Charles Komanoff

Statement regarding Central Business District Tolling Program Environmental Assessment

September 1, 2022

Introduction and context

My name is Charles Komanoff.[1] My kaleidoscopic spreadsheet model of NYC traffic and transportation, the "Balanced Transportation Analyzer," was the primary analytical tool used by New York State's "Fix NYC" panel to scope congestion pricing in 2017-2018, and is cited in the MTA's 2022 draft environmental assessment (EA) of congestion pricing.

I devote this statement to a matter that appears to have gone unmentioned in the EA and in the many responding comments, despite its being a foundation stone on which congestion pricing rests: ***establishing the extent to which an additional auto trip into the congestion zone slows down other vehicles occupying the same streets and roads — both en route to the zone as well as inside it.***

If those costs are small — if a typical vehicle trip causes little discernible slowdown of general traffic — then it is hard to claim a congestion-reduction benefit from congestion charging. In that case, congestion pricing would be a pure revenue play and nothing more. But if each trip's congestion causation is large, then a non-trivial congestion charge toll will almost certainly unsnarl enough traffic to qualify it as a congestion solution as well.

Methodology

My methodology rests on four legs.

One leg is baseline approximations of current traffic volumes and speeds within the charging zone and on the network of highways, bridges and tunnels that funnel motor vehicles to it.[2]

Another is the distances covered by auto trips that go into the zone and are thus subject to the congestion charge. After careful study, I posited average trip distances of 1.25 miles within the CBD, and 16.8 miles from the trip's origin to the zone boundary.

Next, through a literature search I selected and adapted a pair of equations that calculate changes in travel speeds as the rate of capacity utilization changes on Manhattan streets and on area highways.

Inputting these traffic volumes, speeds and distances to the equations allows me to estimate the extent to which any additional vehicle slows down the collective movements of other vehicles that are on the roadways at the same time. This figure is the typical trip's congestion causation, in hours and minutes.

Last, I stipulate a *value of time* for each major vehicle type — private autos, for-hire vehicles, trucks of various sizes and functions, and buses — that make up the mix of road users within and outside the zone. To each, I assign an hourly value in dollars intended to reflect, for example, the high capitalization

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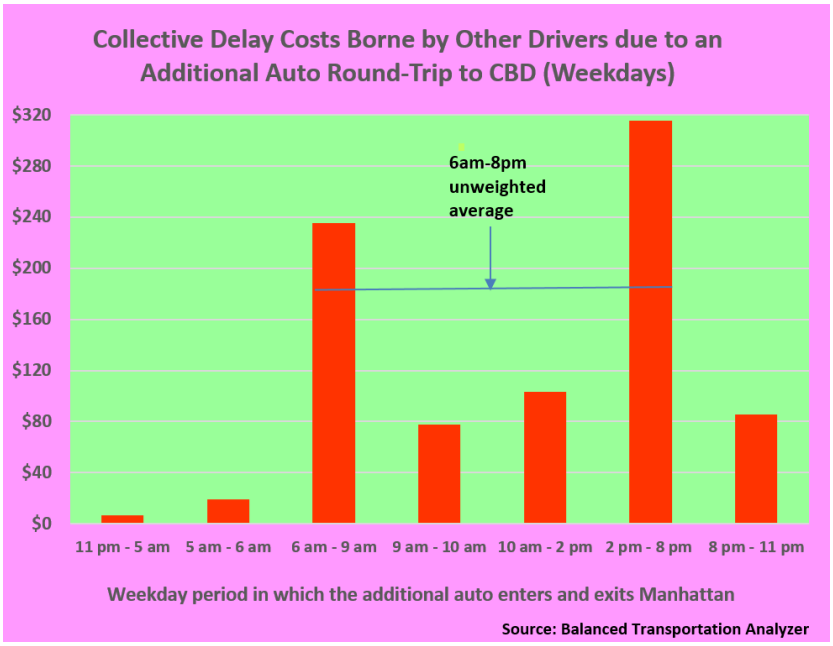
[2] In deference to putative changes in traffic volumes from the Covid pandemic, I have reduced traffic volumes into the CBD given in NYMTC's 2019 Hub-Bound report by 10 percent, and have increased the average 6 am – 6 pm traffic speed in the zone from 7.0 mph reported by NYCDOT prior to the pandemic to 7.5 mph. These changes result in slightly diminished delay costs.

and cargo value of an 18-wheeler, a midrange value of time for the proverbial "man with van," and different values of time for auto trips to offices vs. auto trips for non-work purposes.

Findings

The results of this analysis appear in the bar chart at right.



The seven bars correspond to different time periods in a 24-hour cycle.

The two small bars at left indicate that an auto trip entering and leaving the congestion zone overnight or in the early morning imposes relatively small time costs on other drivers. That is because at those times most roadways are operating with spare capacity, and also because there are so few other road users to be inconvenienced by any additional trip.

The picture is very different during the 6-9 am morning rush, and especially throughout the long afternoon and early evening peak, 2-8 pm. At these times, the high volume of vehicles ensures that any new entrant materially slows down many others. Just how much is revealed by the twin equations mentioned earlier. Translating the calculated delays into dollars reveals that a single auto round-trip entering and exiting during those periods imposes a total of $200 to $300 in time costs upon other motorists. Even during the mid-day lull, 9 am to 2 pm, and the late evening 8-11 pm slot, the aggregate delay-cost in dollars borne by user of autos, trucks, FHV's and buses is in the high double digits.

Implications

Applying these figures in reverse illumines the fairness and efficacy of congestion charging for New York City. On the one hand, the EA envisions peak, round-trip CBD tolls of roughly $10 to $20. (Those figures are for autos, as are all of the congestion-cost figures here.) Yet the analysis summarized here indicates that removing a single automobile round-trip from the stream of traffic to, within and out of the Manhattan core during most hours of the day saves other road users collectively time worth anywhere from $80 to well over $200, on average.

The juxtaposition of these two sets of figures points to the value of and need for congestion pricing. It also suggests that the CBD toll levels under consideration are actually lenient, rather than draconian.

Reference

Calculations and assumptions underlying the chart may be found in the **Delays** tab of my BTA spreadsheet, the current version of which is available at http://www.nnyn.org/kheelplan/BTA_1.1.xls.