

Cafe Sales Analysis

(Coffee Sales)

- Presented by **Soumya Das**

25th June, 2024



Links:

- [Dataset](#)
- [MySQL Queries](#)
- [Power BI Dashboard](#)
- [Sales Forecast \(1 Month\)](#)



Introduction

Project Overview:

This project analyzes coffee shop sales data to uncover trends, patterns, and insights using **MySQL** and **Power BI**.

Objectives:

Analyze sales performance across various dimensions including total sales, orders, and quantities of products sold, segmented by different store locations, months, days of the week, and serving sizes. Identify top 10 selling products and track sales trends over the specified period. Pinpoint key drivers influencing revenue growth and provide a sales forecast for the next 30 days from the latest transaction date.

Outcome:

The owner (or company) of the coffee cafe/restaurant chain will be able to:

- Understand sales across different locations, time periods, and product categories.
 - Identify **top-selling** products and **optimize inventory management**.
 - Discover factors influencing revenue, such as **peak hours** and **days of the week**.
 - Predict sales for the **next 30 days** based on historical data.
 - Find areas for improvement to enhance **profitability**.
 - Make informed decisions on **growth** and **marketing strategies**.
- 

About the data

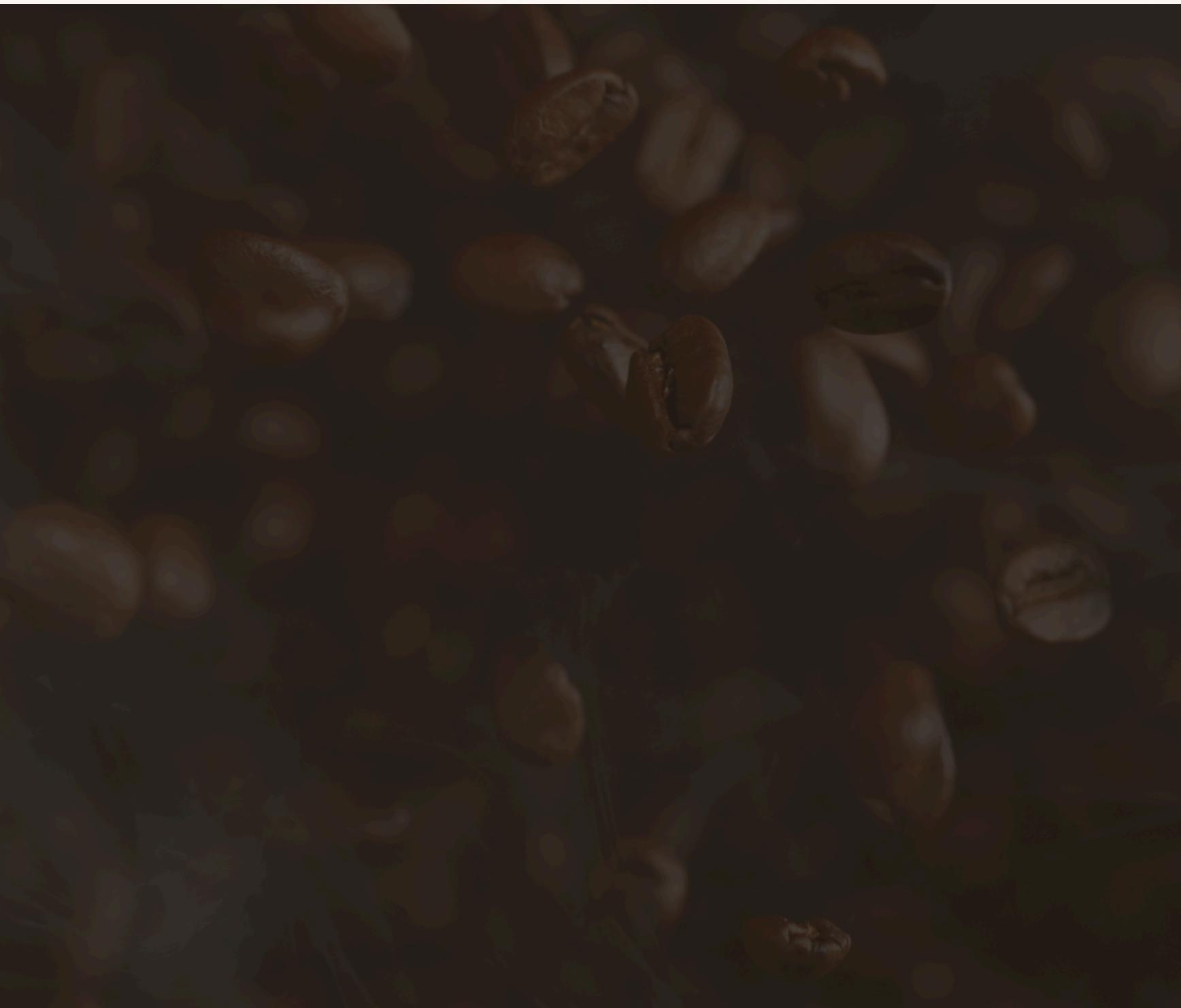
The imported data contains daily sales record of **149,116** transactions for **3** coffee sales chain stores (cafés/restaurants) owned by the same proprietor.

The data covers the period from **January 2023** to **June 2023**.

The data was provided in **.xlsx** format, but was converted into **.csv** for cleaning and analysis on **MySQL** and was visualized over **POWER BI** dashboard to **communicate** insights and facilitate **decision-making**.

MySQL File: [GitHub Link](#)

Power BI File: [GitHub Link](#)



Data Cleaning and Preparation (MySQL Queries)

Correcting data-types

```
-- updating transaction date (imported as text)

UPDATE coffee_sales
SET transaction_date = STR_TO_DATE(transaction_date, '%d-%m-%Y');

ALTER TABLE coffee_sales
MODIFY COLUMN transaction_date DATE;

-- updating transaction time (imported as text)

UPDATE coffee_sales
SET transaction_time = STR_TO_DATE(transaction_time, '%H:%i:%s');

ALTER TABLE coffee_sales
MODIFY COLUMN transaction_time TIME;
```

Checking duplicates

```
-- checking for duplicates

WITH CTE AS
(SELECT transaction_id, ROW_NUMBER() OVER (PARTITION BY transaction_id, transaction_date, transaction_time,
transaction_qty, store_id, store_location, product_id, unit_price,
product_category, product_type, product_detail) AS rownumber
FROM coffee_sales)
SELECT transaction_id, rownumber
FROM CTE
ORDER BY rownumber DESC;

-- no duplicates found
```

Cleaning transaction_id column

```
-- cleaning transaction id name

ALTER TABLE coffee_sales
RENAME COLUMN transaction_id TO transaction_id;
```

Calculated column: serving_size

```
-- adding a serving_size column for future analysis
-- based on the column product_detail
-- creating column

ALTER TABLE coffee_sales ADD serving_size VARCHAR(100);

-- inserting values

UPDATE coffee_sales
SET serving_size =
CASE
    WHEN RIGHT(RTRIM(product_detail), 2) = 'Lg' THEN 'Large'
    WHEN RIGHT(RTRIM(product_detail), 2) = 'Rg' THEN 'Regular'
    WHEN RIGHT(RTRIM(product_detail), 2) = 'Sm' THEN 'Small'
    ELSE 'Not Specified'
END;
```

Data Cleaning and Preparation (Power BI DAX Queries)

Calculated tables & columns:

Table: transaction calendar

Column: mmm yyyy

Column: "1" = Monday

Column: sales (unit pr.*qty)

```
calendar = CALENDAR(MIN(coffee_sales[transaction_date]),MAX(coffee_sales[transaction_date]))  
  
month year = FORMAT('calendar'[date_time],"mmm yyyy")  
  
week day number = WEEKDAY('calendar'[date_time], 2)  
  
sales = coffee_sales[transaction_qty] * coffee_sales[unit_price]
```

Calculated measures:

Current Month Sales

```
cm sales = VAR selected_month = SELECTEDVALUE('calendar'[month])  
           RETURN  
TOTALMTD(CALCULATE([Total Sales],'calendar'[month] = selected_month),'calendar'[date_time])
```

Month-on-month growth

```
mom sales =  
    IF(SELECTEDVALUE('calendar'[month number]) = 1, "No values for previous month",  
        VAR mom_growth = [cm sales] - [pm sales]  
        VAR mom_per = mom_growth / [pm sales]  
        VAR _trend = IF(mom_growth >= 0, "▲", "▼")  
        VAR _sign = IF(mom_growth > 0, "+", "")  
        RETURN  
        _trend & " " & _sign & FORMAT(mom_per,"#0.0%") & " | " & _sign & FORMAT(mom_growth/1000, "0.0K") & " vs LM")
```

Key Performance Indicators

1. Total sales for each respective month:

month	total_monthly_sales
January	81677.74
February	76145.19
March	98834.68
April	118941.08
May	156727.76
June	166485.88

2. Month-on-month increase/ decrease in sales and the month-on-month percentage:

month	monthly_sales	mom_sales_increase	mom_percentage_increase_sales
January	81677.74	NULL	NULL
February	76145.19	-5532.55	-6.77%
March	98834.68	22689.49	29.8%
April	118941.08	20106.4	20.34%
May	156727.76	37786.68	31.77%
June	166485.88	9758.12	6.23%

3. Total no. of orders per month

month	total_monthly_orders
January	17314
February	16359
March	21229
April	25335
May	33527
June	35352

4. Month-on-month increase/ decrease in orders and the month-on-month percentage:

month	total_monthly_orders	mom_orders_increase	mom_percentage_increase_order_numbers
January	17314	NULL	NULL
February	16359	-955	-5.52%
March	21229	4870	29.77%
April	25335	4106	19.34%
May	33527	8192	32.33%
June	35352	1825	5.44%

5. Total no. of order quantities / month

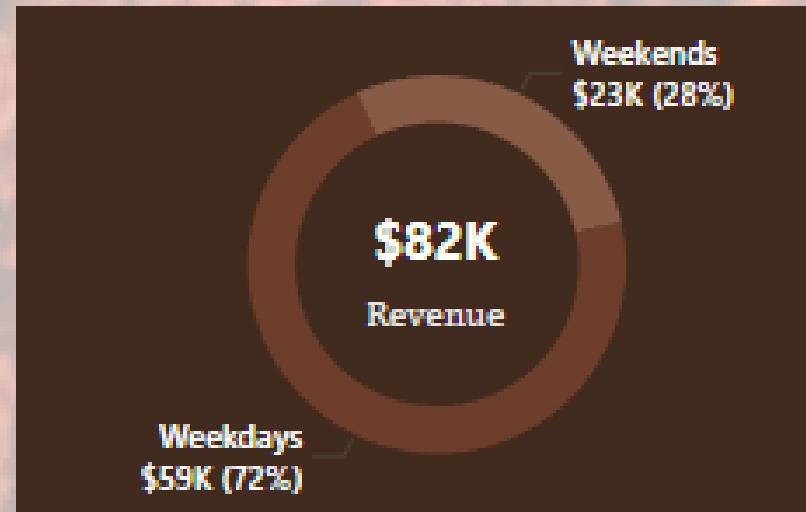
month	total_monthly_order_qty
January	24870
February	23550
March	30406
April	36469
May	48233
June	50942

6. Month-on-month increase/ decrease in order quantity and the m-o-m percentage:

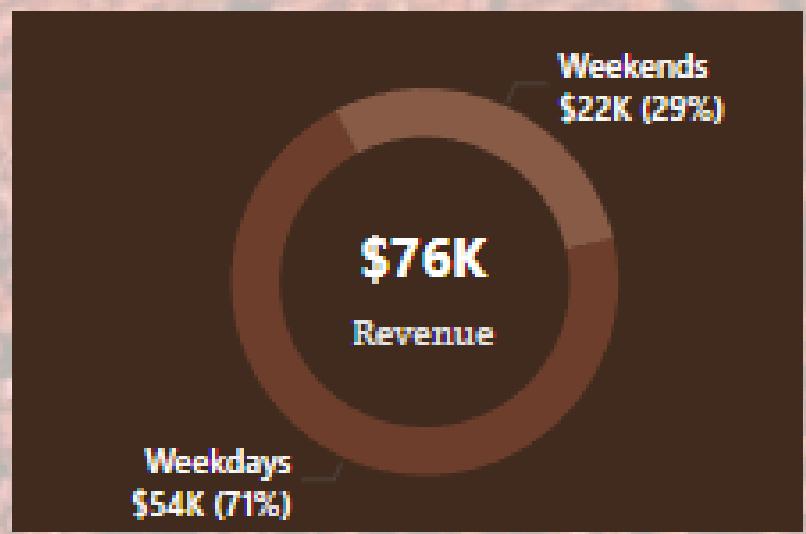
month	total_monthly_order_qty	mom_qty_increase	mom_percentage_increase_qty
January	24870	NULL	NULL
February	23550	-1320	-5.31%
March	30406	6856	29.11%
April	36469	6063	19.94%
May	48233	11764	32.26%
June	50942	2709	5.62%

Sales Overview (Jan to Mar, 2023)

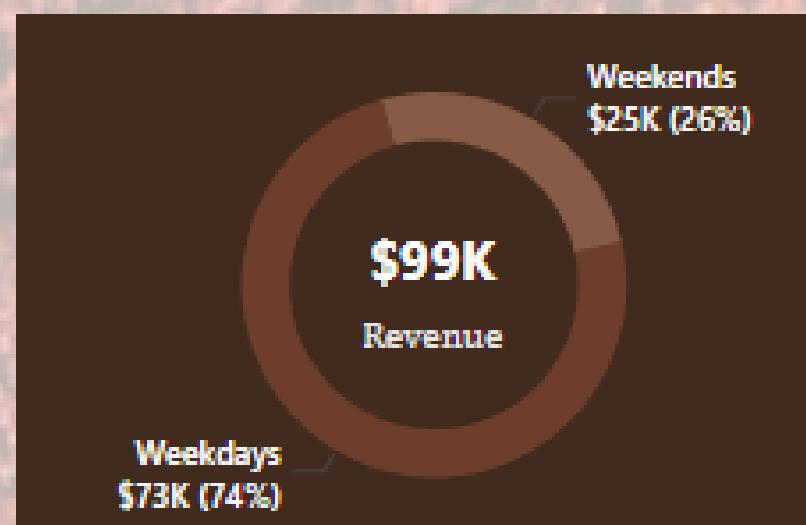
January, 2023



February, 2023

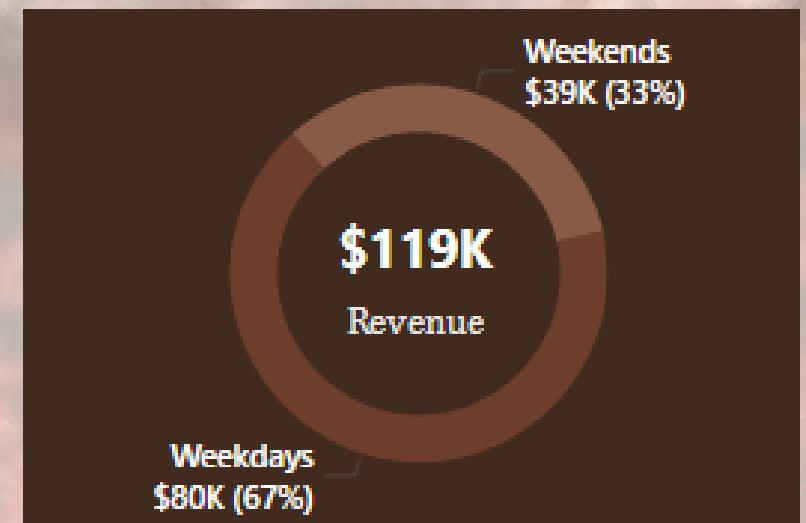


March, 2023

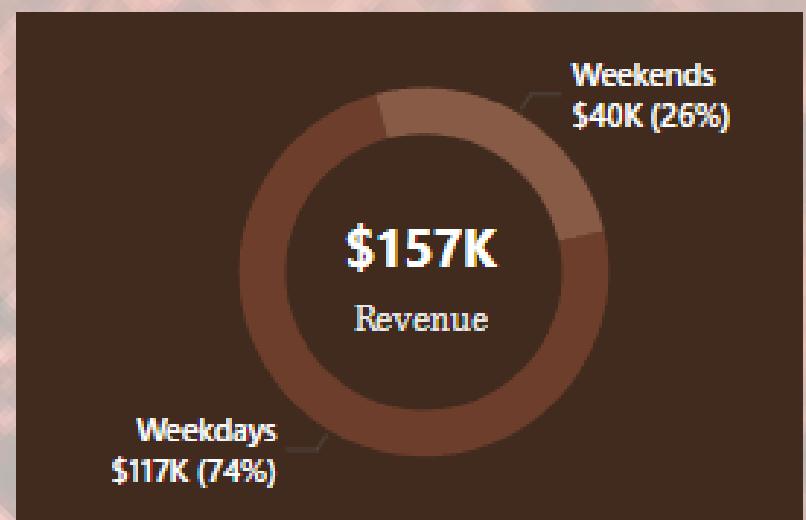


Sales Overview (Apr to Jun, 2023)

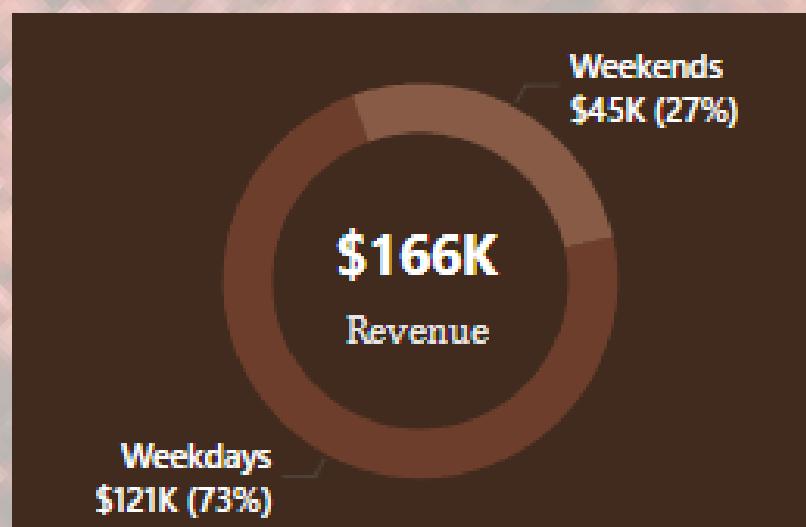
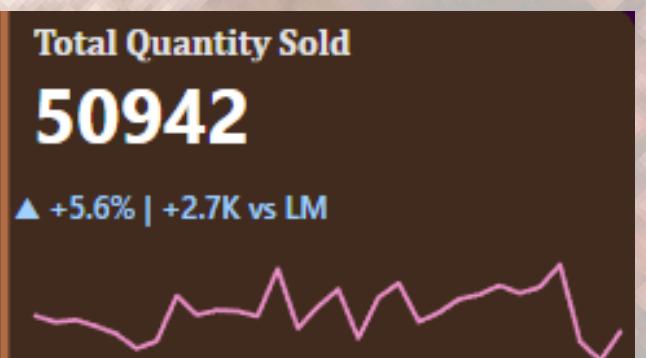
April, 2023



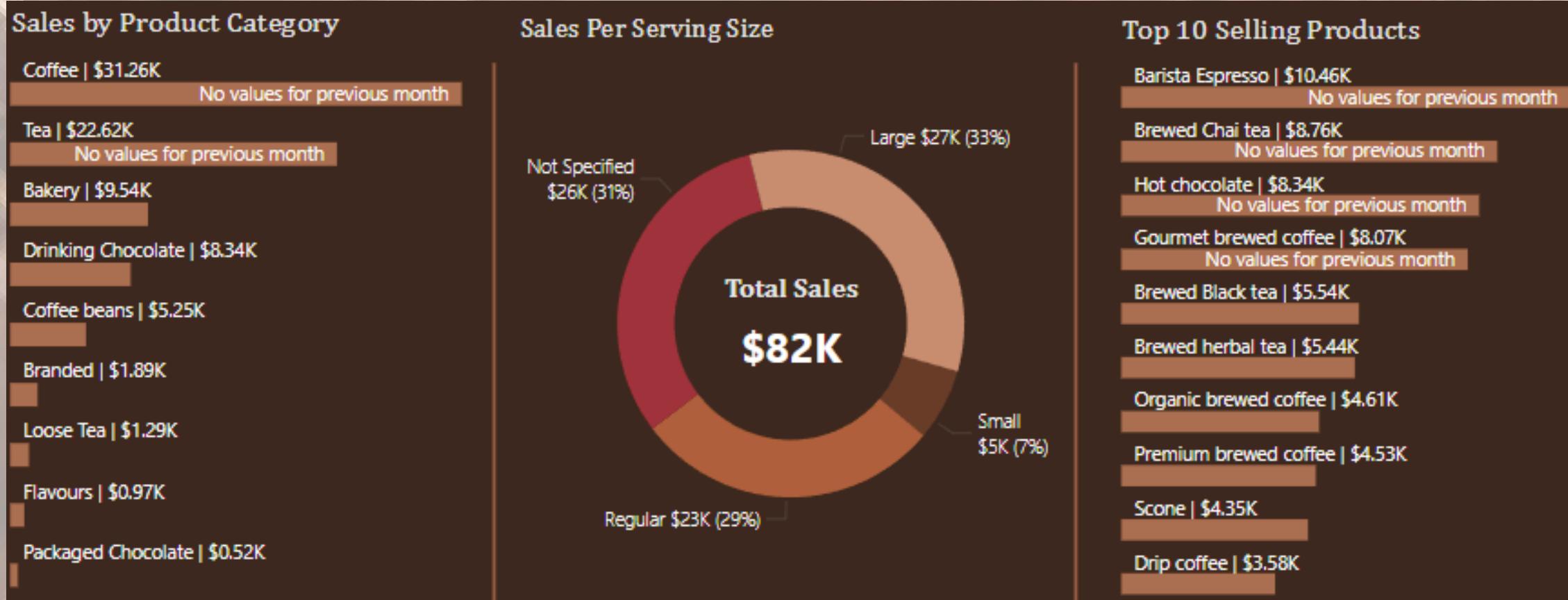
May, 2023



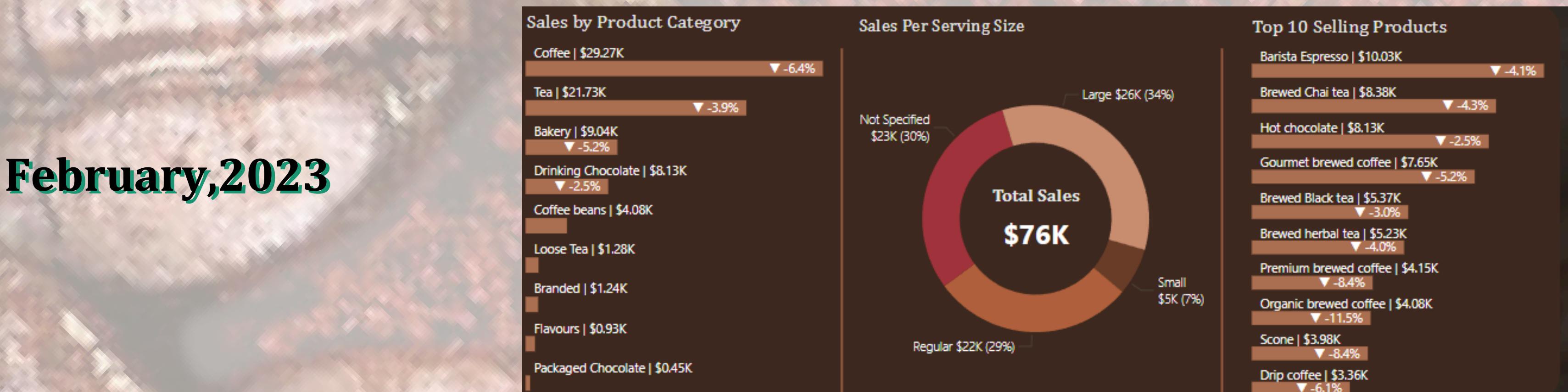
June, 2023



Sales Per Category (Jan & Feb, 2023)

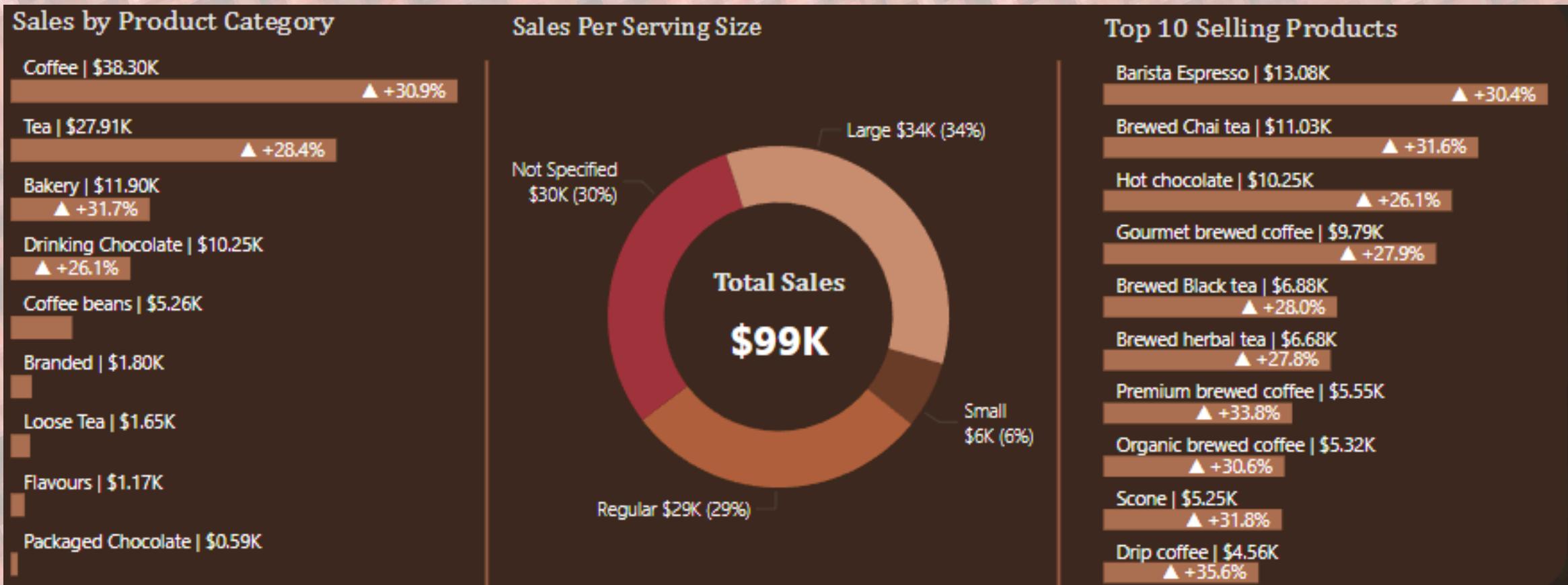


January, 2023



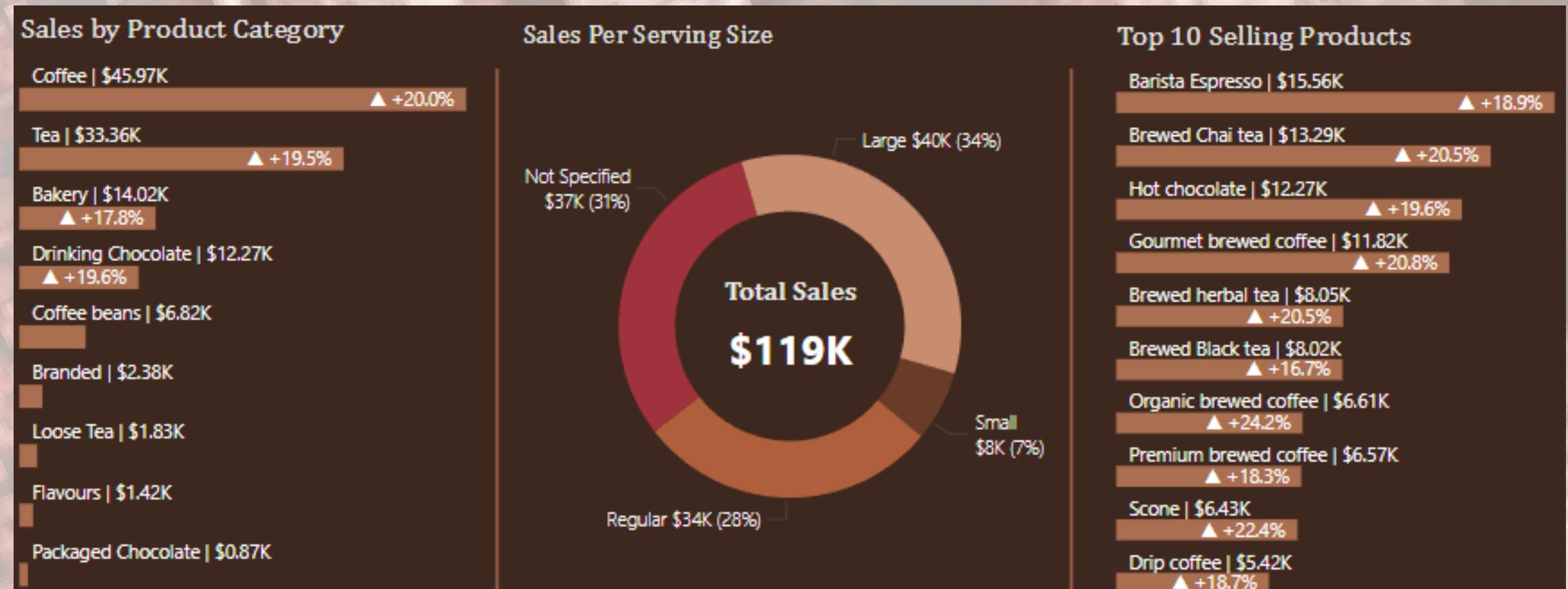
February, 2023

Sales Per Category (Mar & Apr, 2023)

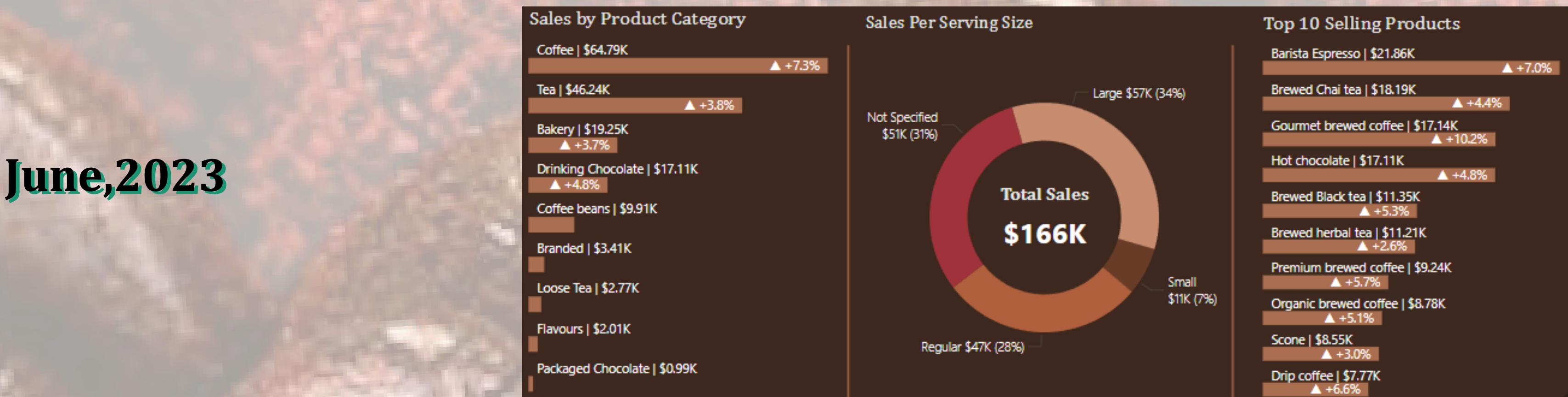
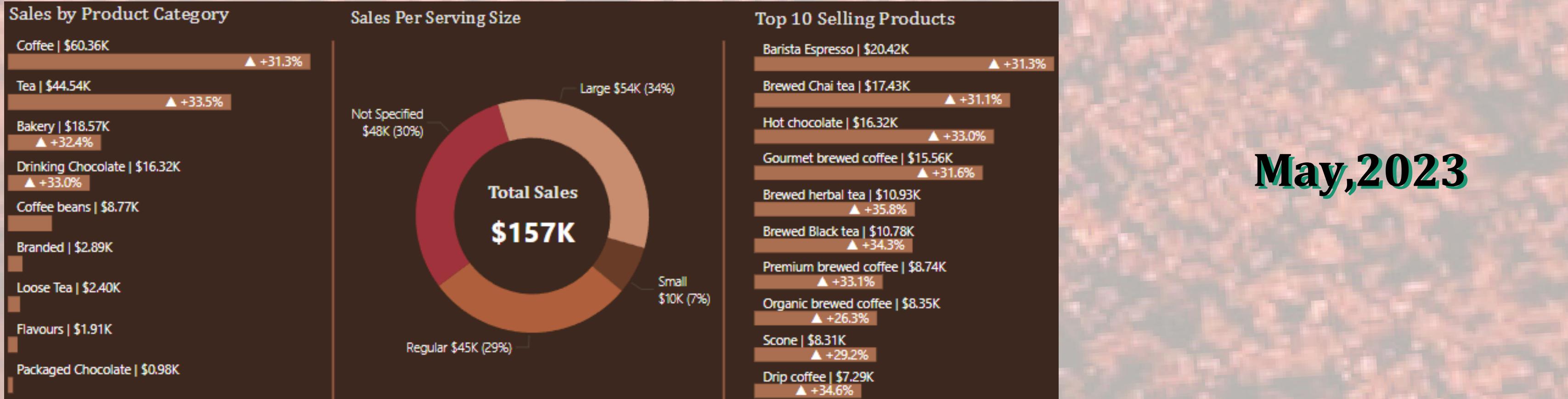


March, 2023

April, 2023



Sales Per Category (May & Jun, 2023)



Sales Per Store Location

January,2023

Hell's Kitchen | \$27.82K

No values for previous month

Astoria | \$27.31K

No values for previous month

Lower Manhattan | \$26.54K

No values for previous month

February,2023

Hell's Kitchen | \$25.72K

▼ -7.6% | -2.1K vs LM

Lower Manhattan | \$25.32K

▼ -4.6% | -1.2K vs LM

Astoria | \$25.11K

▼ -8.1% | -2.2K vs LM

March,2023

Hell's Kitchen | \$33.11K

▲ +28.7% | +7.4K vs LM

Lower Manhattan | \$32.89K

▲ +29.9% | +7.6K vs LM

Astoria | \$32.84K

▲ +30.8% | +7.7K vs LM

April,2023

Hell's Kitchen | \$40.30K

▲ +21.7% | +7.2K vs LM

Astoria | \$39.48K

▲ +20.2% | +6.6K vs LM

Lower Manhattan | \$39.16K

▲ +19.1% | +6.3K vs LM

May,2023

Hell's Kitchen | \$52.60K

▲ +30.5% | +12.3K vs LM

Astoria | \$52.43K

▲ +32.8% | +13.1K vs LM

Lower Manhattan | \$51.70K

▲ +32.0% | +12.5K vs LM

June,2023

Hell's Kitchen | \$56.96K

▲ +8.3% | +4.4K vs LM

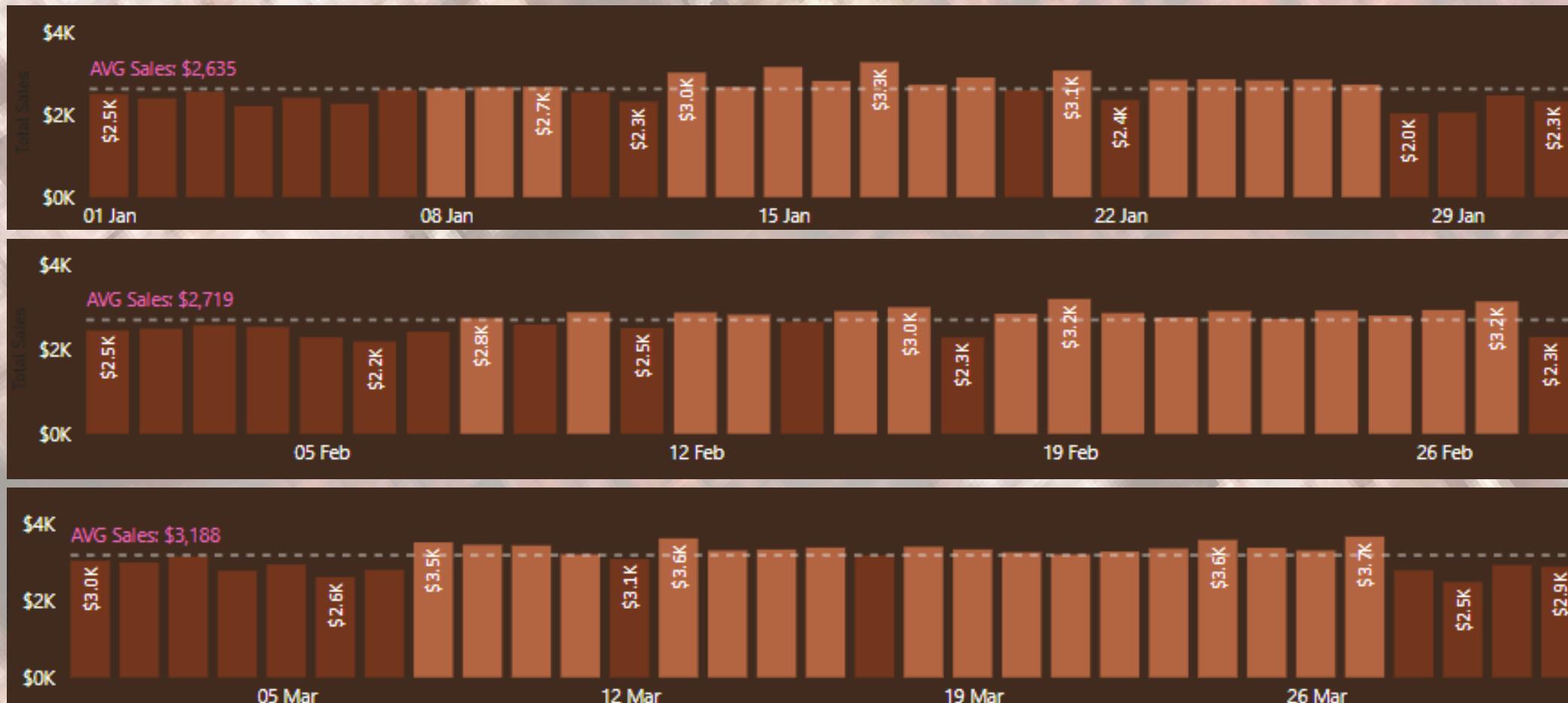
Astoria | \$55.08K

▲ +5.1% | +2.7K vs LM

Lower Manhattan | \$54.45K

▲ +5.3% | +2.7K vs LM

Sales Trend (Jan to Mar, 2023)

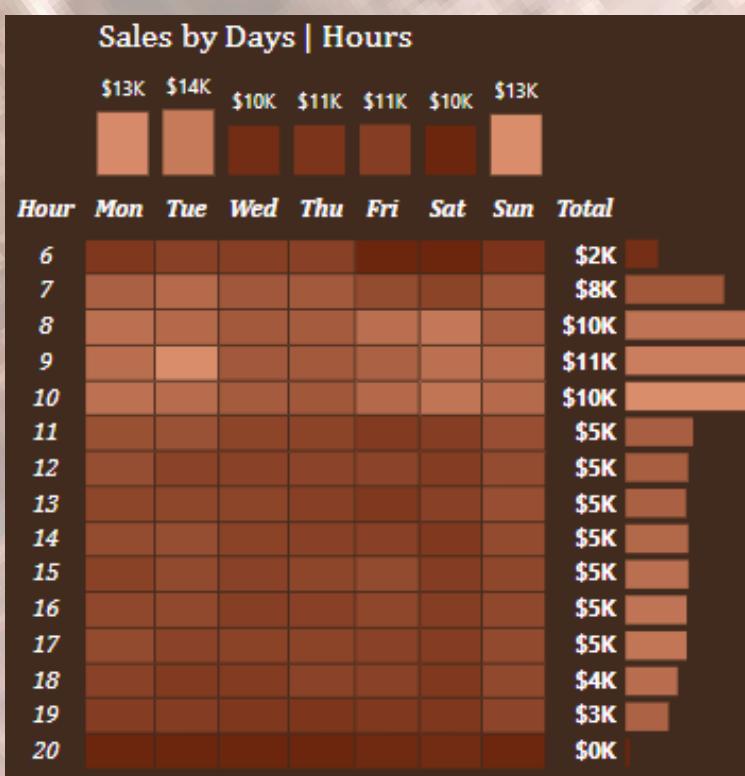


January,2023

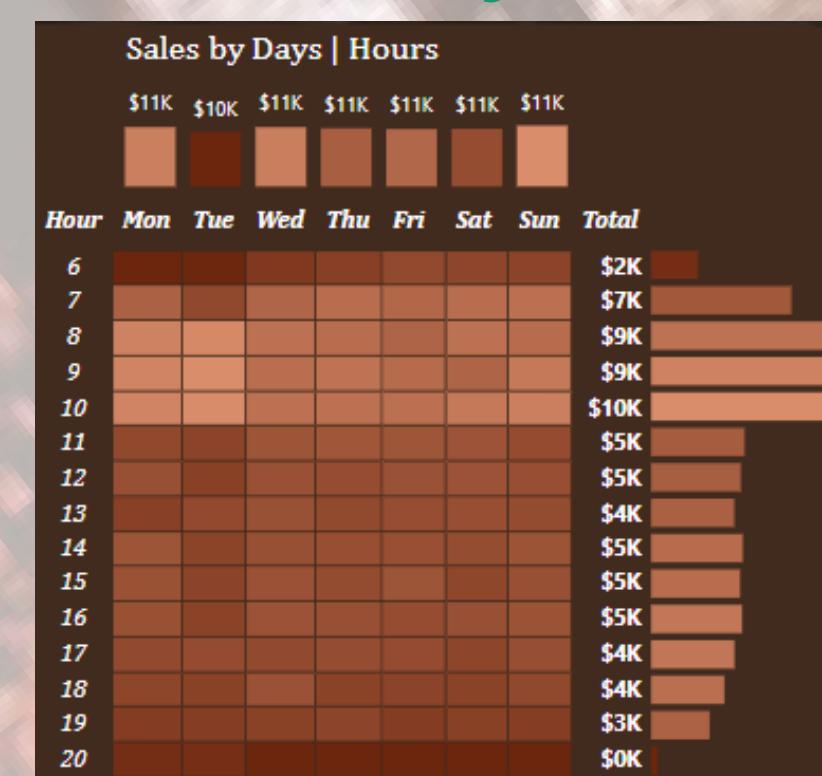
February, 2023

March,2023

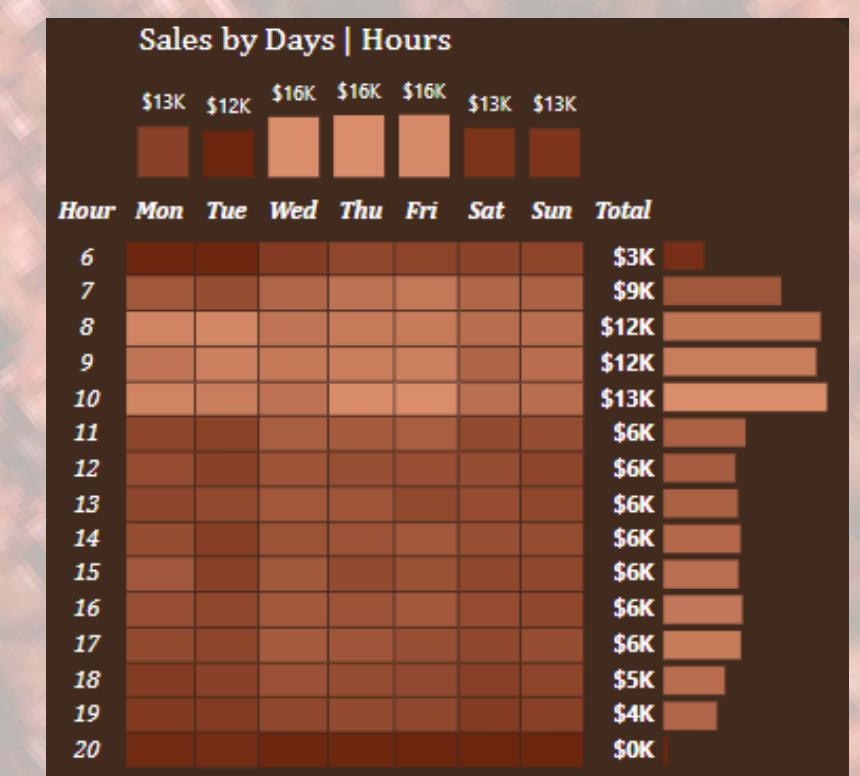
January, 2023



February, 2023



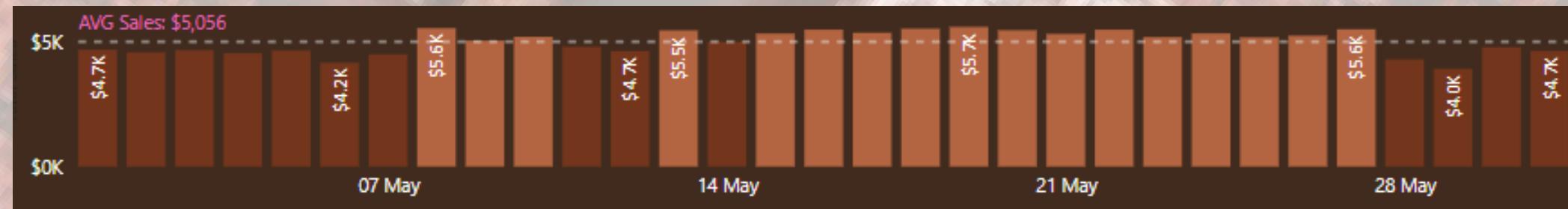
March,2023



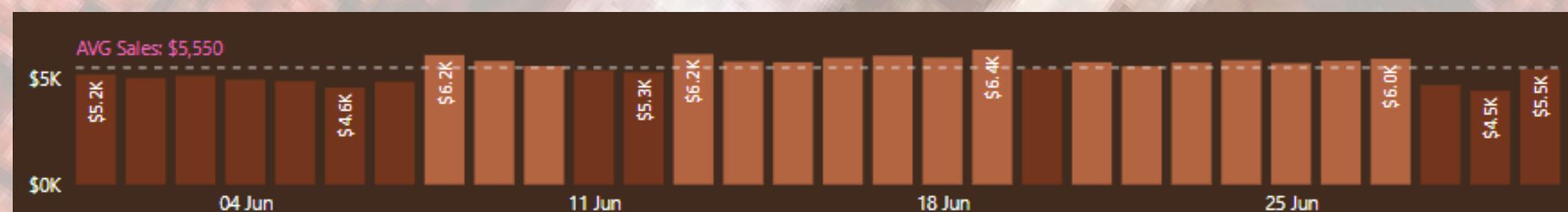
Sales Trend(Apr to Jun, 2023)



April,2023

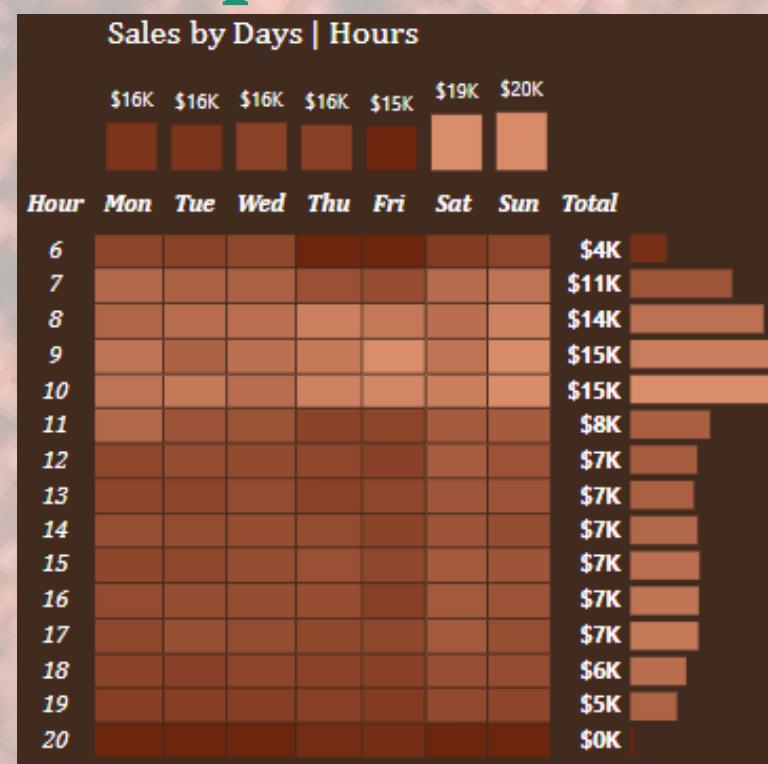


May,2023

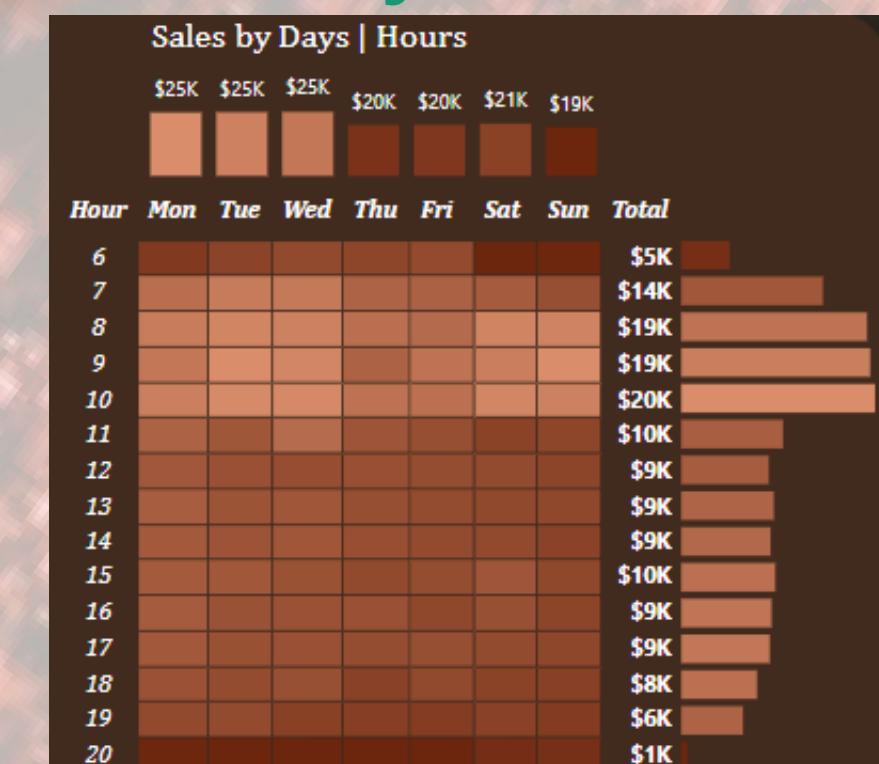


June,2023

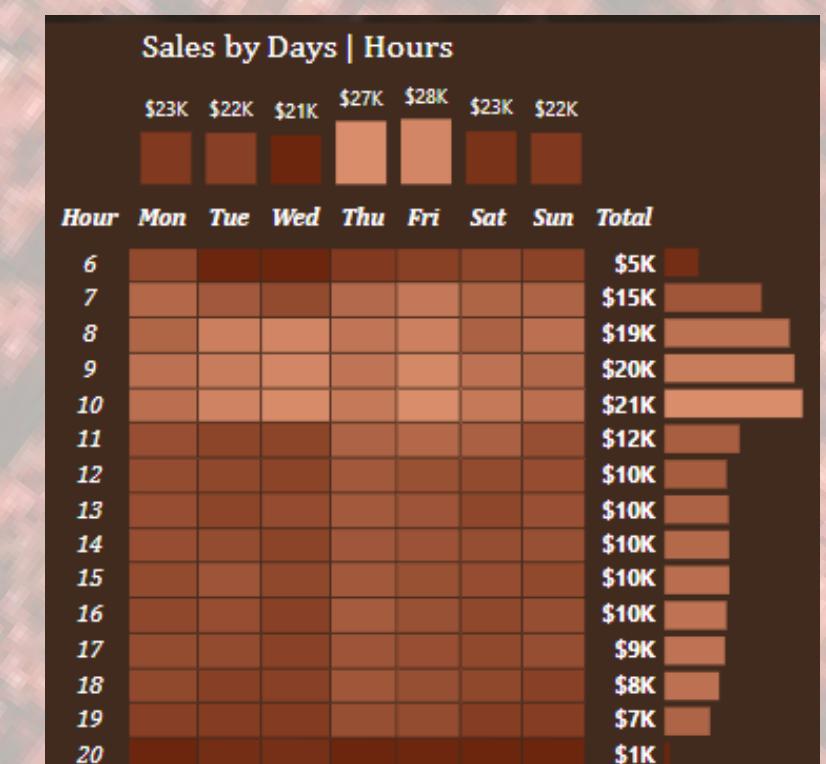
April,2023



May,2023

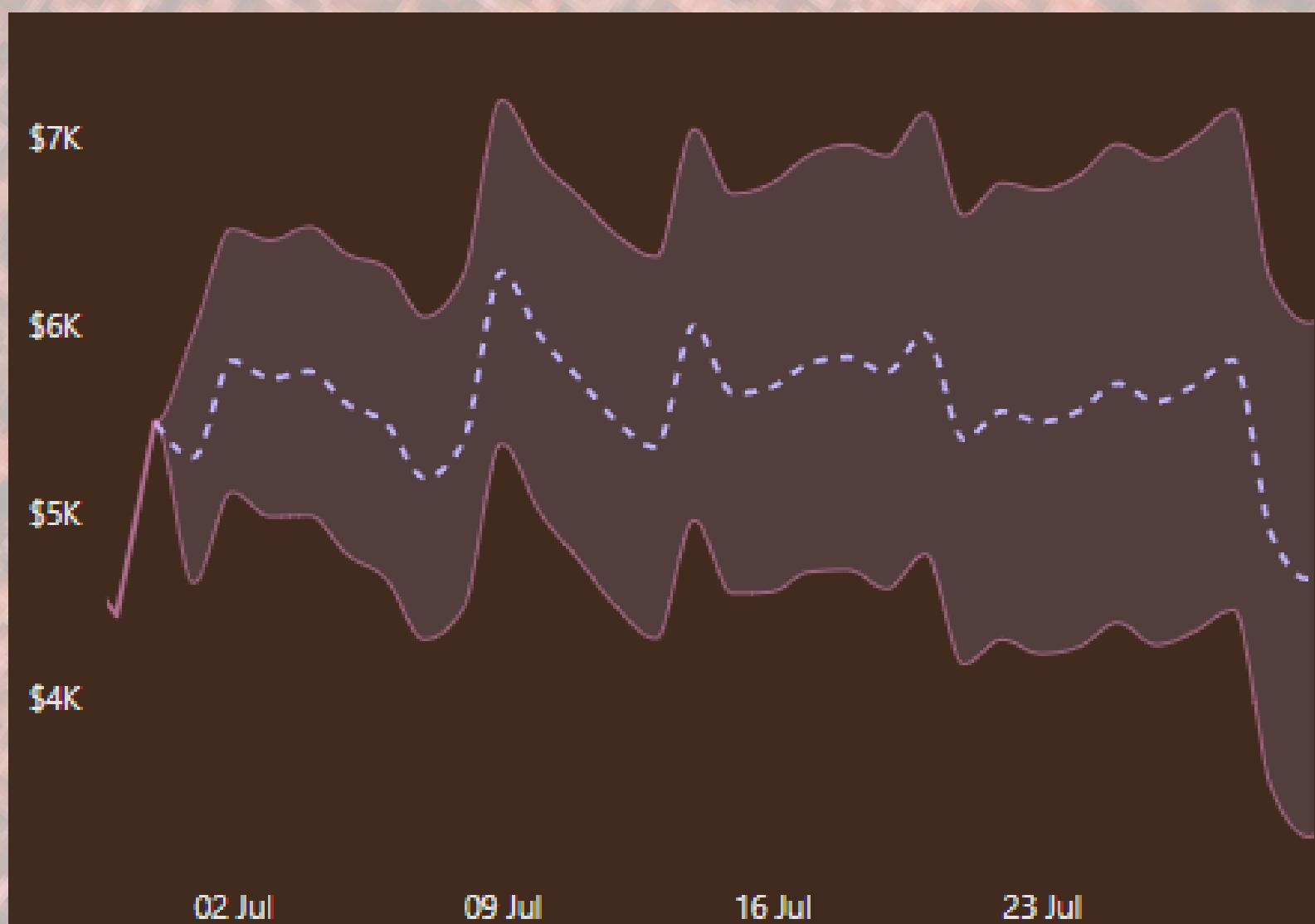
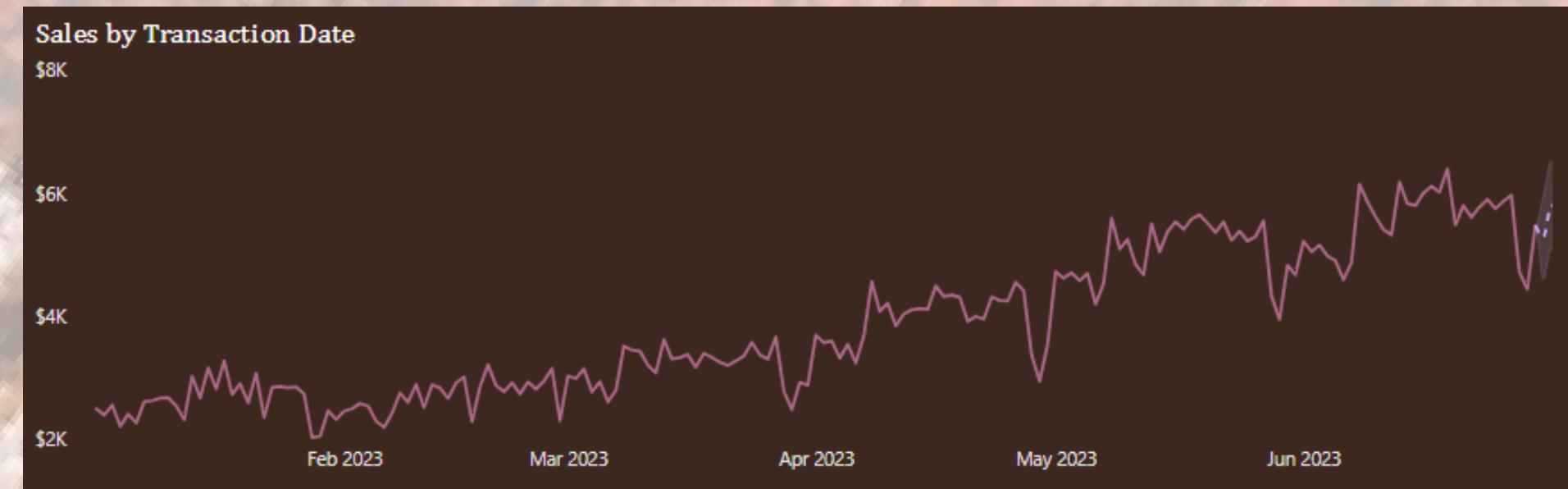


June,2023



Sales Forecast - 1 Month [95% C.I.]

Date	Forecast Value	High Bound - C.I.	Low Bound - C.I.
29 June 2023			
30 June 2023	\$5,481.32	\$5,481.32	\$5,481.32
1 July 2023	\$5,291.34	\$5,958.27	\$4,624.41
2 July 2023	\$5,808.35	\$6,511.36	\$5,105.35
3 July 2023	\$5,714.37	\$6,451.69	\$4,977.06
4 July 2023	\$5,752.45	\$6,522.55	\$4,982.35
5 July 2023	\$5,574.30	\$6,375.85	\$4,772.75
6 July 2023	\$5,475.32	\$6,307.12	\$4,643.51
7 July 2023	\$5,182.47	\$6,043.47	\$4,321.46
8 July 2023	\$5,374.74	\$6,263.98	\$4,485.50
9 July 2023	\$6,280.70	\$7,197.31	\$5,364.10
10 July 2023	\$5,938.97	\$6,882.15	\$4,995.79
11 July 2023	\$5,715.18	\$6,684.21	\$4,746.16
12 July 2023	\$5,482.78	\$6,476.98	\$4,488.58
13 July 2023	\$5,346.20	\$6,364.95	\$4,327.45
14 July 2023	\$5,998.45	\$7,041.17	\$4,955.72
15 July 2023	\$5,633.28	\$6,699.44	\$4,567.12
16 July 2023	\$5,664.10	\$6,753.19	\$4,575.01
17 July 2023	\$5,794.88	\$6,906.43	\$4,683.34
18 July 2023	\$5,827.32	\$6,960.88	\$4,693.76
19 July 2023	\$5,746.59	\$6,901.74	\$4,591.43
20 July 2023	\$5,953.20	\$7,129.55	\$4,776.85
21 July 2023	\$5,388.90	\$6,586.07	\$4,191.72
22 July 2023	\$5,538.78	\$6,756.42	\$4,321.14
23 July 2023	\$5,482.13	\$6,719.90	\$4,244.37
24 July 2023	\$5,540.93	\$6,798.50	\$4,283.36
25 July 2023	\$5,687.76	\$6,964.84	\$4,410.69
26 July 2023	\$5,588.28	\$6,884.55	\$4,292.00
27 July 2023	\$5,679.70	\$6,994.91	\$4,364.50
28 July 2023	\$5,812.83	\$7,146.68	\$4,478.97
29 July 2023	\$4,874.87	\$6,227.13	\$3,522.61
30 July 2023	\$4,638.92	\$6,009.33	\$3,268.52
31 July 2023	\$5,411.96	\$6,800.29	\$4,023.64



Key Findings



1. Total Sales:

- January to June 2023: \$698.81K
- Hell's Kitchen: \$236.51K
- Astoria: \$232.24K
- Lower Manhattan: \$230.06K

Hell's Kitchen	236.51K
Astoria	232.24K
Lower Manhattan	230.06K

2. Top Products:

- Barista Espresso: Best-selling coffee (regular size)
- Brewed Chai Tea: Most preferred product (17,183 orders)

product_type	total_orders	top_selling_size
Brewed Chai tea	17183	Regular
Gourmet brewed coffee	16912	Small
Barista Espresso	16403	Regular
Hot chocolate	11468	Regular
Brewed Black tea	11350	Regular
Brewed herbal tea	11245	Regular
Scone	10173	Not Specified
Organic brewed coffee	8489	Small
Drip coffee	8477	Small
Premium brewed coffee	8135	Small

3. Customer Insights:

- Peak Days: Monday, Tuesday, Wednesday (office goers)
- Q2 Sales Growth: Significant increase, likely due to viral marketing or celebrity endorsements
- Projected Sales: \$5587/day in July (95% C.I.)

day_of_week	total_sales
Monday	25.22K
Tuesday	25.35K
Wednesday	25.46K
Thursday	20.25K
Friday	20.34K
Saturday	20.8K
Sunday	19.3K

Top Recommendations

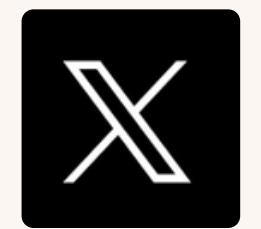
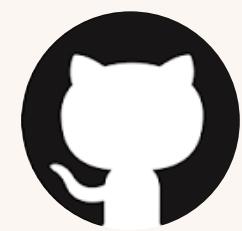
1. Implement "Office Goer Specials" to **maximize sales** on peak days, and introduce loyalty programs and pre-order options to encourage repeat business.
2. Expand the beverage menu with more **coffee variations** and **seasonal flavors**, and offer premium beverage options to attract diverse customer preferences.
3. Increase **inventory levels** for top-selling products and maintain high-quality standards through consistent staff training.
4. Enhance marketing efforts with targeted social media and influencer campaigns, and **actively engage customers** to encourage positive reviews.
5. Diversify the menu by introducing new items based on customer feedback, including healthy and vegan options, and offer **limited-time and seasonal specials** to drive repeat visits.



Visit my website at:

www.sho-das.github.io

Checkout my works on:



Thank you