Sales Data: Analyzing & Predicting

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Background

- XXXXX

Purpose

- XXXXX

9
Columns

1000
Rows

**Data On Company's Customers & Sales**
About The Data

4

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Current Trends

Count Of Buyers By Age Group

Purchasing patterns show a shift with age: males dominate in the 20-30 age group, while females lead in the 40-50 age bracket, suggesting targeted marketing opportunities.

Across all age groups, females consistently represent slightly higher counts in retail purchases. Recognizing age-specific trends in gender-based buying behavior can enhance predictive models, potentially improving gender prediction accuracy and tapping into predictable gender preferences.

Count of Individuals by Age Group and Gender
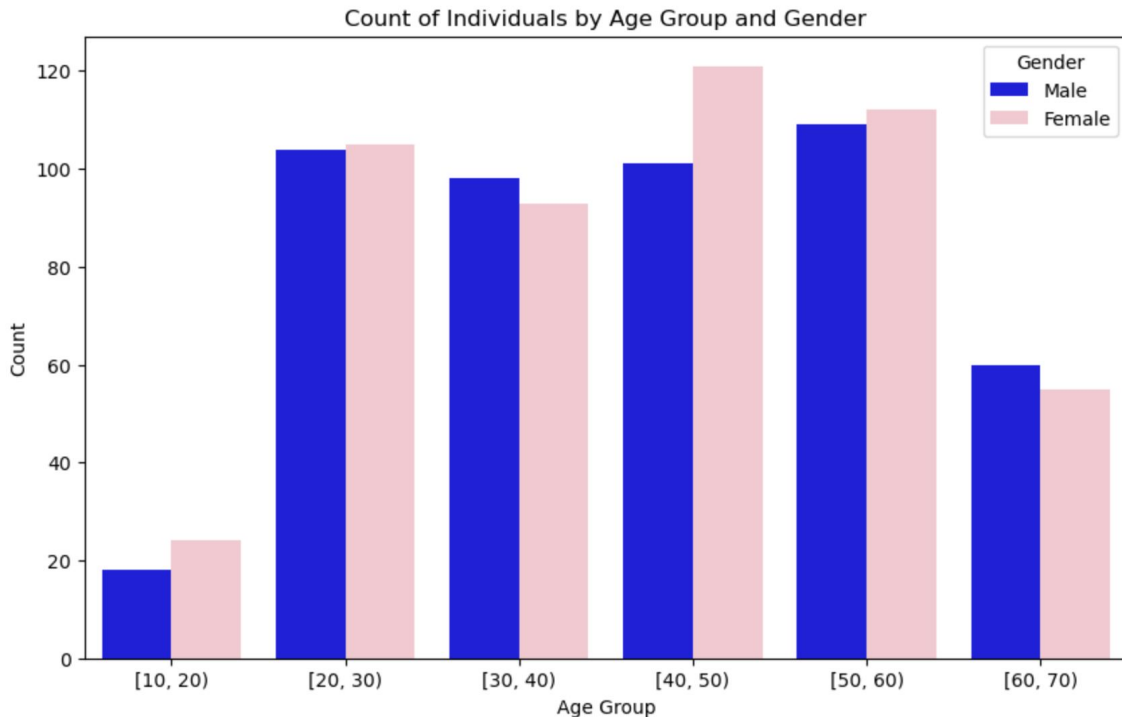
Count Of Buyers By Category & Gender

Beauty products see a clear gender disparity, with females leading in purchases, suggesting a potential focus for targeted marketing. Clothing purchases show balanced engagement between genders, indicating a less pronounced predictive power for gender based on this category alone.

Electronics purchases exhibit comparable patterns between males and females, implying that this category might not be as informative for gender prediction. Other factors, such as age or specific product choices, may be more influential in accurate predictions.

Count of Individuals by Product Category and Gender
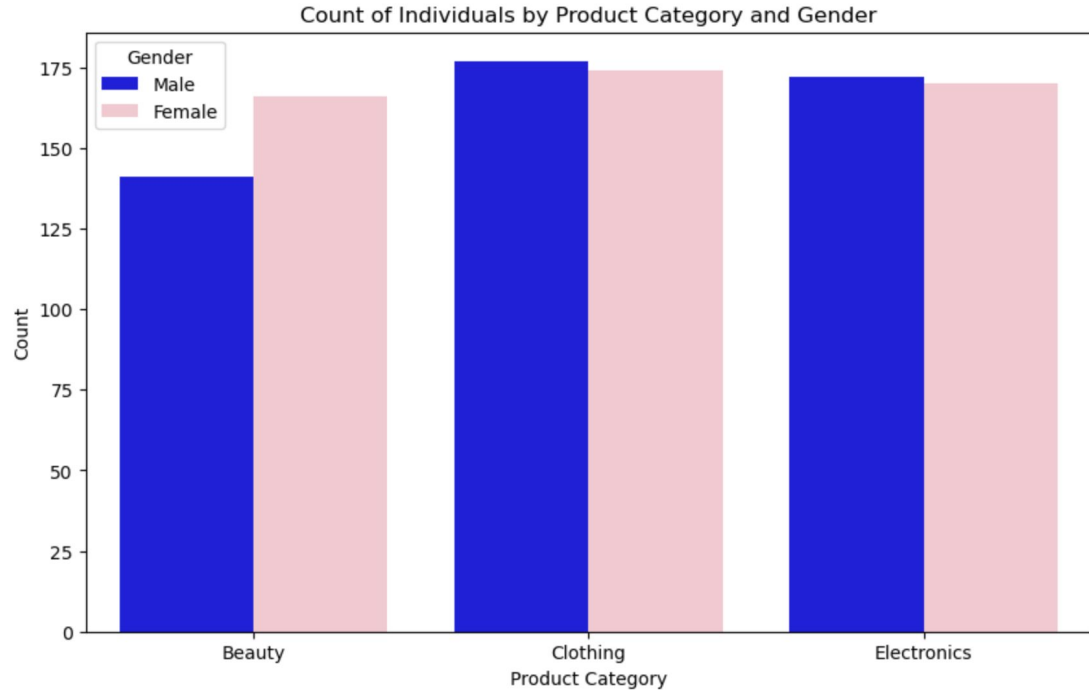
How Age Impacts Total Amount Spent

Across all age groups, the majority of purchases fall within the 0 to 200 total amount spent range, with notable concentration observed. Age-specific peaks in higher spending ranges, particularly between ages 25-30 and 45-55, suggest distinct purchasing behaviors linked to certain age demographics.

Understanding age-related spending patterns can enhance gender prediction models. Age-specific peaks and sparse spending brackets provide valuable insights into how age influences total spending behavior, aiding in the development of more accurate predictive models.

How Age Impacts The Total Amount Spent
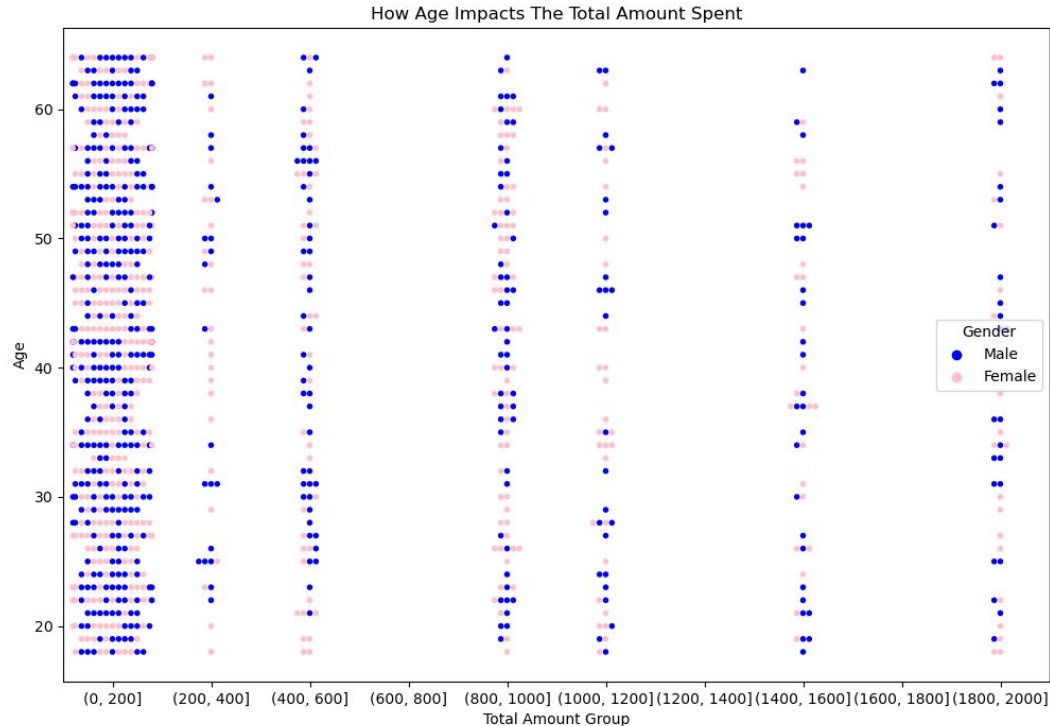
How Age Impacts Product Category Purchased

Clothing and Electronics emerge as dominant categories across age groups, with consistent interest indicated by steady dot clusters. However, the Beauty category exhibits more variability, suggesting age may play a nuanced role in influencing purchasing patterns.

Targeted marketing opportunities arise from recognizing age-related preferences in product categories. While Clothing and Electronics show consistent interest, age-specific campaigns can leverage nuanced age-category relationships for more effective marketing strategies.

How Age Impacts The Product Category Bought
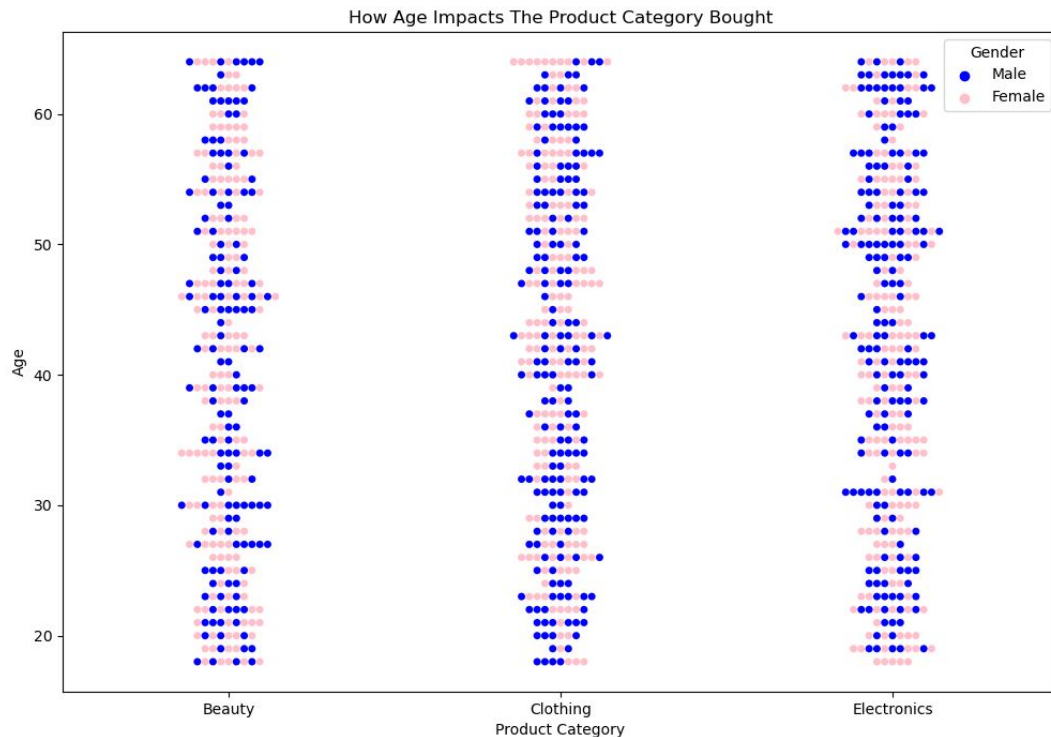
Average Amount Spent By Gender

The visualization indicates a minimal difference in average spending between males and females, with females potentially spending slightly more, albeit marginally.

While this subtle distinction exists, the predictive power for gender classification in retail purchases may rely more on factors such as category, age, and price per unit. Emphasizing the need to explore additional features is crucial for building a robust predictive model.

Average Amount Spent by Gender
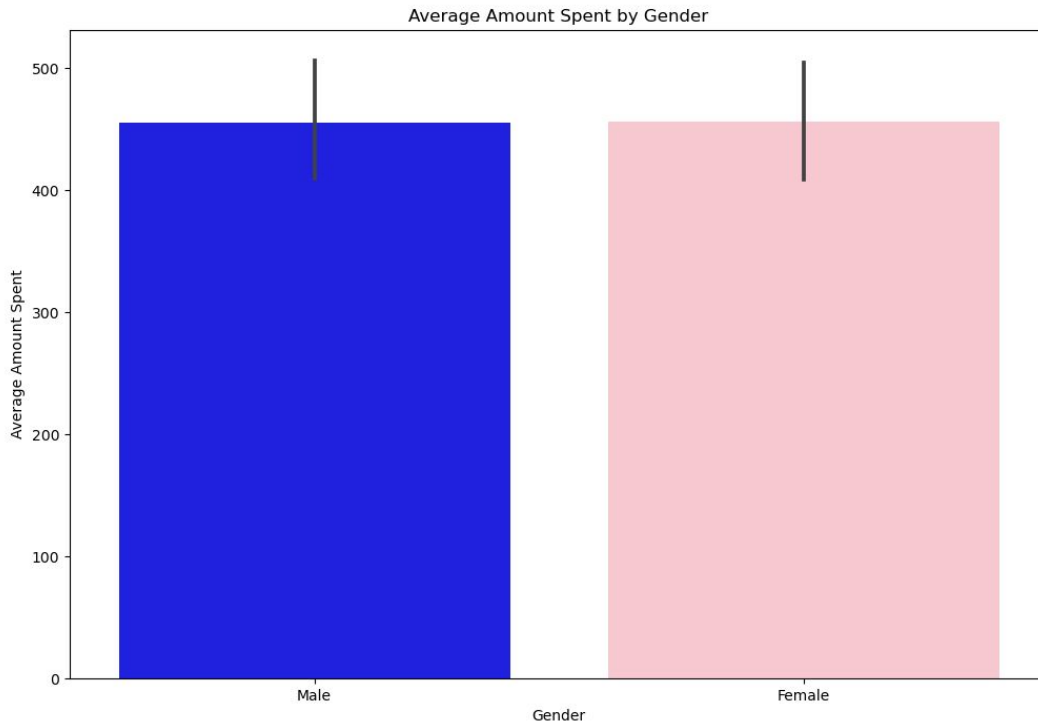
Average Quantity Purchased By Gender

The visualization illustrates a consistent average quantity slightly over 2.5 for both males and females, with females holding a marginal lead, yet notably below 3.

While there's a subtle difference in average quantity, this observation suggests that it may not be a strong predictor for distinguishing between male and female buyers. Exploring additional factors such as category, age, and price per unit is vital for developing a more accurate predictive model.

Average Quantity Bought by Gender
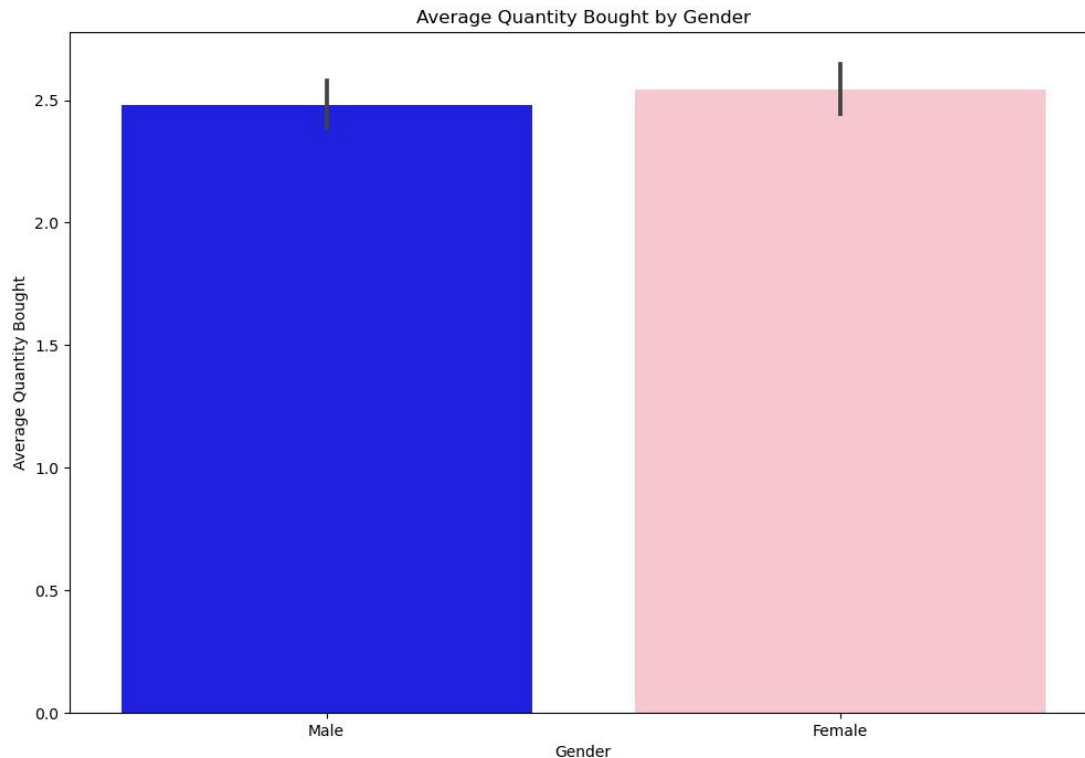
Distribution Of Age By Gender

Males typically range from 30 to 55 years old, with a median around age 42, while females start around age 28 and extend to approximately age 52, aligning with males at age 42.

Age distributions across categories are consistent for males and females, suggesting age alone may not be highly discriminative for predicting gender. Recommending a comprehensive approach incorporating additional features like category and price per unit for a more robust gender prediction model is advisable.

Distribution of Age by Gender

Distribution Of Total Amount Spent By Gender

Both male and female violins exhibit similar distributions of total amounts, ranging from under 0 to over 2000, with a slight prominence for females around the 1000 mark.

Despite some differences, both genders demonstrate comparable spending behavior across the entire range of total amounts. While there's a slightly higher concentration of female spending around the 1000 mark, total amount alone may not be a decisive factor in predicting gender.

Distribution of Total Amount by Gender

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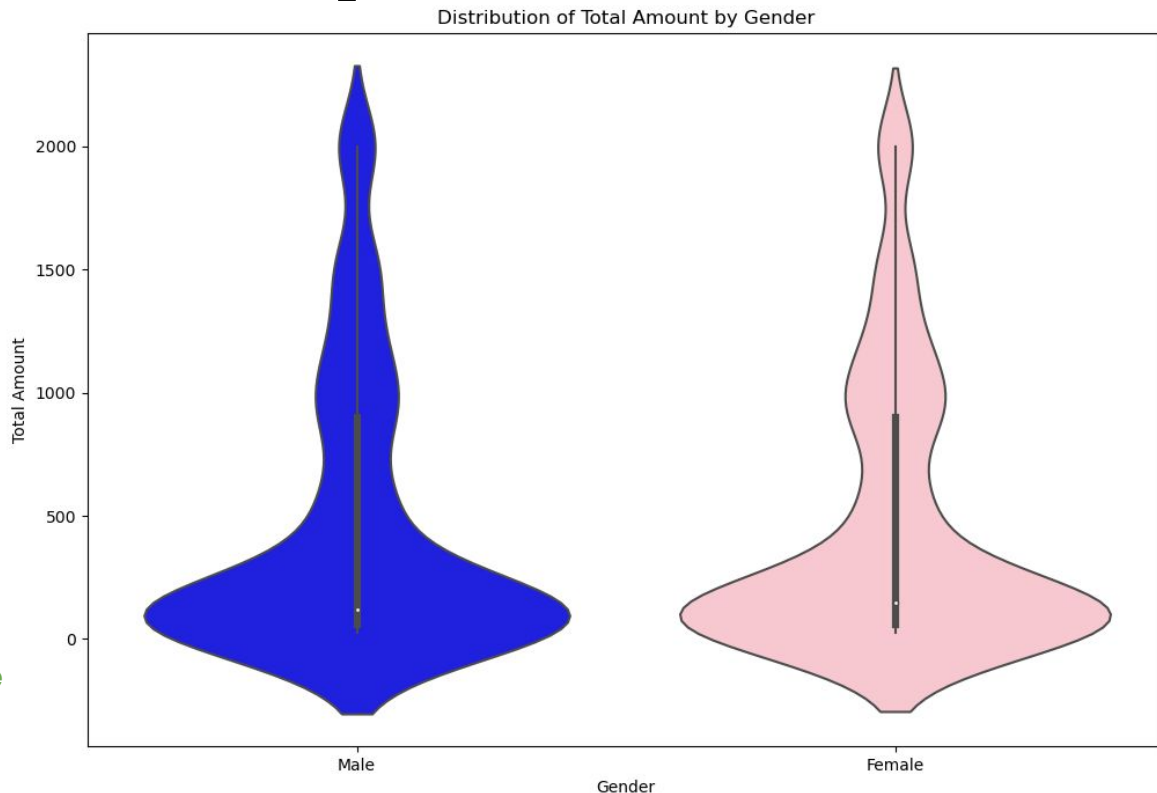
HeatMap: How The Variables Impact Each Other

Interrelation of Variables: The heatmap illustrates how different variables correlate with each other. Gender exhibits a slight positive correlation with age (0.0026) and negative correlations with price per unit (–0.00096) and total amount spent (–0.001), indicating weak associations.

Impact on Prediction: While some variables show correlations, such as total amount spent having a strong positive correlation with price per unit (0.85), the heatmap suggests that gender alone may not strongly predict other variables or vice versa.
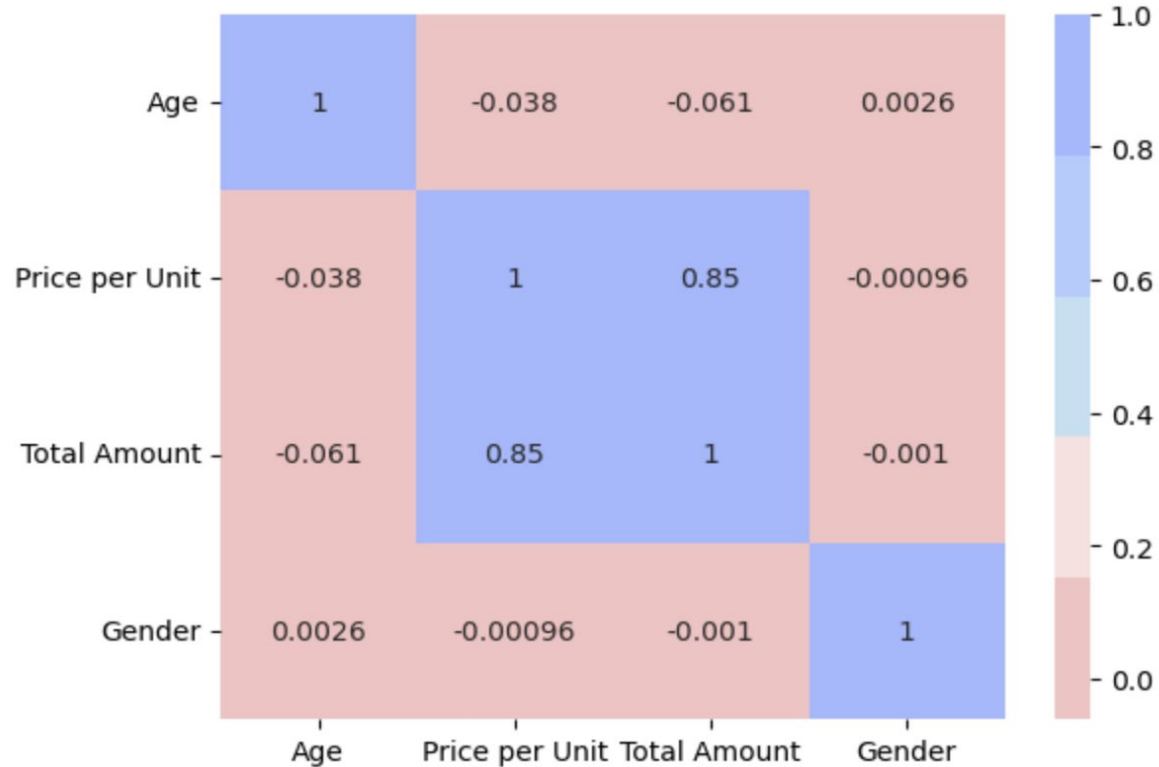
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Modeling

Performance

Testing:

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Application For Predicting

Streamlit App

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Synopsis

Conclusions:
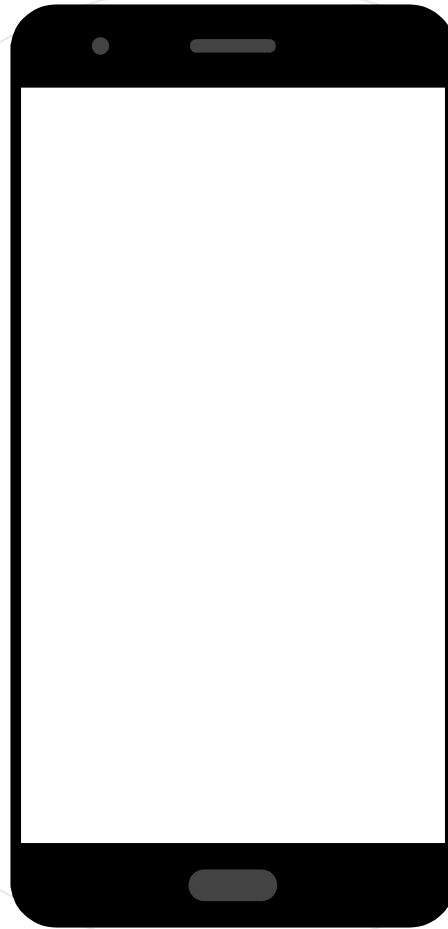
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Recommendations:

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Thanks!

Q&A