PROJECT BACKGROUND

The project is centred around the critical analysis of a car dealership. The report evaluates the development and implementation of a Power BI Car Sales Dashboard for the same. The dashboard aims to optimize sales performance tracking and enable data-driven decision-making.

PROBLEM STATEMENT

- Lack of real-time insights into critical sales performance indicators (KPIs).
- Hinders informed decision-making, progress monitoring, and identification of growth opportunities.

PROJECT OBJECTIVE

The objective of this project is to design and develop a dynamic and interactive Car Sales Dashboard using Power BI that enables the efficient tracking and evaluation of sales data. By leveraging the power of data visualization, the dashboard empowers decision-makers to make informed choices with the help of some critical KPIs related to car sales, optimize inventory management, and ultimately drive business growth within the automotive industry.

DATA OVERVIEW

The data modelled in the project is of a 2 years span (i.e., 2020 and 2021). It consists of 23906 rows and 16 columns. There are various columns like Car Id, Date, Customer Name, Gender, Annual Income, Dealer Name, Company, Model, Engine, Transmission, Colour, Price, Dealer Number, Body Style, Phone and Dealer Region. Car ID column is a column with unique and non-null values.

NUMERICAL KEY PERFORMANCE INDICATORS (KPIS)

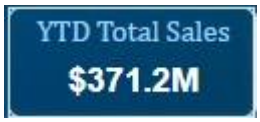
Sales Overview

1. **Year to Date (YTD) Total Sales-** YTD total sales gives insights into the current/latest year sales. In this case, the latest year is 2021, so the total sales for 2021 is $371.2M.

DAX Function:

```
YTD Total Sales = TOTALYTD(SUM(Sheet1[Price ($)]), 'Date Table'[Date])
```

Output:



2. **Year on Year (YOY) growth-** YOY growth percentage calculates the percentage comparing previous year sales and current year sales. Revenue increased by 23.59%.

DAX Function:

```
YoY Total Sales Growth = [Sales Difference]/[PYTD Total Sales]
```

```
Sales Difference = [YTD Total Sales]-[PYTD Total Sales]
```

```
PYTD Total Sales = CALCULATE(SUM(Sheet1[Price ($)]),SAMEPERIODLASTYEAR('Date Table'[Date]))
```

Output:

Average Price Analysis

1. **Year to Date (YTD) Average Price-** This KPI will give us the current year's average price which is calculated using the YTD Total Sales Amount and YTD Number of Car sales metrics.

DAX Function:

```
YTD Average Price = TOTALYTD((Sheet1[Average Price]), 'Date Table'[Date])
```

Output:

2. **Year on Year (YOY) Average price growth-** This identifies the variations between the last and current years' Average Prices in the form of percentage.

DAX Function:

```
YoY Growth in Average Price = [Average Price Difference]/[PYTD Average Price]
```

```
Average Price Difference = [YTD Average Price]- [PYTD Average Price]
```

```
PYTD Average Price = CALCULATE(Sheet1[Average Price],SAMEPERIODLASTYEAR('Date Table'[Date]))
```

Output:

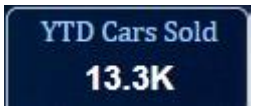
Cars Sold Metrics

1. **Year to Date (YTD) Cars Sold-** The number of cars sold in the latest year (2021).

DAX Function:

```
YTD Cars Sold = TOTALYTD((COUNT(Sheet1[Car_id])),'Date Table'[Date])
```

Output:



2. **Year on Year (YOY) Car sales Growth-** This gives the growth percentage of the cars sold between the previous and the latest year.

DAX Function:

```
YoY Growth in Car Sales = [Car Sales Difference]/[PYTD Cars Sold]
```

```
Car Sales Difference = [YTD Cars Sold]-[PYTD Cars Sold]
```

```
PYTD Cars Sold = CALCULATE((COUNT(Sheet1[Car_id])),SAMEPERIODLASTYEAR('Date Table'[Date]))
```

Output:

GRAPHICAL REPRESENTATIONS OF SOME OTHER KPIS

1. **Weekly Sales Trend:** The Line chart reveals weekly fluctuations and potential seasonality.

Inference: The highest sales is observed to be in the 50th week($28M). There is usually an upward trend of sales in all the weeks except Week 40th-41st. In the 40th week($13M), the sales almost dipped by half as of the previous week($26M) and that came even down in the 41st week($9M).

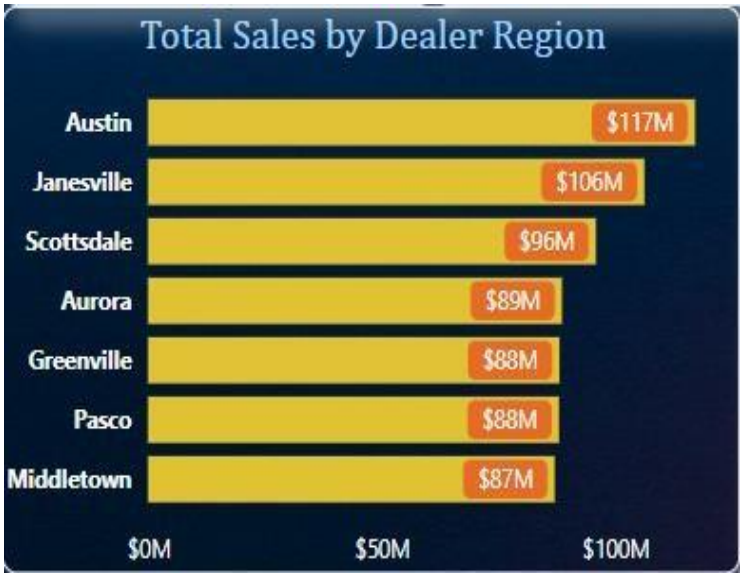
2. **Body Style Sales:** Pie chart shows which styles are driving the market.

Inference: SUVs and Hatchbacks led sales with 25.41% and 24.75% market share, respectively. There still seems to be a good potential to improvise our Passenger (17%) and Hardtop (12.9%) category.

3. Total Sales by Color: Analyzes popular car colors and identifies the customer buying trends.

Inference: 'Pale White' seems to be the most preferred choice of the customers (46%), that is **almost half the customers** are going for this color. The least preferred is 'Red color'

4. Geographical Sales Distribution: The bar chart visualizes sales distribution geographically.



Inference: Austin, Janesville, and Scottsdale topped sales at $117M, $106M, and $96M, respectively.

5. Annual Income by Geographical Distribution: The column chart visualizes Annual Income distribution of customers region-wise.

Inference: Austin remains the top contender income wise as well. Here it seems that the customer income has a strong correlation with buying behaviour.

6. Customer Demographics: The Clustered column chart shows the distribution of male and female customers buying Auto and Manual Transmission cars.

Inference: Male customers dominated the car buying trend and that too the Auto Transmission cars. In the Auto transmission cars, male and female customers both tend to buy more hatchbacks while in the Manual Transmissions cars, they prefer buying more SUVs.

7. Company Sales Comparison: Compare YoY Total Sales growth of different companies for partnerships or competitive insights.

Company	Total Sales	PYTD Total Sales	Total Cars Sold	PYTD Cars Sold	YoY Total Sales Growth
Jaguar	$4.52M	$2.02M	180	78	23.89%
Hyundai	$5.12M	$2.55M	264	130	0.53%
Infiniti	$5.72M	$1.99M	195	73	87.03%
Jeep	$7.64M	$3.48M	363	163	19.76%
Saab	$7.67M	$3.52M	210	99	18.09%
Porsche	$8.19M	$3.61M	361	158	27.03%
Audi	$10.69M	$4.93M	468	209	16.79%
Subaru	$11.31M	$4.93M	405	175	29.47%
Buick	$14.77M	$6.94M	439	196	12.62%
Lincoln	$15.45M	$6.82M	492	223	26.51%
Acura	$17.06M	$7.71M	689	313	21.17%
Plymouth	$18.14M	$8.79M	617	290	6.32%
Saturn	$18.22M	$8.31M	586	260	19.28%
BMW	$19.82M	$8.39M	790	345	36.15%
Honda	$19.88M	$9.08M	708	316	19.06%
Volvo	$21.93M	$9.14M	789	331	39.86%
Pontiac	$23.37M	$10.13M	796	348	30.60%
Nissan	$23.96M	$11.24M	886	413	13.28%
Mercury	$24.94M	$10.81M	874	387	30.80%
Cadillac	$26.71M	$11.38M	652	289	34.70%
Lexus	$27.29M	$12.14M	802	357	24.87%
Chrysler	$29.14M	$13.13M	1120	502	21.97%
Toyota	$32.76M	$15.26M	1110	517	14.72%
Mitsubishi	$34.06M	$15.34M	1277	572	22.06%
Volkswagen	$34.08M	$15.85M	1333	615	15.05%
Mercedes-B	$34.62M	$15.59M	1285	571	22.05%

Inference: Infiniti Automobiles seems to have the most favourable YoY sales growth trend while Hyundai showcases the unfavourable growth.

POWER BI DASHBOARD

The dashboard has a separate filter panel on the bases of 4 different categories. The client can easily drill down and refine the data for the desired results in order to get insights into the data.

SOME BUSINESS INSIGHTS DRAWN FROM THE DATA

- The car dealership is experiencing strong sales growth, led by SUV and hatchback models.
- Regional performance varies, and customer demographics highlight a predominantly male clientele with income influencing buying behaviour.
- In Auto Transmission cars, most sales are for Hatchback cars.
- The top three companies w.r.t. **sales** are: **Chevrolet > Ford > Dodge**. The top three companies w.r.t **cars sold** are: **Chevrolet > Dodge > Ford**. Dodge is selling a greater number of cars compared to Ford but the sales of Dodge is lagging behind Ford. The reason for the same can be, the pricing of most sold Ford cars is a little higher than the Dodge cars.
- There is a huge slump noticed in the total sales in 41st week.