

EM550 Statistical Analysis for Engineers - Resit Assignment

Question 1: Total Purchase Statistics

The statistics for Total Purchases among the customers are as follows:

- Minimum: \$106
- 1st Quartile (25%): \$545
- Median (50%): \$970
- Mean (Average): \$1203.15
- 3rd Quartile (75%): \$1545.50
- Maximum: \$4930

Commentary: The spread from the minimum to the maximum in total purchases shows substantial variation among customers, indicating a diverse customer base with differing purchasing power or preferences.

Question 2: Gender and Marital Status Breakdown

Gender Distribution:

- Male: 50.1%
- Female: 49.9%

Marital Status Distribution:

- Single: 55.4%
- Married: 44.6%

Combination of Gender and Marital Status (percentages within each gender):

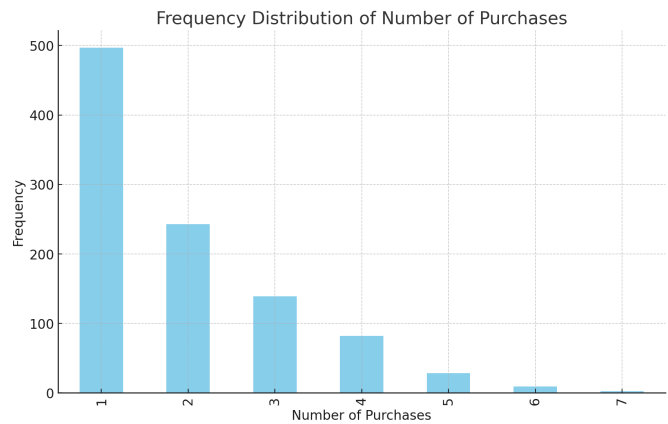
- Female Married: 51.57%
- Female Single: 48.56%
- Male Married: 48.43%
- Male Single: 51.44%

Commentary: The gender distribution is nearly balanced, reflecting a broad consumer base. The marital status shows a slight skew towards singles. The breakdowns seem reasonable and reflect a diverse demographic profile.

Question 3: Number of Purchases Frequency Distribution

The majority of customers made only one purchase last year. The frequency distribution of Number of Purchases is as follows:

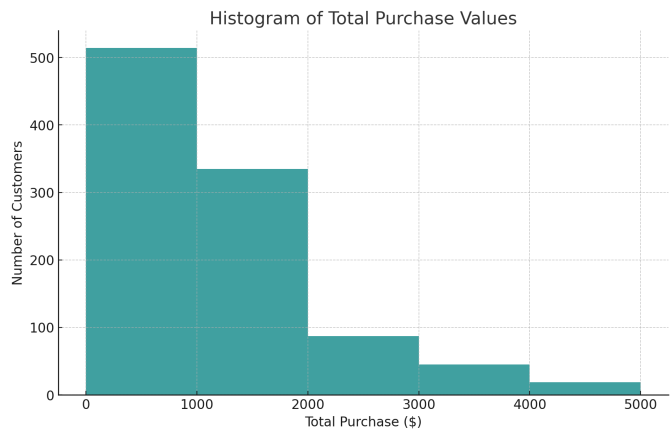
- 1 Purchase: 497 customers
- 2 Purchases: 243 customers
- 3 Purchases: 139 customers
- 4 Purchases: 82 customers
- 5 Purchases: 28 customers
- 6 Purchases: 9 customers
- 7 Purchases: 2 customers



This decreasing trend suggests that while many customers may visit or purchase once, a smaller core group of customers makes multiple purchases.

Question 4: Histogram of Total Purchases

Most customers' total purchases are below \$2000, with a significant drop-off for higher spending levels. This suggests that higher spending levels are less common among this customer base.

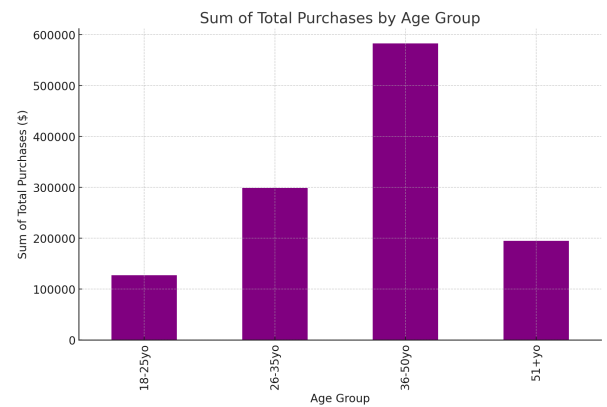


Question 5: Total Purchases by Age Group

The total purchases by age group show that the 36-50 year age group has the highest total spending, followed by the 26-35 year age group. The breakdown is as follows:

- 18-25yo: \$126,797
- 26-35yo: \$298,424
- 36-50yo: \$583,163
- 51+yo: \$194,769

These figures suggest a peak in spending in midlife, possibly due to higher disposable income or greater financial stability.

**Question 6: Total Purchases by Occupation**

The sum of total purchases by occupation shows that Executives and Skilled workers are the primary contributors to purchasing. The breakdown is as follows:

- Executive: \$559,945
- Skilled: \$546,917
- Laborer: \$68,587
- Unemployed: \$27,704

This reflects potentially higher income levels associated with the Executive and Skilled categories, and lower spending from Laborers and the Unemployed.

