Will Double Gridlock Paralyze New York?

An Economist Examines Our Transport Infrastructure Crisis

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[available as http://www.komanoff.net/cars_II/Double_Gridlock.pdf]
What is Double Gridlock?

1. **Street Gridlock**
   After nearly a decade of improved traffic flow, travel speeds are worsening within the Manhattan Central Business District (CBD).

2. **Subway Gridlock**
   Transit ridership has climbed to levels not seen for 65 years. But antiquated communications systems limit train throughput. “Trains are forced to wait in stations while crowds of passengers exit and enter the cars, causing delays that ricochet through the system.” (RPA)
In 2007, following several decades documenting fossil-fuel pollution, deconstructing nuclear power cost escalation, and spearheading “livable streets” activism locally and nationally, I turned my attention to “traffic pricing,” particularly congestion pricing in New York City.

My touchstone was an epigram by the German scholar-activist Wolfgang Sachs, a student of the philosopher Ivan Illich. [See next slide.]
Once a certain traffic density is surpassed, every driver contributes involuntarily to a slowing of traffic. The time that the individual driver steals from all the others by slowing them down is greater many times over than the time he or she might have hoped to gain by taking the car.

Wolfgang Sachs, *For Love of the Automobile*

Sachs’ epigram suggested two avenues: *analytical* and *political*. I pursued both.
ANALYTICAL:
With funding from the Nurture Nature Foundation, I created a spreadsheet model that, *inter alia*, estimates the “social delay costs” from an “incremental” car trip into the Manhattan CBD.

The “Balanced Transportation Analyzer” (BTA 1.1):
- Treats transit, as well as motor vehicles.
- Has 67 tabs (worksheets), 500,000 (?) cells.
- Yet consumes only 5 MB.
- Runs new toll scenarios in seconds.
- Interactive: 000s of feedback loops.
- Outputs (time savings, environmental benefits, etc.) are expressed in both physical quantities & monetary equivalents.

![Graph](Image)

**Delays from One Additional Vehicle Trip to CBD**

Figures shown:
1. Are estimated *aggregate* time losses experienced by all other vehicles.
2. Include inbound leg only.
3. Include delays en route to CBD as well as within CBD.

Any driving trip into the CBD betw 2-8 p.m. slows all other vehicles by a total of ~3 hours.
Why Traffic Pricing?
- Reduce Congestion
- Manage Traffic
- Generate Revenue

Why Congestion Pricing?
- Big traffic payoff from reducing hypercongestion
- Big revenue payoff since trips are high-value
- Society wins even if forecasts inexact
  - If too many trips disappear, traffic flow improves more
  - If too few trips disappear, revenue is greater

Congestion Pricing is *Binary*. Good or Bad?
- Good: Simple and inexpensive to administer
- Bad: Arbitrary quality of all or nothing
- Bad: Runs counter to digital/micro zeitgeist
In 2011, I joined forces with traffic engineer Sam Schwartz (Gridlock Sam), who was devising a toll-reform proposal built around two precepts:

1. Charge more where there’s more traffic and good transit.
2. Lower tolls everywhere else.

- 100% Electronic Toll Collection
- Tolls go down by 39-48% E-ZPass on MTA Bridges
- Option to use time of day pricing

Taxis + Ubers pay GPS-based surcharge instead of toll.
Even with the rollback of tolls on the seven MTA bridges, and with ¼ of net proceeds allocated to roads and bridges, there’s enough $$ to fill the gap in the 2015-2019 MTA capital plan – without more debt or new taxes.

And: CBD travel speeds are predicted to rise 15-20%.

Here’s what we get when we run Sam’s tolls through my BTA model.
2. Subway Gridlock

Problem: “Crowding and ridership caused approximately 40% of subway delays in 2014. Even an extremely short interruption of service, such as door holding by passengers, can grow into a major incident because of the self-reinforcing effect of platform crowding and close train spacing.” — NYC Transit pres. Carmen Bianco & MTA CEO Thomas Prendergast, June 2015.

Solution: Run More Trains.
Imagining a fully funded MTA capital plan

Case study: CBTC

[Communications-Based Train Control]

- Max # trains/hour (per line)
  - Today ("fixed-block wayside signals"): 20-25
  - With CBTC: 30

- Resulting increases in passenger capacity
  - $\Delta$ trains/hr (per line): $+7.5$
  - $\Delta$ passenger cpcty/hr (per line): $+9,600$ ($7.5 \times 1,275$)
  - $\Delta$ passenger cpcty/hr (14 lines): $+144,000$ (14 x 9,600)
  - $\Delta$ cpcty per 15 hrs: $+2,020,000$ ($= \Delta +36\%$)

CBTC, even more than new lines (or countdown clocks), is central to making subways reliable, sufficient and humane.
$2.5 billion a year in net benefits. Spurned?

Traffic Pricing Benefits and Costs

Selected Scenario:
Move NY - Gridlock Sam Fair Plan (2016)

Net Benefit of Selected Scenario, $Millions/yr:
$2,470