NYC Congestion Pricing Audit Report

Executive Summary - Full Year 2025

Background

On January 5, 2025, New York City implemented the Manhattan Congestion Relief Zone toll, charging vehicles $9 to enter Manhattan south of 60th Street. This report analyzes the complete 2025 impact on the taxi industry using TLC trip record data.

Key Findings

Revenue Collection (Full 2025)

Metric	Value
Total Surcharge Revenue	**$75,367,195**
Trips with Surcharge	30.1 Million
Average Surcharge	$2.50
Compliance Rate	**71.86%**

> **Leakage Alert**: 28% of zone-entry trips (~1.7M) had no surcharge recorded

Ghost Trip Analysis (Fraud Detection)

Detected **2.1+ Million fraudulent trips** costing **$62.1M in suspicious fares**:

Vendor	Ghost Trips	% of Total	Suspicious Fare
Vendor #2	1,474,768	**70.0%**	**$46.3M**
Vendor #1	516,990	24.5%	$11.9M
Vendor #7	111,004	5.3%	$3.9M
Vendor #6	3,368	0.2%	$43K

Ghost Trip Types: - **Teleporter**: Short duration + high fare (avg distance: 1.75 mi) - **Impossible Physics**: >65 MPH average speed (avg distance: 6,248 mi!) - **Stationary Ride**: Zero distance + positive fare

Top 3 Missing Surcharge Locations (>99% non-compliance)

1. **Location 183** (99.78% missing rate)
2. **Location 3** (99.72% missing rate)
3. **Location 77** (99.68% missing rate)

Q1 2024 vs Q1 2025 Trip Volumes

Taxi Type	Q1 2024	Q1 2025	Change
Yellow	5,785,754	6,766,323	**+17.0%**
Green	19,366	18,161	-6.2%

Rain Tax Analysis (Weather Impact)

Metric	Value
Rain-Trip Correlation	0.150
Slope	443.4 trips/mm
R-squared	0.023
P-value	0.006
Interpretation	**Inelastic**

Taxi demand is largely insensitive to precipitation, with a statistically significant but weak positive correlation (more rain = slightly more trips).

Recommendations

1. **Urgent Audit**: Investigate **Vendor #2** for systematic fraud - responsible for 70% of all ghost trips ($46.3M suspicious fares)
2. **Location-Based Enforcement**: Target Locations 183, 3, and 77 which have 99%+ missing surcharge rates
3. **Real-Time Detection**: Implement automated flagging for impossible physics trips (>65 MPH) and teleporter anomalies
4. **Revenue Recovery**: The 28% non-compliance rate represents potential lost revenue of ~$30M based on 2025 projections
5. **Weather Pricing**: Rain elasticity is inelastic - no need for weather-based pricing adjustments

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Data Sources & Methodology

Data Sources: - NYC TLC Trip Record Data (2023-2025) - 48 parquet files (~1.5 GB) - Open-Meteo Weather API (Central Park, NYC)

Technical Stack: - DuckDB for in-memory big data processing - Automated web scraping of TLC data portal - December 2025 imputed using 30%/70% weighted average

Compliance: This analysis follows the "Aggregation First" rule - all groupby/agg operations performed in DuckDB before converting to Pandas for visualization.