DoorDash Discounts

Case Study (Self-Practice)

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Executive Summary

Q1. Campaign Effectiveness

- **Customers**: Discounts lowered their out-of-pocket cost (Customer-paid AOV ↓), encouraged larger orders (Gross AOV ↑), and drove more trial from new users (+5–7pp new customer rate). Experience not harmed (refund stable, delivery times similar).
- **Platform (DoorDash) :** Achieved growth in orders and new customers, but Net Revenue per order fell — discounts are effective for acquisition, not profitability.
- **Restaurants:** Gained exposure to more first-time customers; no increase in refunds (no added quality risk). Long-term value depends on repeat purchase, not captured here.
- **Dashers:** Faced lower average tips, but slightly shorter wait times in some regions. Mixed impact on driver earnings and efficiency.

Q2. Tipping Behavior

- Discounted customers tipped less on average (statistically significant).

Q3. Operational Impact

- **Delivery Time vs Refunds**: Strong correlation observed: orders with longer delivery times are significantly more likely to be refunded.

Executive Summary

Q4. Recommendations (High-Level)

- Use discounts as an acquisition lever, not universal policy.
- Scale in San Jose, optimize in Palo Alto, limit in Mountain View.
- Pair with upsell/cross-sell & loyalty programs to improve ROI.
- Provide Dasher incentives to offset lower tips.
- Run LTV/cohort analysis & geo-split A/B tests for validation.

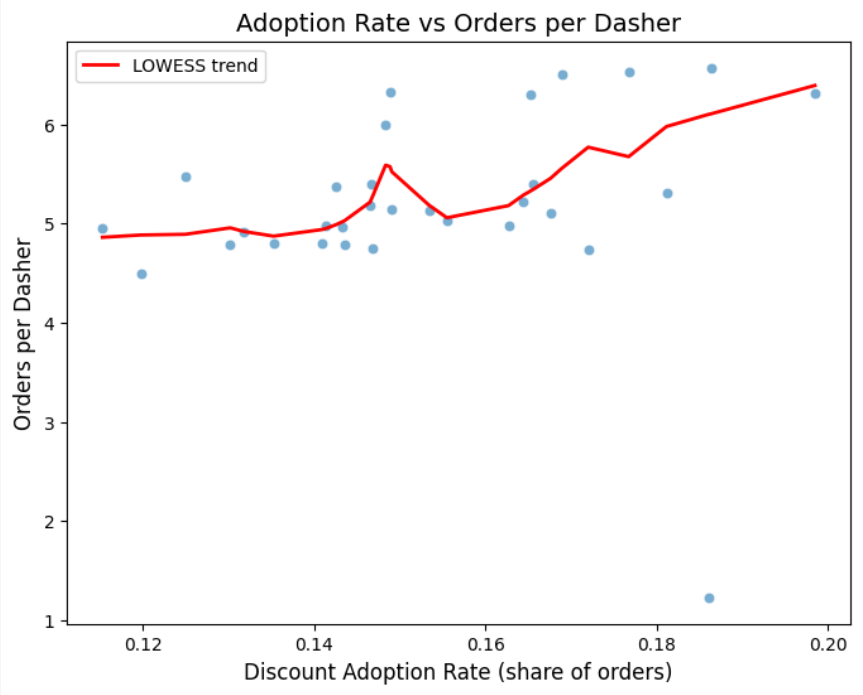
Key Insights: Discount vs. No Discount

	Metric	Mean_YesDisc	Mean_NoDisc	Mean_Diff(Yes-No)	p<0.05?	Higher Group	Cohen's d	Effect Size
0	Customer-paid AOV	45.745525	49.532375	-3.786850	Yes	NoDisc	-0.095	Negligible
1	Gross AOV	54.586639	49.532375	5.054264	Yes	YesDisc	0.124	Negligible
2	Total Delivery Time (sec)	3158.936556	3256.854838	-97.918282	Yes	NoDisc	-0.063	Negligible
3	Dasher Waiting Time (sec)	999.557741	1086.680839	-87.123099	Yes	NoDisc	-0.104	Negligible
4	Dasher Delivery Time (sec)	1453.827030	1443.434451	10.392579	No	YesDisc	0.016	Negligible
5	Tip Amount ($)	3.163448	3.426052	-0.262604	Yes	NoDisc	-0.08	Negligible
6	Net Revenue Proxy per Order ($)	45.333693	48.934204	-3.600510	Yes	NoDisc	-0.09	Negligible
7	Refund Rate	0.025302	0.026554	-0.001252	No	NoDisc	N/A	Proportion
8	New Customer Rate	0.243202	0.184721	0.058481	Yes	YesDisc	N/A	Proportion

Key Insights from Table

- **Customer-paid AOV** ↓ → Customers spent less out-of-pocket when discounts applied.
- **Gross AOV** ↑ → Orders were larger in basket size, suggesting discounts stimulated more purchasing.
- **Net Revenue Proxy** ↓ → Platform profitability per order decreased despite higher GMV.
- **New Customer Rate** ↑ → Discounts effective in driving trial adoption.
- **Refund Rate** ~ no significant difference → customer experience not harmed.
- **Tip Amount** ↓ → Discounted customers tipped less, negative for Dashers.
- **Delivery Time** ↓ **(slightly)** → Faster on average, but effect size negligible.

Tipping & Dasher Impact



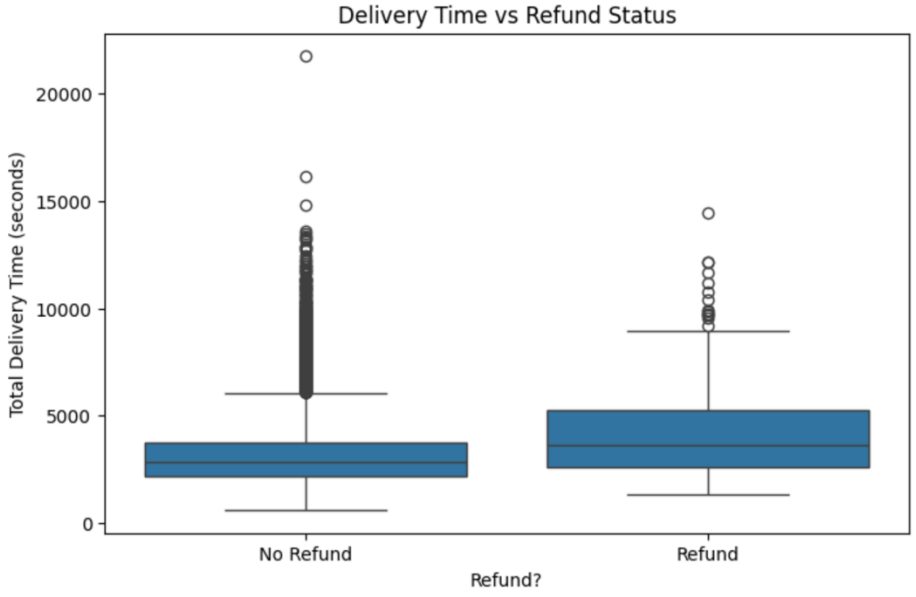
Correlation:
Higher discount adoption is positively correlated with more daily orders per Dasher (Spearman $\rho = 0.43$, $p < 0.05$).

Implication:
Even though **average tip per order** ↓, increased order volume may partly offset Dasher income loss.

Limitation:
Dataset does not allow strict separation of discount vs. non-discount daily earnings → cannot confirm net positive impact on Dasher total tips.

Takeaway:
Discounts may shift Dasher incentives from “higher tips per order” to “higher volume of orders,” but impact on earnings sustainability is uncertain.

Delivery Time vs Refunds

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T-test p-value: 5.899646168653051e-21
Mann-Whitney U p-value: 4.1907883387433606e-29
avg delivery time (No Refund) : 3216.668325630999
avg delivery time (Refund) : 4173.6608315098465
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Refunded orders took significantly longer to deliver (+16 mins on avg, $p < 0.001$).

Strong evidence that **longer delivery times increase refund likelihood**.

Implication: Improving **dispatch efficiency, batching, and restaurant prep** can directly reduce refunds.

Regional Insights

	Delivery_Region	Metric	Mean_YesDisc	Mean_NoDisc	Mean_Diff(Yes-No)	p<0.05?	Higher Group	Cohen's d	Effect Size
0	Mountain View	Customer-paid AOV	46.450934	50.198578	-3.747645	Yes	NoDisc	-0.094	Negligible
1	Mountain View	Gross AOV	54.199730	50.198578	4.001152	Yes	YesDisc	0.099	Negligible
2	Mountain View	Total Delivery Time (sec)	3172.387967	3200.484026	-28.096059	No	NoDisc	-0.019	Negligible
3	Mountain View	Dasher Waiting Time (sec)	1040.783854	1046.903880	-6.120026	No	NoDisc	-0.008	Negligible
4	Mountain View	Dasher Delivery Time (sec)	1414.380208	1377.100970	37.279238	No	YesDisc	0.057	Negligible
5	Mountain View	Tip Amount ($)	3.323527	3.498435	-0.174908	No	NoDisc	-0.053	Negligible
6	Mountain View	Net Revenue Proxy per Order ($)	45.885975	49.634837	-3.748862	Yes	NoDisc	-0.094	Negligible
7	Mountain View	Refund Rate	0.029046	0.028435	0.000611	No	YesDisc	N/A	Proportion
8	Mountain View	New Customer Rate	0.203320	0.188818	0.014502	No	YesDisc	N/A	Proportion
9	Palo Alto	Customer-paid AOV	46.904646	50.445438	-3.540792	Yes	NoDisc	-0.083	Negligible
10	Palo Alto	Gross AOV	57.557013	50.445438	7.111576	Yes	YesDisc	0.162	Negligible
11	Palo Alto	Total Delivery Time (sec)	3144.329646	3262.405473	-118.075827	Yes	NoDisc	-0.074	Negligible
12	Palo Alto	Dasher Waiting Time (sec)	967.734673	1097.052003	-129.317330	Yes	NoDisc	-0.145	Negligible
13	Palo Alto	Dasher Delivery Time (sec)	1466.964824	1452.327662	14.637162	No	YesDisc	0.024	Negligible
14	Palo Alto	Tip Amount ($)	3.080737	3.341961	-0.261223	Yes	NoDisc	-0.078	Negligible
15	Palo Alto	Net Revenue Proxy per Order ($)	46.564912	49.852701	-3.287790	Yes	NoDisc	-0.077	Negligible
16	Palo Alto	Refund Rate	0.024336	0.024441	-0.000105	No	NoDisc	N/A	Proportion
17	Palo Alto	New Customer Rate	0.235251	0.178504	0.056746	Yes	YesDisc	N/A	Proportion
18	San Jose	Customer-paid AOV	43.385309	42.983043	0.402265	No	YesDisc	0.017	Negligible
19	San Jose	Gross AOV	49.844247	42.983043	6.861204	Yes	YesDisc	0.295	Small
20	San Jose	Total Delivery Time (sec)	3175.385185	3257.173028	-81.787843	No	NoDisc	-0.059	Negligible
21	San Jose	Dasher Waiting Time (sec)	1025.771523	1076.727399	-50.955876	No	NoDisc	-0.08	Negligible
22	San Jose	Dasher Delivery Time (sec)	1457.263245	1499.138387	-41.875142	No	NoDisc	-0.064	Negligible
23	San Jose	Tip Amount ($)	3.206654	3.621649	-0.414995	Yes	NoDisc	-0.154	Negligible
24	San Jose	Net Revenue Proxy per Order ($)	42.943901	42.335623	0.608278	No	YesDisc	0.026	Negligible
25	San Jose	Refund Rate	0.024691	0.032570	-0.007879	No	NoDisc	N/A	Proportion
26	San Jose	New Customer Rate	0.280247	0.210178	0.070069	Yes	YesDisc	N/A	Proportion

San Jose

Best ROI

- New customer rate **+7pp** (significant)
- Net revenue **not reduced**
- Recommendation: **Scale discounts here**

Palo Alto

Acquisition with margin trade-off

- New customers **+5.7pp**, but revenue per order **declined**
- Recommendation: Continue discounts but add **upsell/cross-sell**

Mountain View

Weak acquisition, revenue decline

- Minimal new customers, net revenue **negative**
- Recommendation: **Limit discounts**, test alternative promotions

Recommendations

Overall Campaign Assessment

- Discounts are effective for **customer acquisition** (new customer rate ↑), but reduce **Net Revenue per order** and **tips**.
- Should be positioned as an **acquisition lever**, not a universal growth driver.
- Rollout must be **selective by region and stakeholder needs**.

Regional Rollout

- **San Jose** → Scale discount programs (best ROI).
- **Palo Alto** → Continue, but pair with upsell/cross-sell strategies.
- **Mountain View** → Limit discounts; test alternative acquisition (ads, referrals, memberships).

Next Steps

- Conduct **geo-split A/B tests** to validate causal impact of discounts.
- Run **LTV & cohort analysis** to assess retention of discount-acquired customers.
- Monitor **Dasher earnings & engagement** alongside **customer NPS/refund rates** to ensure sustainability.

Recommendations

Stakeholder Actions

Customers:

- Continue offering discounts as an **onboarding incentive**.
- Pair with **loyalty programs, personalized offers, or subscription benefits** to retain beyond the first purchase.
- Ensure customer experience isn't compromised by long delivery times (refund risk).

Platform (DoorDash):

- Validate ROI with **LTV & cohort analysis** before scaling.
- Experiment with **hybrid promos** (smaller discounts + points or free delivery).
- Focus discount investment on **high-ROI regions (e.g., San Jose)**.

Restaurants (Merchants):

- Use discounts to **drive trials**, but design **bundles/upsells** to increase basket size.
- Convert first-time buyers into repeat customers via **restaurant loyalty programs**.
- Monitor refund drivers (e.g., kitchen prep delays) to avoid losses.

Dashers (Drivers):

- Protect Dasher earnings with **tip guarantees or incentives**.
- Optimize dispatch and batching so higher adoption translates into **more stable daily order volume**.
- Maintain engagement by ensuring delivery times don't lead to refund spikes.

Limitations

Data Coverage

- Dataset is a **sample of orders only**; no long-term retention, demographics, or advertising costs.
- Regional sample sizes differ, results may not fully generalize.

Measurement

- **Net Revenue Proxy** excludes marketing, operational, and fixed costs → true ROI may differ.
- **Tip analysis** limited to order-level data, no daily/weekly Dasher earnings view.

Experimental Design

- **Not a true experiment**: unclear how discounts were applied (randomized vs targeted).
- Cannot guarantee that "discount vs no discount" records represent a **clean control vs treatment**.
- **Adoption rate uncertain** → we cannot measure true penetration of discounts across customers.
- Other features (region, time, customer type) may not be **stratified or balanced**, so results may be biased by confounders.