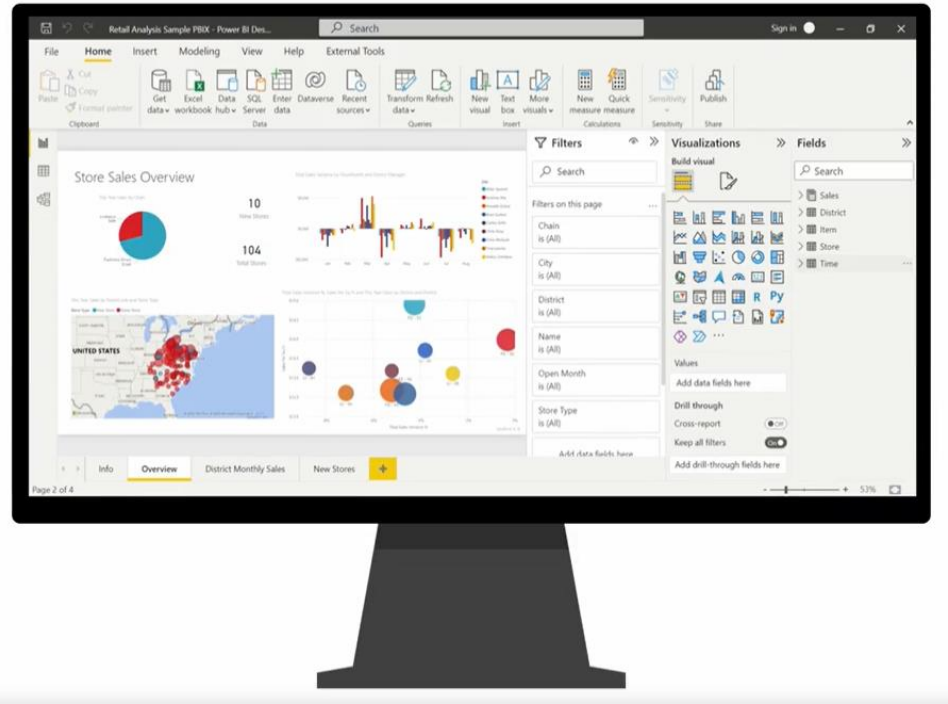
Data Analysis with Power BI

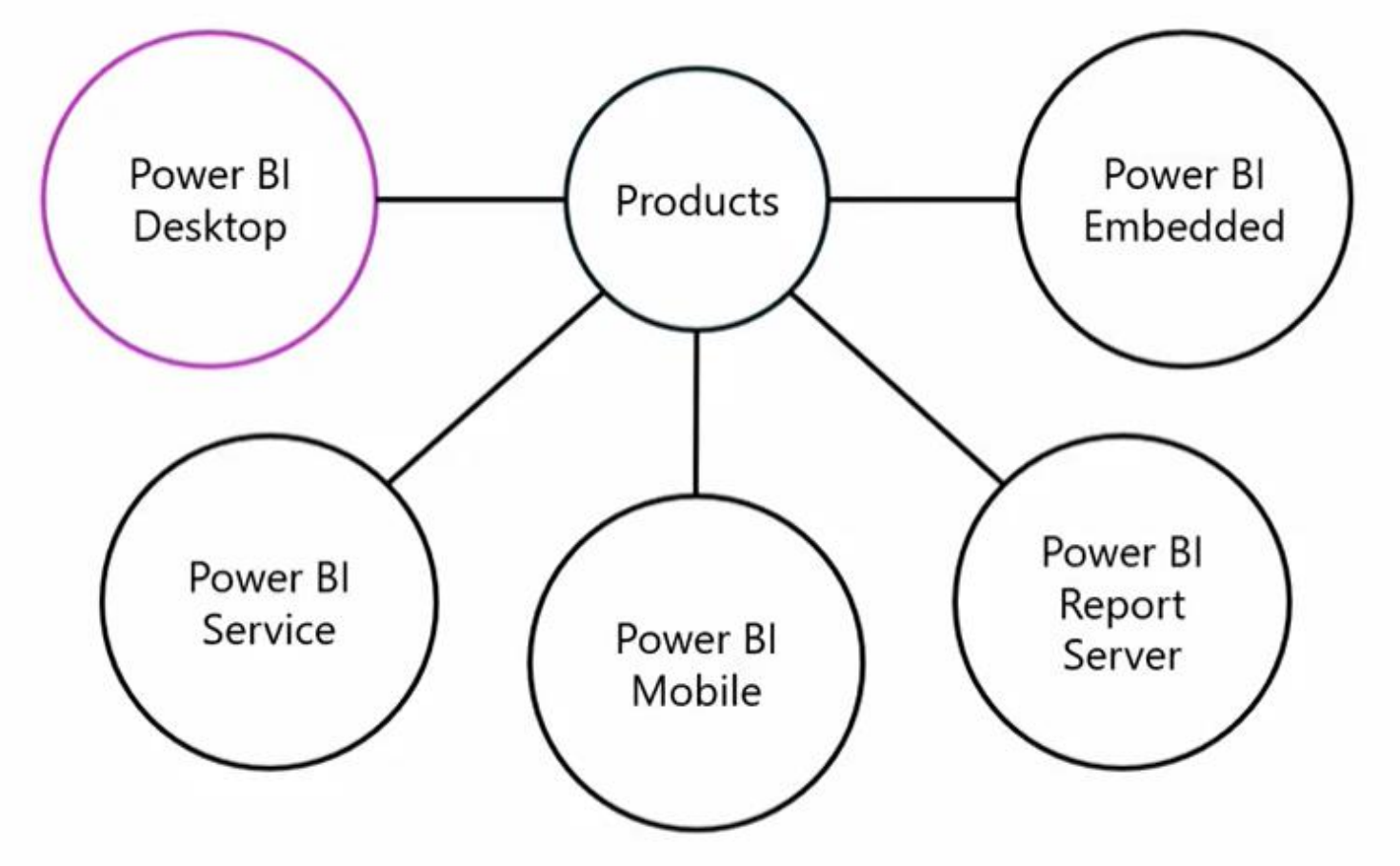
Module 5

What is Power BI?

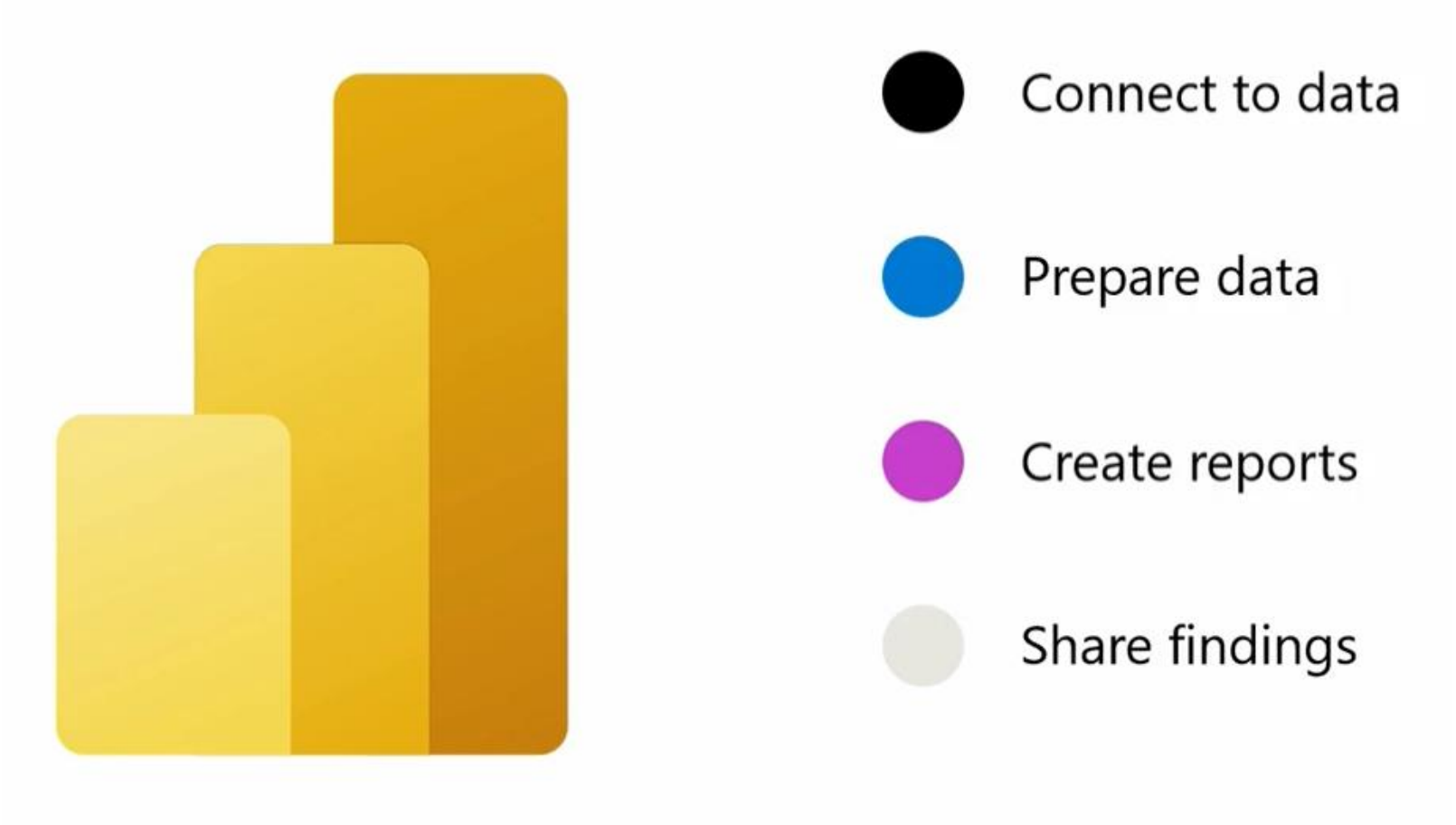
It is a collection of business analytics tools to help organizations make data driven decisions.

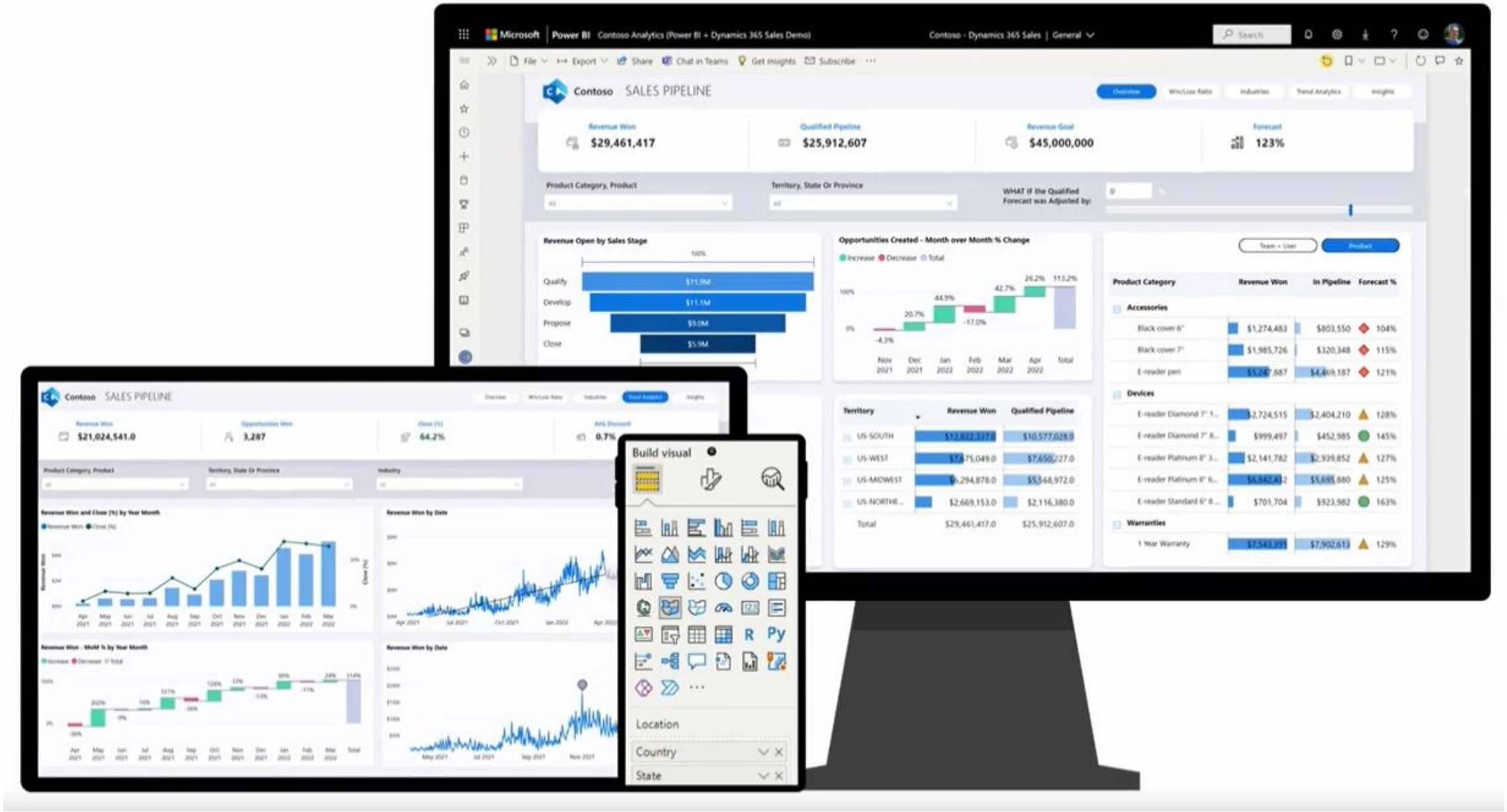


Power BI eco-system



Power BI workflow




Microsoft Power BI Contoso Analytics (Power BI + Dynamics 365 Sales Demo)
Contoso - Dynamics 365 Sales | General
Contoso SALES PIPELINE
Revenue Won
$29,461,417
Qualified Pipeline
$25,912,607
Revenue Goal
$45,000,000
Forecast
123%
Revenue Open by Sales Stage
Qualify
Develop
Propose
Close
Opportunities Created - Month over Month % Change
Territory
Revenue Won
Qualified Pipeline
US-SOUTH
US-WEST
US-MIDWEST
US-NORTHE...
Total
$29,461,417.0
$25,912,607.0
Product Category
Revenue Won
In Pipeline
Forecast %
Accessories
Black cover 6"
Black cover 7"
E-reader pen
Devices
E-reader Diamond 7" 1...
E-reader Diamond 7" 8...
E-reader Platinum 8" 3...
E-reader Platinum 8" 6...
E-reader Standard 6" 8...
Warranties
1 Year Warranty
Contoso SALES PIPELINE
$21,024,541.0
3,287
64.2%
0.7%
Build visual
Location
Country
State

Advantages of Power BI

Drag and drop user interface

Excel, JSON, SQL, etc.

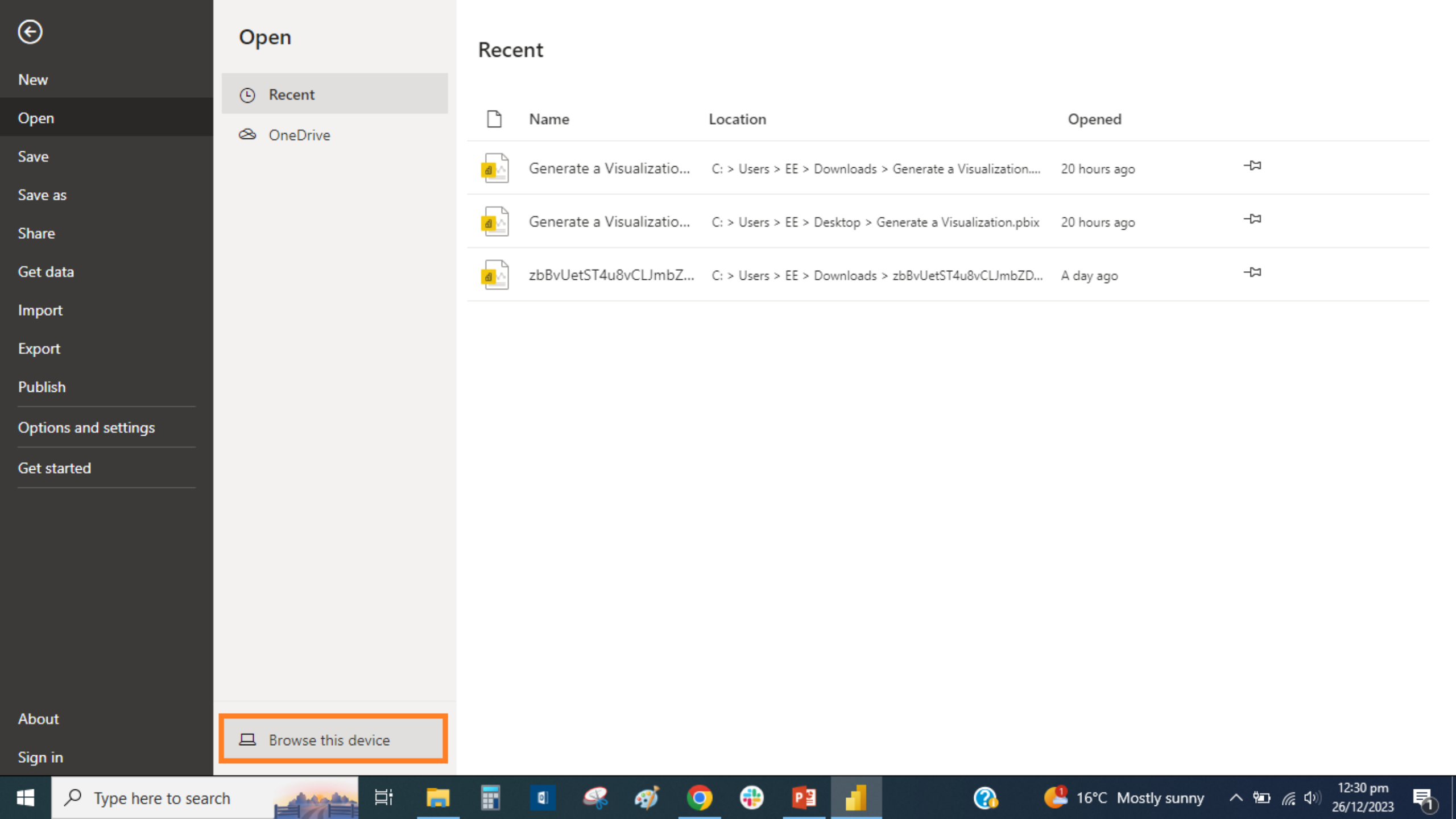
Power Query Editor to clean, transform and reshape data

Bar charts, maps, etc.

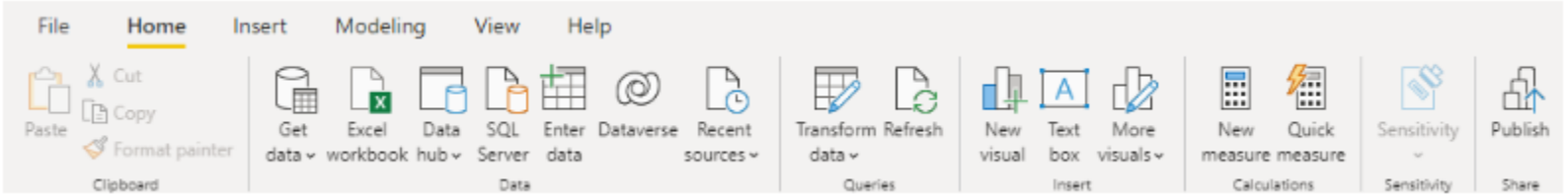
DAX

Activity – How to view a report?

- Download the “Sales-Returns-Sample.pbix” file.
- Open Power BI Desktop.
- Load the report.


New
Open
Save
Save as
Share
Get data
Import
Export
Publish
Options and settings
Get started
About
Sign in
Open
Recent
OneDrive
Browse this device
Recent
Name
Location
Opened
Generate a Visualizatio...
C: > Users > EE > Downloads > Generate a Visualization....
20 hours ago
Generate a Visualizatio...
C: > Users > EE > Desktop > Generate a Visualization.pbix
20 hours ago
zbBvUetST4u8vCLJmbZ...
C: > Users > EE > Downloads > zbBvUetST4u8vCLJmbZD...
A day ago
Type here to search
16°C Mostly sunny
12:30 pm
26/12/2023

Activity – How to view a report? (cont.)



The **ribbon**, located at the top of the screen, contains various tools and features to help you create and modify reports.

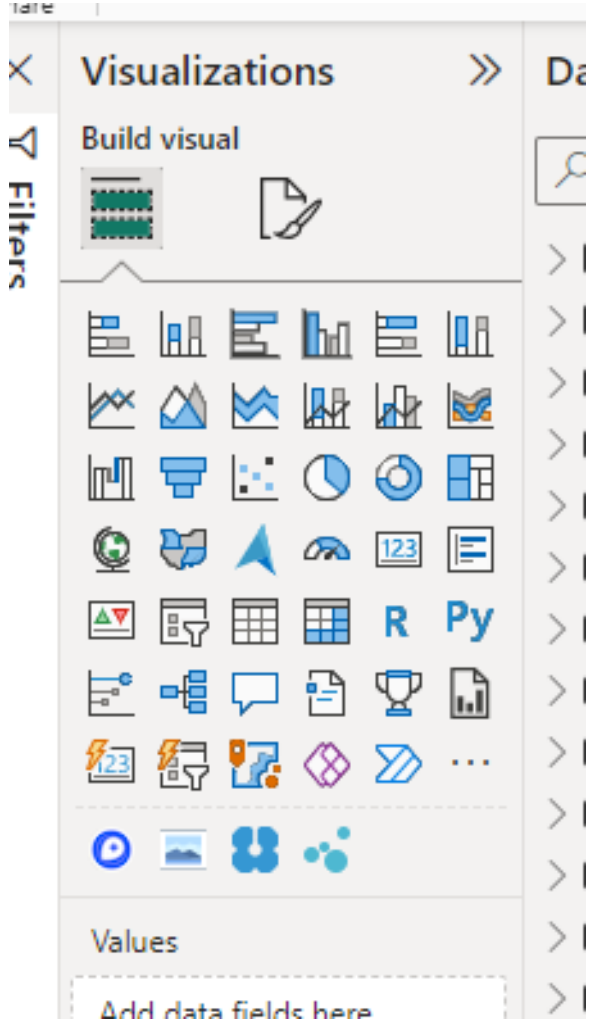
Activity – How to view a report? (cont.)

Report View: This is the main working area where you'll create and edit visualizations.

Activity – How to view a report? (cont.)

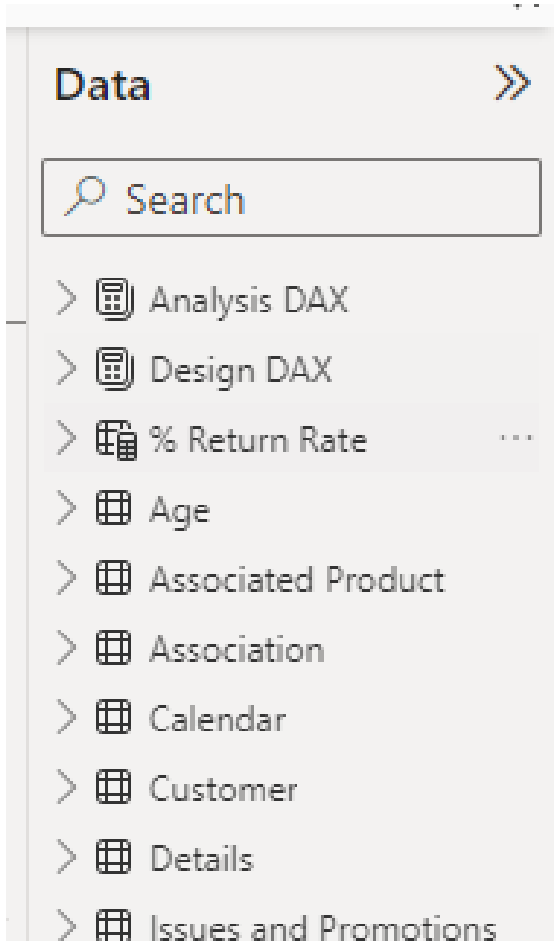
Located at the bottom of the screen, the **Pages** section allows you to switch between different report pages.

Activity – How to view a report? (cont.)



Located on the right side of the screen, this pane displays a list of available **visualizations** that you can add to your report.

Activity – How to view a report? (cont.)



Located next to the Visualizations Pane, the **Fields/Data** Pane displays a list of available data fields from the data model that can be added to visualizations.

Activity – How to view a report? (cont.)

Navigate Report Pages

1. Locate the **Report View**, which should be automatically opened when you open the *Sales and returns sample.pbix* file. If not, select the **Report** icon in the left-hand pane.
2. To switch between report pages, select the **page tabs** located at the bottom of the screen.
3. To add a new page, select the **+** icon next to the existing pages.
4. To delete or duplicate a page, right-click on the page tab and select **Delete** or **Duplicate**.

Activity – How to view a report? (cont.)

Interact with Visualizations

1. To select a visualization, click on it within the **Report View**.
2. To move a visualization, select and drag it to the desired location.
3. To resize a visualization, select and drag the **small borders** located at the edges of the visualization.
4. To access additional options, such as sort by, spotlight, or export data, select the **ellipsis** (three dots) located at the top-right corner of the visualization.

Activity – How to view a report? (cont.)

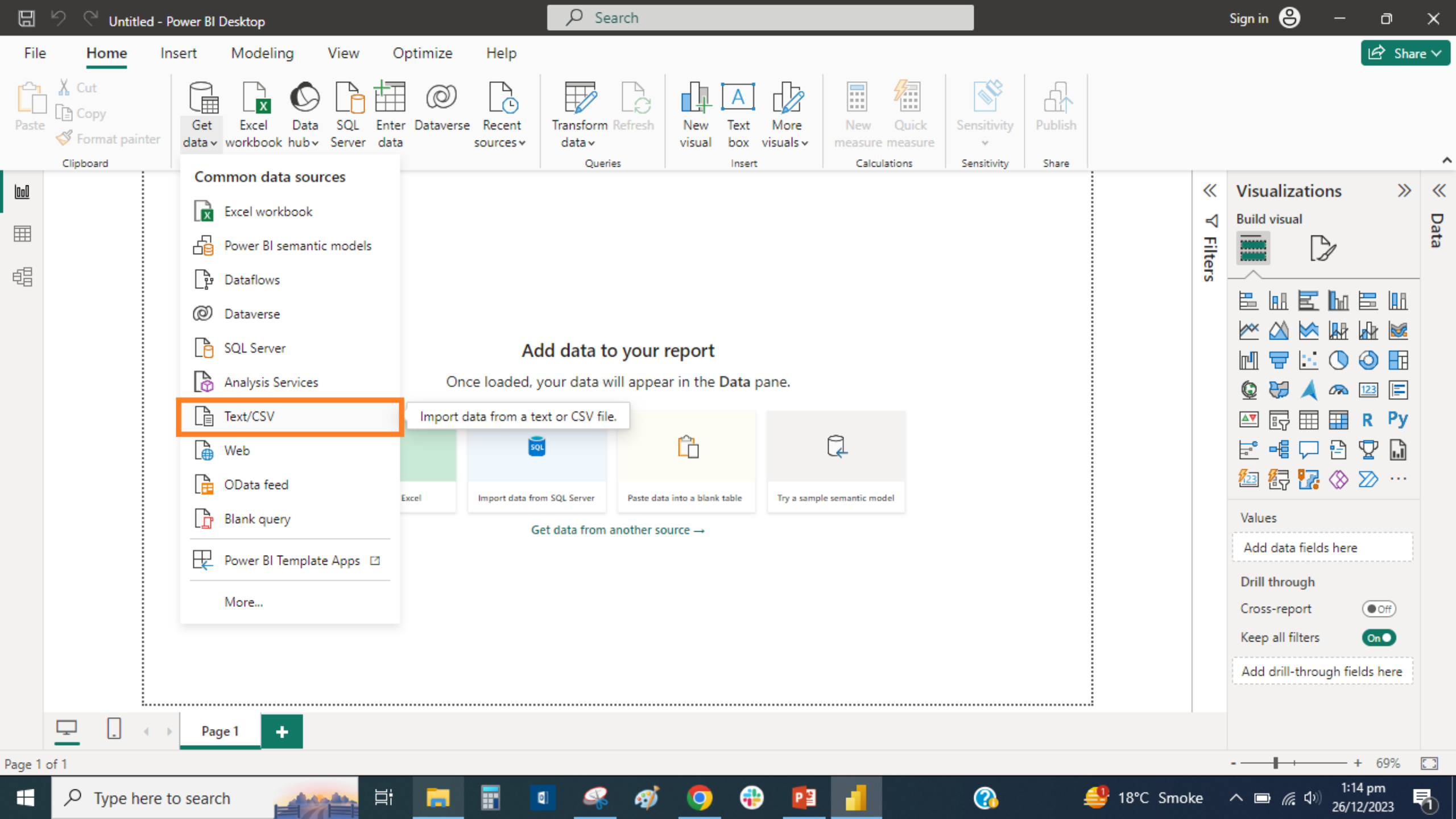
Interact with the Report

1. Hover over different data points, bars, or lines in the visuals to view additional information.
2. Select specific **data points** or **categories** in the visuals to filter or cross-highlight related visuals in the report.

Exercise: Generate a Visualization

Import Data

1. Launch Microsoft Power BI Desktop.
2. Import and load the Adventure Works sales dataset called *AdventureWorks-sales-dataset.csv.* This is the dataset you want to visualize.

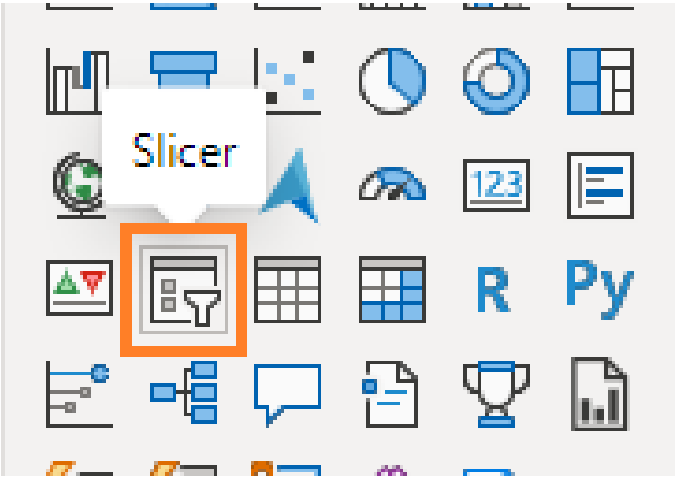

Untitled - Power BI Desktop
Search
Sign in
File
Home
Insert
Modeling
View
Optimize
Help
Share
Paste
Cut
Copy
Format painter
Clipboard
Get data
Excel workbook
Data hub
SQL Server
Enter data
Dataverse
Recent sources
Transform data
Refresh
Queries
New visual
Text box
More visuals
Insert
New measure
Quick measure
Calculations
Sensitivity
Sensitivity
Publish
Share
Common data sources
Excel workbook
Power BI semantic models
Dataflows
Dataverse
SQL Server
Analysis Services
Text/CSV
Web
OData feed
Blank query
Power BI Template Apps
More...
Import data from a text or CSV file.
Add data to your report
Once loaded, your data will appear in the Data pane.
Excel
Import data from SQL Server
Paste data into a blank table
Try a sample semantic model
Get data from another source →
Filters
Visualizations
Build visual
Values
Add data fields here
Drill through
Cross-report
Off
Keep all filters
On
Add drill-through fields here
Data
Page 1
Page 1 of 1
69%
Type here to search
18°C Smoke
1:14 pm
26/12/2023

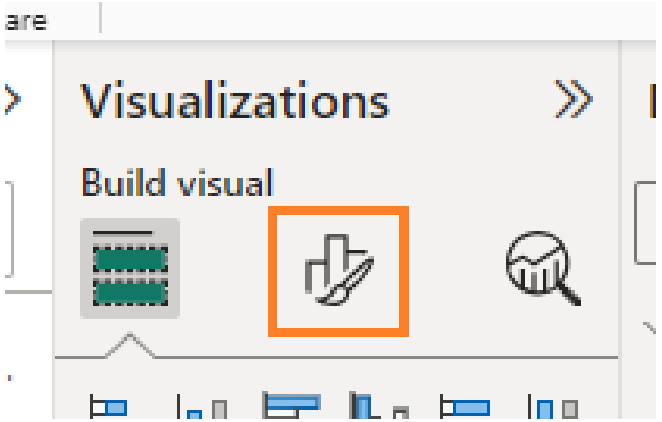
Exercise: Generate a Visualization (cont.)

Create Interactive Filters

One method for filtering data is a slicer—a visual tool that enables users to filter data interactively within a report.

1. To add a slicer for the product category, on the **Home** tab, in the **Visualizations** pane, select **Slicer**.
2. Drag the **Product Category** field from the **Data** pane to the slicer visual.
3. Repeat the process to create another slicer, this time for the **Payment Method** field.
4. For each slicer, add a title by selecting the **Format** tab and choosing **Title** from the options.
5. Drag the positioning of the slicers to the right side of the report area.





Exercise: Generate a Visualization (cont.)

Create a Stacked Column Chart

1. Locate and add a stacked column chart from the **Visualizations** pane to your report. From the **Fields** pane, drag the **Order Total** onto the **Y-Axis**, **Product Size** onto the **X-Axis**, and **Product Category** onto the **Legend**.
2. Set the chart title to **Order Total by Product Size and Product Category for 2023**.
3. Drag the stacked column chart visual to the left side of the **Report** area (next to the interactive slicer filters).

Exercise: Generate a Visualization (cont.)

Create a Donut Chart

1. Add a donut chart for **Order Total Share** by **Product Category**.
2. Set the chart title to **Order Total Share by Product Category for 2023**.
3. Drag the donut chart visual below the stacked column chart.

Exercise: Generate a Visualization (cont.)

Create a Table

1. Add a table showing all product names with their corresponding order totals.
2. Drag the table visual to the right side of the **Report** area, below the interactive filters.

Untitled - Power BI Desktop

Search

Amelia

File Home Insert Modeling View Help

Paste Cut Copy Format painter — Clipboard

Get data Excel workbook Data hub SQL Server Enter data Dataverse Recent sources — Data

Transform data Refresh — Queries

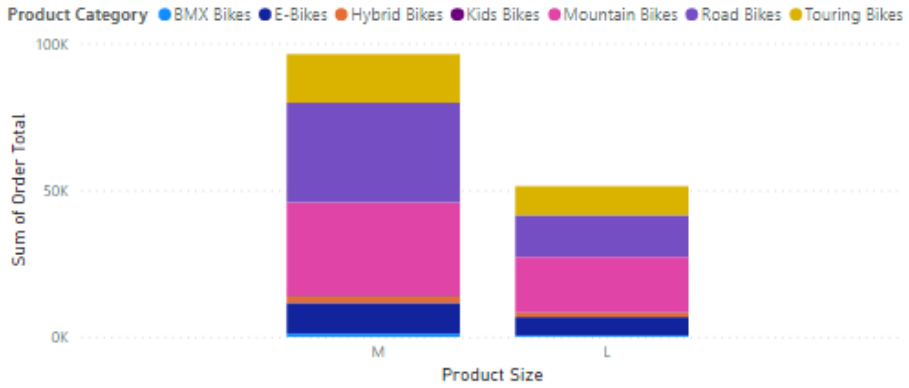
New visual Text box More visuals — Insert

New measure Quick measure — Calculations

Sensitivity — Sensitivity

Publish — Share

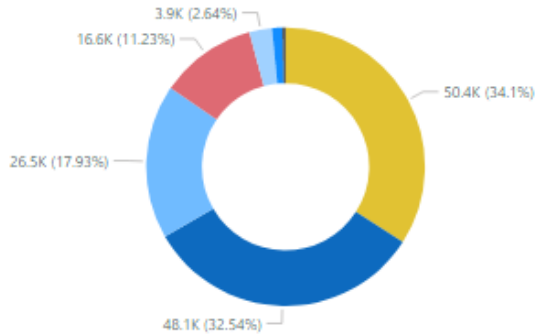
Order Total by Product Size and Product Category for 2023



Product Category
- BMX Bikes
- E-Bikes
- Hybrid Bikes
- Kids Bikes
- Mountain Bikes
- Road Bikes
- Touring Bikes

Payment Method
- Credit Card
- PayPal

Order Total share by Product Category for 2023



Product Category
- Mountain Bikes
- Road Bikes
- Touring Bikes
- E-Bikes
- Hybrid Bikes
- BMX Bikes
- Kids Bikes

Product Name	Sum of Order Total
Adventurer 1000	3 000.00
Adventurer 2000	1 800.00
AeroSpeed 1000	8 400.00
AeroSpeed 2000	3 200.00
CommutePro 1000	2 400.00
CommutePro 2000	1 500.00
CrossRider 1000	5 700.00
CrossRider 2000	2 200.00
DownhillDominator 1000	5 800.00
DownhillDominator 2000	3 300.00
DuoExplorer 1000	4 000.00
DuoExplorer 2000	2 300.00
Total	**147 800.00**

Filters

Visualizations

Build visual

Values

Add data fields here

Drill through

Cross-report Off

Keep all filters On

Add drill-through fields here

Fields

Search

Sales

Page 1

Page 1 of 1

69%

Update available (click to download)

Quiz

- Based on your analysis of the Stacked Column Chart visual, which product category has the highest sum of order totals for size M?
- In the donut chart displaying the sum of order totals for various product categories, which category has the second highest sum of order totals?
- What was the purpose of creating slicers?

Structure of the module

- Part 1: Extract, Transform and Load (ETL) – identify, explain and configure multiple data sources in Power BI; clean and transform data using Power Query.
- Part 2: Data Modeling – identify and create appropriate model relationships; configuring your table and column properties; data analysis expressions (DAX) to configure and optimize your models
- Part 3: Data Analysis and Visualization – add visualizations to reports; format visuals