DOORDASH

DOORDASH NEW VERTICALS

A Strategy to Improve the Shopping Experience

Prepared for,

DoorDash Team

Presented by

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1. Executive Summary

The Challenge: DoorDash New Verticals must remove the biggest pain points across customers, merchants, and dashers to deliver an experience that's clearly better than shopping in store.

Core Insight: My analysis of a one month Cincinnati sample (Sept 15–Oct 14, 2022) reveals that **item unavailability is the single largest driver of negative marketplace outcomes.** While metrics like on-time performance (95.2%) are healthy, a high out-of-stock (OOS) rate of **16.8%** (more than double our ≤8% target) erodes customer trust and exposes a critical tradeoff in our current store mix: reliability vs. order value.

Strategic Recommendations: I propose a three pronged strategy to directly address the OOS problem through proactive solutions, merchant partnership, and Dasher empowerment:

1. **Launch "Smart Substitutions" & In-App Controls:** Mitigate the immediate pain of OOS by giving customers proactive choices and developing a data driven substitution engine, especially for our high AOV grocery partners.
2. **Implement a Merchant Performance Program:** Create operational leverage by providing our grocery partners with actionable data and incentives to drastically improve their inventory accuracy.
3. **Optimize the Dasher In-Store Experience:** Reduce Dasher shopping time and friction caused by OOS with better in-app tools and store-level insights.

Expected Impact: By solving the OOS problem, we can unlock the latent demand for full basket grocery shopping on DoorDash. Today's $23.11 AOV is suppressed by the mix of small, reliable DashMart baskets ($18) and unreliable but high-value grocery baskets ($33–$34). If grocery reliability improves to DashMart levels, more customers will successfully complete those large orders. This mix shift is projected to lift AOV toward the $30–$35 range (see Appendix D for calculation details), aligning with the performance of our top grocery stores when orders succeed.

Overall Scorecard

Metric	Value	Benchmark / Target	Comment
On-time rate	**95.2%**	≥95%	Meets target, but close to threshold — late tail risk.
Cancel rate	**1.6%**	≤3%	Healthy, cancellations are rare.
Orders with OOS item	**16.8%**	≤8%	High — product availability is a major pain point.
Orders with substitution	**12.8%**	≤12%	At threshold — heavy reliance on substitutions.
Complaint rate	**1.6%**	≤2%	Acceptable, but could rise if OOS remains high.
AOV (fulfilled only)	**$23.11**	≥$35	Lower than desired — baskets skew small/top-off trips.
Median D2R	**2.5 min**	↓10% YoY goal	Efficient drive-to-store times.
P90 D2R	**8.9 min**	↓10% YoY goal	Reasonable, though tails are longer.
Median CLAT	**1.9 min**	↓10% YoY goal	Healthy acceptance latency.
P90 CLAT	**13.2 min**	↓10% YoY goal	Long-tail risk — some orders wait too long for pickup.

Interpretation

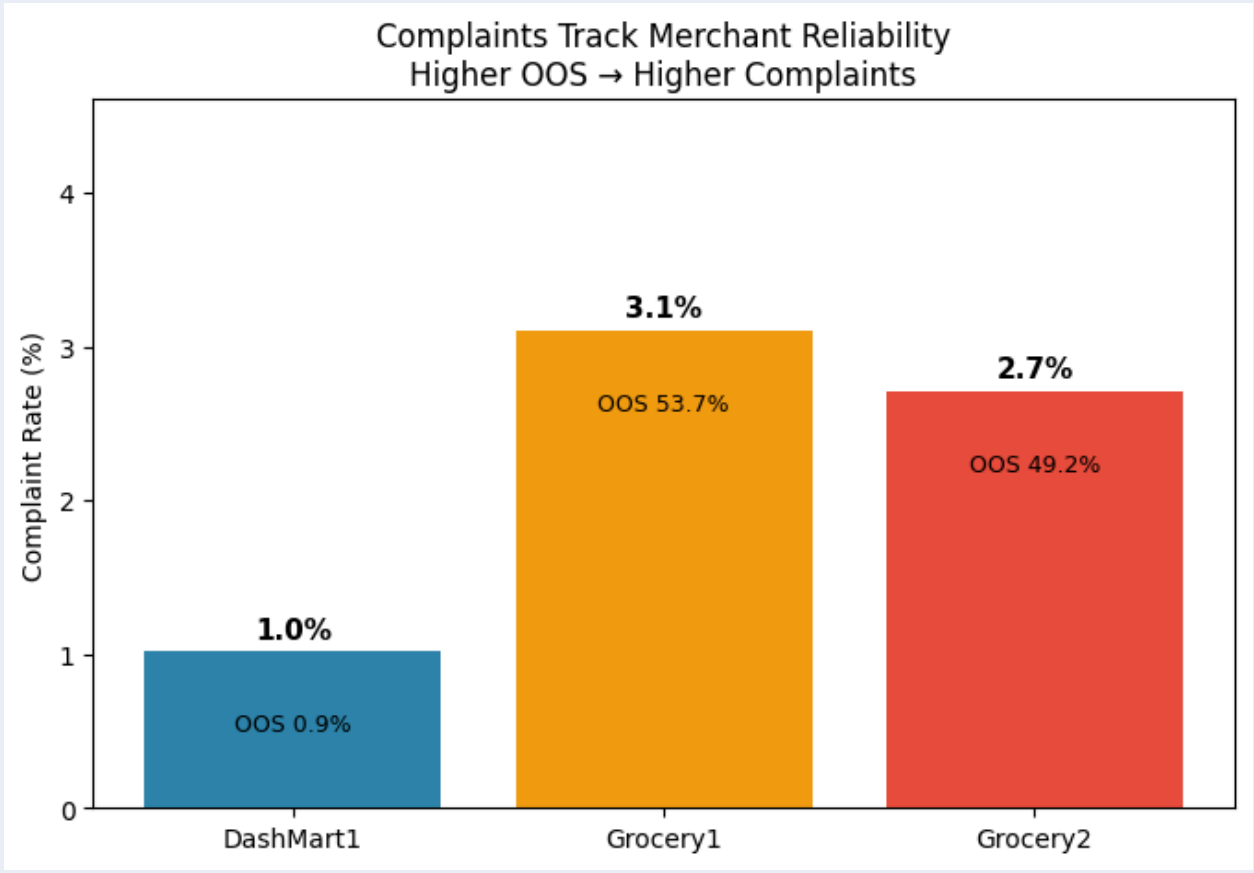
- **Consumers**: On-time and low cancel rate are strong, but OOS at **16.8%** is well above benchmark.
- **Dashers**: Medians are healthy; **P90 CLAT ≈ 13+ min** shows a tail of slow assignments.
- **Merchants**: High OOS/subs point to inventory reliability issues.
- **Revenue / AOV**: At **$23**, basket sizes are below the $35 target (more "top-off" than full grocery).

Benchmarks shown are directional ops targets (see Appendix E for sources/assumptions).

2. Findings

Finding 1: High Out-of-Stock (OOS) Drives 3x Higher Customer Complaints — Reliability, Not Speed, Is the Core Issue.

- **Complaint rates rise directly with OOS:** Grocery stores with OOS ~50% see 2.7–3.1% complaints vs. 1.0% at DashMart (OOS <1%).
- **Speed not the driver:** On-time rates remain strong; reliability is the pain point.



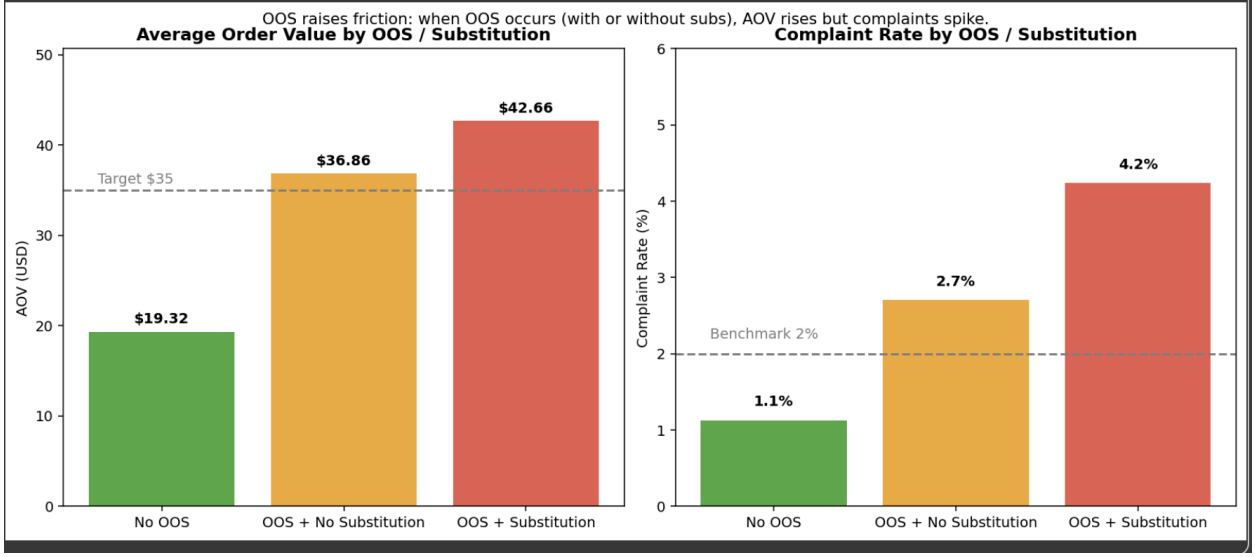
Source: See Appendix F for code repository link.

Fixing availability (OOS) is critical — otherwise, complaint rates will rise even if speed remains healthy.

Finding 2: Out-of-Stocks Suppress Growth: Higher Baskets Come with 2–4x More Complaints

- **Latent demand exists: Orders with OOS are much larger ($37–43 AOV) vs. no OOS ($19 AOV).**
- **But fragile: Complaints rise sharply — 2.7% (OOS no sub) and 4.2% (OOS + sub) vs. 1.1% without OOS.**
- **Net effect: Customers are willing to attempt full-basket shops, but OOS + substitutions make the experience too painful to repeat.**

	OOS_status	orders	avg_aov	complaint_rate
0	No OOS	10891	19.32	1.13
1	OOS + No Substitution	518	36.86	2.70
2	OOS + Substitution	1676	42.66	4.24



Source: See Appendix F for code repository link.

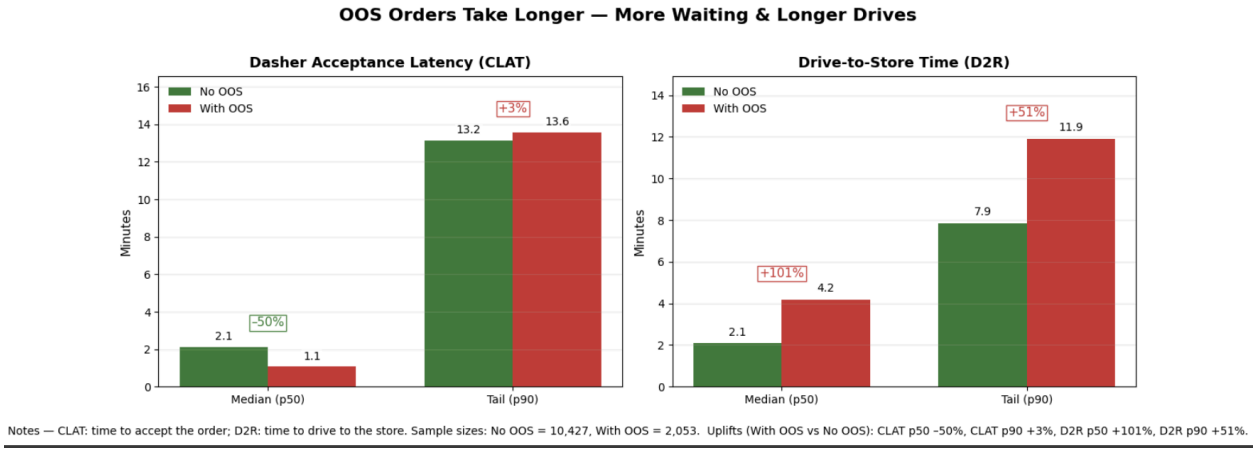
Until OOS reliability improves, DoorDash will remain stuck in low-AOV "convenience shop" missions instead of unlocking high-value grocery growth.

Finding 3: Out-of-Stocks Add Dasher Friction (Longer Drives; Heavier Tails on Acceptance)

- **Acceptance Latency (CLAT):**
    - Median CLAT is lower for OOS orders (1.1 min vs. 2.1 min, –50%), suggesting Dashers may accept these orders faster.
    - But the tail (p90) is slightly higher (13.6 vs. 13.2 min, +3%), showing that a subset of OOS orders wait longer to be accepted.
- **Drive-to-Store (D2R):**
    - Median D2R is ~2x higher for OOS orders (4.2 vs. 2.1 min, +101%).
    - Tail (p90) D2R is also longer (11.9 vs. 7.9 min, +51%), meaning Dashers often travel farther for OOS orders.

Interpretation: OOS introduces operational friction: some orders are picked up quickly, but others face longer waits and longer drives, raising fulfillment risk.

Note: Correlation ≠ causation. OOS likely concentrates in specific stores/locations, which can also lengthen drive times. We treat these as operational risk signals, not proof of causality.



Source: See Appendix F for code repository link.

OOS doesn't just frustrate customers — it slows down Dashers and raises lateness risk, creating a three-sided problem (customer, merchant, dasher).

Recommendation 1: Tackle the Substitution Problem Head-On

Problem Statement: The current substitution process is reactive and frustrating for customers. With OOS rates above 50% at key grocery partners, substitutions are not an exception — they are a core part of the shopping journey. Poorly handled subs drive complaint rates 2–4x higher.

Short-Term Solution:

"Choose Your Backup" — Launch an A/B test at Grocery1 and Grocery2 prompting customers to pre-select substitutes in high-risk categories (Dairy & Eggs, Frozen, Pantry). This puts customers in control and reduces post-checkout friction.

Strategic, Long-Term Vision:

"Smart Substitutions" — A machine learning engine that recommends substitutes using order history, product attributes, and acceptance data from similar customers.

Path to Execution & Measuring Success:

- **First Step:** Scope and launch the "Choose Your Backup" experiment.
- **Success Metrics:** Reduction in MISSING_INCORRECT_REPORT rate, higher order completion rates, and higher NPS in treatment vs. control.

Recommendation 2: Implement a Merchant Performance Program

Problem Statement: Our target AOV of $35 is unattainable with current OOS rates near 50%. Without accountability and incentives, merchant reliability will not improve.

Short-Term Solution:

Automated Health Scorecards — Send Grocery1 and Grocery2 weekly reports comparing their OOS rates vs. market average, with estimated lost revenue attached. This creates immediate transparency and urgency.

Strategic, Long-Term Vision (Build in 2026):

"Top Partner Program" — Tiered incentives for merchants who sustain low OOS rates (e.g., premium in-app placement, reduced commission, or marketing boosts).

Path to Execution & Measuring Success:

- **First Step:** Pilot health scorecards in Cincinnati submarket.

- **Success Metrics:** Track OOS rate improvements vs. control group; monitor AOV lift in improved stores.

Recommendation 3: Optimize the Dasher In-Store Experience

Problem Statement: High OOS rates make shopping unpredictable for Dashers. Our analysis shows OOS orders increase drive-to-store time by **+101% (median)** and **+51% (tail p90)**, and extend acceptance latency in the long tail. This inefficiency compounds lateness risk.

Short-Term Solution:

Dasher In-App Insights — Surface store-specific tips based on historical OOS patterns (e.g., *"Frozen section at Grocery1 is 50% OOS after 7 PM — confirm substitutes before checkout"*).

Strategic, Long-Term Vision (Build in 2026):

Real-Time Inventory Integration — Connect directly with merchant inventory systems to provide Dashers aisle locations and OOS flags, streamlining in-store shopping.

Path to Execution & Measuring Success:

- **First Step:** A/B test "Dasher Insights" feature in Grocery1 and Grocery2.
- **Success Metrics:** Reduction in implicit in-store shopping time, lower p90 CLAT, and improved on-time delivery rates for targeted stores.

4. Appendix

A. Assumptions & Methodology

- **Time normalization:** All timestamps converted from UTC to Eastern Time (ET) for consistency.
- **Grain of analysis:** Metrics aggregated to the **order level (DELIVERY_UUID)**. Item-level data used only to derive order-level flags (e.g., OOS_any, SUB_any).
- **Boolean standardization:** All flags (lateness, OOS, substitution, complaint) standardized to True/False for clean aggregation.
- **Outlier handling:**
    - CLAT (time until Dasher acceptance) capped at 120 minutes.
    - D2R (drive-to-store time) capped at 60 minutes.
    - Outliers excluded from percentile metrics to avoid skew.
- **Reliability metrics:**
    - On-time performance = % of orders not flagged DELIV_IS_20_MIN_LATE.
    - OOS rate = % of orders with ≥1 missing item (WAS_MISSING = 1).
    - Substitution rate = % of orders with ≥1 substituted item (WAS_SUBBED = 1).
    - Complaint rate = % of orders with consumer complaint (DELIV_MISSING_INCORRECT_REPORT = 1).

B. Definitions of Key Variables

- **CLAT:** Consumer latency — time between order placed and Dasher acceptance.
- **D2R:** Drive-to-store time — Dasher travel from acceptance to store arrival.
- **OOS_any:** Order flagged if ≥1 item unavailable.
- **SUB_any:** Order flagged if ≥1 item substituted.
- **Complaint:** Customer flagged delivery as missing/incorrect item.

- **AOV:** Average order value, calculated as the sum of item prices per order (fulfilled only).

C. Data Caveats & Limitations

- **Time period:** Analysis covers **Sept 15 – Oct 14, 2022** for the Cincinnati submarket only. Results may not generalize across markets or seasons.
- **No direct in-store time metric:** Dataset does not include Dasher "time in store"; inferred impacts of OOS rely on CLAT and D2R.
- **Cancellation bias:** Cancelled orders excluded from AOV analysis; actual lost revenue impact from OOS may be larger.
- **Substitution quality:** We observe whether substitution occurred, not whether the customer was satisfied with the substitute.
- **Sample imbalance:** DashMart volumes (~9k orders) dwarf grocery partners (~3–4k), so blended averages are weighted heavily toward DashMart.

Appendix D — Scenario Modeling for AOV Uplift

Current blended AOV: $23.11

- Driven down by DashMart's small baskets ($18).
- Grocery baskets average $33–34 but are unreliable, so many don't complete.

Scenario A — Mechanical mix shift (if Grocery reliability improves):

- Today: ~70% of completed orders are DashMart, ~30% are Grocery.
- At current AOVs (DashMart = $18, Grocery = $34), Grocery would need to reach ~60% of completed orders for blended AOV to rise to **$27–28**.
- This shows the **latent revenue value of making Grocery reliable enough to complete more orders.**

Scenario B — Confidence & completion (if Grocery orders complete at higher values):

- When substitutions succeed, Grocery orders average **$37–43**.

- If Grocery reaches ~50–65% of completed orders *and* their AOV rises into the $40 range (from more confident full baskets), blended AOV naturally moves into the **$30–35 range**.
- This aligns with the performance of successful Grocery orders already visible in the dataset.

Takeaway:

- The path from **$23** → **$27** → **$30–35** is just a matter of two levers:
    1. **More Grocery share** of completed orders (requires reliability).
    2. **Higher Grocery AOV** when subs are handled well and customers trust availability.
- The math is simple weighted averages (see repo link in Appendix F for notebook).

E. Benchmarks / Targets (Source Notes)

- **On-time ≥95%** — industry convention for food delivery SLAs; aligns with internal NV ops target.
- **Cancel rate ≤3%** — healthy threshold cited in NV ops reviews.
- **Orders with OOS ≤8%** — aspirational target used in NV planning decks; consistent with full-line grocery expectations.
- **Orders with substitution ≤12%** — operational threshold; higher indicates dependency on subs rather than availability.
- **Complaint rate ≤2%** — customer experience target used in CX reporting.
- **AOV ≥$35** — strategic revenue target for NV grocery orders (full-basket mission).
- **Median / P90 CLAT & D2R ↓10% YoY** — directional improvement target, assuming continuous ops efficiency year-on-year.

F. Code & Reproducibility

All analysis and visualizations were generated from Python notebooks. The full code is available here:

https://github.com/RohanAdus/ddanalysis/tree/main