



Ze Germans Limited | 2021

Agenda

Business Understanding

Exploratory Data Analysis

Market Basket Analysis

Customer Segmentation



Business Understanding

Business Objectives

Get a complete overview of Instacart's business.

- 🥕 Types of consumer behavior?
- 🥕 Products with extended amount of offerings?
- 🥕 Which products are substitutes?
- 🥕 Which products are complementary?



Business Understanding

Data Mining Objectives

Main Data Mining Objective:

- 🥕 Use association rules mining to find relations among product types.

Subordinate Data Mining Objective:

- 🥕 Generate more insights by applying a customer segmentation based on their buying behavior and product preferences.
- 🥕 Perform association rules mining on top of the given segments to show how they deviate from the overall population.

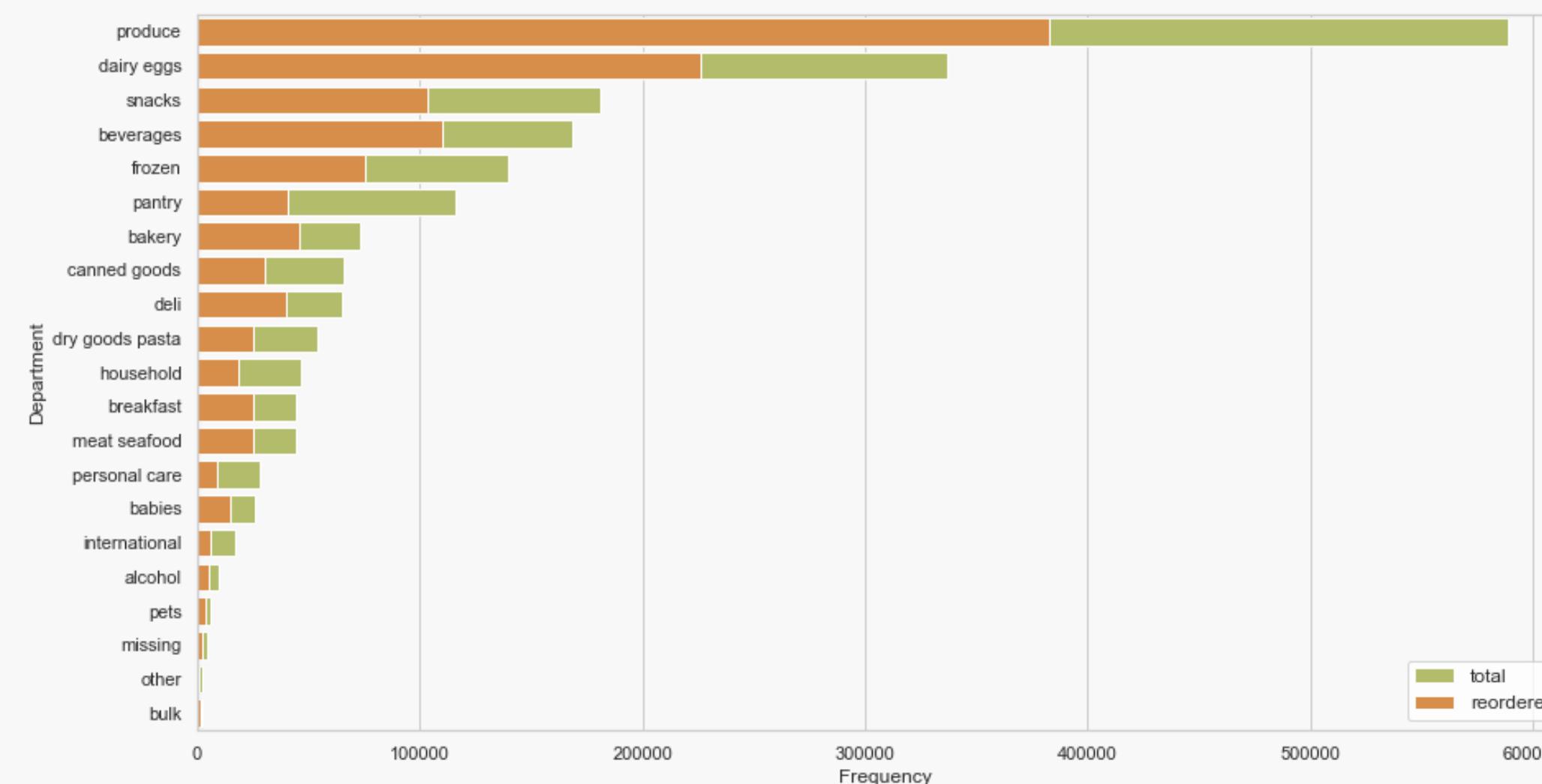




Exploratory Data Analysis

What do customers mostly purchase?

Total Orders and Reorders From Departments



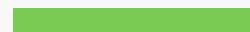
Produce represents 29% of total orders



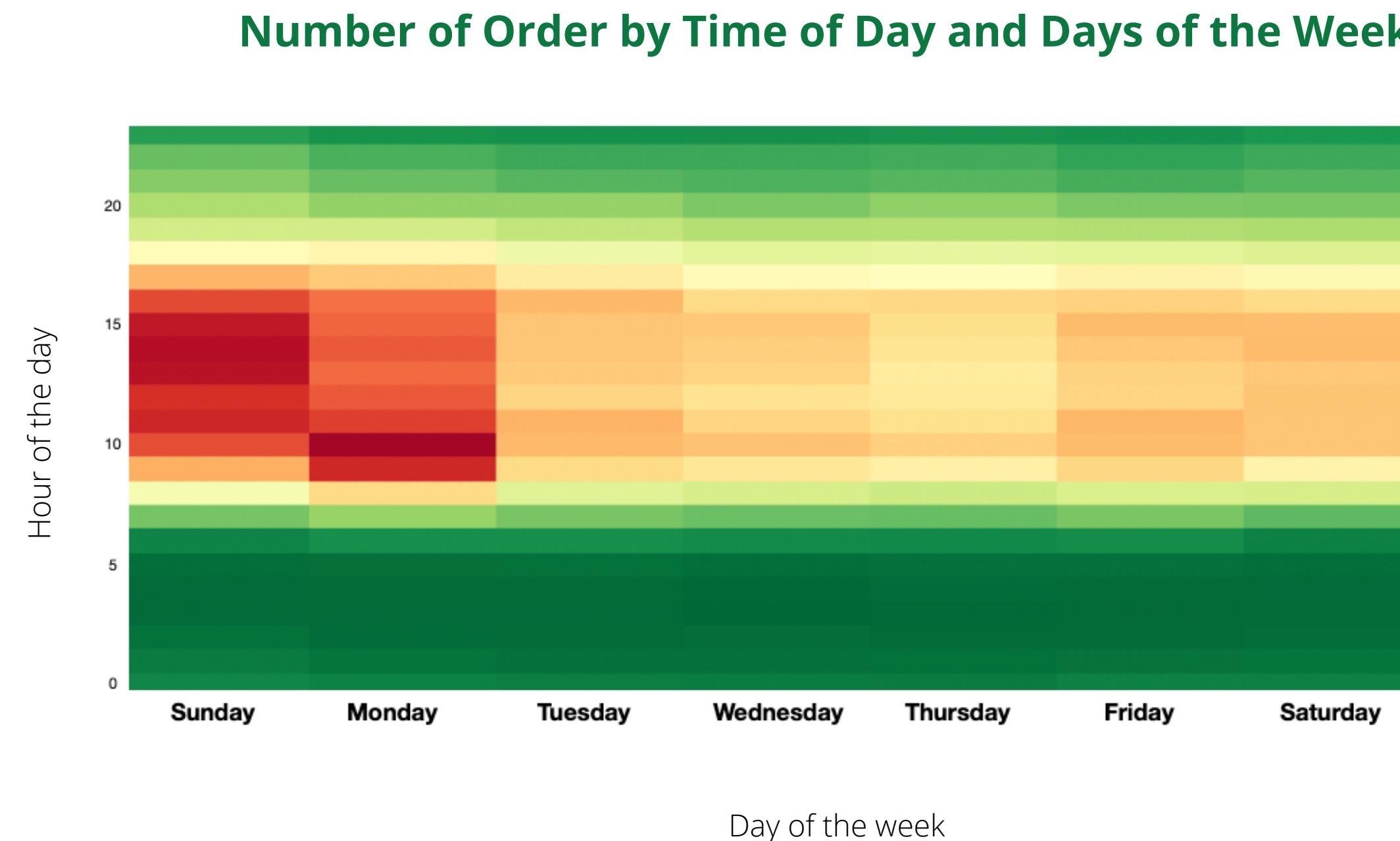
Dairy Egg has the highest reorder ratio: 67%



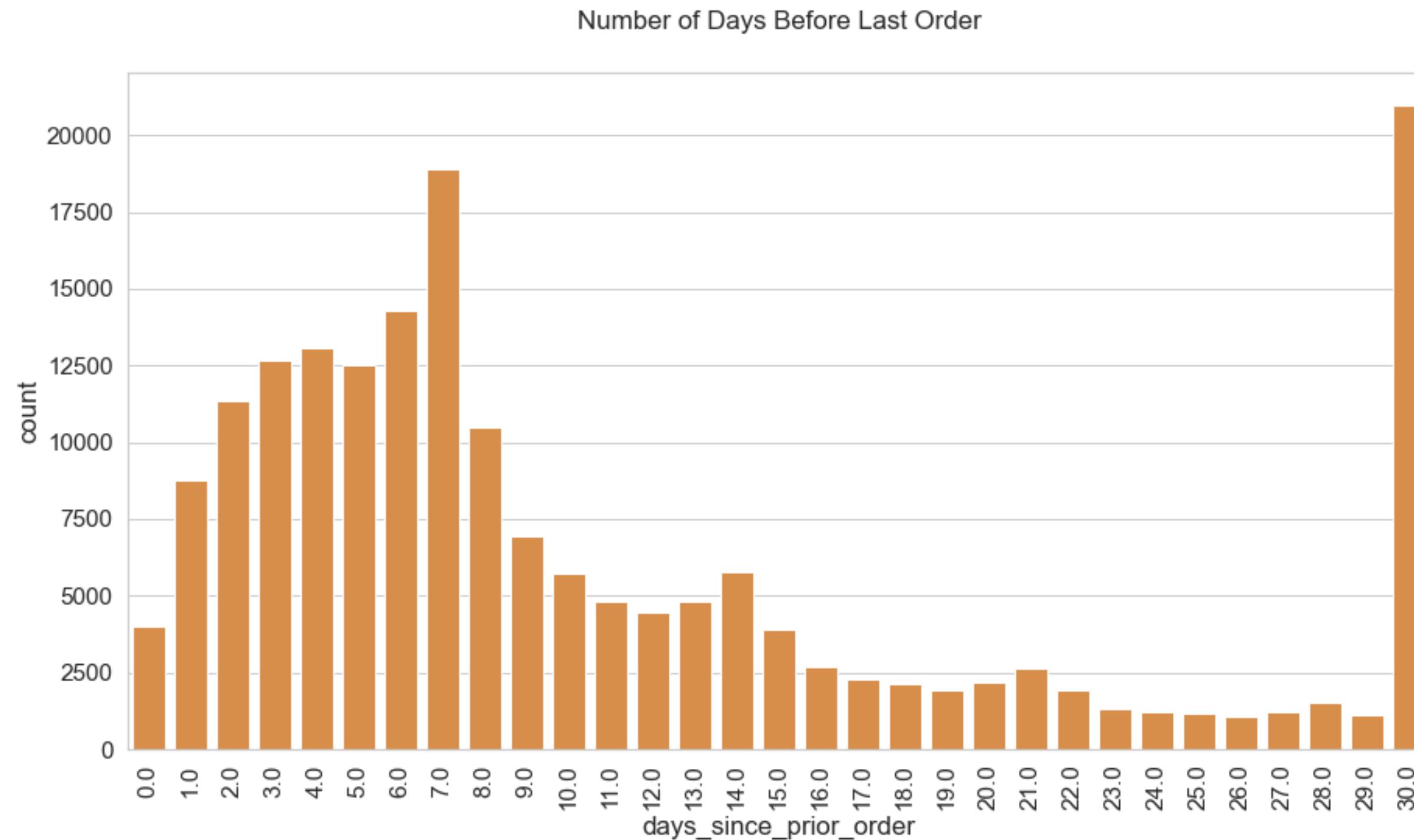
Alcohol and Pets are less ordered but have a high reorder ratio



When do customers order most?



When do customers reorder?



Which items get reordered frequently?



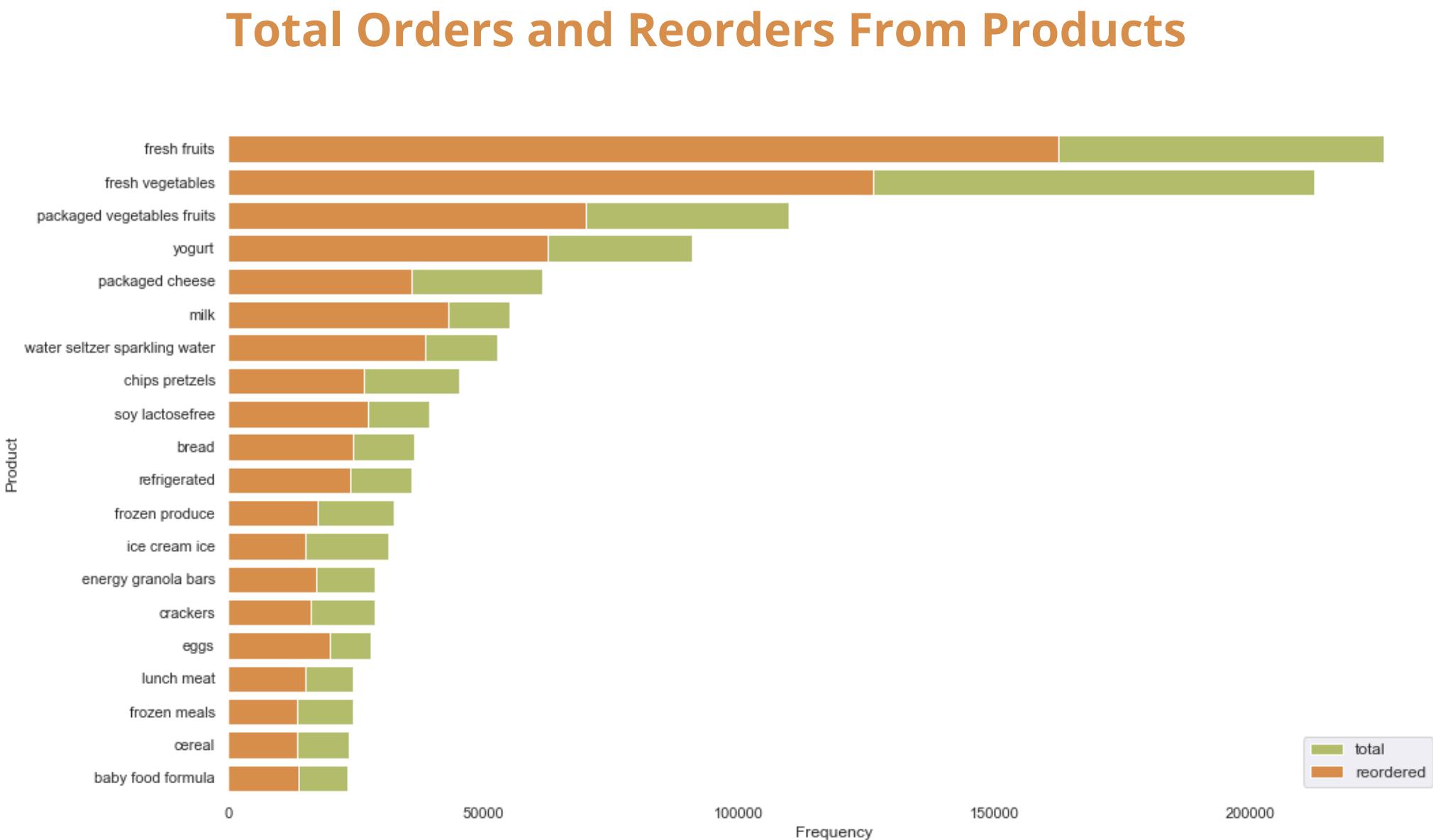
88% reordered products



Higher reorder rate for organic products and daily consumed items



Lower reorder rate for non-organic products and personal care items

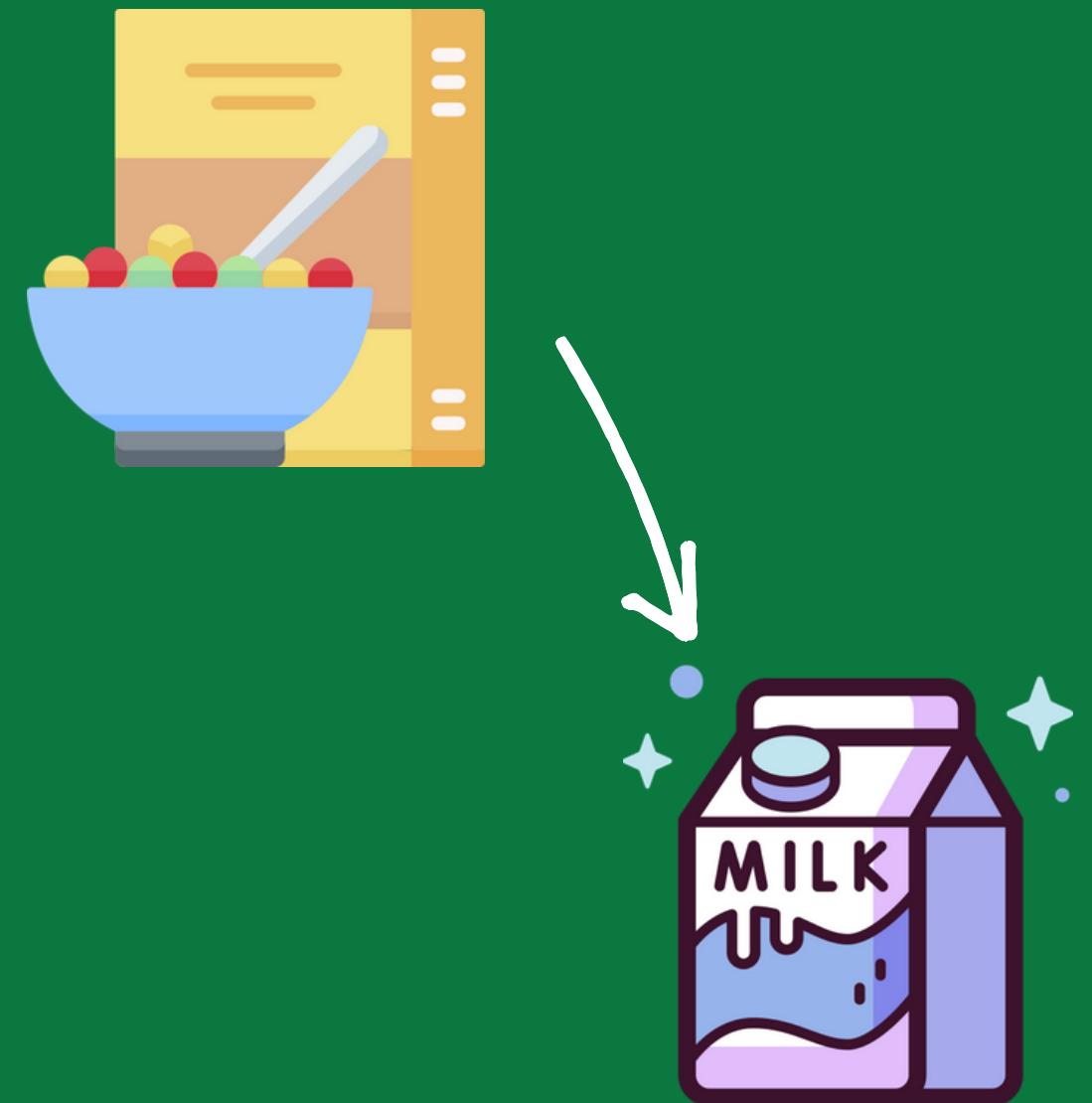


Market Basket Analysis



Complementaries - Definition by Example

Product complementaries



Consumption behaviour



Complementary Items

36 complementaries

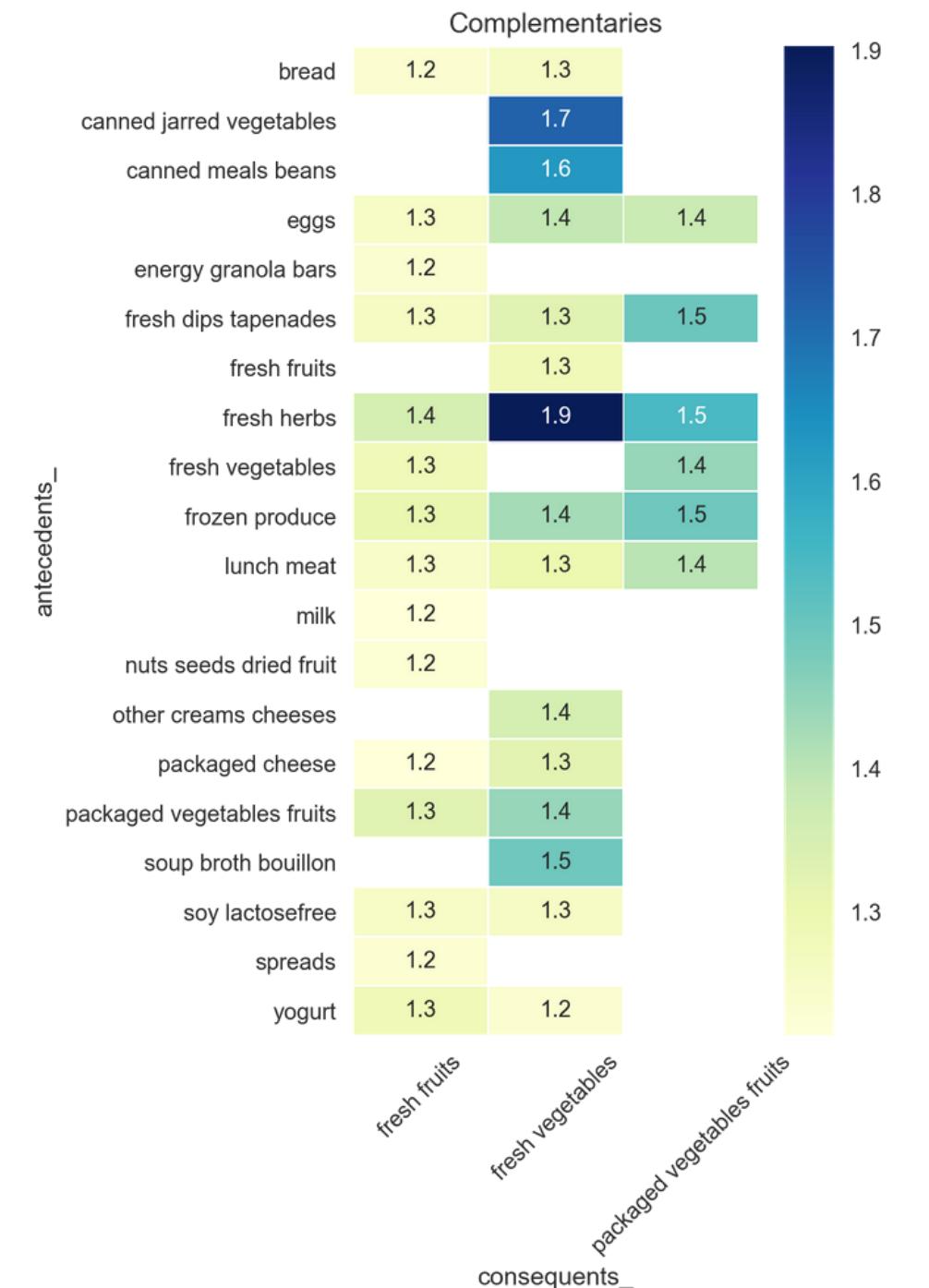


Lift

1.90

1.72

1.63



Substitutes - Definition by Example

Product substitutes



Consumption behaviour



Substitute Items

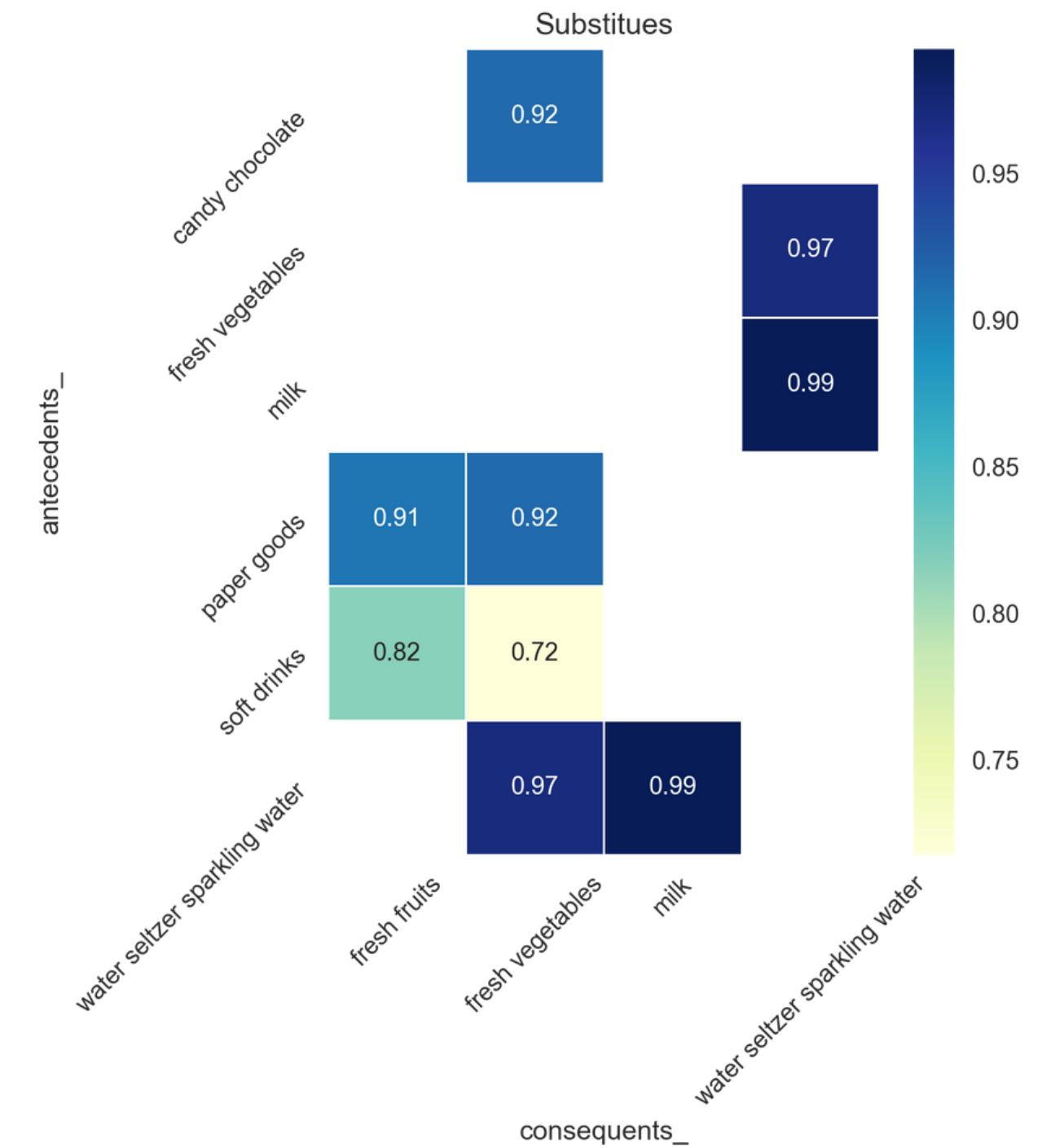
9 substitutes



Lift

0.72

0.81

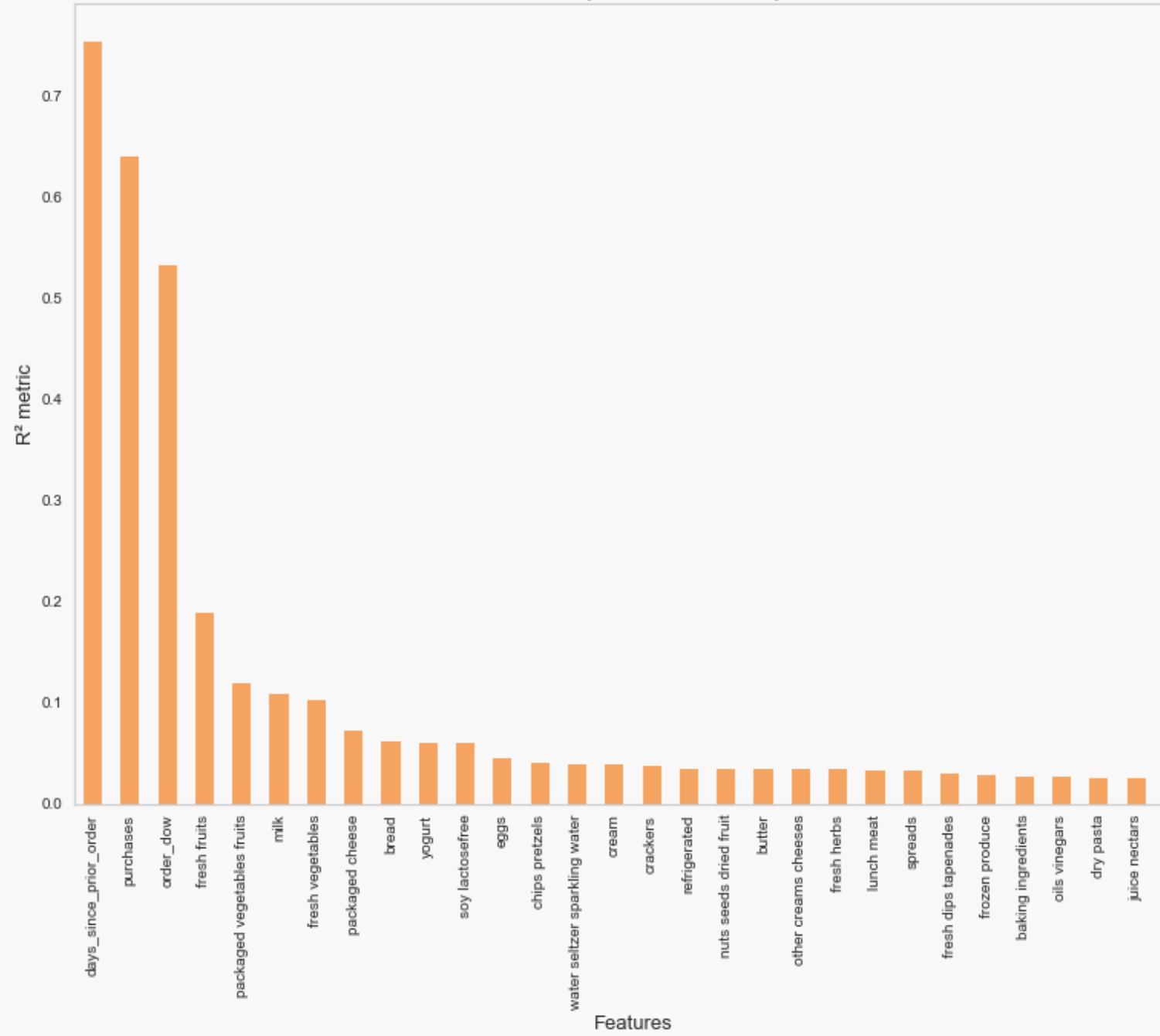




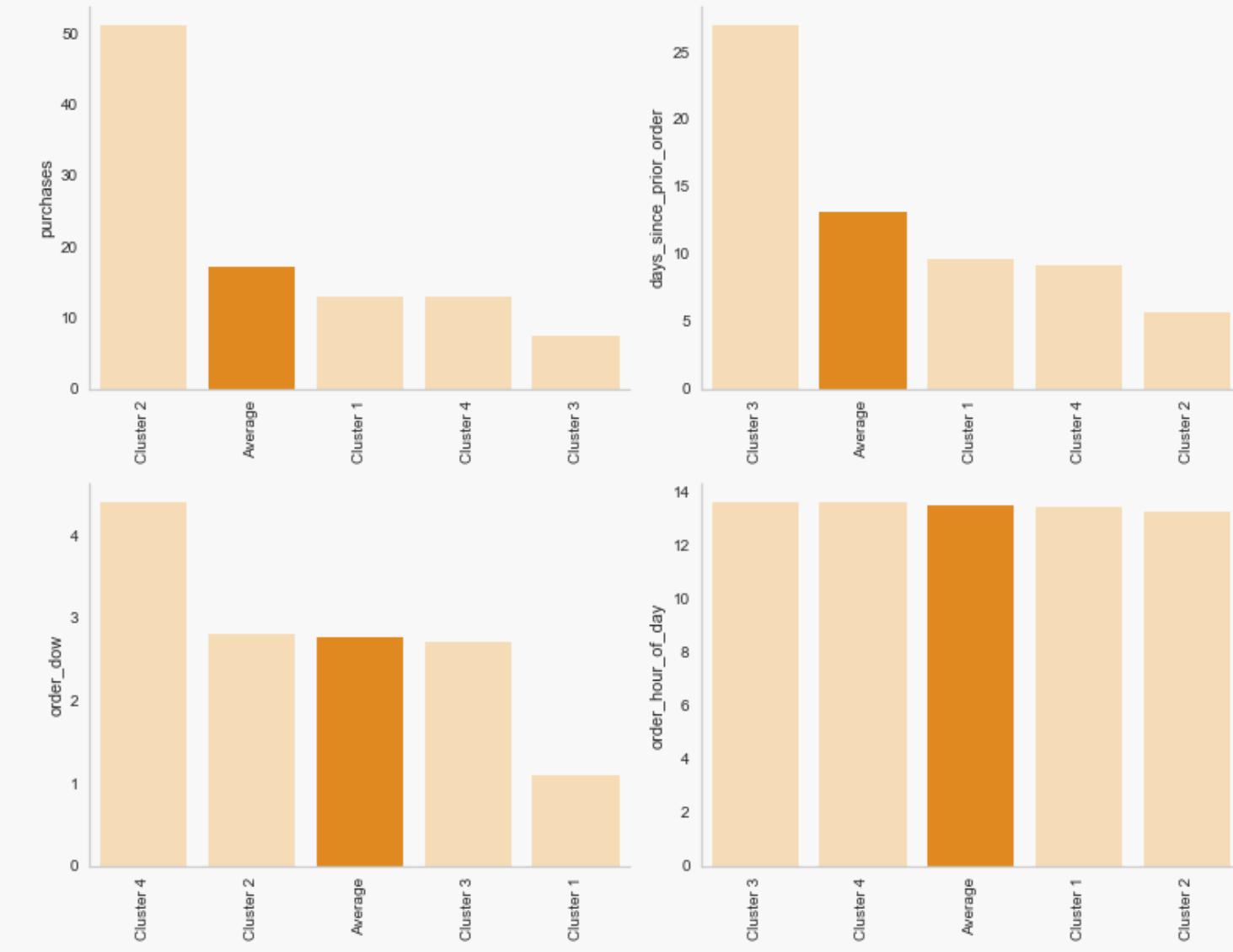
Customer Segmentation

Analysis

Feature Importance

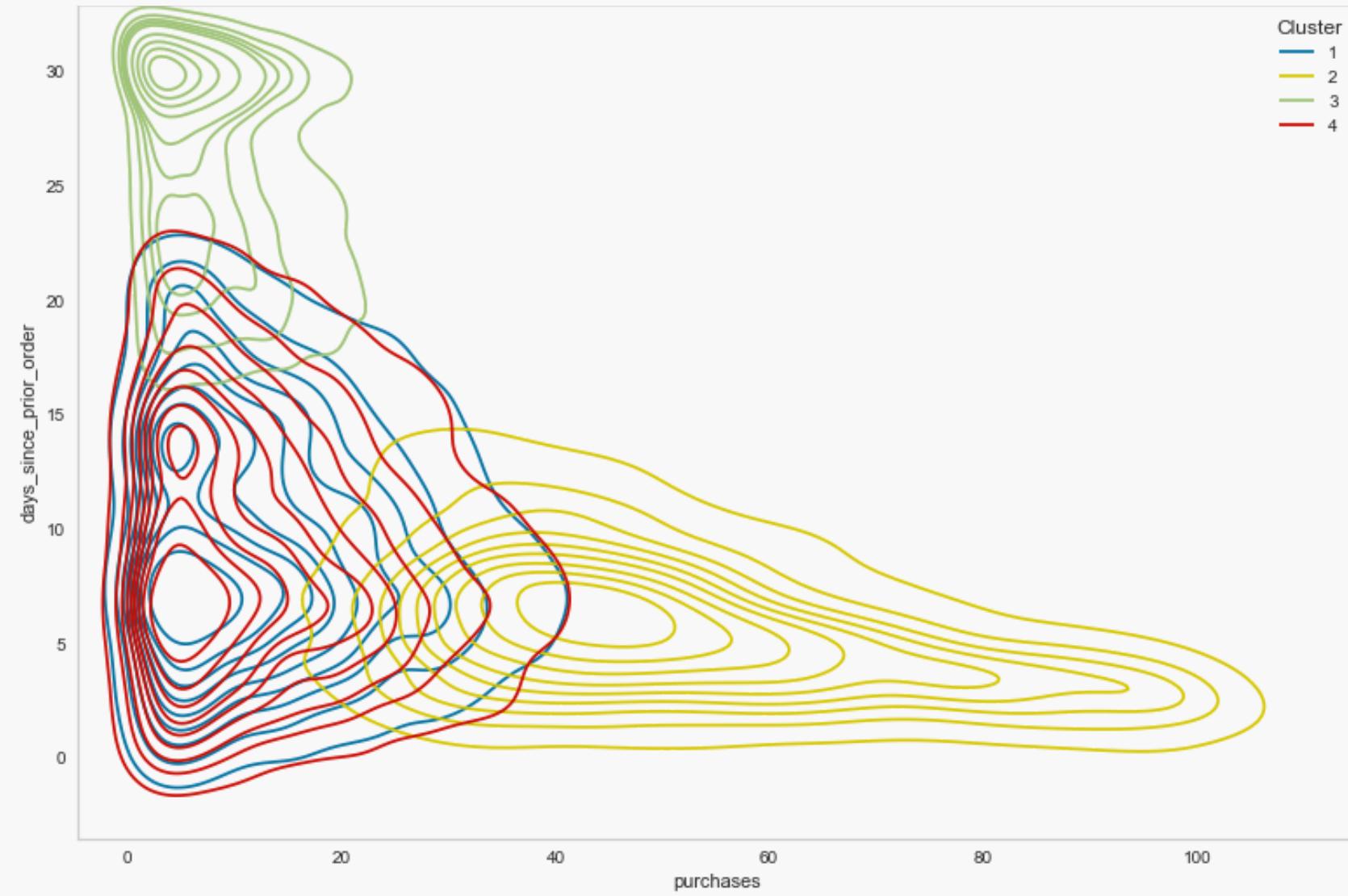


Cluster comparison on buying behavior

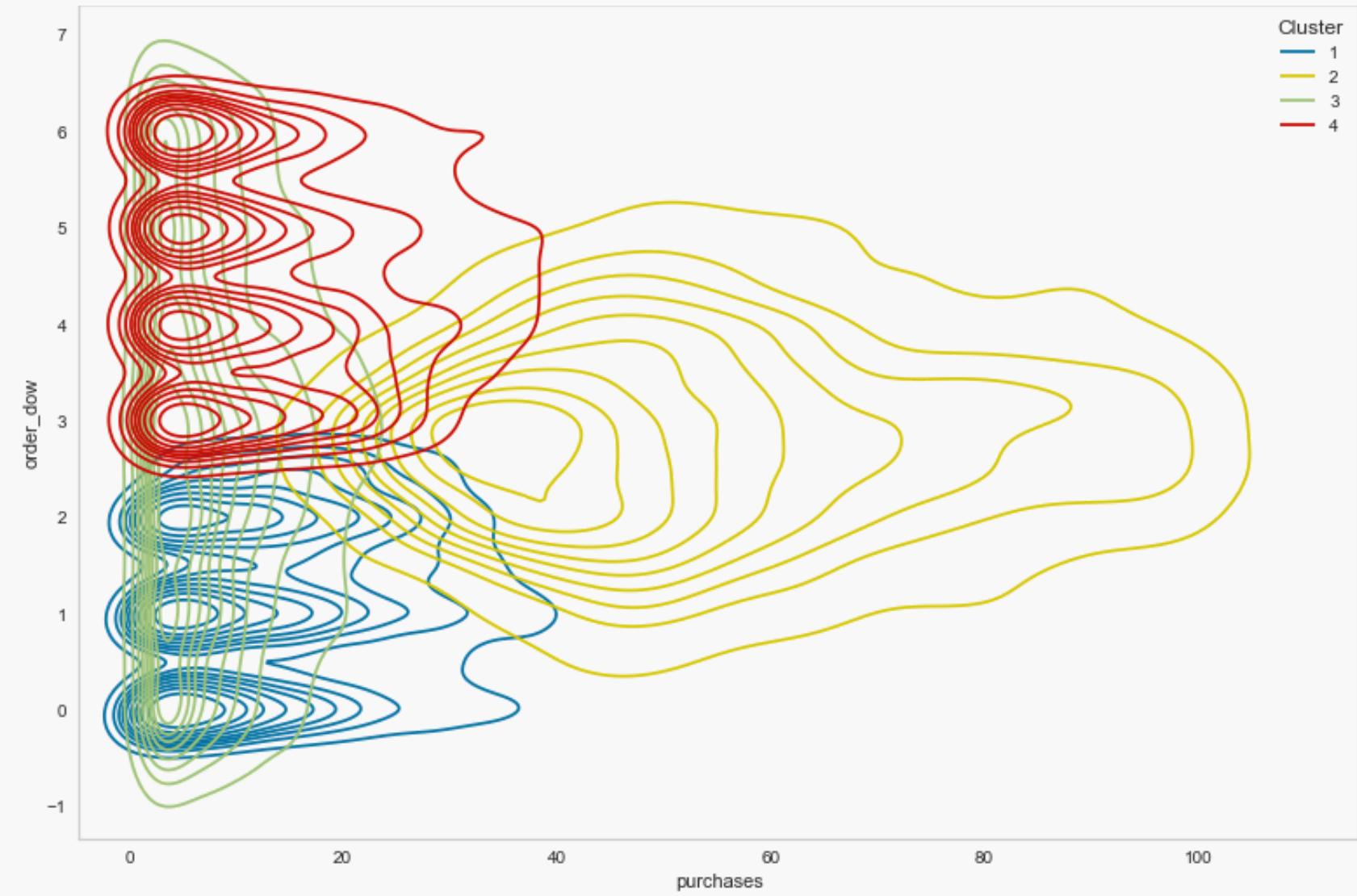


Analysis

Mean Number of Items Ordered vs.
Mean Days since Re-Order



Mean Number of Items Ordered vs.
Mean Order Day of the Week



Cluster Profiles



Frequent Shoppers:

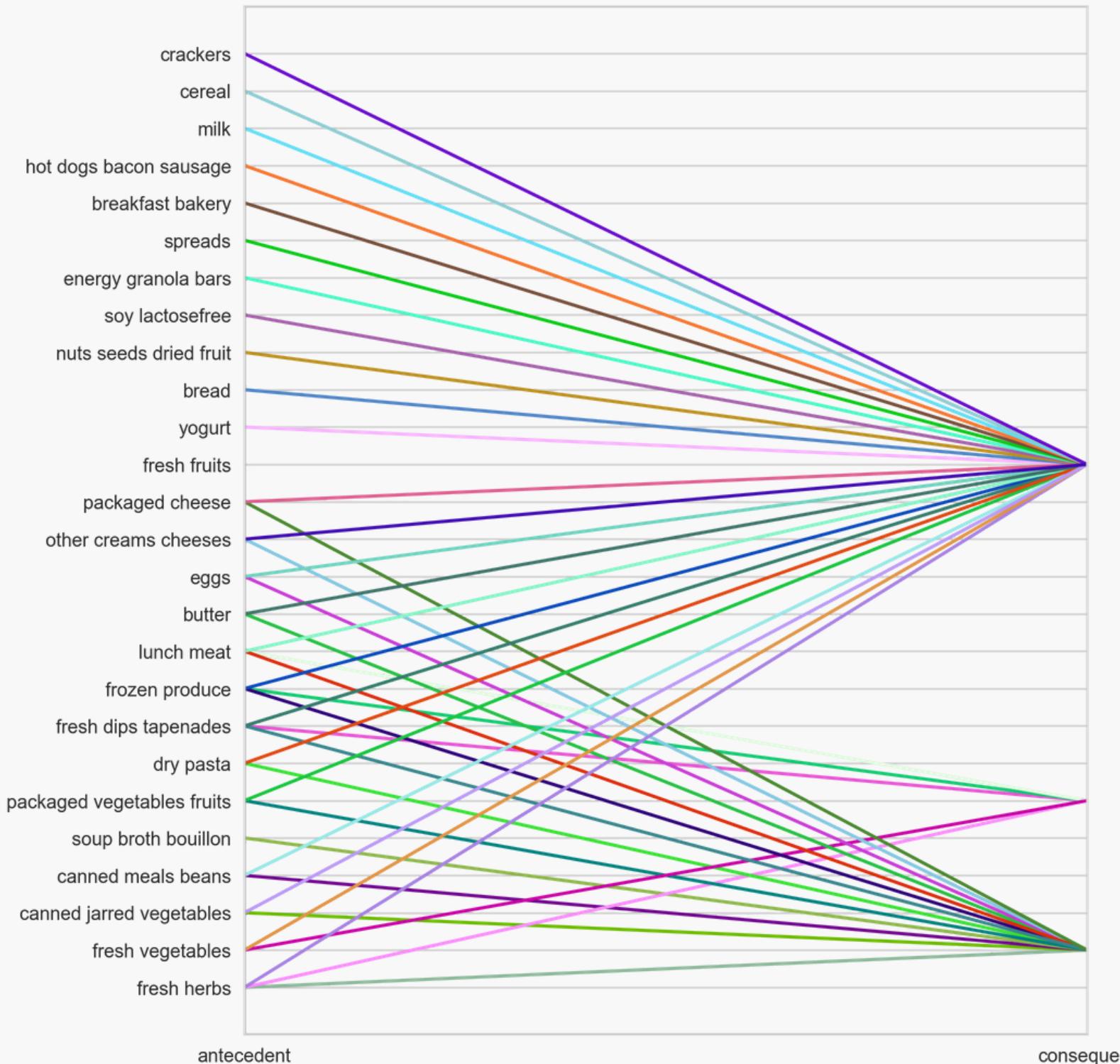
- 🥕 Ordered on average 51 times
- 🥕 Shop every week
- 🥕 Buy the most items per trip



Occasional Shoppers:

- 🥕 Ordering the least
- 🥕 Shop only once per month
- 🥕 Buying on average few items

Complementary itemsets among frequent shoppers



A total of 42 rules found



One-Sided Complementaries



Fresh vegetables, packaged vegetables fruits and packaged cheese



Fresh herbs \Rightarrow Fresh vegetables
Canned jarred vegetables \Rightarrow Fresh vegetables



**Thank you for
listening!**

For questions or concerns, contact us at
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[Github Repository Group G](#)