

02 APRIL 2025

# Flavors Marketplace Of Flavors



MINI PROJECT



## Connecting with Customers in a Dynamic Market

### 1. The "Marketplace of Flavors" Vision

*“high-quality food and beverages for the Market ”*

### 2. The Engagement Opportunity

*“deep understanding of our customers ”*

### 3. Data as Our Customer Compass

*“leverage dataset as a valuable resource ”*



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## INTRODUCTION

'Marketplace of Flavors,' aims to offer a curated selection of high-quality food and beverage products, catering to diverse tastes and preferences in a competitive market.

# HIGHLIGHTS

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# UNVEILING OUR CUSTOMERS: A DIVERSE CUSTOMER PROFILE

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## OVERVIEW

This dataset of 2240 customer profiles with 30 attributes each, aims to provide rich information for understanding customer behavior. Including transactions across product categories.



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# CUSTOMER PROFILE



## DATASET OVERVIEW

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2240 customers, each with a unique profile  
comprised of 30 key attributes

## PRODUCT CATEGORIES

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'Coke,' 'Fruits,' 'Meat,' 'Fish,' 'Sweets,'  
and 'Gold'

## DATA TYPES

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Mix of numerical data (e.g., age, income, spending)  
and categorical data (e.g., education, marital status)

## DATA INTEGRITY

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No duplicates, ensuring the accuracy  
of our findings

FEATURE ENGINEERING

# CREATING CUSTOMER INSIGHTS

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Customer Age

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- 01** Understanding how age influences purchasing decisions and product preferences.

Total Children

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- 02** Recognizing the impact of family size on shopping habits and purchase frequency.

Total Spending

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- 03** Analyzing spending across product categories to identify customer preferences and value.

Total Transactions

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- 04** Analyzing transactions across all channels to measure overall customer engagement.

Conversion Rate

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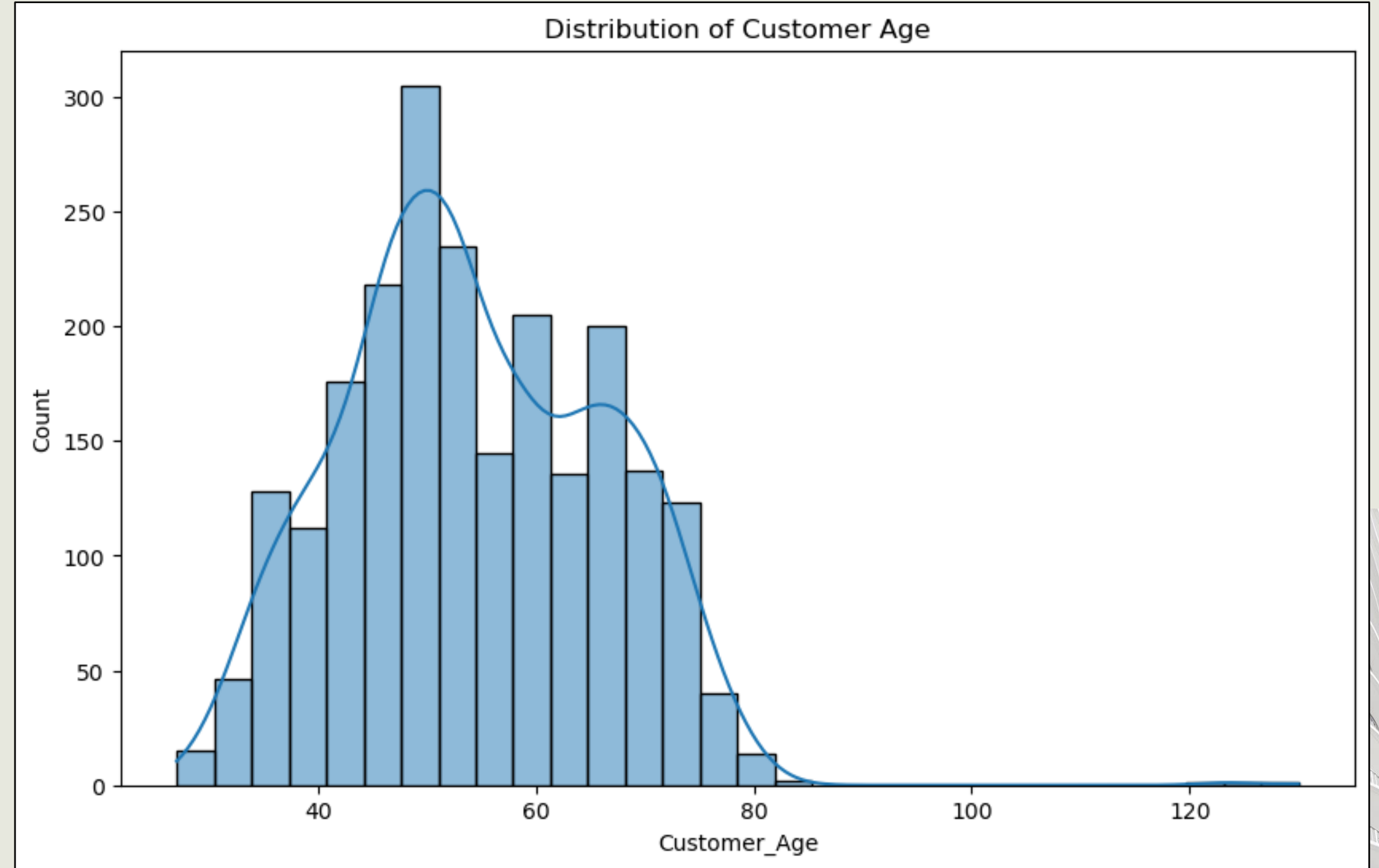
- 05** Evaluating the effectiveness of our online marketing campaigns.



# Age Distribution

Who are our primary customer segments by age?

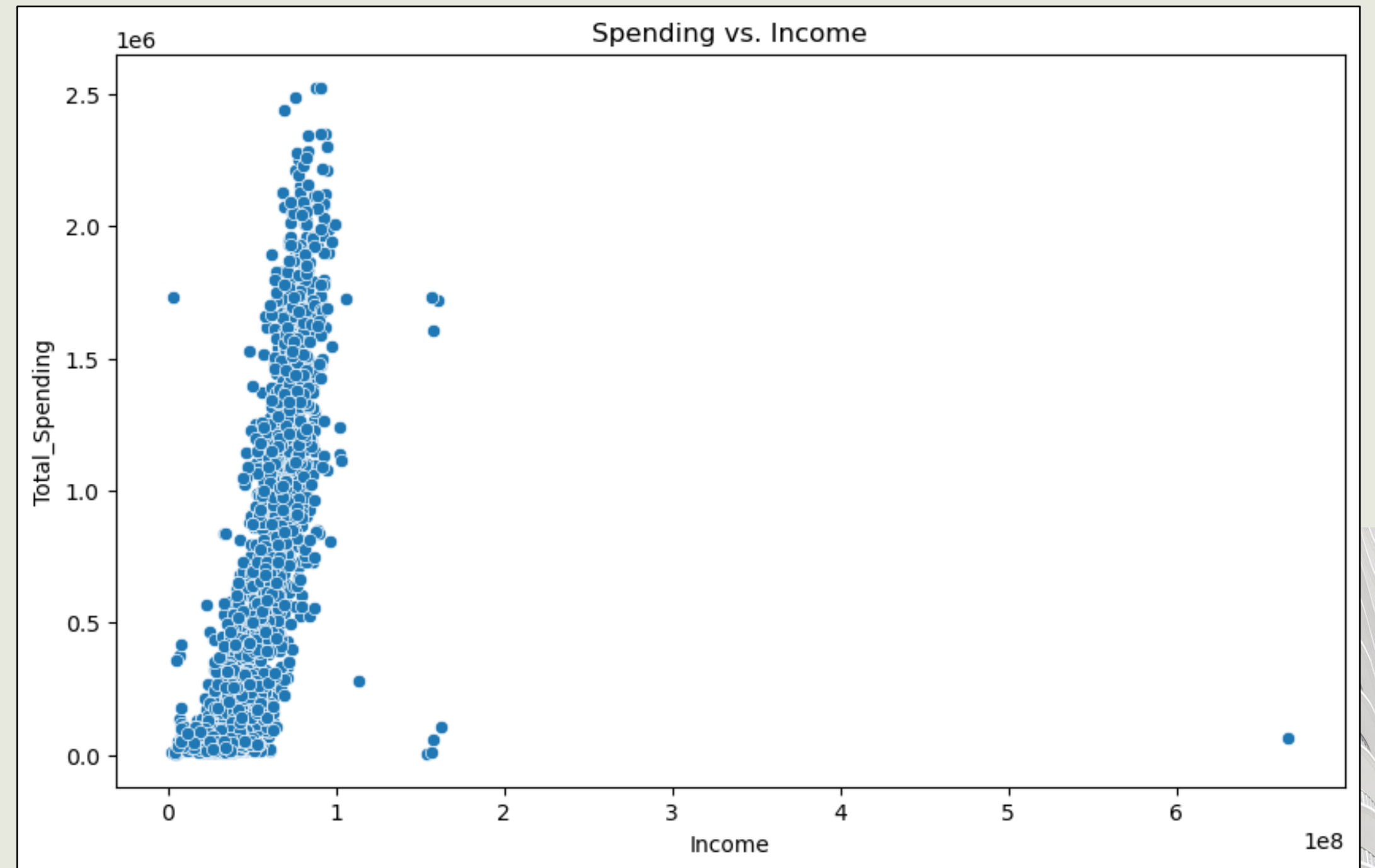
There's a peak around the late 40s to early 50s age range, indicating a concentration of customers in this demographic as well as drop off in customers in the older age ranges.



# Total Spending Distribution

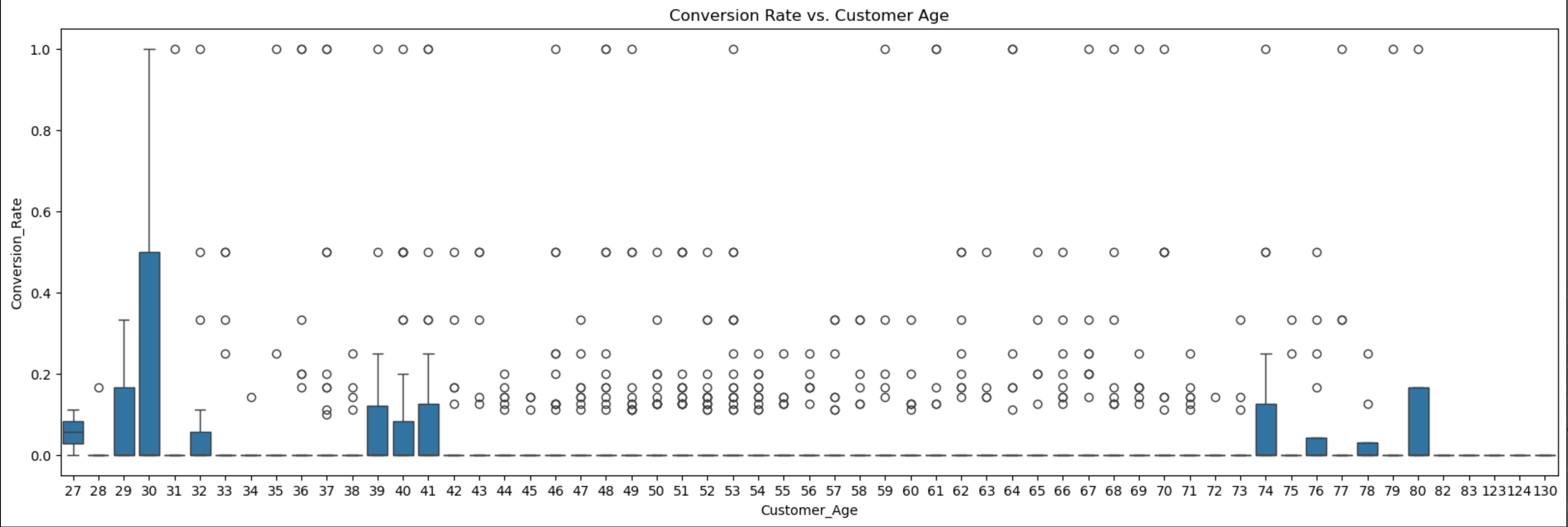
How does customer spending relate to their income?

Customer spending exhibits a clear positive correlation with income, indicating that wealthier customers tend to spend more; however, some high-income customers show lower spending.





# Conversion Rate vs. Age



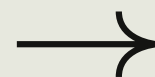
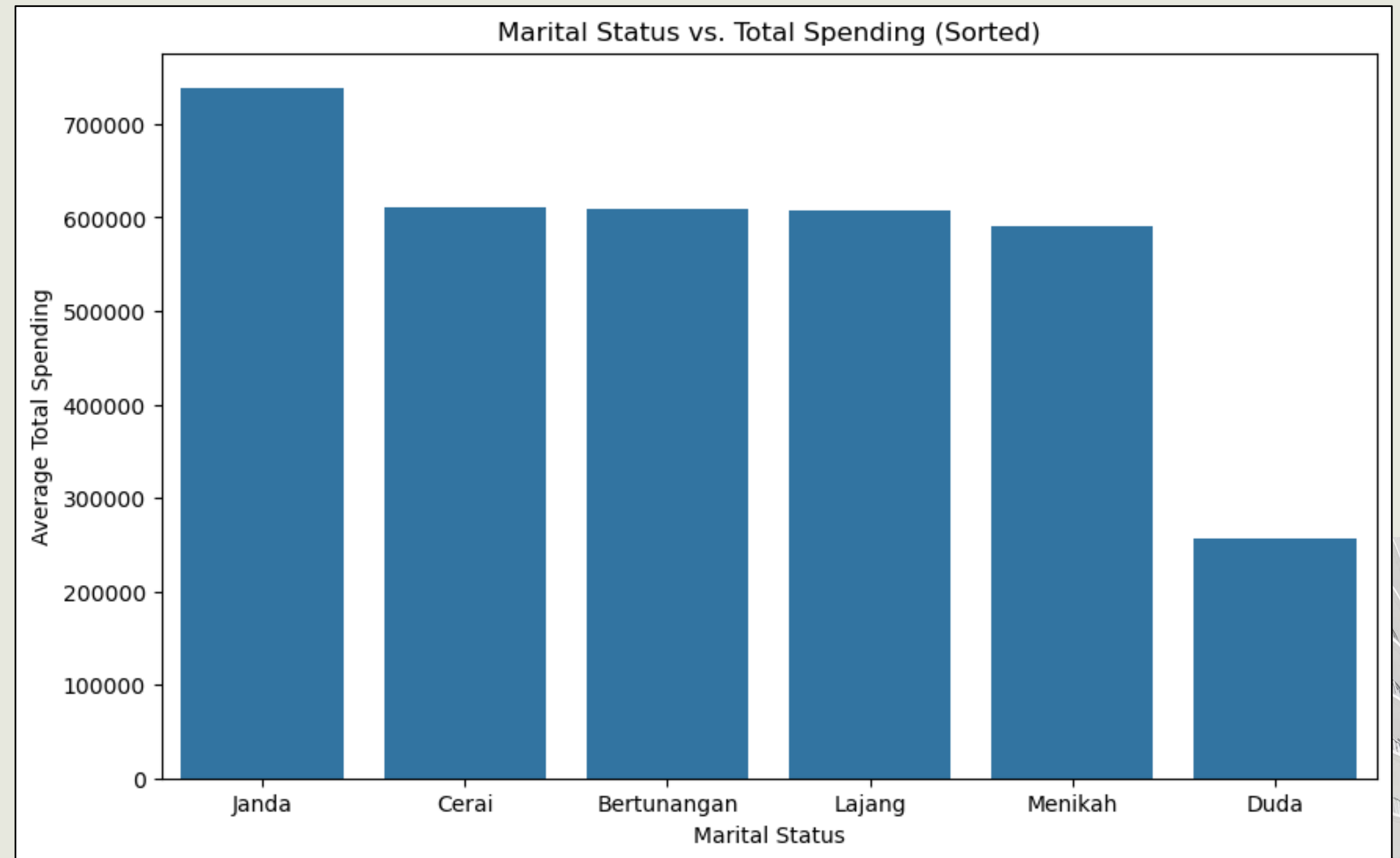
How does 'Conversion Rate' vary across different 'Customer Age' groups?

Conversion rates are generally low across all age groups, clustering near zero, with younger age ranges showing some outliers of higher conversion, and significant variability within each age group.

# Marital Status vs. Total Spending

How does marital status influence customer spending?

Widowed and widower customers show the highest average spending, with widower spending also showing high variability; single, engaged, and married customers have similar average spending, and divorced customers fall in the mid-range.

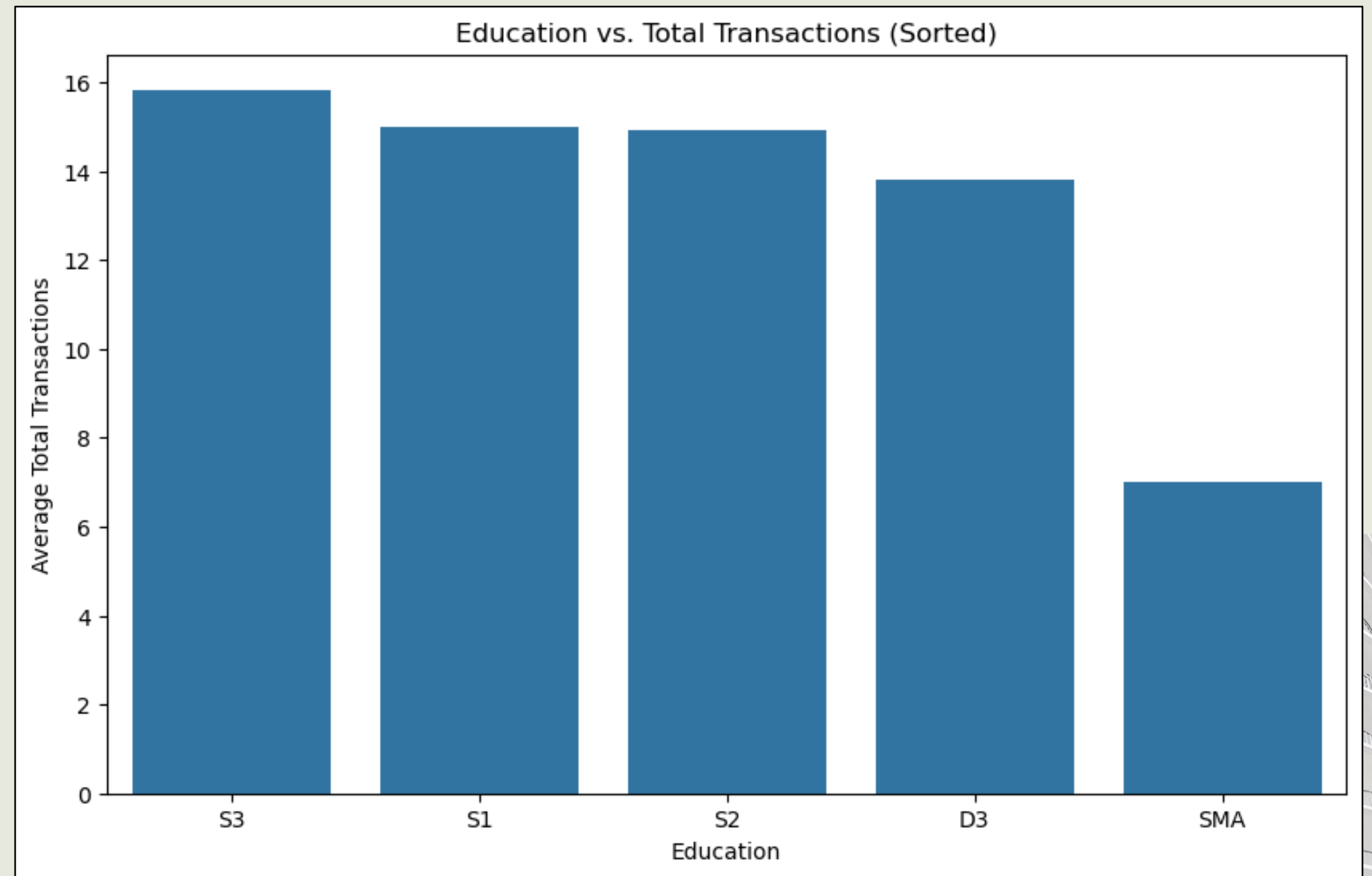


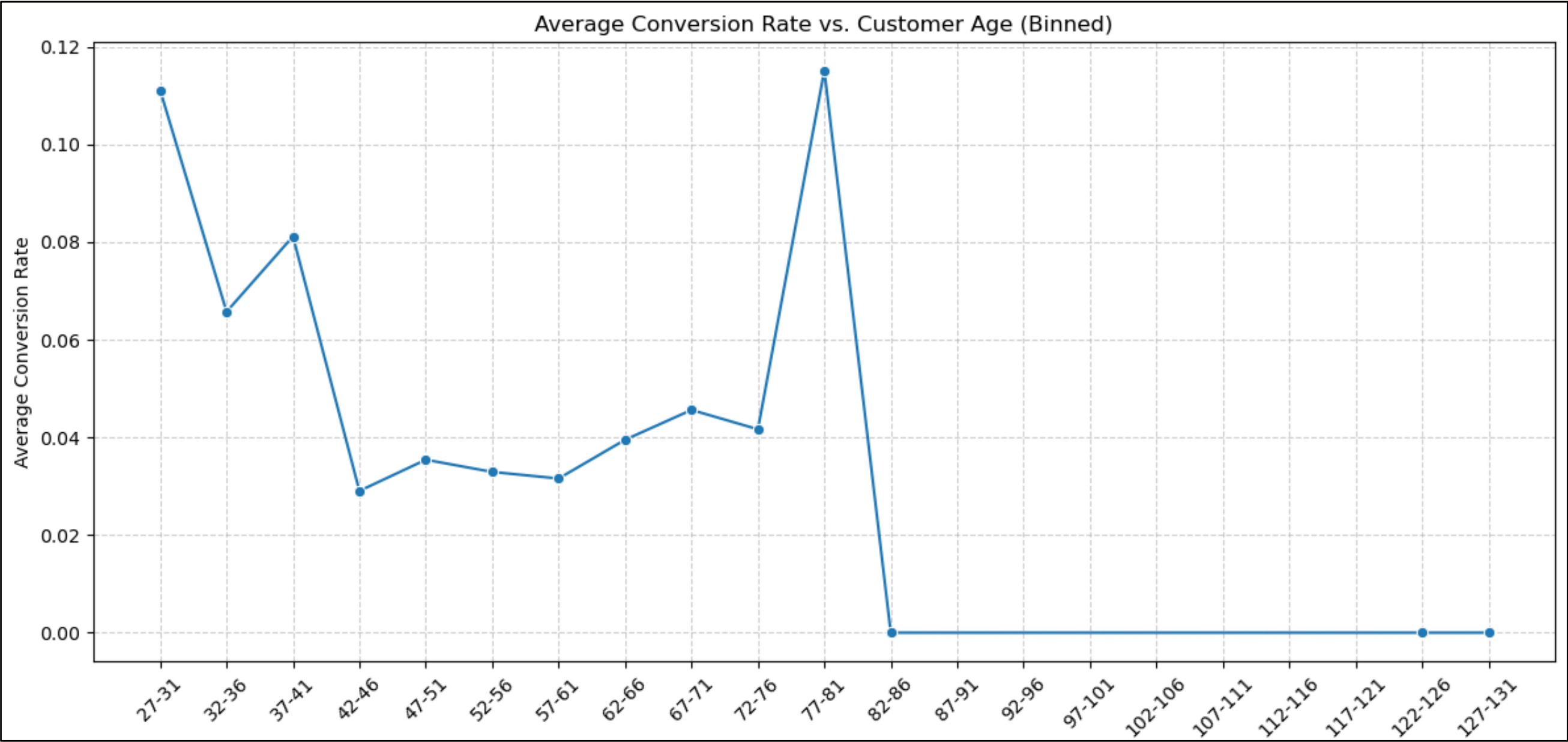


# Education vs. Transactions

How does education level relate to the number of customer transactions?

Customers with bachelor's and PhD degrees have the highest average number of transactions; master's degree and high school graduates are slightly lower, and diploma holders have the lowest number of transactions, with similar variability across all education levels.





27 - 46

The “Volatile” Youngsters

42 - 76

“Low” but, “Consistent”

77 - 81

“High”, but raises “Question”

82

Errors? Irrelevance?



# A MESS



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**PRE-PROCESSING**

1

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Raw data is often messy - incomplete, inconsistent, and in the wrong format.

2

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Data cleaning and pre-processing are essential steps to ensure data quality and suitability for analysis.

3

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In this section, we'll cover the steps taken to prepare our customer data for the 'Marketplace of Flavors' analysis.

# SOME CLEANING



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**PRE-PROCESSING**

1

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Imputed median on the 'Income' feature to fill in the missing values.

2

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Dropped some rows that has null 'Conversion\_Rate'.

3

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Dropped Unnecessary Features such as:  
'Unnamed', 'ID', 'Dt\_Customer', 'Z\_CostContact', 'Z\_Revenue', and 'Age\_Bin'.

[Source code](#)



# SOME CLEANING



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PRE-PROCESSING

4

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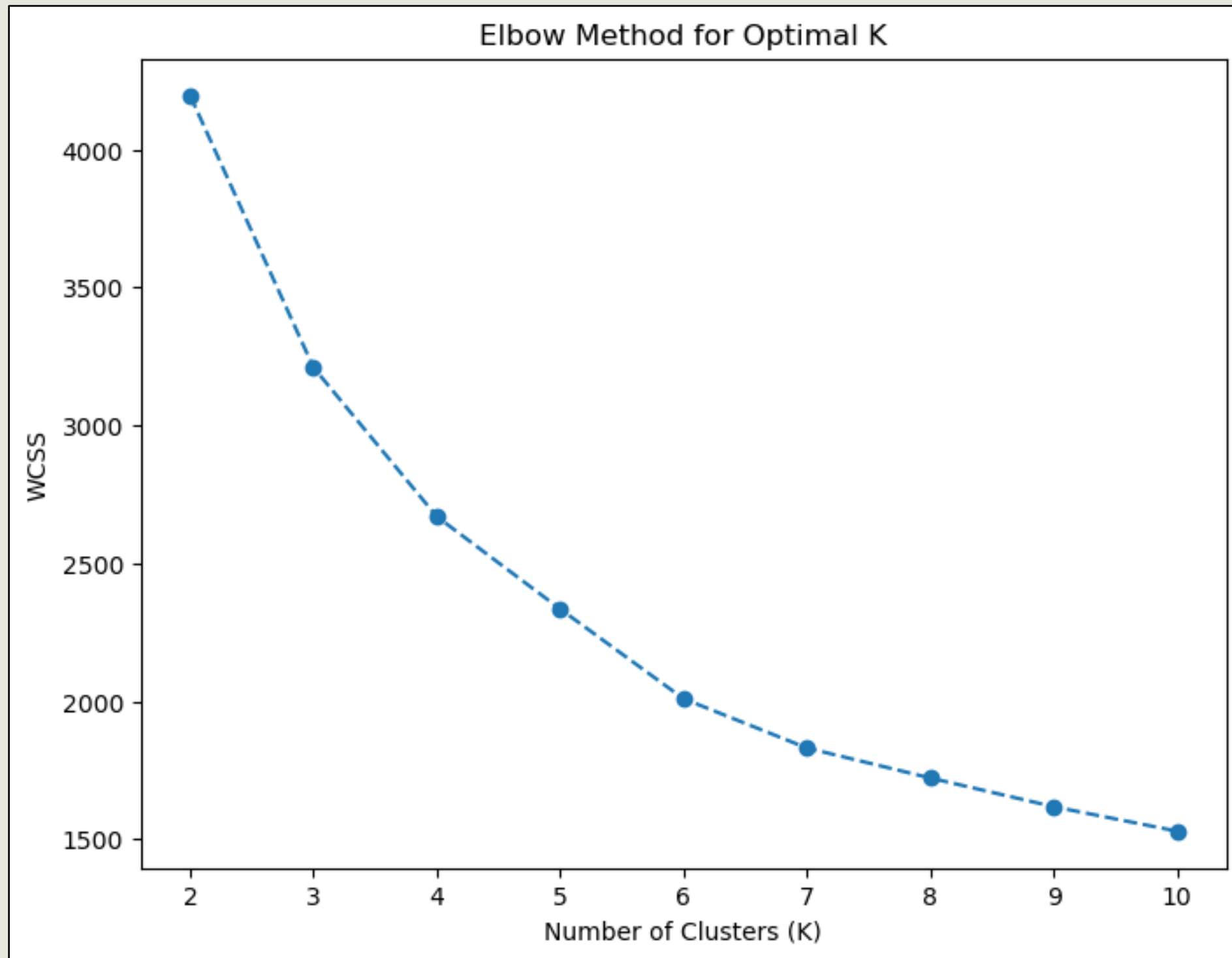
Education was Ordinal encoded by mapping each level to a numerical value.

5

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Marital\_Status was One-Hot encoded to create separate binary columns for each marital status.

# PICK A NUMBER



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CLUSTERING

## Important

WCSS (Within-Cluster Sum of Squares), let's just call it the "dots" on the curve

## Elbow Point

The "elbow" is the point where the rate of decrease in slope on the "dots" starts to slow down considerably.

## The Number

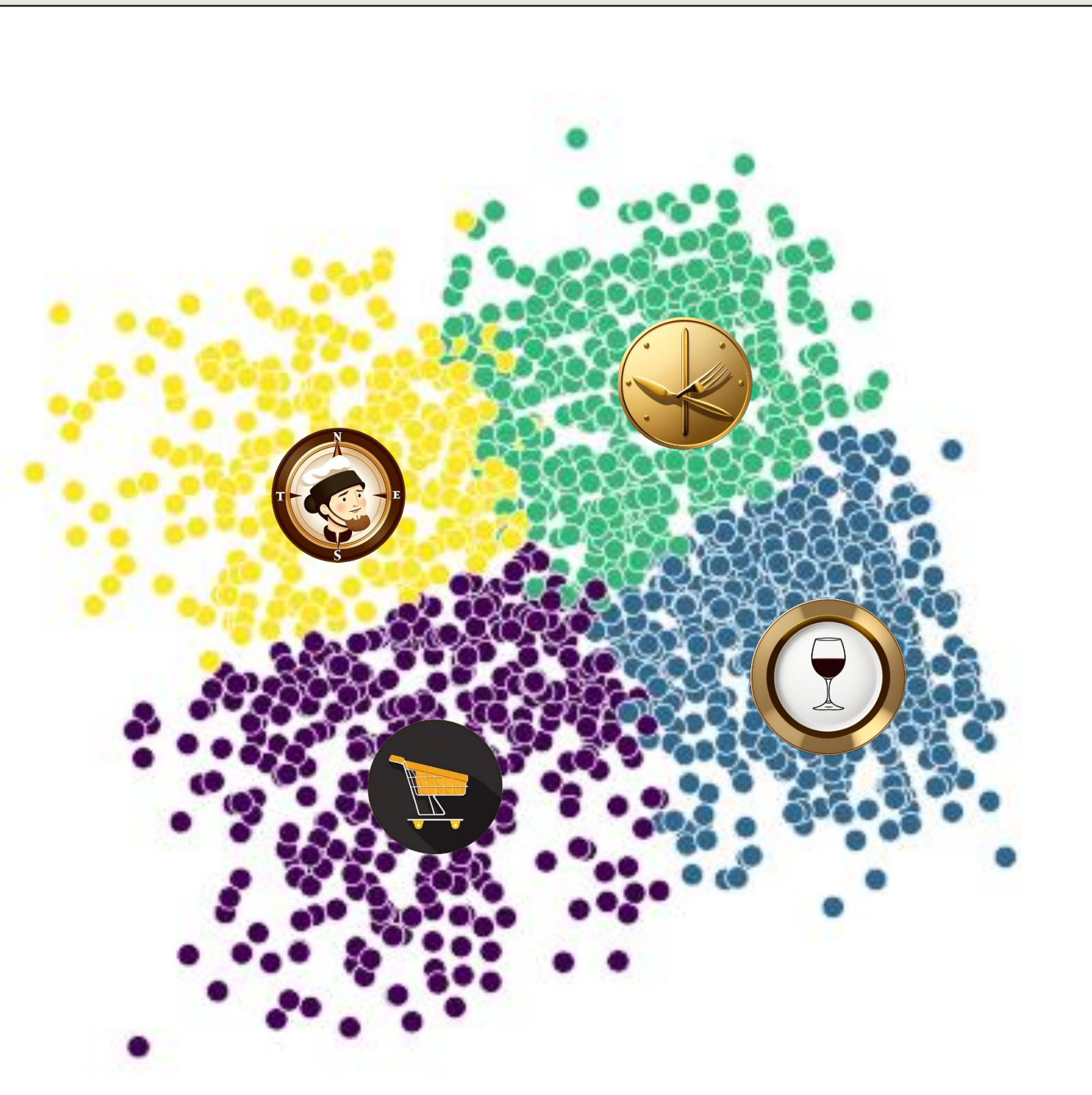
After  $K=4$ , the decrease in the slope is less dramatic, suggesting diminishing returns from adding more clusters.

## More Reasons

Beyond  $K=4$ , the curve becomes relatively flatter. Adding clusters beyond this point doesn't explain much more variance in the data



# VISUALIZATION



## KNOWING THE CLUSTERS *Flavors*

### WHY CLUSTERING?

The answer lies in the power of personalization. In today's market, customers expect tailored experiences. Clustering allows us to move away from a 'one-size-fits-all' approach, which is often inefficient and ineffective.



### “Gourmet Explorer”

Younger, High Spenders



### “Premium Palate”

Older, High Spenders



### “Digital Diner”

Younger, Low Spenders



### “Classic Connoisseur”

Older, Moderate Spenders



# TAILORING THE EXPERIENCE



## ***Flavors***

Each of these profile are as represented by the numbers of clusters we choose, as well as a source of information which you could find [“here”](#).



### Gourmet Explorer

Segment Focus: Younger, High Spenders  
Objective: Maintain loyalty, cross-selling



### Digital Diner

Segment Focus: Younger, High Web Engagement, Low Spenders  
Objective: Increase purchase value, conversion rate



### Classic Connoisseurs

Segment Focus: Older, Moderate Spenders, Moderate Web Activity  
Objective: Increase spending



### Premium Palates

Segment Focus: Older, High Spenders, Low Web Interaction  
Objective: Maintain loyalty, premium service



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WORK  
WITH US



BRAMANTYO RAKA

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+62 813-3353-2005

EMAIL

---

brambsns@gmail.com

WEBSITE

---

linkedin.com/in/bramraka666



# NUMBERS



## NUMBERS AND METRICES

A key to understanding the clusters, this includes the silhouette score, and the cluster summary table.

### Silhouette Score

0.313

Clusters are moderately well-separated

### Cluster Summary

Cluster	Customer Age	Total Spending	NumWebVisitsMonth
0	45.25	1,280,267	3.27
1	46.02	184,636	6.89
2	64.93	351,909	5.84
3	66.86	1,299,852	3.02