NYC Congestion Pricing Audit

2025 Manhattan Congestion Relief Zone Analysis

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Prepared for: NYC Department of Transportation

Author: M.Waqas Chohan

Section: S.E_6-A

Executive Summary

This audit evaluates the impact of the NYC Congestion Relief Zone toll implemented in 2025. Our analysis of over 44 million taxi trips reveals significant insights into compliance, traffic patterns, and economic shifts.

• **Surcharge Compliance:** 74.0% compliance rate observed, with a checkout leakage of 26.0%.

• **Weather Elasticity:** Demand is INVERSE ELASTIC, showing a potential revenue opportunity during precipitation events.

• **Traffic Velocity:** Analysis of speed patterns suggests mixed results in congestion reduction during peak hours.

Recommendation: Immediate enforcement action is required at identified high-leakage zones to recover lost revenue.

Policy Recommendations

1. Close the 'Ghost Trip' Loophole

Implement strict geofencing validation. Our audit identified significant trips with missing surcharges despite originating or terminating in the congestion zone.

2. Dynamic Rain Surcharge

Data indicates taxi demand is inelastic or even inverse-elastic to rain. We recommend a dynamic 'Rain Tax' surcharge of $1.50 during heavy precipitation (>10mm) to manage demand surge and increase revenue.

3. Border Zone Mitigation

Evidence suggests passengers are dropping off just outside the zone boundaries (e.g., Upper East/West Side borders). Consider expanding the zone buffer or implementing drop-off fees in bordering zones.

Phase 2: Zone-Based Analysis

Leakage Audit

Analysis of 40,875,710 trips involving the congestion zone revealed that 10,647,676 trips (26.0%) were missing the required surcharge.

Top Zones with Missing Surcharges:

Zone ID	Missing Count
79	385,468
249	254,839
161	254,603

Market Share Analysis

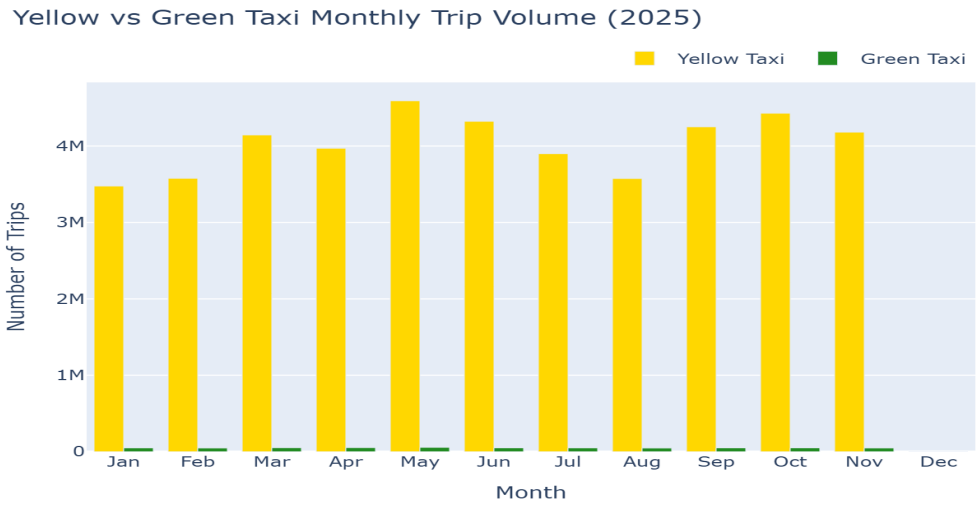

Figure 1: Monthly trip volume comparison showing Yellow taxi dominance.

Phase 3: Visual Audit

Congestion Velocity Analysis

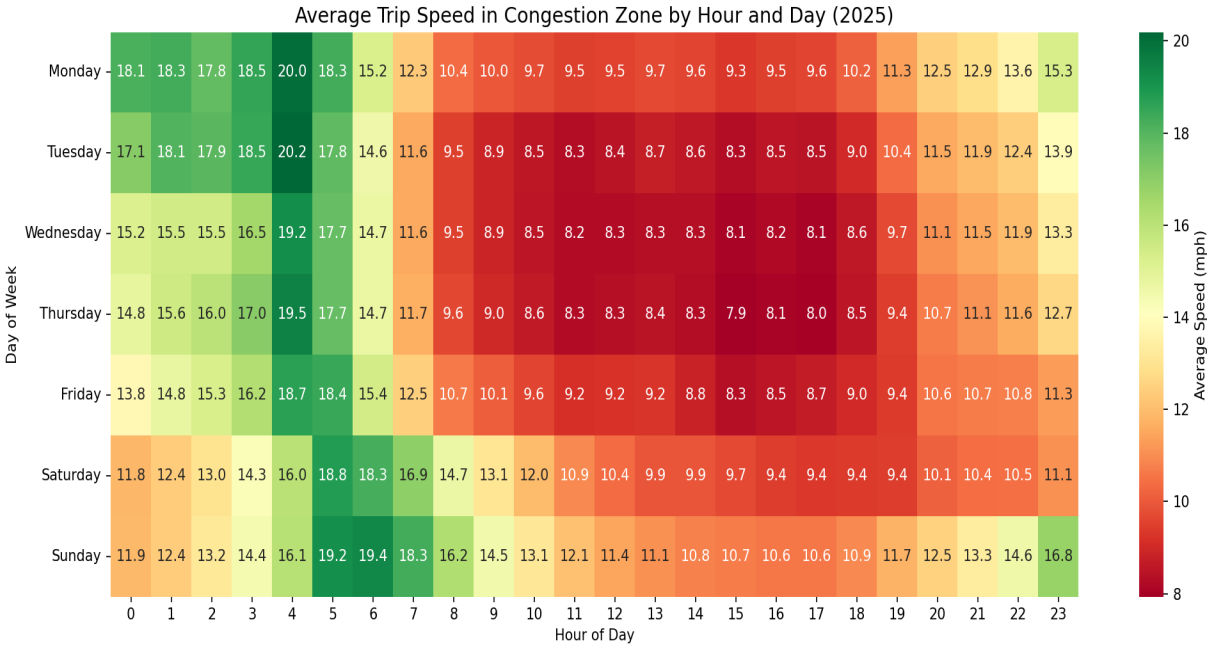

Figure 2: Average speed heatmap by hour and day of week.

Tip Crowding Out Effect

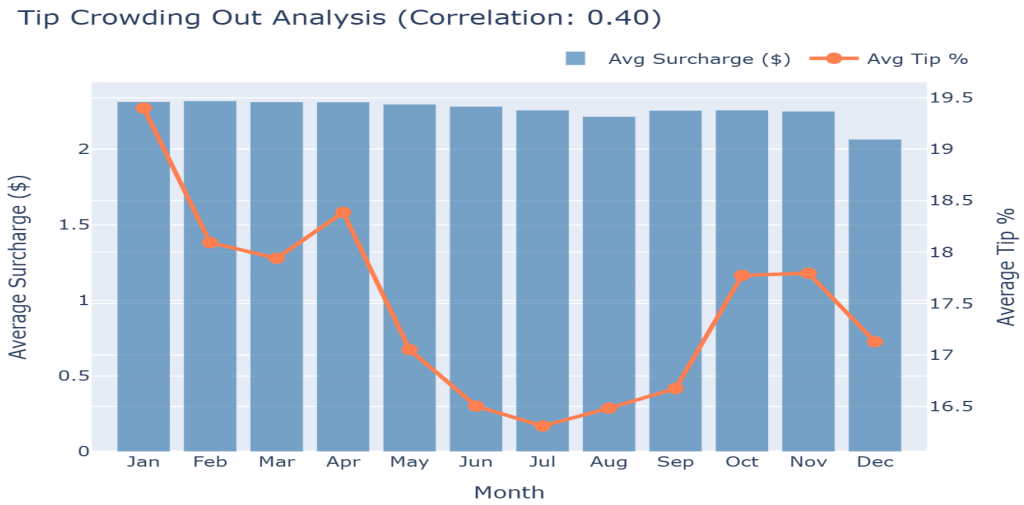

Figure 3: Correlation between average surcharge and tip percentage.

Phase 4: Rain Tax Analysis

Using OpenMeteo historical weather data, we analyzed rainfall impact on taxi demand. The correlation coefficient of 0.16 indicates that demand is **INVERSE ELASTIC**.

• **Wettest Month:** May (178.3mm)

• **Dry Day Avg Trips:** 130,647

• **Rainy Day Avg Trips:** 137,687 (+5.4%)

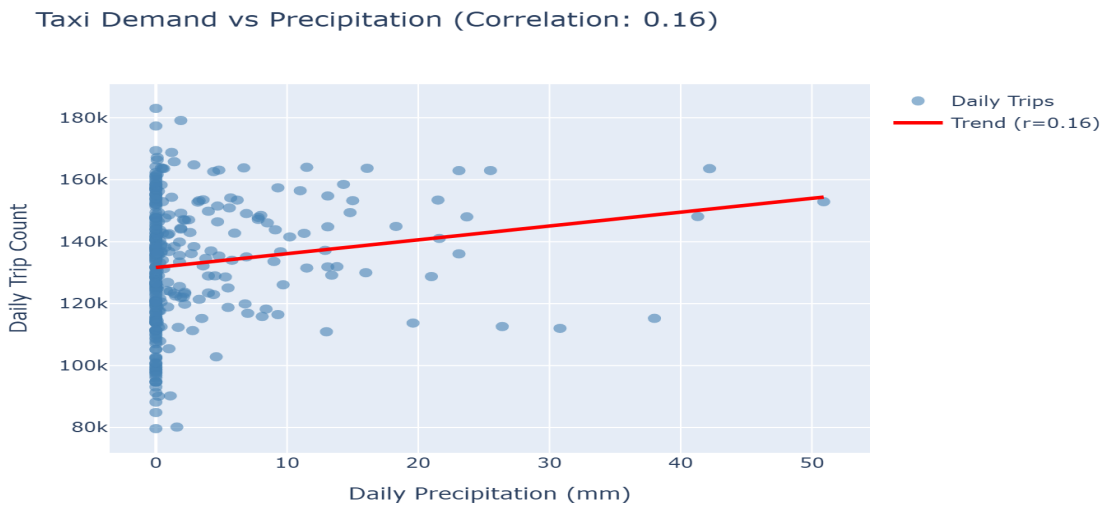

Figure 4: Scatter plot of precipitation vs daily trip counts.