Car store analysis

Prepared by

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- Mohamed Ayman Abdelhakam [EDA python]
- Safaa Elsayed Dawood[Data visualization]
- Aya Mahmoud Fouad [Tableau Dashboard & data visualization]

About the project

- This is the Car sales data set which include information about different cars . This data set is being taken from the Analytixlabs for the purpose of prediction
  In this we have to see two things
  First, we have seen which feature has more impact on car sales and carry out result of this
  Secondly, we have to train the classifier and to predict car sales and check the accuracy of the prediction.

When analyzing data for the car business, key insights often revolve around understanding customer preferences, market trends, operational efficiency, and profitability. Here are some of the most valuable insights you can derive from automotive data:

1. *CUSTOMER PREFERENCES & BUYING BEHAVIOR*

- *VEHICLE TYPE PREFERENCE*: ANALYZE TRENDS IN PREFERENCES FOR SUVS, SEDANS, TRUCKS, ELECTRIC VEHICLES (EVS), AND HYBRIDS. UNDERSTANDING WHICH MODELS OR SEGMENTS ARE GAINING POPULARITY CAN GUIDE INVENTORY AND MARKETING STRATEGIES.

- *PRICE SENSITIVITY*: IDENTIFY HOW PRICE CHANGES IMPACT DEMAND. SEGMENT CUSTOMERS BY BUDGET TO TARGET PRICING STRATEGIES MORE EFFECTIVELY.

2. *MARKET TRENDS*

- BRAND LOYALTY & SWITCHING*: INVESTIGATING CUSTOMER RETENTION RATES, BRAND LOYALTY, AND REASONS FOR SWITCHING BRANDS (E.G., RELIABILITY, COST OF OWNERSHIP, TECHNOLOGY) CAN HELP IMPROVE LONG-TERM CUSTOMER ENGAGEMENT.

3. *Technological Advancements*
   - *Connected Car Features*: The rise of in-car technology (e.g., infotainment systems, autonomous driving, connected car services) is shaping customer preferences. Tracking which features are most desired helps refine product offerings and marketing strategies.
   - *Autonomous & Semi-Autonomous Driving*: Analyzing the readiness of the market for autonomous features, consumer trust in these technologies, and regulatory developments is crucial for future planning.

4. *Competitive Benchmarking*
   - *Competitor Analysis*: Compare performance with competitors in terms of sales, customer satisfaction, and market share. Understanding competitor pricing, product offerings, and marketing strategies helps identify opportunities and threats.
   - *New Entrants (EV-focused companies) *: Companies like Tesla have disrupted the market. Keeping track of new entrants, especially in the EV sector, and how they are shaping customer preferences is key to staying competitive.

Cleaning data in SQL

SQLQuery3.sql - D...2N45QRK\fagr (55))

```sql
--select all data
select *
from dbo.car_prices
--delete the name of the day from the saledate column
UPDATE dbo.car_prices
SET saledate = SUBSTRING(saledate, 4, LEN(saledate))
FROM dbo.car_prices;

--review all data
select *
from dbo.car_prices

--replace column name
EXEC sp_rename 'dbo.car_prices.vin', 'Vehicle Identification Number', 'COLUMN';
EXEC sp_rename 'dbo.car_prices.Vehicle Identification Number', 'Vehicle_Id_NO', 'COLUMN';
EXEC sp_rename 'dbo.car_prices.trim', 'Car trim level', 'COLUMN';

--1* check the data type
--select the needed date only
SELECT LEFT(saledate, 12) AS ModifiedCode
from dbo.car_prices
```

SQLQuery3.sql - D...2N45QRK\fagr (55))

```sql
--update the datset with the needed date only
UPDATE dbo.car_prices
SET saledate = LEFT(saledate, 12)
from dbo.car_prices

--review all data
select *
from dbo.car_prices

--convert the salesdate from varchar into datetime
UPDATE dbo.car_prices
SET saledate = TRY_PARSE(saledate AS DATETIME USING 'en-US')
from dbo.car_prices

UPDATE dbo.car_prices
SET saledate = TRY_PARSE(saledate AS DATE USING 'en-US')
from dbo.car_prices
```

SQLQuery3.sql - D...2N45QRK\fagr (55))

```sql
--2* check null values and remove the Ineffective one
select *
from dbo.car_prices
where sellingprice is null

DELETE FROM dbo.car_prices
WHERE sellingprice IS NULL;

select *
from dbo.car_prices
where saledate is null

DELETE FROM dbo.car_prices
WHERE saledate IS NULL;

select *
from dbo.car_prices
WHERE interior IS NULL;

DELETE FROM dbo.car_prices
WHERE interior IS NULL;

select *
from dbo.car_prices
WHERE odometer IS NULL;

DELETE FROM dbo.car_prices
WHERE odometer IS NULL;
```

SQLQuery3.sql - D...2N45QRK\fagr (55))

```sql
DELETE FROM dbo.car_prices
WHERE odometer IS NULL;

select *
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WHERE condition IS NULL;

DELETE FROM dbo.car_prices
WHERE condition IS NULL;

select *
from dbo.car_prices
WHERE model IS NULL and make is null and body is null

DELETE FROM dbo.car_prices
WHERE model IS NULL and make is null and body is null;

select *
from dbo.car_prices
WHERE body IS null

DELETE FROM dbo.car_prices
WHERE body IS NULL;

SELECT DISTINCT Vehicle_Id_NO
FROM dbo.car_prices;

select *
from dbo.car_prices
WHERE transmission IS null
```
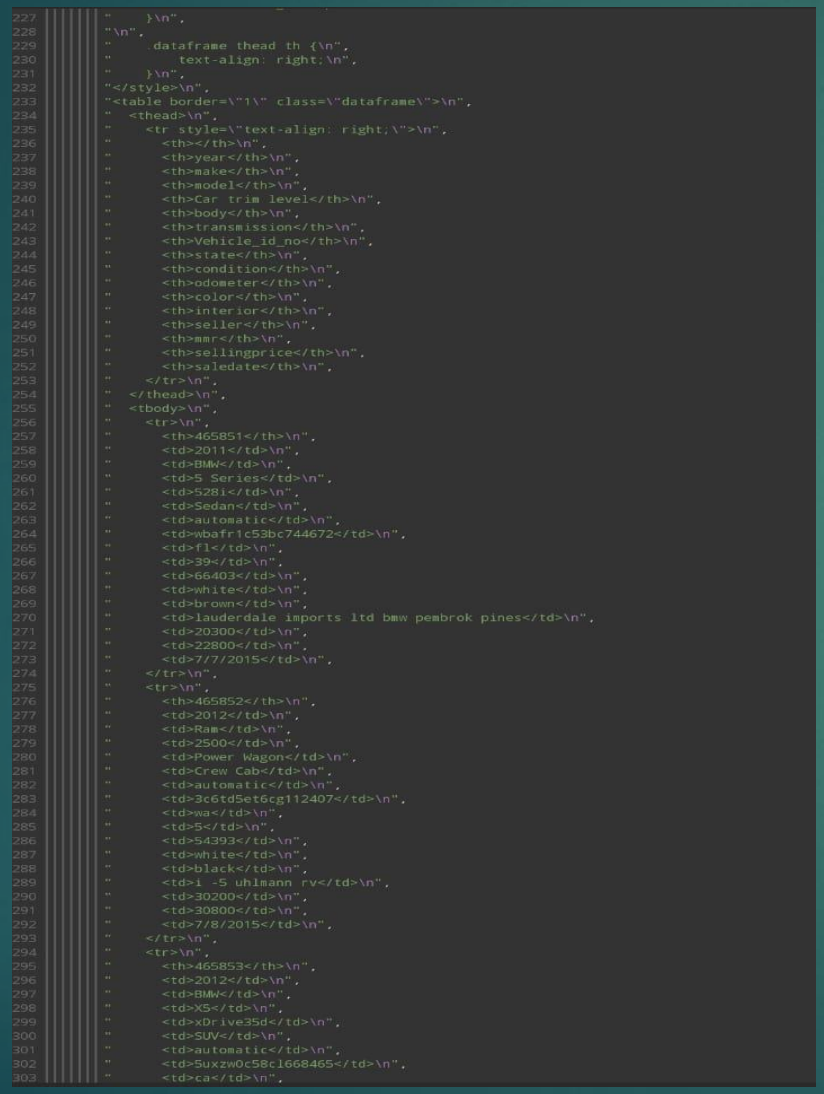

SQLQuery3.sql - D...2N45QRK\fagr (55))

```sql
SELECT DISTINCT Vehicle_Id_NO
FROM dbo.car_prices;

select *
from dbo.car_prices
WHERE transmission IS null

DELETE FROM dbo.car_prices
WHERE transmission IS NULL;

select *
from dbo.car_prices

--3* check Duplicates values and remove the Ineffective one

SELECT Vehicle_Id_NO, COUNT(*) as duplicate
FROM dbo.car_prices
GROUP BY Vehicle_Id_NO
HAVING COUNT(*) > 1;
```

EDA Analysis with python



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Dashboard

Cars Stores Sales Dashboard

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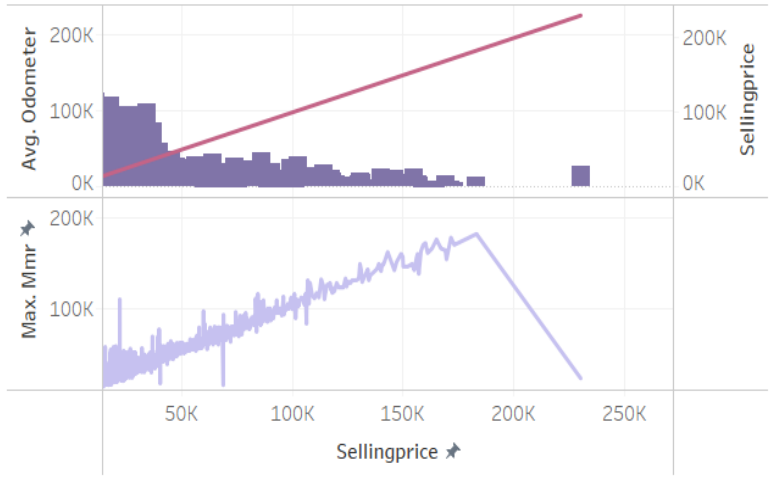
465.86K

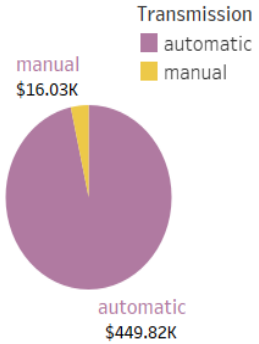
Condition
465.86K

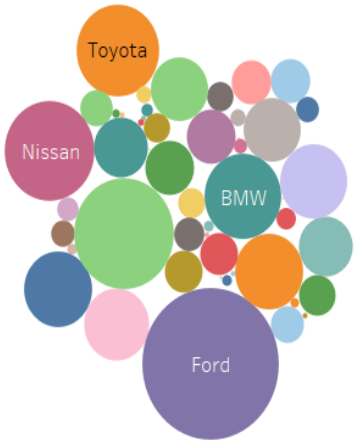
Sum of Sellingprice
$6,379.87M

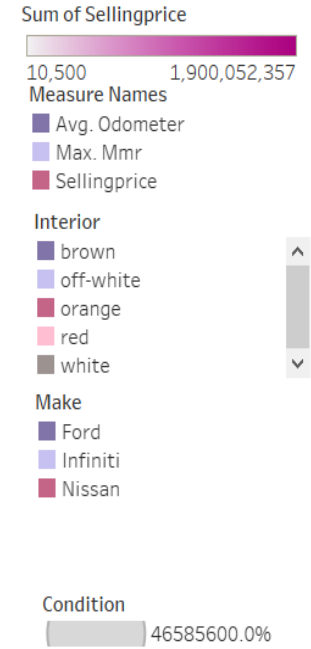
Count of Odometer
466K



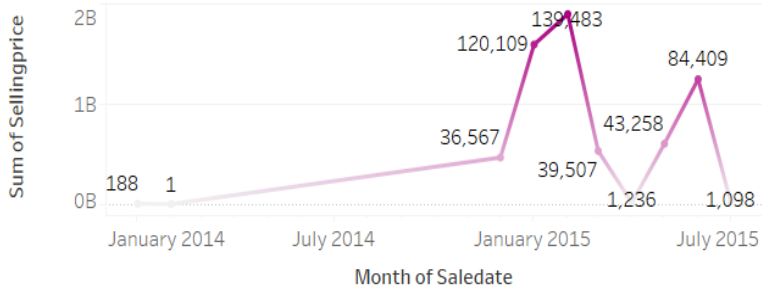
cnt of sellingprice by transmisstion



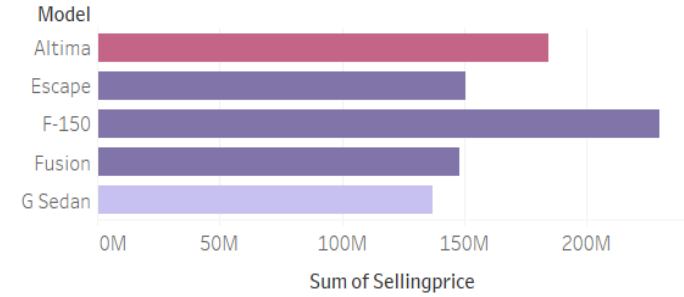




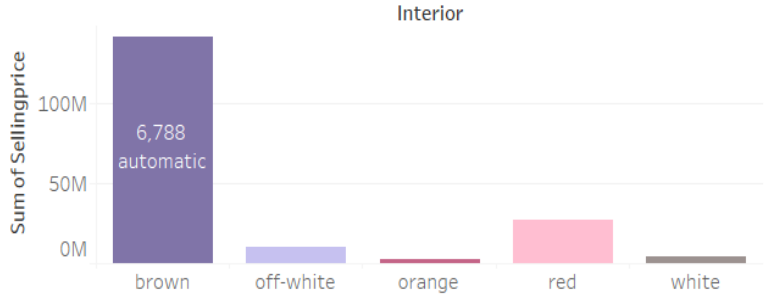
Timeline



Top 5 model/make sales

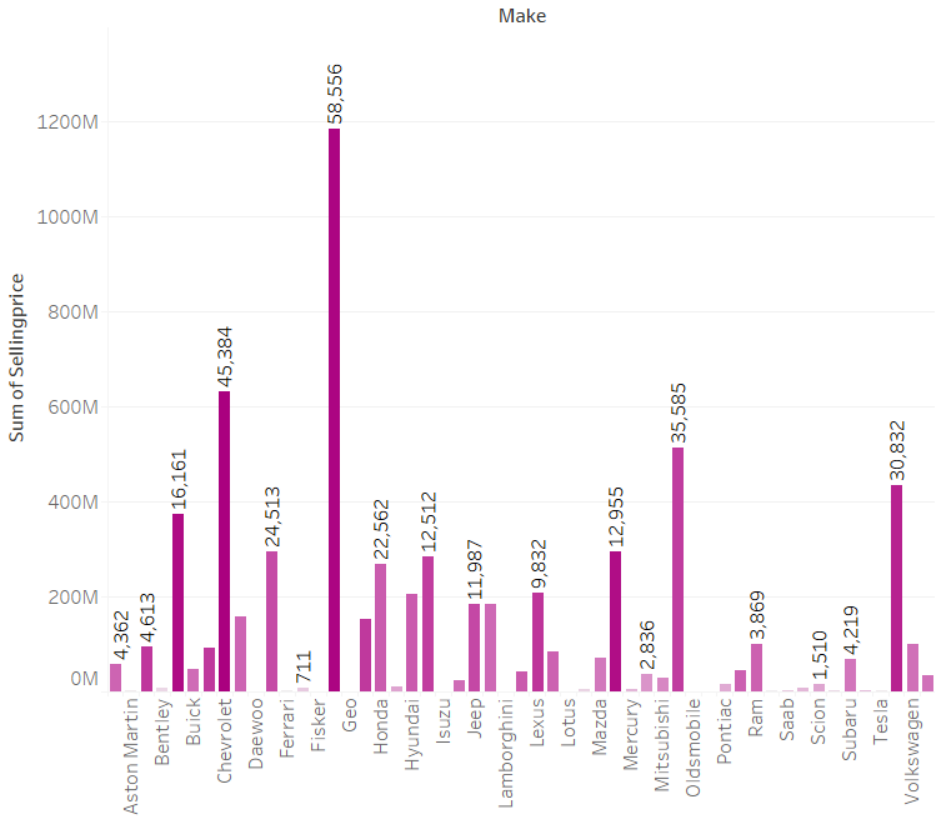


Top 5 interior color sales

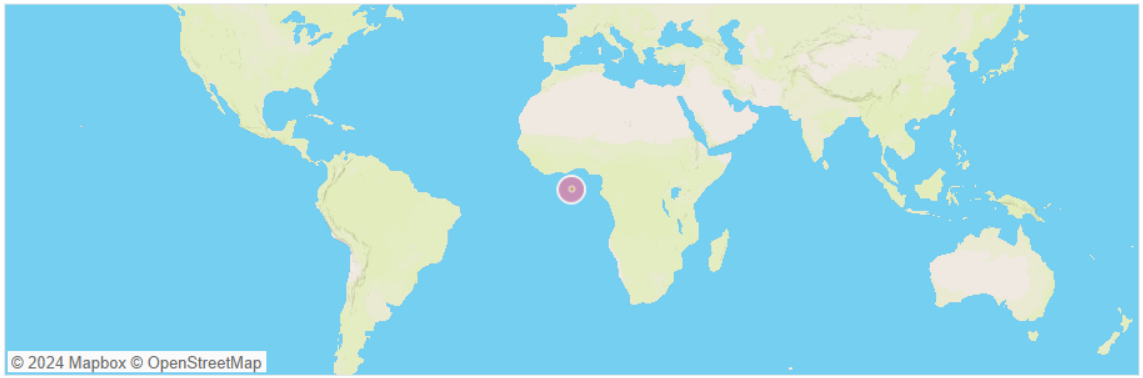


Cars Stores Sales Dashboard

Sheet 7



by state



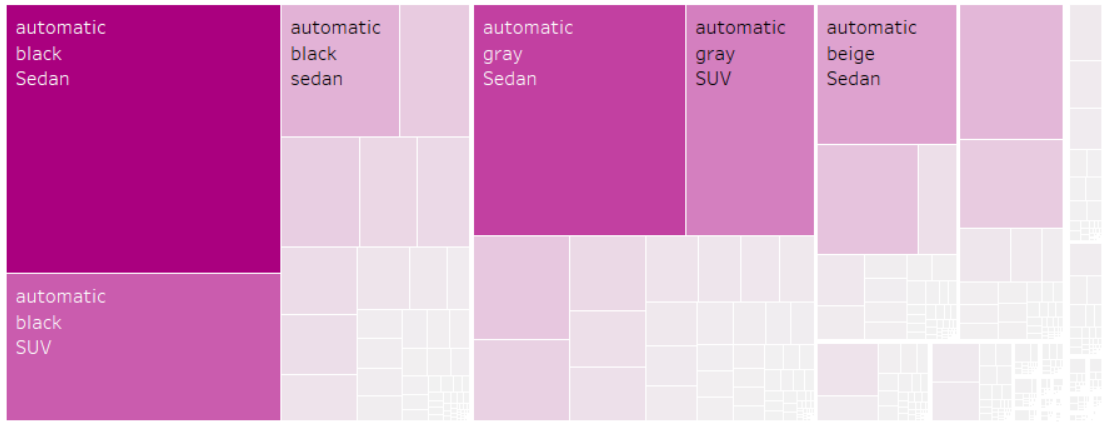
Sellingprice
6,480 17,234

Condition
21
20,000
40,000
60,000
74,378

Distinct count of Sell..
1 933

Count of Book1.csv
1 75,696

Sheet 4




Thank
you