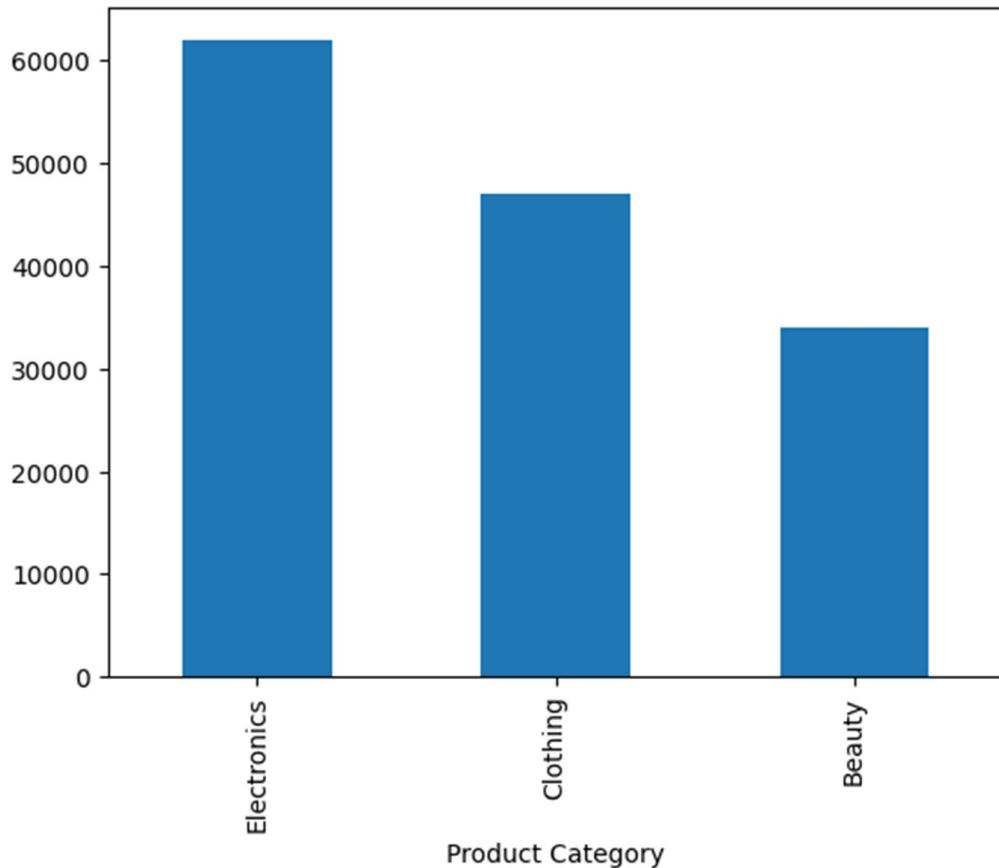


Retail Sales Analysis (Report)

Sales Ranking by Product Category (Age Group 50-64):

- * 1st Place: The bar for Electronics is clearly the tallest, indicating the highest total sales amount.
- * 2nd Place: The bar for Clothing is the second tallest.
- * 3rd Place: The bar for Beauty is the shortest, indicating the lowest total sales amount among the three.



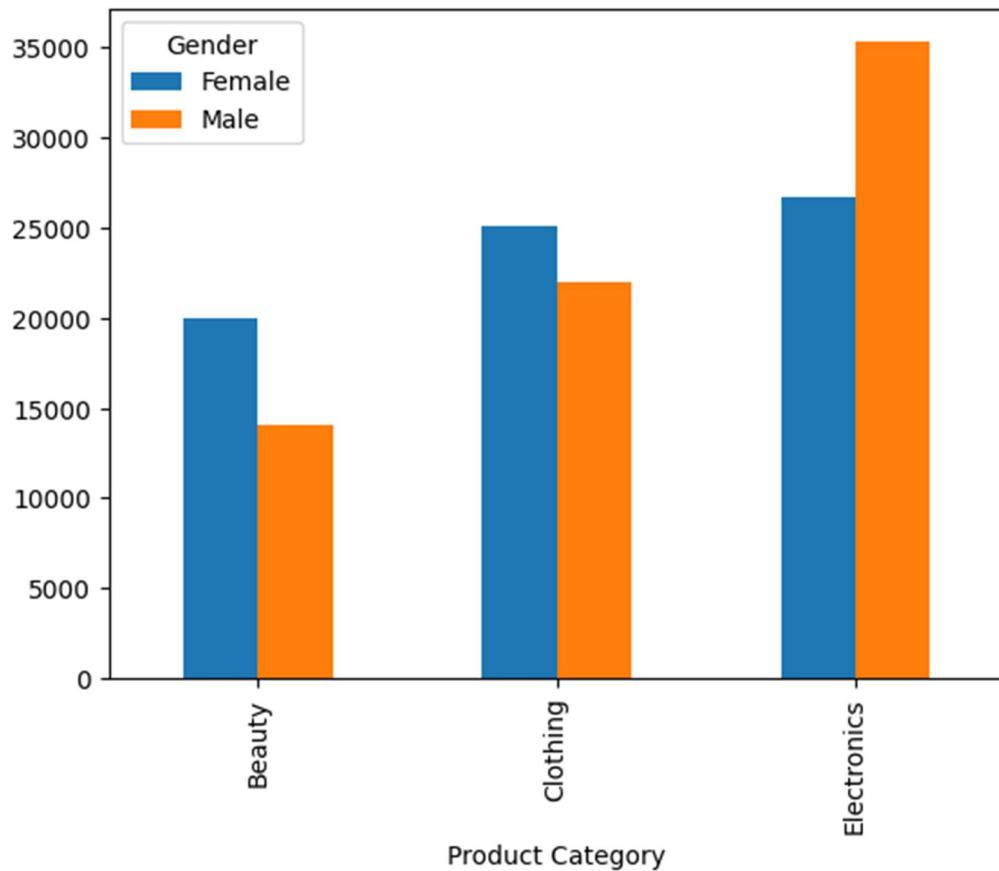
Sales Summary by Gender and Product Category(For age group 50-64):

The chart compares the "Total Amount" (presumably sales) for three product categories (Beauty, Clothing, and Electronics) and segments them by Gender (Female/Blue and Male/Orange).

Key Observations:

- * Beauty: Sales are significantly higher for Females (approx. 20,000) than for Males (approx. 14,000).
- * Clothing: Sales are slightly higher for Females (approx. 24,000) than for Males (approx. 21,000).
- * Electronics: This is the only category where sales are higher for Males (approx. 34,000) than for Females (approx. 25,000).

* Overall Highest Sales: The Male Electronics segment has the highest total sales amount across all categories and genders (approx. 34,000).



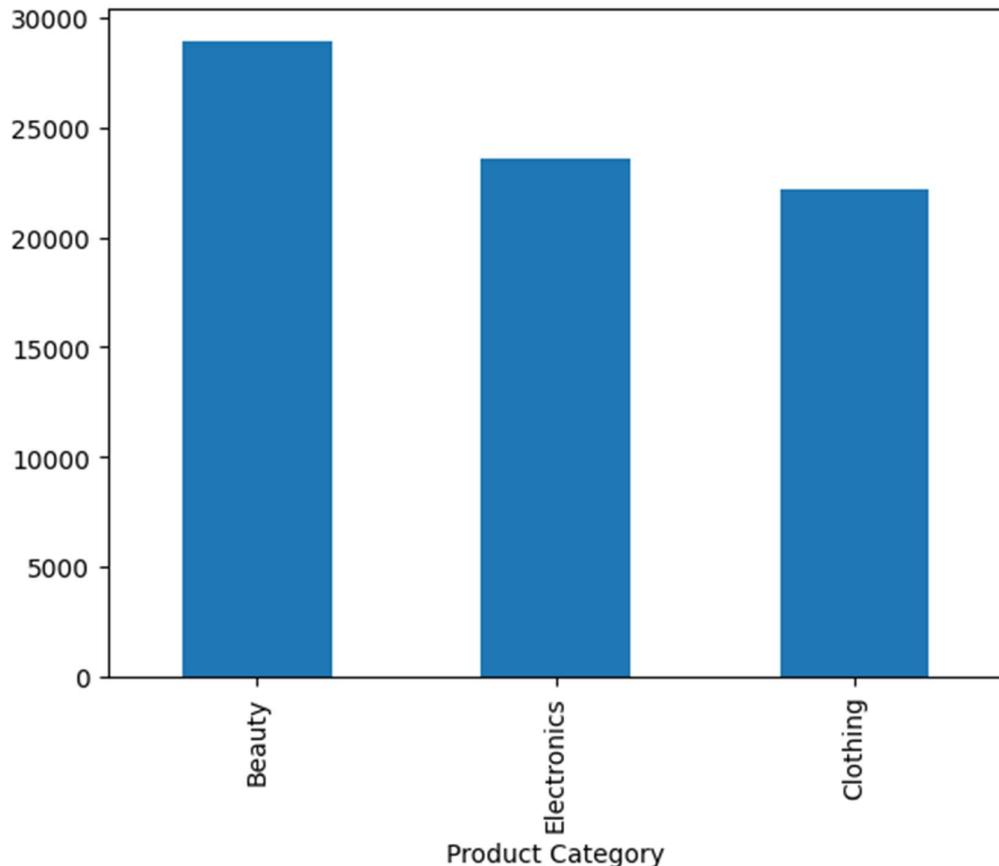
Youth Spending Summary by Product Category

The chart shows the total spending amount for youths in the Beauty, Electronics, and Clothing categories.

* Highest Spending (1st Place): Beauty is the clear leader, with a total amount nearing 30,000. This suggests Beauty products are the largest expenditure for this youth demographic.

* Second Highest Spending (2nd Place): Electronics follows, with total spending at approximately 23,000.

* Lowest Spending (3rd Place): Clothing has the lowest total spending among the three, at just over 20,000.

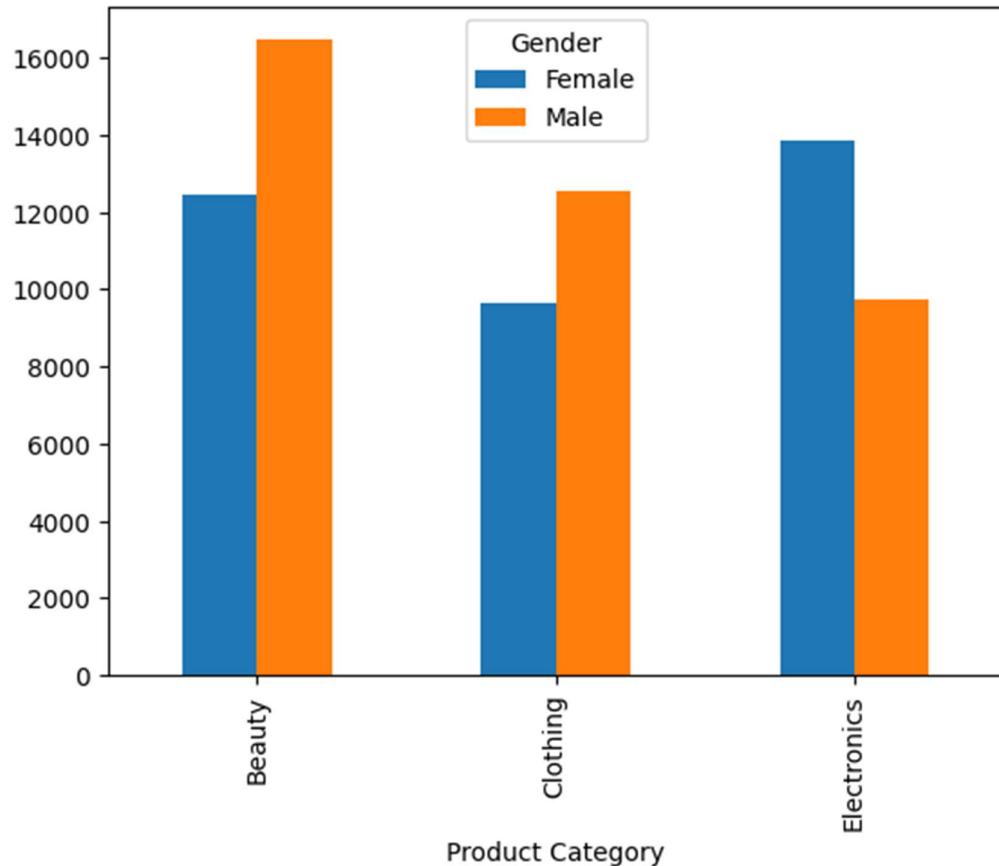


Youth Spending Summary by Gender

Key Observations:

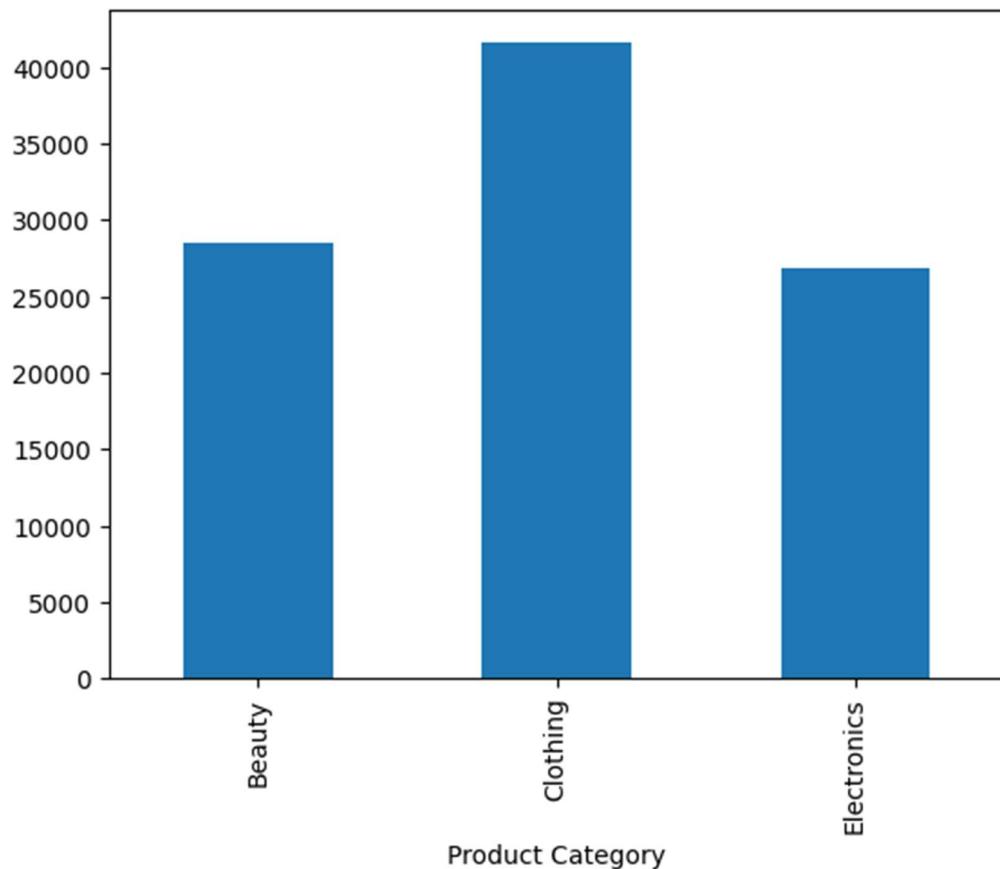
- * Beauty: Sales are significantly higher for Males (Orange bar, approx. 30,000) than for Females (Blue bar, approx. 25,000).
- * Clothing: Sales are also higher for Males (Orange bar, approx. 28,000) than for Females (Blue bar, approx. 23,000).
- * Electronics: This is the only category where sales are higher for Females (Blue bar, approx. 27,000) than for Males (Orange bar, approx. 24,000).
- * Overall Highest Sales: The Male Beauty segment has the highest total spending amount across all categories and genders shown (approx. 30,000).

In short: For this youth group, Males spend more on Beauty and Clothing, while Females spend more on Electronics.



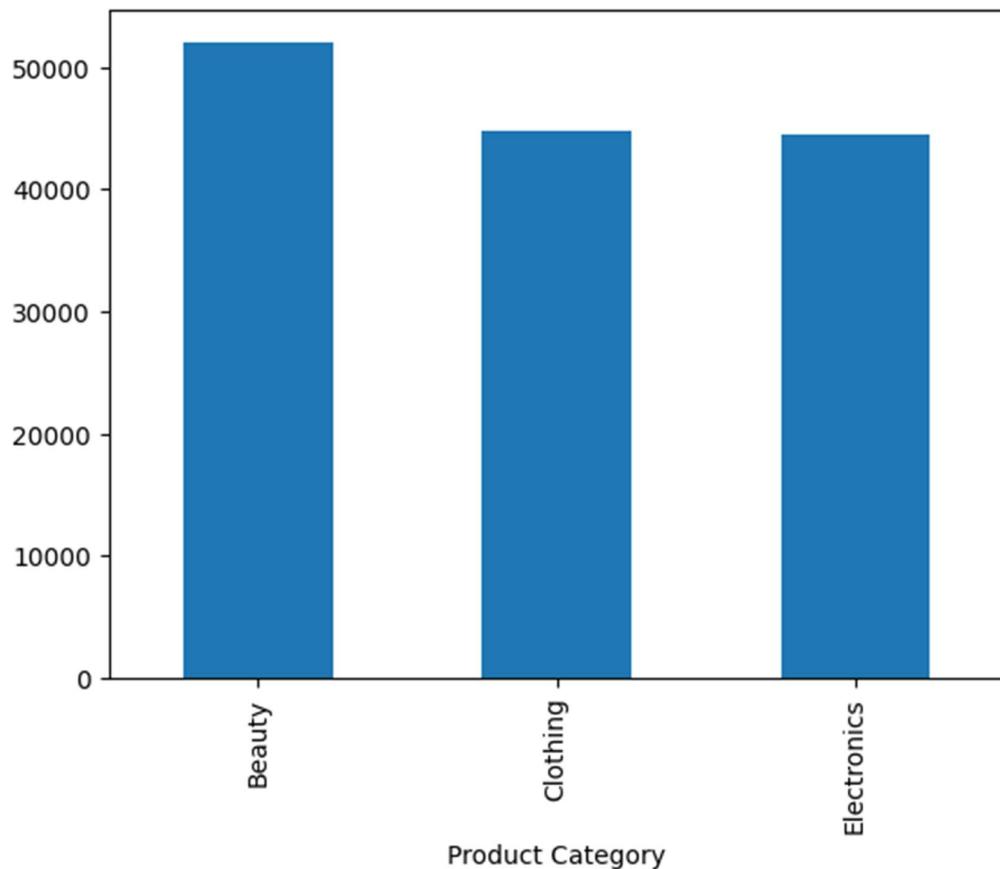
Spending Summary for Age Group 25-34

Clothing is the top spending category (over 40,000), followed by Beauty (approx. 28,000), with Electronics having the lowest total spending (approx. 26,000) among the three.



Spending Summary for Age Group 35-49

Beauty is the top spending category (around 50,000), followed closely by Clothing and Electronics, which have nearly equal spending amounts (both around 45,000).



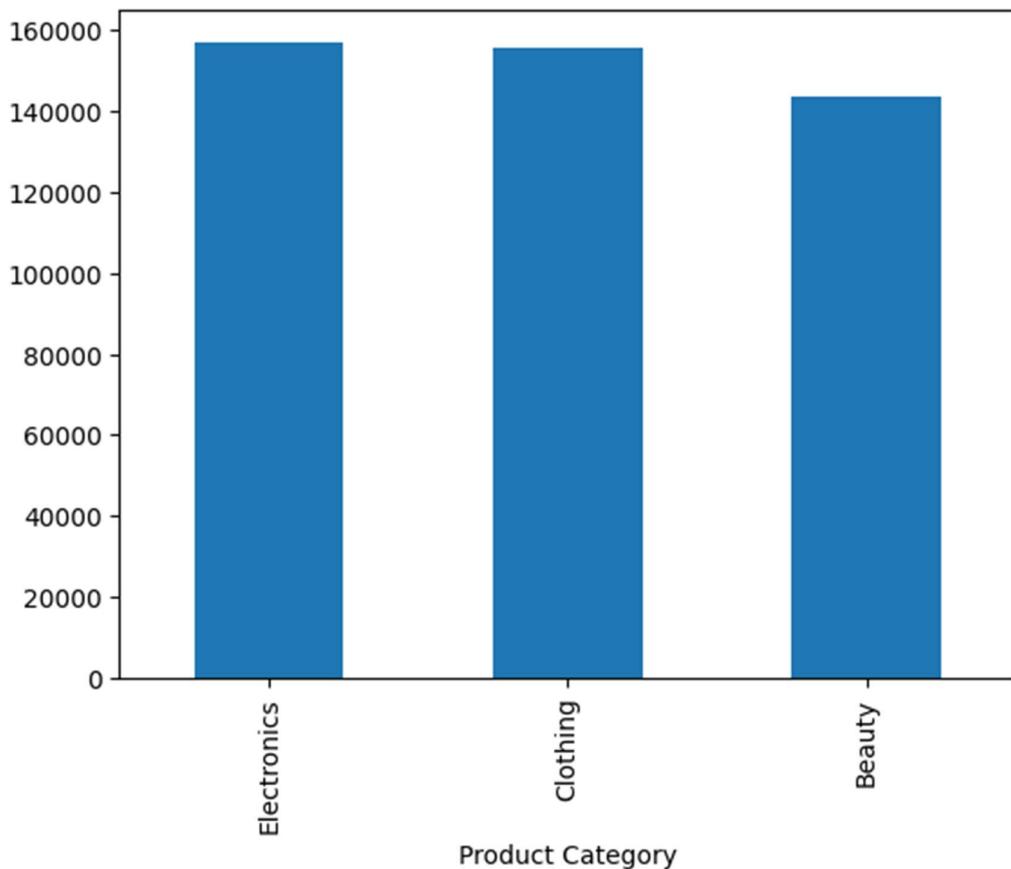
Product category and total spending

Overall Product Sales Summary

The chart compares the total sales amount for Electronics, Clothing, and Beauty products.

- * 1st Place: Electronics has the highest total sales amount, reaching approximately 160,000.
- * 2nd Place: Clothing is a very close second, with total sales just slightly less than Electronics, also around 155,000.
- * 3rd Place: Beauty has the lowest total sales amount, at approximately 140,000.

In short: Electronics is the top-selling category, but Clothing has a nearly equal amount of sales, while Beauty lags slightly behind both.

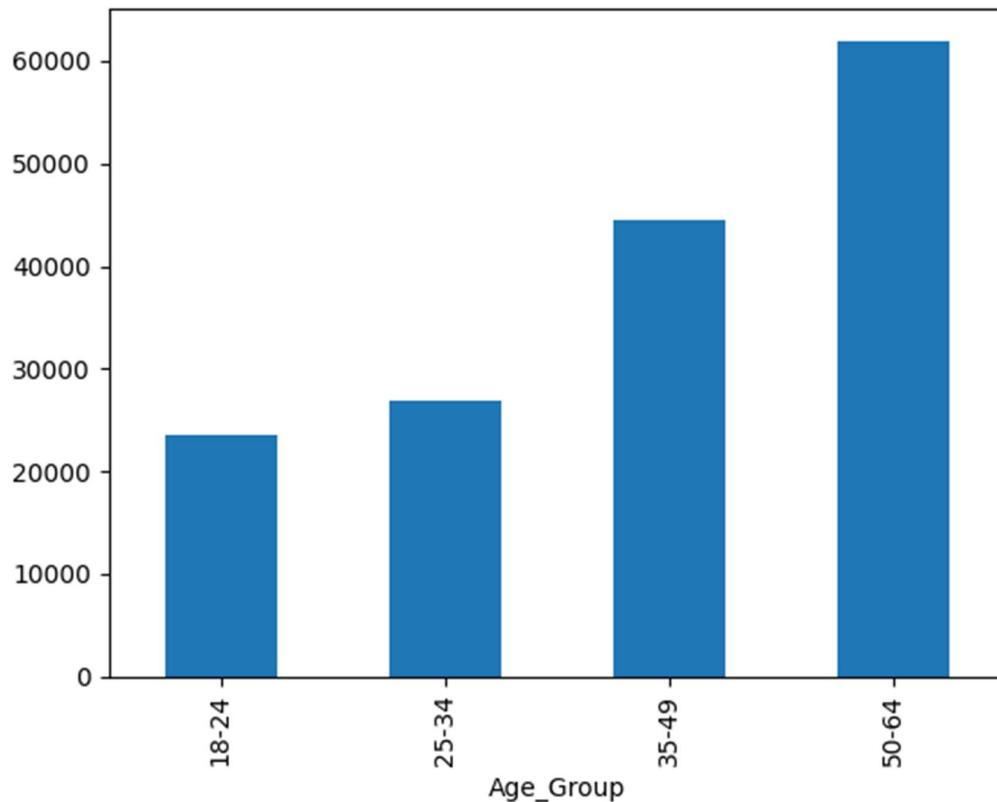


Electronics Spending by Age Group Summary

The spending on Electronics increases steadily with age.

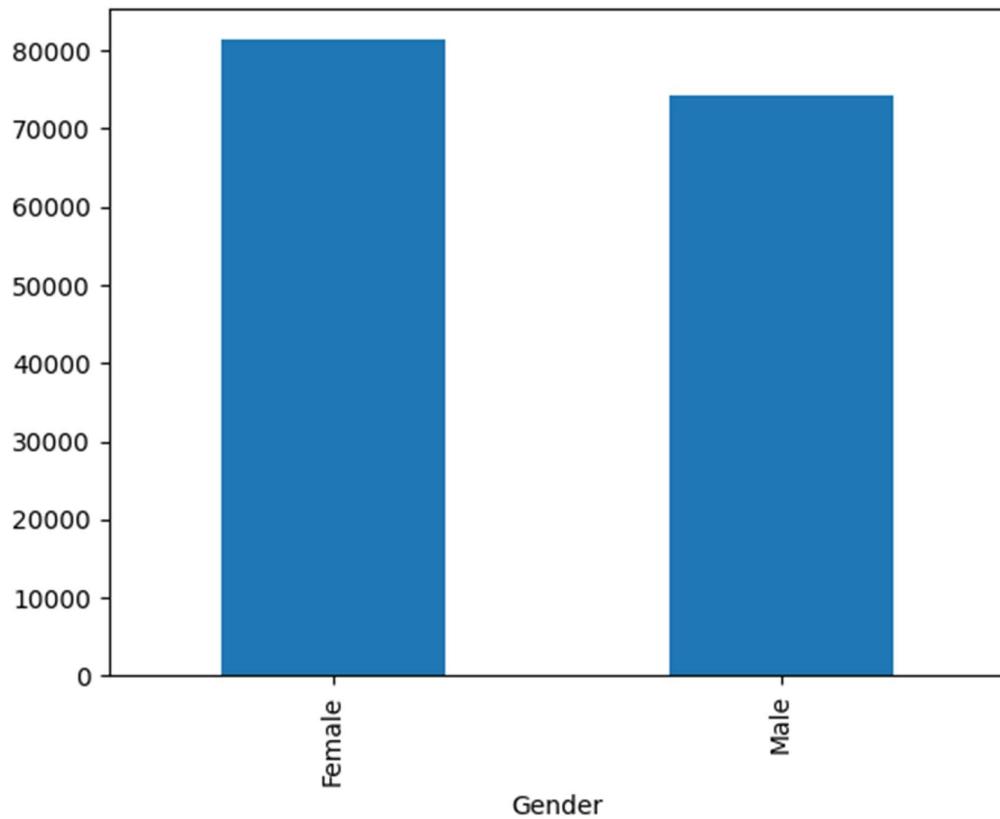
- * The 50-64 age group spends the most on Electronics (nearly 60,000).
- * The 18-24 age group spends the least (around 23,000).

The spending amounts are lowest for the youngest group and highest for the oldest group, showing a strong positive correlation between age and total spending on Electronics.



Clothing Spending by Gender Summary

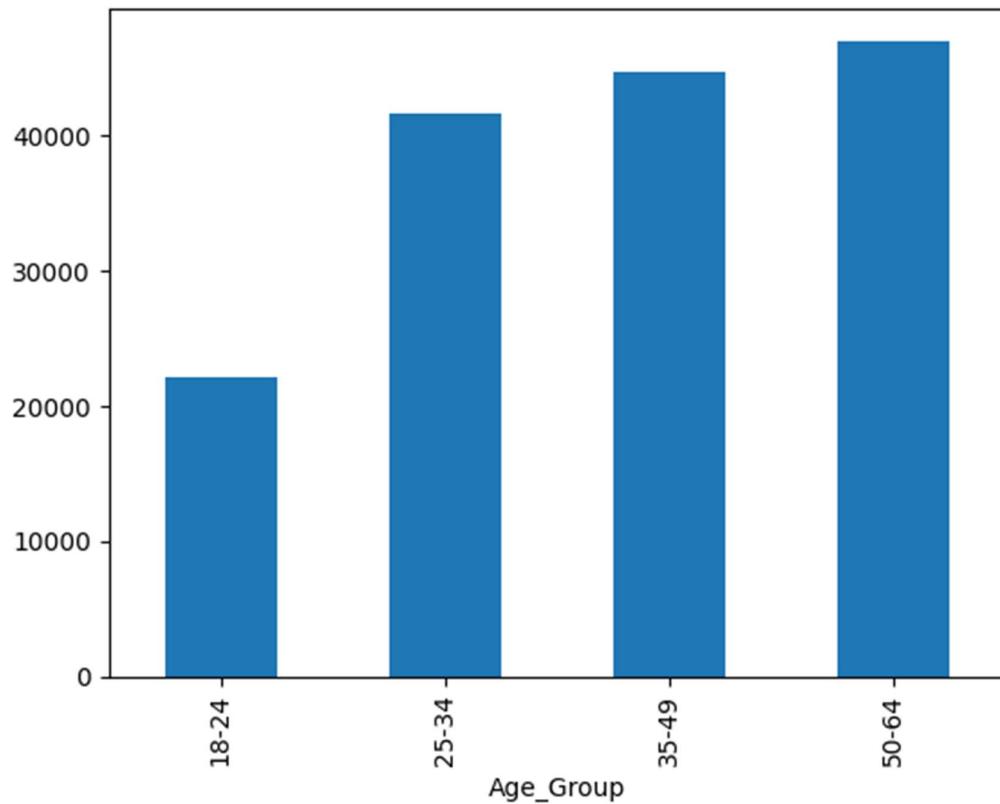
Females spend more on Clothing (around 80,000) than Males (around 72,000).



Clothing Spending by Age Group Summary

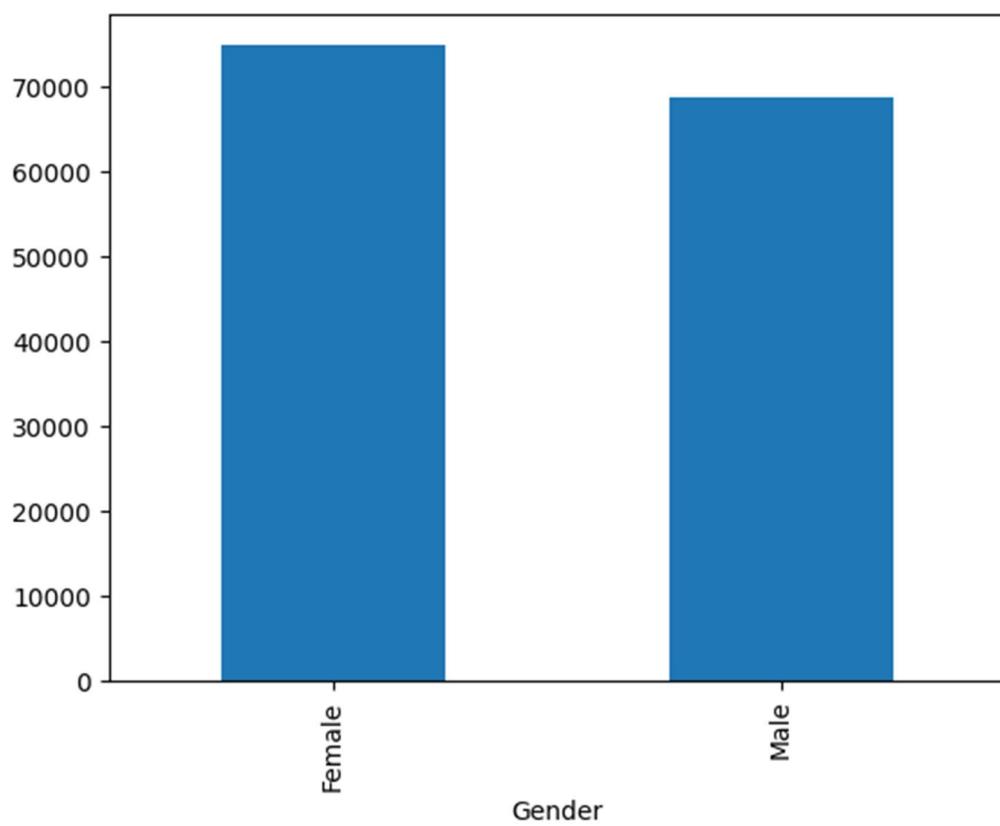
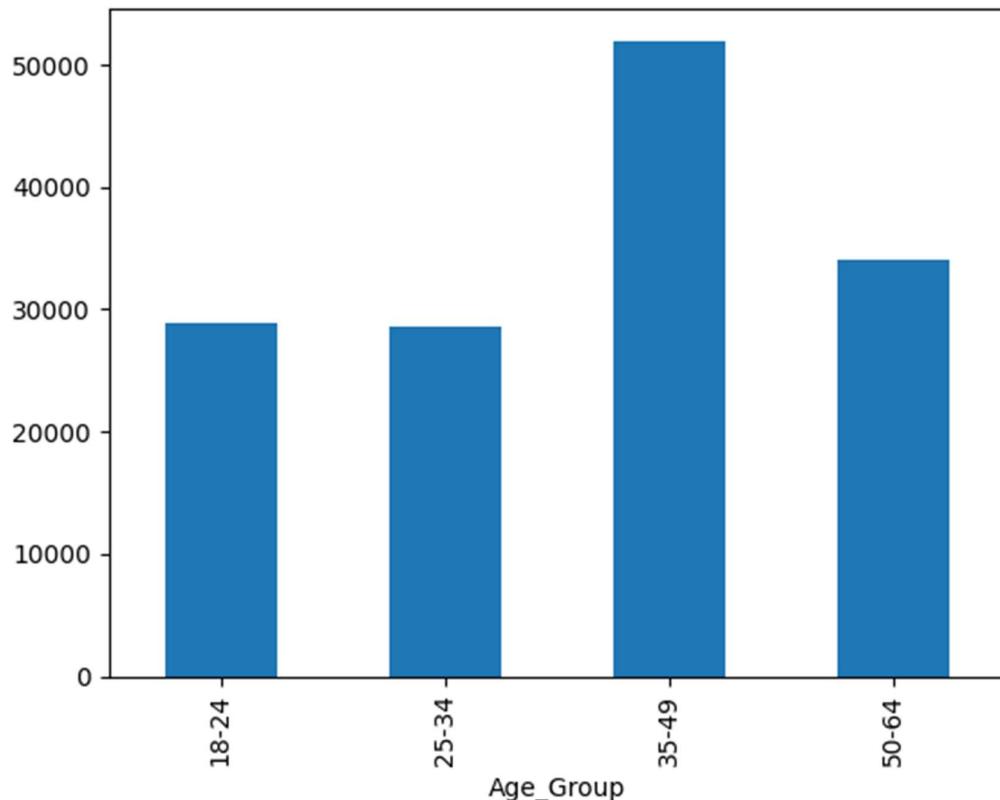
Total spending on Clothing increases consistently with age.

- * The 50-64 age group spends the most (around 46,000).
- * The 18-24 age group spends the least (around 22,000).



Beauty Spending by Age Group Summary

The 35-49 age group spends significantly the most on Beauty (around 50,000), while spending is roughly stable for the other age groups (in the 28,000 to 32,000 range).

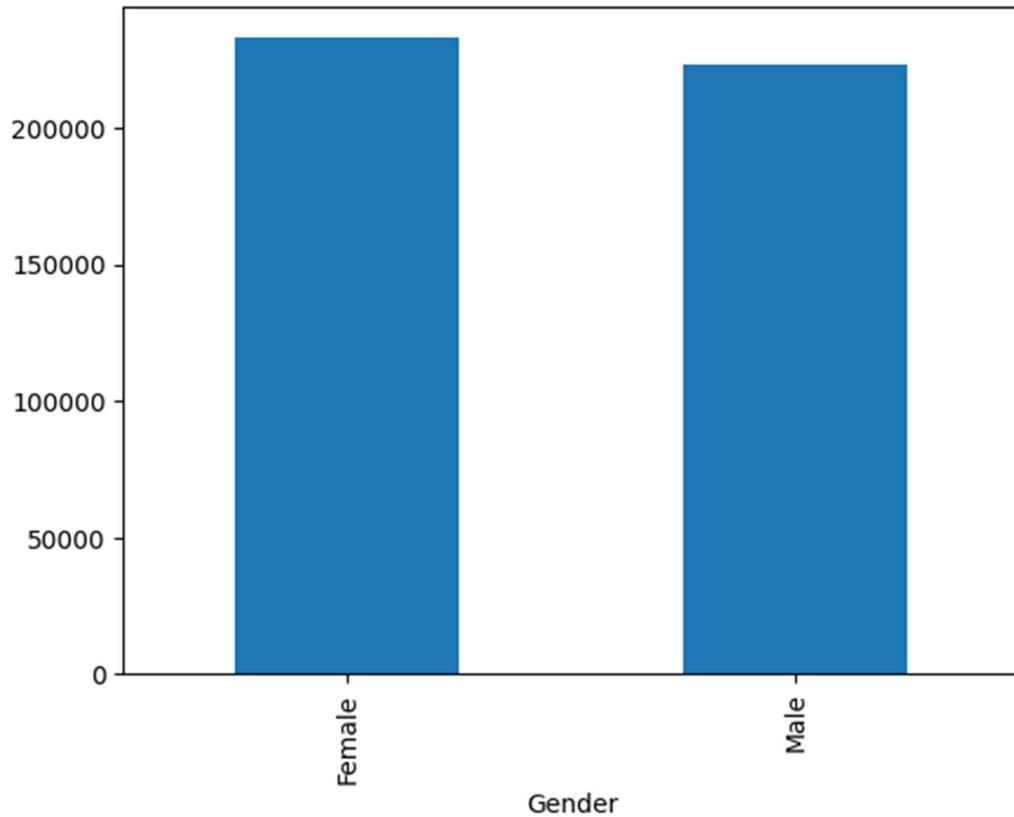


Females comparatively spend more on Beauty products than males

Gender and Total Spending

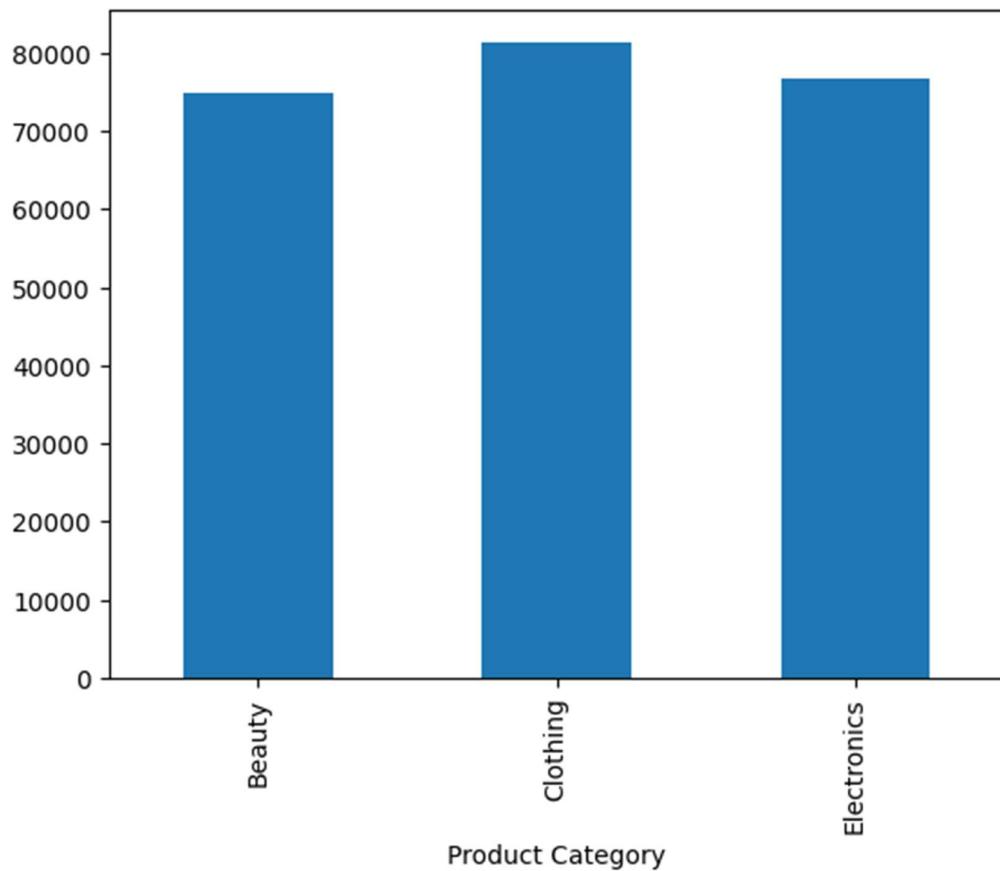
Overall Spending by Gender Summary

Total spending is slightly higher for Females (around 220,000) than for Males (around 210,000), but the overall spending by both genders is very close.



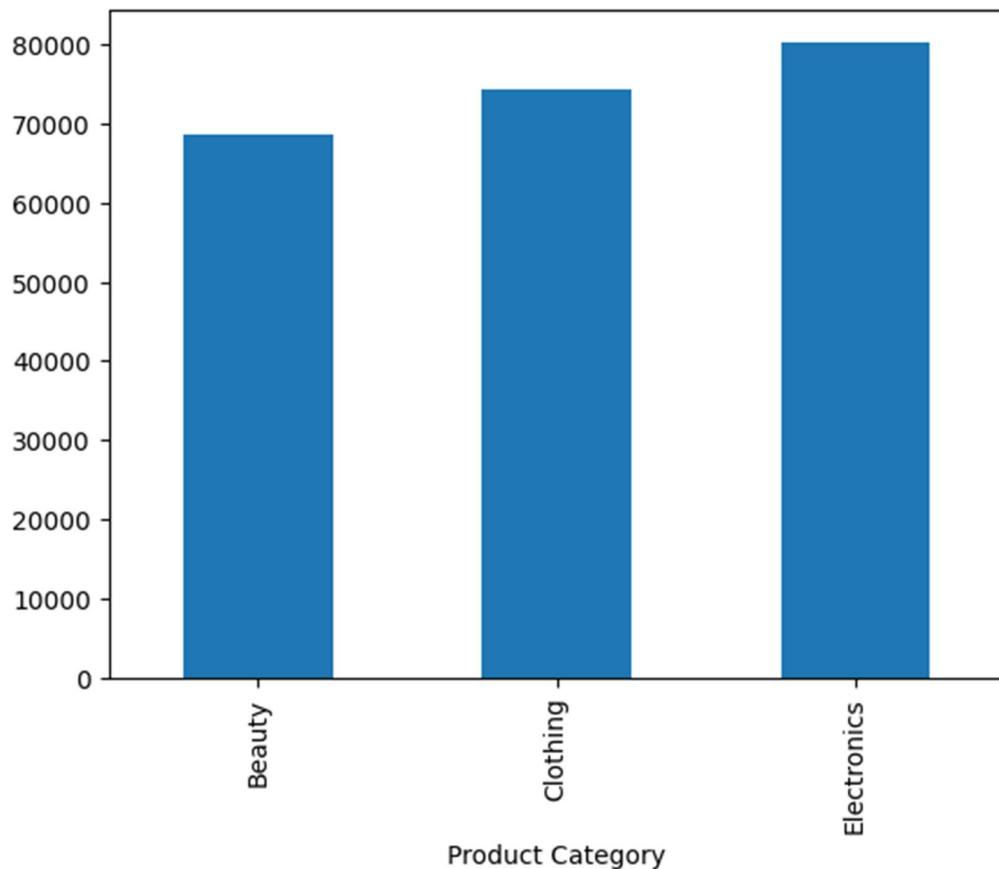
Female Spending Summary by Category

Clothing is the top spending category for Females (around 80,000), closely followed by Beauty and Electronics, which have nearly equal spending amounts (both around 74,000 to 75,000).



Male Spending Summary by Category

Electronics is the top spending category for Males (around 76,000), followed by Clothing (around 72,000), with Beauty having the lowest spending (around 68,000).

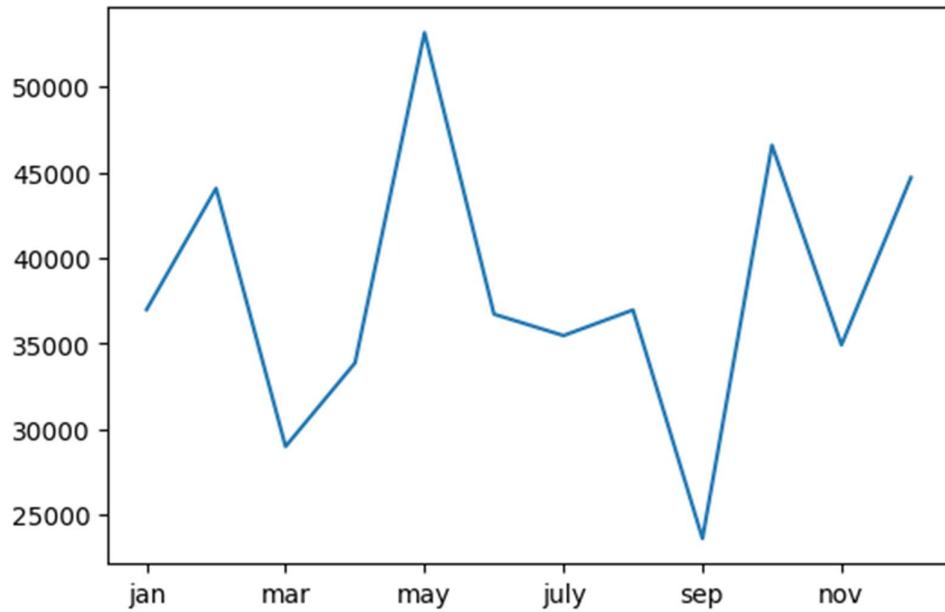


Total Sales by Month

Monthly Sales Trend Summary

The sales data shows a highly volatile trend with several sharp peaks and troughs:

- * Highest Peak: The highest sales occurred in May.
- * Lowest Trough: The lowest sales occurred in September (dropping significantly below 50,000).
- * Key Trends:
 - * Sales start strong in Jan, dip, and then peak dramatically in May.
 - * Sales decline through June, July, and August, hitting the lowest point in September.
 - * Sales recover sharply in October, dip slightly in November, and finish the year with a high value in December.



Hypothesis Testing

Based on the output of the two-sample t-test conducted:

Hypothesis Test Summary (Gender Spending)

The analysis compares the mean spending of females and males using a t-test.

* Hypotheses:

* H0 (Null Hypothesis): Mean female spending and mean male spending are the same.

* H1 (Alternative Hypothesis): Mean female spending and mean male spending are not the same.

* Result: The test produced a p-value of 0.975. Since 0.975 is much greater than the significance level of 0.05, the conclusion is to Fail to reject H0.

In short: There is no statistically significant difference between the mean spending of females and the mean spending of males.

Kruskal-Wallis Test Summary

The Kruskal-Wallis test shown is performed to determine if there is a statistically significant difference in the central tendency (median) of a measured variable across different product categories.

The analysis performed is a Kruskal-Wallis H test, a non-parametric test used to determine if there are statistically significant differences between the means of three or more independent product categories.

* Hypotheses:

* H_0 (Null Hypothesis): There is no difference between the means of the product categories.

* H_1 (Alternative Hypothesis): There is a difference between the means of the product categories.

* Results:

* Test Statistic (H): 0.0553...

* p-value (p_val1): 0.9727...

* Conclusion:

* Since the p-value (0.9727...) is greater than 0.05 ($p > 0.05$), the test concludes to "Fail to reject H_0" (the Null Hypothesis).

In plain terms, there is not enough evidence to conclude that a statistically significant difference exists between the means of the product categories.

Kruskal-Wallis Test Summary (Age Groups)

This shows the results of a Kruskal-Wallis H test, which is a non-parametric test used to see if there are significant differences between the medians of three or more independent groups—in this case, different age groups.

* Hypotheses:

* H_0 (Null Hypothesis): The means (or medians) of all age groups are the same.

* H_1 (Alternative Hypothesis): The means (or medians) of all age groups are not the same.

* Results:

* Test Statistic (H): 1.5345...

* p-value (p_val_a): 0.6743...

* Conclusion:

* Since the p-value (0.6743...) is greater than 0.05 ($p > 0.05$), the decision is to "Fail to reject H_0".

In plain terms, the analysis concludes there is no significant difference between the means of the age groups.

Final Data Analysis Conclusion

The overall sales data shows that while Electronics and Clothing are the top-selling product categories overall, consumer spending habits are highly segmented by age and gender, indicating that a one-size-fits-all marketing approach would be ineffective.

1. Overall Spending (Gender Parity)

* The t-test confirmed there is no statistically significant difference in the mean total spending between Females and Males. This suggests that while their spending is directed towards different categories, their overall expenditure is balanced.

2. Key Product Category Trends

Category	Overall Rank	Top Spenders (Age)	Trend with Age
Electronics	1st	50-64	Strong Positive Correlation: Spending consistently increases with age.
Clothing	2nd	50-64	Strong Positive Correlation: Spending consistently increases with age.
Beauty	3rd	35-49	Non-Linear: Spending peaks sharply in the middle age group (35-49) and is lowest for the oldest and youngest groups.

3. Gender-Specific Consumption

Segmentation by gender reveals distinct priorities:

Gender	Top Category	Spending Preference
Females	Clothing	Spend slightly more on Clothing overall.
Males	Electronics	Spend slightly more on Electronics overall.

Key Youth vs. Elderly Contrast:

Demographic	Top Spending Category
Youth (Total)	Beauty
Elderly/50-64 (Total)	Electronics & Clothing

4. Strategic Recommendation

The data suggests marketing efforts should be finely tuned:

* To capture high-value sales in Electronics and Clothing, focus on the older demographics (50-64), where spending is highest.

* To maximize Beauty sales, target the 35-49 age group, as they represent the primary spenders in this volatile category.

* Acknowledge and leverage the significant, though balanced, total spending between genders by customizing product messaging based on the top category for each: Electronics messaging for Males, and Clothing messaging for Females.