Maven Market

Problem Statements

- The retail company operates across the USA, Canada, and Mexico, with multiple store formats like supermarkets, gourmet stores, and mid-size groceries. However, it lacks a unified view of how each store type is performing in terms of sales and returns.
- There is a large and diverse customer base, but the business doesn't have clear visibility into customer demographics—such as education level, occupation, gender split, and member card types—which limits targeted marketing and service improvements.
- Although over 1,500 products are being sold, the company cannot easily identify which brands or product types are contributing most to overall revenue, or which products are trending based on quantity sold.
- There is also a need to monitor product attributes like low-fat and recyclability status, to align with customer preferences and environmental goals.
- Sales performance trends over time—across years, quarters, and months—are hard to analyze without a dynamic, time-based view, making it difficult to spot seasonal patterns or growth opportunities.
- Regional and store-level comparisons are important for strategy and expansion decisions, but the current data structure does not support easy analysis of geographic performance.
- Without centralized and interactive reporting, decision-makers are forced to rely on static reports, which are time-consuming to generate and often outdated, limiting their ability to make fast, data-driven decisions.

Tools Used

- **Power BI**: Data modeling, dashboard design, and visualizations.
- **Power Query**: Data transformation and cleaning.
- **DAX (Data Analysis Expressions):** For calculated columns and measures.

Project Brief

1. Data Collection & Preparation

Collected raw datasets containing customer details, sales transactions, product attributes, store performance, and return data. Cleaned and transformed the data using Power Query to remove missing values, inconsistencies, and duplicates. Merged multiple datasets to create a unified, analysis-ready dataset for visualization.

2. Data Modeling

Used Power BI's data model feature to establish relationships between various data tables such as customer, product, sales, and store tables. Defined primary keys, lookup columns, and hierarchies to enable accurate slicing and filtering across dashboards.

3. DAX Calculations

Created DAX measures and calculated columns to support critical business KPIs and interactivity:

- Total Customers
- Total Sales & Quantity
- Product Return Quantity
- Sales by Region & Store Type
- Customer Segmentation
- Time-based Trends (Year, Quarter, Month)

These measures enabled enhanced drill-through analysis and trend evaluations.

4. Dashboard Development

Designed four interactive dashboards in Power BI, each focused on a specific area of the B2C business:

- **Customer Dashboard**: Customer demographics, membership levels, and growth trend
- **Product Dashboard**: Brand-level performance, sales by quantity, and product attributes (e.g., low fat, recyclable)
- **Store Dashboard**: Sales and returns by store type and location
- **Sales Trend Dashboard**: Time series trends, regional performance, and year-over-year comparisons

Each dashboard includes dynamic filters for deep dive analysis and decision-making support.

5. Review & Optimization

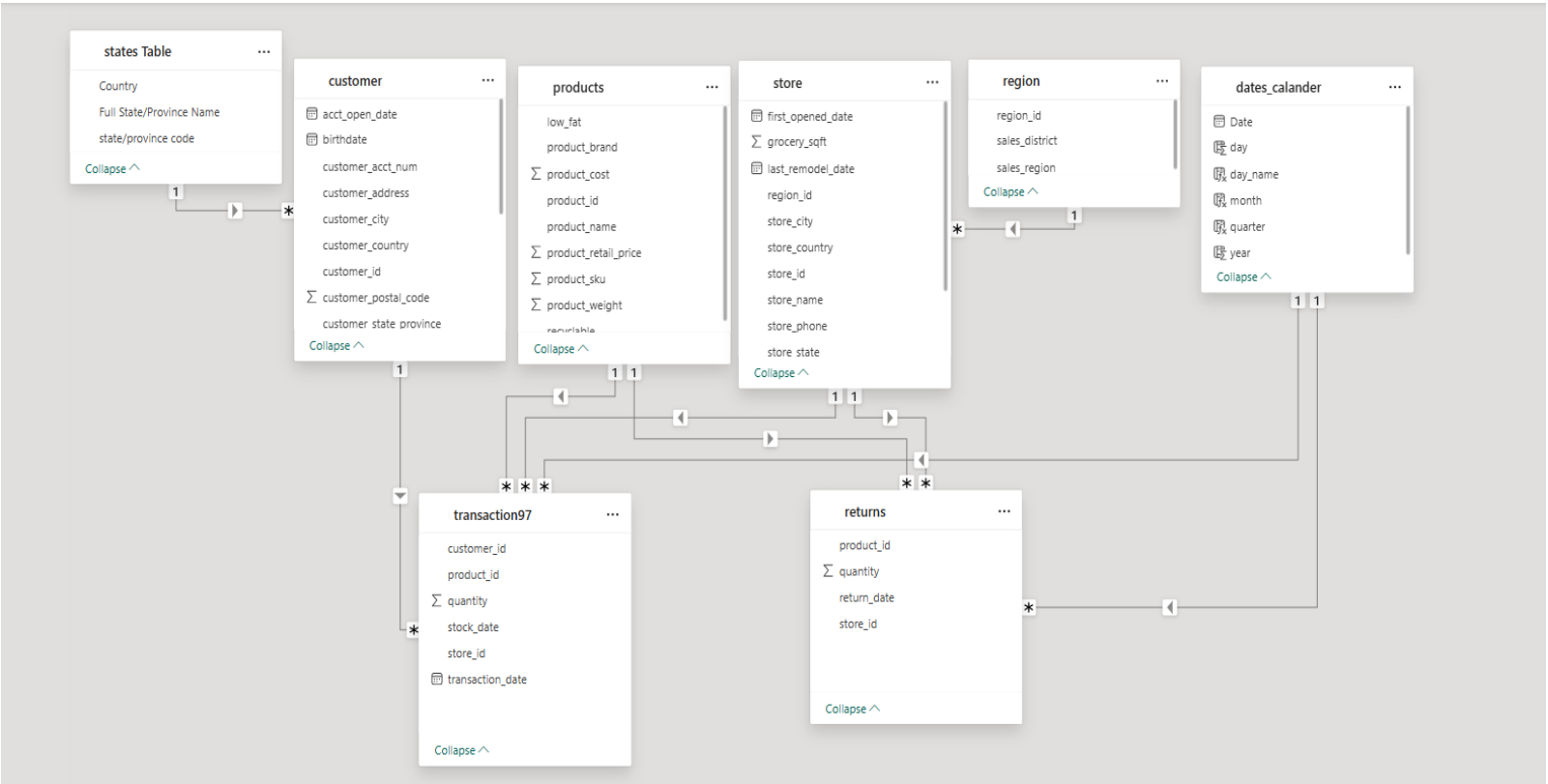
Tested dashboards for data accuracy and performance. Optimized DAX formulas and data model relationships to improve load speed and responsiveness. Ensured slicers, filters, and cross-page interactions worked seamlessly.

Time Taken

Total Project Duration: 10 days

- Data Preparation: 4 days
- Dashboard Design & Development: 5 days
- Testing, Optimization & Final Review: 1 day

Modeling:



Dashboard & Insights:

1. Customer Dashboard

Overview:

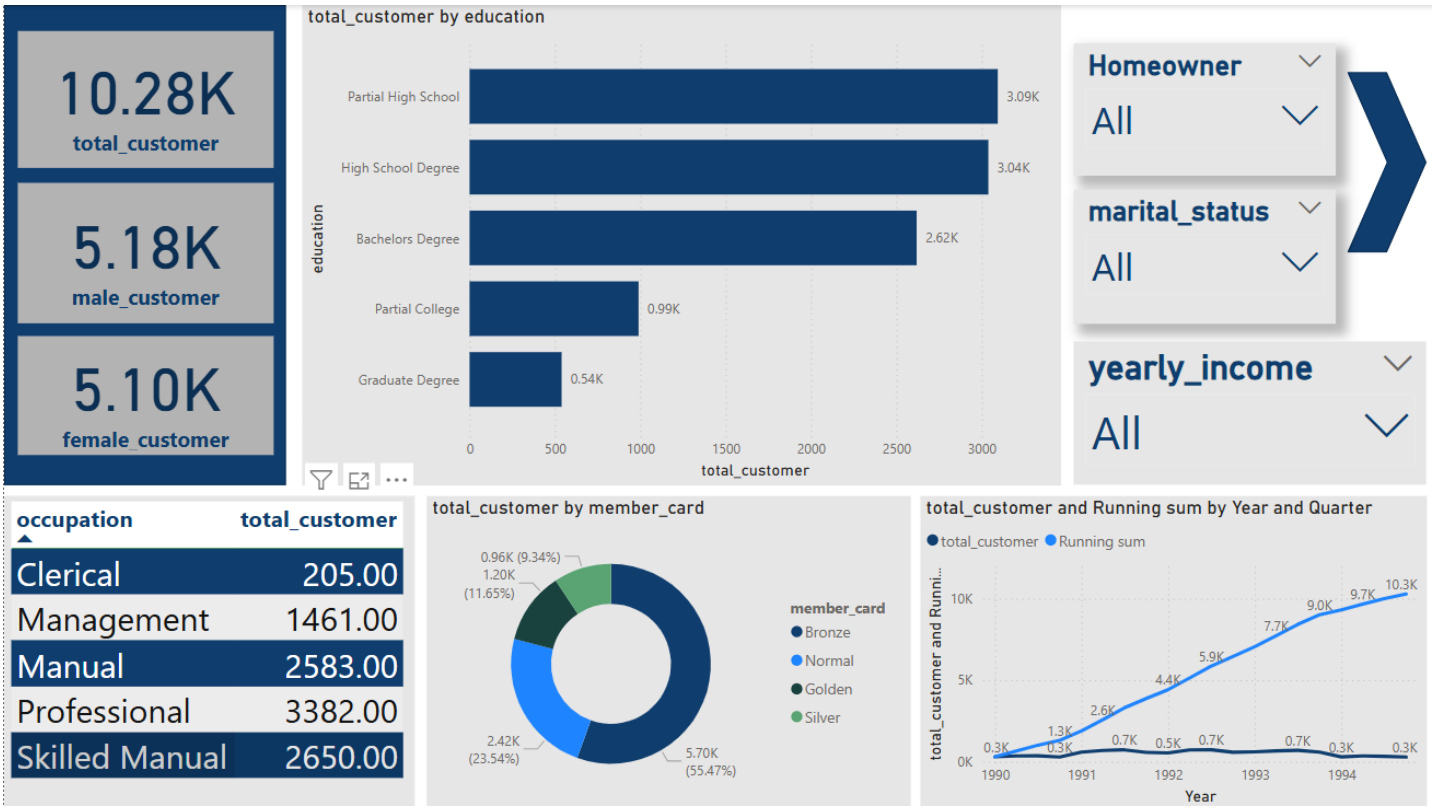
This dashboard provides insights into customer demographics, gender distribution, education levels, occupations, and membership types across the B2C business.

Key Metrics:

- Total Customers: 10.28K
- Male Customers: 5.18K
- Female Customers: 5.10K
- Highest Education Level: Partial High School (3.09K)
- Top Occupation: Professional (3.38K)
- Dominant Member Card: Bronze (55.47%)

Insights:

- Balanced gender distribution among customers.
- Most customers have lower to mid-level education (Partial HS/HS Degree).
- Occupation is led by Professional and Skilled Manual workers.
- The majority of customers use Bronze member cards.
- Consistent customer growth observed from 1990 to 1994.



2. Product Dashboard Report

Overview:

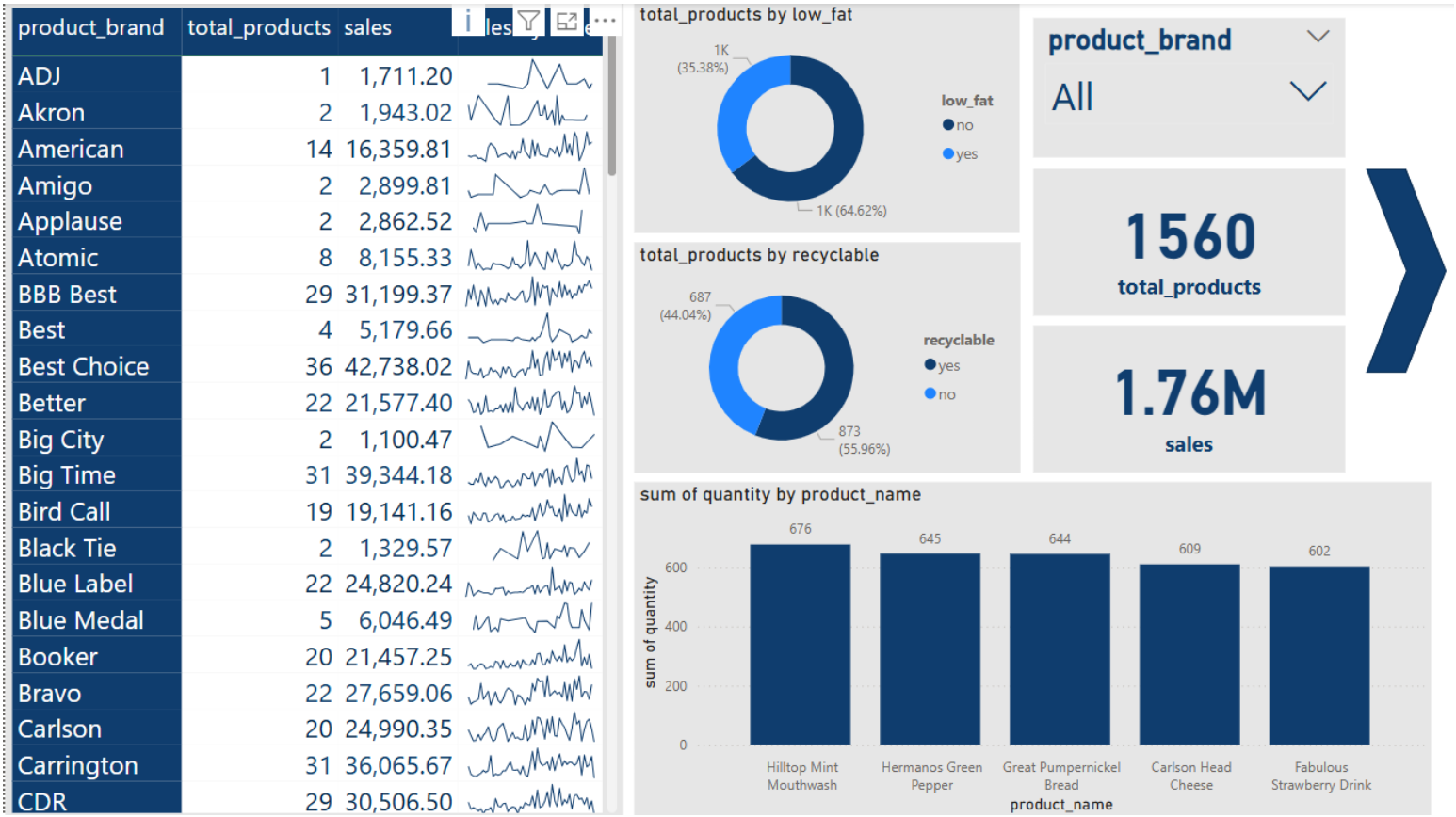
This dashboard analyzes product performance by brand, quantity sold, and attributes such as low-fat and recyclability.

Key Metrics:

- Total Products: 1560
- Total Sales: ₹1.76M
- Most Low-Fat Products: 64.62%
- Recyclable Products: 55.96%
- Top Brand by Sales: Best Choice (₹42,738.02)
- Most Sold Products: Hilltop Mint Mouthwash (676 qty), Hermanos Green Pepper (645 qty)

Insights:

- Leading brands include Best Choice, Big Time, and Carrington.
- Majority of products are both low-fat and recyclable.
- Product health appeal and sustainability are major selling points.
- Specific SKUs show strong repeat purchase trends.



3. Store Dashboard Report

Overview:

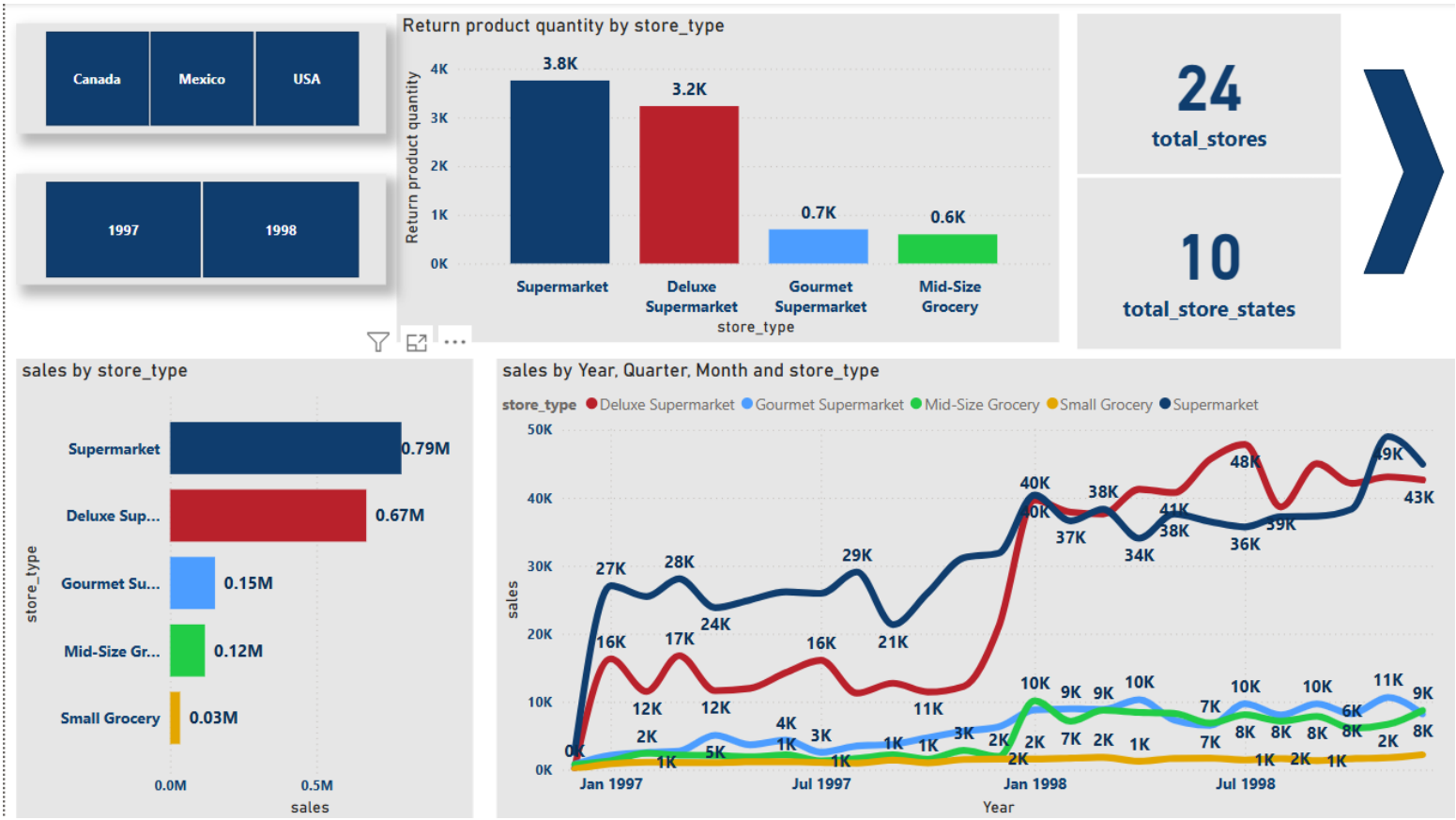
This dashboard focuses on store-wise sales and return analysis to understand which store types perform best and where returns are highest.

Key Metrics:

- Total Stores: 24
- States Covered: 10
- Highest Sales Store Type: Supermarket (₹0.79M)
- Most Returns by Store Type: Supermarket (3.8K returns)
- Store with Lowest Sales: Small Grocery (₹0.03M)

Insights:

- Supermarkets lead in both revenue and return volume.
- Deluxe Supermarkets closely follow in performance.
- Return rates can signal product or service quality issues.
- Smaller stores contribute less to total sales and may need attention or optimization.



4. Sales Trend Dashboard Report

Overview:

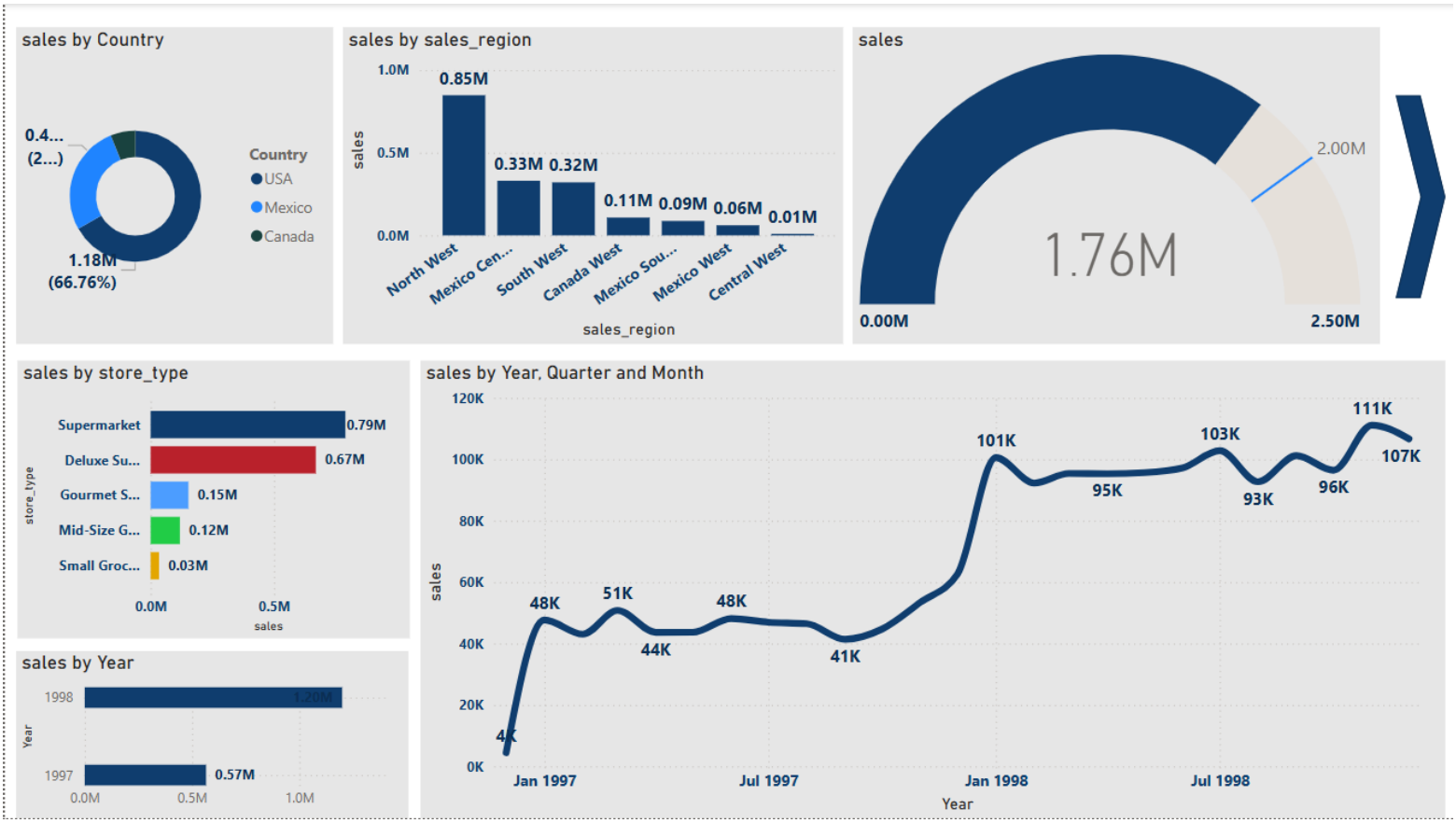
This dashboard presents sales trends over time and by geography, enabling analysis of performance patterns and seasonal effects.

Key Metrics:

- Total Sales: ₹1.76M
- Highest Sales Country: USA (₹1.18M, 66.76%)
- Top Sales Region: North West (₹0.85M)
- Peak Sales Month: Dec 1998 (₹111K)
- Annual Sales: 1997 – ₹0.57M, 1998 – ₹1.20M

Insights:

- The USA is the largest contributing market.
- Sales rose sharply in 1998, particularly in Q1 and Q4.
- North West region consistently outperforms other areas.
- Seasonal spikes are evident in end-of-year quarters, indicating potential promotion or campaign success.



Project Outcome

Delivered a set of four comprehensive, interactive dashboards.

Enabled the business team to:

- Track customer demographics and loyalty.
- Monitor product and brand performance.
- Optimize store-level strategies.
- Identify high-performing regions and seasonal trends.

Problems Faced

- Data inconsistencies in customer and product details (cleaned via Power Query).
- Initial performance issues due to large dataset (resolved using DAX optimization).
- Difficulty in filtering across multiple dashboard elements (solved using slicers and synced filters).

Learnings

- Hands-on experience in designing professional B2C dashboards in Power BI.
- Improved proficiency in Power Query, DAX, and cross-page filtering techniques.
- Learned to handle return product metrics and map trends effectively.

Future Scope

- Integrate real-time data source connections (e.g., Azure SQL, API-based feeds).
- Add profitability analysis and customer lifetime value (CLV) dashboard.
- Enhance mobile responsiveness for executive dashboards.
- Implement RLS (Row-Level Security) for access-based views.