



An Introduction to PowerBI

FOR SMALL CHARITIES & COMMUNITY GROUPS



What we're going to cover

- ✓ What is Power BI?
- ✓ Power BI Desktop vs Power BI Service
- ✓ Queries & getting data from Excel
- ✓ Creating a report
- ✓ Basic visualisations
- ✓ Sharing a report internally
- ✓ Publishing a report publicly

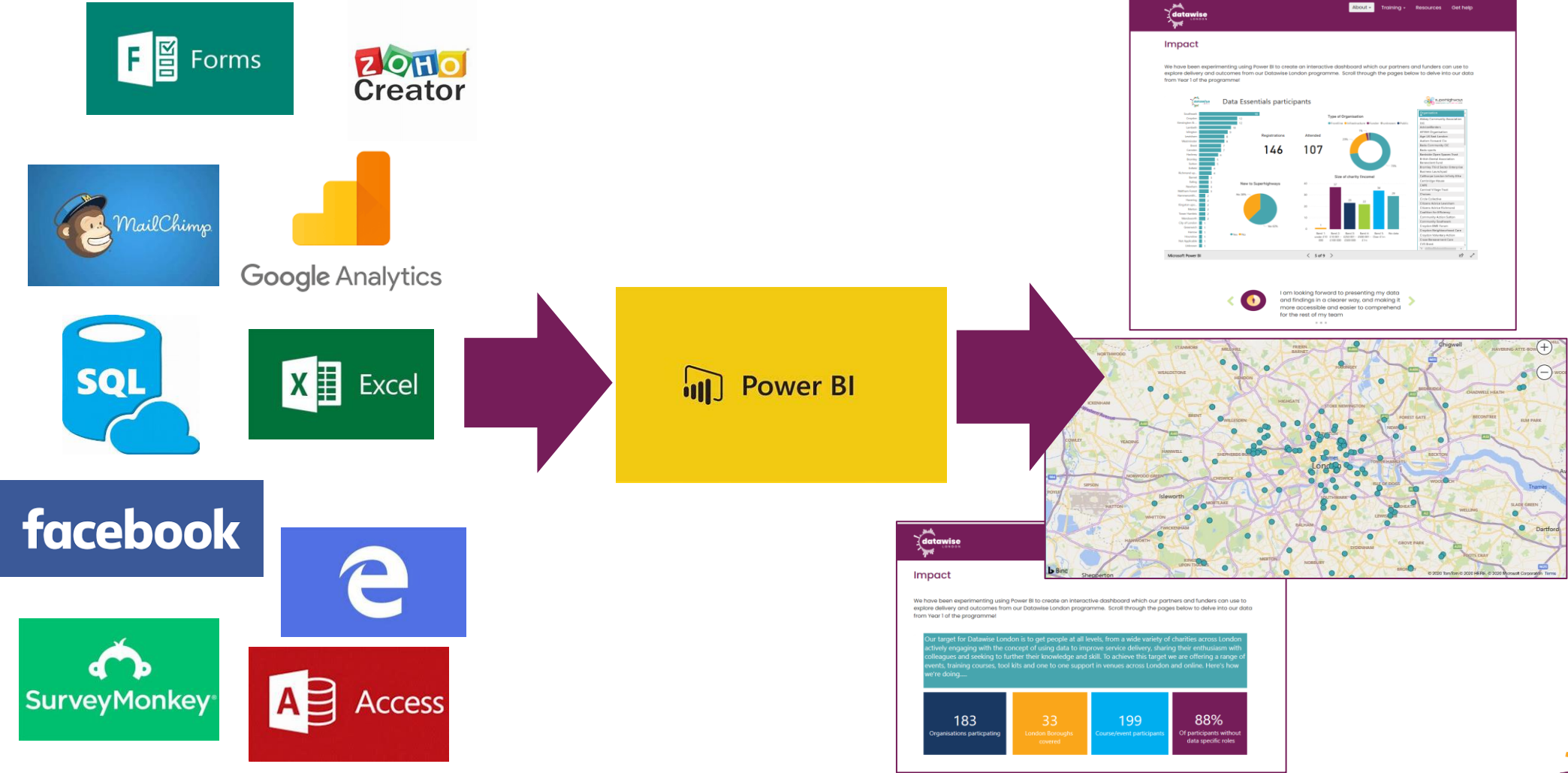


How we'll run the training:

- ✓ Session will be divided up into a short topic demo & then the opportunity for you to put it into practice.
- ✓ Please don't copy what I'm doing, just watch so you don't miss any steps – you're going to be doing it all yourselves in the exercises
- ✓ Questions – ask questions out loud or in the chat as we go along
- ✓ Step by step guidelines have been emailed to you – use them if you get stuck
- ✓ Please keep your camera & microphone on unless you have a noisy background
- ✓ We'll aim to have a break of 10-15 mins in the middle



Power BI is a collection of **business intelligence and data visualization tools by Microsoft**. You can take data from virtually any source and transform them into reports & dashboards

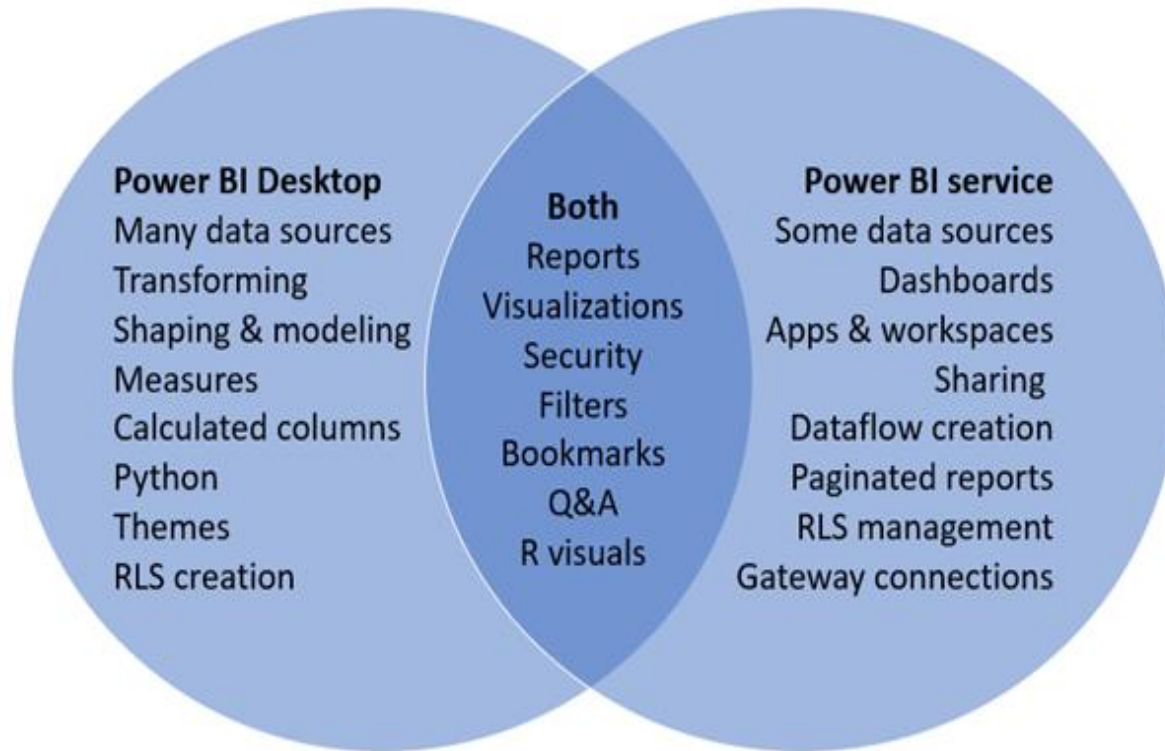


Why should you use Power BI?

- ✓ Unite data from multiple sources in one place
- ✓ Secure data sharing
- ✓ Interactive dashboards
- ✓ Drill down
- ✓ Real time
- ✓ Easy to get started despite being incredibly powerful and complex



Power BI Desktop and the Power BI service



Power BI Desktop

A complete data analysis and report creation tool that you install on your local computer. It includes the **Query Editor**, in which you can connect to many different sources of data, and combine them into a data model. Then you design a report based on that data model.

Power BI service

A cloud-based service. It supports light report editing and collaboration for teams and organizations. You can connect to data sources in the Power BI service, too, but data modelling is limited. Allows you to **publish your reports publicly & embed in websites**



Which one should I use?

Both!

Use **Power BI Desktop** to transform data & create Power BI reports & dashboards using Power Query

Use **Power BI service** to collaborate and share reports & dashboards



What we'll be building today:

Music Mentors work with young offenders in prisons. People sign up to take part in group sessions where they work together with other offenders and mentors to write, play and record music.

The data we are using today is fictional data for the programme which we have created for training purposes. It is for a 3-year period: 2023–25

<https://app.powerbi.com/view?r=eyJrIjojOGM4MTFiNjYtM2VIYS00MjY4LWJkY2ItYTlxY2RIN2UxZjY3IiwidCI6IjViY2QyNTczLWU4YzQtNDZjOCliOTQwLTIwNDZjOWJjMTc4NSIsImMiOjh9>



Relationship between Power BI & external data sources

- ✓ Power BI uses data retrieval queries to connect to external sources
- ✓ You can combine & manipulate data from multiple sources in Power BI
- ✓ Not a two-way relationship, if you make a change in Power BI, it will not update the data source
- ✓ Make all edits to the base data in the external source not in Power BI e.g. adding in rows of data
- ✓ Use the queries to make changes to the data used in your reports e.g. removing columns of sensitive data or adding calculated columns.
- ✓ Clean your data in Power BI e.g. make "UK", "uk", "united Kingdom", "Britain" all "United Kingdom"



Get & Transform data

The **Get & Transform data** functions in PowerBI allow you create and edit **Microsoft SQL or Power queries** to connect to data sources, fetch data from them and manipulate that data in PowerBI.

You need to provide answers to the following questions to create a query:

Get

- ✓ What data do you want to retrieve?
- ✓ Where is that data located?

Transform

- ✓ How do you want to organise it?
- ✓ Where do you want to store the results?



Stage 1

- ✓ Prepare your Excel file
- ✓ Bring the data into PowerBI
- ✓ Combine the different datasheets in PowerBI

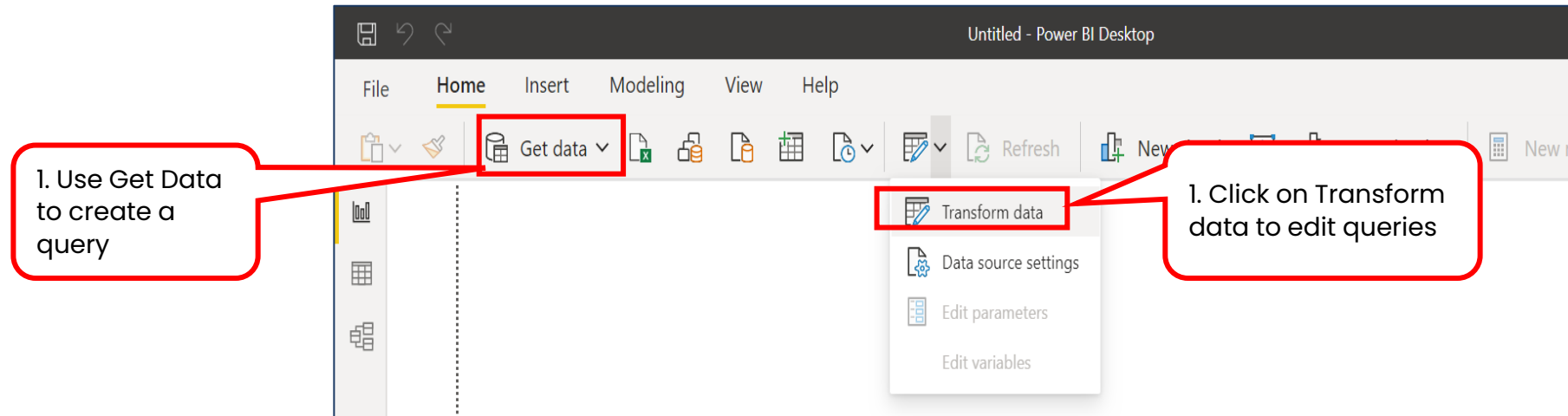


Prepare your Excel data file

- ✓ Put all data into tables
- ✓ Name all tables
- ✓ Name all sheets
- ✓ Make sure the Excel file is in a shared drive eg Onedrive, Google Drive, SharePoint, Teams etc.
- ✓ Close the file before doing the Get Data query
- ✓ If you need to move or rename the Excel file you'll need to update the query in PowerBI otherwise the connection will be broken.

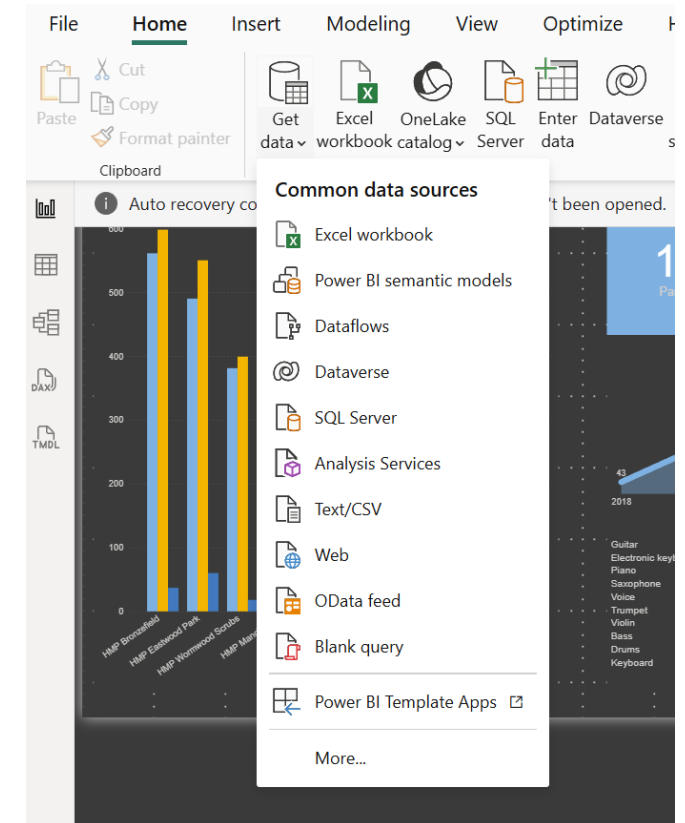


Get & Transform (Query) data in Power BI



Exercise 1 – Use Get data to bring Excel data into Power BI Desktop

- ❑ Make sure your Excel file is closed
- ❑ Open & Log onto Power BI Desktop
- ❑ Save your report as “Music Mentors” (File menu – Save)
- ❑ Use Get Data to connect to the Music Mentors participants Excel file
- ❑ In Navigator select the 3 tables: Participants 2023, 2024 & 2025
- ❑ Click on Close and Load
- ❑ Go to the Data view to review the data



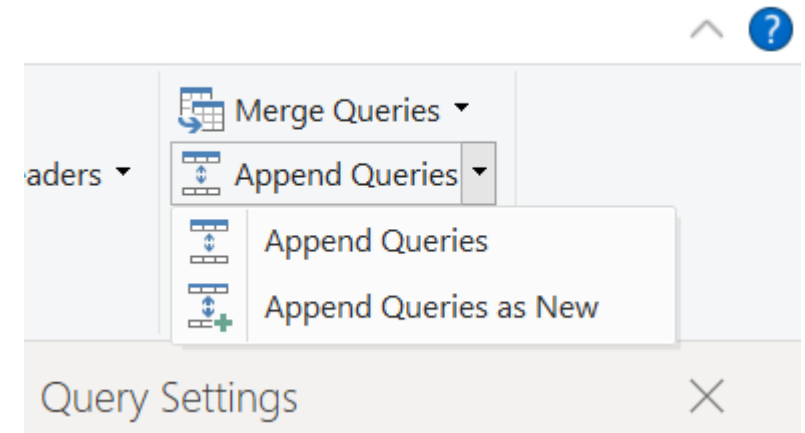
Data types

- ✓ Calculable (anything with a sigma next to it)
Fields which can be used in calculations eg amount or number of days
- ✓ Categorical eg Country, Postcode



Exercise 2 – Use Transform data to combine the 3 years data

- ❑ Click on Transform data to open the Query Editor
- ❑ Create a **new** append query (Home tab-Combine-Append queries-**Append as new**)
- ❑ Remove the First and Last name columns from the new query (Home tab – Choose columns)
- ❑ Name the query “All participants”
- ❑ Close & Apply the query
- ❑ Return to the Data view and select the **All participants** table to see if the query has loaded correctly
- ❑ Save your report



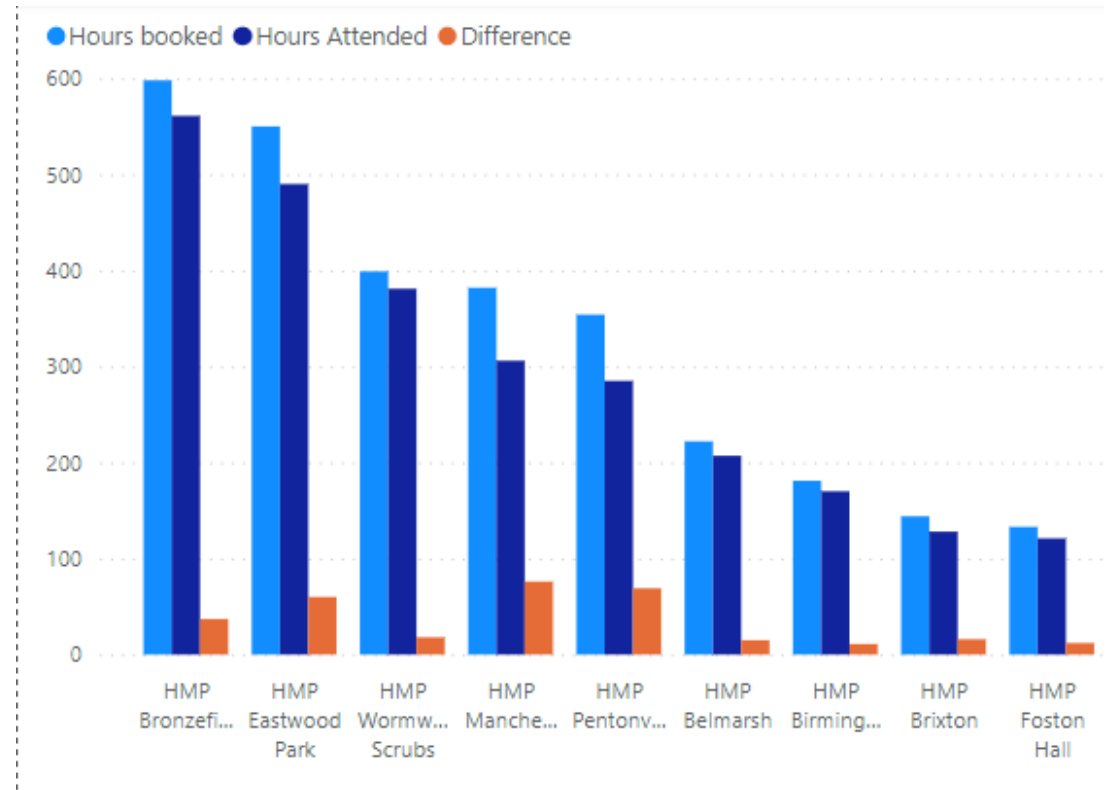
Creating the report



Exercise 3 – Adding a clustered column

- ☐ Go to the Report view
- ☐ Select a Clustered column visual
- ☐ Add the following fields to the **Y Axis** well:
 - ☐ Hours booked
 - ☐ Hours attended
 - ☐ Difference
- ☐ Add the **Prison** field to the **X Axis** well
- ☐ Remove the title from the X & Y Axis (Format-Axis-Title)
- ☐ Resize the chart using click and drag
- ☐ Name the page "Attendance"

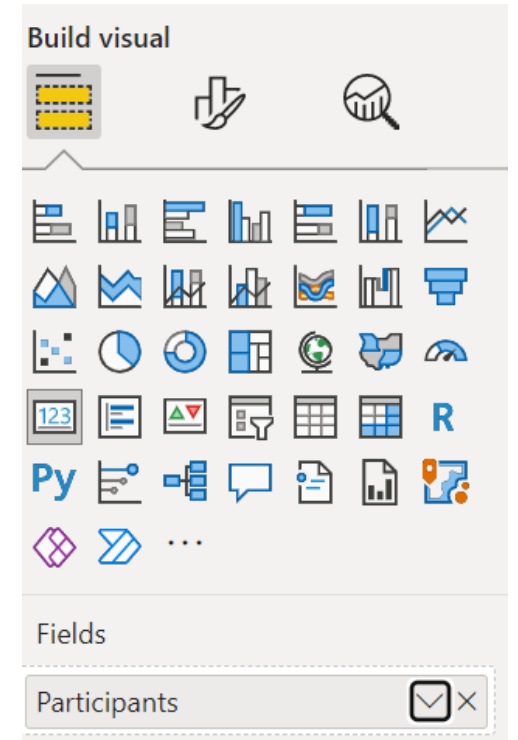
Optional: Change colour theme (View menu – theme)



Exercise 4 – Adding cards

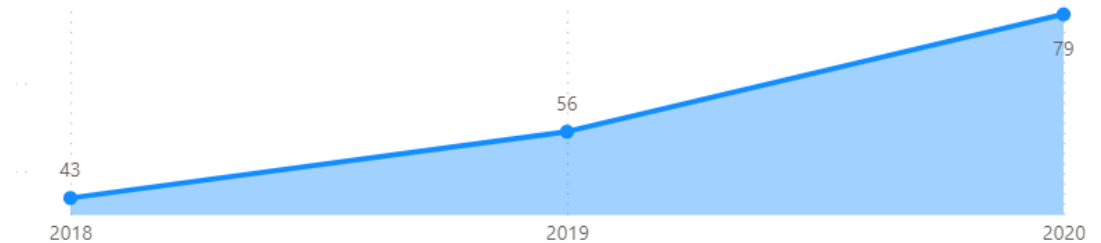
- ☐ Go to the Report view
- ☐ Select a Card visual
- ☐ For the total participants:
 - ☐ Add the **Prison ID** field to the field well
 - ☐ Change the field type to **Count** (click on arrow next to field name)
 - ☐ Rename it to **Participants** (click on arrow next to field name)
- ☐ For the number of prisons:
 - ☐ Add the **Prison** field to the field well
 - ☐ Change the field type to **Count (Distinct)** (click on arrow next to field name)
 - ☐ Rename visual **Prisons** (click on arrow next to field name)
- ☐ Move and resize the cards

Optional: change the background colour on the cards (Format-General-Effects-background-colour)



Exercise 5 – Add an Area chart

- ☐ Go to the Report view
- ☐ Select a Area Chart visual
- ☐ Add **Prison ID** to the Y Axis well
- ☐ Add **Year** to the X Axis well
- ☐ Remove the Title from the X-Axis
(Format -visual-X-Axis-Title Off)
- ☐ Remove the Y-Axis (including title)
- ☐ Turn Data labels on (Format-Visual-Data Labels-On)
- ☐ Rename the chart (Format-General-Title)

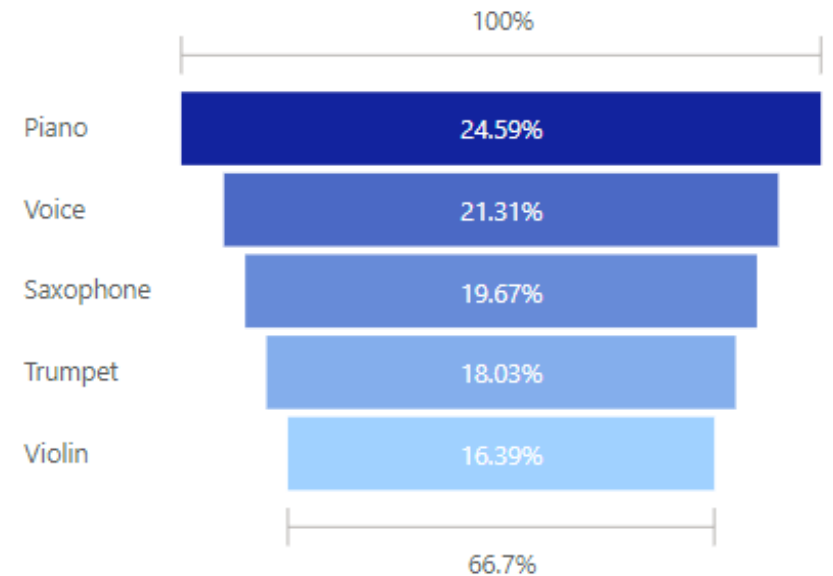


Optional: Add data points (Format-visual-markers-on)



Extension Exercise 6 – Add a Funnel chart

- ☐ Go to the Report view
- ☐ Select a **Funnel** visual
- ☐ Add **Preferred Instrument** to the Category wells
- ☐ Add **Prison ID** to the Value well
- ☐ Remove **Title** (Format-general-Title)
- ☐ Change the colour of the data points (Format-Visual-Colours- FX or Show all to change each one manually)
- ☐ Use the filter to show only the top 5 most popular instruments (Filter-Preferred instrument-Advanced filter-Filter type =Top N)
- ☐ Change the field value to show as a percentage (Build-value-show value as %)



Exercise 7 – Add a Map

- ☐ Go to the Data view
- ☐ Categorise the **Post code** field as a Post code data field
- ☐ Return to the **Report** view
- ☐ Insert a page into the report & rename it “Map”
- ☐ Select a **Map** visual (not a filled map)
- ☐ Add the Post code field to the **Location** well
- ☐ Resize the map to fit the page
- ☐ Add **Category** to the **Legend** well
- ☐ Add **Prison ID** to the **Size** well & rename to “Participants”
- ☐ Add **Prison** to Tool Tips & rename “Prison”
- ☐ Remove the visual title (Format-General –Title off)
- ☐ Turn on Zoom buttons (Format-Visual-Controls-Zoom buttons)

Optional: Change the Bubble size (Format-Bubbles-Size)



Publishing your PowerBI

- ✓ Click on Publish
- ✓ Save to My Workspace
- ✓ Select the option to open in PowerBI
- ✓ Share you PowerBi with someone



Questions to ask before you begin

- ✓ **Why are you creating this dashboard?** Are you trying to prove or disprove a hypothesis? Is this dashboard for a specific task, like showing status of a project, or does it need to achieve a broader goal, like measuring business performance? Understanding why you are building the dashboard will help guide the design and data.
- ✓ **Do you need to track certain KPIs?** Your dashboard should only highlight data that adds value. Make sure you understand the most important KPIs and create the dashboard around those metrics. Anything outside those main KPIs aren't necessary.
- ✓ **Who needs to see the dashboard?** Is this for your colleagues, your management team, your board of trustees? How do these people prefer to digest information? How much time do they have to look at this dashboard? Think about who you're making the dashboard for and keep their preferences in mind.
- ✓ **Where will the data come from?** Do you need to manually import data into your dashboard or will you use an integration or connector to automatically sync and refresh data? What other tools do you use to gather data?
- ✓ **How up to date does the dashboard need to be?** Can you update your dashboard weekly or monthly, or does it always need to show real-time, updated information? Depending on what you chose, this will change the way you build your dashboard.
- ✓ **What format does the dashboard need to be in?** Are you emailing a static dashboard or providing a link to a dynamic one? Does the dashboard need to be embedded in presentations or decks? Do you want to share read-only access or do you want to provide editing capabilities to certain people?



Getting help with Power BI

- <https://datawise.london/resources/power-bi-resources/>
- <https://docs.microsoft.com/en-us/power-bi/create-reports/>
- <https://techsoup-eu.course.tc/catalog/track/power-bi-data-analysis>
- <https://www.edx.org/learn/power-bi>
- <https://www.threesixtygiving.org/2018/03/13/power-bi-manual/>

