

# Coffee Shop Sales Analysis

An in-depth analysis of coffee shop sales data to understand customer preferences, sales patterns, and predict future performance.



# Data Overview & Preprocessing

## Dataset Structure

Sales data including transaction details, payment methods, coffee types, and timestamps.

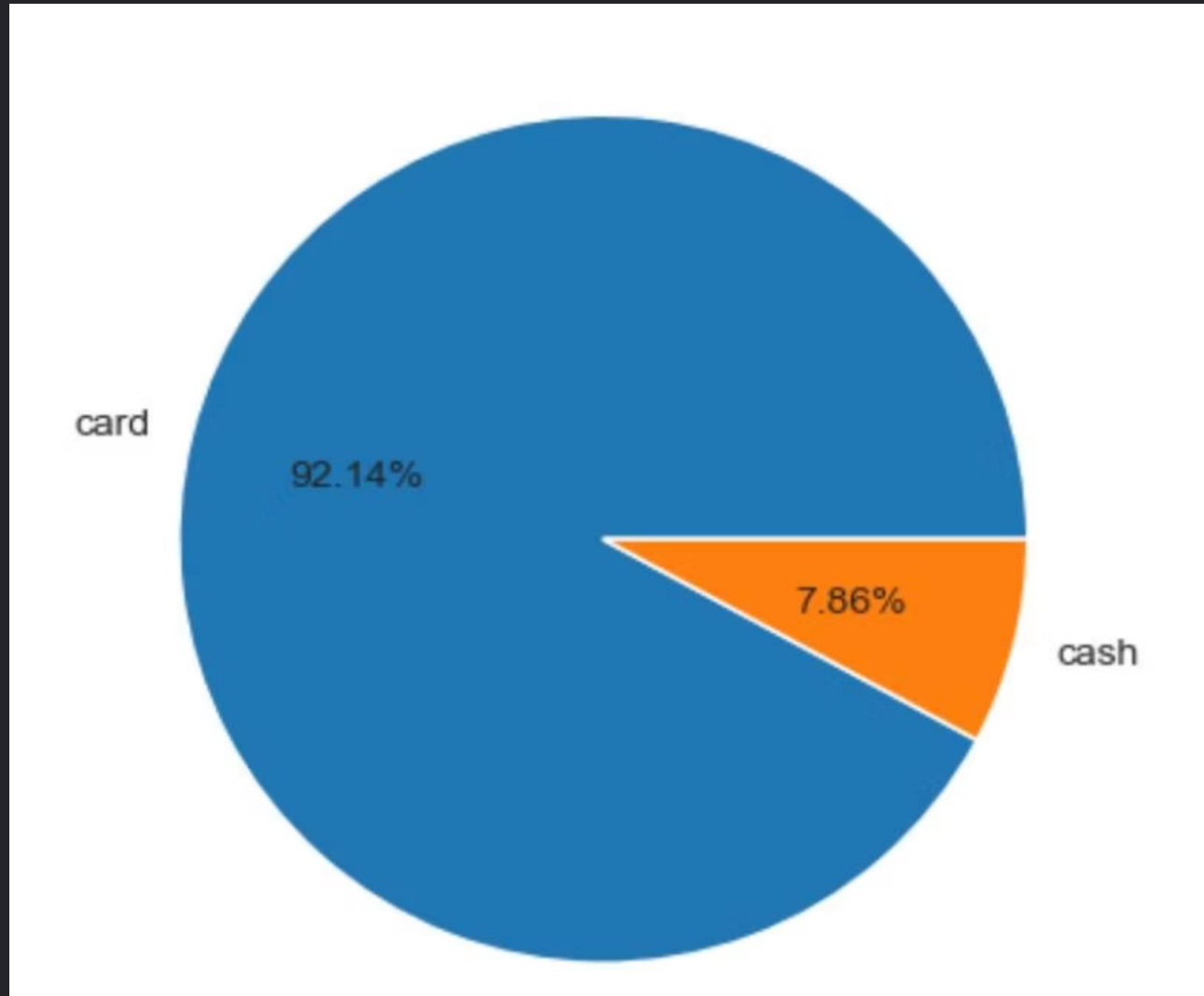
## Preprocessing Steps

- Filled 89 null values in card column with 'Cash Payer'
- Converted date to datetime format
- Extracted day, month, year, and time of day

## Customer Base

447 unique customers identified in the dataset

# Payment Preferences

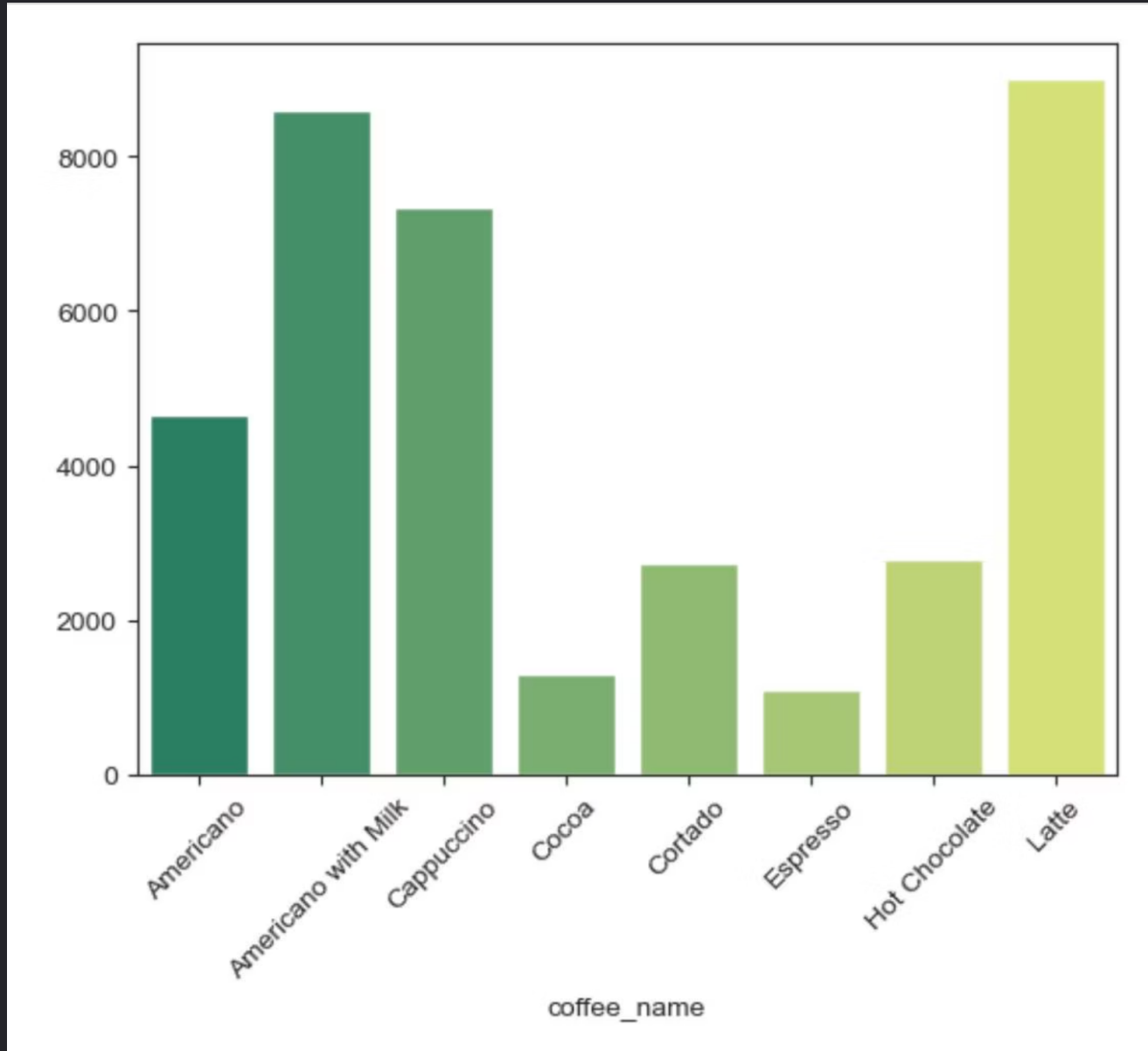


## Key Insights

The majority of customers prefer card payments over cash transactions.

This payment preference insight can help optimize payment processing systems and potentially offer targeted promotions for specific payment methods.

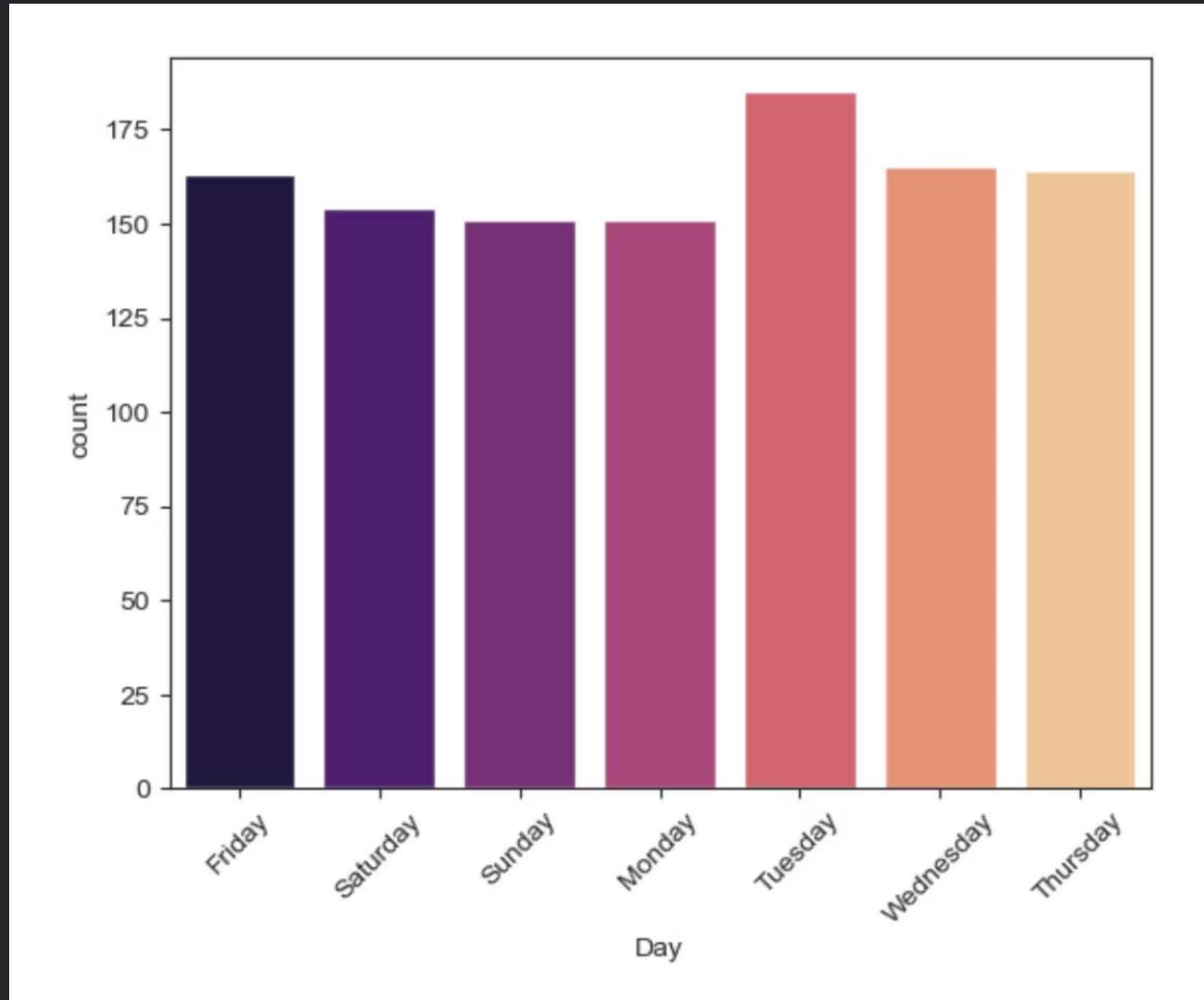
# Coffee Preferences



## Popular Choices

- "Americano with Milk" is the most frequently ordered coffee
- "Latte" generates the highest revenue
- "Cocoa" is the least selected beverage

# Sales by Day of Week



## Weekly Patterns

Sales peak on Tuesdays, indicating higher customer activity.

Understanding these patterns can help with staff scheduling and inventory management to meet demand fluctuations throughout the week.

# Time of Day Analysis

## Morning

High sales volume, particularly for espresso-based drinks



## Afternoon

Steady traffic with more variety in drink selections



## Night

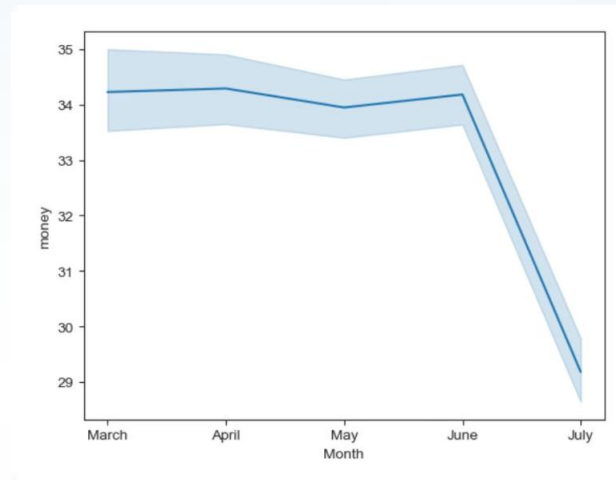
Lowest traffic but opportunity for specialty offerings



## Evening

Peak revenue period despite fewer transactions





# Monthly Sales Trends

## Peak Season

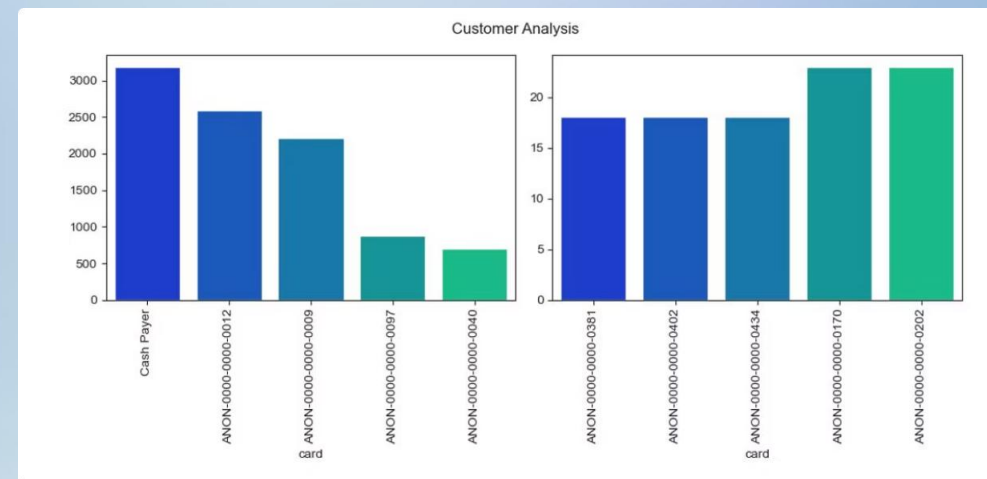
March shows the highest sales volume across coffee types

## Low Season

July experiences the lowest sales, suggesting seasonal impact

## Product Trends

Americano with Milk and Cappuccino sales declined in March but recovered in May



# Customer Analysis

12

Top Customer ID

Highest spending customer

9

Regular Customer ID

Second highest in frequency

309

New Customer ID

Recently joined with potential



# Product Performance by Day

## Latte Performance

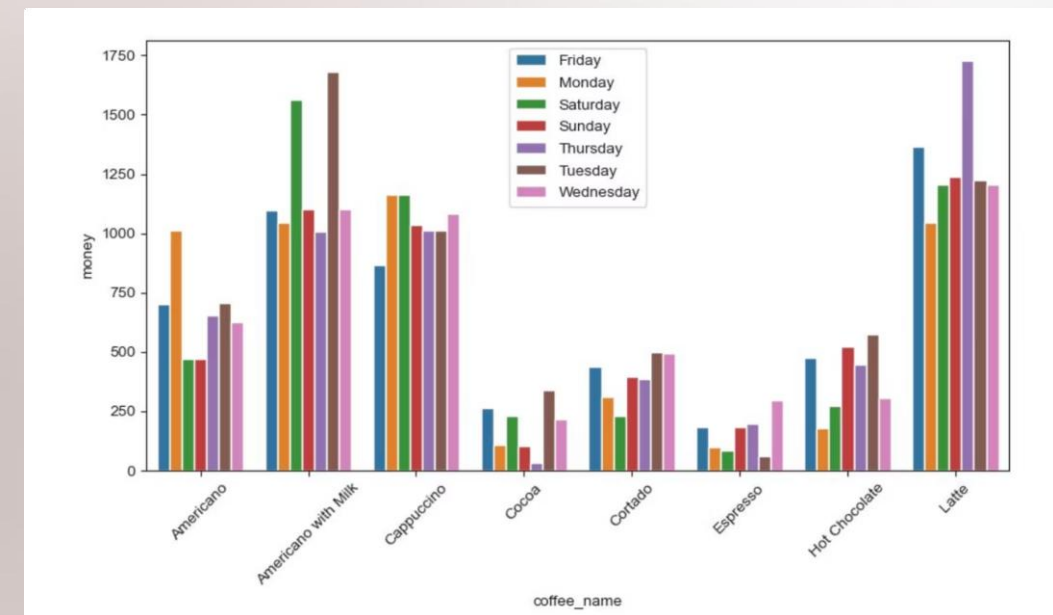
Consistently high sales across all weekdays, making it the top revenue generator

## Espresso Performance

Lowest earning coffee type throughout the week, suggesting potential for menu optimization

## Weekend Patterns

Different consumption patterns on weekends versus weekdays



# Predictive Model Results

0.96

$R^2$  Score

High accuracy in predicting sales

96%

Model Accuracy

For sales forecasting

The Linear Regression model built after preprocessing shows excellent predictive power with an  $R^2$  score of 0.96, enabling accurate forecasting of future sales based on coffee type, day of week, time of day, and payment method.

This model can be used for inventory planning, staff scheduling, and targeted marketing campaigns.