

Data Analysis and Visualisation with Power BI

Overview:

In this project, I undertook a comprehensive learning journey through the Power BI Skillable Labs, which provided me with practical hands-on experience in data analysis and visualisation. Over the course of 11 labs, I built a solid foundation in working with Power BI, covering various aspects of data manipulation, modelling, DAX calculations, report design, and security enforcement. Each lab focused on a specific skill set, enabling me to develop a robust understanding of Power BI's capabilities and how to apply them effectively for data analysis and reporting.

- **Lab 1: Get Data in Power BI Desktop** – Learned how to connect to different data sources and import data into Power BI.
- **Lab 2: Load Transformed Data in Power BI Desktop** – Focused on transforming raw data into a clean and usable format for analysis.
- **Lab 3: Design a Data Model in Power BI** – Developed skills in creating structured and well-organised data models, ensuring efficient querying and reporting.
- **Lab 4: Create DAX Calculations in Power BI Desktop** – Mastered the basics of Data Analysis Expressions (DAX) to perform calculations within Power BI.
- **Lab 5: Create Advanced DAX Calculations in Power BI Desktop** – Expanded my understanding of DAX by working with more complex formulas and functions.
- **Lab 6: Create Visual Calculations in Power BI Desktop** – Focused on applying DAX to create dynamic and interactive visual elements in reports.
- **Lab 7: Design a Report in Power BI Desktop** – Learned how to design comprehensive, user-friendly reports that effectively communicate data insights.
- **Lab 8: Create a Power BI Dashboard** – Gained hands-on experience in building dashboards that provide a snapshot of key performance indicators (KPIs) and data trends.
- **Lab 9: Enhance a Report in Power BI Desktop** – Improved reports by adding interactive features and refining design elements for greater clarity and engagement.
- **Lab 10: Perform Data Analysis in Power BI** – Developed analytical skills to interpret data, identify patterns, and generate actionable insights.
- **Lab 11: Enforce Row-Level Security** – Learned how to implement row-level security to control data access based on user roles.

Throughout this learning experience, I have become proficient in transforming complex datasets into clear and insightful visualisations. My key strengths in data visualisation include:

Selecting the Right Visual Representation: I excel at choosing the most suitable chart types for different data sets, whether it's bar charts, line graphs, or scatter plots.

My focus is on selecting the chart type that best communicates the insights and effectively conveys the intended message.

Applying Colour and Design Principles: I use thoughtful colour schemes and design principles to emphasize critical information, ensuring that charts and reports are not only visually appealing but also easy for viewers to understand and interpret.

Creating Interactive Data Visuals: I specialise in building dynamic, interactive dashboards and visualisations with tools like Power BI. These visuals allow users to explore and interact with data, providing a deeper and more personalized understanding of the insights.

Crafting Data Narratives: I have a strong ability to weave data into a compelling narrative, guiding audiences through the key insights and helping them relate to the story behind the numbers. This approach ensures that my presentations are both engaging and impactful, making complex data accessible and meaningful.

Lab 1: Get Data in Power Bi Desktop.

Get Data in Power BI Desktop
1 Hr 26 Min Remaining

Instructions Resources Help

5 distinct, 0 unique

7. Repeat the steps to create a query based on the **ColorFormats.csv** file.

The **ColorFormats** CSV file contains one row per product color. Each row records the HEX codes to format background and font colors.

You should now have two new queries, **ResellerSalesTargets** and **ColorFormats**.

Queries [8]

- DimEmployee
- DimEmployeeSalesTerritory
- DimProduct
- DimReseller
- DimSalesTerritory
- FactResellerSales
- ResellerSalesTargets
- ColorFormats

Lab complete

Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete

< Previous End >

Lab 2: Load Transformed Data in Power BI Desktop.

Load Transformed Data in Power BI Desktop
56 Minutes Remaining

Instructions Resources Help

- Sales
- Targets
- ColorFormats (which won't load to the data model)

2. Select **Close & Apply** to load the data to the model, and close Power Query Editor window.

3. You can now see the canvas in Power BI Desktop, with Filters, Visualizations, and Data panes on the right. In the Data pane, notice the **7 tables** loaded to the data model.

Data

- Product
- Region
- Reseller
- Sales
- Salesperson
- SalespersonRegion
- Targets

Lab complete

Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete

Previous End

Lab 3: Design a Data Model in Power BI.

Design a Data Model in Power BI
13 Minutes Remaining

Instructions Resources Help

Relate the Targets table

In this task, you'll create a relationship to the **Targets** table.

- 1. Create a relationship from the **Salesperson (Performance)** | **EmployeeID** column and the **Targets** | **EmployeeID** column.
- 2. In Report view, add the **Targets** | **Target** field to the table visual.
- 3. Resize the table visual so all columns are visible.

Salesperson	Sales	Target
Amy Alberts	\$10,288,626	\$19,450,000
Brian Welcker	\$77,548,570	\$221,700,000
David Campbell	\$12,004,822	\$19,625,000
Garrett Vargas	\$13,875,633	\$23,675,000
Jae Pak	\$8,410,883	\$13,575,000
Jillian Carson	\$7,633,387	\$13,675,000
Jose Saravia	\$13,875,633	\$18,875,000
Linda Mitchell	\$25,634,503	\$40,850,000
Lynn Toffias	\$1,391,025	\$3,210,000
Michael Blythe	\$21,987,348	\$31,150,000
Pamela Ansman-Wolfe	\$30,005,939	\$53,850,000
Rachel Valdez	\$1,877,742	\$4,125,000
Ranjit Verma-Chaudhary	\$4,527,840	\$9,050,000
Shirley Flet	\$18,891,116	\$38,890,000
Stephen Wang	\$25,885,919	\$110,150,000
Syed Abbas	\$1,391,025	\$3,050,000
Tony Vance-Amen	\$13,875,633	\$17,100,000
Trill Pettit	\$7,633,387	\$12,320,000
Total	\$77,548,570	\$676,210,000

It's now possible to visualize sales and targets—but take care for two reasons. First, there's no filter on a time period, and so targets also include future target amounts. Second, targets aren't additive, and so the total shouldn't be displayed. They can either be disabled by formatting the visual or removed by using calculation logic.

Lab complete

Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete

Previous End

Lab 4: Create DAX Calculations in Power BI Desktop.

The screenshot shows the Power BI Desktop interface. The main window displays a table with columns: Salesperson, Sales, Target, Variance, and Variance Margin. The table lists 18 salespeople and a total row. The sidebar on the right contains instructions for Lab 4, including a note about collapsing the Data pane and a list of tables to be displayed.

Salesperson	Sales	Target	Variance	Variance Margin
Amy Alberts	\$10,288,626	\$19,450,000	(\$9,161,374)	-47.10%
Brian Welcker	\$77,548,570	\$221,700,000	(\$144,151,430)	-65.02%
David Campbell	\$12,004,822	\$19,625,000	(\$7,620,178)	-38.83%
Garrett Vargas	\$13,875,633	\$23,075,000	(\$9,799,367)	-41.39%
Jae Pak	\$8,410,883	\$13,575,000	(\$5,164,117)	-38.04%
Jillian Carson	\$7,633,387	\$13,675,000	(\$6,041,613)	-44.18%
José Saraiña	\$13,875,633	\$18,075,000	(\$4,999,367)	-26.49%
Linda Mitchell	\$25,634,503	\$40,850,000	(\$15,215,497)	-37.25%
Lynn Tsiflias	\$1,391,025	\$3,210,000	(\$1,818,975)	-56.67%
Michael Blythe	\$21,987,348	\$31,150,000	(\$9,162,652)	-29.41%
Pamela Ansman-Wolfe	\$30,005,939	\$53,850,000	(\$23,844,061)	-44.28%
Rachel Valdez	\$1,877,743	\$4,125,000	(\$2,247,257)	-54.48%
Ranjit Varkey Chudukatil	\$4,527,840	\$9,050,000	(\$4,522,160)	-49.97%
Shu-Itō	\$18,001,116	\$59,850,000	(\$41,848,884)	-69.92%
Stephen Jiang	\$65,868,919	\$110,150,000	(\$44,281,081)	-40.20%
Syed Abbas	\$1,391,025	\$3,050,000	(\$1,658,975)	-54.39%
Tete Mensa-Annan	\$12,004,822	\$17,100,000	(\$5,095,178)	-29.80%
Tsvi Reiter	\$7,638,607	\$13,250,000	(\$5,611,393)	-42.35%
Total	\$77,548,570			

Page 1 of 2

100% Tasks Complete

Lab complete

Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

Lab 5: Create Advanced DAX Calculations in Power BI Desktop.

The screenshot shows the Power BI Desktop interface. The main window displays a data model with tables: Reseller, Product, Sales, Region, and SalespersonRegion. The sidebar on the right contains instructions for Lab 5, including a table of sales data and a list of tables to be displayed.

Sales	Sales YTD	Sales YoY Growth
\$16,429,043	\$16,429,043	
\$489,328	\$489,328	
\$1,540,072	\$2,029,400	
\$1,166,332	\$3,195,733	
\$844,833	\$4,040,566	
\$2,325,755	\$6,366,320	
\$1,703,435	\$8,069,756	
\$713,230	\$8,782,985	
\$1,900,794	\$10,683,780	
\$1,455,280	\$12,139,060	
\$883,011	\$13,022,071	
\$2,269,720	\$15,291,791	
\$1,137,252	\$16,429,043	
\$27,979,780	\$27,979,780	70.31 %
\$2,411,559	\$2,411,559	392.83 %
\$3,615,914	\$6,027,473	134.79 %

100% Tasks Complete

Lab complete

Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

Lab 6: Create Visual Calculations in Power BI Desktop.

The screenshot shows the Power BI Desktop interface. The main view displays a line chart titled "SUM OF SALES AND RUNNING SUM" with "Quarter" on the X-axis and "Sum of Sales and Running sum" on the Y-axis. The chart shows two lines: "Sum of Sales" (blue) and "Running sum" (purple). Below the chart is a data table with columns for Year, Quarter, Sum of Sales, and Running sum. The table shows data for FY2018 Q1 through FY2020 Q4, with a total for each year.

Year	Quarter	Sum of Sales	Running sum
FY2018	FY2018 Q1	\$3,195,733	3,195,732.87
	FY2018 Q2	\$4,874,023	8,069,755.58
	FY2018 Q3	\$4,066,304	12,135,059.65
	FY2018 Q4	\$4,288,983	16,424,042.60
FY2019	FY2019 Q1	\$8,922,120	8,922,119.92
	FY2019 Q2	\$7,047,379	15,969,499.23
	FY2019 Q3	\$5,268,960	21,238,459.35
	FY2019 Q4	\$6,741,320	27,979,779.53
FY2020	FY2020 Q1	\$11,188,116	11,188,115.52
	FY2020 Q2	\$5,486,974	16,675,090.04
	FY2020 Q3	\$5,486,974	22,162,064.56
	FY2020 Q4	\$5,486,974	27,649,039.08

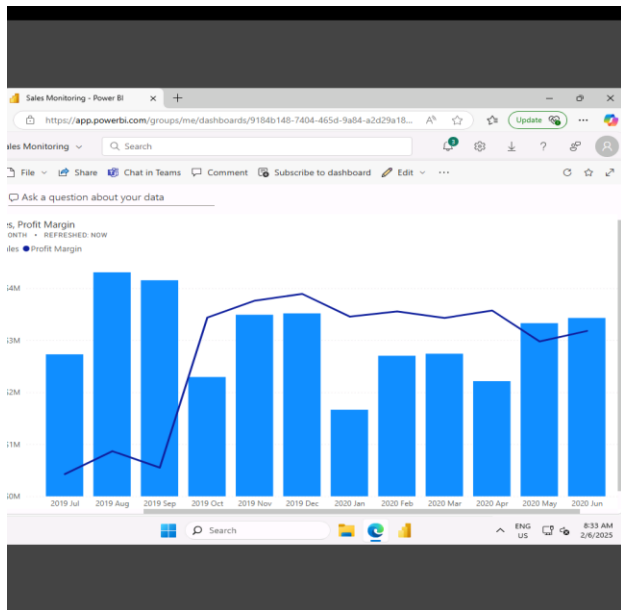
The task pane on the right shows the "Visualizations" pane with a line chart selected. The "Data" pane shows the "Running sum" field selected. The DAX formula bar shows the formula: `Running sum = RUNNINGSUM([Sum of Sales])`.

Lab 7: Design a Report in Power BI Desktop.

The screenshot shows the Power BI Desktop interface in report design mode. The main view displays a report titled "Adventure Works" with a "My Performance" section. The report includes a bar chart titled "Sum of Sales and Profit Margin by Month" and a table titled "Sum of Sales by Country and Category". The task pane on the right shows the "Visualizations" pane with a bar chart selected. The "Data" pane shows the "My Performance" field selected. The DAX formula bar shows the formula: `My Performance = SUM(Sales[SalesAmount])`.

The task pane on the right shows the "Visualizations" pane with a bar chart selected. The "Data" pane shows the "My Performance" field selected. The DAX formula bar shows the formula: `My Performance = SUM(Sales[SalesAmount])`.

Lab 8: Create a Power BI Dashboard.



Create a Power BI Dashboard

48 Minutes Remaining

Instructions Resources Help


The semantic model in the Power BI service now has June 2020 sales data.

Review the dashboard

In this task, you'll review the dashboard to notice updated sales.

1. In the Microsoft Edge browser window, open Power BI service, and then review the **Sales Monitoring** dashboard in **My Workspace**.
2. In the **Sales, Profit Margin** tile, in line with the subtitle, notice that the data was **Refreshed: NOW**.
3. Notice also that there's now a column for **2020 Jun**.

If you don't see the June 2020 data, you might need to press **F5** to reload the web browser.



Lab complete

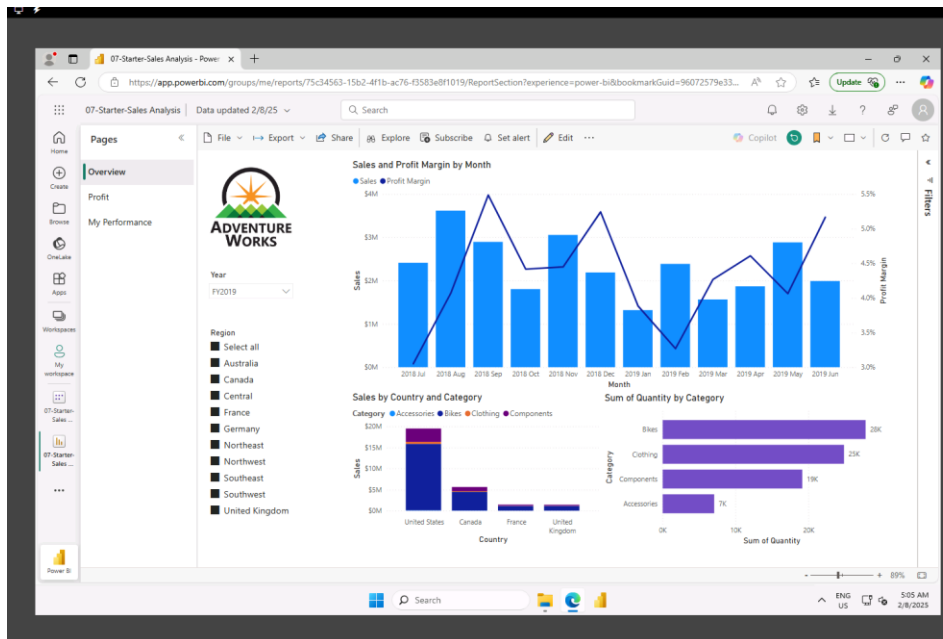
Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete

< Previous End >

Lab 9: Enhance a Report in Power BI Desktop.



Enhance a Report in Power BI Desktop

1 Hr 8 Min Remaining

Instructions Resources Help

7. To publish the report, select **Select**.

- a. If prompted to replace the semantic model, select **Replace**.
- b. When the publication has succeeded, select **Get It**.

8. Close Power BI Desktop.
9. In a Microsoft Edge browser window, navigate to the Power BI service > **My Workspace**, then select the **Sales Analysis** report.
10. To test the drill through feature, navigate to **Overview** page > **Quantity by Category** visual. Then right-click the **Clothing** bar and select **Drill Through | Product Details**.
11. Notice that the **Product Details** page is for **Clothing**.
12. To return to the source page, at the top-left corner of the page, select the arrow button.
13. Select the **My Performance** page.

Select each of the buttons, and then notice that a different visual is displayed.

Lab complete

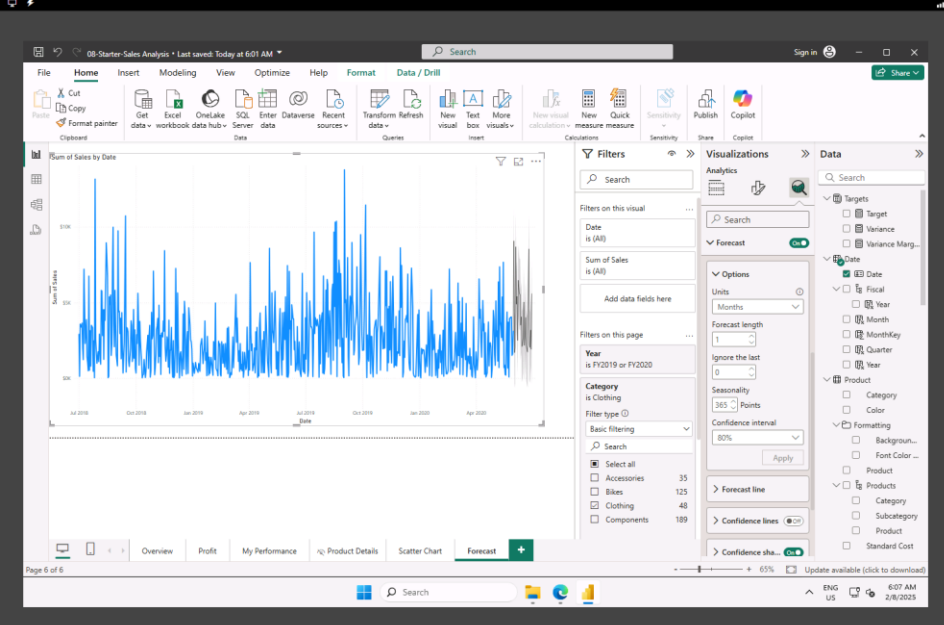
Congratulations

You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete

< Previous End >

Lab 10: Perform Data Analysis in Power BI.



Perform Data Analysis in Power BI
1 Hr 40 Min Remaining

Instructions Resources Help 100%

Forecast length
1
Ignore the last
0
Seasonality
365 Points
Confidence interval
80%
Apply

11. In the line visual, notice that the forecast has extended one month beyond the history data.

The gray area represents the confidence. The wider the confidence, the less stable—and therefore the less accurate—the forecast is likely to be.

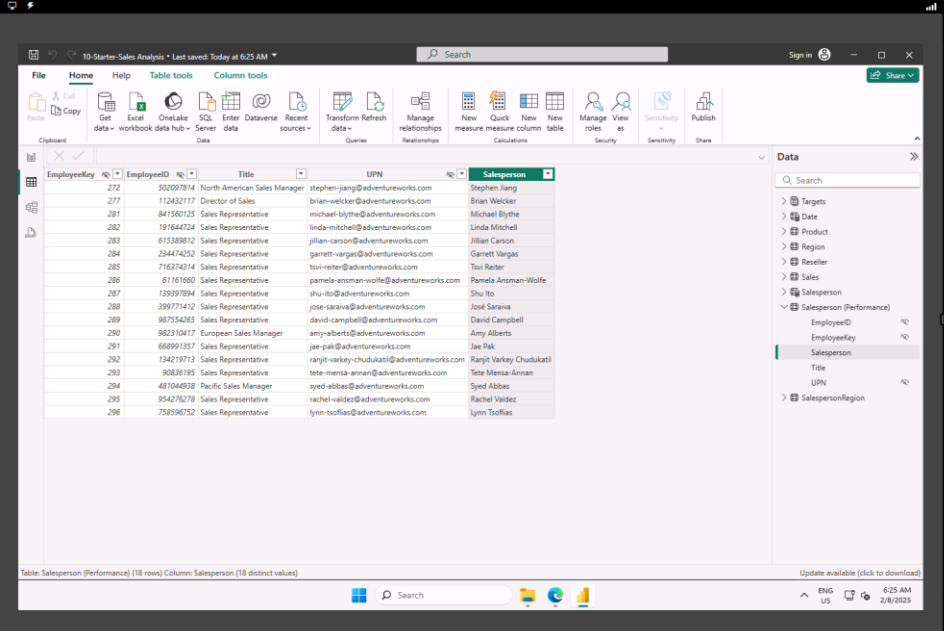
When you know the length of the cycle, in this case annual, you should enter the seasonality points. Sometimes it could be weekly (7), or monthly (30).

12. In the Filters pane, filter by **Clothing** only, and notice that it produces a different result.

Lab complete
Congratulations
You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete
Previous End

Lab 11 Enforce Row-Level Security.



Enforce Row-Level Security
1 Hr 46 Min Remaining

Instructions Resources Help 100%

15. To stop testing, at the right side of the yellow banner, select **Stop testing**.

16. To delete the **Salespeople** role, on the **Home** ribbon tab, from inside the **Security** group, select **Manage Roles**.

17. In the **Manage security roles** window, select the ellipsis (...) on the **Salespeople** role, and select **Delete**. When prompted to confirm the deletion, select **Yes, Delete**.

Note: When the Power BI Desktop file is published to the Power BI service, you'll need to complete a post-publication task to map security principals to the **Salespeople** role. You won't do that in this lab.

Lab complete
Congratulations
You have successfully completed this lab. Click **End** to mark the lab as **Complete**.

100% Tasks Complete
Previous End