



Business Report

AUSTO MOTOR LTD

Shweta Joshi | Coded Project | 17/11/24

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1. Context:

Auto mobile industry is very volatile, and its demands fluctuate with customer time to time. To be inline with the customer one must understand the customer with respect to his interest, gender, salary etc. The key to be successful in this business is to study the different patterns of customer interest, needs about different model of the car

2. Objective:

Austo Motor Company is a leading car manufacturer specializing in SUV, Sedan, and Hatchback models. In its recent board meeting, concerns were raised by the members on the efficiency of the marketing campaign currently being used. The board decides to rope in analytics professional to improve the existing campaign.

Objective of this project is analyzing the data to get a fair idea about the demand of customers which will help Austo Motor LMT in enhancing their customer experience.

3. Data Dictionary:

- **Age:** The age of the individual in years.
- **Gender:** The gender of the individual categorized as male or female.
- **Profession:** The occupation or profession of the individual.
- **Marital status:** The marital status of the individual, such as married &, single
- **Education:** The educational qualification of the individual Graduate and Postgraduate
- **No_of_Dependents:** The number of dependents (e.g., children, elderly parents) that the individual supports financially.
- **Personal_loan:** A binary variable indicating whether the individual has taken a personal loan "Yes" or "No"
- **House_loan:** A binary variable indicating whether the individual has taken a housing loan "Yes" or "No"
- **Partner_working:** A binary variable indicating whether the individual's partner is employed "Yes" or "No"
- **Salary:** The individual's salary or income.
- **Partner_salary:** The salary or income of the individual's partner, if applicable.
- **Total_salary:** The total combined salary of the individual and their partner (if applicable).

- **Price:** The price of a product or service.
- **Make:** The type of automobile

4. Figures used

Source: Google

5. Data Analysis and findings

5.1: STATISTICAL SUMMARY AND INSIGHT INTO NUMERICAL DATA (UNIVARIATE ANALYSIS)

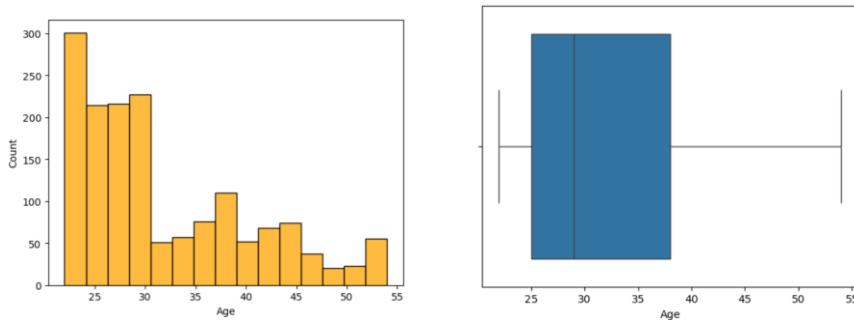
	count	mean	std	min	25%	50%	75%	max
Age	1581.0	31.922201	8.425978	22.0	25.0	29.0	38.0	54.0
No_of_Dependents	1581.0	2.457938	0.943483	0.0	2.0	2.0	3.0	4.0
Salary	1581.0	60392.220114	14674.825044	30000.0	51900.0	59500.0	71800.0	99300.0
Partner_salary	1475.0	20225.559322	19573.149277	0.0	0.0	25600.0	38300.0	80500.0
Total_salary	1581.0	79625.996205	25545.857768	30000.0	60500.0	78000.0	95900.0	171000.0
Price	1581.0	35597.722960	13633.636545	18000.0	25000.0	31000.0	47000.0	70000.0

- Age: The average age of customer buying car is 31. Minimum and maximum age of customer is 25 and 54 respectively. 25% of customers are 25 years old , 50% customers are 29 years old, and 75% customers are 38 years old
- No_of_Dependents: On average customers are having 2 dependents. Minimum and maximum dependents are 0 and 4 respectively

- Salary: Salary of customers ranges between 30000 to 99000. On average customers are having salary 60000
- Partner_salary: Minimum partner salary is 0 and maximum is 80500. 50% of people are having their partner salary is 38300
- price: Highest price of car is 70000 and minim is 35597

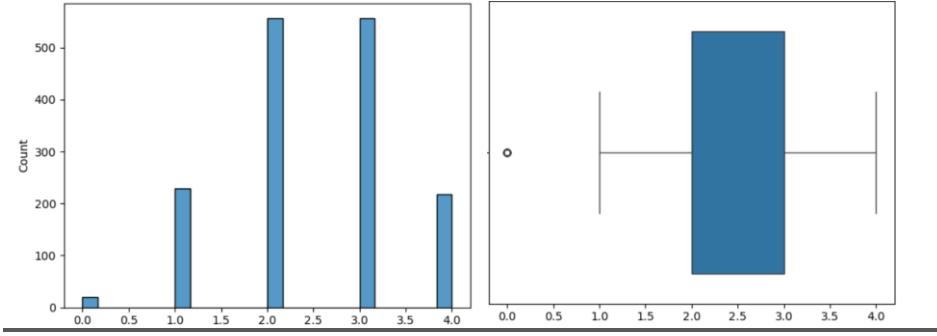
Below is the detailed insight on each data with justification

5.1.1. Age:



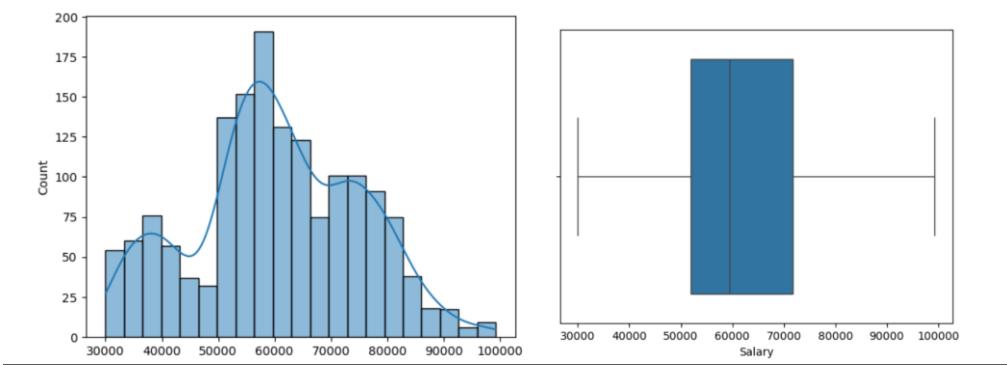
- The average age of customer buying car is 31.
- Minimum and maximum age of customer is 25 and 54 respectively.
- 25% of customers are 25 years old
- 50% customers are 29 years old
- 75% customers are 38 years old.
- Customers who are aged between 20 to 30 years prefers to buy cars more than any other age category
- Car sale is decreasing as the customer age is increasing

5.1.2. No_of_Dependents:



- On average customers are having 2 dependents.
- Minimum and maximum dependents are 0 and 4 respectively.
- There is outlier present in the data but that is genuine, customer having 0 dependents is normal
- This particular data is not affecting the sales

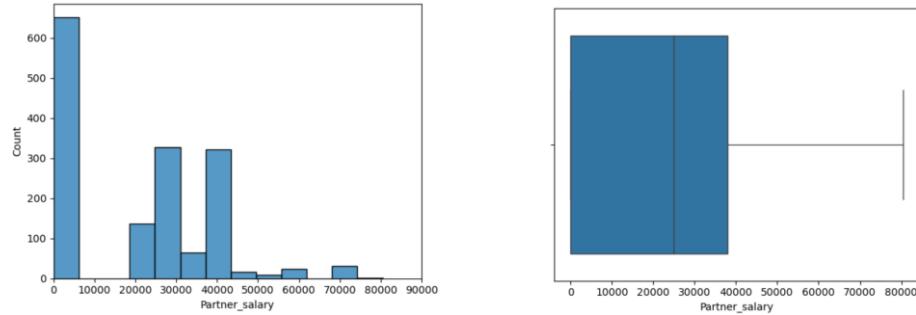
5.1.3. Salary:



- Salary of customers ranges between 30000 to 99000.
- On average customers are having salary 60000.
- Customers whose salary ranges between 30000 USD to 45000 USD won't prefer to buy car

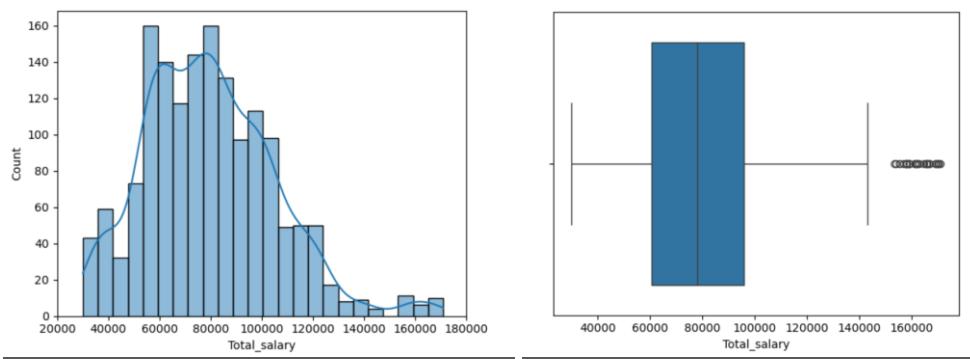
- Customers whose salary ranges between 50000 USD to 80000 USD prefers to buy a car
- Customers whose salary is 90000 USD and above wont prefers to buy a car, they would rather prefer to have only SUVs
- Salary the vital thing to consider for the sales

5.1.4. Partner_salary:



- Partner salary is inversely affecting to sales i.e.as Partner salary increasing sale is decreasing

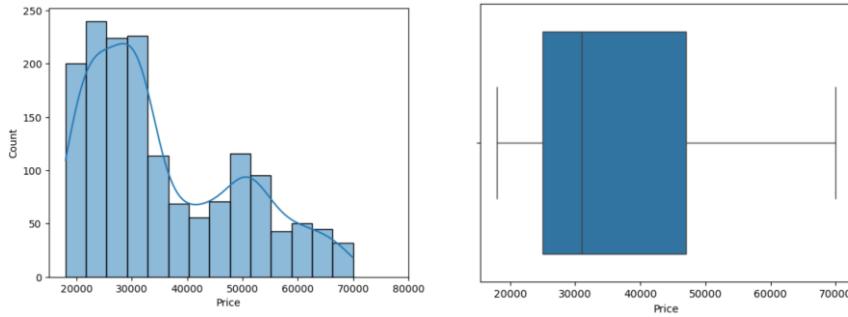
5.1.5. Total_salary:



- The average total salary of customers is 79625.
- Minimum total salary is 30000.
- 25% people are having 60500
- 50% are having 78000
- 75% are having 95900.
- Maximum salary is 171000.

- Total salary is inversely affecting to sales i.e. as Total salary increasing sale is decreasing

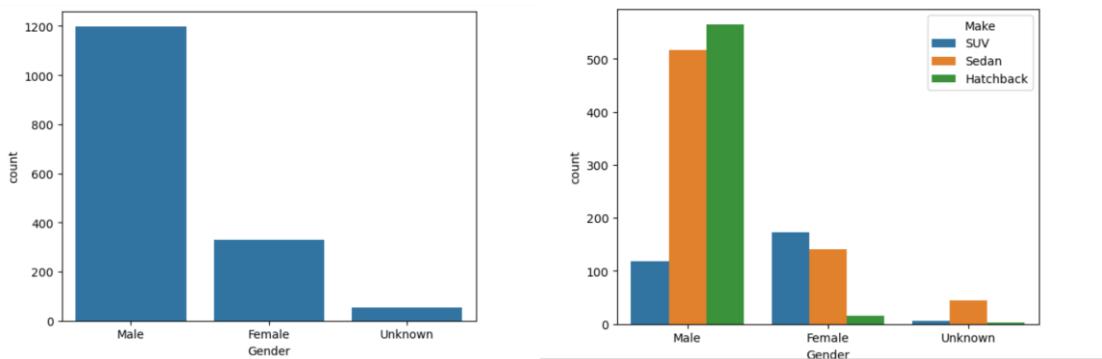
5.1.6. Price:



- The average cost of car is 35597.
- Minimum cost is 18000 ,25% of cars cost is 25000
- 50% of cars cost is 31000
- 75% of cars cost in 47000.
- Highest cost is 70000.
- Customer is more interested in buying cars which are low in cost
- With the higher price, percentage of sale is reducing

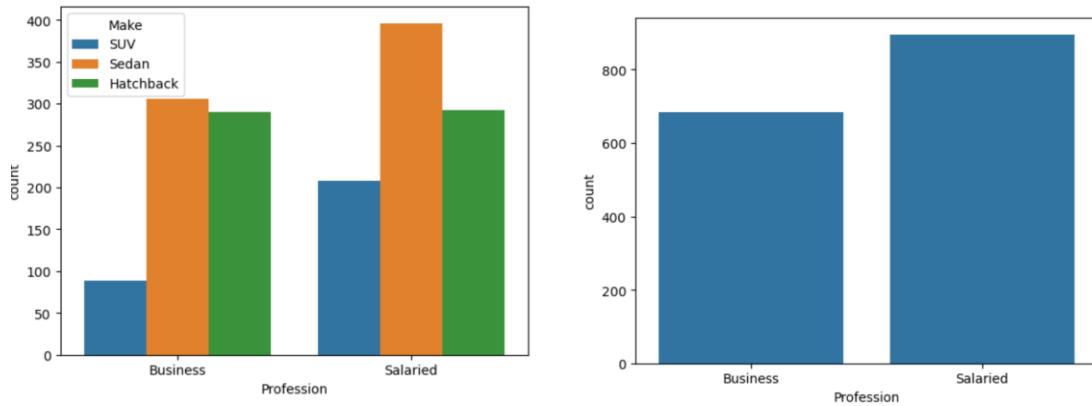
5.2: INSIGHT INTO CATEGORICAL DATA (UNIVARIATE ANALYSIS OF CATEGORICAL DATA)

5.2.1: Observations on Gender data



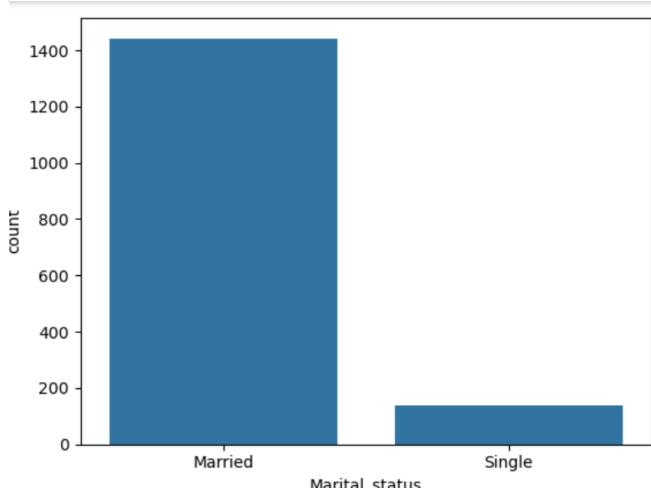
- Men prefers to buy a car more than women.
- Women prefer to buy SUVs more than men
- Men prefers more sedan and hatch back than women
- Very less women prefers hatchbacks

5.2.2: Observations on Profession column data



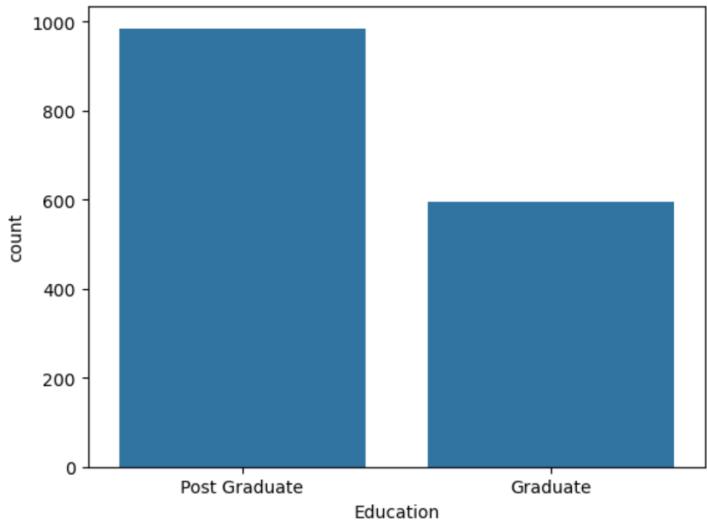
- Sale is more with the customers who are salaried
- Salaried persons prefer sedan more than any other model
- Hatchback is the second preferred model for both salaried and businesspeople
- SUV is last preferred option by businesspeople

5.2.3: Observations on Marital status column data



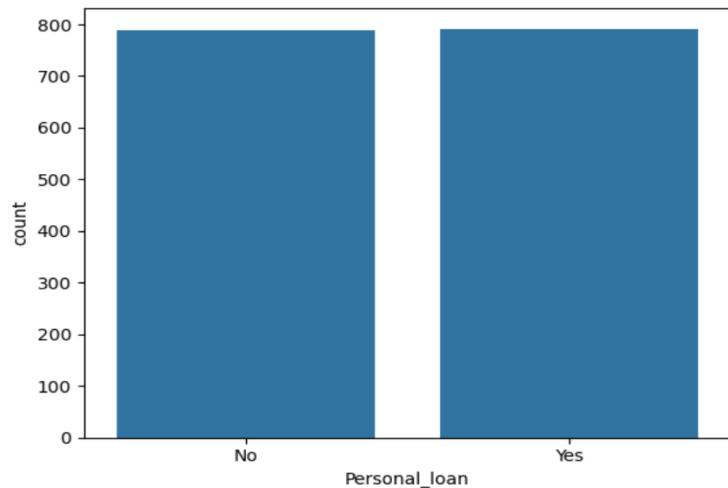
- Married persons prefer to buy car more than a person who is single

5.2.4: Observations on Education column data



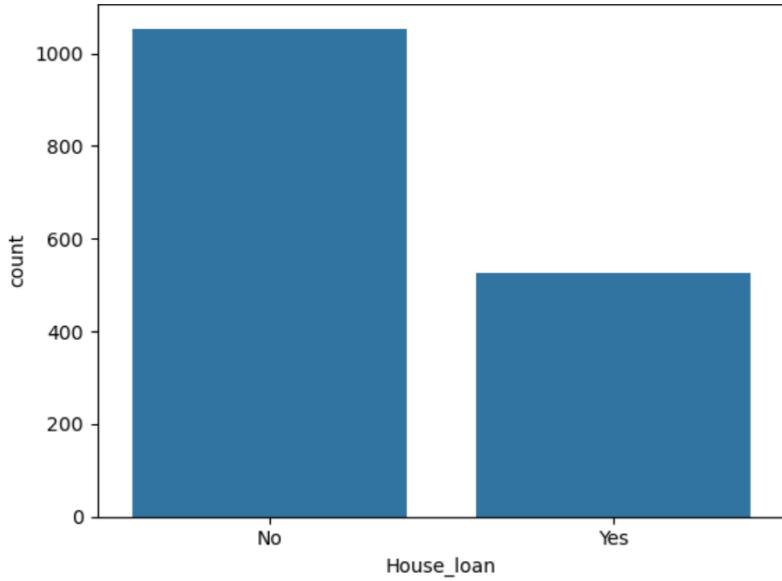
- Postgraduates prefers to buy car more than graduates

5.2.5: Observations on Personal loan column data



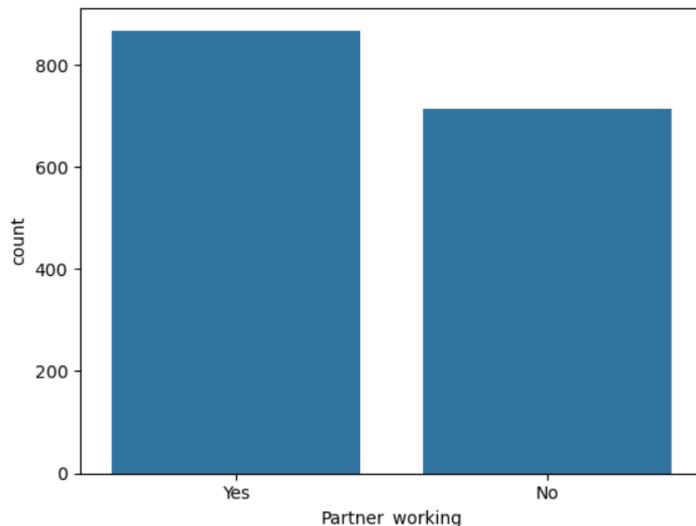
- Personal loan entity is not affecting the sales. sale is almost same for the customer who takes personal loan and who does not take personal loan

5.2.6: Observations on House loan column data



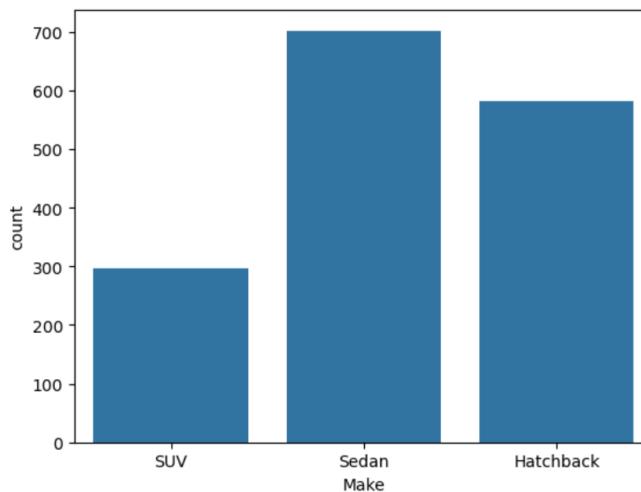
- Customers who are having house loans are not preferring buy car.
- Customers who are not having house loans are preferring to buy a car.

5.2.7: Observations on Partner working column data



- Customer whose partners are working prefer to buy car more than the customers whose partners are not working

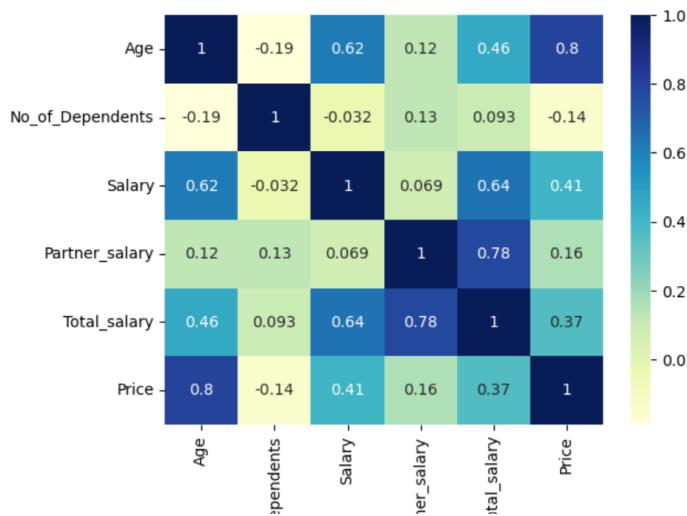
5.2.8: Observations on Make column data



- Make is the important aspect for the car sale.
- More customers prefer to buy sedan make
- Hatchback is the second most preferred
- SUV the last preferred make

5.3: BIVARIATE ANALYSIS

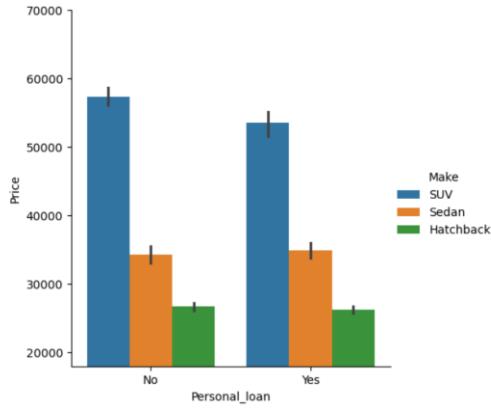
5.3.1: CORRELATION BETWEEN ALL NUMERICAL DATA



- Age and price are highly correlated. As the
- No_of_Dependents column is negatively corelated with Age
- Salary is positively corelated with Age, as age is increasing salary is also increasing

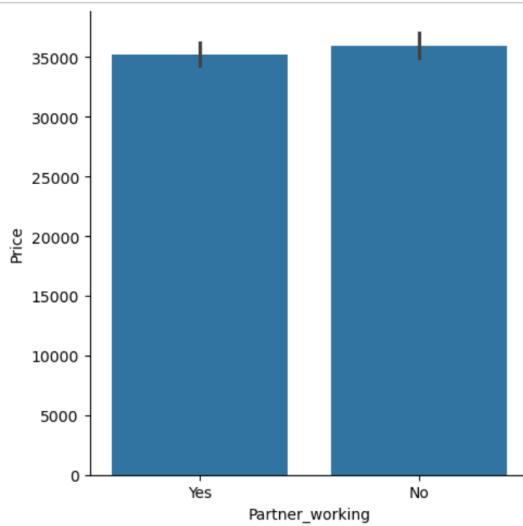
- Partner salary and total salary columns are positively correlated. Partner salary is affecting total salary

5.3.2: Relationship between categorical column (Personal_loan) and numerical column (Price)



- Personal loan entity is not affecting sale that much.
- Without or with personal loan customer interest in buying car is almost similar

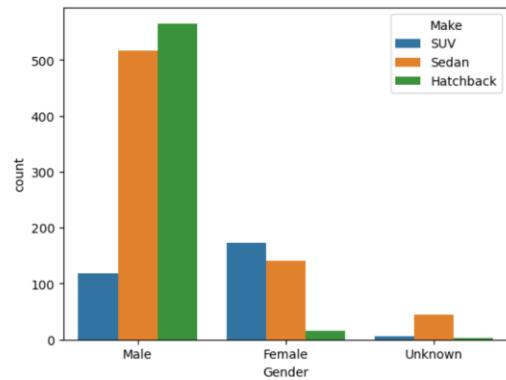
5.3.3: Relationship between categorical column (Partner_working) and numerical column (Price)



- with or without working partner, customer interest for buying car is similar.
- Trend for sale is not changing with respect to working partner

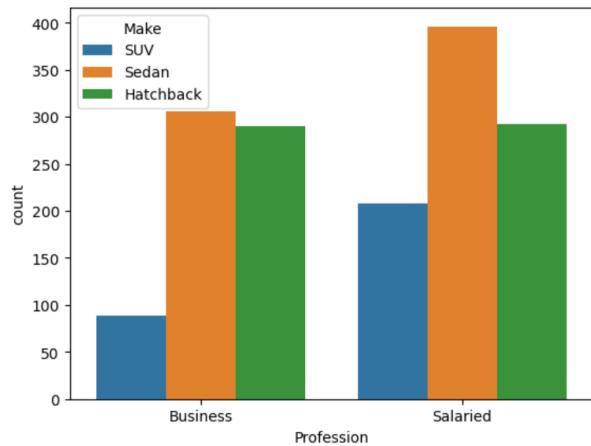
6. Key questions and solutions

6.1. DO MEN TEND TO PREFER SUVS MORE COMPARED TO WOMEN?



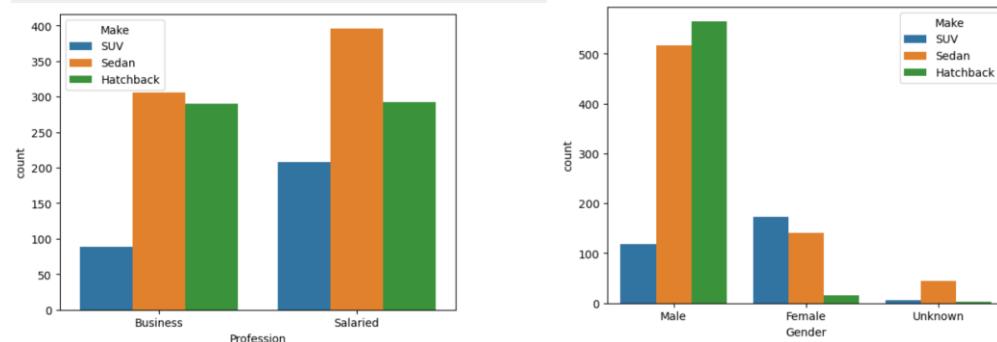
No. Women tend to prefer SUVs more than men

6.2. WHAT IS THE LIKELIHOOD OF A SALARIED PERSON BUYING A SEDAN?



Yes. Salaried persons prefer to buy sedan than any other model

6.3 WHAT EVIDENCE OR DATA SUPPORTS SHELDON COOPER'S CLAIM THAT A SALARIED MALE IS AN EASIER TARGET FOR A SUV SALE OVER A SEDAN SALE?

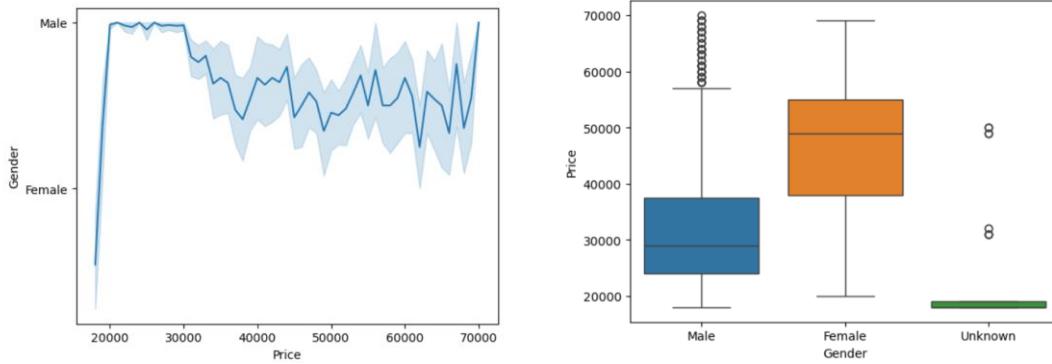


No evidence is there to prove that salaried men are the easier target for SUV.

First graph shows more than 180 SUV cars are sold for women and in the second graph shows SUV sale for salaried person is 200.

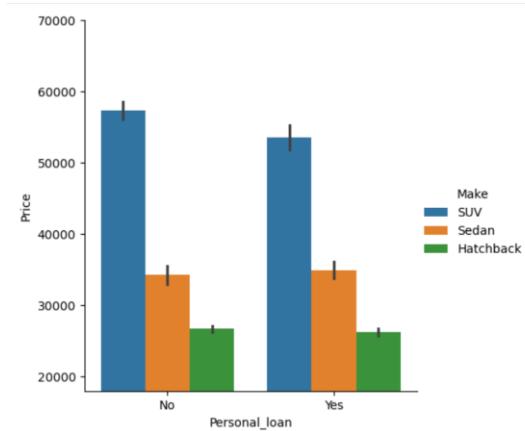
If we analyze both data collectively, we can say more salaried women prefers SUVs. Salaried men prefer to buy sedan models

6.4 HOW DOES THE AMOUNT SPENT ON PURCHASING AUTOMOBILES VARY BY GENDER?



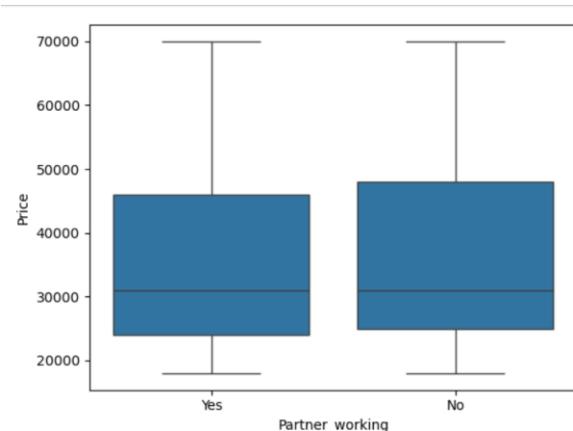
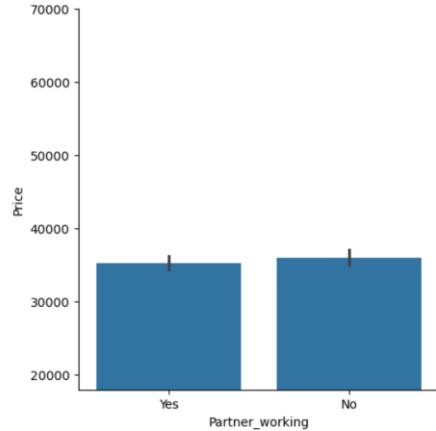
- Yes. There is difference between men and women in spending amount for cars.
- More men prefer to spend amount on cars than women

6.5 HOW MUCH MONEY WAS SPENT ON PURCHASING AUTOMOBILES BY INDIVIDUALS WHO TOOK A PERSONAL LOAN?



- Amount spent by customers who took personal loan is 20000USD to 55000USD

6.6 HOW DOES HAVING A WORKING PARTNER INFLUENCE THE PURCHASE OF HIGHER-PRICED CARS?



- The given pattern indicates that having working partner is not highly affective in influencing customer to buy high priced cars

7. Insights:

- There are 1581 rows and 14 columns in the data set
- Age, Salary, Partner_salary, Total_salary, Price, No_of_Dependents columns are numerical columns, while the rest are categorical in nature
- There are 6 numerical columns and 8 categorical columns in the data set
- Except 'Gender','Partner_salary', there 1581 observations in each column.
- 'Gender' and 'Partner_salary" columns having 1528 and 1475 observations respectively, which indicates missing data and imputed properly
- Salary the vital thing to consider for the sales
- Partner salary is inversely affecting to sales i.e.as Partner salary increasing sale is decreasing
- Total salary is inversely affecting to sales i.e.as Total salary increasing sale is decreasing
- Customer is more interested in buying cars which are low in cost
- With the higher price, percentage of sale is reducing
- Men prefers to buy a car more than women.
- Women prefer to buy SUVs more than men
- Men prefers more sedan and hatch back than women
- Very less women prefers hatchbacks
- Sale is more with the customers who are salaried
- Salaried persons prefer sedan more than any other model
- Hatchback is the second preferred model for both salaried and businesspeople
- SUV is last preferred option by businesspeople
- Married persons prefer to buy car more than a person who is single
- Postgraduates prefers to buy car more than graduates
- Personal loan entity is not affecting the sales. sale is almost same for the customer who takes personal loan and who does not take personal loan
- Customers who are having house loans are not preferring buy car.
- Customers who are not having house loans are preferring to buy a car.
- Customer whose partners are working prefer to buy car more than the customers whose partners are not working
- Make is the important aspect for the car sale.
- More customers prefer to buy sedan make
- Hatchback is the second most preferred
- SUV the last preferred make

8. Business Recommendations

- Though majority of the customers are aged between 30 and 40, which is 75%, the sales are not as expected and needs to adopt different marketing strategies to capitalize the potential of this age group for increased car sales.
- Emphasize on high salaried people, and female customers as they are more interested in SUV make cars
- Low salaried customers are more interested in low-cost cars, colorful offers will help to increase the sales more to this category
- Focus on salaried and married people to increase the sales more
- Businesspeople are less interested in buying cars, especially SUV makes
- Education of customer is affecting sales
- Female customers are not that much interested in buying cars, designing marketing strategy for female customer can help the sales