



Instacart Sales Dashboard Iterative Design Report

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Abstract

After delivering a mature product on the market, companies would still seek continuous modification and adjustment to their product and business strategy for sustainable development. After eight years of launch, Instacart is confronted with intense competition and requires new growing opportunities. This motivates us to design the interactive dashboard for Instacart to provide deeper insights of their annual sales to facilitate better data-driven decision making.

The dashboard contains the annual sales of Instacart in 2017, and the target users of this dashboard include the sales, marketing, data science and executive teams of Instacart. It has been organized into four tabs that each team could easily check through, and answer key questions regarding the business such as the customer segmentation strategy as well as the possible improvement for the data science recommendation algorithm. Five participants with various levels of data experience and backgrounds were engaged in the usability testing to enable better design of the user interface.

With insights obtained from the dashboard, our team provides recommendations to our four different target groups correspondingly and hopefully contribute to the future growth of Instacart.

Introduction

Since the 20st century, there have been lots of emerging online delivery businesses that gradually show up to the market and customers including Instacart. Among all, Instacart is a leading brand and service chain that are accessible and popular among Americans. Since the end of 2018, 80% of American households have been able to use Instacart. With the growing data, Instacart has their challenge: Monitor their sales performance periodically to understand the performance of their general business, every department's business and the popularity of every type of food. For Instacart's sales business teams, these kinds of performance data could help them make later decisions on their supply chain, business / sale strategies and many other aspects. Considering that, we take their open data challenge and design a dashboard using their provided data to help build a tool for their business teams to gain the expected data and insights from raw data in an easy way. The usability test for our Instacart Dashboard is necessary to help

designers and developers to figure out what kinds of functions are useful for their business team, and which one is tedious or useless. This report is relating to the usability test, which the main goal is to evaluate the advantage and drawback of our designed Dashboard before producing and shipping.

Area of Focus

Sales: We aim to answer questions of what days of a week and what times of a day have the most/least orders. The sales and marketing teams can make better decisions about how to promote sales based on the result of these questions.

Customer: We aim to classify customers into high/medium/low value customers based on their buying behavior in order to help the marketing team develop customized marketing strategies for different target segments.

Product: We aim to find the most popular products and the least popular products (based on #of sell) in each department in order to help executive team to decide which product they should have more/less inventory

Summary Questions

1. What's general sales information? e.g. What's the total order? What's the average order per user? What's the distribution of orders across day and hour?
2. How to segment users based on their buying frequency and total orders? What kind of marketing strategies can we perform?
3. How's each department's performance and what can we do with different products?
4. How should we deal with unpopular items, e.g. remove or cross sale? How should we deal with popular reordered items, e.g. sending promotion

Motivation

- Get involved in the development and modification of a trending business model
- Facilitate the data-driven decision making process for sustainable company growth

Screenshots before and after test



Instacart Sales Dashboard Iterative Design Report

Sales Overview(after)

Sales Overview Customer Behavior Department Overview Product Recommendation



What's Instacart general sales information?

- For sales team, see several KPIs to have general idea.
- See peak time using heatmap from hour of day and day of week to determine staff distribution

Total Orders	Total Users	Total Product	Total Department
389,772	25,000	42,814	21
Avg Product Per Order	Avg Order Per User	Avg Buying Frequency	
10.07	15.59	12.82	

Order Heatmap

Number of Records
619 | 67,763

Order Day of Week

Day	Total Orders
Sunday	755,628
Monday	699,617
Tuesday	508,847
Wednesday	464,917
Thursday	456,299
Friday	510,664
Saturday	537,816

Order Hour of Day

Number of Records

Order Hour Of Day

← → ⏪ ⏩ ⏴ ⏵

Customer Overview(before)

[Sales Overview](#) [Department Overview](#) [Customer Behavior](#) [Product](#) [Recommendation](#)

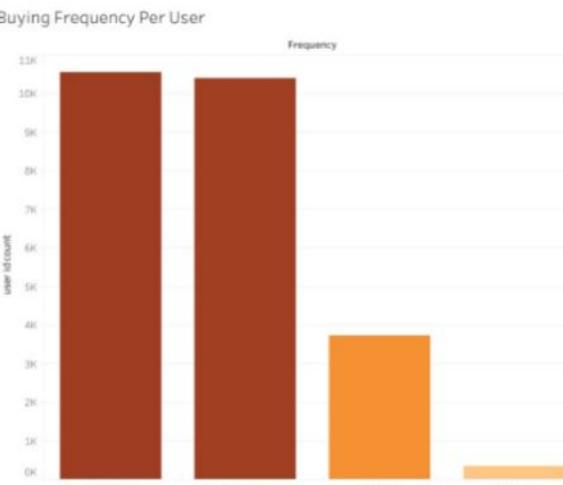


What's customer behavior and how do we segment them?

Frequency	Total Orders Per User (group)				Change View Segmentation Percentage Value
	<10 Orders	11-30 Orders	31-50 Orders	>51 Orders	
14-30 Days	30.89%	11.26%			
7-14 Days	17.48%	17.52%	6.53%	0.06%	Different marketing strategy for different value customers
3-7 Days	5.47%	2.95%	1.72%	4.68%	AB test to find best strategy
<3 Days	0.75%	0.14%	0.08%	0.46%	

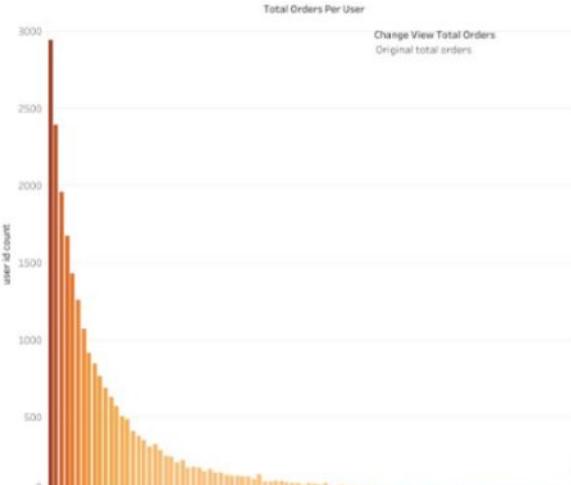
Change View Segmentation
Percentage Value

Buying Frequency Per User



Frequency	User Count
14-30 Days	~12K
7-14 Days	~11K
3-7 Days	~4K
<3 Days	~1K

Total Orders Per User



Order Range	User Count
0-5	~3000
5-10	~2500
10-15	~2000
15-20	~1500
20-25	~1200
25-30	~1000
30-35	~800
35-40	~600
40-45	~400
45-50	~300
50-55	~200
55-60	~150
60-65	~100
65-70	~80
70-75	~60
75-80	~50
80-85	~40
85-90	~30
90-95	~20

Customer Overview (after)

[Sales Overview](#) [Customer Behavior](#) [Department Overview](#) [Product](#) [Recommendation](#)



What's customer behavior and how do we segment them?

- For marketing team and executive team, segment customers into high/medium/low value and perform different marketing campaign.

Customer Segmentation

Frequency	<10 Orders	31-50 Orders	31-50 Orders	>51 Orders
14-30 Days	30.89%	11.26%		
7-14 Days	17.41%			11.03%
3-7 Days	5.47%			4.67%
<3 Days	0.76%	0.14%	0.08%	0.48%

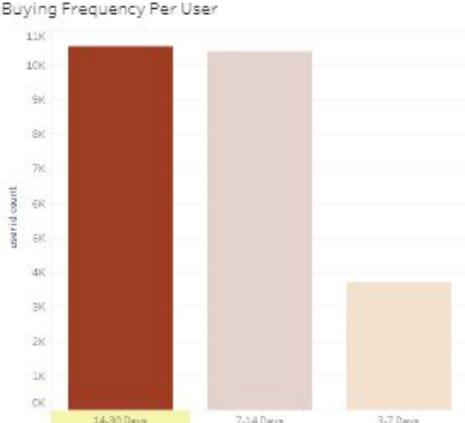
[Change View Segmentation](#)

[Percentage Value](#)

Total Orders Per User (group)

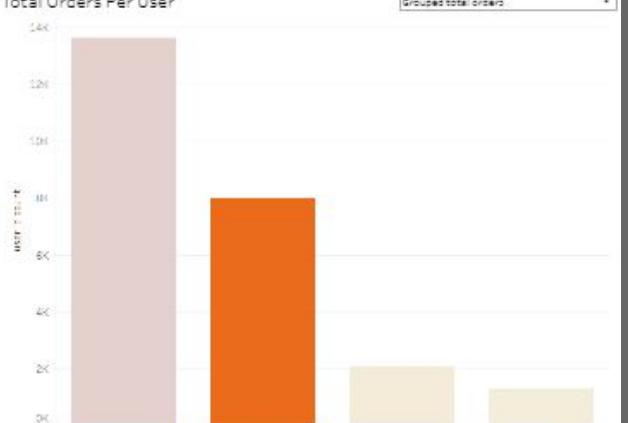
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7-14 Days	17.41%			11.03%
3-7 Days	5.47%			4.67%
<3 Days	0.76%	0.14%	0.08%	0.48%

Buying Frequency Per User



Frequency	14-30 Days	7-14 Days	3-7 Days	<3 Days
14-30 Days	11K	10K	3K	1K
7-14 Days				
3-7 Days				
<3 Days				

Total Orders Per User



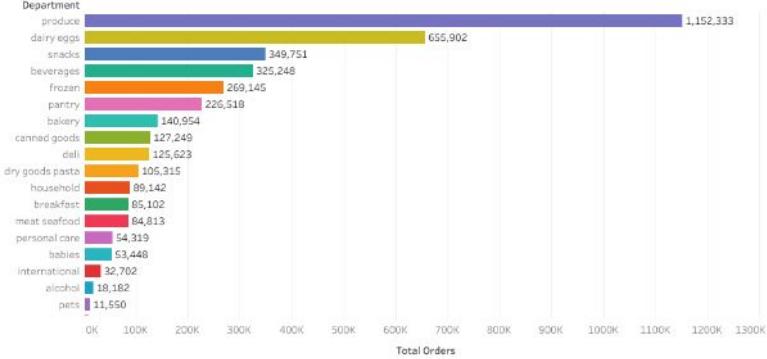
Frequency	<10 Orders	11-30 Orders	31-50 Orders	>51 Orders
<10 Orders	14K	11K	2K	1K
11-30 Orders		11K		
31-50 Orders			2K	
>51 Orders				1K

Department Overview(before)

Sales Overview Department Overview Customer Behavior Product Recommendation 

What's each department performance?

Department Sale



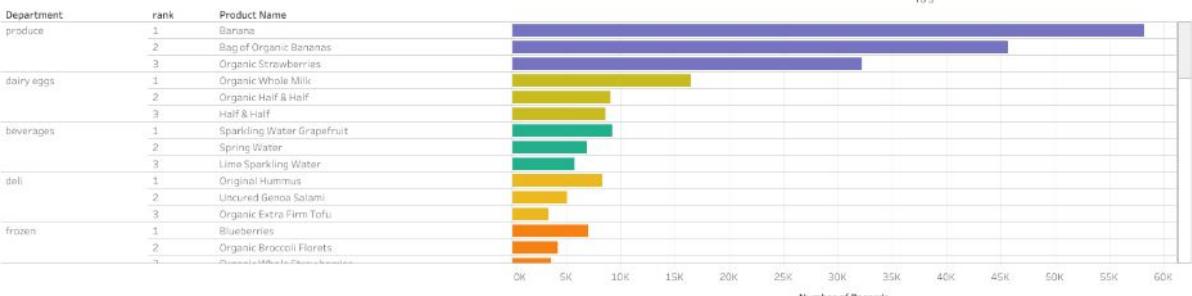
Department	Total Orders
produce	1,152,333
dairy eggs	655,902
snacks	349,751
beverages	325,248
frozen	269,145
pantry	226,518
bakery	140,554
canned goods	127,249
deli	125,623
dry goods/pasta	105,315
household	89,142
breakfast	65,102
meat/seafod	64,813
personal care	54,319
babies	53,448
international	32,702
alcohol	18,182
pets	11,550

Aisle Overview



Department Top Product

Top N Filter To 3



Department	rank	Product Name	Number of Records
produce	1	Banana	58K
produce	2	Bag of Organic Bananas	32K
produce	3	Organic Strawberries	28K
dairy eggs	1	Organic Whole Milk	17K
dairy eggs	2	Organic Half & Half	10K
dairy eggs	3	Half & Half	9K
beverages	1	Sparkling Water Grapefruit	9K
beverages	2	Spring Water	7K
beverages	3	Lime Sparkling Water	6K
deli	1	Original Hummus	8K
deli	2	Uncured Genoa Salami	5K
deli	3	Organic Extra Firm Tofu	4K
frozen	1	Blueberries	7K
frozen	2	Organic Broccoli Florets	5K
frozen	3	Organic Mixed Berries	4K

Department Overview (after)

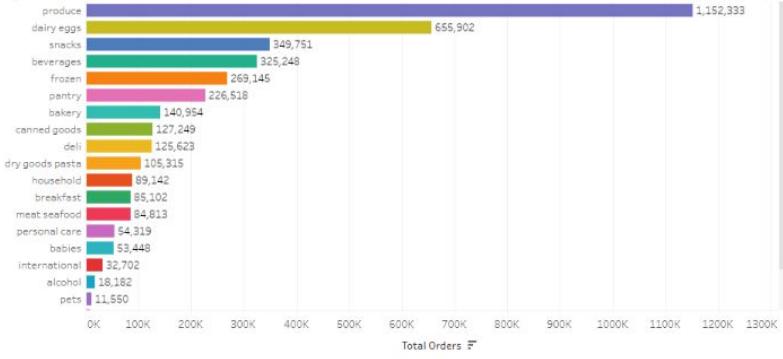
Sales Overview Customer Behavior **Department Overview** Product Recommendation



What's each department performance?
- For marketing team, get more items in popular department to better serve their needs.

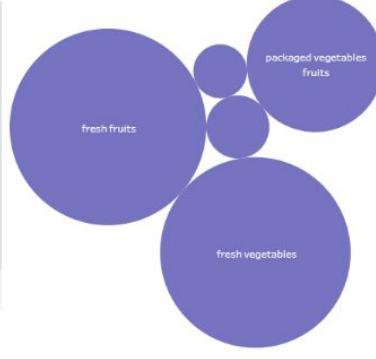
Department (All) ▾

Department Sale



Department	Total Orders
produce	1,152,333
dairy eggs	655,902
snacks	349,751
beverages	325,248
frozen	269,145
pantry	226,518
bakery	140,954
canned goods	127,249
deli	125,623
dry goods pasta	105,315
household	89,142
breakfast	85,102
meat seafood	84,813
personal care	54,319
babies	53,448
international	32,702
alcohol	18,182
pets	11,950

Aisle Overview



Department Top Product

Department	Rank	Product Name
produce	1	Banana
produce	2	Bag of Organic Bananas
produce	3	Organic Strawberries

Top N Filter

 3

Product Overview (before)

Sales Overview Department Overview Customer Behavior **Product** Recommendation 

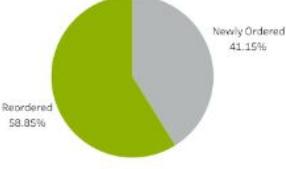
How to deal with less frequently buying & frequently reordered stuff?

Department: All

Seldom Buying Items

Department	Product Count by department	Count	Minimum Buying Count
Beverages	1892		7
breakfast	305		
bulk	7		
canned goods	761		
dairy eggs	834		
deli	417		
dry goods pasta	641		
frozen	1239		
household	1330		
international	450		
meat seafood	292		
missing	674		
other	284		
pantry	2219		
personal care	3646		
pets	428		
produce	359		
snacks	2154		

Reordered percentage



Frequently Reordered

Department	rank	Product Name	Reordered Days	Avg. Reordered
alcohol	1	Granny Smith, Tart Green Apple	2	
	2	Arrogant Bastard Ale	11.7	
	3	Blonde Ale	14.2	
	4	Pinot Grigio, Delle Venezie	15.5	
	5	Originale Amaretto	11.8	
babies	1	Organic Superfoods Orange, Apple & Sweet Potato ...	7	
	2	Organic Nibbly Fingers Stage 3 Bananas & Raisins	12.7	
	3	Lil' Beans Original	Null	
	4	Peach Multigrain Cereal with Blackberries Organic...	2	
	5	Hands & Face Citrus Scent Antibacterial Wipes	8	
bakery	1	Small Soft and Fluffy Flour Tortillas	15.5	
	2	Soft Honey Whole Wheat Bread	13.5	
	3	Blueberry Scones	8.3	
	4	Flax Oat Bran & Whole Wheat Lavash Bread	11	
	5	9 Grain English Muffin	9	



Result & Recommendation

Sales Dashboard:

The target user for this dashboard is the sales team. They can have a general idea of sales performance in different time periods and monitor KPI. From the dashboard we can conclude that Sunday, Saturday and Monday have the most orders placed and most orders are placed

between 9am-4pm every day. As a result, our recommendation is to increase website capacity for weekend peak time to fulfill the increasing demand. Sending promotion and running banner ads during weekdays to promote off-peak time sales.

We changed the order of navigation bars to put icons more related to each other and users could easily navigate between different tabs. We change color in the week of day chart to make it unified with the whole dashboard. Lastly, we change the size of heatmap, which makes it easier for users to look at the whole dashboard without drag a lot.

Customer dashboard:

This dashboard is mainly for marketing and executive teams to segment customers into high/medium/low value customers based on their activities on Instacart. From the dashboard we can see several customer segmentation that is categorized by buying frequency and the total order of each user. The users who buy more frequently and have more total order are considered as higher value customers. We can conclude that currently, most users buying frequencies are 7-14 and 14-30 days, and not many users buying frequency less than 7 days. Additionally, most users have less than 10 orders in total and only a small portion of users has more than 30 total orders.

As a result, our recommendation is to give different market campaigns for different customer segmentation, for example, low frequency but high total order customer segment may indicate that the user has used Instacart for a long time but not always makes orders. Emailing ads to remind users about new products or new promotions, offering loyalty programs may better encourage buying actions for this group category. Whereas high frequency but low total order customer segments may indicate that users just joined Instacart and they like Instacart. Emailing to encourage subscription, or for example offering free shipping if ordering 3 times a week may retain their high activities on Instacart.

We remove some green characters to iterate the design of our dashboard to be more clear. We also add interaction here that if you hover on the main sheet, graphs below could highlight accordingly. Also, we change the name of graphs for easy understanding.

Department Dashboard:

This dashboard is mainly for marketing teams to learn what items sell the best in each department and aisle on Instacart. From the dashboard we can use both filter and hover function to just see the top selling items in the aisle by telling how big the circle area is. The top products part can be done with the top N filter, which users could enter a number by their own to adjust to a number they are interested in. They can also see how many times each item is sold, which bar gives a direct feeling.

Based on the usability test, we change the interaction function that after hover we keep all values there, which allows the user to explore more. We also add our target user group and potential insights they could find.

Product Dashboard:

This dashboard is mainly for marketing teams and ranking algorithm teams. It's been divided into two parts: popular and unpopular products. In the unpopular items part, we could see which department has more and hover to see detailed information. In the popular items part, we care more about reordered items and the ranking team could build a better searching algorithm to prioritize frequently reordered items.

Based on feedback we add numbers into seldom buying items and sort it by count, which gives people a more intuitive sense of each department's unpopular items distribution. Also, we remove the size on the bar to keep every row the same thickness.