Traffic Safety in Washington, D.C.

Darian Madere
Nimu Sidhu

Overview

"Safe streets are for everyone and need to be in every neighborhood in DC. I don't care if you're walking, riding, or driving, you deserve to get from point A to point B safely."
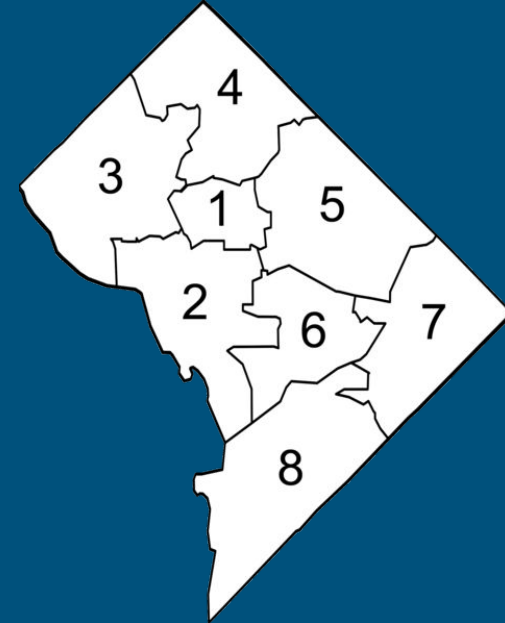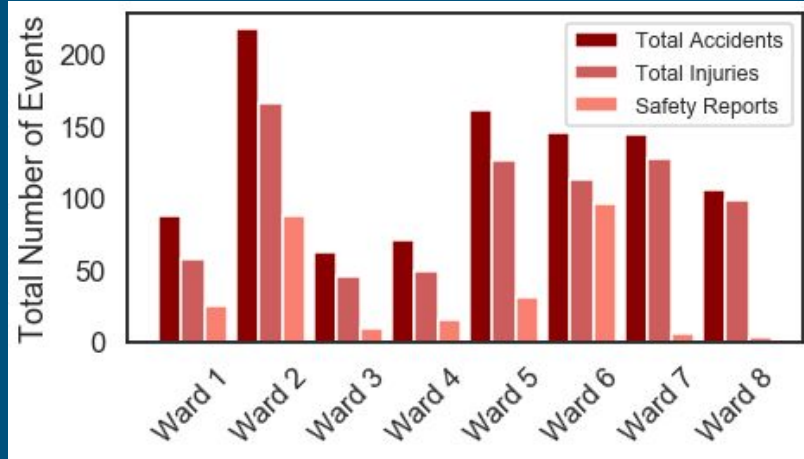
- Councilmember Charles Allen

Data Sources

We used four datasets from Open Data DC in this analysis:

1. Crashes in DC
2. Vision Zero Safety
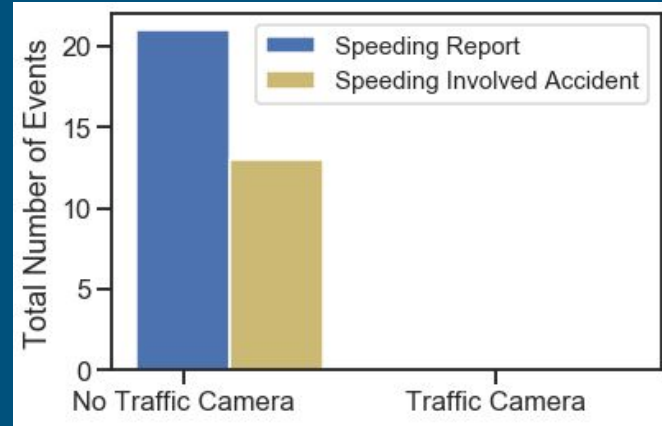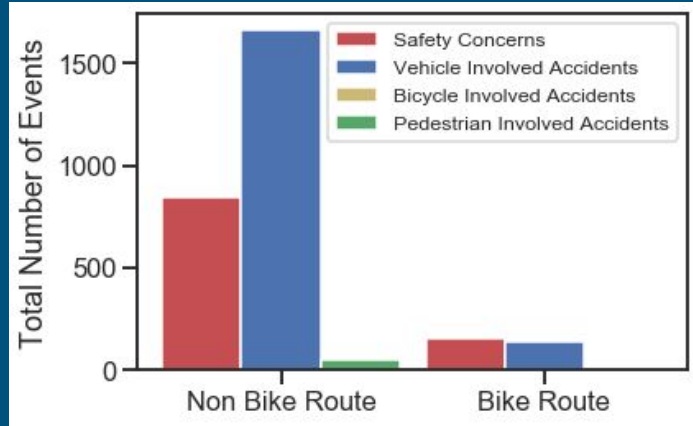3. Traffic Cameras
4. Signed Bike Routes

Safety across Wards

Result: Number of traffic accidents, injuries, and safety concern reports vary significantly across wards

Recommendation: Increase traffic safety measures in Wards 2 and 6
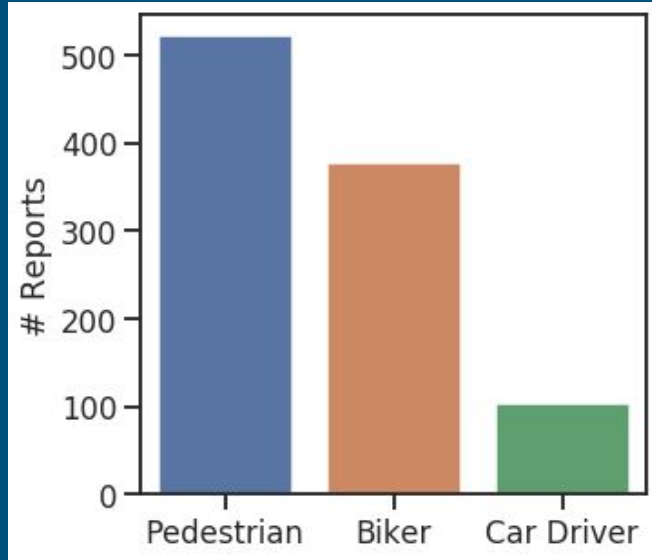
Traffic Safety Measures

Result: Blocks containing bike routes or traffic cameras are significantly safer.

Recommendation: Identify additional safety factors present on blocks containing bike routes and traffic cameras and instantiate these as traffic safety measures.

Safety concern reports and safety
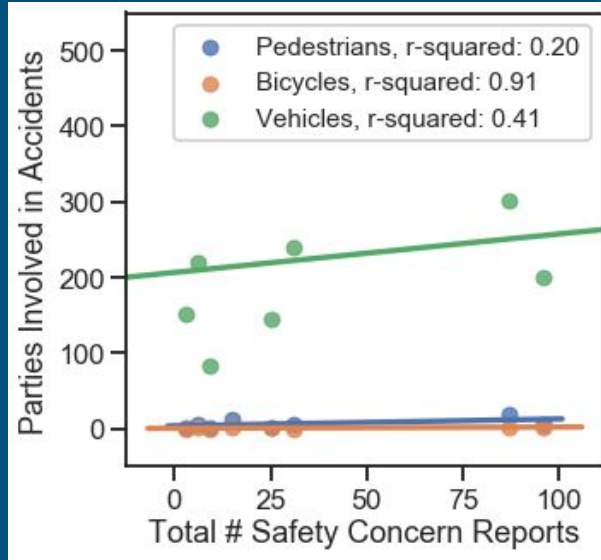
Result: Traffic safety concern reports have low correlation with the number of vehicles, pedestrians, and bicycles involved in accidents.

Recommendations

1. Identify traffic safety factors that correlate with the presence of bike routes and traffic cameras. Establish and implement traffic safety measures based on these factors.
2. Increase traffic safety measures, including number of bike routes and traffic cameras, in Wards 2 and 6.

Questions?

Appendix: Chi-Squared Test

$$\chi^2 = \sum \left[\frac{(fo - fe)^2}{fe} \right]$$

f_o = the observed frequency (the observed counts in the cells)

f_e = the expected frequency if NO relationship existed between the variables

Appendix: Linear Regression

Linear regression finds the smallest possible sum of squared residuals, or distance between the observed values and fitted values.

$$R^2 = \frac{SSR}{SST} = 1 - \frac{SSE}{SST}$$

$$SST = \sum (y - \bar{y})^2$$

$$SSR = \sum (y' - \bar{y'})^2$$

$$SSE = \sum (y - y')^2$$