



Instacart Groceries



Customer Behaviour Analysis

Project Summary

Goal

Instacart, an app-based online grocery delivery service, aimed to conduct an in-depth analysis of customer purchasing behaviour and sales patterns. Insights from this analysis were intended to support more effective and targeted marketing strategies.

Objectives:

- Analyse customer purchasing behaviour, including loyalty trends, demographics, and regional differences.
- Conduct initial data cleaning and exploratory analysis to uncover key sales patterns and trends

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Methods

- Python
- Data wrangling & subsetting
- Merging data frames & deriving variables
- Grouping & aggregating data
- Data Visualization with Python

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Data

- Instacart shopping data from 2017
- Career Foundry customer data set



Questions to Guide Analysis

- ✦ What are the busiest days of the week and hours of the day (i.e., the times with the most orders)?
- ✦ What's the distribution among users in terms of brand loyalty (i.e., how often do they return to Instacart)?
- ✦ Are there particular times of the day when people spend the most money?
- ✦ Are there differences in ordering habits based on a customer's loyalty status?
- ✦ What differences can be found in the ordering habits of different customer profiles?
- ✦ Are there differences in ordering habits based on a customer's region?



Project Process

Data Sourcing

Source the various data including orders, products and customers datasets.

Data Wrangling

Performed initial data checks and basic descriptive analysis. This step also involved renaming columns and creating new dataframes to support further analysis

Data Consistency

Standardised data types across the dataset, removed duplicate entries, and investigated missing values to ensure data quality and consistency.



Project Process

Exploratory Data Analysis

Analysed the dataset in Python to uncover key insights and merged multiple datasets to identify relationships between different variables.

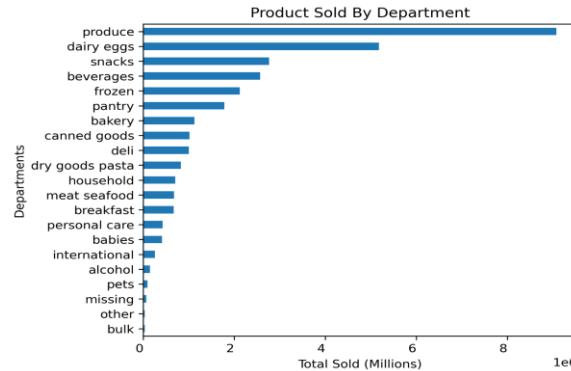
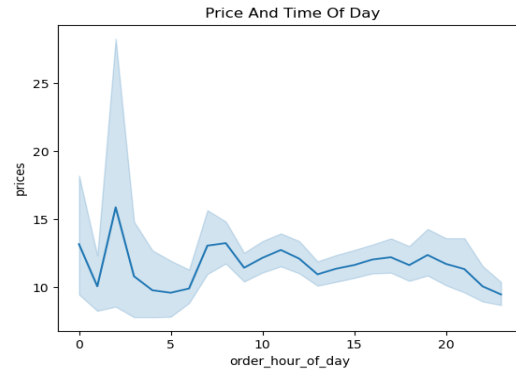
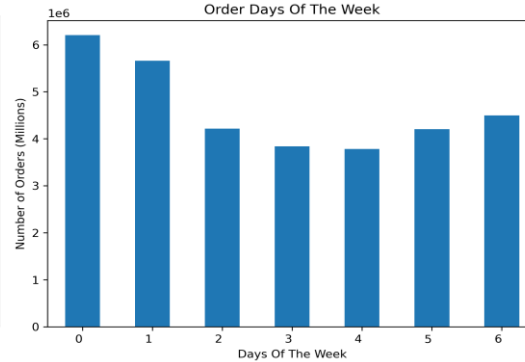
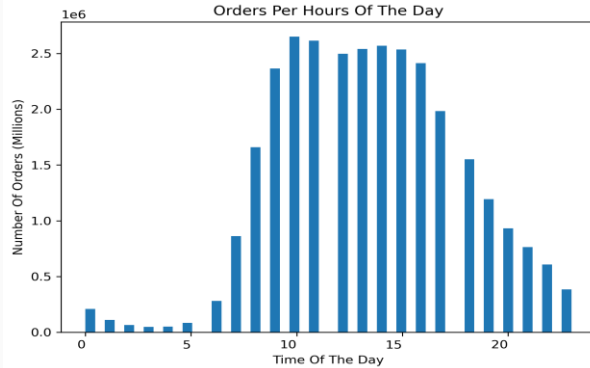
Data Visualisation

Created histograms, bar charts, line charts, and scatterplots to explore individual variables and relationships between them. Also analysed ordering behaviour across different customer groups.

Reporting

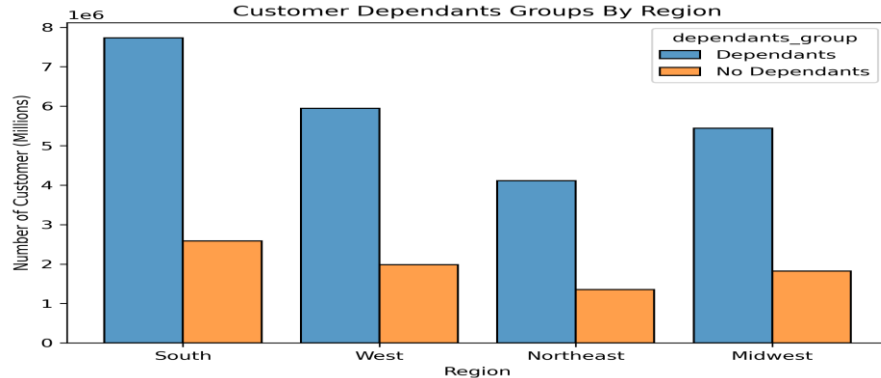
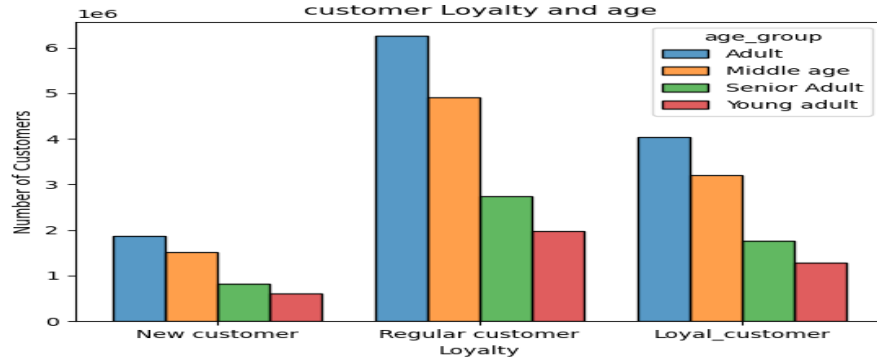
Created a report for the marketing team highlighting key insights and providing actionable recommendations based on the analysis.

Results - Purchasing Behaviour



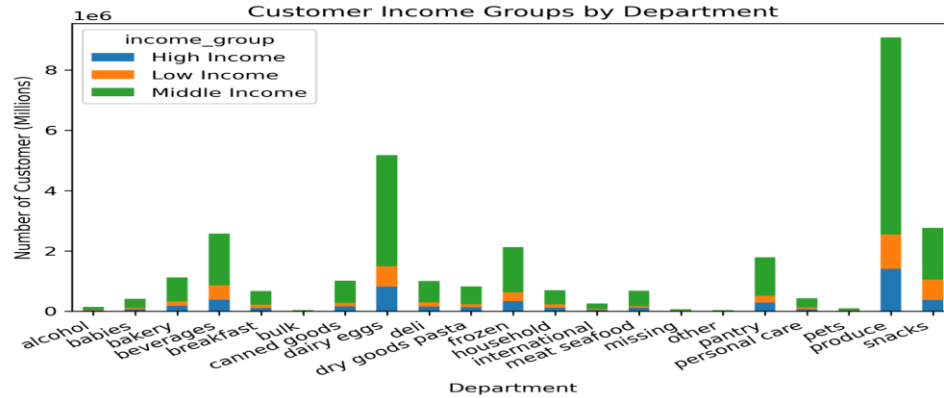
- The data shows the busiest days of the week is **Saturday and Sunday** before sales taper off from Monday.
- The busiest hours of the day is between **9am and 4pm**. Interestingly the most money is spend at 5AM, This does seem like a irregularity as sales stabilise throughout the day.
- **Produce, Dairy/Eggs and Snacks** are the most purchased items for customers.

Results - Customer Demographics

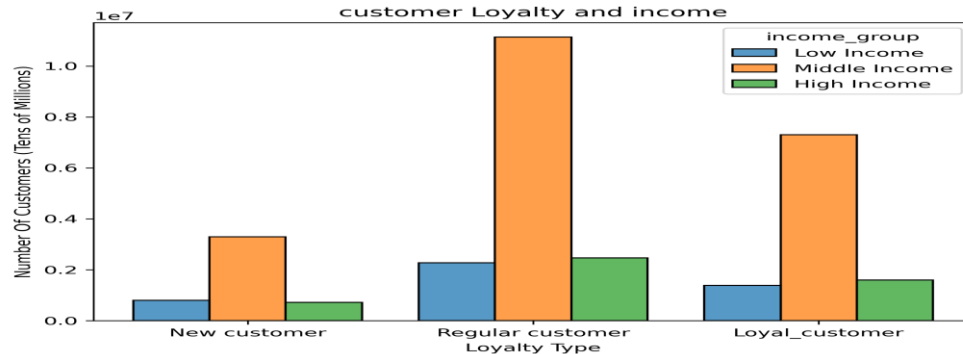


- Majority of customers regularly shop at Instacart and are in the “Adult” age bracket. We seem to struggle to convert new customers to regular customers.
- Customers with dependants prefer to shop at Instacart. This trend is the same across all 4 regions.

Results - Customer Demographics



- Customers within the **middle income** bracket shop more with Instacart compared to the others. Good within **produce** sell the most for this income bracket.



- Our most loyal customers are also within the middle income bracket.

Insight & Recommendation

Insight

- The busiest days of the week are Saturday and Sunday, while the least busy are Tuesday and Wednesday. Most orders are placed between 10 AM and 4 PM
- **Produce** is the most popular category of items sold by Instacart. This trend is consistent across all customer profiles. Produce is closely followed by **Dairy/Eggs** and **Snacks**.
- Seventy percent of customers are middle-income earners, 70% are adults or middle-aged, and 75% have dependants. These characteristics suggest that Instacart's primary customer base is families.

Recommendation

- **Targeted Ads** - To increase sales during the least busy days and times, Instacart should run targeted ads and promotions to encourage customers to shop during those periods.
- **loyalty scheme** - They could also roll out a loyalty scheme and offer promotions to strengthen sales among the family demographic, while providing discounts to underrepresented groups to help grow the customer base.
- **bulk discounts** - Instacart can bundle essential family items and offer bulk discounts, which can be linked to the loyalty scheme to further incentivise purchases