

# What is Power Query?

Power Query is a data transformation and data preparation engine. Power Query comes with a graphical interface for getting data from sources and a Power Query Editor for applying transformations. Because the engine is available in many products and services, the destination where the data will be stored depends on where Power Query was used. Using Power Query, you can perform the extract, transform, and load (ETL) processing of data.

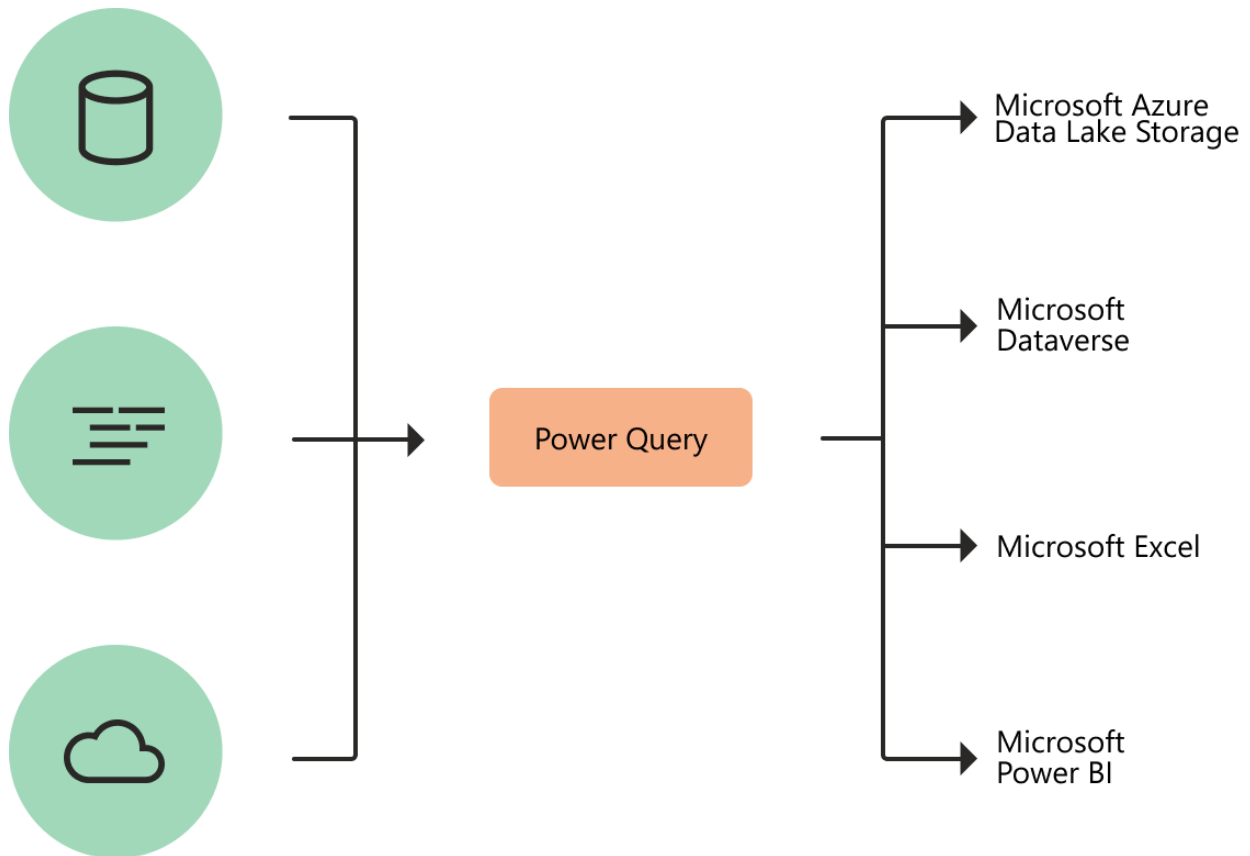


Diagram with symbolized data sources on the left, passing through Power Query for transformation, and then going to various destinations, such as Azure Data Lake Storage, Dataverse, Microsoft Excel, or Power BI.

## How Power Query helps with data acquisition

Business users spend up to 80 percent of their time on data preparation, which delays the work of analysis and decision-making. Several challenges contribute to this situation, and Power Query helps address many of them.

**Existing challenge**

Finding and connecting to data is too difficult

Experiences for data connectivity are too fragmented

Data often needs to be reshaped before consumption

Any shaping is one-off and not repeatable

Volume (data sizes), velocity (rate of change), and variety (breadth of data sources and data shapes)

**How does Power Query help?**

Power Query enables connectivity to a wide range of data sources, including data of all sizes and shapes.

Consistency of experience, and parity of query capabilities over all data sources.

Highly interactive and intuitive experience for rapidly and iteratively building queries over any data source, of any size.

When using Power Query to access and transform data, you define a repeatable process (query) that can be easily refreshed in the future to get up-to-date data.

In the event that you need to modify the process or query to account for underlying data or schema changes, you can use the same interactive and intuitive experience you used when you initially defined the query.

Power Query offers the ability to work against a subset of the entire dataset to define the required data transformations, allowing you to easily filter down and transform your data to a manageable size.

Power Query queries can be refreshed manually or by taking advantage of scheduled refresh capabilities in specific products (such as Power BI) or even programmatically (by using the Excel object model).

Because Power Query provides connectivity to hundreds of data sources and over 350 different types of data transformations for each of these sources, you can work with data from any source and in any shape.

## Power Query experiences

The Power Query user experience is provided through the Power Query Editor user interface. The goal of this interface is to help you apply the transformations you need simply by interacting with a user-friendly set of ribbons, menus, buttons, and other interactive components.

The Power Query Editor is the primary data preparation experience, where you can connect to a wide range of data sources and apply hundreds of different data transformations by previewing data and selecting transformations from the UI. These data transformation capabilities are common across all data sources, whatever the underlying data source limitations.

When you create a new transformation step by interacting with the components of the Power Query interface, Power Query automatically creates the M code required to do the transformation so you don't need to write any code.

Currently, two Power Query experiences are available:

- **Power Query Online**—Found in integrations such as Power BI dataflows, Microsoft Power Platform dataflows, Azure Data Factory wrangling dataflows, and many more that provide the experience through an online webpage.
- **Power Query for Desktop**—Found in integrations such as Power Query for Excel and Power BI Desktop.

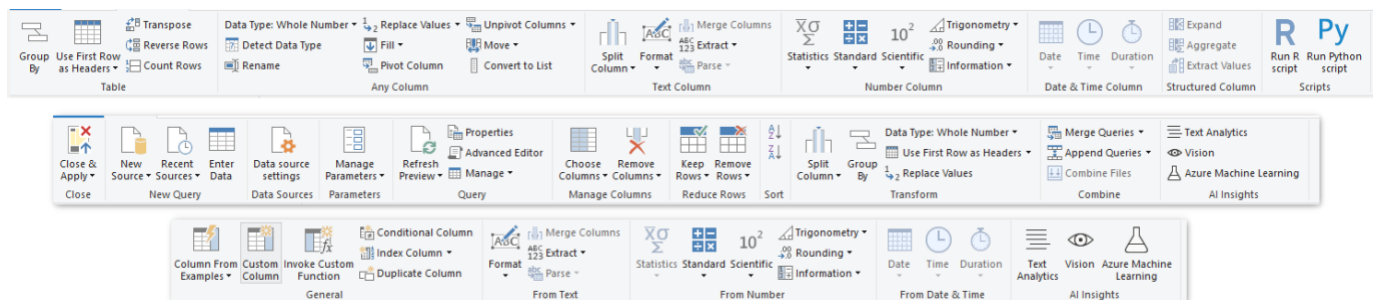
## Note

Although two Power Query experiences exist, they both provide almost the same user experience in every scenario.

## Transformations

The transformation engine in Power Query includes many prebuilt transformation functions that can be used through the graphical interface of the Power Query Editor. These transformations can be as simple as removing a column or filtering rows, or as common as using the first row as a table header. There are also advanced transformation options such as merge, append, group by, pivot, and unpivot.

All these transformations are made possible by choosing the transformation option in the menu, and then applying the options required for that transformation. The following illustration shows a few of the transformations available in Power Query Editor.



## Dataflows

Power Query can be used in many products, such as Power BI and Excel. However, using Power Query within a product limits its usage to only that specific product. *Dataflows* are a product-agnostic service version of the Power Query experience that runs in the cloud. Using dataflows, you can get data and transform data in the same way, but instead of sending the output to Power BI or Excel, you can store

the output in other storage options such as Dataverse or Azure Data Lake Storage. This way, you can use the output of dataflows in other products and services.

## Power Query M formula language

In any data transformation scenario, there are some transformations that can't be done in the best way by using the graphical editor. Some of these transformations might require special configurations and settings that the graphical interface doesn't currently support. The Power Query engine uses a scripting language behind the scenes for all Power Query transformations: the Power Query M formula language, also known as M.

The M language is the data transformation language of Power Query. Anything that happens in the query is ultimately written in M. If you want to do advanced transformations using the Power Query engine, you can use the Advanced Editor to access the script of the query and modify it as you want. If you find that the user interface functions and transformations won't perform the exact changes you need, use the Advanced Editor and the M language to fine-tune your functions and transformations.

### Power Query M Copy

```
let
    Source = Exchange.Contents("xyz@contoso.com"),
    Mail1 = Source{[Name="Mail"]}[Data],
    #"Expanded Sender" = Table.ExpandRecordColumn(Mail1, "Sender", {"Name"},
{"Name"}),
    #"Filtered Rows" = Table.SelectRows(#"Expanded Sender", each ([HasAttachments] =
true)),
    #"Filtered Rows1" = Table.SelectRows(#"Filtered Rows", each ([Subject] = "sample
files for email PQ test") and ([Folder Path] = "\Inbox\")),
    #"Removed Other Columns" = Table.SelectColumns(#"Filtered
Rows1",{"Attachments"}),
    #"Expanded Attachments" = Table.ExpandTableColumn(#"Removed Other Columns",
"Attachments", {"Name", "AttachmentContent"}, {"Name", "AttachmentContent"}),
    #"Filtered Hidden Files1" = Table.SelectRows(#"Expanded Attachments", each
[Attributes]?[Hidden]? <> true),
    #"Invoke Custom Function1" = Table.AddColumn(#"Filtered Hidden Files1",
"Transform File from Mail", each #"Transform File from Mail"([AttachmentContent])),
    #"Removed Other Columns1" = Table.SelectColumns(#"Invoke Custom Function1",
{"Transform File from Mail"}),
    #"Expanded Table Column1" = Table.ExpandTableColumn(#"Removed Other Columns1",
"Transform File from Mail", Table.ColumnNames(#"Transform File from Mail"("#Sample
File"))),
    #"Changed Type" = Table.TransformColumnTypes(#"Expanded Table
Column1",{{"Column1", type text}, {"Column2", type text}, {"Column3", type text},
{"Column4", type text}, {"Column5", type text}, {"Column6", type text}, {"Column7",
type text}, {"Column8", type text}, {"Column9", type text}, {"Column10", type text}})
in
    #"Changed Type"
```

More information: [Power Query M formula language](#)

## Where can you use Power Query?

The following table lists Microsoft products and services where Power Query can be found.

Product	M engine <sup>1</sup>	Power Query Desktop <sup>2</sup>	Power Query Online <sup>3</sup>	Dataflows <sup>4</sup>
Excel for Windows	Yes	Yes	No	No
Excel for Mac	Yes	No	No	No
Power BI	Yes	Yes	Yes	Yes
Power Apps	Yes	No	Yes	Yes
Power Automate	Yes	No	Yes	No
Power BI Report Server	Yes	Yes	No	No
Azure Data Factory	Yes	No	Yes	Yes
SQL Server Integration Services	Yes	No	No	No
SQL Server Analysis Services	Yes	Yes	No	No
Dynamics 365 Customer Insights	Yes	No	Yes	Yes
<sup>1</sup> M engine	The underlying query execution engine that runs queries expressed in the Power Query formula language ("M").			
<sup>2</sup> Power Query Desktop	The Power Query experience found in desktop applications.			
<sup>3</sup> Power Query Online	The Power Query experience found in web browser applications.			
<sup>4</sup> Dataflows	Power Query as a service that runs in the cloud and is product-agnostic. The stored result can be used in other applications as services.			

## The Power Query user interface

With Power Query, you can connect to many different data sources and transform the data into the shape you want.

In this article, you'll learn how to create queries with Power Query by discovering:

- How the "Get Data" experience works in Power Query.
- How to use and take advantage of the Power Query user interface.
- How to perform common transformations like grouping and merging data.

Examples in this article connect to and use the [Northwind OData feed](https://services.odata.org/V4/Northwind/Northwind.svc/).

Copy

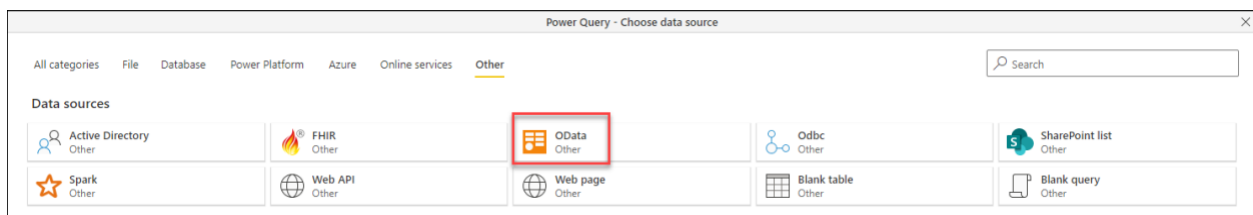
`https://services.odata.org/V4/Northwind/Northwind.svc/`

## Connect to an OData feed

### Note

To learn more about where to get data from each of the Microsoft products that include Power Query, go to [Where to get data](#).

To start, locate the **OData** feed connector from the "Get Data" experience. You can select the **Other** category from the top, or search for **OData** in the search bar in the top-right corner.



Once you select this connector, the screen displays the connection settings and credentials.

- For **URL**, enter the URL to the Northwind OData feed shown in the previous section.
- For **On-premises data gateway**, leave as none.
- For **Authentication kind**, leave as anonymous.

Select the **Next** button.

Power Query - Connect to data source

**OData**  
Other

Connection settings

URL  
<https://services.odata.org/V4/Northwind/Northwind>

Connection credentials

On-premises data gateway  
 (none)

Authentication kind  
 Anonymous

Back Cancel Next

The **Navigator** now opens, where you select the tables you want to connect to from the data source. Select the **Customers** table to load a preview of the data, and then select **Transform data**.

Power Query - Choose data

Search

Display options

OData [26]

- Alphabetical\_list\_of\_pro...
- Categories
- Category\_Sales\_for\_1997
- Current\_Product\_Lists
- Customer\_and\_Supplier...
- CustomerDemographics
- Customers**
- Employees
- Invoices
- Order\_Details
- Order\_Details\_Extendeds
- Order\_Subtotals
- Orders
- Orders\_Qries
- Product\_Sales\_for\_1997
- Products
- Products\_Above\_Average

Select related tables

Customers

ab cd	CustomerID	ab cd	CompanyName	ab cd	ContactName	ab cd	ContactTitle	ab cd	Address
ALFKI			Alfreds Futterkiste		Maria Anders		Sales Representative		Obere Str. 57
ANATR			Ana Trujillo Emparedados y helad...		Ana Trujillo		Owner		Avda. de la Constitu...
ANTON			Antonio Moreno Taquería		Antonio Moreno		Owner		Mataderos 2312
AROUT			Around the Horn		Thomas Hardy		Sales Representative		120 Hanover Sq.
BERGS			Berglunds snabbköp		Christina Berglund		Order Administrator		Berguvsvägen 8
BLAUS			Blauer See Delikatessen		Hanna Moos		Sales Representative		Forsterstr. 57
BLONP			Blondesddsl père et fils		Frédérique Citeaux		Marketing Manager		24, place Kléber
BOLID			Bólido Comidas preparadas		Martín Sommer		Owner		C/ Araquil, 67
BONAP			Bon app'		Laurence Lebihan		Owner		12, rue des Boucher...
BOTTM			Bottom-Dollar Markets		Elizabeth Lincoln		Accounting Manager		23 Tsawassen Blvd.
BSBEV			B's Beverages		Victoria Ashworth		Sales Representative		Fauntleroy Circus
CACTU			Cactus Comidas para llevar		Patricio Simpson		Sales Agent		Cerrito 333
CENTC			Centro comercial Moctezuma		Francisco Chang		Marketing Manager		Sierras de Granada 5
CHOPS			Chop-suey Chinese		Yang Wang		Owner		Hauptstr. 29
COMMI			Comércio Mineiro		Pedro Afonso		Sales Associate		Av. dos Lusíadas, 23
CONSH			Consolidated Holdings		Elizabeth Brown		Sales Representative		Berkeley Gardens 12
DRACD			Drachenblut Delikatessen		Sven Ottlieb		Order Administrator		Walsenweg 21
DUMON			Du monde entier		Janine Labrune		Owner		67, rue des Cinquant
EASTC			Eastern Connection		Ann Devon		Sales Agent		35 King George
ERNSH			Ernst Handel		Roland Mendel		Sales Manager		Kirchgasse 6
FAMIA			Familia Arquibaldo		Aria Cruz		Marketing Assistant		Rua Orós, 92
FISSA			FISSA Fábrica Inter. Saichichas S.A.		Dienn Roel		Accounting Manager		C/ Moralzarzal 86

Back Cancel Transform data

The dialog then loads the data from the Customers table into the Power Query editor.

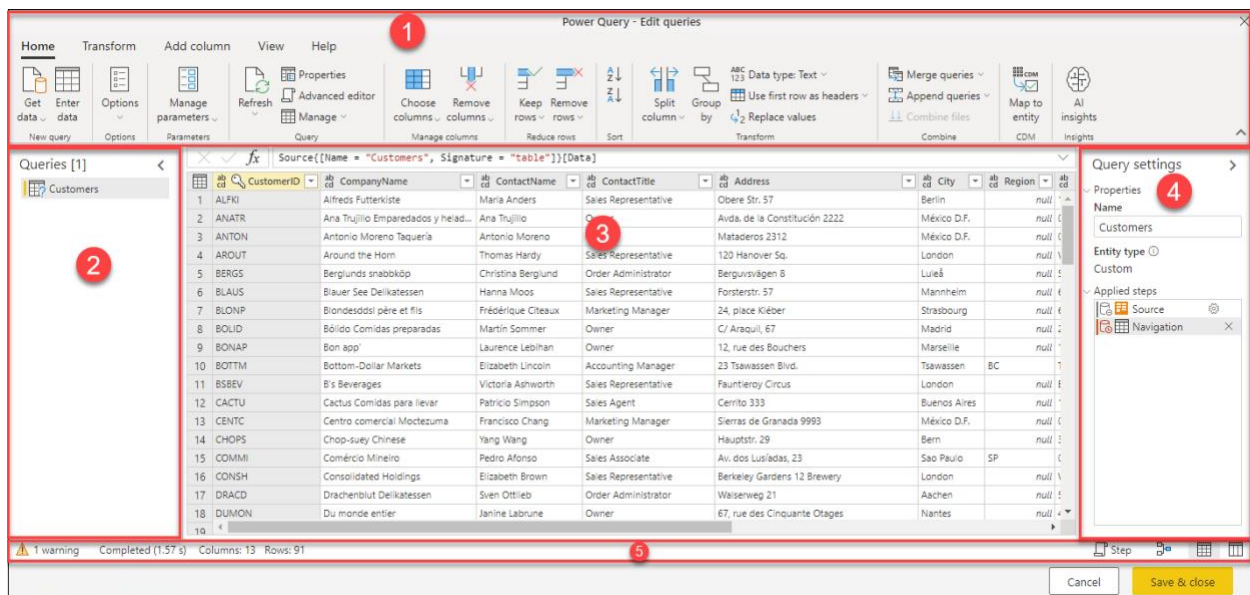
The above experience of connecting to your data, specifying the authentication method, and selecting the specific object or table to connect to is called the *get data experience* and is documented with further detail in the [Getting data](#) article.

## Note

To learn more about the OData feed connector, go to [OData feed](#).

## The Power Query editor user experience

The Power Query editor represents the Power Query user interface, where you can add or modify queries, manage queries by grouping or adding descriptions to query steps, or visualize your queries and their structure with different views. The Power Query user interface has five distinct components.



1. **Ribbon:** the ribbon navigation experience, which provides multiple tabs to add transforms, select options for your query, and access different ribbon buttons to complete various tasks.
2. **Queries pane:** a view of all your available queries.
3. **Current view:** your main working view, that by default, displays a preview of the data for your query. You can also enable the [diagram view](#) along with the data preview view. You can also switch between the [schema view](#) and the data preview view while maintaining the diagram view.
4. **Query settings:** a view of the currently selected query with relevant information, such as query name, query steps, and various indicators.



5. **Status bar:** a bar displaying relevant important information about your query, such as execution time, total columns and rows, and processing status. This bar also contains buttons to change your current view.

### Note

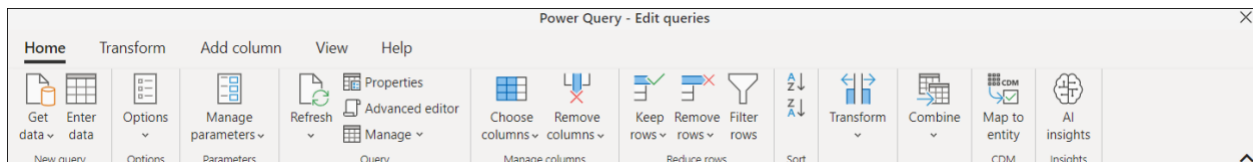
The schema and diagram view are currently only available in Power Query Online.

## Using the Power Query editor

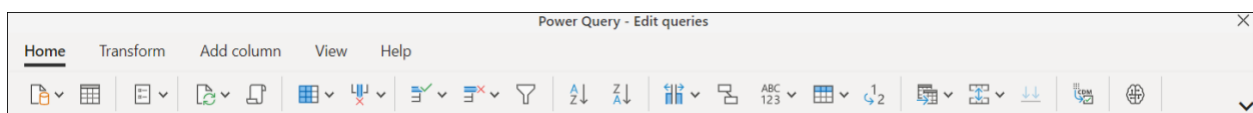
In this section, you'll begin transforming your data using Power Query. But before you start working on transforming the data, we'll discuss some of the UI panes that can be expanded or collapsed depending on their context. Selecting the appropriate panes lets you focus on the view that matters the most to you. We'll also discuss the different views that are available in the Power Query UI.

### The ribbon

The ribbon is the component where you'll find most of the transforms and actions that you can do in the Power Query editor. It has multiple tabs, whose values depend on the product integration. Each of the tabs provides specific buttons and options, some of which might be redundant across the whole Power Query experience. These buttons and options provide you with easy access to the transforms and actions that you may need.



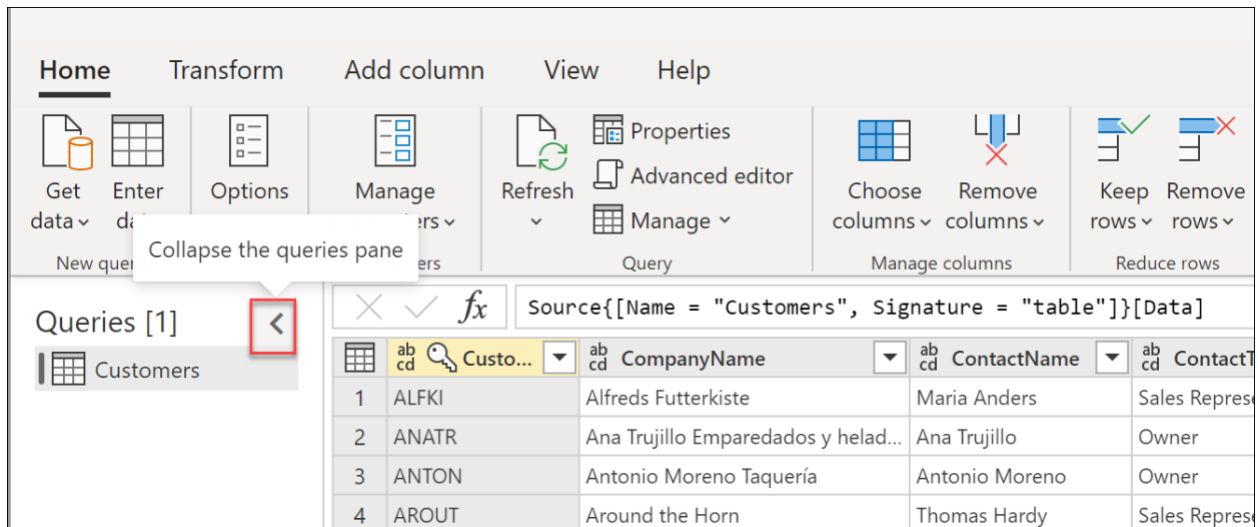
The Power Query interface is responsive and tries to adjust your screen resolution to show you the best experience. In scenarios where you'd like to use a compact version of the ribbon, there's also a collapse button at the bottom-right corner of the ribbon to help you switch to the compact ribbon.



You can switch back to the standard ribbon view by simply clicking on the expand icon at the bottom-right corner of the ribbon

## Expand and collapse panes

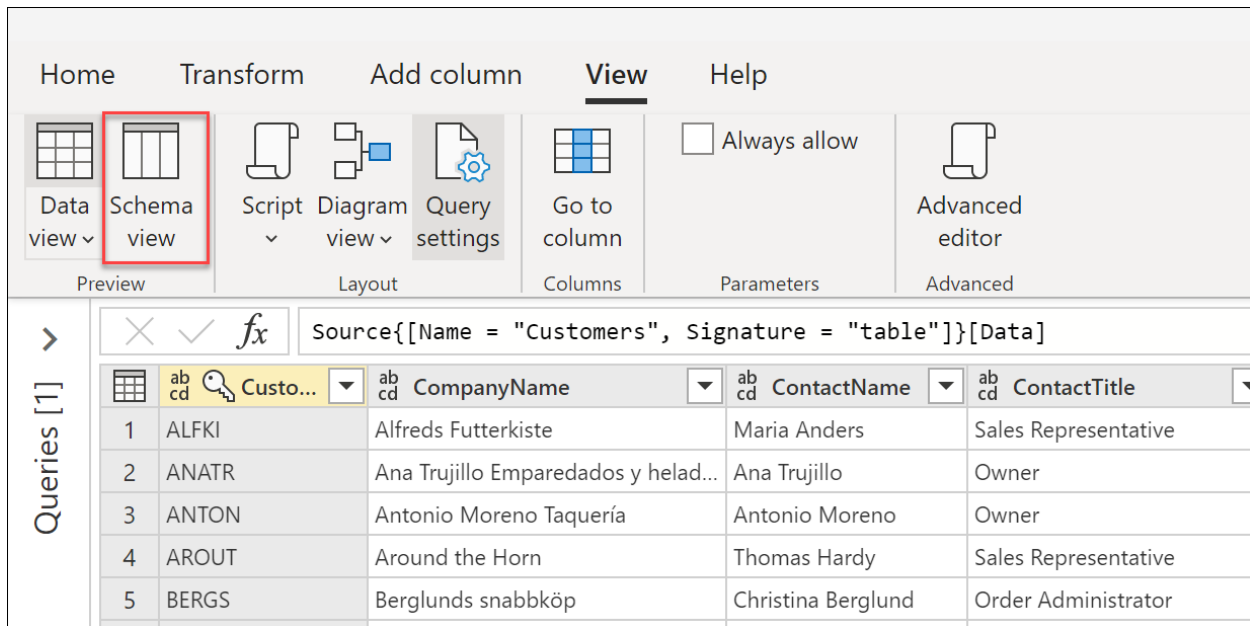
You'll notice that throughout the Power Query user interface there are icons that help you collapse or expand certain views or sections. For example, there's an icon on the top right-hand corner of the Queries pane that collapses the queries pane when selected, and expands the pane when selected again.



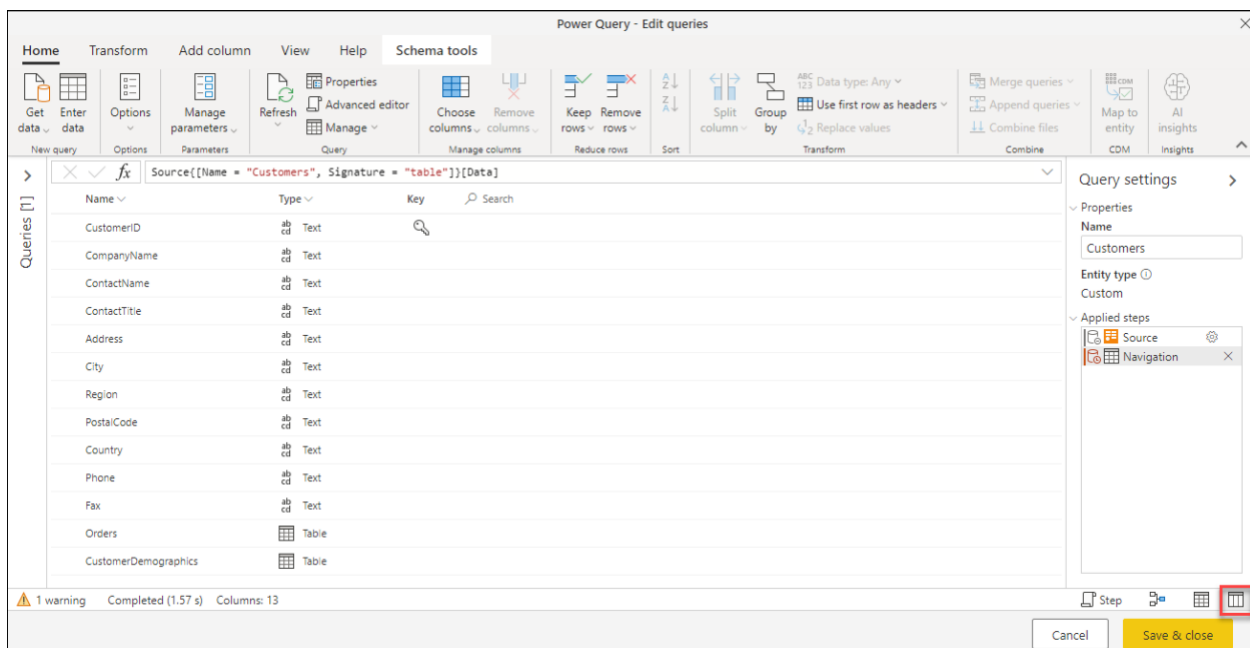
## Switch between views

Apart from being able to collapse certain panes and sections in the Power Query user interface, you can also switch what views are displayed. To switch views, go to the **View** tab in the ribbon and you'll find the **Preview** and **Layout** groups, which control how the Power Query user interface will look.

You're encouraged to try all of these options to find the view and layout that you feel most comfortable working with. As an example, select **Schema view** from the ribbon.



The right side of the status bar also contains icons for the diagram, data, and schema views. You can use these icons to change between views. You can also use these icons to enable or disable the view of your choice.



## What is schema view

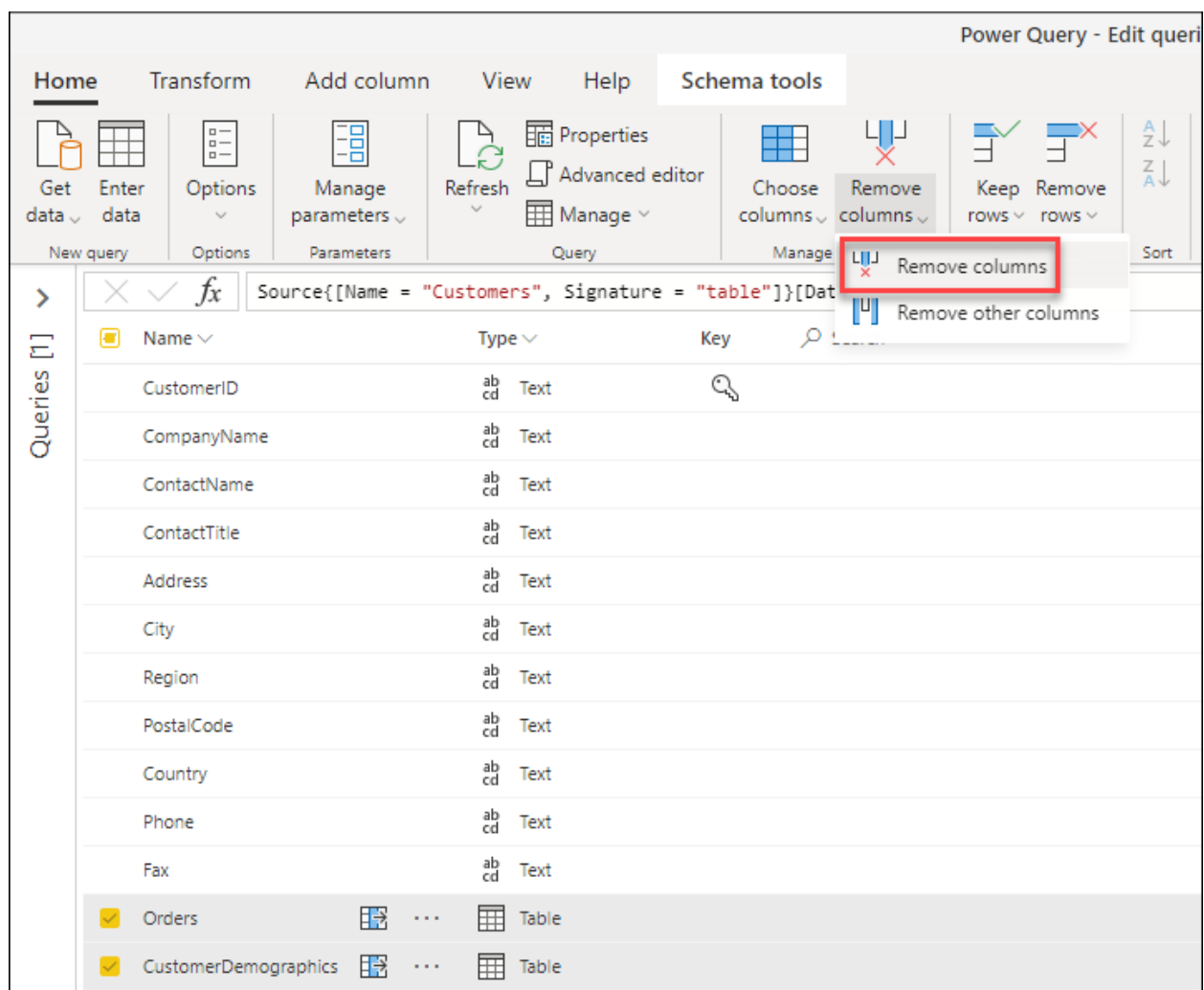
The schema view offers you a quick and straightforward way to interact only with the components of the schema for your table, such as the column names and data types. We recommend the schema view when you want to do schema-related actions, such as

removing columns, renaming columns, changing column data types, reordering columns, or duplicating columns.

## Note

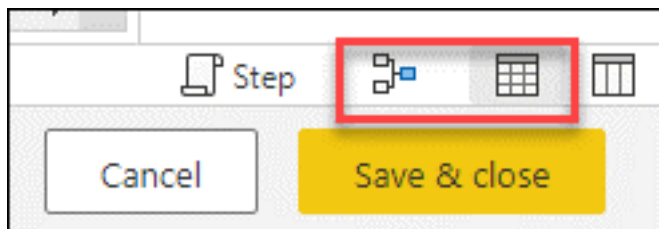
To learn more about schema view, go to [Using Schema view](#).

For example, in schema view, select the check mark next to the **Orders** and **CustomerDemographics** columns, and from the ribbon select the **Remove columns** action. This selection applies a transformation to remove these columns from your data.



What is diagram view

You can now switch back to the data preview view and enable diagram view to use a more visual perspective of your data and query.



The diagram view helps you visualize how your query is structured and how it might interact with other queries in your project. Each step in your query has a distinct icon to help you recognize the transform that was used. There are also lines that connect steps to illustrate dependencies. Since both data preview view and diagram view are enabled, the diagram view displays on top of the data preview.

Power Query - Edit queries

Home Transform Add column View Help

Get data Enter data Options Manage parameters Refresh Properties Advanced editor Manage Query Choose columns Remove columns Keep rows Remove rows Sort Split column Group by Data type: Text Use first row as headers Append queries Append queries Combine files Merge queries Map to entity AI insights

Queries [1]

Customers

OData Navigation Remove columns

Table.RemoveColumns(Navigation, {"Orders", "CustomerDemographics"})

	CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone
1	ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obero Str. 57	Berlin	Germany	12209	Germany	030-0074321
2	ANATR	Ana Trujillo Emparedados y helad...	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.	Mexico	05021	Mexico	(5) 555-4729
3	ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312	México D.F.	Mexico	05023	Mexico	(5) 555-3932
4	AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.	London	UK	WA1 1DP	UK	(171) 555-7788
5	BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvägen 8	Luleå	Sweden	S-958 22	Sweden	0921-12 34 65
6	BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57	Mannheim	Germany	68306	Germany	0621-08460
7	BLONP	Blondel's père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber	Strasbourg	France	67000	France	88.60.15.31
8	BOLID	Bólido Comidas preparadas	Martin Sommer	Owner	C/ Araquil, 67	Madrid	Spain	28023	Spain	(91) 555 22 82
9	BONAP	Bon app'	Laurence Leblan	Owner	12, rue des Bouchers	Marseille	France	13008	France	91.24.45.40
10	BOTTM	Bottom-Dollar Markets	Elizabeth Lincoln	Accounting Manager	23 Tsawassen Blvd.	Tsawassen BC	Canada	T2F 8M4	Canada	(604) 555-4729
11	BSEBV	B's Beverages	Victoria Ashworth	Sales Representative	Fauntleroy Circus	London	UK	EC2 5NT	UK	(171) 555-1212
12	CACTU	Cactus Comidas para llevar	Patricio Simpson	Sales Agent	Cerrito 333	Buenos Aires	Argentina	1010	Argentina	(1) 135-5555
13										

Columns: 11 Rows: 91

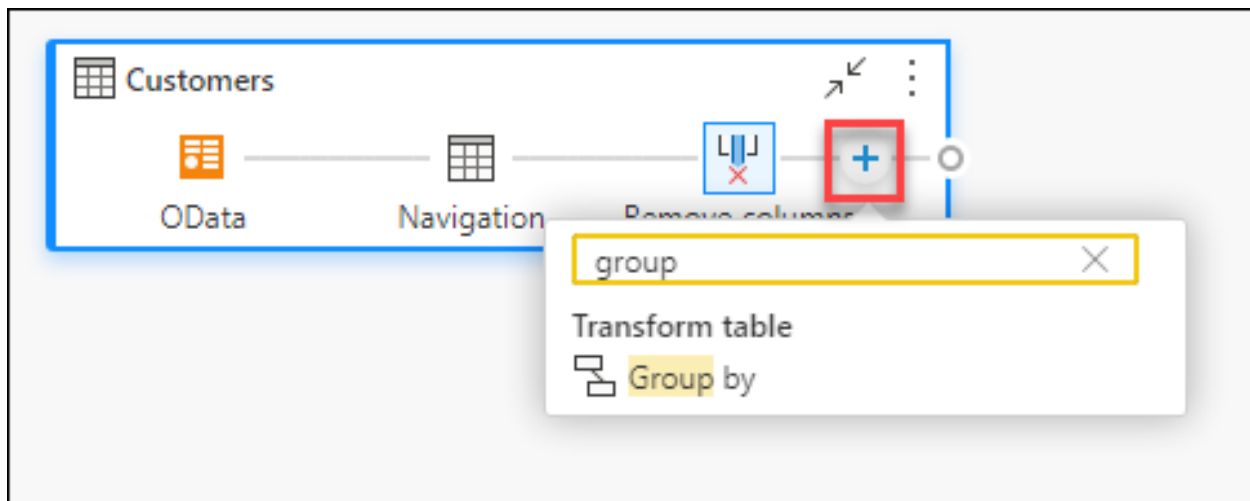
Cancel Save & close

## Note

To learn more about diagram view, go to [Diagram view](#).

Begin transforming your data

With diagram view enabled, select the plus sign. You can search for a new transform to add to your query. Search for **Group by** and select the transform.



The **Group by** dialog then appears. You can set the **Group by** operation to group by the country and count the number of customer rows per country.

1. Keep the **Basic** radio button selected.
2. Select **Country** to group by.
3. Select **Customers** and **Count rows** as the column name and operation respectively.

**Group by** ?

Specify the column to group by and the desired output.

☒ Basic ☐ Advanced

Group by  
Country

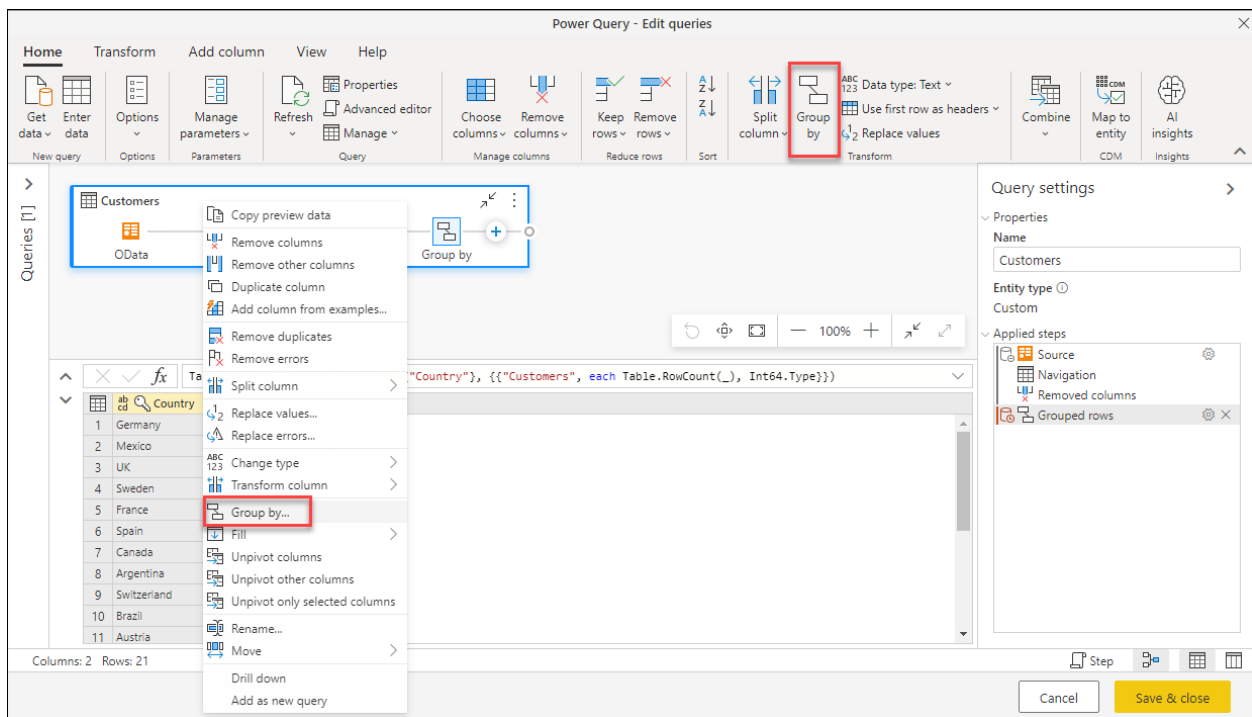
New column name	Operation	Column
Count	Count rows	Customers

☐ Use fuzzy grouping  
 > Fuzzy group options

OK Cancel

Select **OK** to perform the operation. Your data preview refreshes to show the total number of customers by country.

An alternative way to launch the **Group by** dialog would be to use the **Group by** button in the ribbon or by right-clicking the **Country** column.

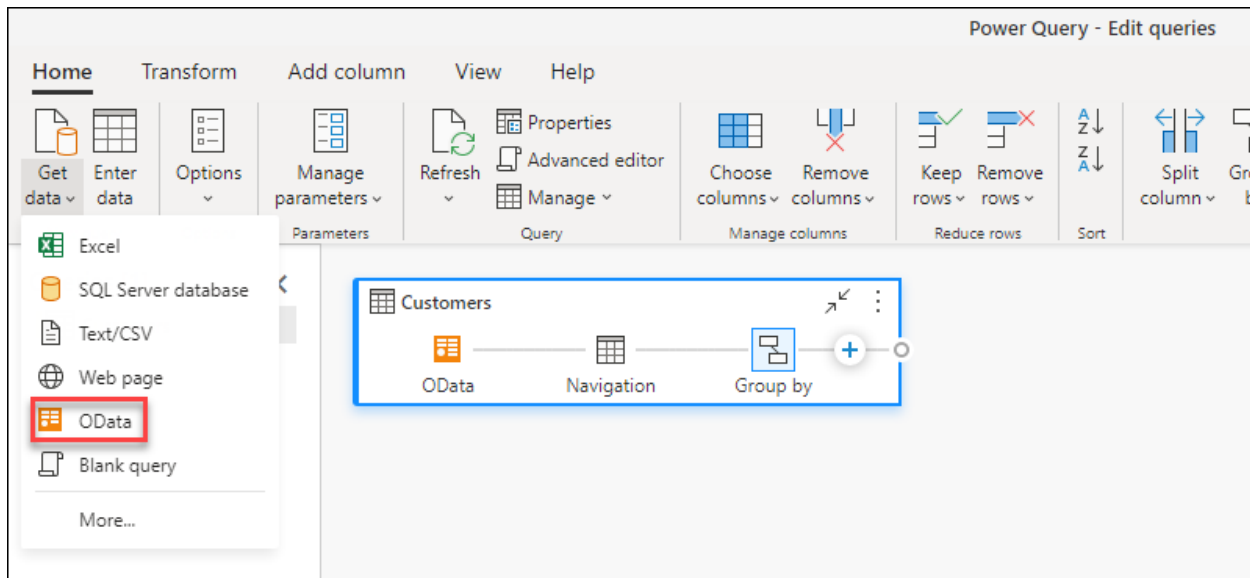


For convenience, transforms in Power Query can often be accessed from multiple places, so users can opt to use the experience they prefer.

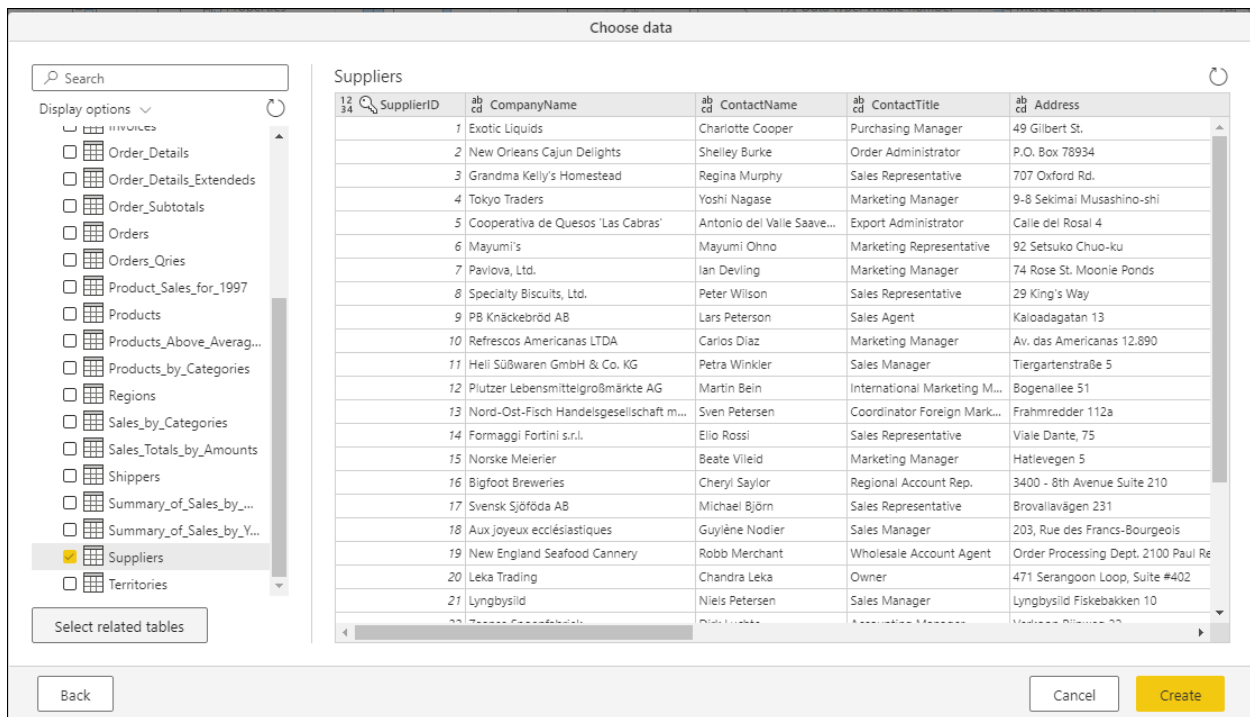
## Adding a new query

Now that you have a query that provides the number of customers per country, you can add context to this data by finding the total number of suppliers for each territory.

First, you'll need to add the **Suppliers** data. Select **Get Data** and from the drop-down menu, and then select **OData**.

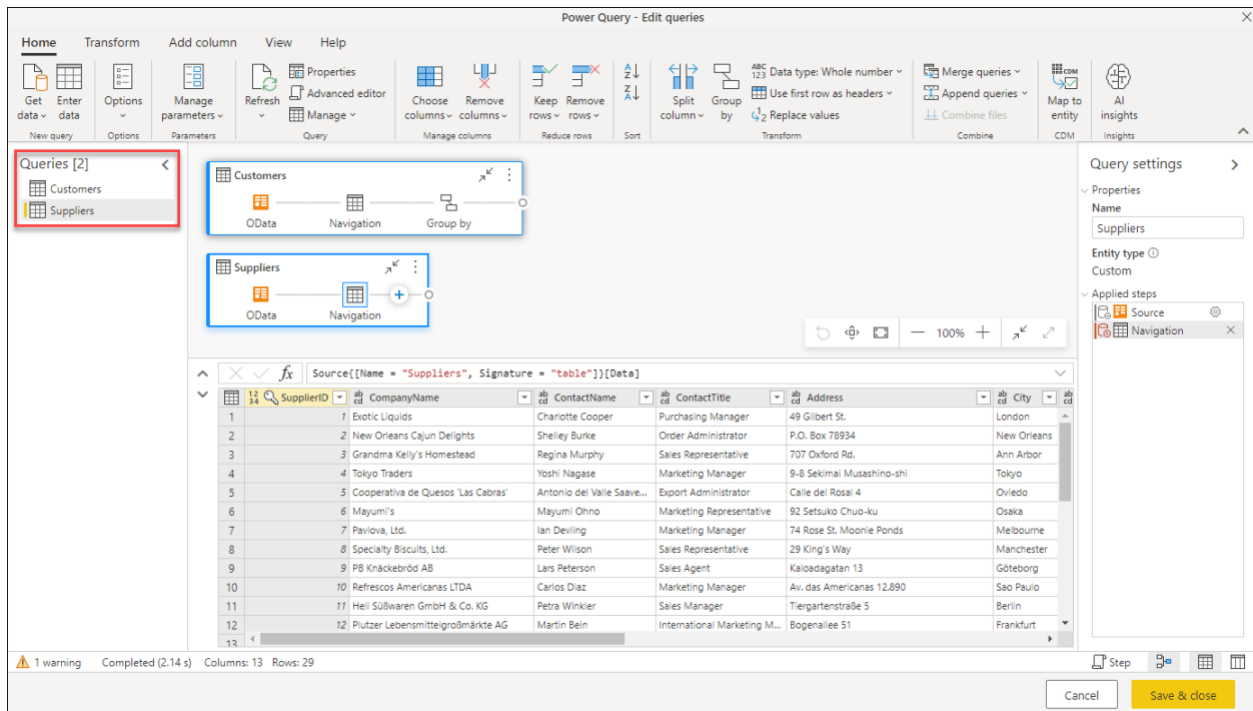


The OData connection experience reappears. Enter the connection settings as described in [Connect to an OData feed](#) to connect to the Northwind OData feed. In the **Navigator** experience, search for and select the **Suppliers** table.

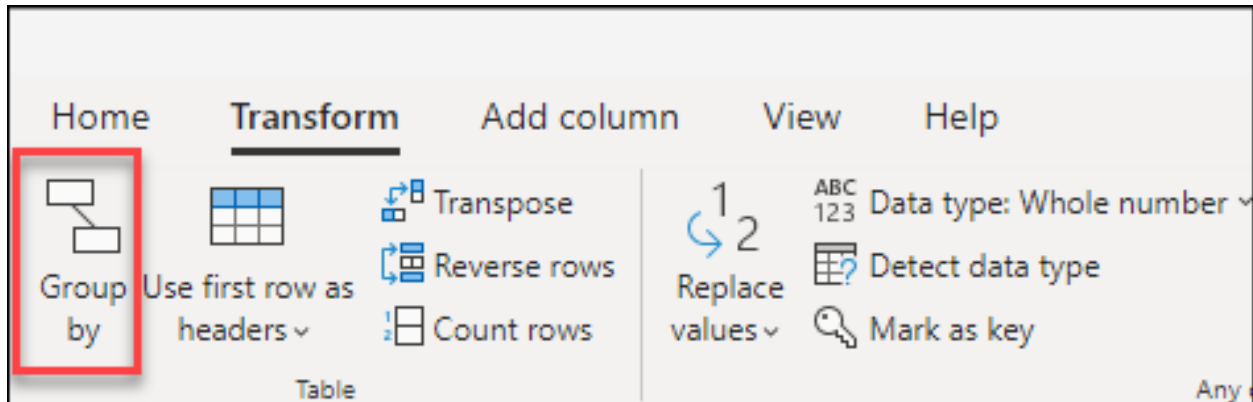


Select **Create** to add the new query to the Power Query editor. The queries pane should now display both the **Customers** and the **Suppliers** query.





Open the **Group by** dialog again, this time by selecting the **Group by** button on the ribbon under the **Transform** tab.



In the **Group by** dialog, set the **Group by** operation to group by the country and count the number of supplier rows per country.

1. Keep the **Basic** radio button selected.
2. Select **Country** to group by.
3. Select **Suppliers** and **Count rows** as the column name and operation respectively.

## Group by

Specify the column to group by and the desired output.

☒ Basic ☐ Advanced

Group by

New column name	Operation	Column
<input type="text" value="Suppliers"/>	<input type="text" value="Count rows"/>	<input type="text"/>

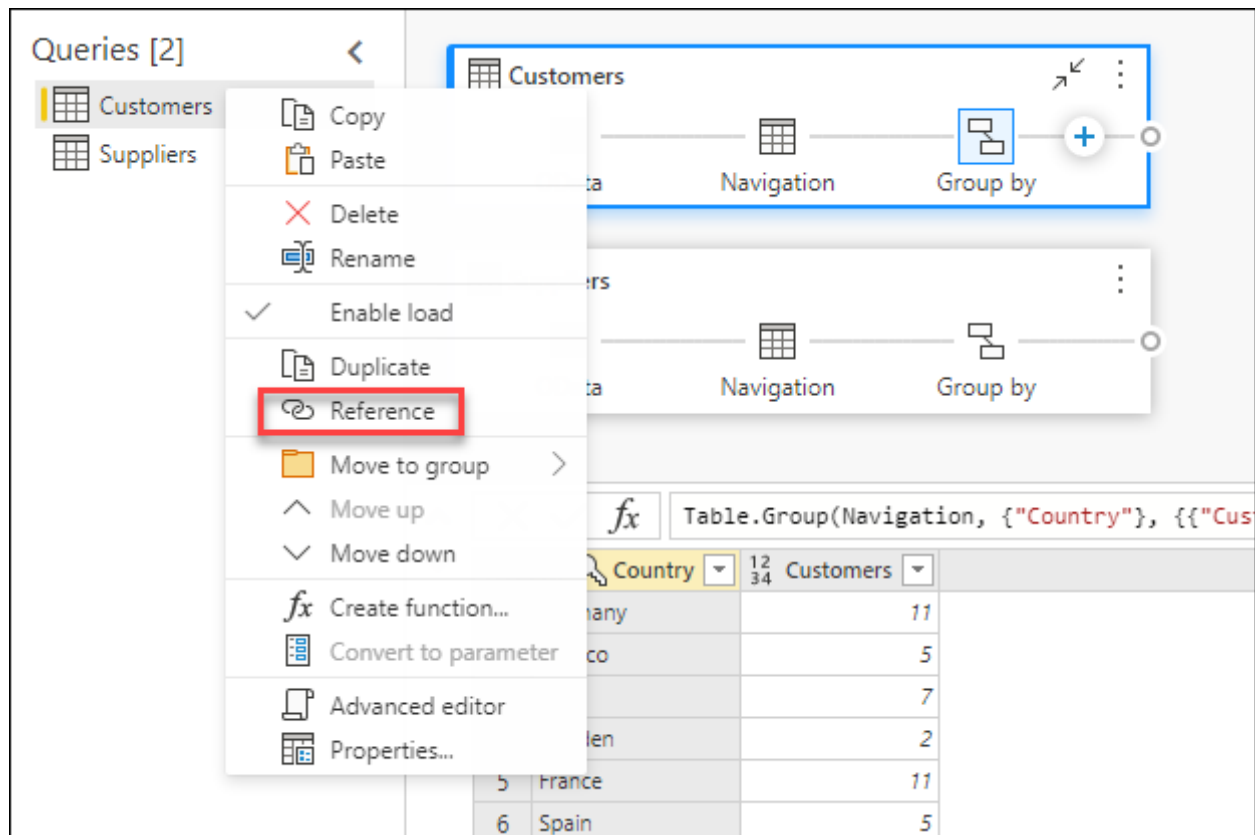
☐ Use fuzzy grouping  
    > Fuzzy group options

### Note

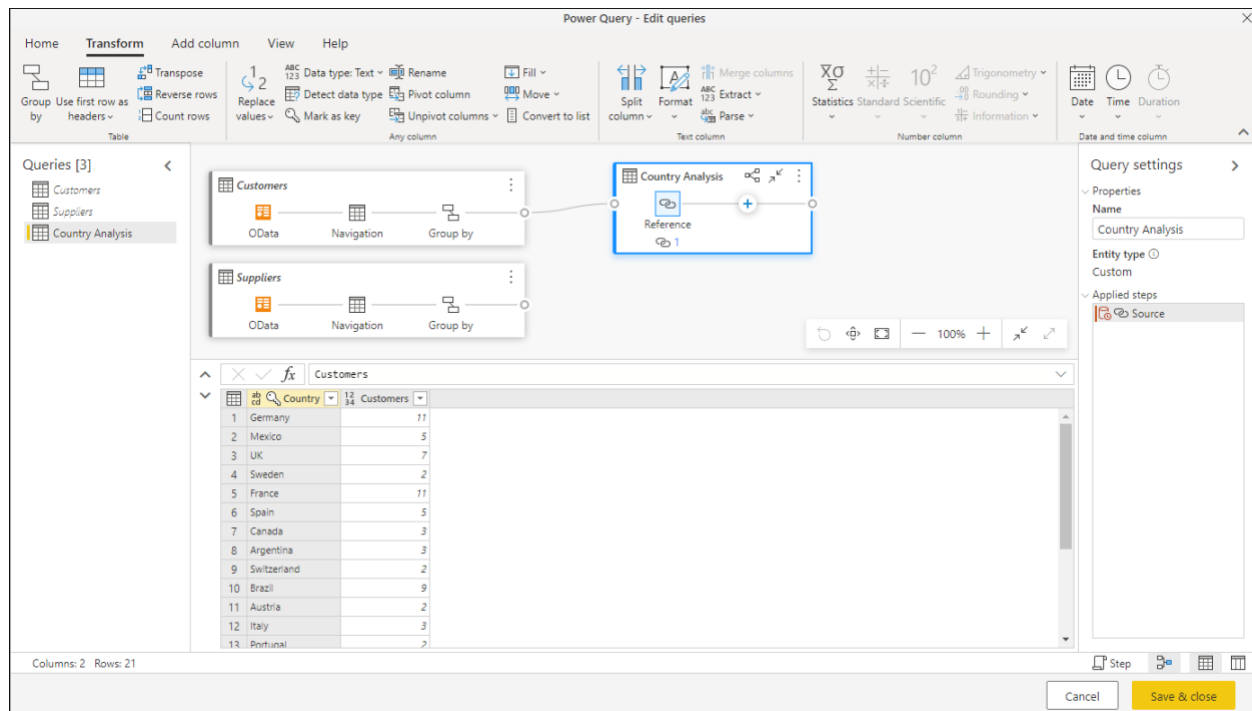
To learn more about the **Group by** transform, go to [Grouping or summarizing rows](#).

## Referencing queries

Now that you have a query for customers and a query for suppliers, your next goal is to combine these queries into one. There are many ways to accomplish this, including using the **Merge** option in the **Customers** table, duplicating a query, or referencing a query. For this example, you'll create a reference by right-clicking the **Customers** table and selecting **Reference**, which effectively creates a new query that references the **Customers** query.



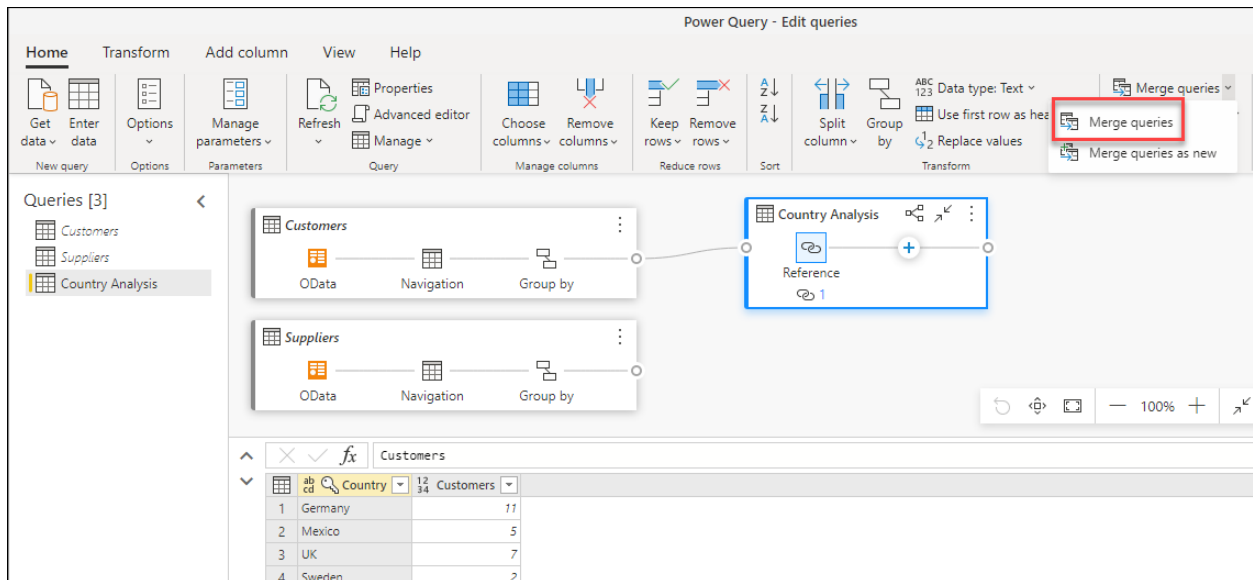
After creating this new query, change the name of the query to **Country Analysis** and disable the load of the **Customers** table by unmarking the **Enable load** option from the **Suppliers** query.



## Merging queries

A **merge queries** operation joins two existing tables together based on matching values from one or multiple columns. In this example, the goal is to join both the **Customers** and **Suppliers** tables into one table only for the countries that have both **Customers** and **Suppliers**.

Inside the **Country Analysis** query, select the **Merge queries** option from the **Home** tab in the ribbon.



A new dialog for the **Merge** operation appears. You can then select the query to merge with your current query. Select the **Suppliers** query and select the **Country** field from both queries. Finally, select the **Inner** join kind, as you only want the countries where you have **Customers** and **Suppliers** for this analysis.

## Merge

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

Country Analysis

ab	Country	12	Customers
cd		34	
	Germany		11
	Mexico		5
	UK		7
	Sweden		2
	France		11

Right table for merge

Suppliers

ab	Country	12	Suppliers
cd		34	
	UK		2
	USA		4
	Japan		2
	Spain		1
	Australia		2

Join kind

Left outer

Right outer

Full outer

Inner

Left anti

Right anti

☐ Use fuzzy matching to perform the merge
 

> Fuzzy matching options

The selection matches 12 rows from both the tables

OK

Cancel

After selecting the **OK** button, a new column is added to your **Country Analysis** query that contains the data from the **Suppliers** query. Select the icon next to the **Suppliers** field, which displays a menu where you can select which fields you want to expand. Select only the **Suppliers** field, and then select the **OK** button.

Table.NestedJoin(Source, {"Country"}, Suppliers, {"Country"}, "Suppliers", JoinKind.Inner)

	Country	Customers	Suppliers
1	Germany	11	[Table]
2	UK	7	[Table]
3	Sweden	2	[Table]
4	USA	13	[Table]
5	France	11	[Table]
6	Spain	5	[Table]
7	Canada	3	[Table]
8	Brazil	9	[Table]
9	Italy	3	[Table]
10	Norway	1	[Table]
11	Denmark	2	[Table]
12	Finland	2	[Table]

Columns: 3 Rows: 12

Search

☒ (Select all)

☐ Country

☒ Suppliers

☒ Use original column name as prefix

OK Cancel

The result of this **expand** operation is a table with only 12 rows. Rename the **Suppliers.Suppliers** field to just **Suppliers** by double-clicking the field name and entering the new name.

Table.RenameColumns("#Expanded Suppliers", {"Suppliers.Suppliers", "Suppliers"})

	Country	Customers	Suppliers
1	Germany	11	3
2	UK	7	2
3	Sweden	2	2
4	USA	13	4
5	France	11	3
6	Spain	5	1
7	Canada	3	2
8	Brazil	9	1
9	Italy	3	2
10	Norway	1	1
11	Denmark	2	1
12	Finland	2	1

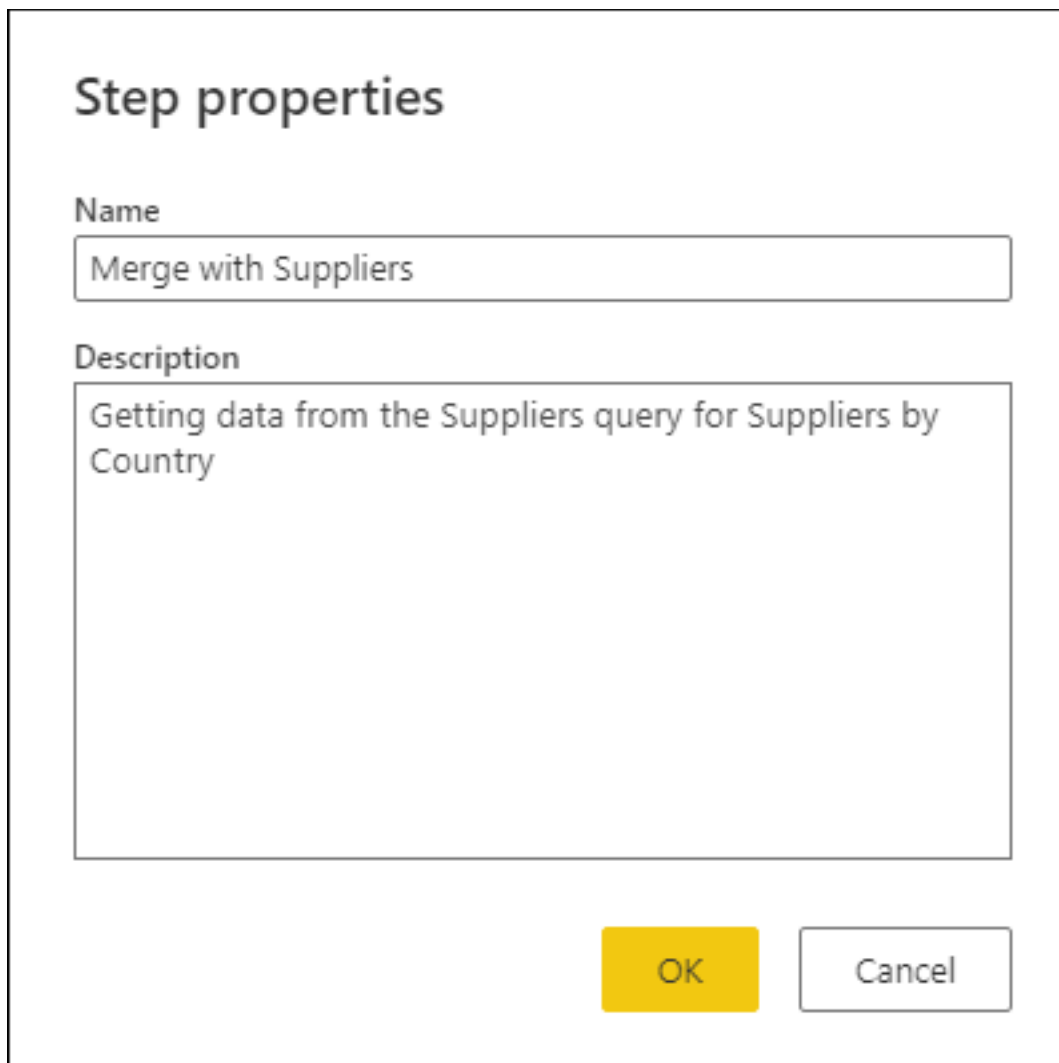
## Note

To learn more about the **Merge queries** feature, go to [Merge queries overview](#).

## Applied steps

Every transformation that is applied to your query is saved as a step in the **Applied steps** section of the query settings pane. If you ever need to check how your query is transformed from step to step, you can select a step and preview how your query resolves at that specific point.

You can also right-click a query and select the **Properties** option to change the name of the query or add a description for the query. For example, right-click the **Merge queries** step from the **Country Analysis** query and change the name of the query to be **Merge with Suppliers** and the description to be **Getting data from the Suppliers query for Suppliers by Country**.

A dialog box titled "Step properties" with a light gray background. It contains two input fields: "Name" with the text "Merge with Suppliers" and "Description" with the text "Getting data from the Suppliers query for Suppliers by Country". At the bottom right, there are two buttons: a yellow "OK" button and a white "Cancel" button with a gray border.

Step properties

Name

Merge with Suppliers

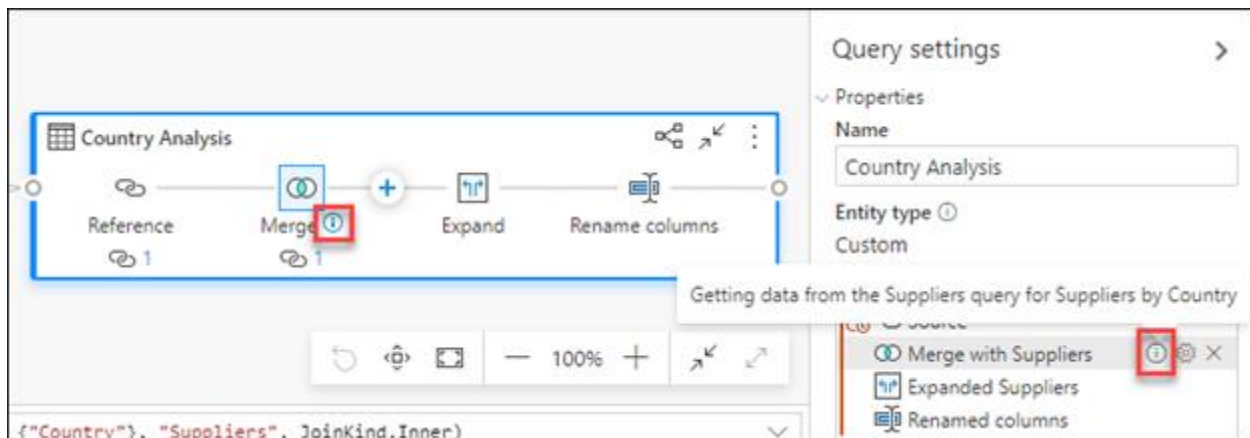
Description

Getting data from the Suppliers query for Suppliers by Country

OK Cancel

This change adds a new icon next to your step that you can hover over to read its description.





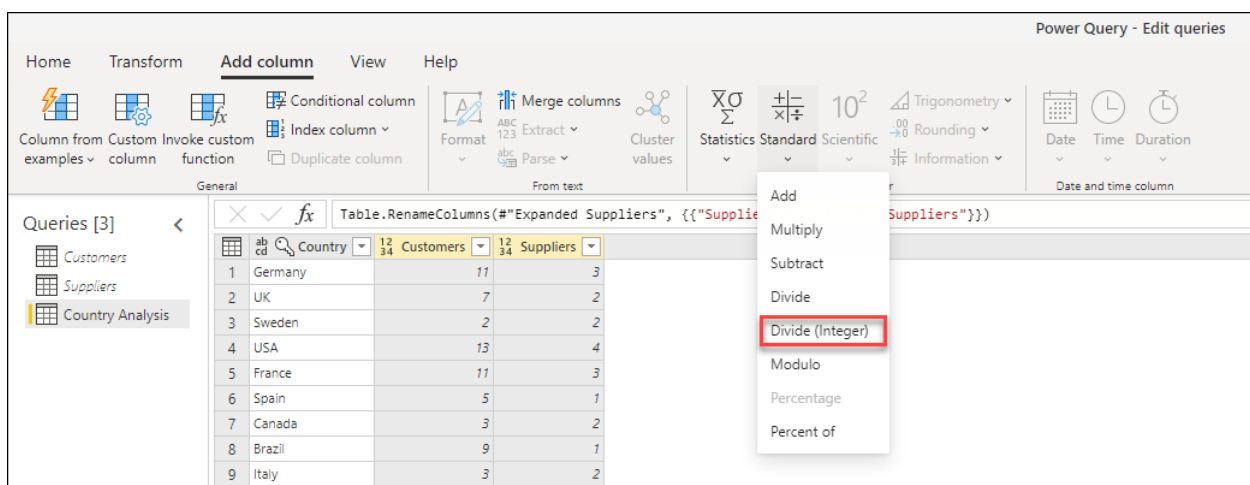
## Note

To learn more about **Applied steps**, go to [Using the Applied Steps list](#).

Before moving on to the next section, disable the **Diagram view** to only use the **Data preview**.

## Adding a new column

With the data for customers and suppliers in a single table, you can now calculate the ratio of customers-to-suppliers for each country. Select the last step of the **Country Analysis** query, and then select both the **Customers** and **Suppliers** columns. In the **Add column** tab in the ribbon and inside the **From number** group, select **Standard**, and then **Divide (Integer)** from the dropdown.

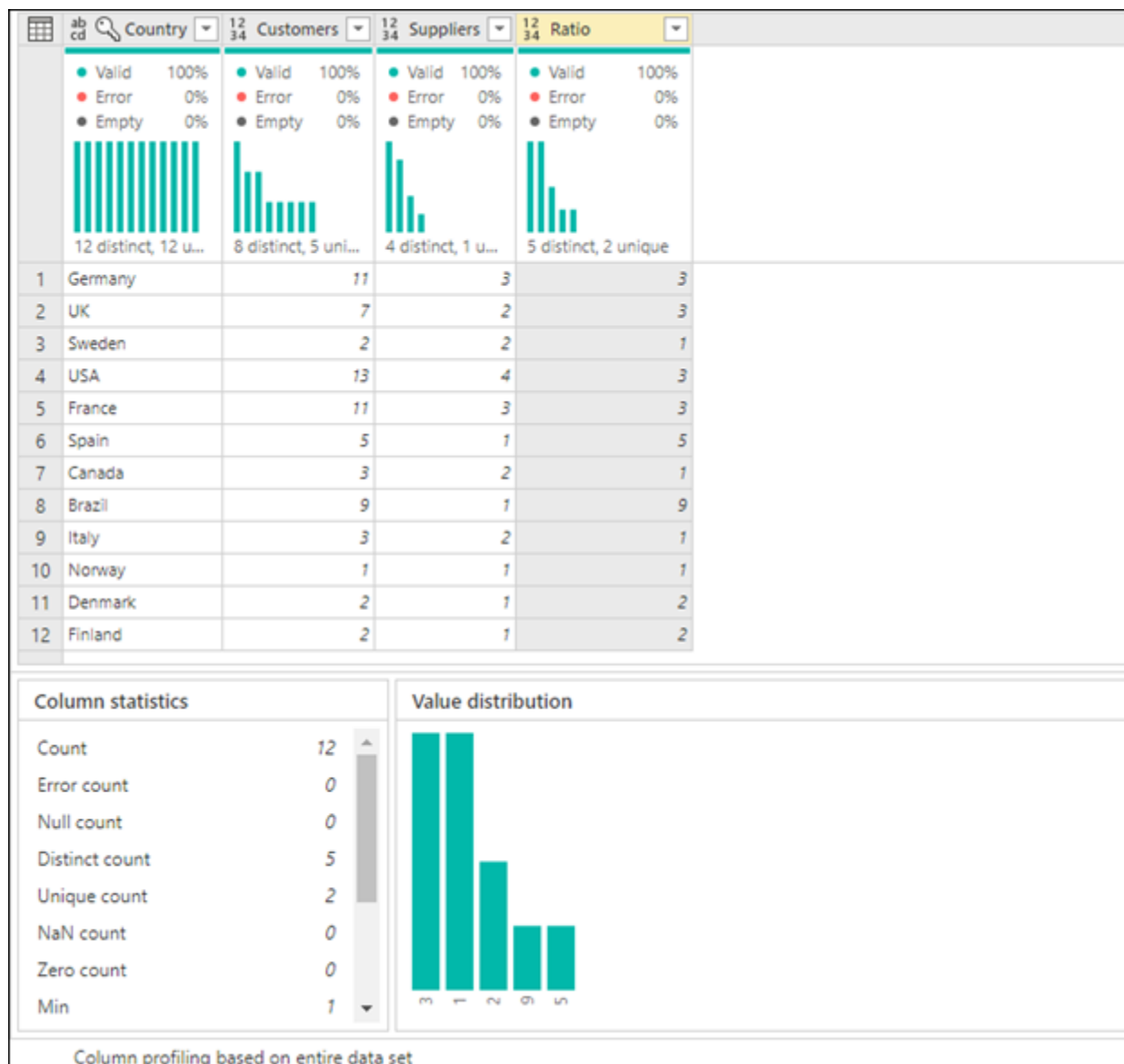


This change creates a new column called **Integer-division** that you can rename to **Ratio**. This change is the final step of your query, and provides the customer-to-supplier ratio for the countries where the data has customers and suppliers.

## Data profiling

Another Power Query feature that can help you better understand your data is **Data Profiling**. By enabling the data profiling features, you'll get feedback about the data inside your query fields, such as value distribution, column quality, and more.

We recommended that you use this feature throughout the development of your queries, but you can always enable and disable the feature at your convenience. The following image shows all the data profiling tools enabled for your **Country Analysis** query.

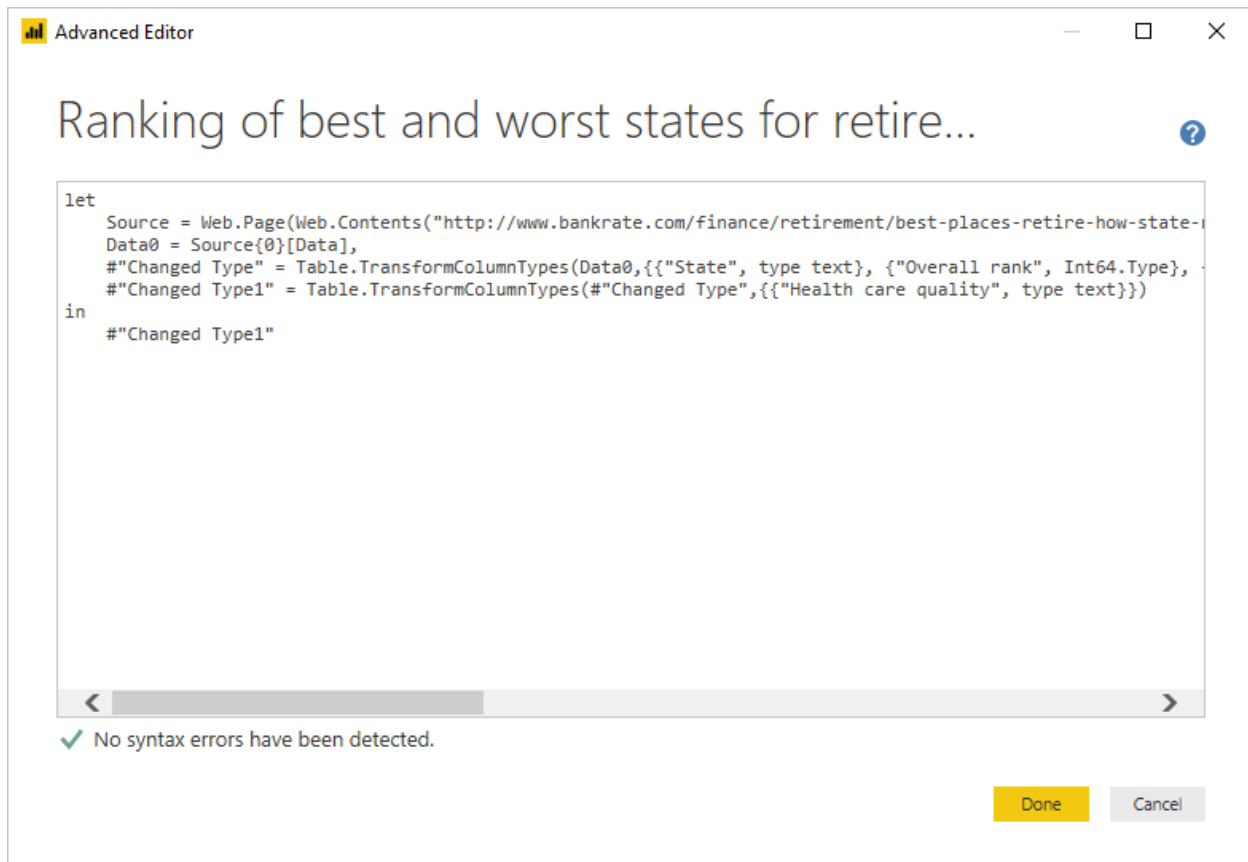


## Note

To learn more about **Data profiling**, go to [Using the data profiling tools](#).

## The advanced editor

If you want to observe the code that the Power Query editor is creating with each step, or want to create your own shaping code, you can use the advanced editor. To open the advanced editor, select the **View** tab on the ribbon, and then select **Advanced Editor**. A window appears, showing the existing query code.



You can directly edit the code in the **Advanced Editor** window. The editor indicates if your code is free of syntax errors. To close the window, select the **Done** or **Cancel** button.

## Accessing Power Query help

There are various levels of help that can be accessed in the Microsoft apps that use Power Query. This section describes these help levels.

### Power Query help in Excel

There are a couple of ways to access Power Query help information that specifically applies to Power Query in Excel. One way to access the online Excel Power Query documentation is to select **File** > **Help** > **Help** in the Power Query editor.

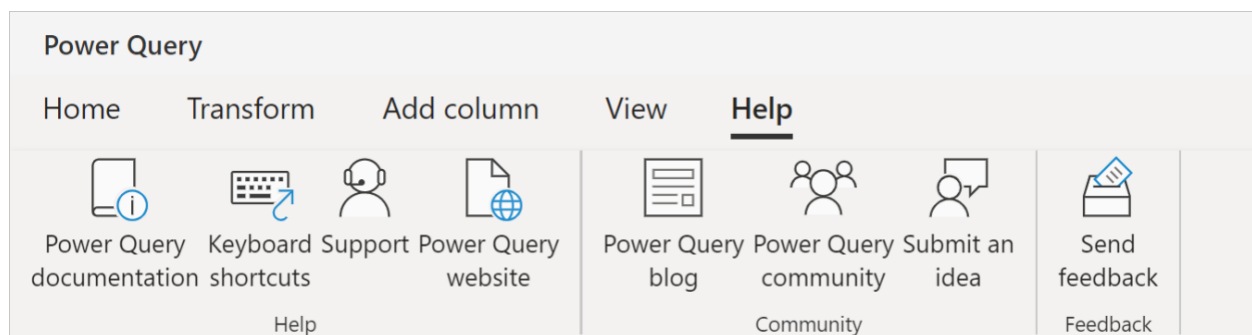
To access the inline Power Query help information in Excel, select the **Help** tab on the Excel ribbon, and then enter **Power Query** in the search text box.

## Power Query help in Power BI Desktop

There's a **Help** tab in the Power Query editor running on Power BI Desktop, but at this time all of the options go to locations that supply Power BI information. You can also reach this same Power BI **Help** information in the Power Query editor in Power BI Desktop by selecting **File > Help**, and then selecting one of the help options.

Power Query help in Power BI service, Power Apps, Customer Insights, and Azure Data Factory

The Power Query **Help** tab in Power BI service, Power Apps, Dynamics 365 Customer Insights, and Azure Data Factory contains links to important sources of information about Power Query.



The options in the help tab include links to:

- [Power Query documentation](#): Links to the Power Query documentation
- [Keyboard shortcuts](#): Links to the keyboard shortcuts article in the Power Query documentation.
- **Support**: Links to the support website of the Microsoft product that Power Query is currently running in.
- [Power Query websight](#): Links to the Power Query website.
- [Power Query blog](#): Links to the Power Query blog
- [Power Query community](#): Links to the Power Query community.
- **Submit an idea**: Links to the ideas website of the Microsoft product that Power Query is currently running in.
- **Send feedback**: Opens a window in Power Query that asks you to rate your experience with Power Query, and to provide any additional information you would like to supply.

### Note

Currently, Azure Analysis Services doesn't contain any inline Power Query help links. However, you can get help for Power Query M functions. More information is contained in the next section.

## Help for Power Query M functions

In addition to the Power Query help functions listed in the previous sections, you can also get help for individual M functions from inside the Power Query editor. The following steps describe how to get to this inline help.

1. With the Power Query editor open, select the insert step (*fx*) button.
2. In the formula bar, enter the name of a function you want to check.
  1. If you are using Power Query Desktop, enter an equal sign, a space, and the name of a function.
  2. If you are using Power Query Online, enter the name of a function.
3. Select the properties of the function.
  1. If you are using Power Query Desktop, in the **Query Settings** pane, under **Properties**, select **All properties**.
  2. If you are using Power Query Online, in the **Query Settings** pane, select **Properties**.

These steps will open the inline help information for your selected function, and let you enter individual properties used by the function.

The screenshot shows the Power Query editor interface. At the top is a search bar labeled "Search (Alt + Q)". Below it is a ribbon with tabs: Home, Transform, Add column, View, and Help. The Help tab is active, showing icons for documentation, shortcuts, support, website, blog, community, submit idea, and feedback. On the left, the "Queries [1]" pane shows a list of queries, with "Date.AddDays" selected. The main area displays the "Date.AddDays" function help. It includes a description: "Adds the specified days to the date." Below this is a section titled "Enter parameters" with two input fields: "dateTime" (with a dropdown menu) and "numberOfDays" (with a dropdown menu). A "Show" button is next to the "dateTime" field. Below the input fields are "Invoke" and "Clear" buttons. At the bottom, the function signature is displayed: "function (dateTime as any, numberOfDays as number) as any". On the right, the "Query settings" pane is open, showing the "Properties" section with fields for "Name" (Contoso Financial Sample 21) and "Entity type" (none). Below this is the "Applied steps" section, which lists "Source", "Promoted headers", "Changed column type", and "Custom".

## Summary

In this article, you created a series of queries with Power Query that provides a customer-to-supplier ratio analysis at the country level for the Northwind corporation.

You learned the components of the Power Query user interface, how to create new queries inside the query editor, reference queries, merge queries, understand the applied steps section, add new columns, and how to use the data profiling tools to better understand your data.

Power Query is a powerful tool used to connect to many different data sources and transform the data into the shape you want. The scenarios outlined in this article are examples to show you how you can use Power Query to transform raw data into important actionable business insights.