Vision Zero: A Journey towards Safer Cities

Alia Kasem

Introduction to Vision Zero

- **Origin:** Sweden, 1997
- **Central principle:** "Life and health can never be exchanged for other benefits within society."
- **Goal:** Create a transportation network with no fatalities or serious injuries
- **Implementation:** Pedestrian, cyclist, and vehicle safety
- **Adoption:** Netherlands, UK, US (cities like Boston, San Francisco, California, and NYC)

Vision Zero in New York City

- **Introduction:** Vision Zero Action Plan by Mayor de Blasio in 2014
- **Goal:** Reduce fatalities by combining process and development enforcement, education and engineering
- **Stakeholders:** City Hall, Police Department, Department of Transportation, Taxi and Limousine Commission, Department of Citywide Administrative Services, Department of Health and Mental Hygiene
- **Measures:** Enforcement against speeding, redesigning intersections, slow zones in residential neighborhoods and school zones, increase in speed humps, speed boards, red lights, speed cameras

Vision Zero Mitigation Measures

- Safety engineering improvements at 50 intersections and corridors
- Creation of 25 new arterial slow zones
- Installation of speed cameras at 20 new locations, 250-speed bumps
- Enhanced maintenance of street markings
- Additional street reconstruction safety projects
- National and international best practices survey
- High-quality ad campaign against speeding, failure-to-yield, and reckless driving
- Increased "Choices" anti-DUI campaign

Vision Zero Mitigation Measures Cont.

- Expanded safety education in schools
- Partnership with senior centers for feedback
- Increased hands-on safety demonstrations
- Addition of safety flyers and messaging in DOT mailings

Vision Zero Data Analysis

- Sources: NYPD Collision Reports, NYC Open Data, NYPD Motor Vehicle Collision
- Approach: Kolmogorov-Smirnov (K-S) test to check if two samples are drawn from the same distribution
- Null Hypothesis: The distribution of daily accidents before and after Vision Zero is the same
- Rejection of Null Hypothesis if p-value < 0.01
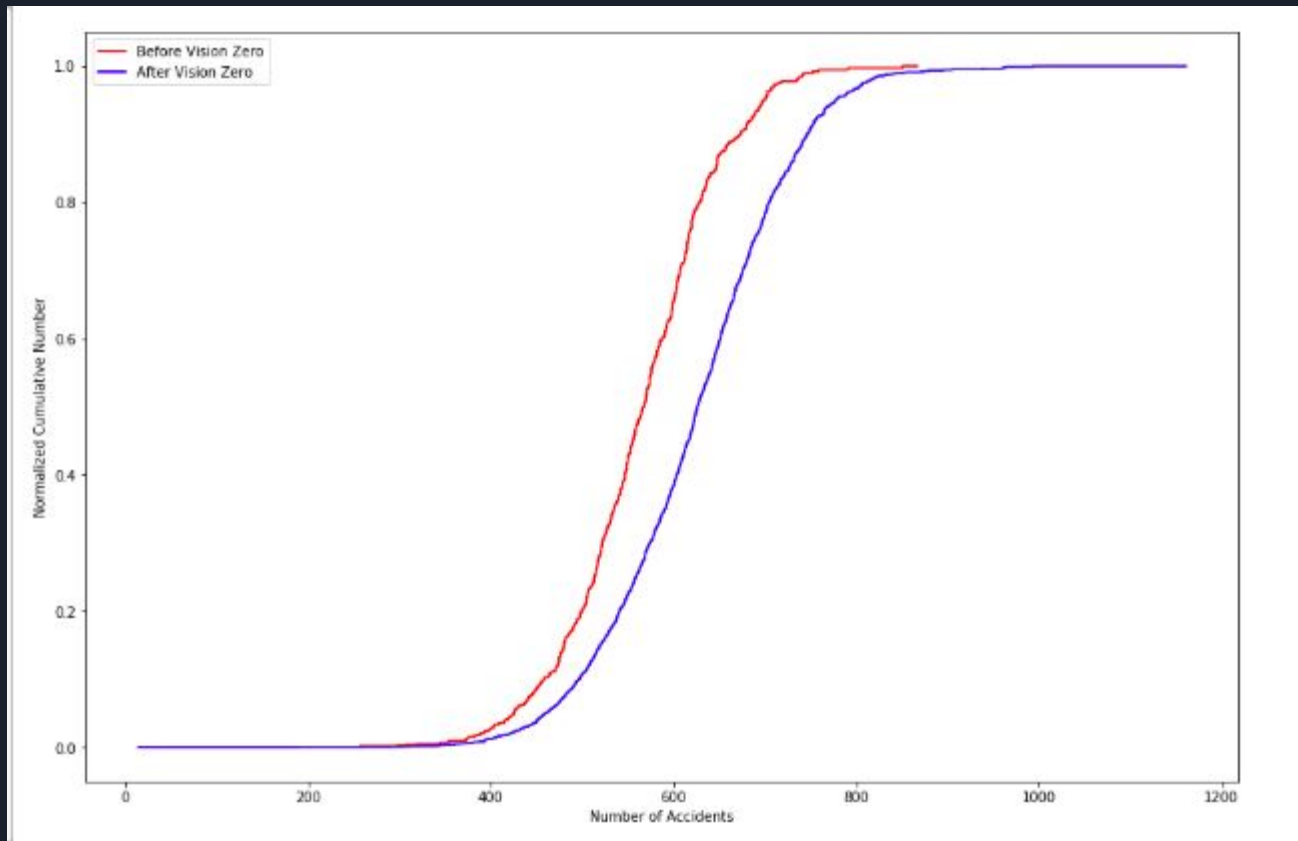
Number of accidents before and after the Vision Zero Adoption.

Vision Zero Adoption Date.
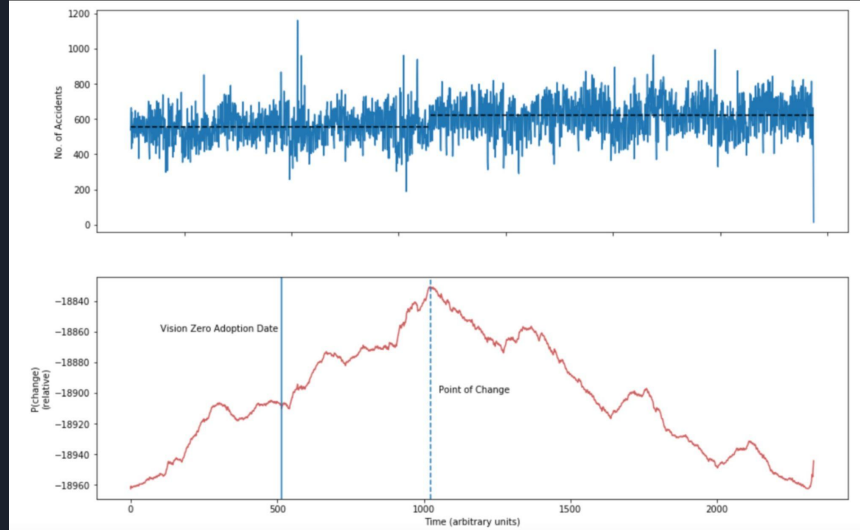
The above figure depicts the mean of the time series before and after the point of change. The figure below it depicts the probability of each point in the time series being the point of change.

Results of the K-S Test

- A significant difference in the distribution of daily accidents before and after Vision Zero (p-value < 0.01)
- Increase in rate of daily accidents after Vision Zero adoption
- The point of change does not correspond to the Vision Zero adoption date.

Conclusion

- The KS-test shows an increase in the rate of daily accidents after NYC date of adoption to Vision Zero.
- This increase does not coincide with the Vision Zero implementation date, leading to the conclusion that the implementation policies were not enough.
- There could be other factors, involved, and an event around the point of change could have caused the increase.
- Further investigation is needed to determine if this is the case.

Recommended Mitigation Measures

- Early safety planning for mobility
- Focused study on street characteristics and culture
- Inclusion of human error in planning, engineering, and enforcement
- Closer collaboration with vehicle engineers and developers
- Updated surveys of yearly vehicle numbers

Future Work

- Improved data collection
- Updated survey of vehicle numbers per-year
- Inclusion of human error in planning, engineering, and enforcement
- Study of street characteristics and culture
- Collaboration with vehicle engineers and developers for safety

Questions?