



An introduction to dashboards and reports

Power BI as a reporting tool and more

Power BI overview

Power BI has **evolved** since its launch, with the latest versions having **key features** to facilitate the processing and analysis of data, and delivering key insights from the process.



Brief history

- It **launched** in 2014 as a business analytics service.
- It has **evolved** over the years to become more user-friendly.
- There have since been regular **updates with a growing community**, with a lot more adoption in various industries.



Core capabilities

- Power BI offers a wide range of **visualisation** options.
- It also ensures the creation and sharing of detailed **reports**.
- Reports can be enhanced with **interactive and dynamic** visualisations to show important data points and insights.



Importance to data practitioners

- This platform enables data professionals to **communicate findings effectively**.
- Its features facilitate the **development of insights** through interactive visualisations and reports.
- This all **supports decision-making** processes through their clear and valuable data insights.

Power BI components

There are three pivotal components to Power BI, each delivering key features over different platform types.

- This is the primary space for **designing and publishing reports**.
- It's able to **connect to various data sources**, both locally (on-premises) and in the cloud.
- It also offers tools for **transforming and shaping data** for enhanced data analysis.

Desktop



- A secure online service that enables **data sharing and collaboration**.
- Users can **create and view reports** with interactive and dynamic visualisations.
- There are also features to schedule **data refreshes** to keep reports up to date.

Service



- Offers **on-the-go access** to view and interact with reports on mobile devices.
- We can also **access real-time data** and insights from anywhere.
- A key feature is the ability to receive **notifications and alerts** based on data changes.

Mobile



Power BI
components



Power BI interface: Toolbars

01. Ribbon

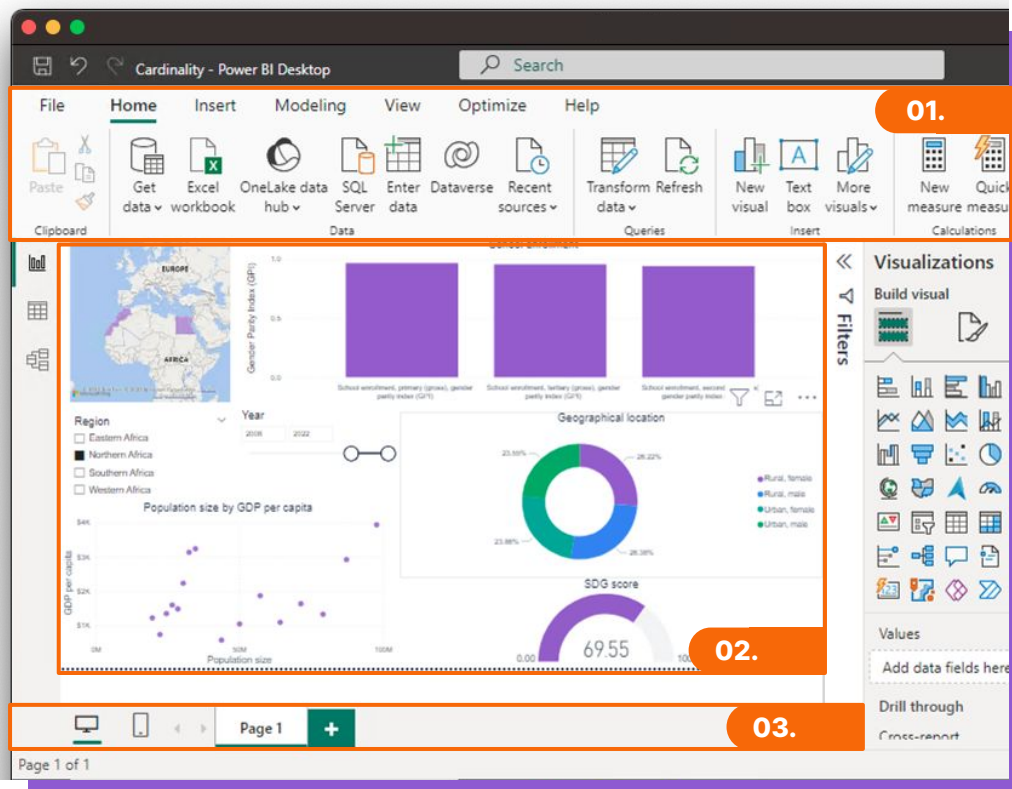
Similar to the **interface** of Microsoft Office, the ribbon has a variety of tabs filled with commands and **tools** essential for developing reports.

02. Canvas

Almost functioning as a 'central workspace', the canvas is where we **develop and edit data visualisations**.

03. Page tabs

The page tabs help with **navigating different pages** of a report, supporting the organisation and accessibility of various visualisations.



Power BI interface: Navigation pane

04. Filter pane

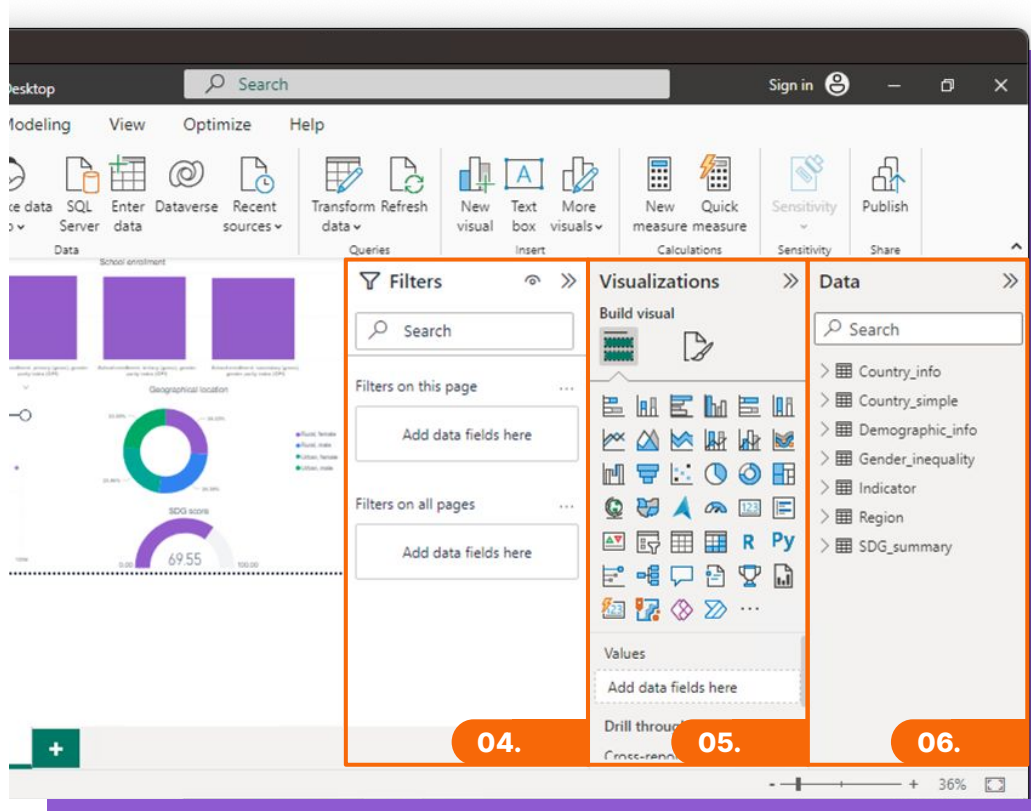
The filter pane is a dynamic tool to **select** which **visualisation** we'd like to display, to focus and tailor the data analysis.

05. Visualisation pane

This pane allows us to select and **modify visual elements**, allowing us to customise our reports to best communicate our findings.

06. Data pane

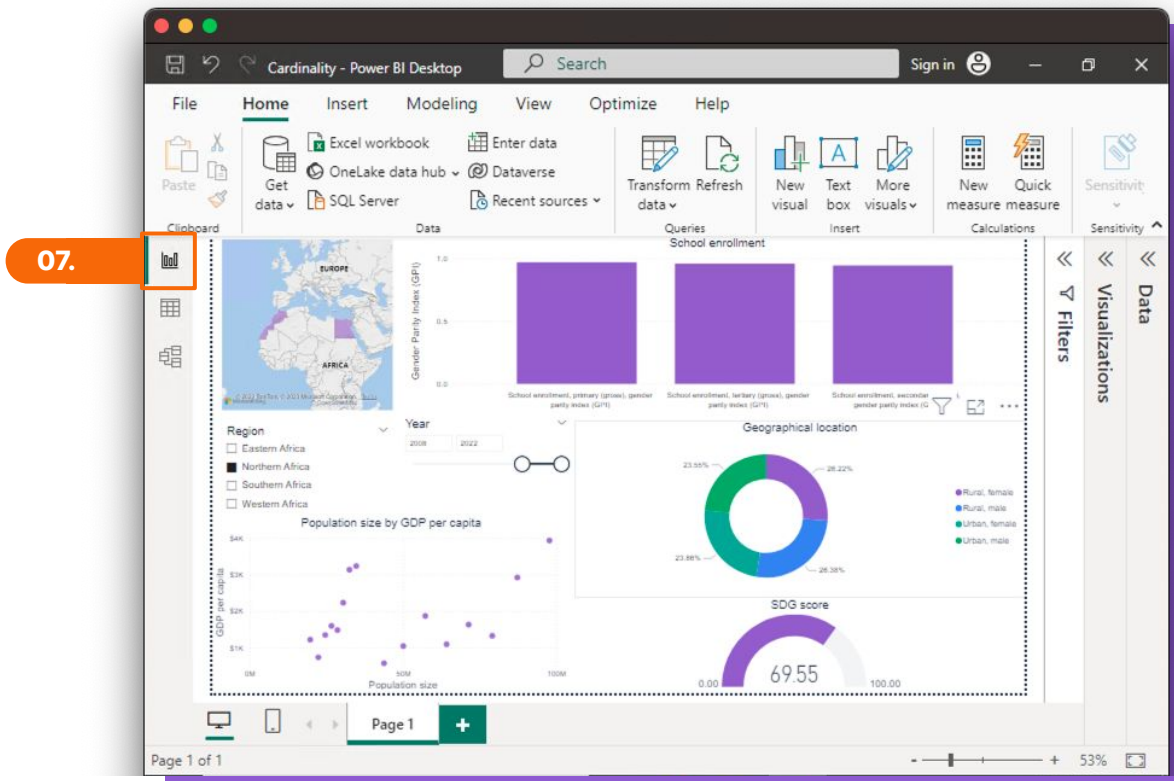
The data pane displays the available tables, columns, and measures of the **connected data sources**.



Power BI interface: Workspace

07. Report view

In the report view, we can **design and develop detailed reports**, using tools and features to create comprehensive and clear **visualisations**.

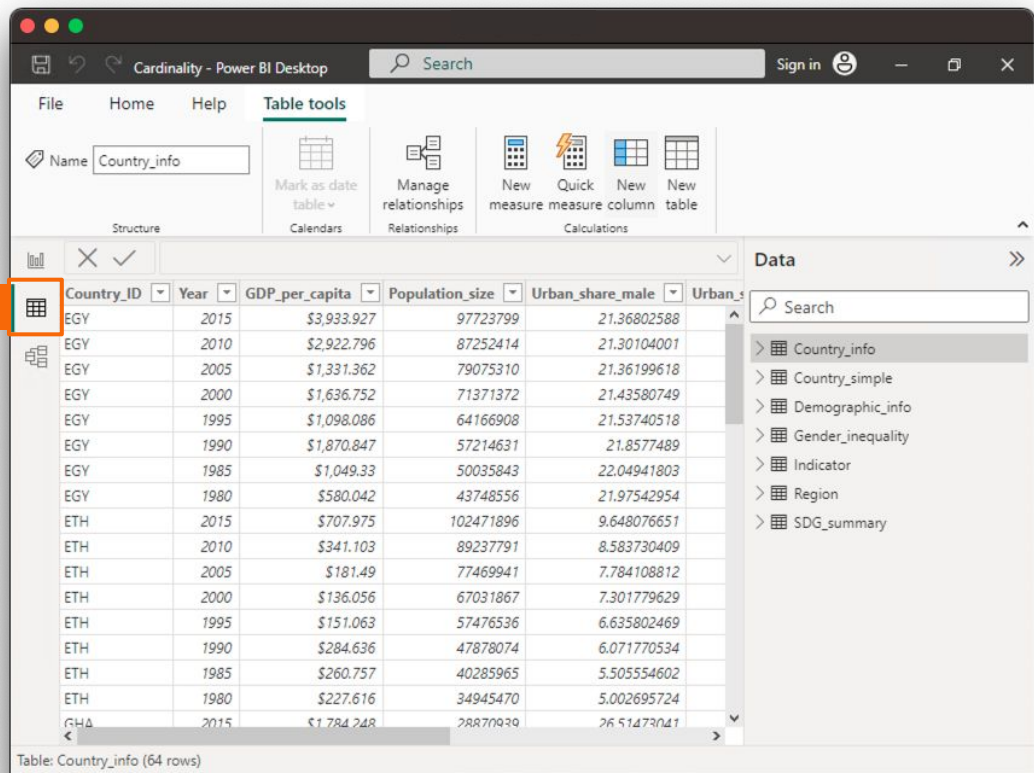


Power BI interface: Workspace

08. Data view

The data view provides a detailed look at the report's **underlying data**, with tools to **inspect and refine this data**.

08.



The screenshot shows the Power BI Desktop interface with the 'Table tools' ribbon active. The 'Country_info' table is displayed in a grid view. The table has columns for Country_ID, Year, GDP_per_capita, Population_size, Urban_share_male, and Urban_share_female. The 'Data' pane on the right shows a list of tables, with 'Country_info' selected.

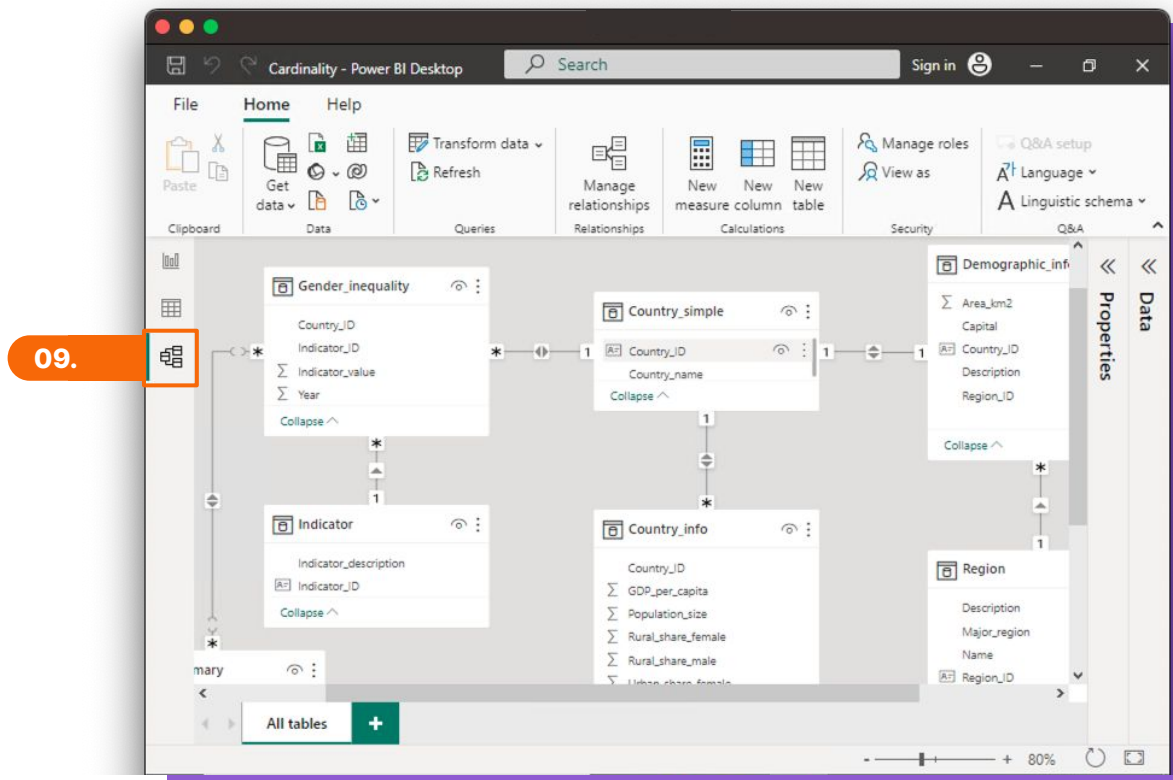
Country_ID	Year	GDP_per_capita	Population_size	Urban_share_male	Urban_share_female
EGY	2015	\$3,933.927	97723799	21.36802588	
EGY	2010	\$2,922.796	87252414	21.30104001	
EGY	2005	\$1,331.362	79075310	21.36199618	
EGY	2000	\$1,636.752	71371372	21.43580749	
EGY	1995	\$1,098.086	64166908	21.53740518	
EGY	1990	\$1,870.847	57214631	21.8577489	
EGY	1985	\$1,049.33	50035843	22.04941803	
EGY	1980	\$580.042	43748556	21.97542954	
ETH	2015	\$707.975	102471896	9.648076651	
ETH	2010	\$341.103	89237791	8.583730409	
ETH	2005	\$181.49	77469941	7.784108812	
ETH	2000	\$136.056	67031867	7.301779629	
ETH	1995	\$151.063	57476536	6.635802469	
ETH	1990	\$284.636	47878074	6.071770534	
ETH	1985	\$260.757	40285965	5.505554602	
ETH	1980	\$227.616	34945470	5.002695724	
CHD	2015	\$1,784.248	28870020	26.51473041	

Table: Country_info (64 rows)

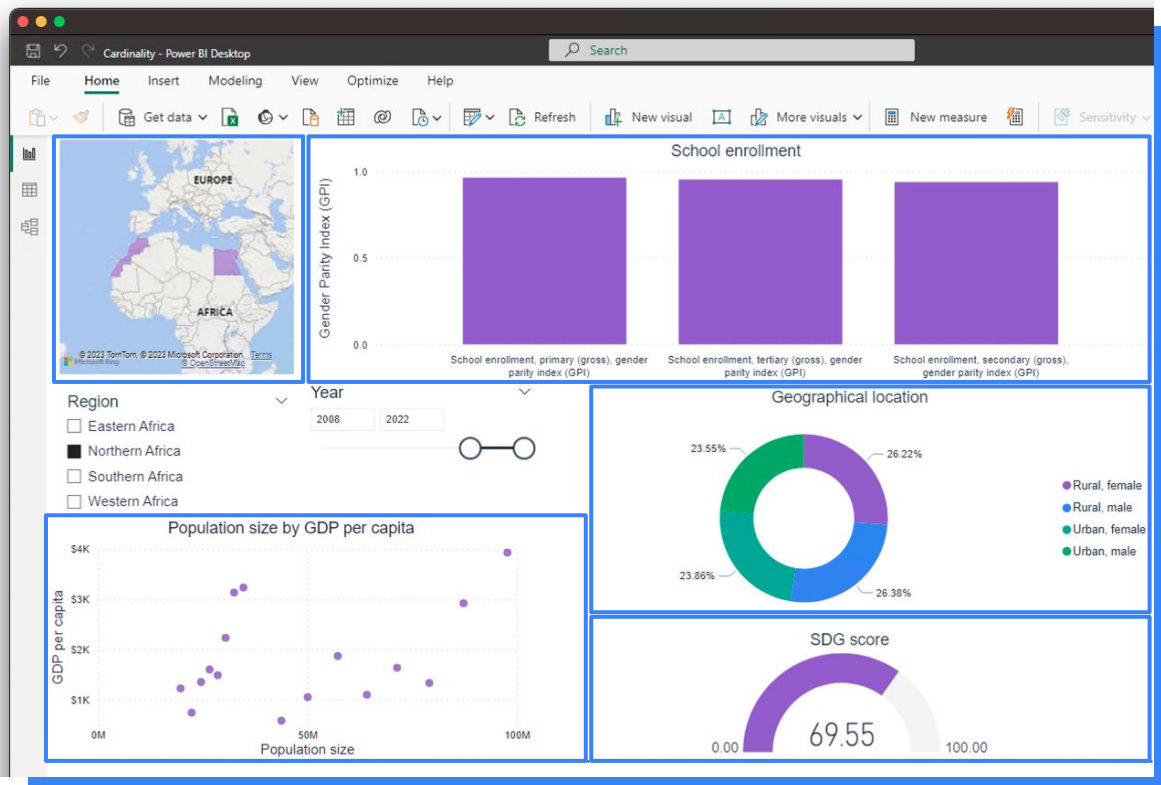
Power BI interface: Workspace

09. Data view

The model view allows us to **observe and manage the data model** used in the reports, showing the **structure and organisation of the data**.



Building blocks of Power BI



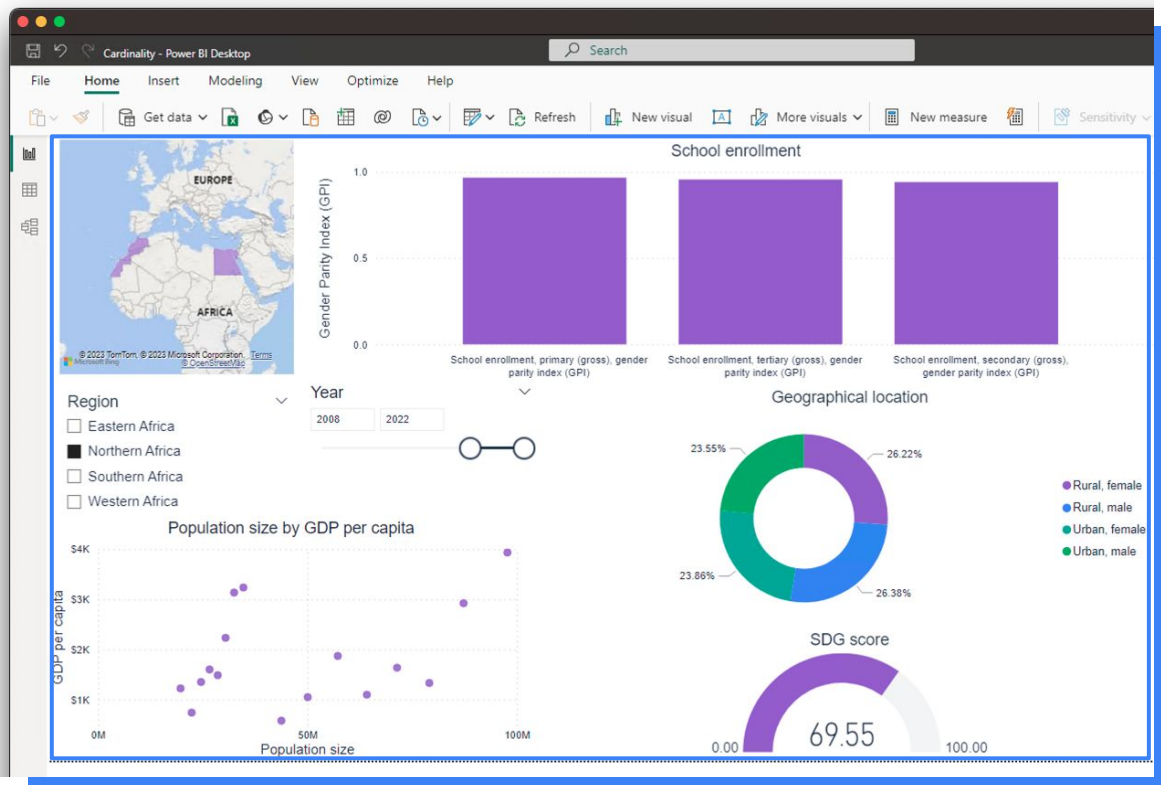
Visualisations

A **visual representation of the data** such as graphs and plots of the data, including charts and maps. These provide clear and concise insights of the data.

Tiles

Tiles are individual clickable elements that act as a focused view of a particular insight. **A single visualisation in a report or dashboard is a tile.**

Building blocks of Power BI



Reports

A Power BI report is a very distinct and clear view of the dataset through visualisation, providing **in-depth findings and insights**.

Dashboards

Dashboards are used for **high-level insights and monitoring**. It often has less interactivity than reports.

These terms are frequently used interchangeably.

Building blocks of Power BI

Shared instance

Cardinality - Power BI Desktop

File Home Help Table tools Column tools

Name Female_populat... Decimal number % General \$ % .00 Auto Sum

1 Female_population = ((Country_info[Urban_share_female] + Country_info[Rural_share_female]) / 100) * Country_info[Population_size]

	GDP_per_capita	Population_size	Urban_share_male	Urban_share_female	Rural_share_male	Rural_share_female	Female_population
015	\$3,933.927	97723799	21.36802588	21.7670531	28.84801549	28.01690553	48650775.6658244
010	\$2,922.796	87252414	21.30104001	21.71858189	28.91541575	28.06496234	43437344.1154327
005	\$1,331.362	79075310	21.36199618	21.66432144	28.90619558	28.0674868	39325581.5343855
000	\$1,636.752	71371372	21.43580749	21.36020684	28.86886312	28.33512255	35468238.4055622
995	\$1,098.086	64166908	21.53740518	21.2758305	28.70291656	28.48384776	31929246.9701902
990	\$1,870.847	57214631	21.8577489	21.61989456	28.37744289	28.14491364	28472751.3794877
985	\$1,049.33	50035843	22.04941803	21.88853136	28.1174274	27.94462321	24934438.9825925
980	\$580.042	43748556	21.97542954	21.88195495	28.13584973	28.00676578	21825594.9262477
915	\$707.975	102471896	9.648076651	9.823937256	40.37516929	40.1528168	51212127.4404401
910	\$341.103	89237791	8.583730409	8.735289052	41.43636259	41.24461795	44600964.9524391
905	\$181.49	77469941	7.784108812	7.91671043	42.20144943	42.09773133	38746158.5229514
900	\$136.056	67031867	7.301779629	7.438091632	42.6277925	42.63233624	33563142.61749
995	\$151.063	57476536	6.635802469	7.191708754	43.24845679	42.92403199	28804791.7703918
990	\$284.636	47878074	6.071770534	6.548436784	43.80333875	43.57645394	23998832.2732559
985	\$260.757	40285965	5.50554602	5.946979915	44.27495892	44.27250656	20231404.7444982
980	\$227.616	34945470	5.002695724	5.408473085	44.77455237	44.81427882	17550576.7001362
915	\$1,784.248	28870939	26.51473041	27.52640356	23.17583843	22.78302761	14524805.1843377
910	\$1,757.045	25574719	24.71354381	25.9995054	24.77124722	24.51570357	12919122.7463403
905	\$1,151.305	22496951	23.37729143	23.93378227	26.58062103	26.10830527	11257943.9132509
900	\$606.501	19665502	21.95707123	21.97726307	28.54866128	27.52337442	9734548.8560687
995	\$918.741	17438874	20.09426645	20.0465366	30.46954239	29.38965456	8621115.08679154
990	\$1,045.595	15446982	18.36079021	18.08052498	32.45608039	31.10260442	7597309.14545471
985	\$1,213.391	13651444	16.58410002	16.30887788	34.22190768	32.88511441	6715690.30883367
980	\$3,489.497	11865246	15.71931124	15.44158489	35.10461026	33.73449361	5834862.68717811
915	\$1,625.176	46851489	13.0557295	12.58636548	36.84570793	37.53253363	23481366.1707625
910	\$1,176.311	41517896	11.9680266	11.60135911	37.94030653	38.49030776	20797006.1557531
905	\$778.333	35843010	10.97915386	10.69692058	38.93422009	39.38970547	17952554.3837641
900	\$617.147	30851606	10.03995525	9.85456289	39.7922327	40.31324916	15477575.7124865
995	\$623.714	26878348	9.19468962	9.067036254	40.61200671	41.12626742	13491130.8341945

Data

Country_info

Country_ID

Female_population

GDP_per_capita

Population_size

Rural_share_female

Rural_share_male

Urban_share_female

Urban_share_male

Year

Country_simple

Demographic_info

Gender_inequality

Indicator

Region

SDG_summary

Datasets

Collections of the **data we use to create visualisations**, reports, and dashboards.

Queries

The instructions or requests we use to **process data**. We can craft them to **filter, shape**, and **aggregate** data to extract insights for visualisations.

Data management in Power BI



Data import

- Power BI facilitates importing data from a **variety of sources**, including databases and cloud services.
- It's compatible with **different datasets** for a comprehensive and detailed analysis.
- **Integration** of data into reports is **efficient** and intuitive.



Data connection

- Power BI establishes and maintains a live connection to a variety of data sources to **access real-time data** accurately.
- Connecting to current and accurate data **creates reliable reporting**.
- Reports are dynamic and responsive, reflecting data changes from sources.



Data transformation

- Power BI offers **tools** for data cleaning, processing, and transformation.
- Data structures and formats are designed to **meet most analytical objectives** and requirements.
- Well-prepared data are guaranteed to produce relevant and **meaningful insights**.



Data refresh

- Power BI provides **scheduled or automatic data refresh** mechanisms to keep data up to date.
- This ensures reports and control panels **show the most recent information**.
- This also supports reliable and credible **insights to make decisions** from the data.