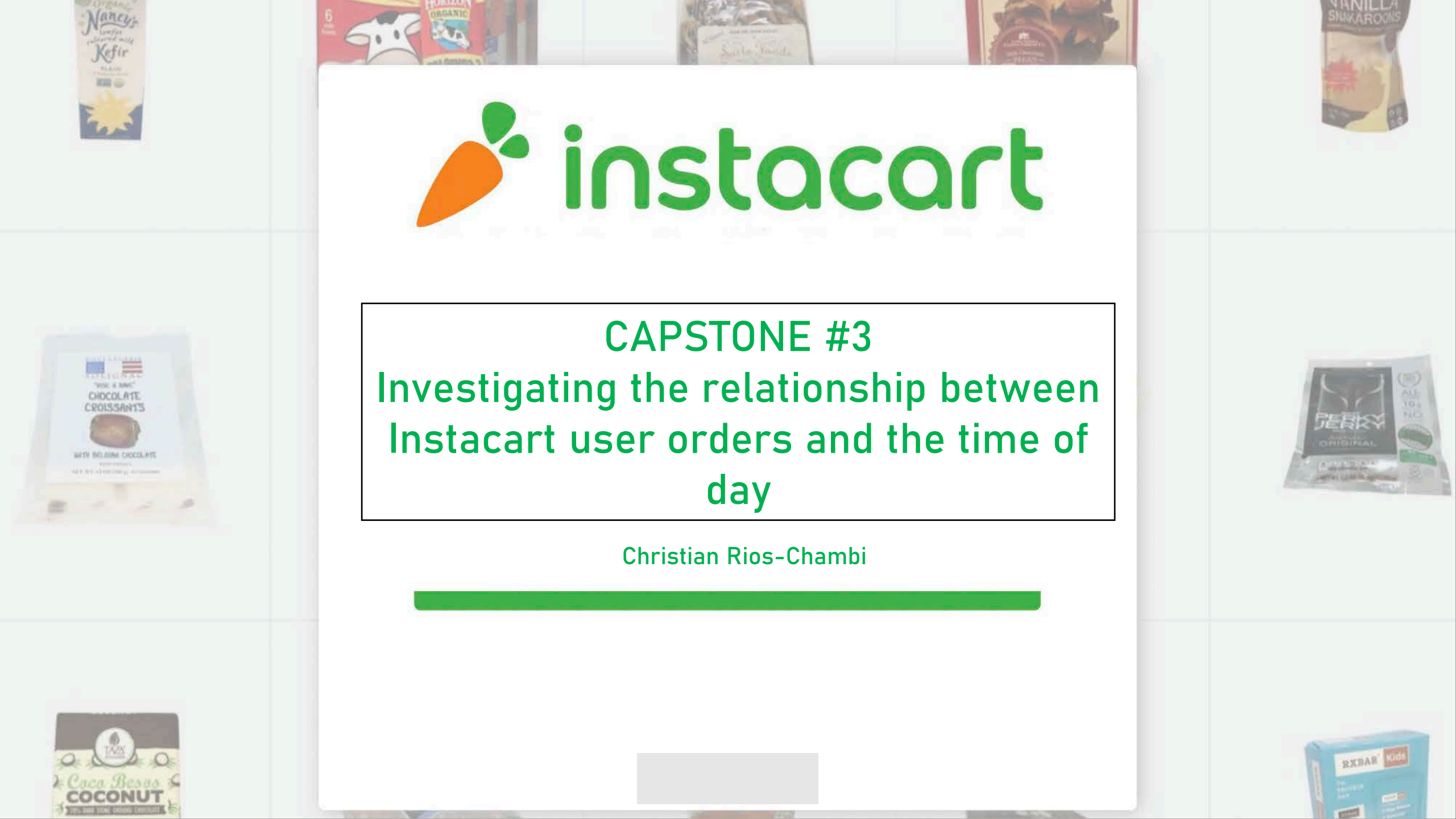


CAPSTONE #3
Investigating the relationship between Instacart user orders and the time of day

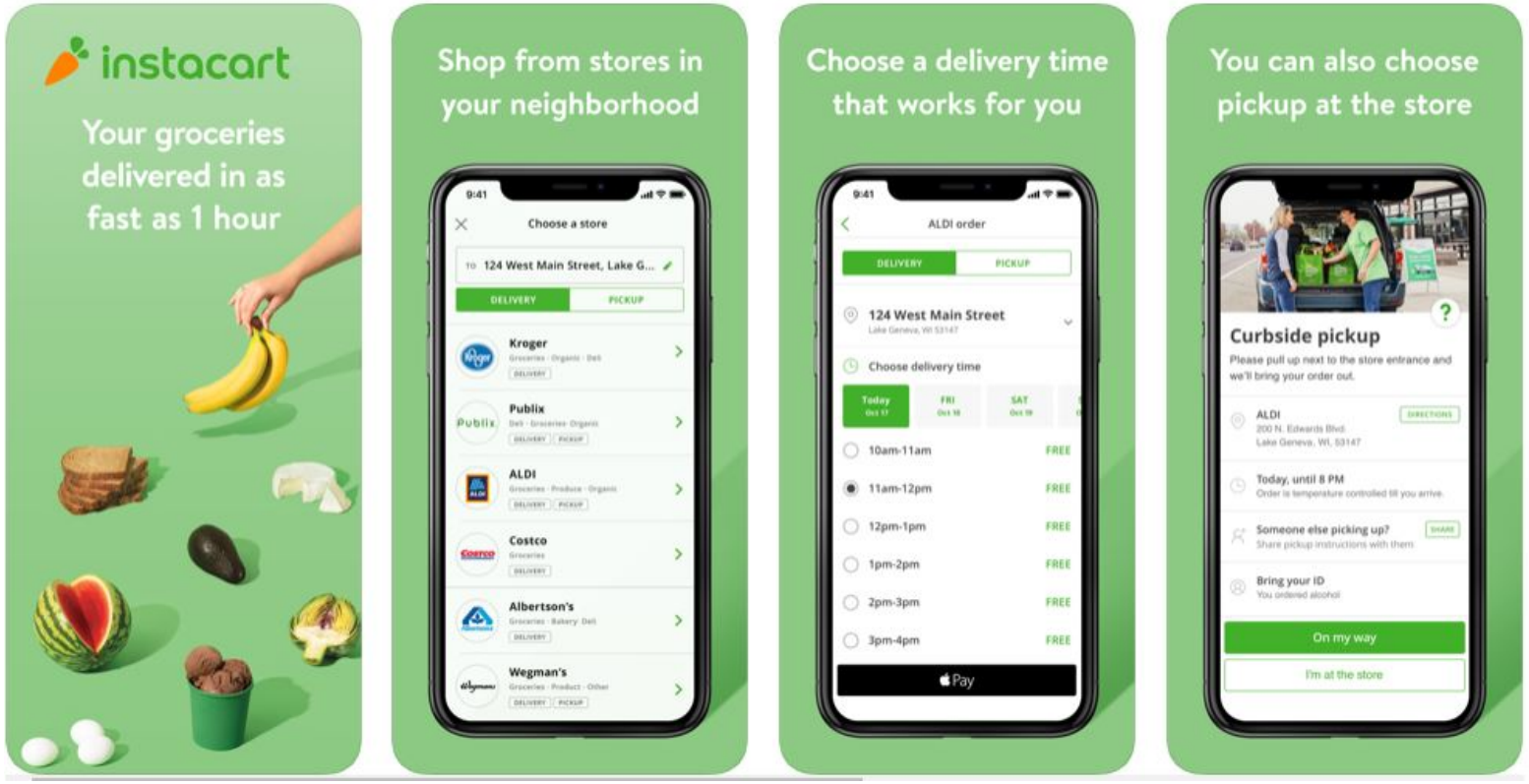
Christian Rios-Chambi

Background Information

Instacart lets you shop from local grocery stores online, then sends a “personal shopper” to fulfill and deliver your order to you the same day

I will be using “The Instacart Online Grocery Shopping Dataset 2017” for my analysis. This anonymized dataset contains a sample of over 3 million grocery orders from more than 200,000 Instacart users.

Question: Does the time of day affect our user orders?



Statistical Testing

I created two groups: AM and PM
AM = 12 am – 11 am
PM = 12pm – 11 pm

Null Hypothesis

H_0: µ1 = µ2. Group AM and Group PM have the same average orders placed (per user)
H_1: µ1 ≠ µ2. = Group AM and Group PM do not have same average orders placed (per user)

Using the Welch's t-test

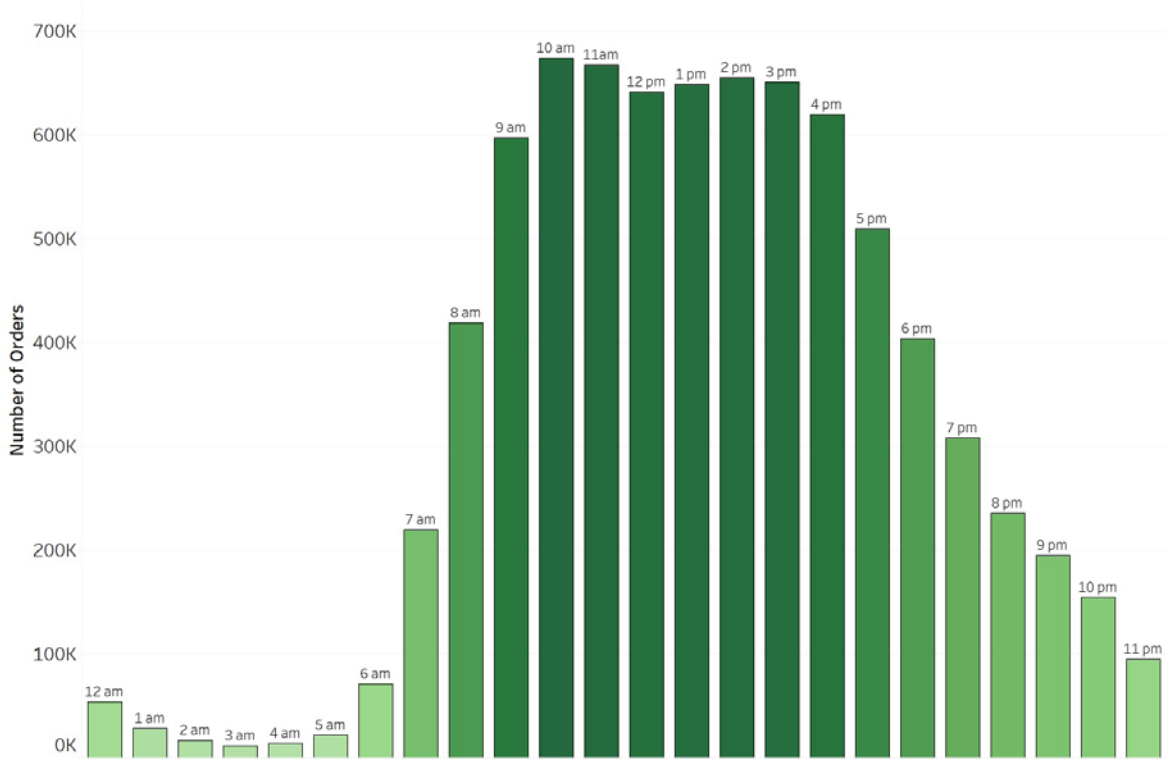
```
Welch's t-test = -141.82183714503853
p-value: 0.0
DoF: 368701.62768209964
Decision: Reject the null hypothesis
```

Time Analysis

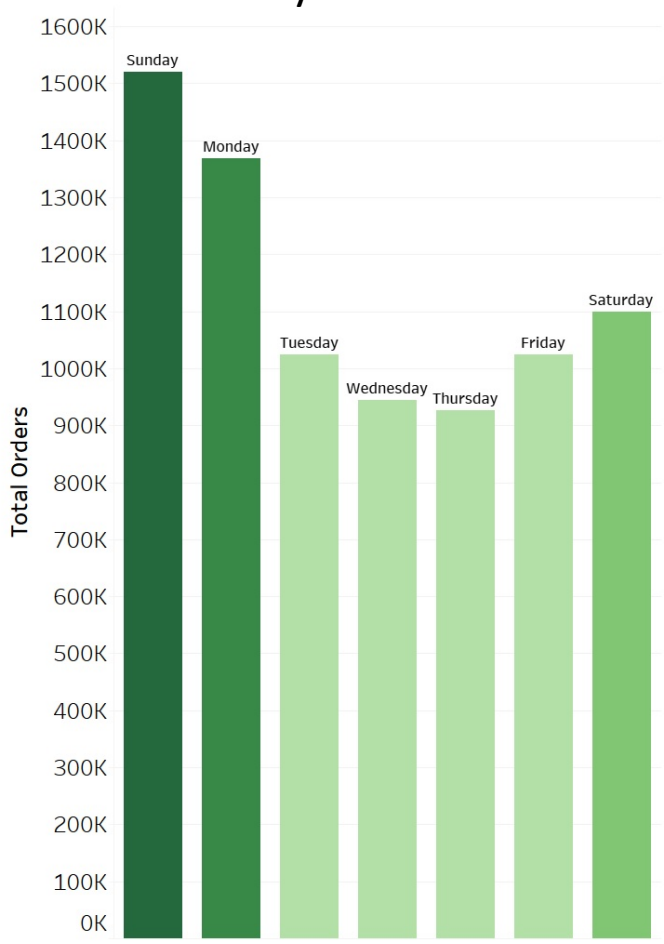
We can see that the hours from 9 am to 4 pm are the most popular hours for ordering

Also Sunday and Monday are the most popular ordering days

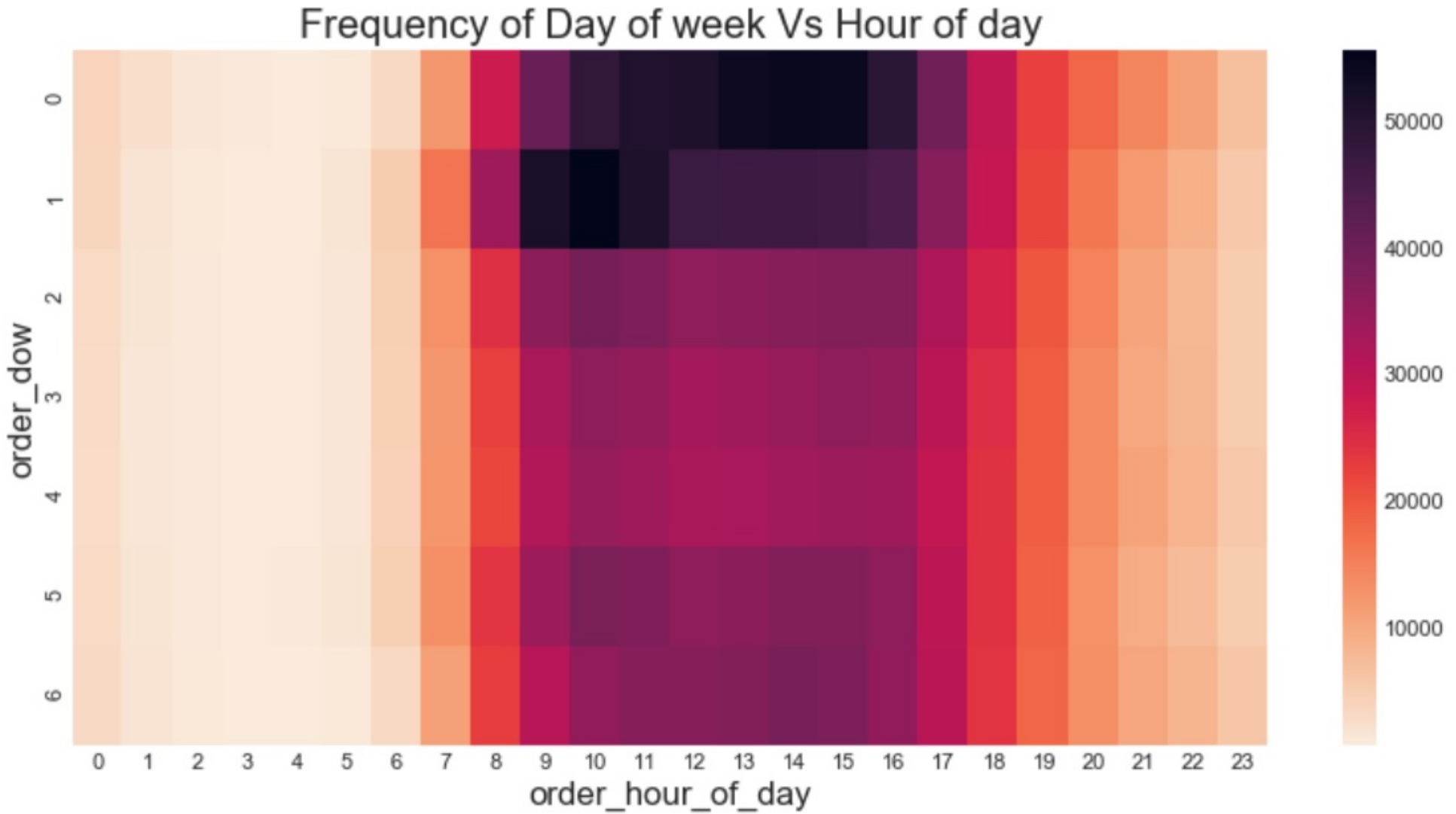
Hours of the Day



Days of the Week



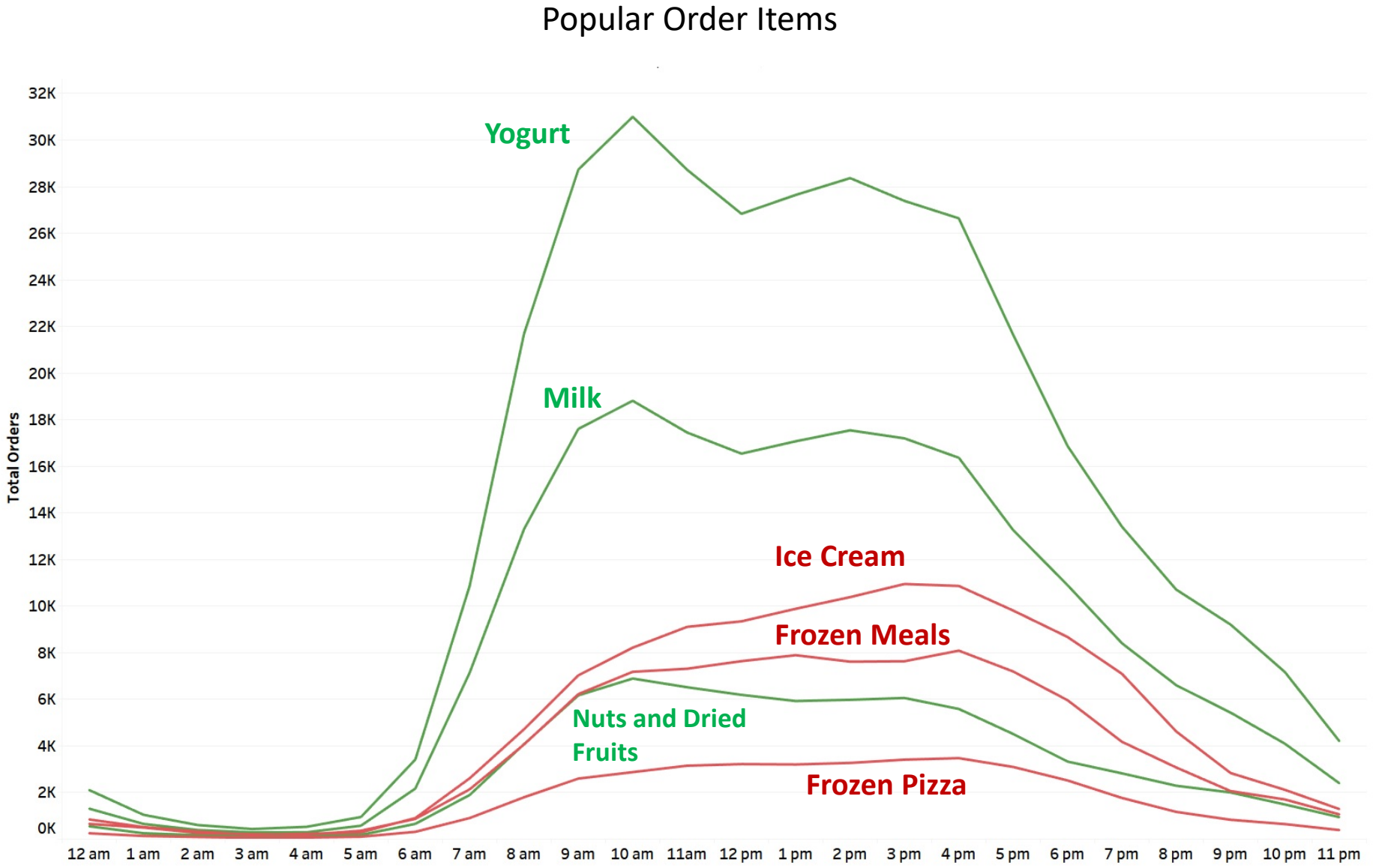
Combining both order hour of day and order day of the week gives us a better visualization



Let's look at the product departments

Yogurt, Milk and Nuts and Dried Fruits peak in the morning (10am-11am)

Ice cream, Frozen Meals, and Frozen Pizza peak in the evenings (4pm-5pm)



Insights and Further Analysis

Group AM and Group PM do not have same average orders placed (per user)

The most popular order times are between 9 am to 4 pm

The most popular order days are Sunday and Monday

Some product departments peak in the morning and others peak during the evening

- We can use this information to help triangulate an advertisement campaign for a specific product (during a specific hour of the day)
- We can improve customer outreach by offering specific coupons for products often purchased at a specific time
- I would like to analyze specific products and/or coupon distribution rates

Thank You for Listening

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