

Charity Digital Academy

Excel advanced – tips and tricks

Delivered by



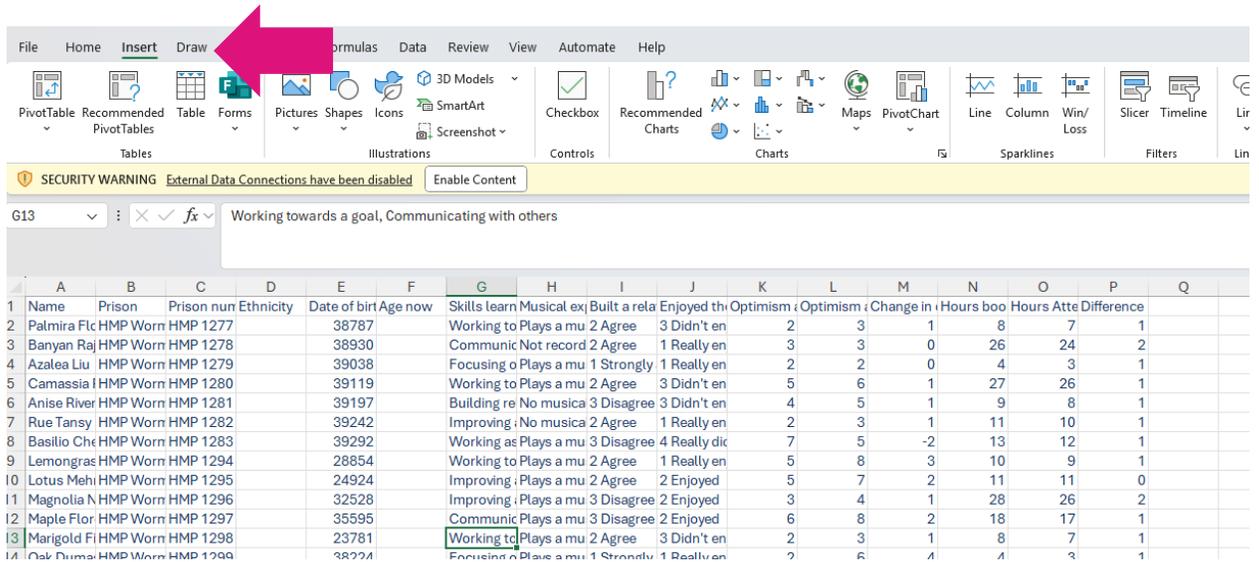
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Exercise 1 – Managing data with tables (1)

Creating tables

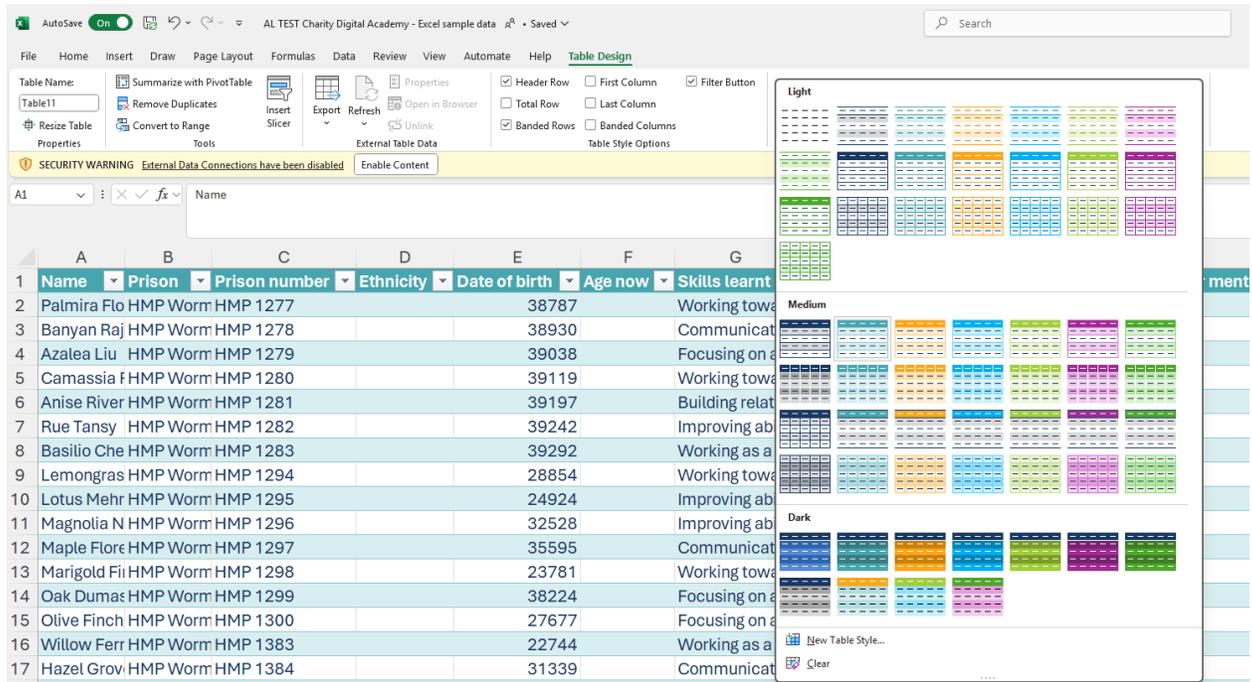
1. Click anywhere on the data in a sheet
2. On the **Insert** menu, click on **Table**



3. Make sure the whole table is selected by checking the cell range and option **My data has headers** is ticked.



4. From the **Table Design** tab, select the **Table style** you want to change the look & feel

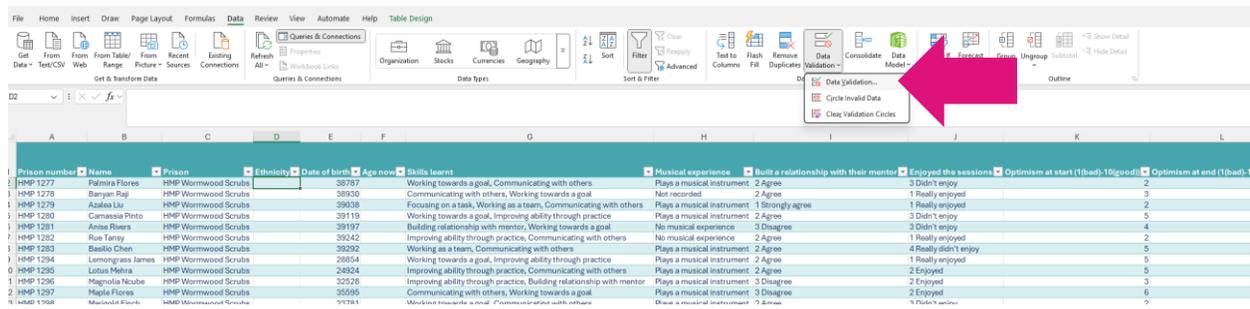


Data validation

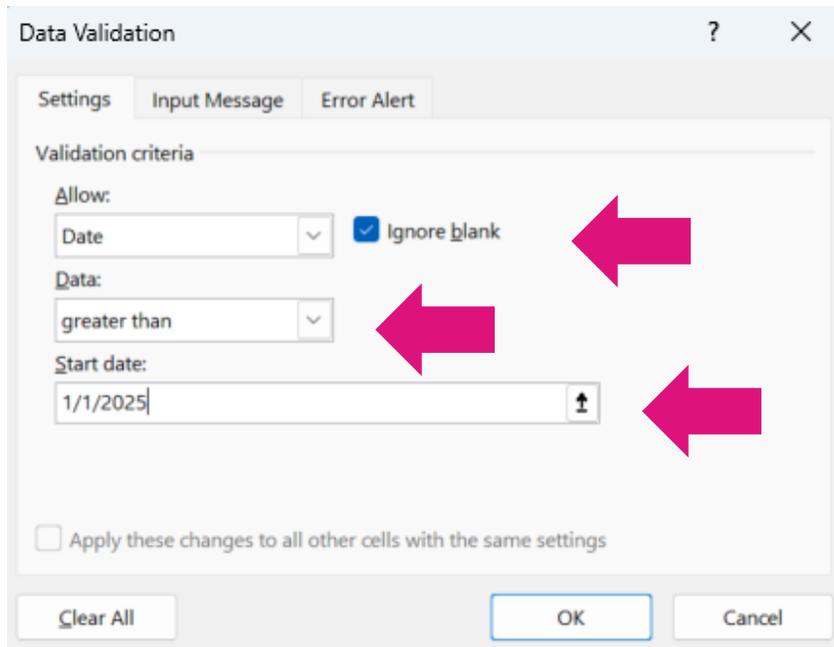
Data validation in Excel is a feature that lets you control what kind of data can be entered into a cell or range of cells.

Data validation - type

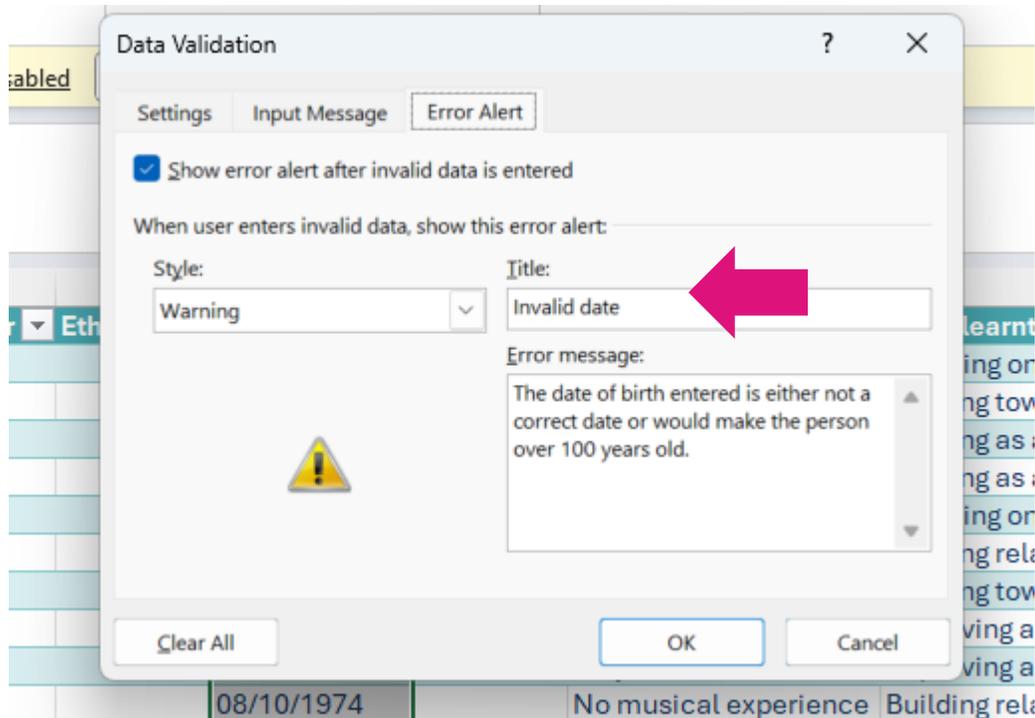
1. Click into the first cell of the column where you want to apply data validation



2. In the **Allow** field select **Date**, in the **Data** field select **greater than** in the Start date put in the earliest possible date e.g. 1/1/2025 as anything earlier would mean someone over 100 being in the prison.

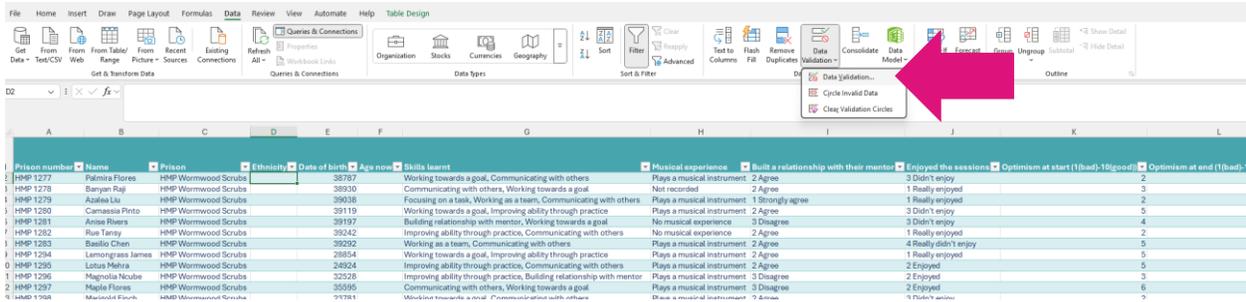


3. Add an alert to warn them what data is required. This will not stop data entry but just warn when it is entered incorrectly. Change the style to warning, put in a title and give an error message to help users understand what the correct data should be.

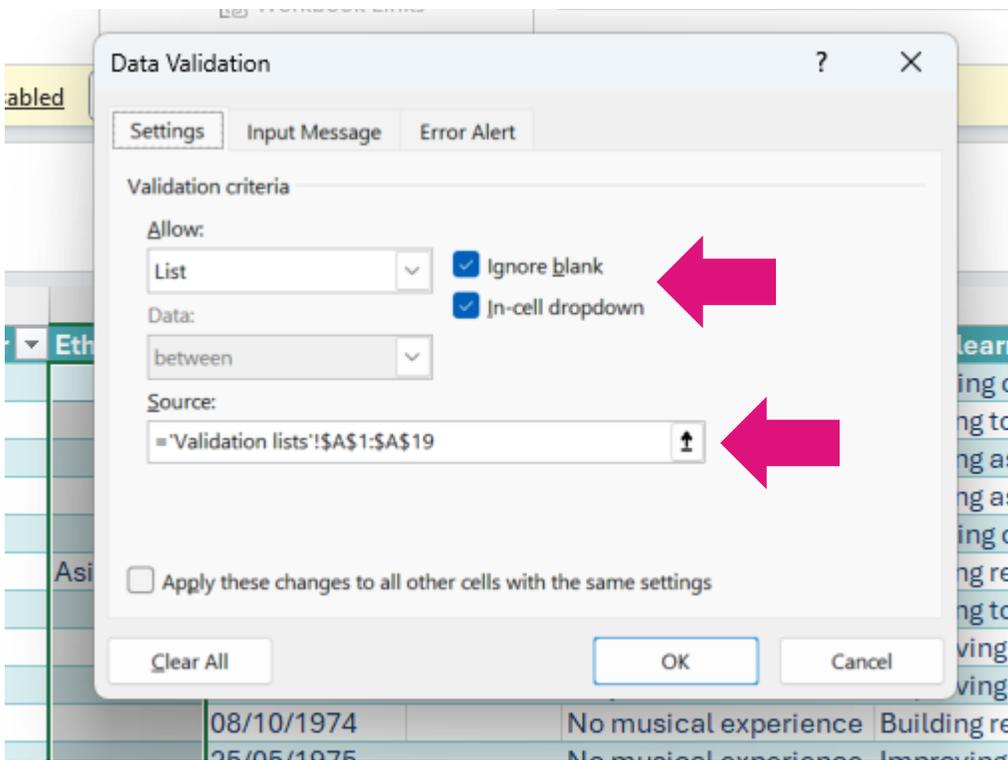


Data validation - List

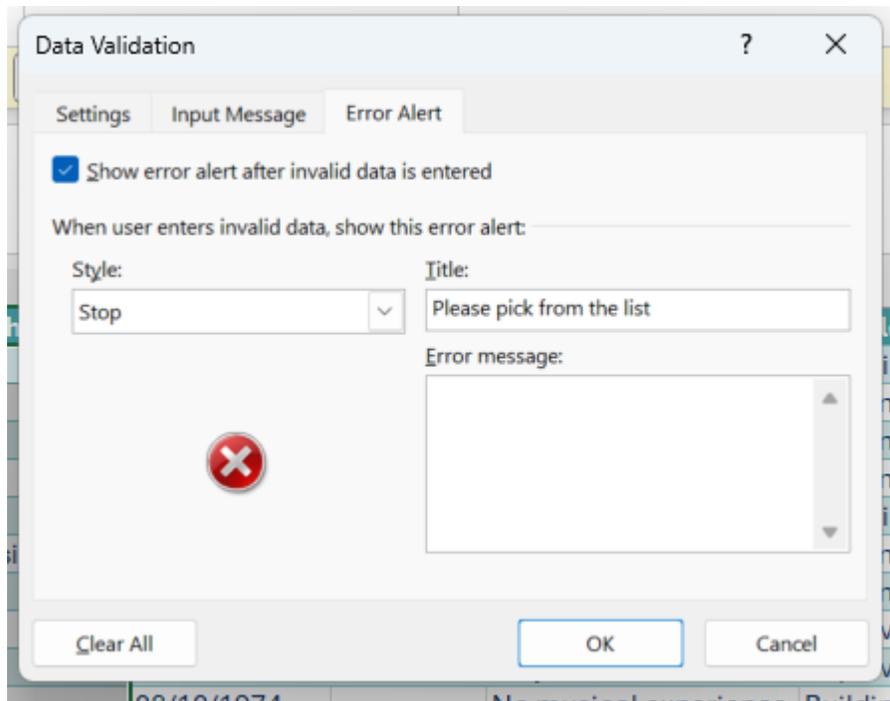
1. Click into the first cell of the column where you want to apply data validation



2. In the **Allow** field select **List**. Click in to the **Source** field and then go to the **Validation lists** sheet, highlight the ethnicity list and click on enter on your keyboard. The worksheet and cell range will then appear in the Source field.



3. Add an **Error Alert** to stop people entering anything which is not on the validation list. In the **Style** field, select **Stop** and then in the **Title** explain why they cannot enter data.

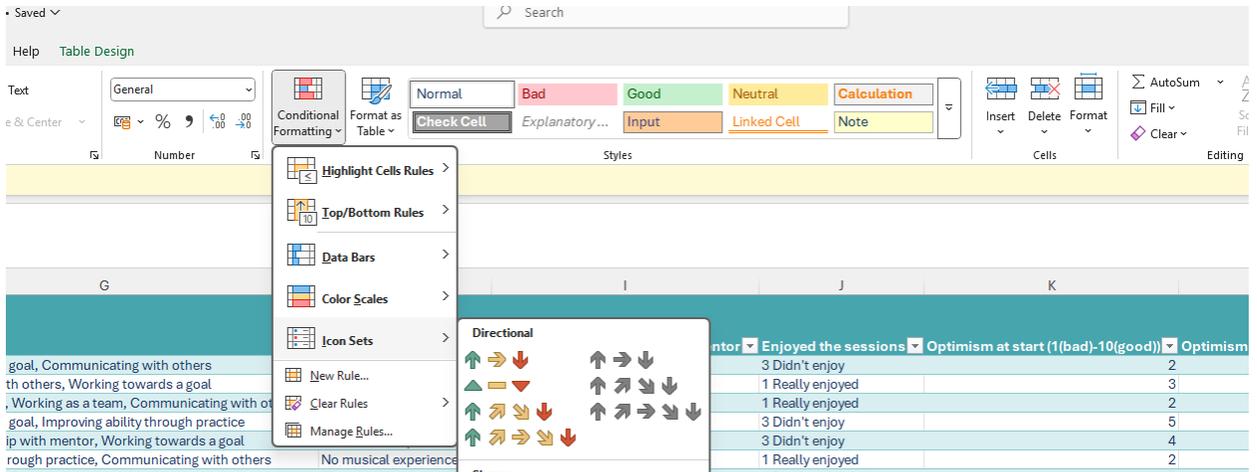


Conditional formatting

Conditional formatting in Excel lets you automatically change how cells look—like colors, icons, or data bars—based on their values, so patterns and important info stand out instantly.

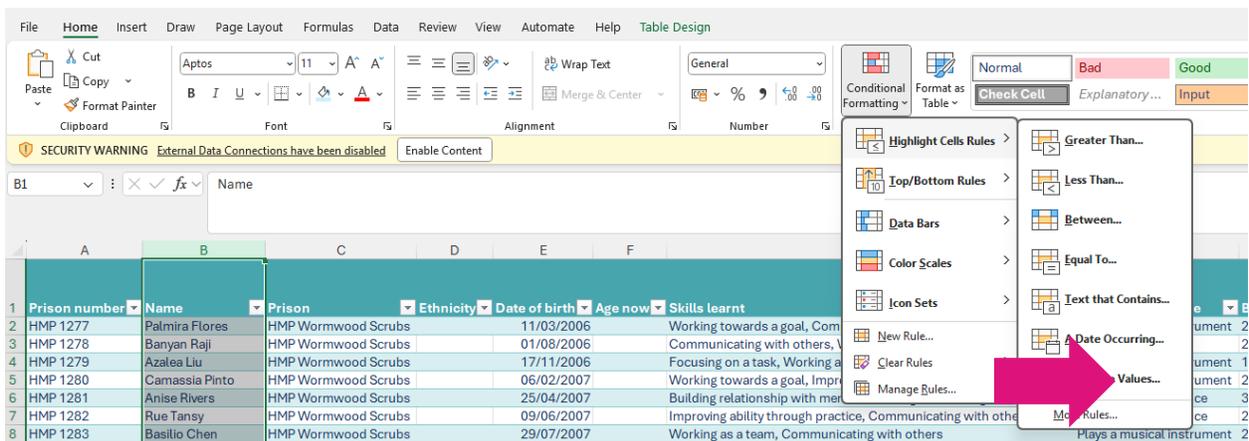
Conditional formatting – Directional

1. Select the **Change in Optimism** column but clicking in the column header
2. On the Home tab, click on the Conditional formatting button and then Icon sets to pick a directional arrow.



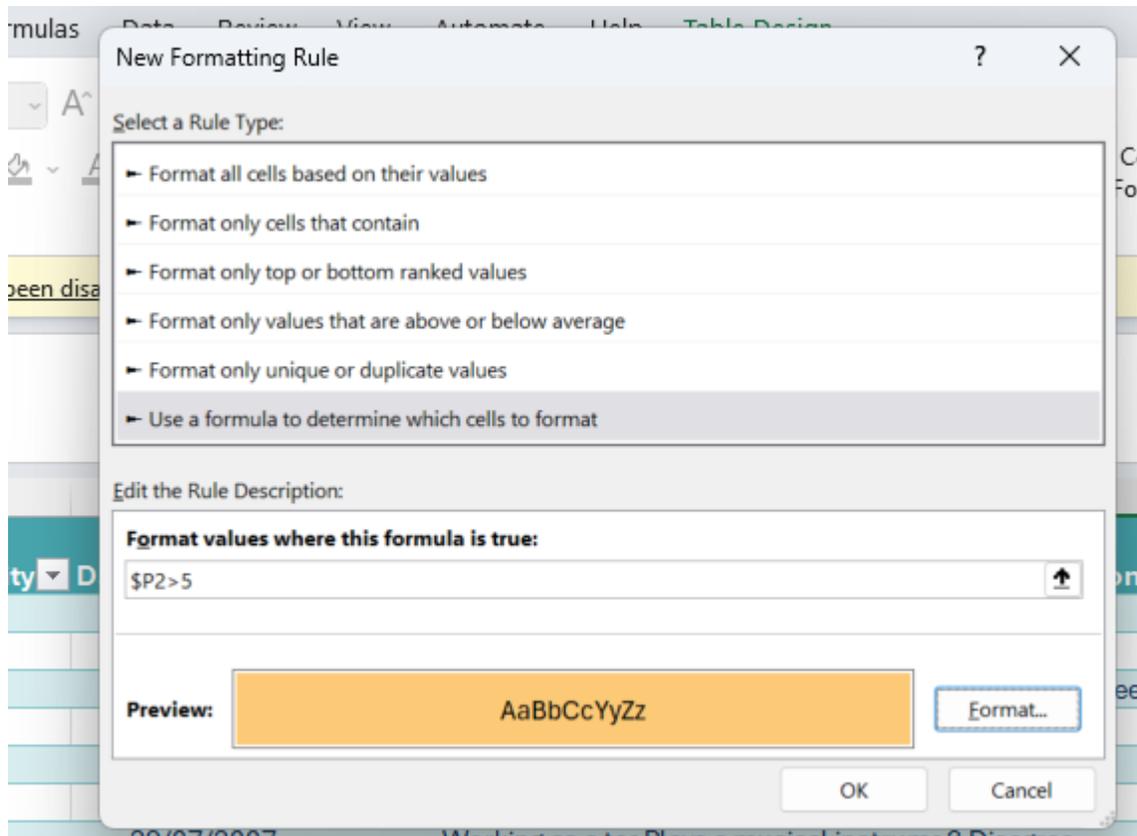
Conditional formatting – Duplicates

1. Select the **Name** column but clicking in the column header
2. On the Home tab, click on the Conditional formatting button, Select **Highlight Cells Rules** and then **Duplicate values**



Conditional formatting – Highlight a whole row based on its value

1. Select the **Name** column but clicking in the column header
2. On the Home tab, click on the Conditional formatting button, Select **New rule**
3. Select **Use a formula to determine which cells to format**
4. In the **Format values where this formula is true** enter **\$P2>5**
5. Click on **Format** and select a background colour.



Exercise 2 – Bringing data together with Power Query

Power Query is a data transformation tool built into Excel and Power BI that lets you connect to data sources, clean and reshape data, and automate repetitive tasks—all without writing code

Creating queries

1. Click on the table
2. On the data tab select **From Table/range**

	A	B	C	D	E	F	G	H	I
1	Name	Prison	Prison number	Ethnicity	Date of birth	Age now	Musical experience	Skills learnt	Built a relationship with their mentor
2	Rowan Alder	HMP Belmarsh	HMP 1234		07/02/1965		Plays a musical instrum	Focusing on a task, Working as a team, Communicating with	2 Agree
3	Hazel Bramble	HMP Belmarsh	HMP 1235		23/07/1966		Plays a musical instrum	Working towards a goal, Improving ability through practice	3 Disagree
4	Holly Thorne	HMP Belmarsh	HMP 1236		14/11/1967		No musical experience	Working as a team, Communicating with others	2 Agree
5	Willow Moss	HMP Belmarsh	HMP 1237		30/04/1968		Plays a musical instrum	Working as a team, Communicating with others	1 Strongly agree
6	Fern Cotter	HMP Belmarsh	HMP 1238		02/12/1969		No musical experience	Focusing on a task, Working as a team, Communicating with	1 Strongly agree
7	Ivy Brook	HMP Belmarsh	HMP 1239		19/09/1970		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree
8	Laurel Fenn	HMP Belmarsh	HMP 1240		03/03/1971		Plays a musical instrum	Working towards a goal, Communicating with others	1 Strongly agree
9	Poppy Heather	HMP Belmarsh	HMP 1241		26/06/1972		Plays a musical instrum	Improving ability through practice, Building relationship with	1 Strongly agree
10	Clover Reed	HMP Belmarsh	HMP 1242		11/01/1973		Plays a musical instrum	Improving ability through practice, Communicating with oth	1 Strongly agree
11	Sorrel Ash	HMP Belmarsh	HMP 1243		08/10/1974		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree
12	Primrose Tilling	HMP Belmarsh	HMP 1244		25/05/1975		No musical experience	Improving ability through practice, Building relationship with	3 Disagree
13	Foxglove Banner	HMP Belmarsh	HMP 1245		15/08/1976		Plays a musical instrum	Building relationship with mentor, Working towards a goal	3 Disagree
14	Bluebell Harrow	HMP Belmarsh	HMP 1247		06/11/1977		No musical experience	Improving ability through practice, Communicating with oth	2 Agree
15	Baobab Moyo	HMP Belmarsh	HMP 1247		18/02/1978		No musical experience	Improving ability through practice, Communicating with oth	3 Disagree
16	Tamarind Ellis	HMP Belmarsh	HMP 1248		09/07/1979		Plays a musical instrum	Communicating with others, Working towards a goal	2 Agree
17	Ritch Tanev	HMP Belmarsh	HMP 1314		29/04/1980		Plays a musical instrum	Working as a team, Communicating with others	2 Agree

3. Check the query has the prison name
4. On the home tab, select **Close and Load to**

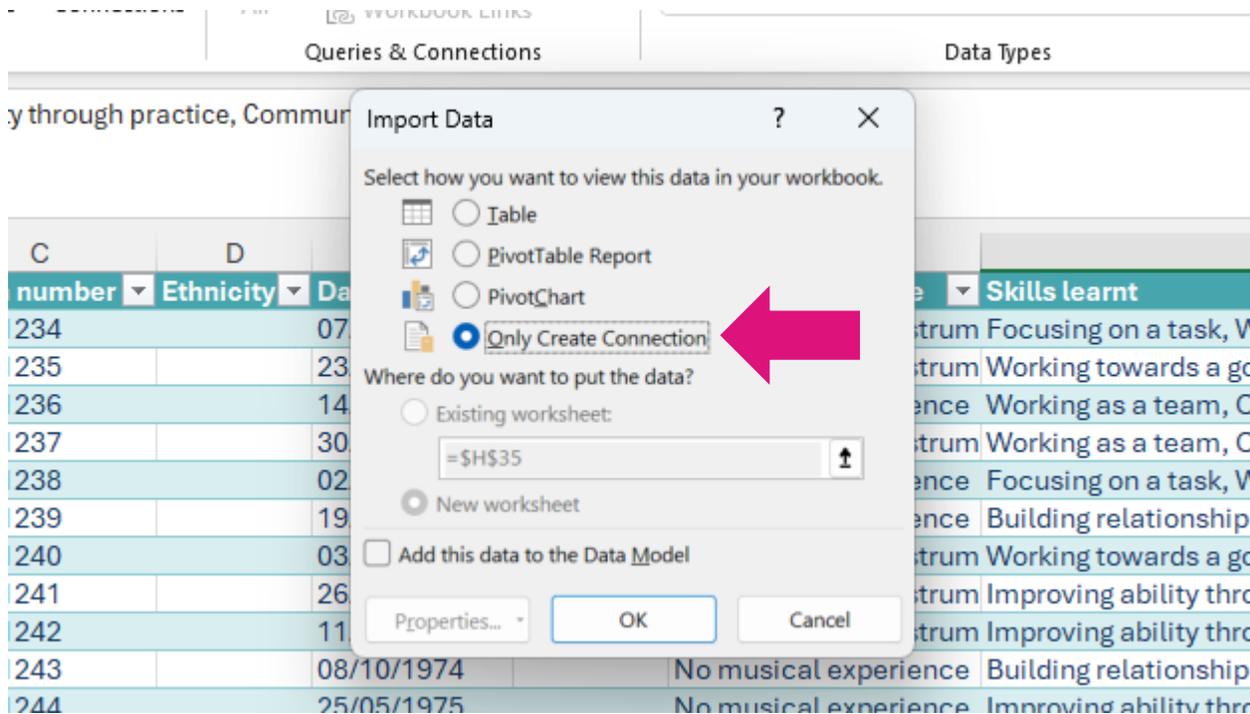
Close & Load To...

	A	B	C	D	E	F	G	H	I
4	Willow Moss	HMP Belmarsh	HMP 1237		30/04/1968 00:00				
5	Fern Cotter	HMP Belmarsh	HMP 1238		02/12/1969 00:00				
6	Ivy Brook	HMP Belmarsh	HMP 1239		19/09/1970 00:00				
7	Laurel Fenn	HMP Belmarsh	HMP 1240		03/03/1971 00:00				
8	Poppy Heather	HMP Belmarsh	HMP 1241		26/06/1972 00:00				
9	Clover Reed	HMP Belmarsh	HMP 1242		11/01/1973 00:00				
10	Sorrel Ash	HMP Belmarsh	HMP 1243		08/10/1974 00:00				
11	Primrose Tilling	HMP Belmarsh	HMP 1244		25/05/1975 00:00				
12	Foxglove Banner	HMP Belmarsh	HMP 1245		15/08/1976 00:00				
13	Bluebell Harrow	HMP Belmarsh	HMP 1247		06/11/1977 00:00				

APPLIED STEPS

- Source
- Changed Type

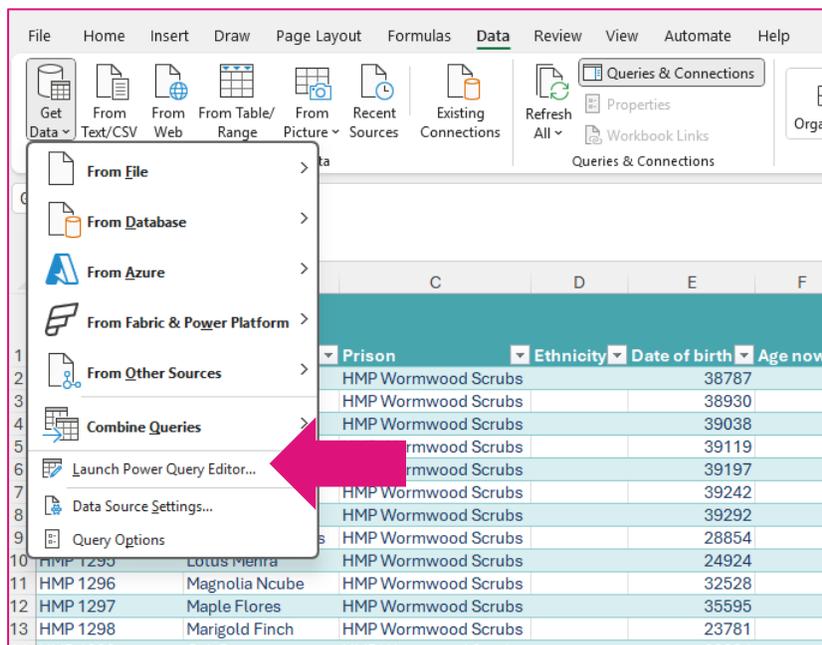
5. Under the Import data options select **Only Create Connection**
6. Click on **OK**



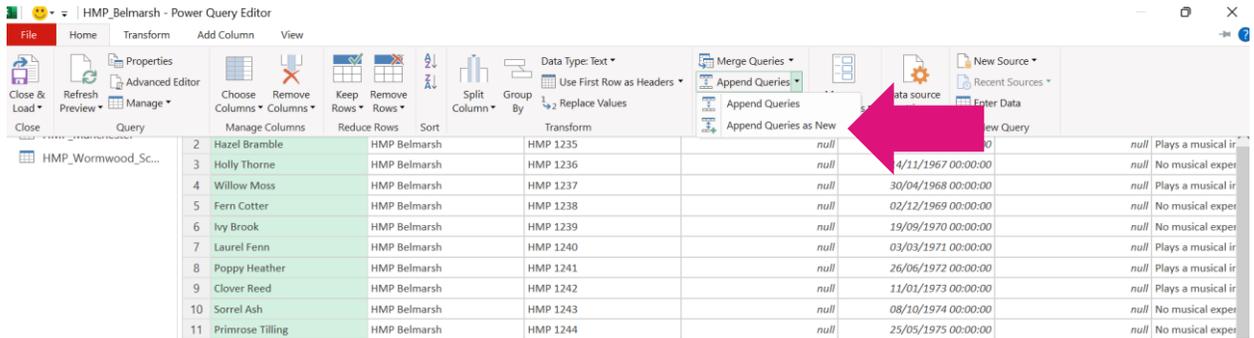
7. Repeat for the other 3 Prisons

Appending queries

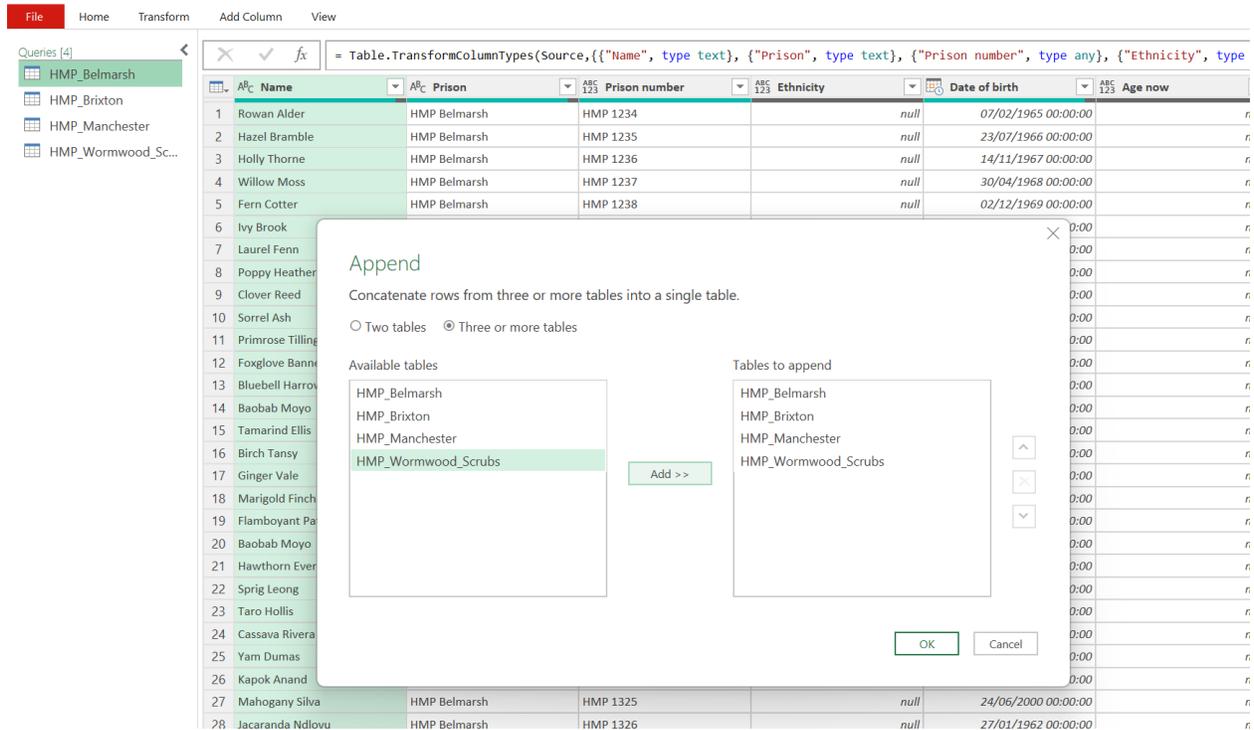
1. Open the Query editor on the Data tab by going to Get Data and selecting Launch Power Query Editor.



2. On the **Home** tab, select the option **Append Queries as New**

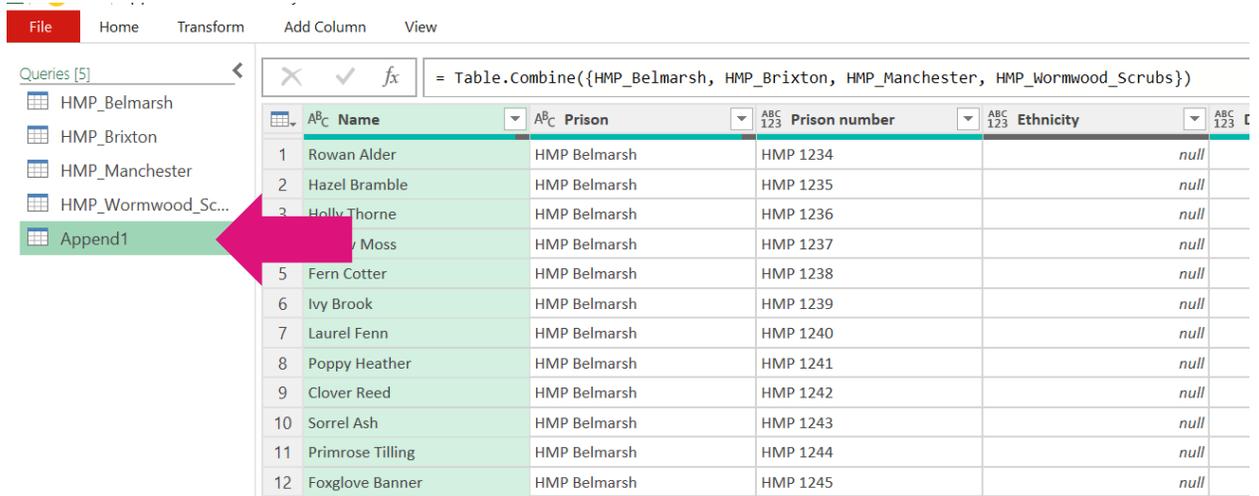


3. Select the 4 Prison queries by clicking on them and then on **Add>>** so that all 4 queries are in the **Tables to append** box

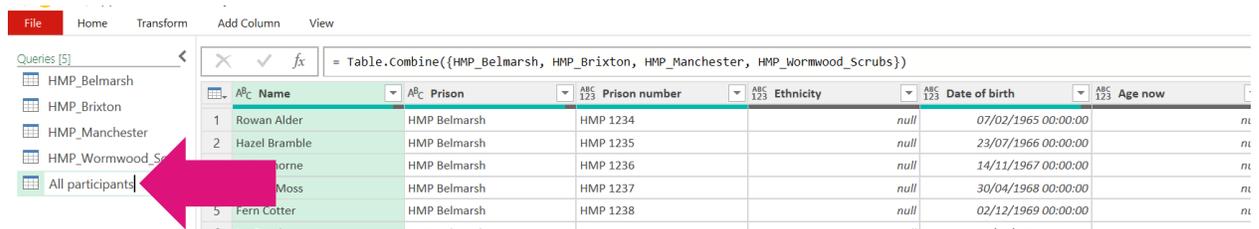


4. Click on **OK**

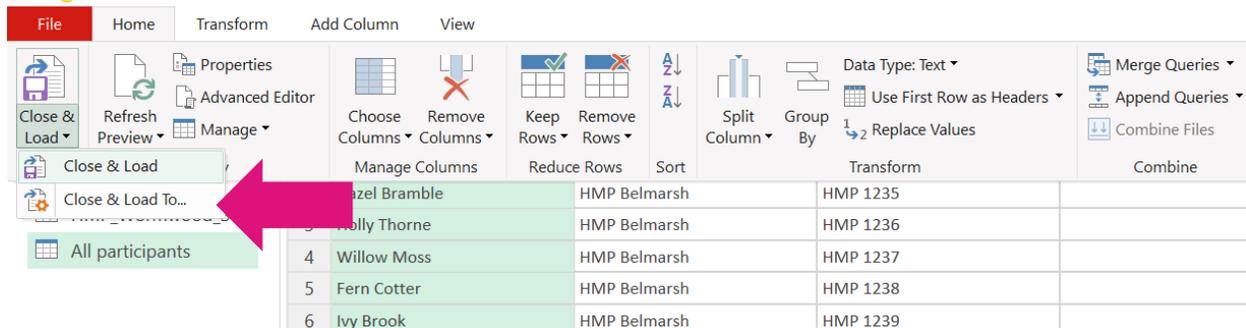
5. A new query will appear on the left called Append1



6. Double click on **Append 1** or right click and select rename, and rename it to **All participants**



7. On the **Home** tab click on the **Close & Load** button



8. You should now have a new sheet called **All participants** in your workbook

49	Mahogany Shaw	HMP Brixton	HMP 1252	30321	No musical experience
50	Sakura Inoue	HMP Brixton	HMP 1253	31006	No musical experience
51	Lotus Mehra	HMP Brixton	HMP 1254	31165	Plays a musical instrument
52	Bamboo Tanaka	HMP Brixton	HMP 1255	31640	No musical experience
53	Maranta Leong	HMP Brixton	HMP 1256	32118	No musical experience
54	Plumeria Anand	HMP Brixton	HMP 1257	32205	Not recorded
55	Ginger Kiri	HMP Brixton	HMP 1258	32795	Plays a musical instrument
56	Ash Rowan	HMP Brixton	HMP 1284	28960	Plays a musical instrument

Adding source data and refreshing queries

1. Add a row of data for a new participant to any of the 4 prison tables
2. Refresh the query either individually by clicking on the refresh icon next to the query name

The screenshot shows the Excel interface with a data table and the Queries & Connections pane. The data table has the following columns: Name, Prison, Prison number, Ethnicity, Date of birth, Age now, Musical experience, Skills learnt, Built a relationship with their mentor, and Enjoys the sessions. The Queries & Connections pane on the right shows a list of queries, with 'All participants' highlighted in red. A red arrow points from the 'All participants' query to the data table.

Or by clicking on Refresh all on the Data tab

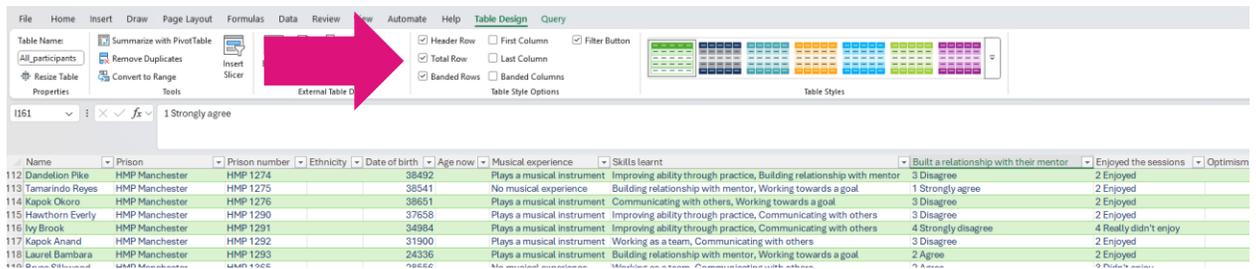
The screenshot shows the Microsoft Excel ribbon with the Data tab selected. The Refresh All button is highlighted in red. The ribbon also shows other options like Get & Transform Data, Queries & Connections, Data Types, and Sort & Filter.

Exercise 3: Managing data with tables (2)

Adding totals

Adding a total row

1. Click anywhere on the table to select it
2. On the **Table Design** tab, tick the **Total row** box



Selecting a type of total

1. Click in the total row in the column where you want to add a calculation and select it off the list

Adding formulas with Flash Fill

1. Add a formula in the first cell of the column where you want the formula
2. Drag it down a few cells
3. Right mouse click and select Flash fill to have the formula populate all the way down

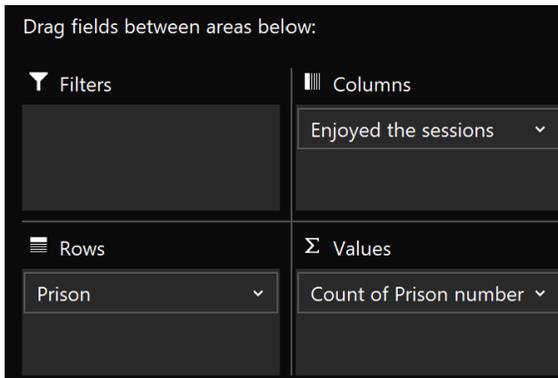
	E	F	G	H	I	J	K	L	M	N	O	P
	Hours	Age now	Musical experience	Skills learnt	Built a relationship with their mentor	Enjoyed the sessions	Optimism at start (1(bad)-10(good))	Optimism at end (1(bad)-10(good))	Change	Hours booked	Hours Attended	Difference
2	23780		Plays a musical instrument	Focusing on a task, Working as a team, Communicating with others	2 Agree	1 Really enjoyed	2	3	1	8	7	
3	24311		Plays a musical instrument	Working towards a goal, Improving ability through practice	3 Disagree	3 Didn't enjoy	3	0	0	26	24	
4	24790		No musical experience	Working as a team, Communicating with others	2 Agree	2 Enjoyed	2	0	0	4	3	
5	24958		Plays a musical instrument	Working as a team, Communicating with others	1 Strongly agree	3 Didn't enjoy	5	6	1	27	25	
6	25539		No musical experience	Focusing on a task, Working as a team, Communicating with others	1 Strongly agree	2 Enjoyed	5	1	9	9	8	
7	25830		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree	4 Really didn't enjoy	2	7	5	32	31	
8	25995		Plays a musical instrument	Working towards a goal, Communicating with others	1 Strongly agree	3 Didn't enjoy	2	2	0	22	23	
9	26476		Plays a musical instrument	Improving ability through practice, Building relationship with mentor	1 Strongly agree	3 Didn't enjoy	6	7	1	8	8	
10	26675		Plays a musical instrument	Improving ability through practice, Communicating with others	1 Strongly agree	2 Enjoyed	4	4	0	19	18	
11	27310		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree	1 Really enjoyed	4	2	2	3	2	
12	27539		No musical experience	Improving ability through practice, Building relationship with mentor	3 Disagree	2 Enjoyed	3	0	0	23	22	
13	27987		Plays a musical instrument	Building relationship with mentor, Working towards a goal	3 Disagree	2 Enjoyed	6	0	5	5	5	
14	28430		No musical experience	Improving ability through practice, Communicating with others	2 Agree	2 Enjoyed	3	4	1	23	23	
15	28539		No musical experience	Improving ability through practice, Communicating with others	3 Disagree	2 Enjoyed	6	4	1	35	34	
16	29045		Plays a musical instrument	Communicating with others, Working towards a goal	2 Agree	2 Enjoyed	4	2	5	8	8	
17	21689		Plays a musical instrument	Working as a team, Communicating with others	2 Agree	4 Really didn't enjoy	5	9	0		12	
18	36323		No musical experience	Working as a team, Communicating with others	2 Agree	2 Enjoyed	2	2	0		3	
19	31764		No musical experience	Focusing on a task, Working as a team, Communicating with others	1 Strongly agree	2 Enjoyed	4	5	0		8	
20	24051		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree	4 Really didn't enjoy	2	7	7		31	
21	37258		No musical experience	Building relationship with mentor, Working towards a goal	2 Agree	1 Really enjoyed	4	2	0		2	
22	26563		No musical experience	Improving ability through practice, Building relationship with mentor	3 Disagree	2 Enjoyed	3	3	0	23	22	

Exercise 4: Pivot Tables & Charts

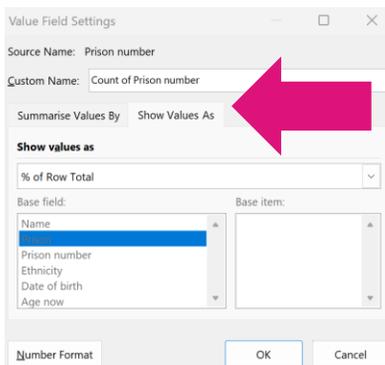
Pivot tables are a feature in Excel and Power BI that lets you summarise, explore, and analyse large datasets quickly and interactively — without writing formulas from scratch.

1. Using the **All participants** sheet, insert a Pivot table (Insert tab and select the PivotTable)

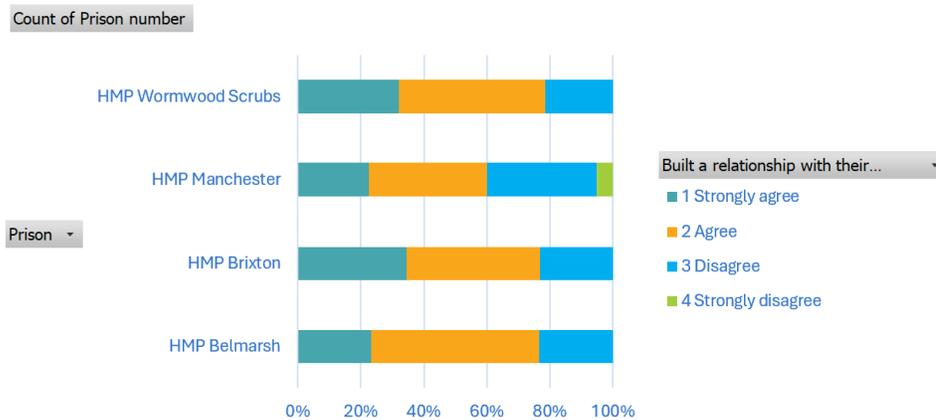
2. Name the Pivot Table 'Enjoyment' (see top left of PivotTable Analyse Tab, or click down arrow under PivotTable Command)
3. Select the following fields in the PivotTable Fields list on the far-right of your screen: Prison, Prison number, Enjoyed the sessions (*If you don't see these options, make sure you have clicked somewhere in the PivotTable on the left*)
4. Drag 'Prison' to Columns; drag 'Prison number' to Values; drag 'Enjoyed the sessions' to Rows. Check the Values is showing as 'Count of Prison number'.



5. Now change the Value Field Settings to show as % of Row Total (Click on the down arrow next to 'Prison ID' in the Values quadrant and choose % of Row Total from the 'Show Values As' tab)



6. Remove the decimal places (Highlight the cells with % in them in the PivotTable, go to the Home Tab, Number Group, and select the Decrease Decimal command twice to remove decimal places (using the right arrow icon))
7. Rename the new Sheet to 'Enjoyment Pivot' (Double click Sheet tab at the bottom to rename)
8. Now repeat the above choosing Built a relationship with their mentor in place of the Enjoyed the sessions, renaming the new sheet created 'Relationship Pivot'.
9. Using the Relationship pivot, click on the Pivot table analyse tab and then select Pivot Chart on the top menu (towards the right). Create a Stacked bar chart to compare the prisons performance.



10. Add the Musical experience field to the Filter area of the Pivot table – this should now appear on your chart. Do the building a relationship with your mentor results differ depending on whether participants did or did not have prior musical experience?

Exercise 5: Bringing data from one sheet to another

The GETPIVOTDATA() formula in Excel is like a smart query tool that lets you pull specific values from a PivotTable based on its structure—not just cell location

1. In the Summary sheet, create a Get Pivot Data formula in the top cell of the Enjoyment Column (for Belmarsh Prison) by clicking in the cell and entering =
2. Then go to the Enjoyment Pivot Sheet and click on the cell with the results for Belmarsh prison and ‘1 Really Enjoyed’. Now click on the + sign and click the cell with the results for Belmarsh prison and ‘2 Enjoyed’. Press Enter.
3. Copy this formula to remaining rows and you’ll see an error. In the Formulae in the next cell down change the Prison name to “HMP Brixton” (type this in, in the formula bar, overriding HMP Belmarsh in the 2 places it occurs in the formulae)
4. In the next cell down, this time remove the Prison name (including the speech marks “ ”) and replace with the cell reference for the Prison name (in the Prison column in the Summary sheet) that you want to replace it with (in this case HMP Manchester – cell A6) Again, you will need to do this twice – for each instance that the Prison name occurs in the formula.
5. Now copy the formula down to the Wormwood Scrubs row and check the answer is correct
6. Repeat for the Built a relationship with their mentor data

Using Xlookup

This formula searches a range or an array for a match and returns the corresponding item from a second range or array. By default an exact match is used.

7. In the Summary sheet, use Xlookup to bring in data for the respective prisons from the Prison info sheet into the Number of mentors column.
8. Follow the Xlookup format below

```
XLOOKUP(lookup_value, lookup_array, return_array, [if_not_found], [match_mode], [search_mode])
```

For this scenario you'll need to use =XLOOKUP(A4, 'Prison info'!A:A,'Prison info'!F:F) and then copy the formulae down.

Using Countif

This Counts the number of cells within a range that meet the given condition.

9. Still in the Summary sheet, use the Countif formula to bring in data for the respective prisons from the Prison info sheet into the Number of mentors column.
10. Follow the Countif format below

```
COUNTIF(range, criteria)
```

For this scenario you'll need to use =COUNTIF(All_participants[Prison], 'Summary sheet'!A4)