

2024

Ironhack

# Customer Behavior Analysis:

## CHURN

Karla Espinoza



**Wait.  
What is  
Churn...**



# Wait. What is Churn...

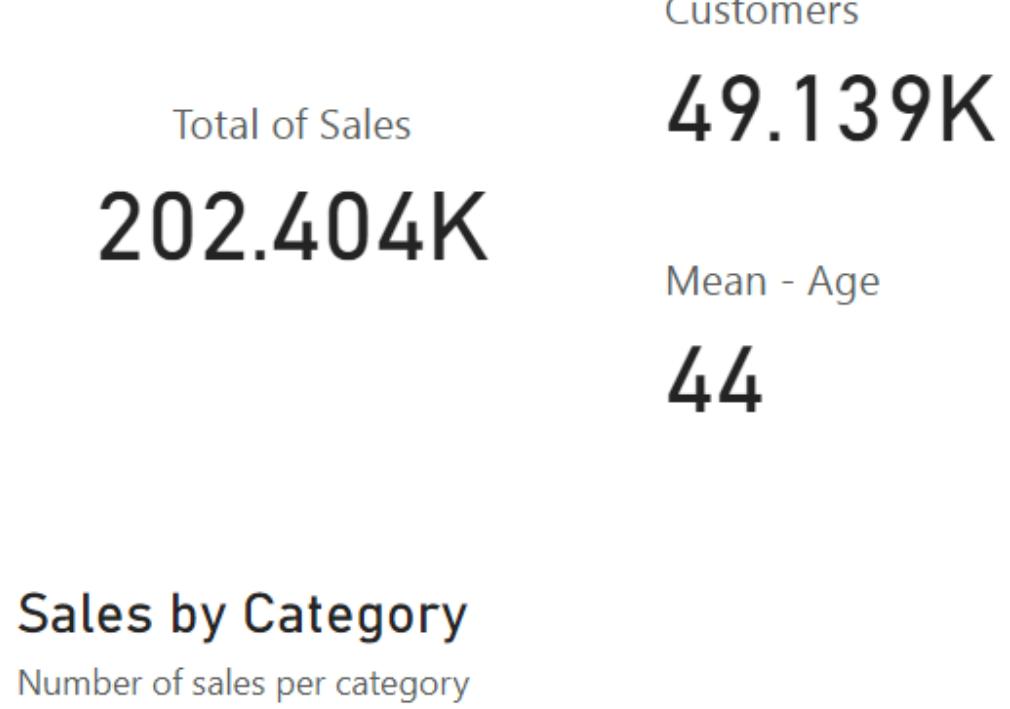
The term customer churn is often translated as **customer loss** or **customer rotation**.

The term “churn” is made up of the English words “**change**” and “**turn**”. With the customer churn rate, companies calculate the **ratio of the number of customers who no longer use a service to the total number of their customers**. The result provides information about a possible decline in the customer base over a given period of time.

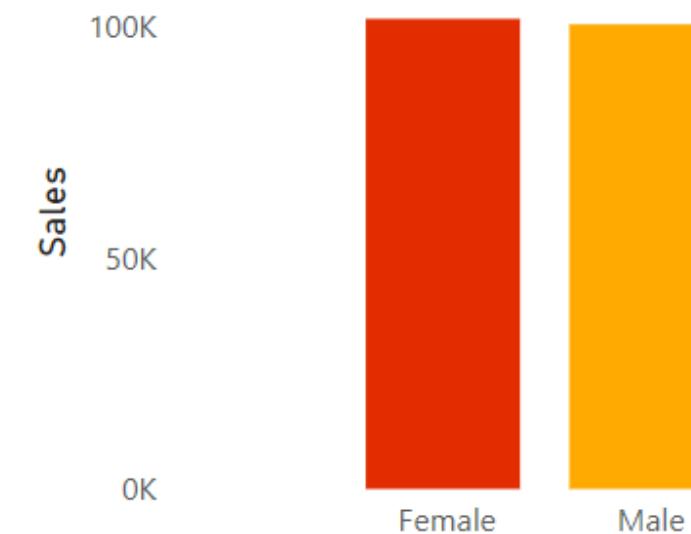
In digital marketing in particular, the churn rate is an important key performance indicator (KPI). As part of the so-called transaction KPIs, it records the success of a company's measures. In this way, processes can be optimized and new goals can be set.

# A Journey into the Characteristics of our Customer Data





Customer by Gender



Payment Method Preferences



Payment Method by Gender

gender ● Female ● Male



## Sales trend by year

Sales of each category per year of transaction:

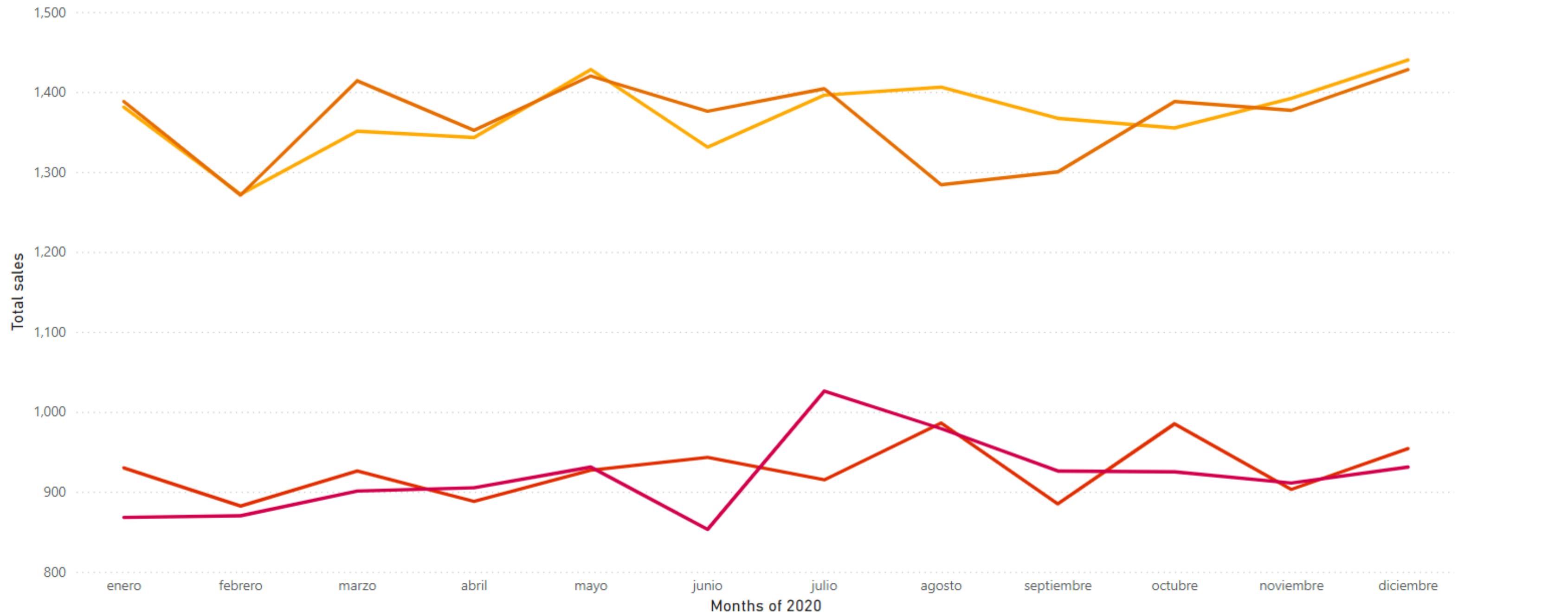


2023

## Sales trend - Months 2020

Analyzing sales of every category during every month in 2020:

category ● Books ● Clothing ● Electronics ● Home



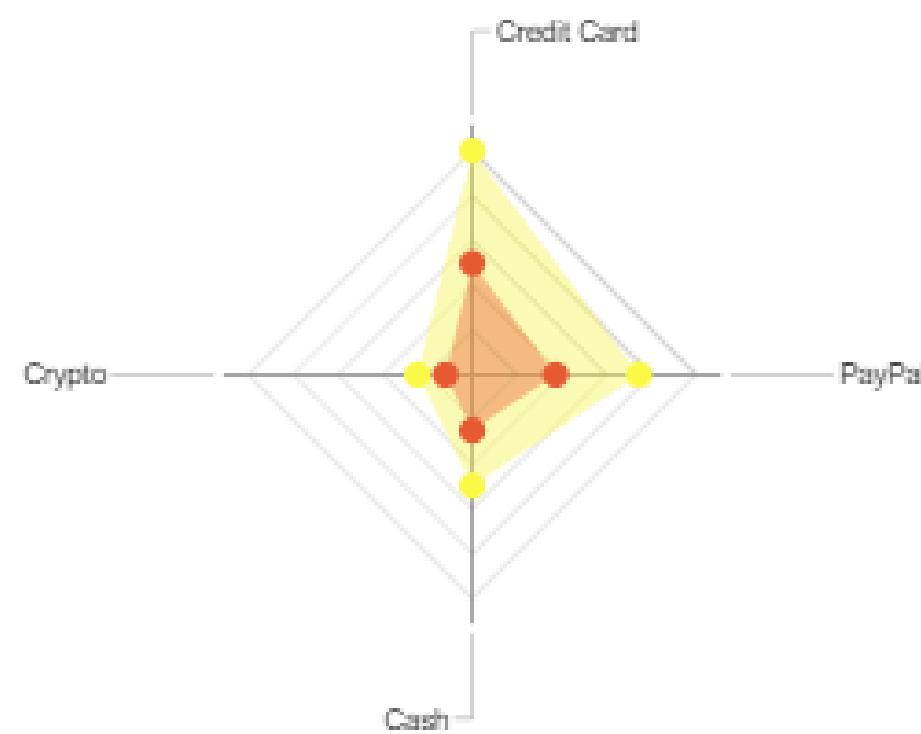
Total of Sales  
**202.404K**

Number of returns  
**101K**

### Payment method vs. Returns

Total sales and returns, generated by each Payment Method:

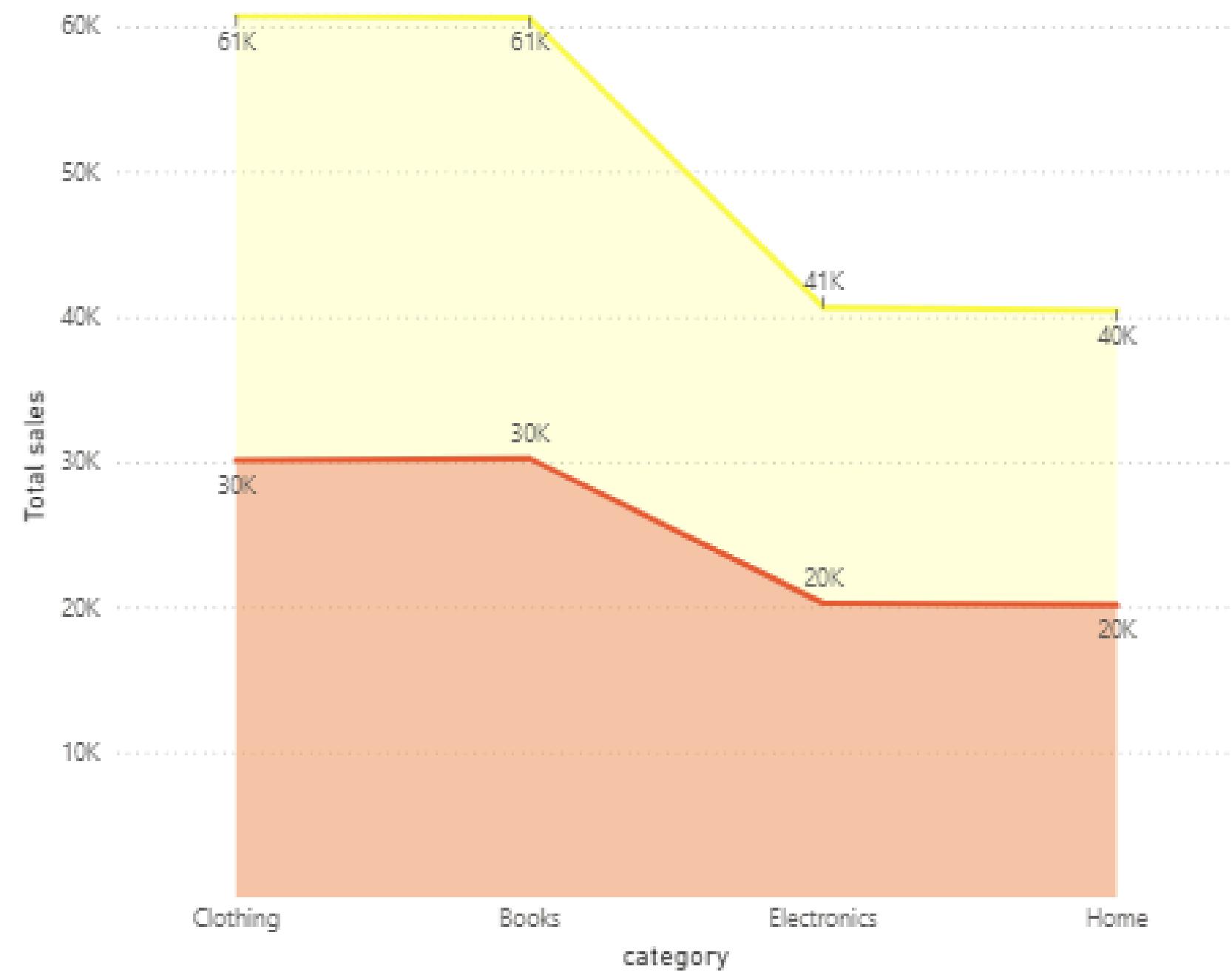
● Total Sales ● Total Returns



### Total sales vs. Returns

Analysis of the amount of returns over the total amount of transactions

● total\_sales ● returns\_count



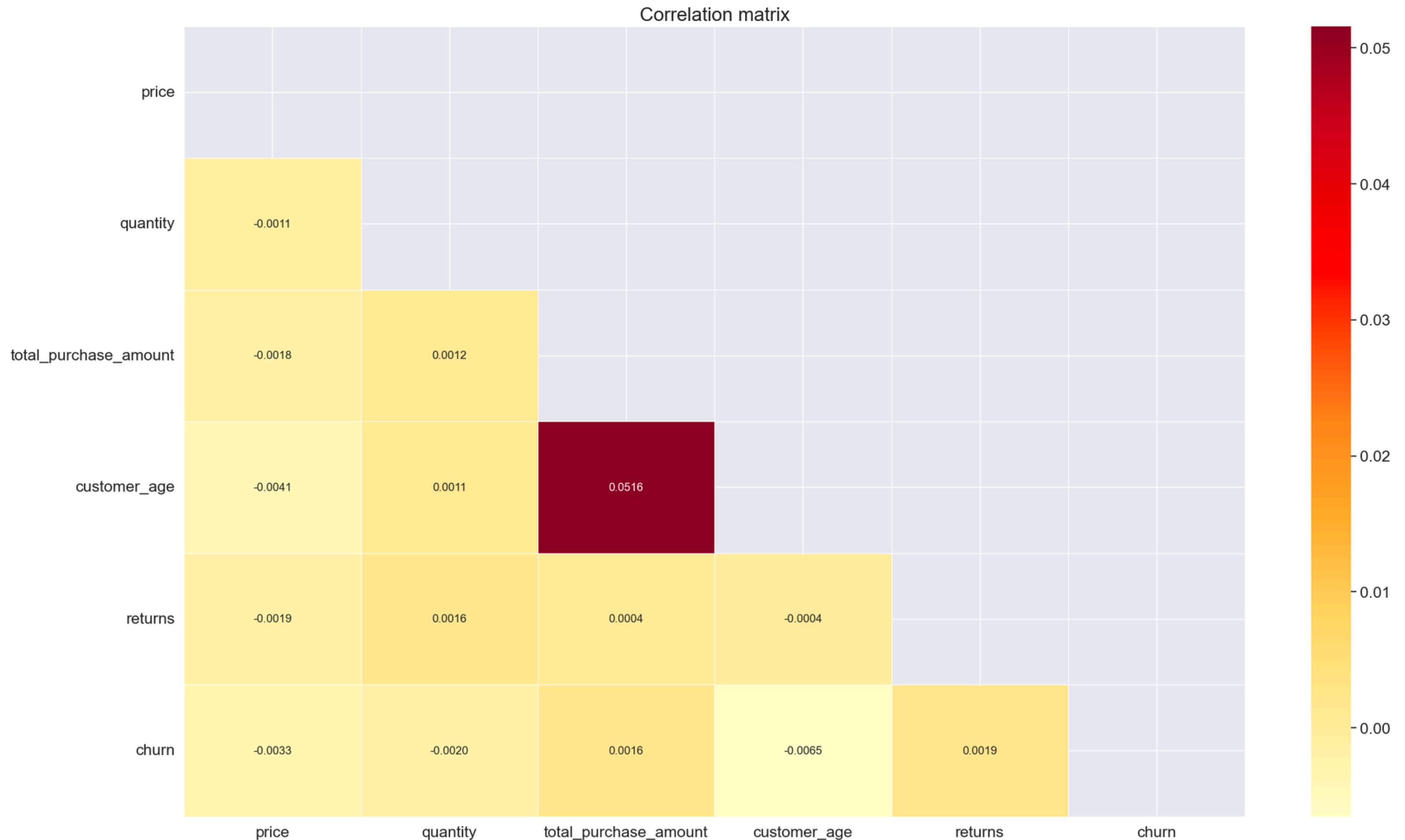
We listen, we don't judge.

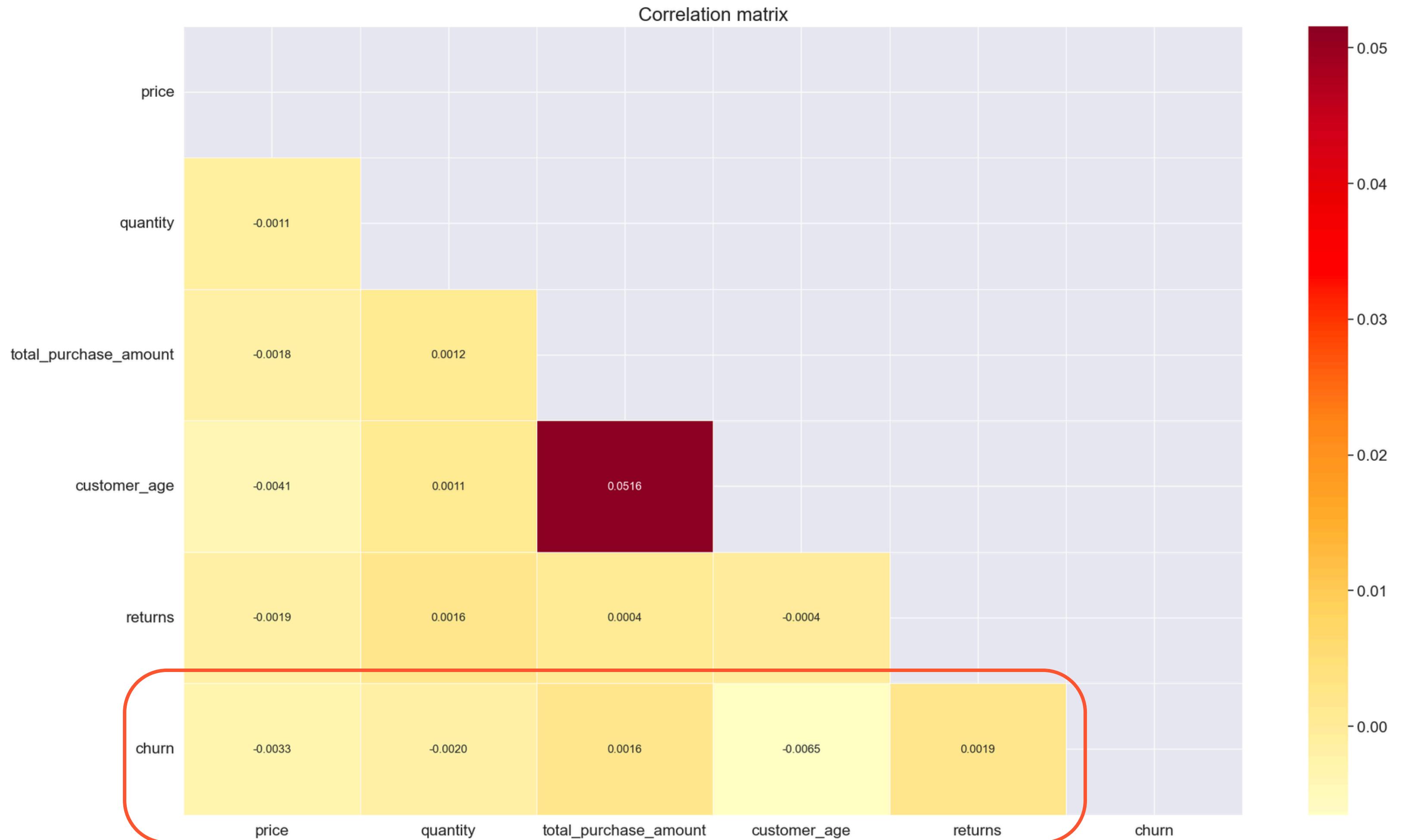


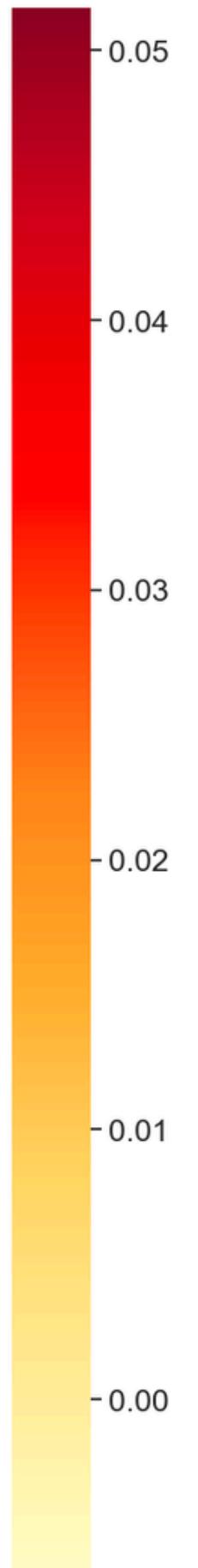
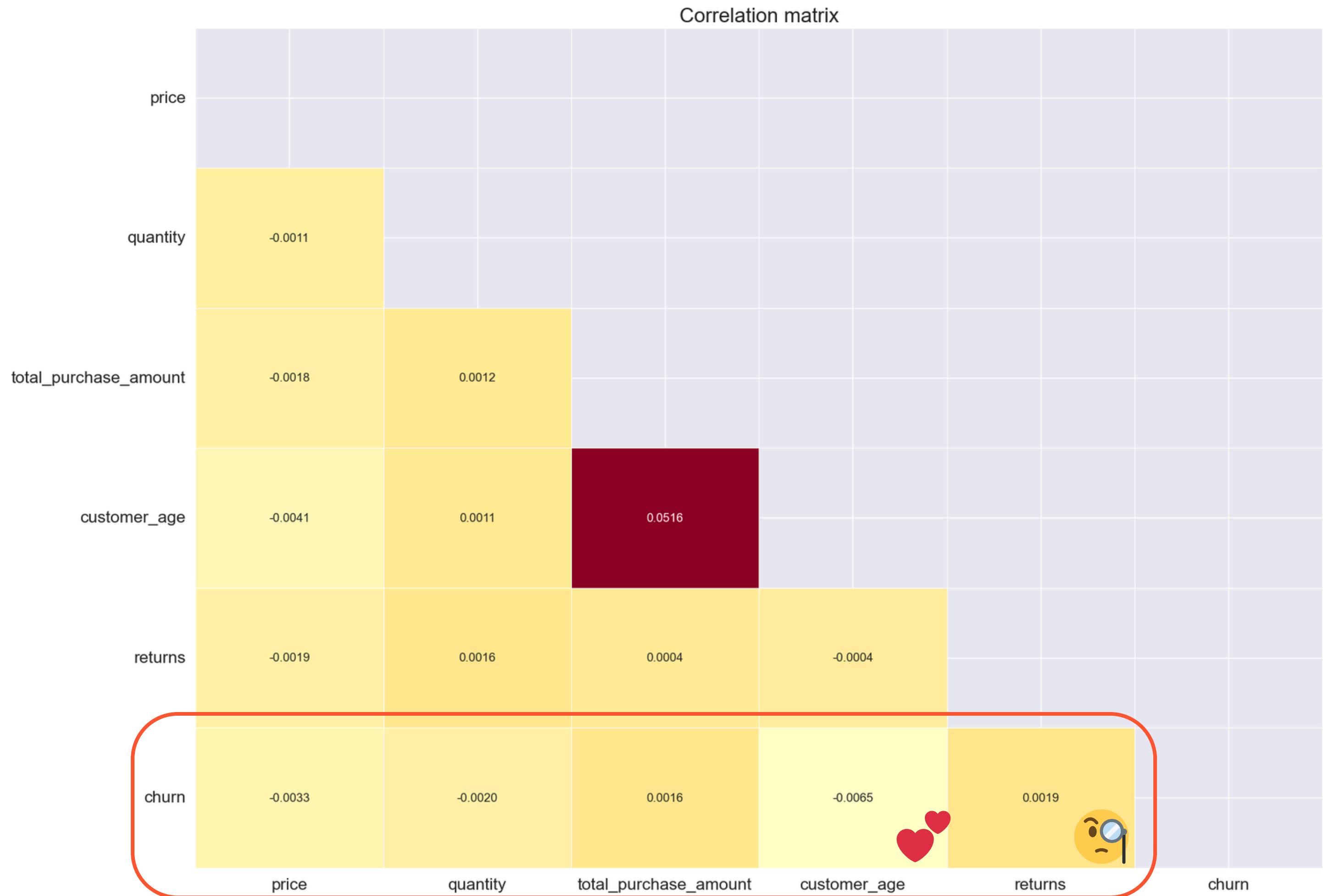
Eww. This is so cringe.

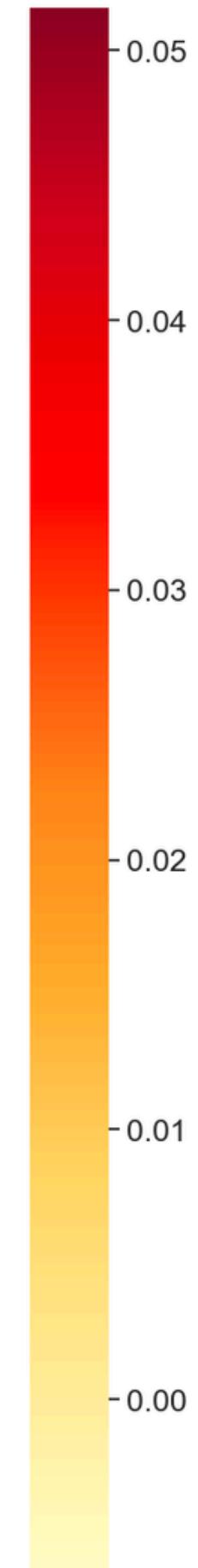
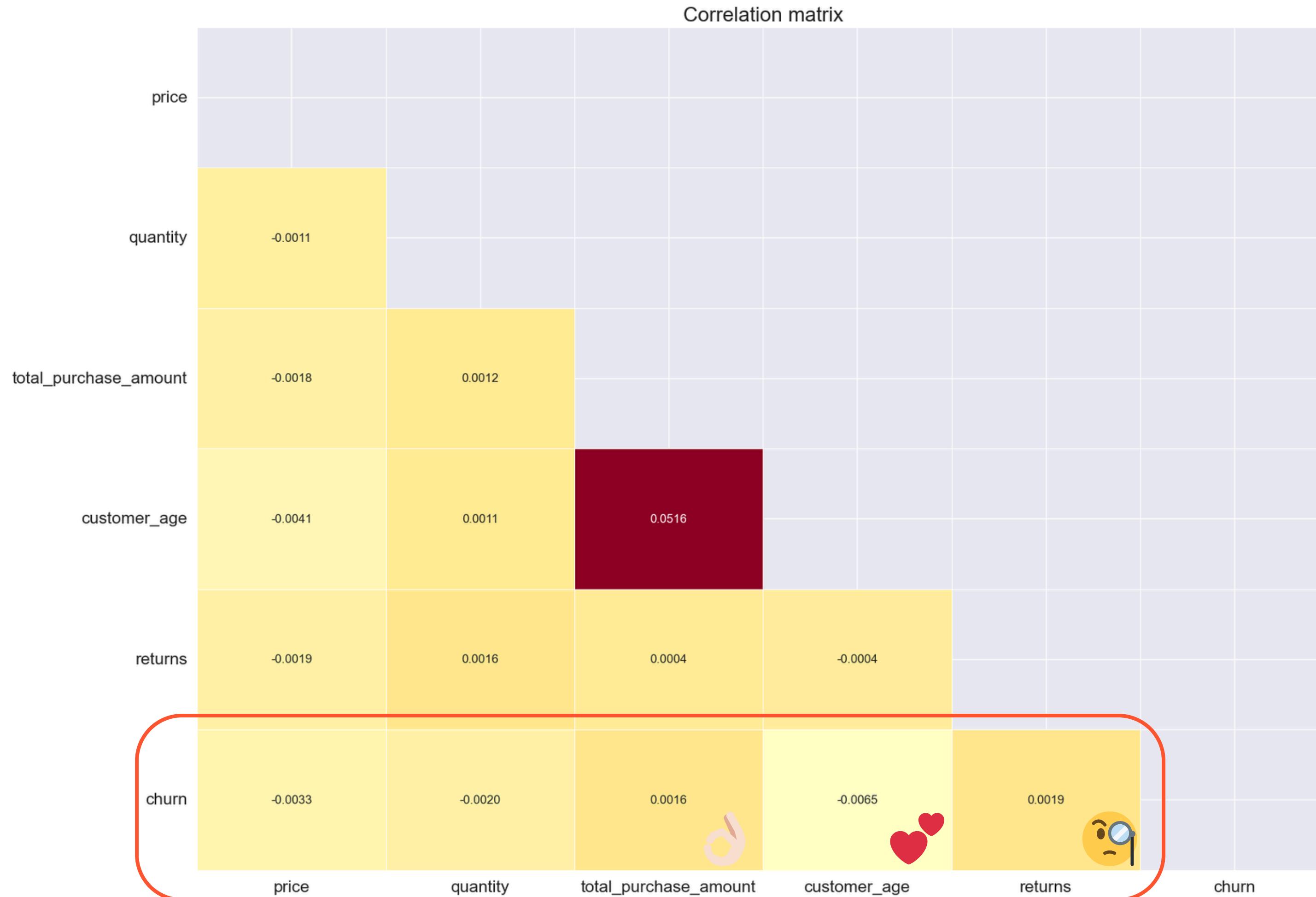
# Inferential Statistics

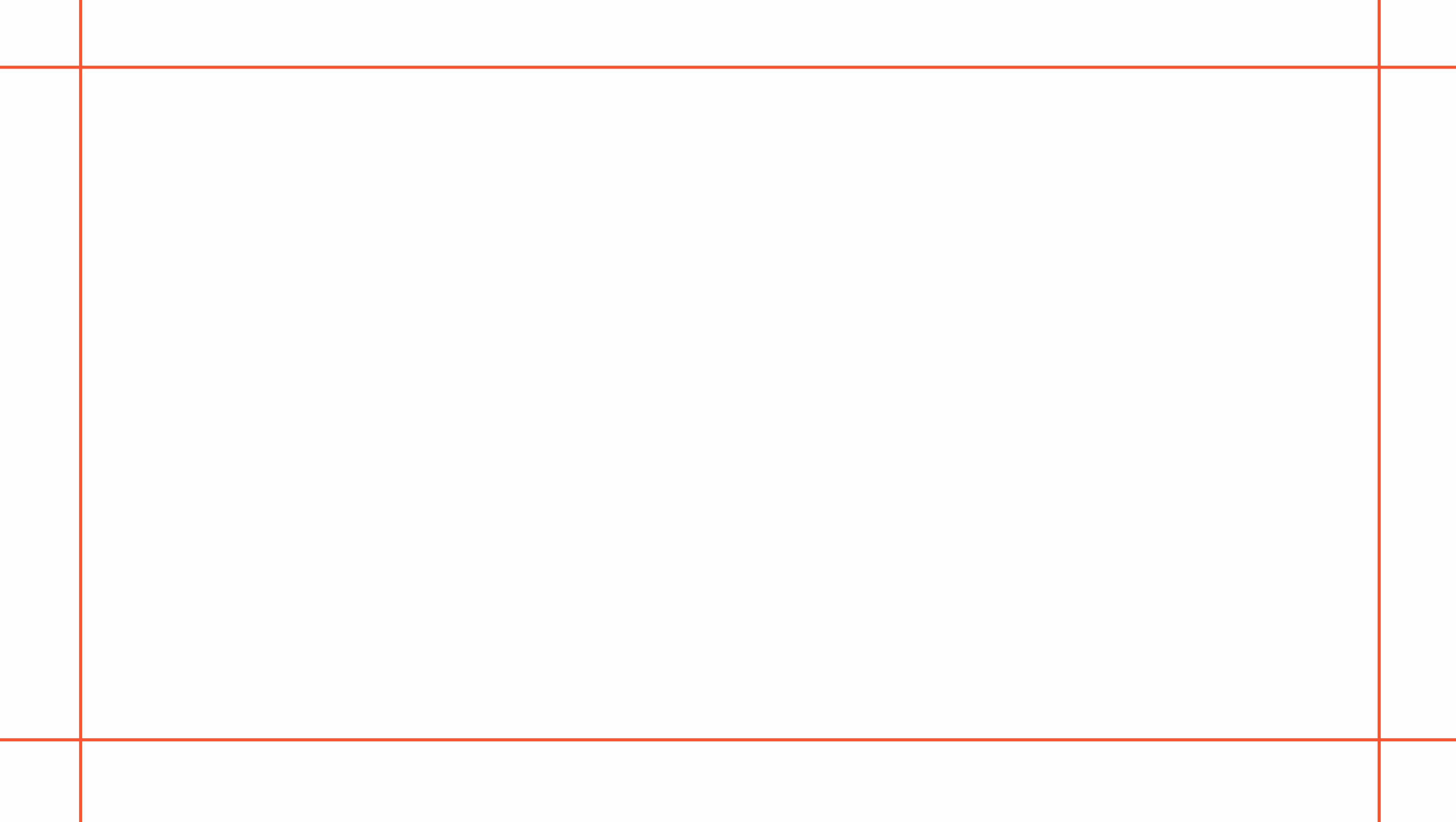
# Correlation matrix

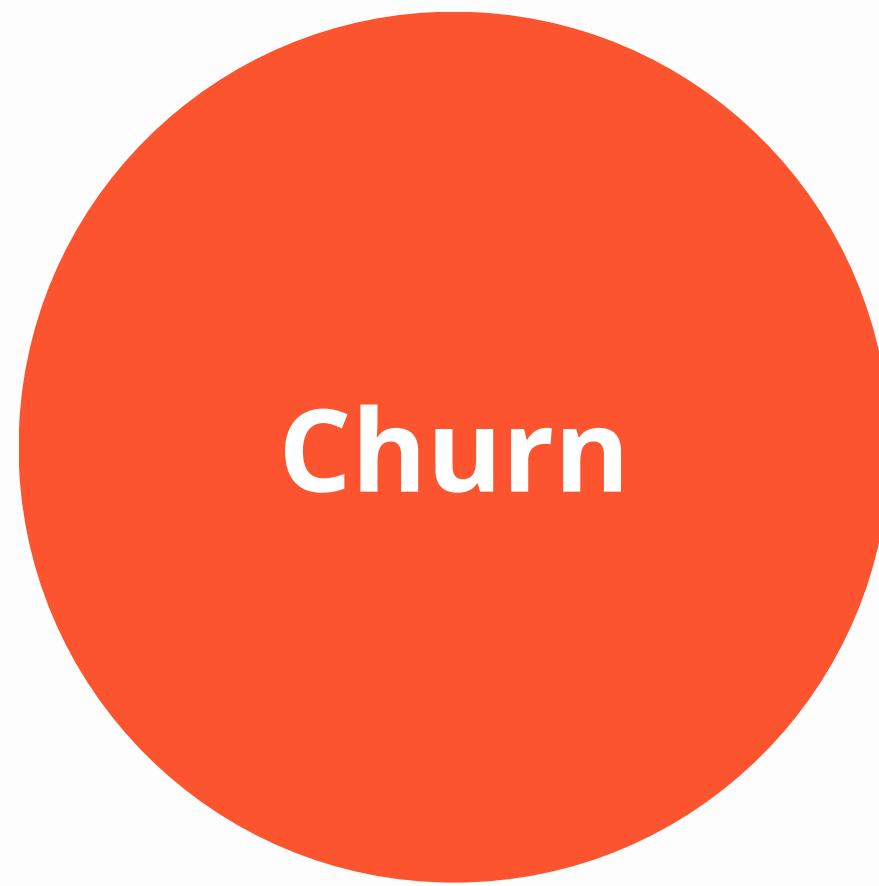


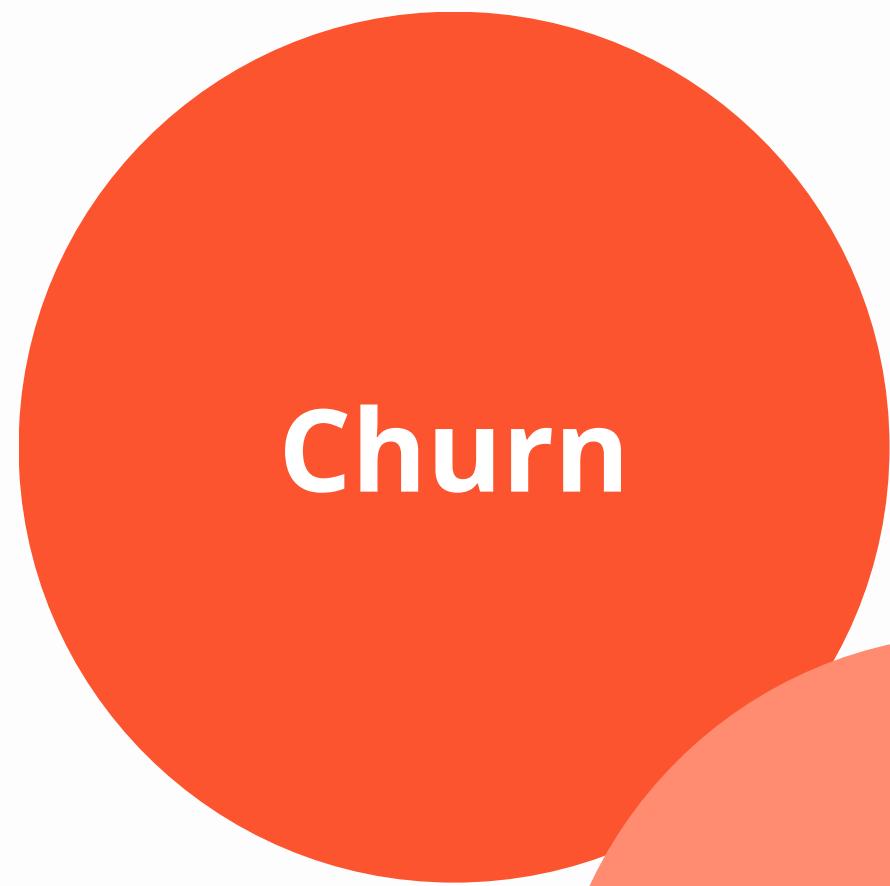












**Churn**



**Customer  
Age**

**Churn**

**Customer  
Age**

	p-value	alpha
Chi Square – Test	0.0005723	0.05

Pearson	Spearman	Cramer
-0.0065	-0.0065	0.03485

# Correlation doesn't mean causation

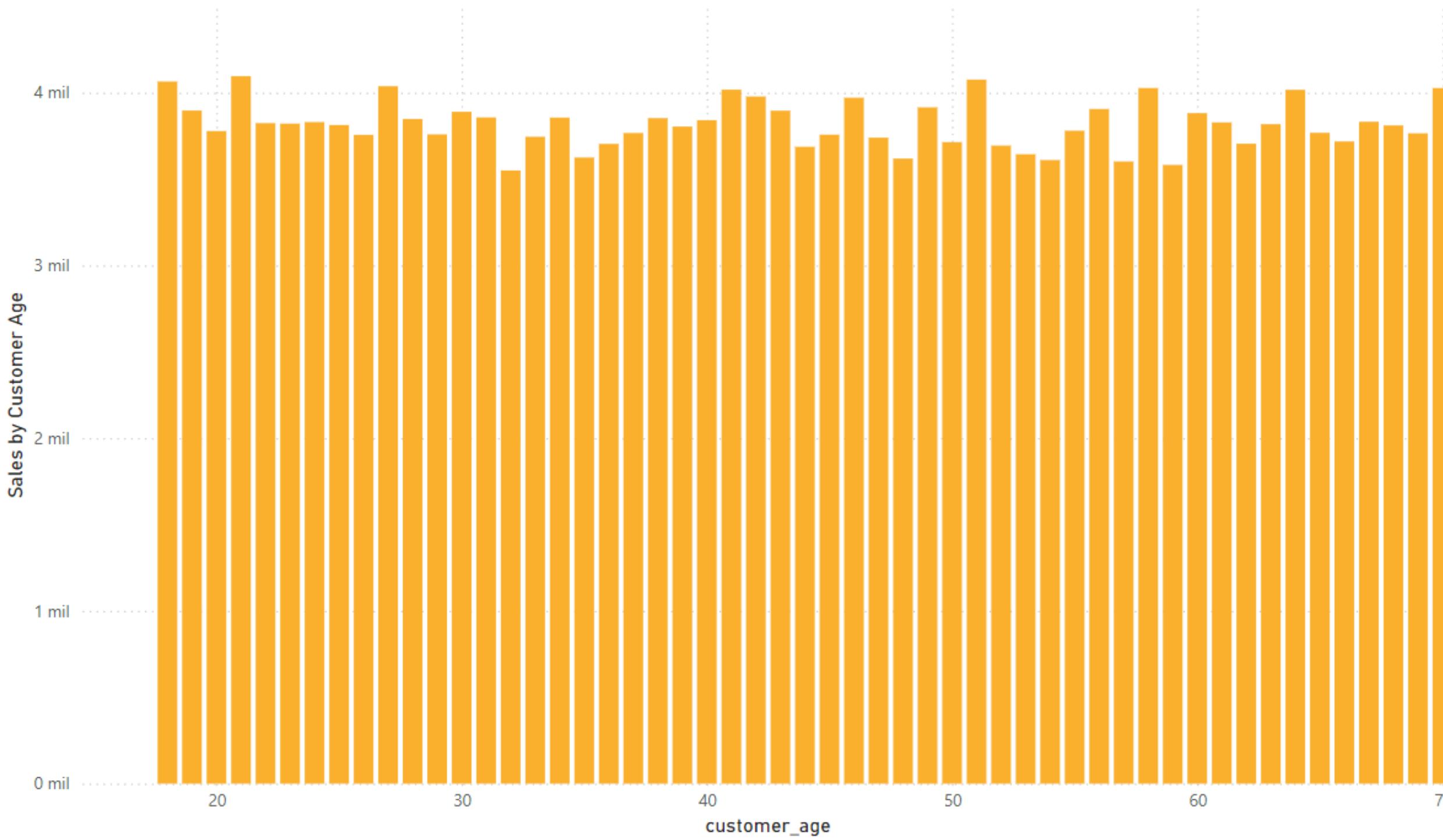


# Customer Segmentation

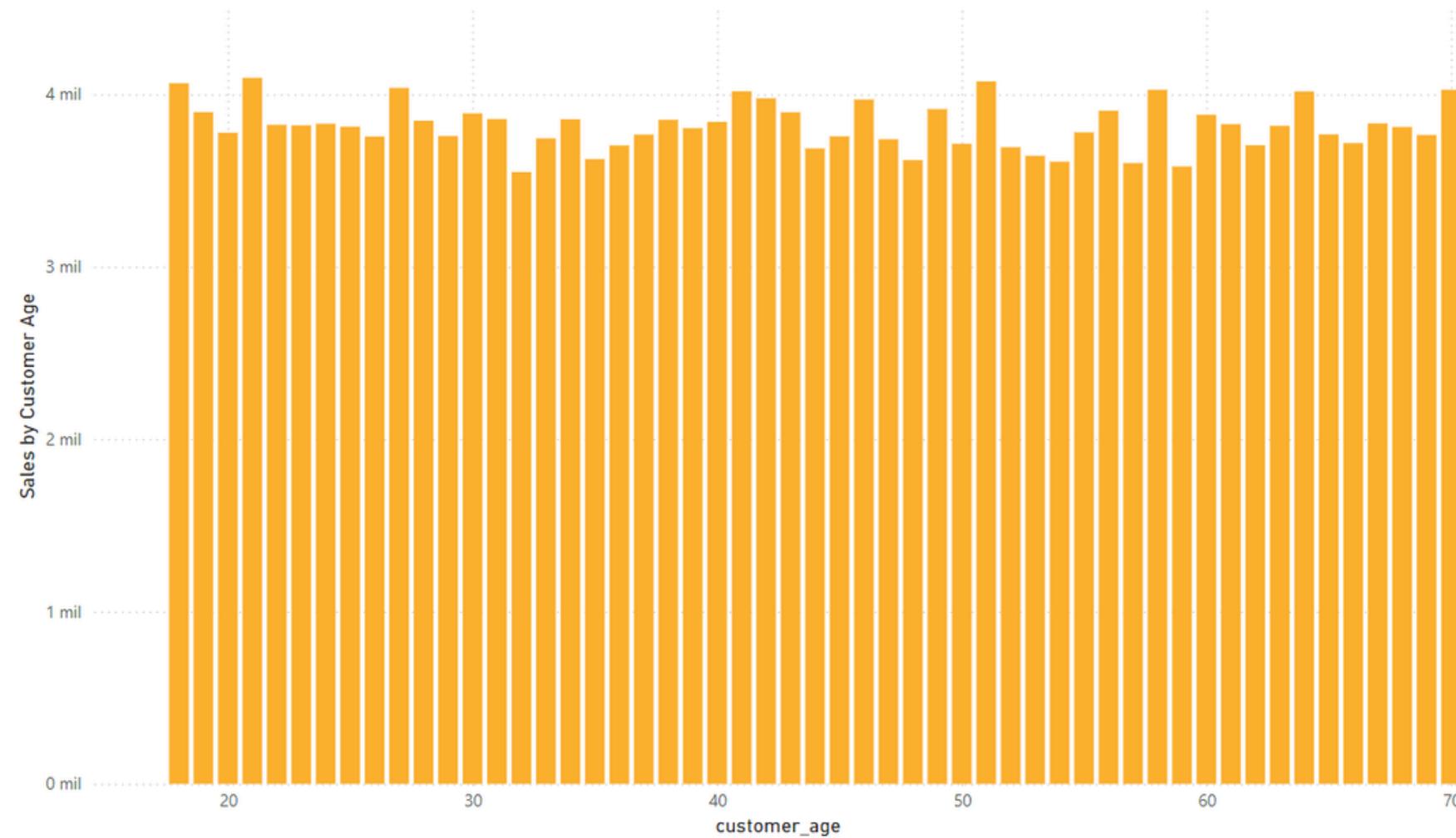


# Segmentation by Age: Generations

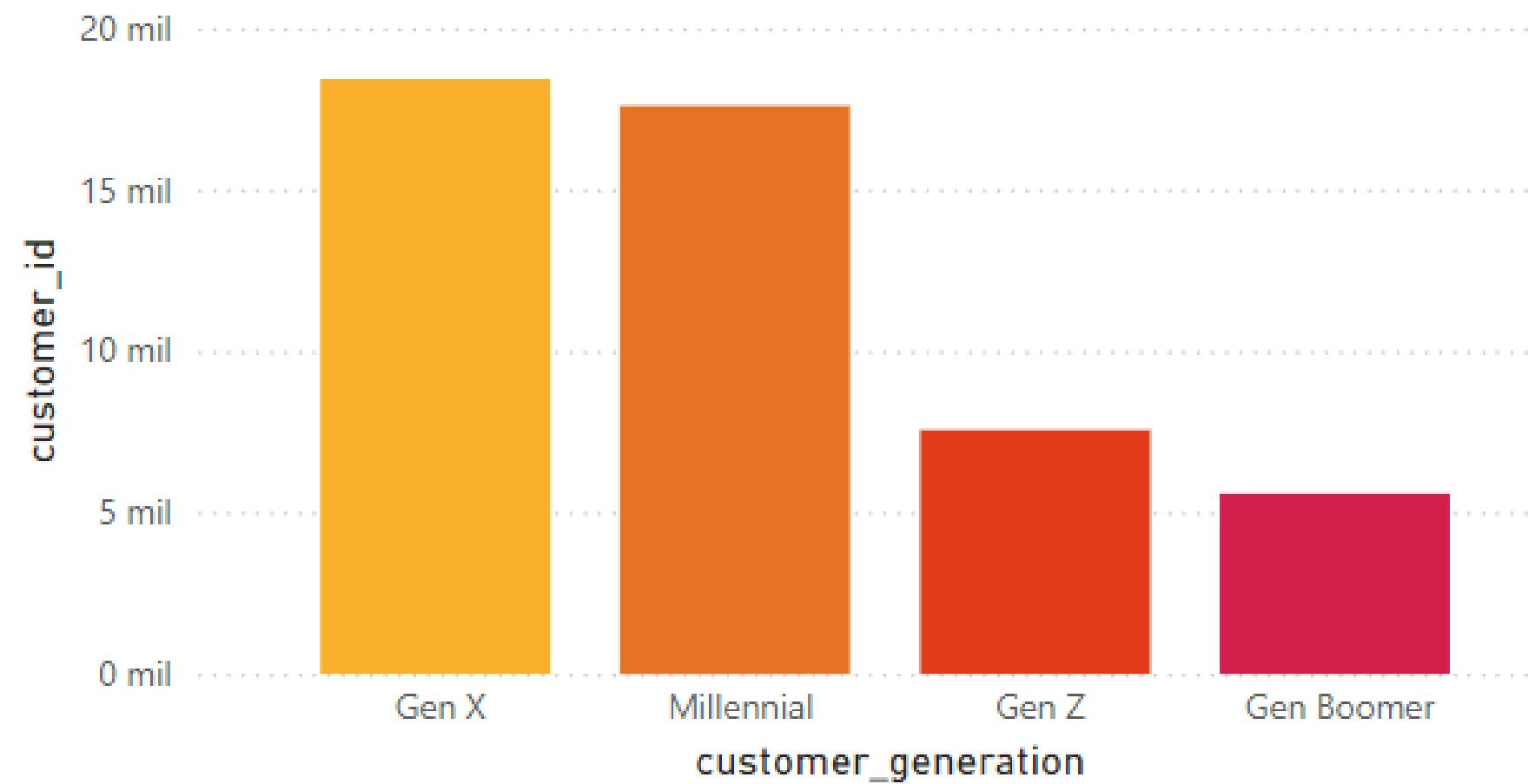
Sales by Customer Age por customer\_age



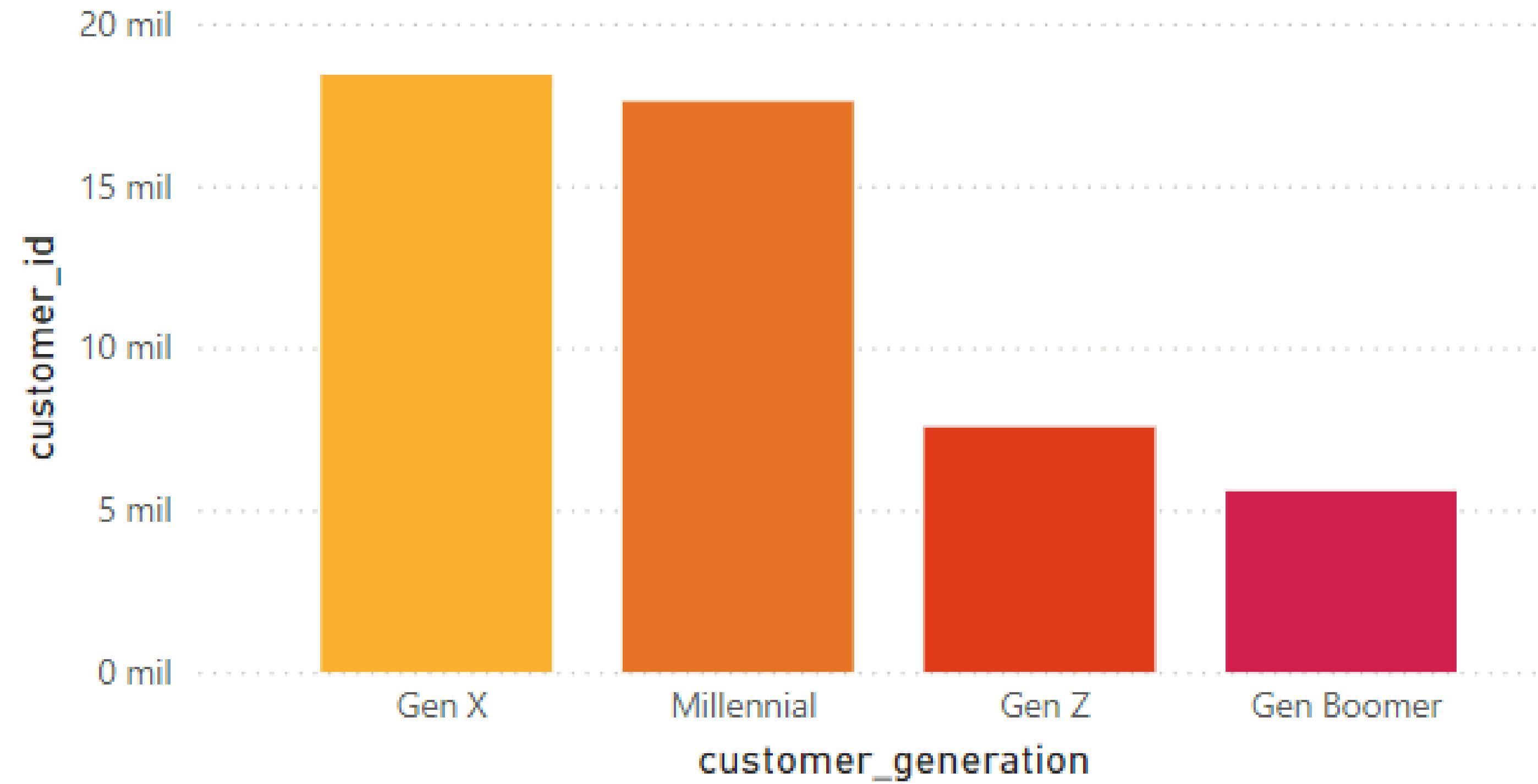
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Customer Segmentation



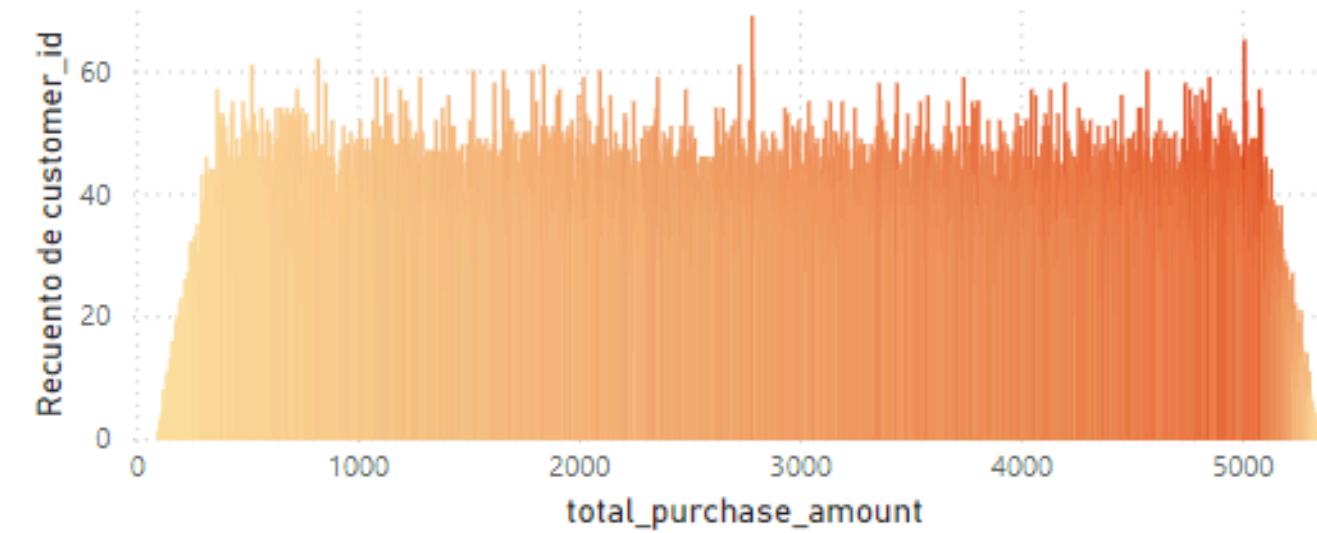
## Customer Segmentation



**Segmentation by amount of  
purchase:  
Bins - Quartile**

### Customers by total\_purchase\_amount

Suma de total\_purchase\_amount 0 mil. 0,33 mil.



Min. amount

**101**

Max. amount

**5 mil**

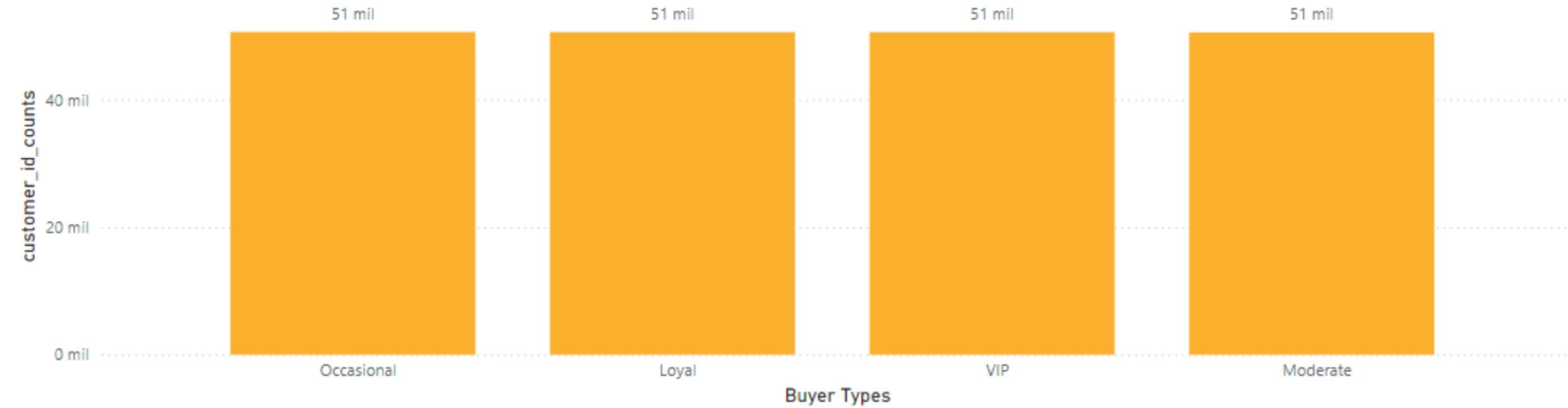
Median amount

**3 mil**

STD

**1,44 mil**

### Buyer Type - count



# Consumer Behavior - Training ML models with Churn feature



**Results for encoding with  
get\_dummies:**

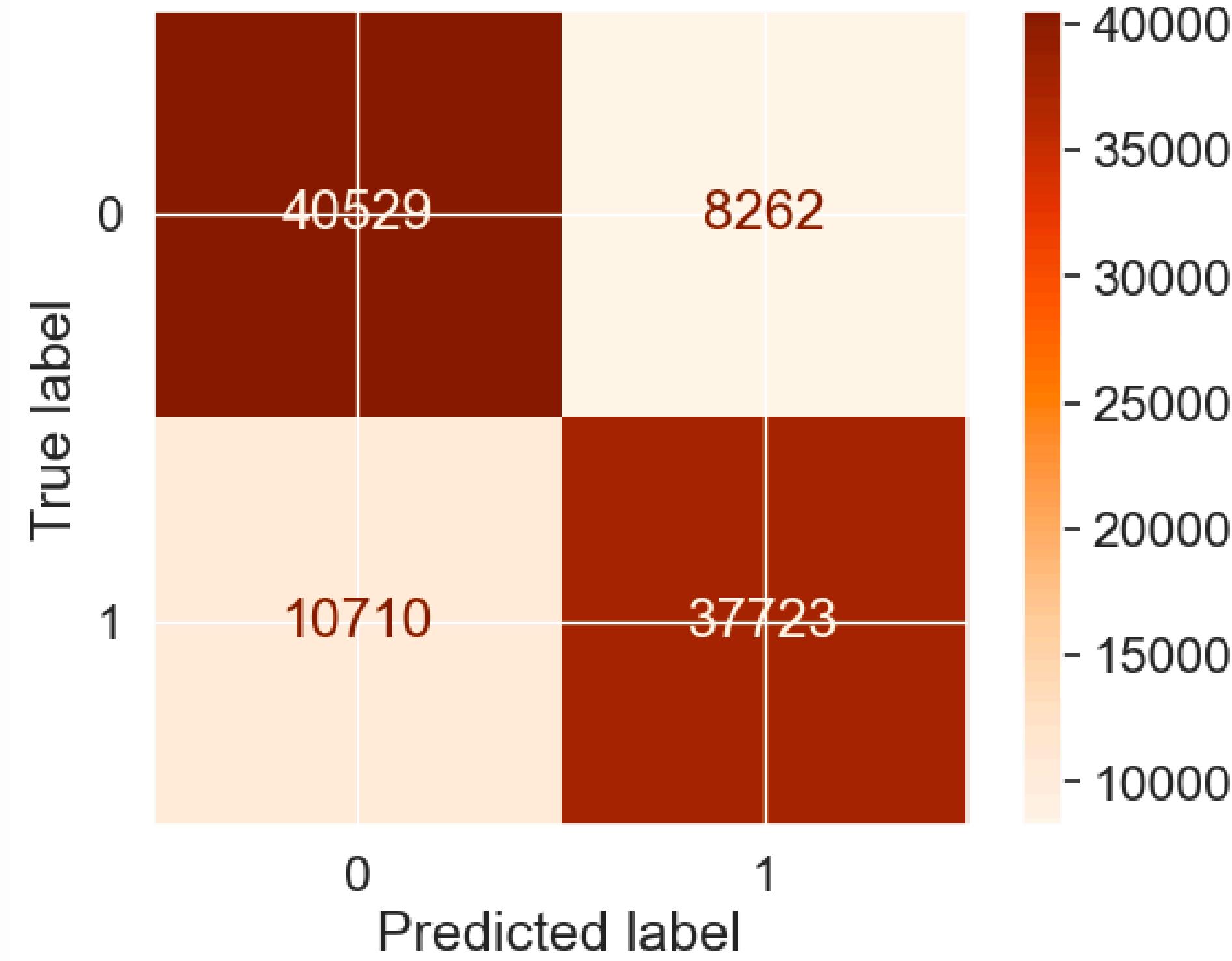
Churn	Precision	Recall	F1-score	support
0	0.80	0.83	0.81	48454
1	0.20	0.17	0.19	12268
accuracy			0,69	60722

## Results for encoding with get\_dummies and SMOTE:

Churn	Precision	Recall	F1-score	support
0	0.81	0.78	0.79	48791
1	0.79	0.81	0.80	48433
accuracy			0.80	97224

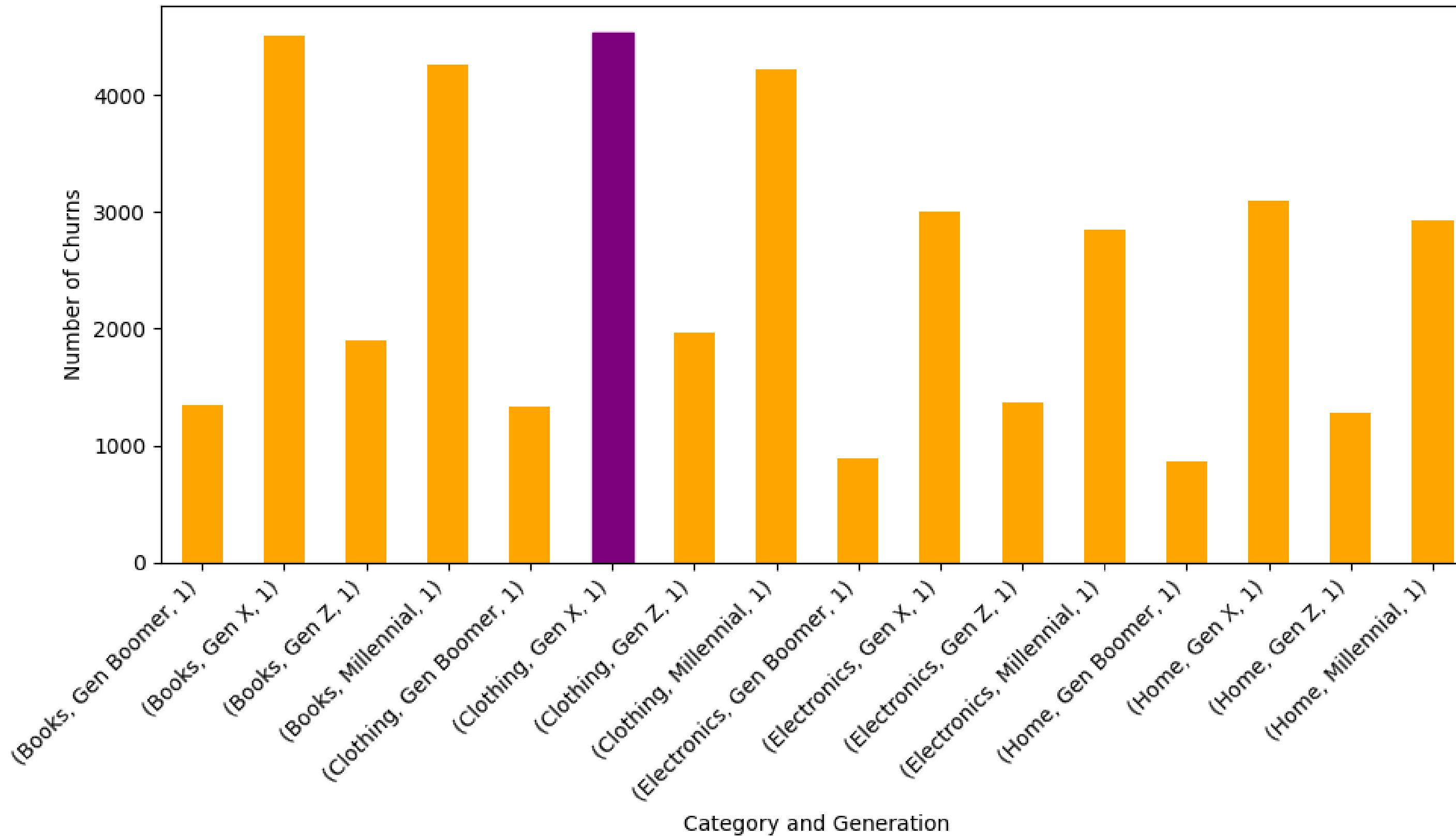
**Results for encoding with  
get\_dummies, SMOTE and  
Re-sample:**

Churn	Precision	Recall	F1-score	support
0	0.79	0.83	0.81	48791
1	0.82	0.78	0.80	48433
accuracy			0.80	97224



# Strategies:

### Churn by Category and Customer Generation



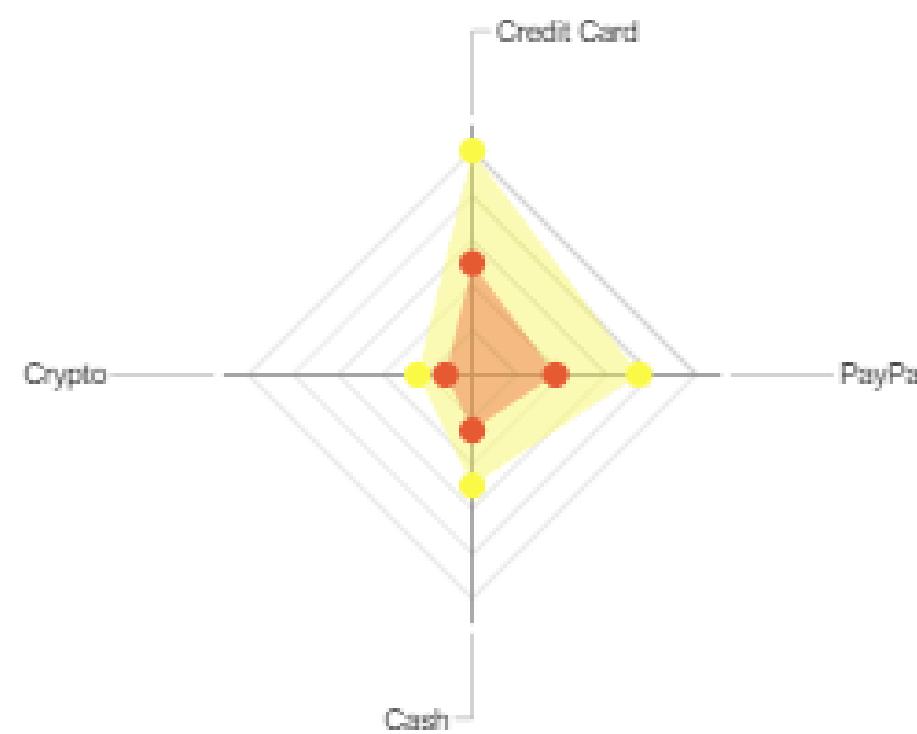
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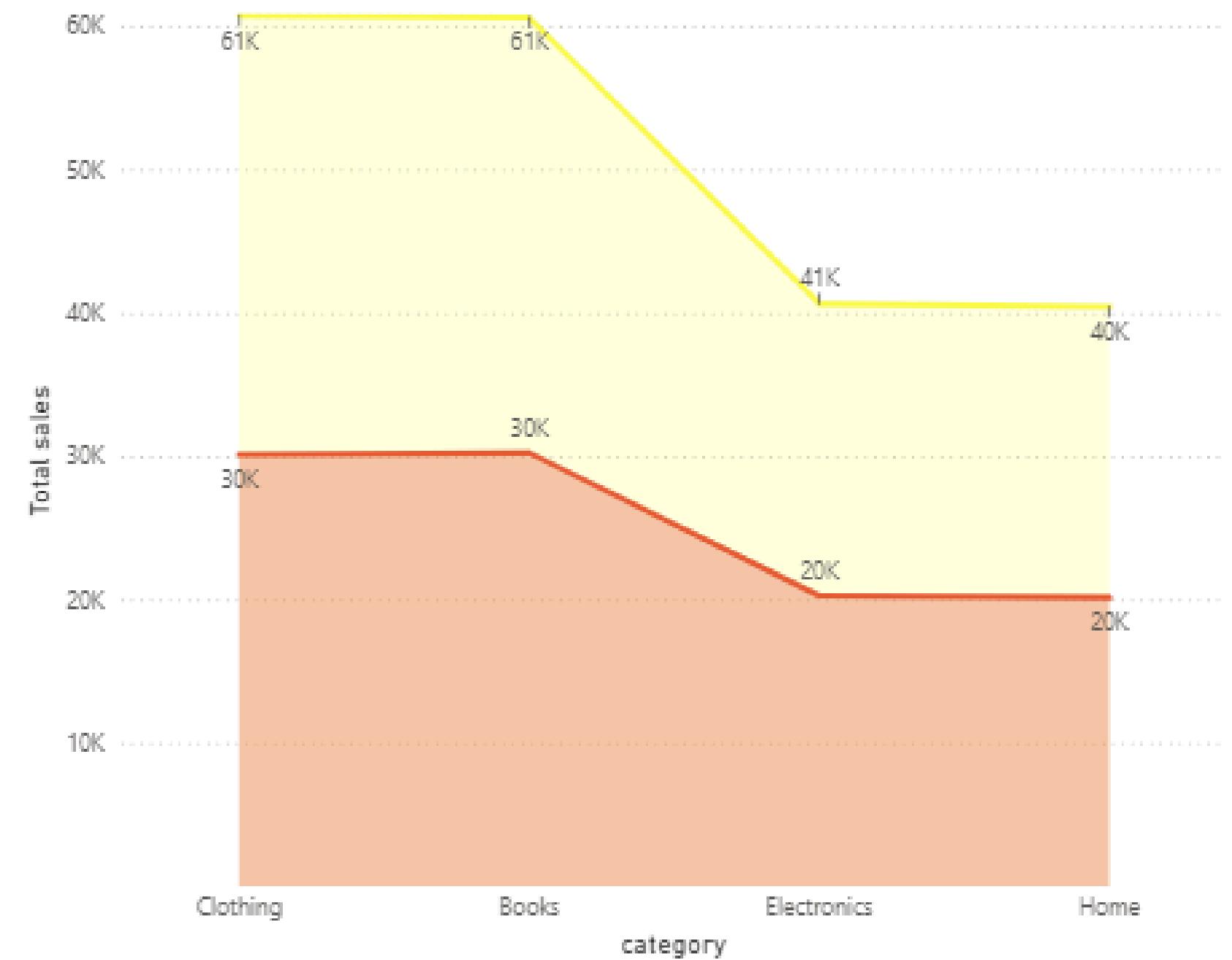
● Total Sales ● Total Returns

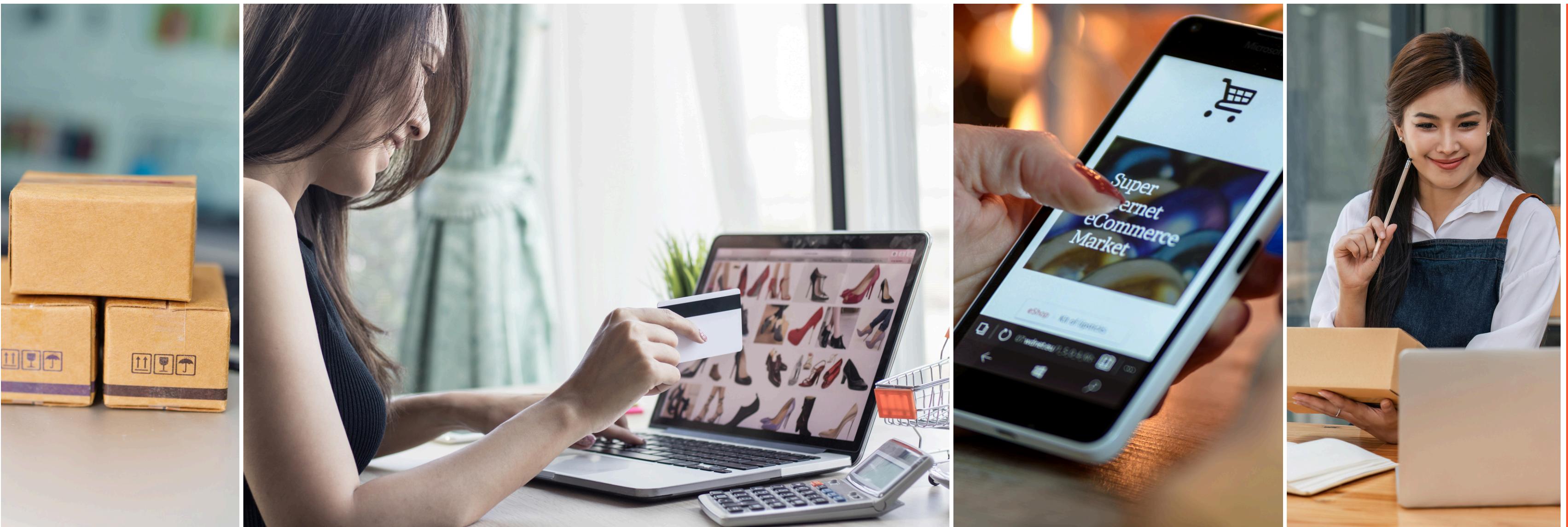


### Total sales vs. Returns

Analysis of the amount of returns over the total amount of transactions

● total\_sales ● returns\_count





# Thank you

Karla Espinoza