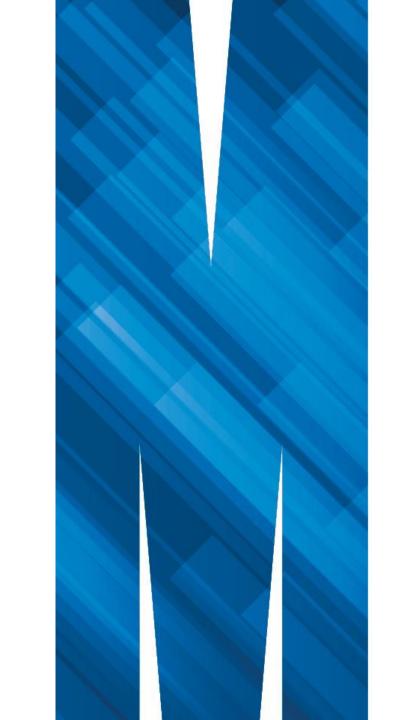# FIT3003 – Business Intelligence and Data Warehousing

Week 10 – Power BI

Semester 2, 2022

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Learning Objectives

1. To be able to utilise BI tool.

2. To connect and shape data in Power BI.

3. To create a data model.

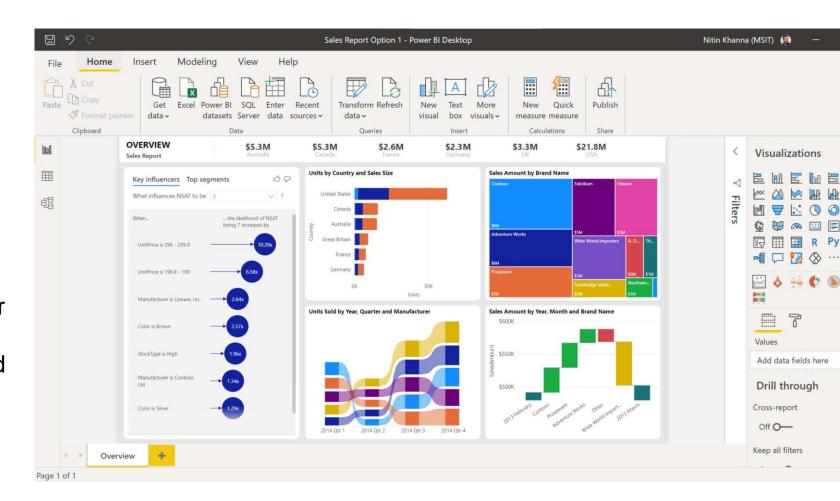4. To visualize data and create a dashboard.

Introduction to Power BI

Power BI

Power BI is a Microsoft's business intelligence tool that comprises both desktop and web-based applications for loading, modeling, and visualizing data.[1]

Connect to and visualise any data using the unified, scalable platform for self-service and enterprise business intelligence (BI) that's easy to use and helps gain deeper data insight.[2]

Power BI

Bridge the gap between data and decision making [2]

1. Create amazing data experiences

   Easily connect to, model, and visualise your data, creating memorable reports personalised with your KPIs and brand. Get fast, AI-powered answers to your business questions—even when asking with conversational language.
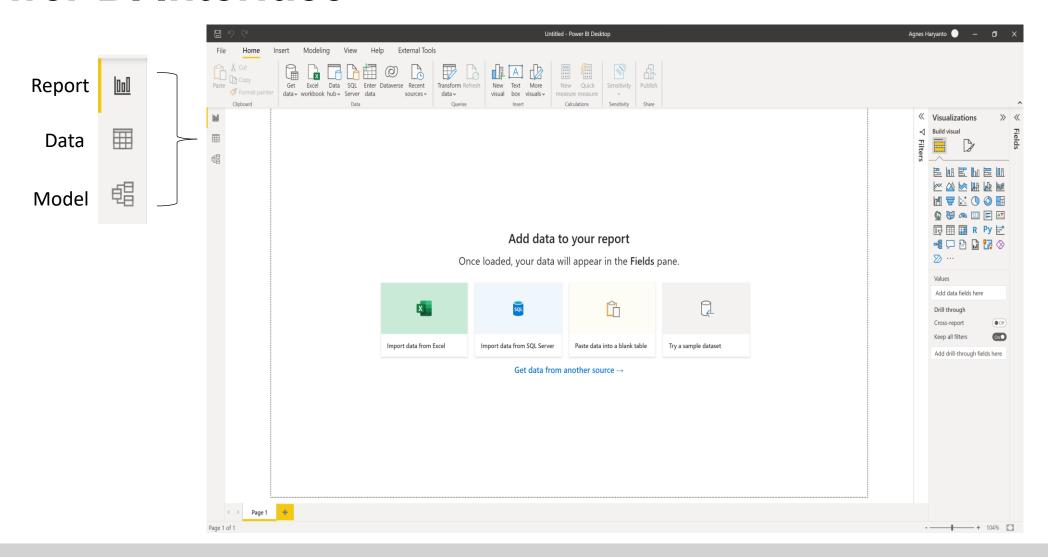
2. Gain insight from your largest BI deployments

   Make the most of your big data investments by connecting to all your data sources with the scale to analyse, share, and promote insights across your organisation while maintaining data accuracy, consistency, and security.
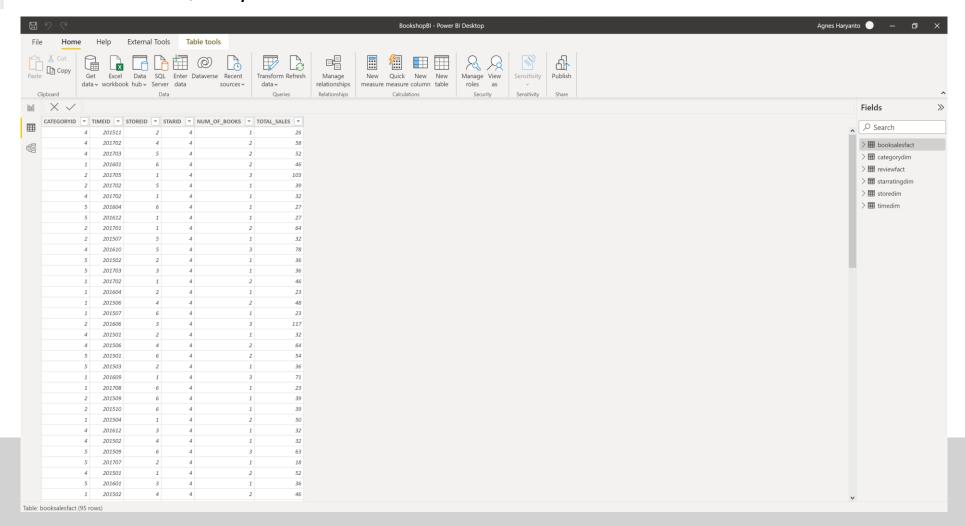
3. Make decisions with confidence

   Work together easily on the same data, collaborate on reports, and share insights across popular Microsoft Office applications such as Microsoft Teams and Excel—empowering everyone in your organisation to quickly make data-driven decisions that drive strategic actions.
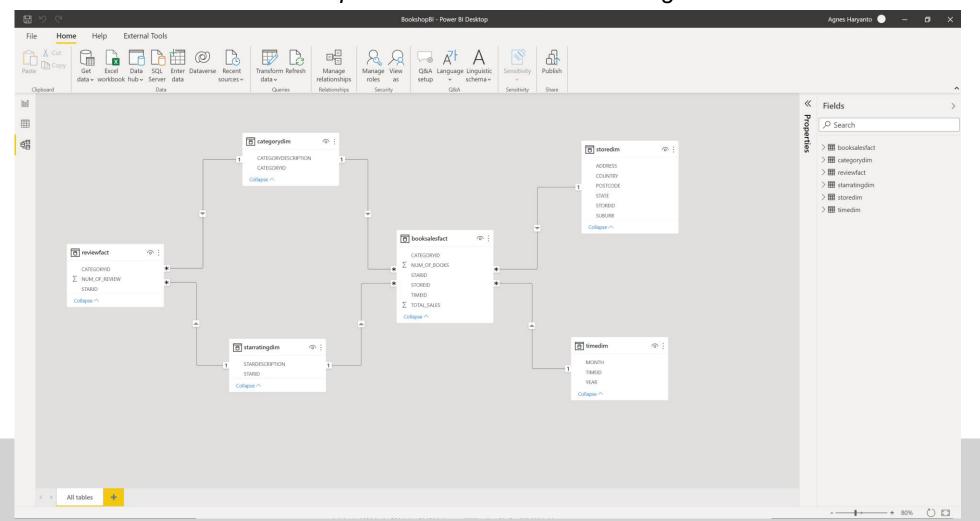
Power BI Interface

Power BI Interface

Data - *Connect, shape and transform raw data*

Power BI Interface
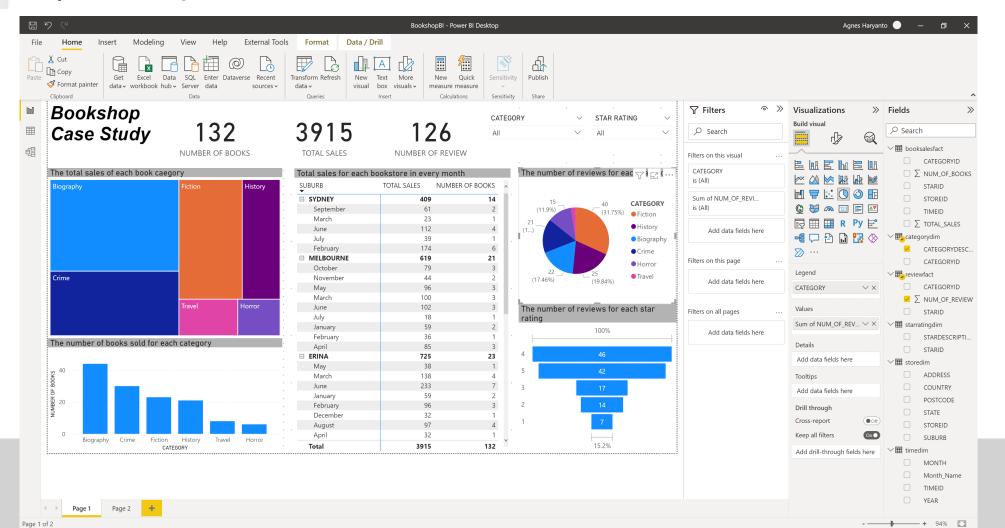
Model - *Build table relationships to create a data model design*

Power BI Interface
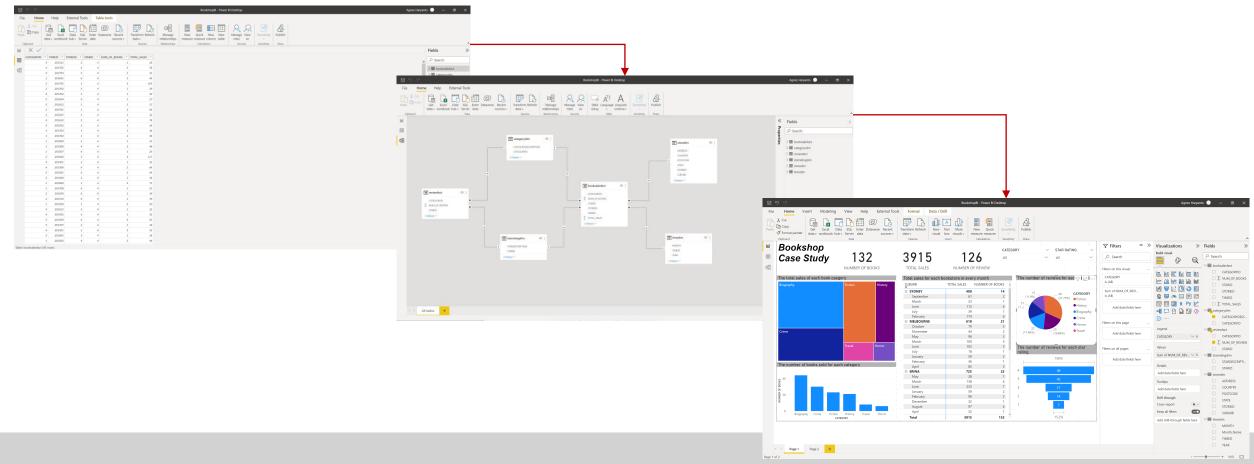
Report - *Design interactive reports to explore and visualize data*

Power BI Workflow

Data → Model → Report

The Book Sales Case Study

The Book Sales Case Study

The system stores information about books, including the authors, publishers, book categories, as well as the reviews that each book has received. The "stars" attribute in the Review entity records the star rating for each review (e.g. 5 stars for excellent to 1 star for poor, etc). One book may receive many reviews. For simplicity, it is assumed, as also shown in the E/R diagram, that a book will only have one category.
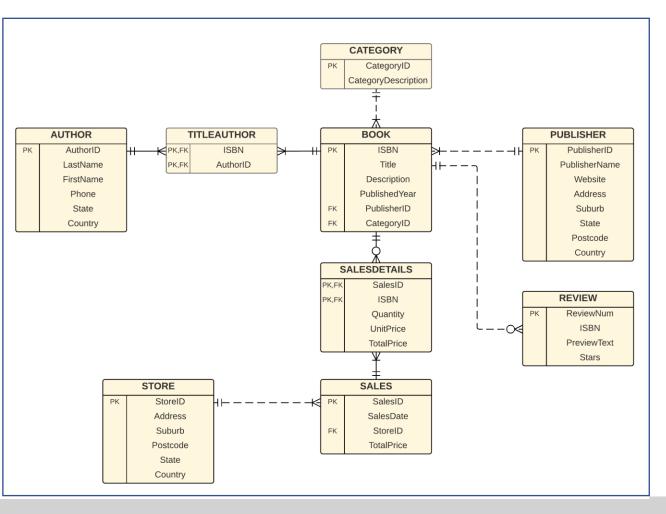
The E/R diagram also includes entities related to sales of books, and the stores which sale the books. Each store has many sales transactions (i.e. the Sales entity), and each sales transaction may include several books (i.e. the SalesDetails entity). The Total Price attribute in the Sales Details entity is basically Quantity multiplied by the Unit Price, whereas Total Price in the Sales entity is the total price for each sales transaction.
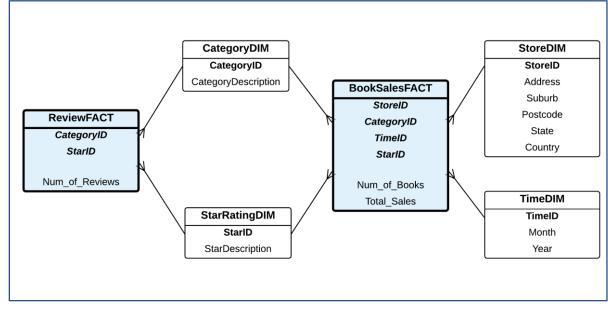
The Book Sales Case Study

The requirements for the data warehouse are quite simple. The data warehouse must be able to answer at least the following questions:

- What are the total sales for each bookstore in a month?

- What is the number of books sold for each category?

- What is the book category that has the highest total sales?

- What is the number of reviews for each category?
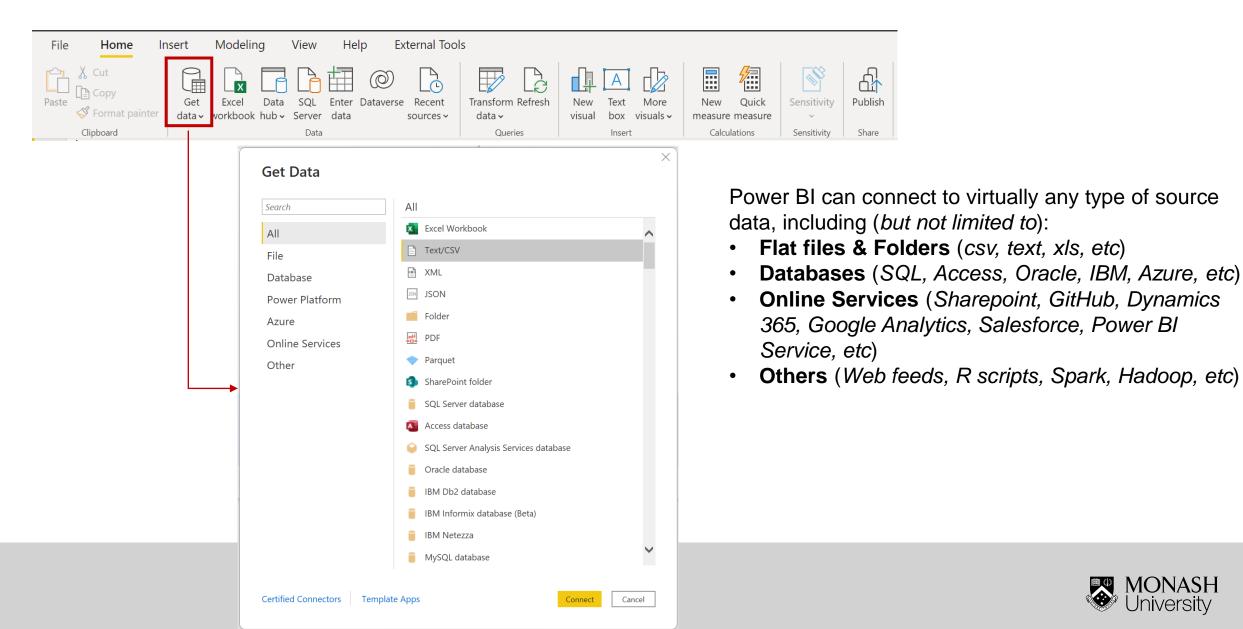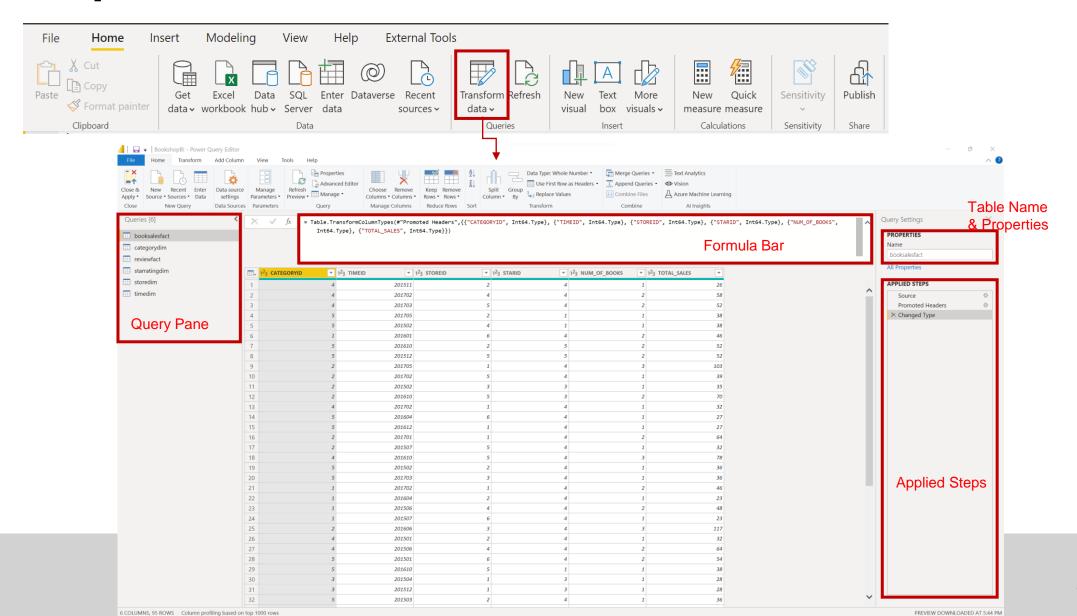
- How many 5-star reviews for each category?

The Book Sales Case Study

Connecting and Shaping Data

Data connectors

Power BI can connect to virtually any type of source data, including (*but not limited to*):
- **Flat files & Folders** (*csv, text, xls, etc*)
- **Databases** (*SQL, Access, Oracle, IBM, Azure, etc*)
- **Online Services** (*Sharepoint, GitHub, Dynamics 365, Google Analytics, Salesforce, Power BI Service, etc*)
- **Others** (*Web feeds, R scripts, Spark, Hadoop, etc*)
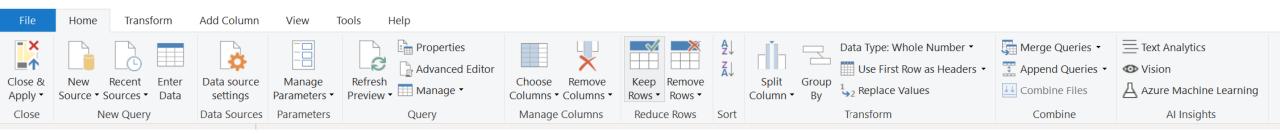
Report View Tab

Power Query Editor
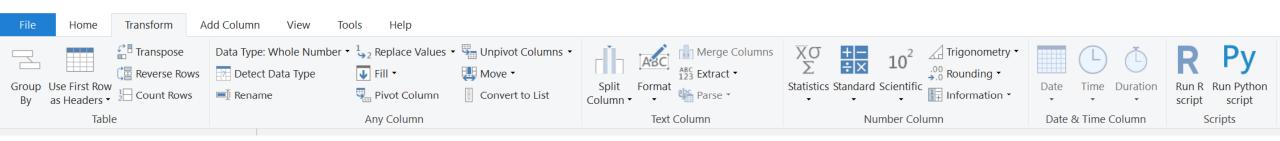
HOME tab – for general settings and common table transformation tools

Power Query Editor
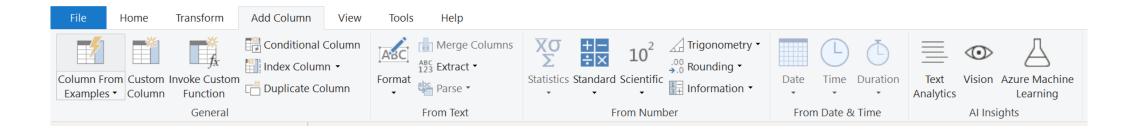
TRANSFORM tab – contains tools to edit existing columns (splitting/grouping, transposing, extracting text, etc)
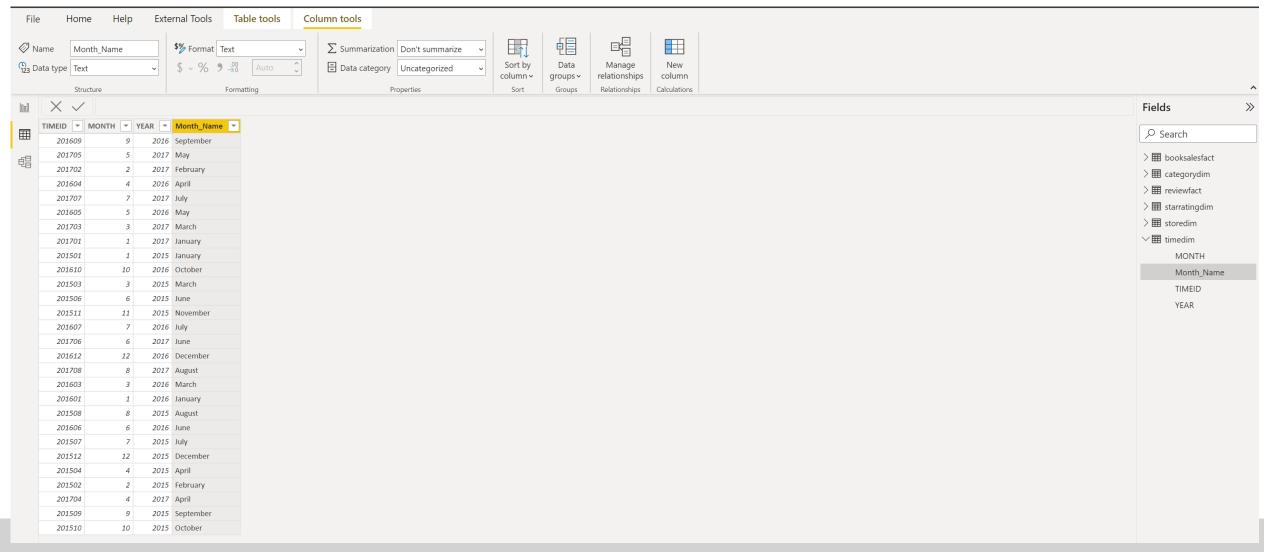
Power Query Editor

ADD COLUMN tab – contains tools to create new columns (based on conditional rules, text operations, calculations, dates, etc.)
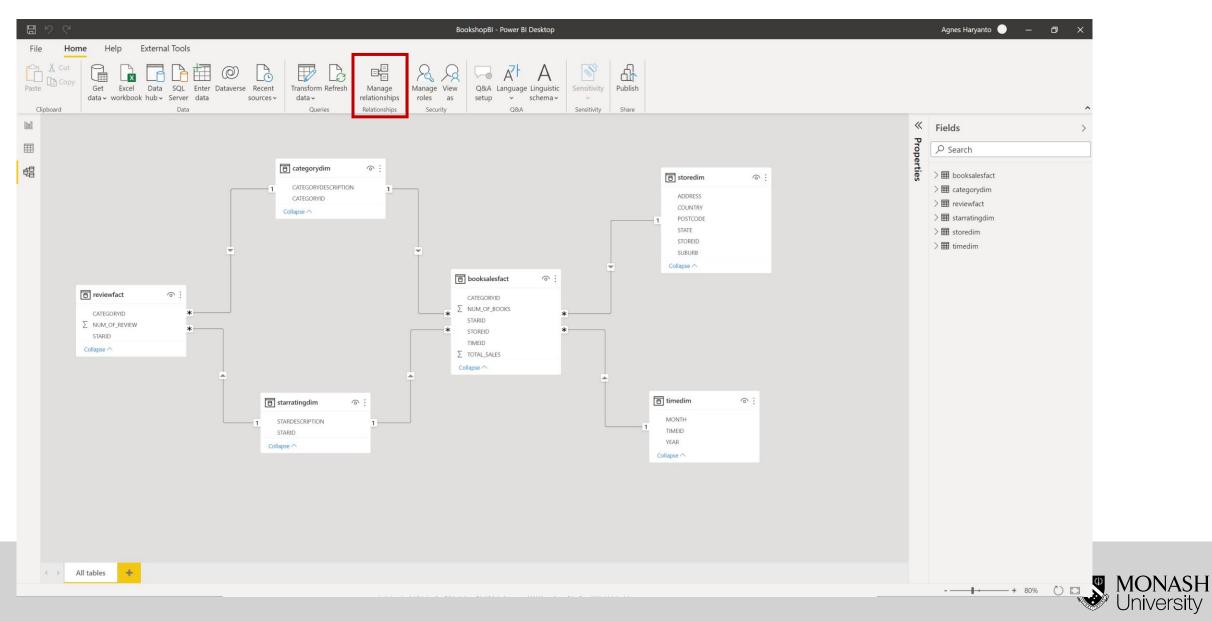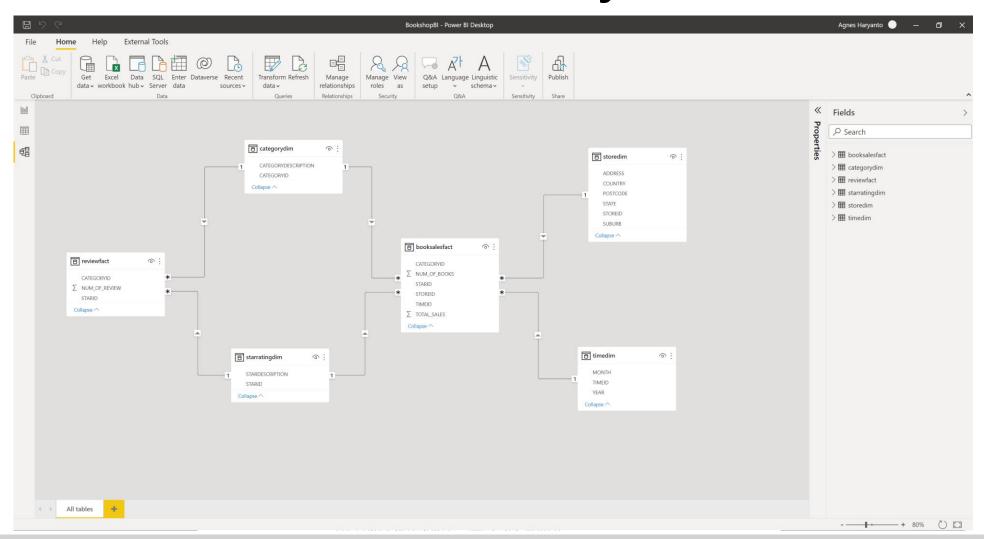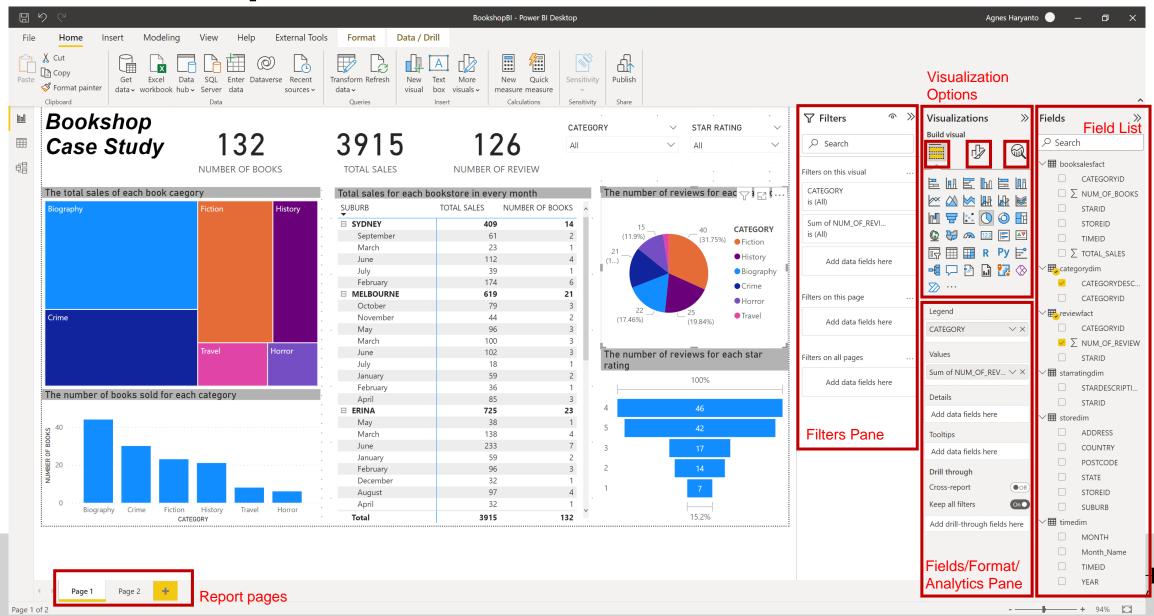
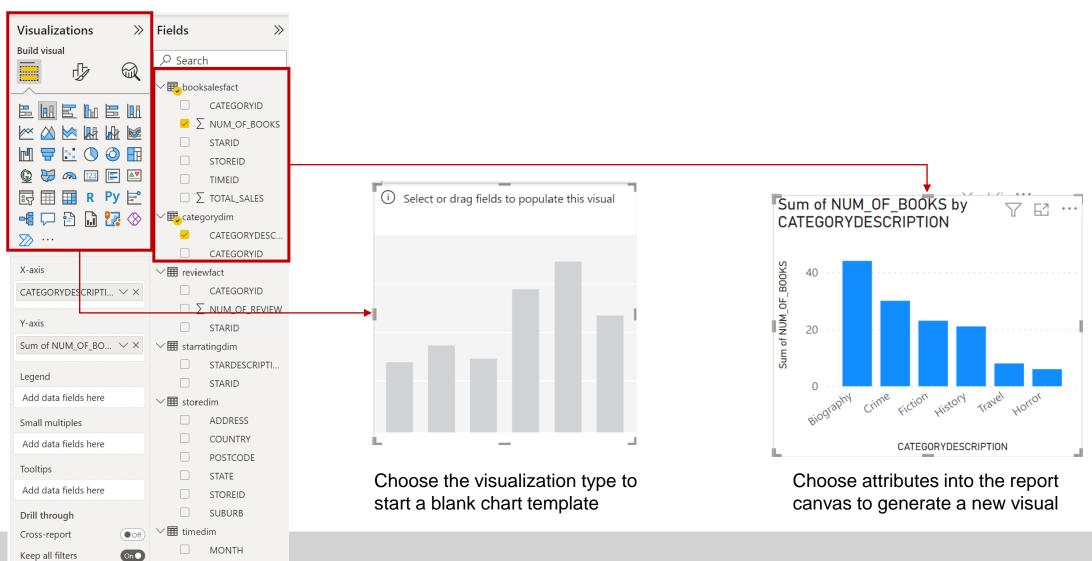# Data View Tab

Model View Tab

Creating Reports

The Book Sales Case Study

Power BI Report View

Start visualizing data

Choose the visualization type to start a blank chart template

Choose attributes into the report canvas to generate a new visual

Formatting Options
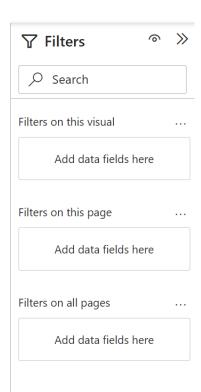

Note: Each visualization would have different formatting options
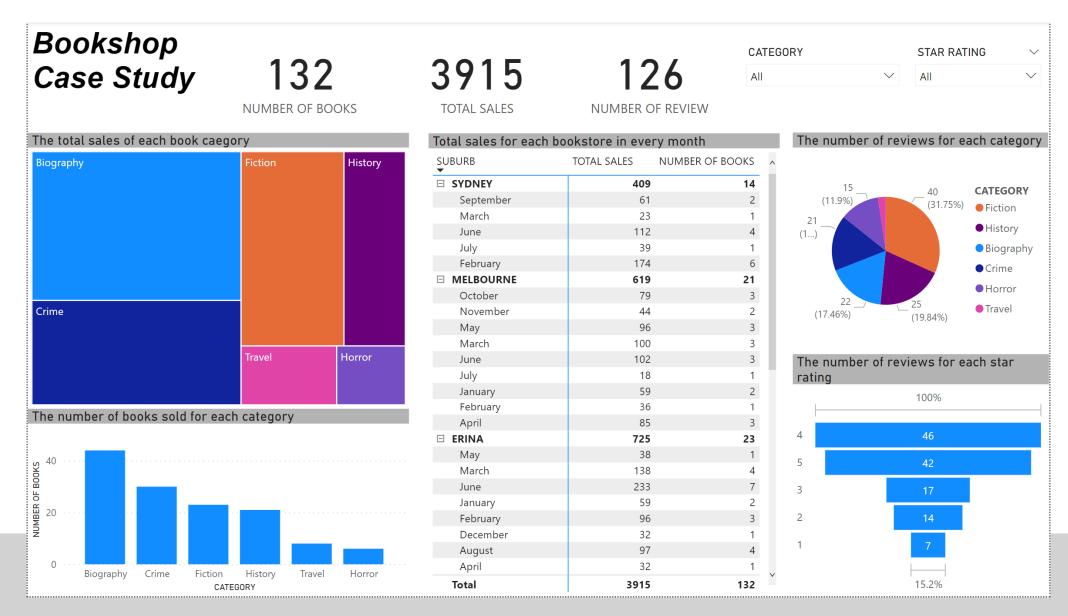
Filtering Options

Main filtering options:

- **Visual Level**: Applies only to the specific visual in which it is defined

- **Page Level**: Applies to all visuals on the specific page in which it is defined

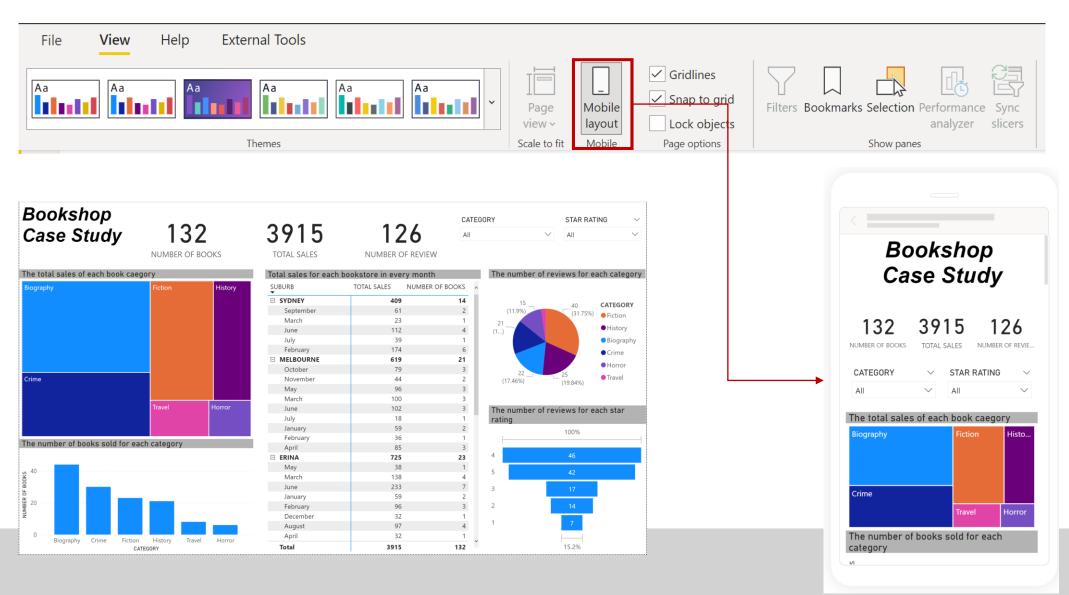- **Report Level**: Applies to all visuals across all pages of the report

The Book Sales Dashboard

Desktop vs Mobile Layouts

Power BI Portal

Power BI Portal

- **Dashboards** – This lists all of the dashboards you have created. After loading a single workbook, Power BI creates a dashboard for you, using the same name as that of the original workbook.[3]

- **Reports** – Here, you will see the reports based on your data.

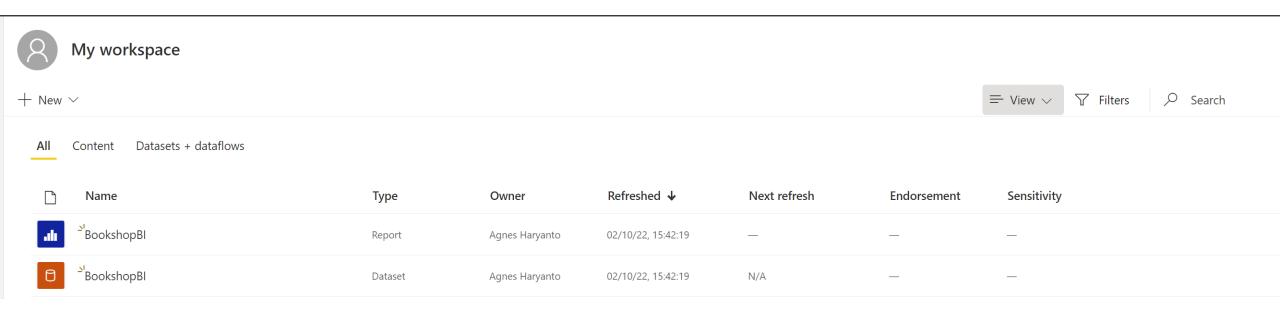- **Datasets** – This lists all of the data sources that you connected to Power BI.

Power BI Portal
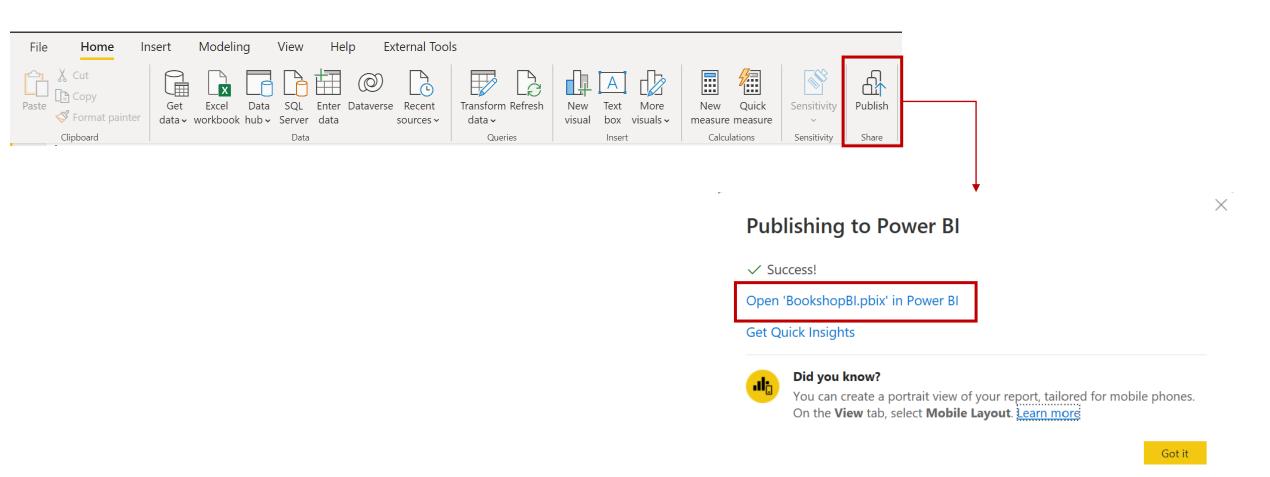
Publishing from Desktop

Power BI Portal
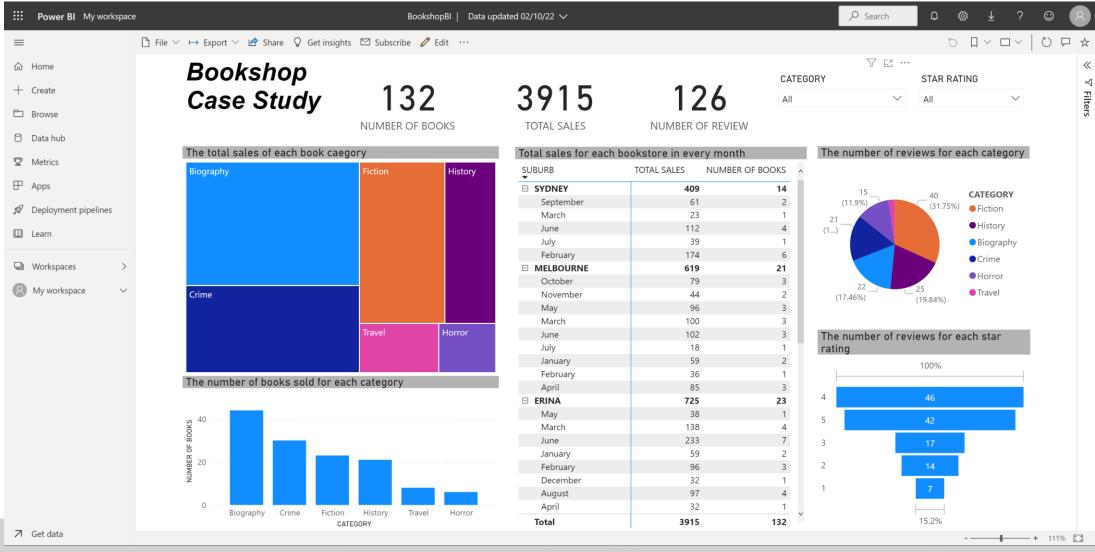
References

[1] Excel Maven & Maven Analytics, LLC, Microsoft Power BI Desktop for Business Intelligence. https://www.mavenanalytics.io/path/power-bi-specialist

[2] Power BI, "What is Power BI?" https://powerbi.microsoft.com/en-au/what-is-power-bi/.

[3] A. Ferrari and M. Russo, Introducing Microsoft Power BI. Microsoft Press, Washington, 2016. https://download.microsoft.com/download/0/8/1/0816F8D1-D1A5-4F60-9AF5-BC91E18D6D64/Microsoft_Press_ebook_Introducing_Power_BI_PDF_mobile.pdf

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