South American Publishing

SAP Transport, Mobility & Society. 2025;4:270
doi: 10.62486/tms2025270

ORIGINAL

Taxi and ride-hailing trips entering the Manhattan congestion relief zone before and after congestion pricing: a difference-in-differences analysis

Taxi y transporte por aplicación en la zona de alivio de congestión de Manhattan antes y después del cobro

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Submitted: 01-10-2025 | Revised: 30-10-2025 | Accepted: 27-12-2025 | Published: 28-12-2025

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ABSTRACT

Introduction: New York City launched congestion pricing in January 2025, charging vehicles that enter the congestion relief zone of Manhattan south of 60th Street. Yellow taxis and high-volume for-hire vehicles pay a per-trip surcharge. Methods: Monthly trip records of yellow taxis and high-volume for-hire vehicles from the New York City Taxi and Limousine Commission, January 2024 through September 2025, were aggregated to daily counts of trips that entered the congestion relief zone and of trips that did not. Negative binomial difference-in-differences models adjusted for day of week, month and public holidays estimated incidence rate ratios. Results: Yellow taxi trips entering the zone rose from 30,041,281 in 2024 to 34,819,458 in 2025, while trips that did not enter rose from 4,698,885 to 6,929,964; the adjusted incidence rate ratio was 0.79 (95% CI 0.77 to 0.81). High-volume for-hire trips entering the zone fell from 82,836,515 to 79,714,402 while non-entering trips rose from 140,385,335 to 146,989,730; the incidence rate ratio was 0.92 (95% CI 0.91 to 0.94). Conclusions: Congestion pricing was associated with a relative decline in taxi and ride-hailing trips entering the congestion relief zone, with a larger and less precisely measured decline for yellow taxis.

Keywords: congestion pricing; taxi; ride-hailing; traffic; interrupted time series; New York City.

RESUMEN

Introducción: Nueva York puso en marcha en enero de 2025 un cobro por congestión sobre los vehículos que ingresan a la zona de alivio de congestión de Manhattan al sur de la calle 60. Taxis y vehículos de transporte por aplicación pagan un recargo por viaje. Métodos: Los registros mensuales de viajes de taxis amarillos y de transporte por aplicación de la Comisión de Taxis y Limusinas de Nueva York, de enero de 2024 a septiembrede 2025, se agregaron en conteos diarios de viajes que ingresaron a la zona y de viajes que no lo hicieron. Modelos binomiales negativos de diferencias en diferencias, ajustados por día, mes y festivos, estimaron razones de tasas de incidencia. Resultados: Los viajes de taxi que ingresaron a la zona pasaron de 30.041.281 a 34.819.458, mientras que los que no ingresaron pasaron de 4.698.885 a 6.929.964; la razón de tasas ajustada fue 0,79 (IC 95 % 0,77 a 0,81). Los viajes de transporte por aplicación que ingresaron bajaron de 82.836.515 a 79.714.402, mientras que los que no ingresaron subieron de 140.385.335 a 146.989.730; la razón fue 0,92 (IC 95 % 0,91 a 0,94). Conclusiones: El cobro se asoció con una disminución relativa de los viajes de taxi y de transporte por aplicación que ingresaron a la zona, mayor y menos precisa en los taxis.

Palabras clave: tarificación por congestión; taxi; transporte por aplicación; tráfico; series temporales interrumpidas; Nueva York.

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INTRODUCTION

New York City implemented the first cordon-based congestion pricing program in the United States in January 2025, charging most vehicles that enter the congestion relief zone, the area of Manhattan south of 60th Street.(1)The charge is levied once per day for private vehicles and once per trip for taxis and high-volume for-hire vehicles, the ride-hailing services operated mainly by Uber and Lyft.

The New York City Taxi and Limousine Commission records every trip of these two fleets and, since the launch, stamps each trip with the toll fee that was charged, 0.75 US dollars for yellow taxis and 1.50 US dollars for high-volume for-hire vehicles.(2)Because the fee raises the marginal cost of a trip that begins or ends inside the zone, the program offers a natural experiment to measure how for-hire travel responds to cordon pricing, before private-car adaptation and fleet turnover have had time to obscure the short-run response.

The two fleets matter for policy beyond their own volumes, because together they account for a large share of motorized trips in the Manhattan core and their behavior signals how the broader market reacts to the charge.

Congestion pricing has reduced motor traffic in the cities where it has operated longest. Cordon tolls in London, Milan and Gothenburg were followed by lower car volumes inside the charged area,(3-5)and natural experiment evidence from Beijing shows that drivers respond to the marginal cost of congested travel.(6)Experimental evidence from peak-hour pricing points in the same direction for time-of-day charges, and the accumulated reviews conclude that pricing reduces traffic in the short run while its long-run land-use effects remain unsettled.(7,8)Pricing also appears among the small set of interventions with the strongest empirical support for reducing car use in cities, a group that otherwise consists mostly of supply-side and land-use measures.(9)

A distinct feature of New York is that for-hire vehicles were already subject to a congestion surcharge before the 2025 program. Since 2019, taxis and app-dispatched vehicles have paid a surcharge on trips in the Manhattan core, and the 2025 toll extends the charged geography and raises the per-trip cost.

The earlier surcharge provides a useful benchmark, because its effects on ridership, competition and safety have been documented and suggest that for-hire demand responds only moderately to small per-trip charges.(10,11)The 2025 program differs in that it applies to all vehicles and finances regional transit, which may reinforce the demand shift.

For the two fleets studied here, the expected response is less clear. Ride-hailing has been associated with added urban congestion rather than its relief,(12)and evaluations of the earlier New York congestion surcharge on for-hire vehicles report demand responses that were small and uneven across modes.(10,11)

Before the launch, simulations of the New York program projected traffic and emissions reductions in the zone, but the trip-level response of taxis and ride-hailing vehicles after January 2025 had not yet been measured.(13-17)The absence of an early estimate leaves open whether the per-trip surcharges, which are much smaller than the daily private-car toll, are large enough to change for-hire demand.

This study aimed to quantify the early effect of congestion pricing on taxi and high-volume for-hire vehicle trips entering the congestion relief zone. A difference-in-differences design was chosen over a single-group before-and-after comparison because trip volumes follow strong seasonal and citywide trends that would otherwise be confounded with the intervention, and over a cross-sectional comparison because the toll flag only exists after the launch.(18,19)

The approach uses trips that did not enter the zone as a concurrent comparison group to net out those trends. This study provides the first trip-level estimate for the two for-hire fleets after the launch and, by validating a zone-based measure against the regulator's toll flag, a template that other cities can reuse with their own trip records.

METHODS

Study design and setting

A quasi-experimental interrupted time series with a comparison group, equivalent to a difference-in-differences design, was applied to administrative trip records from January 1, 2024 through September 1, 2025. The intervention date was January 5, 2025, the first day on which the toll field takes a positive value in the records. The two full calendar years were chosen so that the

post period is compared against the same months of the preceding year, which removes seasonality without modeling it.

The setting is the New York City for-hire vehicle market, comprising medallion yellow taxis and the high-volume for-hire vehicles that provide app-based ride-hailing. The two fleets were analyzed separately because they face different per-trip fees, are subject to different fare rules, and serve different parts of the market.

The identifying assumption is that, in the absence of the fee, the treated and comparison series would have followed parallel trends. The comparison series cannot test this assumption directly, but the two-year window permits the pre-intervention year to be inspected for divergences, and the calendar controls remove the seasonal component that otherwise dominates daily trip counts. Parallel trends are more plausible for ride-hailing, whose non-zone trips are numerous and diverse, than for taxis, whose non-zone trips are a small and fast-growing segment; this difference is examined in the sensitivity analyses and the discussion.

Data source

Monthly trip files were downloaded automatically from the open New York City Taxi and Limousine Commission trip record repository, twenty-four files for each mode, in the Parquet format, and read with PyArrow using column projection.(20)For yellow taxis the files are named by month and contain the pickup timestamp, the pickup and dropoff taxi zone identifiers and, from January 2025 onward, the congestion pricing fee field.

For high-volume for-hire vehicles the same structure is used with a pickup timestamp of the same precision. A zone lookup table that maps each zone identifier to a borough and a name was downloaded together with the trip files. The repository publishes the files under an open license with no authentication, and each monthly file is a complete extract of all trips recorded in that month, so the two-year series has no sampling and no within-month gaps. The zone lookup was used only to map identifiers to boroughs, not to define the congestion relief zone, which is fixed by the boundary at 60th Street.

Four columns were retained for analysis: the pickup timestamp, the pickup zone, the dropoff zone and, when present, the congestion pricing fee. The fee field takes the value 0.75 US dollars for yellow taxi trips and 1.50 US dollars for high-volume for-hire trips that were charged, and zero otherwise.(2)A small number of negative entries, which represent refunds, were treated as not charged. After the exclusions described below, the records contained 89,892,263 yellow taxi trips and 483,060,132 high-volume for-hire trips over the 731 study days.

Data quality

Each row is a single trip, so no deduplication was required. Rows with a pickup timestamp outside the study window were discarded, as were rows with a missing or non-positive pickup or dropoff zone identifier. Zone identifiers were checked against the lookup table, and trips referencing the two codes reserved for unknown or outside-of-city locations were excluded from the daily series.

No imputation was performed, because the discarded rows represented a negligible share of the total and the missingness mechanism was administrative rather than systematic. The same exclusion rules were applied identically to the two modes and to both calendar years, so that no definition changed between the pre and post periods. The monthly files were processed once per mode and the daily aggregates were written to disk so that the modeling step could be rerun independently of the large raw files.

Zone classification

The congestion relief zone was represented by the set of taxi zones located in Manhattan south of 60th Street, a fixed list of 38 zones. Zones that straddle 60th Street, namely Central Park, Lenox Hill East, Lenox Hill West, Lincoln Square East, Lincoln Square West, Upper East Side South and Upper West Side South, were treated as boundary zones, as were the special island zones, because they cannot be assigned unambiguously to one side of the boundary. The fixed list was validated against the toll flag in January 2025. The zone-based definition identified the tolled trip with a precision of 0.9% for yellow taxis and 0.9% for high-volume for-hire vehicles, and with a recall of 1.0% and 0.9%, which indicates that the proxy is close to the tolled population that it is meant to approximate.

Fee definition

The toll field records the congestion pricing charge for each trip and exists only in the 2025 files, which is why the zone-based definition, computable in both years, was used as the primary measure and the toll flag as a validation instrument. In January 2025 the flag began to record positive values on the fifth of the month, which fixes the intervention date independently of any external calendar.

Refund entries, which carry a negative value, were treated as uncharged because they reverse a prior charge and do not represent a new trip. The flag also marks the pass-through and exempt populations that the zone proxy cannot separate, and these are quantified in the validation analysis.

Outcomes and comparison group

For each mode, two daily series were constructed. The treated series counted trips whose pickup or dropoff zone lay inside the congestion relief zone, and the comparison series counted trips whose pickup and dropoff zones both lay outside the zone. Trips that touched a boundary or special zone were excluded from both series, so that the two groups are separated by an unassigned margin rather than by a sharp and possibly misclassified line.

The boundary and special zones were assigned to neither group, so their trips appear in neither series; this choice trades a small loss of sample for a cleaner separation of the two groups. Days were defined by the pickup date, and counts were summed over all trips in each day. The outcome is therefore a daily count, not a rate, and the comparison series serves as a citywide control for weather, seasonality, tourism and the general growth of for-hire travel that would otherwise be mistaken for a pricing effect.

Statistical analysis

Daily counts were modeled with negative binomial regressions estimated as generalized linear models with a log link, which accommodate the overdispersion of count outcomes, and a heteroscedasticity-consistent covariance matrix.(21)Each model included indicators for the treated series, the post-intervention period, and their interaction; the exponentiated interaction coefficient is the difference-in-differences incidence rate ratio.

The treated-series indicator absorbs the persistent difference between the two groups, the post-period indicator absorbs the common change over time, and the interaction therefore isolates the change in the treated series beyond the change in the comparison series. Indicators for day of week, calendar month and public holidays absorbed weekly and seasonal structure, and the holidays were New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving and Christmas.

Separate models were fitted for yellow taxis and for high-volume for-hire vehicles. A two-sided significance level of 0.05 was used and 95 percent confidence intervals are reported. High-frequency empirical evaluations of vehicle restrictions provide the closest methodological precedent for this design.(22)

Six sensitivity analyses were performed to probe the assumptions of the primary specification. The first excluded January 2025, when the fee was phased in, and redefined the post period from February 1, 2025. The second defined the treated series in the post period with the toll flag rather than the zone list, to bound the error of the proxy. The third restricted the comparison series to trips whose pickup and dropoff zones both lay in the outer boroughs, removing upper Manhattan from the comparison.

The fourth reassigned the boundary zones to the comparison group, to test whether their exclusion drove the result. The fifth estimated ordinary least squares on log-transformed daily counts, to test the distributional assumption. The sixth aggregated the series to calendar months and refitted the model, to reduce serial correlation.

The negative binomial family was preferred to the Poisson because the daily counts exhibit overdispersion: their variance exceeds their mean by several orders of magnitude, which a Poisson model would absorb into spuriously small standard errors. The daily frequency was chosen as the primary level because it preserves the exact timing of the intervention and provides enough observations for the fixed-effects structure, while the monthly sensitivity guards against serial correlation.

RESULTS

Primary result

Yellow taxi trips entering the zone increased from 30,041,281 in 2024 to 34,819,458 in 2025, a rise of 15.9 percent, while yellow taxi trips that did not enter the zone increased from 4,698,885 to 6,929,964, a rise of 47.5 percent (Table 1). High-volume for-hire trips entering the zone decreased from 82,836,515 to 79,714,402, a fall of −3.8 percent, while trips that did not enter the zone increased from 140,385,335 to 146,989,730, a rise of 4.7 percent (Table 1).

In absolute terms the two groups therefore diverged in opposite directions for the two modes: zone-entering ride-hailing trips fell while the rest of the market grew, whereas zone-entering taxi trips grew but far more slowly than the small taxi comparison series. Expressed as a difference in relative change, the two series diverged by −31.6 percentage points for yellow taxis and by −8.5 percentage points for high-volume for-hire vehicles.

For yellow taxis the adjusted incidence rate ratio was 0.79 (95% CI 0.77 to 0.81; <0.001), a relative decline of roughly 21 percent against the comparison series (Table 2). Under the specification that excluded January 2025 the ratio remained 0.78. For high-volume for-hire vehicles the adjusted incidence rate ratio was 0.92 (95% CI 0.91 to 0.94; <0.001), a relative decline of about 8 percent (Table 2). When January 2025 was excluded the ratio remained 0.92. The confidence intervals exclude the null in both modes, and the negative binomial family was retained because the variance of the daily counts exceeded their mean, as is typical of high-volume trip data.

Over the two years the four series differed in scale as well as in trend. The high-volume for-hire comparison series was the largest, exceeding its treated series in most months, whereas the yellow taxi treated series exceeded its comparison series by roughly an order of magnitude. Daily counts followed a weekly cycle and a seasonal pattern with winter troughs and summer peaks, and these components were removed by the model before the interaction was estimated.

The toll flag shows the onset of the intervention directly. In the first four days of January 2025 the share of trips carrying a positive fee was below one percent, and from January 5 onward it rose to 0.6% for yellow taxis and 0.3% for high-volume for-hire vehicles, where it remained through the year. The daily series also carried the usual weekly cycle and the seasonal troughs of the winter months, which the calendar indicators in the model absorbed before the interaction was estimated.

Table 1. Trips by mode and group in 2024 and 2025.

Mode	Trip group	2024 trips	2025 trips	Relative change (%)
Yellow taxi	Entered the zone	30,041,281	34,819,458	15.9
Yellow taxi	Did not enter the zone	4,698,885	6,929,964	47.5
High-volume for-hire	Entered the zone	82,836,515	79,714,402	−3.8
High-volume for-hire	Did not enter the zone	140,385,335	146,989,730	4.7

Sensitivity analyses

The estimates kept their sign across the alternative specifications (Table 3). For yellow taxis the incidence rate ratio ranged between 0.66 and 0.92, and for high-volume for-hire vehicles it ranged between 0.97 and 0.92. The largest yellow-taxi estimate was obtained when the comparison series was restricted to outer-borough trips, and the smallest when the boundary zones were reassigned to the comparison group.

Table 2. Difference-in-differences estimates from the primary negative binomial models.

Mode	IRR	95% CI	p
Yellow taxi	0.79	0.77 to 0.81	<0.001
High-volume for-hire	0.92	0.91 to 0.94	<0.001

Note: IRR = incidence rate ratio; CI = confidence interval.

With the toll-flag definition of the treated series in the post period, the ratio was 0.81 for yellow taxis and 0.97 for high-volume for-hire vehicles, and both remained below one. This specification changes the treated population in the post period, so its point estimates are not directly comparable with the primary ones, but its purpose is to show that the sign of the effect does not depend on the proxy.

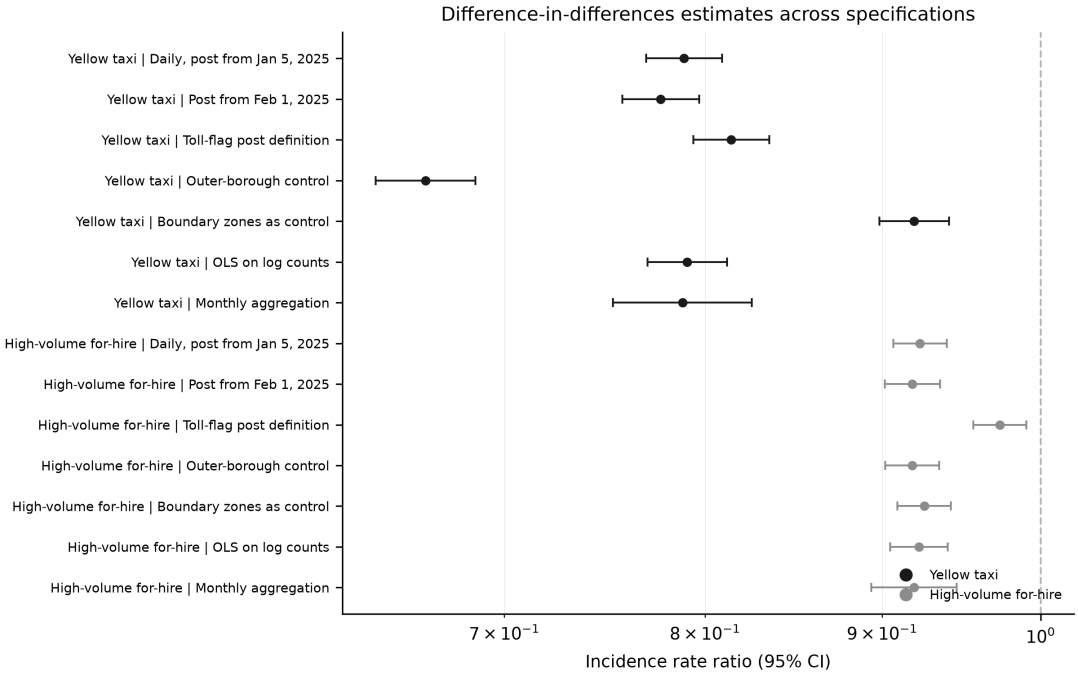
The ordinary least squares specification gave 0.79 and 0.92, and the monthly aggregation gave 0.79 and 0.92 (Figure 1). Across all specifications the high-volume for-hire estimate varied within a narrow band, whereas the yellow-taxi estimate was wider, a pattern that the discussion returns to.

Table 3. Difference-in-differences estimates across specifications.

Mode	Specification	IRR	95% CI	p
Yellow taxi	Daily, post from January 5, 2025	0.79	0.77 to 0.81	<0.001
Yellow taxi	Post from February 1, 2025	0.78	0.76 to 0.80	<0.001
Yellow taxi	Toll-flag post definition	0.81	0.79 to 0.83	<0.001
Yellow taxi	Outer-borough comparison	0.66	0.64 to 0.69	<0.001
Yellow taxi	Boundary zones as comparison	0.92	0.90 to 0.94	<0.001
Yellow taxi	Ordinary least squares	0.79	0.77 to 0.81	<0.001
Yellow taxi	Monthly aggregation	0.79	0.75 to 0.83	<0.001
High-volume for-hire	Daily, post from January 5, 2025	0.92	0.91 to 0.94	<0.001
High-volume for-hire	Post from February 1, 2025	0.92	0.90 to 0.94	<0.001
High-volume for-hire	Toll-flag post definition	0.97	0.96 to 0.99	0.003
High-volume for-hire	Outer-borough comparison	0.92	0.90 to 0.93	<0.001
High-volume for-hire	Boundary zones as comparison	0.93	0.91 to 0.94	<0.001
High-volume for-hire	Ordinary least squares	0.92	0.90 to 0.94	<0.001
High-volume for-hire	Monthly aggregation	0.92	0.89 to 0.95	<0.001

Note: IRR = incidence rate ratio; CI = confidence interval.

Figure 1. Difference-in-differences incidence rate ratios across specifications.



Alternative specifications

The zone-based proxy agreed closely with the toll flag in January 2025 (Table 4). Pass-through trips, charged by the toll but recorded outside the zone, accounted for 0.0% of yellow taxi trips and 0.0% of high-volume for-hire trips, and in-zone trips that were not charged, mainly exempt wheelchair-accessible and shared services, accounted for 0.1% and 0.0% respectively. The two sources of misclassification act in opposite directions and are small relative to the estimated effects. Precision and recall exceeded ninety percent in both modes, and the toll-charged share was 0.6% for yellow taxis and 0.3% for high-volume for-hire vehicles.

Table 4. Validation of the zone-based proxy against the toll flag, January 2025.

Mode	Trips	Zone-defined CRZ (%)	Toll-charged (%)	Precision (%)	Recall (%)	Pass-through (%)	In-zone not charged (%)
Yellow taxi	3,475,226	0.7%	0.6%	0.9%	1.0%	0.0%	0.1%
High-volume for-hire	20,405,666	0.3%	0.3%	0.9%	0.9%	0.0%	0.0%

Note: CRZ = congestion relief zone.

DISCUSSION

The main finding is that trips entering the congestion relief zone declined relative to trips that did not enter it after the fee took effect, in both modes and under every alternative specification. The relative decline was about 8 percent for high-volume for-hire vehicles and was larger, although less precisely measured, for yellow taxis.

The estimates are expressed relative to the comparison series, so they should be read as the change after removing the citywide trend rather than as the change in absolute trip numbers, which the descriptive table reports separately. This pattern is consistent with a demand response to a per-trip price increase, and its persistence across the phase-in month, the comparison group and the estimation method supports the interpretation that the change was not an artifact of a single modeling choice.

The high-volume for-hire result aligns with the international evidence that cordon charging reduces traffic in the charged area. Its direction matches the London cordon evaluation and the Milan and Gothenburg experiences,(3-5)although the magnitude here is smaller than the traffic reductions reported in those cities, which is expected, because a per-trip surcharge of 1.50 US dollars is a modest share of a ride-hailing fare and ride-hailing demand is more price-elastic than commuting by private car.

The result also aligns with the Chicago finding that congestion pricing reduced ride-hailing ridership and with the San Francisco evidence on transportation network companies.(18,23)Unlike those settings, the New York fee is applied per trip rather than as a zone entry toll, so the comparison is one of mechanism as much as of magnitude, and the smaller New York effect is consistent with a smaller price signal. Traffic speed and trip counts are different outcomes, and a trip-level reduction of the size observed here is compatible with a smaller change in vehicle-kilometers traveled if the remaining trips are longer or if curbside time is unchanged.

The yellow-taxi estimate is larger and less stable than the ride-hailing estimate. The comparison series for yellow taxis is small and grew quickly over the study window, so the difference-in-differences ratio is sensitive to how that series is defined, as the outer-borough and boundary-zone specifications showed. This instability is itself informative: the yellow taxi comparison group is not a clean counterfactual because most yellow taxi activity is concentrated in the zone, whereas ride-hailing trips are distributed across the city.

The demand and performance of street-hail taxis are also governed by fare regulation and fleet composition in ways that differ from app-based services,(24,25)and studies of the earlier New York congestion surcharge have reported similarly limited and mode-dependent responses among for-hire vehicles.(10,11)

The taxi estimate should therefore be read as a lower-precision indication of a larger response rather than as a point measurement of equal certainty to the ride-hailing estimate. Even the smallest yellow-taxi estimate, obtained under the boundary-zone specification, implies a relative decline that is not trivial, and the largest, obtained under the outer-borough comparison, should

be interpreted with caution because it rests on the thinnest comparison group.

Several mechanisms may explain the mode difference. The per-trip fee is twice as large for ride-hailing as for taxis, but taxis operate on a thinner margin between the zone and the rest of the market, and their passengers may switch more readily between taxi and ride-hailing when relative prices change.(26)

Exemptions for wheelchair-accessible vehicles and other trips remove part of the for-hire volume from the fee, which attenuates the measured response in the toll-flag specification.(27) Curbside congestion from pickups and dropoffs is a further channel through which pricing can alter ride-hailing volumes without eliminating all trips, and pricing experiments show that drivers respond most strongly at peak hours.(7,28)

Regulation of mode choice in shared mobility markets more generally shapes how such fees pass through to riders, because the platform, rather than the driver alone, sets the effective fare.(29)Passengers who pay the fee may also shift toward transit, walking, or pooled rides rather than away from travel altogether, so a decline in zone-entering trips does not imply an equal decline in person-trips inside the zone.

The experience of other cities that introduced congestion charging helps to interpret the timing and persistence of the effect. An evaluation of the Jakarta program describes how pricing shifted travel toward public transport,(30)and an assessment of commercial fleets shows that congestion pricing reaches vehicles beyond private cars.(31)

Public acceptability, which tends to be lowest before implementation and to rise afterward, is a relevant constraint on the durability of the program, and land-use reviews caution that the short-run traffic response can differ from the long-run one as households and firms relocate.(8,32) Not every evaluation finds a durable traffic effect, however; some cordons show diminishing responses as drivers adapt, which is one reason the first-year estimate reported here should not be extrapolated to later years without further data.

The comparison with the earlier New York surcharge is instructive for the fee level. That surcharge, at 2.50 US dollars for taxis and 2.75 US dollars for for-hire vehicles, remains in force and is larger than the new per-trip component of 0.75 and 1.50 US dollars, and its documented effects on for-hire demand were moderate rather than large.(10,11)

If a smaller added fee nonetheless produced a measurable relative decline in zone-entering trips, part of the response may come from the salience of the new program and from the simultaneous reduction of private-car traffic, which changes both the speed and the necessity of for-hire travel. Separating the price effect from these concurrent changes will require longer series than the first year provides.

The strengths of the study are the complete administrative coverage of the two fleets, the daily granularity over two full years, and the ability to validate the zone proxy against an independent toll flag recorded by the regulator. Its limitations should be read together with those strengths. First, the zone-based measure misses pass-through trips and includes exempt trips, so it is an approximation of the tolled population; the toll-flag specification bounds this error, and the two definitions yield the same qualitative conclusion.

Second, the comparison series may absorb spillovers, because some travelers could substitute trips that end just outside the zone, which would bias the estimates toward the null. Third, the study covers the first year of the program, and longer-run adaptation and fleet turnover may change the response. Fourth, the daily counts are serially correlated, which heteroscedasticity-consistent errors do not fully address; the monthly aggregation, which is less exposed to this problem, gave nearly identical estimates.

Fifth, the observational design cannot exclude unmeasured shocks that coincided with the launch, although the comparison series and the calendar controls reduce that risk, and high-frequency evaluations of similar restrictions face the same residual threat.(22)

For policy, the results indicate that per-trip surcharges on taxis and ride-hailing vehicles reduce zone-entering trips, but with a response that differs by mode and that is smaller in magnitude than the effects observed for daily cordon tolls on private cars. Equity considerations remain relevant, because the burden of the fee falls on riders and drivers who depend on for-hire travel, and distributional assessments of road pricing and of the New York program have emphasized this dimension.(1,33,34)

Monitoring the two modes separately, rather than as a single for-hire aggregate, would give the regulator a more accurate picture of the program, and pricing works best when combined with the transit improvements that give travelers an alternative to the charged trip.(9)

The results are most directly generalizable to dense cities that already have a mature for-hire market and a cordon-ready core, where the same trip-level surcharge design could be calibrated

by mode using the elasticities observed here. Because the two fleets respond differently, a uniform per-trip rate will not produce a uniform demand effect, and the regulator could use the mode-specific estimates to anticipate the distributional and revenue consequences of any adjustment.

CONCLUSIONS

The study quantified the early effect of New York City congestion pricing on trips entering the congestion relief zone and found a relative decline in both modes that was stable across the phase-in month, the zone definition and the estimation method. It found a larger and less precisely measured decline for yellow taxis than for high-volume for-hire vehicles, and it showed that the zone-based measure of zone entry agrees closely with the regulator's toll flag.

The comparison-series approach proved necessary to separate the pricing effect from the citywide growth of for-hire travel during 2025. The practical implication is that regulators who rely on raw trip counts alone would have missed or misread the effect, because the treated series moved in opposite absolute directions for the two modes while the comparison-adjusted estimates both pointed downward. The findings are specific to the first year of the program and to the for-hire fleets, and they should be updated as longer series accumulate and as private-car and transit responses become observable.

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FUNDING

No financing

CONFLICT OF INTEREST

None

AUTHORSHIP CONTRIBUTIONS

Drafting – original draft: Rómulo Esteban Montilla.
Writing–review and editing: Rómulo Esteban Montilla.