Online Grocery (Re)ordering

promoting new products based on reorder correlations

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Project goals:

- Specify product reordering correlations

- **Use them to promote new products**

- As well as informing:
  - restocking
  - reorder streamlining
  - predictions for future orders

Business Context:
Grocery Delivery & Curbside-Pickup

Online grocery delivery **became mainstream** in the mid-2010's through third-party service companies such as **Instacart** and **Shipt**.

During & after the pandemic, many US grocery chains **started their own delivery services.**

Besides Amazon Fresh, these stores also offer **curbside-pickup service**.

Data Overview

- Instacart dataset from Kaggle.com

- data contains over three million records with:

    - order information

    - when orders were placed
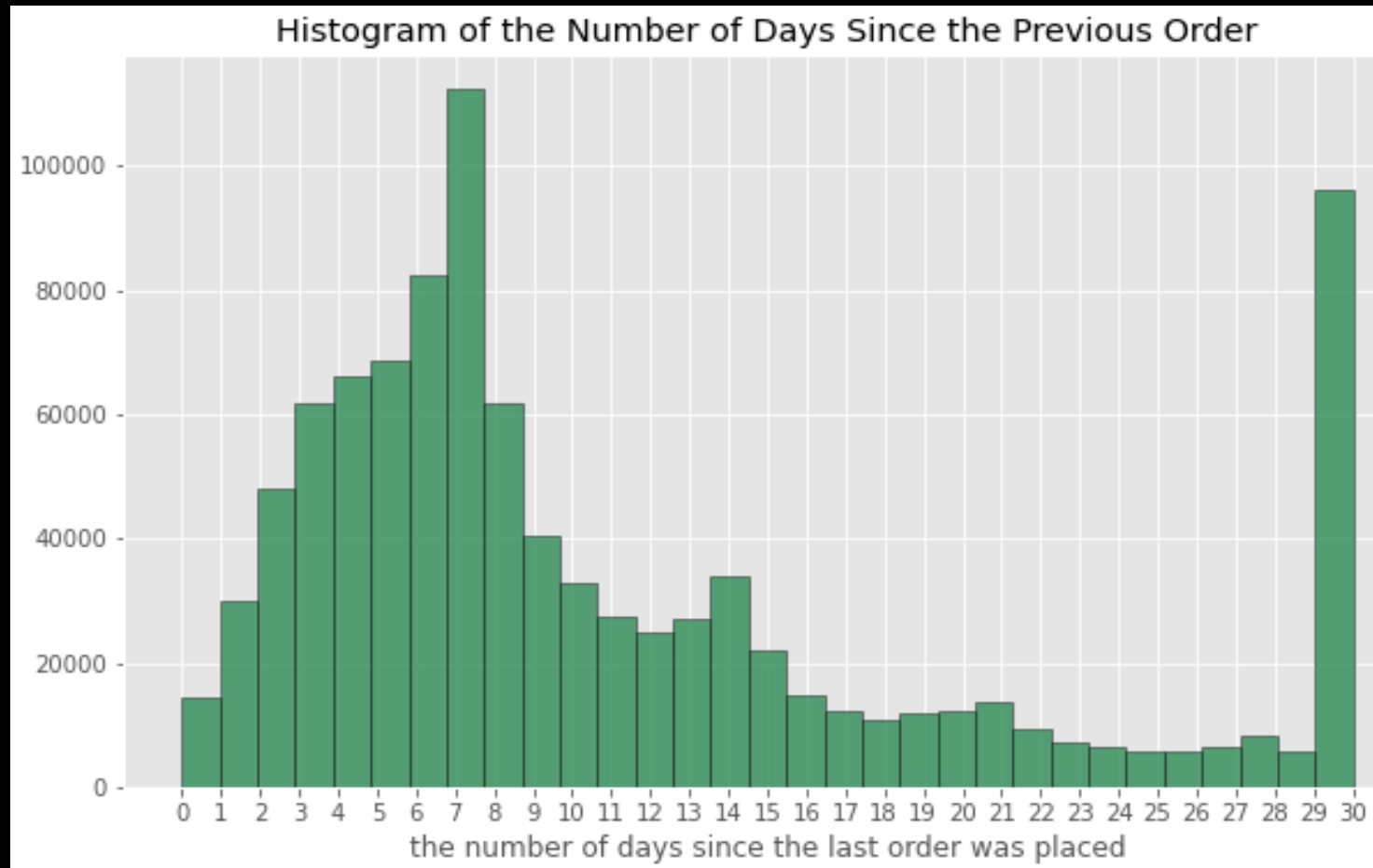
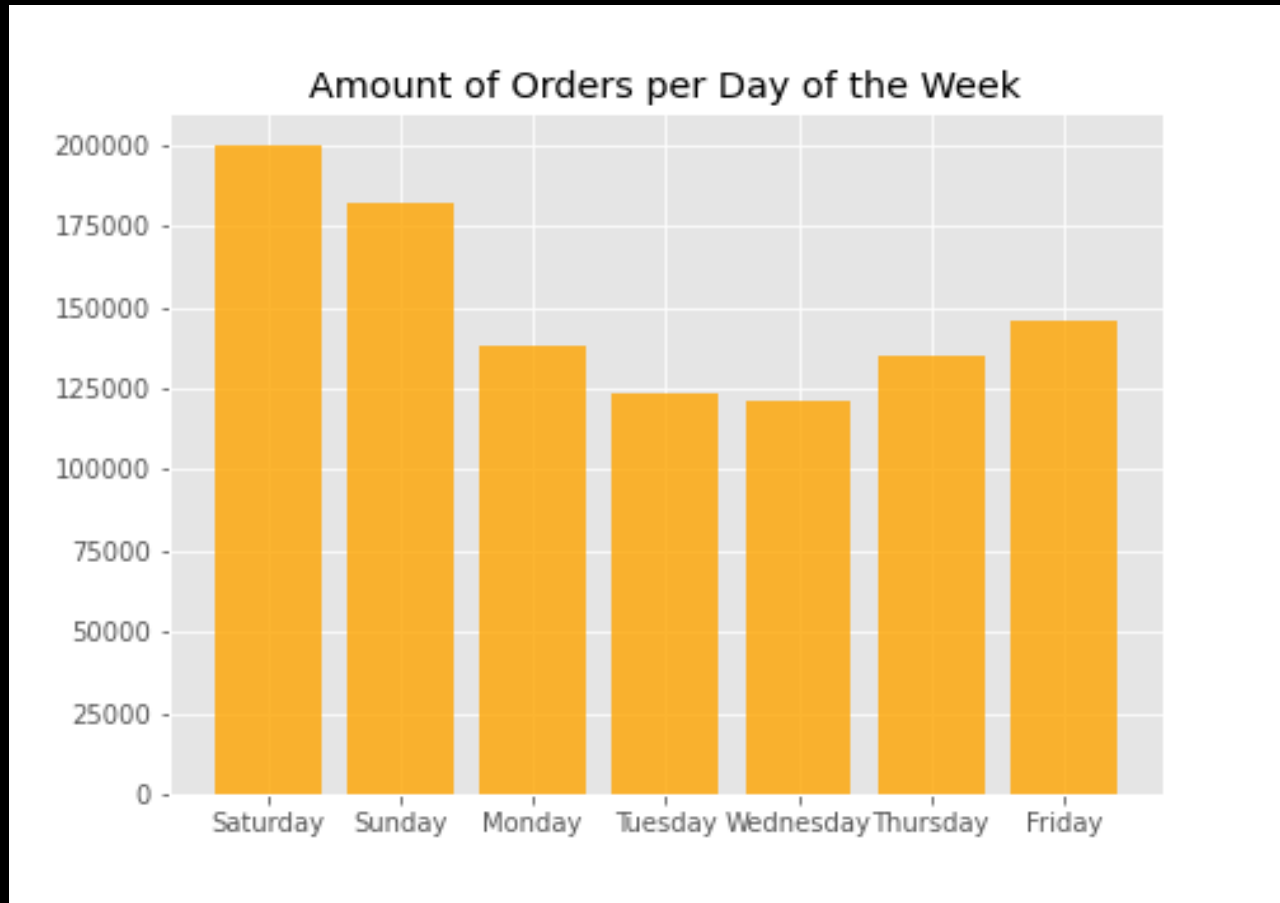   - how products were added to cart

Project Overview

1. preliminary analysis

2. linear regression analysis

3. business recommendations on promoting new items

weekly ordering trends

Histogram of the Number of Days Since the Previous Order

busy weekend cycle

Amount of Orders per Day of the Week

add-to-cart order

Customers reorder products first

Just the top 100 products are shown here

Including all 35,449 unique products obscures this pattern

Regression analysis specifies the exact, broader correlation

Added-to-Cart-Order & Product-Reorder-Percentage

linear regression analysis

turning preliminary findings
into
business recommendations

1.baseline model

2.model evaluation

3.model improvement

Only more popular products make for useful insights

- including all 35k unique products cannot explain reordering

- product order amounts range from 150,000 down to 1

- only products ordered over 100 times are included here

Helpful data aspects for regression analysis:

- average order in which a product was added to the cart

- average number of days between a product being reordered

- product's average order day of the week

As a customer adds products to the cart, each product is 4.7% less likely to be a reorder.

recommendation 1:

Promote new products **towards the end** of the ordering process.

recommendation 2:

Streamline reordering to allow greater time for new product promotion

● such as a "click to reorder previous" option

As the week progresses from Saturday by one whole day, the likelihood of products being a reorder **decreases by 15.2%**.

recommendation 3:

New product promotion on **Thursdays or Fridays** may increase interest before the weekend rush.

Conclusions and future applications

Instacart's dataset generalized to grocery stores

It can inform marketing & restocking

Also relevant for online-only "fulfillment centers"

Future projects tailored in-store may optimize:

- aisle layouts

- reserved parking spaces for curbside pickup

- allocation of staff to delivery & curbside

Thank You

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