رواد مصر الرقمية

وزارة الاتصالات
وتكنولوجيا المعلومات

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Cars Market Analysis

In Egypt

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DATA ANALYSIS TRACK - DEPI

1. BUSINESS UNDERSTANDING

BEFORE WE BEGIN...

OBJECTIVES

- Identifying factors that affect the demand for used cars.
- Analyzing pricing trends for different car makes, models, and years.
- Impact of used car prices on the overall automotive industry and economy

TARGET AUDIENCE

- Car dealerships and resellers.
- Buyers looking for used cars.
- Financial institutions offering auto loans.
- Insurance companies evaluating used car values

2. GENERATING QUESTIONS

6 MAIN QUESTIONS TO ANSWER

1. Price Analysis

- What factors affect the price?
- How is the price range varying over different locations.

2. Car Kilometers

- How does no. of kilometers changes over brands.
- What is the avg kilometers for each city.

3. Brands and models

- The most popular brands for cities.
- The price range for each brand

4. Car Body Type

- The most preferred color for each body type.
- Avg price for each type.

5. Transmission & Fuel Type

- How transmission type affect price.
- How common are fuel type for each car model

6. Engine Size

- How does engine size vary over car types?
- What is the avg engine size for each manufacture year

3. GATHERING & UNDERSTANDING DATA

The used dataset is a combination of 2 datasets, one is scraped from hatla2ee website, and the other is uploaded on Kaggle website.

Brand	Model	Body	Color	Year
BMW	X6 M	SUV	White	2024
BMW	520	Sedan	Black	2023
Chery	Tiggo 3	hatchback	Brown	2023
Chevrolet	N300	Sedan	Black	2023
Chevrolet	Optra	Sedan	Dark blue	2023
Hyundai	Accent RB	Sedan	Silver	2024
Hyundai	Elantra HD	Sedan	Dark grey	2023
Hyundai	Tucson	SUV	Green	2023
Hyundai	IX 35	Hatchback	Petroleum	2023
Kia	Xceed	SUV	Gray	2024
Kia	Sportage	SUV	Black	2024
Kia	Cerato	Sedan	Black	2023
Mercedes	A200	hatchback	Black	2023

Fuel	Kilometers	Engine CC	Trasmission	Price	location
gas	300,000	1600	Automatic	1,600,000 ج.م.	Port Said
gas	25,000	1000	Manual	35,000 ج.م.	El Haram
gas	64,000	1000	Manual	42,000 ج.م.	6th of October
Benzine	80,000	1400	Manual	80,500 ج.م.	Qalyubia
gas	80,000	1600	Manual	110,000 ج.م.	Madinaty
Benzine	120,000	1324	manual	40,000 ج.م.	Cairo
Benzine	135,000	1000	manual	17,500 ج.م.	Helwan
Benzine	135,000	1600	manual	18,000 ج.م.	Cairo

UNDERSTANDING DATA COLUMNS

Column	Description	Column	Description
1. Brand	Car Brand (Hyundai, Kia,…)	**7. Kilometer**	The Distance traveled
2. Model	Car model (Verna, Cerato,…)	**8. Engine CC**	Engine Capacity (in CC)
3. Body Type	Type of body (Sedan, SUV,…)	**9. Transmission**	Gear type (Manual or Automatic)
4. Color	Color of the car	**10. Price**	The price of the vehicle in EGP
5. Year	Manufacturing year	**11. Location**	The location of the vehicle
6. Fuel	Fuel Type (Gasoline, diesel,…)		

4. CLEANING DATA

HANDLING NULLS

- Type, fuel and engine size missing cols.
- After handling Null Values, the remaining rows is 62.7K

=TEXTJOIN(" ";TRUE;D2;E2)

D	E	F
Brand	model	car name
Hyundai	Accent RB	Hyundai Accent RB
Hyundai	Verna	Hyundai Verna
Daihatsu	Charade	Daihatsu Charade

car name	Body
Hyundai Accent RB	Sedan
Hyundai Verna	Sedan
Daihatsu Charade	Sedan
Suzuki Celerio	hatchback
Suzuki Swift	Sedan
Renault Megane	Sedan

=VLOOKUP(C13701;car_body;2)

C	D
Chevrolet Lanos	Sedan
Hyundai Verna	Sedan
Chevrolet Lanos	Sedan
Chevrolet Lanos	Sedan

FEATURE ENGINEERING

- Creating an “Age” column derived from manufacture year.
- Creating an “Governorate” column derived from car location.
- Creating an “Price range” column derived from car price.

NORMALIZING DATA

- Normalizing data values like price to egp and so on...

5. ANALYZING DATA

DATA OVERVIEW

62,739

- No. of listed cars

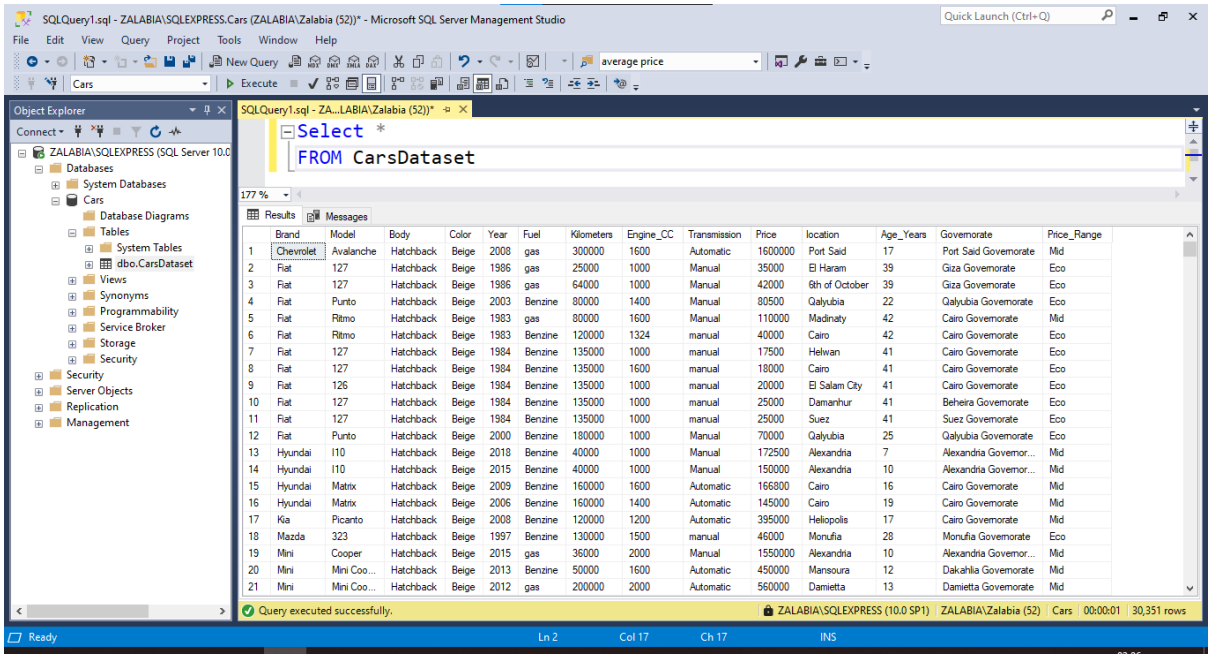
2011

- Average manificture year

626,699 EGP

- Average price

UPLOADING TO SSMS



APPLYING SQL QUERIES

```sql
-- 1. What is the average price and total count of cars for each brand?
SELECT Brand,
    AVG(Price) AS Average_Price,
    COUNT(*) AS Total_Count
FROM CarsDataset
GROUP BY Brand
ORDER BY Average_Price DESC;
```

	Brand	Average_Price	Total_Count
1	Lexus	7416666	3
2	Porsche	5622142	14
3	Maserati	3820000	2
4	Cadillac	3766666	3
5	Land Rover	3560900	50
6	Mercedes	3332470	1289
7	Bentley	3275000	2
8	Tesla	2703333	9
9	Infiniti	2553125	8
10	Zeekr	2500000	1
11	Cupra	2487000	5

```sql
-- 2. How is the price distributed (Avg, Max, Min) across each Governorate?
SELECT Governorate,
    AVG(Price) AS Average_Price,
    MAX(Price) AS Max_Price,
    MIN(Price) AS Min_Price
FROM CarsDataset
GROUP BY Governorate
ORDER BY Average_Price DESC;
```

	Governorate	Average_Price	Max_Price	Min_Price
1	Giza Governorate	983121	12600000	10000
2	Cairo Governorate	884567	16250000	10000
3	Beheira Governorate	693017	2670000	25000
4	Port Said Governorate	557178	4000000	22000
5	Qalyubia Governorate	504138	8350000	13000
6	Gharbia Governorate	492177	4850000	13000
7	Kafr el-Sheikh Governorate	476667	3900000	16000
8	Alexandria Governorate	476144	8500000	11000
9	Red Sea Governorate	456829	2500000	25000
10	Damietta Governorate	453907	3250000	15000
11	Dakahlia Governorate	443829	4300000	15000

```sql
-- 3. What are the top 5 most common and popular car models in the market?
SELECT TOP 5 Model,
    COUNT(*) AS Model_Count
FROM CarsDataset
GROUP BY Model
ORDER BY Model_Count DESC;
```

	Model	Model_Count
1	Optra	1506
2	Corolla	1328
3	Sunny	1301
4	Verna	1161
5	Lanos	1061

```sql
-- 4. What is the ranking of Body Types based on their average price?
SELECT Body,
    AVG(Price) AS Avg_Price
FROM CarsDataset
GROUP BY Body
ORDER BY AVG(Price) DESC
```

	Body	Avg_Price
1	Coupe	2299534
2	convertable	1816086
3	SUV	1803234
4	Sedan	521930
5	Hatchback	489508
6	Van	466553
7	Pickup	434414

```sql
-- 5. What is the average number of kilometers driven for each brand?
SELECT Brand,
    AVG(Kilometers) AS Avg_Kilometers
FROM CarsDataset
GROUP BY Brand
ORDER BY Avg_Kilometers DESC;
```

	Brand	Avg_Kilometers
1	Lotus	300000
2	Senova	283333
3	Hafei	265000
4	Smart	199333
5	Sokon	193000
6	Perodua	192000
7	Skoda	191184
8	Brilliance	183905
9	Hummer	180000
10	Hawtai	180000
11	Great Wall	179117

```sql
-- 6. What is the percentage of each transmission type within each car brand?
SELECT Brand,
    Transmission,
    COUNT(*) AS Count
FROM CarsDataset
GROUP BY Brand, Transmission
ORDER BY Brand;
```

	Brand	Transmission	Count
1	Alfa Romeo	manual	5
2	Alfa Romeo	Automatic	1
3	Audi	Manual	19
4	Audi	Automatic	93
5	Baic	Automatic	10
6	Bentley	Automatic	2
7	Bestune	Automatic	4
8	Bestune	Manual	1
9	BMW	Manual	150
10	BMW	Automatic	912
11	Baic	Manual	1

```sql
-- 7. number of car's model for each goverorate
select Governorate, Model,count(*) as 'No. of cars'
from CarsDataset
Group by Governorate, Model
order by 'No. of cars' desc;
```

	Governorate	Model	No. of cars
1	Cairo Governorate	Corolla	681
2	Cairo Governorate	Sunny	665
3	Cairo Governorate	Optra	396
4	Cairo Governorate	Verna	385
5	Cairo Governorate	Sportage	359
6	Alexandria Governorate	Corolla	324
7	Cairo Governorate	I10	322
8	Qalyubia Governorate	Optra	321
9	Cairo Governorate	X1	310
10	Cairo Governorate	Elantra	304
11	Cairo Governorate	Grandeur	298

```sql
-- 8. What is the average price for each price range?
select Price_Range, AVG(Price) as AVG_Price
from CarsDataset
group by Price_Range
```

	Price_Range	AVG_Price
1	Mid	540835
2	Eco	58144
3	Expensive	3256055

```sql
-- 9. How is the Transmission Distributed over price ranges
select Price_Range, Transmission, COUNT(Price_Range) as 'No. of Cars'
from CarsDataset
group by Transmission, Price_Range
order by Price_Range, 'No. of Cars' desc
```

Price_Range	Transmission	No. of Cars
Eco	Manual	2873
Eco	Automatic	120
Expensive	Automatic	2597
Expensive	Manual	117
Mid	Automatic	16554
Mid	Manual	8087
Mid	CVT	3

Query executed successfully.

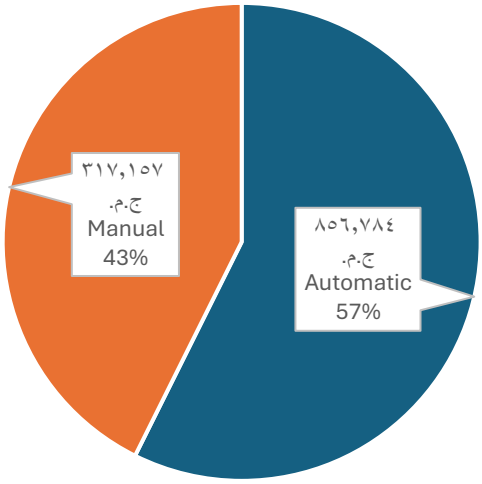
```sql
-- 10. How does the average Engine CC change over the years?
SELECT Year,
    AVG(Engine_CC) AS Avg_Engine_CC
FROM CarsDataset
GROUP BY Year
ORDER BY Year DESC;
```

Year	Avg_Engine_CC
2024	2038
2023	1891
2022	1683
2021	1591
2020	1653
2019	1597
2018	1724
2017	1574
2016	1669
2015	1542

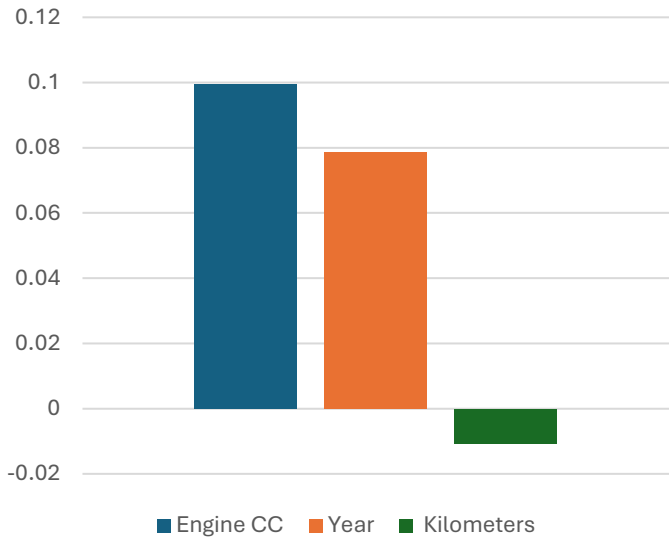
Query executed successfully.

FACTORS AFFECTING THE PRICE

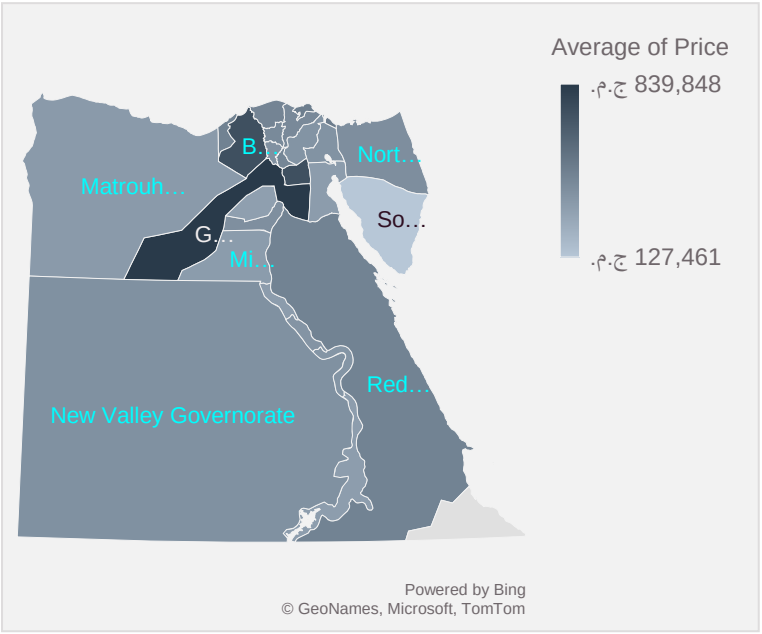
AVG price by car transmission



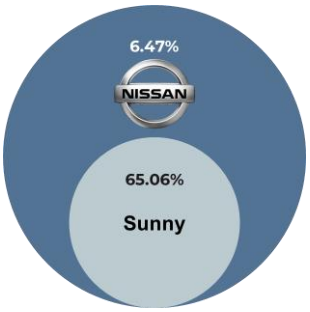
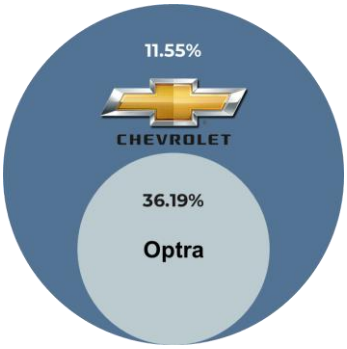
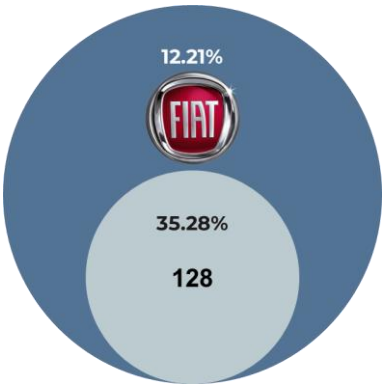
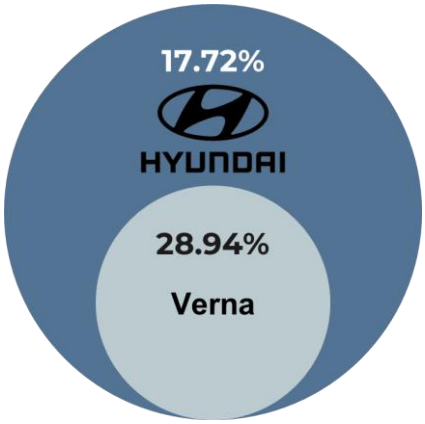
Other factors affect the price



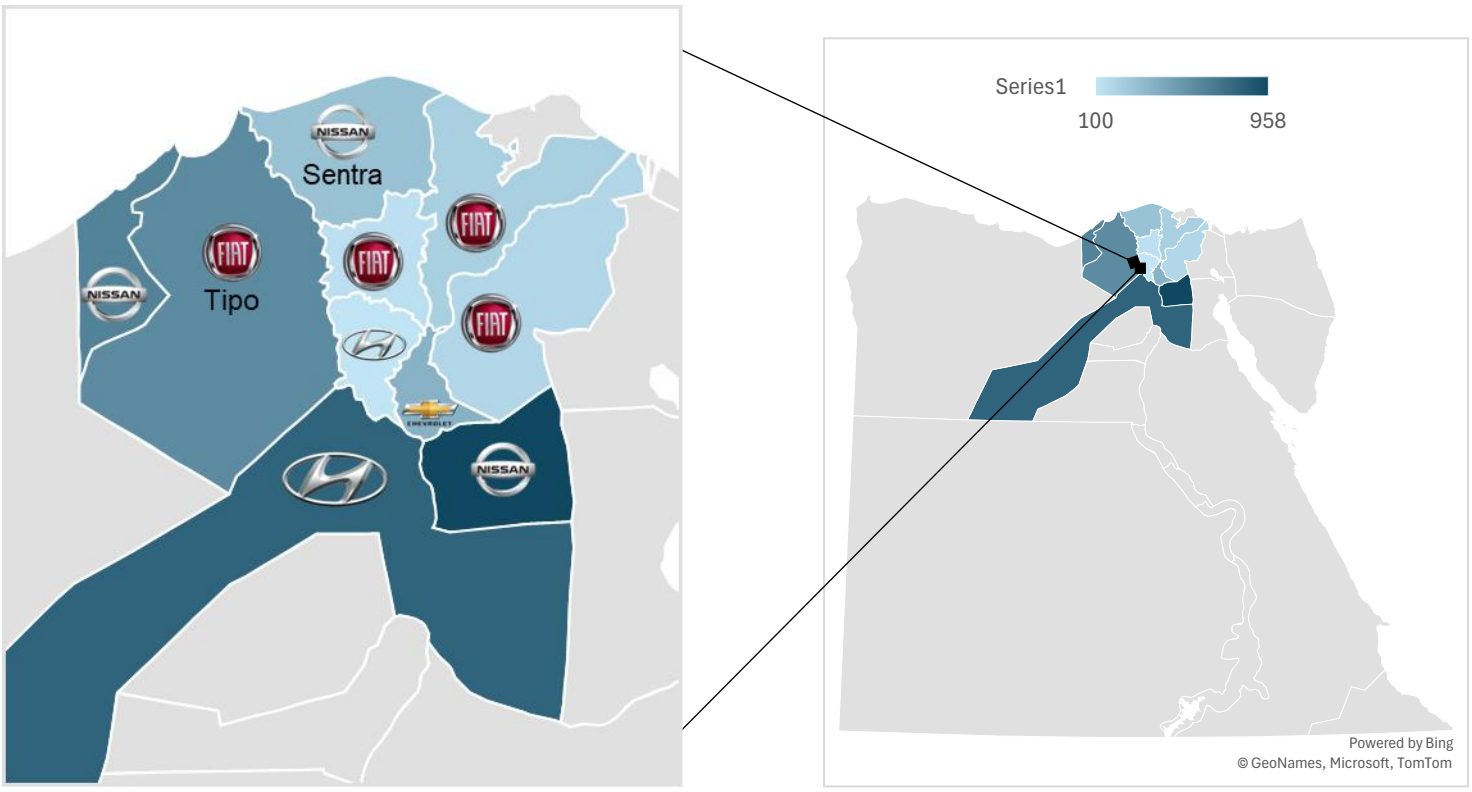
Price change over governorates



MOST COMMON BRANDS IN THE MARKET

Popularity	Car	Average Price/ Average Year
		544,260 EGP 2015
		296,148 EGP 2015
		23,725 EGP 1985
		209,743 EGP 2013

MOST COMMON CAR FOR GOVERNORATES



MARKET SHARE BY CLASS

Medium class

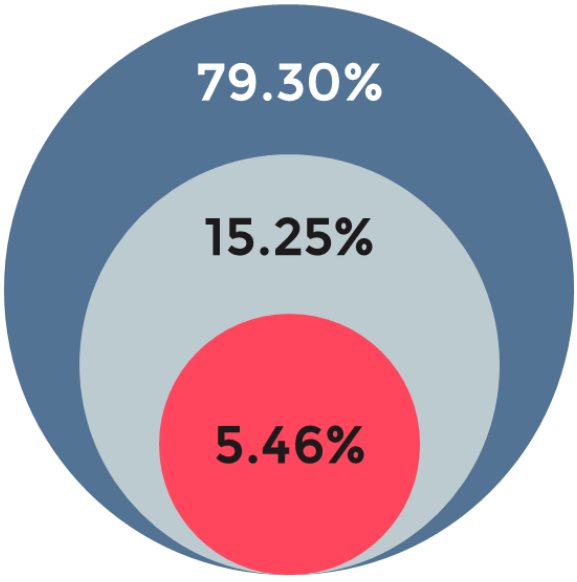
- The medium class started from **1M** EGP to **2M** EGP.
- The most common car brand in this class is **Hyundai** with **18.6%**

Economic class

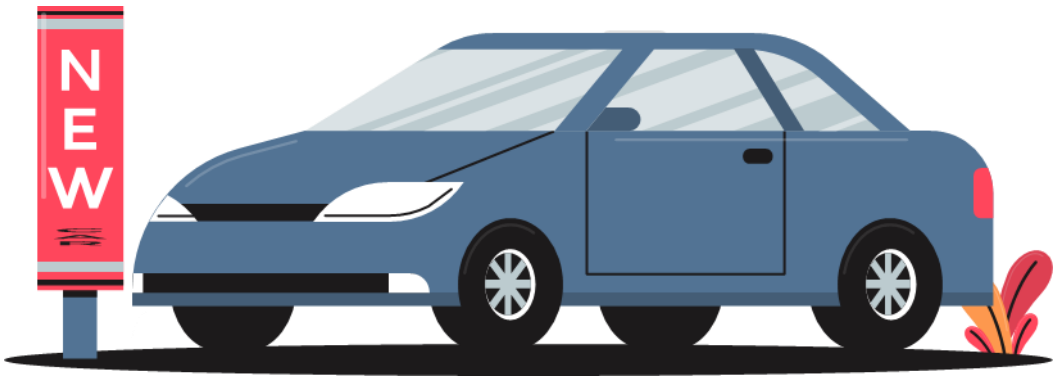
- The economic class is under **1M** EGP.
- The most common car brand in this class is **Fiat** with **58.19%**

High class

- The high class is above **2M** EGP.
- The most common car brand in this class is **Mercedes** with **26.15%**



6. CONCLUSION



Car Price

For minimum car prices we suggest to buy from **South Sania** or **Faiyum** with low **engine capacity** and appropriate **manufacture year**.

Transmission

Automatic Transmission cause more in price by about **50%**
However, it's more common in the market than manual with **57%**

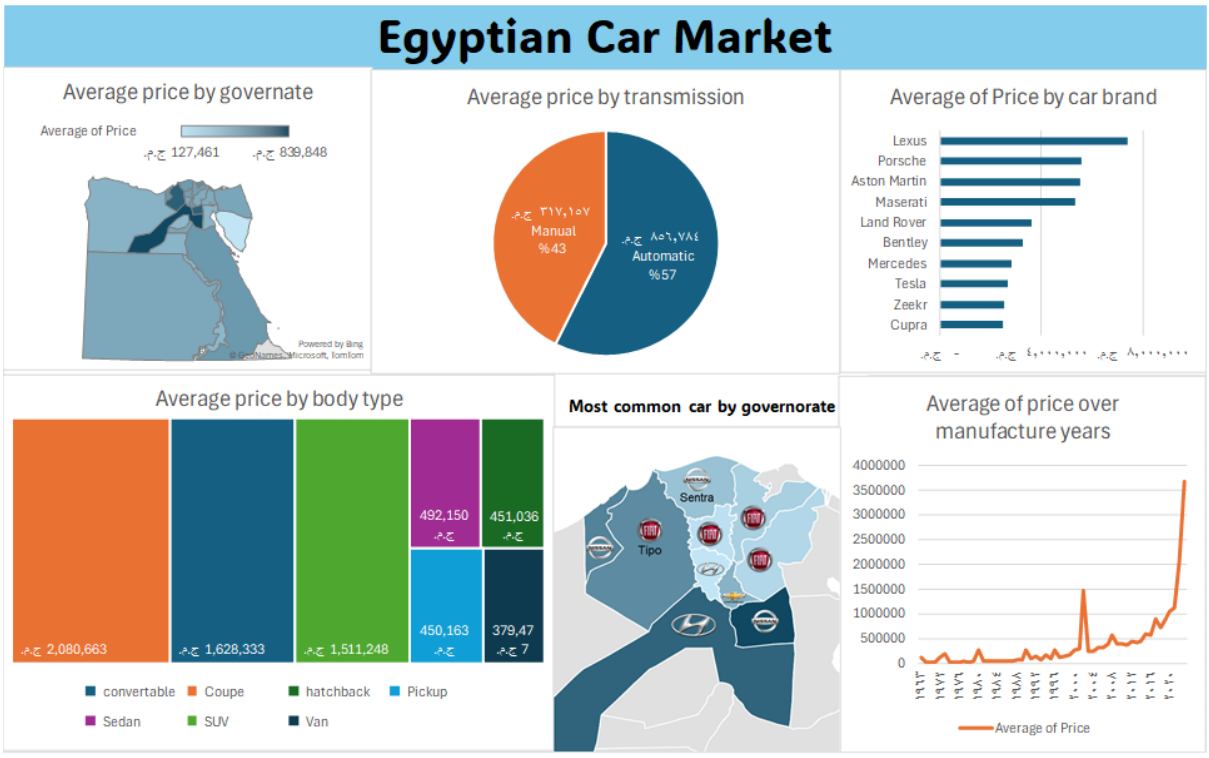
Car brand

Hyundai Verna is the most Dependability car in the Medium class and in Egypt.
However, **Fiat** is the most common brand in the economic class,
And **Mercedes** is the most common in high class

Car color

The Expensive cars tend to be Gray colored.

7. DASBOARD



Thank You!

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