

CIB - Data Driven CC Marketing

Presented by:

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AGENDA

1) Problem Statement

2) Business Insights

4) Targetted vs Mass Marketing

6) Met Business Goals

8) Technical Journey

3) Customer KPIs

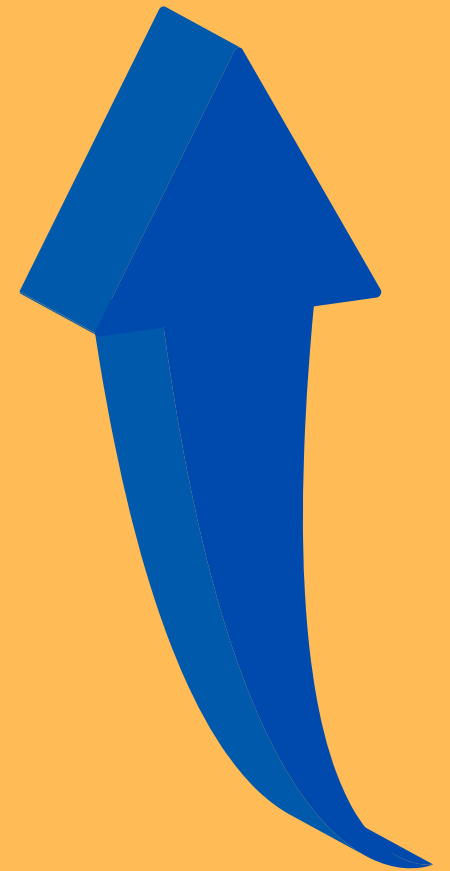
5) Targetted Marketing

7) Why should you hire us?

9) References

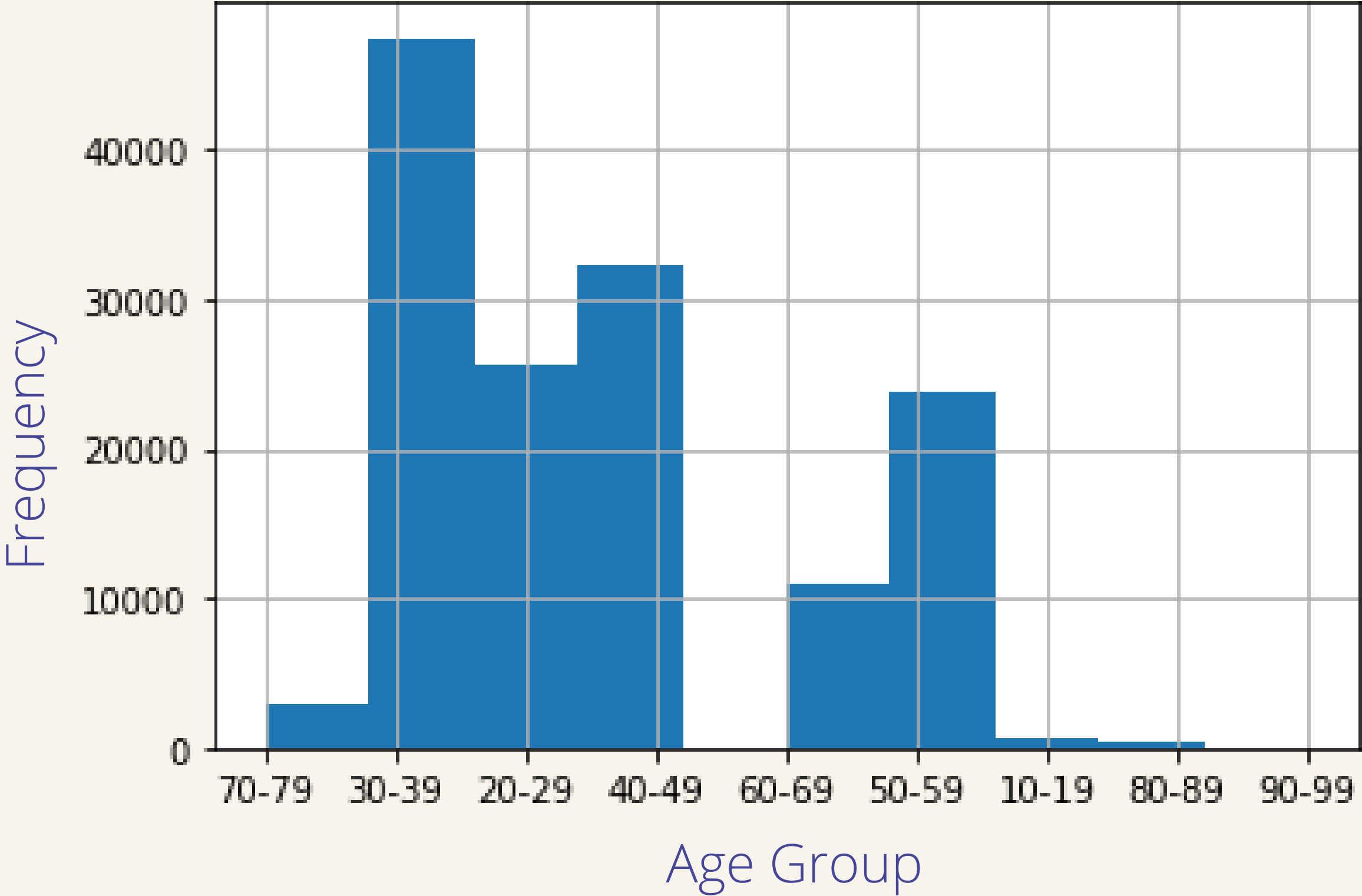
PROBLEM STATEMENT

- Fintech and credit card industry is growing.
- Competition is high in Credit Card (CC) industry
- Industry studies suggest 57% of its customer base is lost in case of not exceeding customers expectations due to better competitors service.
(AcuityKP, n.d.)
- **CIB** wants to satisfy its customer base and even attract new customers



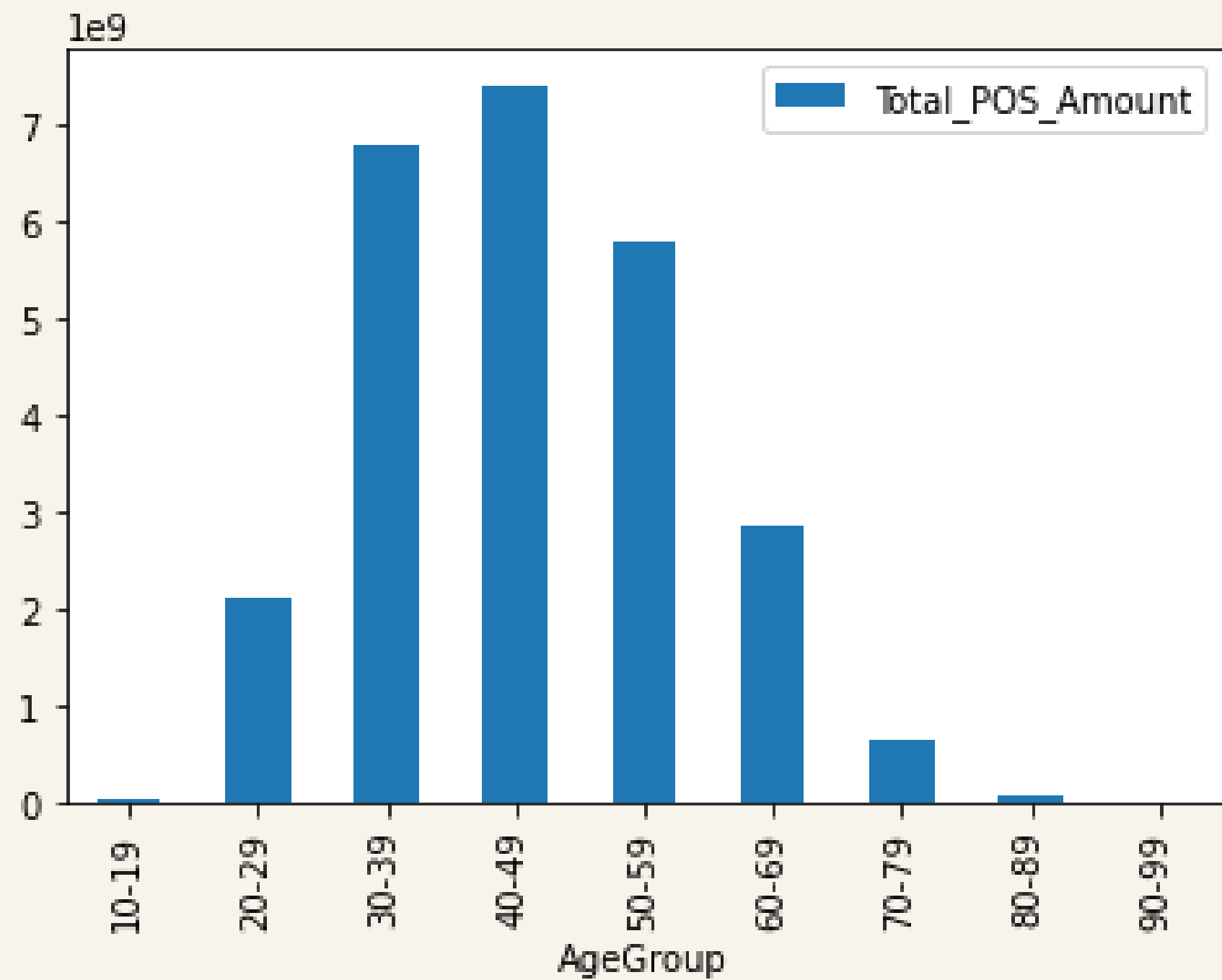
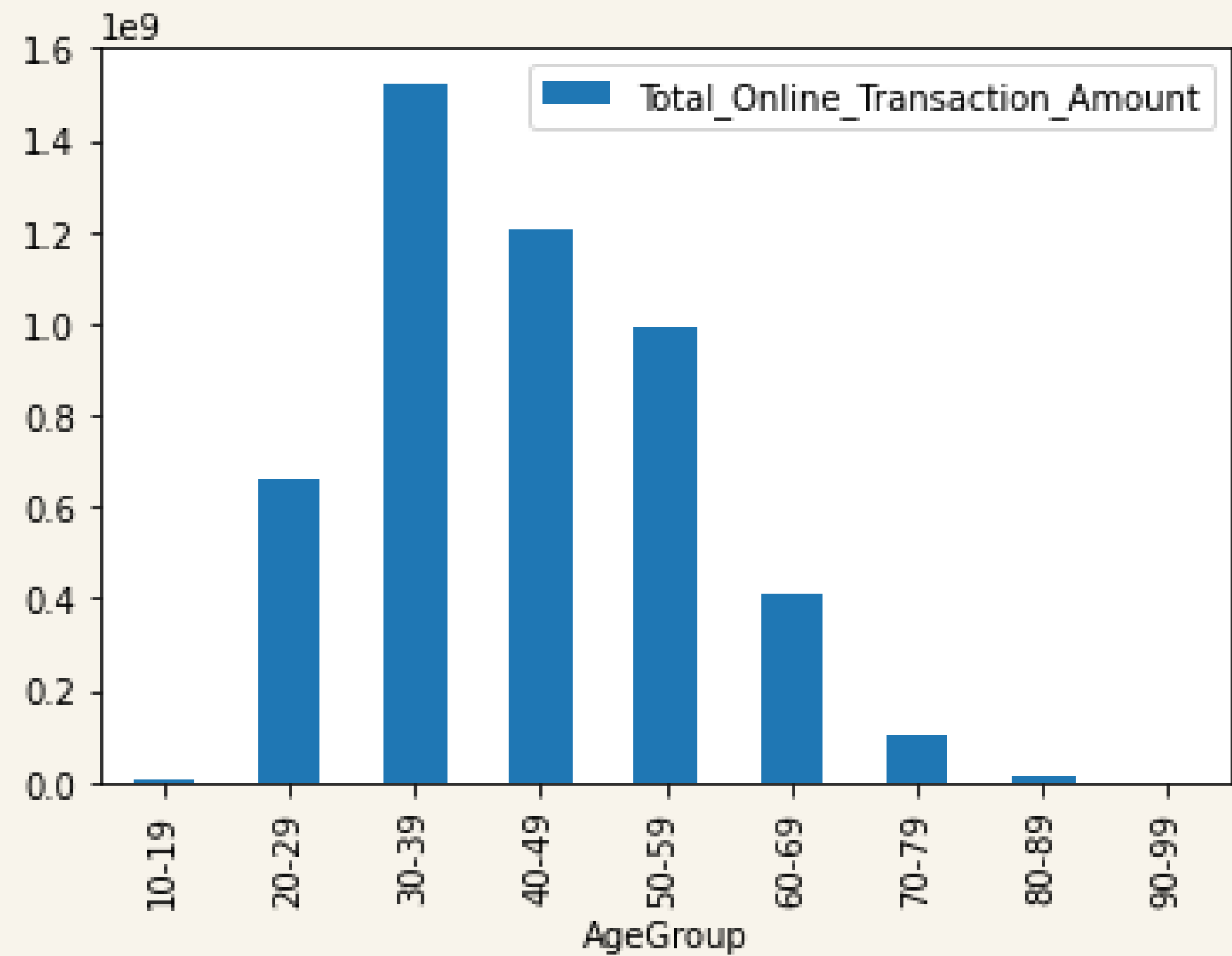
BUSINESS INSIGHTS

AGE ANALYSIS

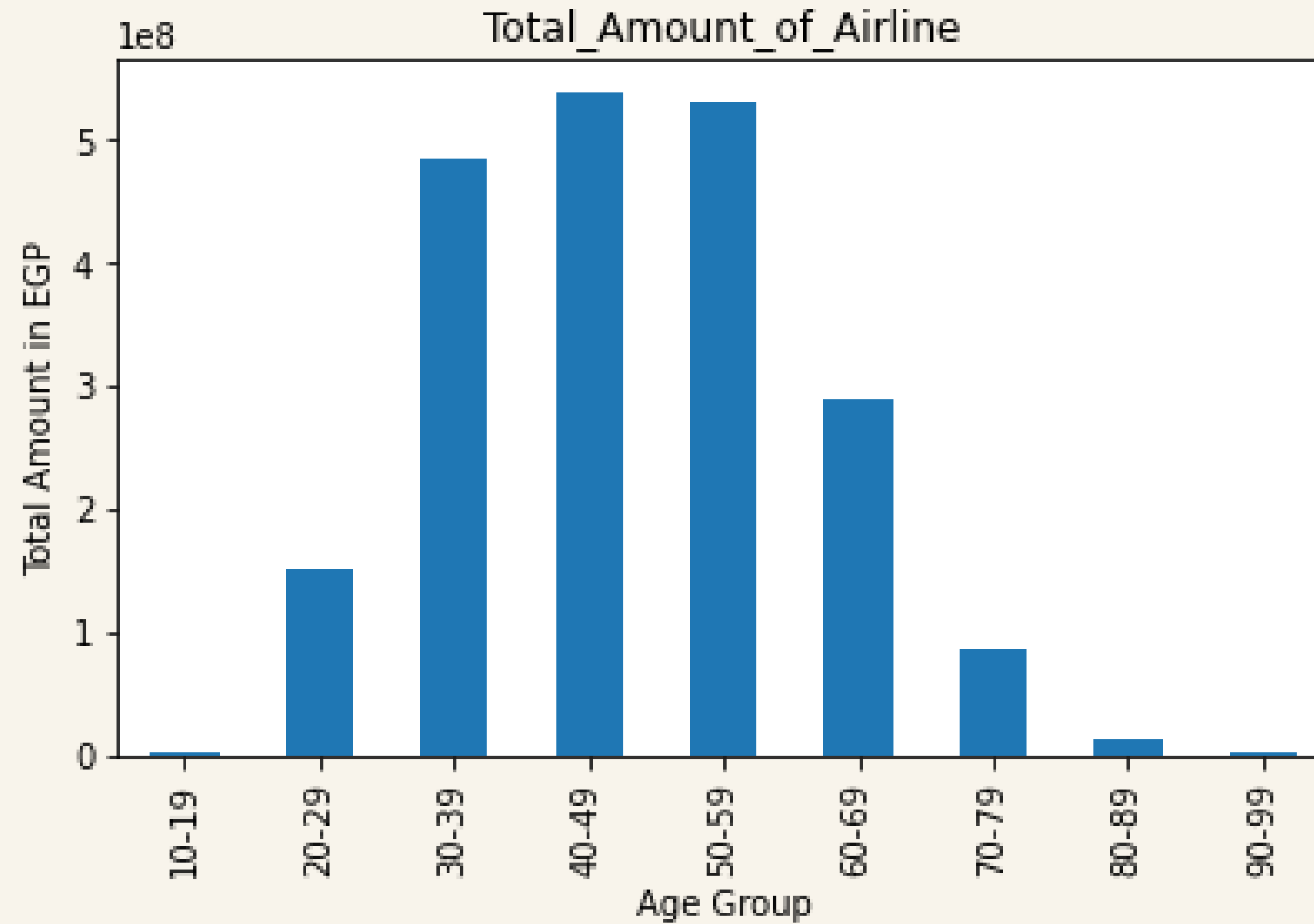


Age	Population%
30-39	33.0 %
40-49	22.4 %
20-29	17.8 %
50-59	16.5 %
60-69	7.7 %
70-79	2.0 %
10-19	0.5 %
80-89	0.2 %

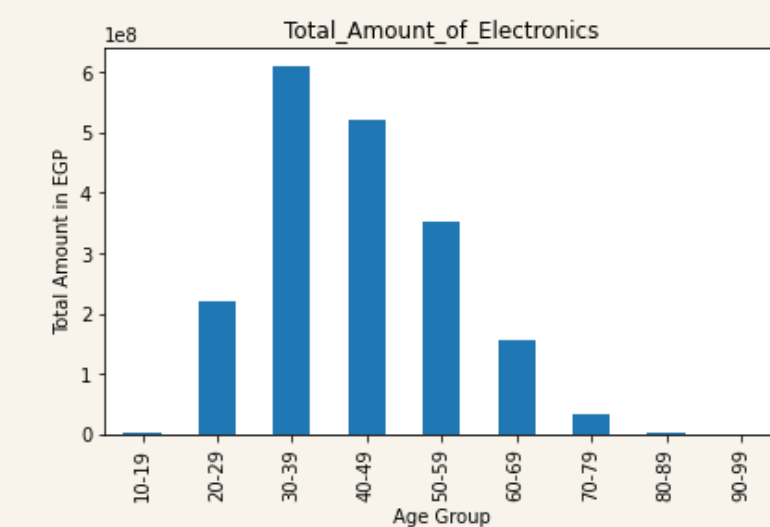
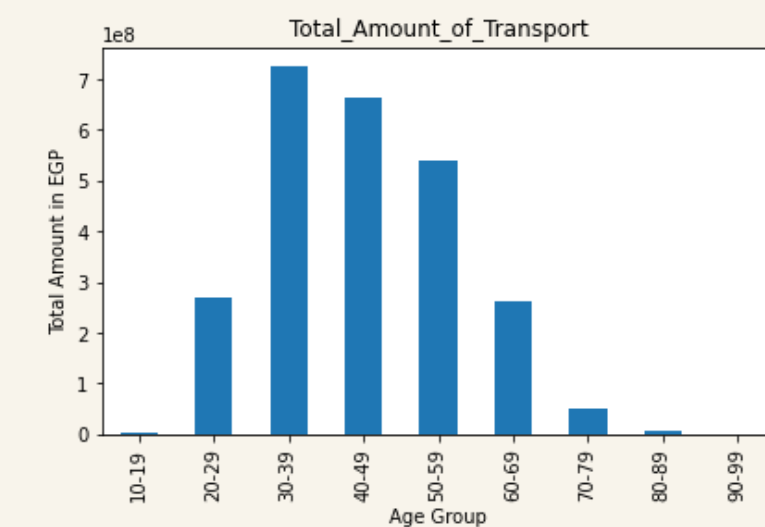
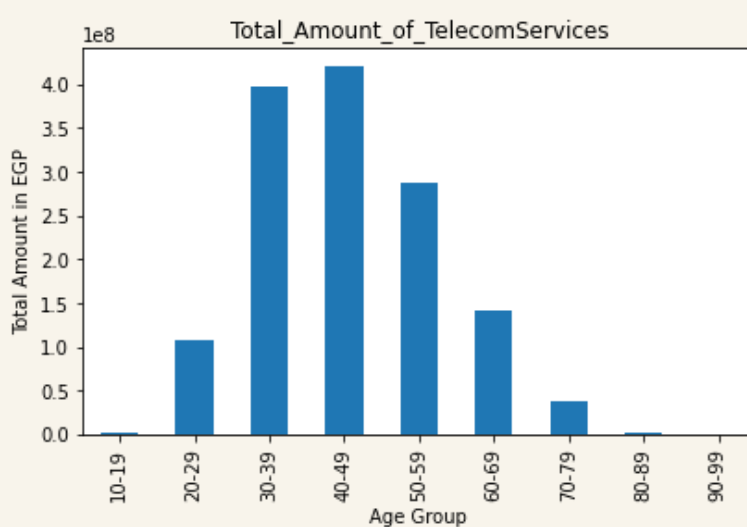
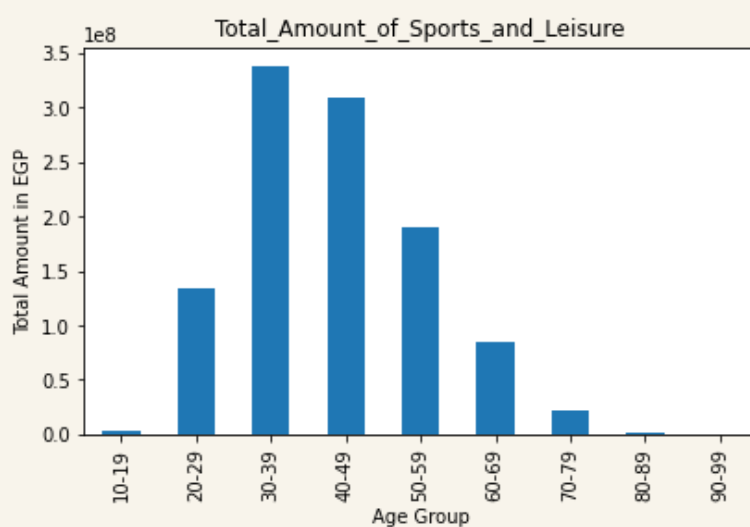
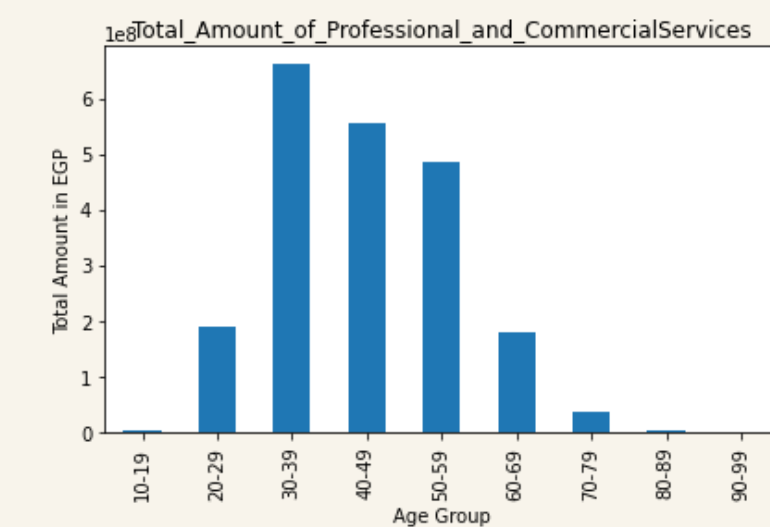
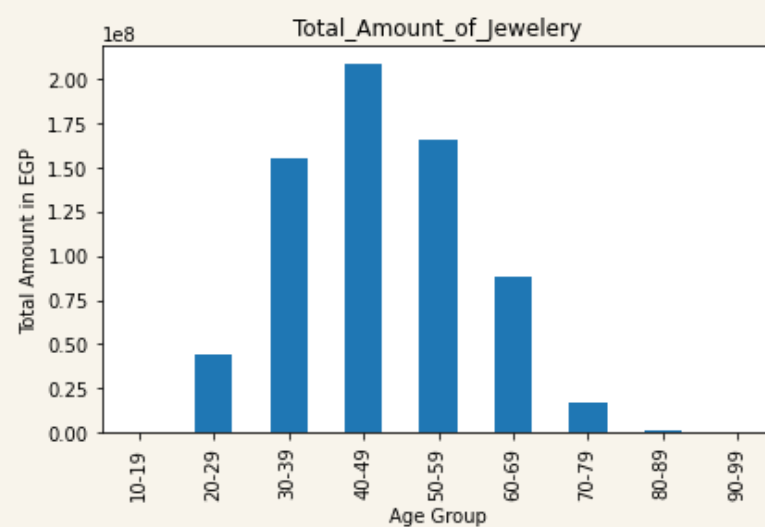
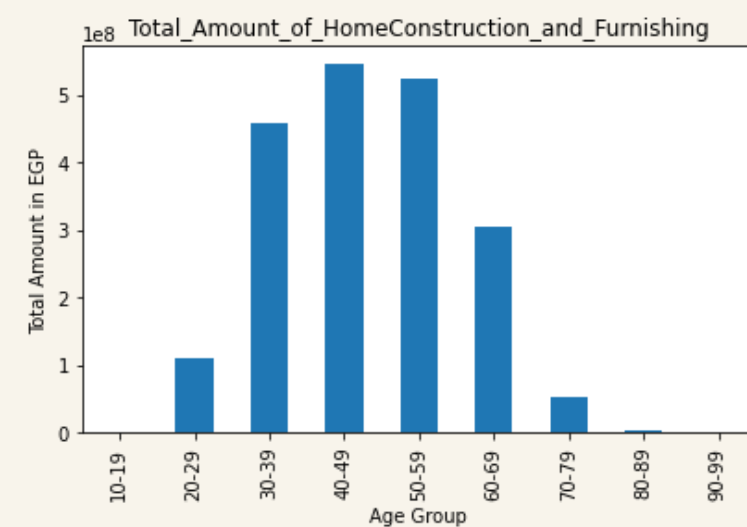
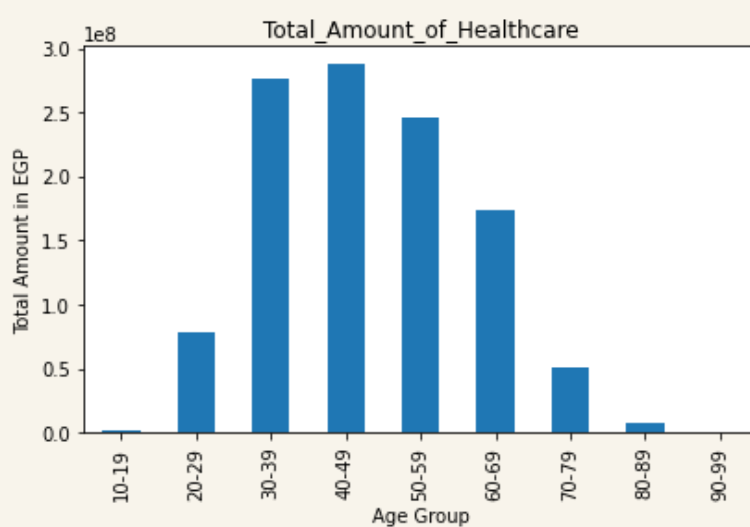
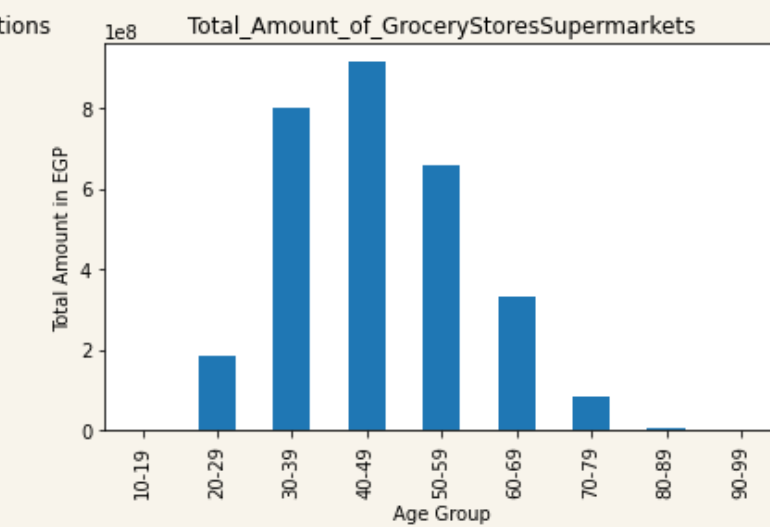
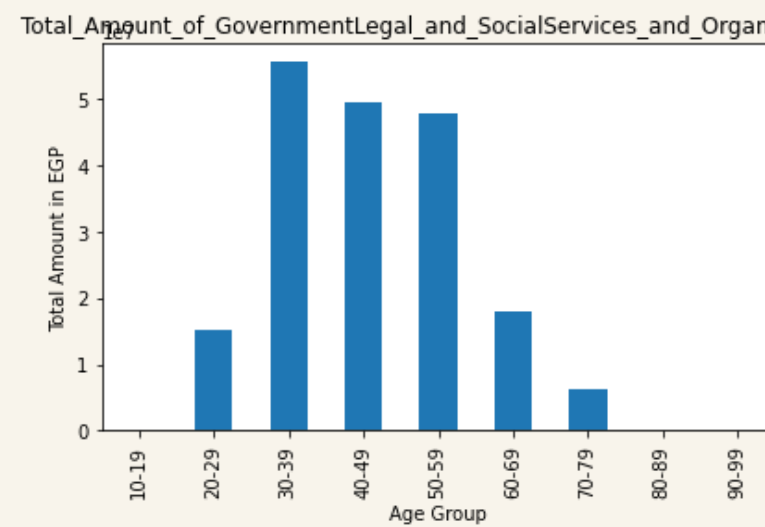
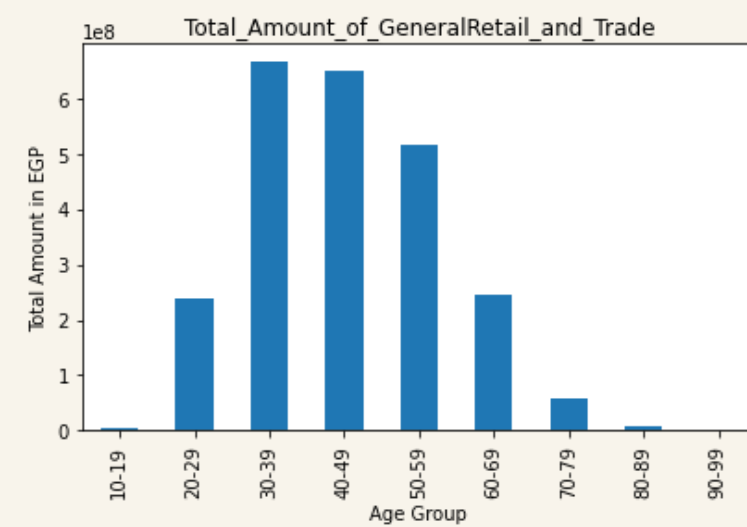
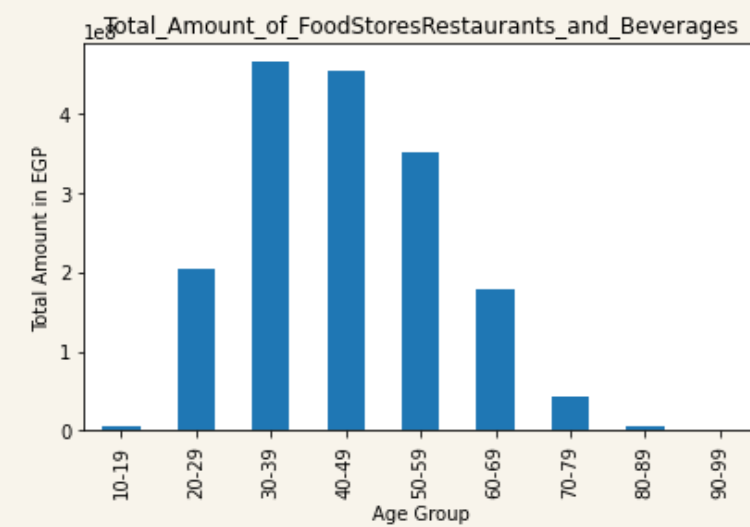
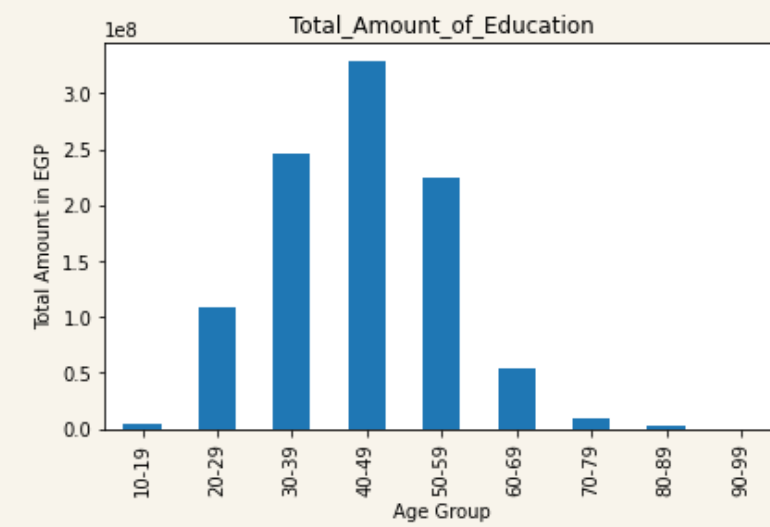
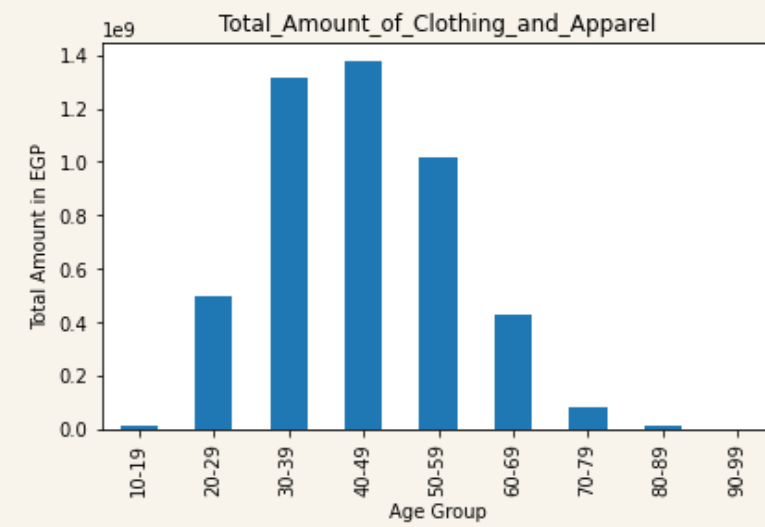
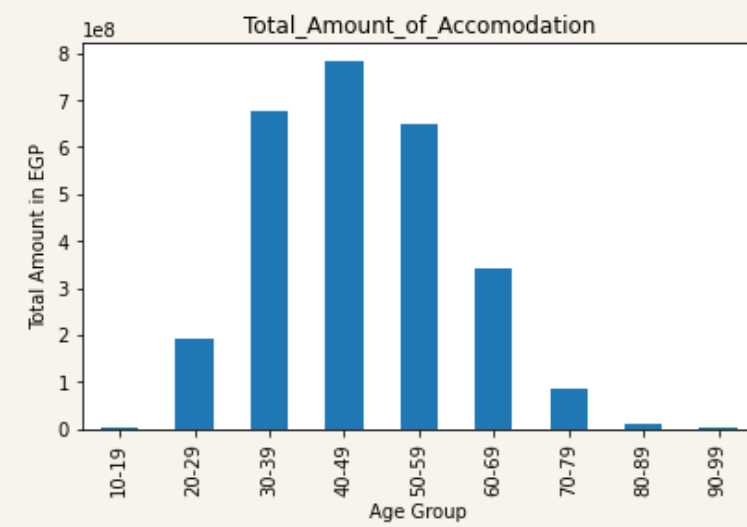
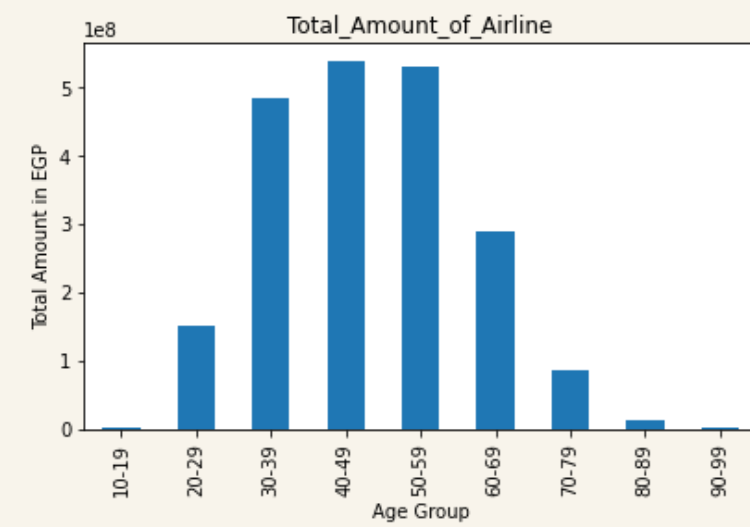
AGE VS POS/ONLINE



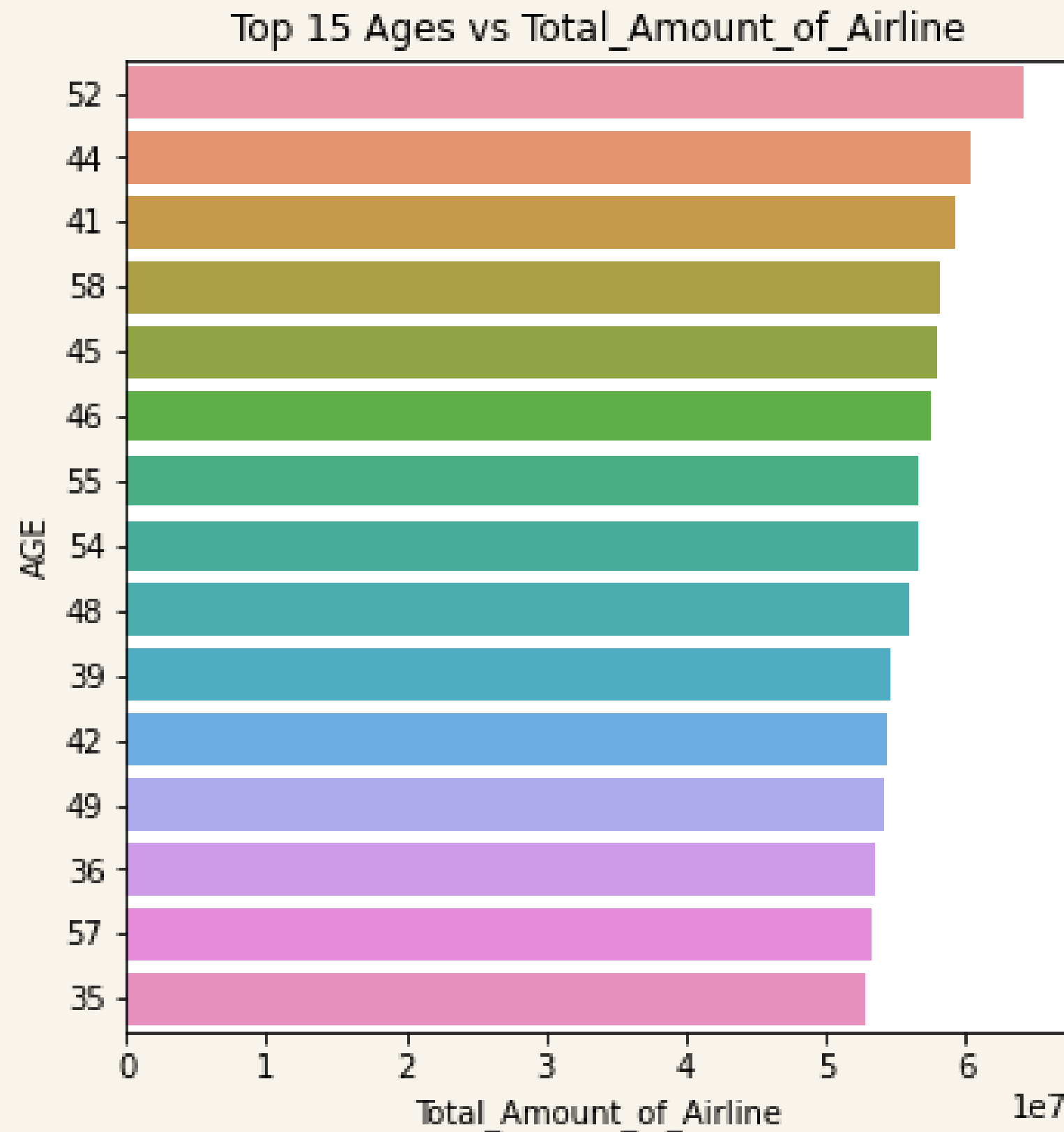
AGE VS MG



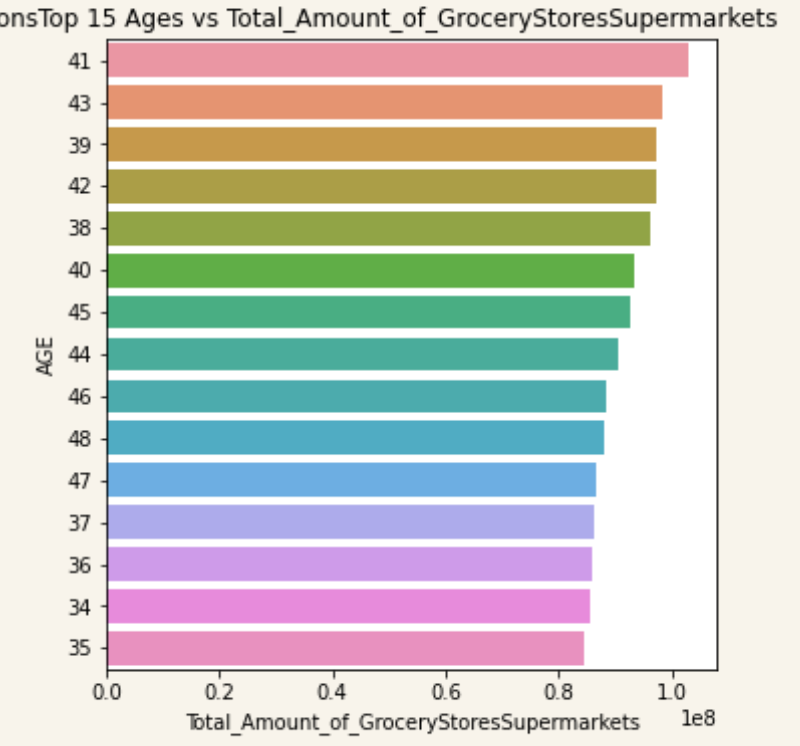
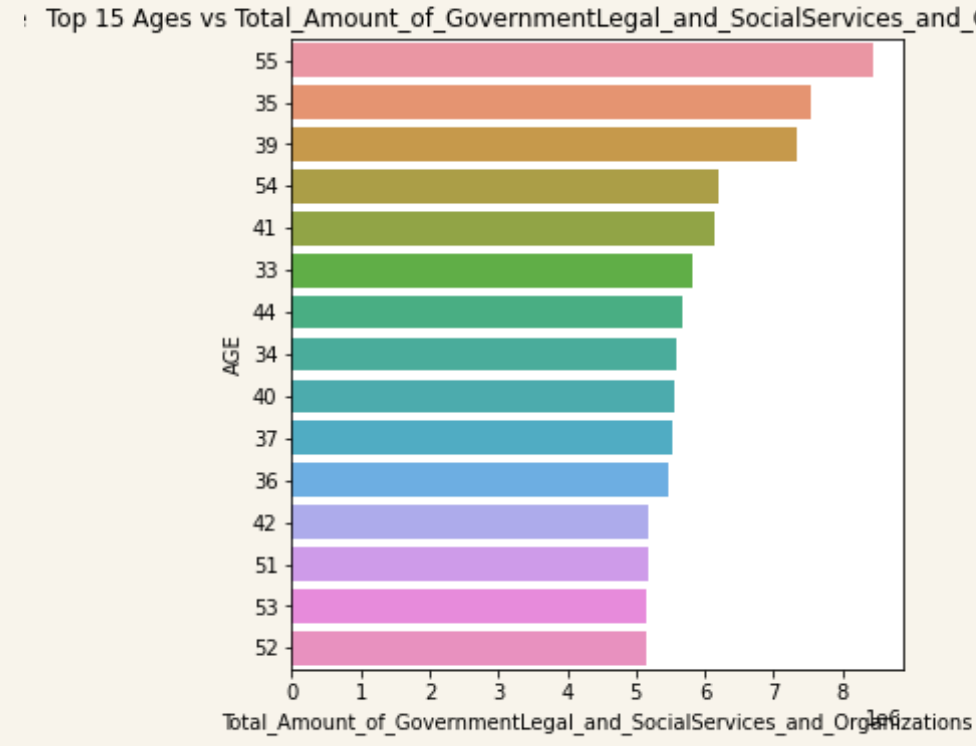
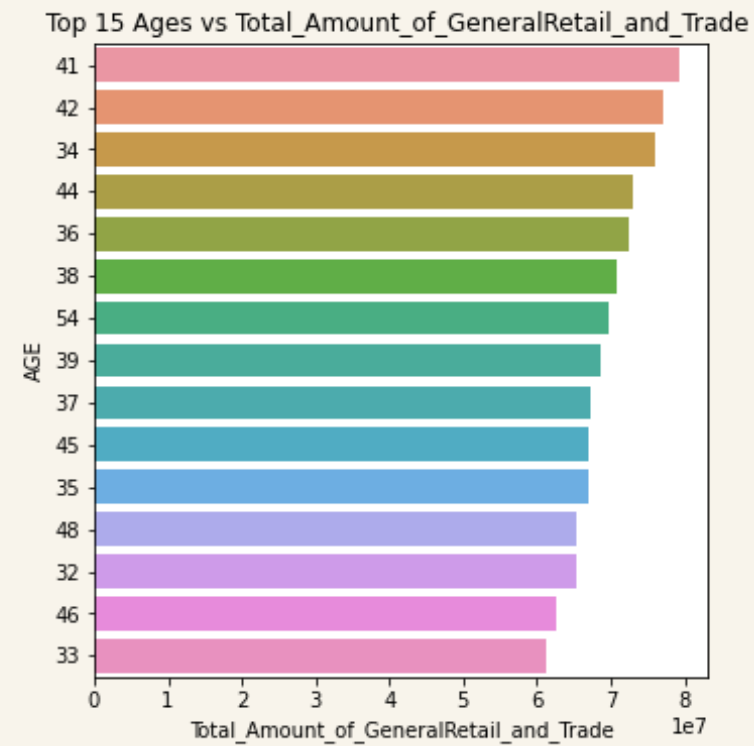
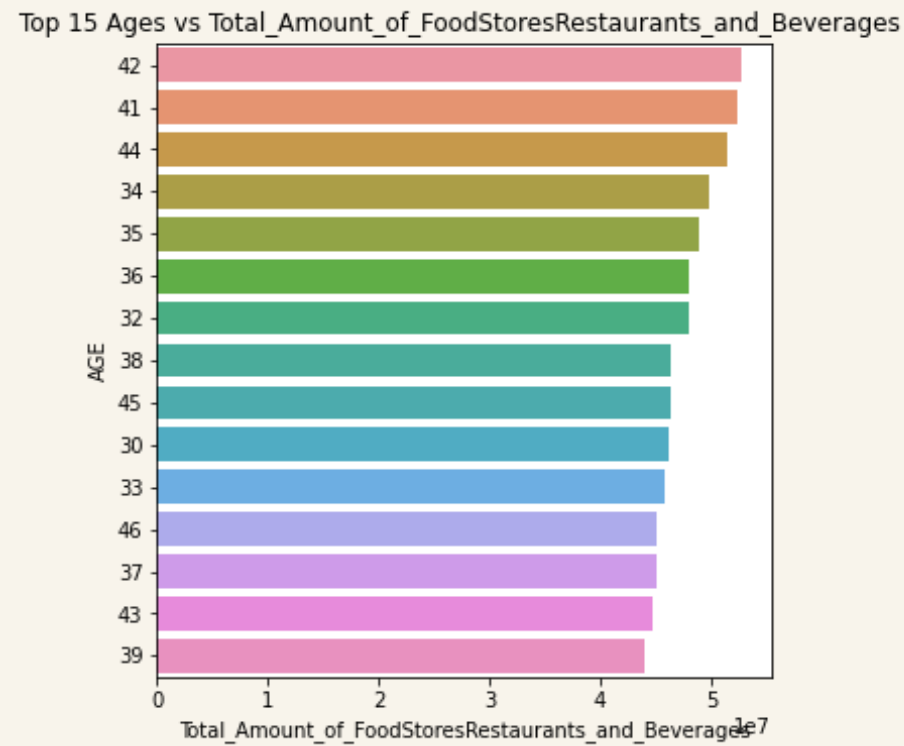
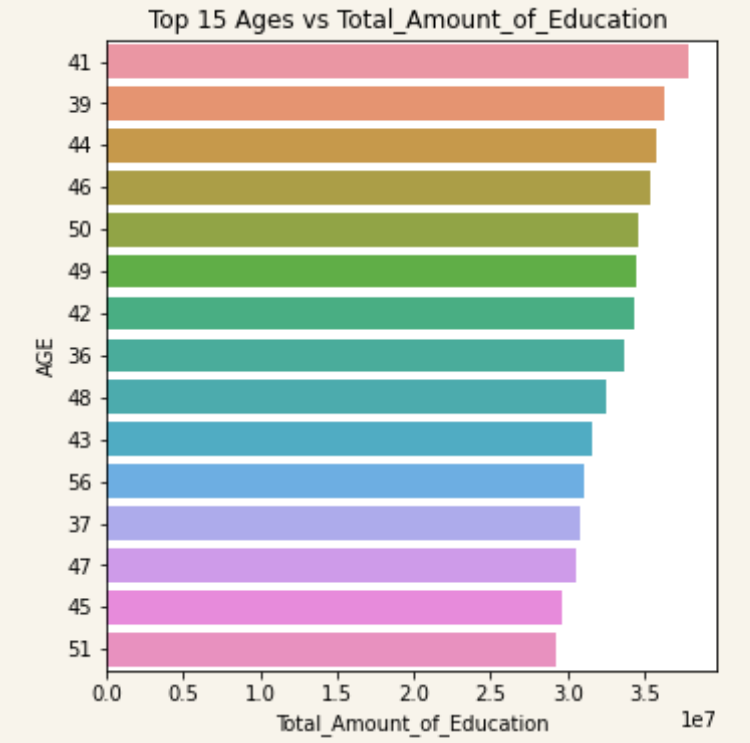
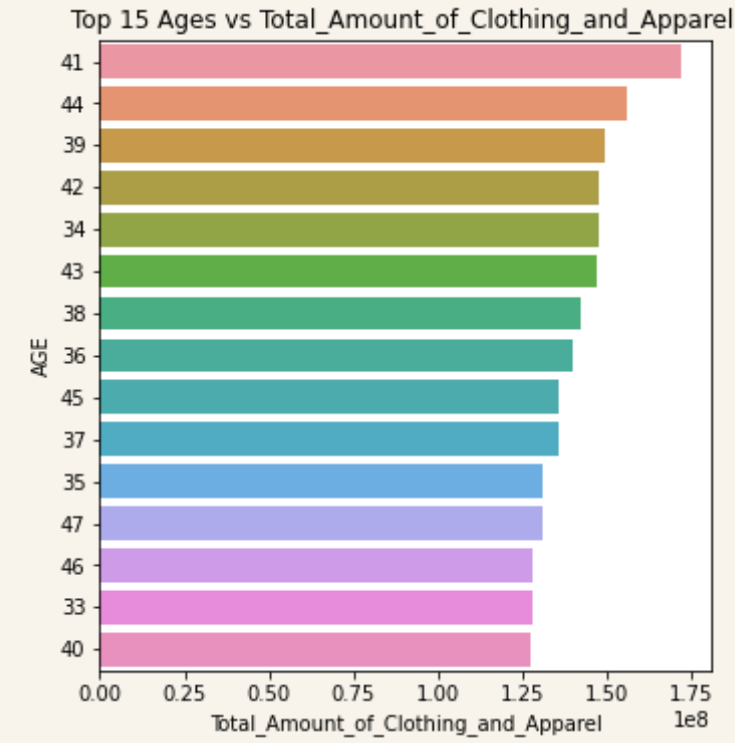
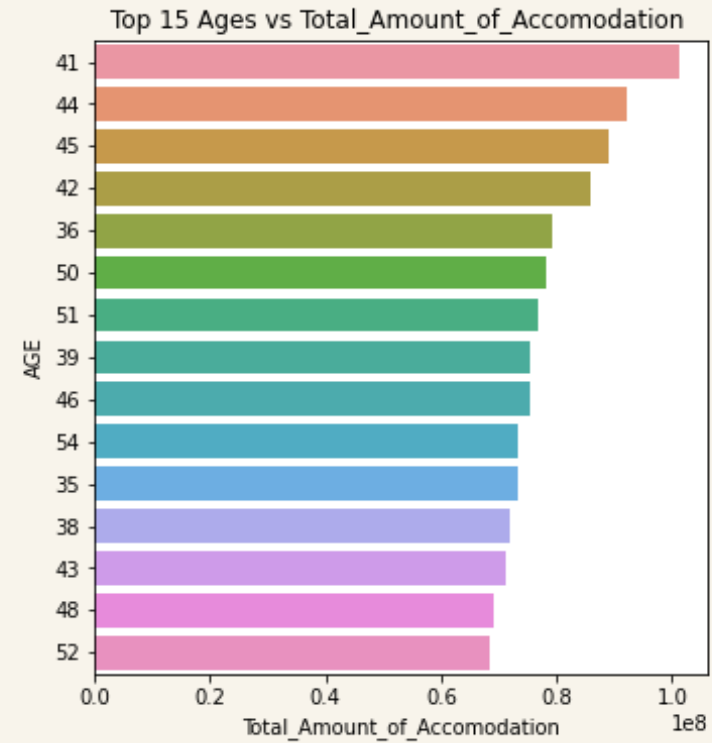
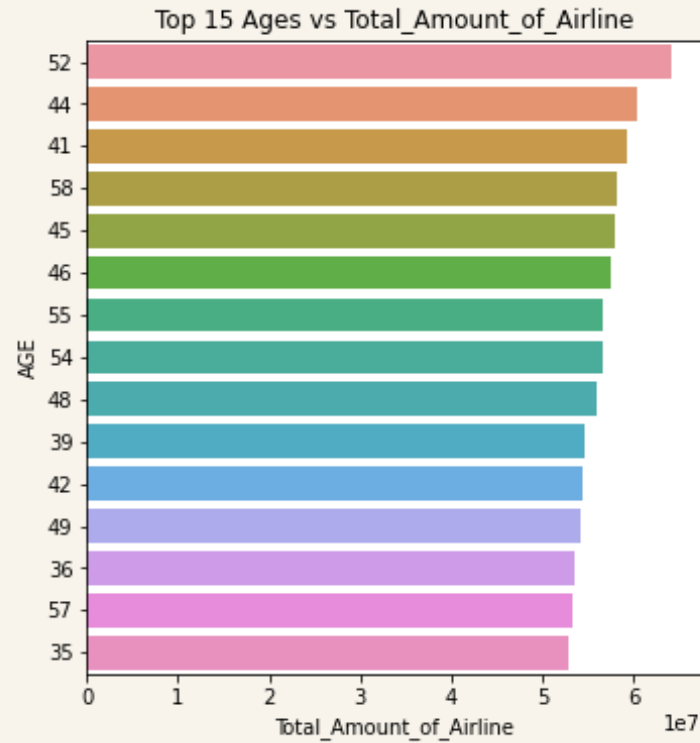
The total amount
spent by every age
group in all categories

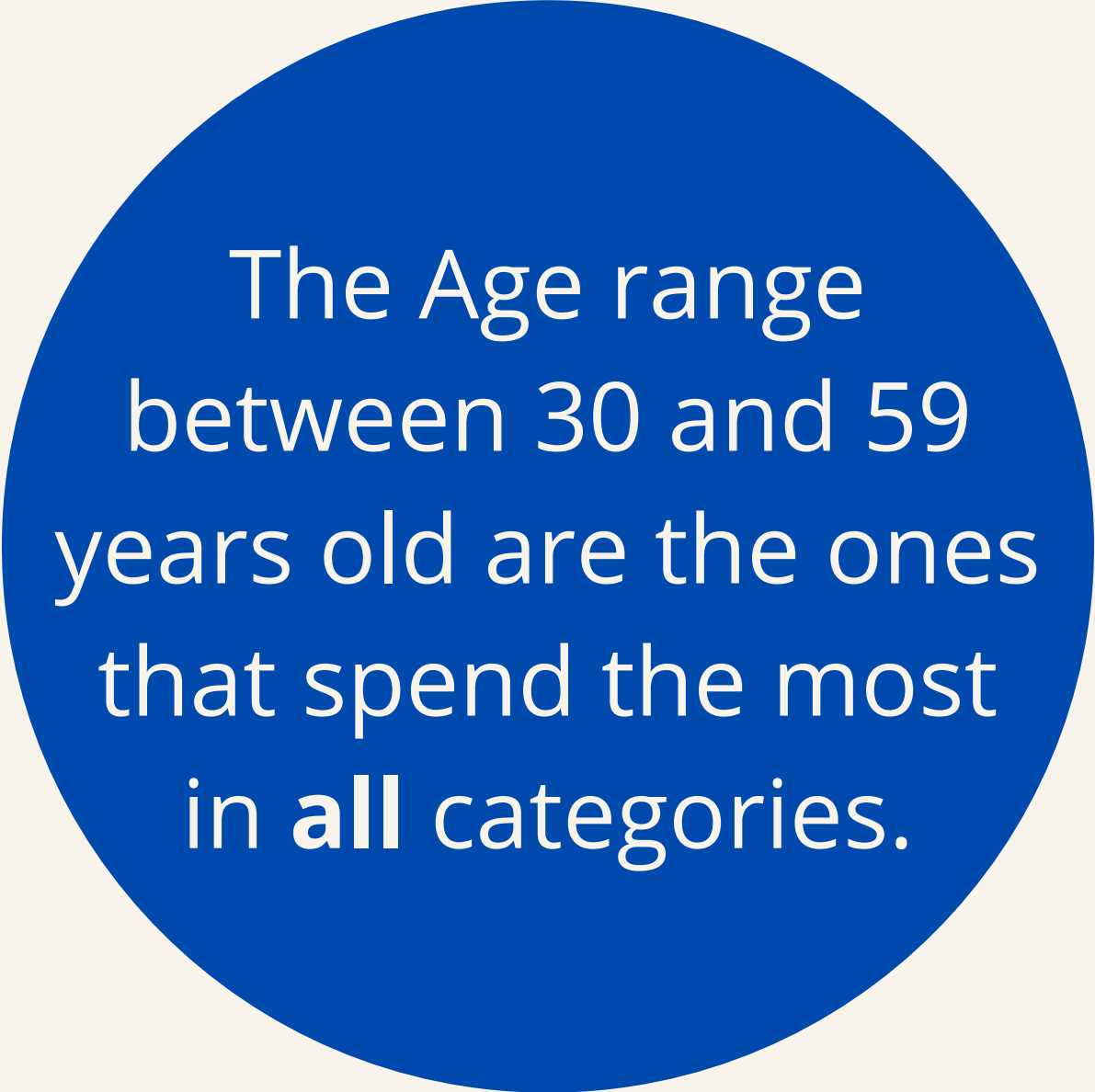


AGE VS MG



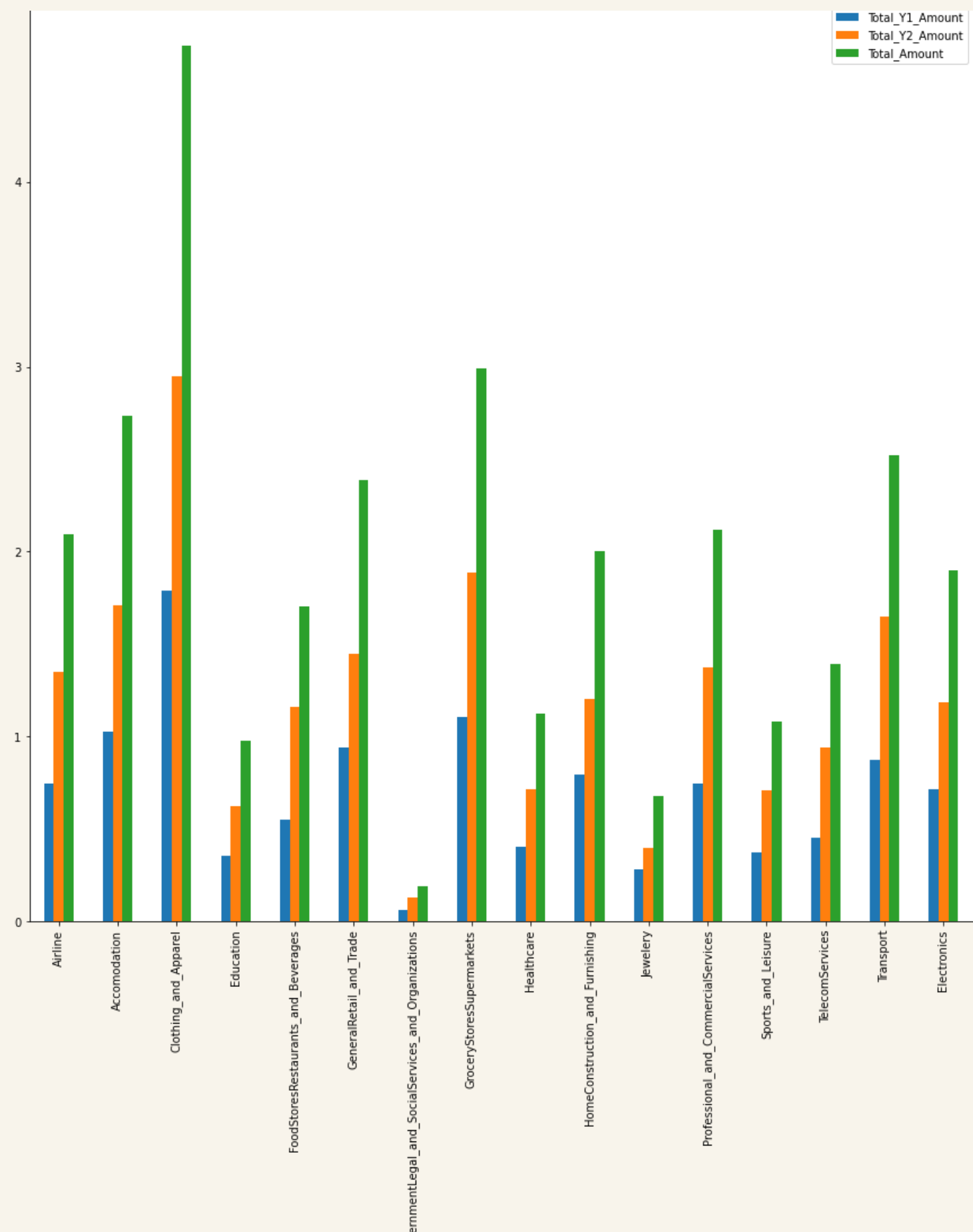
Top 15 Ages that
spend in every
category



A solid blue circle is centered on a light beige background. Inside the circle, white text is arranged in five lines, centered horizontally. The text reads: "The Age range between 30 and 59 years old are the ones that spend the most in **all** categories." The word "all" is bolded.

The Age range
between 30 and 59
years old are the ones
that spend the most
in **all** categories.

MERCHANT GROUP ANALYSIS



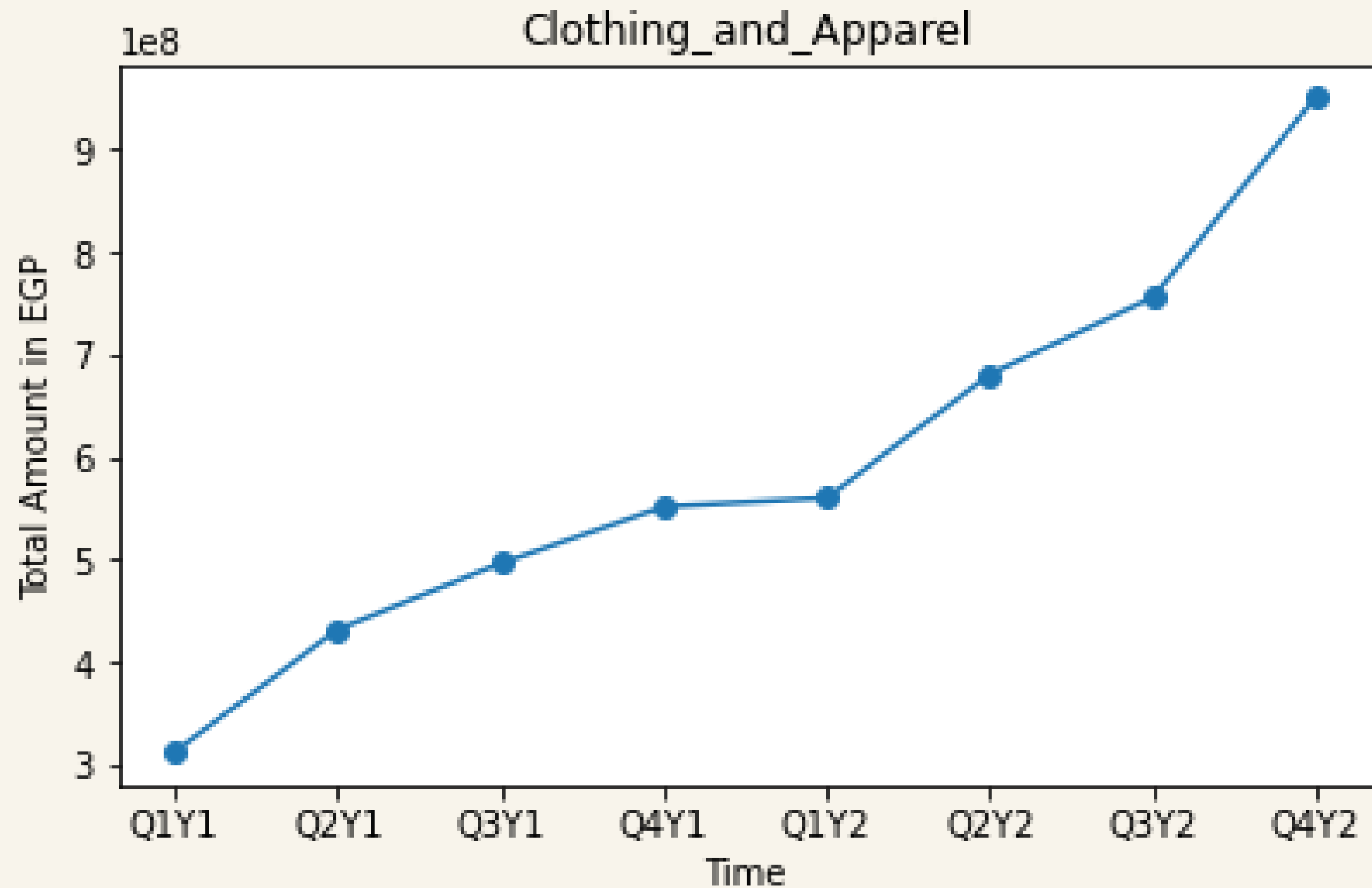
**Highest
Total
Spend**

- 1 CLOTHING AND APPAREL
- 2 GROCERY AND SUPERMARKETS
- 3 ACCOMODATION
- 4 TRANSPORT

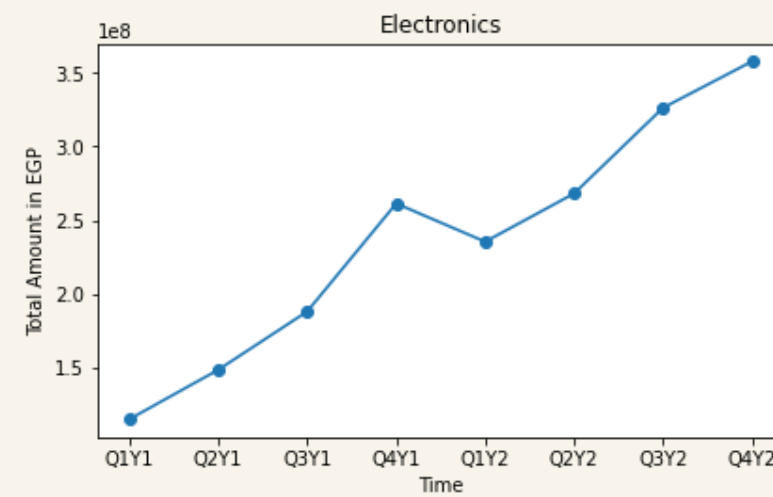
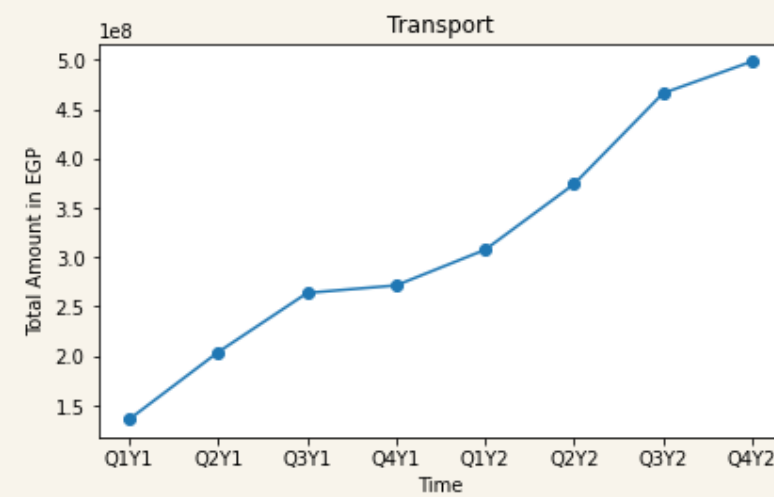
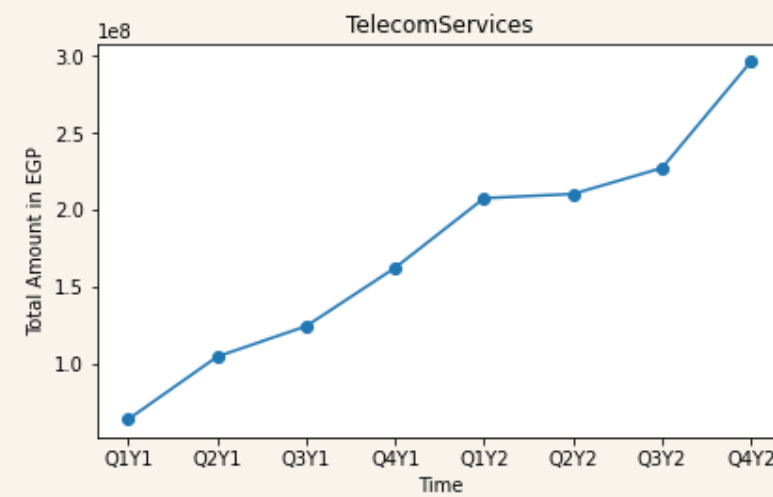
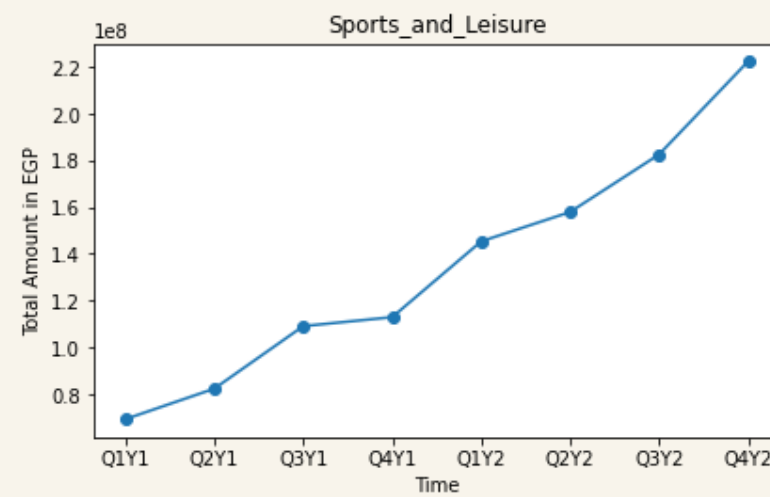
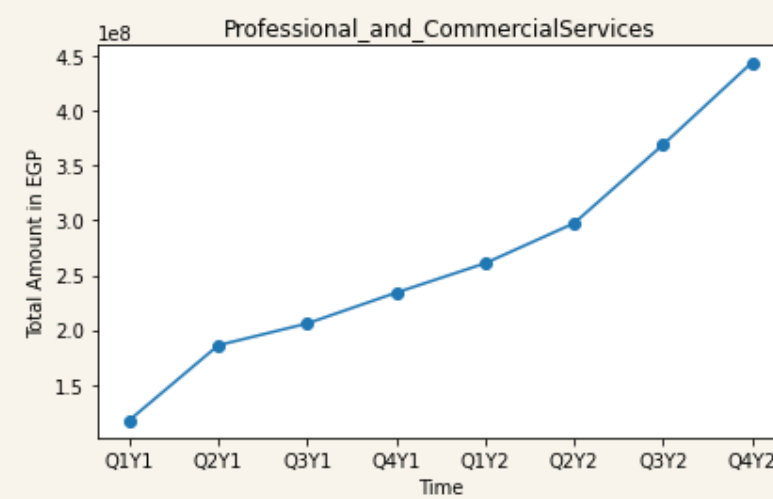
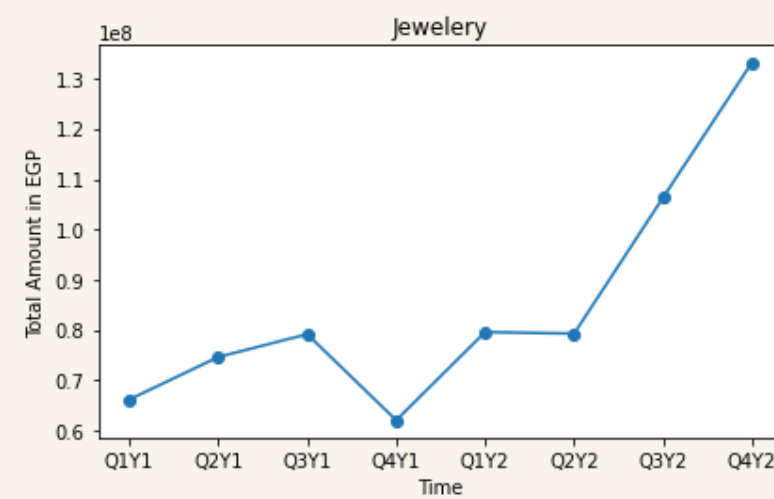
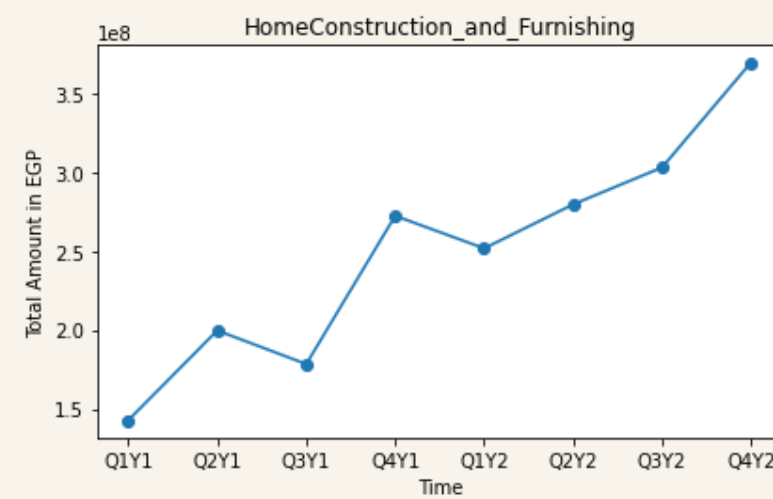
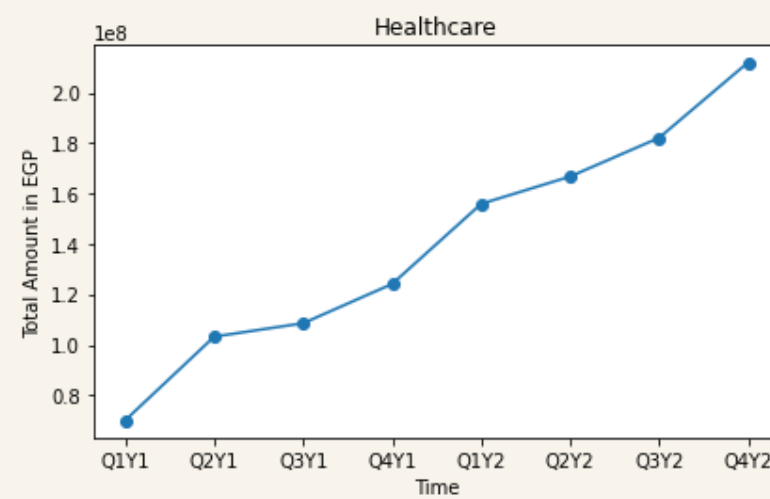
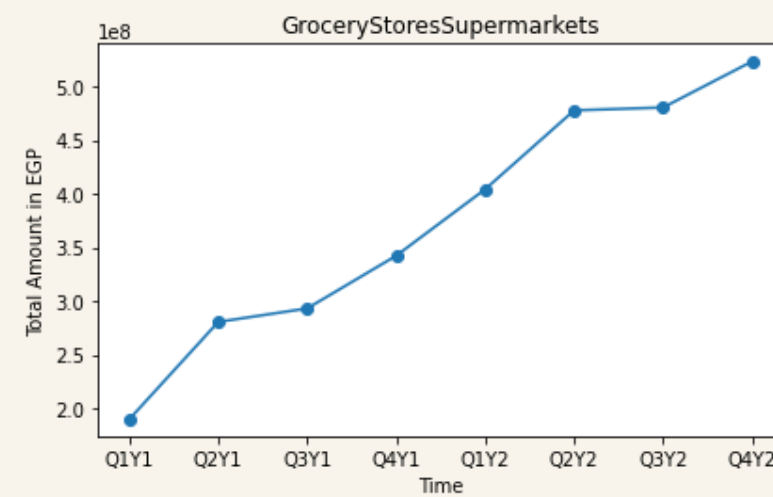
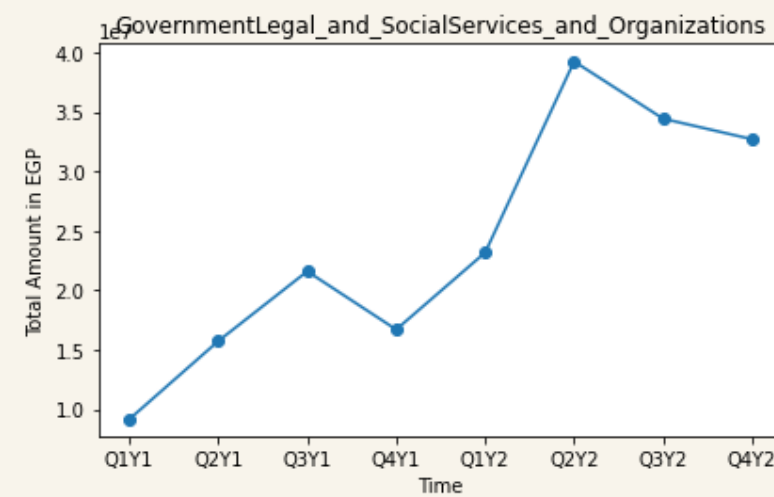
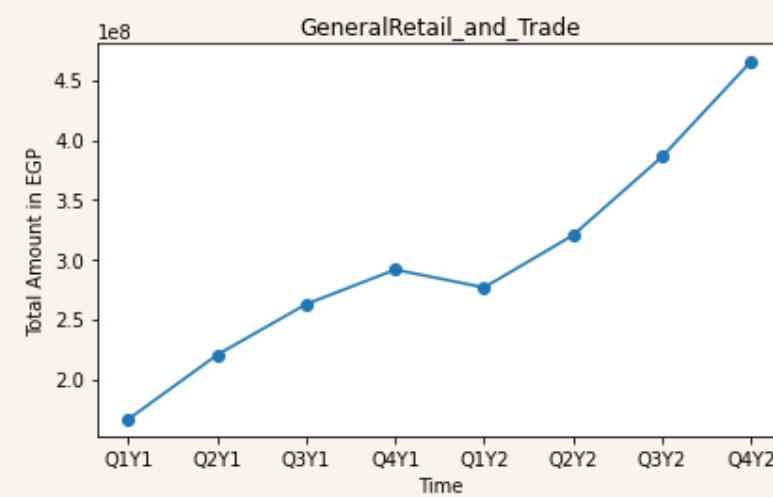
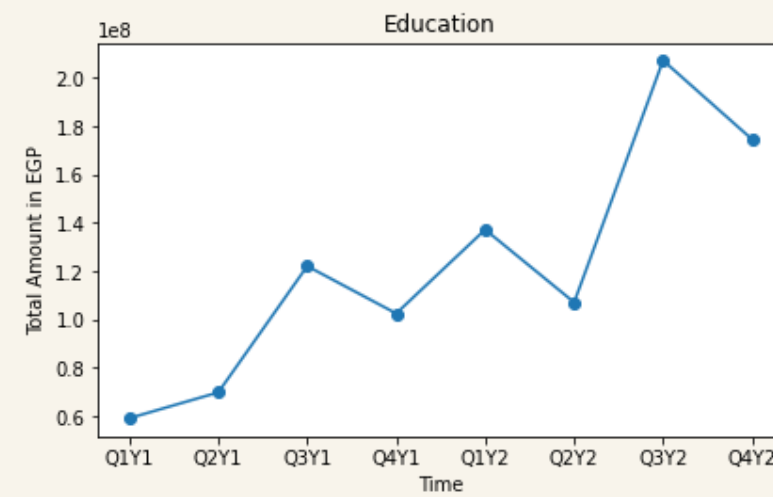
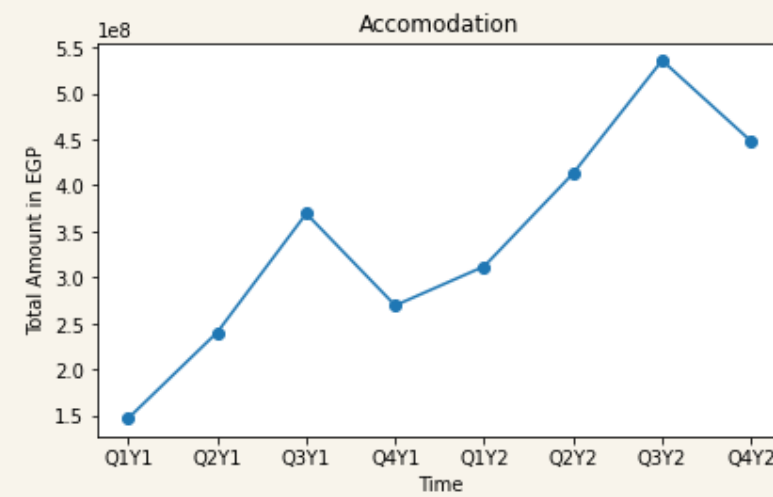
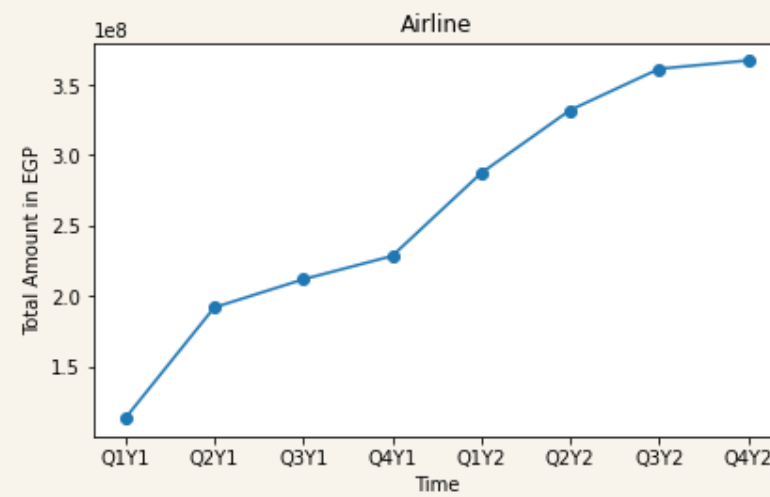
**Lowest
Total
Spend**

- 1 GOVERNMENTAL SERVICES
- 2 JEWELRY
- 3 EDUCATION

MG TIME SERIES ANALYSIS



Total Amount
Spent in every
category over time

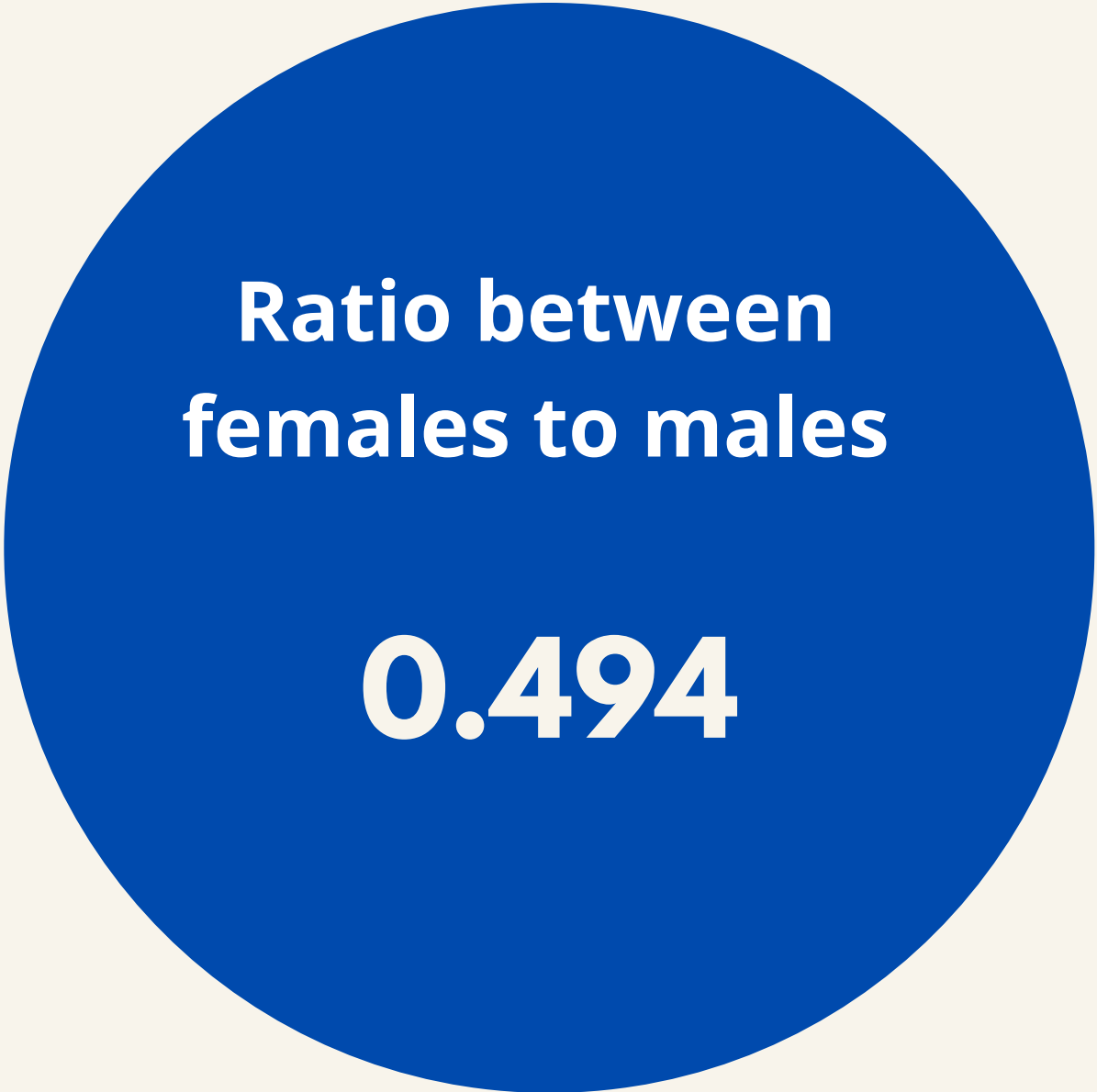


Customers tend to spend more using credit cards in almost all merchant groups by the time especially clothing, grocery stores, food & restaurants, commercial services, transport, sports .

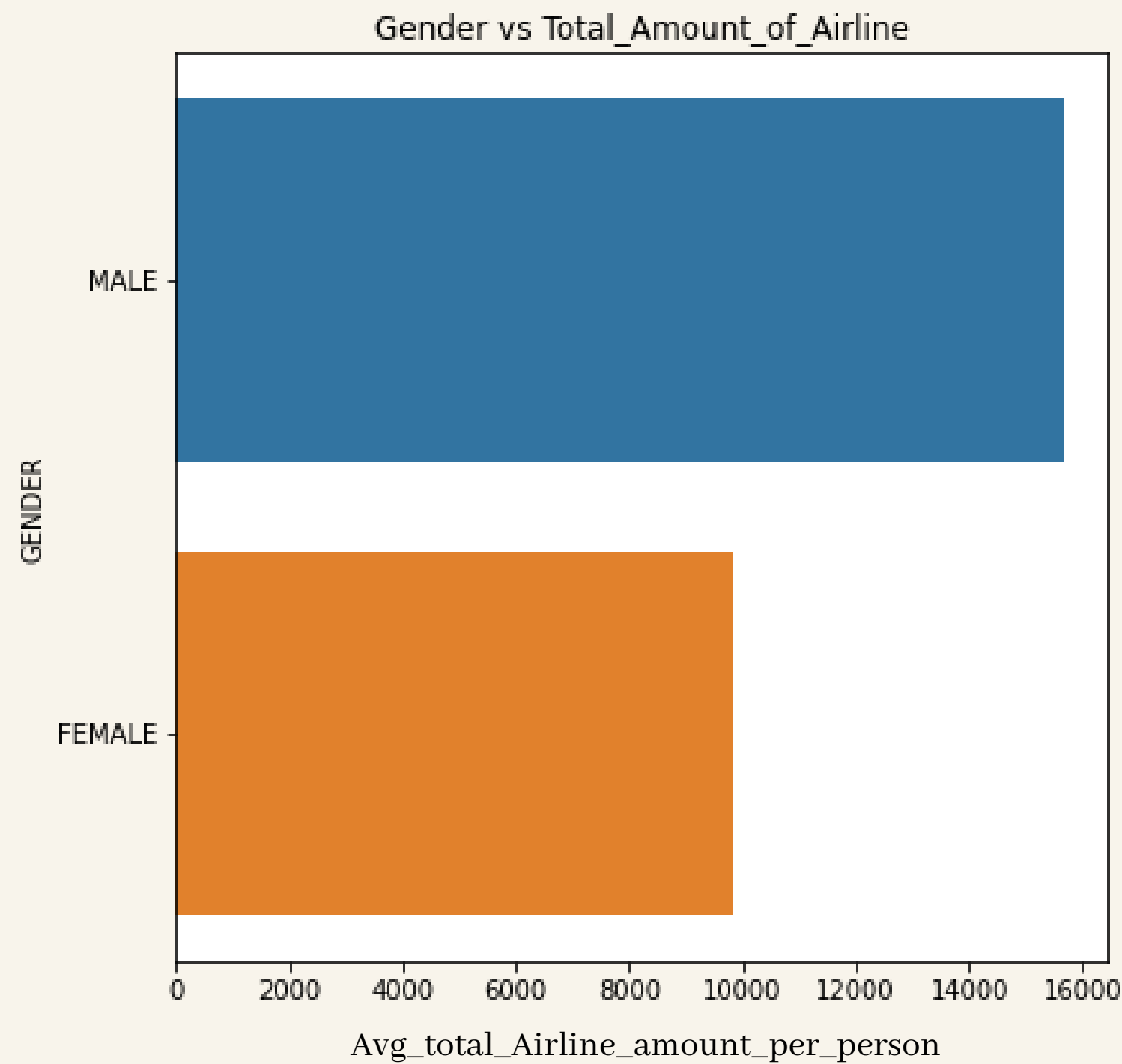
- Education sector is fluctuating
- Decrease in Accommodation total spent amount at the 4th quarter of both years
- A high increase in jewellery group in the second quarter of the second year

GENDER ANALYSIS

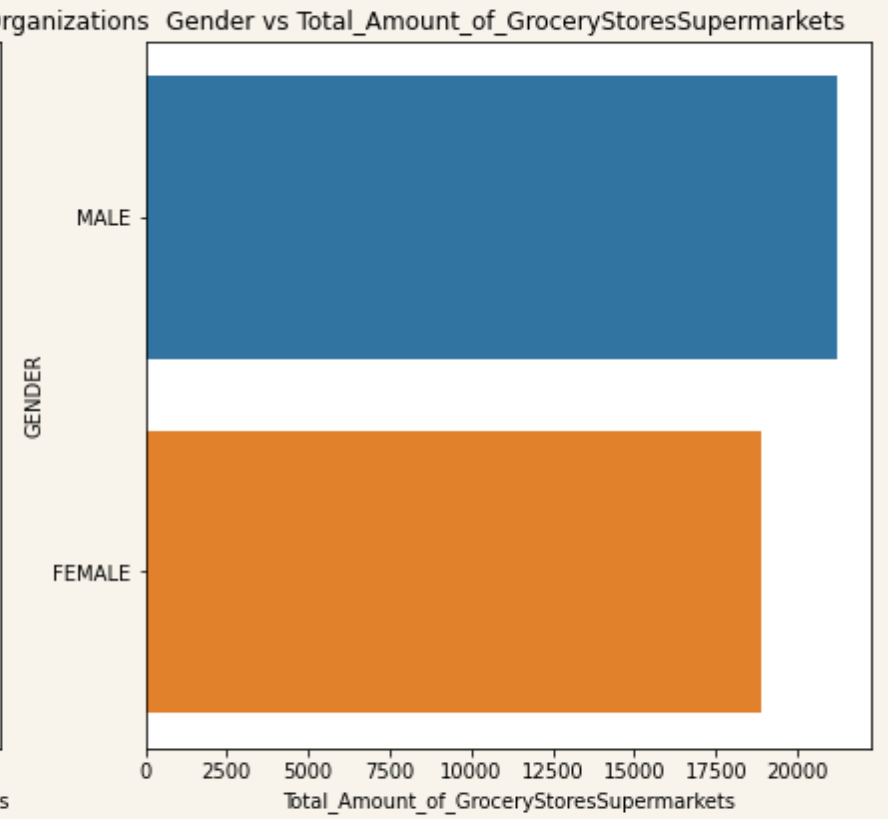
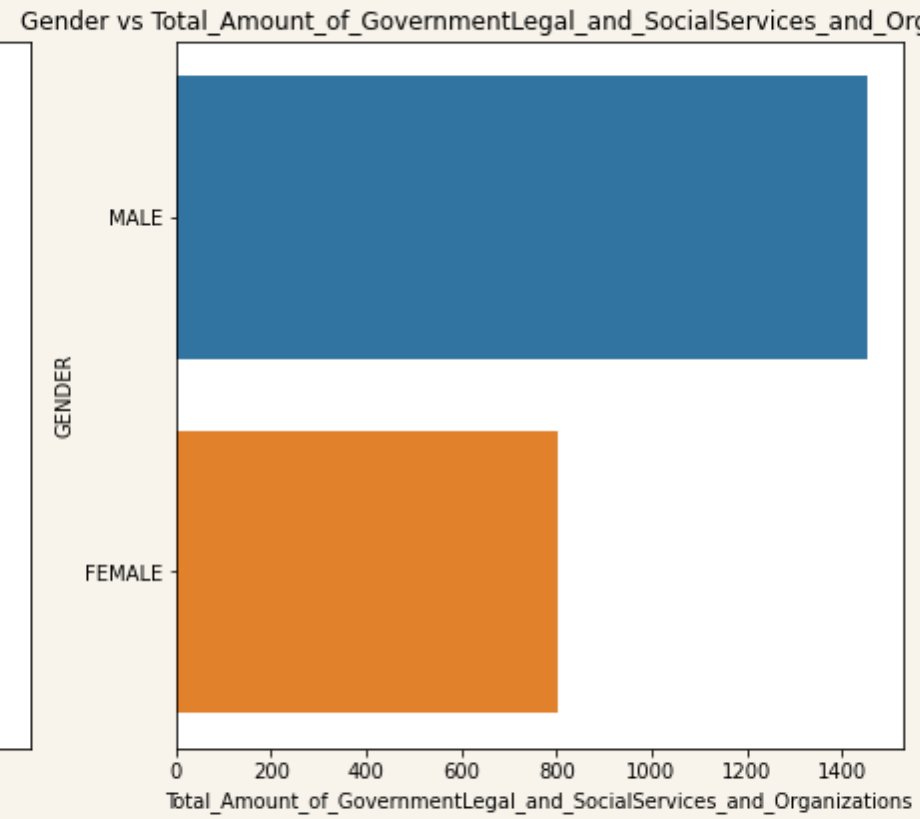
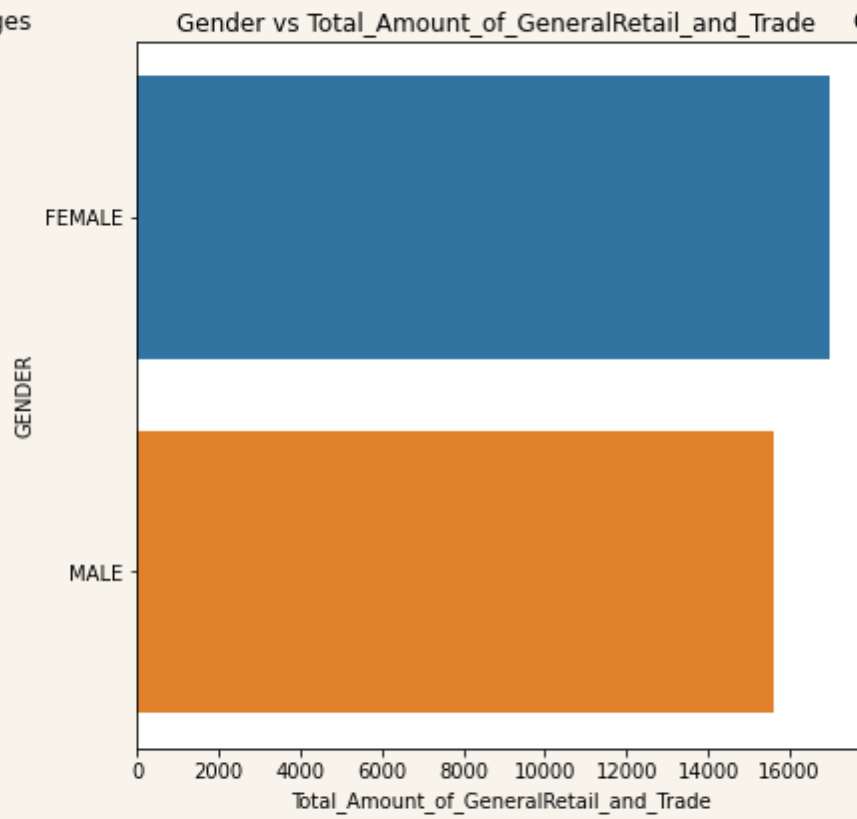
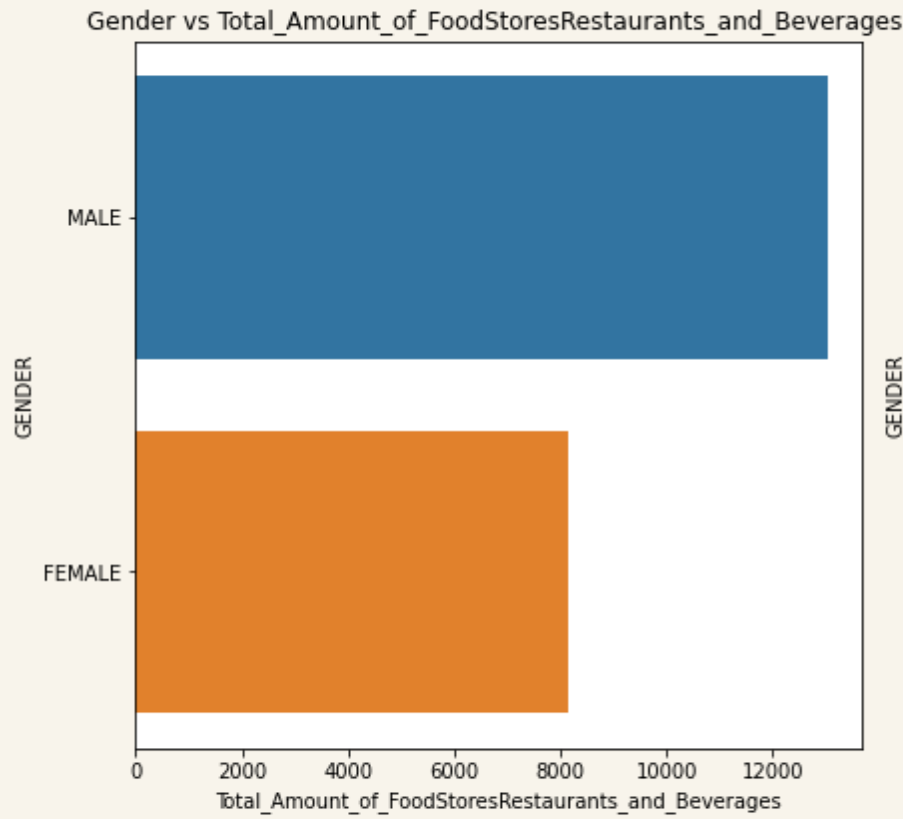
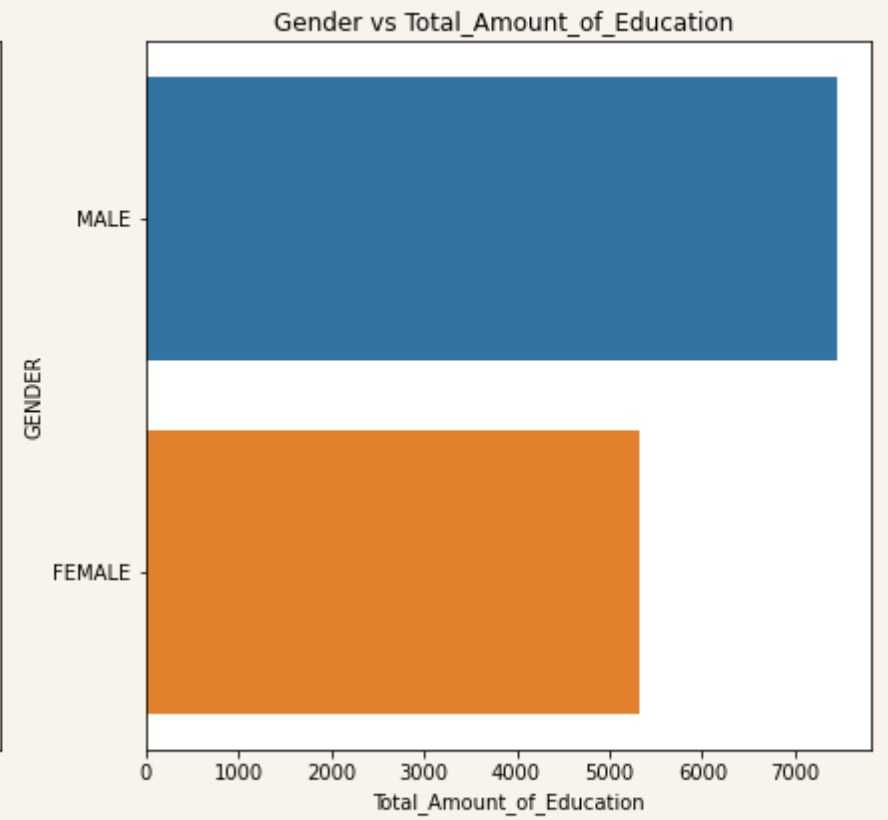
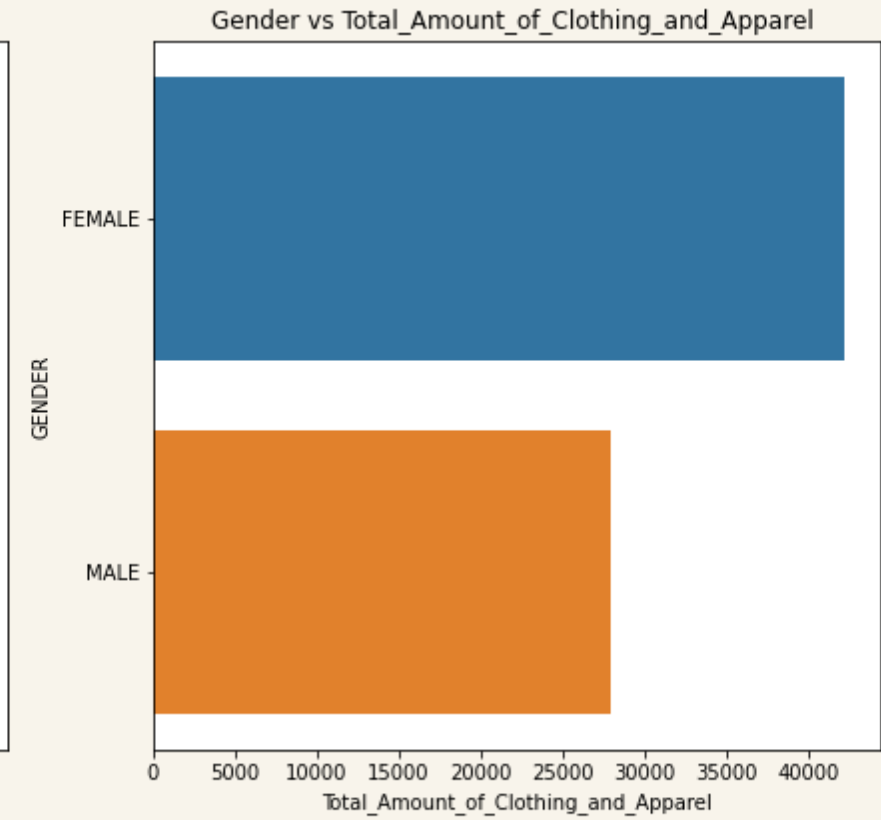
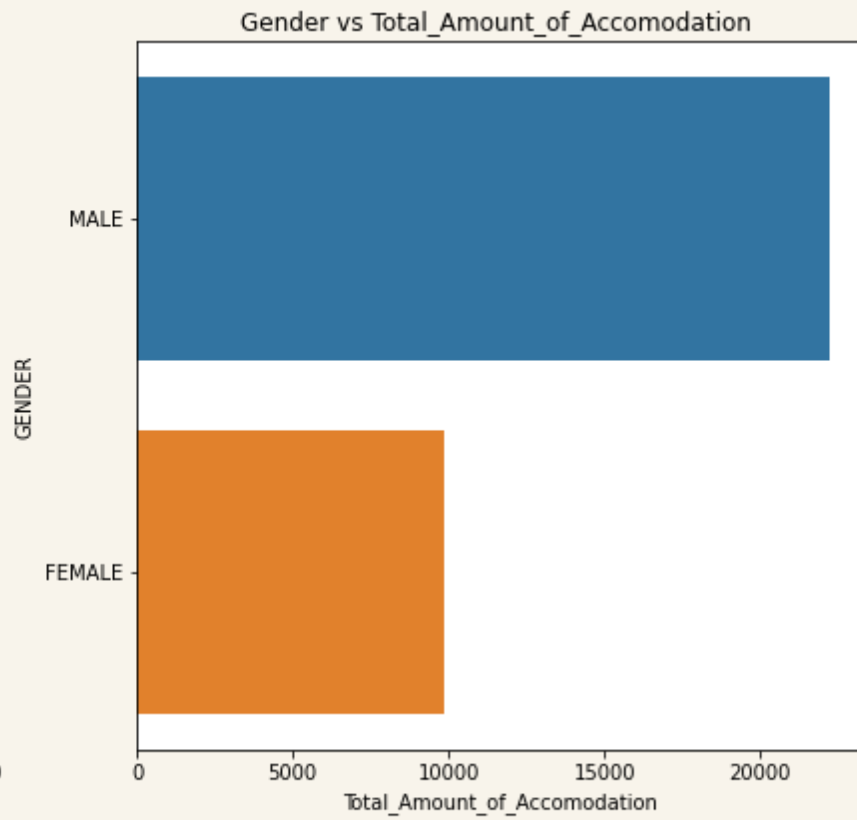
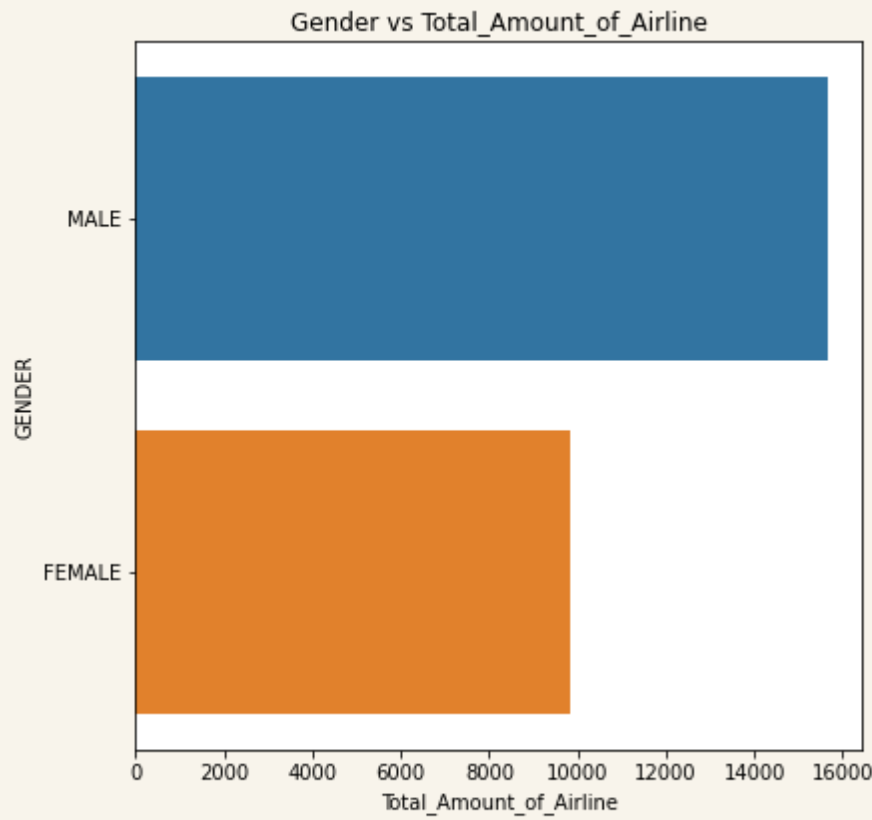
MALE	84956
FEMALE	41970
NA	16991

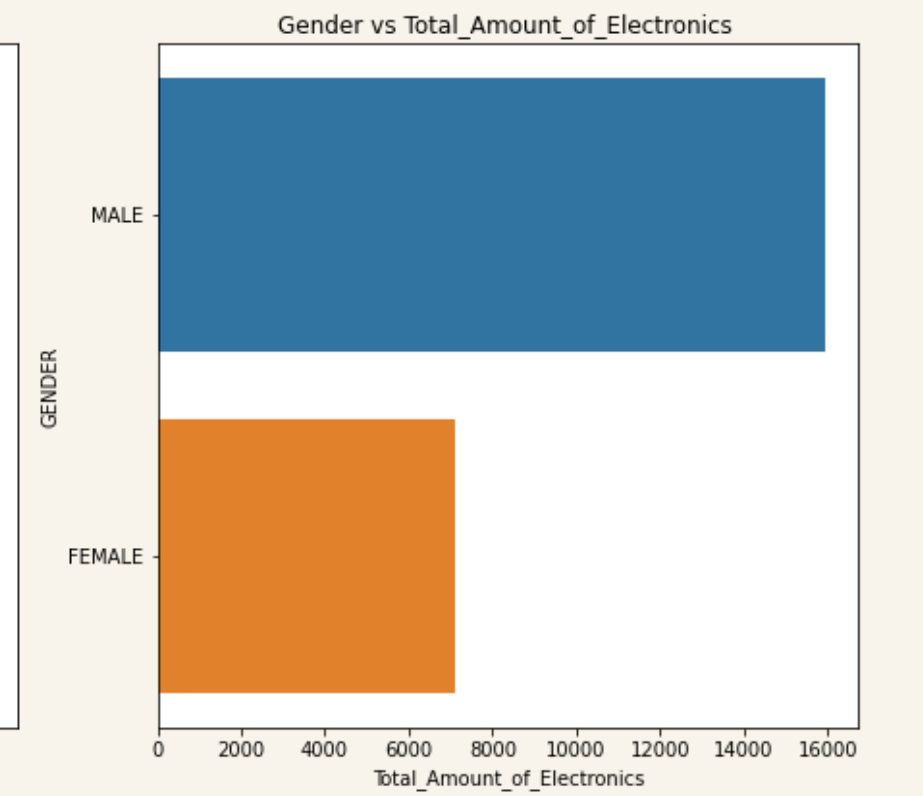
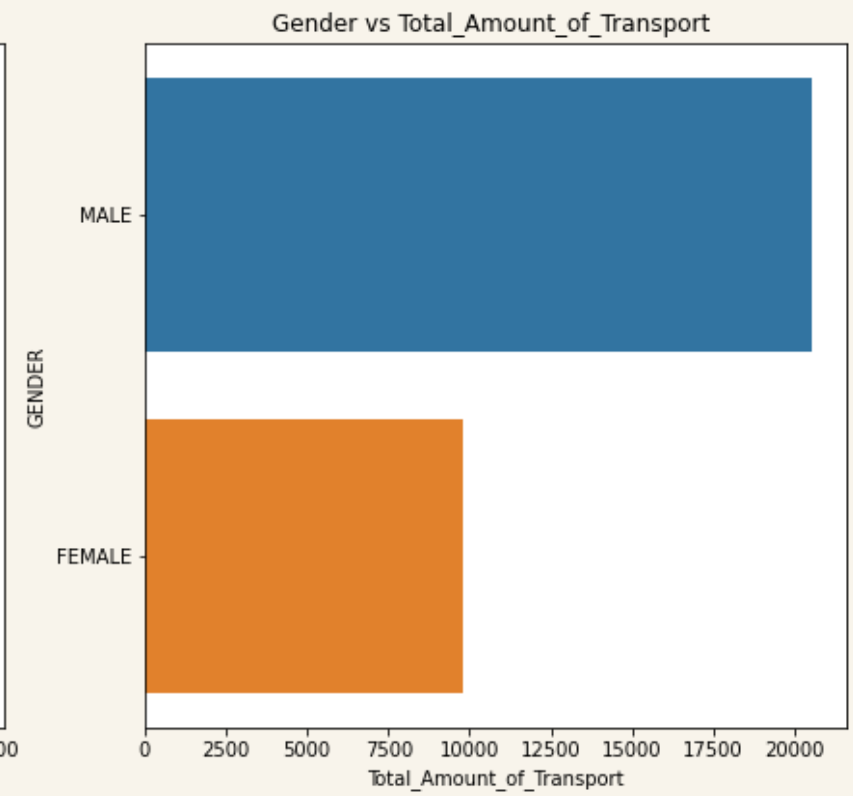
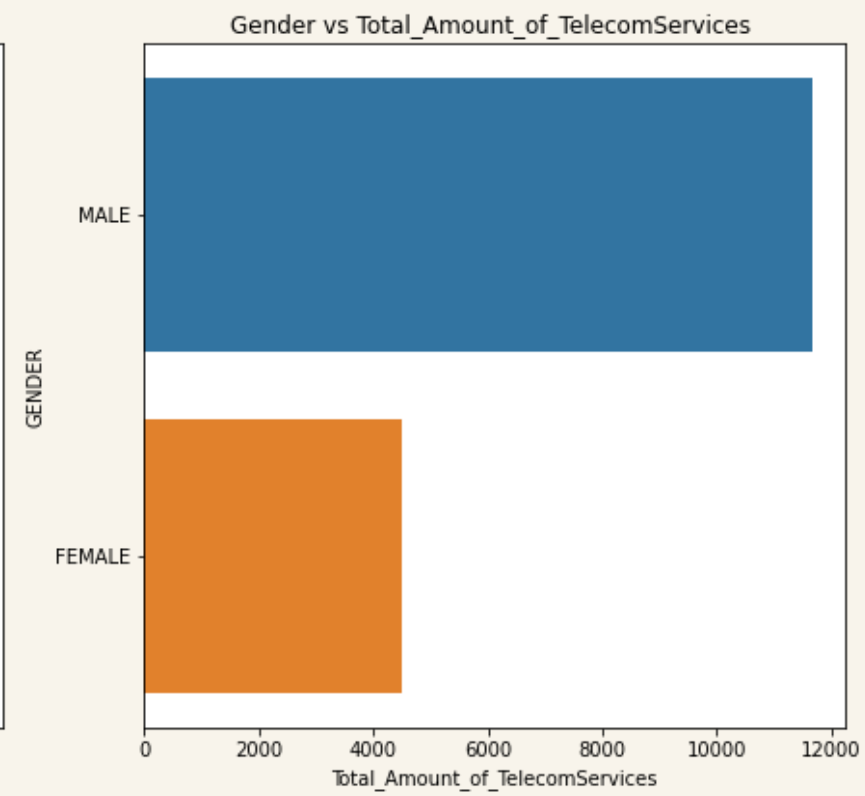
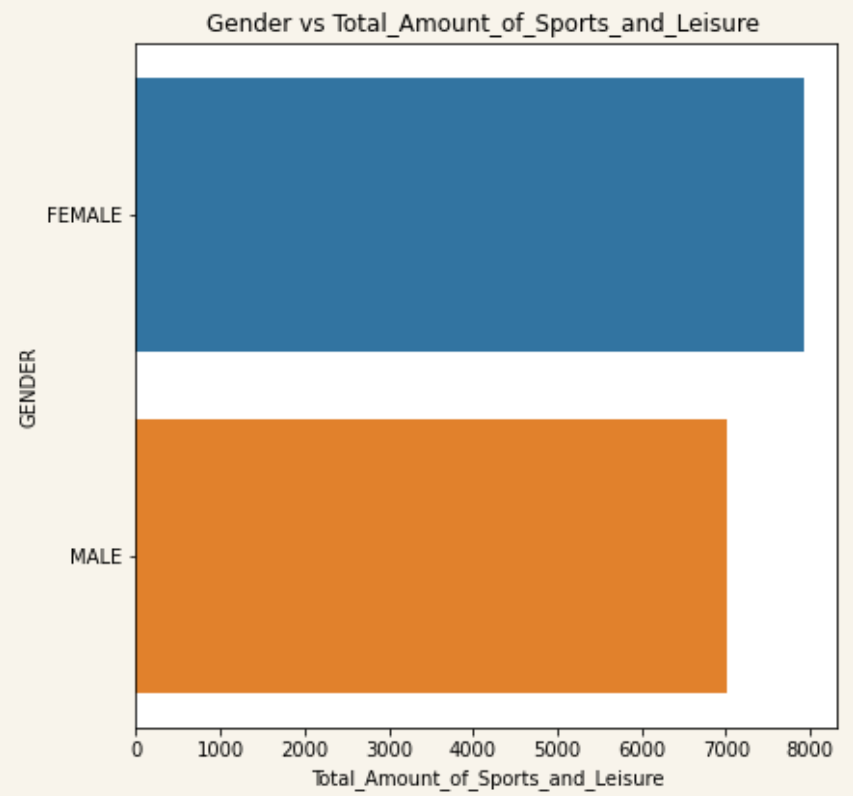
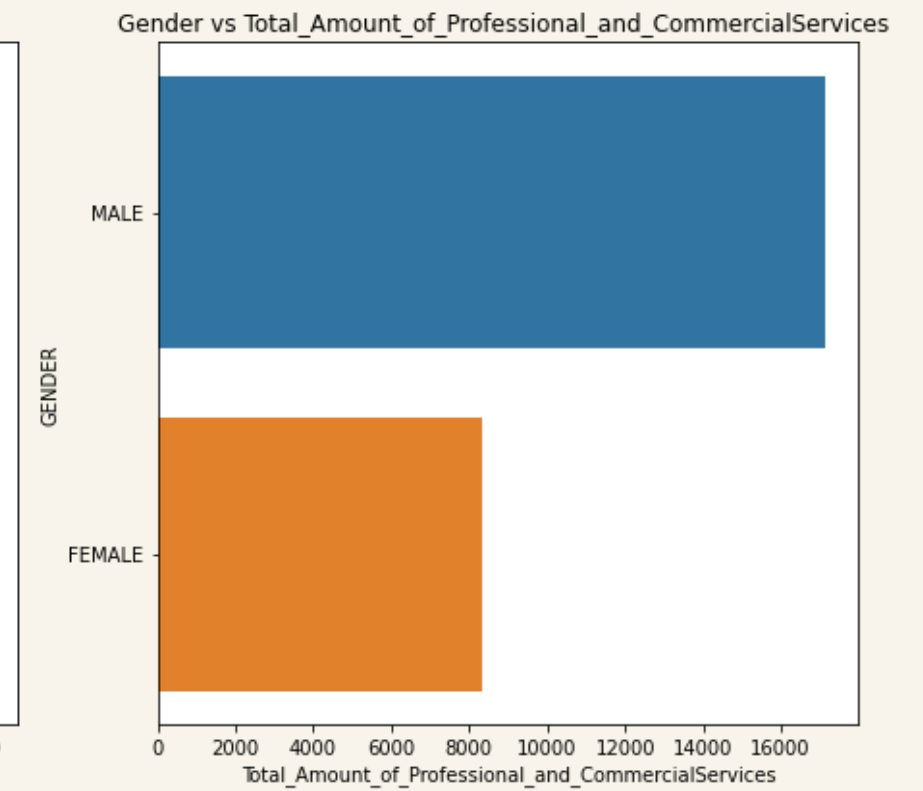
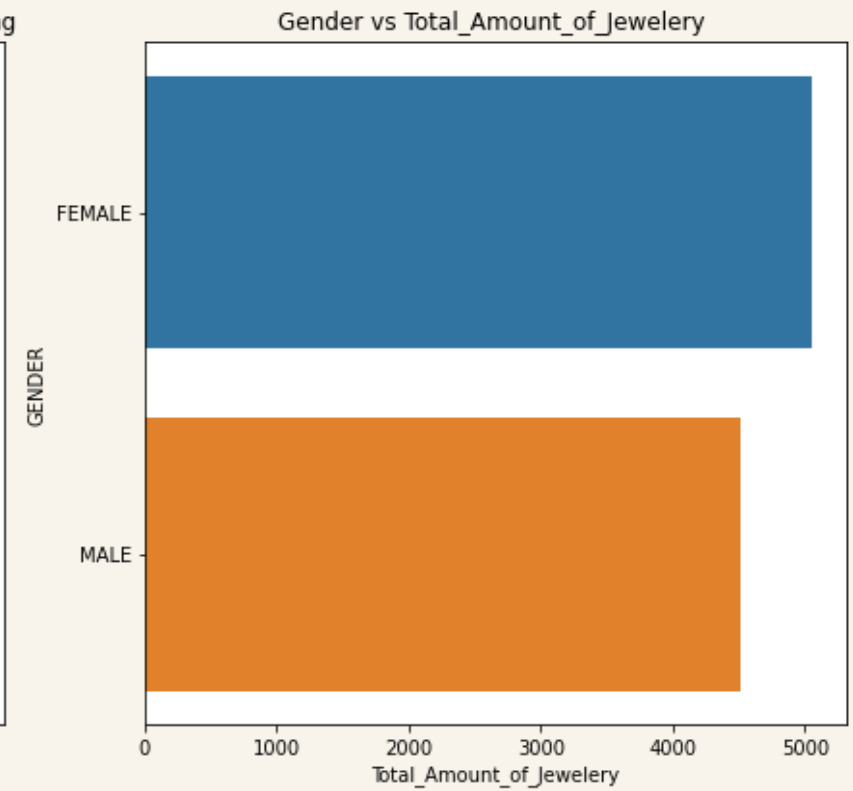
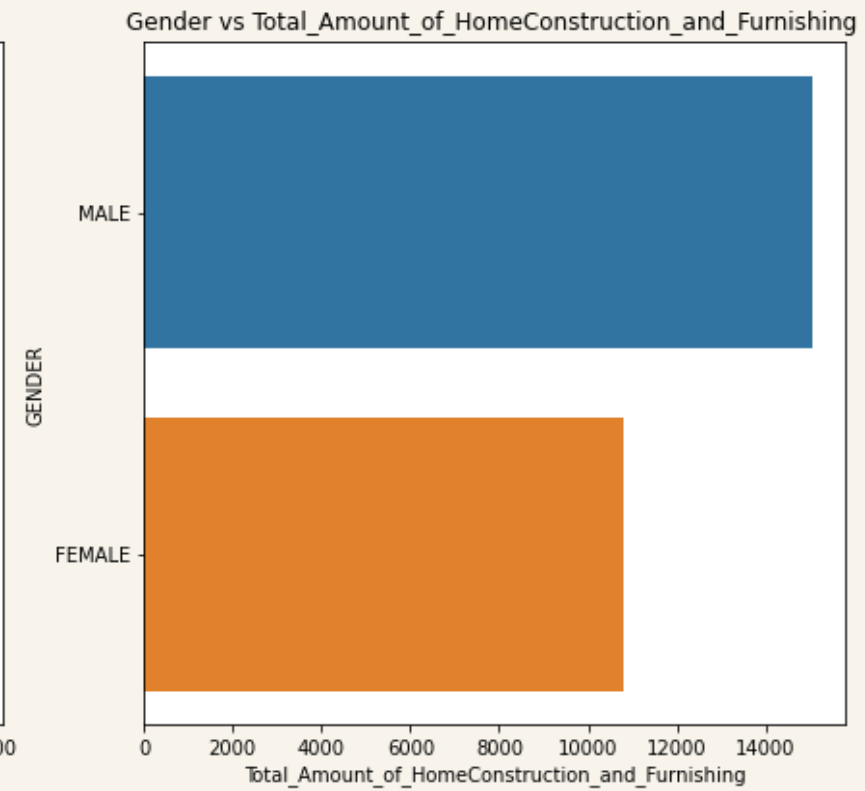
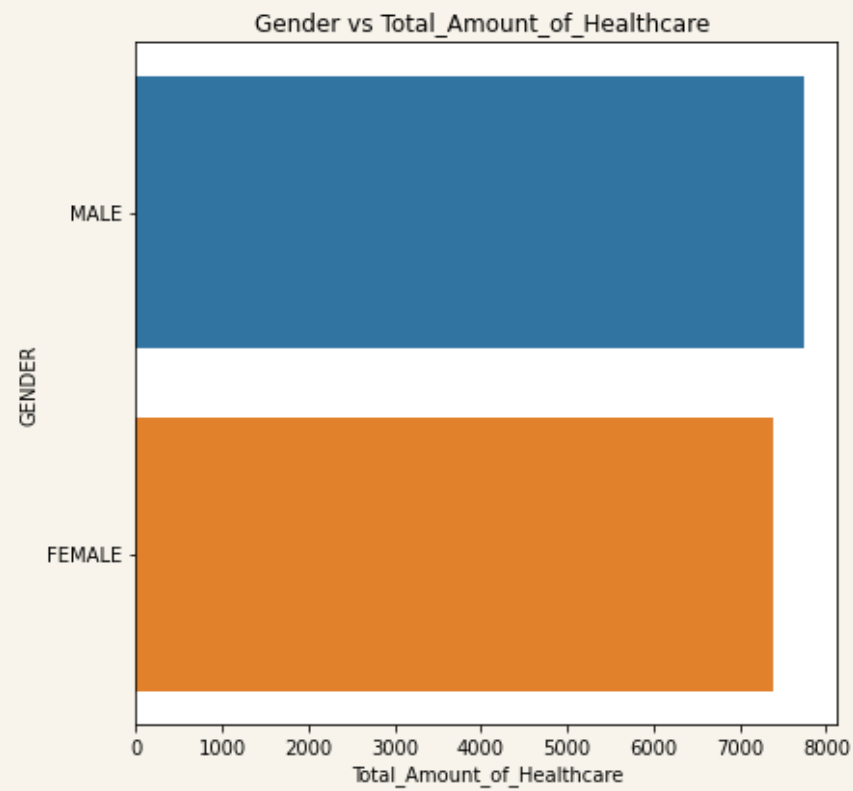


GENDER VS MG



Average Total Amount
spent by gender in all
categories

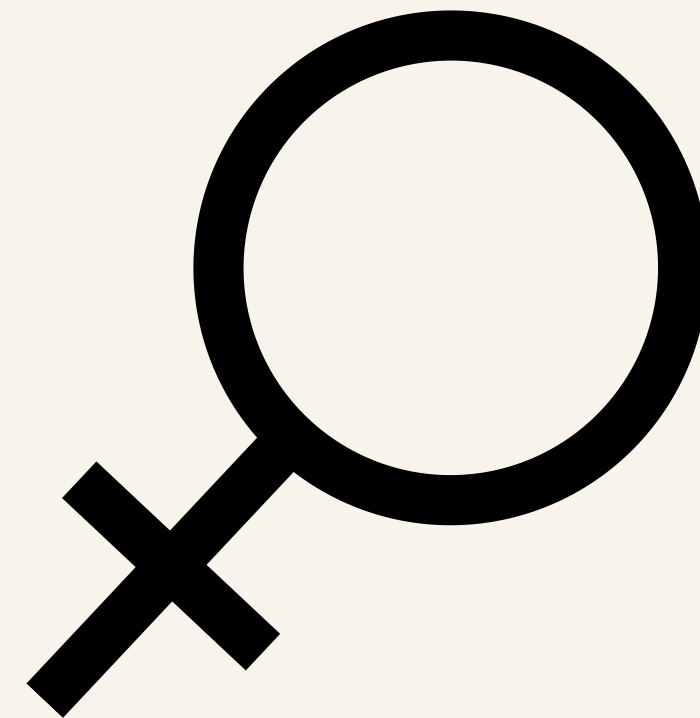




**males spend much more in
Electronics, Telecom Services,
Transport, Commercial services,
governmental services,
Acommodation, and Airline**



**females spend
much more in the
Clothing and
Apparel group
than males.**



CUSTOMER KPIs

PROFITABILITY KPI

a feature called transaction value score was created to measure the profitability of the customer. This KPI was calculated by:

$$\left(\frac{\text{Total Transaction Amount}}{\text{Total Transaction Count}} \right)$$

Then, it was normalized to have a score from 0 to 1 for each user.

ACTIVITY KPI

a feature called activity score was created to measure the activity of each user according to the following formula:

$$\left(\frac{\text{Total Retail Transactions count} * (\text{Number of Active months in two years} / 24)}{\text{Total Cash Transactions Count}} \right)$$

Then, it was normalized to have a score from 0 to 1 for each user.

CUSTOMER SEGMENTS

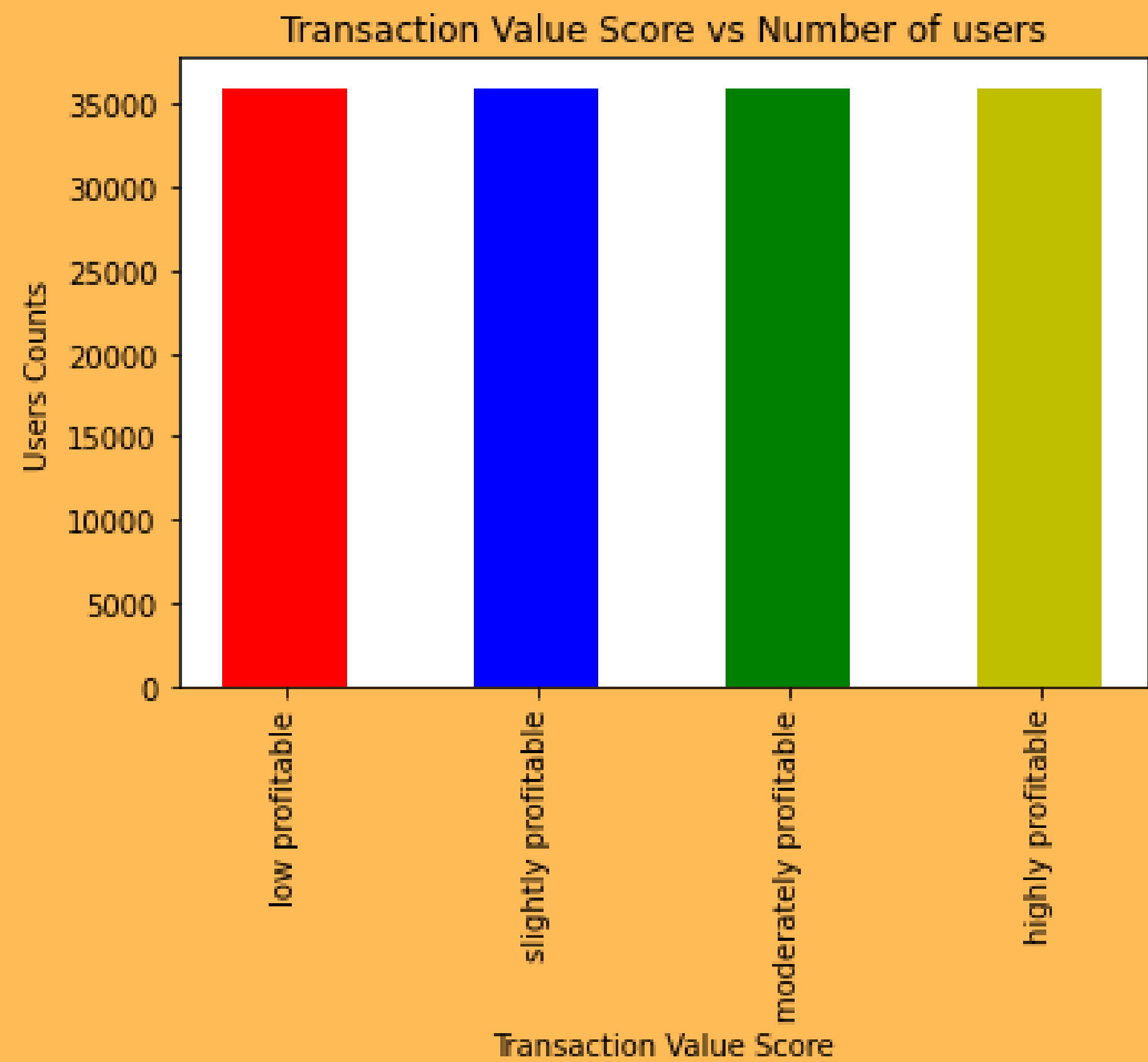
we decided to segment to customers according to the following criterial with tailored targetted marketing plans to each segment:

- **Profitability**
- **Activity**



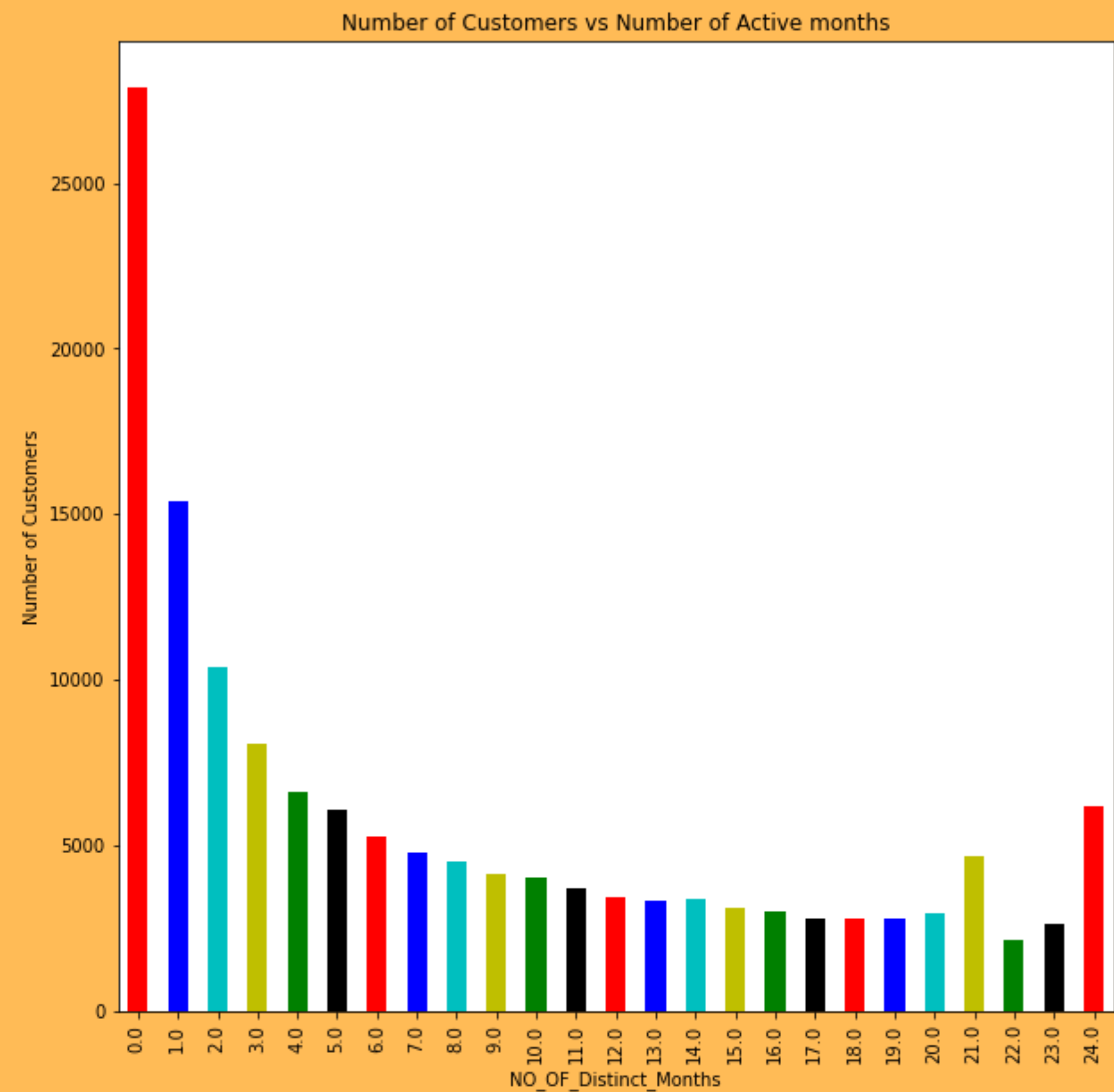
CUSTOMER SEGMENTS

BASED ON TRANSACTION SCORE:



CUSTOMER SEGMENTS

CUSTOMER ACTIVITY VS DISTINCT MONTHS:

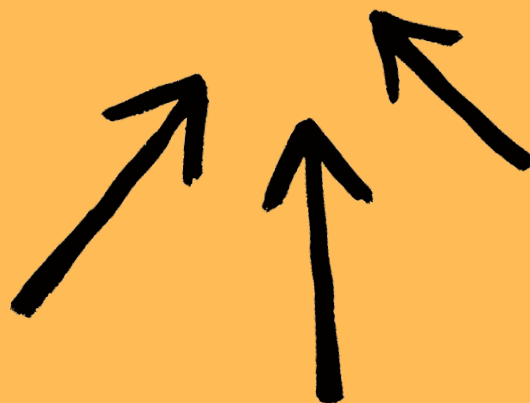
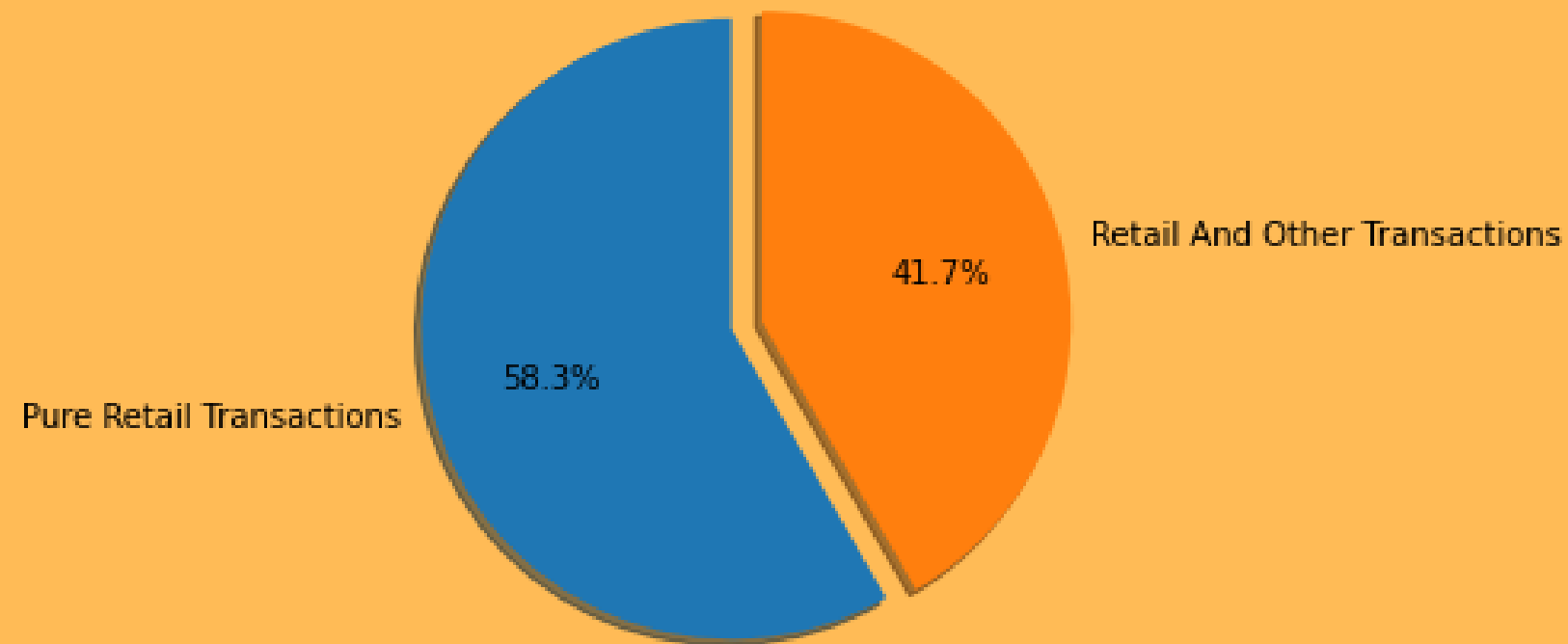


there are many customers with 0 active months since number of active months is only calculated for **retail** transactions

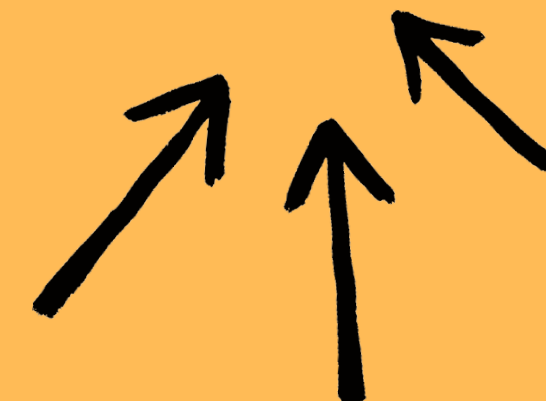
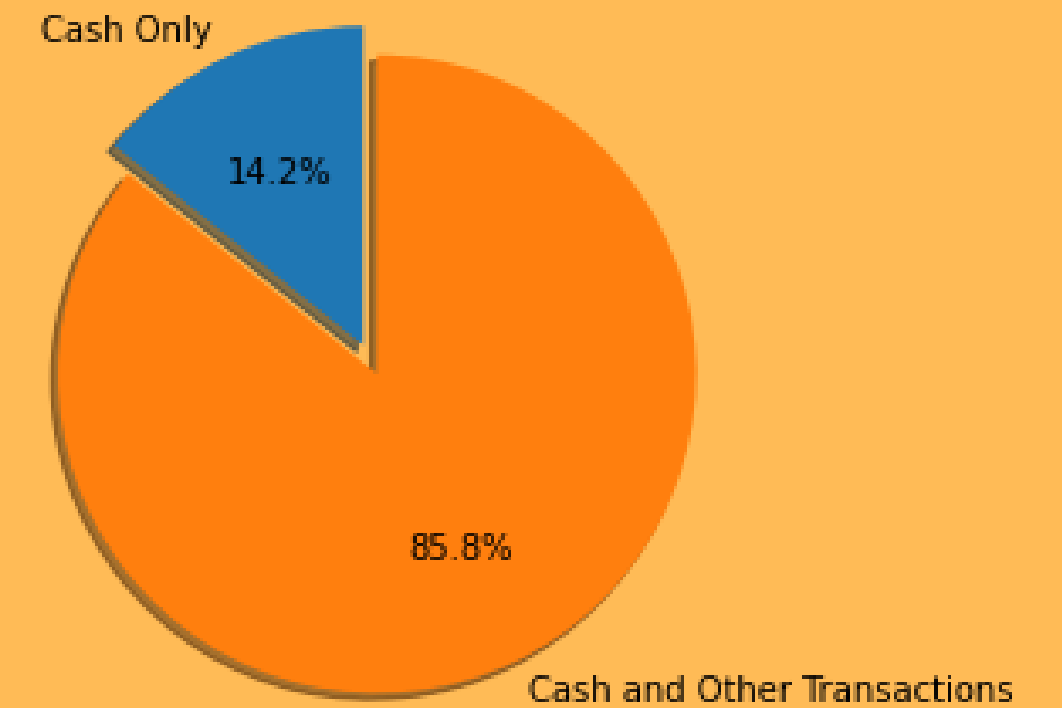
CUSTOMER SEGMENTS

CASH VS RETAIL TRANSACTIONS

Retail Transactions pie chart
(Total Retail Transactions = 116024 Transactions)

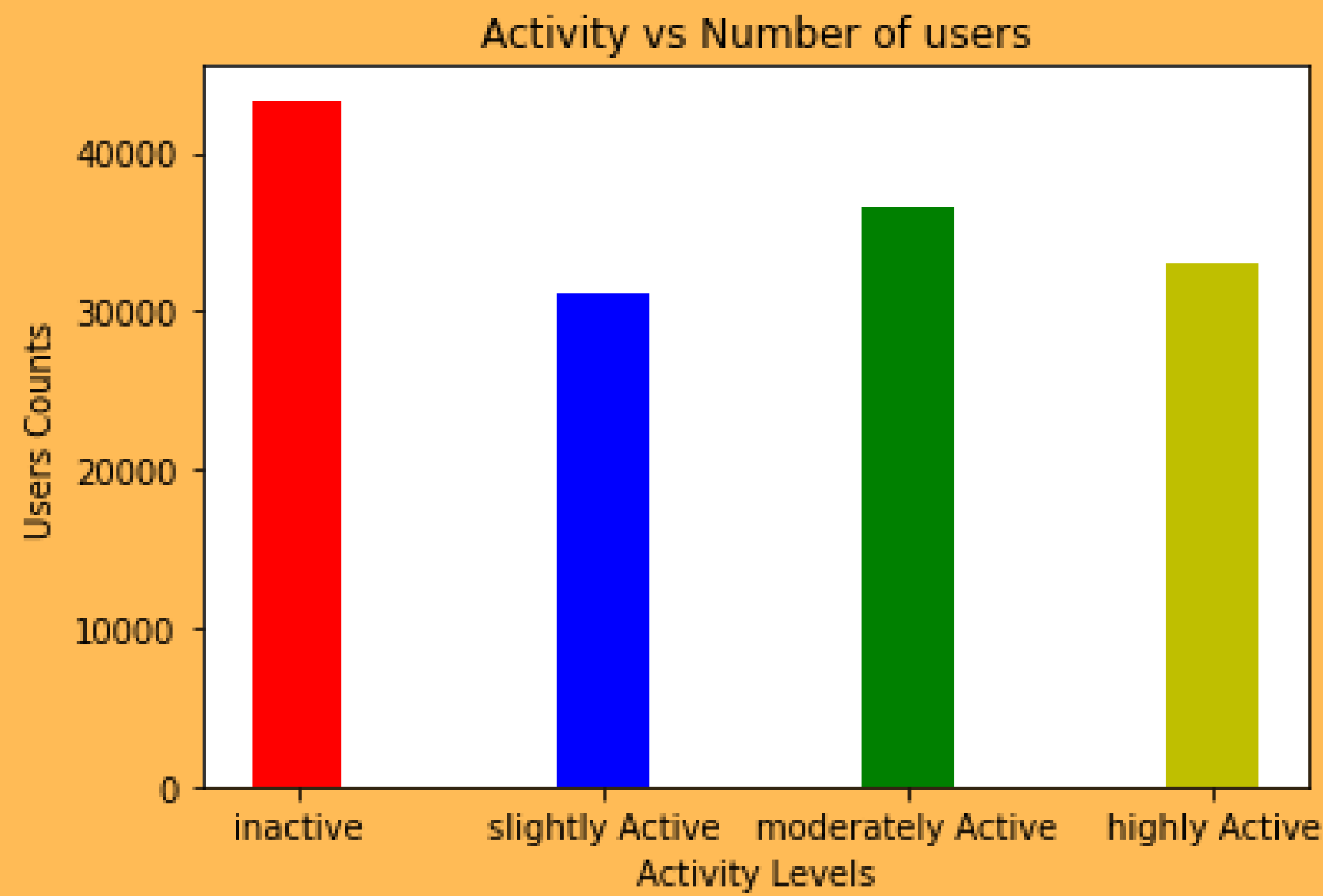


Cash Transactions pie chart
(Total Cash Transactions = 56400 transactions)



CUSTOMER SEGMENTS

BASED ON ACTIVITY:



TARGETTED VS MASSIVE MARKETING

TARGETTED MARKETING

Pros

- cheaper and more affordable
- offers a great profit margin
- offers a better chance for leads

Cons

- Takes time to see the result
- Requires planning and strategy to determine your segments.

(Staff,2021)

VS

MASSIVE MARKETING

Pros

- It reaches a wide range of audiences
- Maximum product/services exposure

Cons

- Expensive
- Hard to measure its effectiveness
- low profit margin
- requires a lot of manpower

(Staff,2021)

TARGETTED MARKETING

PROFIT SEGMENTS:

low profit: offer them discounts in order to use it more - investigate their behavior more - partnerships

slightly profitable: partnerships with favorite MG - reduce fees based on number of transactions and count of transactions

moderately profitable: offer rewards - increase out of balance Credit

Highly profitable: offer rewards - reduce Credit interest - enhance their most used services - partnerships

TARGETTED MARKETING

ACTIVITY SEGMENTS:

inactive: increase awareness of credit card benefits - credit card score and usage by social media ads

slightly active: offer customized promotions based on favorite categories

moderately active: offer rewards - Increase awareness of the benefits of Highly active users

Highly active: Bonus credit - Increase credit card tenure - Remove Fees

TARGETTED MARKETING

RECOMMENDED COURSES OF ACTION:

- **Create Credit Cards that are tailored for each merchant with lower credit interest and more outbalance credit than normal credit cards. for example: clothing has the most spendings in egypt. hence, clothing credit cards would be marketed well.**
- **Partnerships with Brands from each MG category. In clothing we can have CIB partner with Zara, H&M, Bershka, ..**
- **Awareness Campaigns on Credit Cards usage and benefits in collaboration with other CC competitors to reduce competition since according to CBE, in 2021, only 3M egyptians has credit cards.**
- **Offer Bonus Credits for Customers based on their Activity and profitability.**
- **Create Marketing Campaigns based on Gender, Age & MG. for example, Jewelery campaigns that targets women whereas Sports Campaigns targeting men. similar trends are found in our Analysis. The marketing channels will be tailored as well.**

MET BUSINESS GOALS:

- Increase customer Satisfaction
- Increase Customer engagement using CLB credit cards
- Reduce Marketing campaign costs (Mass Campaigns vs Target Campaigns)
- Reduce Merchants transactional costs

WHY SHOULD YOU HIRE US?

Customer KPIs

**Business
Improvement**

**Increase
Customer Base**

**Exceed Customer
Needs**

**Thorough Market
Analysis**

**Future work
recommendations**

TECHNICAL JOURNEY

EDA AND HANDLING MISSING VALUES:

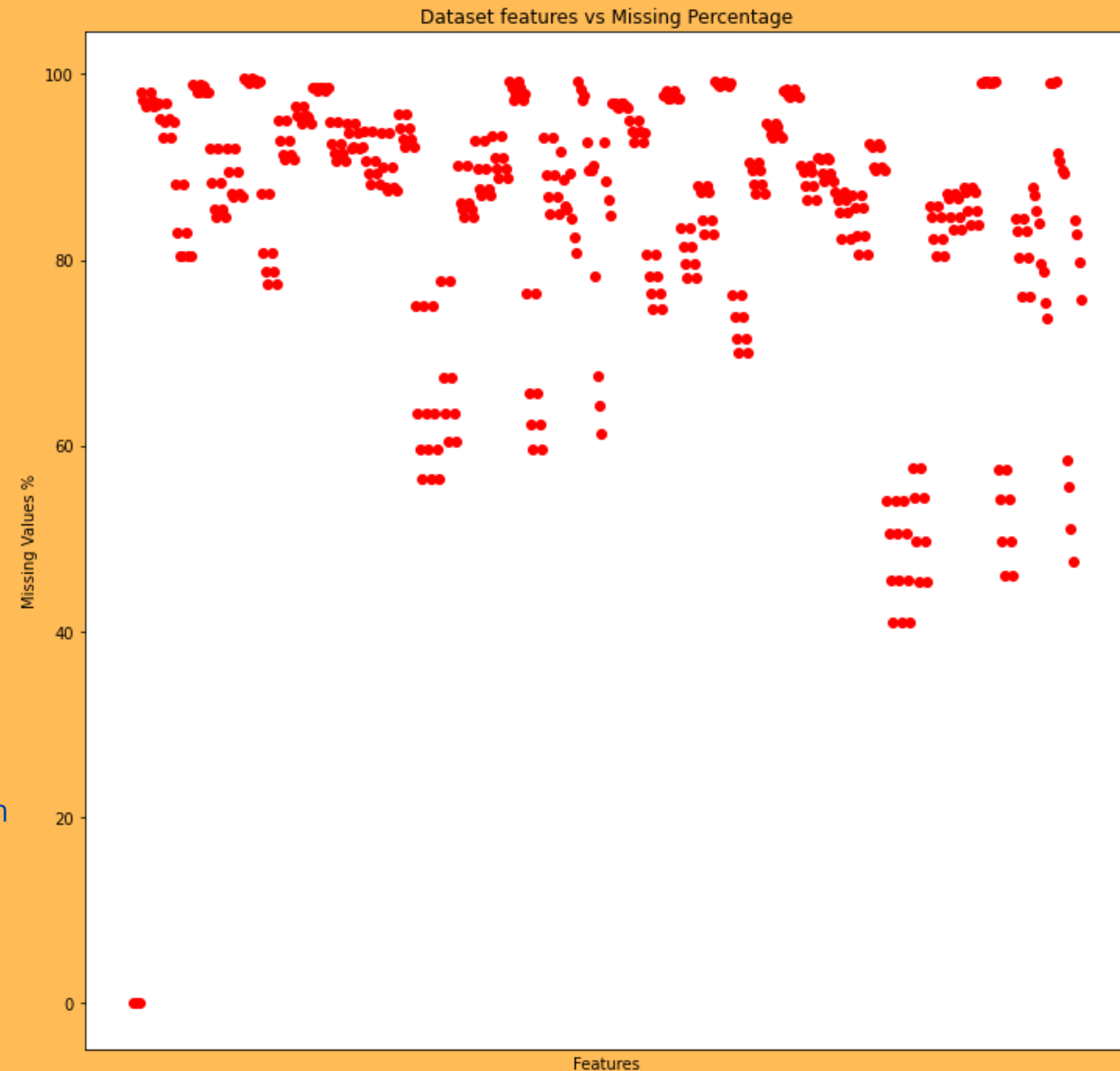
- **95.72%** of the numerical columns has more than **50 %** missing values
- **84.46%** of the numerical columns has more than **75 %** missing values
- **42.79%** of the numerical columns has more than **90 %** missing values

Hence, dropping the columns with most missing values does not seem like a reasonable choice.

After careful consideration:

- Regarding the **Categorical** values, we had only two categorical values [gender , batch_id]. we dropped batch_id and had a category **NA** for the missing genders.
- Regarding the **Numerical** missing values, we decided to fill them with 0 indication that there was no any amount spent or count of transaction for this record.

The absence of information is information!



TECHNICAL JOURNEY

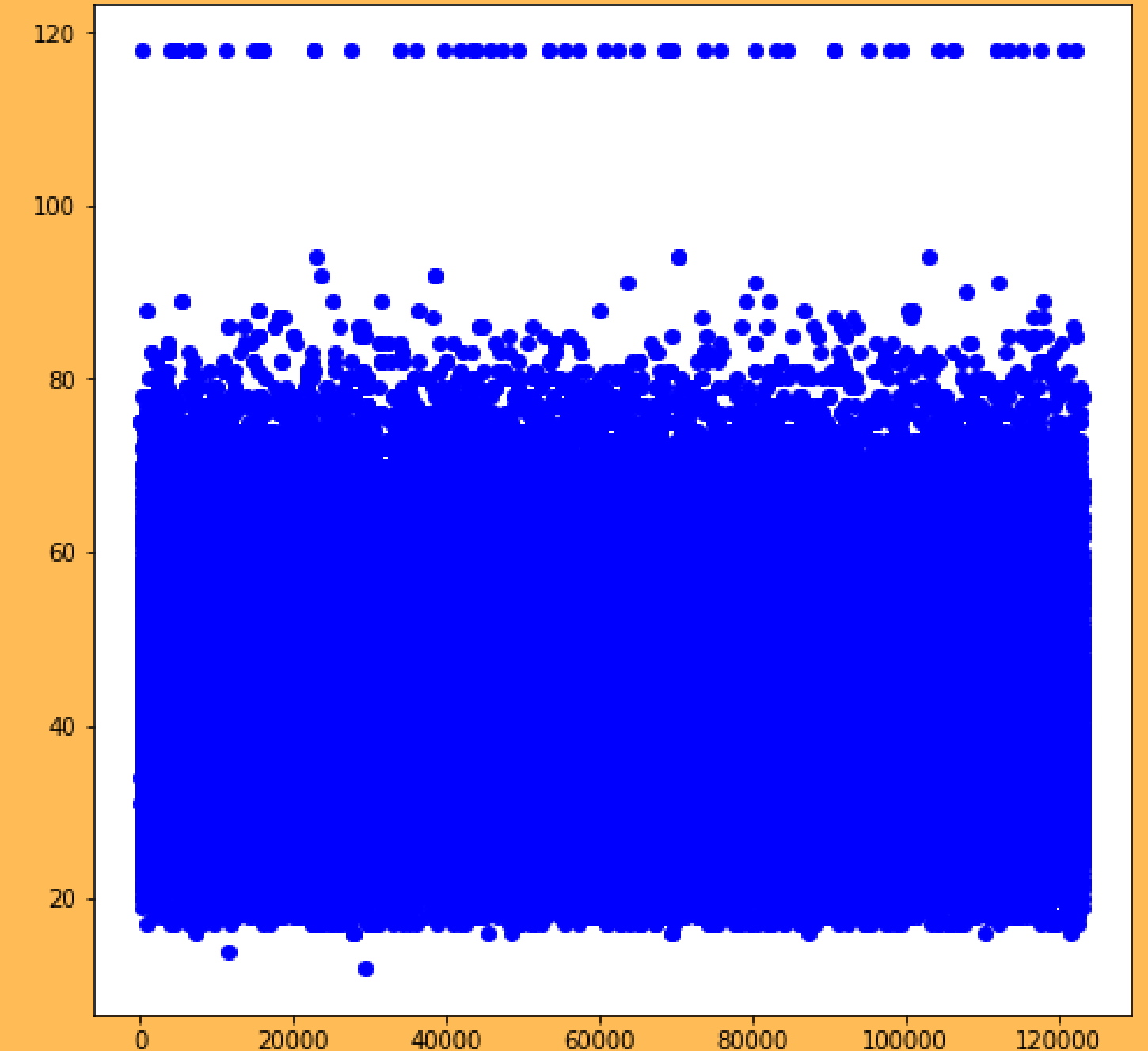
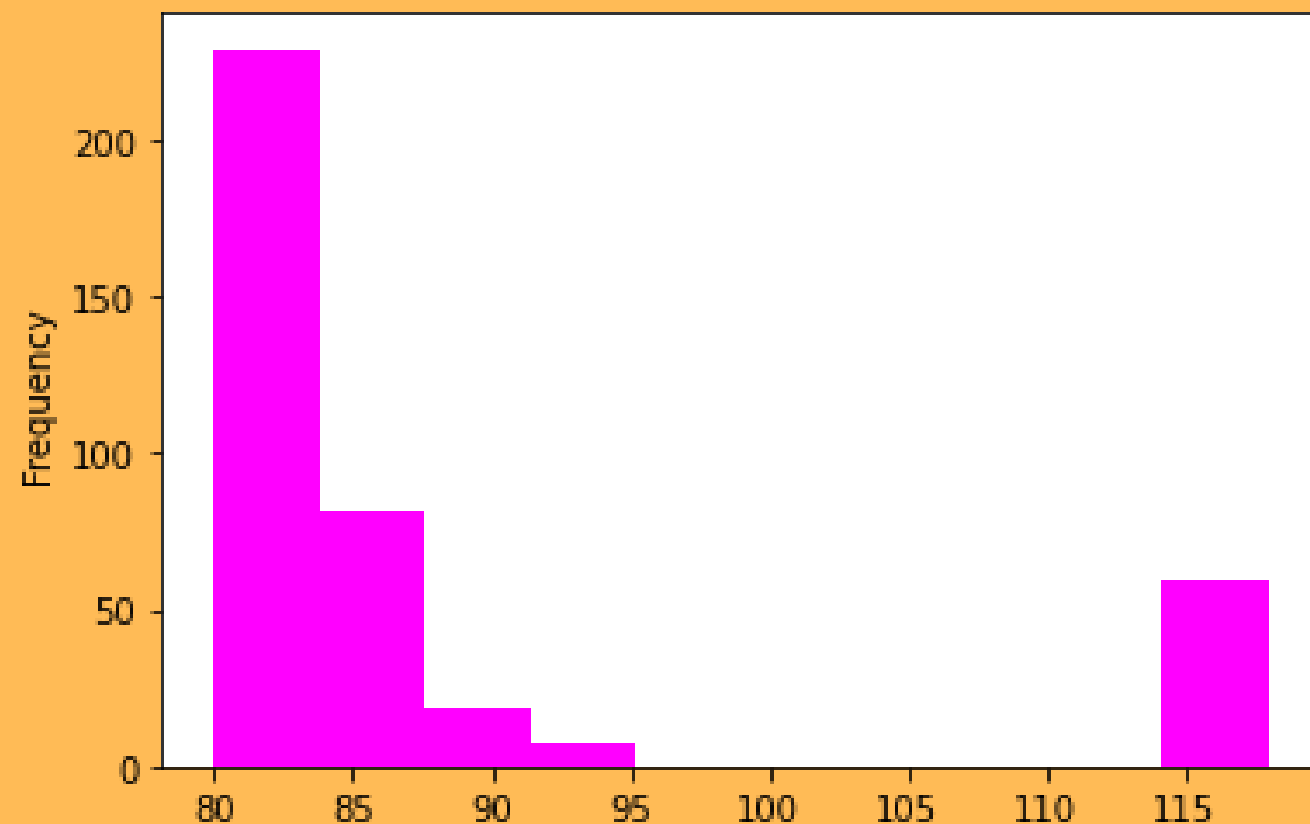
OUTLIERS DETECTION AND HANDLING:

AGE:

we found a fair and reasonable for ages that were determined as outliers by calculating the z-score.

hence, we decided to go for removing the ages that are greater than 100 due to the following reasons:

- All the ages greater than 100 years old are equal to 118 years old which is kind of suspicious.
- All the customers with ages greater than 100 years old have no gender specified except for 2 customers.
- The count of the customers greater than 100 years old is only 59 customers.



TECHNICAL JOURNEY

FEATURE ENGINEERING

Here are some of the features that we added:

(**Total_Transactions_Amount_Y1** , **Total_Transactions_Amount_Y2** , **Total_Transactions_Amount**) : the total amount spent by a single credit card in Y1 and Y2 and the two years sum as well.

(**Total_Transactions_Count_Y1** , **Total_Transactions_Count_Y2** , **Total_Transactions_Count**) : the number of transactions done by a single card in Y1 and Y2 and the two years count as well.

(**NO_OF_Distinct_Months_Y1** , **NO_OF_Distinct_Months_Y2** , **NO_OF_Distinct_Months**) : the total number of distinct active months for a specific card in a year and their sum as well.

Transaction value score : we defined this measure as being the ($\text{Total_Transactions_Amount} / \text{Total_Transactions_count}$) and will be normalized.

Total_merchant_X_score_Y1 : for each merchant X of the 16 merchants, we will add a feature to represent the total in year 1 by a single card

Total_merchant_X_score_Y2 : for each merchant X of the 16 merchants, we will add a feature to represent the total in year 2 by a single card

Total_merchant_X_score : for each merchant X of the 16 merchants, we will add a feature to represent the total spent to this merchant over the two years by a single card.

Total_online_transactions: two new features were added for the total amount and count for online transactions.

Total_POS_transaction: two new features were added for the total amount and count for online transactions.

Activity Score : for each card, it is measure as (Total Retail Transactions count * (Number of Active months in two years / 24) + Total Cash Transactions Count) in order to be a measure of activity of the card, then it will be normalized.



TECHNICAL JOURNEY

DESCRIPTIVE ANALYTICS

we tackled the following Analysis in our work:

- Merchant Group Analysis by Gender and Age.
- Merchant Group Analysis wholistic spendings
- Merchant Group Analysis Trends
- Age group spendings
- Gender Analysis
- IQR analysis
- Activity Analysis
- Profitability Analysis

Future Work recommended Analysis:

- Customer level Analysis (more behavioral trends for example: users with multiple credit cards)



TECHNICAL JOURNEY

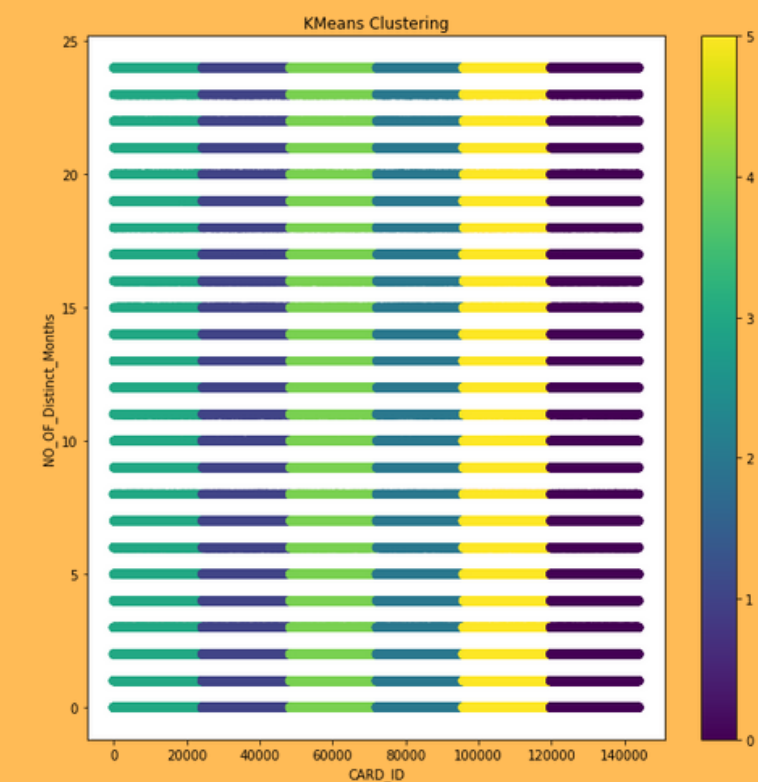
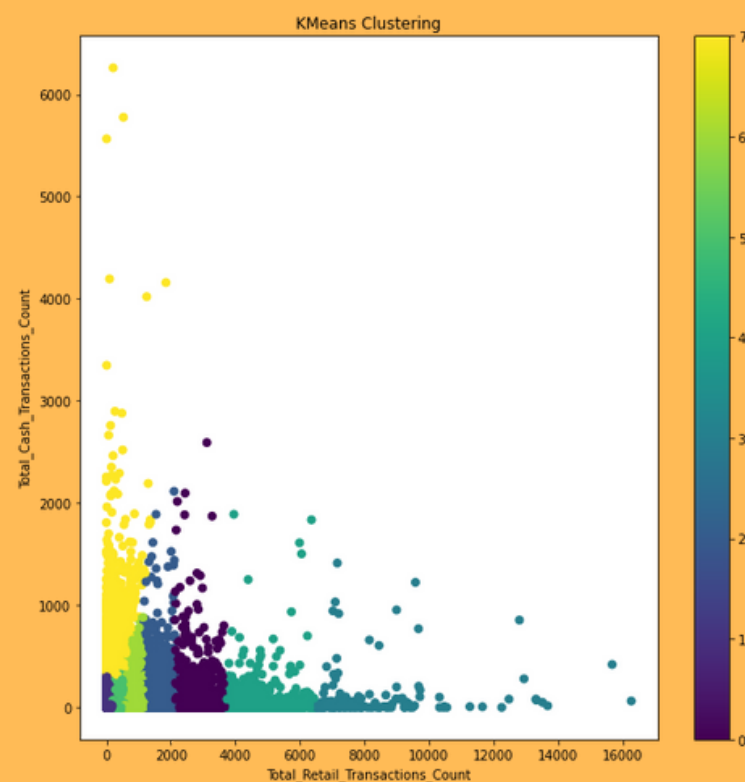
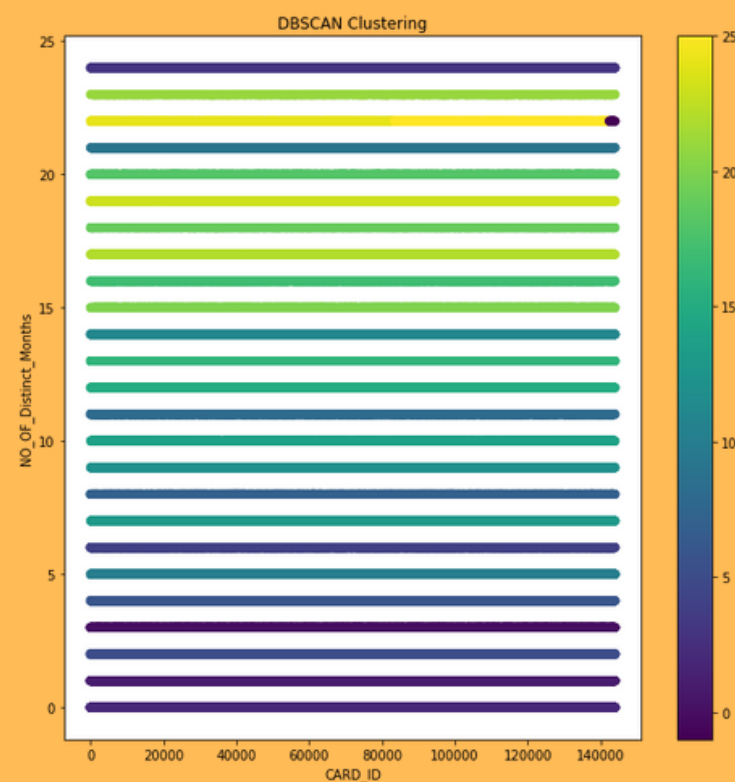
PREDICTIVE ANALYTICS

we tackled the following Analysis in our work:

- We tackled clustering using DBScan and Kmeans. However, we did not have enough time to fine tune our clustering models in order to have meaningful clusters that can be used. however, some clustering attempts are shown below:

Recommended future work:

- Fine tune clustering models to have more meaningful clusters that can be used for customer segmentation.
- Develop a classification model that's able to lable a new customer as being (active/inactive) , (profitable/not profitable)
- Develop multiple regression models that are able to predict customer's future spendings based on their History.



TECHNICAL JOURNEY

Script link

https://colab.research.google.com/drive/1NsJSYbLTaS44cpxsYzBJ_N9XZcSMrj_n?usp=sharing



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