

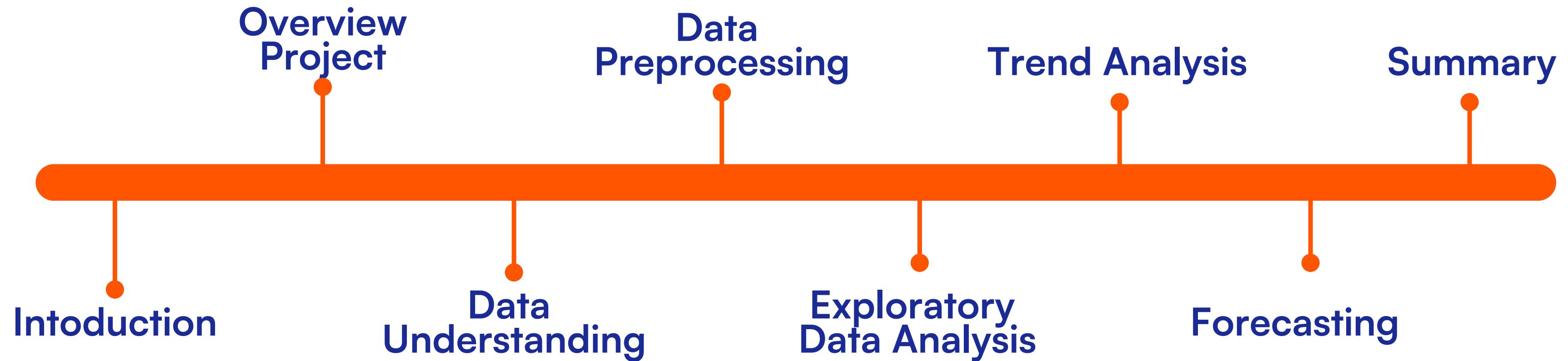


COFFEE SHOP SALES PRESENTATION



MARVEN ROASTERS - COFFEE SHOP

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INTRODUCTION

01

/ MARVEN ROASTERS - COFFEE SHOP



RAIHAN FEBRIAN

Semester 8



Teknologi Industri Pertanian
Universitas Padjadjaran

UPHOLD THE VALUES

- Professionalism
- Agile
- Meticulous

INTEREST

- Data Sciences
- Artificial Intelligence (AI)



OVERVIEW PROJECT

MARVEN ROASTERS - COFFEE SHOP

Data Science Project with Python: Data Type and Structure, Manipulation, Cleaning

- Understanding data types and structures in Python for effective data analysis.
- Processing and manipulating datasets to produce analysis-ready data.
- Cleaning data from inconsistencies and outliers to ensure analysis quality.

Hypothesis Testing Concepts, SQL Query, Web Scrapping

- Applying hypothesis testing concepts to evaluate assumptions and make data-driven decisions.
- Using SQL for efficient data management and retrieval from databases.
- Utilizing Python to extract data from websites, generating relevant datasets for analysis.

Hypothesis Testing Concepts, SQL Query, Web Scrapping

- Applying hypothesis testing concepts to evaluate assumptions and make data-driven decisions.
- Using SQL for efficient data management and data retrieval from databases.
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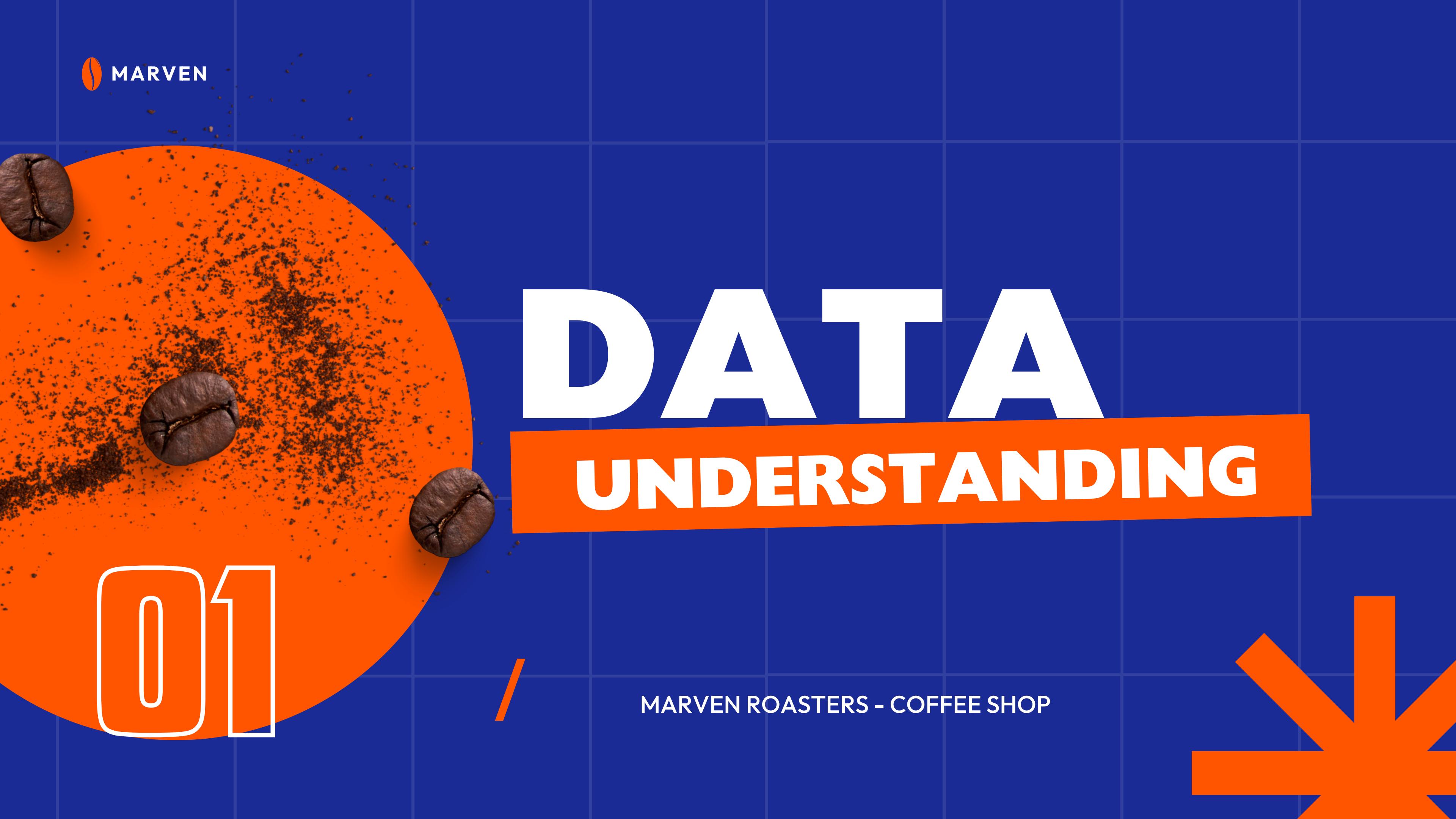
Web Dashboard Development, Exploratory Data Analysis (EDA), Regularized Regression in Python

- Creating interactive dashboards for data visualization using tools like Flask or Dash.
- Conducting exploratory data analysis (EDA) to uncover patterns, trends, and insights in datasets.
- Applying regularized regression techniques such as Lasso and Ridge to enhance model performance.

Hyperparameter Tuning in Python, Exploring Machine Learning Models with Python (Supervised), Exploring Other Machine Learning Models with Python (Unsupervised), Support Vector Machine (SVM)

- Optimizing machine learning models through hyperparameter tuning for more accurate results.
- Building and evaluating supervised learning models such as regression and classification.
- Implementing unsupervised learning models, including clustering and dimensionality reduction.
- Developing and implementing Support Vector Machine (SVM) models for complex data classification.





DATA UNDERSTANDING

01

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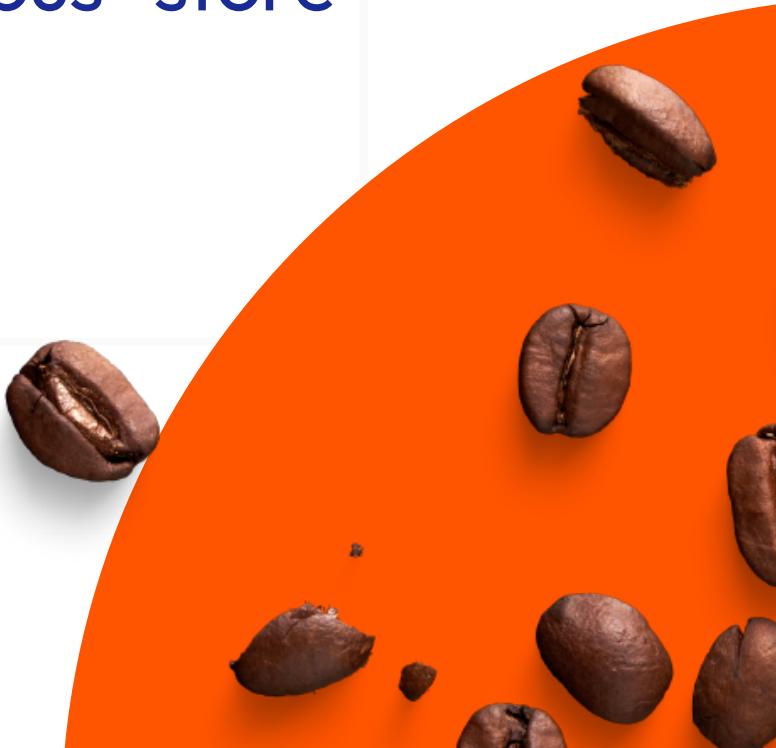
BACKGROUND



Maven Roasters, a fictitious coffee shop chain with locations in New York City, is focused on understanding customer behavior and optimizing sales strategies. The data contains a series of transactions, including product sales, store locations, and timestamps. By analyzing this data, Maven Roasters aims to gain insights into sales patterns, peak times, and the popularity of different products.

PROBLEM

- 01** **Sales Trends:** What are the sales trends over time? Are there any specific patterns related to time of day, day of the week, or seasonality?
- 02** **Product Popularity:** Which products are generating the most revenue? Which products are underperforming?
- 03** **Store Performance:** Are there differences in sales between various store locations? Which stores are the most profitable?
- 04** **Sales Projection for the Next 6 Months:** How the prediction about sales for 6 months



OBJECTIVE

01

Sales Trends: To identify sales patterns over time, including trends related to the time of day (morning, afternoon, evening), day of the week, and seasonality. The goal is to understand peak and low sales periods.

02

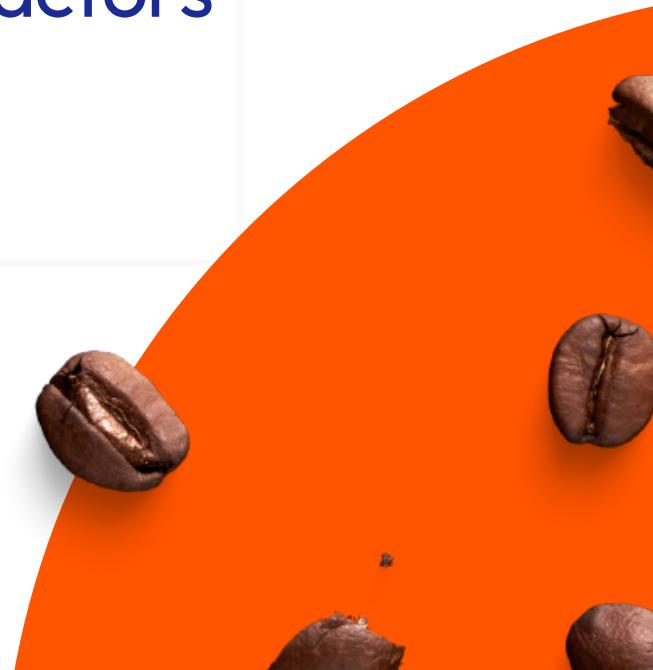
Product Popularity: To analyze which products generate the highest revenue and which ones are underperforming. This aims to optimize the product portfolio and marketing strategies.

03

Store Performance: To evaluate sales performance differences between store locations, identify the most profitable stores, and understand the factors contributing to their success.

04

Sales Projection for the Next 6 Months: To forecast sales for the next 6 months based on historical data to support strategic planning, inventory management, and resource allocation.



GOALS

01

Sales Trends

- Maximize sales by leveraging peak times based on identified patterns.
- Develop targeted marketing strategies to boost sales during low-performing periods.

02

Product Popularity

- Increase revenue contribution from top-performing products.
- Develop strategies to improve sales of underperforming products or consider replacing them.

03

Store Performance

- Enhance the performance of low-performing stores with tailored strategies.
- Sustain and expand best practices from the most profitable stores.

04

Sales Projection for the Next 6 Months

- Support strategic decision-making based on sales forecasts.
- Optimize inventory and resource management to prevent wastage and shortages over the next 6 months.



DATASET

| Column | Description |
|------------------|--|
| transaction_id | Unique sequential ID representing an individual transaction. |
| transaction_date | Date of the transaction. |
| transaction_time | Timestamp of the transaction. |
| transaction_qty | Quantity of items sold in the transaction. |
| store_id | Unique identifier for each store location. |
| store_location | Location of the store. |
| product_id | Unique identifier for each product sold. |
| unit_price | Retail price of each unit of product sold. |
| product_category | The category of the product. |
| product_type | The type of the product. |
| product_detail | Detailed description of the product. |

02

DATA PREPROCESSING

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DATA PREPROCESSING

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 149116 entries, 0 to 149115
Data columns (total 11 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   transaction_id  149116 non-null   int64  
 1   transaction_date 149116 non-null   object  
 2   transaction_time 149116 non-null   object  
 3   transaction_qty   149116 non-null   int64  
 4   store_id          149116 non-null   int64  
 5   store_location    149116 non-null   object  
 6   product_id        149116 non-null   int64  
 7   unit_price        149116 non-null   float64 
 8   product_category  149116 non-null   object  
 9   product_type      149116 non-null   object  
 10  product_detail    149116 non-null   object  
dtypes: float64(1), int64(4), object(6)
memory usage: 12.5+ MB
```

Transform 

```
transaction_id          int64
transaction_date         datetime64[ns]
transaction_time         object
transaction_qty          int64
store_id                 int64
store_location           object
product_id               int64
unit_price               float64
product_category         object
product_type              object
product_detail            object
dtype: object
```

DATA PREPROCESSING

Missing Values

```
transaction_id      0
transaction_date    0
transaction_time    0
transaction_qty     0
store_id            0
store_location      0
product_id          0
unit_price          0
product_category    0
product_type         0
product_detail       0
dtype: int64
```

Add new features

| | transaction_date | day_of_week | month | year |
|---|------------------|-------------|-------|------|
| 0 | 2023-01-01 | 6 | 1 | 2023 |
| 1 | 2023-01-01 | 6 | 1 | 2023 |
| 2 | 2023-01-01 | 6 | 1 | 2023 |
| 3 | 2023-01-01 | 6 | 1 | 2023 |
| 4 | 2023-01-01 | 6 | 1 | 2023 |

| | transaction_qty | unit_price | total_revenue |
|---|-----------------|------------|---------------|
| 0 | 2 | 3.0 | 6.0 |
| 1 | 2 | 3.1 | 6.2 |
| 2 | 2 | 4.5 | 9.0 |
| 3 | 1 | 2.0 | 2.0 |
| 4 | 2 | 3.1 | 6.2 |

Duplicate values

| transaction_id | transaction_date | transaction_time | transaction_qty | store_id | store_location | product_id | unit_price | product_category | product_type | product_detail | day |
|----------------|------------------|------------------|-----------------|----------|----------------|------------|------------|------------------|--------------|----------------|-----------|
| 1 | 2023-01-01 | 10:00:00 | 2 | 1 | New York | 101 | 3.0 | Electronics | Smartphones | iPhone 14 Pro | Wednesday |



EXPLORATORY DATA ANALYSIS

03



MARVEN ROASTERS - COFFEE SHOP

EXPLORATORY DATA ANALYSIS

Splitting Transactions by Time

| | transaction_time | time_of_day |
|---|------------------|-------------|
| 0 | 07:06:11 | Pagi |
| 1 | 07:08:56 | Pagi |
| 2 | 07:14:04 | Pagi |
| 3 | 07:20:24 | Pagi |
| 4 | 07:22:41 | Pagi |

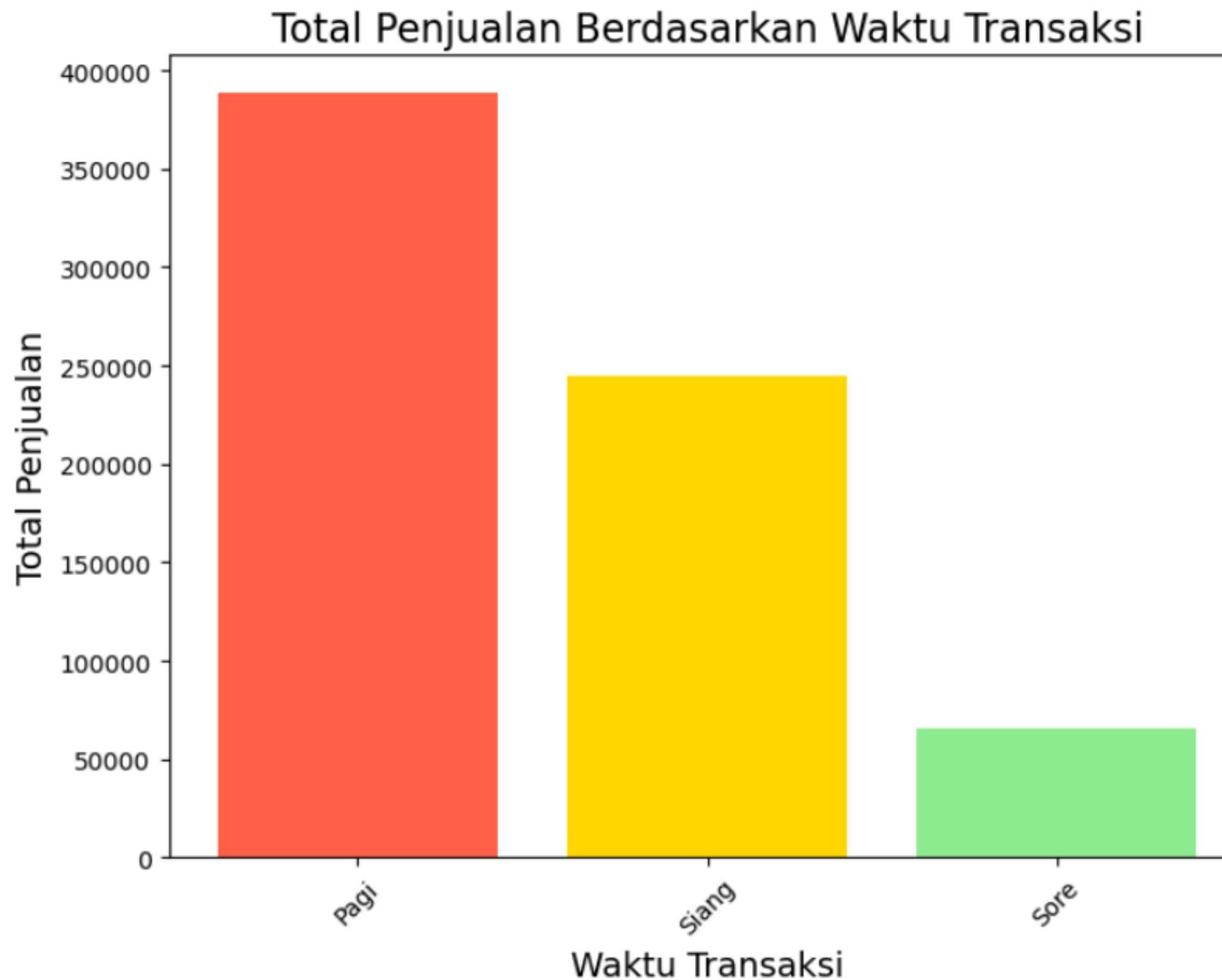
Sum Revenue by Month

| month | total_revenue |
|-------|---------------|
| 0 | 81677.74 |
| 1 | 76145.19 |
| 2 | 98834.68 |
| 3 | 118941.08 |
| 4 | 156727.76 |
| 5 | 166485.88 |

Sum Revenue by Time

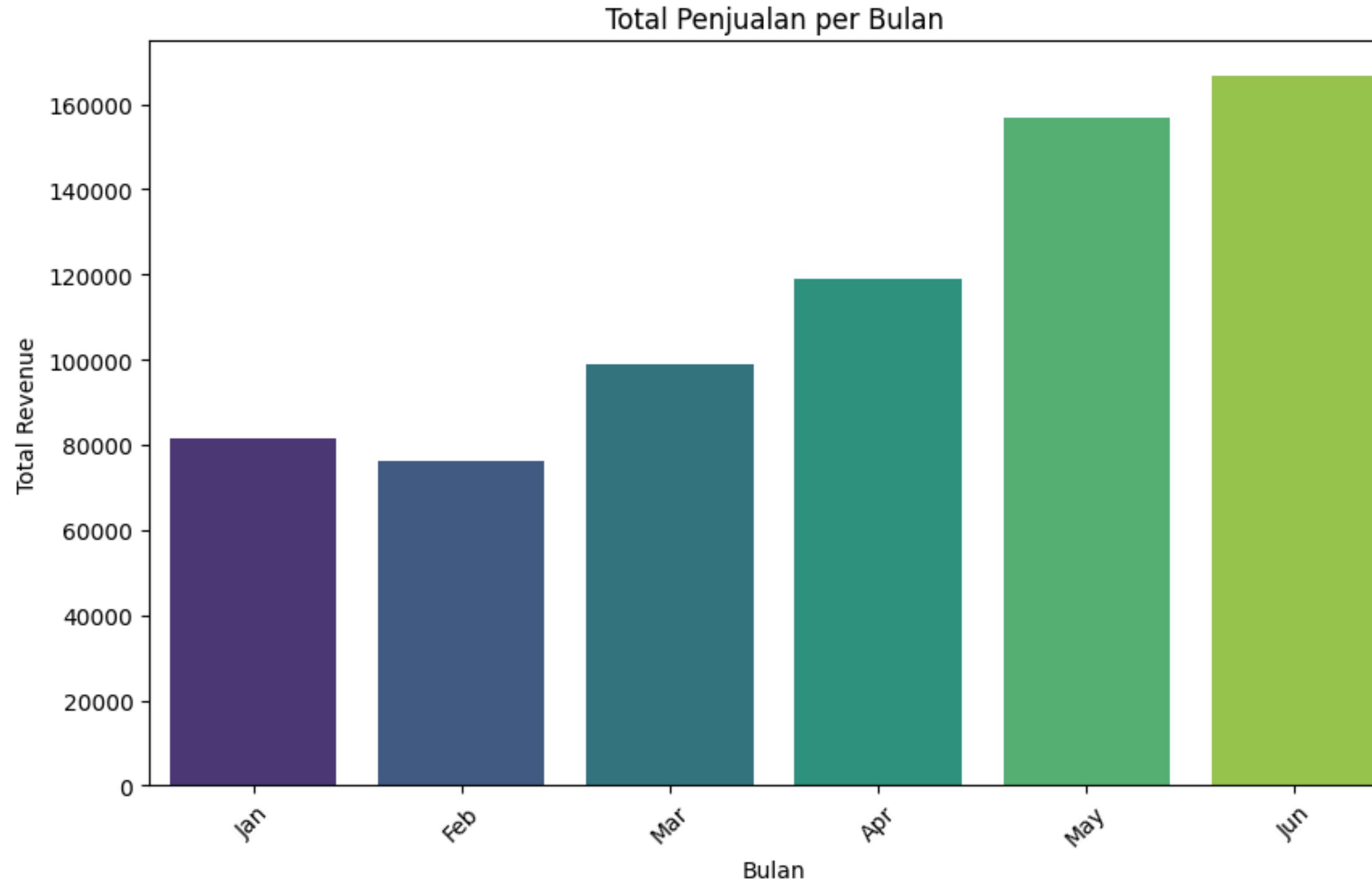
| time_of_day | total_revenue |
|-------------|---------------|
| 0 | 388288.67 |
| 1 | 244855.14 |
| 2 | 65668.52 |

EXPLORATORY DATA ANALYSIS



↑ Higher: Pagi
↓ Lowest: Sore

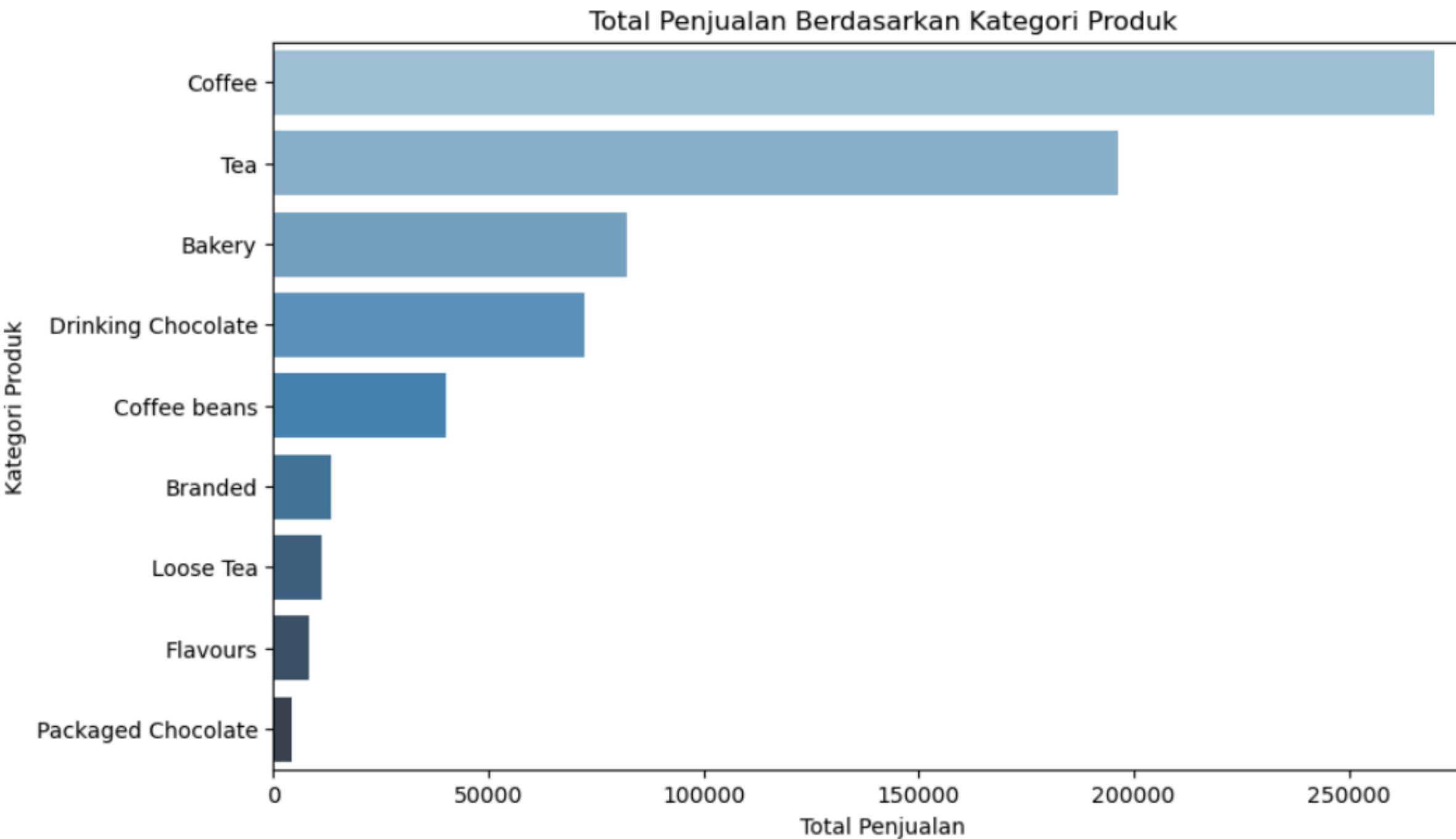
EXPLORATORY DATA ANALYSIS



Stable
Increase



EXPLORATORY DATA ANALYSIS



Higher

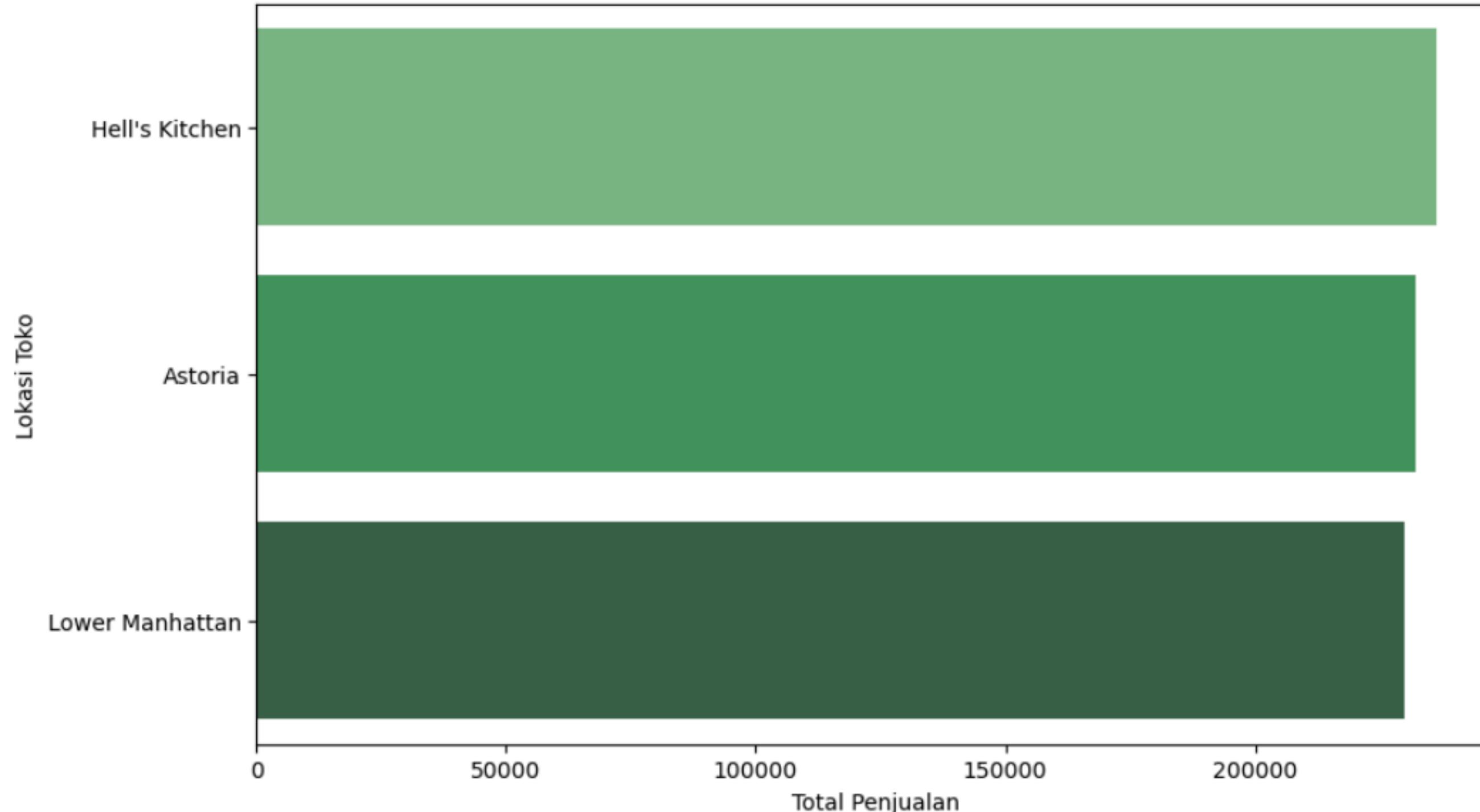
- 1) Coffee
- 2) Tea

Lowest

- 1) Packaged Chocolate
- 2) Flavours

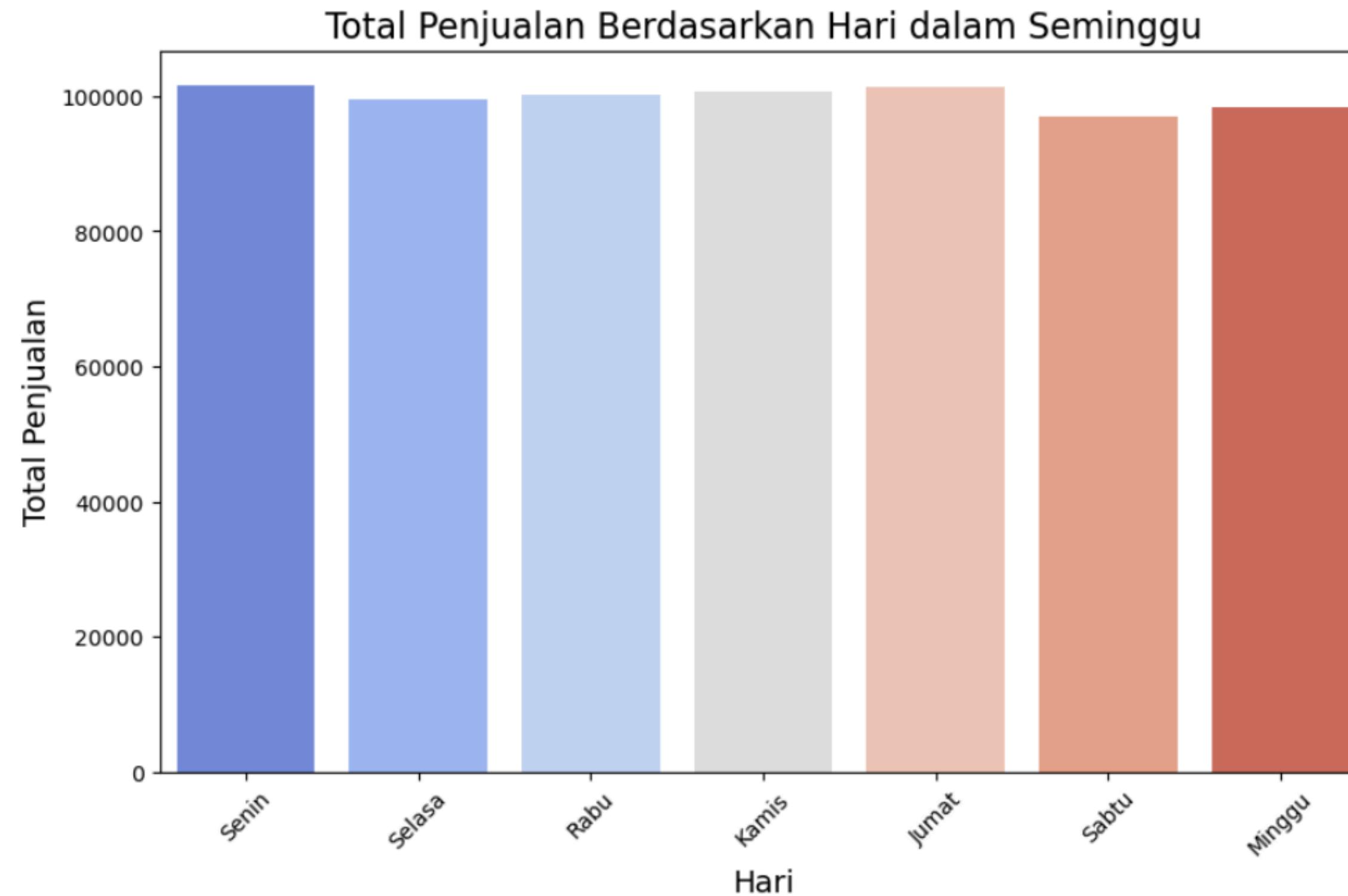
EXPLORATORY DATA ANALYSIS

Total Penjualan Berdasarkan Lokasi Toko



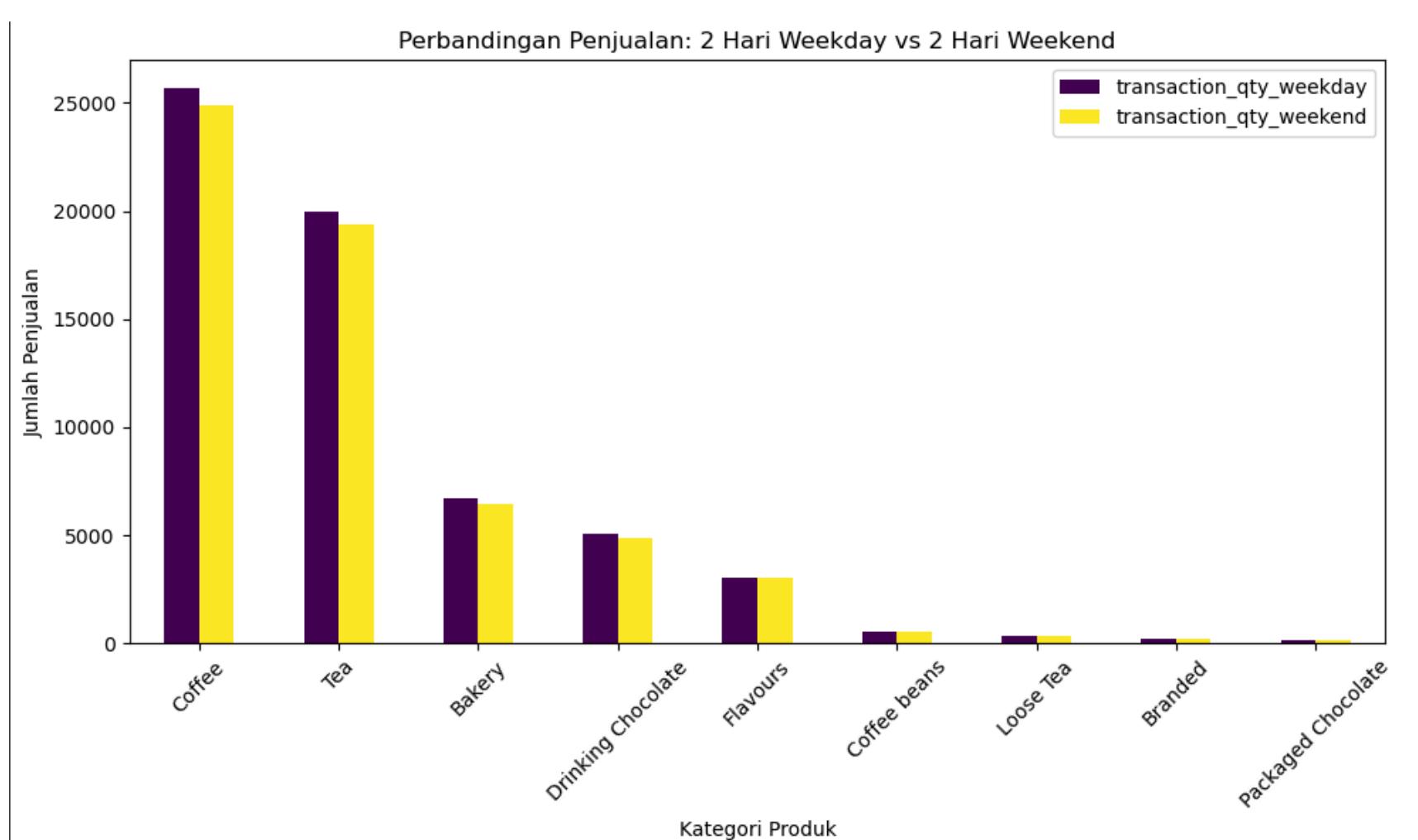
Stable

EXPLORATORY DATA ANALYSIS



Weekday > Weekend

EXPLORATORY DATA ANALYSIS



| product_category | transaction_qty_weekday | transaction_qty_weekend |
|----------------------|-------------------------|-------------------------|
| 2 Coffee | 25694 | 24882 |
| 8 Tea | 19956 | 19360 |
| 0 Bakery | 6711 | 6449 |
| 4 Drinking Chocolate | 5046 | 4874 |
| 5 Flavours | 3059 | 3003 |
| 3 Coffee beans | 533 | 523 |
| 6 Loose Tea | 339 | 337 |
| 1 Branded | 211 | 226 |
| 7 Packaged Chocolate | 131 | 142 |

04



DAY SALES ANALYSIS

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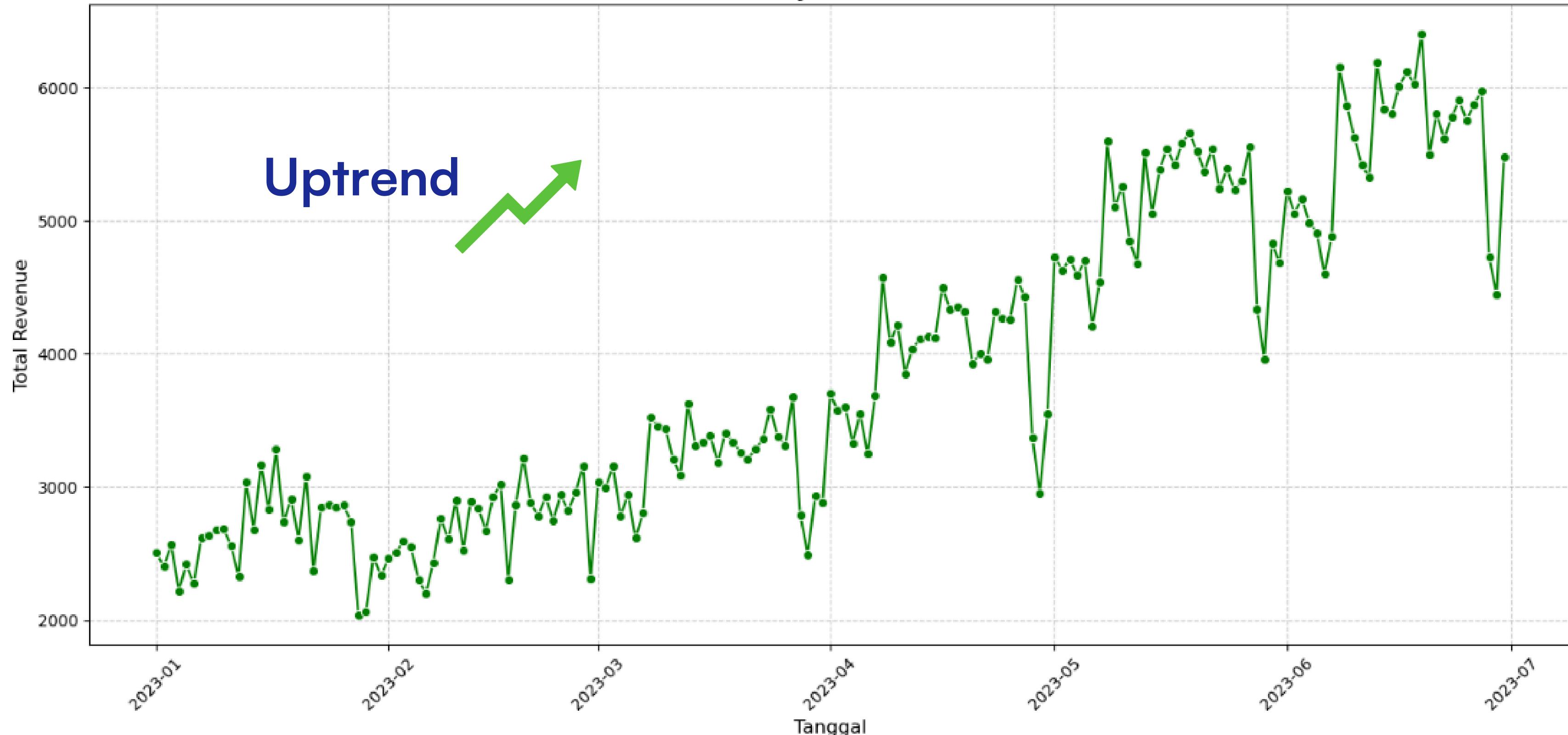
DAY SALES ANALYSIS

Total revenue daily

| | transaction_date | total_revenue |
|---|------------------|---------------|
| 0 | 2023-01-01 | 2508.28 |
| 1 | 2023-01-02 | 2403.35 |
| 2 | 2023-01-03 | 2565.00 |
| 3 | 2023-01-04 | 2220.10 |
| 4 | 2023-01-05 | 2418.85 |

DAY SALES ANALYSIS

Pola Penjualan Harian

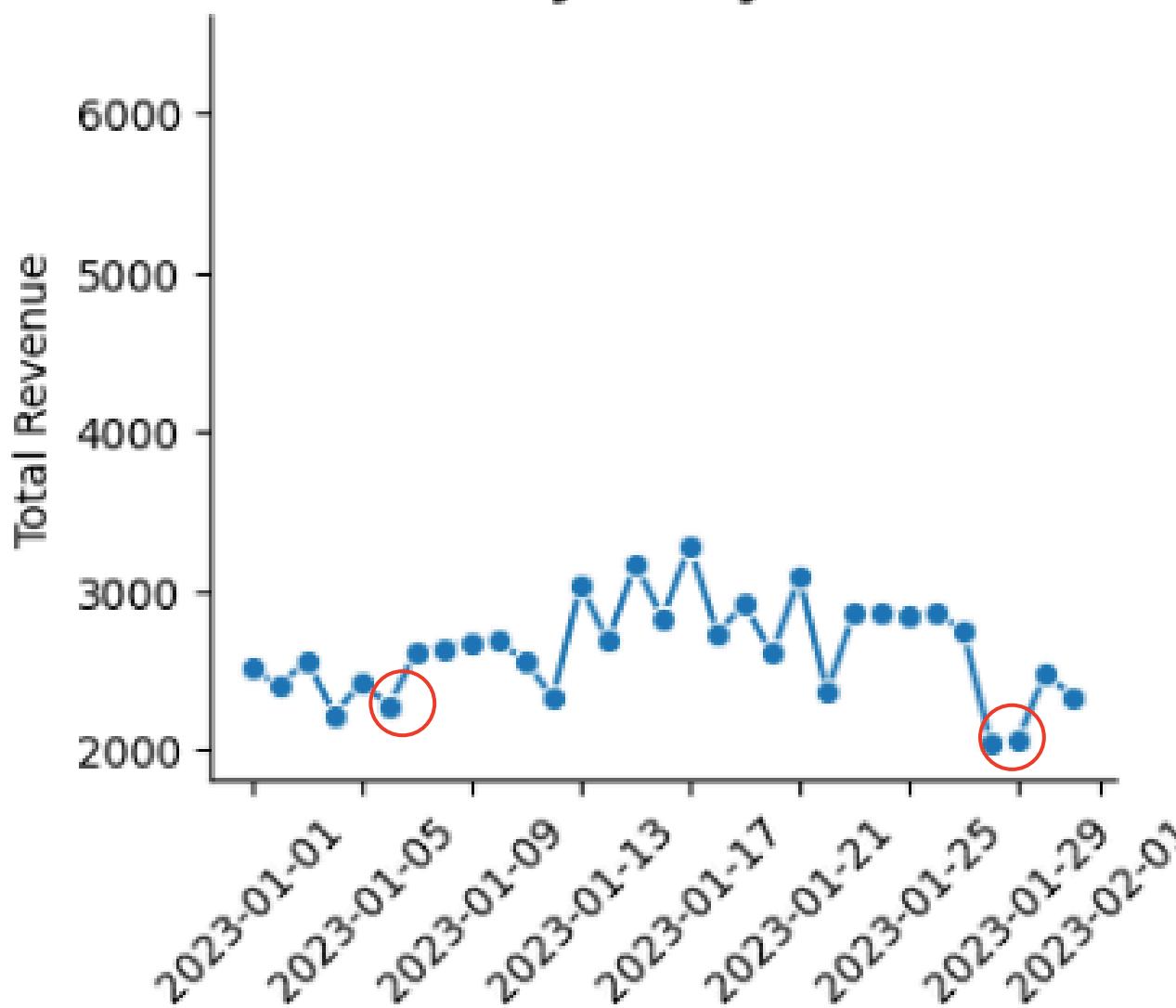


DAY SALES ANALYSIS

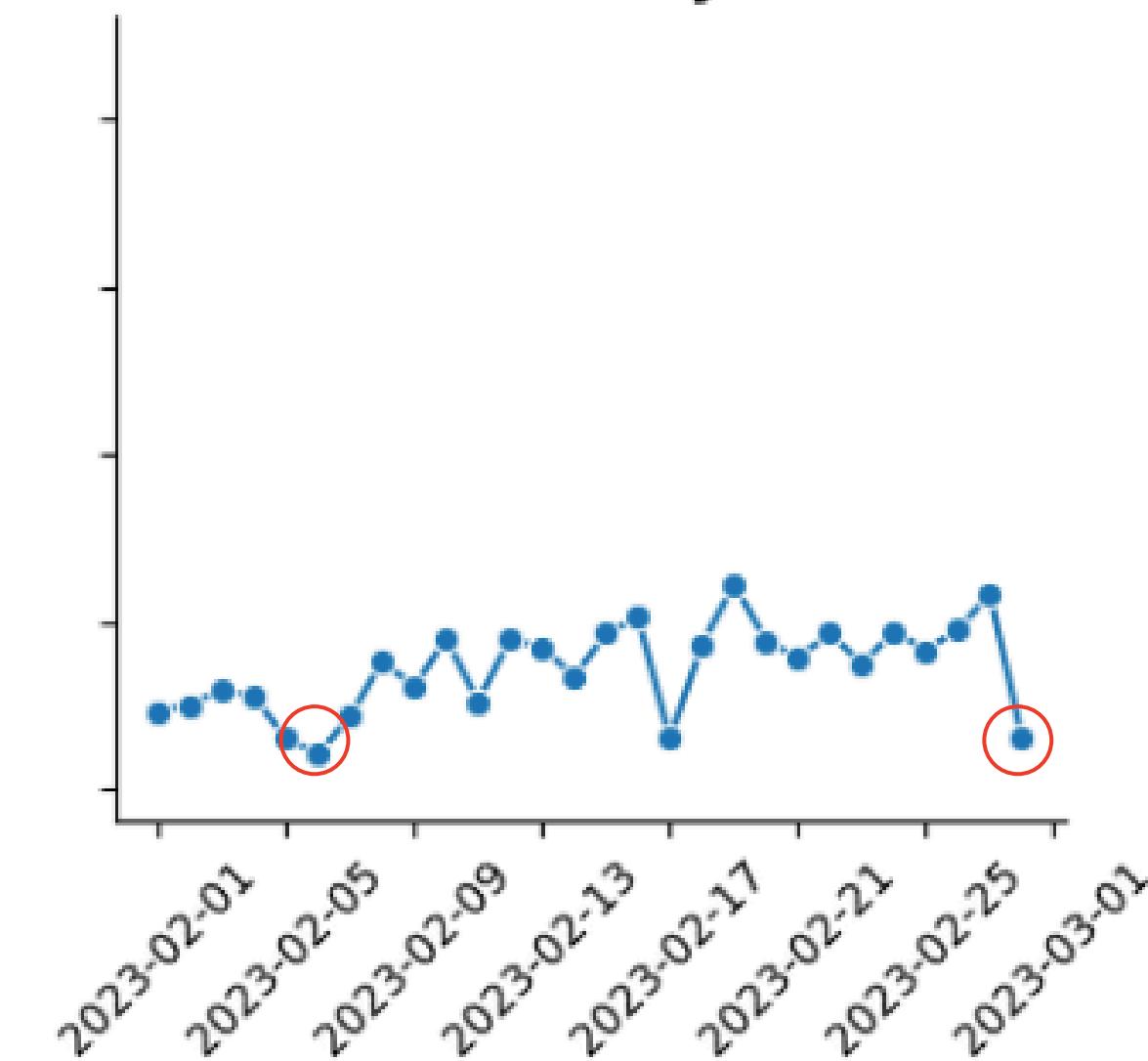
Have a Downtrend Pattern
on Specific date



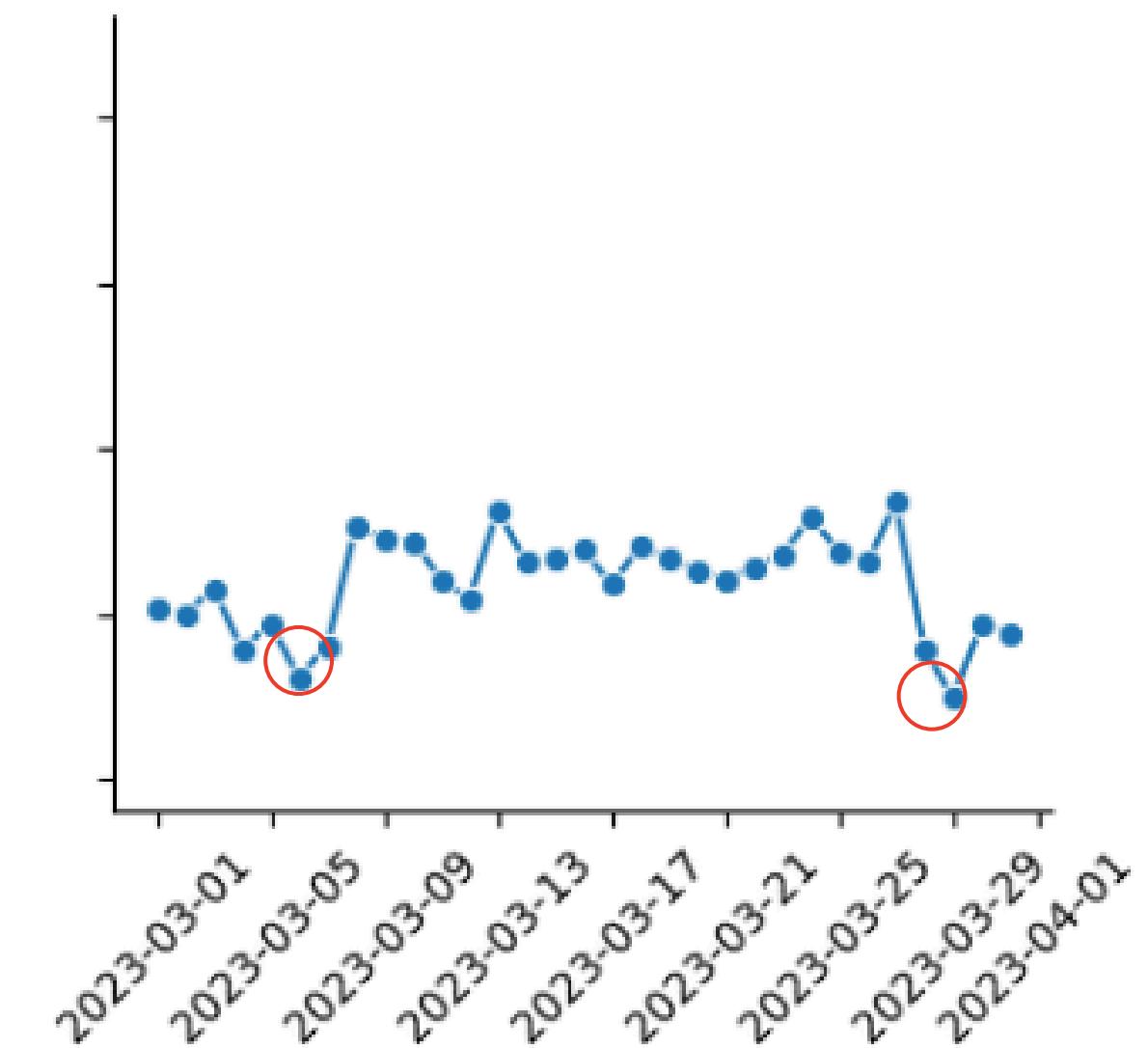
January



February

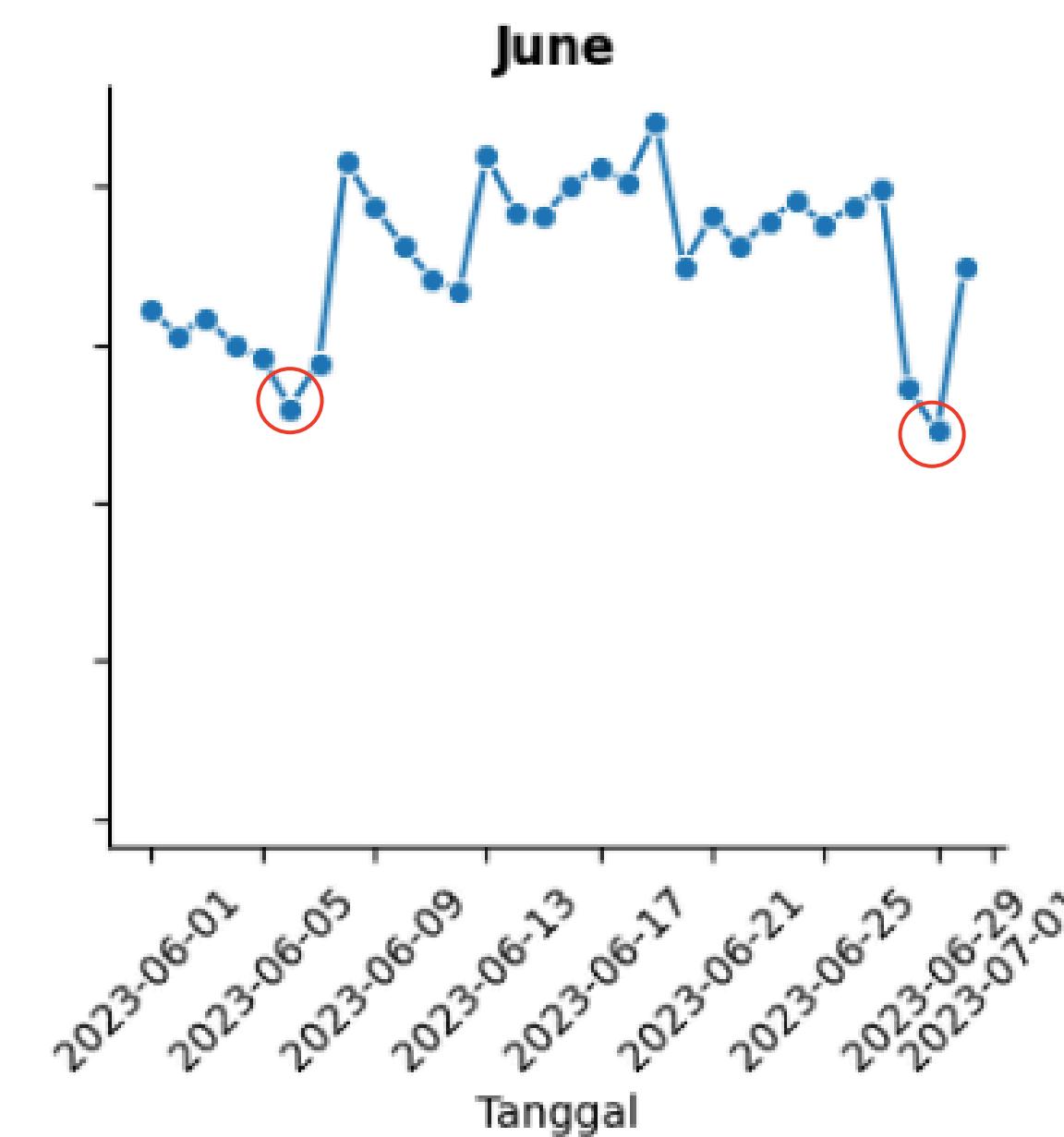
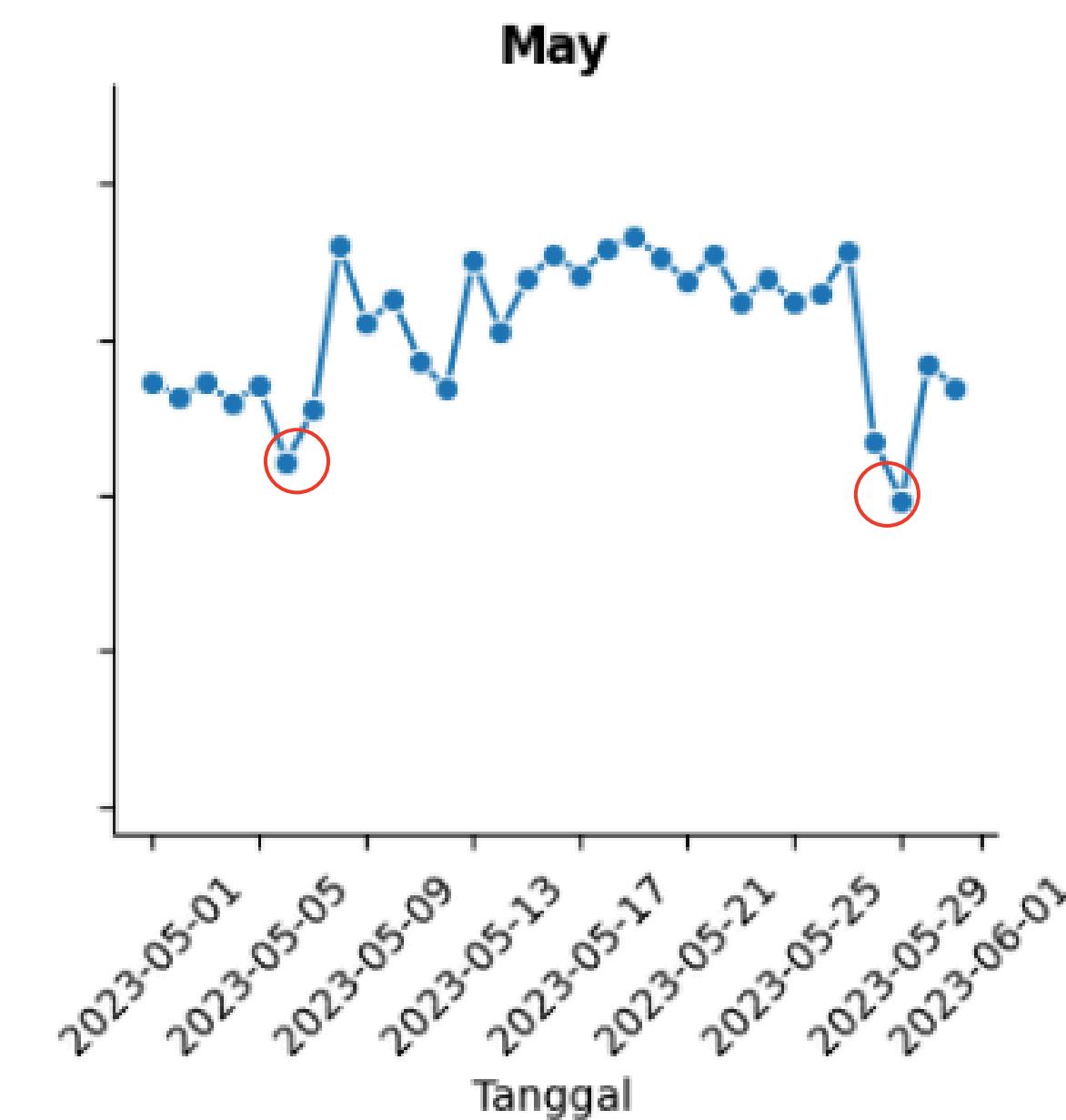
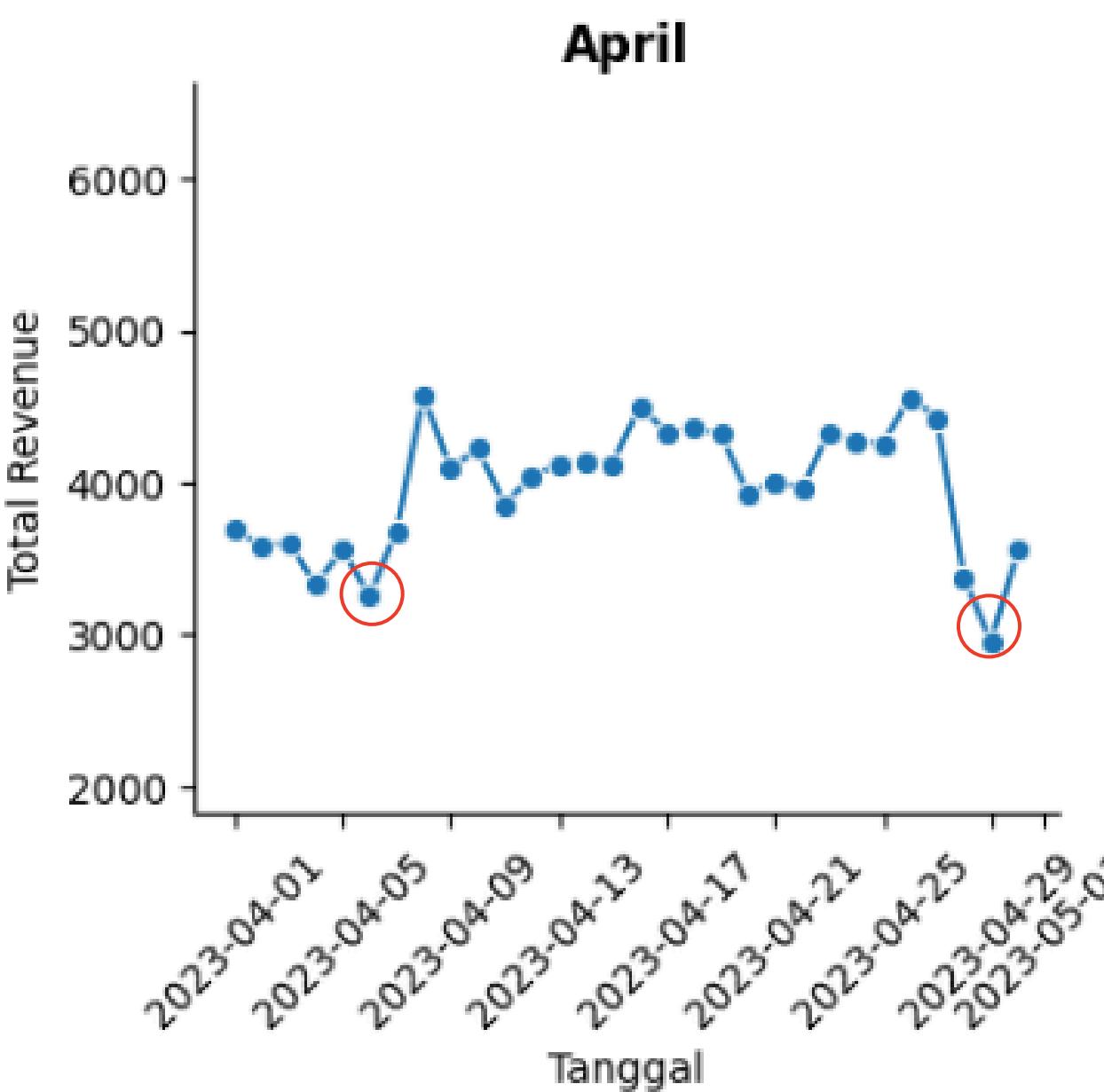


March



DAY SALES ANALYSIS

Have a Downtrend Pattern
on Specific date



ANALYSIS OF DAILY SALES PATTERNS

01

Decline at the End and Beginning of the Month: The graph reveals a consistent decline in revenue around the 25th to the 5th of each month.

02

FACTORS

- Consumers tend to reduce spending at the end of the month as they await their salary.
- Early in the month may not yet show a full recovery in consumption patterns.



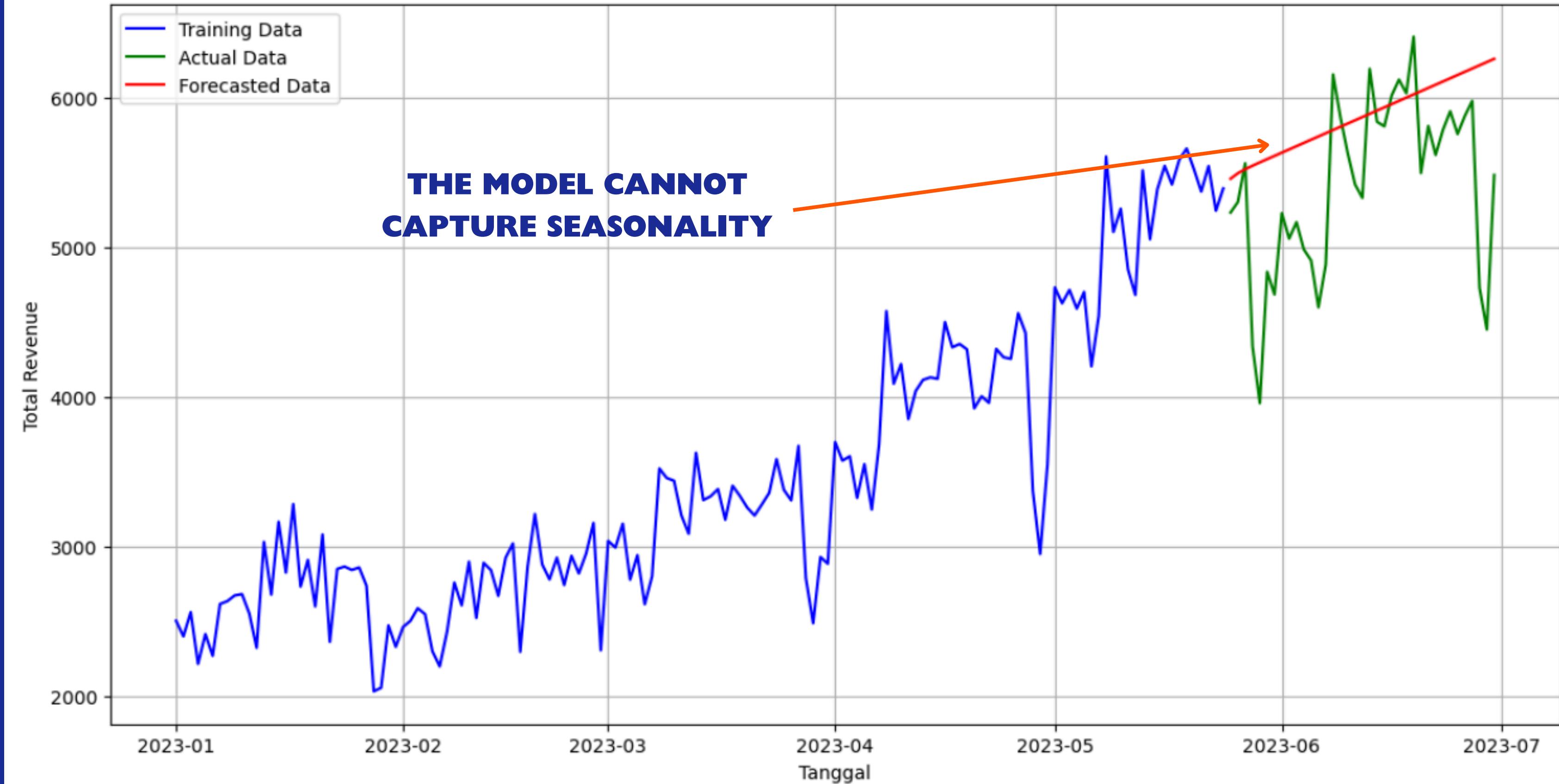
DATA FORECASTING

06

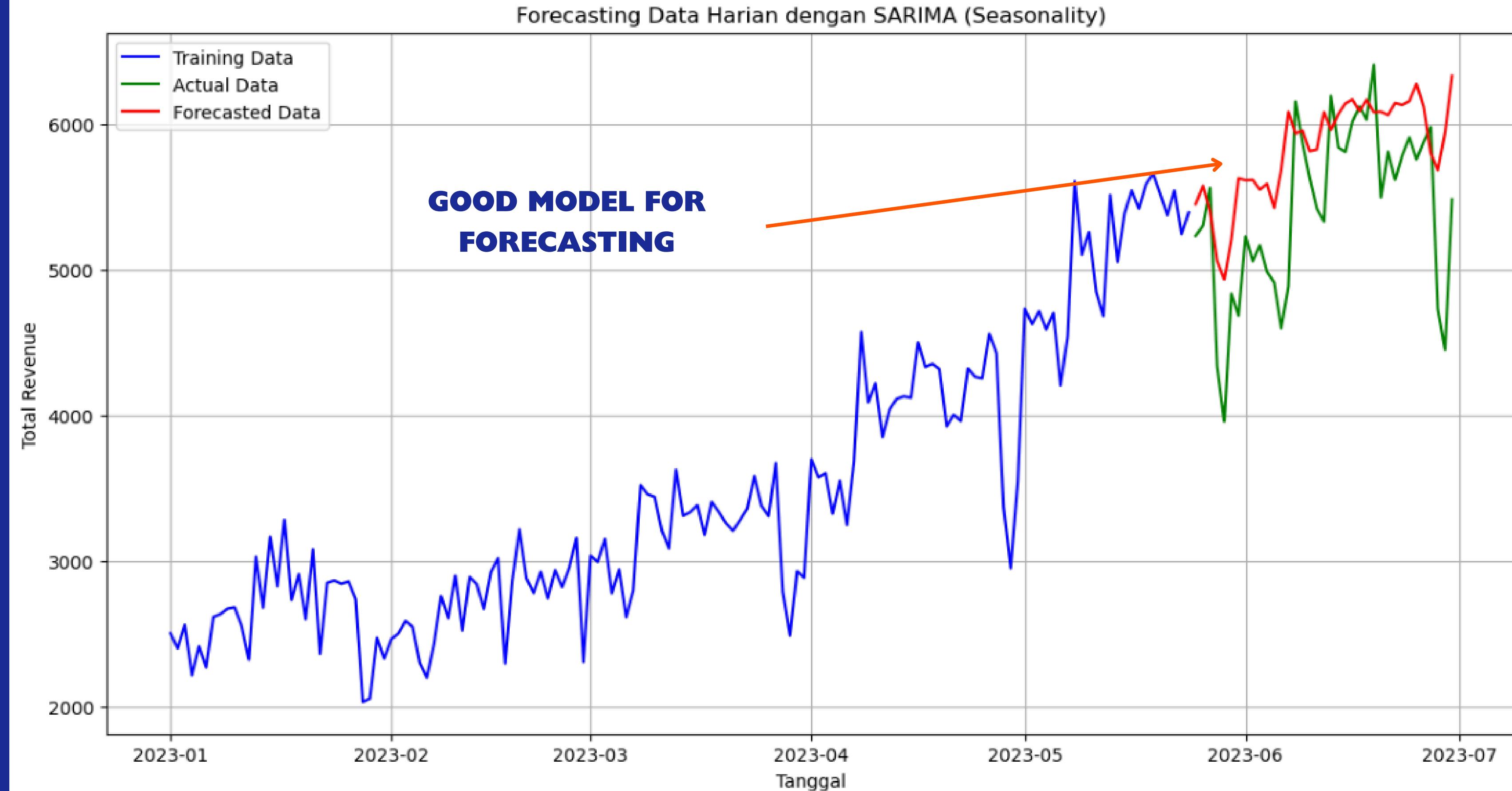
MARVEN ROASTERS - COFFEE SHOP

FORECASTING

Forecasting Data Harian dengan Auto ARIMA

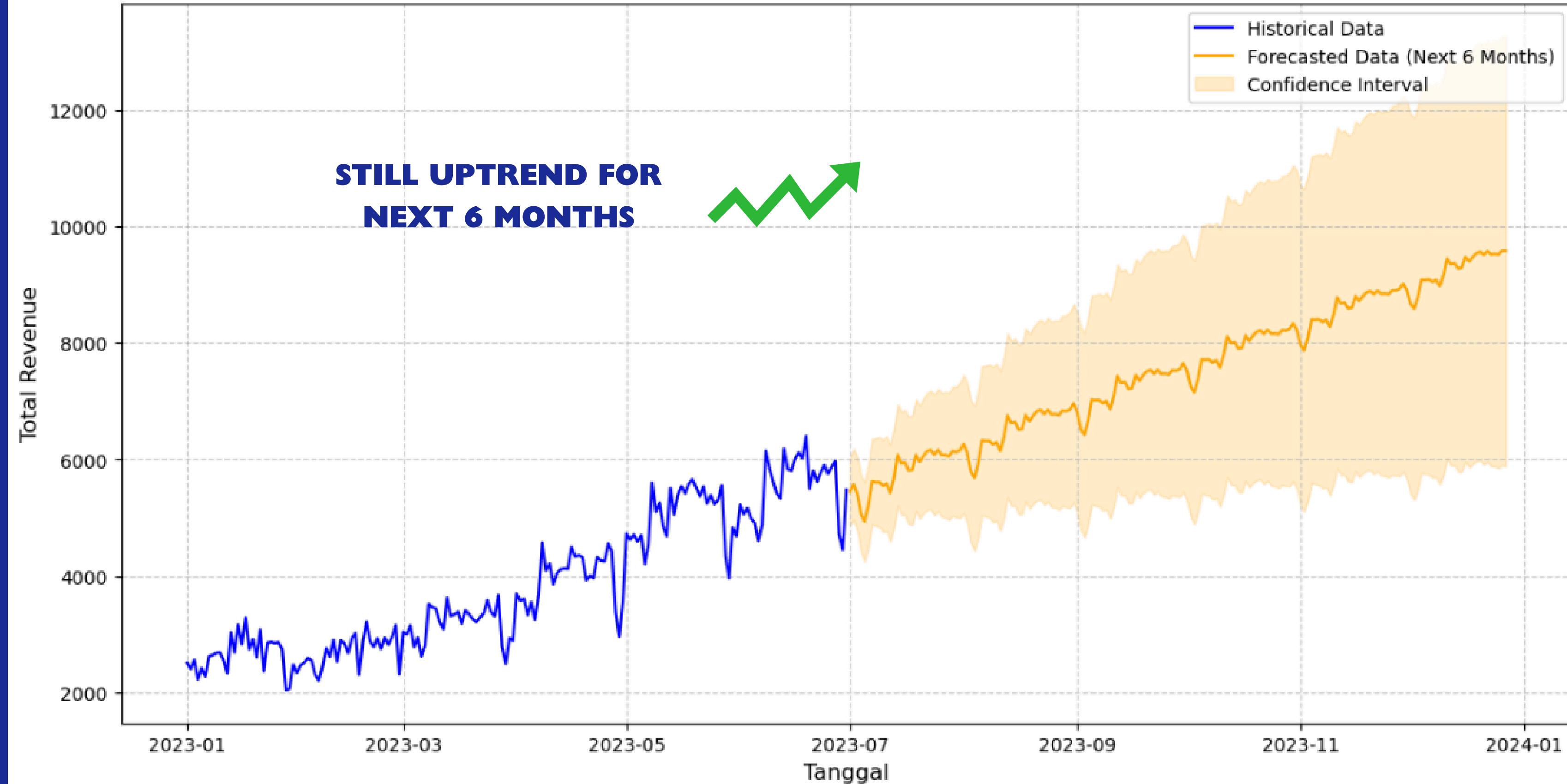


FORECASTING



FORECASTING

Forecasting Data Harian dengan SARIMA (6 Bulan ke Depan)



07



INSIGHT STRATEGY

MARVEN ROASTERS - COFFEE SHOP

MARKETING STRATEGY

JULY-AUGUST

- Focus: Cold beverages (iced coffee, iced tea).
- Strategy:
 - New Menu: "Summer Refreshers" (lemon iced tea, caramel iced coffee).
 - Promotion: Bundling packages for cold beverages, such as "Buy 2 Get 1 Free."
 - Event: "Summer Saturdays" offering free toppings for evening drinks.

SEPTEMBER-OCTOBER

- Focus: Transitional menu with spiced flavors (cinnamon, pumpkin spice).
- Strategy:
 - New Menu: "Fall Favorites" (Cinnamon Latte, Pumpkin Spice Latte).
 - Promotion: Bakery + hot coffee packages for morning customers.
 - Loyalty: Additional points for regular transactions.

NOVEMBER-DECEMBER

- Focus: Holiday season and year-end gifting.
- Strategy:
 - New Menu: Peppermint mocha, eggnog latte.
 - Promotion: Bundling packages for gifts ("Holiday Gift Box").
 - Event: "Holiday Coffee Tasting" at key locations.

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SUPPLY CHAIN STRATEGY

JULY-AUGUST

- Adjust stock levels to match daily revenue of approximately 5,000-7,000.
- Focus on raw materials for cold beverages (lemon, mint) and regular bakery items.
- Rotate stock using the First-In, First-Out (FIFO) method.

OCTOBER - DECEMBER

- Increase raw material stock by 15-20% to support daily revenue approaching 9,500
- Add seasonal ingredients such as cinnamon, peppermint, and pumpkin spice.
- Ensure fresh items like milk and bakery products are delivered using the Just-In-Time (JIT) method.

GENERAL MANAGEMENT

- Suppliers: Build long-term relationships for core ingredients and prepare backups for seasonal products.
- Stock Monitoring: Utilize a POS system to track real-time inventory needs.

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SUMMARY

In conclusion, the sales data from this coffee shop reveals a seasonality trend at the end of each month leading into the beginning of the next. Therefore, further actions are needed to respond to this trend effectively to increase the cafe's revenue. Additionally, preparations in both marketing and inventory management are essential for the next six months, as sales are predicted to steadily grow, especially towards the end of the year due to significant holidays such as Halloween and Christmas. A tailored strategy is required to capitalize on these opportunities and boost the cafe's sales revenue.

Furthermore, by strategically combining high-performing products with less popular items in different stores and at varying times throughout the day, it is expected that the overall sales performance of the coffee shop can be significantly improved.

THANK YOU

