



# **Analysis of NYC Traffic Congestion and Emergency Response Times**

A Report by Senator Brad Hoylman-Sigal and Gridlock Sam Schwartz

September 2024

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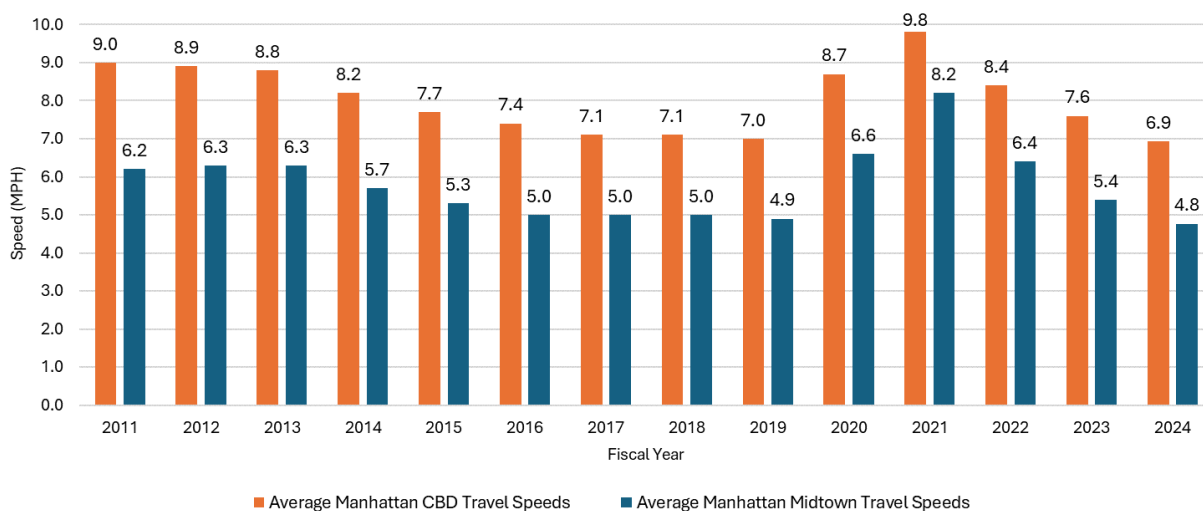
## Introduction

Senator Brad Hoylman-Sigal, in June 2024, observed a man writhing in Chelsea. He called 911 and stayed with the man until EMTs arrived 37 minutes later. He then enlisted Sam Schwartz (Gridlock Sam), and his former company Sam Schwartz Engineering, to see if this was a trend that may have been caused by growing traffic congestion. All work done for this report has been pro bono.

### I) Traffic Speeds in Midtown and the Central Business District (CBD) have steadily gotten worse over the past decade to record low levels

As Figure 1 below shows that Fiscal Year (FY) speeds have dropped consistently (except for peak Covid years, since 2011). These speeds are gathered by analyzing GPS data from taxis and other For-Hire-Vehicles. Midtown Speeds in FY 24 dropped to 4.8 mph and CBD speeds dropped to 6.9 mph. In 2014 Midtown and CBD speeds were nearly 20% higher at 5.7 mph and 8.2 mph respectively. Before 2010, speed studies were conducted by NYC DOT by sending traffic analysts into the field with stopwatches crisscrossing Midtown Manhattan streets and avenues. DOT speeds recorded in Midtown from 1971 to 2010 were all above FY 2024 speeds.

**Figure 1. New York City Manhattan Central Business District (CBD) and Midtown Speeds, Fiscal Year Average**



Source: NYC DOT, Taxi GPS TPEP Data. Manhattan CBD defined as 60th Street to the Battery), Manhattan Midtown defined as East River to Ninth Av, 34th-60th St. New York City Fiscal Years begin on July 1st of one calendar year and ends on June 30th of the following calendar year. Data reflects miles per hour average for Weekdays, 8am-6pm; US Holidays excluded. NYC DOT TPEP2.0 starts in January 2015.

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### II) UN Week, when more than 100 world leaders address the General Assembly, is the slowest week of the year with speeds dropping to 3-4 mph

During UN Week 2023 Midtown speeds averaged below 4 mph for 5 straight days with the nadir coming on Monday, September 18<sup>th</sup> when average speeds dipped to 3.2 mph as President Biden and a hundred plus world leaders arrived in NYC. President Biden addressed the General Assembly the next day.

**Table 1. New York City Manhattan Central Business District (CBD) and Midtown Speeds during UN General Assembly September 2023, Daily Average**

Date	Average CBD Speeds (MPH)	Midtown Speeds (MPH)
9/1/2023	7.9	5.9
9/2/2023	9.4	7
9/3/2023	9.8	6.8
9/4/2023	10.9	8.4
9/5/2023	7.6	5.2
9/6/2023	6.4	4
9/7/2023	6.3	4.1
9/8/2023	6.4	4.5
9/9/2023	7.1	4.7
9/10/2023	8	6.2
9/11/2023	7	4.5
9/12/2023	6.2	3.9
9/13/2023	6.1	3.8
9/14/2023	6.4	4.1
9/15/2023	7.3	5
9/16/2023	7.9	6
9/17/2023	6.8	3.8
9/18/2023	5.8	3.2
9/19/2023	6.4	3.7
9/20/2023	6	3.3
9/21/2023	6.4	3.9
9/22/2023	7.1	4.5
9/23/2023	7.2	5
9/24/2023	8.5	6.7
9/25/2023	8.5	6.2
9/26/2023	6.2	4
9/27/2023	6.9	4.7
9/28/2023	6.4	4.5
9/29/2023	6	5.2
9/30/2023	8.2	6.1

Source: NYC DOT, Taxi GPS TPEP Data. Manhattan CBD defined as 60th Street to the Battery), Manhattan Midtown defined as East River to Ninth Av, 34th-60th St. Data reflects miles per hour daily average, 8am-6pm. **Yellow** indicates UN General Assembly 2023.

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### III) New York City is now the most congested World City on the Planet

INRIX, a leading traffic data firm, found that NYC led the world's cities in traffic congestion with the average driver spending 101 hours in delay/year (see Figure 2). Pre-pandemic, in 2019, NYC ranked 4<sup>th</sup> among the most congested urban areas, with drivers stuck in traffic 10 fewer hours/year at 91 hours of delay.<sup>1</sup>

Figure 2. INRIX 2023 Global Traffic Scorecard

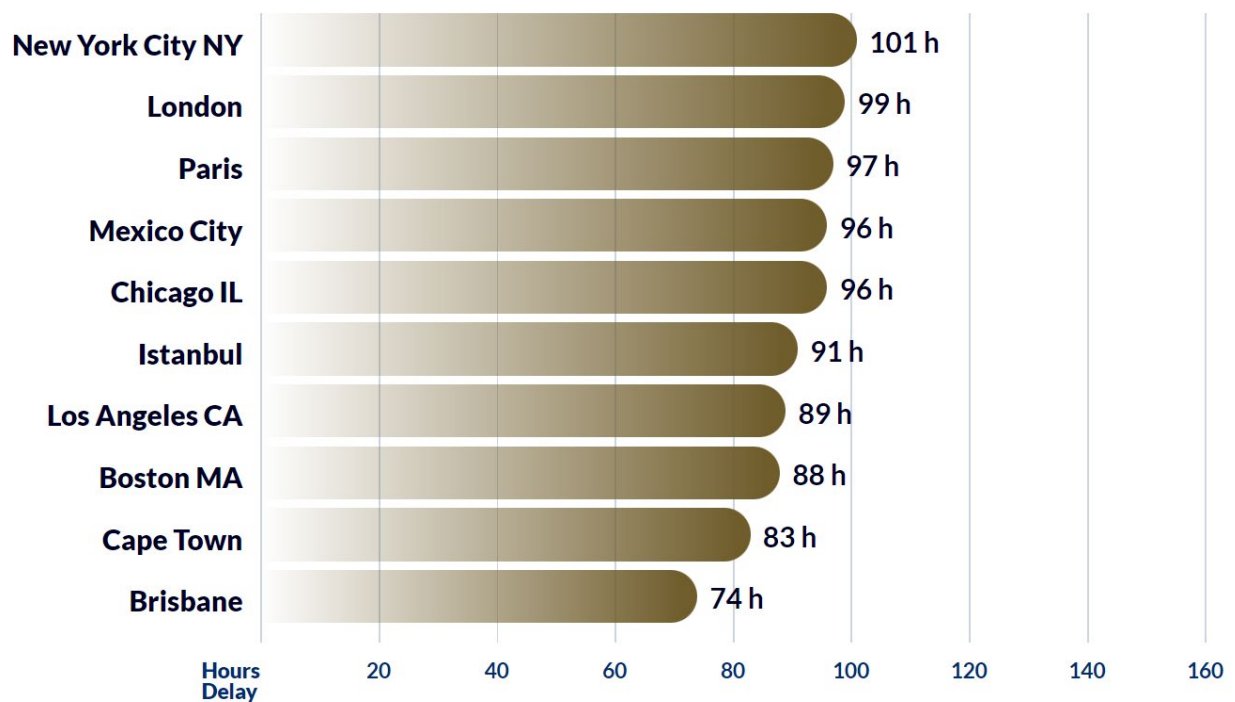


Chart: INRIX

<sup>1</sup> INRIX. (2023). INRIX 2023 Global Traffic Scorecard. Retrieved from <https://inrix.com/scorecard>.

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### IV) Traffic Congestion in NYC, over the past 5 years, has worsened more than any other major city in the U.S.

According to data firm Streetlight, “New York City’s urban core, in particular, has seen the biggest increase in VMT (vehicle-miles traveled) over the past 5 years and the biggest increase in congestion” of the 25 largest cities in the U.S. (see Figure 3).

**Figure 3. Correlating VMT and Congestion for urban cores within the top 25 metros, Spring 2019 to Spring 2024**

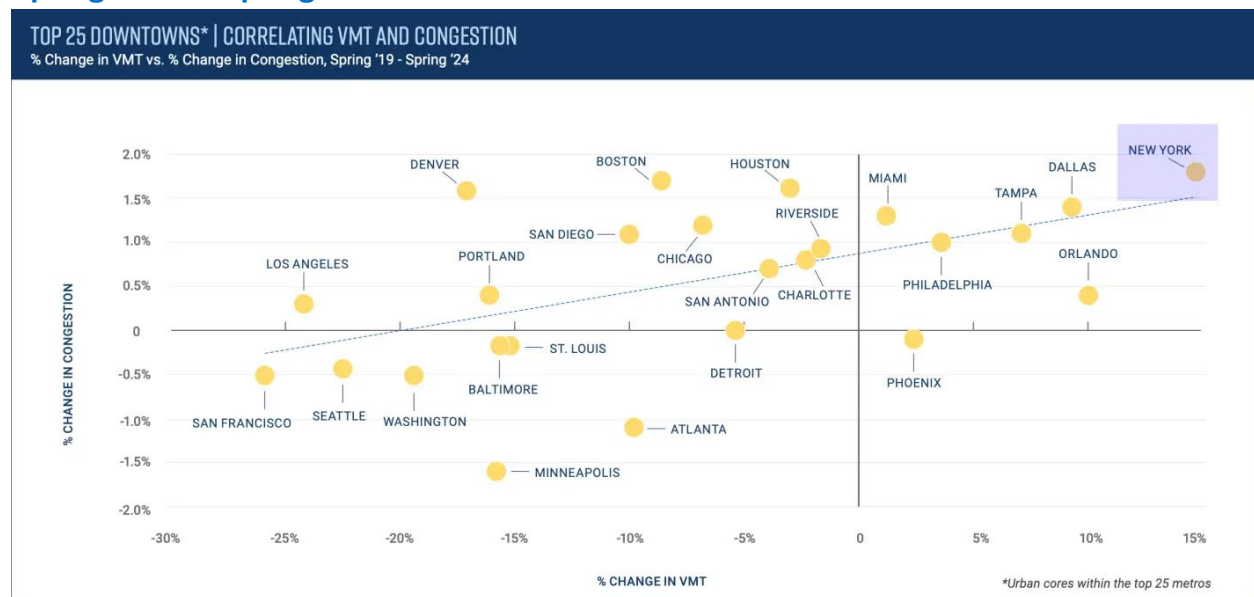


Chart: Streetlight Data, accessed at <https://learn.streetlightdata.com/vmt-congestion-report-2024>

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### V) Emergency Response Times have lengthened in every measurable category over the past decade

The most obvious way gridlock can affect our health is by increasing emergency response times to **health emergencies, fires, and crimes**. For up-to-date information, we compared NYC 911 End-to-End Detail<sup>2</sup> data from July 2024 with July 2014. Response times for all three indicators have risen significantly over the past decade (see Table 2). The Mayor's Management Report, which only looks back 5 years, also showed increases in emergency response times.

EMS Life-threatening response times increased from 9.6 minutes to 12.4 minutes, an increase of 29% and 2.8 minutes. Non-Life-Threatening EMS response times more than doubled from 8.3 minutes to 23.3 minutes; 15 more minutes of suffering while waiting for an ambulance. Most troubling, FDNY Medical Emergency response times jumped by 70% going from 8.3 minutes to 14.3 minutes.

NYPD Critical, which includes shootings, robberies or burglaries and is the most urgent category reported, jumped from 7.9 minutes to 9.7 minutes, an increase of nearly 2 minutes. NYPD response to serious incidents jumped by 4 minutes in the past decade while non-critical responses doubled to over a half-hour.

FDNY response times to structural fires increased by about half a minute from 4.7 minutes to 5.2 minutes. Non-structural fires increased by seven-tenths of a minute.

**Table 2. NYC 911 Response times, July 2014 compared to July 2024**

Category	2014 Response Time	2024 Response Time	Difference	Difference % Change
NYPD Critical	7.86	9.69	+1.83	+23%
NYPD Serious	9.92	14.13	+4.21	+42%
NYPD Non-Critical	15.42	30.59	+15.17	+98%
FDNY Structural Fires	4.69	5.2	+0.51	+11%
FDNY Non-Structural Fires	5.9	6.63	+0.73	+12%
FDNY Medical Emergencies	8.31	14.27	+5.96	+72%
FDNY Non-Medical Emergencies	7.89	10.02	+2.13	+27%
EMS Life-Threatening	9.62	12.43	+2.81	+29%
EMS Non-Life-Threatening	8.28	23.25	+14.97	+181%

<sup>2</sup> <https://www.nyc.gov/site/911reporting/reports/end-to-end-response-time.page>

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Source: NYC 911 Reporting, End-to-End Response Time. 2014 data reflects the weeks of June 30, 2014 through July 28, 2014. 2024 data reflects weeks of July 1, 2024 through July 29, 2024.

### VI) Travel time increases were a major factor in increasing Response Times

NYC 911 isolates time spent traveling to emergencies. Travel times increased in every one of the 8 emergency response categories. For FDNY medical emergencies an extra 2 minutes was spent in traffic. For EMS Life-threatening travel added 1 ½ minutes and 1.4 for NYPD critical response (see Table 3).

**Table 3. NYC 911 Travel times, July 2014 compared to July 2024**

Category	2014 Response Time	2024 Response Time	Difference	Response % Change
NYPD Critical	3.57	4.95	+1.38	+39%
NYPD Serious	4.83	8.5	+3.67	+76%
NYPD Non-Critical	7.52	19.06	+11.54	+153%
FDNY Structural Fires	3.69	5.2	+1.51	+41%
FDNY Non-Structural Fires	5.9	6.63	+0.73	+12%
FDNY Medical Emergencies	4.17	6.14	+1.97	+47%
FDNY Non-Medical Emergencies	4.84	10.02	+5.18	+107%
EMS Life-Threatening	6.09	7.54	+1.45	+24%
EMS Non-Life Threatening	8.28	12.54	+4.26	+51%

Source: NYC 911 Reporting, End-to-End Response Time. Year 2014 data reflects the weeks of June 30, 2014 through July 28, 2014. Year 2024 data reflects weeks of July 1, 2024 through July 29, 2024.



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### VII) More than half the increased response times to the 9 categories appears to be due to slower speeds

Table 4 below shows the percentage of the increased end-to-end response time was due to travel time increases. For example, 75% of the increased NYPD response time to NYPD Critical, i.e. shootings, robberies or burglaries, was from increased travel time. Over half the increased time to EMS Life-threatening emergencies, may be attributed to increased travel time.

**Table 4. NYC 911 Travel times as percentage of increase in response time, July 2014 compared to July 2024**

Category	Percentage of the increased end-to-end response time due to travel time increases
NYPD 1-Critical	75%
NYPD 2- Serious	87%
NYPD 3- non-critical	76%
FDNY 1- Structural fires	33%
FDNY 2- Non-structural	74%
FDNY 3- Medical Emergencies	33%
FDNY 4-Non-Medical Emergencies	46%
EMS 1- Life threatening	52%
EMS 2- Non-life threatening	28%
<b>AVERAGE DELAY</b>	<b>54%</b>

Source: NYC 911 Reporting, End-to-End Response Time. Year 2014 data reflects the weeks of June 30, 2014 through July 28, 2014. Year 2024 data reflects weeks of July 1, 2024 through July 29, 2024.

**VIII) A stroke victim loses nearly 2 million brain cells per minute lost in time to medical treatment**

Medical professionals will tell you, to no one’s surprise, there is a direct relationship between response time and outcomes including survival. For example, for every minute of delay in a stroke patient nearly 2 million brain cells die which can result in severe disabilities, such as loss of speech, paralysis, or even death.<sup>3</sup>

According to FDNY union president for EMTs Oren Barzilay in an interview with Spectrum News NY1, "Clinical death begins after four minutes. Biological death begins after six minutes. So, if we're getting there in nine minutes, your chance of surviving a heart attack or going into cardiac arrest are slim to none."<sup>4</sup> Maybe that’s a bit of hyperbole by a union rep but study after study and doctor after doctor all agree that “Time is Brain” for stroke victims and “Time is Muscle” for heart attacks.

The American Heart Association and the American Stroke Association have emphasized the importance of speedy medical attention to stroke patients. A chart originally published in the American Heart Association Journal *Stroke* titled “Time is Brain Quantified,” (Table 5) shows that with each passing minute 1.9 million neurons die.<sup>5</sup> Neurons, also known as nerve cells, are the fundamental units of the brain and the nervous system. As neurons are lost in the brain the probability of in severe disabilities increase, such as loss of speech, paralysis, or even death.

**Table 5. Time is Brain Quantified: Neural Circuitry Loss in Ischemic Stroke**

	Neurons Lost	Synapses Lost	Myelinated Fibers Lost	Accelerated Aging
Per Stroke	1.2 billion	8.3 trillion	4470 miles	36 y
Per Hour	120 million	830 billion	447 miles	3.6 y
Per Minute	1.9 million	14 billion	7.5 miles	3.1 wk

Chart: *Stroke*, 37(4), 1048-1054. <https://doi.org/10.1161/01.str.0000196957.55928.ab>

<sup>3</sup> Menon, B. K., Christoforidis, G. A., Qureshi, A. I., Burgin, W. S., & Katzan, I. L. (2006). *Comparison of qualitative and quantitative methods in determining severity of stroke*. *Stroke*, 37(4), 1048-1054. <https://doi.org/10.1161/01.str.0000196957.55928.ab>

<sup>4</sup> Greenberg, Rebecca. "Emergency Response Times by FDNY, NYPD Increase." *NY1*, 19 September 2022. <https://ny1.com/nyc/all-boroughs/public-safety/2022/09/19/emergency-response-times-by-fdny--nypd-increase>.

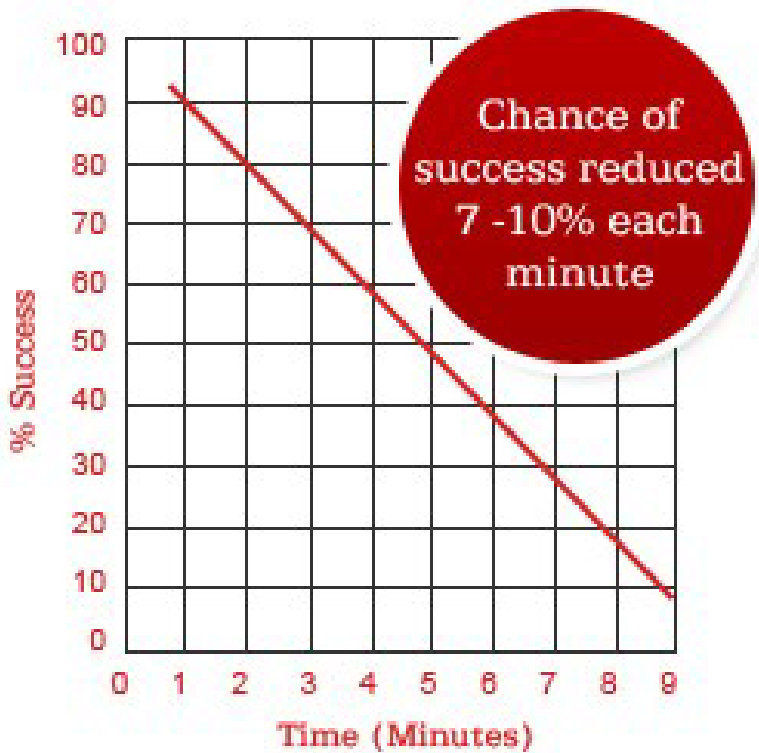
<sup>5</sup> Menon, B. K., Christoforidis, G. A., Qureshi, A. I., Burgin, W. S., & Katzan, I. L. (2006).

**IX) During Cardiac Arrest chances of survival drop by 7- 10% for every minute of delayed treatment**

Sudden cardiac arrest (SCA), as described by the Mayo Clinic website, “is the sudden loss of all heart activity due to an irregular heart rhythm. Breathing stops. The person becomes unconscious. Without *immediate* treatment, sudden cardiac arrest can lead to death.”<sup>6</sup>

The emphasis is on the word “immediate.” According to the National Library of Medicine, “For every minute without CPR, survival from witnessed VF cardiac arrest decreases by 7 - 10%.”<sup>7</sup>

**Figure 4. Chance of Survival by Minute in a Cardiac Arrest Patient**



**Survival from Sudden Cardiac Arrest.**

Chart: Laerdal Medical. "The Importance of Early Defibrillation." Laerdal, <https://laerdal.com/au/docid/36016554/The-Importance-of-Early-Defibrillation>.

<sup>6</sup> Mayo Clinic. (2023). Sudden cardiac arrest - Symptoms and causes. Retrieved from <https://www.mayoclinic.org>.

<sup>7</sup> Ibrahim WH. Recent advances and controversies in adult cardiopulmonary resuscitation. Postgrad Med J. 2007 Oct;83(984):649-54. doi: 10.1136/pgmj.2007.057133. PMID: 17916874; PMCID: PMC2600120.

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But, it is not only survivability that's at risk with cardiac arrest. Brain damage begins at about the 4-minute mark after the heart stops beating. At six minutes permanent brain damage is likely. By ten minutes there is little likelihood of survival.

**Table 6. Time Range to CPR and Likelihood of Brain Damage in Cardiac Arrest Patient**

<b>Time Range</b>	<b>Likelihood of Brain Damage or Other Outcome</b>
0-4 minutes	Brain damage is not likely; chances of survival and health are high.
4-6 minutes	Brain damage could occur; beginning of brain death.
6-10 minutes	Brain damage is likely; ongoing issues may occur post-resuscitation.
10+ minutes	Brain death is likely; very slim chance of regaining consciousness or survival.

Source: ProCPR. "CPR Facts and Stats." ProCPR Blog, <https://www.procpr.org/blog/training/cpr-facts-and-stats>.

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The outcomes for Acute Myocardial Infarctions, i.e. Heart Attacks, can be improved not just by getting patients to the ER more quickly but by the speeding of EMTs to the scene. Dr. Daniel Karlsberg, Clinical Faculty cardiologist at [NYU Langone Health](#) explained that “the longer the heart doesn’t have fresh oxygenated blood” the more heart muscle dies, and the probability of complications rises. But, once an EMT is with the patient, through communication with the hospital, measures can be taken to slow heart muscle death, and the hospital can make preparations in advance of the arrival of the patient further improving outcome.

### **X) It’s not just strokes and heart attacks that need prompt attention**

In interviews with NYC Emergency Department doctors they highlighted other cases where minutes and even seconds matter.

It’s not just adults who suffer from strokes and heart attacks where time is a major factor of survivability and quality of life afterwards. Children need immediate attention for several medical issues such as pediatric airway management, acute trauma, sharp object ingestion, and toxicology.

Dr. Mark Hanna, an emergency department pediatric physician in Manhattan, told us “time to intervention” is directly related to saving lives especially with children suffering from anaphylaxis or opioid overdose. He recalled a teenage boy suffering anaphylaxis shock. “While I was driving lights and sirens to get to him, I remember watching updates on my computer in my physician response vehicle as the dispatcher was updating the patient’s status. By the time I got to him he was in cardiac arrest and died. I think about him often and to this day believe we could have saved him if we had gotten there sooner.”

Pediatric gastroenterologist Dr. Joseph Picoraro NYPH Columbia (Sam Schwartz’s son-in-law) needs to race to the hospital anytime a child ingests a button battery. Delay in treatment can mean life-threatening complications.

Dr. David Schaeffer, a Brooklyn ER physician we interviewed by phone, also pointed out the need for speed for non-obvious life-threatening injuries, say a broken leg after getting hit by a car where response times have increased by 10 minutes. Unseen could be a torn artery where the end result “could be loss of a limb or damage to a critical organ,” said Dr. Schaeffer.

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### Conclusion

New Yorkers and its visitors are at increased risk every day due to worsening traffic congestion. Emergency response times for medical emergencies, crimes in progress and fires have all lengthened. Much of the added delay is due to worsening traffic congestion. This is a solvable problem. Fewer vehicles would mean traffic speeds and emergency response times would improve. Congestion pricing is an important step for the 4 million people in the CBD daily and for the dense surrounding communities that would also benefit from fewer cars and trucks passing through enroute to the congestion pricing zone. We call for the full implementation of the original congestion pricing plan as envisioned by the MTA.

But it is not only the state that has a role to play. The city controls traffic flow on its streets. The additional for-hire-vehicles (FHVs) such as Uber and Lyft that traverse our streets add significantly to congestion. We call on the mayor to put an immediate cap on their numbers. Currently the cap is lifted for e-cars. Traffic enforcement is sorely lacking direction. We believe the DOT should be directing parking enforcement, as it had through 1995, not the NYPD. The police are crime-fighters not gridlock-busters.

We have more trucks on city streets than ever before. This started 20 years ago but jumped sharply during the pandemic and has continued post-pandemic. One of the beauties of congestion pricing could be the setting of policies that encourage trucks to make overnight deliveries by much lower prices for entry at night and exit by early morning. Parking enforcement can sharply reduce double-parking by trucks by clearing the curb lane of illegally parked vehicles.

We also point out that the parking problem has been exacerbated by the proliferation of parking permits and bogus parking permits. The city often says it will crack down but in our opinion their response has been anemic to put it mildly. The solution is not rocket-science and there are successful examples from past administrations.<sup>8</sup>

Ghost license plates and bogus out-of-state registrations have multiplied exponentially over the past few years. The MTA, in concert with other agencies, do spot checks at their bridges and tunnels. This should continue. But the easiest way to deal with this problem is when cars are idle. One can just walk any street in NYC to see plastic covered (to thwart cameras) or altered plates or cars with plates from Texas that probably have never been there yet park with de facto impunity since summonses can never be linked to owners. A good first step was announced by Mayor Adams on September 18<sup>th</sup> with the creation of a task force as a pilot to crack down on ghost cars; it should be made permanent.

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<sup>8</sup> Vital City. (2023). Parking Placard and License Plate Arrogance. Retrieved from <https://www.vitalcitynyc.org>.

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Lastly, we recommend that someone be put in charge again. Until the Giuliani administration there was a traffic commissioner who also supervised thousands of traffic agents. If emergency vehicles are getting stuck in traffic, we would know who to call, who was responsible. Today, it's a multitude of agencies meaning no one is in charge.

We are all in this great metropolis together. Our elected officials must keep us safe. We call for the full implementation of congestion pricing. It can literally be a matter of life and death!