



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
- ✓ Visualisations
- ✓ Sharing a report internally
- ✓ Publishing a report publicly

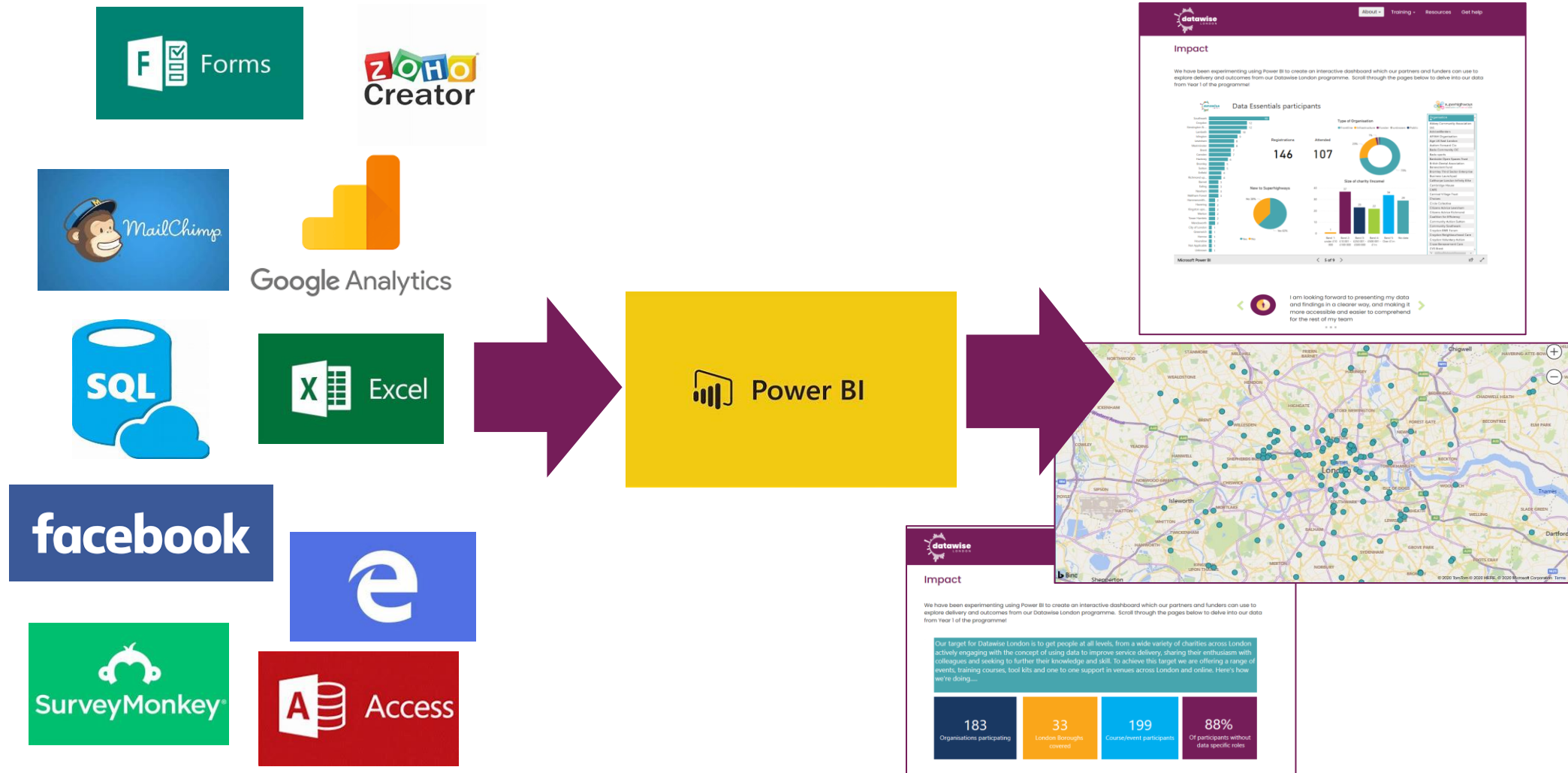


How we'll run the training:

- ✓ 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 halfway through



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 PowerBI?

- ✓ 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



What we'll be building today:

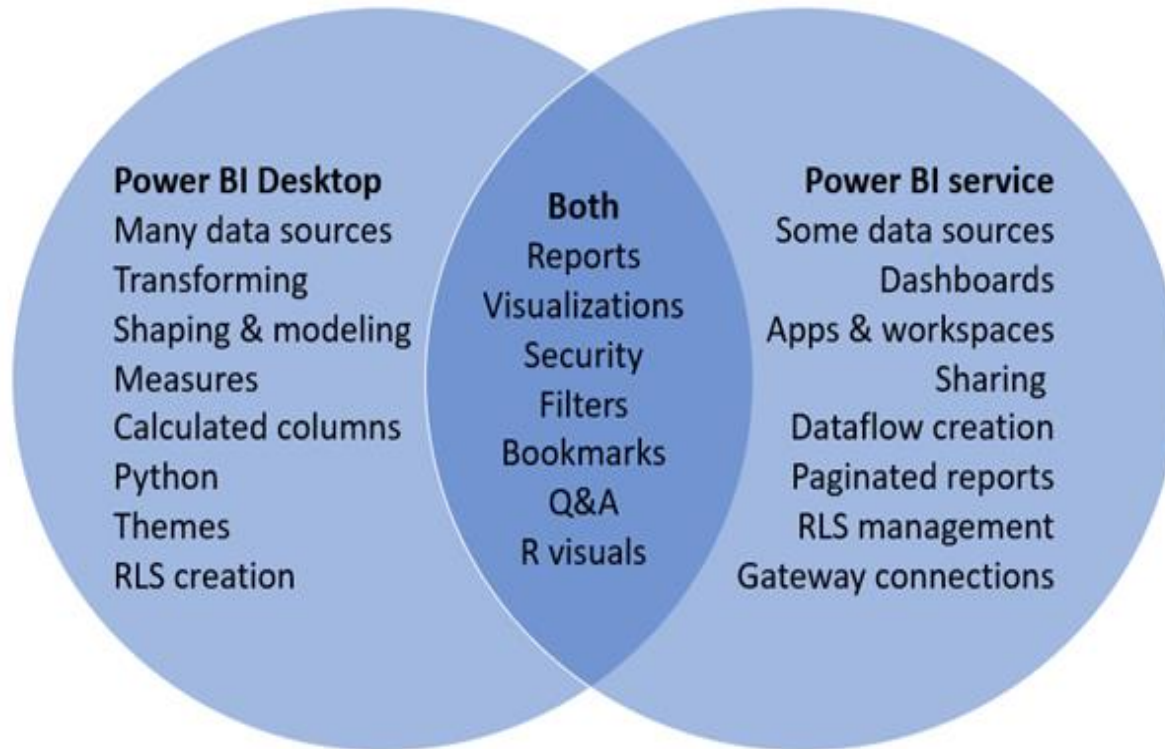
Music Mentors work with young offenders in prisons. People sign up to take part in group sessions where they work together with other offenders and mentors to write, play and record music.

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: 2018-2020

<https://app.powerbi.com/view?r=eyJrIjoizTE1YzUyZTMtY2YxMS00ZGJiLTlmMjltMzQyYzU1MGM2OWIzIiwidCI6IjViY2QyNTczLWU4YzQtNDZjOC1iOTQwLTlwNDZjOWJjMTc4NSIsImMiOjh9&pageName=ReportSection>



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

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



Power BI - Building Blocks

Everything you do in Microsoft Power BI can be broken down into a few basic **building blocks**.

Here are the basic building blocks in Power BI:

- ✓ Visualizations
- ✓ Datasets
- ✓ Reports
- ✓ Tiles
- ✓ Dashboards



Relationship between Power Bi & external data sources

- ✓ Power BI uses data retrieval queries to fetch data from 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 changes to the data in the external source not in Power BI



What is a query and how do they work

A Microsoft Query is an **SQL SELECT Statement** which allows you to retrieve data from Excel, Power BI and other external data sources. You need to provide answers to the following questions to create a query:

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

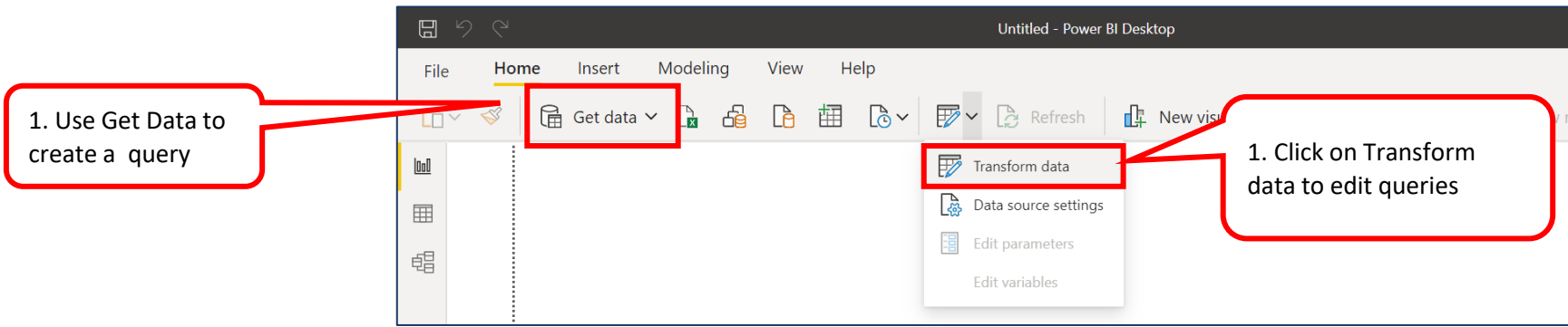


Prepare your Excel data file

- ✓ 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 PowerBI

- Make sure your Excel file is closed
- Open & Log onto Power BI
- 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 2018, 2019 & 2020
- Click on Load
- Go to the Data view to review the data



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

- Go to Transform data
- 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 **Values** well:
 - Hours booked
 - Hours attended
 - Difference
- Add the **Prison** field to the **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 on the View menu



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**
 - Rename it to **Participants**
- For the number of prisons:
 - Add the **Prison** field to the field well
 - Change the field type to **Count**
 - Rename visual “Prison”
- Move and resize the cards

Optional: change the background colour on the cards



Exercise 5 – Add an Area chart

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

Optional: Change the line width (Format-Shapes-Stroke width)



Extension Exercise 6 – Add a Funnel chart

- Go to the Report view
- Select a **Funnel** visual
- Add **Preferred Instrument** to the Value & Group well
- Remove **Title**
- Change the colour of the data points (Format-Data Colours-Show all-change each one manually)
- Use the visual filter to remove values you don't want showing eg not recorded, blanks etc



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 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”
- Amend the visual title (Format-Title)
- Turn on Zoom buttons (Format-Map controls)

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



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?



Publishing your PowerBI

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



Getting help with Power BI

- <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/>

