

# Practise reshaping datasets in Excel



# Learning intentions

We will be learning to reshape data in Excel, specifically to,

- how to **manually reshape** data from wide to long and visa versa
- how to use **Power Query Editor in Excel to reshape** data

# Wide and long datasets

In the last lesson we looked out the differences between wide and long datasets, and the benefits of both.

We are now going to look at how to **reshape datasets in Excel**.

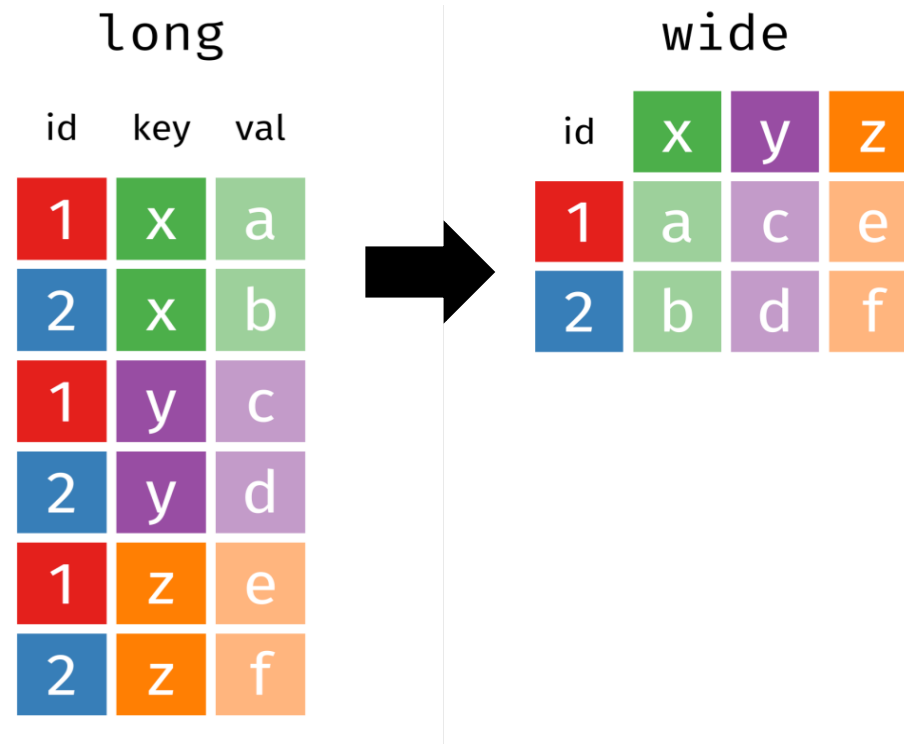
wide			
id	x	y	z
1	a	c	e
2	b	d	f

long		
id	key	val
1	x	a
2	x	b
1	y	c
2	y	d
1	z	e
2	z	f

Source: Garrick Aden-Buie's (@grrrck) Tidy Animated Verbs

# How to reshape in Excel

First, we are going to reshape a dataset from **long** to **wide**.



# Create new wide dataset

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 1. Once you have your long dataset open, create a new dataset with the headings you need for your wide dataset.

	A	B	C	D	E	F	G
1	<b>race</b>	<b>time_type</b>	<b>time</b>		<b>race</b>	<b>start_time</b>	<b>end_time</b>
2	Dumfries	start	10:15				
3	Dumfries	end	12:02				
4	Glasgow	start	10:30				
5	Glasgow	end	16:30				
6	Leven	start	10:00				
7	Leven	end	13:04				
8	Stirling	start	09:30				
9	Stirling	end	20:08				
10							

# Sort your data

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 2. **Sort** your data so that the data items are grouped together to match your new columns. In this case, sort by **time\_type** then by **race**.

Reminder: to sort data click on the Home ribbon, then click on 'Sort & Filter' then on '**Custom Sort...**'

	A	B	C
1	race	time_type	time
2	Dumfries	start	10:15
3	Dumfries	end	12:02
4	Glasgow	start	10:30
5	Glasgow	end	16:30
6	Leven	start	10:00
7	Leven	end	13:04
8	Stirling	start	09:30
9	Stirling	end	20:08
10			
11			
12			
13			
14			

Sort

+ Add Level   - Delete Level   Copy Level   ^   v   Options...

☒ My data has headers

Column	Sort On	Order
Sort by time_type	Cell Values	A to Z
Then by race	Cell Values	A to Z

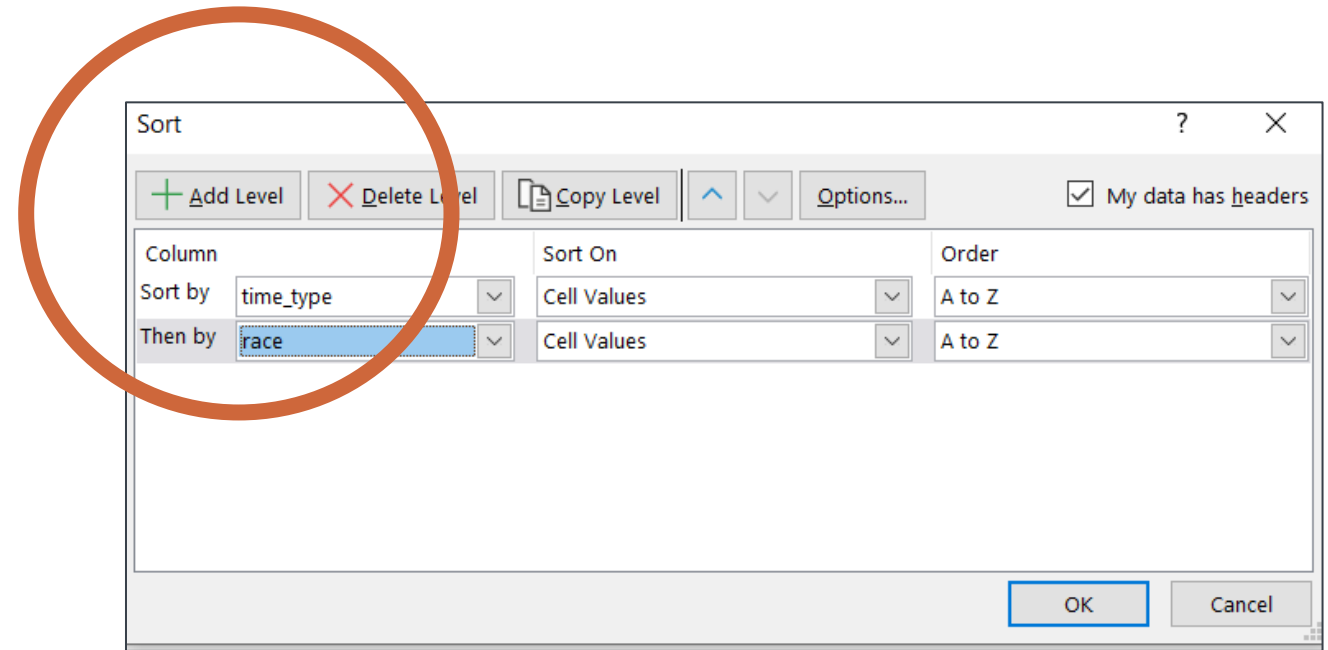
OK   Cancel

# Sorting by key then id column

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

To get the data in the right order for reshaping you need to **sort by the key** column **then the id** column.

To sort your dataset by multiple columns you can click on **Add Level** in the Sort window.



# Copy to wide dataset

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 3. Copy and paste the **id** information that is needed. In this case the names of the **race**.

	A	B	C	D	E	F	G
1	race	time_type	time		race	start_time	end_time
2	Dumfries	end	12:02		Dumfries		
3	Glasgow	end	16:30		Glasgow		
4	Leven	end	13:04		Leven		
5	Stirling	end	20:08		Stirling		
6	Dumfries	start	10:15				
7	Glasgow	start	10:30				
8	Leven	start	10:00				
9	Stirling	start	09:30				
10							



# Copy data items

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 4. Copy and paste the **start time** and **end time** data items into their columns.

	A	B	C	D	E	F	G
1	race	time_type	time		race	start_time	end_time
2	Dumfries	end	12:02		Dumfries	10:15	12:02
3	Glasgow	end	16:30		Glasgow	10:30	16:30
4	Leven	end	13:04		Leven	10:00	13:04
5	Stirling	end	20:08		Stirling	09:30	20:08
6	Dumfries	start	10:15				
7	Glasgow	start	10:30				
8	Leven	start	10:00				
9	Stirling	start	09:30				
10							
11							

## Next steps

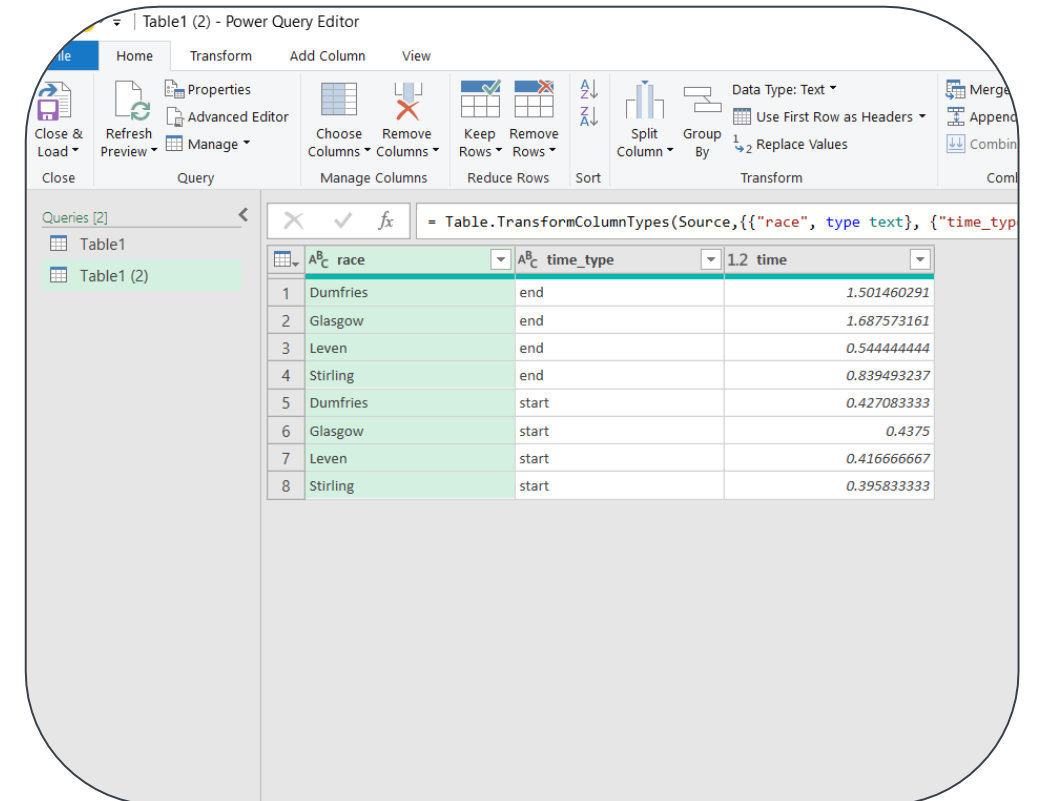
Complete **questions 1 to 10**  
in **section 1** of the  
'Practise reshaping datasets  
in Excel' workbook.

# Alternatives to manually reshaping data

In Excel there are many ways to get to the answer you need.

Understanding the different ways and working out which one is right for you can save you a lot of time.

An alternative to manually reshaping data in Excel is to use **Power Query**.



# What is Power Query?



“With Power Query you can import or **connect to external** data, and then **shape that data** [...] in ways that meet your needs.

Then, you can **load your query into Excel** to create charts and reports.

Periodically, you can **refresh the data** to make it up-to-date”

# Using Power Query in Excel



In this lesson we are going to look at how to use the **transform** part of Power Query to allow us to reshape data.

If you would like to know more about Power Query in Excel, please see

<https://powerquery.microsoft.com/en-us/>

# Overview of Power Query Editor

As with other Microsoft packages, there is a **ribbon** at the top with the buttons you will need.

**Any steps you apply to your data are recorded here.**

The screenshot shows the Power Query Editor interface. The ribbon at the top includes tabs for File, Home, Transform, Add Column, and View. The Home tab is active, showing various data manipulation options. A table of data is displayed in the center, and the right-hand pane shows the Properties and Applied Steps sections. Annotations with arrows point to the ribbon, the data table, and the Applied Steps section.

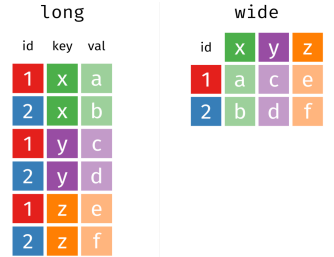
	race	1.2 start	1.2 end
1	Dumfries	0.427083333	1.501460291
2	Glasgow	0.4375	1.687573161
3	Leven	0.416666667	0.544444444
4	Stirling	0.395833333	0.839493237

**PROPERTIES**  
Name: Race\_times  
[All Properties](#)

**APPLIED STEPS**  
Source  
Changed Type  
Pivoted Column  
**Reordered Columns**

Here you can see a **preview of your data** you are transforming

# Long to wide in Power Query Editor



We are now going to use Power Query to reshape the dataset we manually transformed before.

	A	B	C	D	E	F	G
1	race	time_type	time		race	start_time	end_time
2	Dumfries	end	12:02		Dumfries	10:15	12:02
3	Glasgow	end	16:30		Glasgow	10:30	16:30
4	Leven	end	13:04		Leven	10:00	13:04
5	Stirling	end	20:08		Stirling	09:30	20:08
6	Dumfries	start	10:15				
7	Glasgow	start	10:30				
8	Leven	start	10:00				
9	Stirling	start	09:30				
10							
11							

# Opening Power Query Editor

long			wide		
id	key	val	id	x	y
1	x	a	1	a	c
2	x	b	2	b	d
1	y	c			
2	y	d			
1	z	e			
2	z	f			

Step 1. Highlight the data, then to open Power Query Editor, click on the **Data** ribbon then click on the **From Table/Range** button.

The screenshot shows the Microsoft Excel interface with the Power Query Editor ribbon selected. The ribbon has tabs for File, Home, Insert, Page Layout, Formulas, Data, Review, and View. The Data tab is active, and the 'From Table/Range' button is highlighted with an orange rectangle. The 'Data' tab label is also circled in orange. Below the ribbon, a table is displayed with the following data:

	A	B	C	D	E	F
1	race	time_type	time			
2	Dumfries	end	12:02			
3	Glasgow	end	16:30			
4	Leven	end	13:04			
5	Stirling	end	20:08			
6	Dumfries	start	10:15			
7	Glasgow	start	10:30			
8	Leven	start	10:00			
9	Stirling	start	09:30			
10						
11						



# Opening Power Query Editor

long			wide		
id	key	val	id	x	y
1	x	a	1	a	c
2	x	b	2	b	d
1	y	c			
2	y	d			
1	z	e			
2	z	f			

Step 2. Now Power Query Editor is open. Click on the Transform ribbon

The screenshot shows the Power Query Editor interface. The 'Transform' ribbon is highlighted with an orange box. The ribbon contains various options like 'Transpose', 'Reverse Rows', 'Count Rows', 'Data Type: Text', 'Replace Values', 'Unpivot Columns', 'Merge Columns', 'Statistics', 'Trigonometry', 'Date', 'Time', and 'Duration'. The main area shows a table with columns 'race', 'time\_type', and 'time'. The 'race' column has values like 'Dumfries', 'Glasgow', 'Leven', and 'Stirling'. The 'time\_type' column has values 'end' and 'start'. The 'time' column has numerical values. The 'Query Settings' pane on the right shows the query name 'Table2' and the applied steps: 'Source' and 'Changed Type'.

	AB_C race	AB_C time_type	1.2 time
1	Dumfries	end	1.501460291
2	Glasgow	end	1.687573161
3	Leven	end	0.544444444
4	Stirling	end	0.839493237
5	Dumfries	start	0.427083333
6	Glasgow	start	0.4375
7	Leven	start	0.416666667
8	Stirling	start	0.395833333

Query Settings

**PROPERTIES**

Name: Table2

[All Properties](#)

**APPLIED STEPS**

Source

✕ Changed Type

# Pivot your key column

long			wide		
id	key	val	id	x	y
1	x	a	1	a	c
2	x	b	2	b	d
1	y	c			
2	y	d			
1	z	e			
2	z	f			

Step 3. Now highlight your **key** column (in this case **time\_type**)

Click on the **Pivot Column** button

The screenshot shows the Power Query Editor interface. The 'Transform' tab is active, and the 'Pivot Column' button is highlighted with an orange rectangle. Below the ribbon, the 'time\_type' column in the data table is highlighted with an orange rounded rectangle. The data table has three columns: 'race', 'time\_type', and 'time'. The 'time\_type' column contains values 'end' and 'start'.

	AB_C race	AB_C time_type	2 time
1	Dumfries	end	1.501460291
2	Glasgow	end	1.687573161
3	Leven	end	0.544444444
4	Stirling	end	0.839493237
5	Dumfries	start	0.427083333
6	Glasgow	start	0.4375
7	Leven	start	0.416666667
8	Stirling	start	0.395833333

# Identify your value column

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 4. Next you need to tell Power Query Editor which **column contains your values**. In this case it is the **time** column.

×

## Pivot Column

Use the names in column "time\_type" to create new columns.

Values Column ⓘ

race

race

time

[Learn more about Pivot Column](#)

time

OK

Cancel

# Check your data

long			wide		
id	key	val	id	x	y
1	x	a	1	a	c
2	x	b	2	b	d
1	y	c			
2	y	d			
1	z	e			
2	z	f			

Step 5. Check your data has been transformed as you expected it to be.

Table2 - Power Query Editor

File Home Transform Add Column View

Group By Use First Row as Headers Count Rows

Table

Data Type: Decimal Number Replace Values Unpivot Columns

Detect Data Type Fill Move

Rename Pivot Column Convert to List

Any Column

Split Column Format Merge Columns

ABC 123 Extract Parse

Text Column

Statistics Trigonometry

Standard Rounding

10<sup>2</sup> Scientific Information

Number Column

Date & Time C...

Structured Column

Queries [3]

Table1

Table1 (2)

Table2

AB race 1.2 end 1.2 start

1	Dumfries	1.501460291	0.427083333
2	Glasgow	1.687573161	0.4375
3	Leven	0.544444444	0.416666667
4	Stirling	0.839493237	0.395833333

Query

PROPER

Name

Table2

APPLIED STEPS

Source

Changed Type

Pivoted Column

A record of the steps you have completed are here

Here is a preview of your data

# Load reshaped data back to Excel

long			wide			
id	key	val	id	x	y	z
1	x	a	1	a	c	e
2	x	b	2	b	d	f
1	y	c				
2	y	d				
1	z	e				
2	z	f				

Step 6. If you are happy your data has been reshaped, on the **Home** ribbon click on the **Close & Load** button.

The screenshot shows the Power Query Editor window. The 'Home' ribbon is active, and the 'Close & Load' button is highlighted with an orange rectangle. The main area displays a table with 4 rows and 3 columns: 'race', '1.2 end', and '1.2 start'. The 'Query Settings' pane on the right shows the query name 'Table2 (2)' and the applied steps: 'Source', 'Changed Type', and 'Pivoted Column'.

	AB <sub>C</sub> race	1.2 end	1.2 start
1	Dumfries	1.501460291	0.427083333
2	Glasgow	1.687573161	0.4375
3	Leven	0.544444444	0.416666667
4	Stirling	0.839493237	0.395833333

# Reformat your reshaped dataset

long			wide		
id	key	val	id	x	y
1	x	a	1	a	c
2	x	b	2	b	d
1	y	c			
2	y	d			
1	z	e			
2	z	f			

Step 7. Your reshaped data will now be in your Excel workbook. You might need to rearrange the dataset and/or reformat it.

	A	B	C	D
1	race	end	start	
2	Dumfries	1.501460291	0.427083333	
3	Glasgow	1.687573161	0.4375	
4	Leven	0.544444444	0.416666667	
5	Stirling	0.839493237	0.395833333	
6				
7				
8				

Reformat and  
reorder columns

E	F	G	H
race	start	end	
Dumfries	10:15	12:02	
Glasgow	10:30	16:30	
Leven	10:00	13:04	
Stirling	09:30	20:08	

## Next steps

Complete **questions 1 to 7**  
in **section 2** of the  
'Practise reshaping datasets  
in Excel' workbook

# How to reshape in Excel: wide to long

Now, we are going to reshape this dataset from **wide** to **long**.

Like going from long to wide, this can be done manually.

We are going to go through the steps to reshape a dataset using Power Query Editor.

In Excel this is referred to as **unpivoting columns**.

	A	B	C	D
1	nation	gold	silver	bronze
2	Sweden	145	170	179
3	Australia	147	163	187
4	France	212	241	263
5	Italy	206	178	193
6	Australia	147	163	187
7	France	212	241	263
8				
9				
10				



# Selecting your data

wide				long		
id	x	y	z	id	key	val
1	a	c	e	1	x	a
2	b	d	f	2	x	b
				1	y	c
				2	y	d
				1	z	e
				2	z	f

Step 1. Highlight the data you need to reshape then click on **Data tab** then '**From Table/Range**' button.

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected in the ribbon. The 'From Table/Range' button is circled in orange. Below the ribbon, a table of Olympic medal data is visible, with the first row highlighted in green.

	nation	gold	silver	bronze
2	Sweden	145	170	179
3	Australia	147	163	187
4	France	212	241	263
5	Italy	206	178	193
6	Australia	147	163	187
7	France	212	241	263

# Power Query Editor

wide				long		
id	x	y	z	id	key	val
1	a	c	e	1	x	a
2	b	d	f	2	x	b
				1	y	c
				2	y	d
				1	z	e
				2	z	f

Step 2. This will open the **Power Query Editor**. You need to select the columns you need to reshape. In this case it is the columns **gold**, **silver** and **bronze**. Press ctrl + click on the columns you need.

The screenshot shows the Power Query Editor interface. The ribbon includes tabs for File, Home, Transform, Add Column, and View. The Transform tab is active, showing options like Choose Columns, Remove Columns, Keep Rows, Remove Rows, Sort, Split Column, Group By, and Replace Values. A callout box with the text "Ctrl + click on columns" points to the 'gold', 'silver', and 'bronze' columns in the data table. The data table has columns: nation, gold, silver, and bronze. The formula bar shows the transformation: `= Table.TransformColumnTypes(Source,{{"nation", type text}, {"gold", Int64.Type}, {"silver", Int64.Type}, {"bronze", Int64.Type}})`.

	nation	gold	silver	bronze
1	Sweden	145	170	179
2	Australia	147	163	187
3	France	212	241	263
4	Italy	206	178	193
5	Australia	147	163	187
6	France	212	241	263

# Unpivot columns

wide				long		
id	x	y	z	id	key	val
1	a	c	e	1	x	a
2	b	d	f	2	x	b
				1	y	c
				2	y	d
				1	z	e
				2	z	f

Step 3. Next click on the **Transform tab** then **Unpivot columns**.

The screenshot shows the Power Query Editor interface. The 'Transform' tab is selected, and the 'Unpivot Columns' button is circled in orange. The formula bar shows the following M code:

```
= Table.TransformColumnTypes(Source,{{"nation", type text}, {"gold", Int64.Type}, {"silver"
```

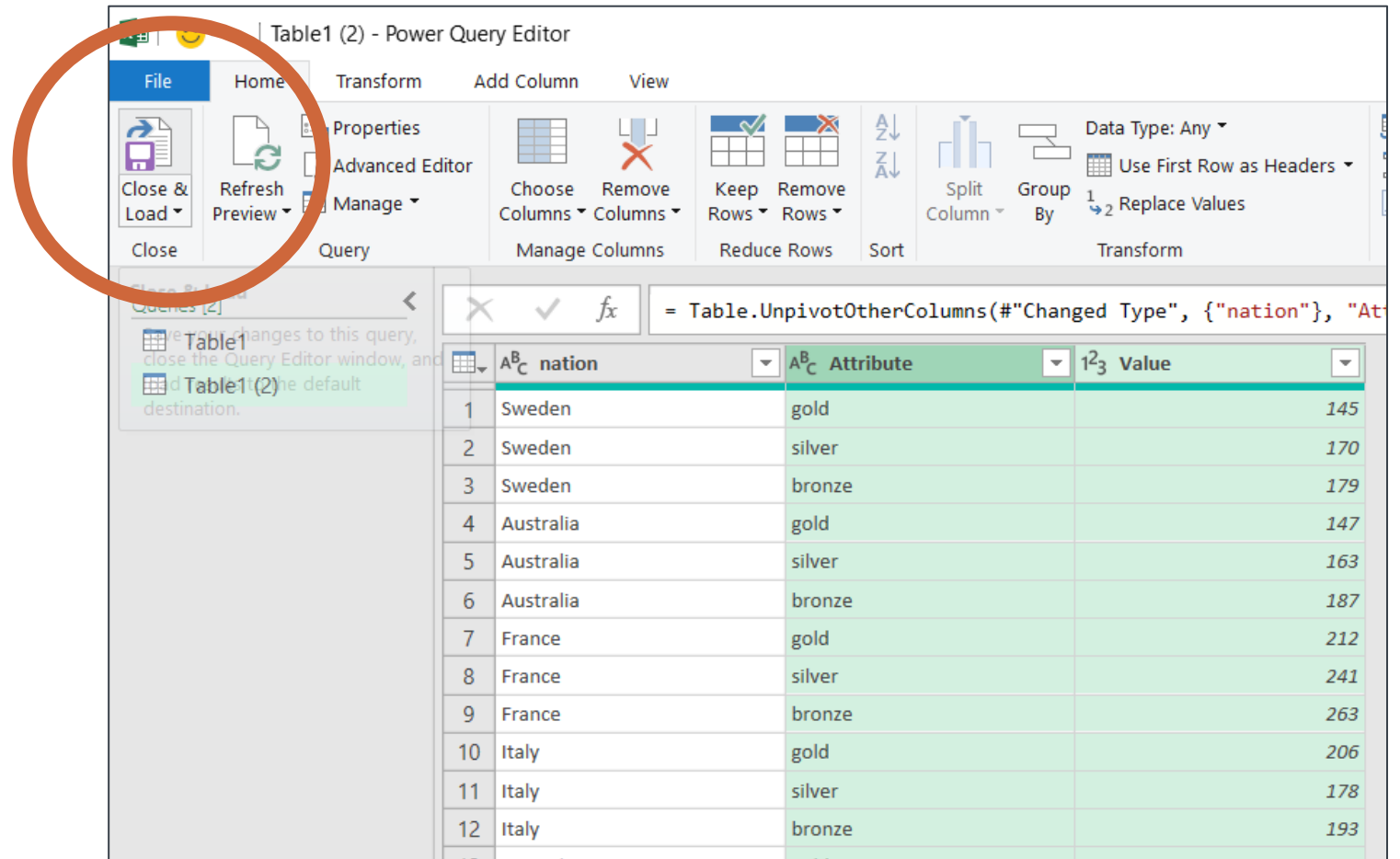
The data table below the formula bar is as follows:

	nation	gold	silver	bronze
1	Sweden	145	170	179
2	Australia	147	163	187
3	France	212	241	263
4	Italy	206	178	193
5	Australia	147	163	187
6	France	212	241	263

# Long dataset produced

wide				long		
id	x	y	z	id	key	val
1	a	c	e	1	x	a
2	b	d	f	2	x	b
				1	y	c
				2	y	d
				1	z	e
				2	z	f

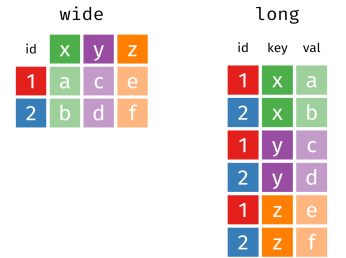
Step 5. Excel has now reshaped your dataset. To get the dataset into your workbook go to the **Home** tab and click on **Close and Load**.



The screenshot shows the Power Query Editor window titled 'Table1 (2) - Power Query Editor'. The 'Home' tab is selected in the ribbon, and the 'Close & Load' button is circled in orange. The formula bar shows the query formula: `= Table.UnpivotOtherColumns(#"Changed Type", {"nation"}, "Attribute", "Value")`. The data table below shows the resulting long dataset with columns: nation, Attribute, and Value.

	nation	Attribute	Value
1	Sweden	gold	145
2	Sweden	silver	170
3	Sweden	bronze	179
4	Australia	gold	147
5	Australia	silver	163
6	Australia	bronze	187
7	France	gold	212
8	France	silver	241
9	France	bronze	263
10	Italy	gold	206
11	Italy	silver	178
12	Italy	bronze	193

# Final long dataset



Step 5. The new long dataset will appear in your workbook. You can now copy and paste the dataset to where you want it and rename variables if required.

	A	B	C	D
1	nation	Attribute	Value	
2	Sweden	gold	145	
3	Sweden	silver	170	
4	Sweden	bronze	179	
5	Australia	gold	147	
6	Australia	silver	163	
7	Australia	bronze	187	
8	France	gold	212	
9	France	silver	241	
10	France	bronze	263	
11	Italy	gold	206	
12	Italy	silver	178	
13	Italy	bronze	193	
14	Australia	gold	147	
15	Australia	silver	163	
16	Australia	bronze	187	
17	France	gold	212	
18	France	silver	241	
19	France	bronze	263	
20				

Copy/Paste

	A	B	C	D	E	F	G	H
1	nation	gold	silver	bronze		nation	Attribute	Value
2	Sweden	145	170	179		Sweden	gold	145
3	Australia	147	163	187		Sweden	silver	170
4	France	212	241	263		Sweden	bronze	179
5	Italy	206	178	193		Australia	gold	147
6	Australia	147	163	187		Australia	silver	163
7	France	212	241	263		Australia	bronze	187
8						France	gold	212
9						France	silver	241
10						France	bronze	263
11						Italy	gold	206
12						Italy	silver	178
13						Italy	bronze	193
14						Australia	gold	147
15						Australia	silver	163
16						Australia	bronze	187
17						France	gold	212
18						France	silver	241
19						France	bronze	263
20								

# Reminder: Excel Power Query Editor

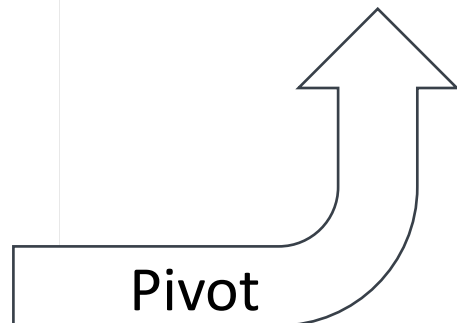


long

id	key	val
1	x	a
2	x	b
1	y	c
2	y	d
1	z	e
2	z	f

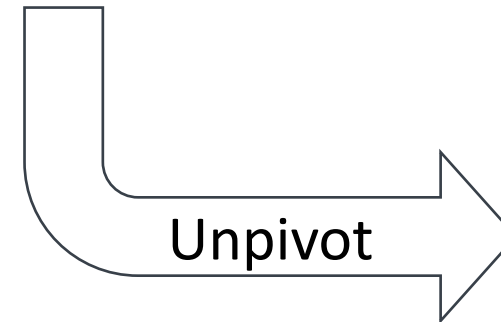
wide

id	x	y	z
1	a	c	e
2	b	d	f



wide

id	x	y	z
1	a	c	e
2	b	d	f



long

id	key	val
1	x	a
2	x	b
1	y	c
2	y	d
1	z	e
2	z	f

## Next steps

Complete **questions 1 to 8**  
in **section 3** of the  
'Practise reshaping datasets  
in Excel' workbook

# Learning checklist

I can *manually reshape* data from long to wide in Excel

I can *use* Power Query Editor in Excel to reshape data in Excel.



# How you can use this lesson



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