Course 3 (Week 3)

Power BI - I

Lecture 2: Power BI Basics: Interface, importing data, creating visualizations.

What's a personal goal you're currently working toward?

Skills Covered

- Navigating the Power BI interface and its essential features.
- Importing datasets into Power BI for analysis.
- Creating basic visualizations using Power BI (bar charts, line charts, pie charts, etc.).
- Applying filters and slicers to enhance interactivity.

Learning Outcomes

By the end of this session, students will be able to:

1. Understand and navigate the Power BI interface effectively.
2. Import datasets from Excel or other sources into Power BI for data analysis.
3. Create and customize basic visualizations (bar charts, pie charts, line charts).
4. Use filters and slicers to add interactivity to their reports and visualizations.

Objectives for today

1. Power BI Interface
2. Data Import in Power BI
3. Creating Visualizations Using Power BI
4. Short project: Build a report using the imported dataset and multiple visualizations.

Introduction to Power BI

Sections

Section 1

Section 2

Section 3

Section 4

Section 5

History of Power BI

- Launched by Microsoft in 2013 as a self-service BI tool.
- Evolved from Excel add-ins like Power Pivot and Power Query.
- Now a full-fledged suite of business intelligence tools with frequent updates.

Purpose

- To provide users with tools to transform raw data into meaningful insights through visualizations.
- Aimed at business users and analysts for creating reports, dashboards, and data models without needing a deep technical background.

Current Uses

- Widely used across industries for decision-making based on real-time data.
- Commonly used for creating interactive dashboards, reports, and sharing insights across organizations.
- Integration with Microsoft tools like Excel, Azure, and Teams enhances its adoption.
- Popular in sales, marketing, finance, healthcare, and operations for tracking KPIs, analyzing trends, and making data-driven decisions.

Power BI Desktop

A free Windows application used primarily for data modeling, data import, and report creation.

Power BI Service

A cloud-based platform that allows users to view, share, and collaborate on reports and dashboards created in Power BI Desktop.

Business Intelligence

- BI refers to the technologies, strategies, and practices used by organizations to analyze business data and make informed decisions.
- Tools like Power BI help businesses gather data from multiple sources, analyze it, and convert it into actionable insights.
- The main goal of BI is to enable better decision-making by providing a comprehensive view of business data.

Why are Visualizations important?

- **Clarity**: Visual representations of data (charts, graphs) make complex data easy to understand at a glance.
- **Efficiency**: Visual data allows quicker analysis and interpretation, enabling faster decision-making.
- **Insight Discovery**: Patterns, trends, and correlations in data become more apparent through visualization.
- **Communication**: Data visualization facilitates effective communication of insights to stakeholders who may not have a technical background.
- **Interactivity**: Modern BI tools, like Power BI, provide interactive dashboards that allow users to explore data dynamically and gain deeper insights.

What we will cover in demo

Setup

Interface

Power Query Editor

Views, Filters, Visualizations

Hands-on activity over a dataset

Importing Data

Data Transformation

Creating Visualizations

Exporting Reports

Next up:

BI Reporting

Interactive Dashboarding

Advanced Power BI

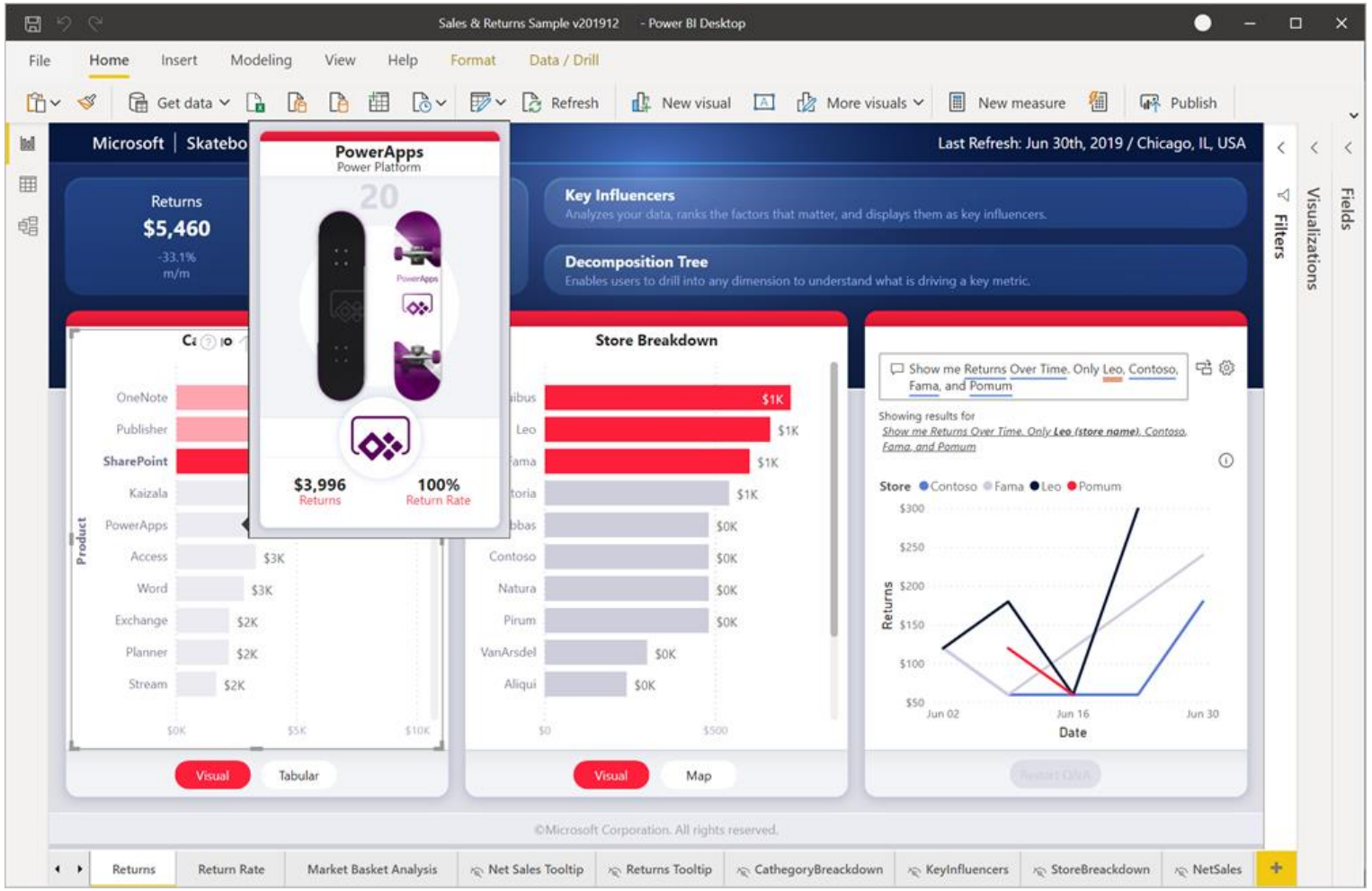
DAX for Data Analysis

Hands-on Project

Report vs Dashboard

A report is a detailed, multi-page document that presents data in various visual formats like tables, charts, and graphs.

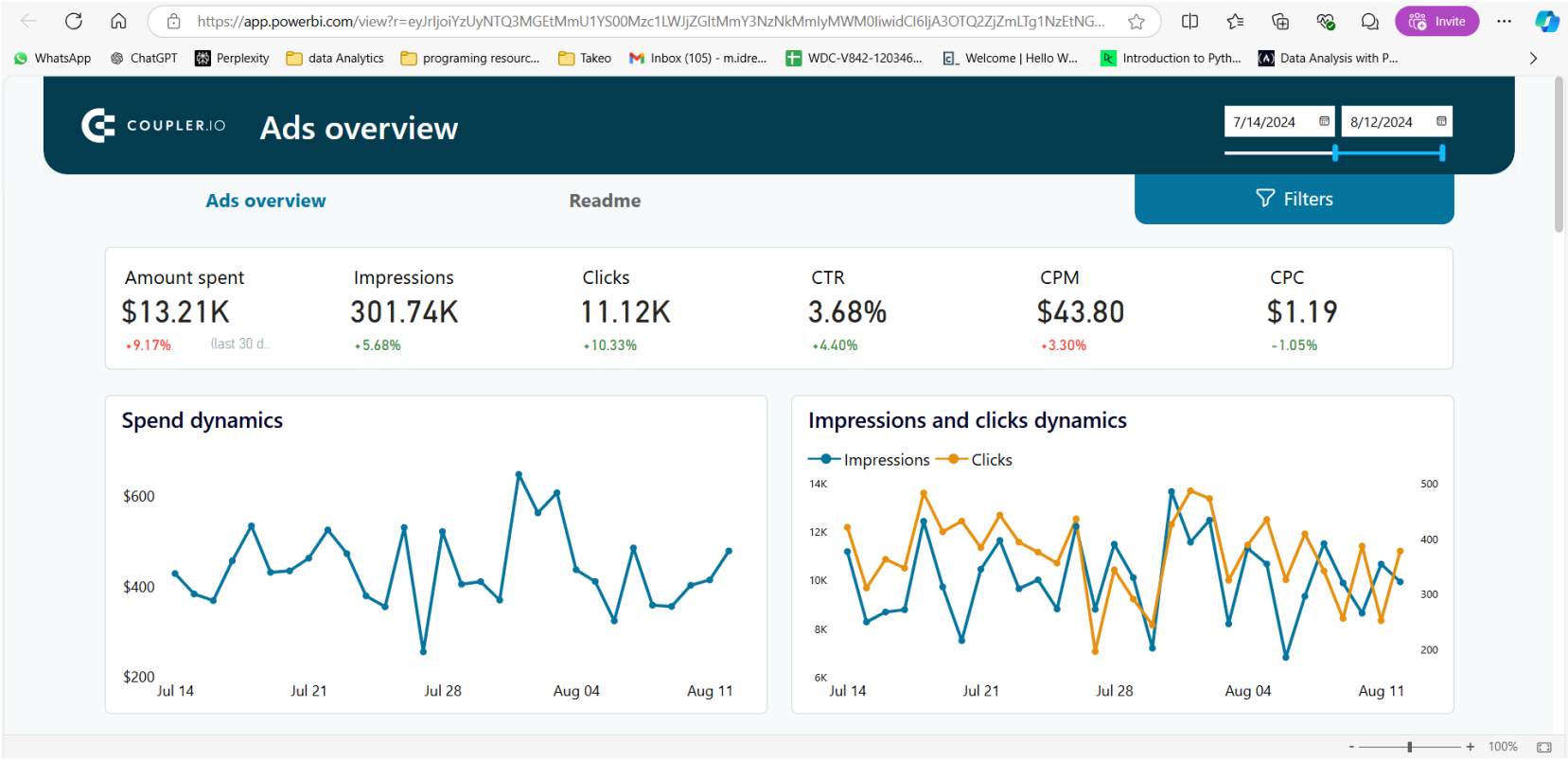
Users can drill down into individual visualizations, filter data, and interact with various elements within the report.



Report

A dashboard is a single-page, real-time snapshot of key metrics or KPIs that presents data visually.

Dashboards are more static compared to reports. Users can click on tiles to view the underlying report but can't interact with visuals in as much depth.



Dashboard

File formats

.pbix: Power BI Desktop file.
standard file format used to save Power BI reports and data models.
Can only be opened and modified in Power BI Desktop.
The file can include data from multiple sources, visualizations

.pbit: Power BI Template file.
to save templates that can be reused for multiple reports.
When a .pbit file is opened, it prompts the user to provide the data source, as the actual data is not stored in the file.

File formats

.pbix (in Power BI Service): The same Power BI Desktop file, but used in Power BI Service
.pbix file from Power BI Desktop to Power BI Service, it allows sharing and collaboration in the cloud.
file remains in .pbix format but is hosted and managed online.

.pnib: Power BI Project File (Preview).
used for more complex development work with Power BI, especially when creating solutions that involve multiple .pbix files.
organizes multiple .pbix files and related resources, but is not yet as widely adopted

File Format	Description	Use	Implication
.pbix	Power BI Desktop file	Standard report and data model	Can be opened and edited in Power BI Desktop
.pbit	Power BI Template file	Reusable templates without data	Prompts user for data source when opened
.pbix (Service)	Published Power BI report	Share and collaborate online	Same as .pbix, but hosted in Power BI Service
.csv	Comma-Separated Values	Simple data file	Only stores data, no metadata or visuals
.xlsx	Excel Spreadsheet	Import data from Excel	Can include data tables, ranges, and Power Query
.xml	XML file	Import structured data from XML	Useful for structured data like feeds
.json	JSON file	Import hierarchical data	Ideal for nested data structures
.xmla	XML for Analysis	Used with SSAS multidimensional models	For querying OLAP models in Power BI
.rdl	Report Definition Language	Used with SSRS for paginated reports	Static reports typically for printing
.pbip	Power BI Project File (Preview)	Organize complex Power BI solutions	Manage multiple .pbix files and resources

Let’s move to interface now!

Hands-on Activity

Activity: Visualize Your Favorite Movies

Objectives

- Learn Power BI basics by creating a movie dashboard
- Use IMDb movie dataset to explore movie trends, genres, and ratings
- Build an interactive dashboard to visualize key insights

Step 1 - Importing Data

1. Download the IMDb movie dataset
   IMDB 5000 Movie Dataset (kaggle.com)
2. Open Power BI and import the dataset into the platform
3. Explore columns like movie title, genre, release year, ratings

Step 2 - Data Cleaning

Use Power Query Editor to:

1. Remove duplicates or irrelevant columns
2. Convert data types (numeric values for ratings, box office)
3. Handle missing data (remove, replace, etc.)

Step 3 - Creating Visuals

1. Create a **Bar Chart** for top 10 highest-grossing movies
2. Use a **Pie Chart** for genre distribution
3. Make a **Line Graph** to show trends in movie production or ratings over time

Step 4 - Building the Dashboard

- Combine all visuals into one dashboard
- Add a title: "Explore Your Favorite Movies!"
- Label visuals and arrange them neatly

Step 5 - Explore and Share

- Discover insights about genres, ratings, and top movies
- Share your findings with the class

Resources

- Microsoft Documentation - Tutorial: Get started creating in the Power BI service - Power BI | Microsoft Learn
- Learn PowerBI Dashboarding: Create dashboards in Power BI - Training | Microsoft Learn
- Power BI Tutorial for Beginners | DataCamp
- Power BI Tutorial | Learn Power BI – GeeksforGeeks
- Power BI Tutorial for Beginners – YouTube

That’s a wrap

Any Questions?