



Instacart Market Basket Analysis

Insights & Recommendations

By: Brandon Menendez





Who am I?

Brandon Menendez

- 01.** Experienced E-Commerce Grocery Category Manager
- 02.** Data Science Student at the Flatiron School
- 03.** Passionate about creating better online shopping experiences



Agenda



Business Problem



Data Understanding



Market Basket Analysis & Modeling



Recommendations



Future Steps

Overview & Business Problem

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Business Problem



Merchandising



Recommendations



Promotions

KEY FINDINGS

Re-order Predictions

90 %

Model Precision

Top Basket Builders



The Power of Recommendation

35%

Orders Contain
Recommended Product

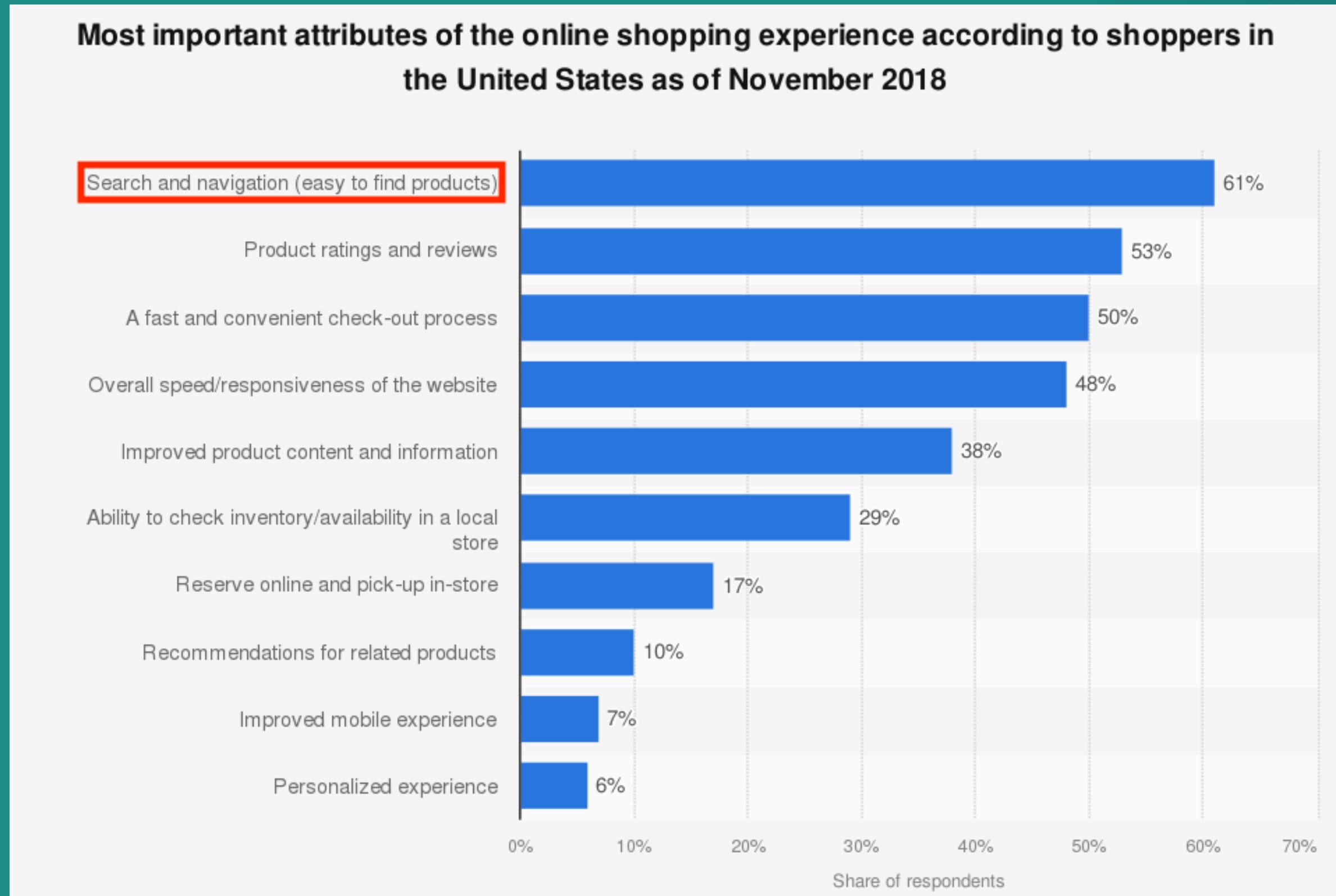


88%

Orders Contain
Re-ordered Product



Customers Care About Merchandising



Source: Statista 2022

More Coupons, More Revenue

Online coupon users spend 24% more than regular shoppers.



Data & Methods

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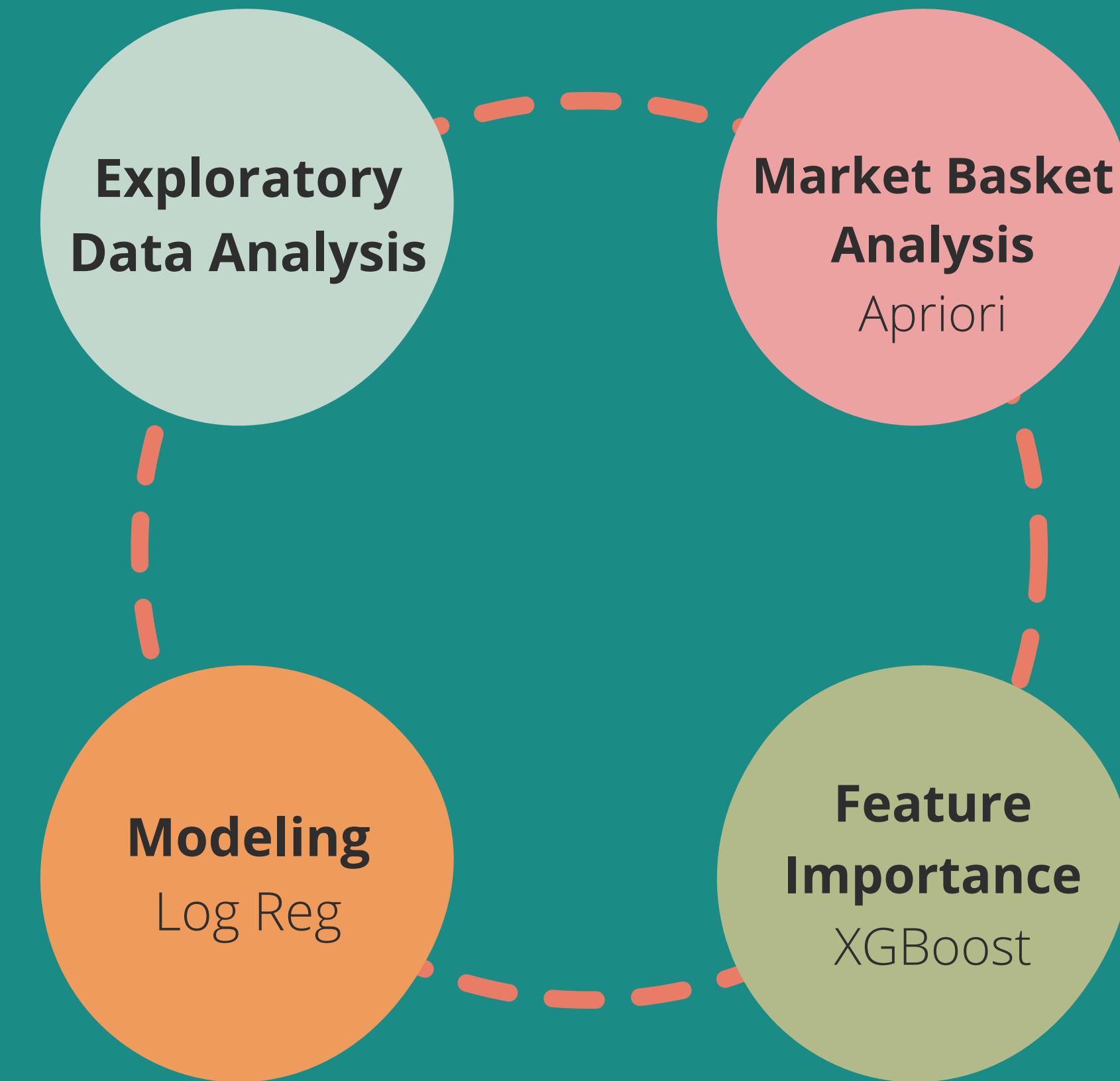


THE DATA

- 206K Unique Customers
- 49K Unique SKUs
- 3.2M Total Orders Analyzed



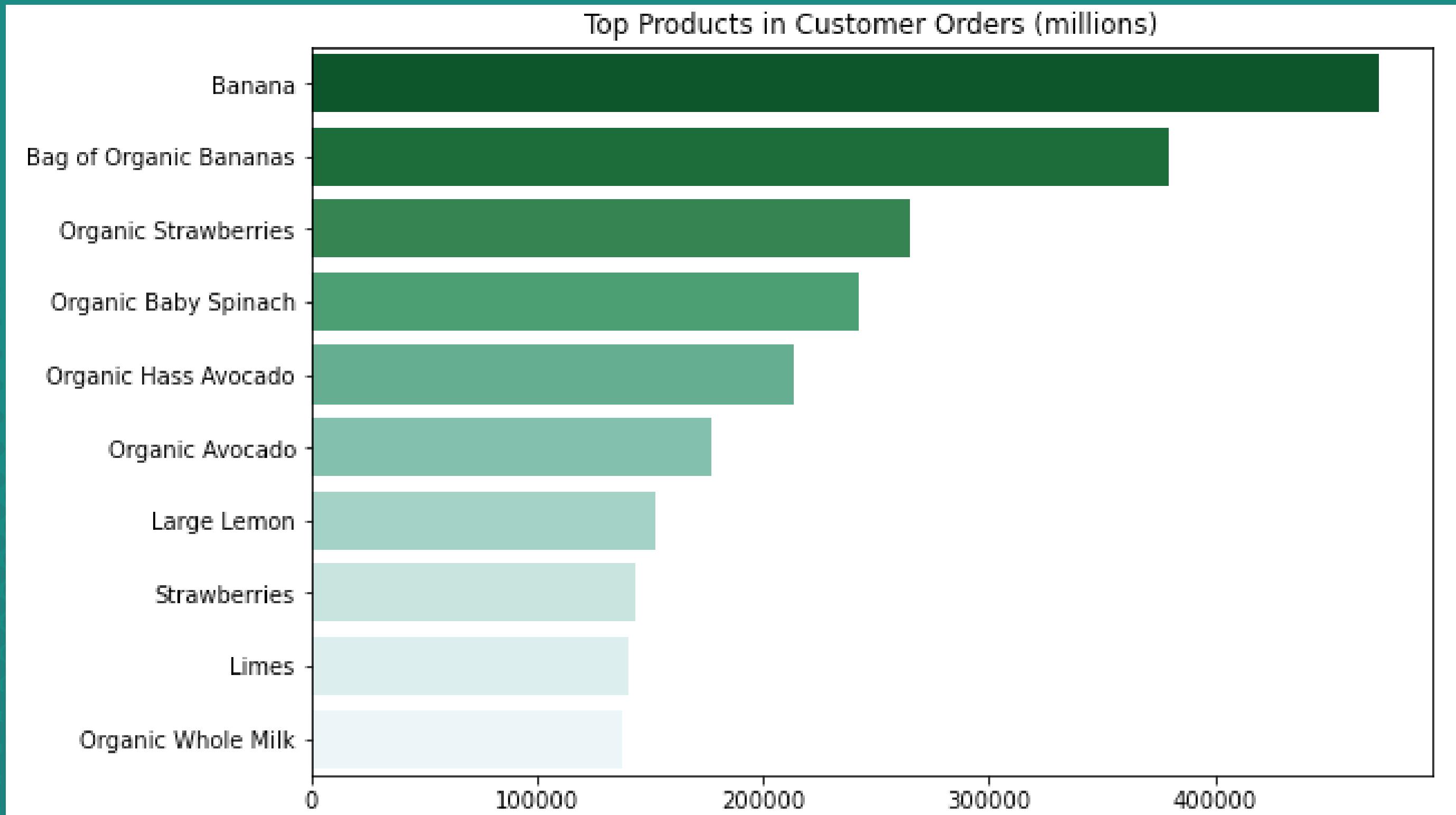
Methodology



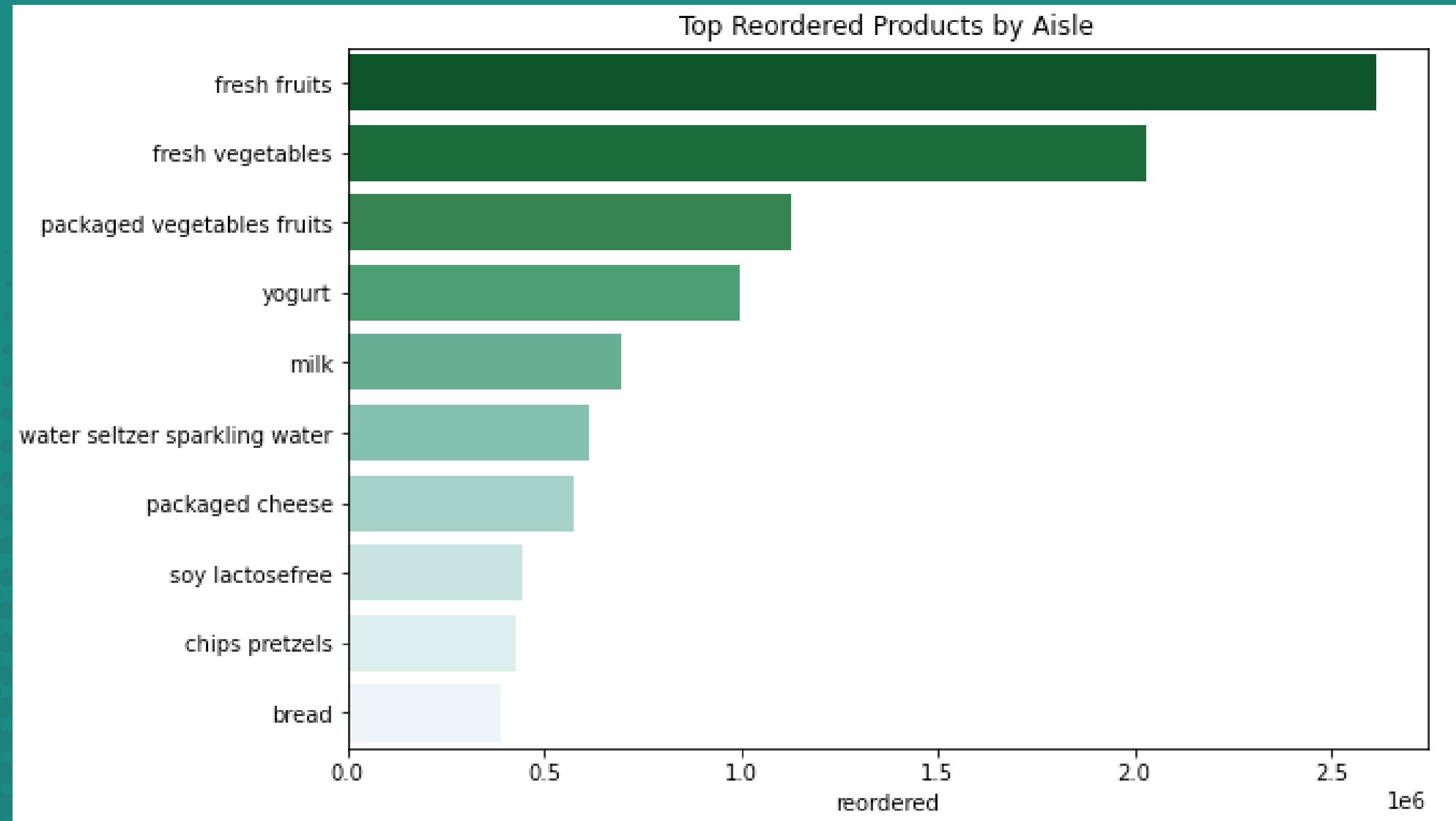
Data Overview



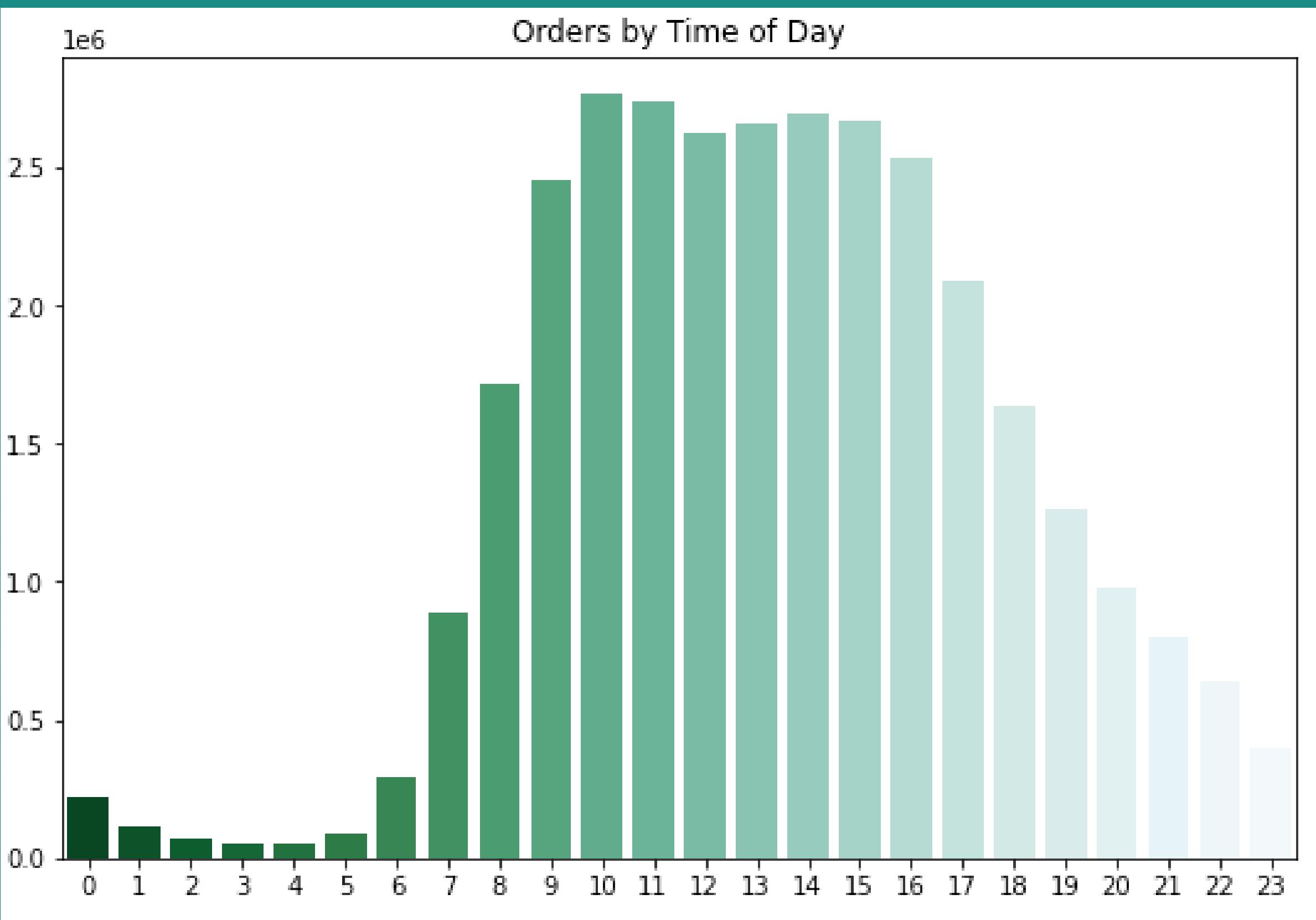
Banana's are important



Produce & Dairy Dominate Customer Reorders



Customers order in time for dinner



Market Basket Analysis

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Apriori - Confidence

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
(Organic Fuji Apple)	(Banana)	0.02710	0.17149	0.01078	0.397786	2.319587	0.006133	1.375773
(Organic Raspberries)	(Bag of Organic Bananas)	0.04394	0.13489	0.01322	0.300865	2.230446	0.007293	1.237400
(Organic Avocado)	(Banana)	0.05676	0.17149	0.01688	0.297393	1.734168	0.007146	1.179193
(Strawberries)	(Banana)	0.04222	0.17149	0.01249	0.295831	1.725065	0.005250	1.176579
(Organic Hass Avocado)	(Bag of Organic Bananas)	0.07202	0.13489	0.02110	0.292974	2.171949	0.011385	1.223590
(Large Lemon)	(Banana)	0.04520	0.17149	0.01223	0.270575	1.577790	0.004479	1.135840
(Organic Raspberries)	(Organic Strawberries)	0.04394	0.08810	0.01032	0.234866	2.665899	0.006449	1.191817
(Organic Strawberries)	(Bag of Organic Bananas)	0.08810	0.13489	0.01975	0.224177	1.661925	0.007866	1.115087
(Organic Whole Milk)	(Banana)	0.04804	0.17149	0.01063	0.221274	1.290302	0.002392	1.063930
(Organic Strawberries)	(Banana)	0.08810	0.17149	0.01864	0.211578	1.233761	0.003532	1.050846

*Orders that contain Organic Fuji Apples, have a
40% probability of containing Bananas*

Apriori - Lift

antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
(Organic Raspberries)	(Organic Strawberries)	0.04394	0.08810	0.01032	0.234866	2.665899	0.006449	1.191817
(Organic Strawberries)	(Organic Raspberries)	0.08810	0.04394	0.01032	0.117140	2.665899	0.006449	1.082912
(Banana)	(Organic Fuji Apple)	0.17149	0.02710	0.01078	0.062861	2.319587	0.006133	1.038160
(Organic Fuji Apple)	(Banana)	0.02710	0.17149	0.01078	0.397786	2.319587	0.006133	1.375773
(Bag of Organic Bananas)	(Organic Raspberries)	0.13489	0.04394	0.01322	0.098006	2.230446	0.007293	1.059940
(Organic Raspberries)	(Bag of Organic Bananas)	0.04394	0.13489	0.01322	0.300865	2.230446	0.007293	1.237400
(Organic Hass Avocado)	(Bag of Organic Bananas)	0.07202	0.13489	0.02110	0.292974	2.171949	0.011385	1.223590
(Bag of Organic Bananas)	(Organic Hass Avocado)	0.13489	0.07202	0.02110	0.156424	2.171949	0.011385	1.100055
(Organic Hass Avocado)	(Organic Strawberries)	0.07202	0.08810	0.01282	0.178006	2.020501	0.006475	1.109376
(Organic Strawberries)	(Organic Hass Avocado)	0.08810	0.07202	0.01282	0.145516	2.020501	0.006475	1.086013

Orders that contain Organic Raspberries are 2.6x more likely to contain Organic Strawberries than not

Modeling Reorders



Re-order Prediction Results

90%

Precision



88%

Recall



Important Predictors

01.

User Re-order history

02.

Add to cart order

03.

Product Re-order History

04.

User Average Basket Size



Recommendations

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Recommendations



**Targeted Ads &
Merchandising**



**Add to Cart &
Recommendations**



**Cross
Promotion**

Looking Forward



Future Steps

- Display Ad Opportunity Cost
- Basket Margin Optimization
- Reviews & Ratings





Thank You

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