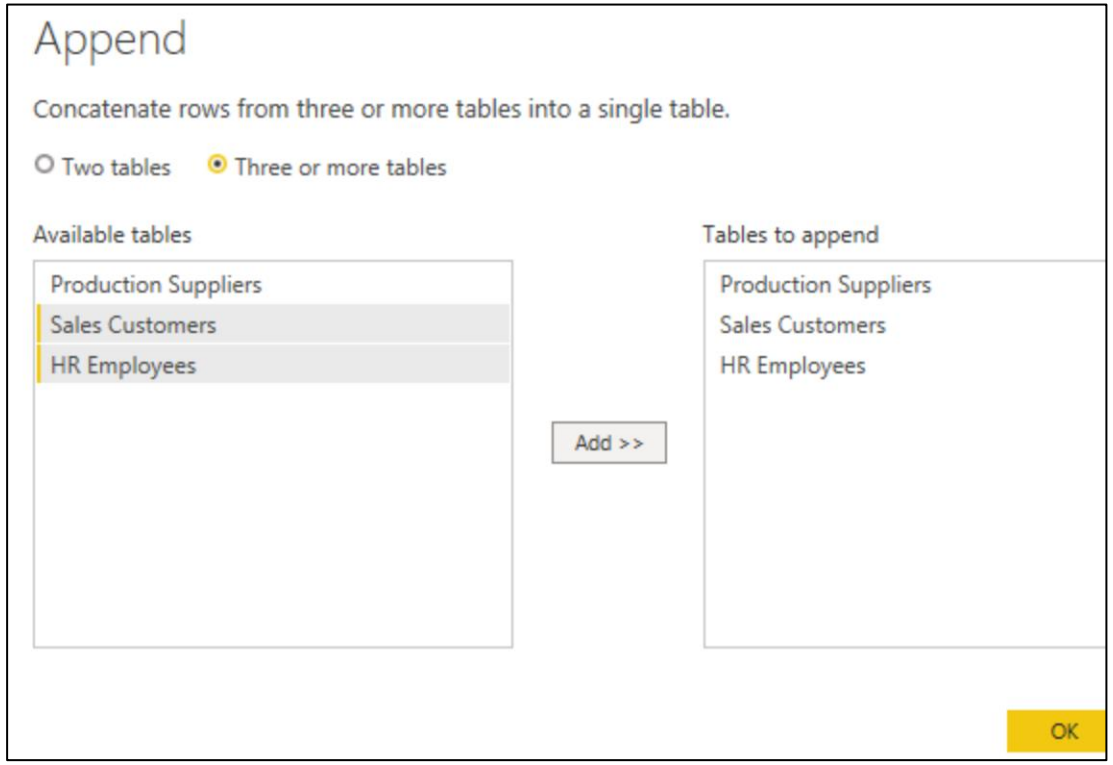
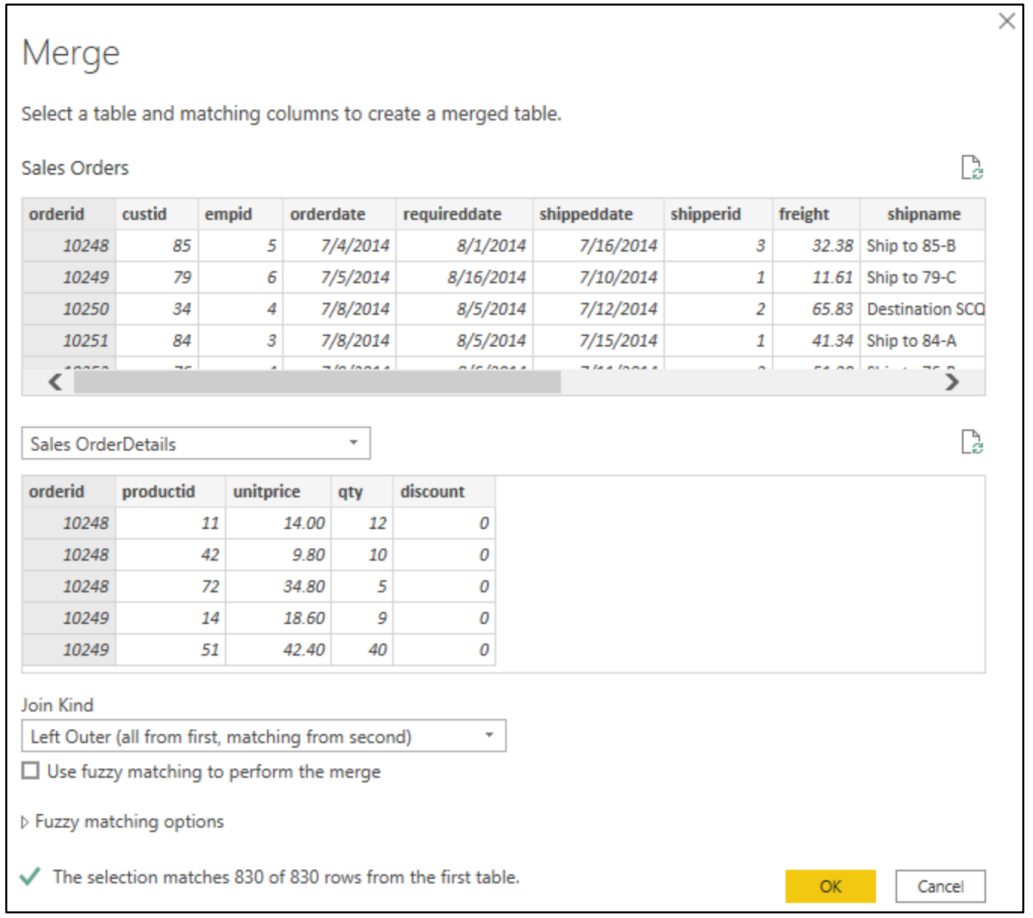
Combine multiple queries into one

Append



Merge



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Unpivot or pivot columns

Add or remove table structure to meet your aggregation needs.

	Category Name	Subcategory Name
1	Bikes	Mountain Bikes
2	Bikes	Road Bikes
3	Bikes	Touring Bikes
4	Clothing	Bib-Shorts
5	Clothing	Caps
6	Clothing	Gloves
7	Clothing	Jerseys
8	Clothing	Shorts
9	Clothing	Socks
10	Clothing	Tights
11	Clothing	Vests
12	Accessories	Bike Racks
13	Accessories	Bike Stands
14	Accessories	Bottles and Cages

	1.2 Bikes	1.2 Components	1.2 Clothing	1.2 Accessories
1	*3*	*14*	*8*	*12*

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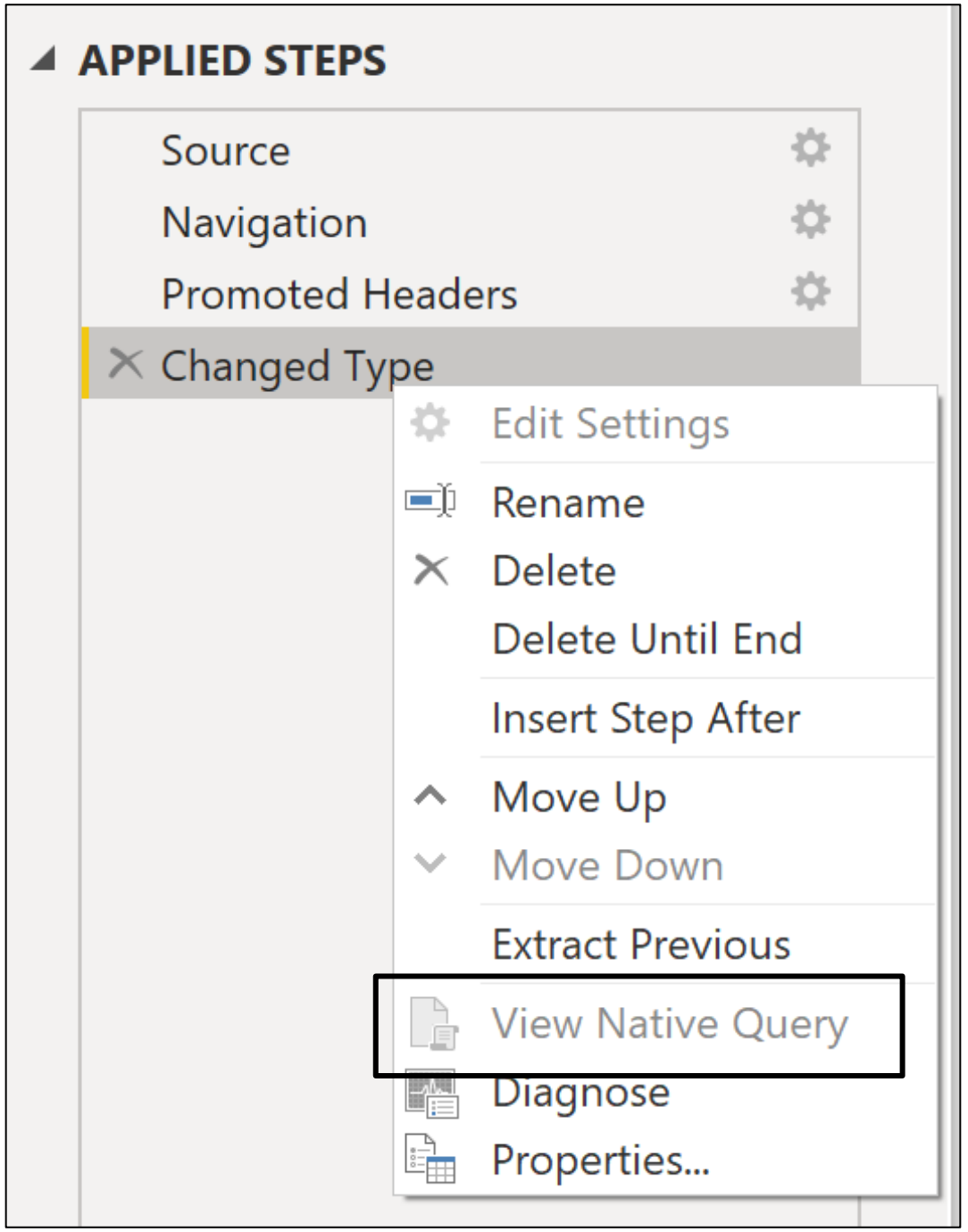
Query folding

Pushes data transformations to the source for better performance and efficiency.

Supported sources

- Relational databases
- OData feeds
- Active Directory



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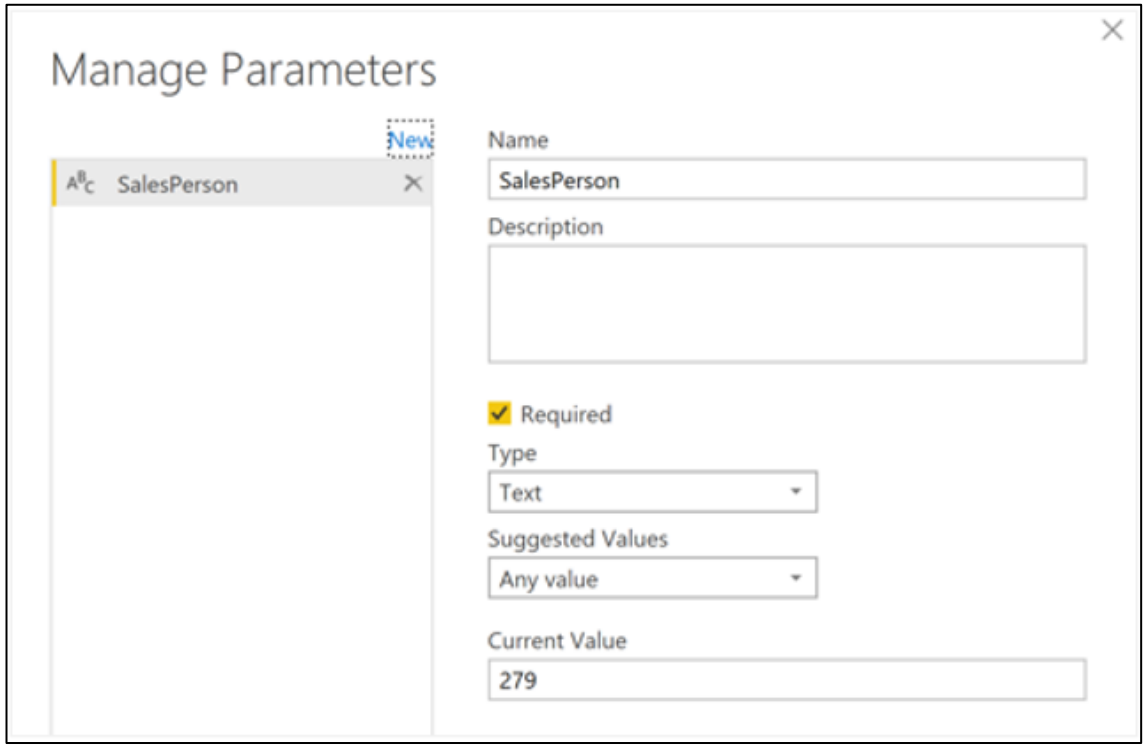
Dynamic reports with parameters



	SalesOrderNumber	SalesOrderID	SalesPersonID
1	SO43659	43659	279
2	SO43660	43660	279
3	SO43681	43681	279
4	SO43684	43684	279
5	SO43685	43685	279
6	SO43694	43694	279
7	SO43695	43695	279
8	SO43696	43696	279

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Performance recommendations

- Only keep necessary data
- Check data types
- Reduce cardinality
- Disable query load
- Use parameters

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Lab: Load data in Power BI Desktop (45 minutes)

Load Data | GitHub Exercise

In this lab, you'll apply transformations to each of the queries created in the previous lab. You'll then apply the queries to load each as a table to the data model.

In this lab you learn how to:

- Apply various transformations
- Apply queries to load them to the data model

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Knowledge check: clean and transform data

What is a risk of having null values in a numeric column?

- ☐ That function SUM of data are incorrect.
- ☐ That function MAX of data will be incorrect.
- ☑ That function AVERAGE of data will be incorrect.

If you have two queries that have different data but the same column headers, and you want to combine both tables into one query with all the combined rows, which operation should you perform?

- ☑ Append
- ☐ Merge
- ☐ Combine

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Recap

In this section, we covered:

Connecting to various data sources.

Determining the right storage mode.

Profiling data for accuracy and insights.

Cleaning, transforming, and loading data.

Using Query Folding for appropriate sources.

Recommendations for more performant reports.

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Thanks

Resources

Prepare data for analysis

Clean, transform, and load data in Power BI