

A Congestion Toll New York Can Live With

A report for the Nurture Nature Foundation



By
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FOREWORD

This report, and the research that made it possible, was funded by the Nurture Nature Foundation (NNF), a 501(c)(3) nonprofit. NNF was founded by Theodore Kheel, a famed labor peacemaker and civil rights advocate from the 1950s to 1980s, who in the 1990s became a spokesperson for sustainable development and a benefactor of diverse environmental causes. Kheel passed away in 2010 at the age of 96, but his nonprofit has continued the work he began.

Kheel was a longstanding advocate for public transportation. He was speaking out for the cause already in the 1940s and 1950s. In 1965, he made headlines urging that tolls charged to drive cars into NYC be doubled and the proceeds used to help the City's struggling transit system. In keeping with its founder's convictions, NNF has been a long-time supporter as well of efforts to promote sustainable transportation, with the many benefits it brings — such as improving urban life, reducing traffic, conserving land, and reducing greenhouse gas emissions.

In 2008, NNF published a [report](#) showing that congestion pricing would not only improve travel in New York City but could also fund free mass transit. Kheel's goal was to enlist support for congestion pricing by highlighting the positive (improved mass transit) rather than the negative (additional costs for car travel).

As Kheel explained in the introduction to that report:

[C]ar travel and mass transit are interrelated, like two sides of an equation, two weights counterpoised on a scale. Ideally, there should be a balance, but instead, our system is enormously, unconscionably out of balance. This report shows how we can correct that.

Congestion pricing was, as we all know, thwarted in the New York legislature in 2008. However, NNF did not abandon the fight. Instead, NNF continued funding work in this area, devoting significant resources to research and outreach designed to bring congestion pricing back to the legislature when the time was ripe. The substantial work done in that period lay the groundwork for a renewed, and ultimately successful, initiative a decade later.

A major contribution by NNF was to fund the development of the [Balanced Transportation Analyzer](#), dubbed the "BTA," which became a critical tool of analysis for anyone considering traffic pricing options in New York, and contributed greatly to the understanding and ultimate adoption of congestion pricing in 2019. The BTA, which grew out of NNF's original transit report, is a sophisticated modeling program that can quantify the effect that any given change in automobile tolls or subway fares would have on an array of parameters including revenues, traffic congestion and pollution.

Beginning in 2008 and continuing to the present, NNF has continued to fund updates, expansions, refinements, and improvements of this tool, to ensure it is of maximum use on an ongoing basis to the transit

community and public policymakers, as well as legislators and other public officials. Renowned transportation expert "Gridlock" Sam Schwartz once described the BTA as the "best [modeling] tool that I have seen in my nearly 40 years." Gov. Andrew Cuomo's Fix NYC Advisory Panel, which came up with the recommendations that paved the way for enactment of congestion pricing legislation in 2019, also praised the BTA and relied on it as the basis for the panel's conclusions in its final report. Prior to that, the transit advocacy coalitions MoveNY and Fix Our Transit relied on the BTA in developing their proposals.

Recent developments to the BTA have made possible development of the new tolling iteration described in the following pages. These advances could allow the MTA to deliver the revenue that is needed with a less draconian toll structure than the peak tolls that had been feared (\$17 to \$23). The plan also could mollify opposition to congestion pricing from New Jersey officials by crediting existing Lincoln and Holland Tunnel tolls toward the new congestion toll. The plan also offers relief to New York's hard-pressed taxi workers by foregoing tolls or additional surcharges for yellow cab rides.

In short, the creative new plan made possible by new BTA modeling offers just the sort of win/win resolution of an apparent conflict to which NNF's founder devoted his career. NNF is proud to have been able to support the research that underlies such a resolution.

Robert J. Kheel

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AUTHORS

Economist and policy-analyst **Charles Komanoff** created the “BTA” spreadsheet model used by state officials to draft the 2019 legislative framework enabling congestion pricing for New York City, and that forms the basis for this paper’s conclusions and recommendations. His work as policy analyst and organizer, including co-founding the Carbon Tax Center (2007) and the direct-action pedestrian rights group Right Of Way (1996), and “re-founding” and leading the bicycling advocacy organization Transportation Alternatives (1986-1992), was catalytic to the livable-streets movement in New York City and across the country. Earlier, as expert witness for state government agencies in New York, California and a dozen other states, Komanoff helped save billions for electricity customers by documenting utility company misfeasance in failed nuclear power plant ventures. His work includes books (*Power Plant Cost Escalation, Killed By Automobile, The Bicycle Blueprint*), scholarly articles and journalism. An honors graduate of Harvard and married parent of two grown sons, Charles lives in lower Manhattan. Web site: <https://komanoff.net>.

Gernot Wagner is a climate economist at Columbia Business School. His research, writing, and teaching focus on climate risks and climate policy. He is the author of five books, most recently *Geoengineering: the Gamble* (Polity, 2021). Prior to joining Columbia, he taught at NYU and Harvard, was the founding executive director of Harvard’s Solar Geoengineering Research Program (2016-2019), and served as economist at the Environmental Defense Fund (2008-2016), most recently as lead senior economist (2014 – 2016) and member of its Leadership Council (2015-2016). He is a member of the New York City Panel on Climate Change and serves on the board of CarbonPlan.org. He writes a monthly, globally syndicated column and is a frequent contributor to the New York Times, Washington Post, and elsewhere. Gernot and his gynecologist spouse live in lower Manhattan with their two young children. Web site: <https://gwagner.com/>.

The Balanced Transportation Analyzer is an integrated Excel spreadsheet model that quantifies how congestion pricing will function in New York City under almost any conceivable tolling scenario, processing not just varying car and truck tolls at different hours but also for-hire vehicle surcharges, toll credits and exemptions, and the fruits of investing the congestion revenues in improved subway and bus service. Developed and curated since 2007 by Charles Komanoff, with major financial support from the Nurture Nature Foundation established by legendary New York civic leader Theodore W. Kheel, the BTA has grown to encompass nearly 100 “tabs” linked by 140,000 equations. Its outputs include toll revenues, changes in vehicle volumes and travel speeds, time saved by drivers and transit users, and net benefits for the entire New York region. Komanoff updates the spreadsheet continually and keeps it in the public domain at the permalink http://www.nnyn.org/kheelplan/BTA_1.1.xls.

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Links to access/download this paper

DIRECT LINK: http://www.komanoff.net/cars_II/NYC-15-9-3.pdf

LINK TO PAGE ON GERNOT’S WEBSITE: gwagner.com/NYC-15-9-3

LINK TO PAGE ON NNF’S WEBSITE:

<https://nuturenature.org/pages/report-for-the-nuture-nature-foundation-charles-komanoff-and-gernot-wagner>

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SUMMARY

A vast number of toll combinations can satisfy the legislative mandate that New York’s congestion pricing program generate sufficient revenue to bond \$15 billion worth of MTA capital improvements.

One specific combination appears to fulfill that requirement in a particularly fair and efficient way. We call it “15/9/3.” This paper seeks to demystify this toll arrangement and explain why we believe congestion pricing in New York should adhere to it.

What does 15/9/3 denote?

It’s shorthand for the dollars we propose to charge private cars to enter the congestion zone: \$15 at peak times, which comprise weekdays, 6 am – 8 pm; \$9 during “shoulder” hours, comprising weekends and holidays, noon – 10 pm; and \$3 off-peak, comprising all other hours: weekdays, 8 pm – 6 am and weekends and holidays, 10 pm – noon. (Toll credits for tunnels to Manhattan, which are already tolled, are noted directly below.)

PEAK HOURS WEEKDAYS, 6 AM – 8 PM	“SHOULDER” HOURS WEEKENDS & HOLIDAYS, NOON – 10 PM	OFF-PEAK HOURS WEEKDAYS, 8 PM – 6 AM & WEEKENDS AND HOLIDAYS, 10 PM – NOON
\$15	\$9	\$3

We also propose a rise of \$2.25 from the current \$2.75 customer surcharge for Uber trips that touch the congestion zone.

How much revenue will this toll combination generate?

Based on our detailed modeling, employing the sophisticated spreadsheet tool developed by one of us and used by state officials to scope congestion pricing in the run-up to the 2019 legislation authorizing it (see footnote 1), we believe our toll plan will bring in approximately \$1.3 billion a year. The net after deducting \$110 million in toll-administration costs, around \$1.2 billion a year, is comfortably above the \$1 billion a year considered necessary to cover the interest on the mandated \$15 billion in MTA capital spending.

What toll exemptions or credits are included in your plan?

- We propose to credit car and truck trips to Manhattan via the Port Authority’s Hudson River tunnels for the full amount they’re already paying the Port Authority. For example, cars with E-ZPass entering Manhattan via the Holland and Lincoln Tunnels between 10 am – 4 pm now pay the Port \$12.75. The \$15.00 peak inbound car toll in our plan means that after paying the same \$12.75 to the Port, the driver will now also pay \$2.25 to the MTA.

- Our plan similarly credits tolls (both inbound and outbound) on the MTA’s Queens-Midtown and Brooklyn-Battery tunnels under the East River, currently \$6.55 at all times with E-ZPass. Under our plan, these cars will pay an additional \$1.90 (that’s \$15.00 less twice \$6.55) but nothing at other times because both the shoulder and off-peak congestion tolls are less than twice \$6.55.
- Under our plan, neither Ubers nor yellow cabs will pay tolls to enter the congestion zone, beyond what they might already pay at the Hudson or East River tunnels. However, Uber trips touching the zone will be surcharged an additional \$2.25, which will bring the total surcharge for such trips to \$5.00. Yellows will continue to pay only the ongoing \$2.50.

Are there exemptions or credits being discussed that your plan will NOT include?

We won’t credit “upstream” tolls paid for trips en route to the zone, whether at the Port Authority’s George Washington Bridge or the MTA’s RFK and Verrazzano Bridges. We also do not exempt trips into the congestion zone by drivers who live there, although residents earning less than \$60k per year will qualify for state tax credits prescribed in the 2019 legislation establishing congestion pricing. We won’t exempt mayors, councilmembers, judges, cops, firefighters, teachers, clergy, et al.

Other plan particulars such as truck tolling are discussed in Section 4.

The MTA’s environmental assessment of congestion pricing posited peak tolls as high as \$23. Yet your plan purports to fulfill the \$1 billion a year revenue target, with room to spare, with a \$15 peak toll and off-peak tolls just 10 cents higher than prospective new subway and bus fares. How does your plan accomplish that?

While we haven’t done a side-by-side comparison, we suspect a key factor in our plan’s ability to hit the mandated revenue mark without exceeding a \$15 toll is that our peak tolling period extends for 14 hours a day (6am – 8pm), 5 days a week. While our long peak is intended to conform to traffic levels — congestion is rampant in and en route to the zone over that entire period — it does generate substantial revenue. Our plan also reaps nearly \$200 million a year by increasing the Uber surcharge by \$2.25 for each trip touching the congestion zone.

Do you consider your toll combination fair?

Yes, for several reasons. First, the off-peak toll rate of \$3 matches, with rounding, the \$2.90 subway and bus fares that the MTA is expected to ratify this summer. Second, the relative toll rates are in rough proportion to the congestion each additional car trip causes, though, we hasten to add, much below their absolute congestion costs, as we show in Section 3. Third, our \$2.25 additional Uber surcharge will help rectify the damage caused by that company’s theft of yellow taxis’ exclusive franchise to pick up street hails in Manhattan south of 96th Street.

1. CONGESTION PRICING, 2017-2022

Legislation directing the state-run Metropolitan Transportation Authority to develop and implement a congestion pricing program for Manhattan south of 60th Street was adopted by the NY State legislature and signed by the governor at the end of March 2019.

Key to the legislation was the decision by Gov. Andrew Cuomo to put his administration's weight behind Central Business District tolling, in response to relentless political pressure to "fix the subways" from deteriorating service. The governor's [heralding congestion pricing as](#) "an idea whose time has come" in August 2017 initiated a year-and-a-half-long process culminating in the 2019 legislation.

"Fix NYC"

One element of that process was the state's convening a "Fix NYC" panel to scope congestion pricing and sow a favorable political atmosphere. (For quantification, the panel relied almost exclusively on a traffic model developed by one of us.¹) Another element was enactment of "congestion surcharges" on yellow cab and Uber fares for trips "touching" the Manhattan taxi zone, which comprises the borough north from the Battery to 96th Street. Yellow trips were surcharged \$2.50, and trips in Ubers and Lyfts (denoted here as "Ubers") \$2.75, with the funds going to the MTA.

These surcharges were intended to be joined in early 2021 by far more extensive congestion tolls on cars and trucks. But the one-two punch of the Covid pandemic and the troglodytic Trump White House put those in abeyance.

The simultaneous advent of the Biden administration and Covid vaccines in early 2021 and the resulting economic recovery resuscitated congestion pricing. Almost immediately, however, the program began to be dithered nearly to death. Federal officials asserted jurisdiction, notwithstanding — or perhaps because of — their automobile bias (the "lead" federal agency was the Federal Highway Administration) and congestion pricing's mostly-local scope. For its part, the MTA, its hands tied by FHWA and gripped by the bureaucratic compulsion to lawyer-proof any novel idea, embarked upon what became a mountainous ([46-volume, 4,000-page](#)) "[environmental assessment](#)." Worse, the "EA" [appeared to understate](#) the extent to which motorists faced with the tolls would drive less, a miscalculation that led to overhyping scenarios in which congestion pricing would worsen pollution in poor neighborhoods of color outside Manhattan.

The \$15 billion transit investment mandate and the Traffic Mobility Review Board

The 2019 legislation deliberately did not specify congestion toll rates, instead assigning that task to a citizen panel, the Traffic Mobility Review Board, five of whose six members would be appointed by the

¹ Co-author Komanoff began developing this "Balanced Transportation Analyzer" model, or BTA, in 2007. The current edition may be downloaded via [this permalink](#) (18 MB Excel file). One of the nearly 100 "tabs" in the file, "About," includes passages from the "Fix NYC Advisory Panel Report" extolling the model's value to the panel.

governor and one by the mayor. The TMRB's recommendations are likely to carry substantial weight, even if the final say is reserved for the MTA (and, in effect, Gov. Hochul).

Also consequential was [the decision by Gov. Cuomo and his team](#) to anchor the congestion pricing legislation to a transit-investment target (\$15 billion) rather than specific toll rates. This enabled the governor and the MTA to highlight congestion pricing's transit benefits to riders and the city and region as a whole, deflecting attention, at least for a while, from the toll costs. The investment mandate also established an astute, self-regulating dynamic whereby exempting some classes of motorists — whether based on employment or geographical residence or some other criterion — would require non-exempt drivers to make up the lost revenue.

Other notable provisions in the 2019 legislation

In addition to the \$15 billion investment target and the congestion zone's 60th Street northern boundary, the 2019 legislation established these provisions:

- Residents of the congestion zone earning no more than \$60,000 a year can qualify for state income tax rebates up to the full amount of their annual congestion toll payments.
- Trips crossing 60th Street on the FDR Drive or West Street are exempted, provided they leave the area south of 60th Street within a set time period without having entered the zone on a cross street.²
- Cars and trucks will be tolled upon entering the zone but not for traveling within it or when departing. This precluded the possibility of fine-tuning the congestion tolls by charging "half tolls" in both directions.

Notably, the legislation did not specify a target of increased average travel speeds within or on the approaches to the congestion zone. Nevertheless, those speeds will increase as a matter of course, due to thinning out the number of trips entering and leaving the zone.

There are, thus, plenty of possible refinements to the 2019 legislation. But we take the legislation here as given for a number of reasons, not least because re-opening the 2019 legislative framework might result in weakening it.

² This exemption will likely be administered by tolling vehicles crossing 60th Street southbound but then wiping out the toll if a vehicle leaves the zone within two hours, either by crossing 60th Street northbound or by taking the Brooklyn-Battery Tunnel under the East River to Brooklyn.

2. CONGESTION PRICING PRINCIPLES

Congestion pricing works best in cities with (i) well-defined, vibrant downtowns or other central area; (ii) chronic congestion, not just within the congestion zone but in larger, adjacent areas; and (iii) good transit alternatives. Regarding the first point: A clearly defined congestion zone enhances public understanding, while a vibrant one means that most car trips into the area will continue in the face of the toll, generating revenue that can be invested in transit. This is the fine balance to be struck as with any fees or taxes aimed at internalizing negative externalities, while also generating revenues: too high, and revenues will decline because the activity in question will decline precipitously; too low, and there is insufficient effect from the policy intervention.

These criteria, while helpful for assessing which cities are suited for congestion pricing, have little bearing on toll design. For that, we rely primarily on the principle that car and truck trips into the congestion zone should be tolled primarily in proportion to the delay costs they impose on other road users. This principle, which we call *toll proportionality*, has these corollaries, all anchored in sound economic principles:

- Tolls should vary by time of day and day of week (weekday vs. weekend), in reasonable proportion to variations in congestion causation.
- Toll exemptions should be sharply limited, since every trip into the congestion zone adds to congestion and slows down other road users. The more exemptions, the greater the toll disparity between exempted trips (paying zero) and tolled trips (which must be tolled even more to make up the lost revenue).
- Truck tolls should exceed car tolls, and large trucks should pay more than smaller ones.
- Toll levels shouldn't vary with vehicle occupancy, since a full vehicle adds as much to congestion as a single-occupant one. (The toll itself creates incentives for higher occupancy; carpoolers, of course, can share the toll payments among themselves.³)
- Electric or otherwise “clean” automobiles should be tolled the same as combustion autos, since the societal damage from vehicle trips into the congestion zone is primarily from the space they occupy and the delays they cause, rather than their tailpipe emissions.

Missing from the list is graduating car tolls by vehicle size or weight — an eminently sensible idea that is almost certainly too big of a conceptual or political lift at this time. In a nod to simplicity, we also propose just three toll levels, corresponding to broad definitions of peak, shoulder and off-peak periods. More finely tuned tolls — what one might call “real-time pricing” — would conceivably be more efficient, but that is simply not in the cards, nor is it necessarily desirable. Simplicity is important, too, given how much

³ Our modeling projects a nearly 10 percent rise in average car occupancies for trips to the congestion zone, one of several mechanisms by which the number of people coming to the zone is projected to increase with congestion pricing.

psychology plays a role here. The decision whether to drive into the zone may be linked not just to the actual toll amount but also to the zero-one decision of whether there is one, or not.

For-hire vehicles vs. cars

For-hire vehicles — a category encompassing taxis (yellow cabs) as well as Ubers (and Lyfts) — present challenges for congestion pricing on account of their unique functionality and regulatory framework:

- FHV's are already (sur)charged for trips that touch the Manhattan taxi zone (the area south of 96th Street) at rates of \$2.75 per Uber ride and \$2.50 for yellows.
- The ubiquity of for-hire vehicles helps New Yorkers forego car ownership and the associated private and public costs.
- Compared to private cars, FHV trips that touch the congestion zone generally spend more of their driving time and miles within the zone than en route to it.
- FHV drivers are a struggling low-wage class, in contrast to their passengers (who span the income spectrum but trend higher-income) and car drivers into the zone (also higher-income).
- Uber built its business upon, and profited from, usurping the exclusive right to pick up street hails in the taxi zone conferred on yellow cabs in the 1930s in exchange for purchasing taxi medallions. Breaking the taxi monopoly has led to significantly worsened congestion while wreaking economic ruin on many taxi owners and workers.

Balancing for-hire vehicle tolls vis-a-vis private car tolls to reflect these multiple considerations would be challenging even if the MTA had complete license to reset FHV tolls — if, for example, the authority could charge yellows and Ubers according to the length of time each fare trip spends in the taxi zone (south of 96th Street) or the congestion zone (south of 60th). That would be “true” congestion pricing, since charging by time would capture the incremental traffic delay resulting from the trip. Alas, neither the 2018 nor 2019 legislation conferred that ability; the MTA can only implement congestion pricing for FHV's via cordon tolls or as increases to the ongoing congestion surcharges.

Making for-hire vehicles pay full price to enter the congestion zone is impracticable, in our view. Congestion pricing's “binary” nature is arbitrary enough without forcing it on taxi or Uber trips that, on average, are far more likely to pick up and drop off relatively near to the cordon boundary. FHV cordon-crossing trips could be charged a lesser entry fee, but that's best done as a surcharge.

We derived our proposed additional \$2.25 surcharge for Uber trips that touch the zone based on its proportionality to the congestion causation from a typical zone-touching Uber trip to that from a typical private car cordon-crossing trip. The same methodology could warrant a \$1.50 increase in the taxi congestion surcharge,⁴ but considerations of social fairness compel us to recommend foregoing any taxi surcharge at this time.

TABLE 1
EFFECTS OF BOOSTING UBER SURCHARGES BY \$2.25 WHILE KEEPING YELLOW SURCHARGES UNCHANGED

SCENARIO	FARE TRIPS / DAY (Δ FROM CURRENT BASELINE)			NEW REVENUE	Δ TO CBD SPEEDS
	YELLOWS	UBERS	COMBINED		
CONGESTION PRICING W/ CURRENT \$2.50 / \$2.75 SURCHARGES	+ 8,000 / + 6.1%	+ 18,000 / + 2.8%	+ 26,000 / + 3.9%	+ \$30 million	+ 9.7%
CONGESTION PRICING ADDING \$2.25 TO UBERS WHILE LEAVING YELLOWS ALONE	+ 19,000 / + 14.0%	+ 1,000 / + 0.2%	+ 20,000 / + 3.1%	+ \$200 million	+ 11.0%

BOTH CP SCENARIOS REFLECT 50 PERCENT OF THE EVENTUAL SUBWAY SERVICE IMPROVEMENTS FINANCED BY THE CONGESTION REVENUE. REVENUE GAIN IN SCENARIO 1 REFLECTS MODEST INCREASE IN FHV USE WHICH TRANSLATES INTO MODEST REVENUE INCREASE WITH CURRENT SURCHARGES.

Table 1 indicates that increasing congestion surcharges for Uber rides touching the congestion zone will boost the number of taxi fare trips by one-seventh, without reducing Uber fare trips from current (pre-congestion pricing) levels.⁵

3. EVERY VEHICLE COMPOUNDS TRAFFIC CONGESTION (EXCEPT DURING THE “GRAVEYARD SHIFT”)

Although drivers traveling to or through congested areas are quite cognizant of traffic’s impact on the time their own trip will take, they’re largely heedless of the extent to which their trip slows down traffic at large. Indeed, drivers have no need to ponder the “time costs” their trips impose on others, since they’re not charged for them. That’s the textbook definition of a negative externality. The textbook solution: internalize it by charging drivers for the congestion they cause.

When traffic is light, those time costs are generally modest; my car or FHV trip hardly slows down traffic, and there are so few other vehicles that any delays caused by my driving can’t amount to much. But in the heavy traffic conditions that typify congested NYC roads — especially in the Manhattan Central Business District and on the approaches to it — those costs can be substantial.

⁴ The mathematically derived surcharge should be higher for Ubers because of their extra congestion causation from “stockpiling” vehicles in Manhattan, a phenomenon one of us, Komanoff, explored in a 2021 report for the City Council, [“Curbing For-Hire Vehicle Stockpiling in the Manhattan Core: Empty-Vehicle Charges for Ride-Hail Companies.”](#) Note also that surcharging Ubers raises more revenue than surcharging taxis by the same amount (see Table 5 further below).

⁵ Our toll plan produces a slight uptick in Uber fare rides in the congestion zone — a result of improved travel speeds that will bump up demand in two ways: by reducing the time cost of Uber trips and also by lowering the by-the-minute component of Uber (as well as taxi) fares.

The same BTA model we employ here to estimate congestion pricing revenues (see footnote 1) lets us compute the magnitude of these slowdowns at different times of day or night. The calculations, in minutes and seconds, express the total time-delays imposed on all other drivers combined from adding one additional vehicle to the traffic mix for, say, one minute. The model translates this lost time into dollars by factoring the typical mix of vehicles on the road: private autos, “cruising” taxis or double-parked Ubers, the spectrum of trucks from vans to 18-wheelers, and so forth. The results are impressive — disturbing, we should say — as Figure 1 shows.

There’s a lot of information in Fig. 1, but it converges to this bottom line: For a large majority of the hours of the day — from 6am into the late evening — the time costs from just the inbound leg of a typical car trip to the congestion zone easily exceed — by a factor of more than two — the peak toll of \$15 we propose for that same trip.

Consider further that the same trip’s actual time burden to other drivers averages twice the amounts shown in the vertical bars, which reflect only the trip’s inbound leg. (We don’t include the outbound leg in the chart because we can’t know the time period in which it takes place.) Our chart also excludes the myriad other societal costs from that trip — tailpipe exhaust, climate pollution, noise, endangerment, and interference with pedestrian movement and cycling.

We hope Fig. 1 puts to rest one myth and one notion. The myth is that congestion is caused solely by other drivers; true, traffic is a collective creation, but every vehicle on the road adds to it. The notion is that a peak toll of \$15 or even \$23 (the latter is a hypothetical figure from the MTA’s environmental assessment) is blatantly unfair; no, what’s unfair is that society’s failure to charge drivers for their involuntary theft of time from others is leading to wasteful use of our finite road system that is costing drivers and the entire city and region dearly.

FIGURE 1
Collective Delay Costs Borne by Other Drivers due to each Additional Auto Trip to Manhattan Congestion Zone (Weekdays)

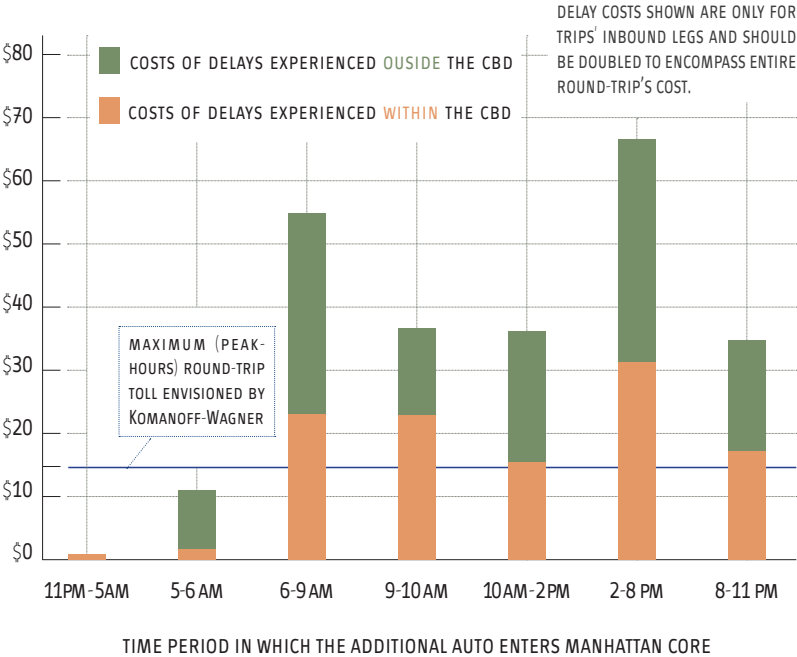


Fig. 1 also bears on our decision to surcharge Uber (and Lyft) trips that touch the congestion zone an additional \$2.25, beyond the ongoing \$2.75 surcharge for trips touching the Manhattan taxi zone extending to 96th Street. The figure demonstrates that the average auto trip creates at least as much delay cost outside the congestion zone as within. Yet Uber trips that touch the zone typically spend far less time outside the zone than do private cars. That alone justifies a lesser congestion charge for an Uber zone trip than a private auto trip.⁶

4. CONGESTION PRICING REVENUES: BREAKDOWN BY USERS

A. Revenues collected by toll portal

One useful way to break down the projected congestion pricing revenue is by toll portal. Table 2 shows that under our plan the northern portal (60th Street) and the eastern portal (the four currently untolled East River bridges, supplemented by the East River tunnels), will each contribute 40-45 percent of total gross revenue. The remaining 15 percent will come from the added surcharge to Uber (and Lyft) trips that touch the congestion zone.

TABLE 2
GROSS REVENUES BY “PORTAL,” IN \$ MILLIONS PER YEAR (ROUNDED TO NEAREST \$5M) AND PERCENT OF TOTAL

CARS AND TRUCKS ENTERING THE CONGESTION ZONE				ADDITIONAL FHV SURCHARGES FOR TRIPS TOUCHING MANHATTAN CONGESTION ZONE		
VIA 60TH ST	VIA AN EAST RIVER BRIDGE	VIA AN EAST RIVER TUNNEL	VIA A HUDSON RIVER TUNNEL	UBER / LYFT	TAXIS	TOTAL
\$ 530 / 40%	\$ 605 / 45%	\$ 5 / 0.3%	\$ 5 / 0.3%	\$ 195 / 15%	\$ 0 / 0%	\$ 1,335

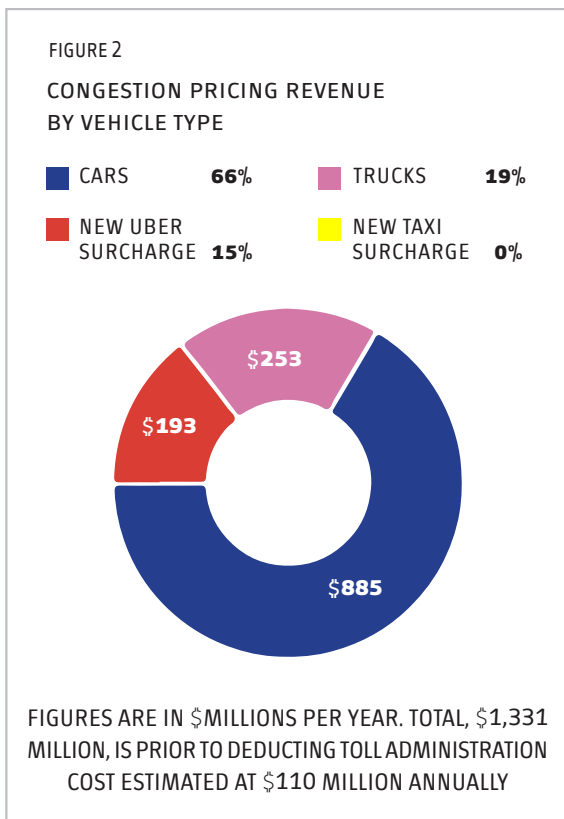
FIGURES EXCLUDE COSTS OF TOLL ADMINISTRATION, WHICH WE ESTIMATE TO BE \$110 MILLION PER YEAR. HUDSON AND EAST RIVER TUNNEL REVENUES ARE MINUSCULE BECAUSE CONGESTION TOLL RARELY EXCEEDS EXISTING PANYNJ TOLL OR ROUND-TRIP TBTA TOLL, RESULTING IN ZERO OR VERY SMALL NET. OUR MODELING CREDITS 50 PERCENT OF THE EVENTUAL SUBWAY SERVICE IMPROVEMENTS FINANCED BY THE CONGESTION REVENUE. FIGURES EXCLUDE TURNSTILE AND FAREBOX WINDFALLS, ESTIMATED AT \$100 AND \$10 MILLION, RESPECTIVELY, FROM ADDITIONAL RIDERSHIP ATTRACTED BY FASTER SUBWAYS AND BUSES.

⁶ Derivation of our \$2.25 Uber surcharge will need to await the next edition of this paper, when our own time pressures have abated.

B. Revenues contributed by driver county of residence

Another way to break down congestion revenues is by county of driver residence. Contrary to popular belief that most car trips into the congestion zone originate in the suburbs, NYC residents will pay the lion’s share of the new tolls. Queens, Brooklyn and Manhattan are projected to be 1-2-3,⁷ followed by New Jersey (which we consider as a single entity, not separated by county), and then the Bronx, Nassau County, and Staten Island and Westchester in a virtual tie. All told, of every dollar paid by motorists in congestion tolls and surcharges, city residents will pay 61 cents.

C. Revenues paid by type of vehicle



Our final revenue breakdown is by vehicle type: private cars, trucks, Ubers (& Lyfts) and taxis.

Under our toll proposal, private cars will pay two-thirds of revenues. The remaining 34 percent will come from trucks, 19%; and the \$2.25 increase in Uber congestion zone surcharges, which will raise 15%.

As noted, our plan’s car tolls are \$15 peak, \$9 in shoulder hours, and \$3 off-peak. For trucks, we propose to maintain those relative rates and “graduate” them per axle, according to the MTA’s sliding rate schedule on its “major” bridge and tunnel crossings.

Under that schedule, 2-axle trucks pay the MTA \$10.55 in each direction, an amount 1.61 times as great as the \$6.55 car toll. Tolls for 3-,

4- and 5-axle trucks are, respectively, 2.60, 3.33 and 4.34 times as high as the car toll. Applying those ratios to multi-axle trucks driven into the congestion zone results in a weighted average truck toll 1.97 times as high as car tolls.

⁷ The Manhattan share reaches double digits because of the additional Uber surcharges. If those are excluded, Manhattanites’ share of the tolls is only 7 percent.

TABLE 3

GRADUATED TOLLS FOR MTA'S SIX MAJOR TOLLED FACILITIES

	AUTOS	2-AXLE TRUCKS	3-AXLE TRUCKS	4-AXLE TRUCKS	5-AXLE TRUCKS
TOLL	\$ 6.55	\$ 10.55	\$ 17.05	\$ 21.79	\$ 28.40
SHARE OF TRUCK TRAFFIC	NA	67.2%	29.6%	2.5%	0.7%

TOLLS ARE ONE-WAY AND ARE CHARGED IN BOTH DIRECTIONS WITH NO HOURLY OR DAILY VARIATION. FIGURES ASSUME E-ZPASS AND ARE CURRENT AS OF JULY, 2023, HAVING LAST BEEN RAISED IN MARCH 2019. THEY APPLY TO THE VERRAZZANO, RFK, WHITESTONE AND THROGS NECK BRIDGES AND THE BROOKLYN BATTERY AND QUEENS MIDTOWN TUNNELS, WHICH ARE OWNED AND OPERATED BY THE MTA'S TRIBORO BRIDGE & TUNNEL AUTHORITY. SHARES ARE FROM 'STANTEC' 2020 REPORT FOR TBTA COVERING 2019, FOR THE TWO EAST RIVER TUNNELS.

It's tempting to steepen our toll schedule, on the premise that harms from truck traffic multiply within the Manhattan congestion zone. It's also true that the Port Authority deploys a steeper toll rise per axle on its river crossings connecting Staten Island to New Jersey along with the Lincoln and Holland Tunnels and the George Washington Bridge. The added revenue is inviting as well.

On the other hand, truck trips into the zone arguably outrank car trips. Not only are trucks carrying groceries, materials and equipment, they're also less convertible to transit. Which isn't to say that truck volumes won't diminish over time in response to congestion tolling's price disincentive; there are always efficiencies and alternatives, at least at the margin: smaller vehicles, less deadheading, reduced packaging, "last mile" cargo bikes, and so forth. Rather, truck traffic shouldn't be viewed as a cash cow. There's something to be said, moreover, for tethering a new policy — congestion pricing, in this case — to an old one. The MTA's per-axle toll schedule offers a ready pricing template, and we favor it.

5. TOLL EXEMPTIONS

Port Authority crossing credits: Hudson River tunnels yes, George Washington Bridge no

As noted in the opening section, we propose to credit, i.e., deduct tolls paid to the PA at the Lincoln and Holland Tunnels from the cordon (congestion) charge. Failure to do so would effectively ignore the substantial (double-digit) toll already paid to the PA, which for nearly a century has functioned as a form of congestion pricing. In practical terms, it would raise to \$27.75-\$29.75 what is now a \$12.75-\$14.75 toll to cross during peak hours from New Jersey directly into the congestion zone. While the new higher range would still be multiples less than the delay costs that each car trip imposes on others, it would be nearly twice as great as the CBD entry fee charged at 60th St or the East River crossings.

Nevertheless, we do not support toll-crediting trips that enter the congestion zone after crossing from New Jersey into upper Manhattan via the George Washington Bridge. Rather than entering the zone directly, as do Lincoln or Holland Tunnel trips, those cars and trucks will have traveled half-a-dozen miles from the GWB off-ramp at 178th Street to the zone portal at 60th Street. Whether taken on the West Side Highway or Riverside Drive or, in the case of trucks, arterials such as Amsterdam Avenue or Broadway, those trips are imposing delay costs and various pollution externalities (fumes and noise) and collision dangers on Washington Heights, Harlem, East Harlem, the Upper East Side, Morningside Heights, Manhattan Valley and the the Upper West Side. Each trip's incremental delay cost — the lost time stuck in the additional traffic — easily exceeds the prospective full congestion toll.

We acknowledge the principle of equalizing toll costs for all trips into the congestion zone. Indeed, we subscribe to it, so long as the trips being equalized enter the zone directly. The further out from which one drives into the congestion zone, the more ambiguous “double tolling” becomes and the more the toll credit whitewashes the externality costs of the miles driven from the upstream toll crossing to the congestion zone boundary. Though not a slam-dunk, the merits favor crediting the tunnels but not the GWB — or, for that matter, the RFK Triboro Bridge, to which the same logic applies.

Crediting GWB tolls paid to the PA would diminish the congestion revenues by an estimated \$60 million a year — money that will need to be made up by raising tolls at other portals to the congestion zone.

MTA crossing credits: East River tunnels yes, RFK Bridge no

Just as does the PA, the MTA (technically, TBTA) owns and operates one bridge to upper Manhattan (the RFK) and two tunnels flowing directly into the congestion zone (Queens-Midtown and Brooklyn-Battery). Our recommended toll treatments are the same for the MTA crossings: credit the tolls paid at the tunnels, but refrain from crediting the upstream toll at the RFK Bridge.

The RFK Bridge's 5-mile distance from the nearest congestion zone entry at East 60th Street is nearly the same as the 6-mile distance from the George to the West 60th Street portal, which means that the externality-cost argument for adding the congestion toll to the GWB toll applies equally well for the RFK Bridge. If anything, the concentration of environmental-justice communities on the RFK route militates even more strongly against diluting the congestion toll there.

Moreover, in the view of New York City's fabled traffic savant "Gridlock" Sam Schwartz, toll-crediting the RFK Bridge will probably add to traffic and pollution in the region's most iconic environmental-justice neighborhood, the South Bronx.⁸

Resident discounts

A number of Manhattan congestion pricing opponents who live south of 60th Street cite London's 90 percent congestion toll discount for zone residents. Why, they ask, should New York zone residents be treated differently?

One reason, perhaps the most telling, is that New York's zone population of 612,000 is far greater than London's 136,000 zone population. That's a 4.5 to 1 ratio, even before considering the likely higher per capita rate of car ownership here. Accordingly, a resident discount for New York congestion pricing would be costly not just in pocketbook terms but symbolically and, thus, politically.⁹

In our view, the larger matter of perceived unfairness, with some Manhattan zone residents contending they shouldn't be charged "just to leave the zone and come back," isn't fundamentally different from non-residents' plaint for being charged to enter the zone for work, cultural events, medical care, family gatherings, etc. Zone residents' access to transit is no worse, and probably better, than non-residents', and zone residents' auto trips returning to the zone cost their neighbors no less than non-residents' auto trips. Fairness is served by tolling similarly-timed trips equally, not by preferencing one class of car users over another.¹⁰

⁸ According to Schwartz, who was NYC Traffic Commissioner for much of the 1980s and later won renown for his "Ask Gridlock Sam" traffic column, toll-crediting the Triboro will encourage car and truck trips from the northeast Bronx, southeast Westchester and Connecticut that now reach the Manhattan CBD by taking the Whitestone Bridge across Long Island Sound to the Long Island Expressway, to instead take the Bruckner Expressway through the South Bronx to the Triboro. (Personal communication, July 2023.)

⁹ Population figures were accessed in June 2023 from Wikipedia (for London) and NYC government data, though the data sources aren't fully up to date. See Cordon tab of BTA spreadsheet, beginning at Row 367.

¹⁰ This issue has a personal dimension, as both of us live in the congestion zone (Charles in Tribeca, Gernot in NoHo), and neither of us would qualify for any income exemptions.

6. SENSITIVITY ANALYSIS: HOW REVENUES CHANGE IF WE ALTER TOLL LEVELS AND COVERAGE

As Table 4 shows, the largest changes in projected net toll revenues come from tweaking the congestion-zone entry fee for autos and trucks — unsurprisingly, since the number of car and truck entries greatly exceeds the number of for-hire vehicle trips that touch the congestion zone.

TABLE 4

HOW CONGESTION REVENUES CHANGE BY ALTERING TOLL LEVELS AND COVERAGE

CHANGES ARE SEPARATE, NOT CUMULATIVE, I.E., THEY ALL OPERATE ON OUR PREFERRED TOLL PLAN OF \$15/\$9/\$3

TOLL CHANGE	CHANGE FROM CP BASELINE	DETAILS
RAISE PEAK AUTO TOLL BY \$1	+ \$60 million	PEAK-HOUR TRUCK TOLLS ALSO RISE TO MAINTAIN SAME PROPORTION TO CAR TOLLS
RAISE ALL AUTO TOLLS BY \$1	+ \$120 million	SAME AS ABOVE
RAISE AUTO TOLLS BY \$1 / \$2 / \$3	+ \$260 million	RISES ARE OFF-PEAK/SHOULDER/PEAK. SAME TRUCK TREATMENT AS ABOVE
ADD \$1 TO UBER SURCHARGE RISE	+ \$80 million	\$1 RISE IS IN ADDITION TO OUR POSITED NEW \$2.25 SURCHARGE FOR ZONE TRIPS
\$1 SURCHARGE TO YELLOW TRIPS	+ \$40 million	SURCHARGE APPLIES ONLY TO TRIPS TOUCHING CONGESTION ZONE
TOLL-CREDIT GWB TRIPS	– \$60 million	WE ASSUME NO CREDIT FOR TOLLS PAID “UPSTREAM” AT GW BRIDGE
TOLL-CREDIT RFK BRIDGE TRIPS	– \$30 million	WE ASSUME NO CREDIT FOR TOLLS PAID “UPSTREAM” AT RFK-TRIBORO BRIDGE
DOUBLE TOLL EVASION RATE	– \$40 million	EACH 1 PERCENTAGE POINT CHANGE TO OUR ASSUMED 4% BASE TOLL-EVASION RATE CHANGES REVENUE BY \$10 MILLION
FULL-CREDIT BETTER SUBWAYS	– \$60 million	NEGATIVE CHANGE REFLECTS DROP IN (PAYING) AUTO ENTRIES. NOT SHOWN, HOWEVER, IS \$100 MILLION RISE IN “TURNSTILE WINDFALL” FROM MORE SUBWAY TRIPS

FIGURES ARE DRAWN FROM MODELING THAT CREDITS 50 PERCENT OF EVENTUAL SUBWAY SERVICE IMPROVEMENTS FINANCED BY THE CONGESTION REVENUE

Here are key takeaways from Table 4:

- Changing both shoulder and off-peak tolls has the same effect on revenue as only changing peak tolls by the same amount.
- Changing Ubers’ (and Lyfts’) congestion surcharge has twice the revenue impact as adding yellow cab trips’ congestion surcharge.
- Toll evasion is costly. In our pre-pandemic modeling, we assumed that 2 percent of zone-entering vehicles would be untolled due to either administrative error or deliberate evasion.¹¹ We now assume a 4 percent non-collection rate, based on the prevalence of obscured, defaced, or “ghost” plates and the evident unconcern of law enforcement. Our assumption does not account for the possibility that evasive measures will metastasize, once the congestion tolls take effect.
- Also costly would be credits for upstream tolls paid on the George Washington and RFK Bridges. Granting such credits would take away an estimated \$60 million and \$30 million, respectively, from our estimated annual congestion revenues.

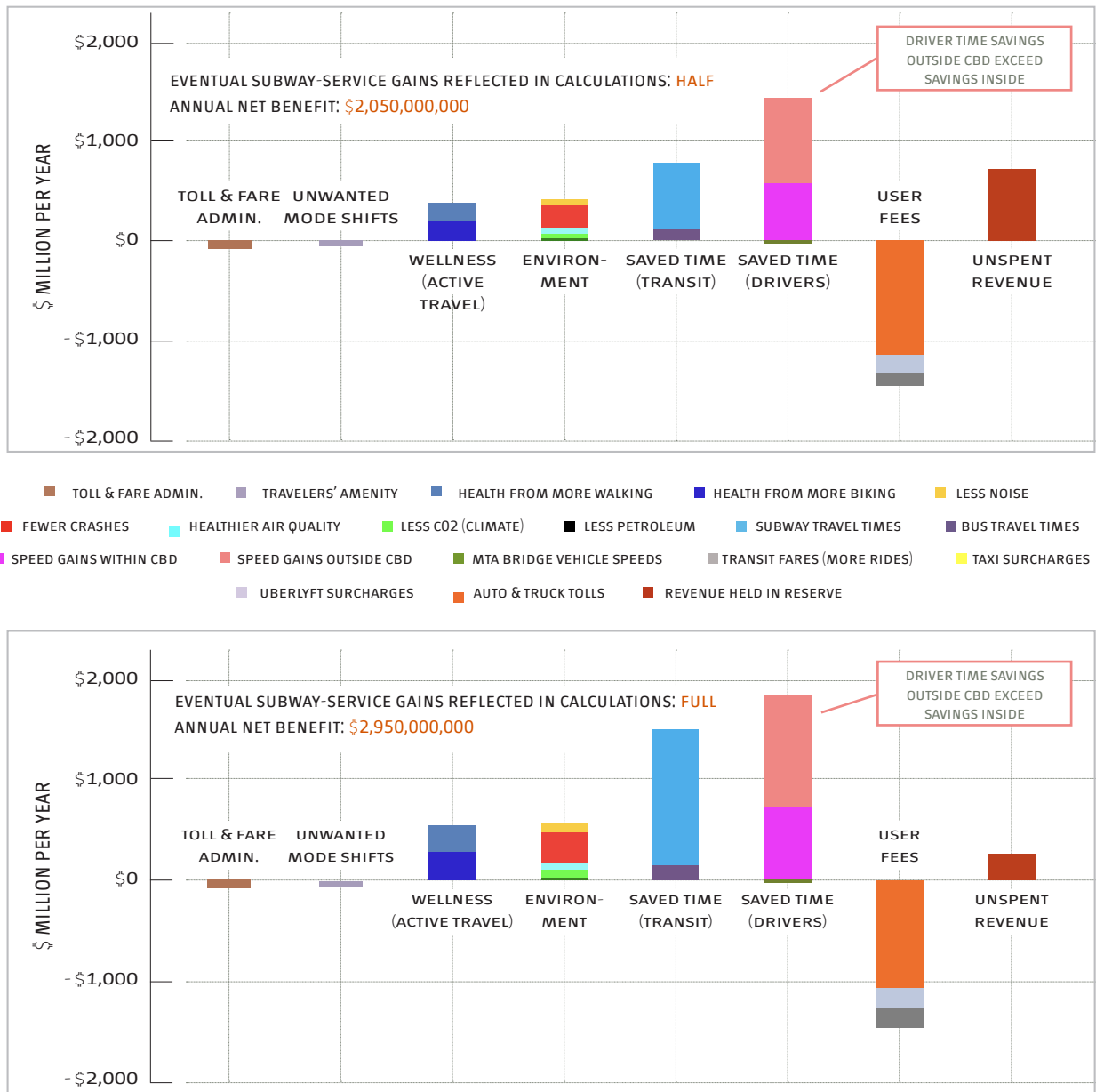
¹¹ We based that assumption on 2019 “non-revenue collection rates” reported by the TBTA at its two tunnels and the RFK Bridge.

7. CONGESTION PRICING'S BENEFITS WILL BE SUBSTANTIAL

The benefits, as well as costs, from our proposed 15/9/3 toll scenario are shown in Fig. 3.

The top chart adheres to the convention we have observed throughout this paper, to credit only 50 percent of the eventual subway-service improvements to be financed by the congestion revenues. With this assumption, the three largest benefits, all of them time savings — enjoyed by subway riders, by motorists driving within the congestion zone, and by motorists outside the zone where traffic en route to the zone will be slightly lighter — are roughly equal magnitude. Together, and enhanced by the environmental benefits along with increased longevity from increased walking and bicycling, they more than offset the new congestion toll payments, resulting in estimated net benefits of \$2 billion annually.

FIGURE 3
CONGESTION PRICING BENEFITS AND COSTS



The bottom chart captures traffic and transit outcomes from a full accounting of the improved subway service. Its annual net benefit, nearly \$3 billion,¹² reflects across-the-board increases in the various time-saving categories. Improved subway service means greater per-trip time savings applied across more trips. Drivers save more time both inside and outside the zone, as traffic thins further due to car trips attracted to transit. The improved quality of life, which includes cleaner air, healthier bodies and safer, quieter streets, but is dominated by sizeable reductions in time stuck in crawling autos and stalled subways, averages \$600 per household in the MTA region.¹³

Optimizing politically, not mathematically

Our 15/9/3 plan doesn't yield the maximum calculated net benefit for New York congestion pricing. In fact, it doesn't come close. Our proposed per-trip tolls are too far below each trip's incremental delay costs for our plan to achieve mathematical optimum.

To demonstrate this, we tested a scenario with triple our toll rates: \$45 per car during peak hours, \$27 in shoulder hours, \$9 off-peak, and a \$6.75 rather than \$2.25 rise in Ubers' congestion surcharge. This hypothetical "45/27/9" plan produces net benefits of \$4.3 billion a year — exceeding by 50 percent the \$2.9 billion net benefit from our preferred 15/9/3 plan. (Both figures are calculated with full credit for subway improvements, though with a \$1 billion a year cap on invested congestion revenues.)

This goes to show that, far from seeking to "soak drivers" in pursuit of some mathematical holy grail, our plan aims for a more modest political sweet spot. If change is hard, dramatic change all at once is even more difficult. Getting a midrange congestion pricing program in place is significantly better for New York than propounding a theoretically perfect plan that never leaves the shelf.

¹² This \$3 billion figure, though substantial, is considerably less than the \$4 billion net benefit we propounded in our June 8 New York Times guest essay, [There's Only One Way to Fix New York's Traffic Gridlock](#). The lower figure results from modeling refinements during the past month, including a clearer accounting of transit investments.

¹³ Spreading the \$2.95 billion net benefit among the 4.82 million households in the 12 New York counties comprising the MTA service area calculates to \$610 net benefits per household per year.