

MARKETING CAMPAIGN CUSTOMERS SEGMENTATION

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This project implements advanced Machine Learning techniques to analyze and segment customers, aiming to optimize marketing strategies by identifying homogeneous groups with similar characteristics.

A

Determining the Purpose of Analysis

B

Exploratory Data Analysis

C

Features Selection & Features Engineering

D

ML Modeling - Evaluation

E

Identifying Customer Segmentation

F

Strategy Recommendation



PROBLEM DEFINITION

Company realizes Low acceptance of marketing campaigns.

Help business enhance marketing efficiency and maximize return on investment by applying **customer segmentation** based on buying patterns and behavior. This enables company to personalize marketing and loyalty strategies, increasing their overall effectiveness.



The intended goal of customer segmentation is to divide the dataset of costumers into groups based on certain common characteristics.



DATA SOURCE

MARKETING CAMPAIGN DATASET



DEMOGRAPHICS

- **AGE**
- **EDUCATION LEVEL**
- **FAMILY STATUS / NUMERS OF KIDS**

SPENDING HABITS

- **EXPENSES IN DIFFERENT PRODUCTS CATEGORIES**
- **NUMBER OF PURCHASES MADE THROUGH DIFFERENT CHANNELS**

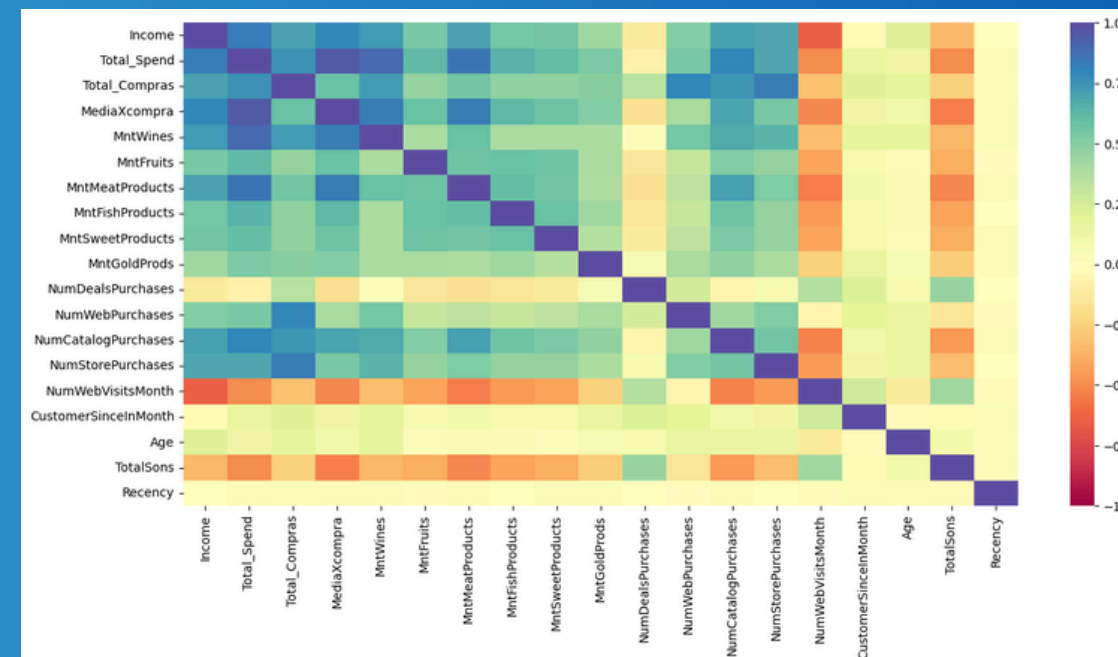
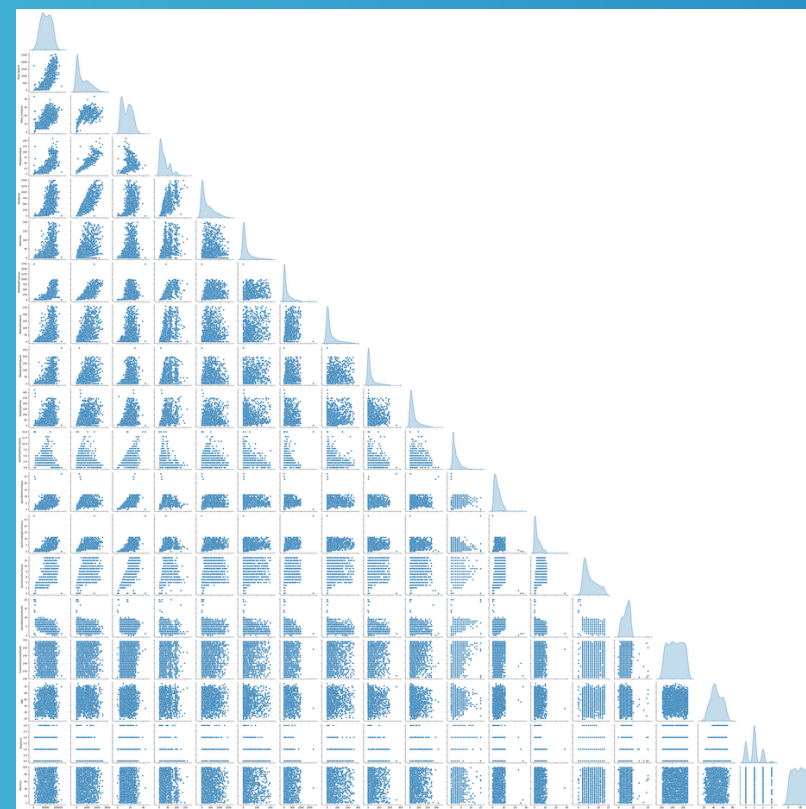
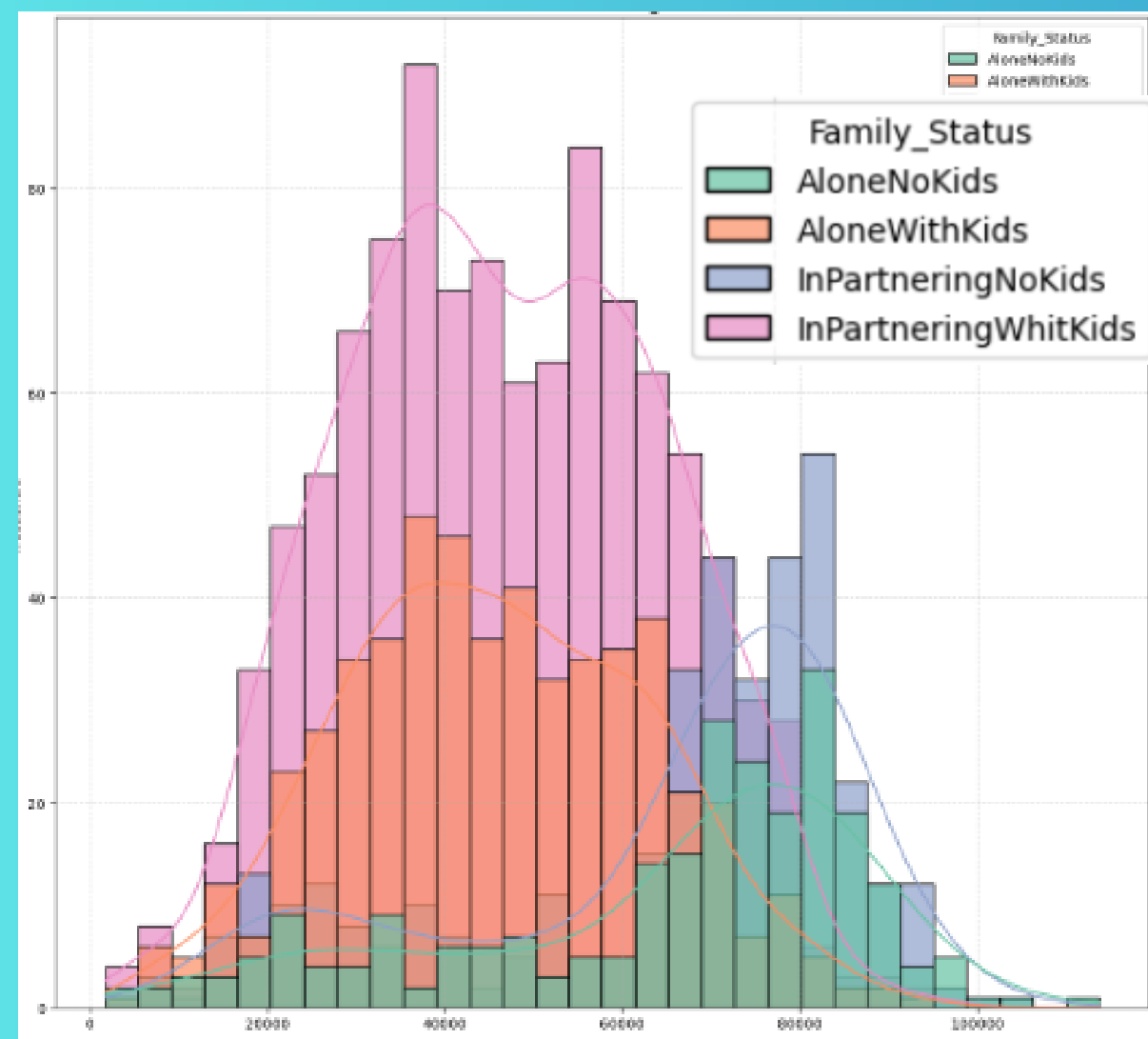
FINANCIALS

- **INCOME**

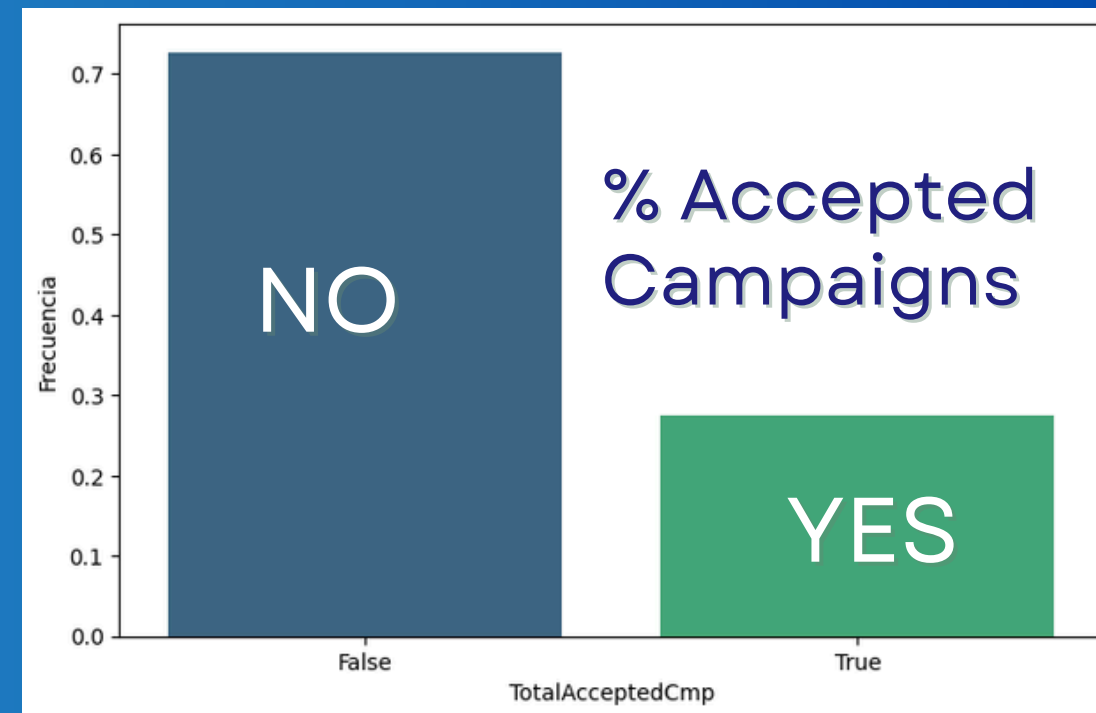
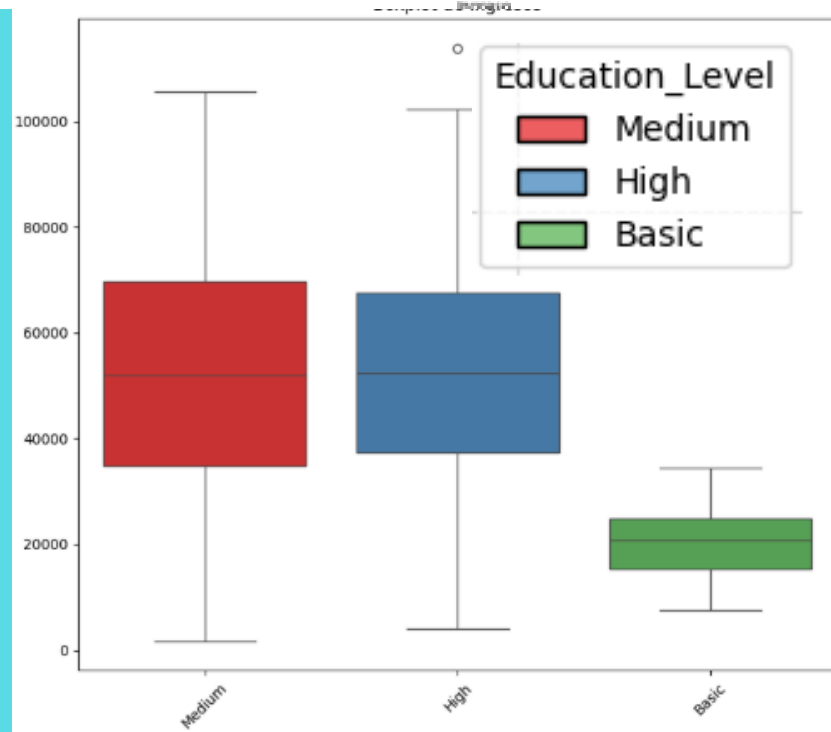
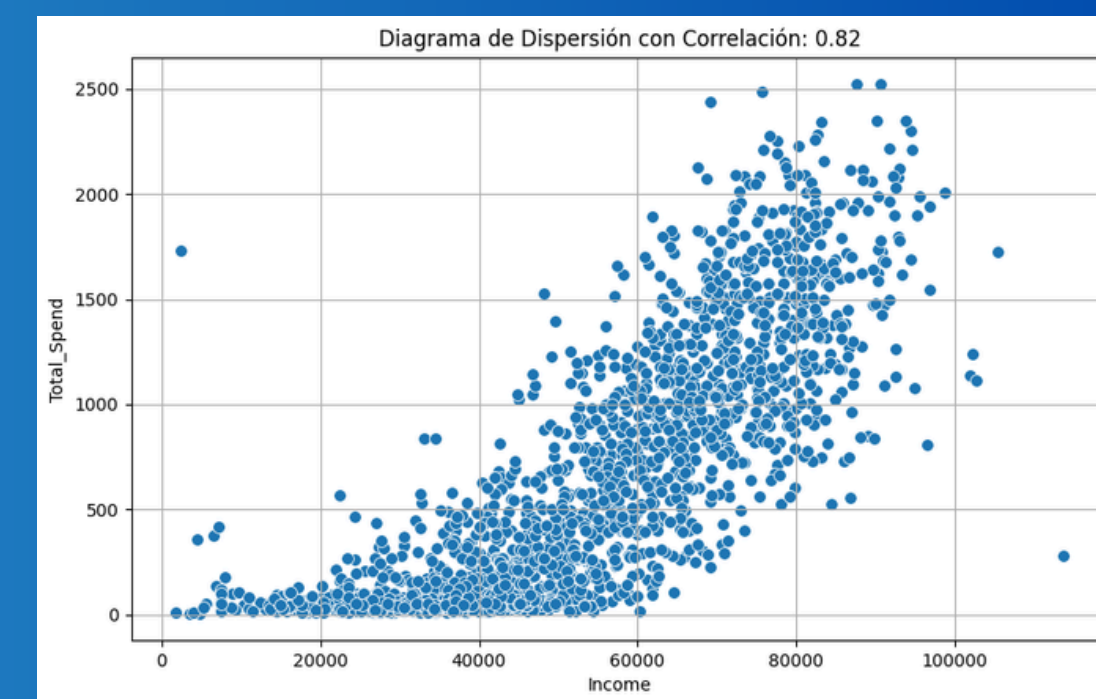
CAMPAIGN INTERACTION

- **FREQUENCY OF WEBSITE VISITS**
- **RESPONSE TO MARKETING CAMPAIGNS**

EDA



- Asymmetrical, right-skewed distribution
- Age not relevant
- INCOME IS STRONGLY CORRELATED WITH EXPENSES
- ECONOMIC IMPACT OF HAVING CHILDREN
- Families with children show lower incomes and spend less
- Having children reduces expenses in different categories
- Educational level influences income and expenses



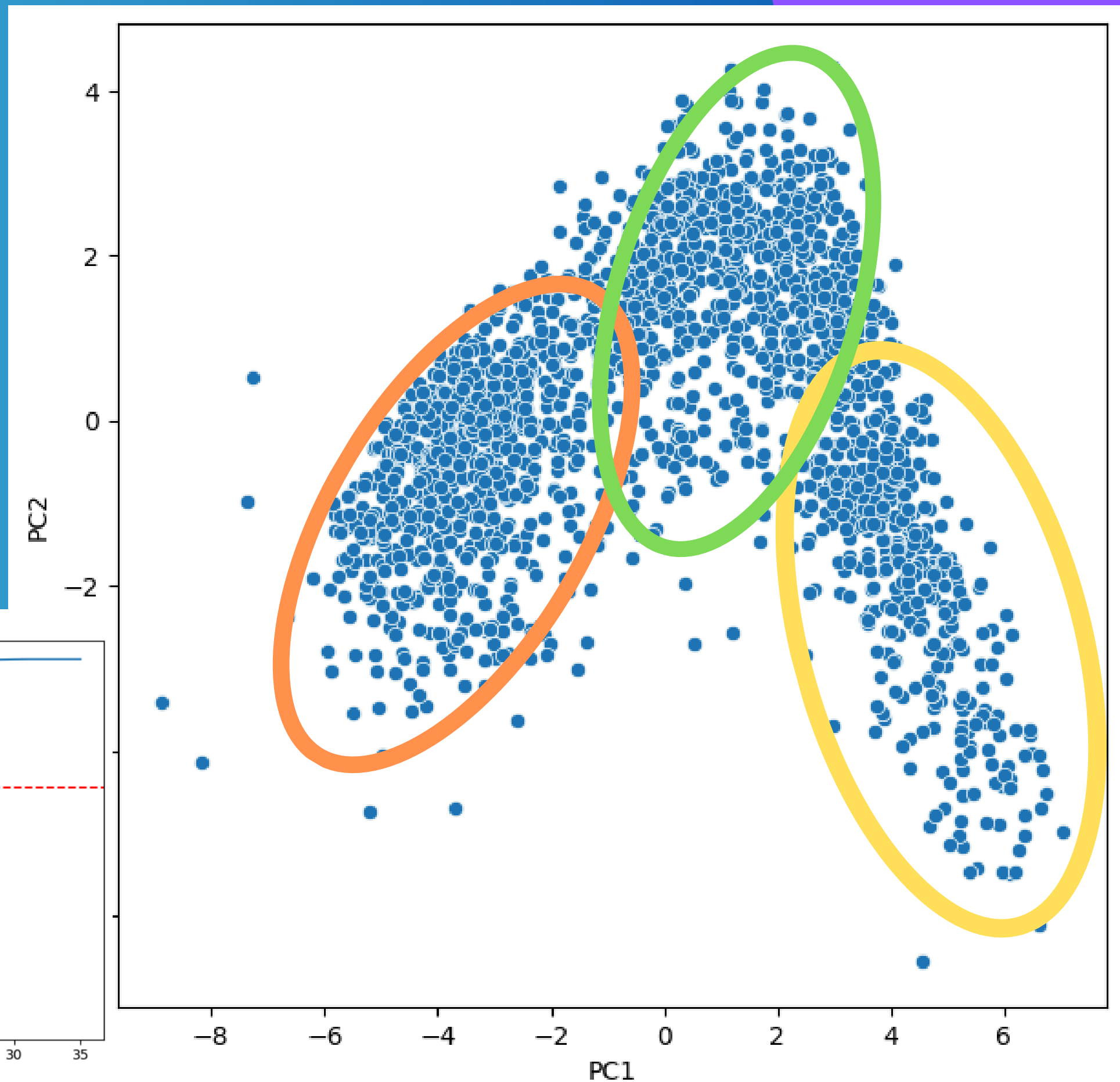
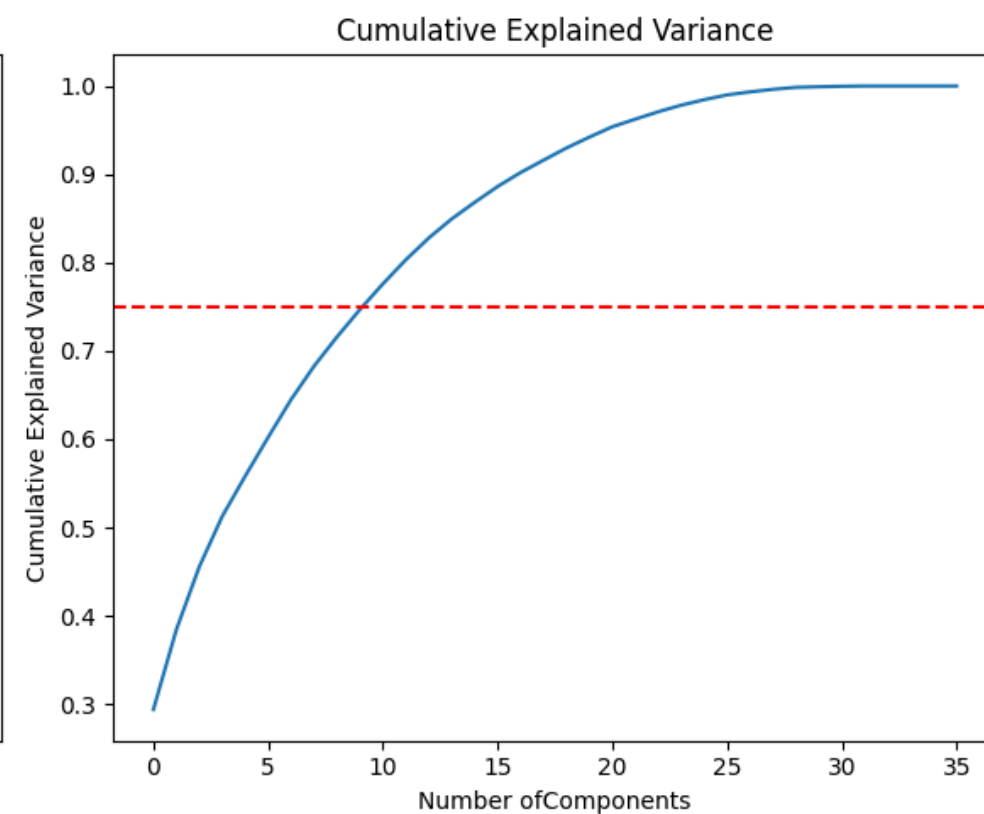
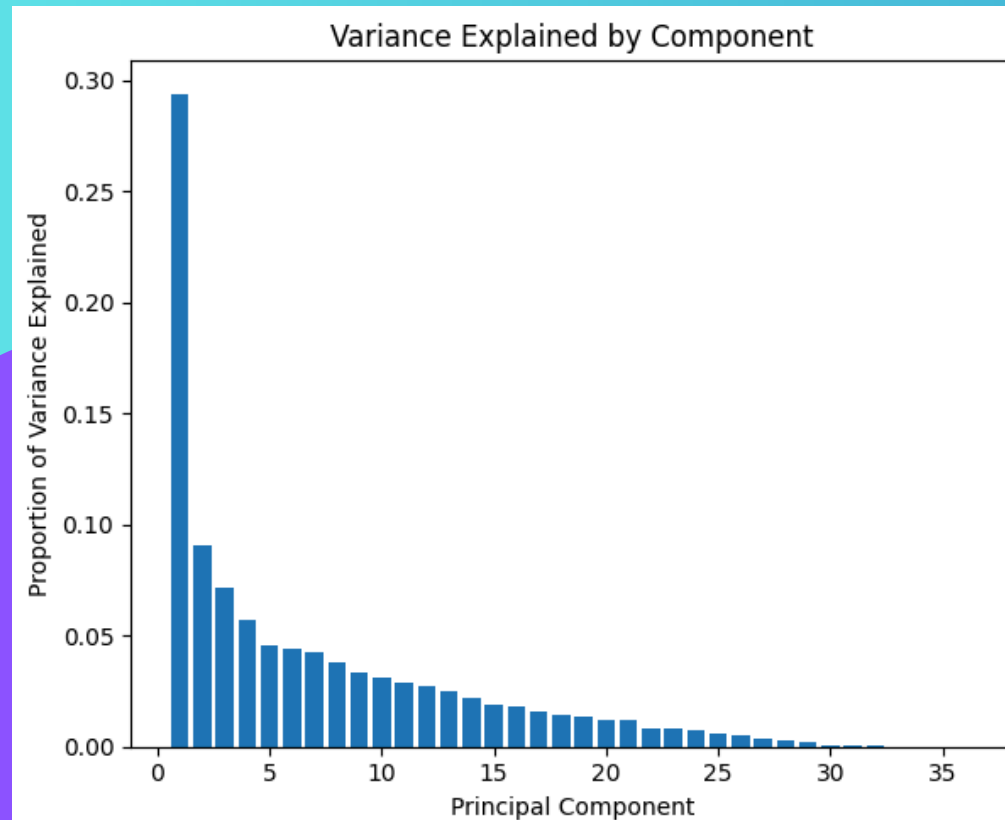
PCA

- Dimensional reduction
- multicollinearity reduction
- Plot the first two components



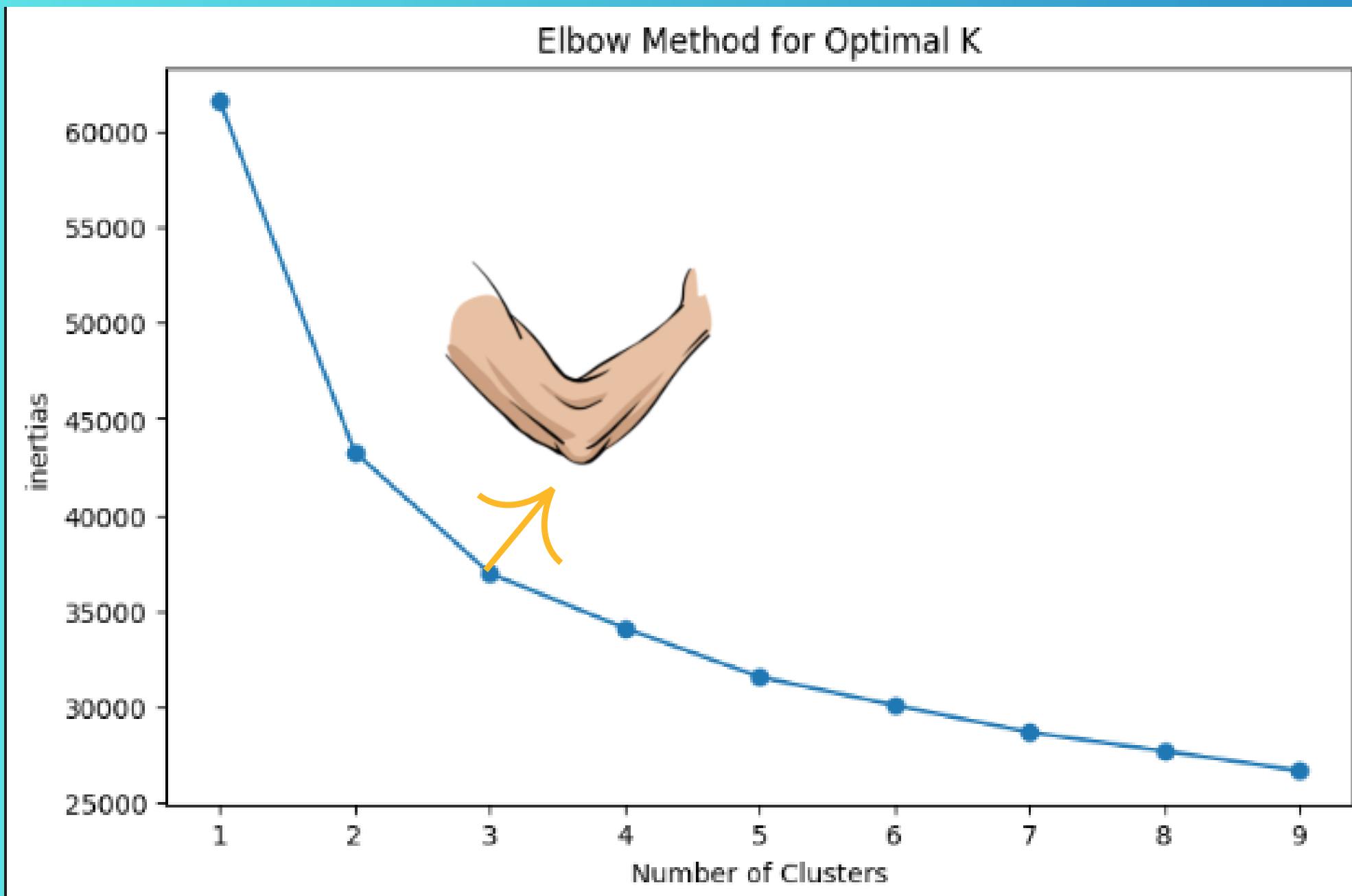
n-components 75% variance explained: 11

3 POSSIBLE CLUSTERS ??

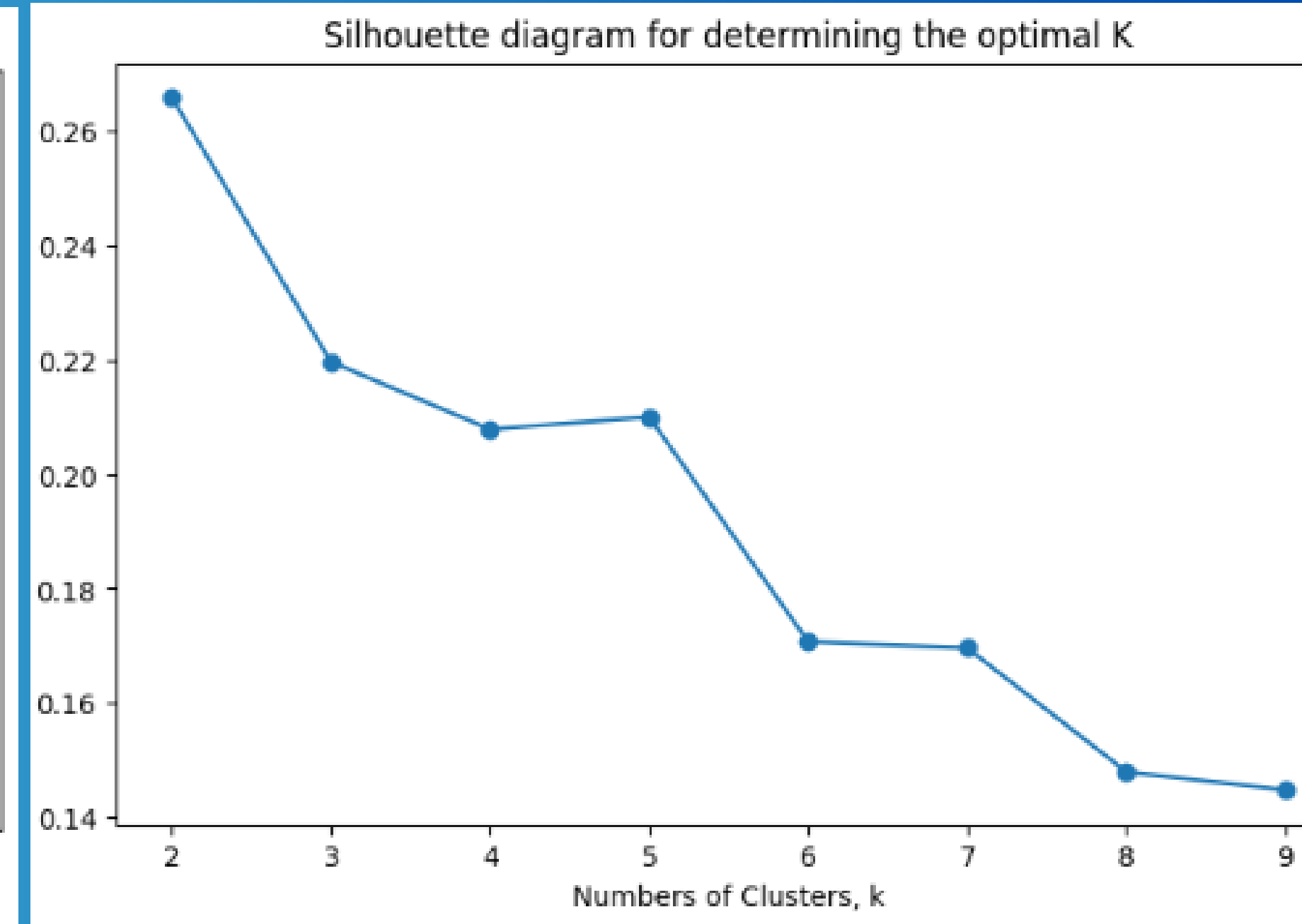


K-MEANS

ELBOW METHOD



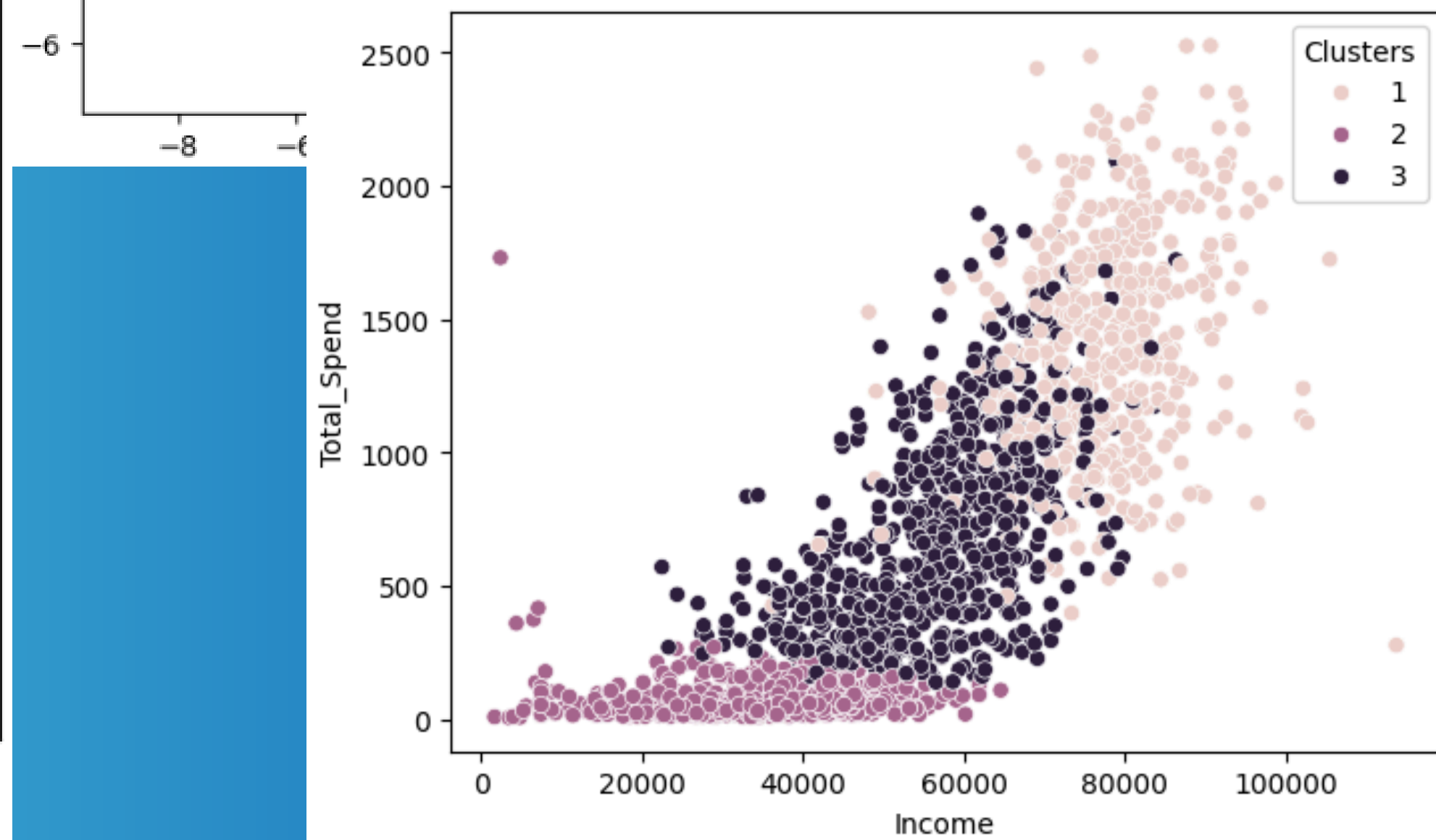
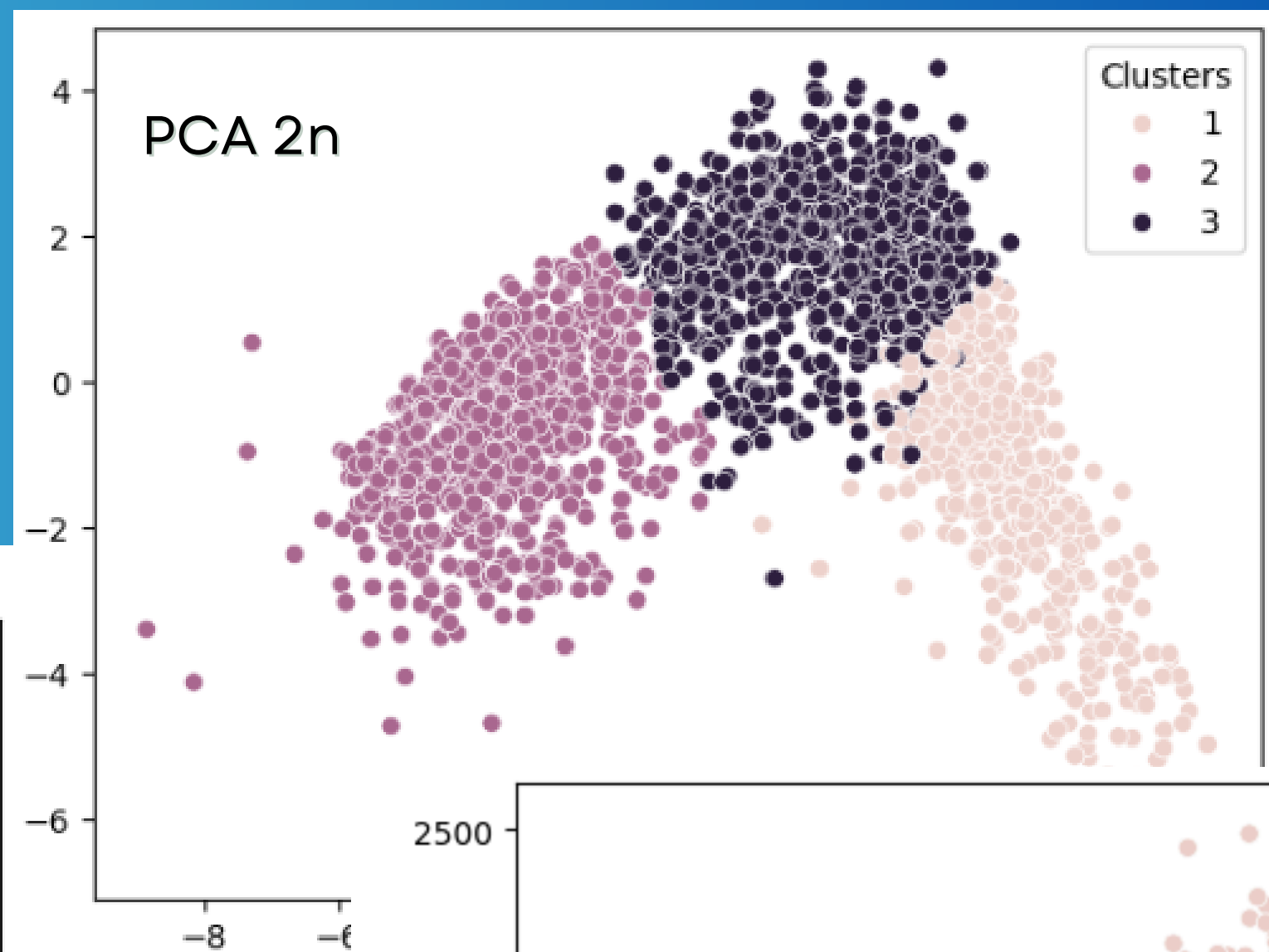
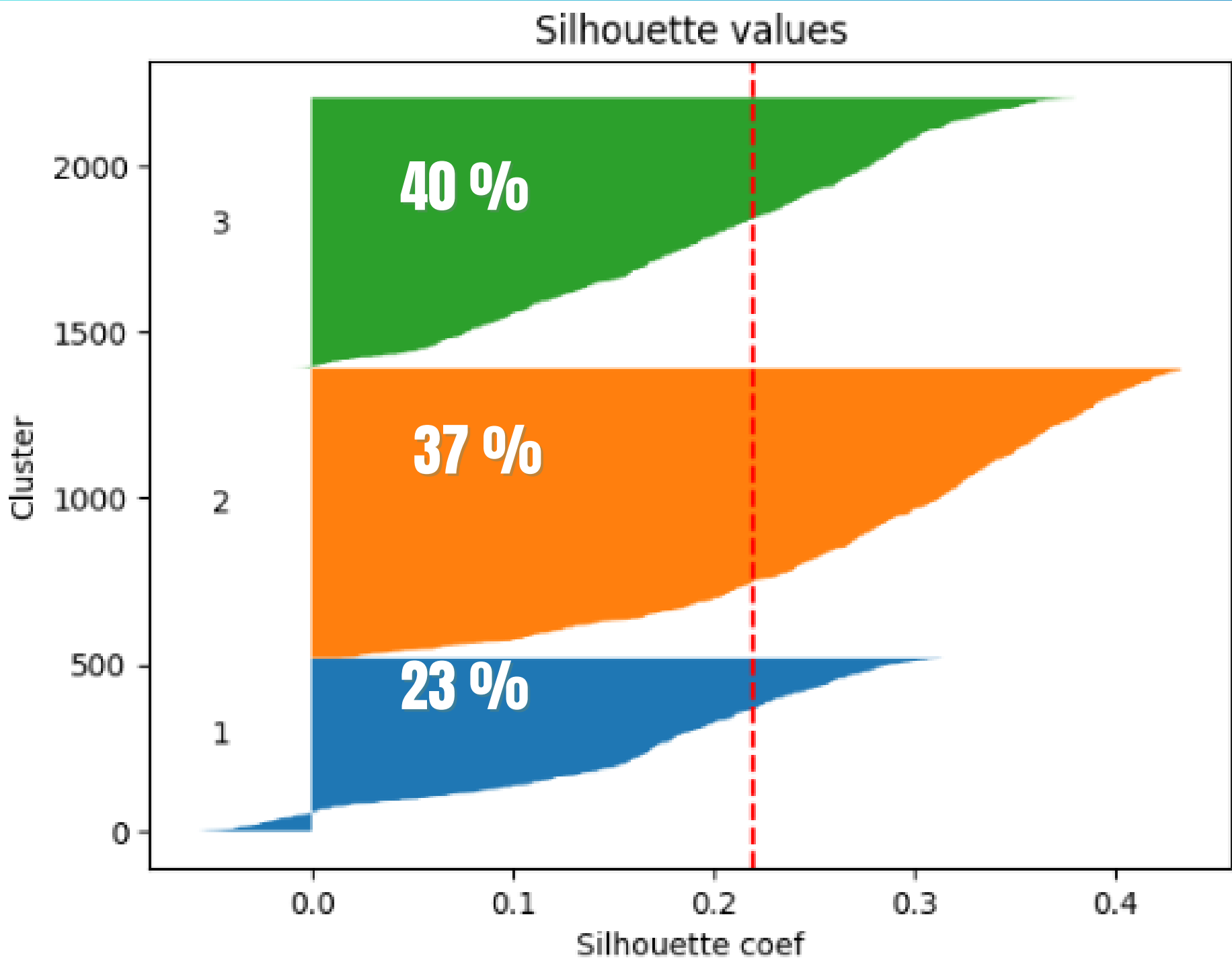
SILHOUETTE DIAGRAM



OPTIMAL NUMBER OF CLUSTERS

$K = 3$

CLUSTERING VISUALIZATION



CLUSTERING PROFILING

CLUSTER 1

Childless

High Value Income

Strong Purchases power

Physical and catalog Purchases

Accept Campaign

CLUSTER 2

With children

Basic Education Level

Low Income and spending

Discount oriented

Online shopping

Low Campaign Acc

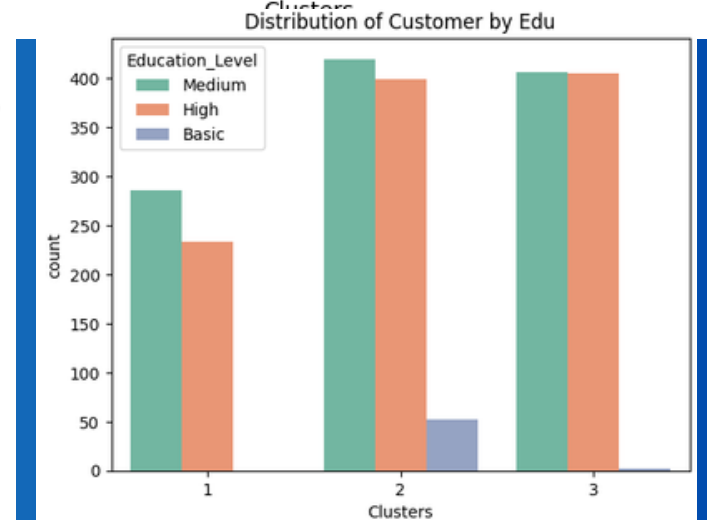
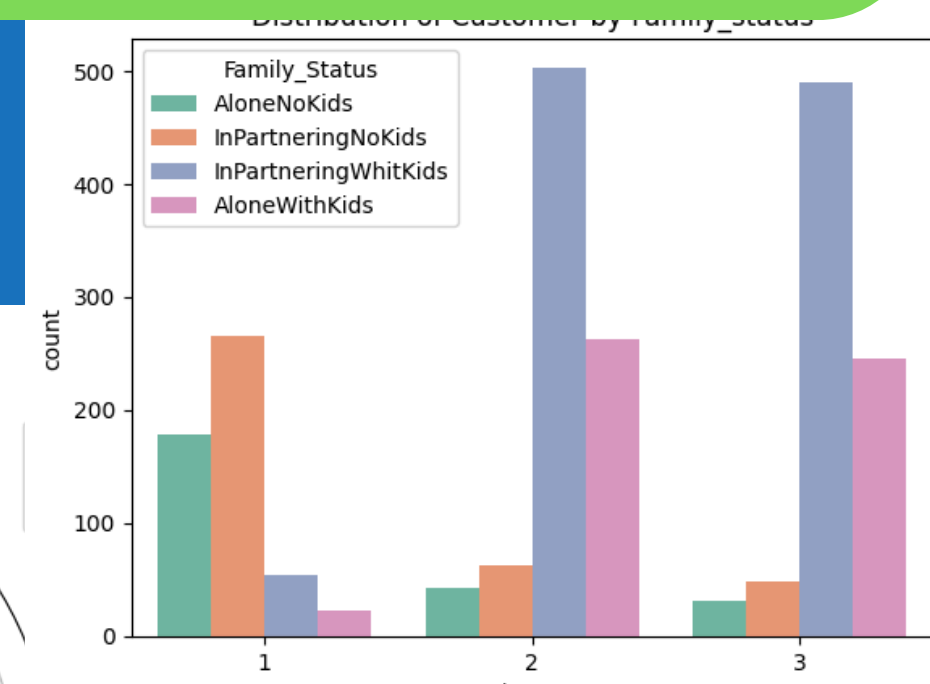
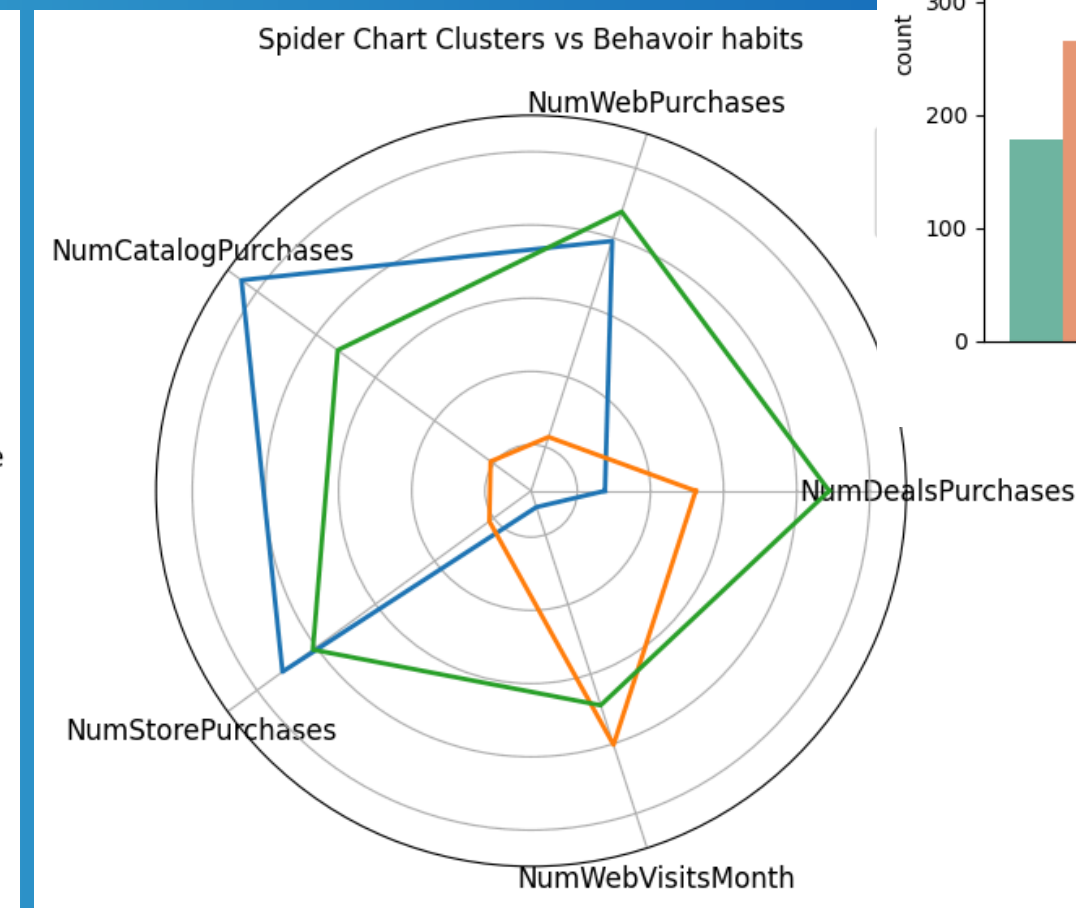
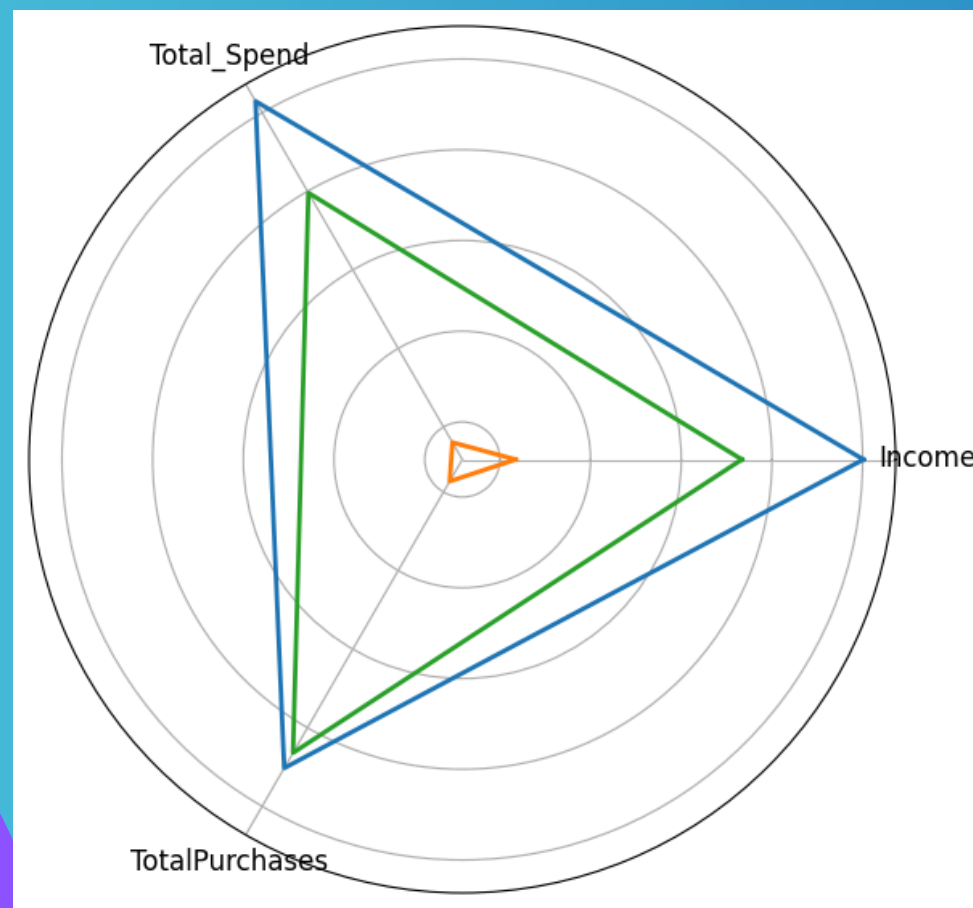
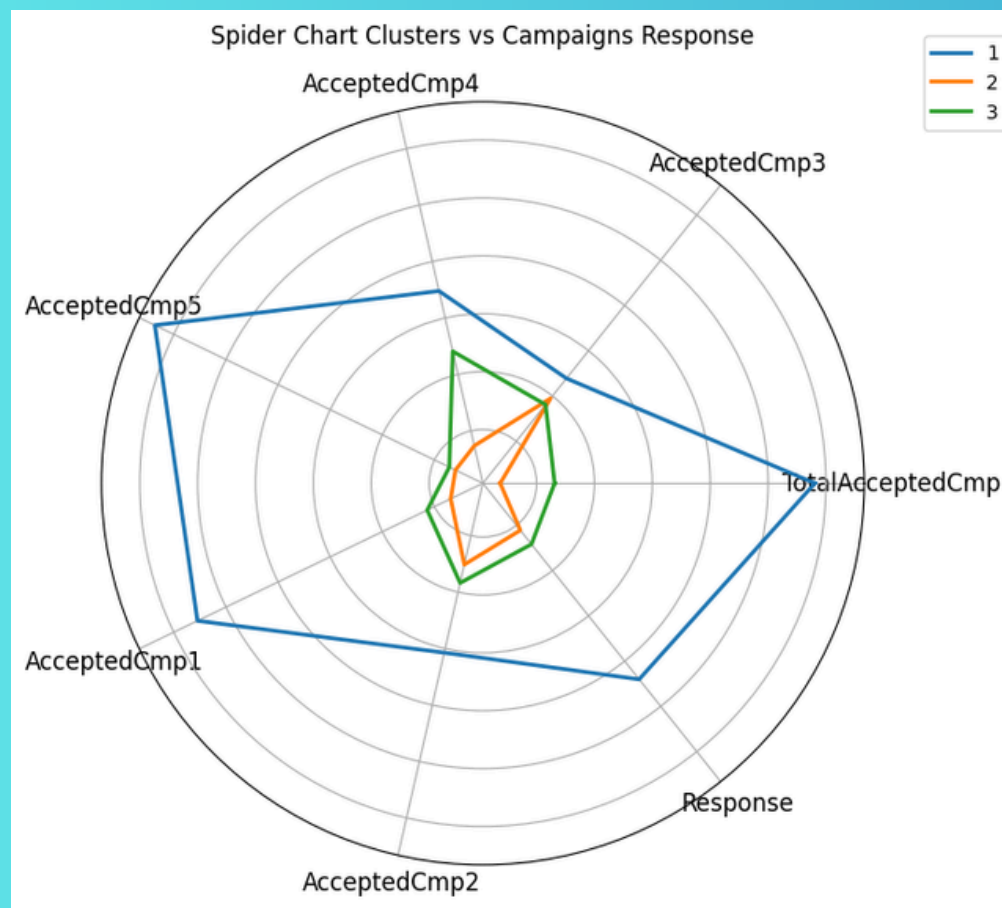
CLUSTER 2

With children(most 1)

Moderate Income and Spending
sensitive to discounts

Physical and Online Purchases

Moderate Campaign Acc





	CLUSTER 1	CLUSTER 2	CLUSTER 3
DEMOGRAPHICS	<ul style="list-style-type: none">• Dominated by customers with no children	<ul style="list-style-type: none">• Strong presence of customers with more children• Highest concentration basic education level	<ul style="list-style-type: none">• Strong presence of customers with 1 child• Significant number of single parents
FINANCIALS	<ul style="list-style-type: none">• high-value customers• strong purchasing power	<ul style="list-style-type: none">• lowest-value customer segment• minimal income and spending	<ul style="list-style-type: none">• mid-tier customers• reasonable income and spending habits
SPENDING HABITS	<ul style="list-style-type: none">• Prefers catalogs and physical stores• less focus on discounts and online browsing.	<ul style="list-style-type: none">• Frequently explores online stores,• buys less• discount-oriented	<ul style="list-style-type: none">• Balanced between online and physical shopping• high sensitivity to discounts.
CAMPAIGN INTERACTION	<ul style="list-style-type: none">• Dominates in AcceptedCmp1, AcceptedCmp5, and TotalAcceptedCmp	<ul style="list-style-type: none">• Moderate performance across most campaigns• Generally underperforms compared to Cluster 1	<ul style="list-style-type: none">• Moderate performance across most campaigns• Generally underperforms compared to Cluster 1

STRATEGY RECOMMENDATION

CLUSTER 1

Products and services appealing to singles and couples without children (travel, dining, luxury goods)

CLUSTER 2

Family-oriented offerings (family packs, children's products, family experiences)

CLUSTER 3

emphasize family values and benefits for children

The strategy that marketing should apply is a diversification strategy: focus on product offerings and different communication according to the characteristics of the 3 clusters.

MORE RECOMMENDATIONS

Prioritize marketing efforts and budget allocation toward Cluster 1 customers for higher conversion rates

For Clusters 2 and 3, consider testing modified campaign approaches that might better resonate with these segments

Analyze why Campaigns 1 and 5 were particularly effective with Cluster 1 to replicate their success

Prioritize marketing efforts and budget allocation toward Cluster 1 customers for higher conversion rates



THANK YOU

CHIARA TOTARO