

CAR SHOWROOM

Inventory Management Analysis

Using excel+SQL+Powerbi

Business Problem

WHAT PROBLEM ARE WE SOLVING?

- Overstock & stock-out both hurt profitability
- Management needs visibility on inventory risk
- No clear view of:
 - Which brands/models need action
 - Where stock is blocked



01

Excel Data Uploading

- 1 Imported the CSV dataset using Power Query.
- 2 Conducted data cleaning and preparation:
 - Checked for extra spaces in text fields.
 - Standardized data types.
 - Added derived columns using conditional logic.
 - Corrected column headers and removed unnecessary fields.
- 3 Saved the cleaned dataset as a CSV file for further analysis.

Excel work

	A ^B C engine_type	A ^B C transmission	1.2 price	I ² 3 stock_qty	A ^B C status	A ^B C 123 stock_level
1	Petrol	Automatic	80338.15	6	Available	In Stock
2	Electric	Manual	26437.73	16	Available	In Stock
3	Electric	Automatic	50158.13	20	Available	In Stock
4	Hybrid	Automatic	33026.14	3	Available	Low in stock
5	Hybrid	Manual	79672.9	9	Reserved	In Stock
6	Diesel	Automatic	94225.03	17	Sold	In Stock
7	Petrol	Manual	21344.38	7	Reserved	In Stock
8	Hybrid	Manual	48813.94	14	Reserved	In Stock
9	Electric	Manual	34430.1	14	Sold	In Stock
10	Hybrid	Manual	42136.55	0	Sold	Out of Stock
11	Electric	Automatic	17337.05	3	Available	Low in stock
12	Electric	Manual	78178.58	13	Reserved	In Stock
13	Diesel	Manual	92616.24	2	Sold	Low in stock
14	Hybrid	Automatic	97512.33	18	Reserved	In Stock
15	Diesel	Manual	89267.74	17	Reserved	In Stock
16	Petrol	Manual	36006.2	10	Reserved	In Stock
17	Petrol	Automatic	30585.94	2	Reserved	Low in stock
18	Petrol	Manual	71104.74	15	Reserved	In Stock
19	Diesel	Manual	24426.04	2	Sold	Low in stock
20	Electric	Manual	68270.75	2	Sold	Low in stock
21	Diesel	Automatic	60882.36	19	Available	In Stock
22	Diesel	Automatic	40366.14	18	Sold	In Stock
23	Diesel	Automatic	51077.41	20	Reserved	In Stock
24	Petrol	Manual	33546.72	8	Sold	In Stock

Power Query Editor

A	B	C	D	E	F	G	H	I	J	K	
1	car_id	brand	model	year	color	engine_type	transmission	price	stock_qty	status	stock_level
2	C0001	Toyota	Camry	2023	Red	Petrol	Automatic	80338.15	6	Available	In Stock
3	C0002	Tesla	Model 3	2019	Red	Electric	Manual	26437.73	16	Available	In Stock
4	C0003	Nissan	Qashqai	2018	Blue	Electric	Automatic	50158.13	20	Available	In Stock
5	C0004	Hyundai	Sonata	2025	Red	Hybrid	Automatic	33026.14	3	Available	Low in stock
6	C0005	Toyota	RAV4	2016	White	Hybrid	Manual	79672.9	9	Reserved	In Stock
7	C0006	Hyundai	Elantra	2019	White	Diesel	Automatic	94225.03	17	Sold	In Stock
8	C0007	Mercedes	C-Class	2020	Gray	Petrol	Manual	21344.38	7	Reserved	In Stock
9	C0008	Tesla	Model 3	2021	Gray	Hybrid	Manual	48813.94	14	Reserved	In Stock
10	C0009	BMW	3 Series	2017	Blue	Electric	Manual	34430.1	14	Sold	In Stock
11	C0010	Tesla	Model S	2015	Red	Hybrid	Manual	42136.55	0	Sold	Out of Stock
12	C0011	Tesla	Model 3	2017	Silver	Electric	Automatic	17337.05	3	Available	Low in stock
13	C0012	Tesla	Model S	2016	Gray	Electric	Manual	78178.58	13	Reserved	In Stock
14	C0013	Hyundai	Sonata	2018	Blue	Diesel	Manual	92616.24	2	Sold	Low in stock

Output

Excel window



Query Settings

PROPERTIES

Name

Cars

All Properties

APPLIED STEPS

Source



Promoted Headers



Trimmed Text

Trimmed Text1

Changed Type

Extracted Year

Changed Type1

Renamed Columns



Added Custom

Removed Columns

Added Custom1

Removed Columns1

Changed Type2

Renamed Columns1

Added Conditional Column



Task done

On power Query

02 SQL Solutions

- 1 Performed data quality checks to identify null or inconsistent values.
- 2 Derived key business insights such as total stock availability and sold inventory and applied CTEs, CASE statements, and logical operators to implement business logic.
- 3 Created SQL views for reusable, structured outputs that were later consumed in Power BI dashboards for easy stakeholder analysis.

SQL Work

```
4     SUM(CASE WHEN price IS NULL THEN 1 ELSE 0 END) AS price_nulls,  
5     SUM(CASE WHEN stock_qty IS NULL THEN 1 ELSE 0 END) AS stock_nulls  
6   FROM cars_inventory;
```

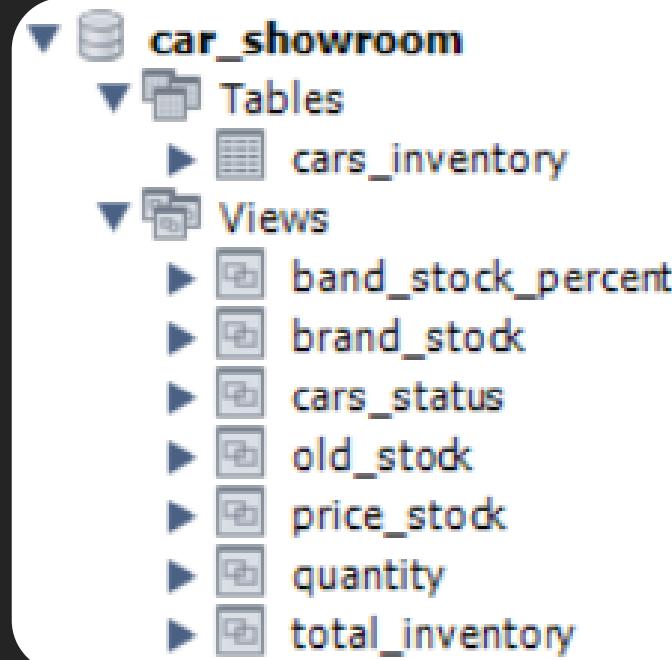
Result Grid		
	price_nulls	stock_nulls
▶	0	0

Know About Dataset

```
8 •  SELECT  
9   CASE  
10    WHEN price < 30000 THEN 'Budget'  
11    WHEN price BETWEEN 30000 AND 60000 THEN 'Mid Range'  
12    ELSE 'Premium'  
13  END AS price_band,  
14  SUM(stock_qty) AS stock  
15  FROM cars_inventory
```

price_band	stock
Premium	2458
Budget	822
Mid Range	1696

Use of Operators



Views

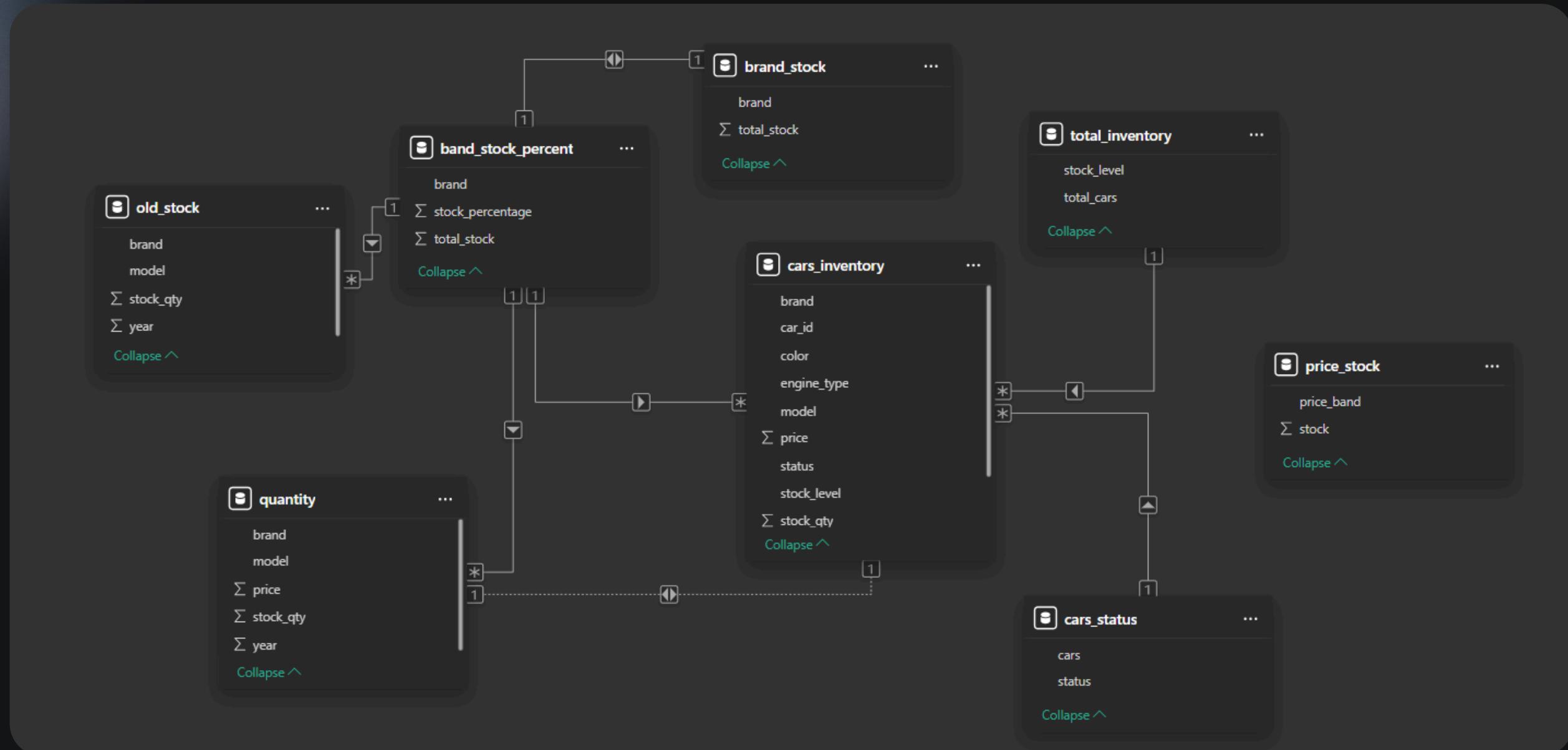
brand	total_stock	stock_percentage
Toyota	699	14.05
Tesla	786	15.80
Nissan	799	16.06
Hyundai	558	11.21
Mercedes	793	15.94
BMW	684	13.75
Kia	657	13.20

Result

03 Powerbi Visuals

- 1 Analyzed relationships among all tables to ensure correct data modeling.
- 2 Designed two dashboards for different business objectives:
 - Overall Operations Overview:
Visualized total stock levels, inventory aging risk by model, and capital blockage due to long-held inventory.
 - Pricing & Stock Analysis:
Analyzed the impact of price on inventory movement and identified optimal selling strategies based on engine type.
- 3 Used multiple visualizations to explain key inventory dynamics, enabling data-driven decision-making for owners and managers.

Powerbi Work



Data

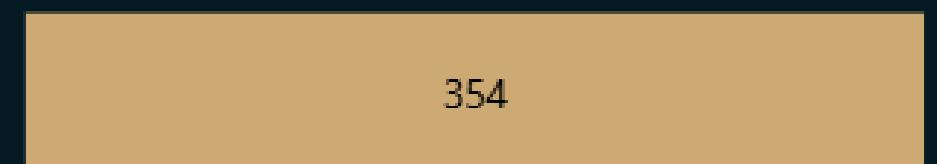
Search

- > **band_stock_percent**
- > **brand_stock**
- > **cars_inventory**
- > **cars_status**
- > **old_stock**
- > **price_stock**
- > **quantity**
- > **total_inventory**

Operations Overview

Total Cars

In Stock



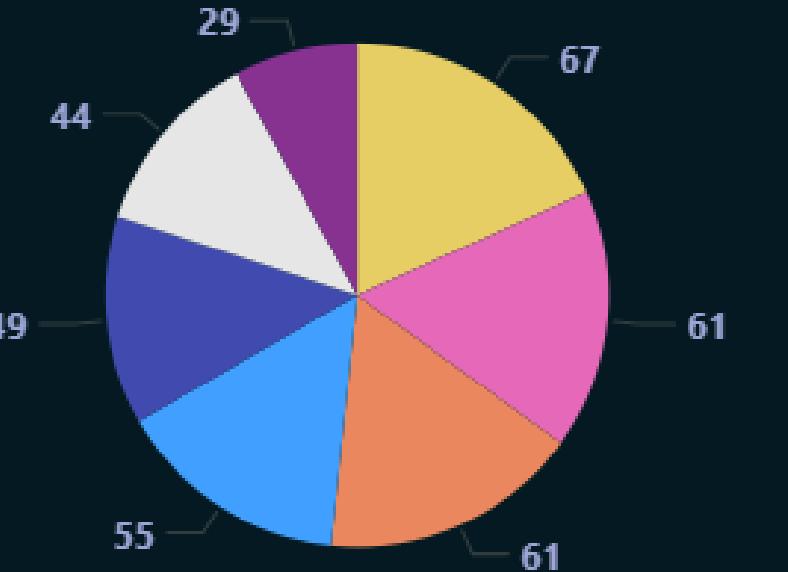
Low in stock



Out of Stock



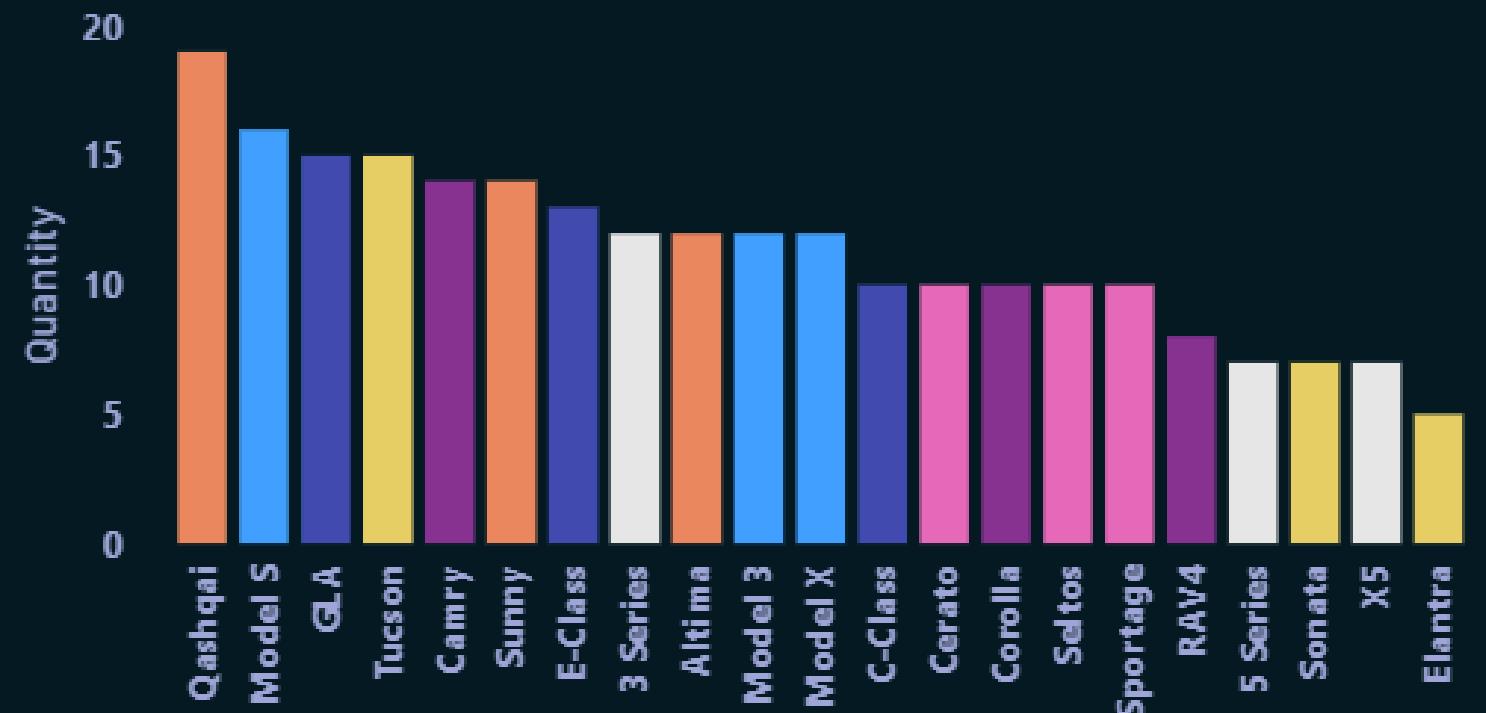
Total Quantity of each Brand



● Hyundai ● Kia ● Nissan ● Tesla ● Mercedes ● BMW ● Toyota

Old Model Quantity left

brand ● BMW ● Hyundai ● Kia ● Mercedes ● Nissan ● Tesla ● Toyota



Brand	Year
● (Blank)	2015
● BMW	2016
● Hyundai	2017
● Kia	2018
● Mercedes	2019
● Nissan	
● Tesla	

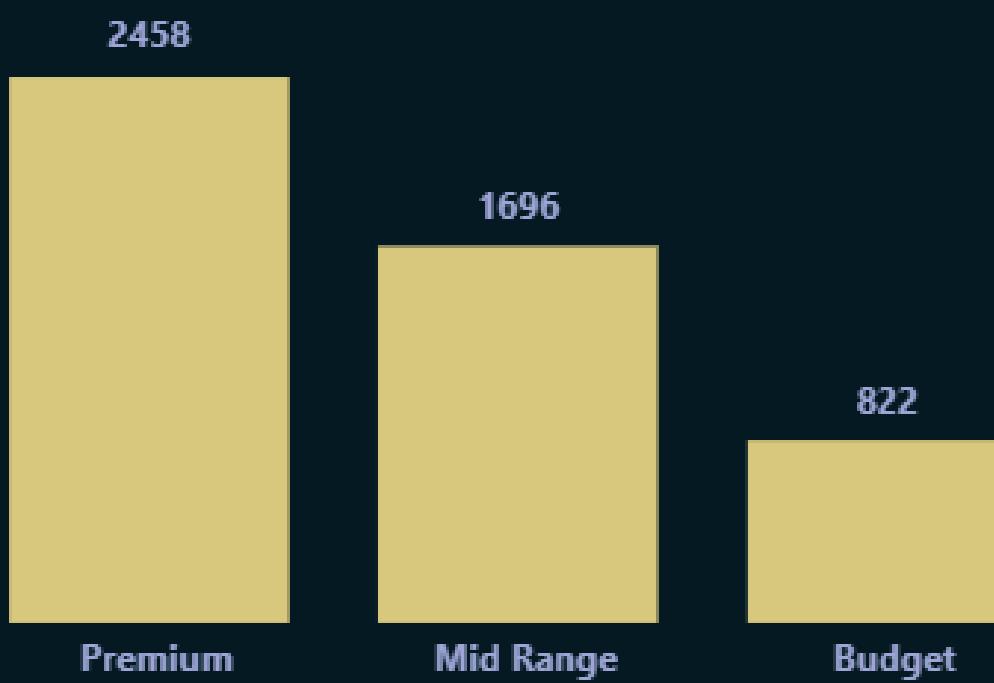
Dependency Risk

brand	model	year	Sum of stock_qty	stock_level
Toyota	Camry	2016	22	In Stock
Toyota	Camry	2017	33	In Stock
Toyota	Camry	2018	83	In Stock
Toyota	Camry	2018	7	Low in stock
Toyota	Camry	2019	34	In Stock
Toyota	Camry	2020	37	In Stock
Toyota	Camry	2021	18	In Stock
Toyota	Camry	2021	0	Out of Stock
Toyota	Camry	2022	17	In Stock
Toyota	Camry	2022	2	Low in stock
Toyota	Camry	2023	57	In Stock
Toyota	Camry	2023	3	Low in stock
Toyota	Camry	2024	38	In Stock
Toyota	Camry	2025	6	In Stock
Toyota	Camry	2025	3	Low in stock
Toyota	Corolla	2015	15	In Stock
Toyota	Corolla	2016	43	In Stock
Toyota	Corolla	2017	38	In Stock
Toyota	Corolla	2018	16	In Stock
Toyota	Corolla	2018	1	Low in stock
Toyota	Corolla	2019	1	Low in stock
Toyota	Corolla	2020	5	Low in stock
Toyota	Corolla	2021	0	Out of Stock
Toyota	Corolla	2022	20	In Stock
Toyota	Corolla	2023	2	Low in stock
Toyota	Corolla	2023	0	Out of Stock
Toyota	Corolla	2025	21	In Stock

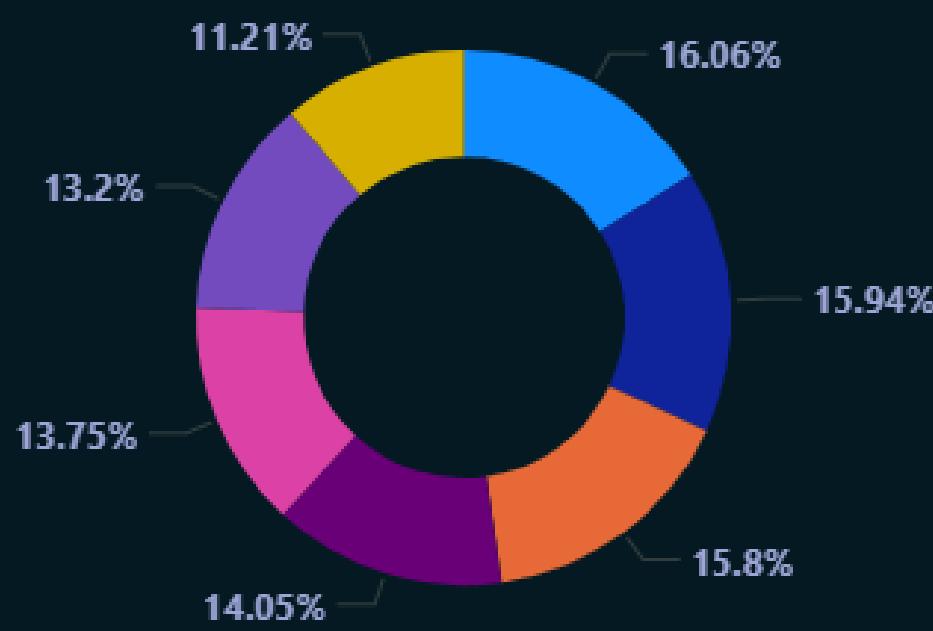
Colours in table representing: Green = Low risk, Yellow = Medium risk, Red = High risk

Pricing & Stock Strategy

Stock as per Range



Total stock of each Brand



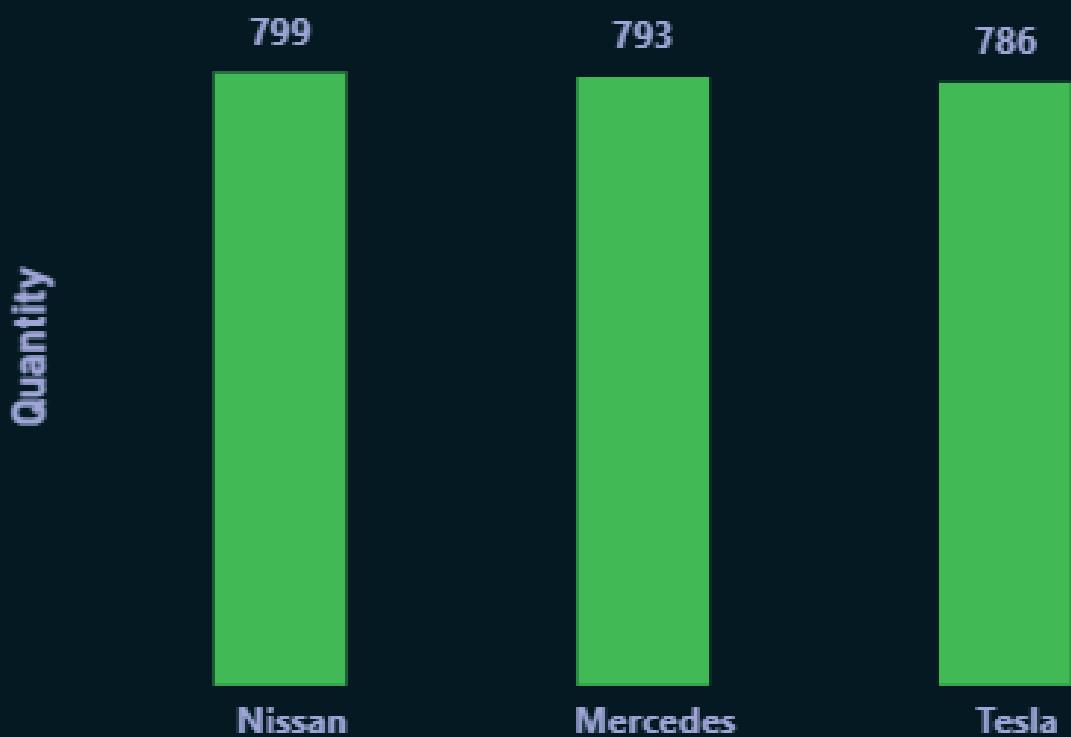
Stock in store according to engine type

Diesel	89	In Stock
Diesel	30	Low in stock
Diesel	7	Out of Stock
Electric	97	In Stock
Electric	25	Low in stock
Electric	6	Out of Stock

Average Price of a Brand



Top 3 brands having highest Quantity



KEY INSIGHTS

Through my analysis, I have identified the following insights:

- 1 Premium vehicles are more prevalent in showrooms, with a total of 2,458 units, in contrast to budget vehicles, which have only 822 units available. This suggests that consumers tend to purchase less expensive cars, indicating a preference for affordability over quality.
- 2 The three cars with the highest stock levels are Nissan (799 units), Mercedes (793 units), and Tesla (786 units).
- 3 There are currently more units available in stock (178) than those sold and reserved, indicating that the owner should prioritize enhancing sales to alleviate the volume of blocked inventory rather than acquiring additional stock.
- 4 The inventory consists of 354 cars, with 27 units currently out of stock.
- 5 Nissan also exhibits the highest stock level among older models, specifically those manufactured prior to 2019.
- 6 The data indicates that the greater the stock, the more storage space it occupies, thereby limiting the capacity for new inventory.
- 7 An analysis of different types of engine oil reveals that diesel vehicles do not sell as well, as they hold the highest stock level (89 units), while hybrid vehicles are sold more rapidly, with only 8 units remaining in stock.

Recommendations

1. The owner should recruit a sales representative to promote the current stock.
2. Enhance marketing efforts or consider selling the older model to free up inventory space.
3. Consider requesting the automobile manufacturers to replace outdated models with newer variants in order to maintain an updated inventory.
4. Rather than focusing solely on electric vehicles, it may be beneficial to increase stock levels of hybrid or diesel cars, which tend to sell more effectively; currently, there are 97 units of electric vehicles in stock.
5. Expand the inventory to include a wider range of brands beyond Nissan to achieve a more balanced stock distribution.

Thank You

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