



# EVALUATING THE IMPACT OF CONGESTION PRICING ON TRAFFIC SAFETY IN MANHATTAN: A PRELIMINARY ANALYSIS (2012–2025)

Mohammedamin Mussa  
Graduate Student at UMBC



## SAFER STREETS THROUGH SMARTER POLICIES

### INTRODUCTION

Background:

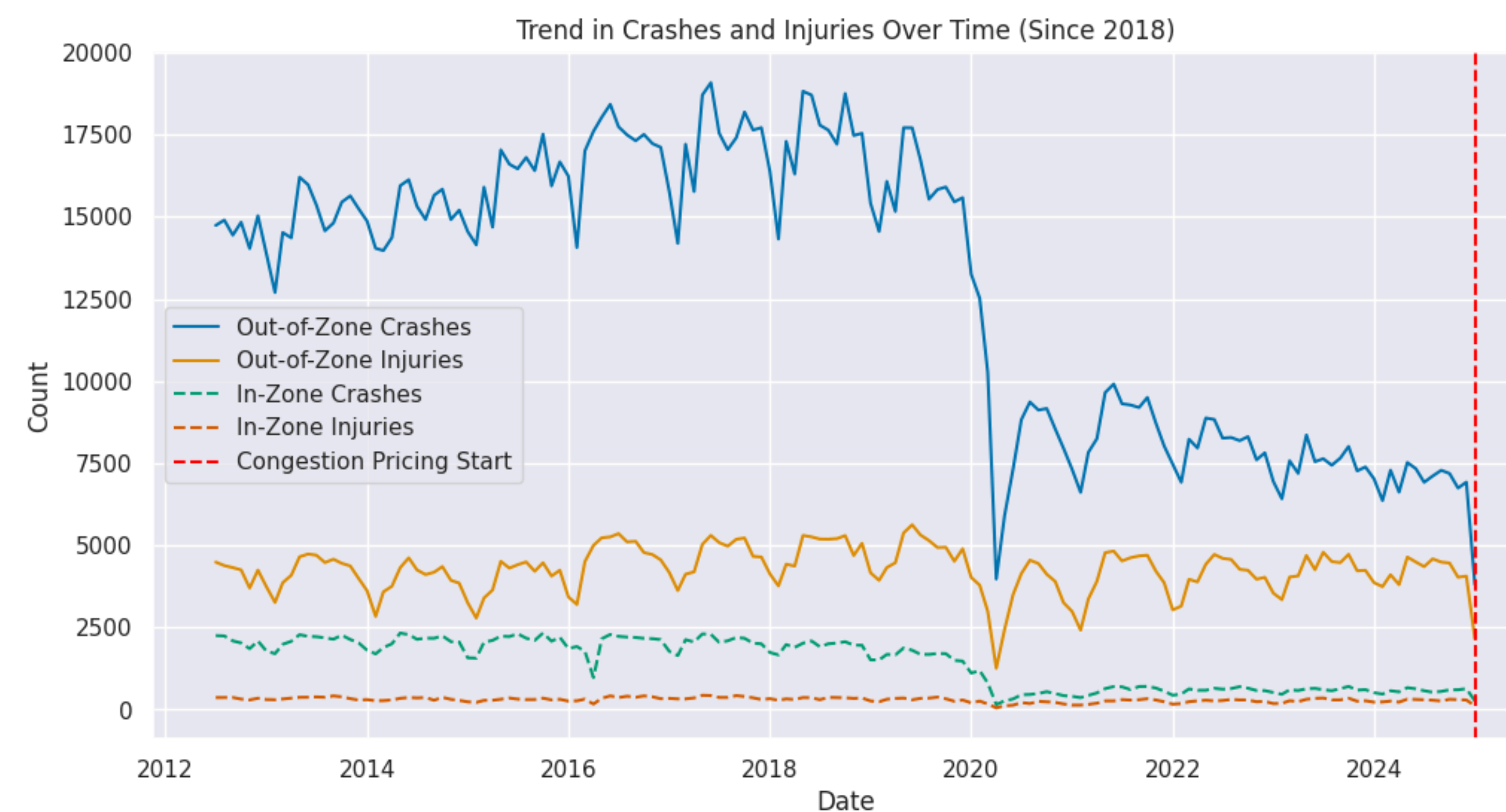
- Congestion pricing policy went into effect in Jan 5, 2025 in Manhattan NYC. The policy aims to reduce vehicle volumes and improve safety.
- Study focuses on pre- and post-implementation impacts.

### OBJECTIVE

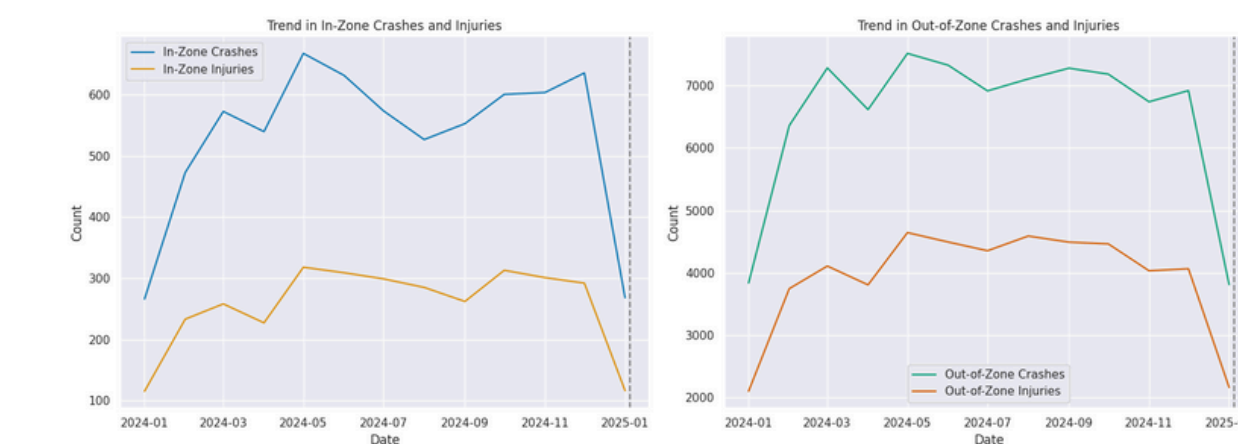
- Evaluate crash and injury reduction post-congestion pricing in Manhattan's congestion relief zone.

### METHODOLOGY

- Study Period: 2012–2025 (focus on before and after Jan 5 2025).
- Data Source: NYC OpenData.
- Key Metrics:
  - 1.Total crashes.
  - 2.Injuries and fatalities.
  - 3.Crash density in the CRZ.
- Analysis Tools: Python for data cleaning and visualizations.



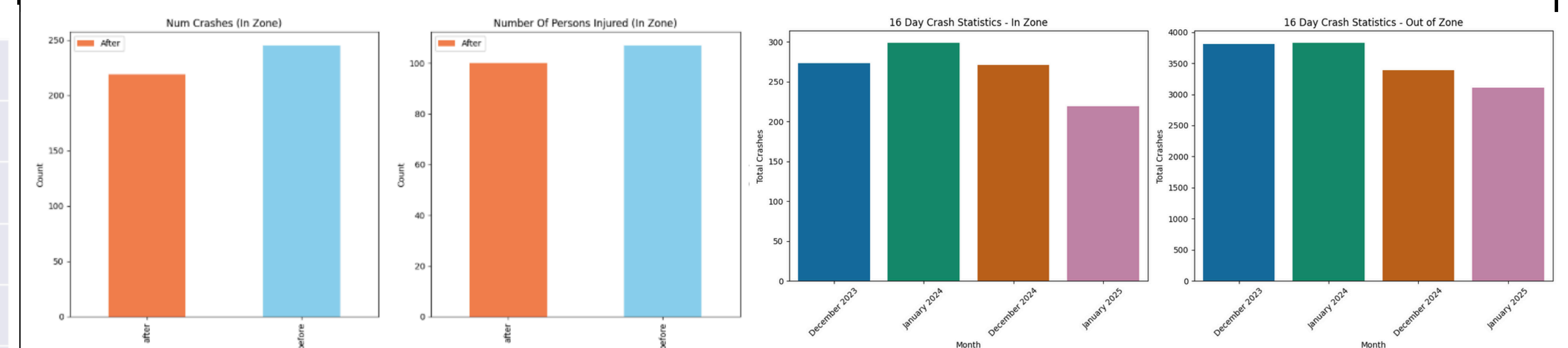
INZONE REFERS TO AREAS IN THE CONGESTION RELIEF ZONE AND OUT OF ZONE REFERS TO AREAS OUT OF CONGESTION RELIEF ZONE IN NYC



CLOSE UP FIGURE OF THE TREND IN THE ABOVE GRAPH IN 2024

### KEY FINDINGS

- The line graphs above show a sharp decline in crashes and injuries in both the CRZ and outside it in January 2025. Notably, the trend began before January 5, warranting further examination, and suggests congestion pricing may also reduce accidents outside the CRZ
- Spatial Trends: The heatmaps show reduced crash density in hotspots like Midtown post-congestion pricing.



Crash Frequency Across 4 Time Periods: Congestion Relief Zone vs. Surrounding Areas and Before and After Congestion Pricing

REFERENCES  
CITY OF NEW YORK. "MOTOR VEHICLE COLLISIONS - CRASHES." NYC OPEN DATA. [https://data.cityofnewyork.us/public-safety/motor-vehicle-collisions-crashes/h9gi-nx95/about\\_data](https://data.cityofnewyork.us/public-safety/motor-vehicle-collisions-crashes/h9gi-nx95/about_data). ACCESSED 25 JAN. 2025.

CBS NEW YORK. "NYC CONGESTION PRICING MAPS RELEASED, SHOWING WHERE TOLLING WILL BEGIN." CBS NEWS, 20 JUNE 2023. <https://www.cbsnews.com/newyork/news/ny-congestion-pricing-maps/>. ACCESSED 26 JAN. 2025

### ANALYSIS

- Similar to the line charts, the bar charts above to the left show less number of crashes and injuries after congestion pricing, comparing 16 days immediately before and after Jan 5 for both inzone and out of zone areas.
- The bar chart to the right compares crashes during 4 different 16-day periods: before and after Jan 5 for both 2024 and 2025.
- In January 2025, crashes and injuries decreased by ~22% and ~20% in the CRZ and ~15% and ~17% outside the CRZ, respectively compared to the other three periods. Fatalities dropped significantly, with a 100% reduction in the CRZ and a 40% reduction outside the CRZ.

### CONCLUSION

- Broader Benefits: Crash reductions were observed both inside and outside the CRZ, indicating wider safety improvements.
- Future Focus: Continued monitoring is needed to assess long-term effects and potential spillovers to surrounding areas.

