Laboratory Work 1

Introduction to Business Intelligence & Power BI

Getting Started with Power BI – Loading and Exploring Data

Dianah Myra Salazar

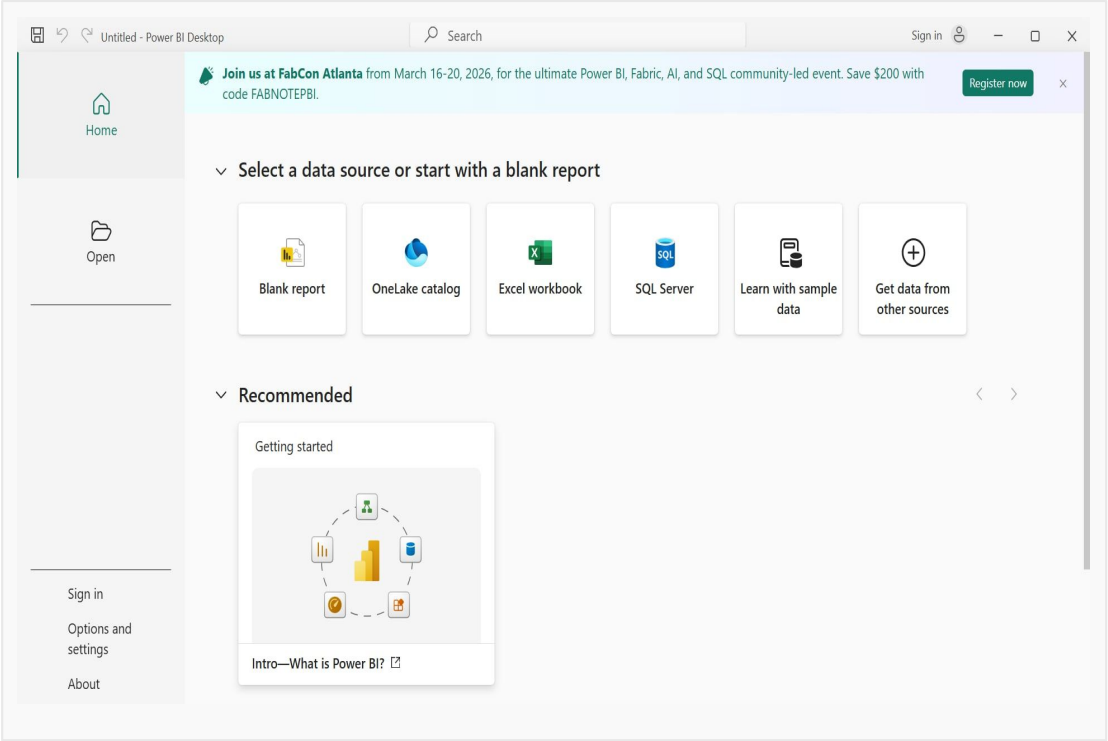
Instructor: Joseph A. Vistal • IS 107 - Business Intelligence

Part 1 | Step 1

Open Power BI Desktop

Step 1: Open Power BI Desktop

- Click Start
- Open Microsoft Power BI Desktop
- Wait for the startup screen

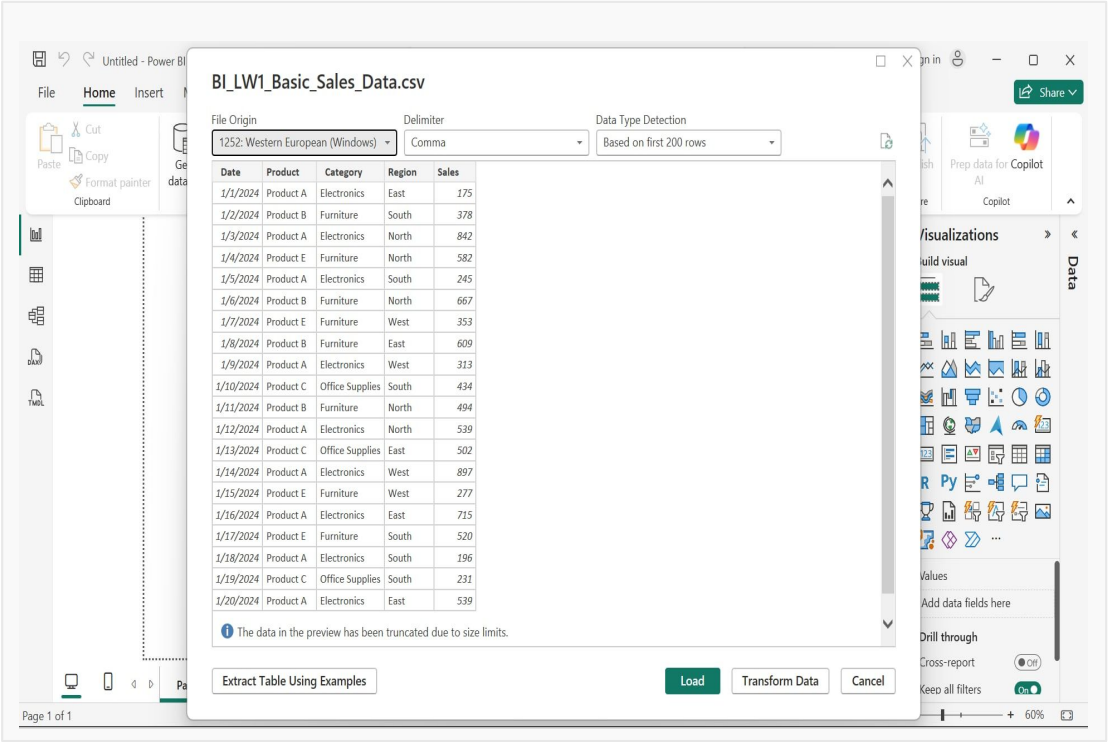


Part 1 | Step 2

Load the Dataset

Step 1: Load the Dataset

- Click Home Tab
- Click Get Data
- Select Text/CSV
- Browse and Select:
  Week1_Basic_Sales_Data.csv
- Click Load



Part 1 | Step 3

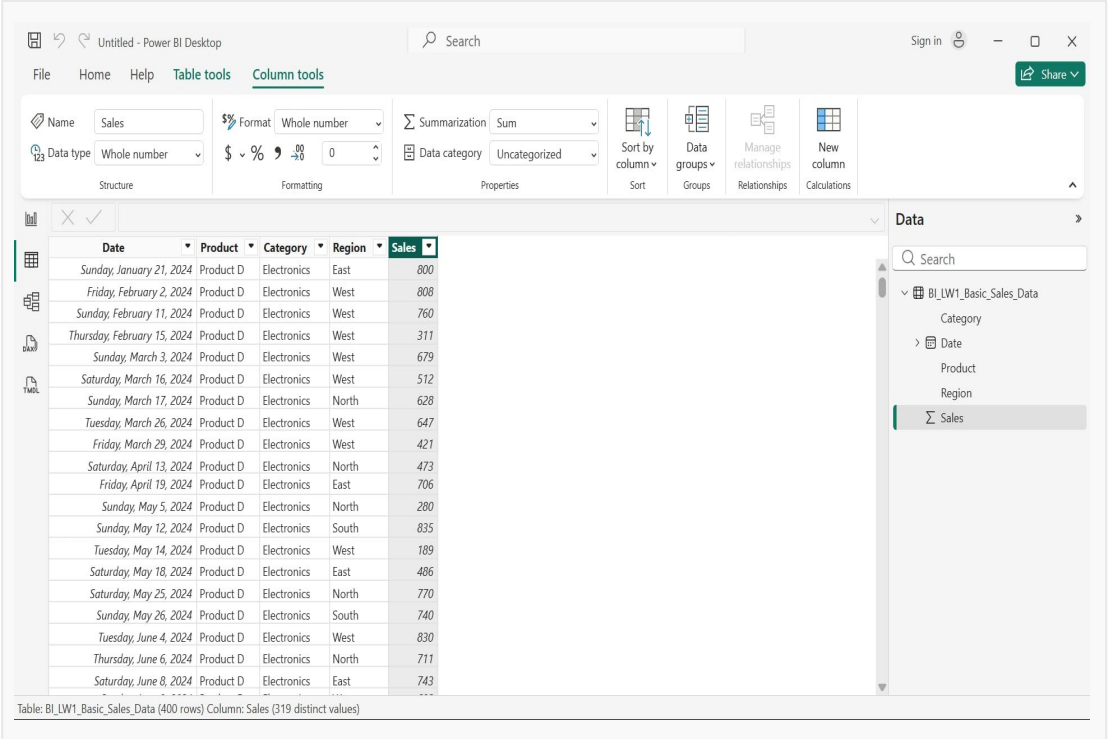
Verify Data in Data View

Q: Are all columns visible? ✅ Yes. All five columns — Date, Product, Category, Region, and Sales — are visible in the Data View.

Q: Is "Date" formatted as Date? ✅ Yes, but it is set as long date format.

Q: Is "Sales" formatted as Decimal Number? ⚠️ The Sales column was initially formatted as Whole Number. This was corrected by:

1. Clicking the Sales column
2. Going to Column Tools
3. Changing the data type to Decimal Number



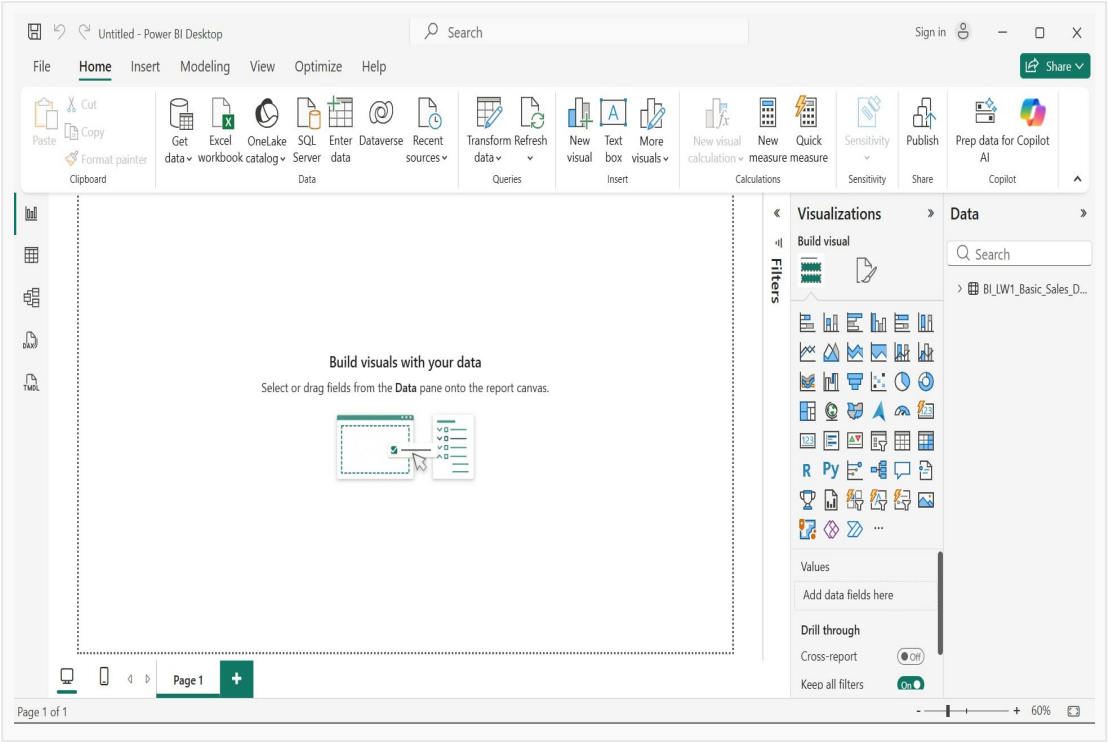
Date	Product	Category	Region	Sales
Sunday, January 21, 2024	Product D	Electronics	East	800
Friday, February 2, 2024	Product D	Electronics	West	808
Sunday, February 11, 2024	Product D	Electronics	West	760
Thursday, February 15, 2024	Product D	Electronics	West	311
Sunday, March 3, 2024	Product D	Electronics	West	679
Saturday, March 16, 2024	Product D	Electronics	West	512
Sunday, March 17, 2024	Product D	Electronics	North	628
Tuesday, March 26, 2024	Product D	Electronics	West	647
Friday, March 29, 2024	Product D	Electronics	West	421
Saturday, April 13, 2024	Product D	Electronics	North	473
Friday, April 19, 2024	Product D	Electronics	East	706
Sunday, May 5, 2024	Product D	Electronics	North	280
Sunday, May 12, 2024	Product D	Electronics	South	835
Tuesday, May 14, 2024	Product D	Electronics	West	189
Saturday, May 18, 2024	Product D	Electronics	East	486
Saturday, May 25, 2024	Product D	Electronics	North	770
Sunday, May 26, 2024	Product D	Electronics	South	740
Tuesday, June 4, 2024	Product D	Electronics	West	830
Thursday, June 6, 2024	Product D	Electronics	North	711
Saturday, June 8, 2024	Product D	Electronics	East	743

Part 2

Exploring the Interface

Power BI Views:

- Report View
  → **Create dashboards & visuals**
- Data View
  → **See raw data**
- Model View
  → **Manage relationships**
- Switch back to Report View



Part 3 | Step 1

Quick Visualization

Step 1: Auto Visualization

- Drag Sales into canvas
- Power BI creates a visual

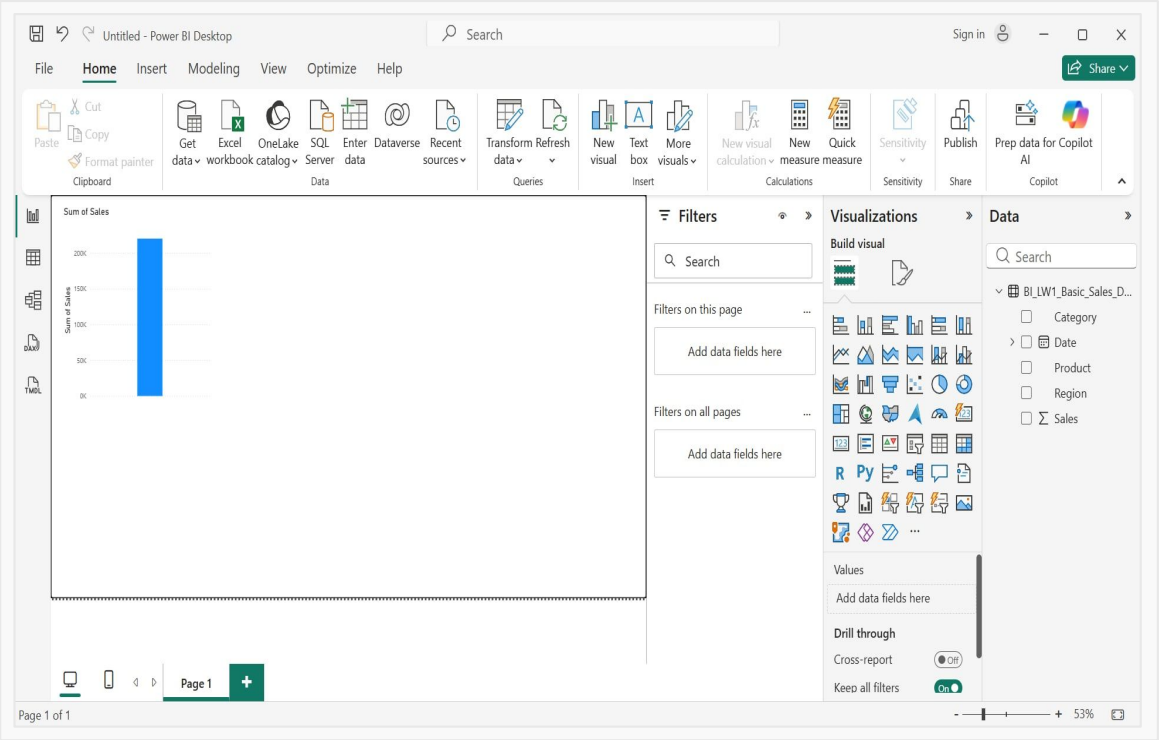
Question:

What type of chart was created?

| Power BI automatically created a **Clustered Bar/Column Chart** when the Sales field was dragged onto the canvas.

Q: What does it show?

| It shows the **Sum of Sales** as a single aggregated bar representing the total sales value across all records — 220K (220,000).



Part 3 | Step 2

Sales by Region Chart

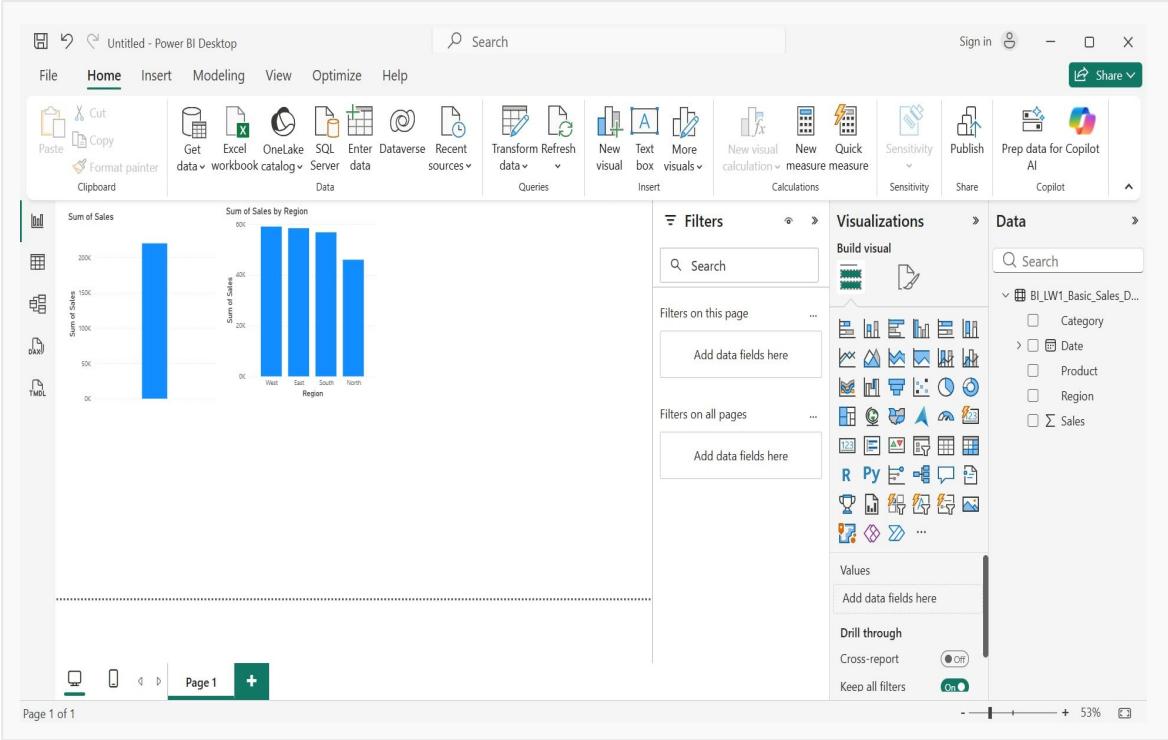
Step 2: Clustered Column Chart

- Click blank canvas
- Select Clustered Column Chart
- Drag Region ⟶ X-axis
- Drag Sales ⟶ Values

Question:

Which region has the highest sales?

| The **West** region has the highest total sales at approximately **59K**, followed by East (~58K), South (~57K), and North (~46K).



Part 3 | Step 3

Sales by Category

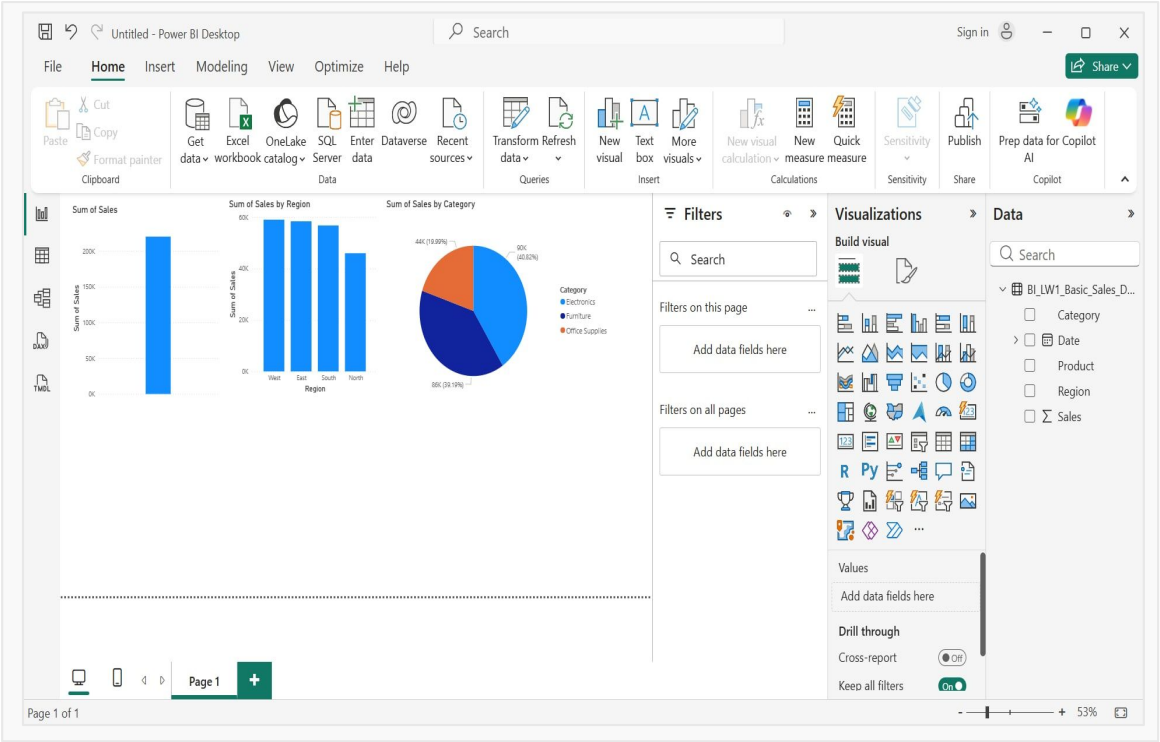
Question:

Which category dominates?

| Electronics dominates with **90K (40.82%)** of total sales — the highest among all three categories.

Q: Is the distribution balanced?

| The distribution is not perfectly balanced. **Electronics** and **Furniture** are relatively close (40.82% vs 39.19%), but **Office Supplies** significantly trails at only **19.99%**. The split is roughly 40/40/20, showing a clear gap between the top two categories and Office Supplies.



Part 3 | Step 4

Sales Over Time

Step 4: Line Chart

- Insert Line Chart
- Drag Date ⟶ X-axis
- Drag Sales ⟶ Values

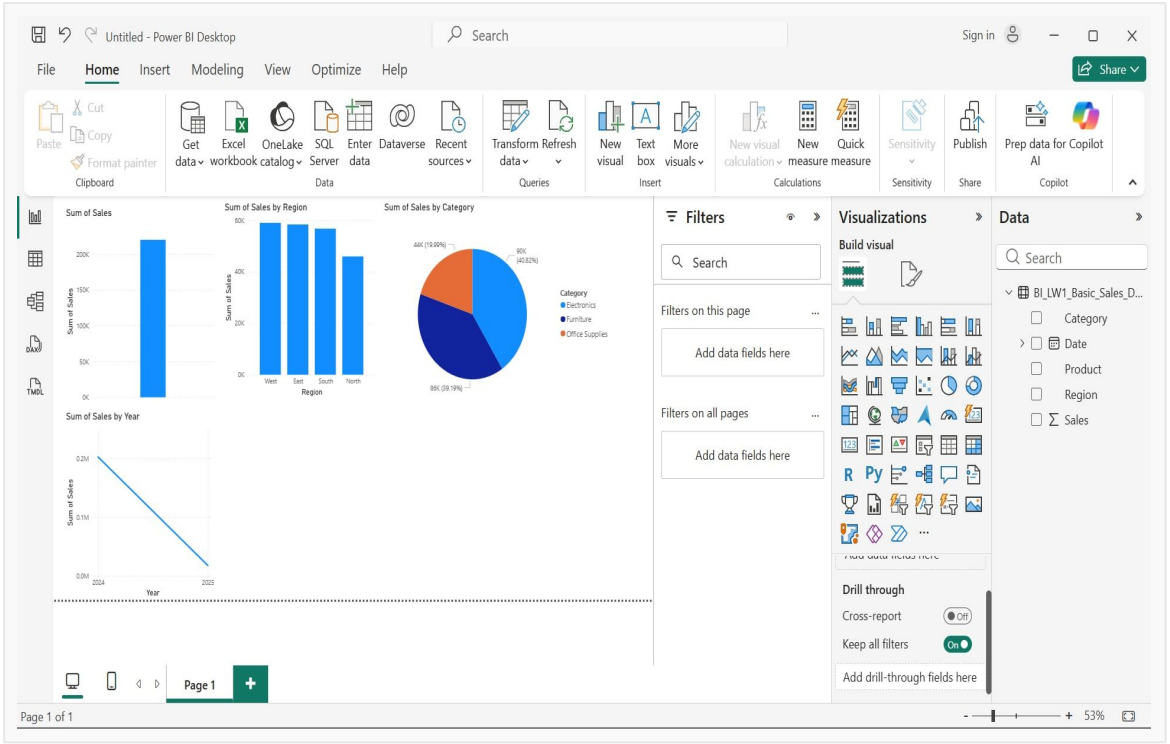
Question:

Q: Is there growth?

| No. The line chart shows a **declining trend** from 2024 to 2025 rather than growth.

Q: Any noticeable trend?

| There is a steep **downward slope** from approximately **200K in 2024** down to near **0 in 2025**.



Part 4

Basic Data Insight Interpretation

Q: Which region contributes most revenue?

The West region contributes the most revenue with approximately 59K in total sales, making it the top-performing region.

Q: Which product category performs best?

Electronics performs best, contributing 90K (40.82%) of total sales — the highest share among all three product categories.

Q: Are sales consistent across dates?

Sales are not fully consistent across dates. The 2024 data shows significantly higher recorded sales (~200K) compared to 2025.

Q: What business recommendation can you suggest?

Focus resources on West and East regions, launch campaigns for North (~46K). Increase attention on Office Supplies (19.99%) which underperforms vs. Electronics and Furniture.

Laboratory Questions – Part A

Technical Questions

1. What are the five columns in the dataset?

The five columns are: Date, Product, Category, Region, and Sales.

2. What data type is assigned to the "Sales" column?

The Sales column was initially set to Whole Number but was corrected to Decimal Number using Column Tools in Power BI.

3. Which Power BI view allows you to see raw data?

The Data View (table icon on the left sidebar) allows users to see and inspect raw data.

4. What chart type is best for showing trends over time?

A Line Chart is best for showing trends over time — it clearly visualizes how a value increases, decreases, or remains stable.

5. What aggregation is automatically applied to Sales?

Power BI automatically applies Sum aggregation to the Sales field, displaying the total sum of all sales values.

Laboratory Questions – Part B

Analytical Questions

6. Which region has the highest total sales?

The West region has the highest total sales at approximately 59K.

7. Which category has the lowest performance?

Office Supplies has the lowest performance at 44K (19.99%) — significantly lower than Electronics (40.82%) and Furniture (39.19%).

8. Are sales increasing, decreasing, or stable?

Sales appear to be decreasing from 2024 to 2025 based on the line chart.

9. If you were a manager, which region would you prioritize?

I would prioritize the North region — it underperforms at ~46K vs. other regions (56K–59K). A targeted recovery strategy here offers the greatest growth opportunity.

10. Provide one actionable recommendation based on the data.

Launch a targeted campaign in the North region focused on Office Supplies — addressing the two weakest segments simultaneously. Bundle Office Supplies with Electronics, offer regional promotions, or increase sales staffing in the North.

ENHANCEMENT SECTION - TASK 1

Card Visualization – Total Sales

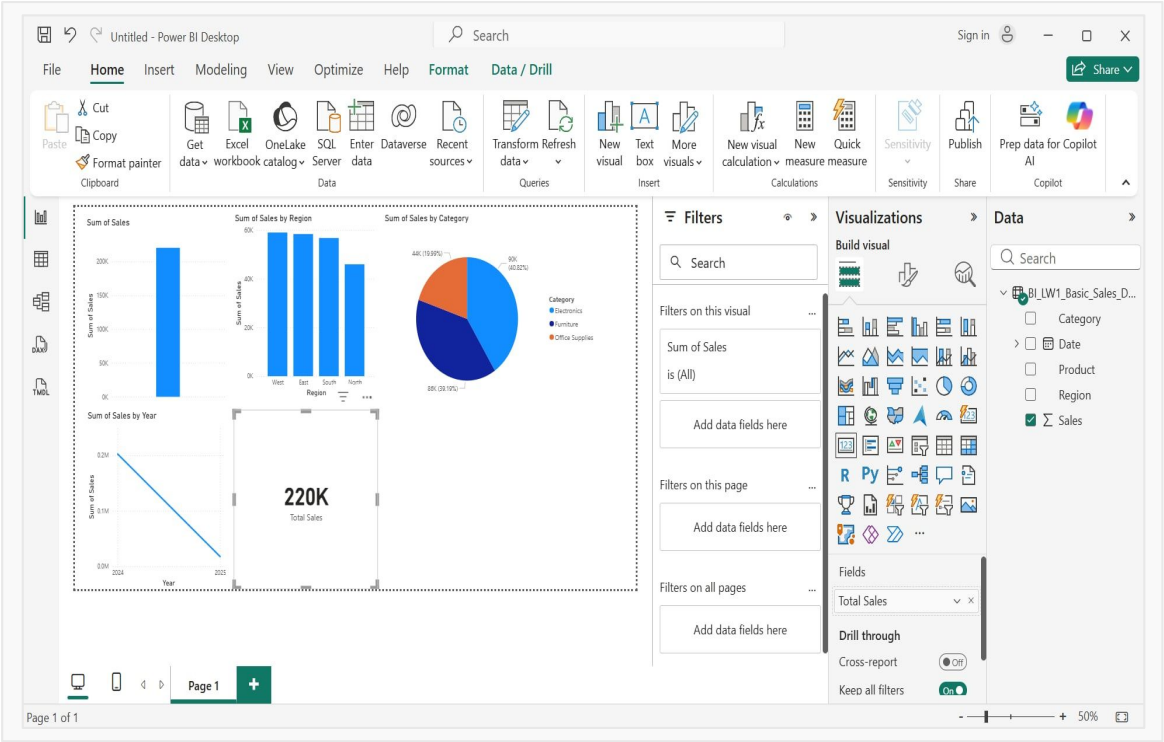
Task 1: Add a Card

- Insert Card visual
- Drag Sales into it
- Increase font size
- Change title to 'Total Sales'

Question:

What is the total sales amount?

| The total sales amount is **220K (220,000)**.



ENHANCEMENT SECTION - TASK 2

Add Slicer

Q: What happens to other visuals when you click a region?

| All other visuals on the dashboard automatically filter and update to only display data for the selected region. For example, when "South" is selected:

| • Total Sales card changes from 220K → **57K**

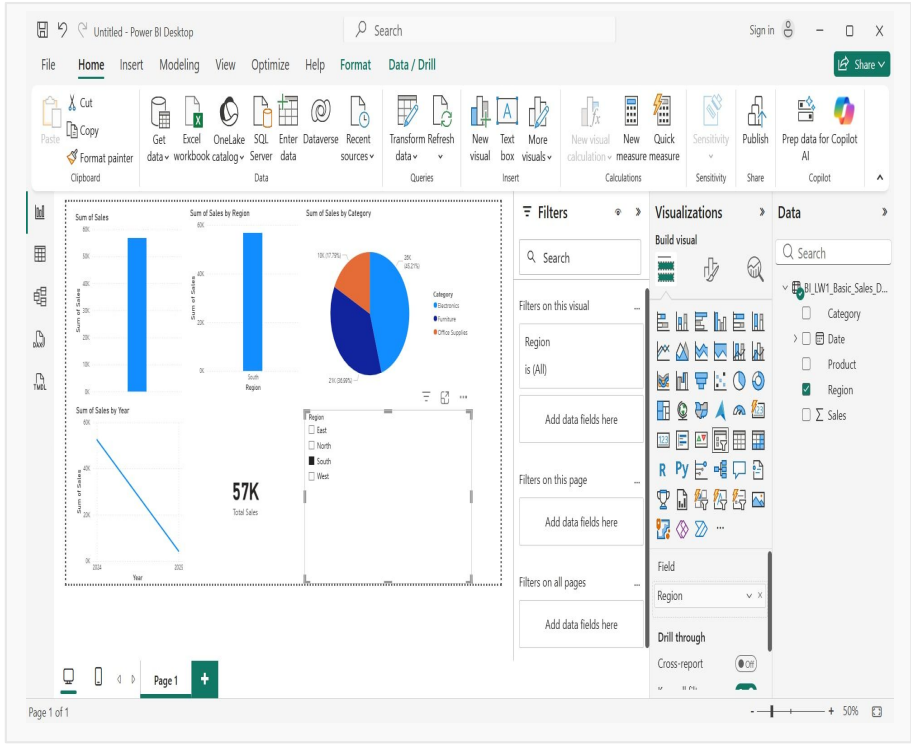
| • The bar chart shows only the **South** bar

| • The pie chart updates to South's category breakdown (**Electronics 45.21%, Furniture 36.99%, Office Supplies 17.79%**)

| • The line chart updates to show only **South's** sales trend

Q: Why is filtering important in BI?

| Filtering is critical in Business Intelligence because it allows users to drill down into specific segments of data without needing to create separate reports for each scenario. It enables **dynamic, real-time analysis** — allowing managers and decision-makers to quickly isolate and compare performance by region, time period, category, or any other dimension. This leads to **faster and more accurate business decisions**.



ENHANCEMENT SECTION - TASK 3

Sort Sales

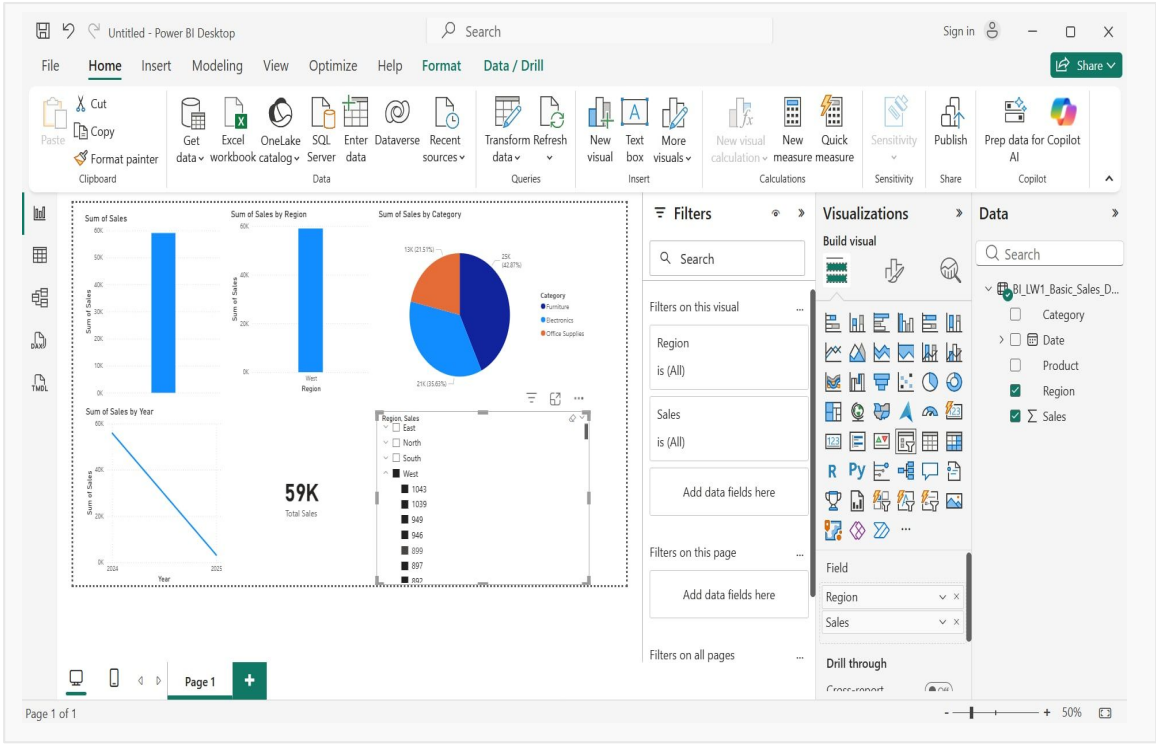
Question:

Q: Does sorting improve readability?

| Yes, sorting by Sales Descending immediately makes it clear which region leads and which trails, without requiring the viewer to scan and mentally compare bar heights.

Q: Why?

| Sorted charts follow a **natural visual hierarchy** from highest to lowest value, which significantly reduces cognitive effort for the viewer. It allows the reader to instantly identify **rankings and performance gaps** between regions, making the chart far more useful for presentations, reports, and business decision-making.



Enhancement · Task 4

Identify Outliers

Q: Which region is significantly higher or lower?

The North region stands out as significantly lower at approximately 46K, while the other three regions (West ~59K, East ~58K, South ~57K) are closely clustered. The West region has the highest sales among all regions.

Q: What might explain that difference?

Possible explanations for North's underperformance include:

- Lower population density or smaller market size in the North
- Fewer sales representatives or distribution channels assigned to the region
- Less marketing investment or brand awareness compared to other regions
- Seasonal demand differences that uniquely affect the North
- Logistical or supply chain challenges affecting product availability in that region

One-Page Insight Summary

Business Intelligence Insights – LW1 Sales Data Analysis

Total Sales: 220,000 | Regions: 4 | Categories: 3 | Period: 2024–2025

Insight 1 – West Region is the Top Revenue Contributor

The West region leads with ~59K in total sales, followed by East (58K) and South (57K). North lags at 46K — a gap of ~12K. The top three regions perform similarly, while North requires urgent strategic attention.

Insight 2 – Electronics Dominates the Product Mix

Electronics accounts for 40.82% (90K) of total sales. Furniture follows at 39.19% (86K). Office Supplies trails at only 19.99% (44K) — less than half of Electronics — indicating lower demand or insufficient promotional effort.

One-Page Insight Summary

Insights 3, 4 & 5

Insight 3 – Sales Trend Appears Declining but Data May Be Incomplete

The line chart shows a steep downward trend from ~200K in 2024 to near zero in 2025. This is most likely caused by incomplete 2025 data (partial year recording) rather than an actual business decline. No firm year-over-year conclusions should be drawn until complete 2025 data is available.

Insight 4 – Regional Filtering Reveals Unique Product Preferences

When filtered to the South region (57K total), Electronics accounts for 45.2% — notably higher than the overall average of 40.82%. This suggests stronger Electronics demand in the South, which can guide region-specific inventory decisions and targeted marketing strategies.

Insight 5 – North Region is a Clear Underperformer

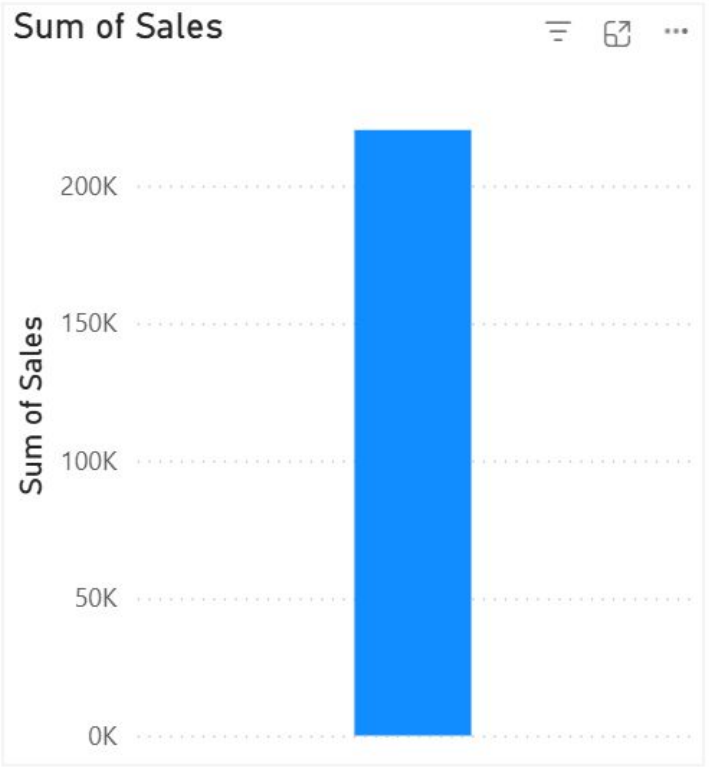
At only 46K, North consistently underperforms across all metrics. This represents the single largest revenue gap and the biggest growth opportunity. A dedicated recovery plan — increased staffing, targeted promotions, and improved distribution — could meaningfully close this gap.

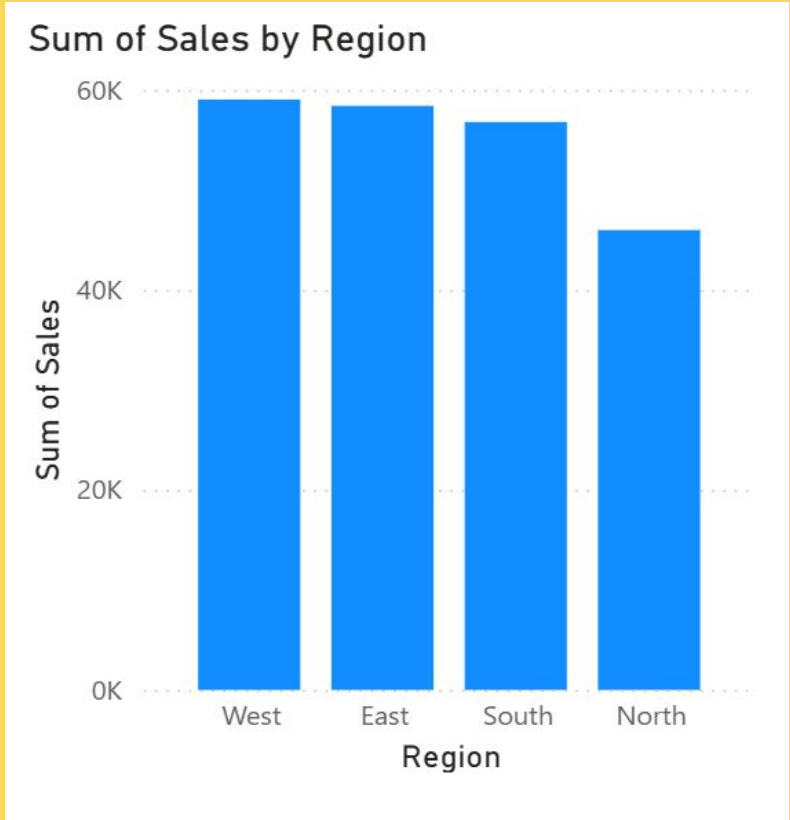
One-Page Insight Summary

Key Recommendations

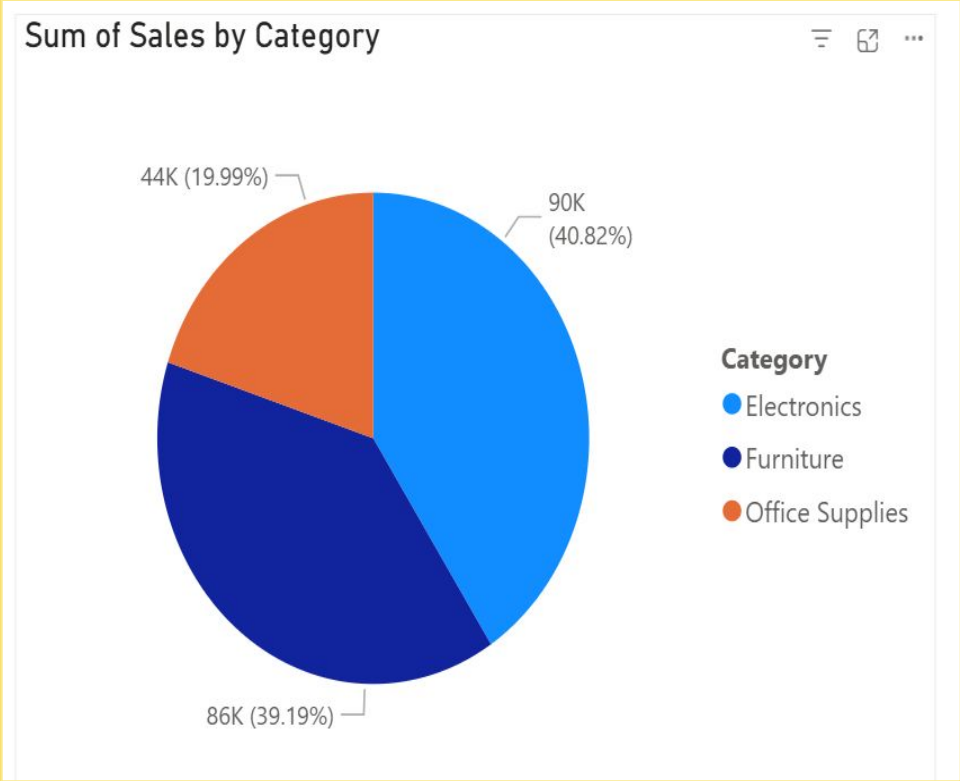
1	Prioritize the West and East regions for continued investment as they deliver the highest returns.
2	Develop a targeted recovery plan for the North region — investigate root causes and launch region-specific campaigns.
3	Boost Office Supplies performance through bundling, promotions, or improved placement across all regions.
4	Collect complete 2025 data before making any year-over-year performance judgments.
5	Use Power BI slicers for monthly regional reviews to catch performance dips early and enable faster responses.

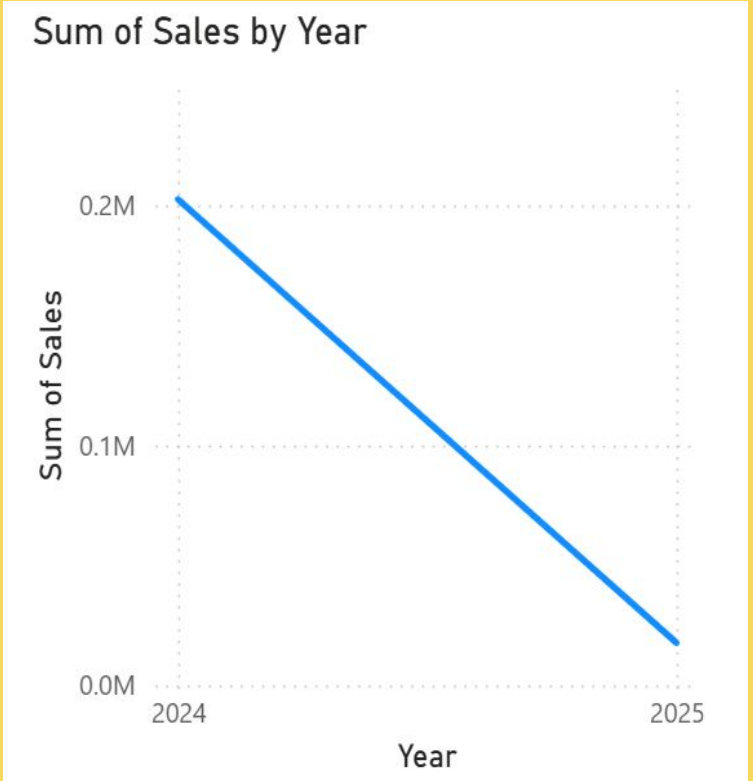
SCREENSHOTS





SCREENSHOTS





SCREENSHOTS