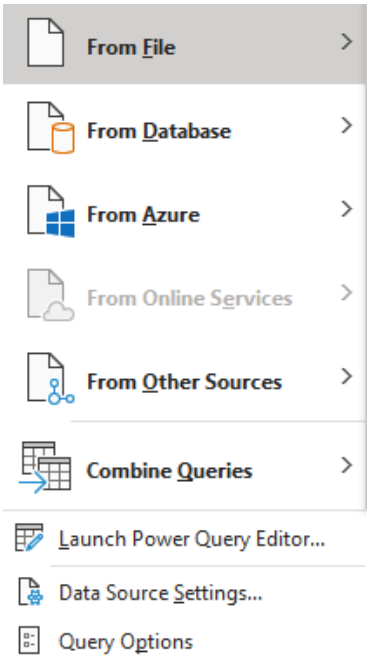
Microsoft Excel 2016: PowerQuery

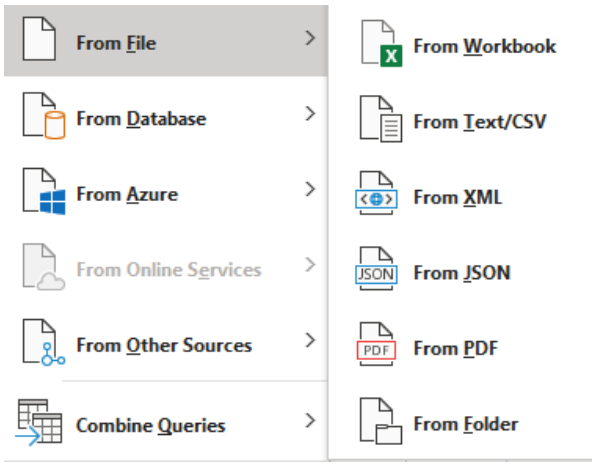
PowerQuery

PowerQuery allows you to connect to external websites, spreadsheets, databases, and other data sources.

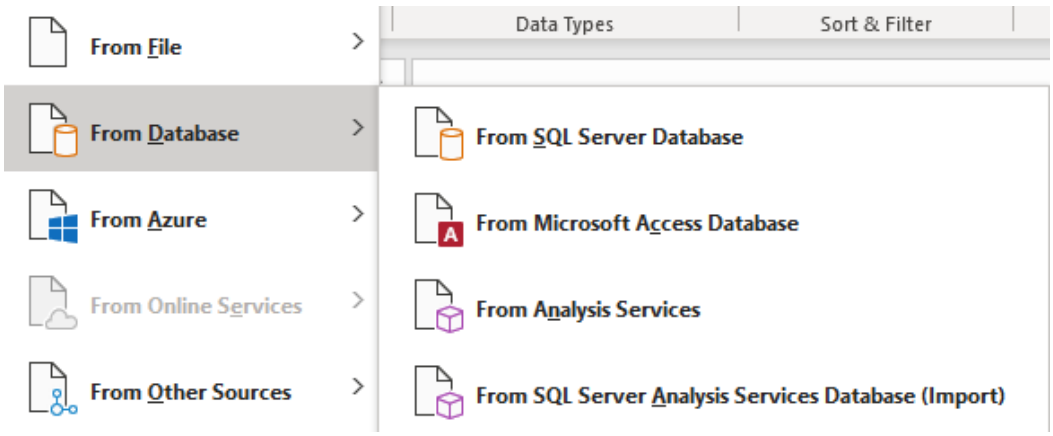
1. Open a blank Excel spreadsheet
2. To start PowerQuery, click on the Data tab.
3. On the upper left of the screen, in the section Get & Transform, click on the down arrow next to Get Data. This is the PowerQuery section, although it is not currently labelled PowerQuery. The list of possible data sources will appear.



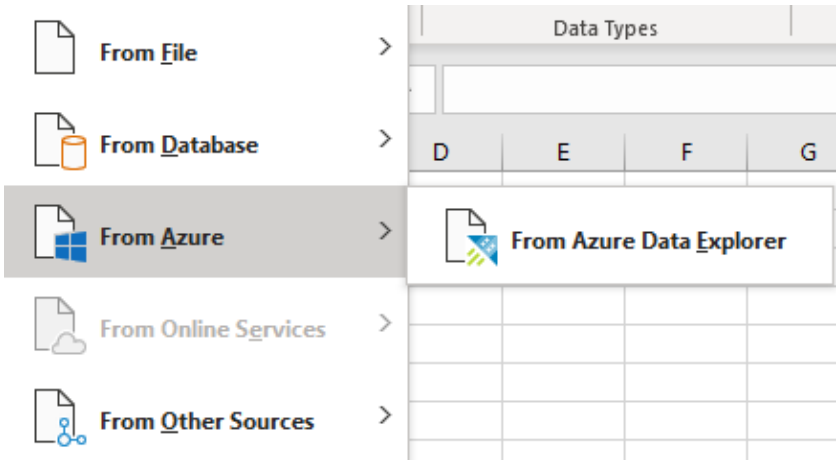
4. Put your cursor over From File, and a list of the options will appear.



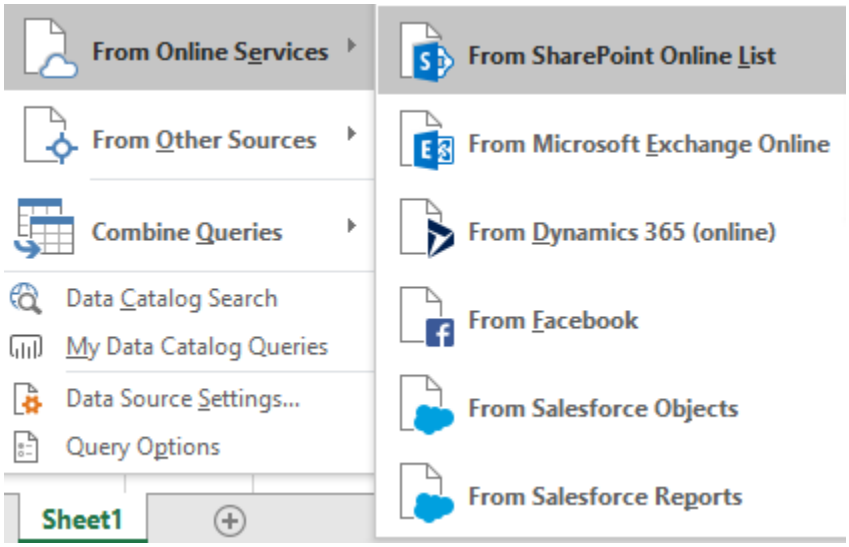
5. Next, put the cursor over From Database.



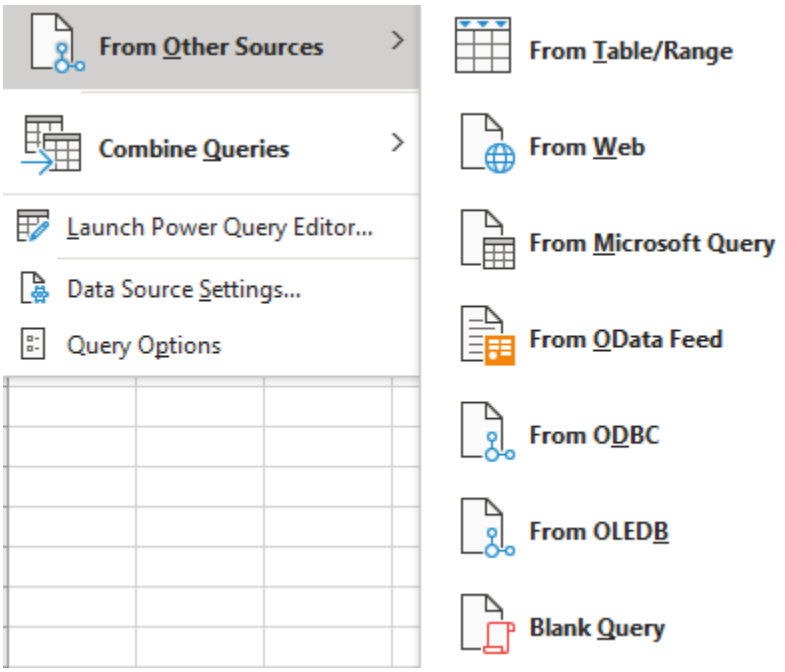
6. Now try From Azure.



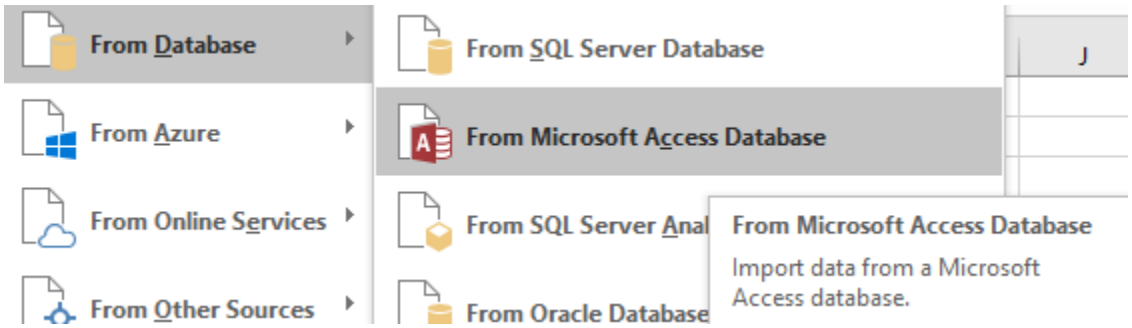
7. Try From Online Services



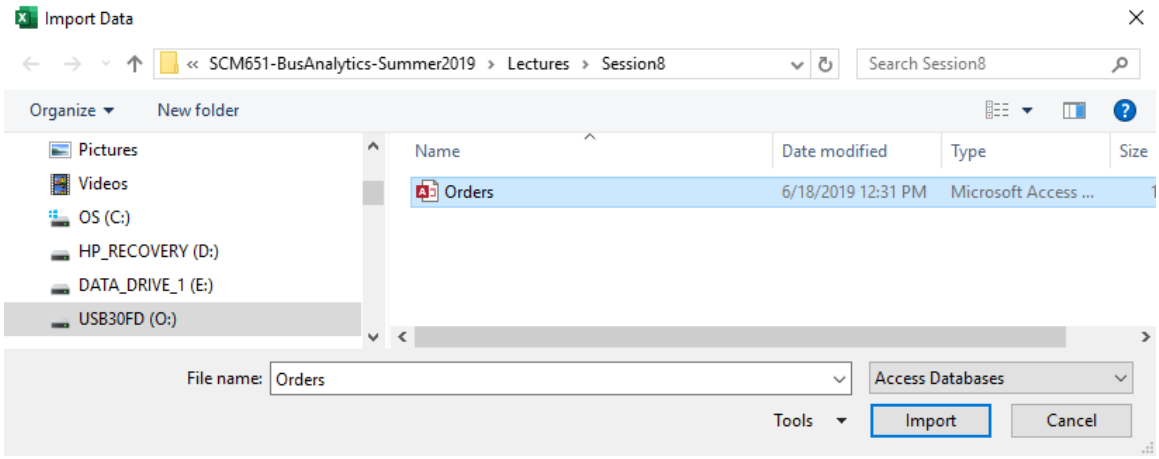
8. Finally, click on From Other Sources



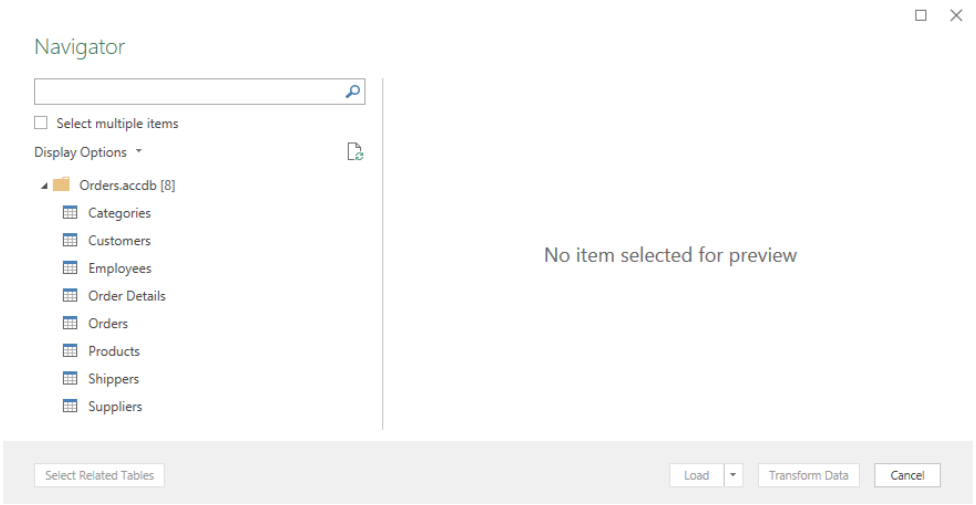
9. Let's now connect to our data. Click New Query, From Microsoft Access Database



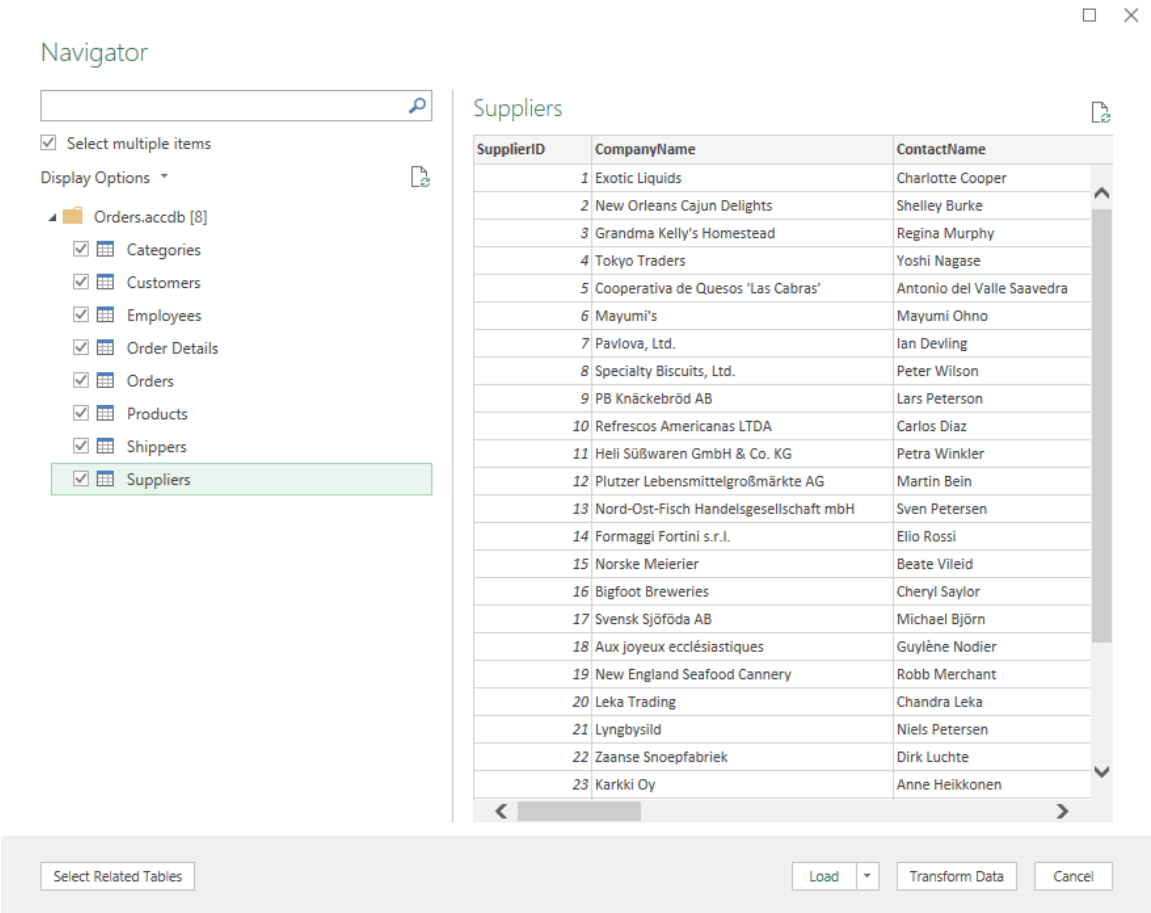
10. Find the downloaded file Orders.accdb. Click on the file name, then Import.



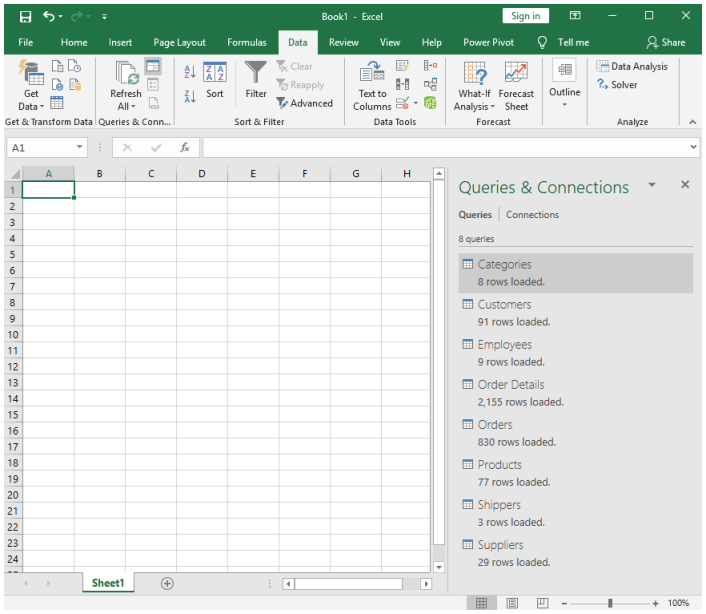
11. To connect to all tables, first check the box Select multiple items



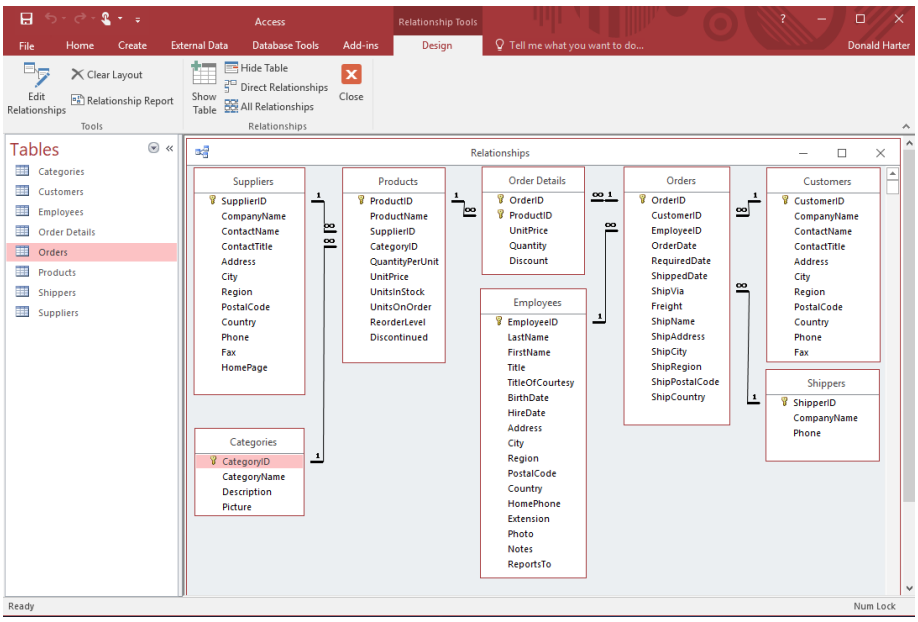
12. Next, check the box in front of each table name, then click Load



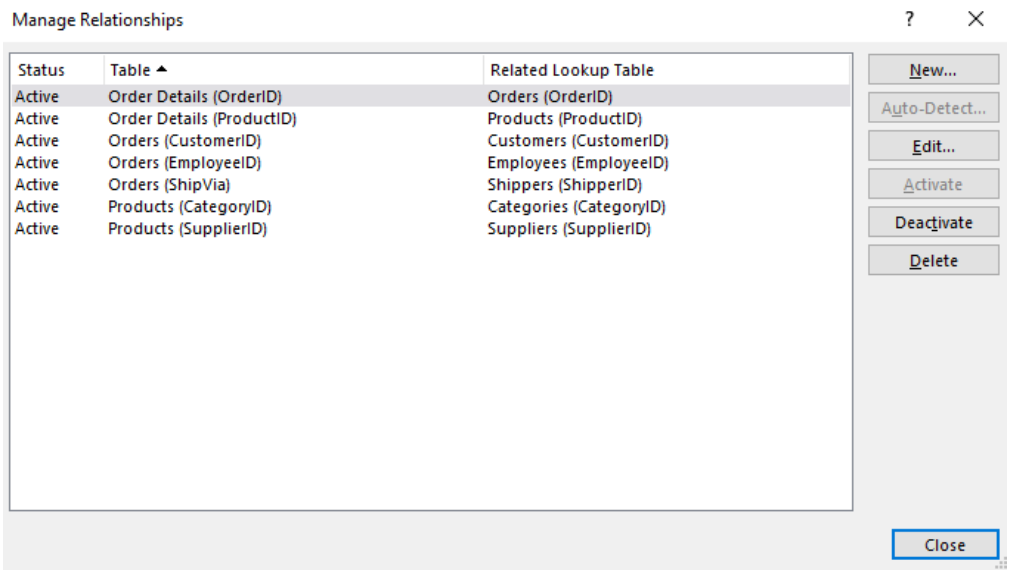
13. All of the table connections via Power Query will be listed on the right.



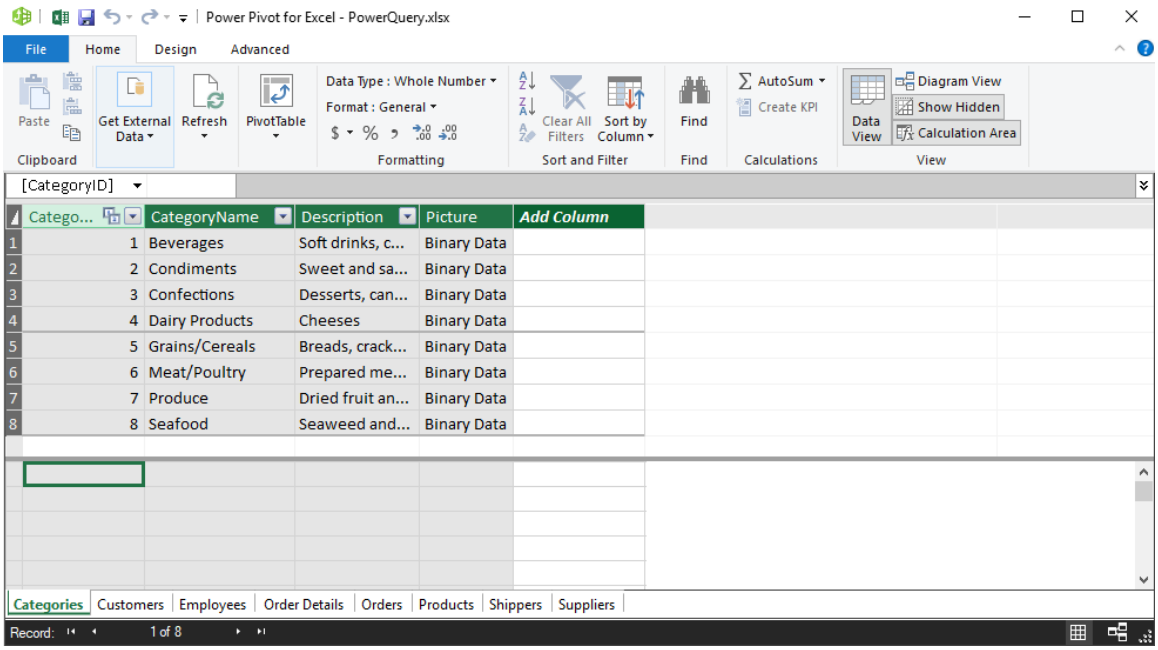
14. Save your PowerQuery worksheet as clicking on File, Save As, PowerQuery (you can name it anything that you want).
15. Recall the relationships that we had in Access with these tables.



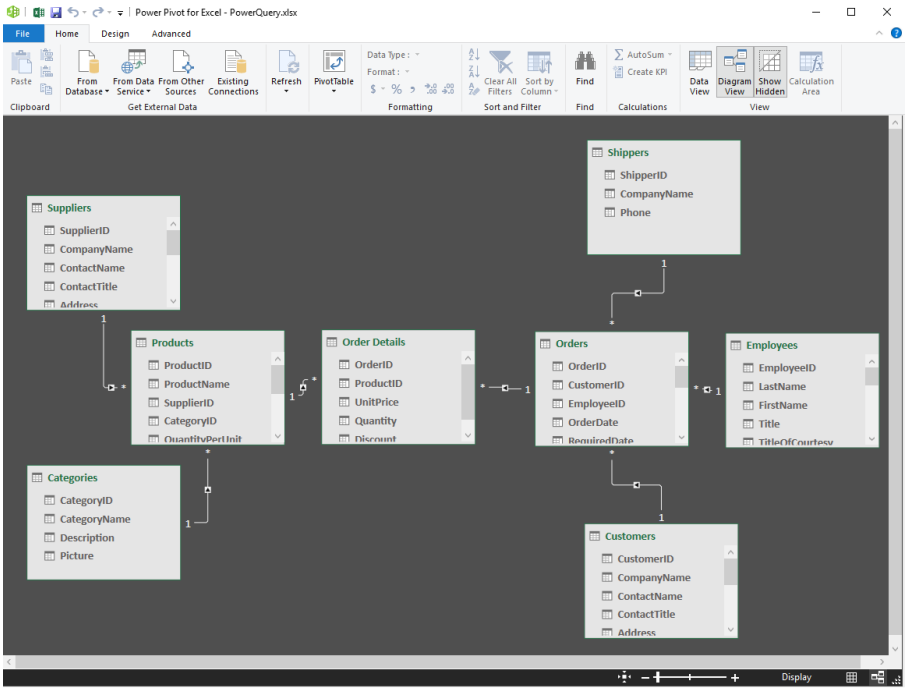
16. Click on the Data tab, in the Data Tools section click on Relationships. The Manage Relationships screen will appear. Check that the relationships match the diagram above.
17. Click close when you've confirmed that all relationships are there.



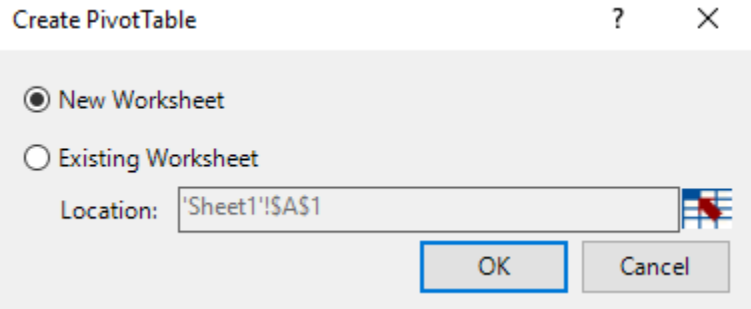
18. To see the relationships in a different view, click on the Data tab, then in the Data Tools section, click on Manage Data Model



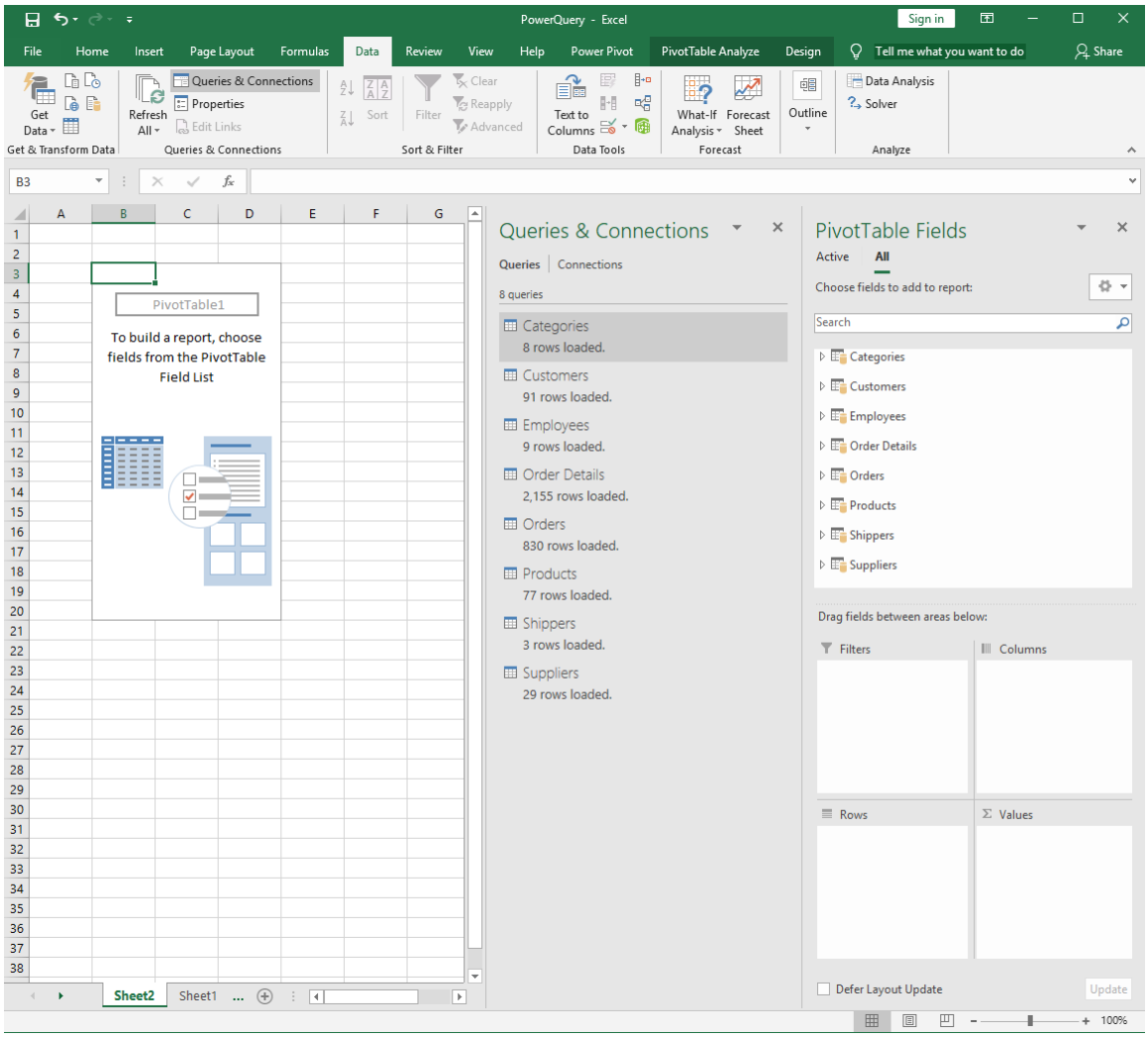
19. Now click on Diagram View (upper right corner of screen); this shows the relationship diagram for our two tables.



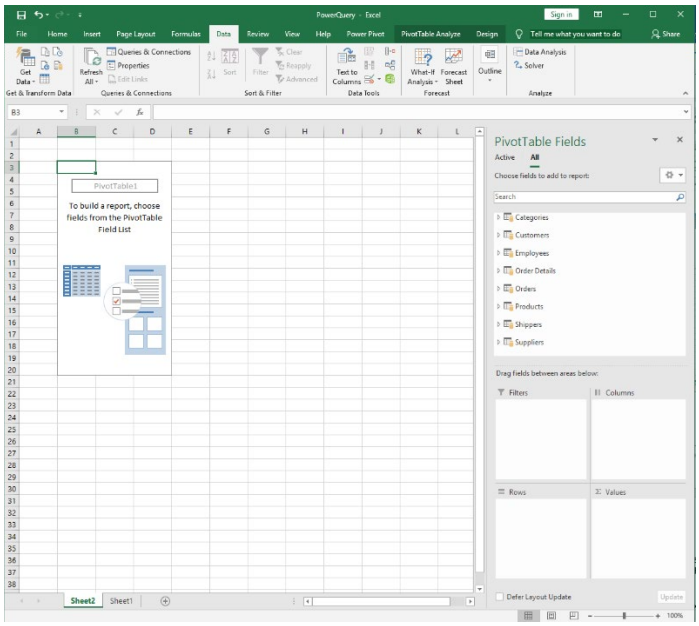
20. At the top of the diagram view of the data model, click on Pivot Table, then Pivot Table, then on the screen below, click OK.



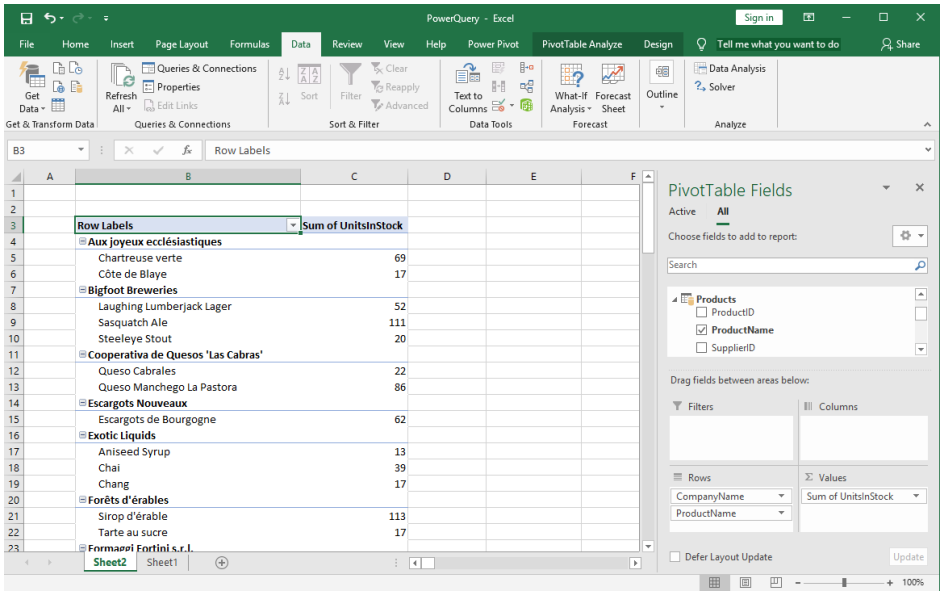
21. You will see a Pivot Table, with the data tables to the right. The two tables with relationships created have the dark bar at the top of the table.



22. The Queries & Connections section in the middle takes up space. Click on the X to the right of Queries & Connections to close this view



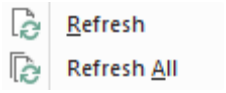
23. Next, create a pivot table using Company Name, Product Name, Units in Stock for Values
24. Click on the arrow to the left of Suppliers, then drag CompanyName to Rows
25. Click on the arrow to the left of Products, then click ProductName to Rows, but below CompanyName
26. Drag Units in Stock in Products to Values



Refreshing Data

What happens if your database is updated? You don't need to re-import the data, just use the refresh option. (Refresh works in both Power Query and Power Pivot)

1. Click on the Data tab
2. At the top left of the screen is Refresh button.
3. Click on the down arrow below the refresh button.

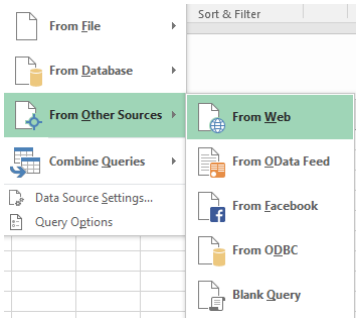


4. Click on Refresh. PowerQuery goes to the database, retrieves the data, and updates your table.

PowerQuery Exercise Using Web Data

To connect to website data, there are some additional steps required. In this exercise, we will try to calculate the total income by state in the U.S. by retrieving population and per capita personal income estimates from the internet, then multiplying the two.

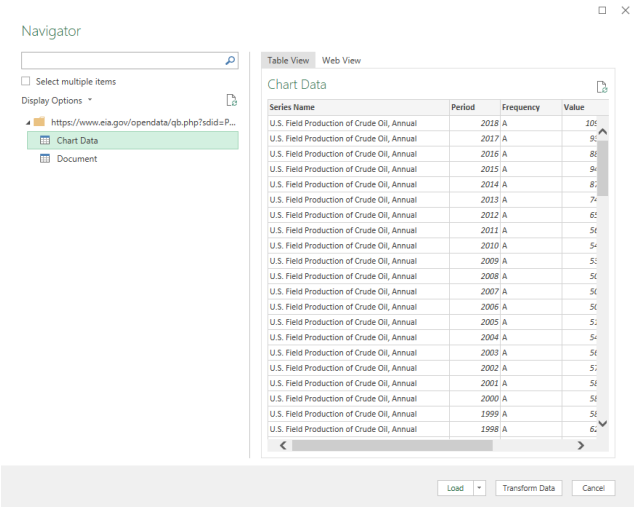
1. Open a new Excel spreadsheet
2. Click on the Data tab, Get Data, From Other Sources, From Web



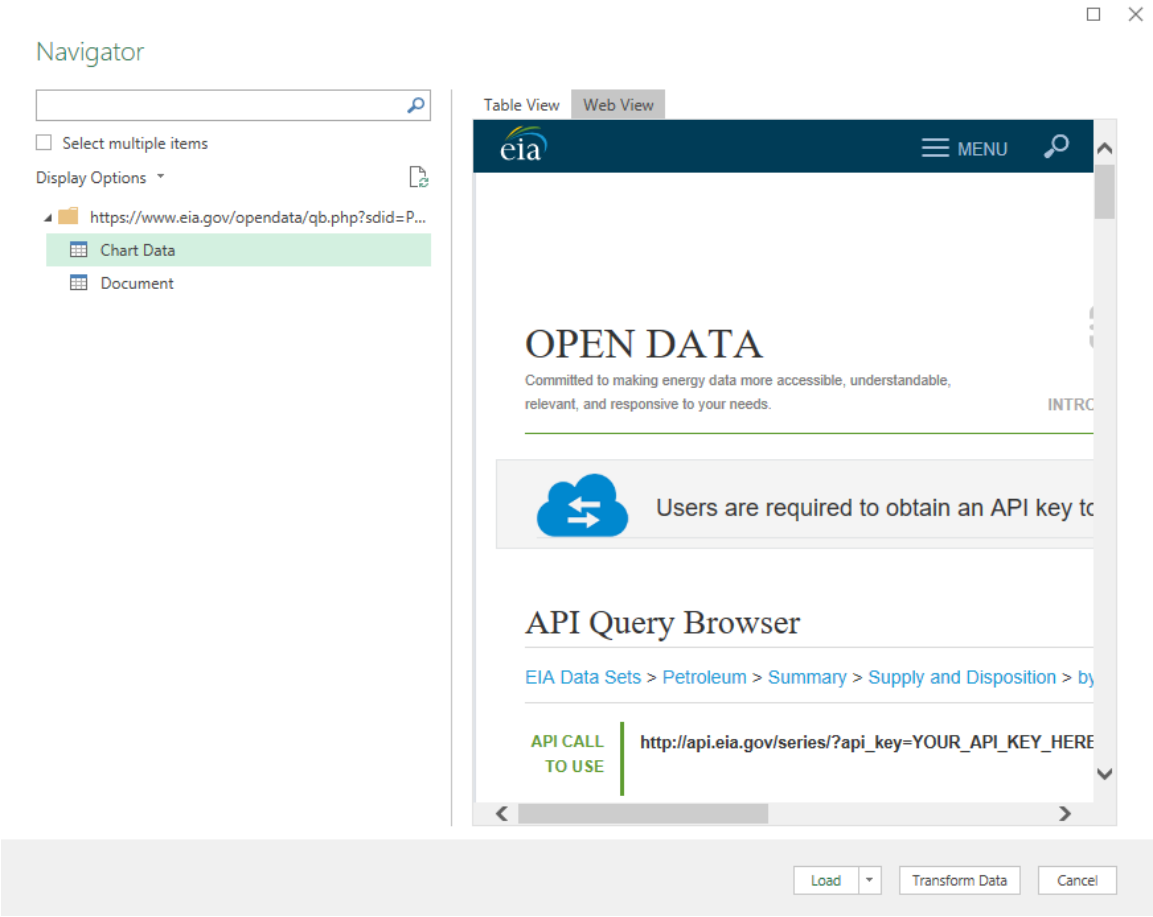
3. In the URL space, enter the following web address. This web page contains the oil production from 1859 to 2018. Suggest that you copy the link below to Excel. Click OK.

   https://www.eia.gov/opendata/qb.php?sdid=PET.MCRFPUS2.A

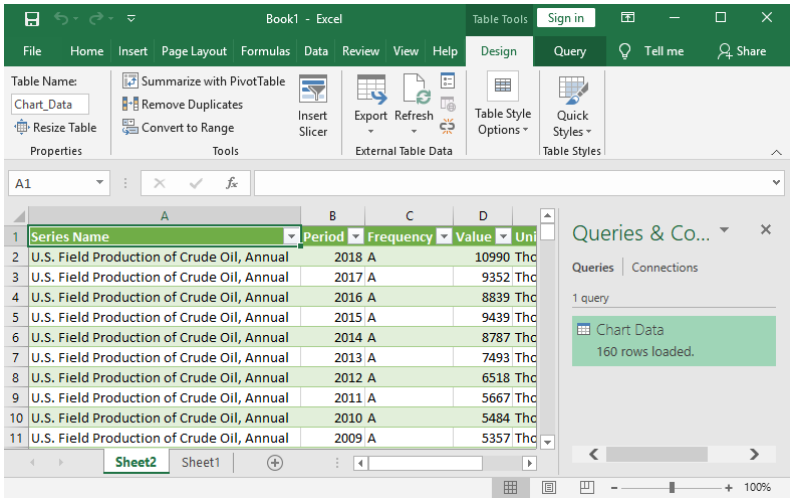
4. On the left side of the screen, click on Chart Data. Excel will automatically find the table and connect to it.



5. Above the table, change from Table View to Web View. This is the original view of the web page.

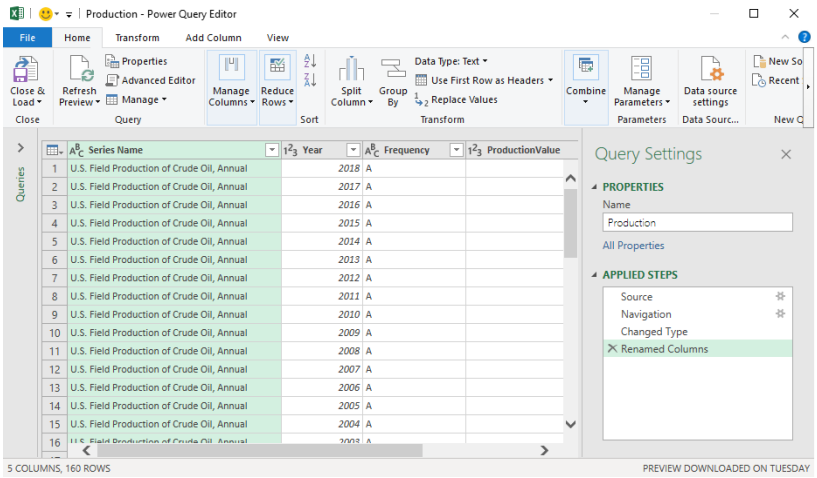


6. Click on Table View, then Load

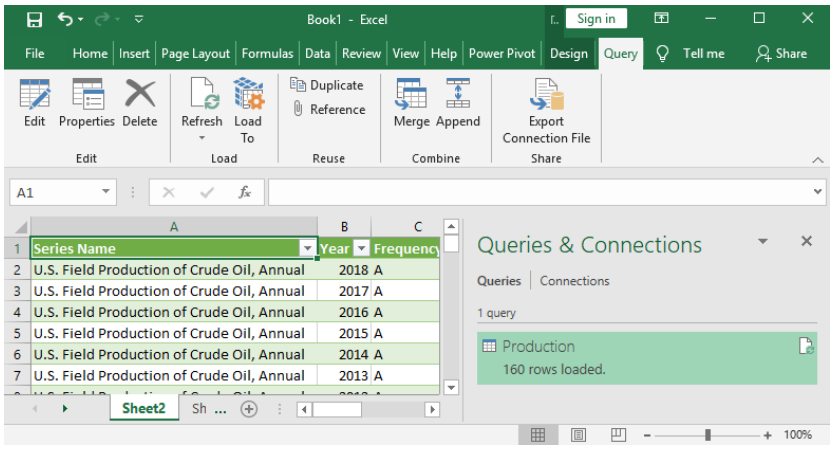


7. To edit the query name and column headings, click on the Query tab at the top, then Edit

8. On the right side of the screen, under Properties, change Name from Chart Data to Production
9. Double click on the header Period, change it to Year
10. Double click on the header Value, change it to ProductionValue



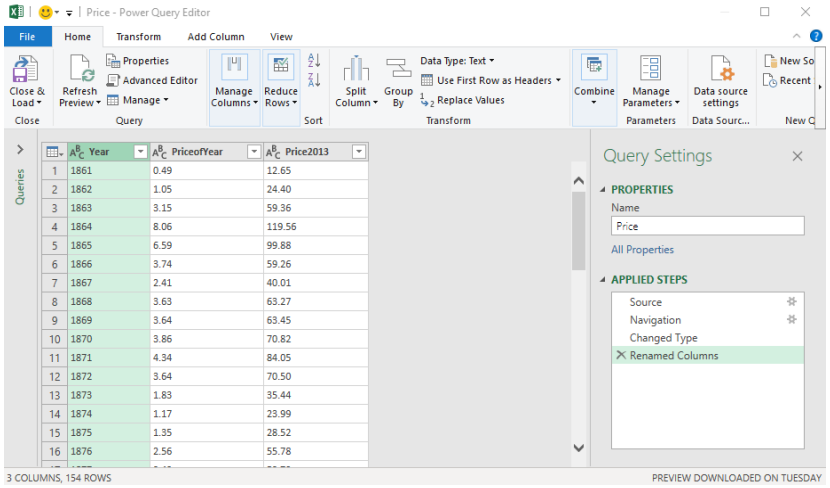
11. Click Close & Load to save the changes



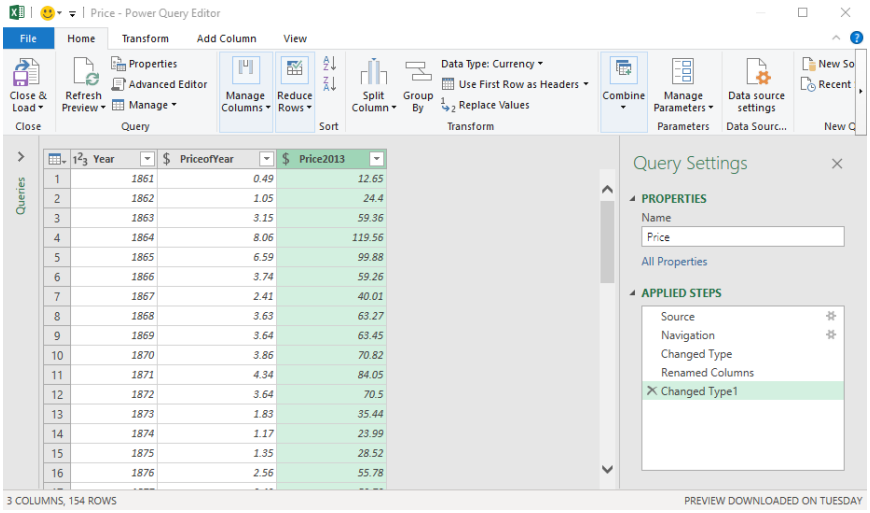
12. Next connect to the Price data
13. Click on the Data tab, Get Data, From Other Sources, From Web
14. In the URL space, enter the following web address. This web page contains the oil price data from 1861 to 2013. Suggest that you copy the link below to Excel. Click OK.

    http://chartsbin.com/view/oau

15. Select Table 0
16. Click Load
17. Note that the column headings are missing and the Query name is not very informative
18. Click on the Query tab, Edit
19. On the right side, under Properties, change Name from Table 0 to Price
20. Double click on the heading for Column 1, change it to Year
21. Double click on the heading for Column 2, change it to PriceofYear
22. Double click on the heading for Column 3, change it to Price2013

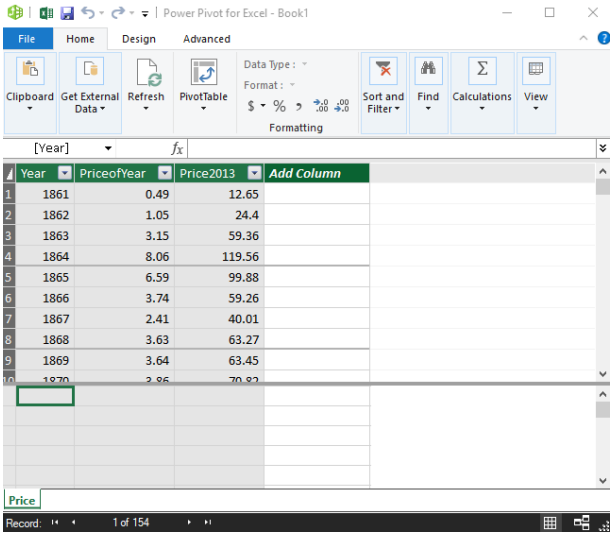


23. Note that the numbers in the columns appear left-justified. Let's check the data type.
24. Click on the Year column. In the middle of the top of the screen, it shows Data Type: Text. Click on the down arrow next to Text, change to Whole Number
25. Click on the PriceofYear column. Change Data Type: Text to Currency
26. Click on the Price2013 column. Change Data Type: Text to Currency

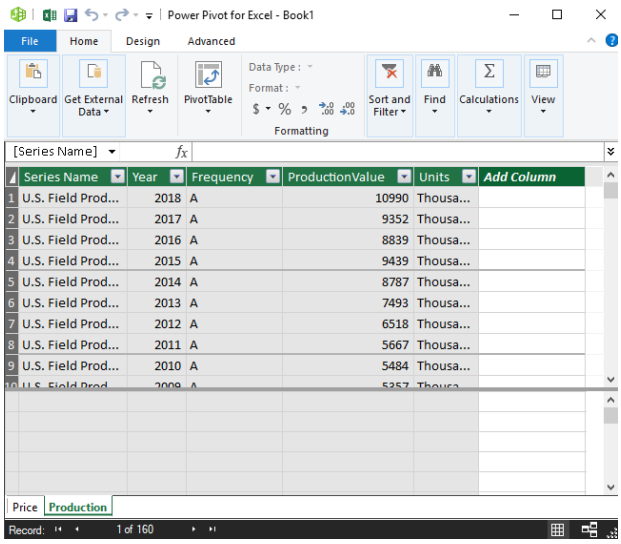


27. Click Close & Load to save the changes

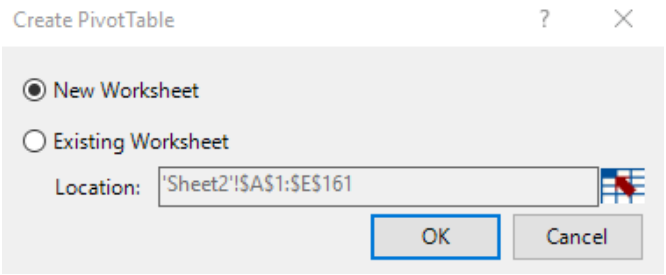
28. Click on PowerPivot at the top of the screen
29. Click Add to Data Model



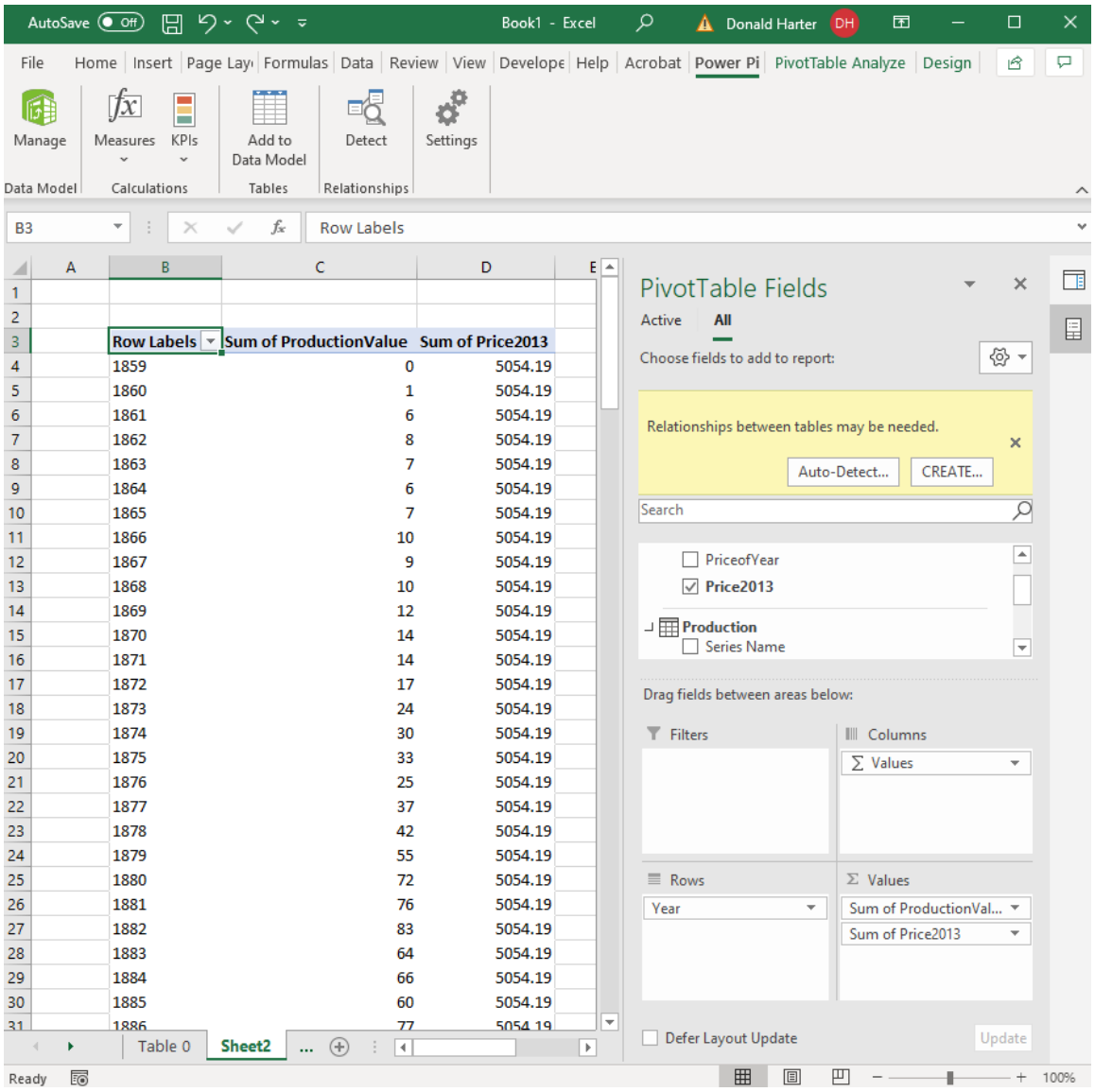
30. Go back to the main Excel screen, click on the Production Query, then Add to Data Model



31. Click on Pivot Table, Pivot Table, then OK

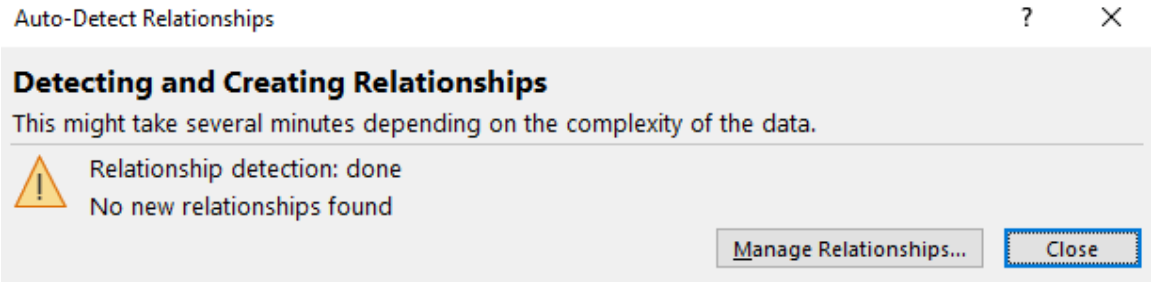


32. Click on the X next to Queries & Connections to free up space
33. Click on the arrow next to Production in the PivotTable Fields
34. Drag Production: Year to Rows
35. Drag Production: ProductionValues to Values
36. Click on the arrow next to Price
37. Drag Price2013 to Values



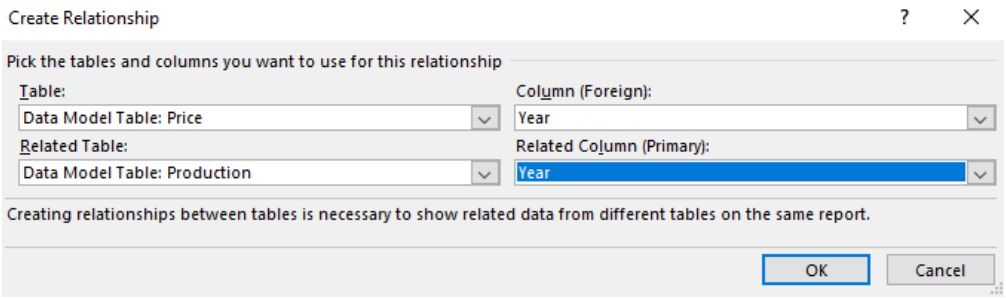
38. The data looks incorrect. Note the message on the right “Relationships between tables may be needed”

39. Click Auto-Detect

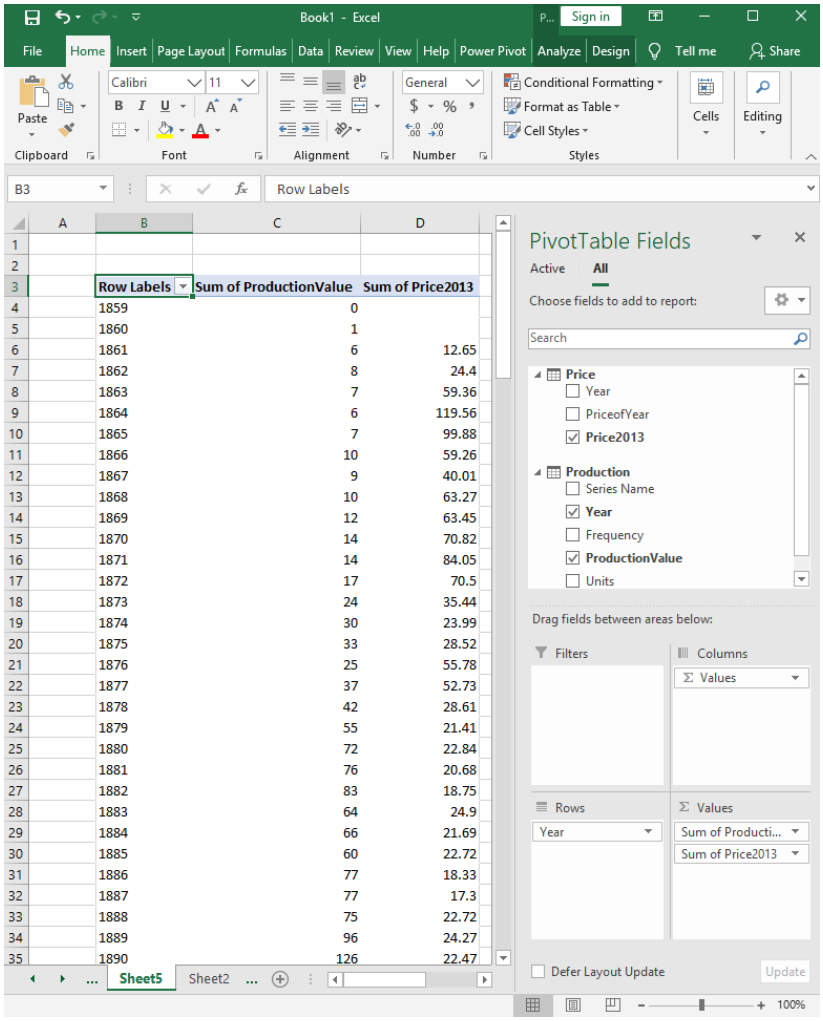


40. Auto-Detect failed to make the correction
41. Click Manage Relationships

42. Click New to create a new relationship
43. For the first table, use the drop-down arrow and select Data Model Table: Price
44. For the second table, use the drop-down arrow and select Data Model Table: Production
45. For Column (Foreign), use the drop-down arrow and select Year
46. For Column (Primary), use the drop-down arrow and select Year

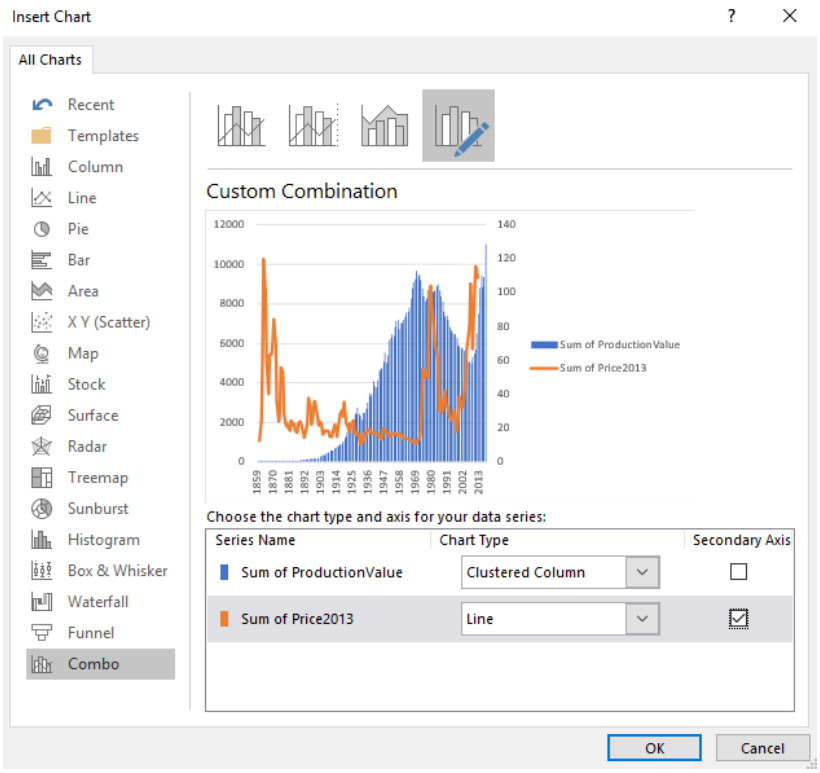


47. We have created the relationship between Production and Price
48. Click Close
49. The values for ProductionValue and Price2013 now appear correct



Row Labels	Sum of ProductionValue	Sum of Price2013
1859	0	
1860	1	
1861	6	12.65
1862	8	24.4
1863	7	59.36
1864	6	119.56
1865	7	99.88
1866	10	59.26
1867	9	40.01
1868	10	63.27
1869	12	63.45
1870	14	70.82
1871	14	84.05
1872	17	70.5
1873	24	35.44
1874	30	23.99
1875	33	28.52
1876	25	55.78
1877	37	52.73
1878	42	28.61
1879	55	21.41
1880	72	22.84
1881	76	20.68
1882	83	18.75
1883	64	24.9
1884	66	21.69
1885	60	22.72
1886	77	18.33
1887	77	17.3
1888	75	22.72
1889	96	24.27
1890	126	22.47

50. To create a PowerPivot chart, click on PivotTable Analyze, Pivot Chart
51. Select Combo chart at the bottom
52. For Price2013, check the box for Secondary Axis



53. Click OK