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Basket Behaviour Analysis

12/10/2025

Presented by:

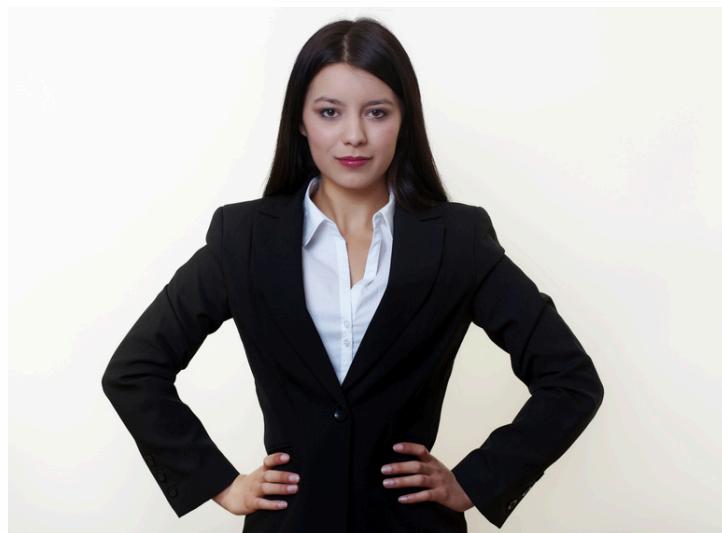
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Reference: <https://www.instacart.com>

PROBLEM STATEMENT

Instacart faces the challenge of identifying the key drivers of customer loyalty and repeat purchasing amid rapidly growing user activity and complex, dispersed transactional data.

Emma, Product & Ops Lead



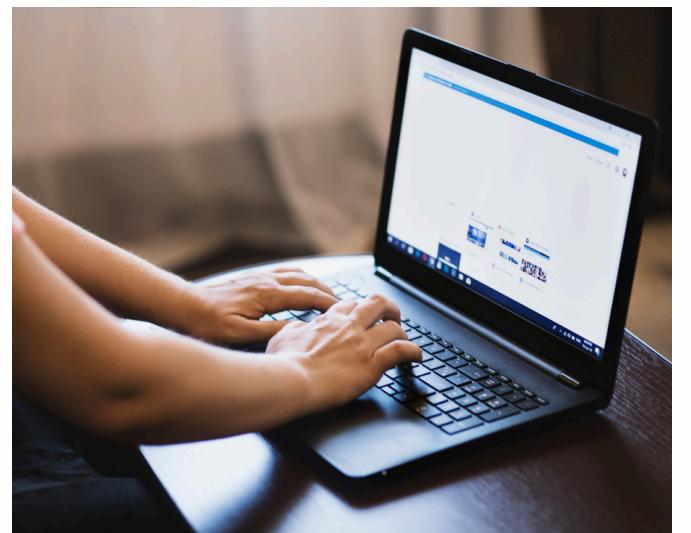
Which customers and products drive repeat business, when do customers order, and which product bundles can increase basket size via cross-sell?

Mateo, Data Scientist



Which signals (user-level, product-level, sequence embeddings, time features) best predict reorder behavior and days-to-next-order?

Priya, Marketing Analyst



Which segments (light/medium/heavy) respond best to cross-sell, and which product pairs yield highest lift?

EXECUTIVE SUMMARY

Instacart is a grocery delivery platform whose customers exhibit clear temporal shopping patterns and concentrated repeat-purchase behavior. A small set of products and departments account for most reorders, with high-frequency users driving a disproportionate share of the volume. Several product pairs also demonstrate strong co-purchase relationships, indicating cross-sell potential.

Key Finding

Reorder hotspots
Light/Medium/Heavy segments differ in reorder probability and responsiveness to offers.

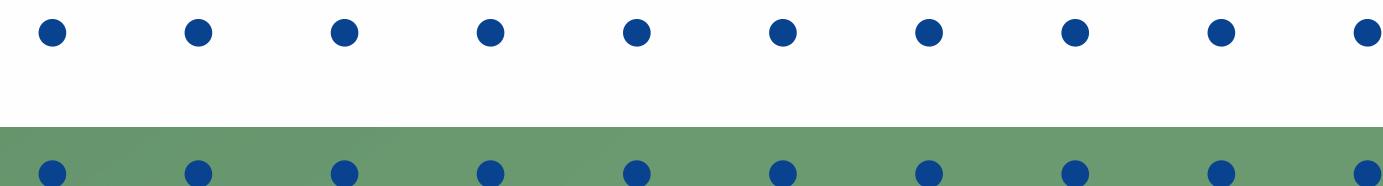
Recommended Actions

Reorder hotspots
Light/Medium/Heavy segments differ in reorder probability and responsiveness to offers.

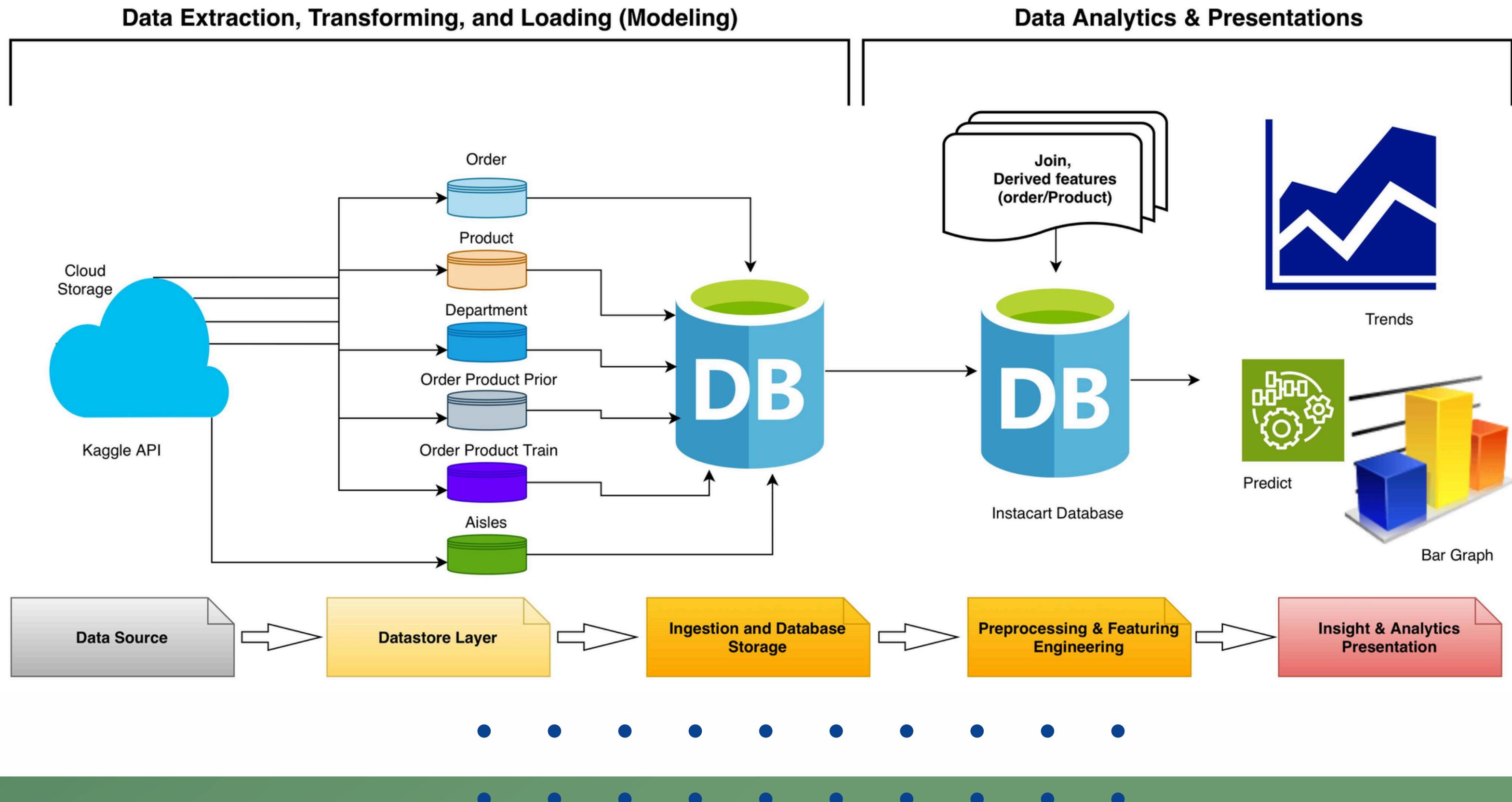
Success Metrics

Descriptive, Predictive, Operational (reduced under/over-staffing hours)

Instacart's mission is to create a world where everyone has access to the food they love and more time to enjoy it together.

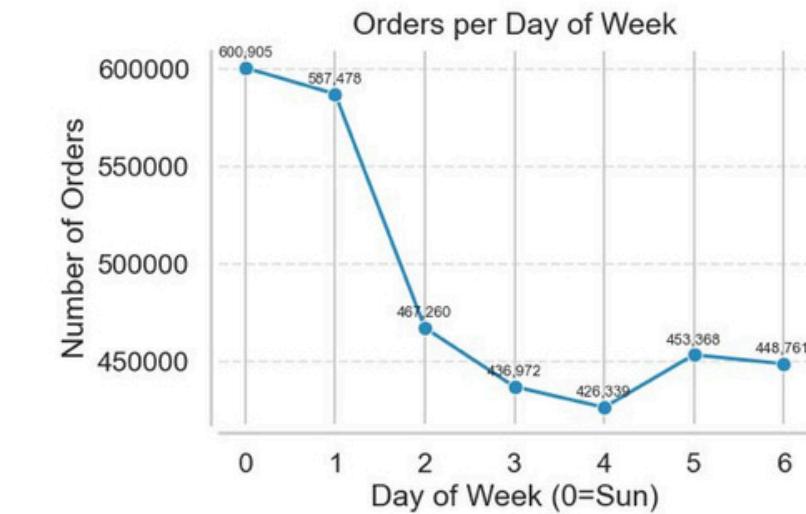
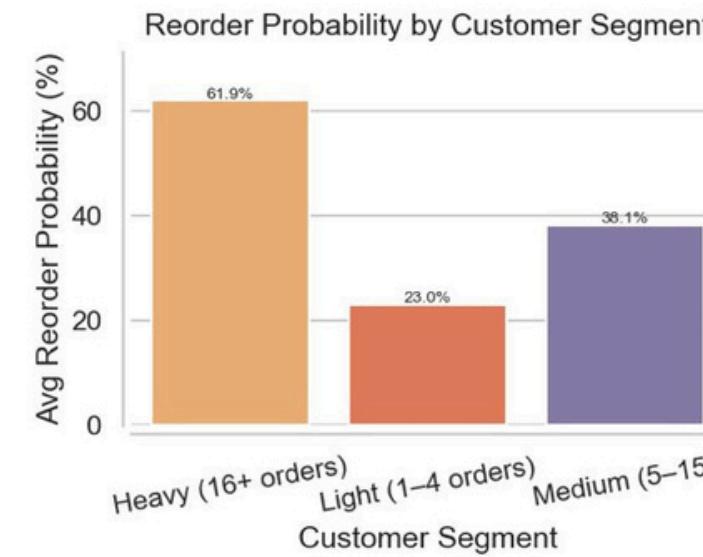
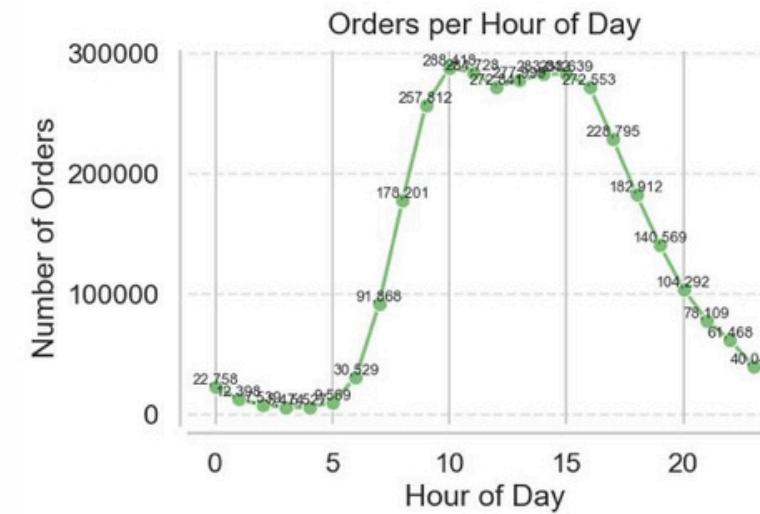
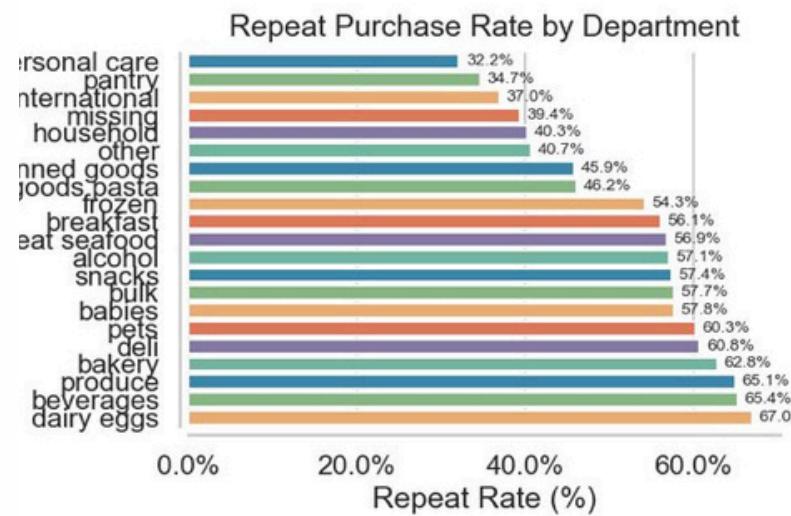


METHODOLOGY APPROACH

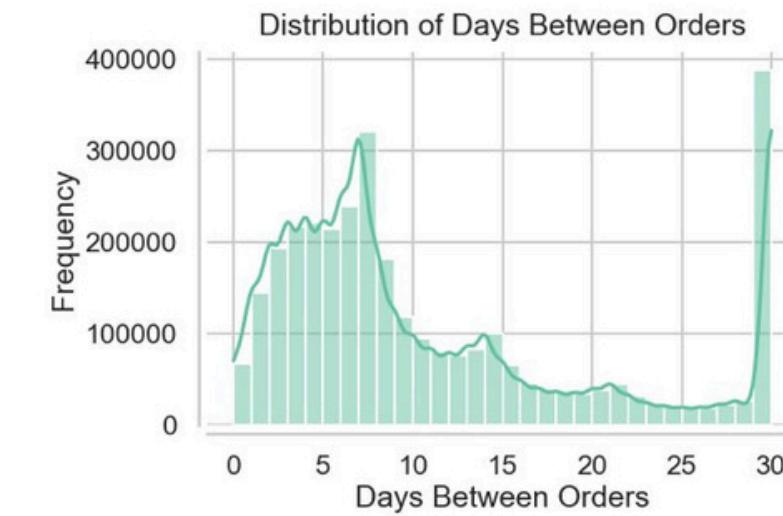
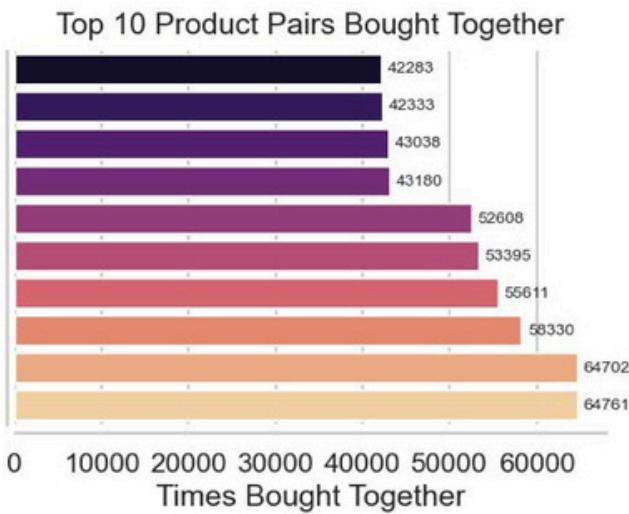


EXPLORE, BUSINESS QUESTIONS & INSIGHTs

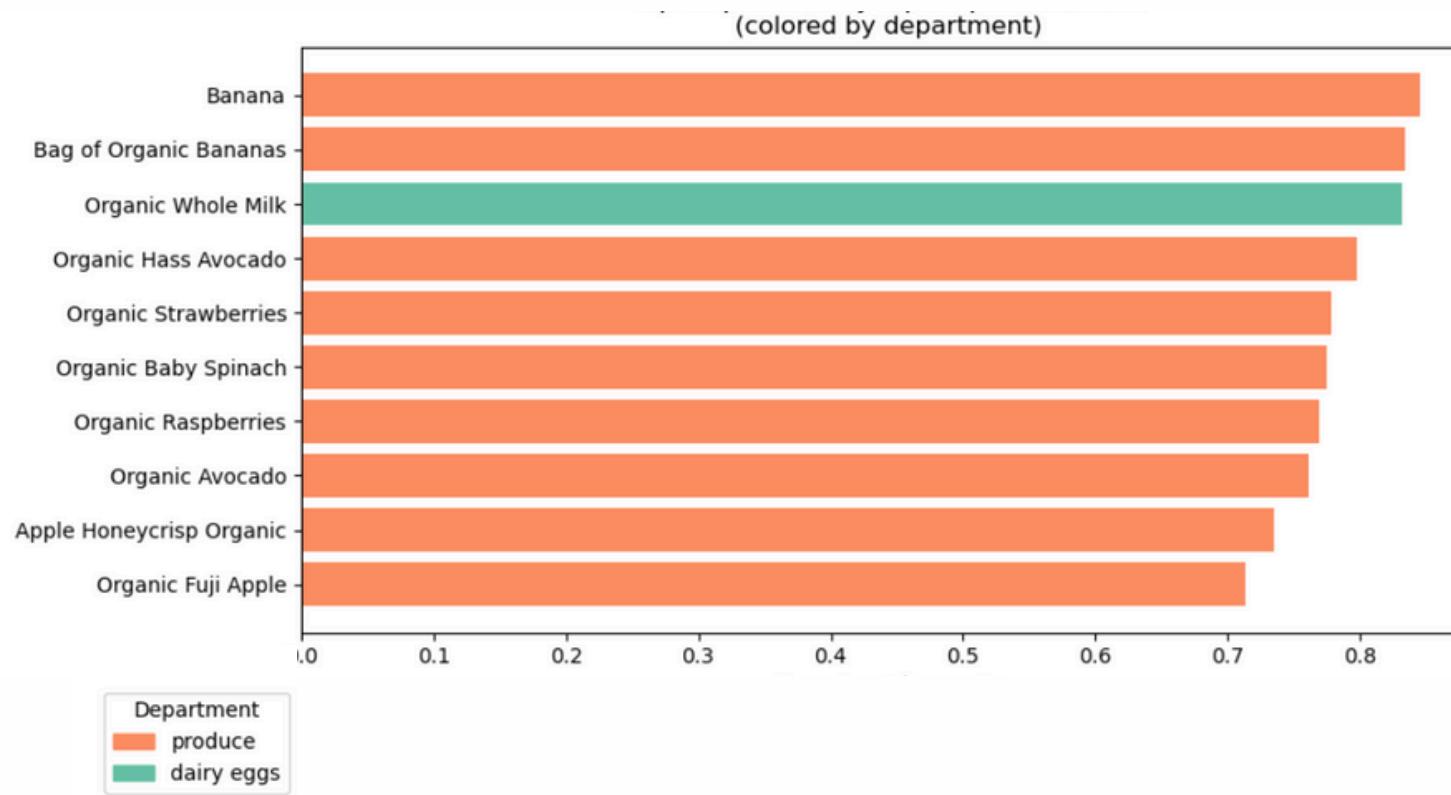
Instacart — Dashboard Overview



Bag of Organic Bananas + Organic Raspberries
Organic Strawberries + Organic Hass Avocado
Banana + Large Lemon
Strawberries + Banana
Bag of Organic Bananas + Organic Baby Spinach
Organic Baby Spinach + Banana
Banana + Organic Avocado
Organic Strawberries + Banana
Bag of Organic Bananas + Organic Strawberries
Bag of Organic Bananas + Organic Hass Avocado



Q: Repeat Purchase Rate (Reorder Rate)



Insight:

- The most frequently reordered products are fresh essentials (bananas, milk, avocados).

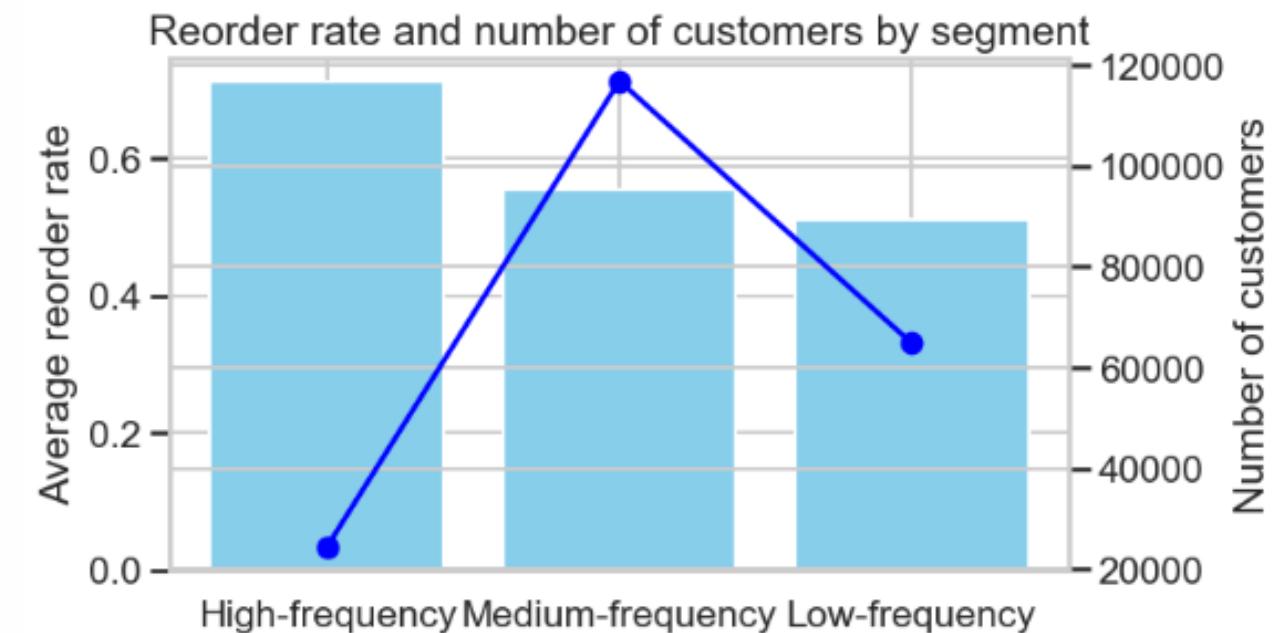
Explains:

- Users return to Instacart to restock these staples on a weekly basis.

Action:

- Keeping these items in stock and offering personalized suggestions can strengthen customer loyalty.

Q: Customer Segments



Insight

- High-frequency users reorder the most, but medium-frequency users are the largest group.
- Low-frequency users show the weakest retention.

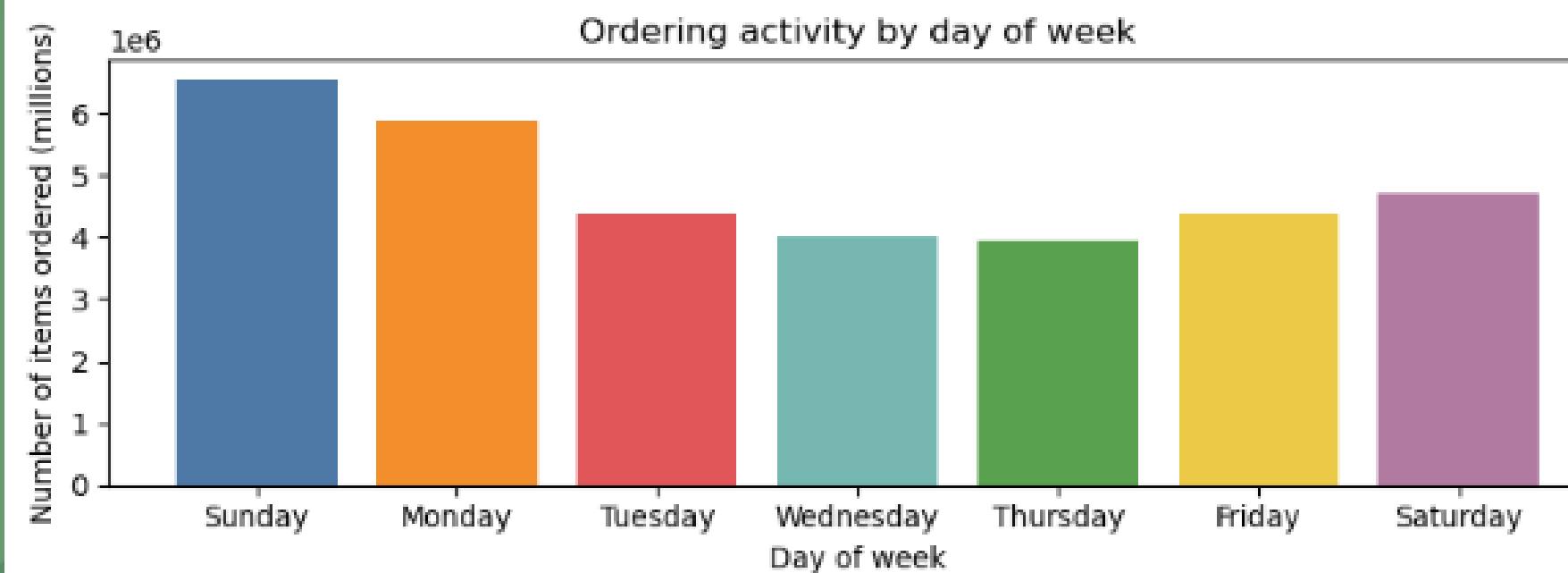
Explains

- High-frequency customers are highly loyal; medium-frequency users have strong potential; low-frequency customers engage only occasionally.

Actions

- Boost loyalty for high-frequency users (early access, recurring-order perks).
- Encourage medium-frequency users with reminders and targeted offers.
- Reactivate low-frequency users with first-reorder incentives and reduced friction.

Q: Ordering Behavior (Day of Week and Hour of Day)



Insight

- Ordering activity peaks on Sundays, Saturdays, and Mondays, and drops to its lowest level mid-week. By hour, demand is highest between 10:00 AM and 3:00 PM, with very low activity from 12:00 AM to 5:00 AM.

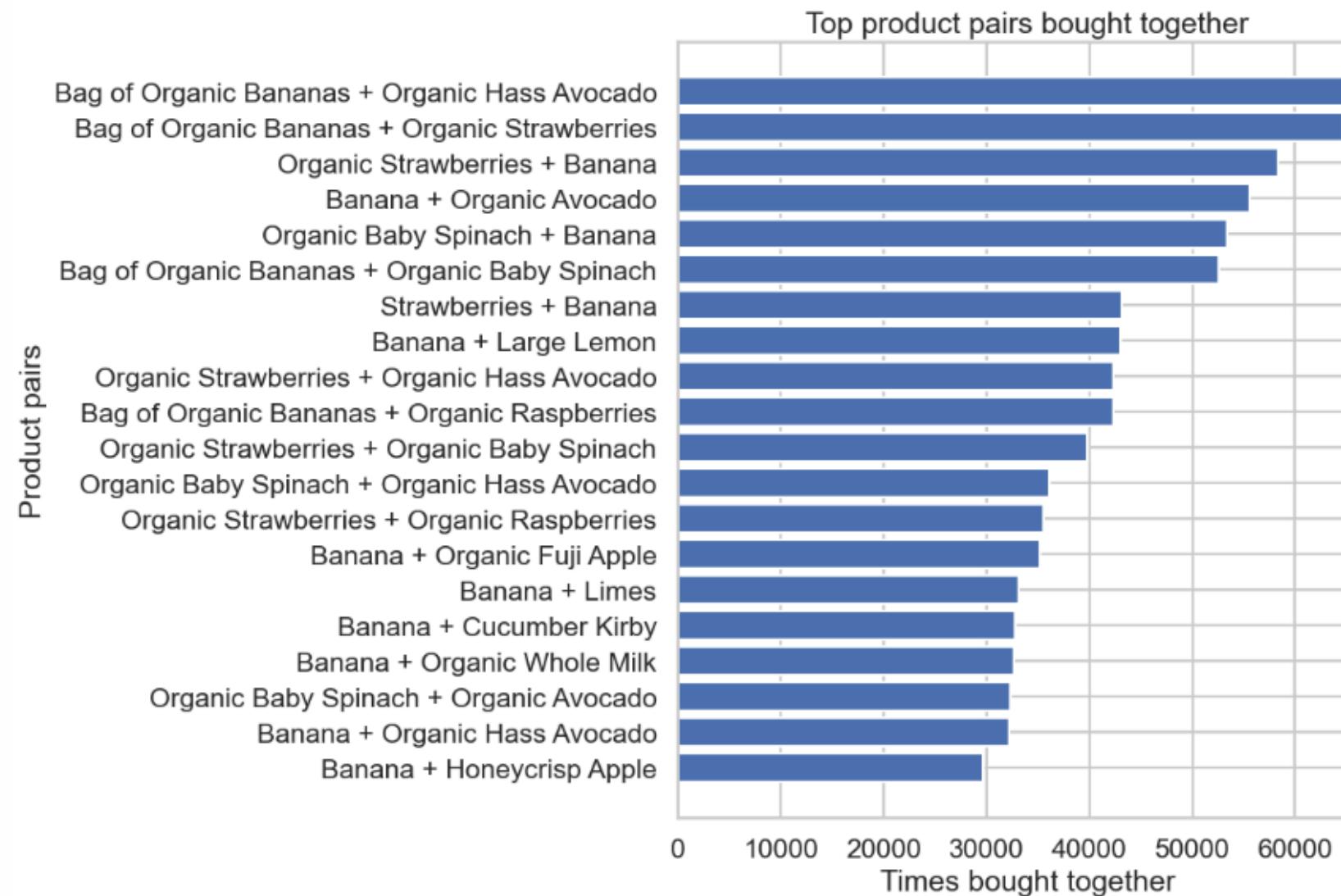
Explanation

- Customers rely heavily on Instacart for weekend shopping and weekly restocks.
- Peak midday hours reflect when most users are actively planning meals or preparing for the week.

Actions

- Scale operational capacity (customer support, real-time monitoring, delivery coordination) during weekend and midday peaks.
- Schedule app maintenance and shopper training during low-demand periods.
- Use peak-time insights to optimize staffing and ensure fast, reliable service during high-volume periods.

Q: Co-Purchase Analysis (Top Product Pairs)



Insight

- The highest reorder rates come from fresh essentials (bananas, milk, avocados, berries, spinach).
- These items act as anchor products-

Explains

- Customers consistently rely on Instacart to replenish these staples.
- These products drive repeat traffic to the platform and represent predictable, recurring demand.

Actions

- Ensure consistent stock availability for top staples to avoid missed sales and customer frustration.
- Promote personalized recommendations (e.g., "Buy again" or "Complete your basket").
- Bundle fresh essentials with complementary items (e.g., bananas + yogurt; avocados + tortillas) to increase average order value.
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CONCLUSION & RECOMMENDATION

CONCLUSION

- Users place most orders on weekends and during late-morning/early-afternoon hours, revealing predictable demand peaks.
- Fresh essentials (bananas, milk, avocados) drive the highest reorder rates, confirming they are core items in customers' weekly shopping.
- Most frequently purchased pairs are fruits and vegetables, showing consistent patterns in healthy and routine-oriented purchasing.
- High-frequency users show strong loyalty, while medium-frequency users form the largest and most scalable segment.

RECOMMENDATION

- Ensure maximum platform capacity and shopper availability during peak hours (10 AM–3 PM) and weekends.
- Guarantee constant stock for essential staples to maintain customer satisfaction and prevent order cancellations.
- Introduce automated complementary-product suggestions based on the most common product pairs.
- Segment Strategy:
 - High-frequency: loyalty programs and exclusive perks.
 - Medium-frequency: personalized promotions to increase reorder likelihood.
 - Low-frequency: reactivation offers and reminders to bring them back.

Thank you for your time!

Any Questions



<https://www.kaggle.com/datasets/yass erh/instacart-online-grocery-basket-analysis-dataset>