Optimizing Order Frequency, Revenue Growth, and Lead Time Through Strategic Initiative

Objective and Summary

This case's study's main goal is to examine delivery data for DoorDash's New Verticals businesses during a month. The goal is to offer strategic and doable recommendations to enhance operations based on the insights obtained.The three key players are—the business/stores , the Dashers, and customers—will be the focus of the investigation. These KPIs will be useful in assessing customer satisfaction as well as operational effectiveness.

To increase the frequency of orders, increase revenue, and minimize lead time, this study aims to provide insights into how DoorDash can optimize its operations within New Verticals. By implementing strategic recommendations, DoorDash can enhance efficiency, meet consumer demands, and drive revenue growth

Data Analysis

Data Cleaning Process

1. Reviewed the dataset and found a hidden row labeled 'Mode,' which was deleted to perform accurate calculations in pivot tables.
2. Converted the time zone from UTC to EST, considering daylight saving time for consistency with the Cincinnati location.
3. Imputed missing DELIV_CLAT (2393 missing rows) and DELIV_D2R (1287 missing rows) by calculating and applying the average time for each ITEM_CATEGORY.
4. Removed 4 duplicate records to avoid inflating the numbers.

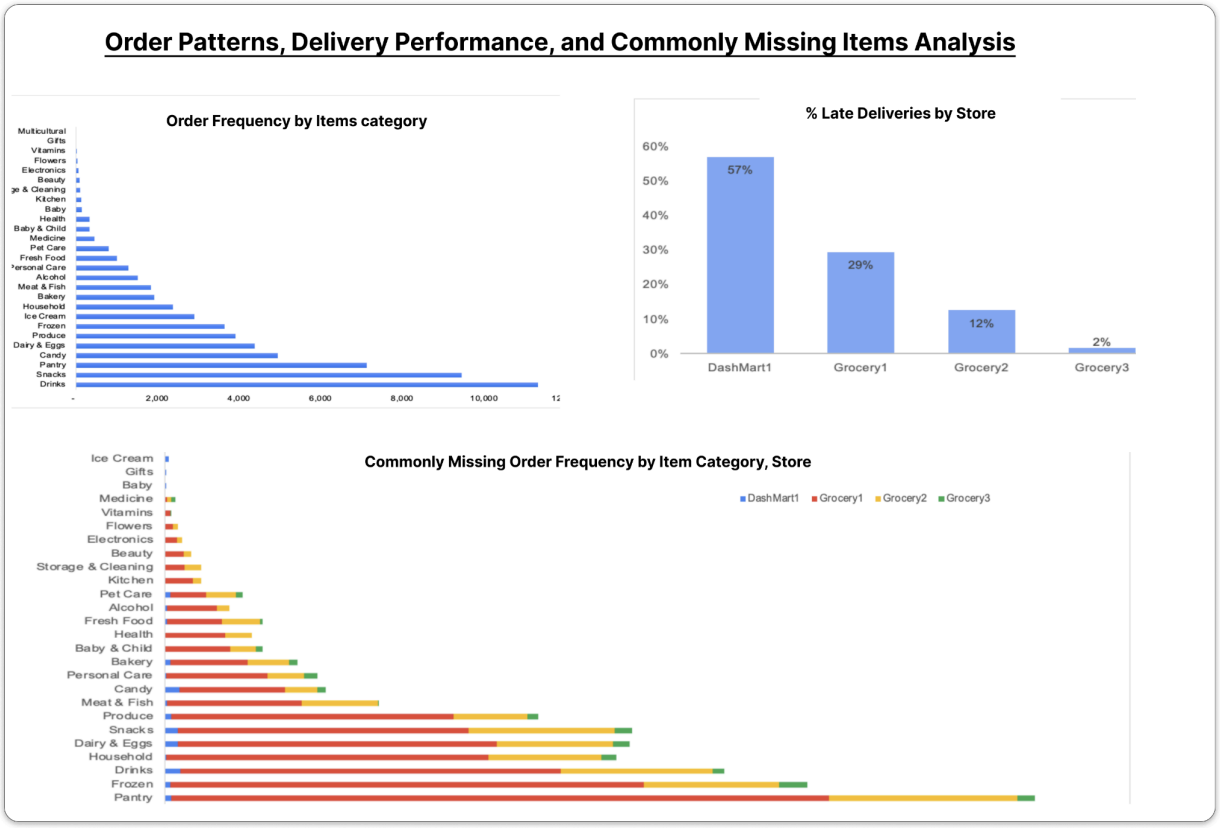
Data Visualization & Exploratory Data Analysis:

The visualizations below were used to uncover key insights through charts and graphs, allowing us to identify patterns, trends, and outliers in the dataset. This included analyzing order frequency, average order value (AOV), delivery times, and substitution rates, providing a clear foundation for strategic recommendations.

Based on the data analysis, the below key research questions will help to explore opportunities and provide recommendations to improve strategy, enhance operational efficiency, and optimize delivery performance for DoorDash's New Verticals.

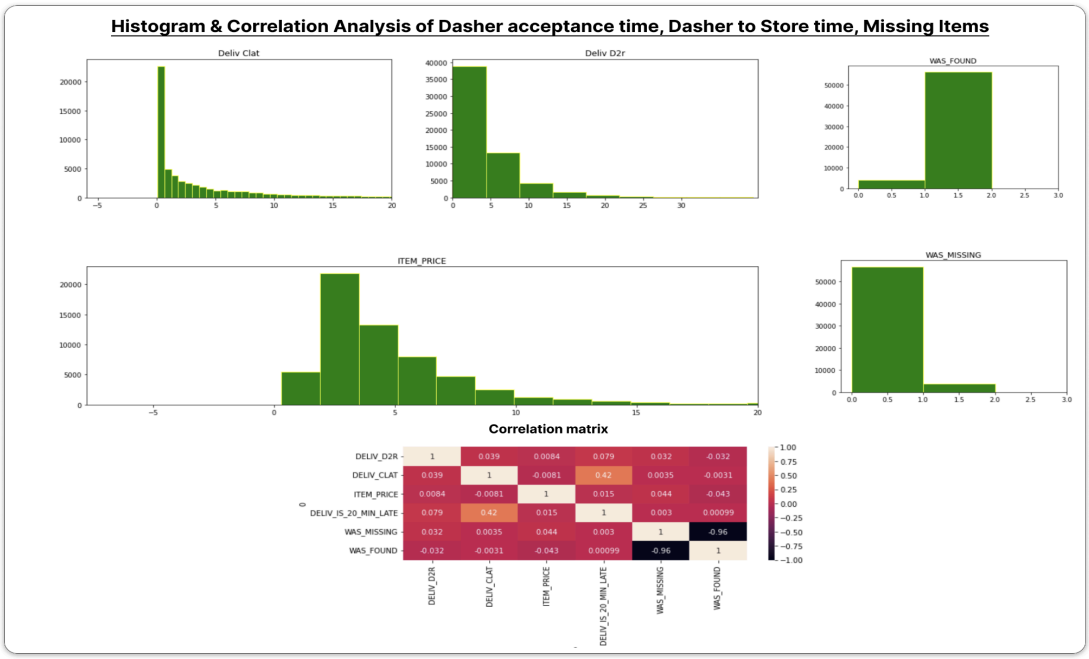
Business Research Questions:

- How do variations in item category and store location influence the relationship between order frequency and revenue generation?
- To what extent do late deliveries impact store performance, and how do these delays vary across different store types?
- Which item categories are most susceptible to fulfillment challenges, such as missing items, and what strategies can mitigate these issues?
- What is the effect of time of day on revenue generation, and how do delivery timeliness and lateness patterns vary with different time segments?
- How do delivery-related factors, such as dasher acceptance time and travel time, impact the likelihood of late deliveries, and what trends can be identified in the distribution of missing and fulfilled items?
- How can insights from order frequency, delivery performance, and average order values inform the design of loyalty programs that enhance customer retention and improve delivery efficiency?



Insights:

- High-Demand Categories: Drinks, Snacks, and Pantry are the most frequently ordered items. Ensure consistent stock availability in these categories.
- Late Deliveries: DashMart1 has a high late delivery rate (57%), followed by Grocery 1 (29%). Improving delivery processes at these locations is essential.
- Missing Items: Pantry, Frozen, Drinks, and Household items are most commonly missing, particularly at DashMart1 and Grocery1. Focus on inventory management to reduce stockouts.
- Improve delivery operations and inventory management, especially for high-demand and frequently missing items at DashMart1 and Grocery1.

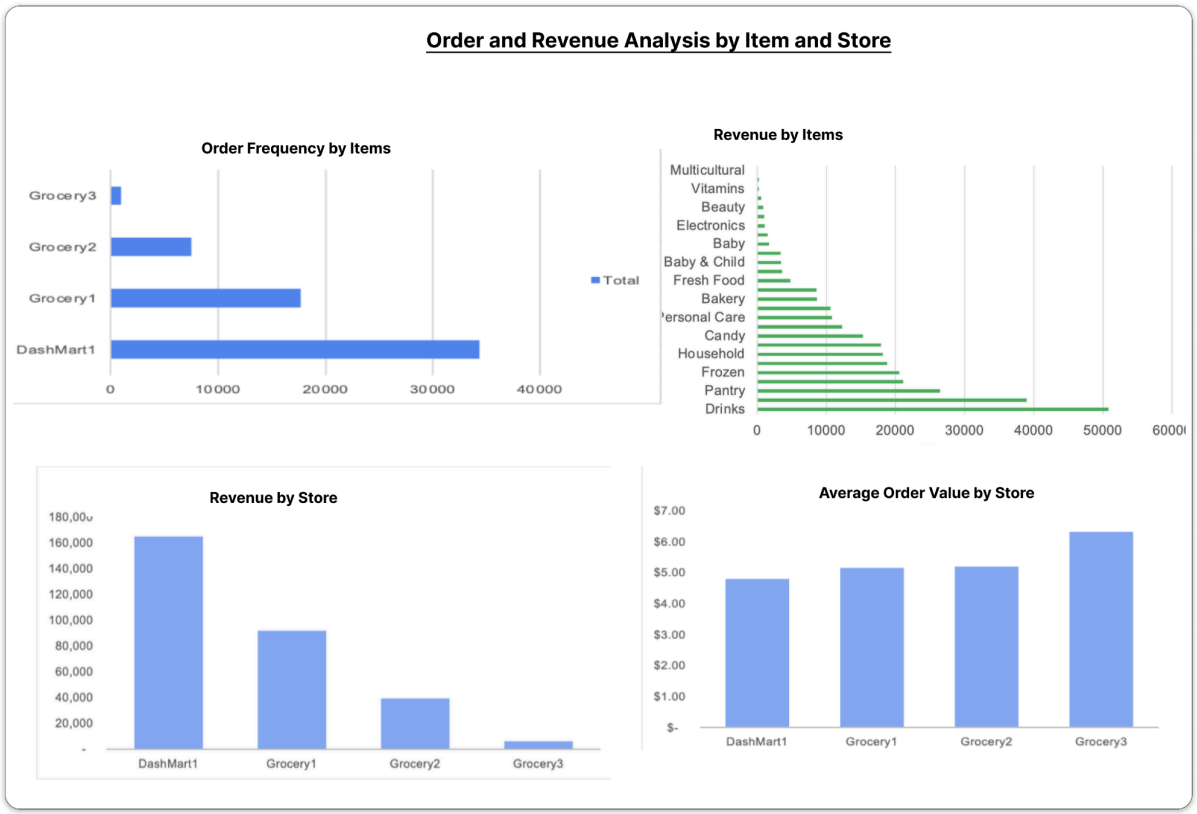


Histogram Insights:

- DELIV_CLAT (Dasher Acceptance Time): Right-skewed. Most orders are accepted quickly, but some outliers take longer.
  Insight: Majority of dashers respond fast, but some delays exist.
- DELIV_D2R (Time to Store): Right-skewed. Dashers reach stores in under 5 minutes for most deliveries, with a few longer travel times.
  Insight: Efficient deliveries, though some routes may cause delays.
- ITEM_PRICE: Bimodal distribution. Low and mid-priced items ordered most frequently.
  Insight: Business caters to both low and mid-tier priced items.

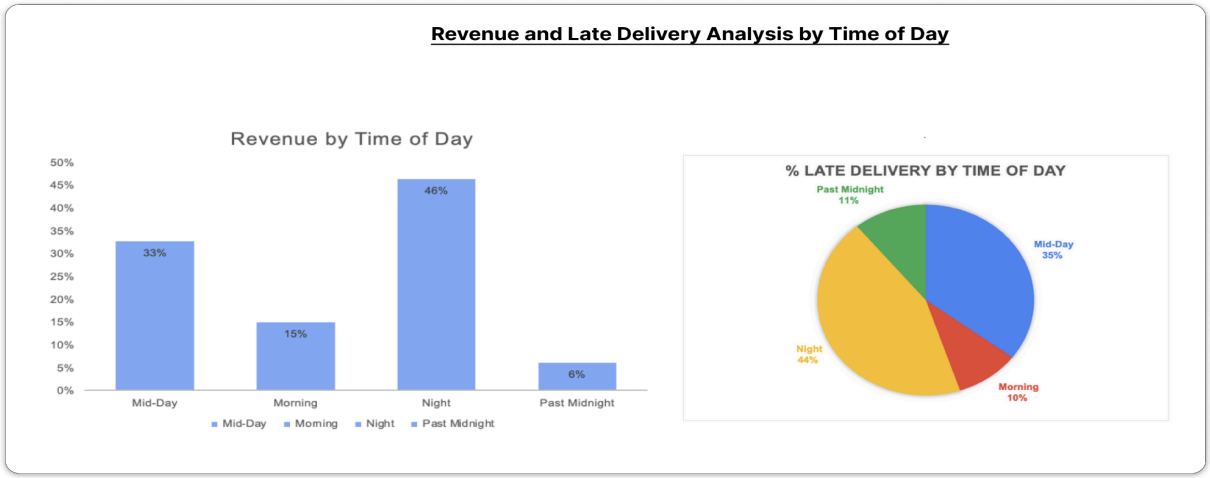
Correlation Insights:

- WAS_MISSING & WAS_FOUND: Strong negative correlation (-0.96). If an item is found, it's not missing.
- DELIV_CLAT & DELIV_IS_20_MIN_LATE: Moderate positive correlation (0.42). Longer acceptance times increase lateness.
- DELIV_D2R: Minimal impact on lateness or fulfillment.
- ITEM_PRICE: Weak correlation with other variables, little effect on delivery performance.



Insights:

- DashMart1: Highest order volume, but low average order value. Compensates with high order count.
- Grocery3: Fewer orders but highest average order value, driving strong revenue per order.
- Drinks & Pantry: Top revenue categories across all stores.
- Grocery1: Moderate order volume, balanced average order value.
- Frozen & Household: Mid-level revenue contributors, with consistent demand.
- Multicultural & Vitamins: Lowest revenue contributors, niche demand.



Insights:

- Night contributes the highest revenue at 46%, indicating peak order demand during late hours. However, it also has the highest percentage of late deliveries (44%), suggesting a potential capacity issue or inefficiency in late-night deliveries.
- Mid-Day generates 33% of revenue and accounts for 35% of late deliveries. This shows that while mid-day is a significant time for revenue, it struggles with timely delivery.
- Morning orders account for only 15% of revenue but have the lowest percentage of late deliveries (10%). This suggests that the morning is a quieter but more efficient time for deliveries.
- Past Midnight deliveries contribute the least (6%) to revenue but still have a significant share of late deliveries (11%). Even though fewer orders are placed, improving performance at this time can reduce late deliveries further.
- These insights suggest that increasing efficiency, especially during night and midday peak times, could improve customer satisfaction and reduce late delivery rates

Recommendations

Short Term Recommendation

1. Flash Sales with Hyper-Targeted Delivery Zones
   Launch geo-targeted, time-sensitive flash sales for specific product categories (e.g., Alcohol or Snacks), but limit them to off-peak times and certain delivery zones with the capacity for ultra-fast delivery (within 10-20 minutes).
   Impact: This creates a sense of urgency, encourages impulse purchases, and capitalizes on underutilized delivery capacity during non-peak times.
2. On-Demand Pop-Up Stores
   Create temporary, on-demand pop-up stores for Dashmart in high-traffic areas where customers can place their orders online and pick them up within minutes. These could be used during special events, holidays, or periods of high demand for specific categories like Alcohol, Snacks, Pantry .
   Impact: This creates a hybrid experience, combining the convenience of delivery with instant availability, especially during periods of high foot traffic or major events, increasing brand presence and sales.

Long Term Recommendation

This recommendation is to **increase the frequency of customer orders and maximize revenue** by introducing a loyalty program that incentivizes repeat purchases, timely deliveries, and high-value orders. The approach focuses on analyzing various factors like:

- **Order Frequency**: Encouraging more frequent orders by rewarding customers for placing multiple orders within a specific timeframe.
- **Order Timing**: Offering additional incentives for orders placed during off-peak times or days, which can help smooth out demand and improve delivery efficiency.

- **On-Time Deliveries**: Providing rewards for both customers and Dashers when deliveries are completed on time, promoting operational efficiency and customer satisfaction.
- **High-Value Orders**: Rewarding customers who consistently place higher-value orders, thereby boosting average order values and overall revenue.
- **Product Availability**: Ensuring that frequently ordered items are always in stock and rewarding customers who purchase these products, reducing the risk of substitutions or missing items that could affect customer loyalty.

By aligning these aspects, the loyalty program can drive higher order frequency, improve delivery performance, and increase revenue, benefiting all three sides of the marketplace: customers, Dashers, and businesses.

Tier	Criteria	Rewards (Customers)	Rewards (Dashers)
Bronze Tier	1-2 orders per month	1% cashback on every order - Bonus points for off-peak orders (e.g., 2x points for weekday orders between 2 pm-5 pm) - Free delivery on orders over $50	- Bonus for completing 50 deliveries - Priority access to high-demand delivery times
Silver Tier	3-5 orders per month OR higher-value orders (>$40)	- 2% cashback on every order - Priority access to high-demand items - Exclusive discounts on popular items - Free delivery for orders above $40	- 5% bonus for consistently on-time deliveries - Priority assignment for high-value deliveries
Gold Tier	6-10 orders per month OR total order value >$200	- 5% cashback on every order - Free delivery on all orders - Exclusive promotions for new items - Faster customer support - Early deal access	10% bonus for maintaining on-time deliveries - Early access to busy delivery slots and high-earning periods
Platinum Tier	More than 10 orders per month OR total order value >$500	- 7% cashback on every order - Personal shopper assistance - Early access to new products - Guaranteed delivery slots during peak hours - VIP support	- 15% bonus for on-time delivery rates above 95% - Access to premium delivery slots with higher earnings opportunities

Key Features of the Optimized Loyalty Program:

- **For Customers**:
  - **Increased Order Frequency**: Rewards such as cashback and discounts encourage more frequent orders.
  - **Higher-Value Orders**: Incentives for higher-value purchases drive up the average order value.
  - **On-Time Deliveries**: Rewards for orders delivered on time promote customer satisfaction.
  - **Off-Peak Ordering**: Bonuses for placing orders during less busy times balance out demand.
- **For Dashers**:
  - **More Deliveries**: Incentives for completing more deliveries within a set period encourage Dashers to remain active.
  - **Timeliness**: Bonuses for maintaining a high on-time delivery rate improve operational efficiency.

    - **High-Value Deliveries**: Dashers are rewarded for completing deliveries of higher-value orders, aligning their efforts with revenue generation.
    - **Peak/Off-Peak Flexibility**: Rewarding Dashers for deliveries during peak times ensures that high-demand periods are well-covered, while also offering bonuses for off-peak deliveries.
- **For Business:**
    - **Demand Balancing:** By offering discounts during off-peak times, businesses can smooth out demand, optimizing operations and reducing strain during peak periods
    - **Increased Customer Retention:** Offering discounts or rewards for frequent orders builds customer loyalty, encouraging repeat purchases and fostering long-term relationships
    - **Collaborative Promotions:** Partnering with suppliers or other merchants for bundled offers can increase sales across multiple verticals, improving overall business performance

Conclusion

To achieve the objective of optimizing order frequency, revenue growth, and lead time, it is essential to enhance inventory management in high-demand categories such as Drinks, Snacks, and Pantry items, reducing missing and substituted products to improve customer satisfaction. Addressing the high rate of late deliveries at DashMart by optimizing delivery processes and offering incentives for timely deliveries will also enhance operational efficiency. Increasing average order value (AOV) through promotions and personalized offers that encourage larger basket sizes will drive revenue growth. Introducing a tiered loyalty program will incentivize repeat purchases, higher-value orders, and on-time deliveries, helping to boost both customer retention and business performance. Additionally, offering time-based incentives for off-peak orders will help balance demand, minimize lead times, and further improve delivery efficiency which caterers to 3-sided marketplace

APPENDIX

Key Business Questions

- **How can we optimize the inventory at high-performing stores to minimize item substitution and missed items?**
  To address stockouts, further investigation is needed to determine if the issue stems from the app not reflecting accurate inventory data or if the data collected from the store is inaccurate, resulting in delayed replenishments. Ensuring that real-time inventory tracking and swift replenishment processes are in place can minimize stockouts and substitutions.
  Examining delivery data can help optimize route planning by identifying patterns of lateness, such as specific times, routes, or locations prone to delays. Implementing dynamic routing systems that adjust in real time based on traffic and location data will further reduce delivery delays. Offering incentives to Dashers for quickly accepting orders (DELIV_CLAT) can decrease late deliveries, as longer acceptance times are often linked to delays. Additionally, increasing Dasher availability during peak hours will help improve overall delivery punctuality and performance
- **What operational improvements can be made to reduce late deliveries, particularly for the most frequently late items?**
  Route planning can be made more efficient by analyzing delivery data to find patterns of lateness (such as particular times, routes, or locations with regular delays). Additionally, late delivery can be avoided by utilizing dynamic routing systems that make adjustments in real time depending on location and traffic data. Since longer acceptance times (DELIV_CLAT) are correlated with late delivery, it can also be beneficial to use incentives to encourage Dashers to accept orders swiftly. Finally, providing extra assistance during busy times when there are more Dashers on duty helps enhance on-time performance.
- **Are there opportunities to improve partnerships with stores that frequently report missing or substituted items?**
  Reducing stock outs can be achieved by strengthening relationships with stores that submit reports on a regular basis, giving them access to improved technology for inventory updates, and training them on efficient stock management. Collaborative efforts such as joint promotions (e.g., exclusive offers for best-selling items) can help improve customer happiness and store performance. Promoting consistent communication between DoorDash and these establishments will guarantee prompt issue resolution and avert unpleasant customer experiences.