



THE UNIVERSITY OF  
**CHICAGO**

**MS-APPLIED DATA SCIENCE**

# Analyzing the Viability of the All Day Breakfast Menu

Presented to: **MCOPCO**

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# Agenda

## 01 Problem Statement & Overview

Declining traffic, challenges with "All Day Breakfast," and impact on profitability and operations.

## 02 Exploratory Data Analysis (EDA)

Insights into data trends, regional differences, and patterns in customer behavior.

## 03 Data Assessment

Evaluation of key variables and their relevance to solving the business problem.

## 04 Data Concerns

Data quality issues that may affect the analysis.

## 05 Client Questions

Clarifications and requests for additional data or operational details.

## 06 Projected Timeline

Next steps, milestones, and deadlines for delivering actionable insights.

# 01 Problem Statement & Overview

Declining traffic, challenges with "All Day Breakfast," and impact on profitability and operations.

# Business Problem

McDonald's restaurants in Western and Northern Michigan have observed a 5% YoY decline in customer traffic in the past 3 years. We want to understand whether the All Day Breakfast initiative, launched in October 2015, has been effective in improving overall profitability, revenue, and operational efficiency.

## Corporate level

Reverse this declining trend by increasing YoY growth by 5%

## Owner operator level

Overall profitability and operational efficiency.

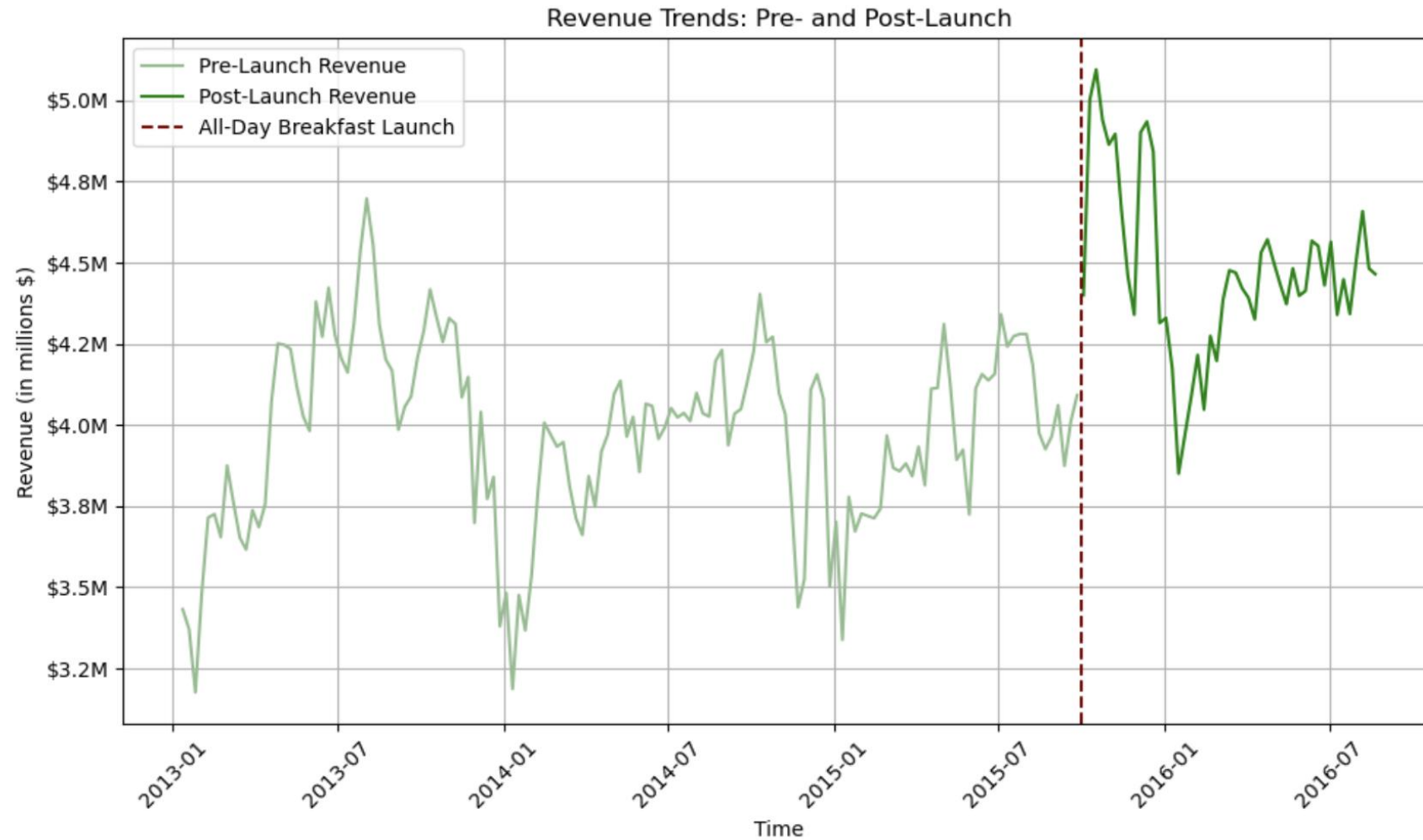


**Key question:** Did the All-Day Breakfast promotion contribute to increased profitability beyond the initial 3 months? If so, how can its execution be best optimized across restaurants in Western and Northern Michigan?

## 02 Exploratory Data Analysis (EDA)

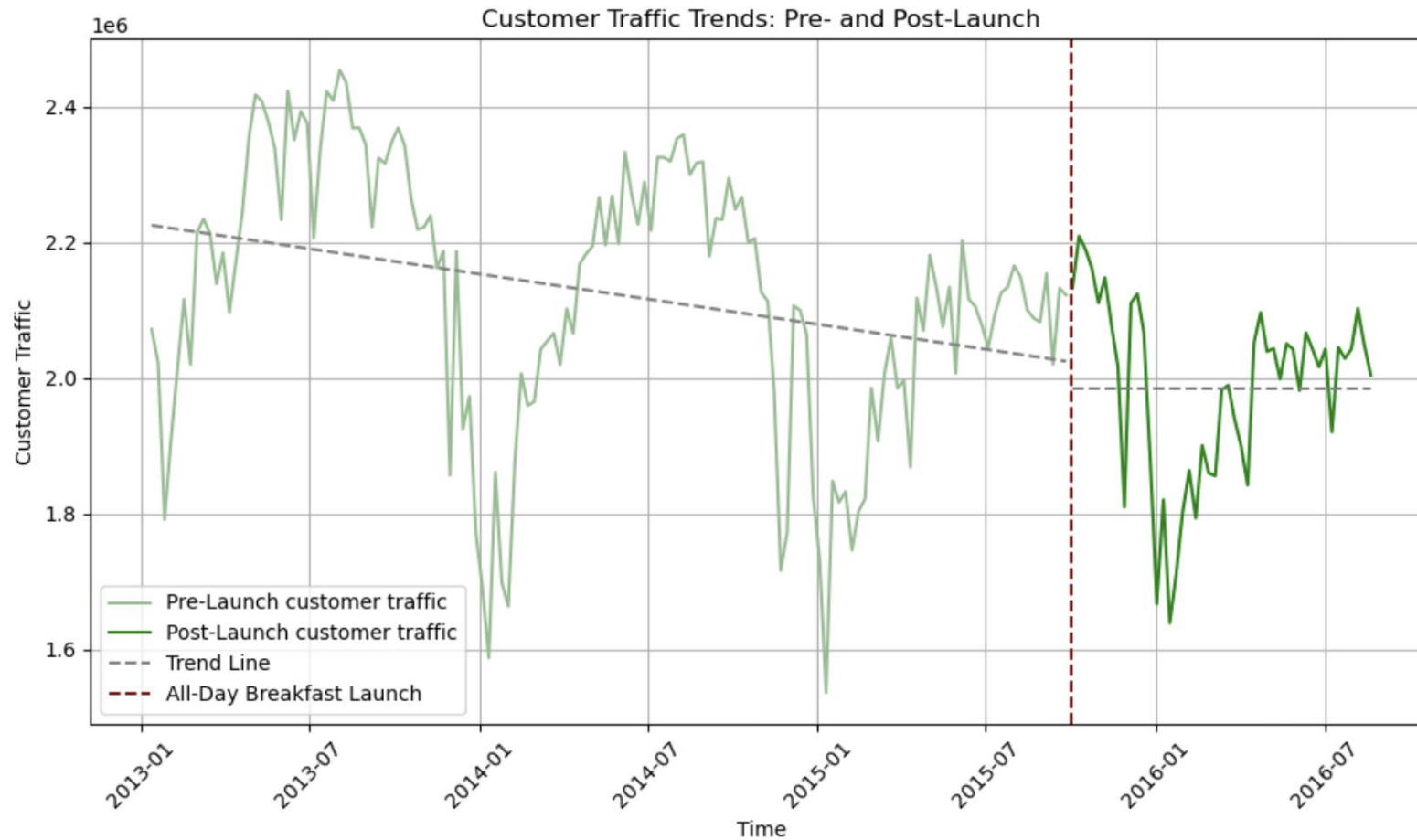
Insights into data trends, regional differences, and patterns in customer behavior.

After the launch, the Revenue for All Day Breakfast noticeably increased.



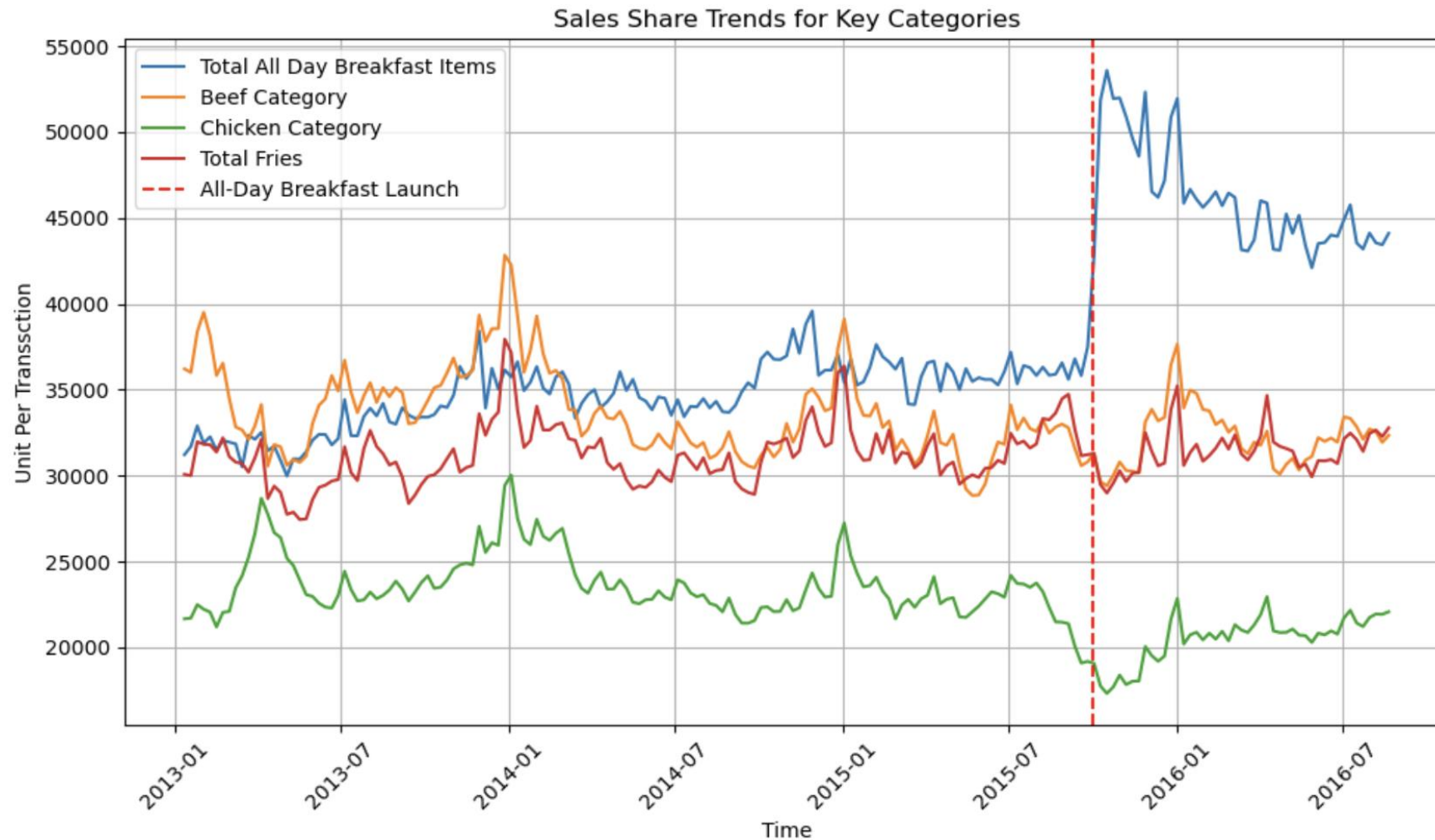
\* revenue is considered as weekly sales quantity multiplied by the weighted average price.

**Customer traffic has declined over the past three years. However, the introduction of the All Day Breakfast has contributed to stabilizing this trend.**



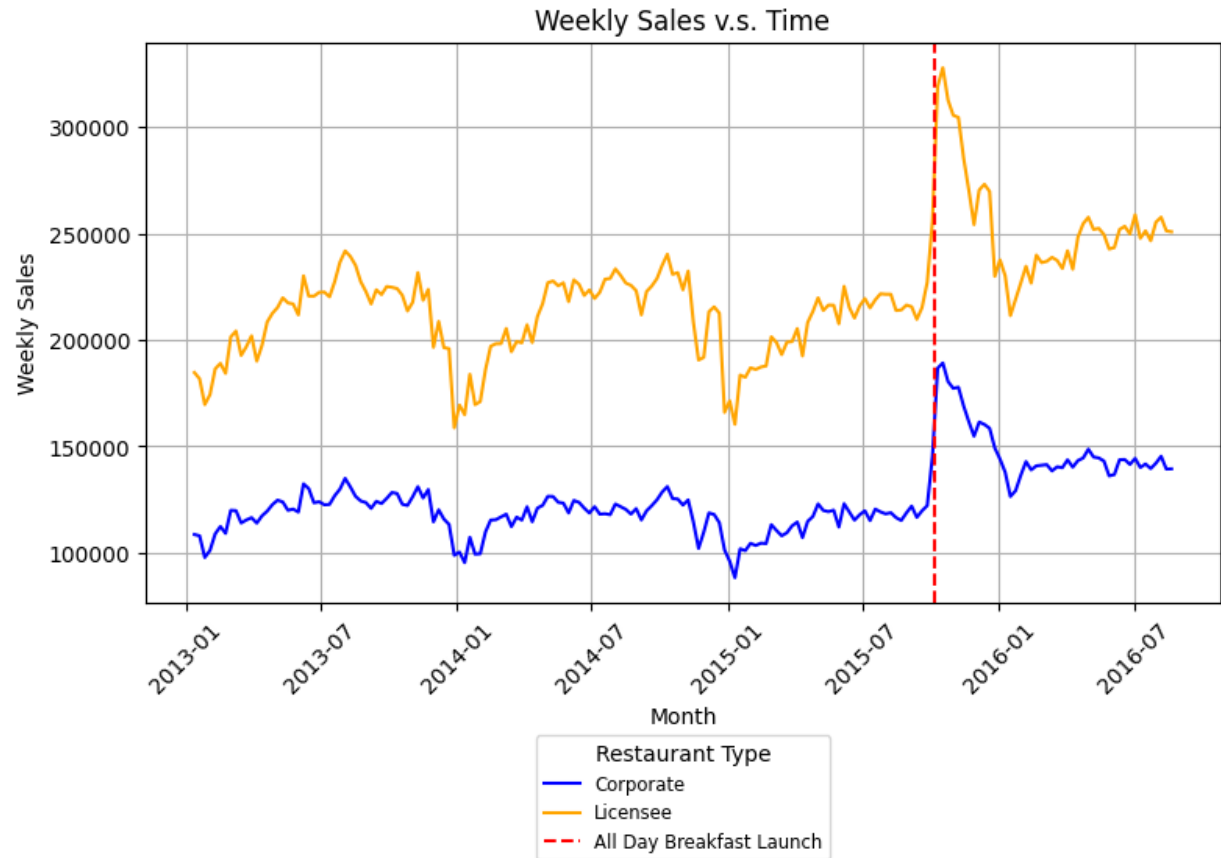
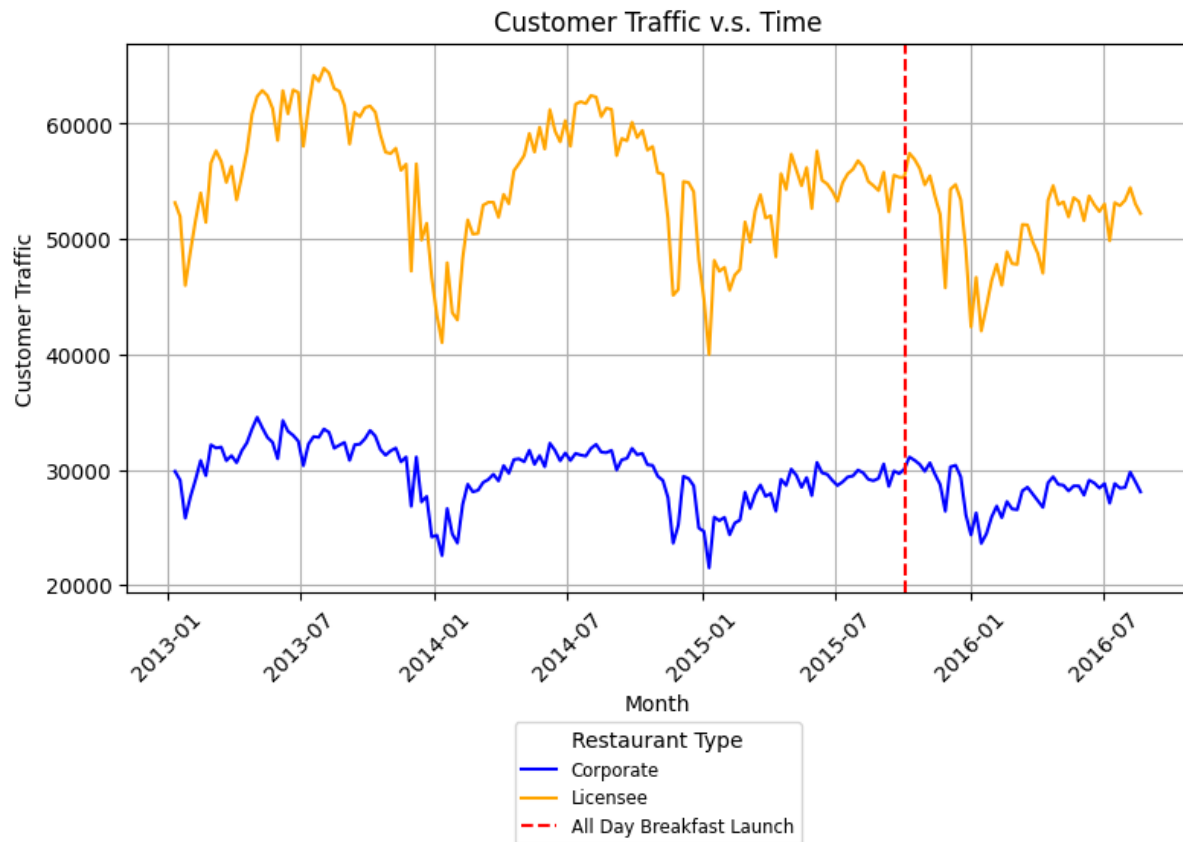
\* Transaction counts are used to depict customer traffic.

After the All Day Breakfast launch, there are early signs of potential cannibalization in specific stores in sales share for beef, chicken, and fries.





**Both corporate and licensee stores have similar patterns in customer traffic and sales before and after the All Day Breakfast launch.**



## 03 Data Assessment

Evaluation of key variables and their relevance to solving the business problem.

# Key variables required to address the problem and complementary variables for further analysis.

## Key features used for analysis

- Last date of each week
- Sale quantity; units per restaurant per week
- Sale quantity; units per thousand transactions
- Average transaction counts
- Weighted average price
- Product category description

## Complementary features

- Restaurant ID
- Indication of restaurant type (traditional versus non-traditional)
- Indication of owner type (corporate versus licensee)
- Location information (city, county, ZIP)
- Demographic features (ethnicity, city type, income level etc...)

\* transactions are comparable to guest counts and are used interchangeably in the analysis.

^ main categories for analysis are "Total All Day Breakfast Items", "Beef Category", "Chicken Category", and "Total Fries"

## 04 Data Concerns

Data quality issues that may affect the analysis.

# Concerns regarding data quality with the provided datasets.

## 1. Multiple variables in the weekly sales dataset have missing values

Variables	Number of Missing Values (% missing in overall dataset)
Units Sold for the Week	4762 (1.5)
Weighted Avg Price across the menu item or category	4762 (1.5)
Unit Sales Rate per 1000 transactions	4762 (1.5)
Average Transactions per Day for a specific week	4762 (1.5)
Average Daily Units Sold	4762 (1.5)
Units Sold for the Week	4762 (1.5)

## 2. There are multiple stores with outliers in revenue and sales share



### Stores:

- 117
- 18004
- 36277
- 16773

*Can distort analysis and lead to misleading conclusions*

# Additional Data that can aid in answering the problem at hand.

## Customer satisfaction surveys

Survey data related to breakfast service (e.g., long wait times, limited menu) and their preference for breakfast after 10 AM would allow us to **assess demand**.

## Marketing and promotion data

Understanding what promotions have been run and when they occurred will allow us to **assess their impact on sales and customer traffic**.

## Sales data by time and product

The data provided does not include time-of-day information. This would be valuable for **differentiating between breakfast, lunch, and dinner performance**.

## Menu item profitability

Data regarding profit margins of each menu item will allow us to **assess the effectiveness of the All Day breakfast initiative**.

## 05 Client Questions

Clarifications and requests for additional data or operational details.

# Formal Requests for MCOPCO

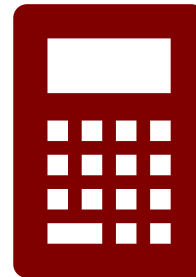
## Marketing Strategies and Plans

Detailed marketing plans, target demographics, budget allocations, and channels for the All Day Breakfast menu promotion.



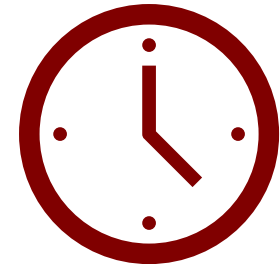
## Financial Projections and Cost Analysis

Financial data related to the costs of implementing the All Day Breakfast menu, including potential impact on margins.



## Customer Traffic Patterns and Peak Times Analysis

Data on customer traffic patterns, including peak hours for breakfast versus non-breakfast items.





## 06 Projected Timeline

Next steps, milestones, and deadlines for delivering actionable insights.

# Projected timeline



**Oct. 15 – Nov. 1**

## **Complete data cleaning**

*Handle missing values and ensure consistency across all locations.*



**Nov. 2 – Nov. 15**

## **Conduct in-depth analysis of sales trends**

*Focus on peak breakfast hours and customer behavior post-10 AM.*



**Nov. 16 – Dec. 1**

## **Model different scenarios for All Day Breakfast**

*Consider regional variations, operational costs, and potential customer demand.*



**Dec. 2 – Dec. 15**

## **Draft recommendations based on analysis**

*Include financial projections and operational considerations.*



**Dec. 16 – Dec. 22**

## **Prepare final report and presentation**

*Incorporate client feedback and validation results.*

# Appendix

# EDA - Stores-Level Outlier

## Outlier based on UPT

**Store 117, 18004, and 36277** selling large number of item per transaction. (selling strategy, location or promotion)

*notes: best practices that could be scaled to other stores*

## Outlier based on urws

**Store 16773** have fewer guest counts compared to the UPT outliers, this store is generating disproportionately high revenue. This suggests that the store may have higher pricing on average per item or store has implement marketing strategy.

*notes: need to understand pricing and marketing strategy on this store*

Outlier Stores Based on transaction:

	upt	urws	adus
REST_KEY			
117	827237.6	8785337.0	1257137.6
18004	838242.9	7297962.0	1048392.9
36277	495352.5	3090992.0	446574.7

Outlier Stores Based on Unit sold for the week:

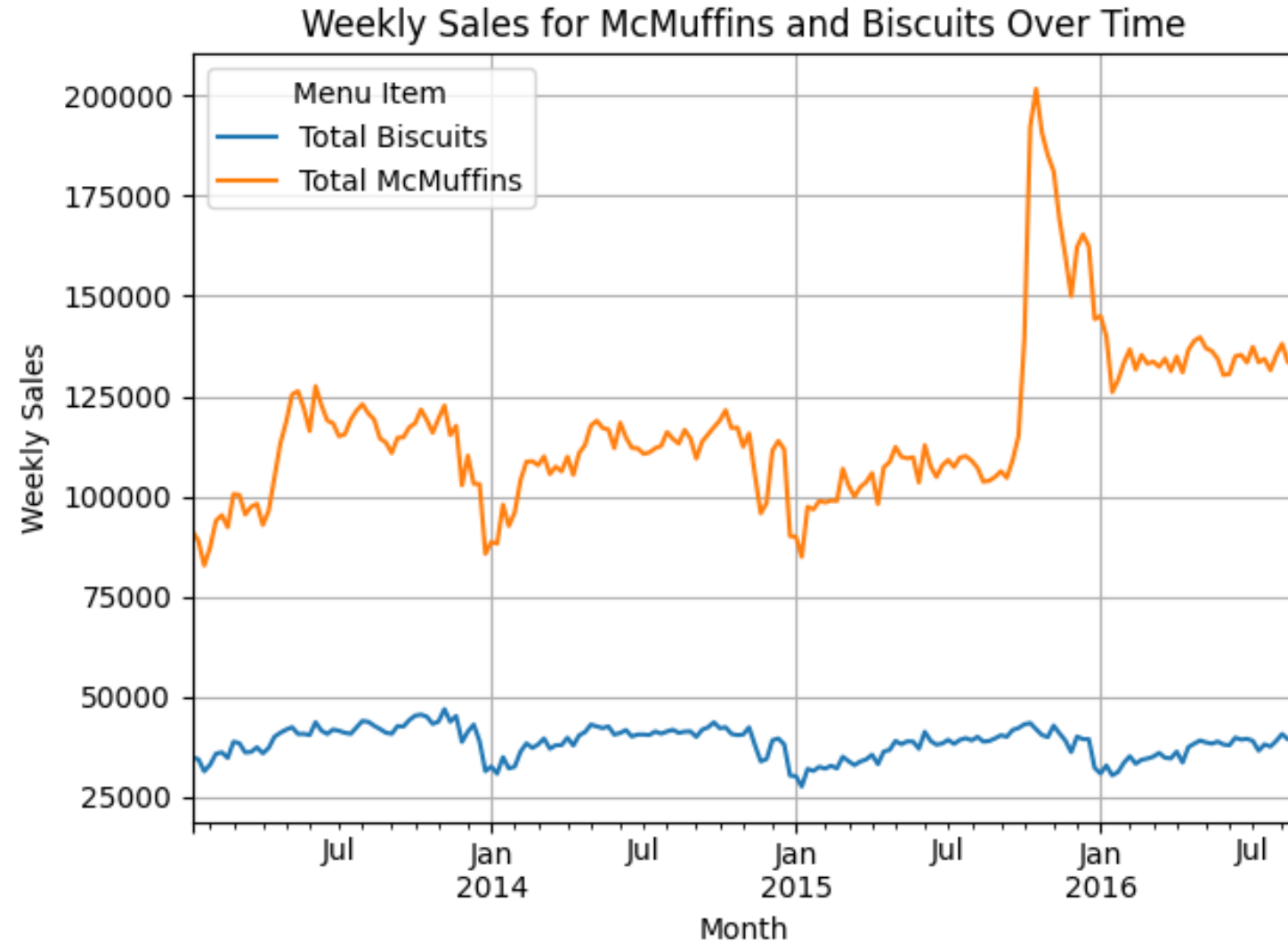
	upt	urws	adus
REST_KEY			
16773	708135.4	2033884.0	292646.4

Outlier Stores Based on average daily sold:

	upt	urws	adus
REST_KEY			
16773	708135.4	2033884.0	292646.4

# Appendix

## Mc Muffin vs Biscuits



**End of Deck**