



DECODING NYC COLLISIONS

Presented by the Bug Busters



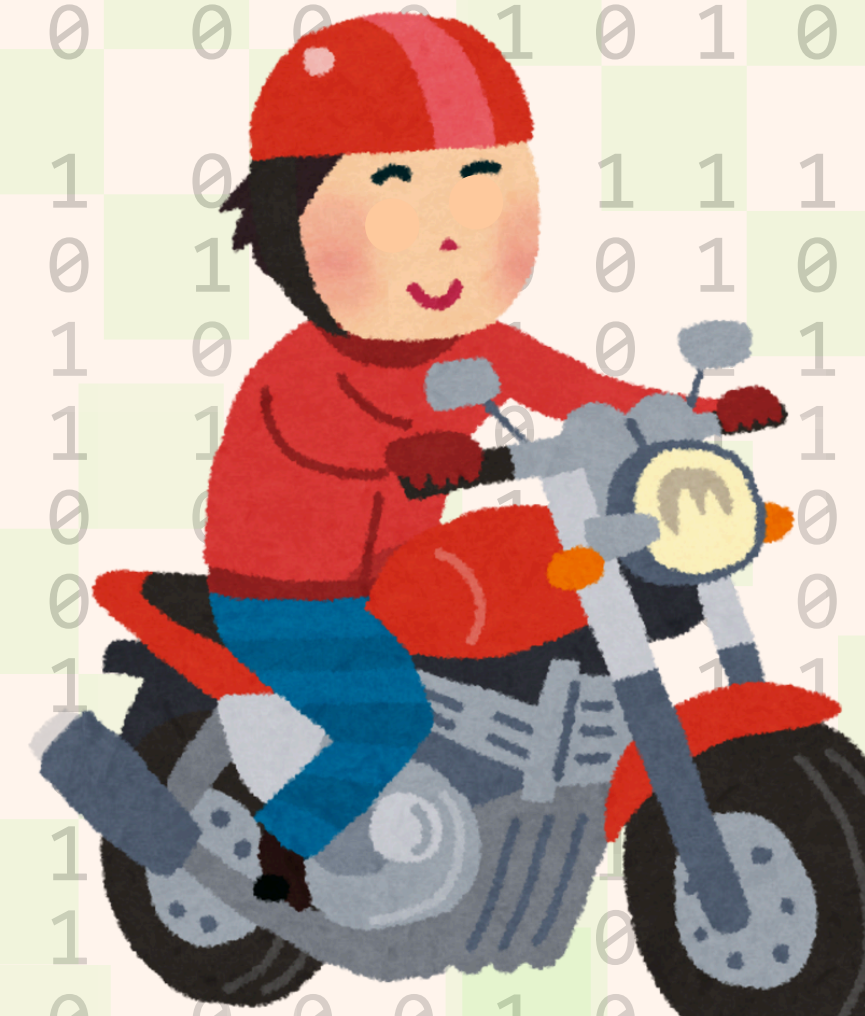
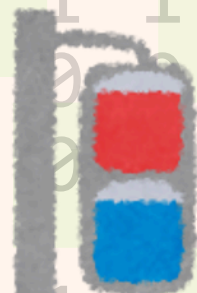
BEHIND THE BUG BUSTERS

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OUR DATA

- Our dataframe is from NYC OpenData, it measures two-vehicle collisions in which someone was injured or killed since July 2012, from police reports.
- We chose to focus only on crashes in 2025.
- Each observation represents a single collision event.

VARIABLES

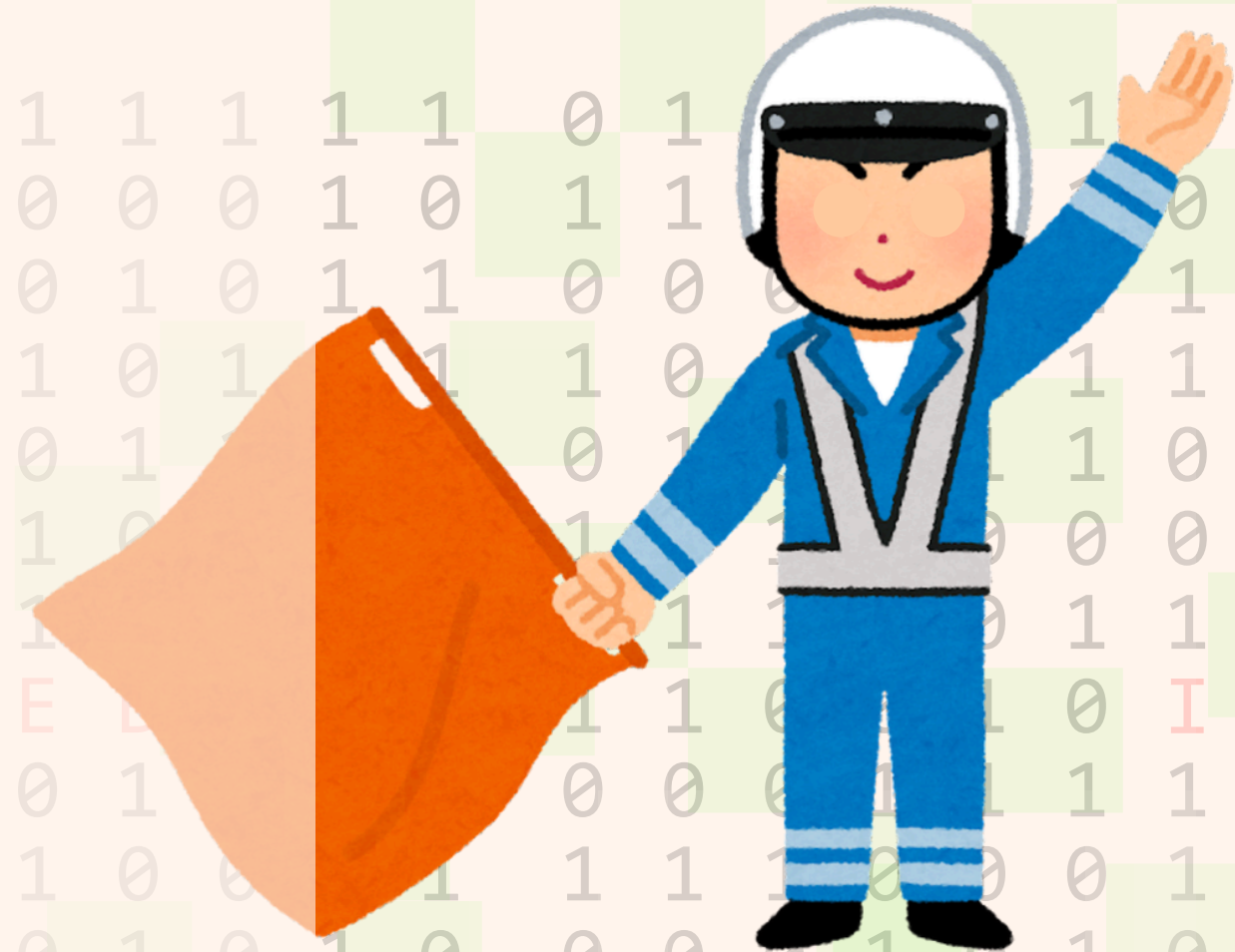
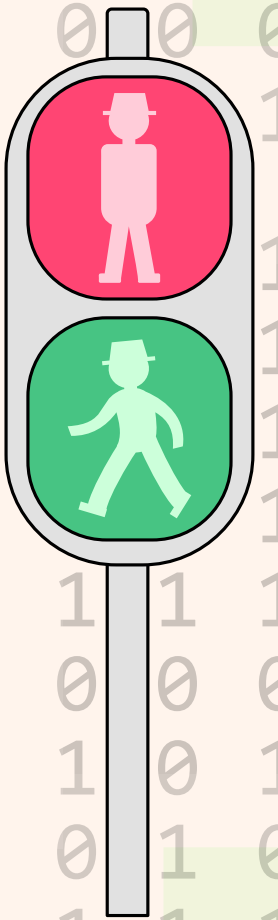
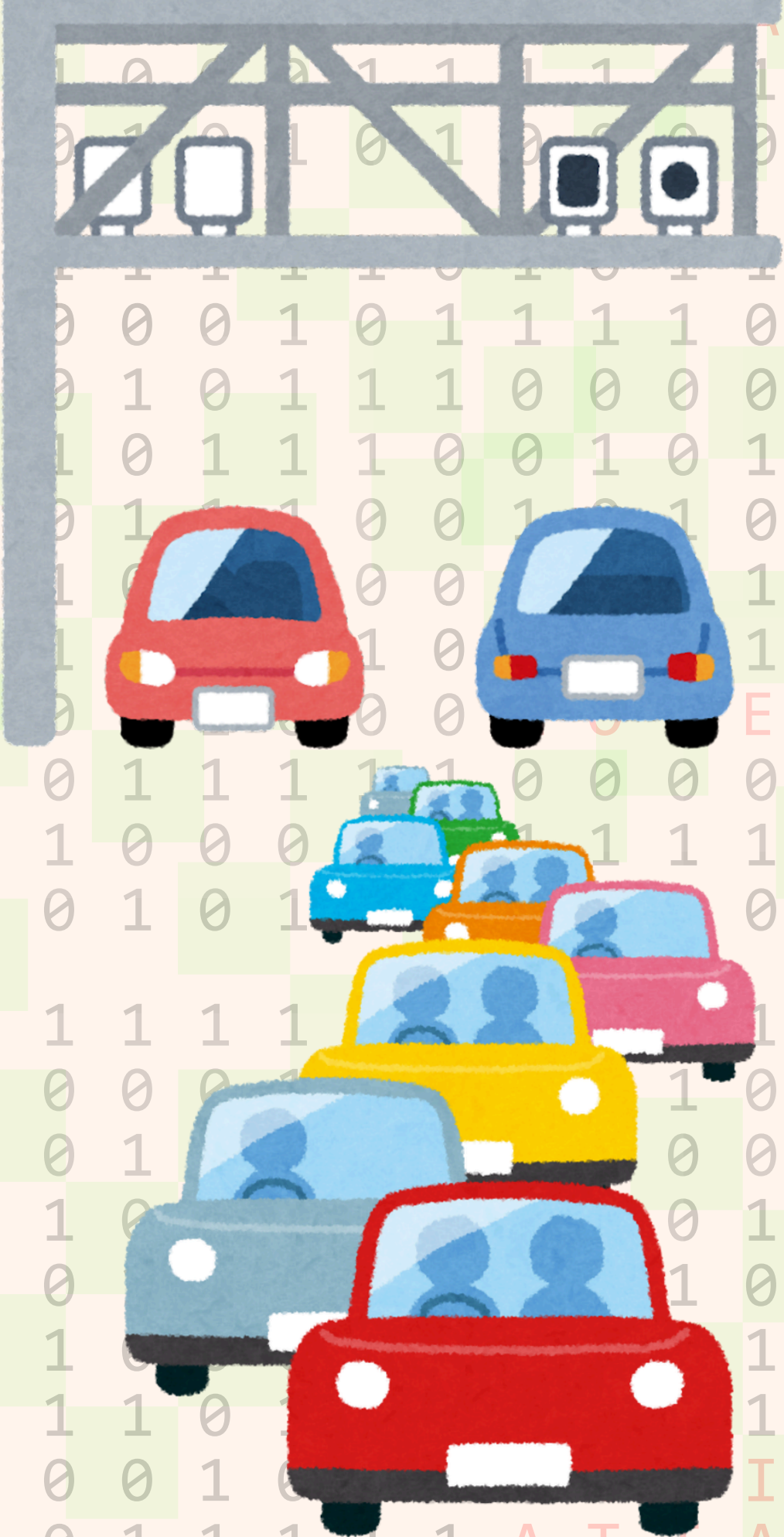
- BOROUGH: the location of the crash within New York City
- NUMBER_OF_PERSONS_INJURED: the total number of individuals injured in the crash
- NUMBER_OF_PERSONS_KILLED: the total number of individuals killed in the crash
- TOTAL_CASUALTIES: the sum of the number of individuals killed or injured in the crash
- VEHICLE_TYPE_CODE_1: the primary type of vehicle involved in the collision

RESEARCH QUESTION

What patterns exist in injuries, fatalities, and vehicle types involved in crashes across boroughs or zip codes in New York City?

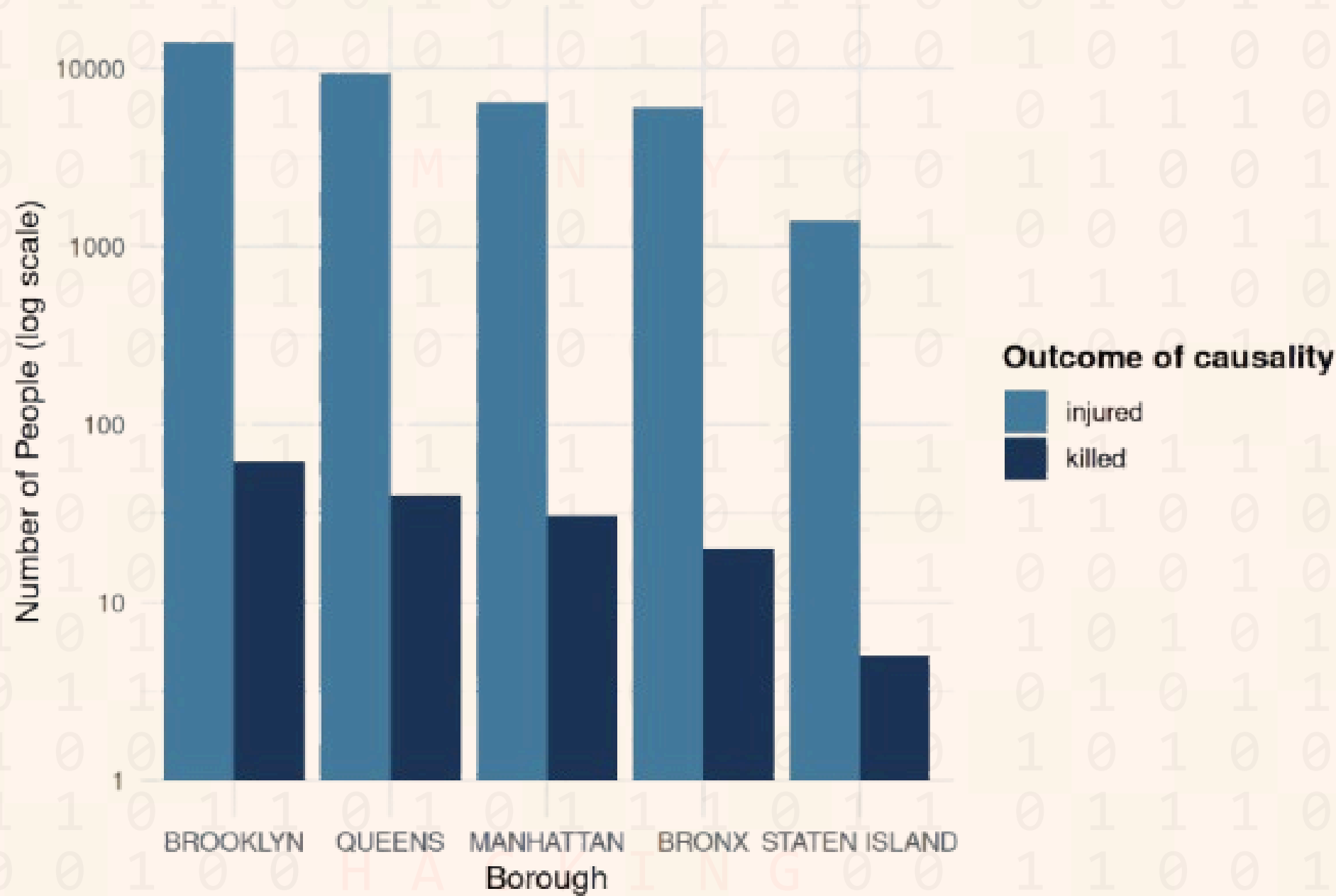
MOTIVATION

- Policy Implications
- Duke Relations

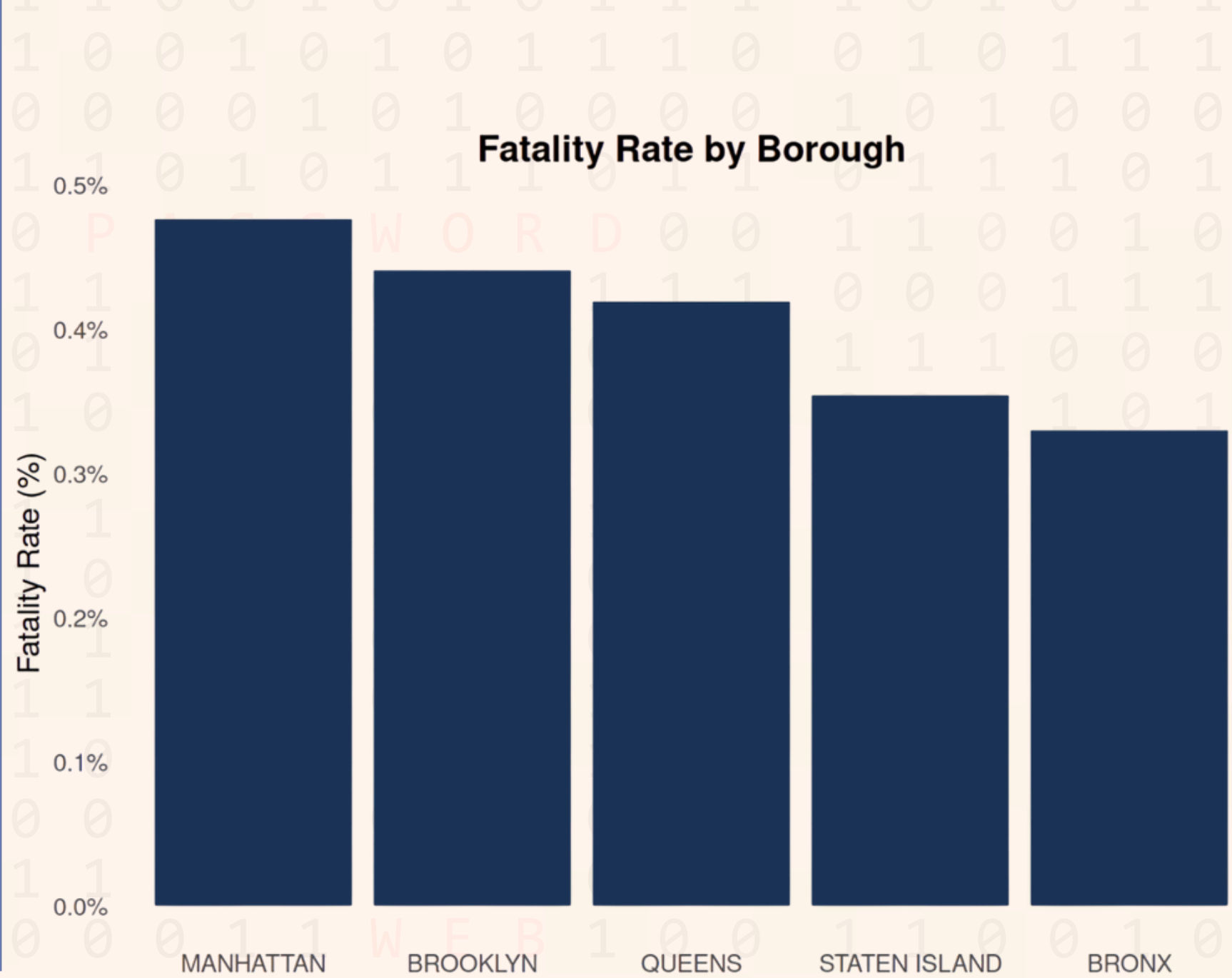


CASUALTIES BY BOROUGH

Number of People Injured vs Killed by Borough

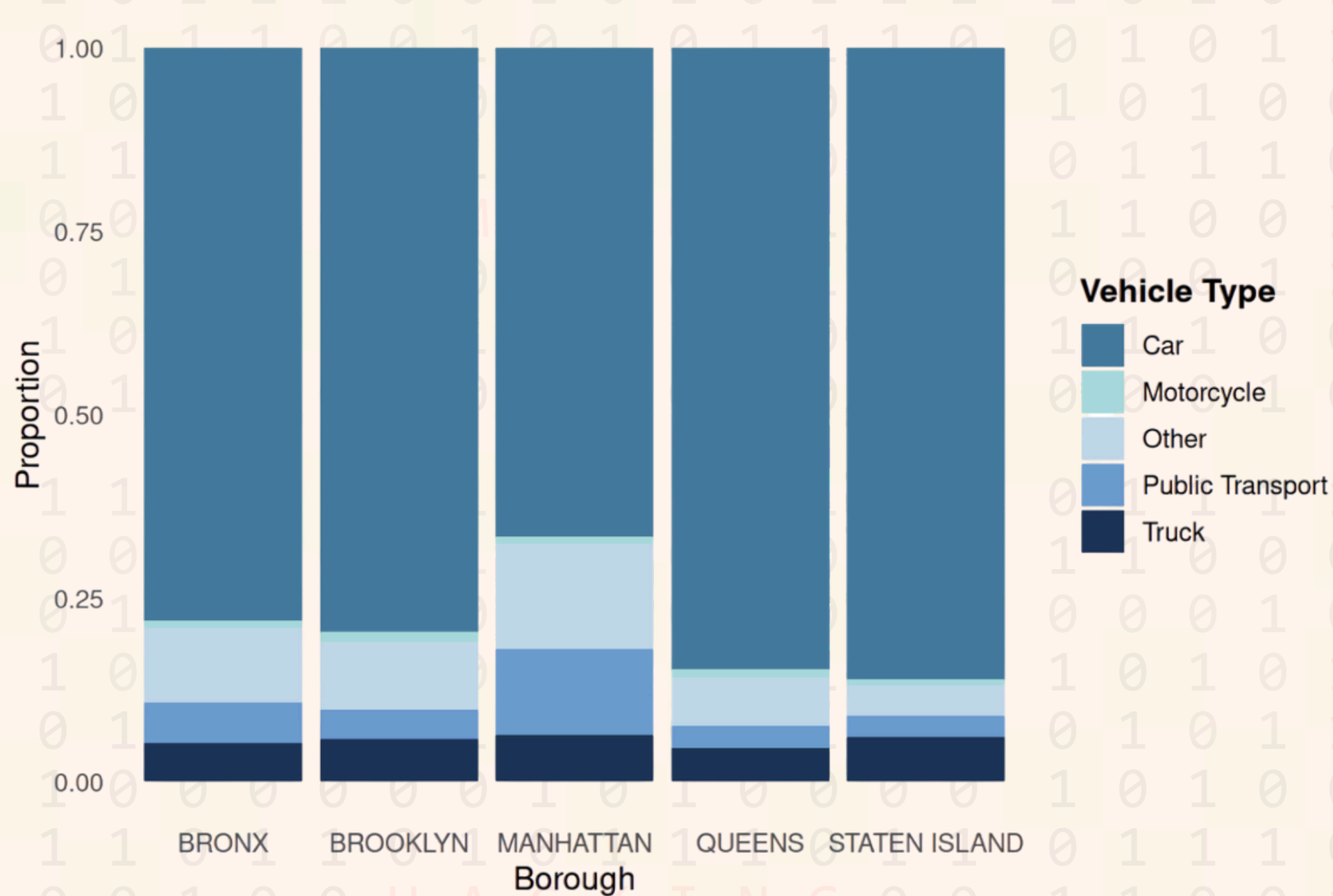


Fatality Rate by Borough

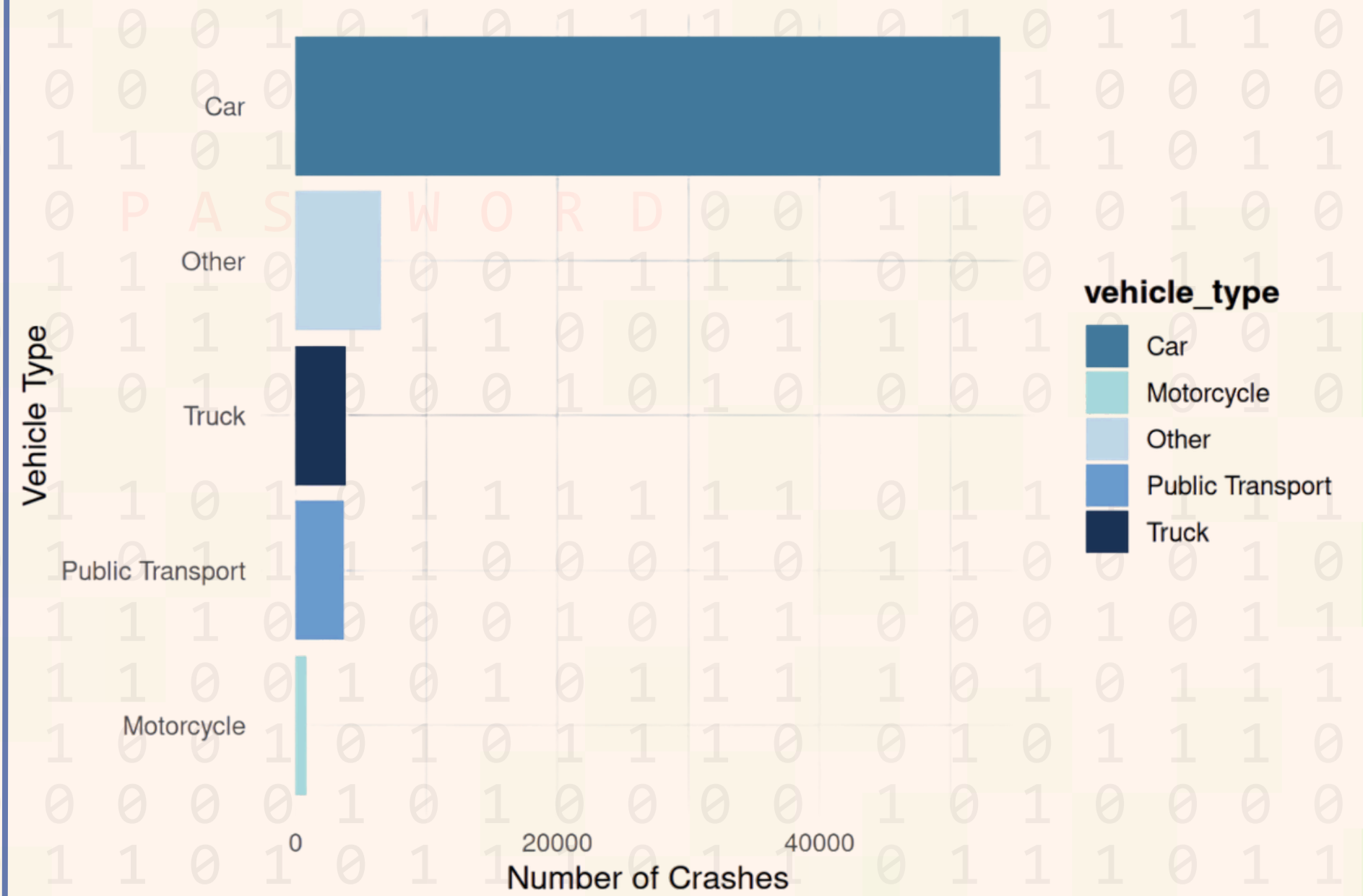


CASUALTIES BY VEHICLE

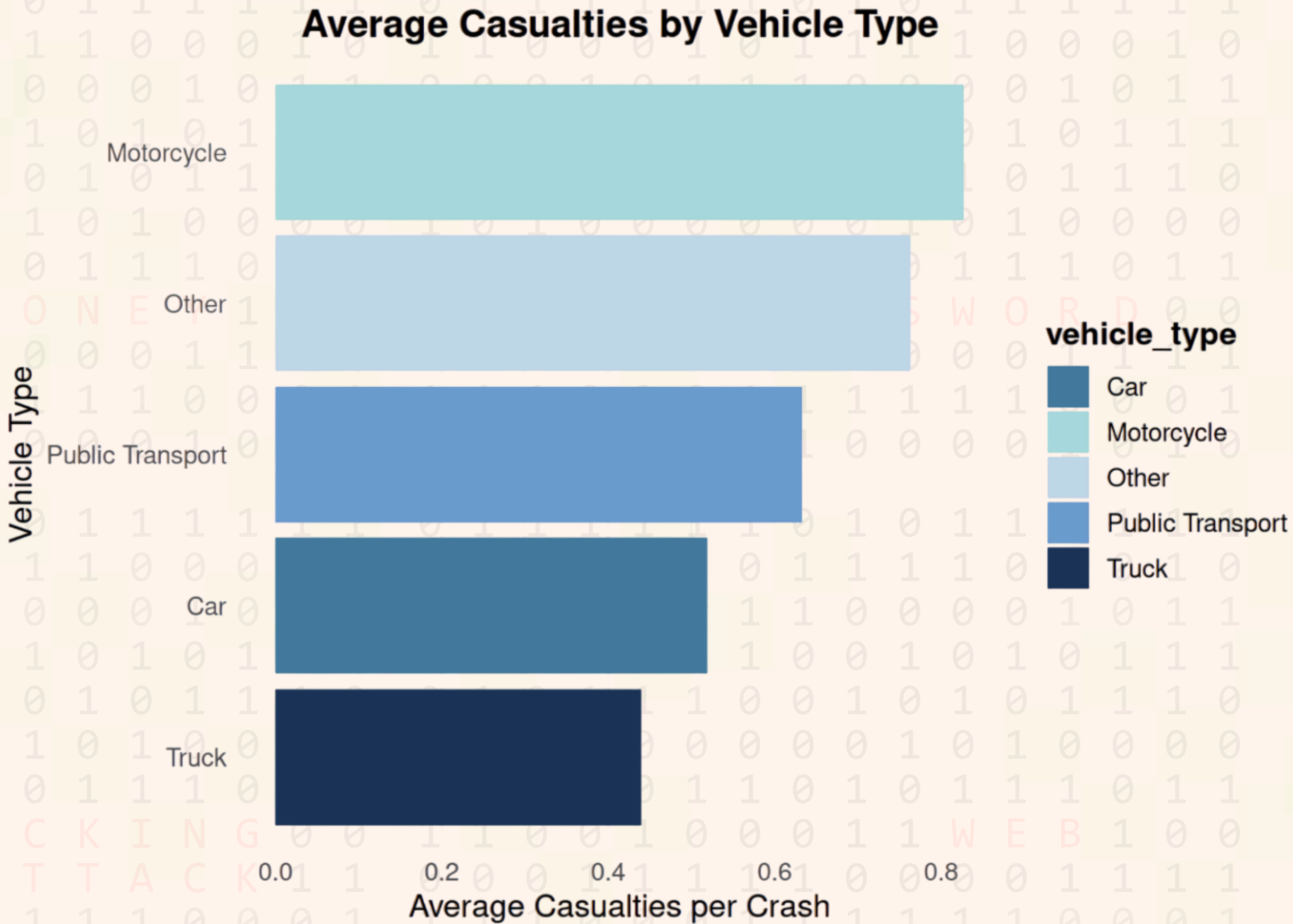
Proportion of Vehicle Types by Borough



Distribution of Vehicle Types in NYC Crashes

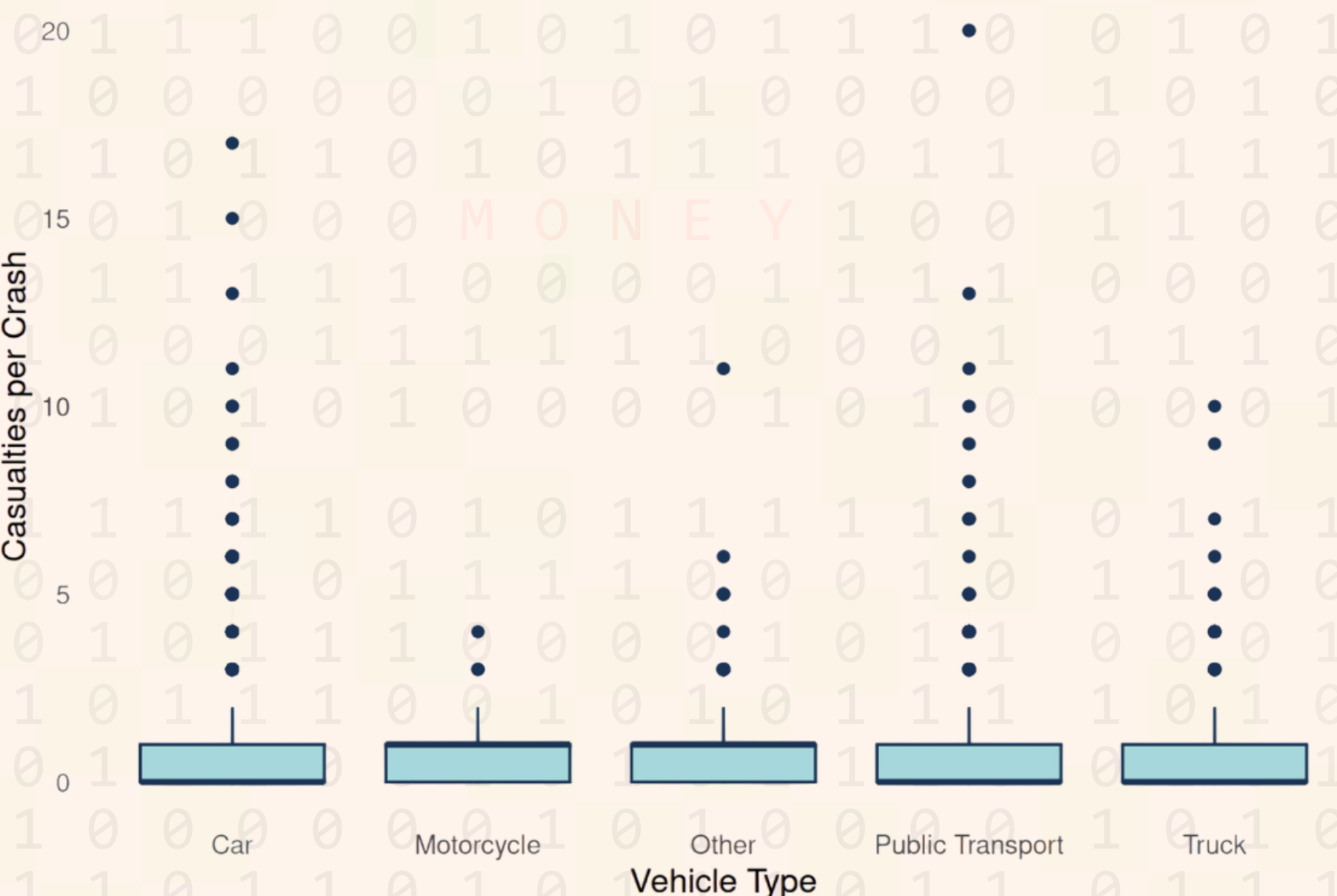


CASUALTIES BY VEHICLE

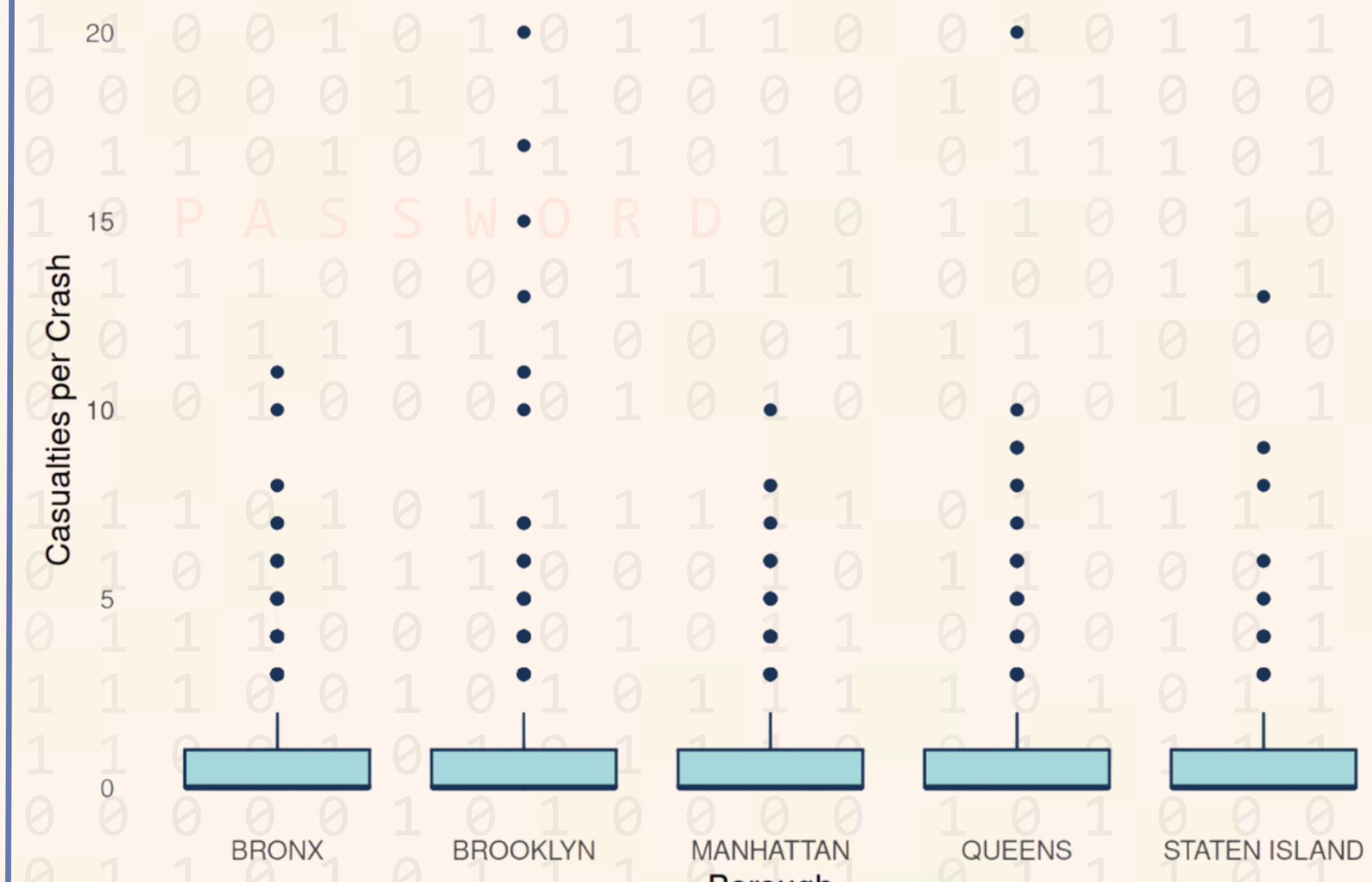


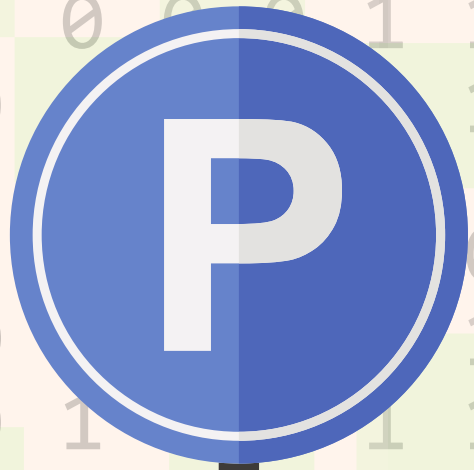
THE BIG 3

Casualties per Crash by Vehicle Type

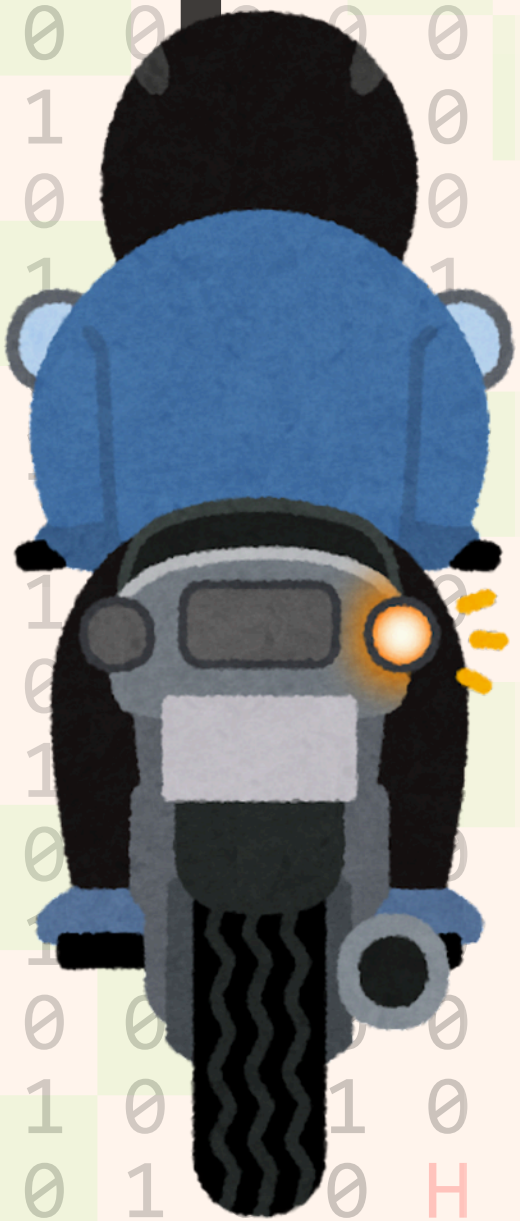


Distribution of Casualties per Crash by Borough

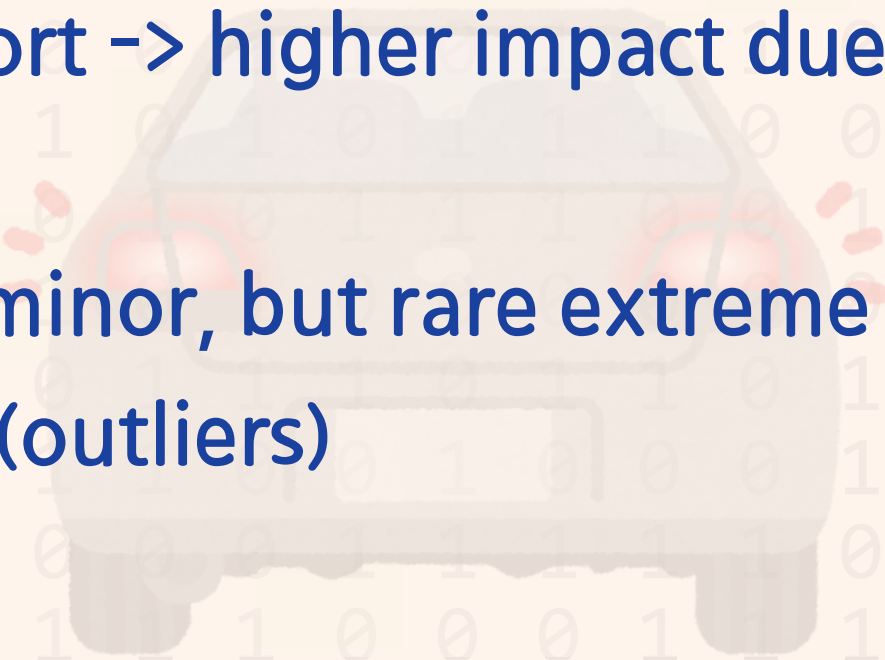
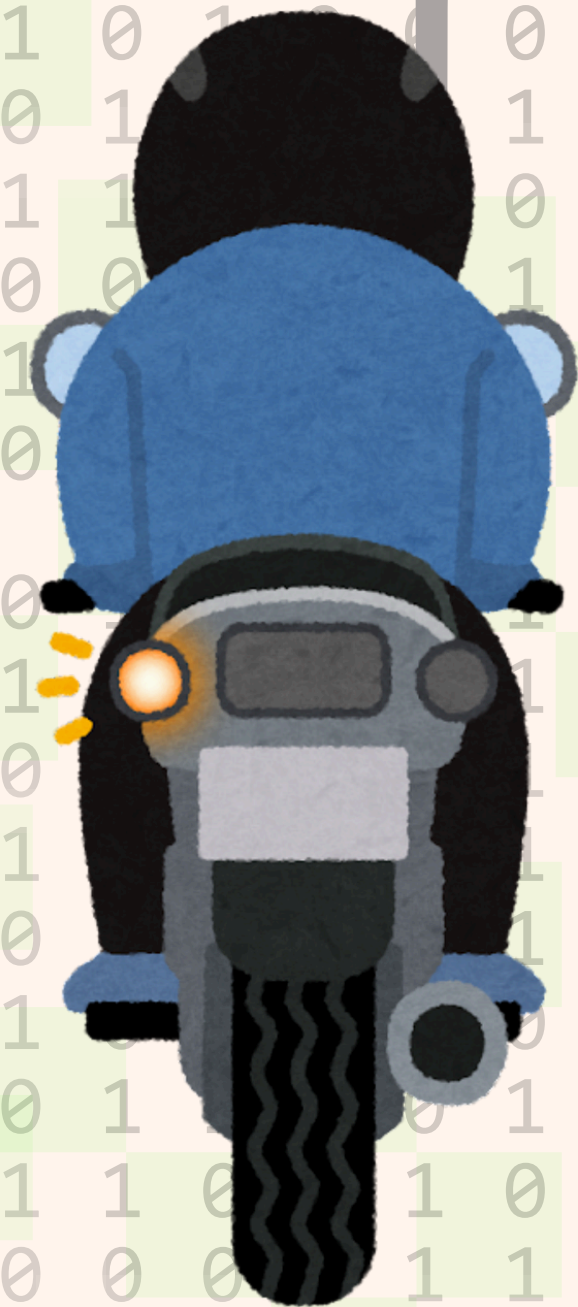




WRAP-UP DISCUSSION



- Crash frequency is highest in Brooklyn and Queens, indicating the influence of traffic density and population
- Severity does not follow frequency (Manhattan has the highest fatality rate despite fewer crashes)
- Vehicle type impacts severity:
 - Motorcycles -> highest casualties per crash
 - Public transport -> higher impact due to passenger numbers
- Most crashes are minor, but rare extreme events drive overall casualties (outliers)

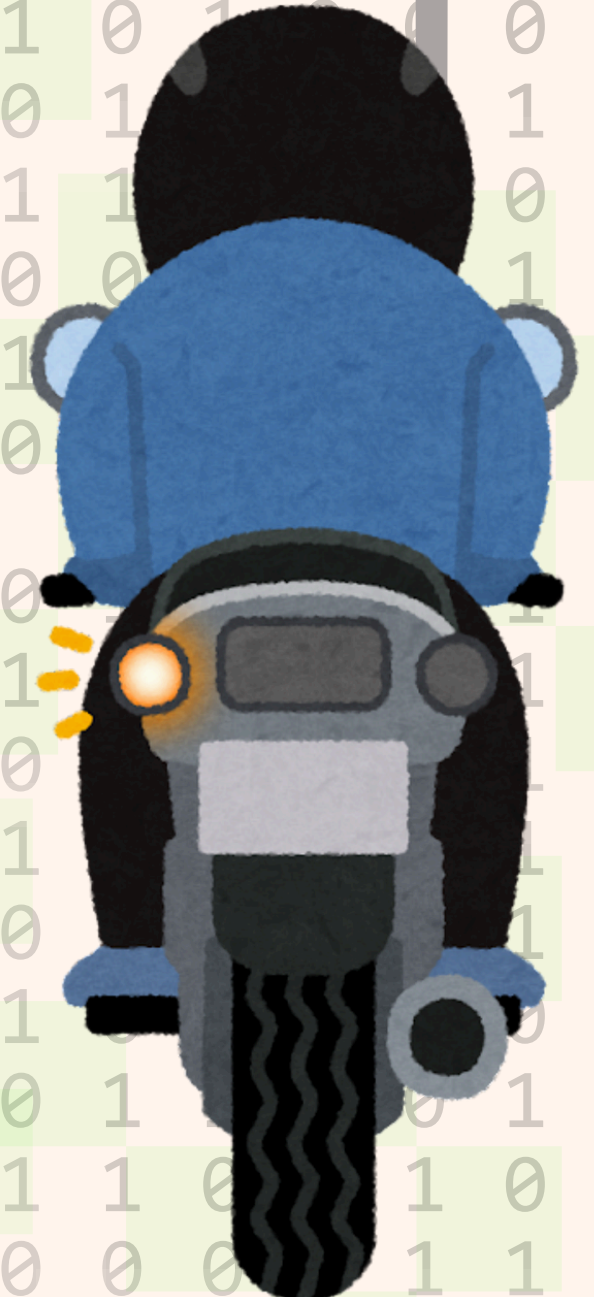
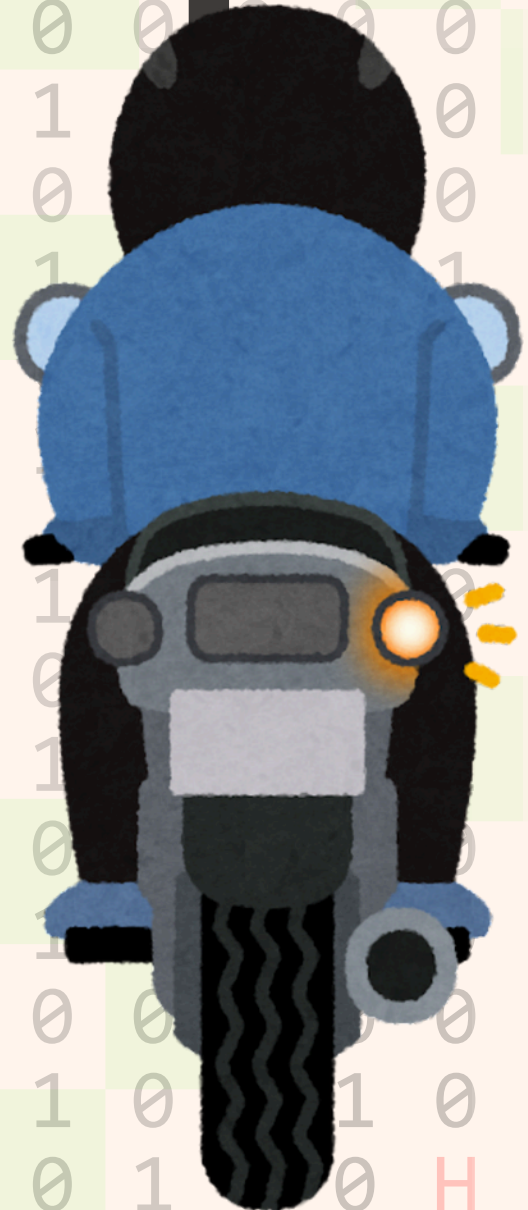




WRAP-UP CONCLUSION



- Road safety patterns are shaped by both location and vehicle type
- High-frequency areas do not equal the highest severity
- Severity:
 - vehicle vulnerability
 - urban environment
- Effective strategies must:
 - reduce crash frequency
 - target high-risk crash types

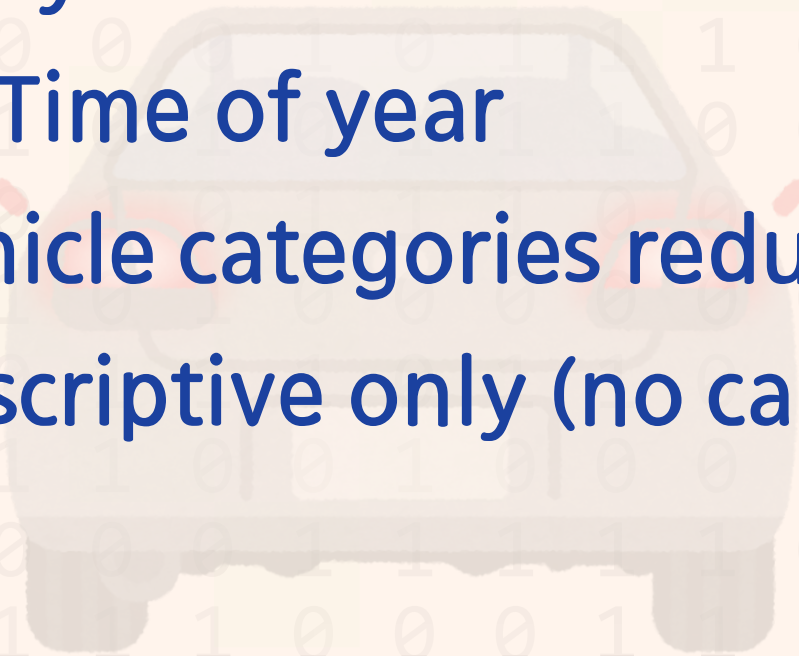
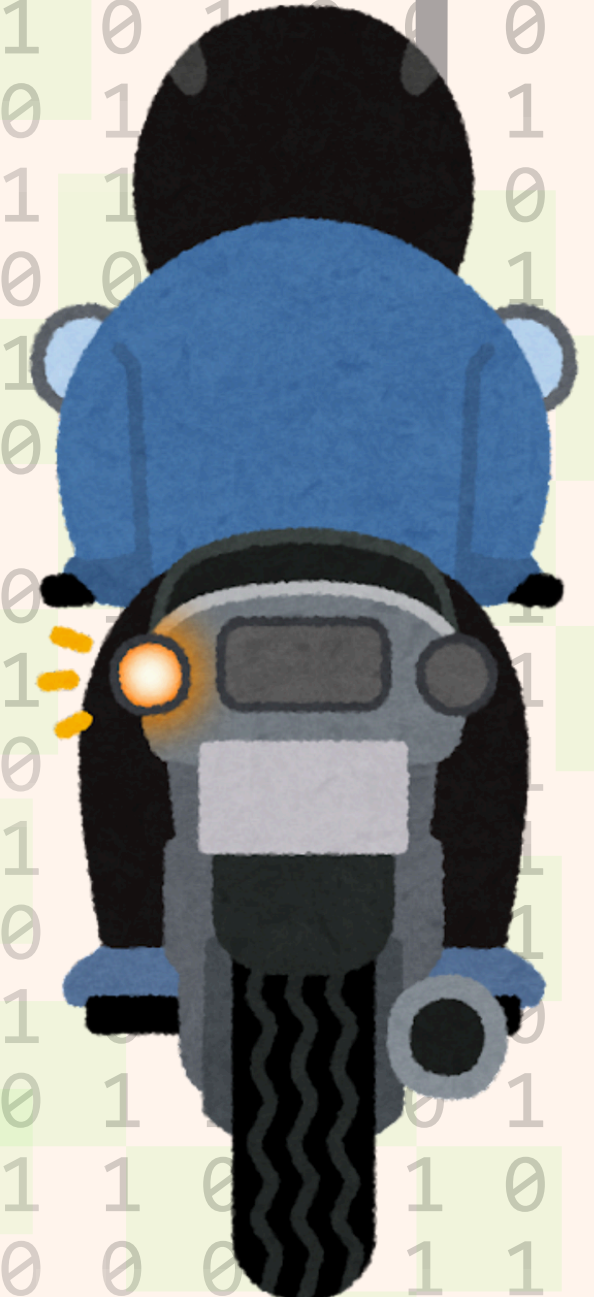
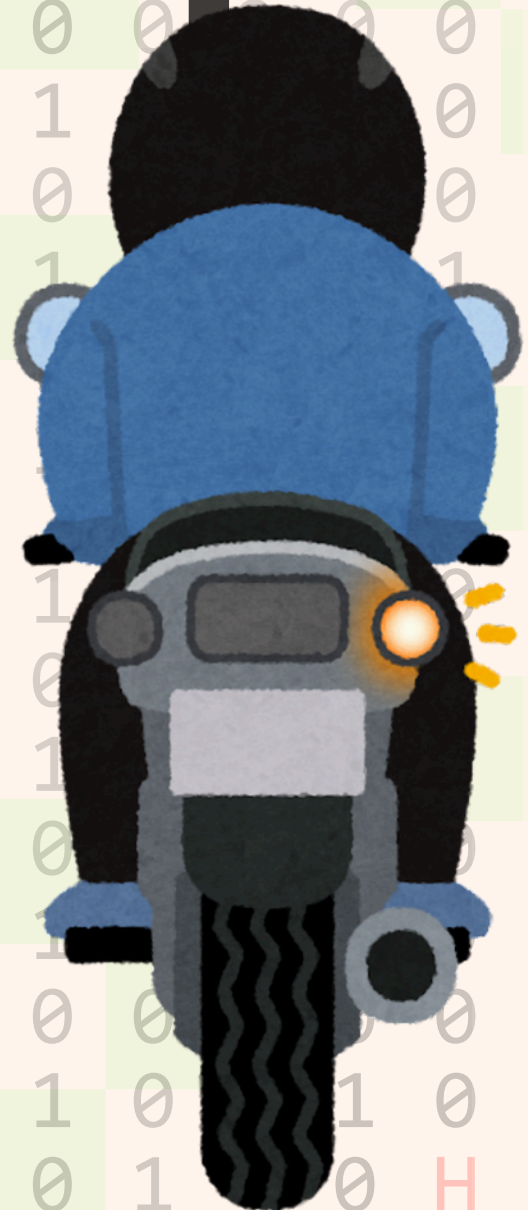




WRAP-UP CRITIQUE



- Data includes only reported crashes -> possible underreporting
- Missing key variables:
 - Infrastructure
 - Driver behavior
 - Time of day
 - Weather/Time of year
 - Broad vehicle categories reduce detail
- Analysis is descriptive only (no causal conclusions)



THANK YOU

