CAR SALES ANALYSIS DASHBOARD

A PROJECT REPORT

Submitted by

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for

22ADF01 - DATA ANALYSIS

DEPARTMENT OF ARTIFICIAL INTELLIGENCE

KONGU ENGINEERING COLLEGE

(Autonomous)

PERUNDURAI ERODE – 638 060

NOVEMBER 2024

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Department of Artificial Intelligence

22ADF01 – Data Analysis Project Report

Signature of Course in-Charge

Signature of the HOD

Submitted for the Continuous Assessment Viva-Voice examination held on.

EXAMINER I

EXAMINER II

ABSTRACT

Car Sales Analysis offers an in-depth examination of car sales trends using Power BI, with insights designed to optimize dealership operations, marketing strategies, and customer targeting. By leveraging historical sales data and key performance indicators (KPIs), this analysis explores factors impacting car sales, including model popularity, seasonal trends, and regional preferences. Reviewing sales data over various timeframes, the report identifies peak sales periods, high-performing models, and customer demographics most likely to drive sales. The dataset, encompassing thousands of transactions, includes details like sale date, car model, price, customer location, and sales channels. After rigorous data cleaning and transformation, we modelled relationships between key entities such as car models, dealerships, and regions to examine sales patterns across multiple dimensions. Key findings show that some models consistently outperform others in specific regions and times of the year. Seasonal variations also affect sales, with spikes in certain months due to promotions and customer buying behaviors. These insights inform recommendations for targeted promotions, focus on high-demand models by region, and tailored marketing based on demographics, enabling dealerships and manufacturers to make data-driven decisions that enhance sales performance and customer satisfaction.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The car sales industry operates in a fast-paced, competitive environment influenced by various factors, including economic conditions, customer preferences, and seasonal trends. Dealerships and automotive manufacturers must regularly analyze sales data to gain insights into customer behavior, identify top-selling models, and adjust their strategies to stay competitive. This report leverages Power BI for in-depth analysis, using interactive dashboards to uncover monthly and annual sales patterns, popular car models, and demographic trends. By visualizing key performance indicators (KPIs), stakeholders can easily monitor sales trends, understand market dynamics, and make data-informed decisions.

The main goals of this analysis are to identify high-performing car models, understand regional and seasonal demand patterns, and analyze customer demographics to support targeted marketing. These insights can help dealerships optimize inventory distribution, design effective promotions, and tailor marketing approaches to specific customer segments. Ultimately, this data-driven approach enables stakeholders to refine their strategies, better meet customer needs, and improve overall profitability in the competitive car sales industry.

1.2 DATA COLLECTION

The dataset for this project, sourced from car sales transactions, provides detailed information on various aspects of car purchases. This includes key metrics such as customer demographics, car specifications, dealer information, and transaction details. The dataset captures both quantitative data (e.g., annual income, price) and qualitative data (e.g., car model, color, body style), providing a comprehensive view of the car sales process.

1. **Car ID**: A unique identifier for each car sale transaction.
2. **Date**: The date when the car sale transaction occurred.
3. **Customer Name**: The name of the customer who purchased the vehicle.
4. **Gender**: The gender of the customer (Male or Female).
5. **Annual Income**: The annual income of the customer (in dollars).
6. **Dealer Name**: The name of the dealership where the car was purchased.

7. **Company**: The company or brand of the vehicle (e.g., Ford, Toyota).
8. **Model**: The specific model of the vehicle purchased (e.g., Expedition, Accord).
9. **Engine**: The engine type of the vehicle (e.g., Overhead Camshaft, Double Overhead Camshaft).
10. **Transmission**: The type of transmission in the vehicle (e.g., Auto, Manual).
11. **Color**: The color of the vehicle purchased.
12. **Price ($)**: The price of the car at the time of purchase (in US dollars).
13. **Dealer No**: A unique identifier for the dealership.
14. **Body Style**: The body style of the vehicle (e.g., SUV, Sedan, Hatchback).
15. **Phone**: The contact phone number of the customer.

1.3PROBLEM STATEMENT

In the highly competitive automotive market, understanding consumer preferences, regional buying trends, and pricing strategies is essential for maximizing sales and enhancing customer satisfaction. However, car dealerships and manufacturers often struggle to identify complex purchase patterns and preferences across various demographics, income brackets, and vehicle features.

This project, *"Analyzing Patterns in Car Sales Data,"* aims to address these challenges by leveraging a dataset containing information on car purchases, customer demographics, dealer details, and vehicle specifications. Key metrics, including purchase counts by model, engine type, transmission, body style, and customer income level, will be analyzed to identify patterns and trends in consumer behavior.

The goal is to create an interactive Power BI dashboard to help car dealerships, manufacturers, and policymakers make data-driven decisions. By examining correlations between factors like car type, pricing, customer income, and regional preferences, this project aims to guide stakeholders in optimizing sales strategies, enhancing inventory management, and tailoring marketing efforts. The insights will ultimately support the automotive sector in meeting customer expectations, boosting sales, and addressing market demands effectively.

1.4 BUSINESS OBJECTIVE

In a rapidly evolving automotive market, understanding buyer behavior, regional preferences, and pricing dynamics is crucial for car dealerships and manufacturers to stay competitive and drive growth. This project aims to support the following business objectives:

1. **Enhancing Customer Satisfaction and Retention**: By analyzing customer demographics, preferred vehicle types, and popular features, dealerships can better

align their offerings with buyer preferences, improving satisfaction and fostering loyalty.

2. **Maximizing Revenue through Targeted Pricing and Promotions**: Insights into pricing trends, sales volumes, and high-demand models enable dealerships to optimize pricing strategies, introduce targeted promotions, and enhance profitability.
3. **Optimizing Inventory and Supply Chain Management**: Understanding sales patterns by vehicle model, body style, and region allows businesses to efficiently manage inventory levels, reduce excess stock, and ensure the right models are available to meet customer demand.
4. **Adapting to Market Trends and Customer Preferences**: Using historical sales data, the project aims to identify trends in customer preferences, such as shifts toward electric vehicles or specific body styles, allowing dealerships to proactively adjust inventory and marketing efforts.
5. **Supporting Sustainable and Efficient Business Practices**: By analyzing data on fuel types and car usage patterns, dealerships can promote more sustainable options, such as hybrids and electric vehicles, while also optimizing resource use and reducing costs.
6. **Enhancing Decision-Making with Predictive Insights**: Leveraging predictive analytics, this project will provide insights into future demand, helping dealerships and manufacturers make data-driven decisions that align with market trends and buyer expectations.

CHAPTER 2

DATA PREPARATION AND MODELING

2.1 DATA CLEANING

Before analysing the dataset in Power BI, it's crucial to clean and preprocess the data to ensure consistency and accuracy. The following steps were taken to prepare the dataset:

Handling Missing Values:

- Columns with a high percentage of missing data were identified and reviewed to assess their impact on the analysis.
- Columns such as *Phone Number* or *Dealer Contact Details*, if missing in large amounts, were considered for removal to streamline the dataset and focus on core analysis fields.
- Rows with missing values in critical fields, such as *Date of Purchase*, *Price*, *Car Model*, or *Dealer Name*, were either filled with reasonable defaults or removed to maintain data integrity.

Outlier Detection and Filtering:

- Extreme outliers in fields such as *Annual Income* or *Price* were identified and reviewed. Outliers that were likely data entry errors (e.g., unusually high or low values) were corrected or removed to prevent skewing results.
- Outliers in sales dates, such as transactions recorded in unexpected years, were also verified to ensure they fall within a realistic timeframe for analysis.

2.1 DATA TRANSFORMATION

Before analysing the dataset in Power BI, it's crucial to clean and preprocess the data to ensure consistency and accuracy. The following steps were taken to prepare the dataset:

1.Setting Header : The dataset's first row was set as the header, improving readability and accessibility of data attributes. This change provides clear column labels, making it easier to reference and interpret each attribute during analysis.

2.Data Type Conversion : The **Time needed to visit in hrs** column, which was initially represented in decimal format, was converted to a whole number. This simplification enhances readability in Power BI and ensures consistent representation across all records, making it easier to analyse visitor time.

PROCEDURE

STEP 1

1. Go to the HOME tab in the ribbon.
2. Click on GET DATA and select data from the system or from any platform where it resides.
3. Here select a dataset from a system and load it to POWER BI.

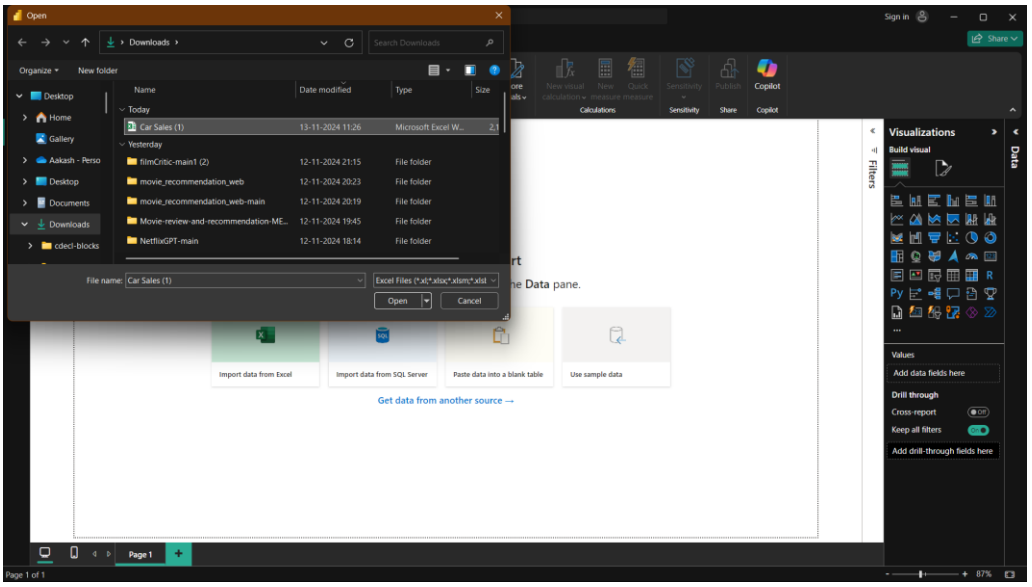


Figure 2.2.1 Select Dataset

STEP 2

1. From the ribbon of the HOME tab select TRANSFORM DATA in order to clean and transform data.

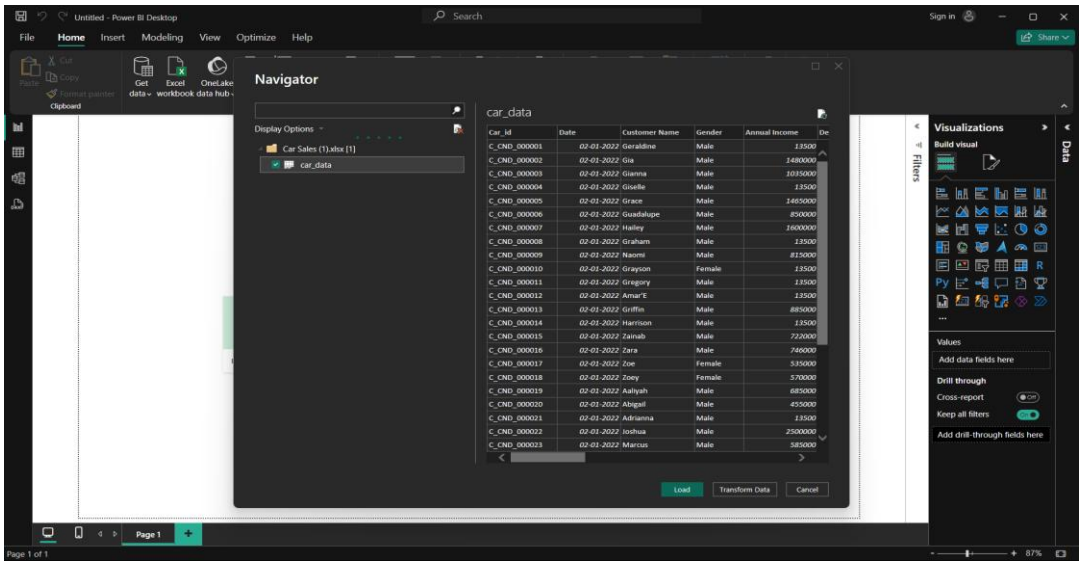


Figure 2.2.2 Transform Data

STEP 3

1. Now select the table to clean it.
2. Here apply change datatype so click the column that needed to change the datatype.
3. Select “Time needed to visit” column then change its datatype to whole number.

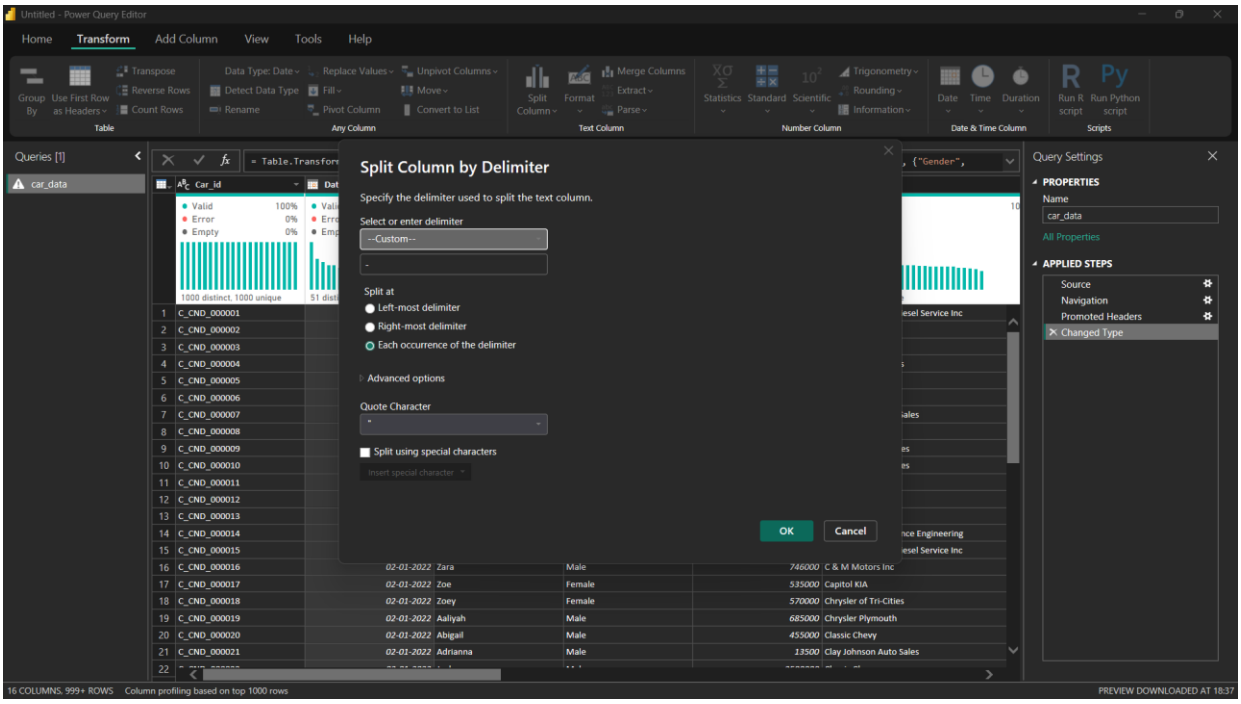


Figure 2.2.3 Change Column Type

2.3 DAX FUNCTIONS

DAX is a special function that contains a collection of operators, formulae, functions, expressions to calculate, process and execute the values from the existing table and return one or more values as the result of respective functions. So, it is used to create new information from the data that already exists in the table while creating the model and analysing it.

DAX measured of Power Bi are special functions or Programming Language that are used to create the following such as

- ➢ Calculated columns
- ➢ New measures
- ➢ Customized tables
- ➢ Quick measures
- ➢ Implement Time Intelligence

So, from these formulae and expressions we can find results like maximum, minimum, average, count, sum, filters, difference, total, variance, percentage, addition, subtraction, division, etc.….

STEP 1

1. Create new measure called as “YTD total sales”.
2. Apply the required formulae with a new name and click enter.

YTD total sales = TOTALYTD(SUM('car_data'[Price ($)]),'Calendar Table'[Date])

Figure 2.3.1 Create new measure Year to day total sales

STEP 2

1. Create a new measure called “YTD Avg Price .

2.Apply the required formulae with a new name and click enter.

YTD Avg Price = TOTALYTD([Avg Price],'Calendar Table'[Date])

Figure 2.3.2 Create a Year to Date

STEP 3

1. Create new measure called as “YTD cars sold”.
2. Apply the required formulae with new name and click enter.

Formula for measure:

YTD cars sold = TOTALYTD(COUNT(car_data[Car_id]),'Calendar Table'[Date])

Figure 2.3.3 Create Measure YTD cars sold

STEP 4

1. Create new measure called as “MTD KPI”.
2. Apply the required formulae with a new name and click enter.

Formula for measure:

MTD KPI = CONCATENATE("MTD Total Sales : ",FORMAT([MTD Total Sales]/1000000,"$0.00M"))

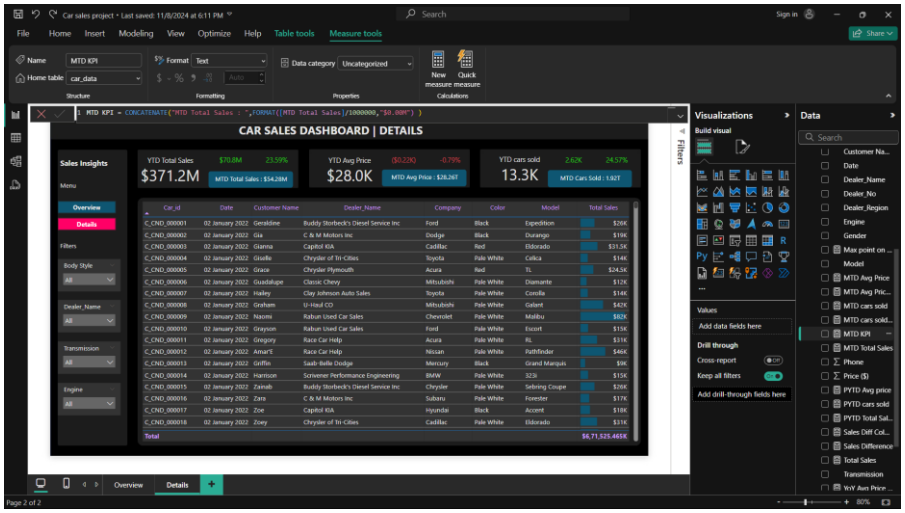


Figure 2.3.4 Create Measure MTD KPI

STEP 5

1. Create new measure called as “MTD Avg Price KPI”.
2. Apply the required formulae with a new name and click enter.

Formula for measure:

MTD Avg Price KPI = CONCATENATE("MTD Avg Price : ",FORMAT([MTD Avg Price]/1000,"$0.00T"))

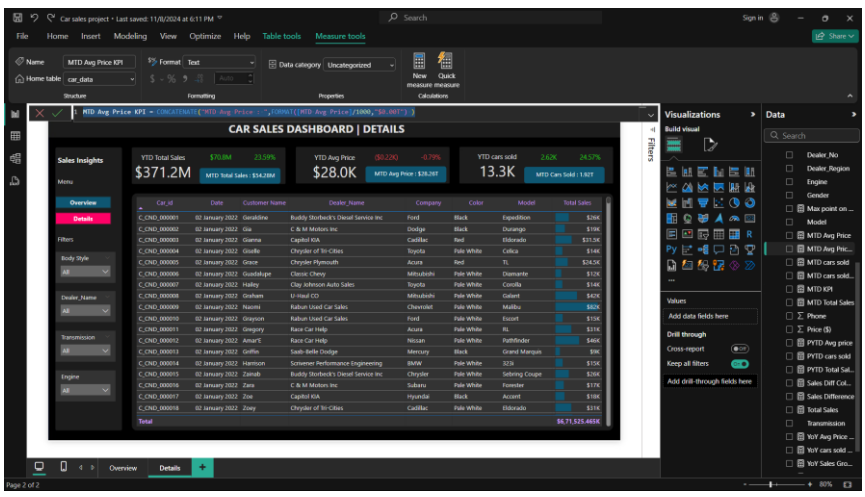


Figure 2.3.5 Create Measure MTD Avg Price KPI

STEP 6

1. Create new measure called as “MTD Avg Price ”.
2. Apply the required formulae with new name and click enter.

Formula for measure:

MTD Avg Price = TOTALMTD([Avg Price],'Calendar Table'[Date])

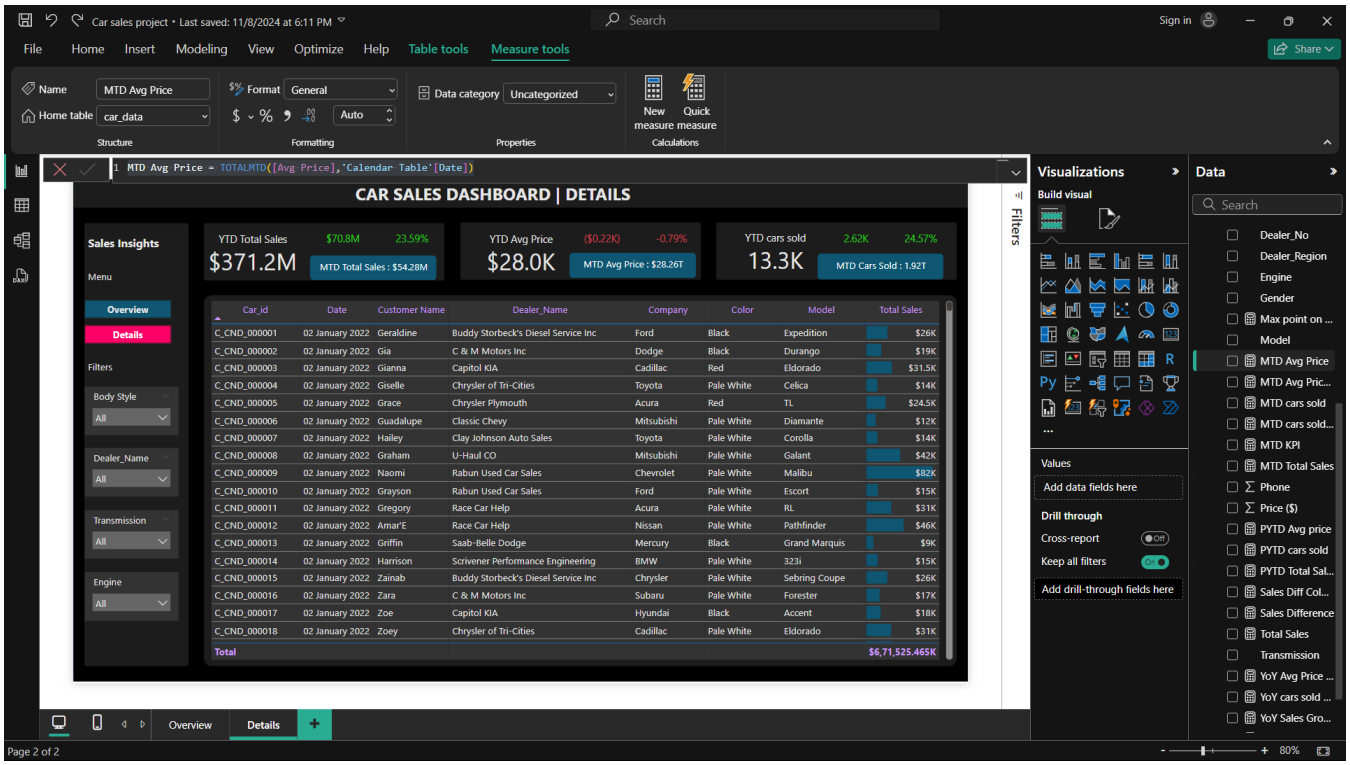


Figure 2.3.6 Create Measure MTD Avg Price

CHAPTER 3

DATA ANALYSIS AND INTERPRETATION

3.1 DATA ANALYSIS

To turn raw data into insightful information, data analysis is the process of analysing, manipulating, and monitoring. Making the necessary decisions for a business or company's growth is made easier with the use of data insights. Deep data analysis is crucial if need want to manage a firm that is data-driven. Then it is needed to find learning different Power BI data analysis approaches fascinating and useful Data analysis includes the following results

- ➢ Used to create various charts from Power Bi visuals
- ➢ Select data from various tables, analyse it and convert it into visuals.
- ➢ From the analysed result infer the result or final solution

CHARTS

1.What are the total year-to-date (YTD) car sales?

i Select Card in the visualization pane.

ii Drag the “YTD total sales” field into the Values section in Power BI.

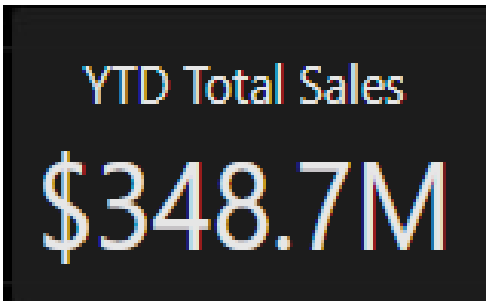


Figure 3.1.1 Car sales year-to-date

2. How many cars have been sold this year?

i. Select Card from the Visualizations pane.

ii. Drag a field "YTD cars sold" into the slicer.

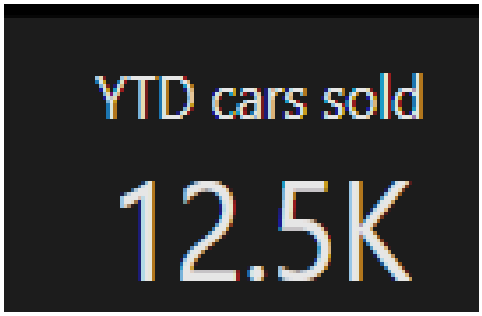


Figure 3.1.2 Total cars sold

3. What is the average price of cars for the year?

i.select a Card in the visualization pane

ii.Drag a field "YTD Avg Price" into the Values section.

Figure 3.1.3 Average cars sold price

4. What are the total car sales by color?

i.select a Donut Chart in the visualization pane

ii.Add the Legend “Color” and values “YTD total sales”.

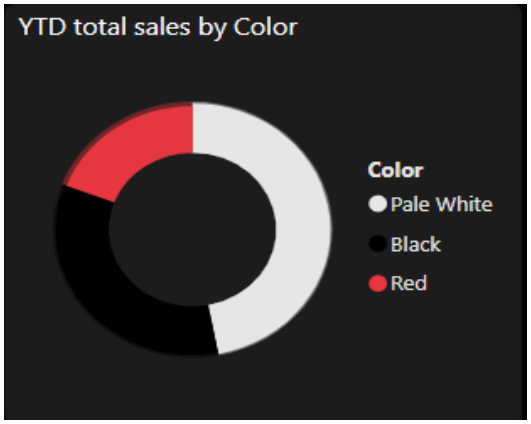


Figure 3.1.4 Car sold color

5. What are the YTD car sales by body style?

i.select Donut Chart in the visualization pane

ii.Add Legend “Body Style” and Values “YTD total sales”.

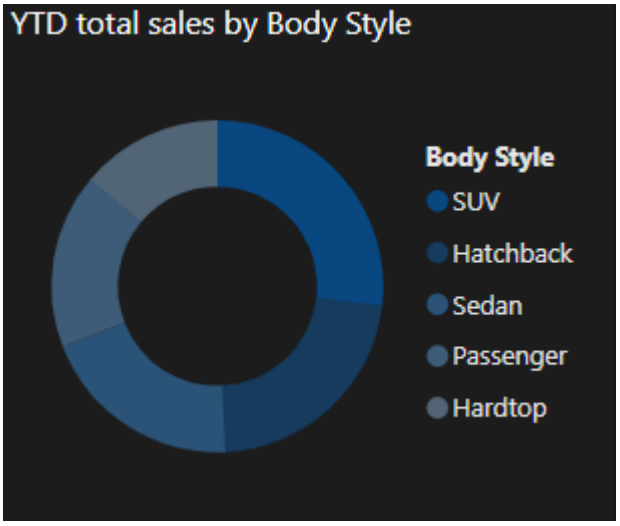


Figure 3.1.5 Body Style

6. What is the company-wise sales trend?

i. Select a Matrix chart in the Visualizations pane.

ii. Add the field "Company" to the Rows field and "YTD Avg Price," "YTD Cars Sold," "YTD Total Sales," and "%GT YTD Total Sales" to the Values field.

Company wise sales Trend

Company	YTD Avg Price	YTD cars sold	YTD total sales	%GT YTD total sales
Dodge	$26.9K	382.0	$10.3M	10.28%
Chevrolet	$27.9K	338.0	$9.4M	9.45%
Ford	$30.6K	256.0	$7.8M	7.85%
Mercedes-B	$26.4K	252.0	$6.6M	6.66%
Acura	$23.7K	204.0	$4.8M	4.84%
Audi	$21.5K	195.0	$4.2M	4.20%
BMW	$29.3K	191.0	$5.6M	5.59%
Chrysler	$23.1K	182.0	$4.2M	4.21%

Figure 3.1.6 Company-wise sales Trend

7. What is the year-over-year (YOY) growth in average price?

i. Select a Card in the Visualizations pane.

ii. Add the "YoY Cars Sold Growth" field.

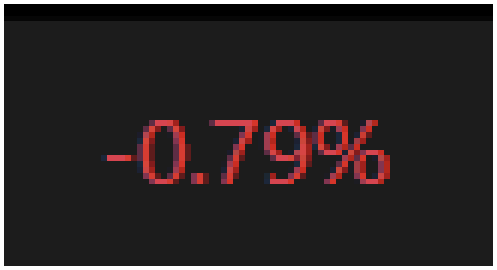


Figure 3.1.7 Year-over-year growth.

8. What is the YOY growth in car sales?

i. Select a **Card** in the **Visualizations** pane.

ii. Add the field **"YoY Cars Sold Growth"**.

Figure 3.1.8 Year over Year. sales growth

9. What are the total car sales by dealer region?

i. Select a Map in the Visualizations pane.

ii. Add the location field "Dealer_Region".

Figure 3.1.9 Region of car sales.

10. What is the YTD weekly sales trend?

i. In the Visualizations pane, choose the Area Chart.

ii. Add "Week" to the X-axis and "Max Point on Chart" and "Sum of Price ($)" to the Y-axis.

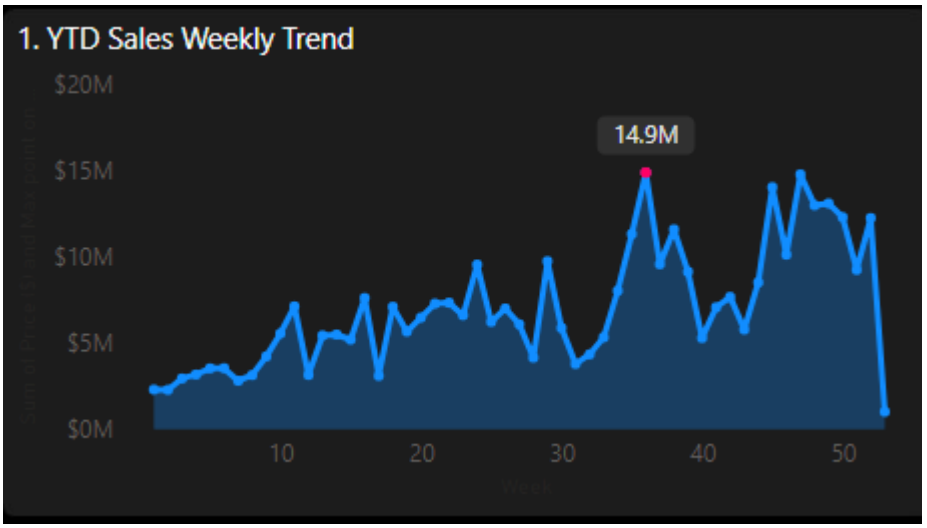


Figure 3.1.10 Year to Date weekly sales trend.

11.Which dealer had the highest total sales for December 31, 2023?

i.Select a Table in the Visualizations pane.

ii.Add the columns "Car_id," "Date," "Customer Name," "Total Sales," "Model," "Color," and "Company."

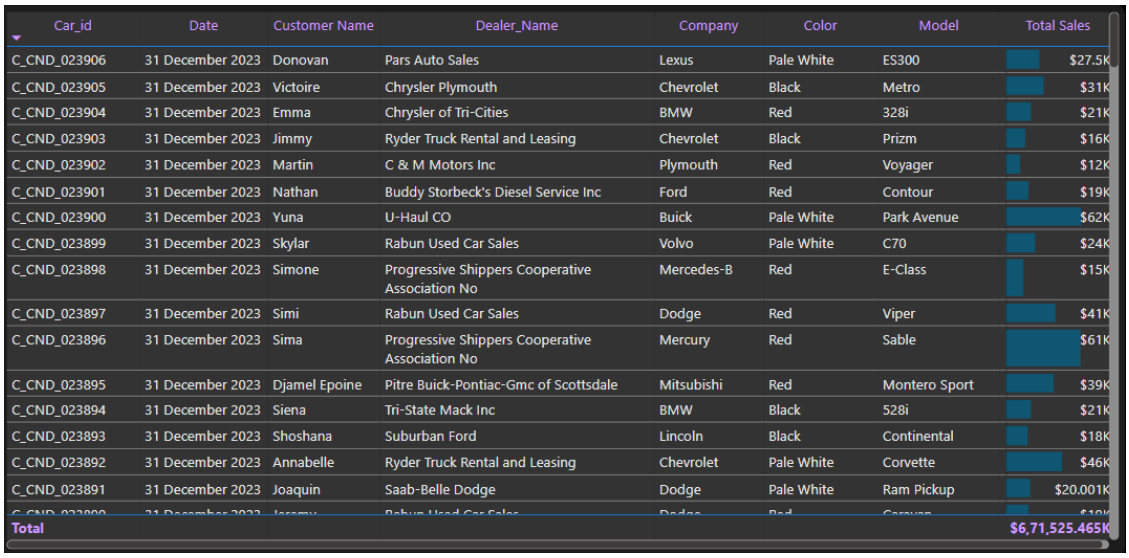
Car_id	Date	Customer Name	Dealer_Name	Company	Color	Model	Total Sales
C_CND_023906	31 December 2023	Donovan	Pars Auto Sales	Lexus	Pale White	ES300	$27.5K
C_CND_023905	31 December 2023	Victoire	Chrysler Plymouth	Chevrolet	Black	Metro	$31K
C_CND_023904	31 December 2023	Emma	Chrysler of Tri-Cities	BMW	Red	328i	$21K
C_CND_023903	31 December 2023	Jimmy	Ryder Truck Rental and Leasing	Chevrolet	Black	Prizm	$16K
C_CND_023902	31 December 2023	Martin	C & M Motors Inc	Plymouth	Red	Voyager	$12K
C_CND_023901	31 December 2023	Nathan	Buddy Storbeck's Diesel Service Inc	Ford	Red	Contour	$19K
C_CND_023900	31 December 2023	Yuna	U-Haul CO	Buick	Pale White	Park Avenue	$62K
C_CND_023899	31 December 2023	Skylar	Rabun Used Car Sales	Volvo	Pale White	C70	$24K
C_CND_023898	31 December 2023	Simone	Progressive Shippers Cooperative Association No	Mercedes-B	Red	E-Class	$15K
C_CND_023897	31 December 2023	Simi	Rabun Used Car Sales	Dodge	Red	Viper	$41K
C_CND_023896	31 December 2023	Sima	Progressive Shippers Cooperative Association No	Mercury	Red	Sable	$61K
C_CND_023895	31 December 2023	Djamel Epoine	Pitre Buick-Pontiac-Gmc of Scottsdale	Mitsubishi	Red	Montero Sport	$39K
C_CND_023894	31 December 2023	Siena	Tri-State Mack Inc	BMW	Black	528i	$21K
C_CND_023893	31 December 2023	Shoshana	Suburban Ford	Lincoln	Black	Continental	$18K
C_CND_023892	31 December 2023	Annabelle	Ryder Truck Rental and Leasing	Chevrolet	Pale White	Corvette	$46K
C_CND_023891	31 December 2023	Joaquin	Saab-Belle Dodge	Dodge	Pale White	Ram Pickup	$20.001K
Total							$6,71,525.465K

Figure 3.1.11 Highest total sales for december 31,2023

12.What is the most sold car model and its total sales value?

i.Select a Table in the Visualizations pane.

ii.Add the columns "Car_id," "Date," "Customer Name," "Total Sales," "Model," "Color," and "Company."



Car_id	Date	Customer Name	Dealer_Name	Company	Color	Model	Total Sales
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C_CND_023905	31 December 2023	Victoire	Chrysler Plymouth	Chevrolet	Black	Metro	$31K
C_CND_023904	31 December 2023	Emma	Chrysler of Tri-Cities	BMW	Red	328i	$21K
C_CND_023903	31 December 2023	Jimmy	Ryder Truck Rental and Leasing	Chevrolet	Black	Prizm	$16K
C_CND_023902	31 December 2023	Martin	C & M Motors Inc	Plymouth	Red	Voyager	$12K
C_CND_023901	31 December 2023	Nathan	Buddy Storbeck's Diesel Service Inc	Ford	Red	Contour	$19K
C_CND_023900	31 December 2023	Yuna	U-Haul CO	Buick	Pale White	Park Avenue	$62K
C_CND_023899	31 December 2023	Skylar	Rabun Used Car Sales	Volvo	Pale White	C70	$24K
C_CND_023898	31 December 2023	Simone	Progressive Shippers Cooperative Association No	Mercedes-B	Red	E-Class	$15K
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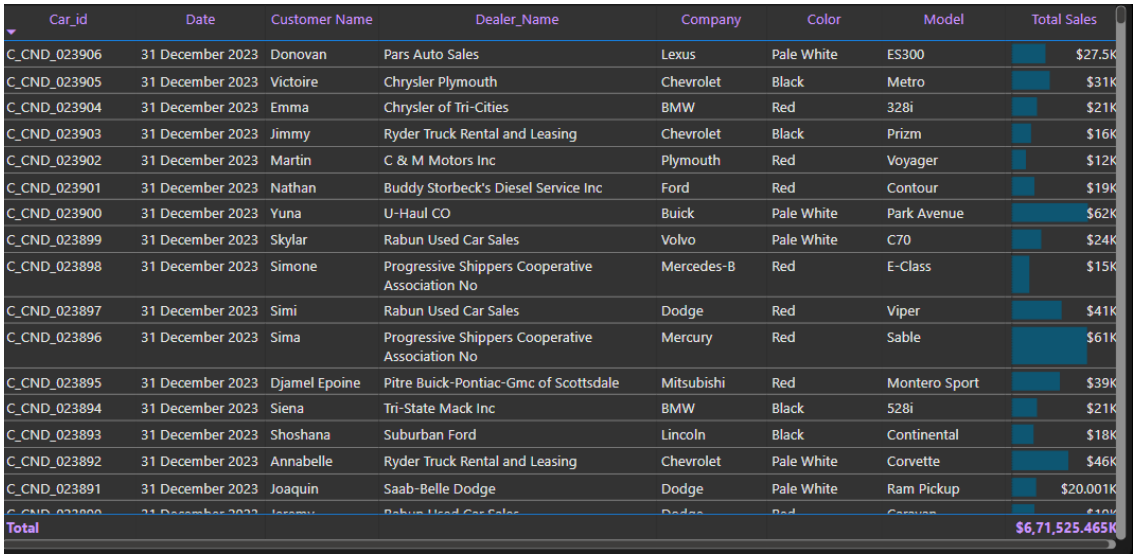
C_CND_023892	31 December 2023	Annabelle	Ryder Truck Rental and Leasing	Chevrolet	Pale White	Corvette	$46K
C_CND_023891	31 December 2023	Joaquin	Saab-Belle Dodge	Dodge	Pale White	Ram Pickup	$20.001K
Total							$6,71,525.465K

Figure 3.1.12 most sold car model and its total sales value

13.How many cars were sold in Pale White color on December 31, 2023?

i.Select a Table in the Visualizations pane.

ii.Add the columns "Car_id," "Date," "Customer Name," "Total Sales," "Model," "Color," and "Company."



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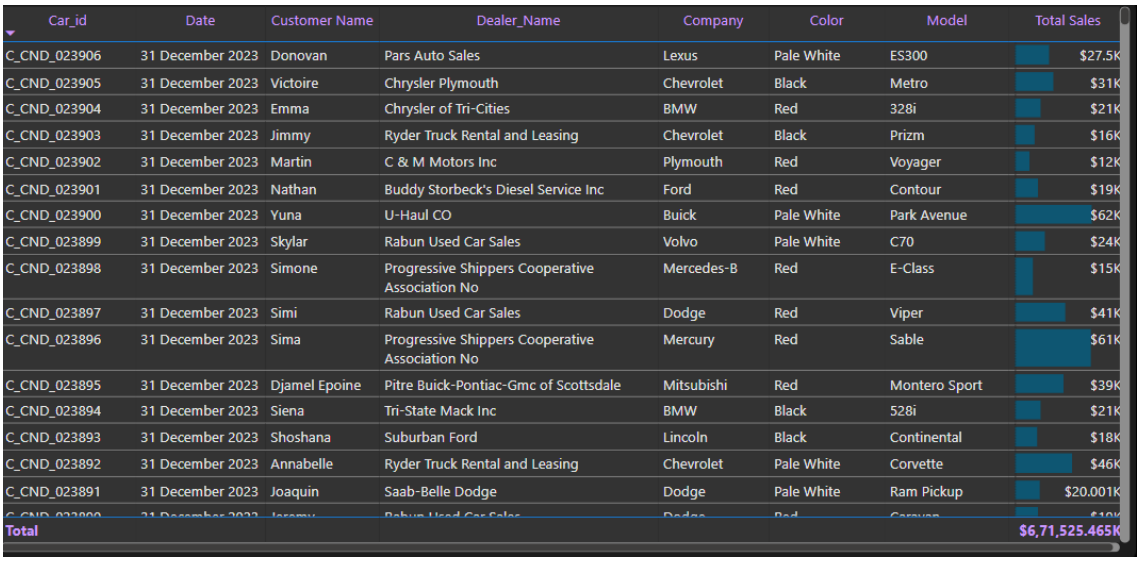
C_CND_023904	31 December 2023	Emma	Chrysler of Tri-Cities	BMW	Red	328i	$21K
C_CND_023903	31 December 2023	Jimmy	Ryder Truck Rental and Leasing	Chevrolet	Black	Prizm	$16K
C_CND_023902	31 December 2023	Martin	C & M Motors Inc	Plymouth	Red	Voyager	$12K
C_CND_023901	31 December 2023	Nathan	Buddy Storbeck's Diesel Service Inc	Ford	Red	Contour	$19K
C_CND_023900	31 December 2023	Yuna	U-Haul CO	Buick	Pale White	Park Avenue	$62K
C_CND_023899	31 December 2023	Skylar	Rabun Used Car Sales	Volvo	Pale White	C70	$24K
C_CND_023898	31 December 2023	Simone	Progressive Shippers Cooperative Association No	Mercedes-B	Red	E-Class	$15K
C_CND_023897	31 December 2023	Simi	Rabun Used Car Sales	Dodge	Red	Viper	$41K
C_CND_023896	31 December 2023	Sima	Progressive Shippers Cooperative Association No	Mercury	Red	Sable	$61K
C_CND_023895	31 December 2023	Djamel Epoine	Pitre Buick-Pontiac-Gmc of Scottsdale	Mitsubishi	Red	Montero Sport	$39K
C_CND_023894	31 December 2023	Siena	Tri-State Mack Inc	BMW	Black	528i	$21K
C_CND_023893	31 December 2023	Shoshana	Suburban Ford	Lincoln	Black	Continental	$18K
C_CND_023892	31 December 2023	Annabelle	Ryder Truck Rental and Leasing	Chevrolet	Pale White	Corvette	$46K
C_CND_023891	31 December 2023	Joaquin	Saab-Belle Dodge	Dodge	Pale White	Ram Pickup	$20.001K
Total							$6,71,525.465K

Figure 3.1.13 cars were sold in Pale White color on December 31, 2023

14.Which company generated the highest total sales for a single car sale?

i.Select a Table in the Visualizations pane.

ii.Add the columns "Car_id," "Date," "Customer Name," "Total Sales," "Model," "Color," and "Company."



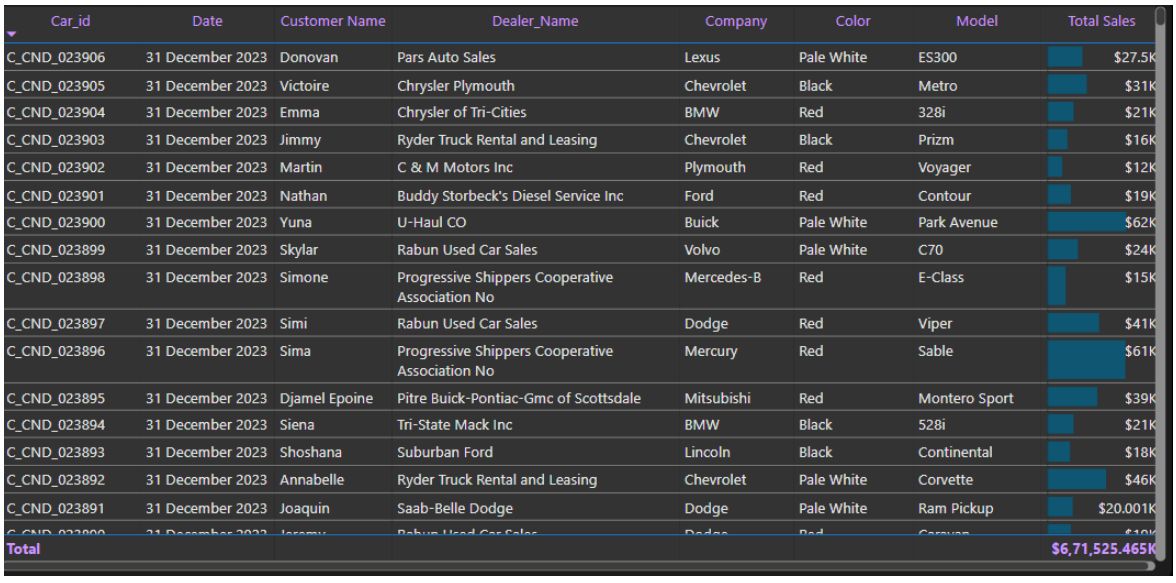
Car_id	Date	Customer Name	Dealer_Name	Company	Color	Model	Total Sales
C_CND_023906	31 December 2023	Donovan	Pars Auto Sales	Lexus	Pale White	ES300	$27.5K
C_CND_023905	31 December 2023	Victoire	Chrysler Plymouth	Chevrolet	Black	Metro	$31K
C_CND_023904	31 December 2023	Emma	Chrysler of Tri-Cities	BMW	Red	328i	$21K
C_CND_023903	31 December 2023	Jimmy	Ryder Truck Rental and Leasing	Chevrolet	Black	Prizm	$16K
C_CND_023902	31 December 2023	Martin	C & M Motors Inc	Plymouth	Red	Voyager	$12K
C_CND_023901	31 December 2023	Nathan	Buddy Storbeck's Diesel Service Inc	Ford	Red	Contour	$19K
C_CND_023900	31 December 2023	Yuna	U-Haul CO	Buick	Pale White	Park Avenue	$62K
C_CND_023899	31 December 2023	Skylar	Rabun Used Car Sales	Volvo	Pale White	C70	$24K
C_CND_023898	31 December 2023	Simone	Progressive Shippers Cooperative Association No	Mercedes-B	Red	E-Class	$15K
C_CND_023897	31 December 2023	Simi	Rabun Used Car Sales	Dodge	Red	Viper	$41K
C_CND_023896	31 December 2023	Sima	Progressive Shippers Cooperative Association No	Mercury	Red	Sable	$61K
C_CND_023895	31 December 2023	Djamel Epoine	Pitre Buick-Pontiac-Gmc of Scottsdale	Mitsubishi	Red	Montero Sport	$39K
C_CND_023894	31 December 2023	Siena	Tri-State Mack Inc	BMW	Black	528i	$21K
C_CND_023893	31 December 2023	Shoshana	Suburban Ford	Lincoln	Black	Continental	$18K
C_CND_023892	31 December 2023	Annabelle	Ryder Truck Rental and Leasing	Chevrolet	Pale White	Corvette	$46K
C_CND_023891	31 December 2023	Joaquin	Saab-Belle Dodge	Dodge	Pale White	Ram Pickup	$20.001K
Total							$6,71,525.465K

Figure 3.1.14 Highest total sales for a single car

15.What is the combined total sales for vehicles sold by Suburban Ford?

i.Select a Table in the Visualizations pane.

ii.Add the columns "Car_id," "Date," "Customer Name," "Total Sales," "Model," "Color," and "Company".



Car_id	Date	Customer Name	Dealer_Name	Company	Color	Model	Total Sales
C_CND_023906	31 December 2023	Donovan	Pars Auto Sales	Lexus	Pale White	ES300	$27.5K
C_CND_023905	31 December 2023	Victoire	Chrysler Plymouth	Chevrolet	Black	Metro	$31K
C_CND_023904	31 December 2023	Emma	Chrysler of Tri-Cities	BMW	Red	328i	$21K
C_CND_023903	31 December 2023	Jimmy	Ryder Truck Rental and Leasing	Chevrolet	Black	Prizm	$16K
C_CND_023902	31 December 2023	Martin	C & M Motors Inc	Plymouth	Red	Voyager	$12K
C_CND_023901	31 December 2023	Nathan	Buddy Storbeck's Diesel Service Inc	Ford	Red	Contour	$19K
C_CND_023900	31 December 2023	Yuna	U-Haul CO	Buick	Pale White	Park Avenue	$62K
C_CND_023899	31 December 2023	Skylar	Rabun Used Car Sales	Volvo	Pale White	C70	$24K
C_CND_023898	31 December 2023	Simone	Progressive Shippers Cooperative Association No	Mercedes-B	Red	E-Class	$15K
C_CND_023897	31 December 2023	Simi	Rabun Used Car Sales	Dodge	Red	Viper	$41K
C_CND_023896	31 December 2023	Sima	Progressive Shippers Cooperative Association No	Mercury	Red	Sable	$61K
C_CND_023895	31 December 2023	Djamel Epoine	Pitre Buick-Pontiac-Gmc of Scottsdale	Mitsubishi	Red	Montero Sport	$39K
C_CND_023894	31 December 2023	Siena	Tri-State Mack Inc	BMW	Black	528i	$21K
C_CND_023893	31 December 2023	Shoshana	Suburban Ford	Lincoln	Black	Continental	$18K
C_CND_023892	31 December 2023	Annabelle	Ryder Truck Rental and Leasing	Chevrolet	Pale White	Corvette	$46K
C_CND_023891	31 December 2023	Joaquin	Saab-Belle Dodge	Dodge	Pale White	Ram Pickup	$20.001K
Total							$6,71,525.465K

Figure 3.1.15 Total sales for vehicles sold by Suburban Ford?

3.2 PUBLISHING DASHBOARD

❖ Often referred to as a canvas, a Power BI dashboard is a single page that employs visuals to convey a story. A well-designed dashboard only includes the key components of the tale because it is only one page long. The dashboard's tiles—the visuals you see there—are placed there by report creators.

❖ The report page where the visualisation was made is often the page you land on after picking a tile. A dashboard's visuals are derived from reports, and each report is built using a single dataset. A dashboard may really be thought of as a portal to the underlying reports and statistics.

❖ Then it may get the report that was used to produce a visualisation by selecting Dashboards are an excellent method to keep an eye on your company, search for solutions, and quickly view all of your most crucial indicators.

❖ A dashboard's visualisations might be drawn from a single underlying dataset or several, as well as a single underlying report or many.

❖ Regardless of where the data is stored, a dashboard may mix on-premises and cloud data to provide a consolidated picture. A dashboard is interactive, and the tiles refresh as the underlying data changes.

Link for dashboard

https://app.powerbi.com/groups/me/reports/baffd724-eb36-4a69-9dac-0b015851af16/ReportSectionad0f4d7562964a790590?experience=power-bi

Process of creating Dash board

STEP 1 : After signing in, click the Publish button on the Home tab. Select My workspace as the destination.

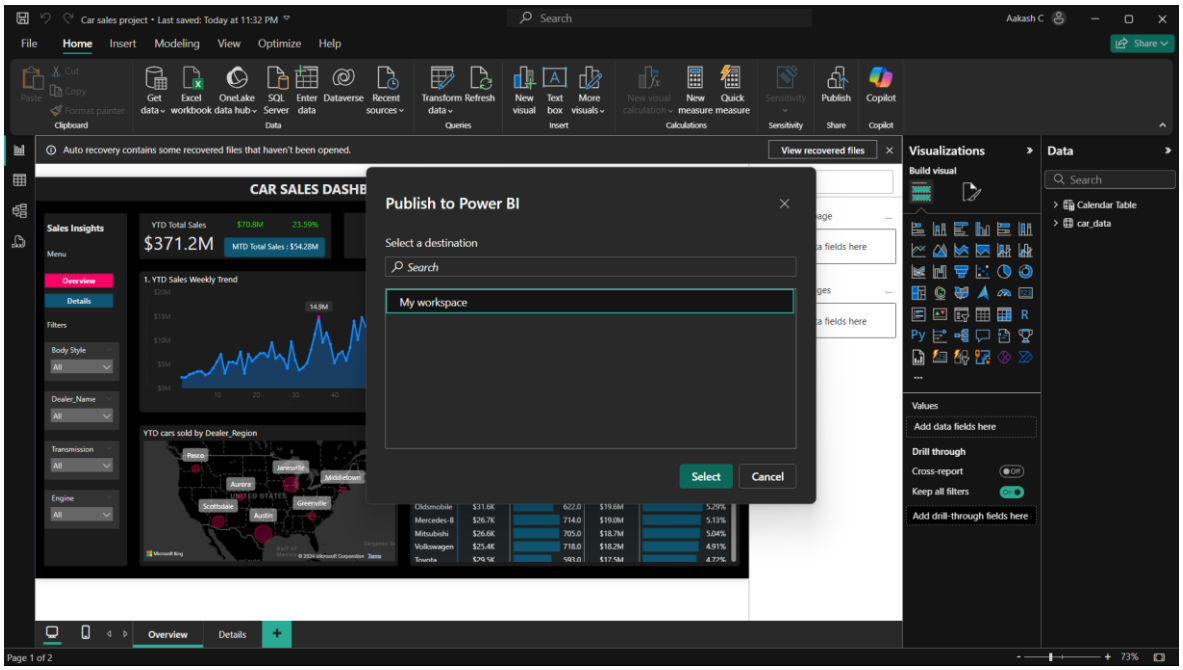


Figure 3.2.1 Publish to power BI

STEP 2 : Once published, click the link to open the report in Power BI

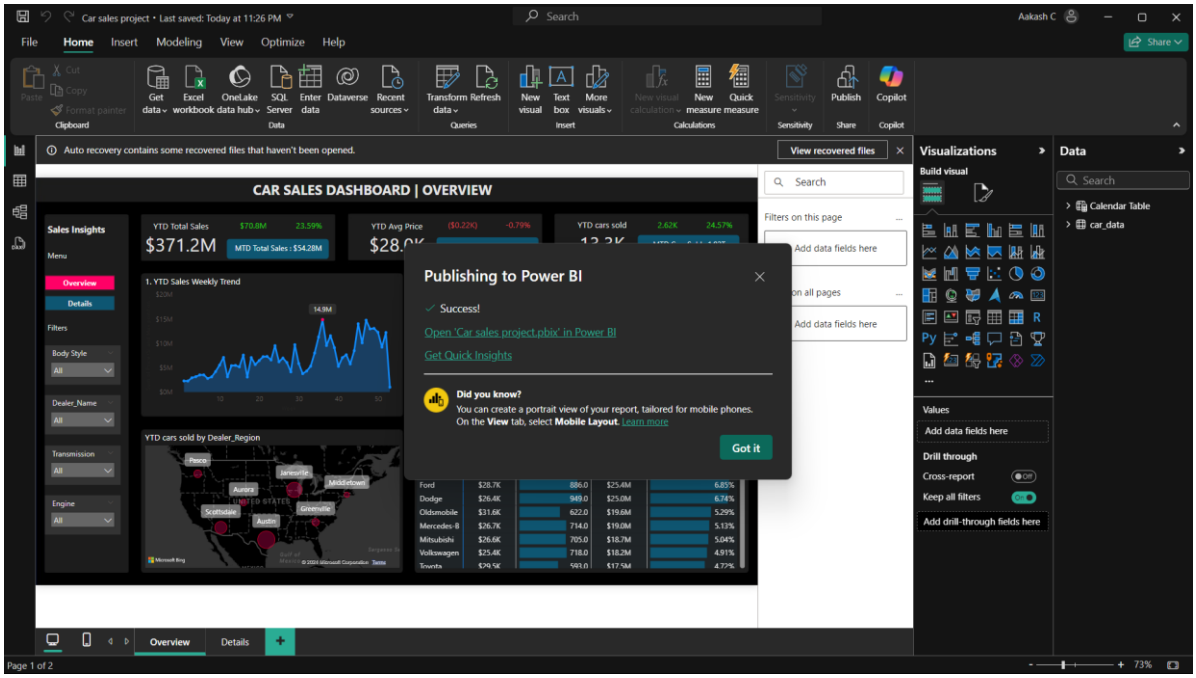


Figure 3.2.2 Publishing to power BI

STEP 3 : In the Report view, You should see a pin icon in the upper right corner

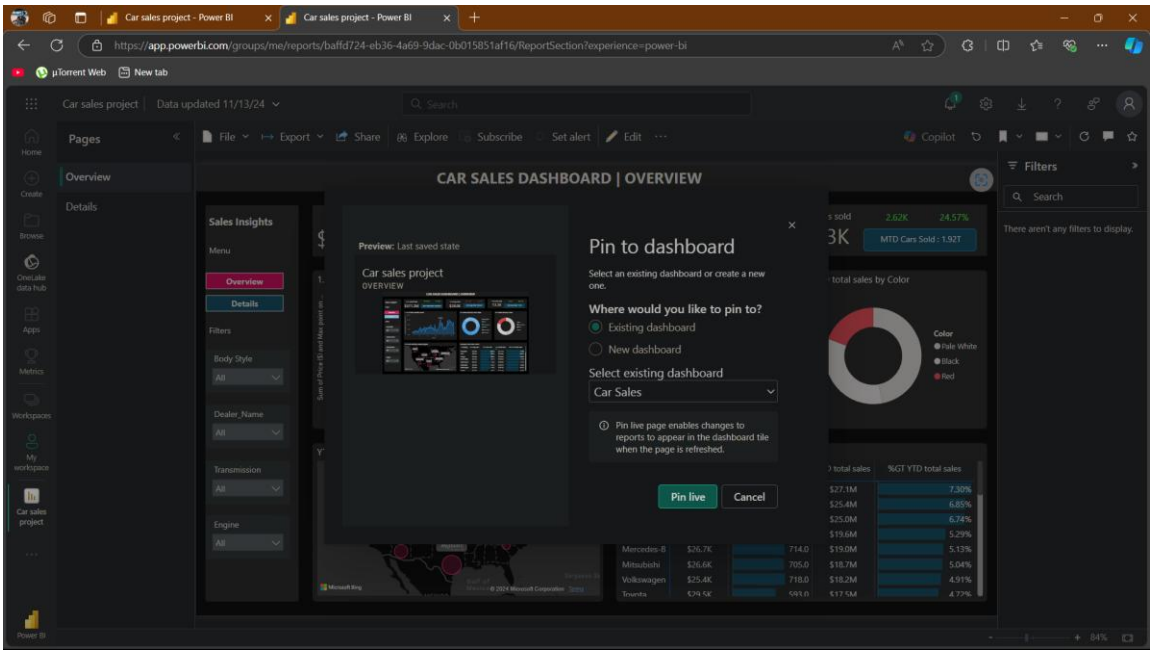


Figure 3.2.3 Pin to dashboard

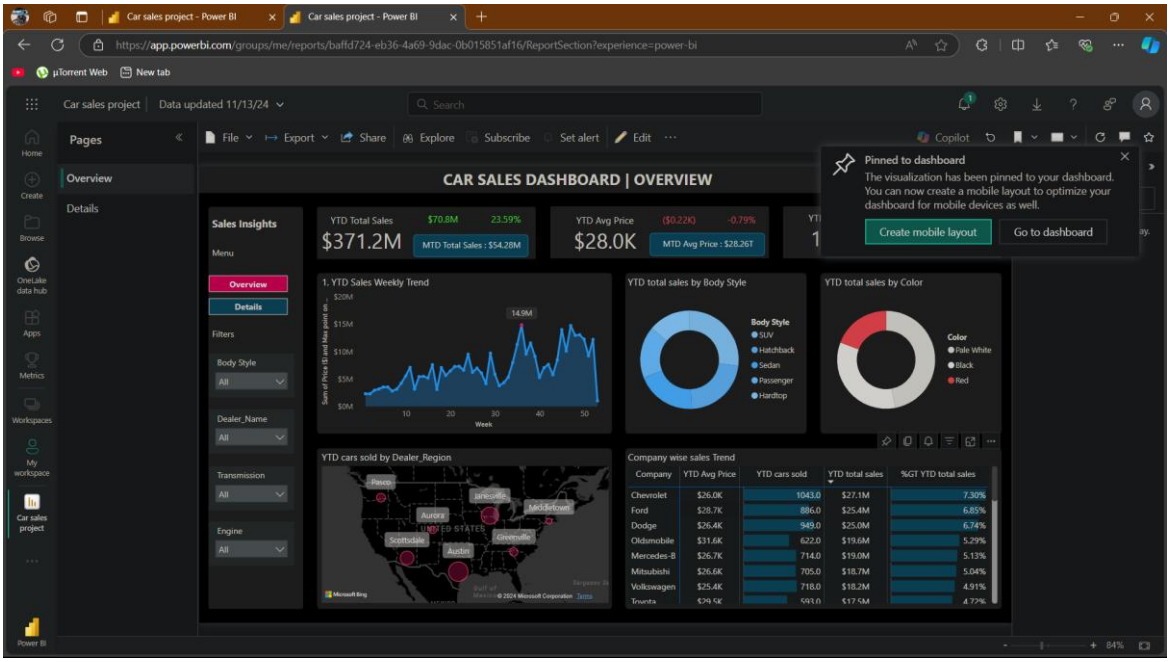
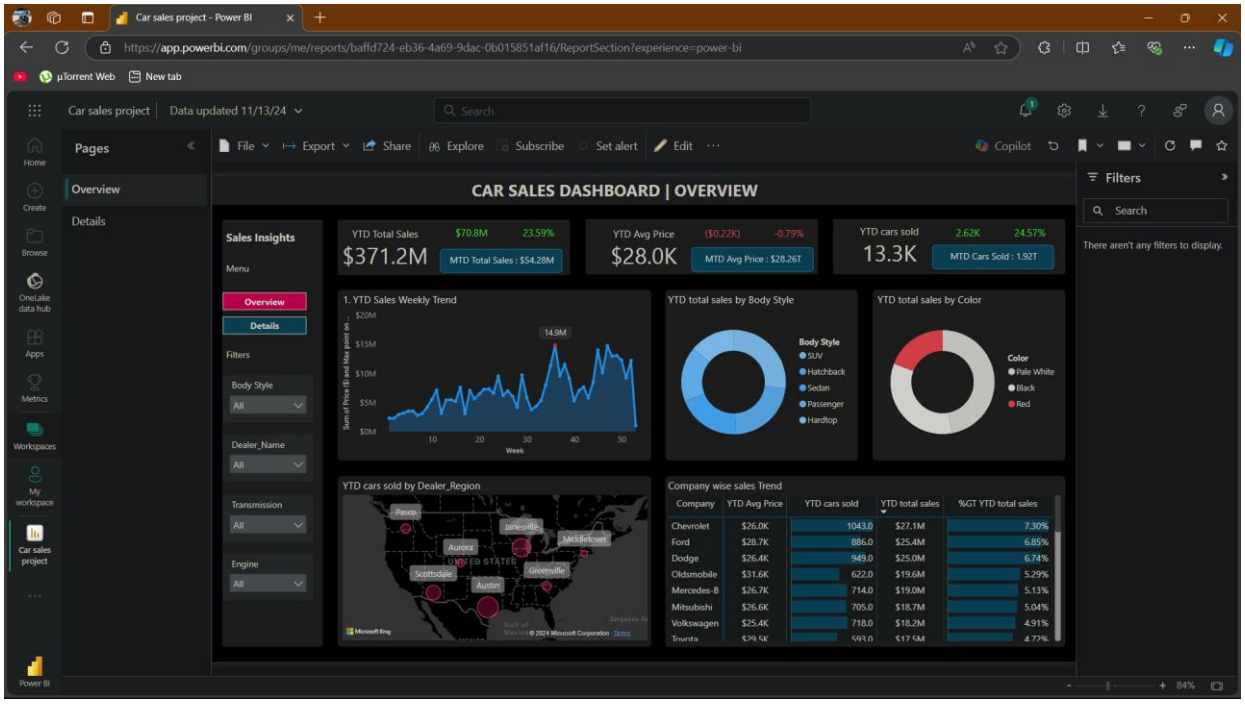


Figure 3.2.4 Pinned to dashboard

DASHBOARD VIEW:



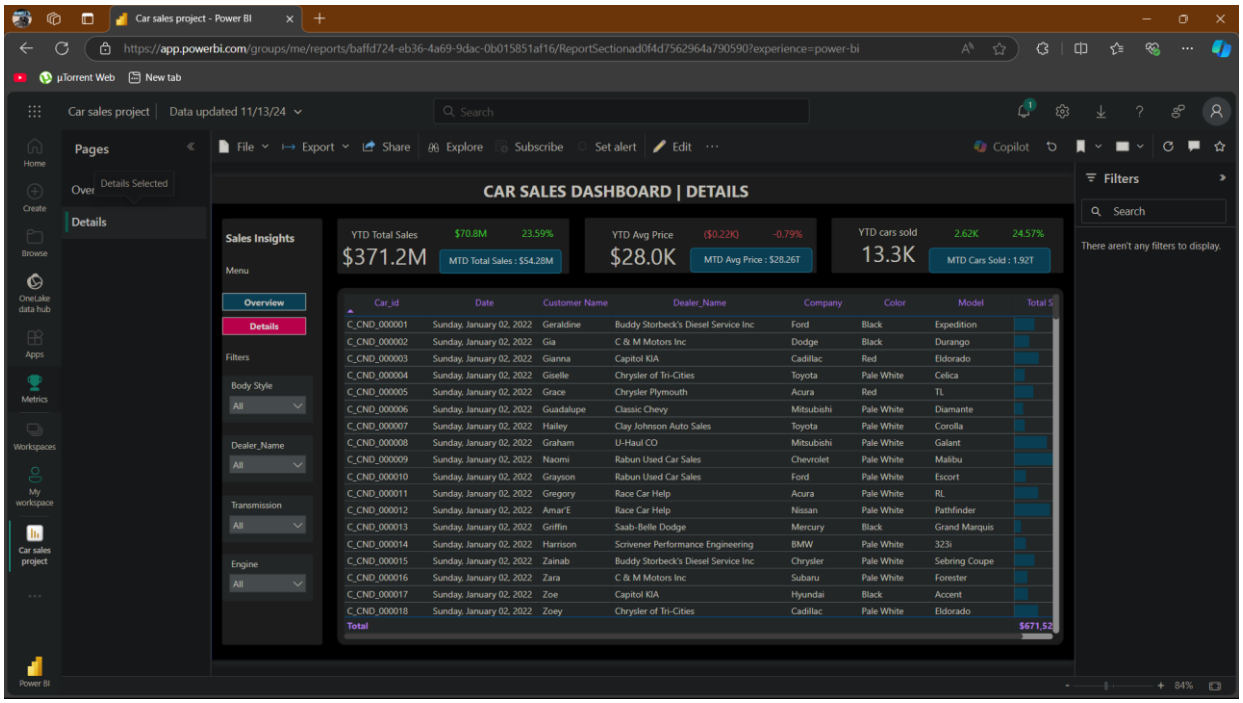


Figure 3.2.5 Created Dashboard

3.3 INFERENCES

1.What are the total year-to-date (YTD) car sales?

The total year-to-date (YTD) car sales amount to $371.2 million. This reflects the cumulative revenue from car sales, serving as a key performance indicator. It allows stakeholders to assess growth, compare with past years, and adjust sales strategies to meet goals.

2. How many cars have been sold this year?

A total of 13.3K cars have been sold year-to-date (YTD). This figure measures sales volume and helps assess market demand and inventory needs. It aids in evaluating sales strategy success and planning future targets.

3. What are the total car sales by color?

The total car sales by color show that Black has the largest share, indicating it's the most popular among buyers. Red accounts for a significant portion, reflecting strong customer preference. Pale White has a smaller share, showing moderate interest. This breakdown helps guide inventory and marketing strategies based on customer preferences.

4)What is the average price of cars for the year?

The average price of cars for the year-to-date (YTD) is $28.0K. This reflects the average revenue per car sold, indicating the pricing and product mix. A higher average price suggests strong sales of premium models, while a lower price may indicate budget options or increased competition. Tracking this metric helps adjust pricing strategies and optimize profitability.

5. What are the YTD car sales by body style?

Black represents the largest share of sales, indicating it's the most popular color among buyers. Red accounts for a significant portion, reflecting a strong preference for this vibrant color. Pale White has a smaller share, showing moderate customer interest. This breakdown helps stakeholders make informed inventory and marketing decisions based on customer preferences.

6. What is the company-wise sales trend?

Chevrolet leads with a 7.30% YTD sales share and an average price of $26.0K. Ford follows at 6.85%, with a higher average price of $28.7K. Dodge and Oldsmobile offer a mix of affordability and premium appeal, with average prices of $26.4K and $31.6K, respectively. Other brands like Mercedes-Benz, Mitsubishi, and Toyota show steady sales, each catering to distinct customer segments.

7. What is the year-over-year (YOY) growth in average price?

The Year-Over-Year (YOY) growth in average price for the current year is -0.79%, as shown on your Power BI dashboard. This indicates that the Year-to-Date (YTD) average price of $28.0K is $0.22K (or $220) lower compared to the same period last year, where the average price was $28.22K. The negative growth signifies a slight decrease in the average selling price of cars from the previous year.

8. What is the YOY growth in car sales?

The YOY growth in car sales shows a comparison of total sales between the current and previous year. The regions with notable sales include Pasco, Janesville, Middletown, Aurora, Greenville, Scottsdale, and Austin. The red circles on the Power BI map visually represent the sales volume by dealer region. Specific values can be derived from the detailed report or chart.

9. What are the total car sales by dealer region?

The image shows dealer regions with sales activity in Pasco, Scottsdale, Aurora, Austin, Janesville, Middletown, and Greenville but lacks specific sales figures for each region.

10. What is the YTD weekly sales trend?

The YTD weekly sales trend shows a noticeable peak around **week 40**, with sales reaching approximately $14.9M. The trend also shows variability, indicating fluctuations between higher sales and dips. This line chart helps visualize weekly performance, identifying high-performing weeks and potential seasonal patterns in sales data..

11.Which dealer had the highest total sales for December 31, 2023?

On December 31, 2023, **Scrivener Performance Engineering** had the highest total sales, with a notable transaction of **$69.001K** for a **Lexus LS400**. This suggests that Scrivener Performance Engineering led in sales that day, driven by multiple high-value transactions across different models. This strong performance highlights their dominance in high-value vehicle sales.

12.What is the most sold car model and its total sales value?

The most sold car model can be identified by aggregating the sales data. Models like the Honda Accord, Saab (03-09-2020), and Dodge Ram Pickup appear frequently, suggesting they are top sellers. A detailed aggregation in Power BI would calculate their total sales value.

13.How many cars were sold in Pale White color on December 31, 2023?

To find how many cars were sold in **Pale White** color on December 31, 2023, aggregate the sales data by color in Power BI. This will give the precise count of cars sold in Pale White. A detailed filter can identify the exact number of sales for that color.

14.Which company generated the highest total sales for a single car sale?

Scrivener Performance Engineering generated the highest total sales for a single car sale on December 31, 2023, with a Lexus LS400 sold for $69.001K.

15.What is the combined total sales for vehicles sold by Suburban Ford?

To calculate the combined total sales for vehicles sold by **Suburban Ford**, sum all the sales values associated with Suburban Ford entries, such as $22.001K (Chevrolet Prizm) and $27.001K (Honda Odyssey). Using Power BI, these entries can be aggregated to provide the exact total sales figure for Suburban Ford.

CHAPTER 4

CONCLUSION AND FUTURE WORK

4.1 RECOMMENDATIONS

In order to enhance the car sales dashboard's usability and clarity, we recommend implementing several improvements. First, adding more robust filtering options would enable users to perform more specific analyses. For instance, allowing multi-dimensional filters (e.g., body style, dealer name, transmission, and engine) would make it easier for users to drill down into specific data segments. Additionally, introducing time-based filters, such as a date range slider or options for year-to-date (YTD) and month-to-date (MTD) views, would offer users flexibility to examine trends across various time periods. Enhancing the visualizations on the dashboard would also improve data interpretation. In the YTD Sales Weekly Trend graph, labeling the Y-axis with units (e.g., "$ Millions") would increase readability, while using trendlines or color variations could highlight significant peaks and drops, making patterns more noticeable. In the body style and color distribution charts, displaying percentage values directly within each chart segment would clarify the relative contributions of each category. Additionally, the map visualization of regional sales could benefit from zoom capabilities and hover-over details, enabling users to explore specific regions more closely, particularly in high-sales areas.

Overall, these enhancements would improve the dashboard's effectiveness by making data more accessible, detailed, and visually clear, thus supporting better decision-making for users.

4.2 CONCLUSION

The car sales dashboard effectively highlights key performance metrics, such as total sales, average price, and sales distribution by body style, color, region, and company, enabling users to track trends and identify top-performing regions and models. However, enhancing the dashboard with expanded filtering options, clearer visualizations, and more detailed regional data would improve its usability and support deeper analysis. These refinements would empower stakeholders to gain more precise insights, driving strategic decision-making and contributing to the company's competitive edge.

In conclusion, while the current dashboard is effective, these refinements would significantly enhance its usability, data accessibility, and overall impact.

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