Measuring the Impact of Traffic Violations on NYC Bus Travel Times

ZBGSS Bearcats

Background

- Automated Camera Enforcement program (ACE) detects traffic violations along NYC bus routes
- All violations currently start with a $50 fine and can escalate up to $250 with repeat offenses
- Types of violations include:
  - Bus lane violations
  - Bus stop blocking violations
  - Double parking violations

Research Questions

- Should all fines cost the same amount?
- Do some violations affect travel time more than others?

Project Overview

Objective:

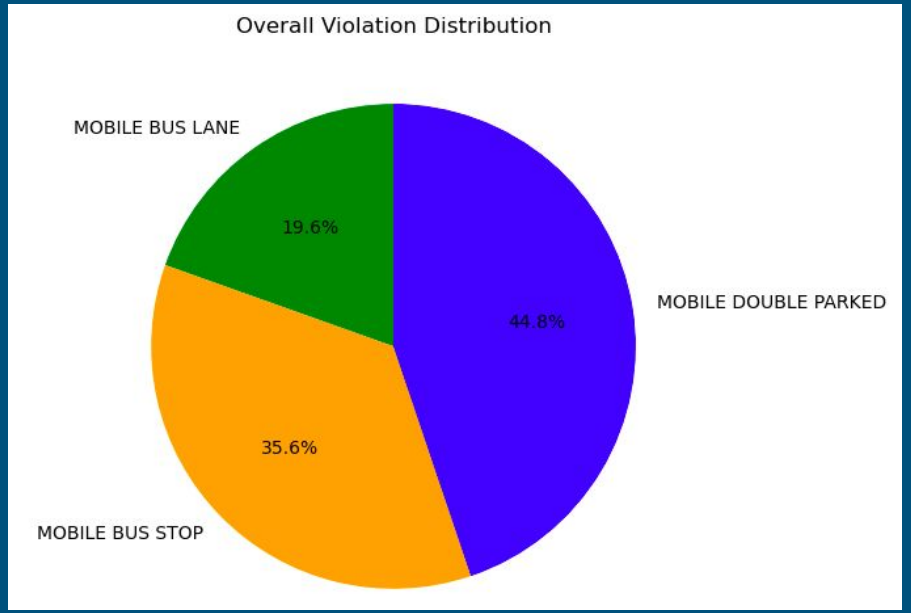
- To evaluate how different traffic violations affect average bus travel times between stops, and highlight which violations cause the greatest delays for riders.

Datasets Used:

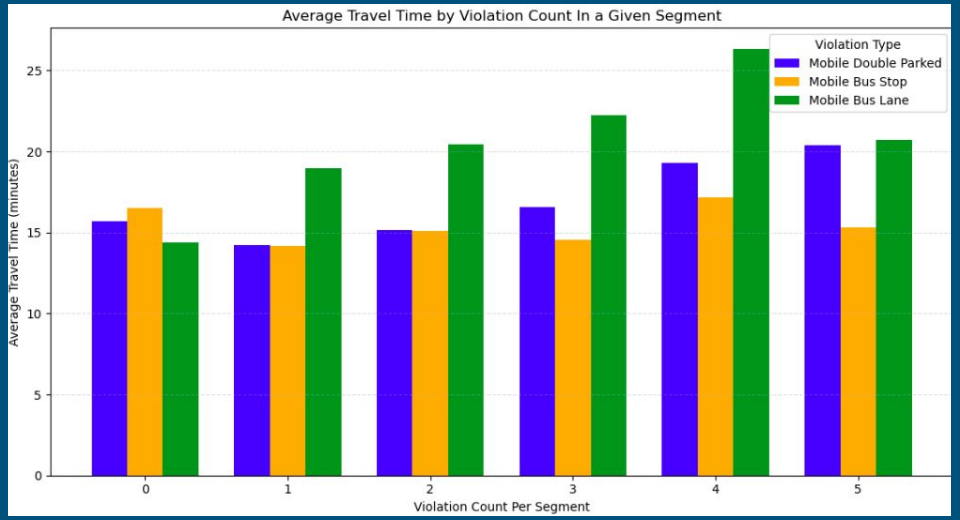
- MTA Bus Automated Camera Enforcement Violations: Beginning October 2019
- MTA Bus Route Segment Speeds: Beginning 2025
- MTA Bus Route Segment Speeds: 2023 - 2024

Violations Distribution

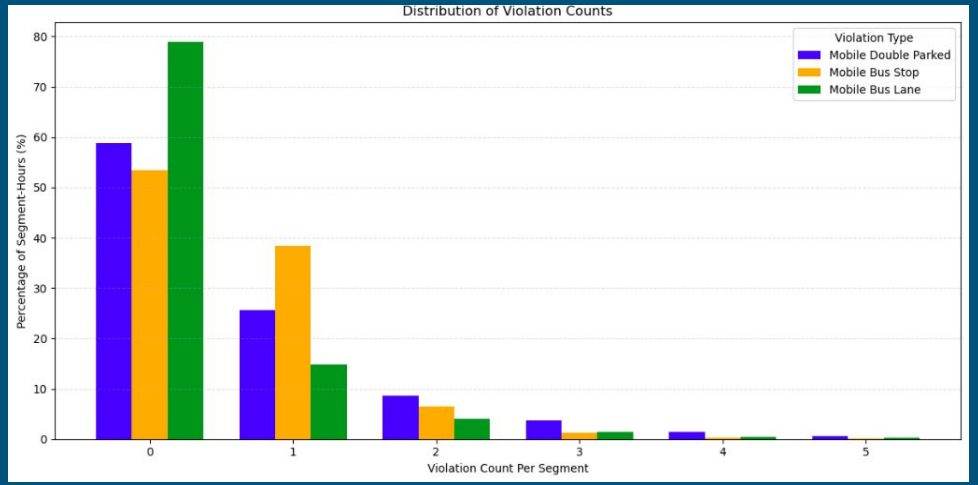
- Double parking and bus stop violations are both nearly twice as common as bus lane violations
- How do they affect travel time per segment?



- Bus lane violations consistently result in the longest travel times out of the 3 violations

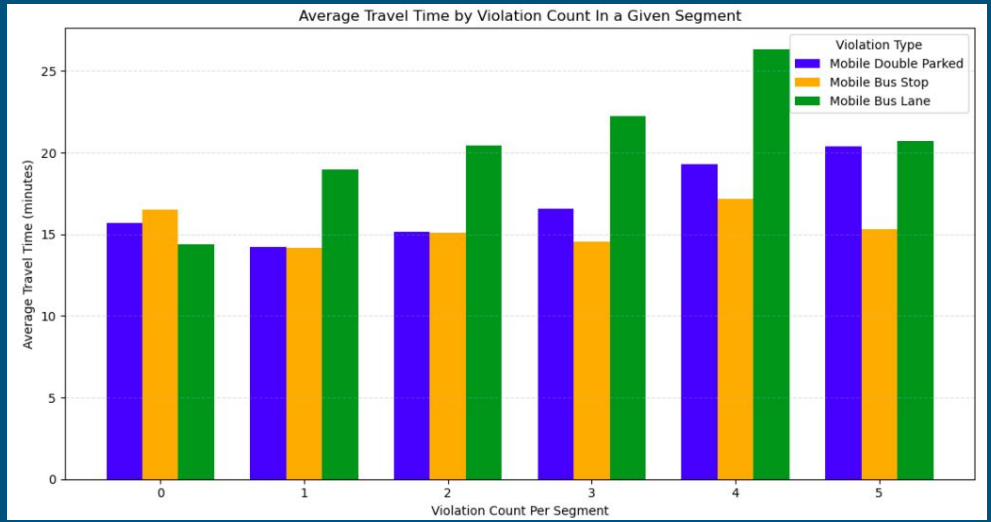


- The chart on the bottom right displays the percentage distribution of number of violations per segment
- We see that most of the time no violations occur, but when they do, typically only 1 to 3 violations occur in a given segment



Delay Significance

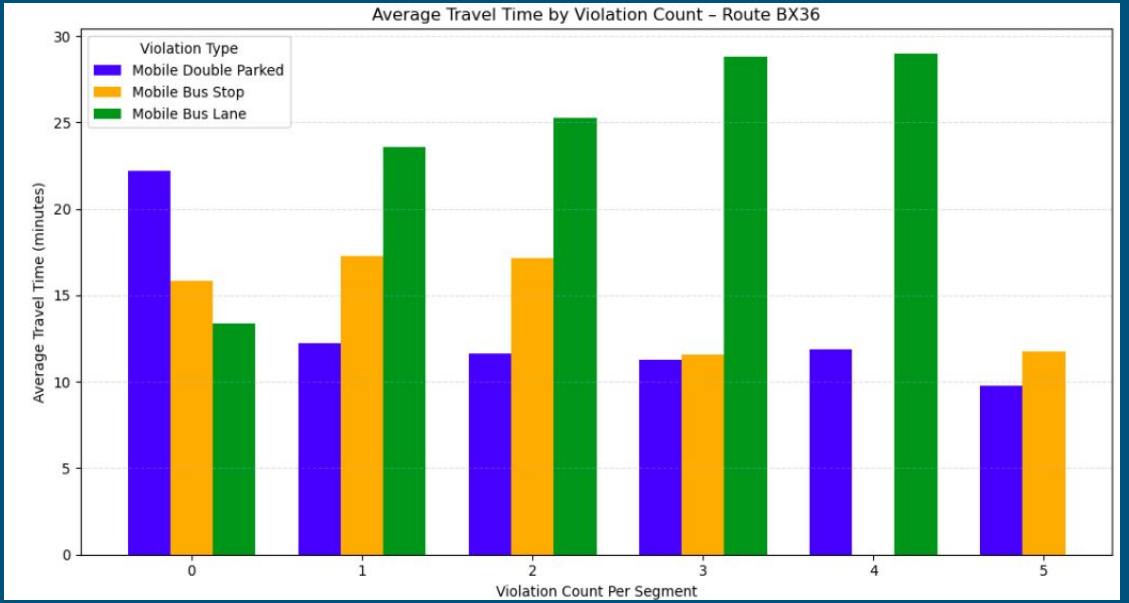
- A 5-minute delay from bus lane violations may seem small, but it is important to remember these times represent the travel time between any two stops along the bus route
- When repeated across multiple segments, delays can compound into significant lost time for each full route.



Let’s take a look at specific bus routes

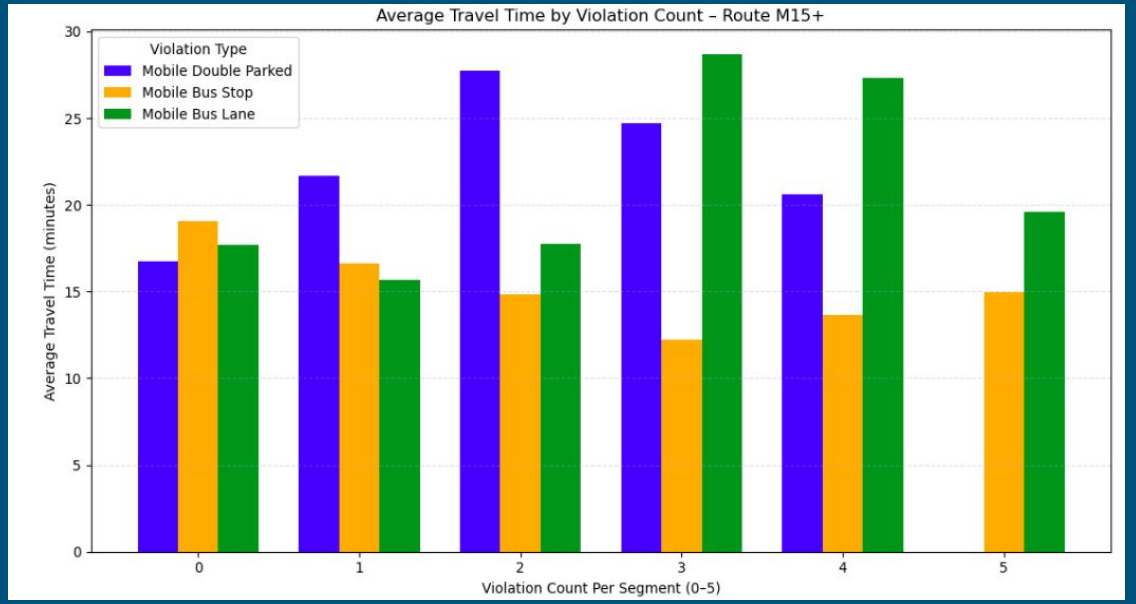
BX36

- Looking at the BX36, we see that bus lane violations can result in double the amount of travel time than double parking between two bus stops



M15+

- Looking at the M15+, both double parking and bus lane violation consistently cause larger amounts of travel times when compared to bus stop violation



Recommendations

Revisit violation fines to reflect true impact on travel time:

- Our analysis shows that not all violations have the same effect
  - Though not as common as double parking and bus stop violations, bus lane violations on average cause longer travel times than the other two violations
  - In some cases, such as the M15+, double parking violations can also cause higher travel times than the other two violations

- A more effective fine structure would scale penalties to the actual delay impact of each violation type.

Recommendations Continued

Education campaigns:

- Launch public education campaigns that highlight the real-world impacts of traffic violations on thousands of daily riders.
- Develop clear, relatable messaging such as “Bus lane violations can double travel times for NYC buses”

Lessons Learned

1. Take the time to understand dataset deeply. Study the data dictionary to clearly grasp what each column represents
2. Don’t get stuck on one idea or research question. Don’t be afraid to restart or ask new questions along the way