SALES REPORT

From a business point of view, we have to find the current trend for the cars which now a days people prefer to have. Is it the SUV, Sedan, Hatchback so we can make arrangements for the production and the market campaigning according to the demand we have for the each of the Car type.

Problem Statement

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

As a data analyst our job is to find the current trends in the market, for the car sales with the data we have received. And we will try to find the answers of the key questions which is asked by the company, and will give insights we found with the data.

Data Description

Sl. No	Column Name	Description
1	**Age**	The age of the individual in years.
2	**Gender**	The gender of the individual, categorized as male or female.
3	**Profession**	The occupation or profession of the individual.
4	**Marital_status**	The marital status of the individual, such as married &, single
5	**Education**	The educational qualification of the individual Graduate and Post Graduate
6	**No_of_Dependents**	The number of dependents (e.g., children, elderly parents) that the individual supports financially.
7	**Personal_loan**	A binary variable indicating whether the individual has taken a personal loan "Yes" or "No"
8	**House_loan**	A binary variable indicating whether the individual has taken a housing loan "Yes" or "No"
9	**Partner_working**	A binary variable indicating whether the individual's partner is employed "Yes" or "No"
10	**Salary**	The individual's salary or income.
11	**Make**	The salary or income of the individual's partner, if applicable.
12	**Total_salary**	The total combined salary of the individual and their partner (if applicable).
13	**Price**	The price of a product or service.
14	**Make**	The type of automobile

List of Images

Image 11	Graph showing relationship b/w Age, Make, and Gender
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Image 14	Graph showing car preferences b\w Gender
Image 15	Graph showing Preference b\w cars based on Profession
Image 16	Count Plot showing evidence or data supports Sheldon Cooper's claim
Image 17	Graph showing amount spent on purchasing automobiles vary by gender
Image 18	Graph showing the money spend on car purchase by individual have a personal loan
Image 19	Graph showing the influence over purchasing of high price cars having working partner

Data Ingetion

	count	unique	top	freq	mean	std	min	25%	50%	75%	max
Age	1581.000000	NaN	NaN	NaN	31.922201	8.425978	22.000000	25.000000	29.000000	38.000000	54.000000
Gender	1528	4	Male	1199	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Profession	1581	2	Salaried	896	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Marital_status	1581	2	Married	1443	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Education	1581	2	Post Graduate	985	NaN	NaN	NaN	NaN	NaN	NaN	NaN
No_of_Dependents	1581.000000	NaN	NaN	NaN	2.457938	0.943483	0.000000	2.000000	2.000000	3.000000	4.000000
Personal_loan	1581	2	Yes	792	NaN	NaN	NaN	NaN	NaN	NaN	NaN
House_loan	1581	2	No	1054	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Partner_working	1581	2	Yes	868	NaN	NaN	NaN	NaN	NaN	NaN	NaN
Salary	1581.000000	NaN	NaN	NaN	60392.220114	14674.825044	30000.000000	51900.000000	59500.000000	71800.000000	99300.000000
Partner_salary	1475.000000	NaN	NaN	NaN	20225.559322	19573.149277	0.000000	0.000000	25600.000000	38300.000000	80500.000000
Total_salary	1581.000000	NaN	NaN	NaN	79625.996205	25545.857768	30000.000000	60500.000000	78000.000000	95900.000000	171000.000000
Price	1581.000000	NaN	NaN	NaN	35597.722960	13633.636545	18000.000000	25000.000000	31000.000000	47000.000000	70000.000000
Make	1581	3	Sedan	702	NaN	NaN	NaN	NaN	NaN	NaN	NaN

Image- 1

1. The image above shows us the statistical summary of the data.
2. We have total number of 1581 rows in (observations) and 14 columns (variables) in the data set.
3. There are no duplicate values in the data.
4. We have some missing values in the column Gender and Partner salary, so we need to treat them**.**

```
 0   Age                1581 non-null   int64
 1   Gender             1581 non-null   object
 2   Profession         1581 non-null   object
 3   Marital_status     1581 non-null   object
 4   Education          1581 non-null   object
 5   No_of_Dependents   1581 non-null   int64
 6   Personal_loan      1581 non-null   object
 7   House_loan         1581 non-null   object
 8   Partner_working    1581 non-null   object
 9   Salary             1581 non-null   int64
 10  Partner_salary     1475 non-null   float64
 11  Total_salary       1581 non-null   int64
 12  Price              1581 non-null   int64
 13  Make               1581 non-null   object
```

Image 2

1 As we find we have the values which has been miss spelled so we corrected them (Femal, Femle to Female).

1.1 As we have the missing values in the Gender Column so we imputed the value with the Mode function.

1.2 After applying the mode function we have total 1581 non-null values which consists total (Male= 1252, Female=329)

Univariate Analysis

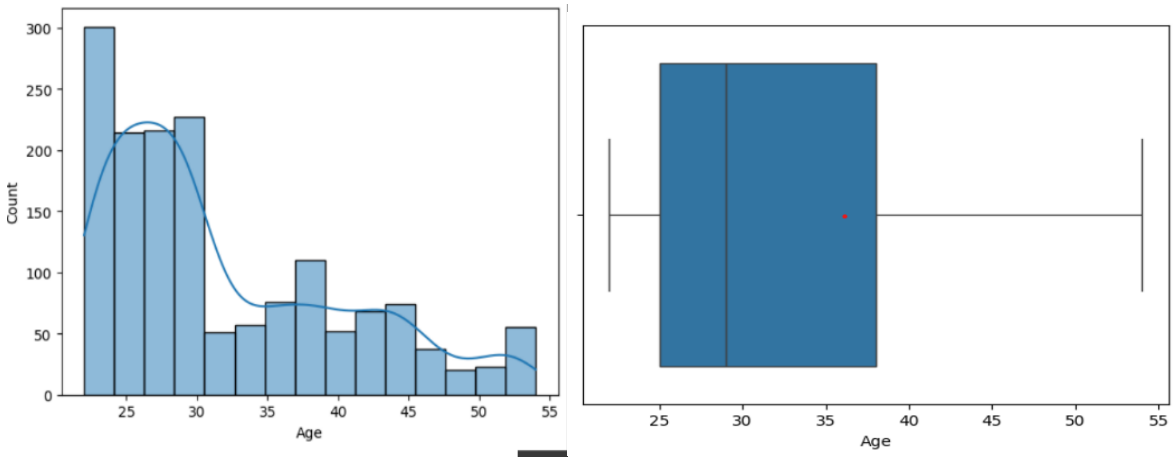

Image 3

Above Graphs shows data is Right skewed, as most of the buyers are youngsters.

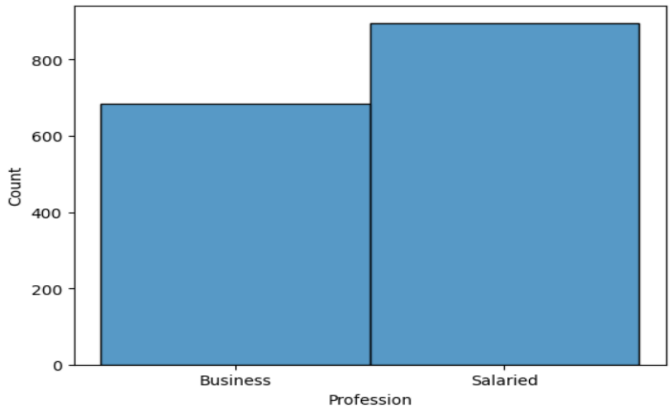

Image 4

Above Graph shows majority of the individuals are Salaried around 850, and Business around 671.

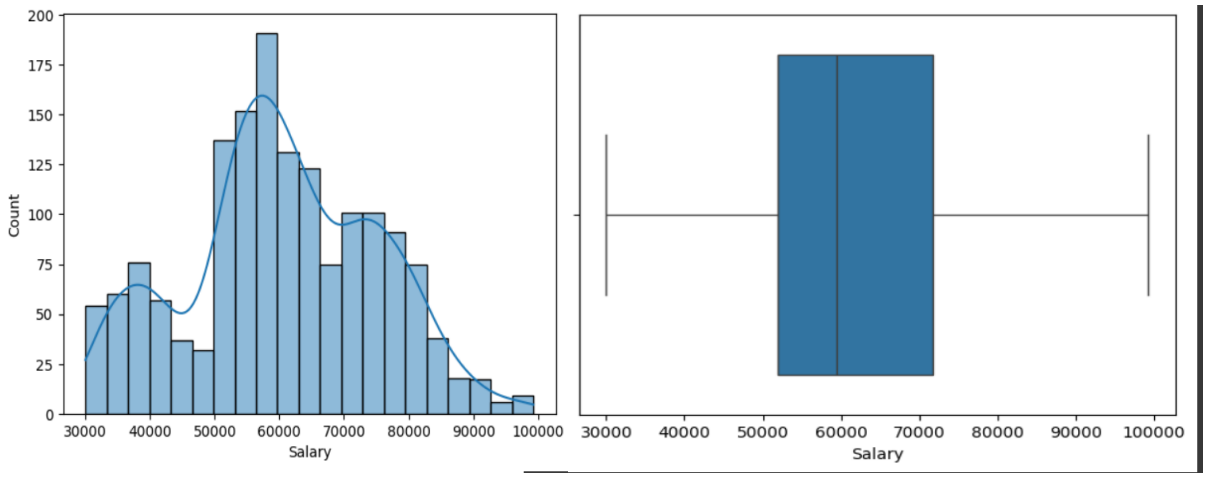

Image 5

Above Graph shows the salary distribution is mostly in b\w the $52,000 to $73,500.

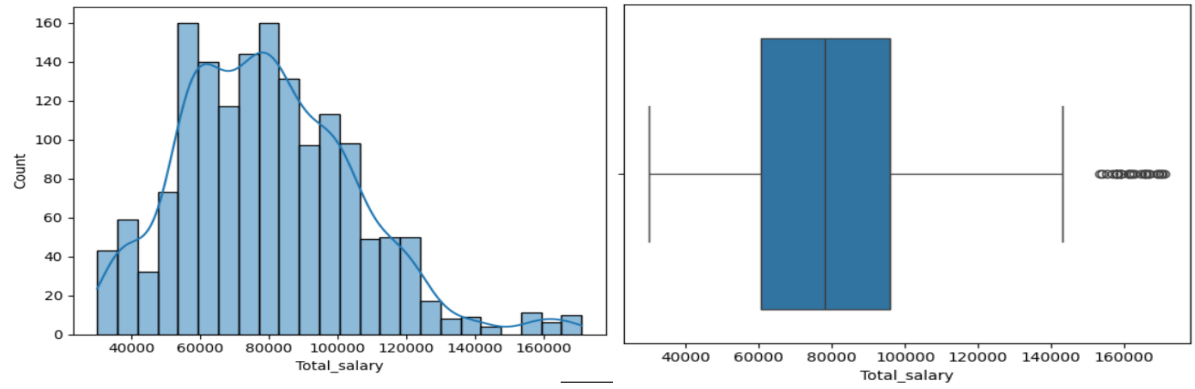

Image 6

Above Graph shows the salary distribution is mostly in b\w the $60,000 to $97,000.

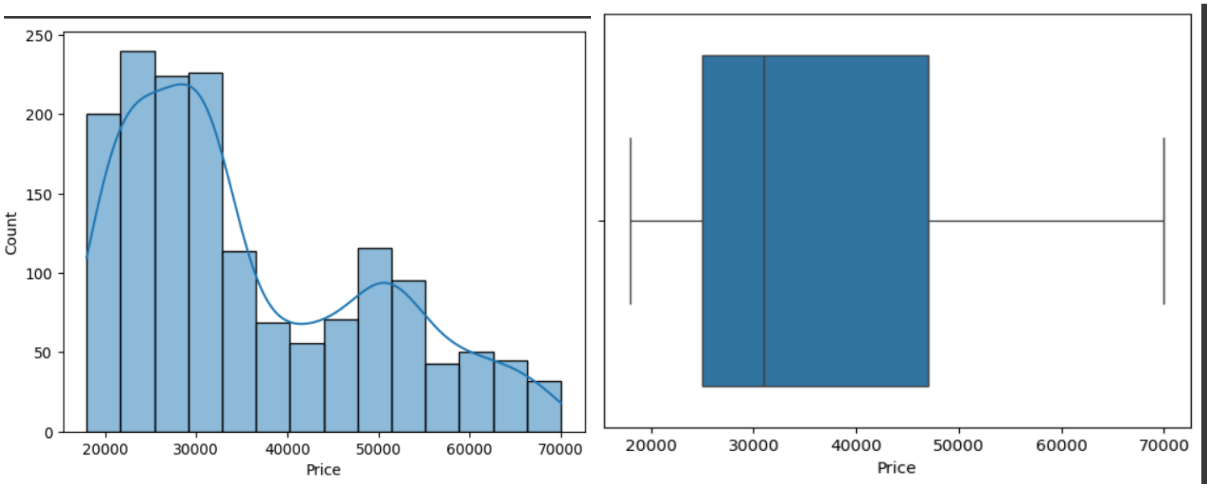

Image 7

Above Graph shows most of the car Price is in b\w $26,000 to $48,000.

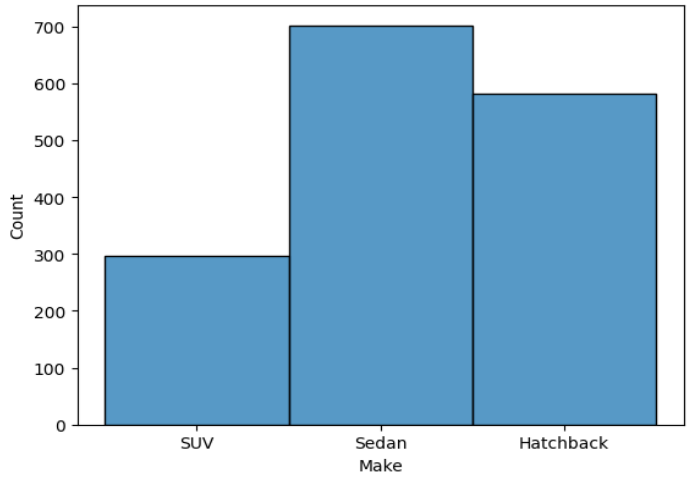

Image 8

Above Graph shows the most preferred cars by the Individuals is Sedan then Hatchback then SUV.

Bivariate & Multivariate Analysis

Image 9

Above Heat map shows there is a high co-relation between the age group and the price of the cars they purchase.

It also shows there is not a very high co-relation between the Salary and Total_Salary of the individual and the price of the car they purchase.

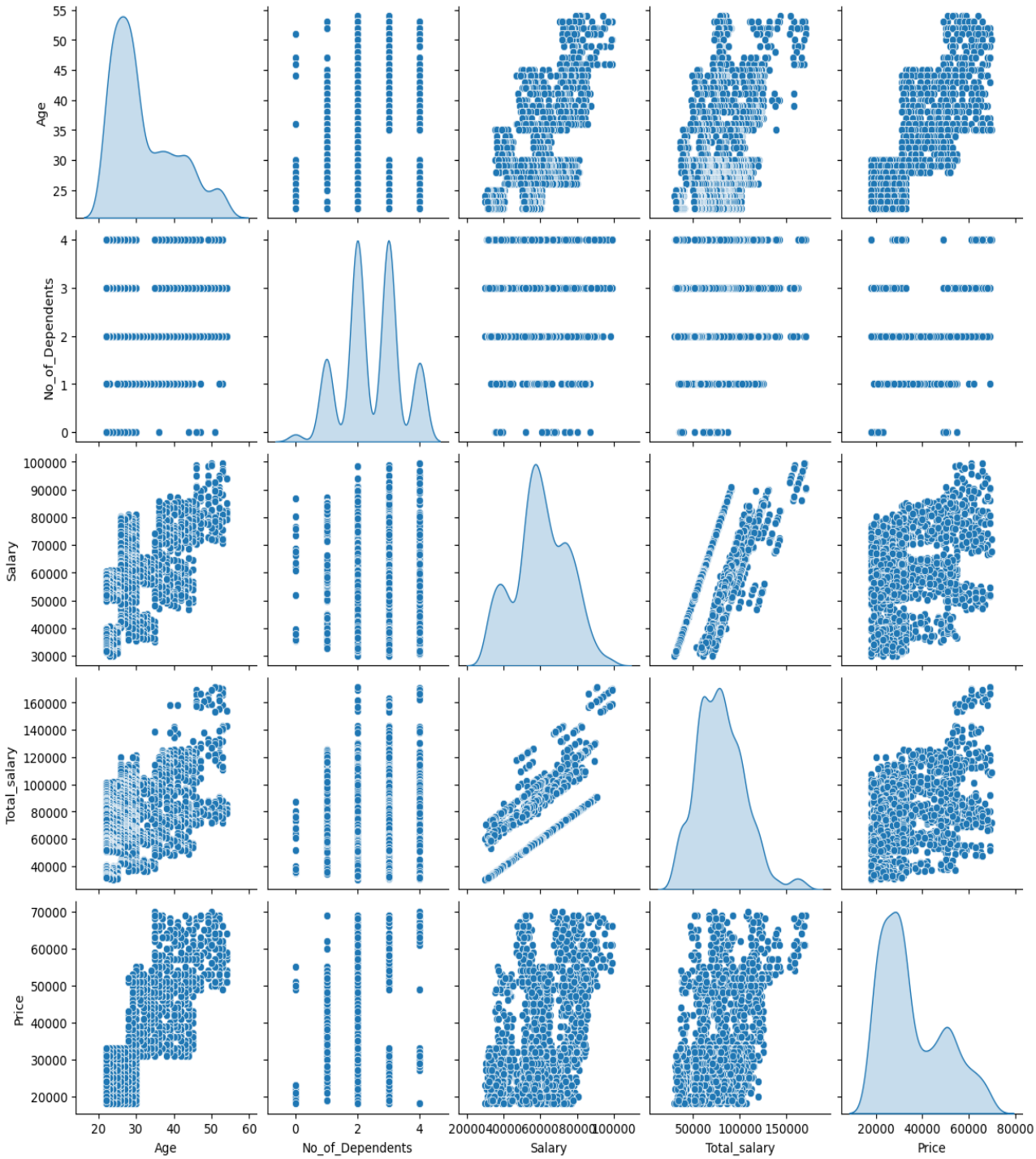

Image 10

Above image shows There is a high co-relation b\w the Age and the price of the car they purchase.

Above image also shows co-relation b\w the Total_salary and the Price of car they purchase.

Above image shows high corelation b\w the Salary and the price of the car they purchase.

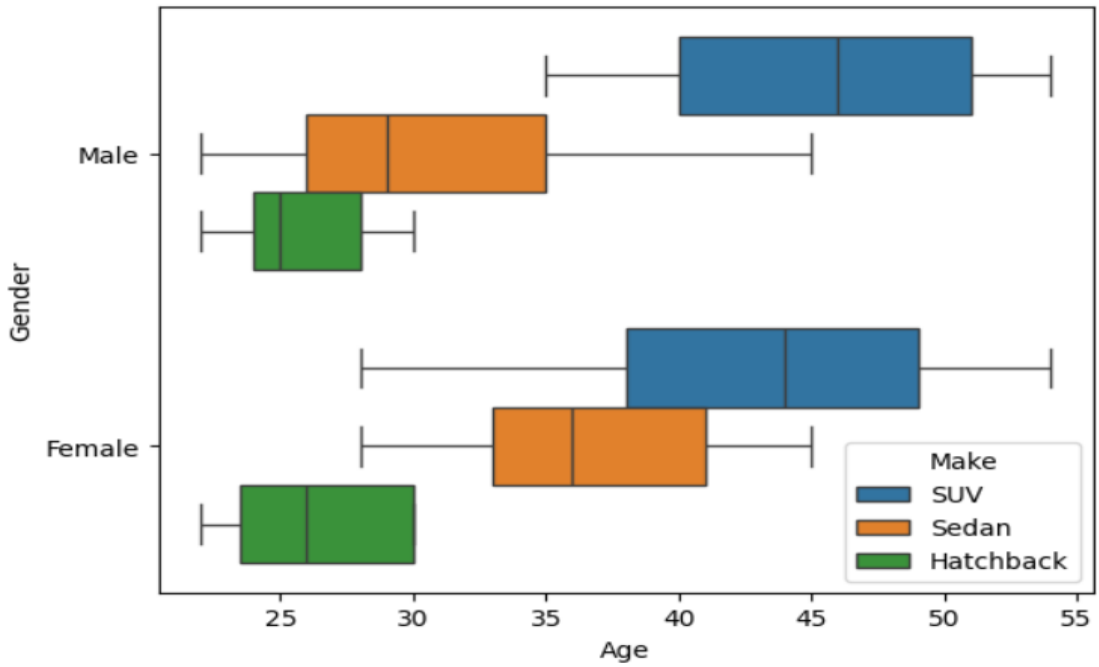

Image 11

The above box plot shows as the buyers are of older age they prefer more the SUV, then Sedan and they less prefer the Hatchback irrespective of their Gender.

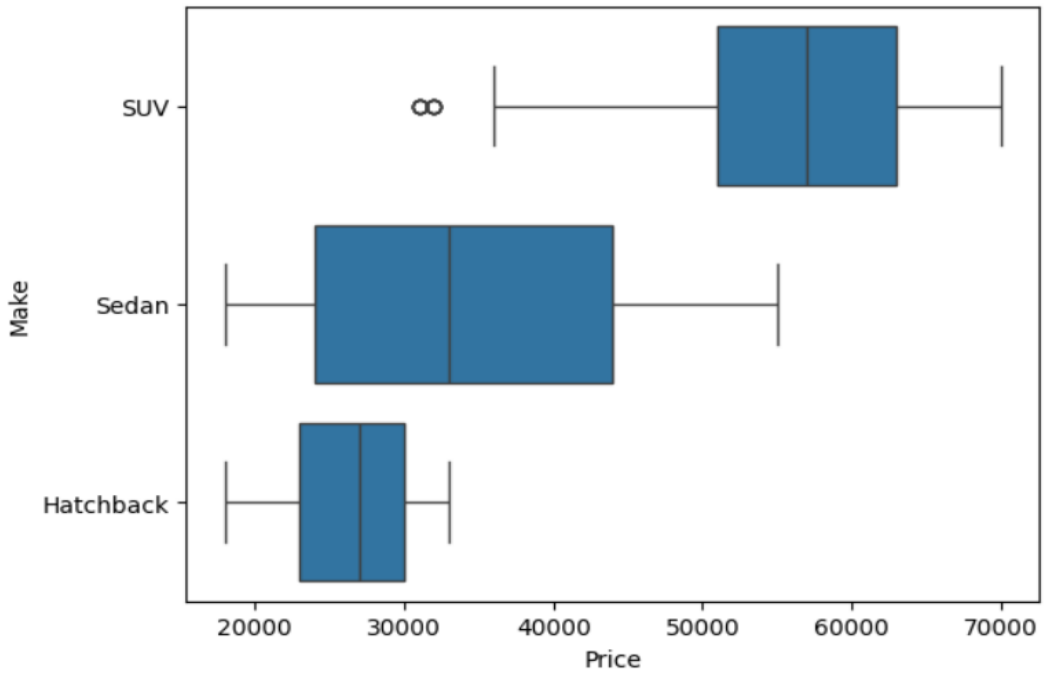

Image 12

The above Graph shows and prove the fact we observe in the Heat map that, there is a positive co-relation b\w the age of the person and the price of the car they prefer.

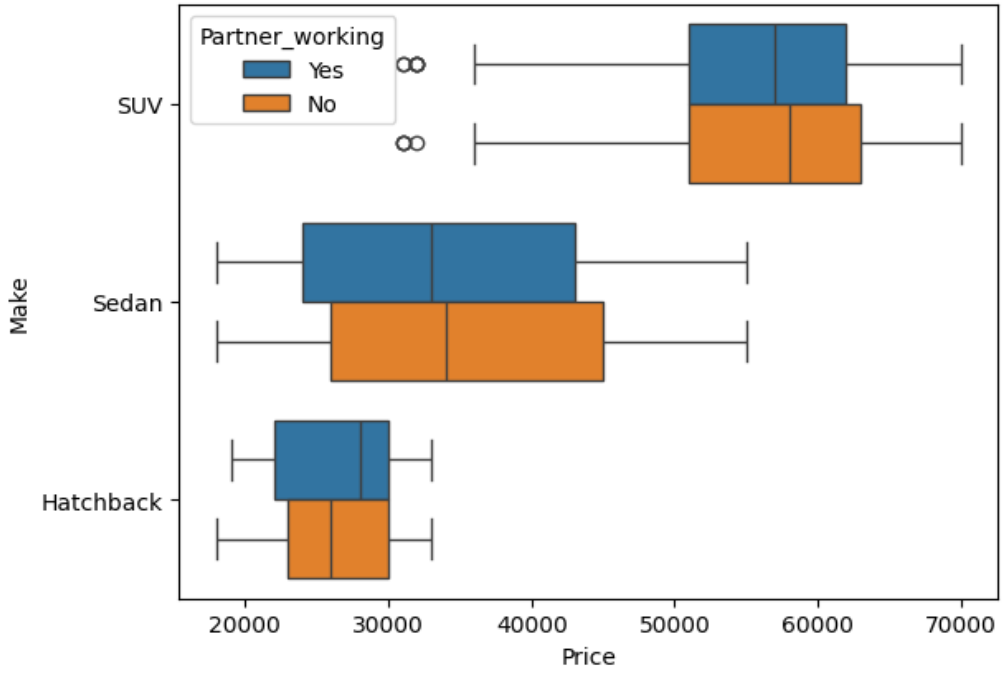

Image 13

The above Graph not shows a great shift in the purchase of the cars if the partners of the individuals are working or not.

Key Questions

1. Do men tend to prefer SUVs more compared to women?

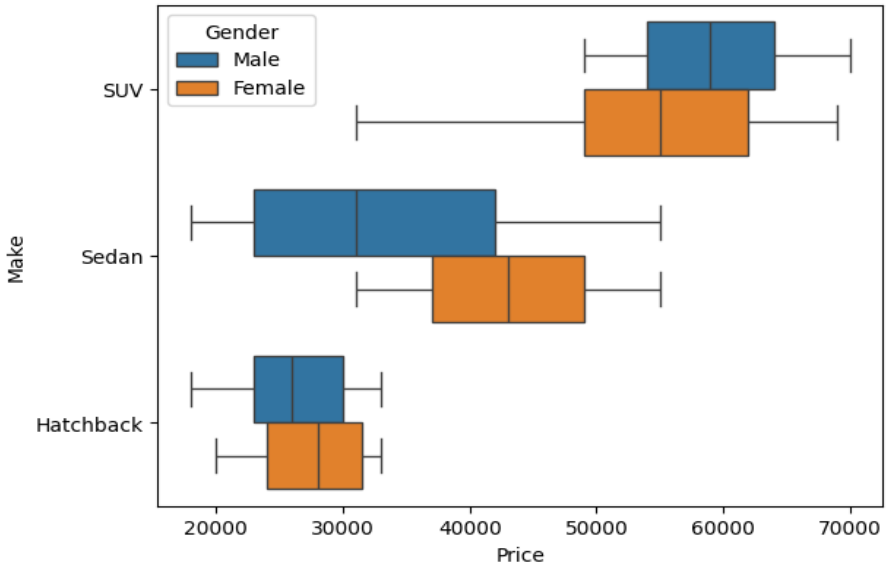

Image 14

Above Graph shows mostly the Male prefers the Sedan over the Females.

Above image shows Female prefers SUV over the Male.

2. What is the likelihood of a salaried person buying a Sedan?

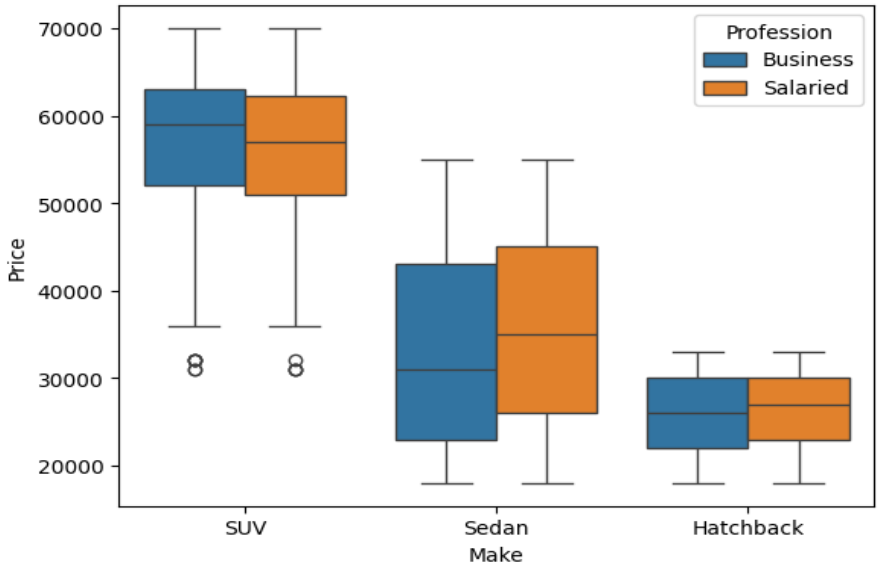

Image 15

Above Image shows that mostly the salaried individuals prefer, the sedan as their price is budget friendly as they cost mostly b\w ($20.000 to $55,000).

Above Image shows salaried person mostly prefer to have sedan then the Business persons.

Above Image shows Business person shows slightly they prefer to have more SUV than salaried person.

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?

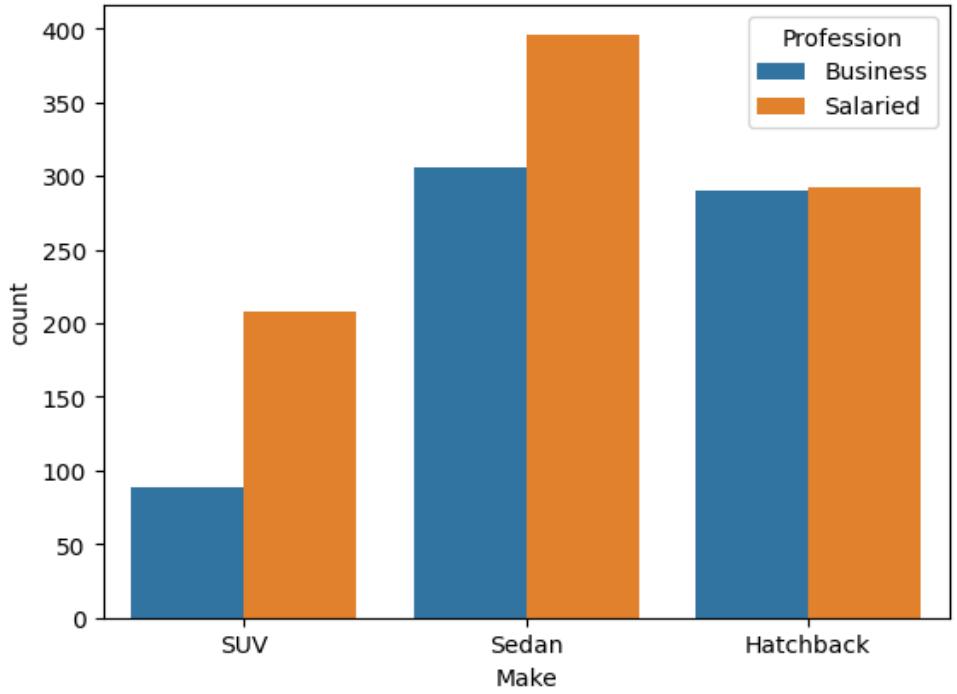

Image 16

Above Image above supports the data which shows that a salaried person is easy target for the Sedan then the SUV, so the Sheldon Cooper's statement contradicts the data which we have in our sales.

4. How does the amount spent on purchasing automobiles vary by gender?

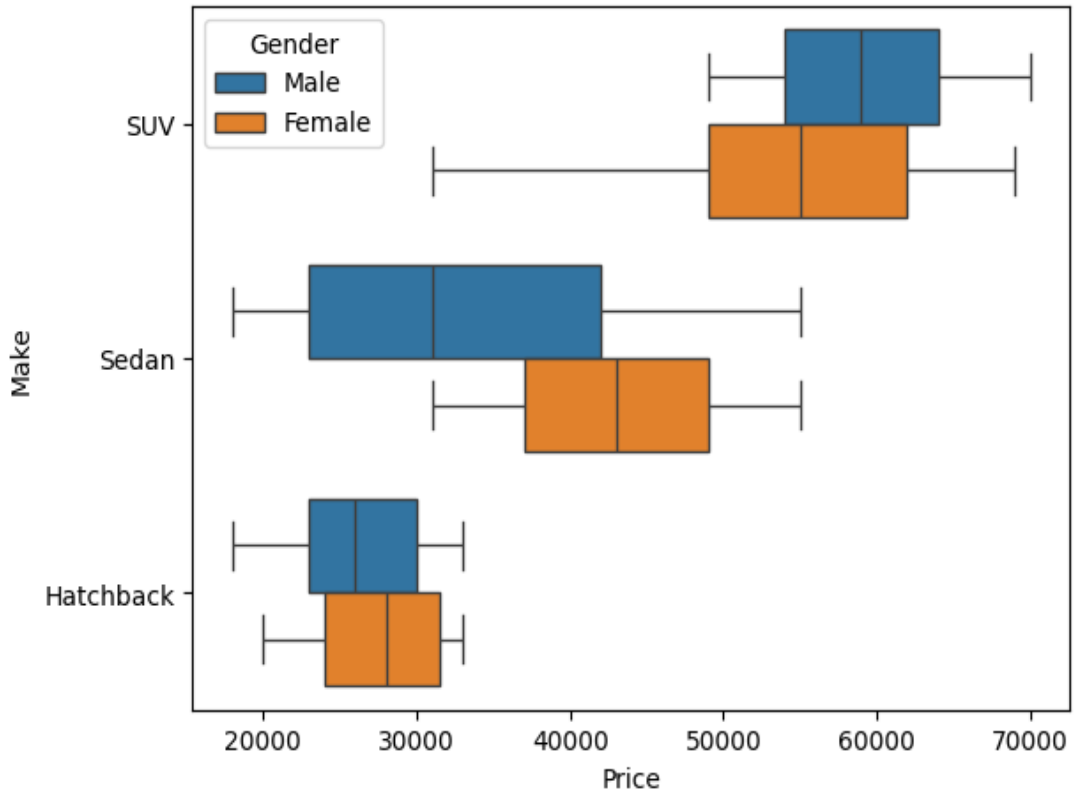

Image 17

Above Image shows mostly Female prefers to spend more on the Sedan and Hatchback then Male.

Above Image shows Male prefers to spend more on SUV then Female.

5. How much money was spent on purchasing automobiles by individuals who took a personal loan?

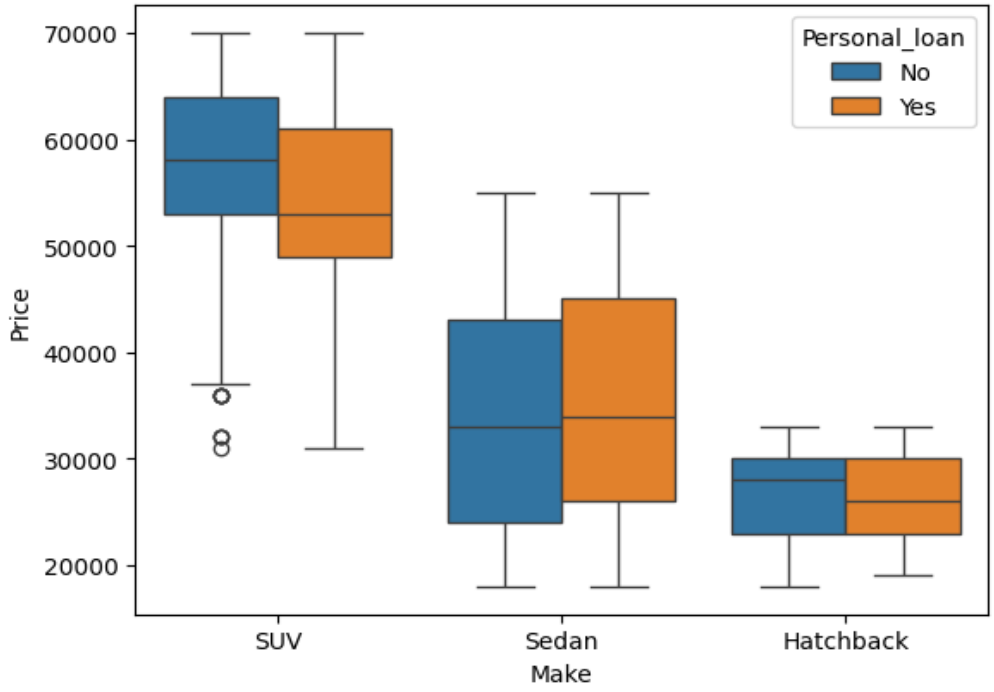

Image 18

Above Image shows individuals with the Individual loan they prefer to spend more on purchasing Sedan over SUV then the Individual having no personal loan.

Above Image shows individuals having personal loan

6. How does having a working partner influence the purchase of higher-priced cars?

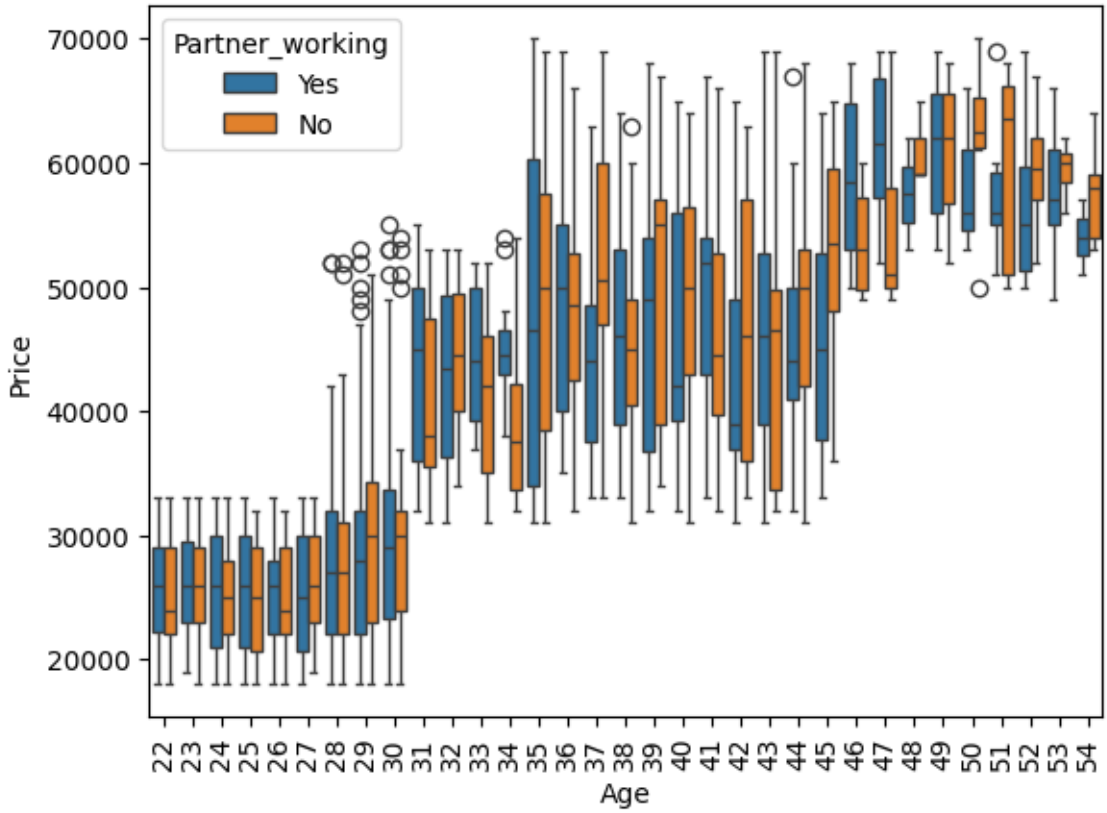

Image 19

Above Image shows the age range b\w the (22 to 30) there we found some outliers shows Working partner's influences the purchase of the high price cars.

Above Image shows age range b\w (31 to 45) shows they prefers the they spend more if their partners are working.

Above Image shows the age range b\w the (46 - 54) shows mostly if their partner is not working, they spend more on the car purchase.

Actionable Insights & Recommendations

Actionable Insights

1. The above data set shows mostly the person with the higher age group prefers cars with higher price than the Age Group with lower Age.
2. The above data set shows with age Group increase they prefers the SUV over the Sedan and Hatchback.
3. The above data set also shows the number of buyers we have are more youngster's and they prefer mostly Hatchback over the Sedan and SUV as Hatchback is more Budget friendly as their price range is b\w ($18,000 to $33,000).

4. We find mostly the Females prefer to have the Sedan over the SUV and Hatchback.

Business Recommendations

1. Hatchback is popular amongst the youngsters, and SUV is mostly popular in the Higher Age group.
2. As our Buyers are mostly youngsters so we need to ensure the production of the cars accordingly.
3. We can run the advertisement according to the preference of the car models to attract the attention of the age group they prefer.
4. We find mostly the Individuals prefers to have the Sedan with higher prices as it comes under Budget friendly price and in the category of Luxury cars.