**Sales Analysis & Visualization Project Report**

**Project Summary:**

The primary goal of this project was to analyze multi-year regional sales data using SQL and create an interactive dashboard in Power BI. This solution was designed to uncover patterns, seasonal trends, and growth opportunities across counties, quarters, and years.

I started with a raw dataset containing sales by county, quarter, and year. Using SQL, I transformed this data into key analytical views. These were imported into Power BI to create an interactive and professional-grade dashboard.

**Methodology:**

1. Data Source & Structure-

SQL table: Colorado\_vehicle\_sales

Key columns: year, quarter, county, sales

2. SQL Data Preparation-

|  |  |
| --- | --- |
| Query Name | Description |
| Total Sales by County | Aggregates total sales across all years per county |
| Average Quarterly Sales | Computes mean sales per quarter across all counties |
| Yearly Trends by County | Tracks yearly sales performance for each county |
| Year-over-Year Growth | Calculates percentage increase/decrease in yearly sales |
| Quarterly Sales Breakdown | Pivoted view of sales by quarter across multiple years |

Five main queries were created to structure the data for analysis:

Each result set was saved as a separate table for easy import into Power BI.

3. Power BI Visualization Design-

Visual Elements Used:

* Bar Charts – County comparisons by total sales and YoY growth
* Line Charts – Trendlines showing seasonal and annual performance
* Matrix Tables – Detailed quarter-by-year breakdowns
* Slicers – Filter by year, quarter, and county
* Maps (Optional) – Visualize sales by region

Dashboard Design Focus:

* Clean layout, uniform color palette
* Clear titles and tooltips
* Drill-down from yearly to quarterly data

**Project Goals: Predicted vs Achieved**

|  |  |  |  |
| --- | --- | --- | --- |
| **Objective** | **Goal** | **Achieved** | **Description** |
| Identify top-performing counties |  |  | Found via bar charts and total aggregates |
| Understand seasonal/quarterly trends |  |  | Line charts and matrix views confirmed seasonal patterns |
| Calculate YoY sales growth |  |  | Custom SQL calculations with percentage deltas |
| Build an interactive dashboard |  |  | Filters, drill-downs, tooltips implemented in Power BI |
| Present professional visualizations |  |  | Final dashboard is presentation-ready and user-friendly |

**Key Insights**

Top Counties: Arapahoe, Adams, and El Paso consistently generated the highest sales.

Seasonality: Sales often peaked in Q4, suggesting strong holiday-season demand.

YoY Growth: Some counties, like Weld and Larimer, exhibited positive growth trends, while others were more volatile.

Regional Performance: Rural counties had slower growth, indicating opportunities for investment or marketing.

**Deliverables:**

* SQL scripts for calculated metrics
* Power BI file with complete dashboard
* Fully interactive visual components
* Modular design ready for real-time refresh and future expansion

**Conclusion**

This project delivered a highly functional business intelligence dashboard using SQL and Power BI. By analyzing over 7 years of sales data, I produced actionable insights for strategic planning. The resulting visuals are interactive, clean, and designed for decision-makers to explore key metrics with ease.

-Next steps could include integrating product-level data, expanding to forecasting models, and publishing to Power BI Service with scheduled refreshes.