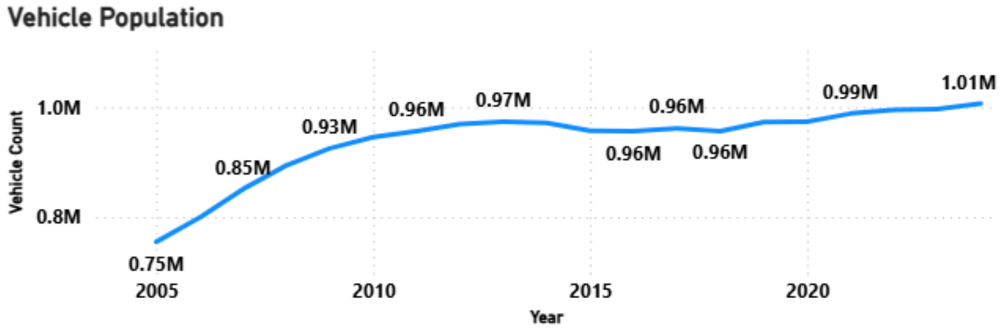
Analysis of Road Traffic & Objects Data – A Geospatial Analytics Project

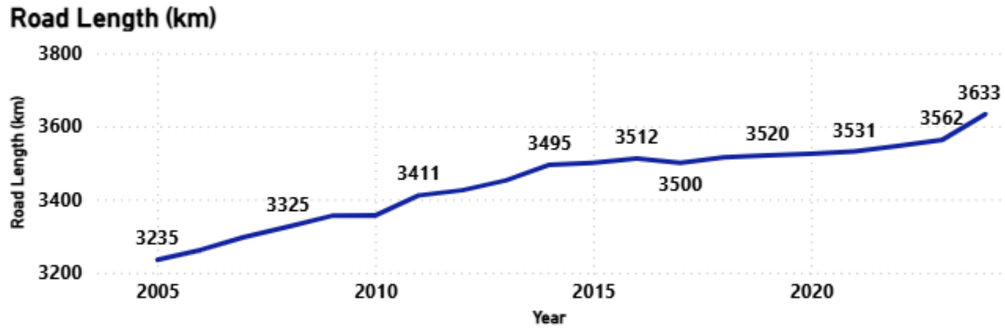
Jonathan Lee

Oct 2025

Introduction

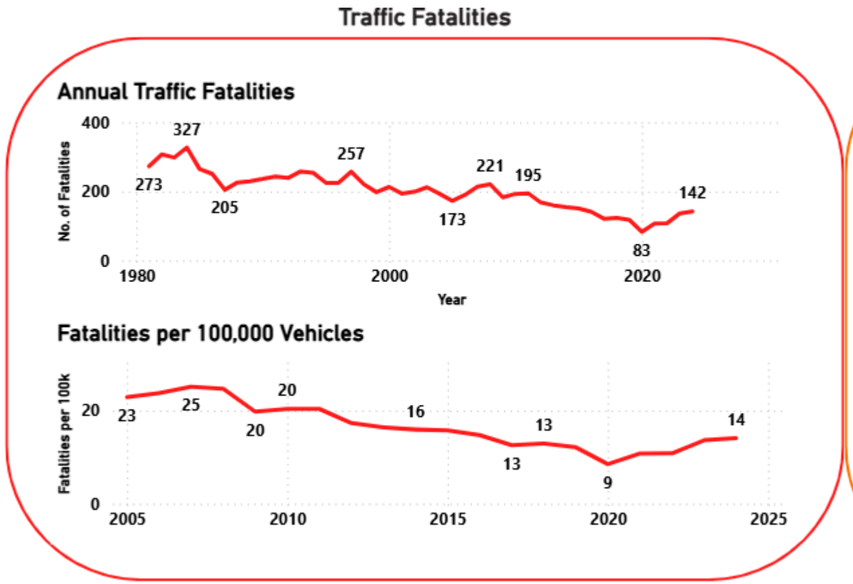
- Vehicle Population has remained steady due to the control of COE (5.2% Increase from 2015 to 2024).
- Road Length also seen a small increase of 3.8% for the same period.

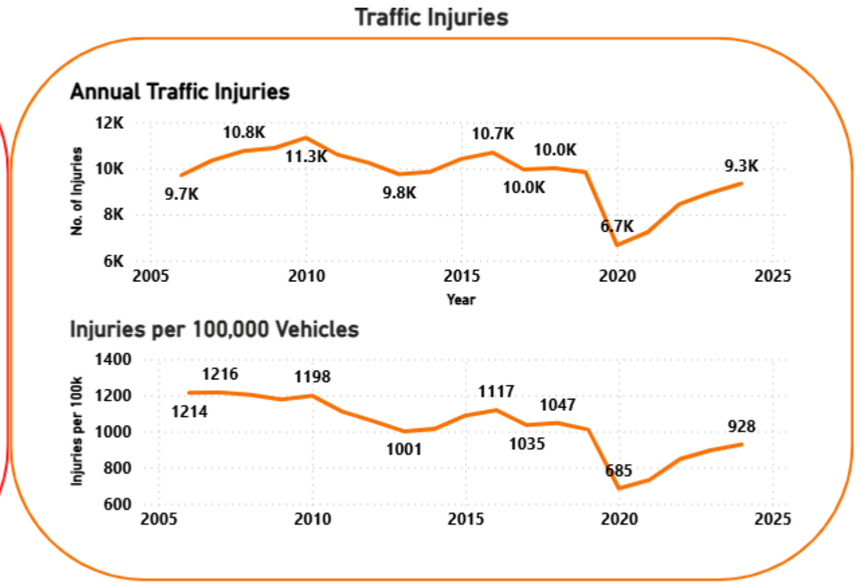




Problem

- Despite a steady decrease and record low no. of traffic fatalities and injuries in 2020, it has gradually increased





Objective

- Younger children are limited by their physical, cognitive and social development, making them more vulnerable in road traffic than adults.
  - As such, emphasizing road safety in school zones is exceptionally important.
  - This project aims to provide an analysis on road objects **within 100m buffer of school zones**.
  - The resulting analysis can be used against location specific accident data, to identify if there is any correlation and areas for road enhancement.

Data Source

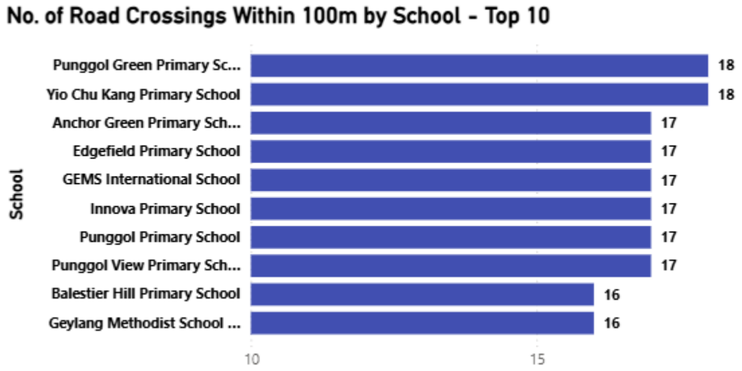
- Public datasets found from:
  - LTA Datamall - datamall.lta.gov.sg
  - Singapore open data portal – data.gov.sg
- Datasets used:
  - Geospatial:
    - School Zones
    - Road Crossing
    - Road Hump
    - Speed Regulating Strips
    - Traffic Signs
    - Road Markings
  - Static:
    - Road Traffic Accident Casualties, Annual
    - Total Kilometer of Roads
    - Annual Motor Vehicle Population by Vehicle Type

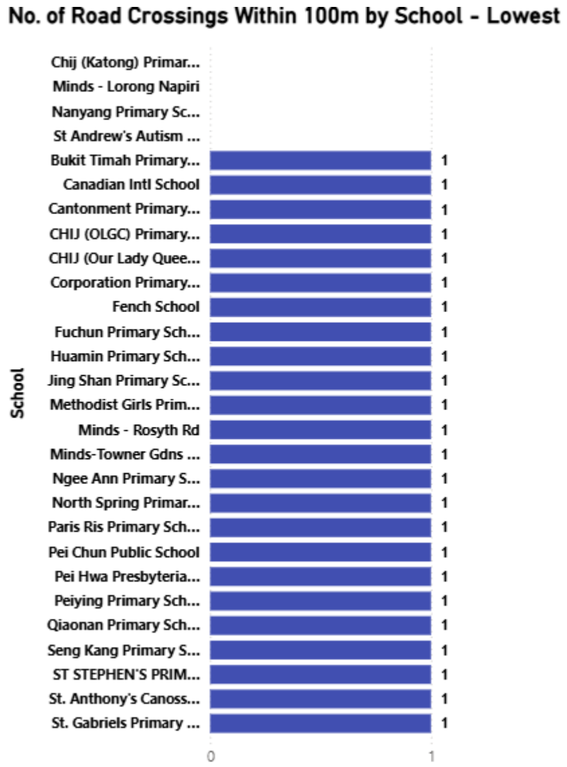
Road Objects

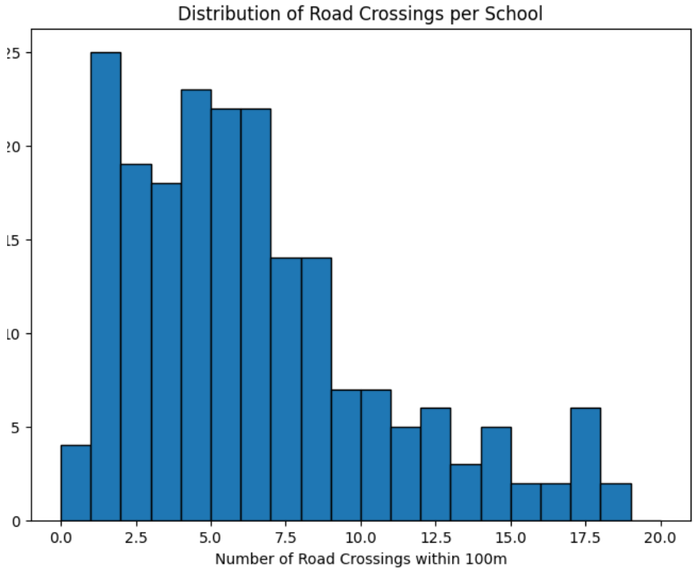
- For the purpose of the analysis, it is defined to be the following:
  1. Road Crossings
  2. Road Humps - raised section across a road to reduce the speed of vehicles
  3. Speed Regulating Strips
  4. Traffic Signs
  5. Word Markings

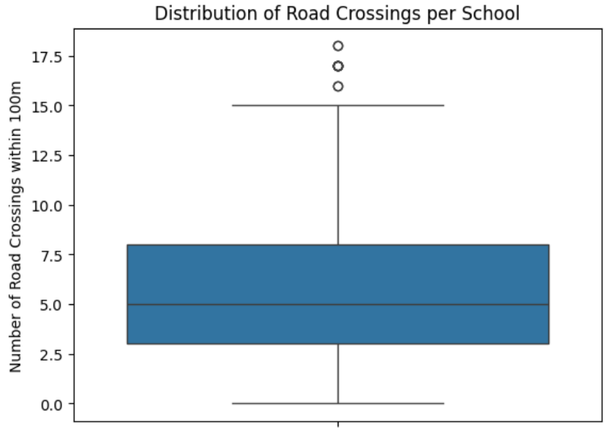
Road Crossings

- Median = 5



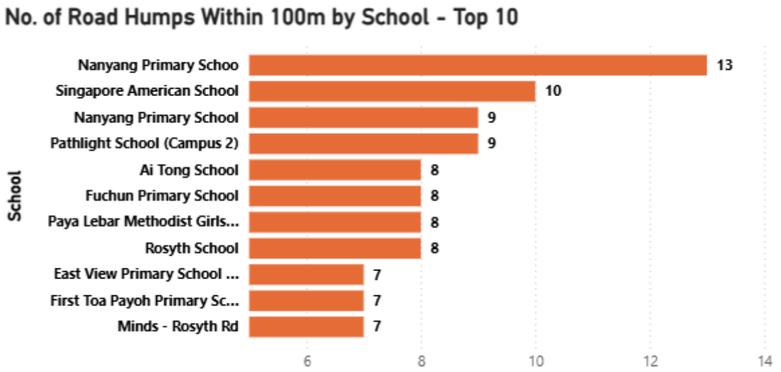


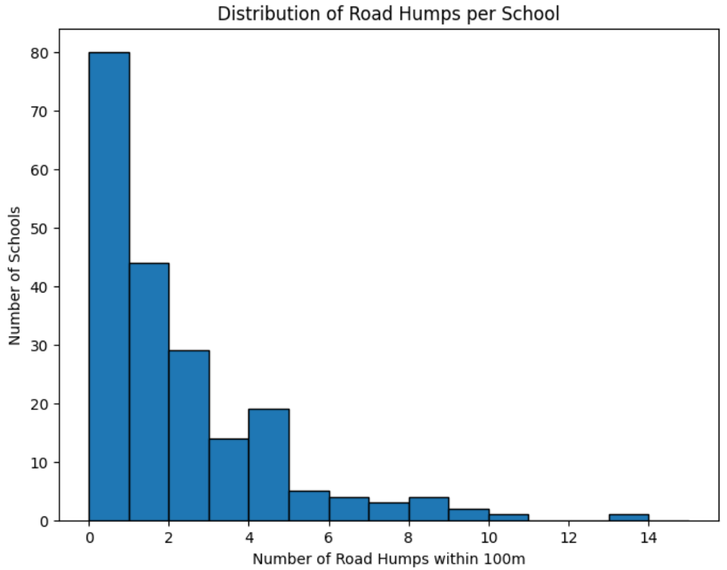


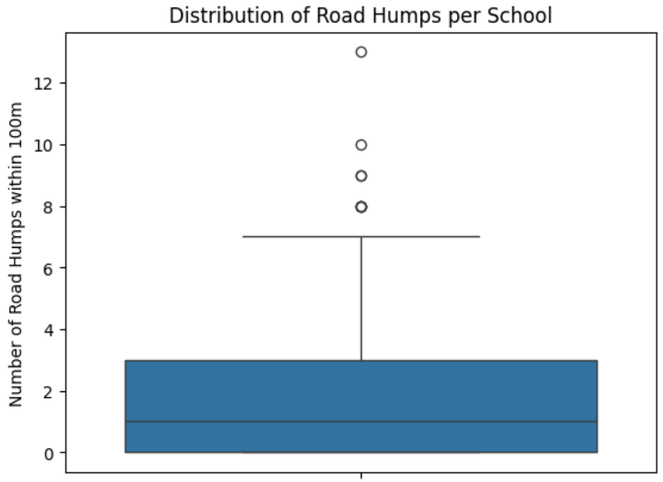


Road Humps

- Median = 1

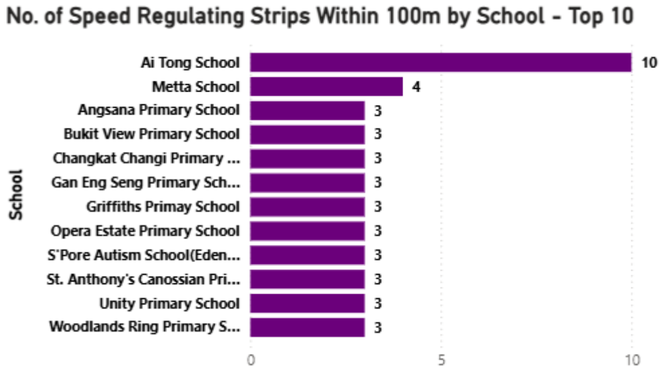


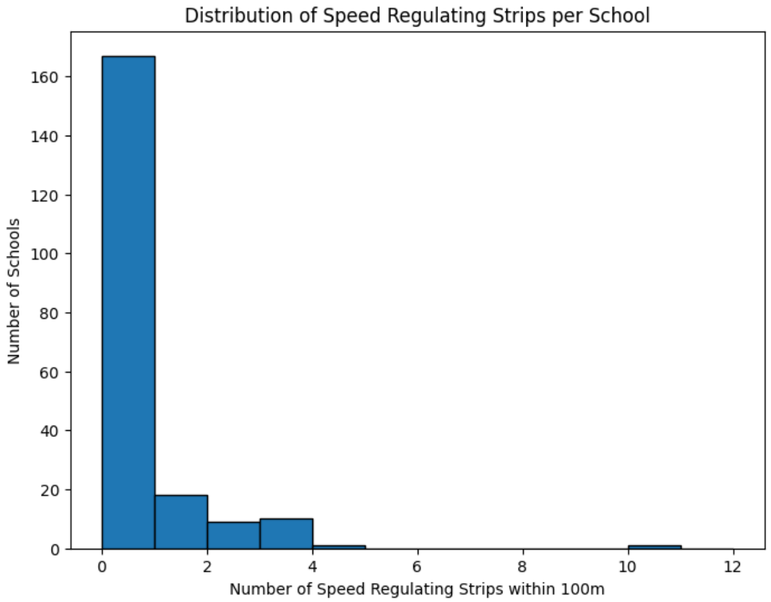


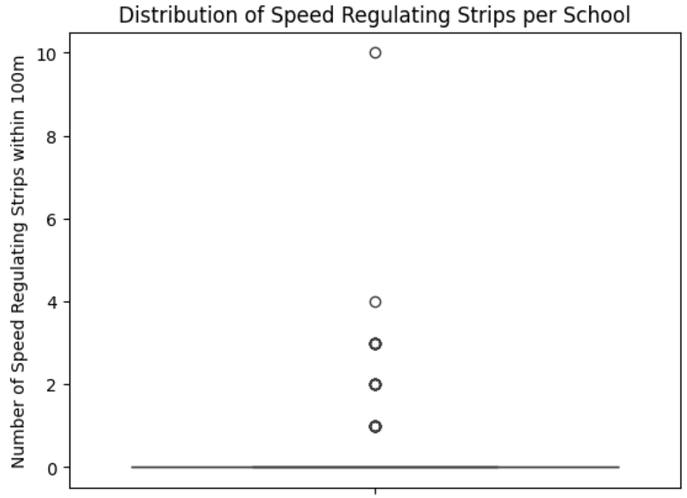


Speed Regulating Strips

- Median = 0

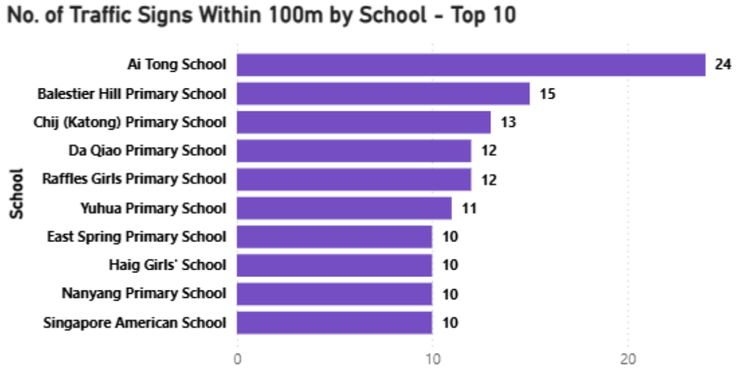


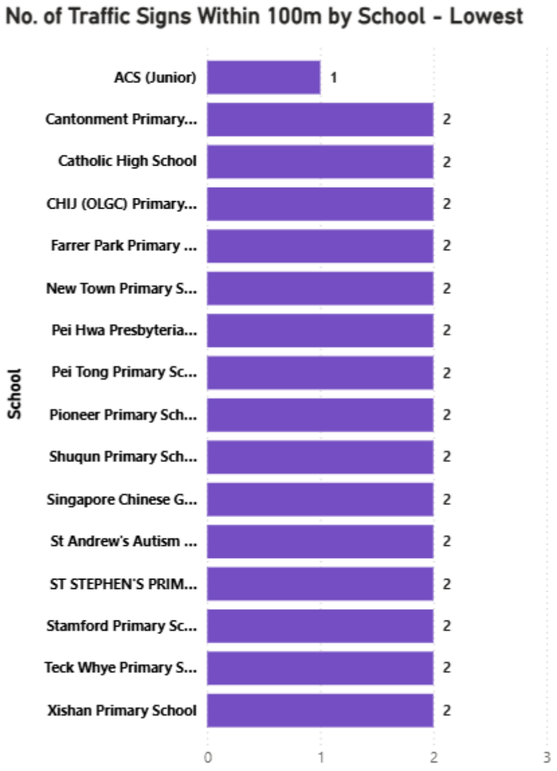


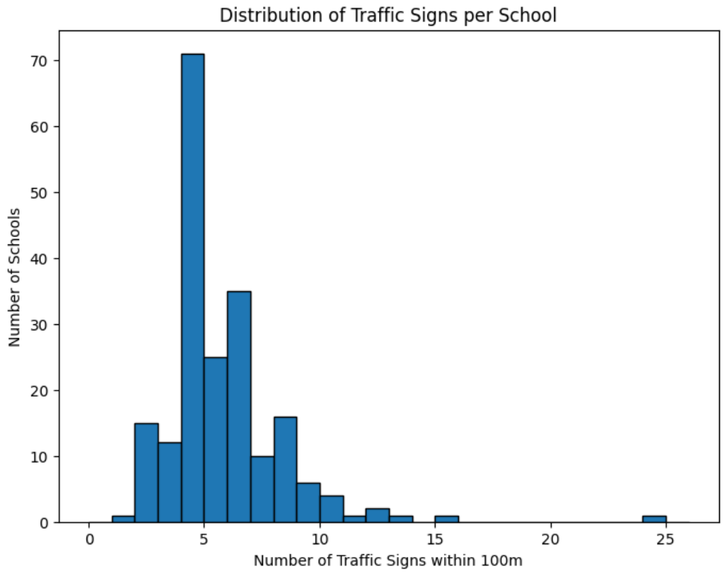


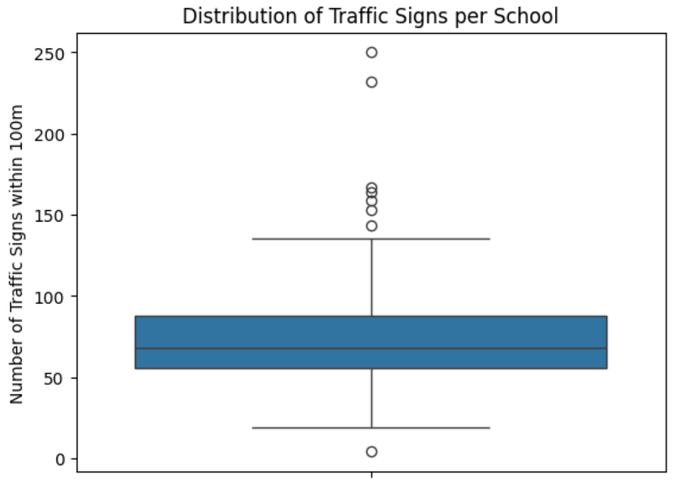
Traffic Signs (School Zone)

- Only for traffic signs related to school zones
- Median = 68



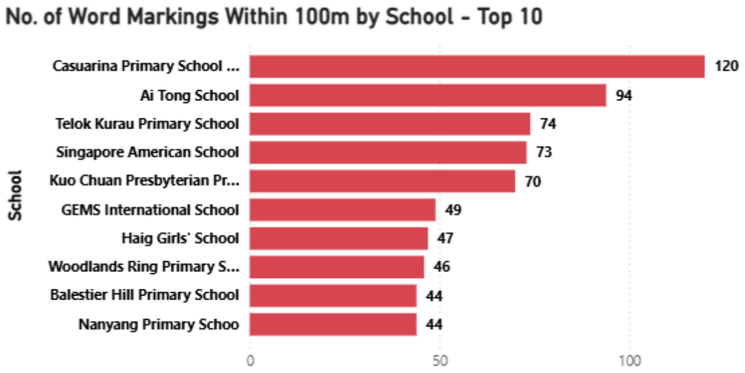


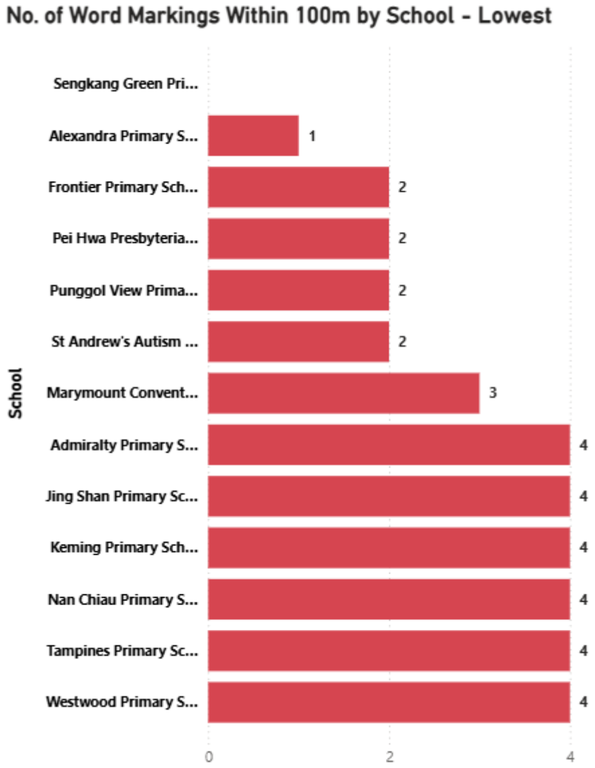


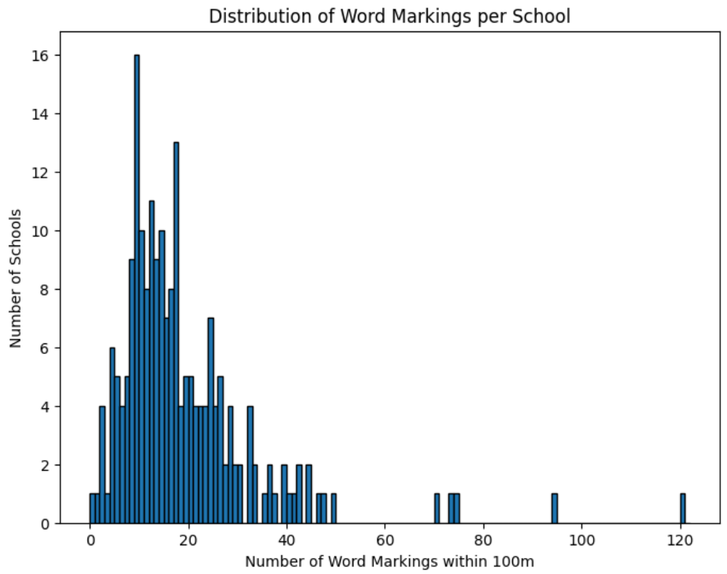


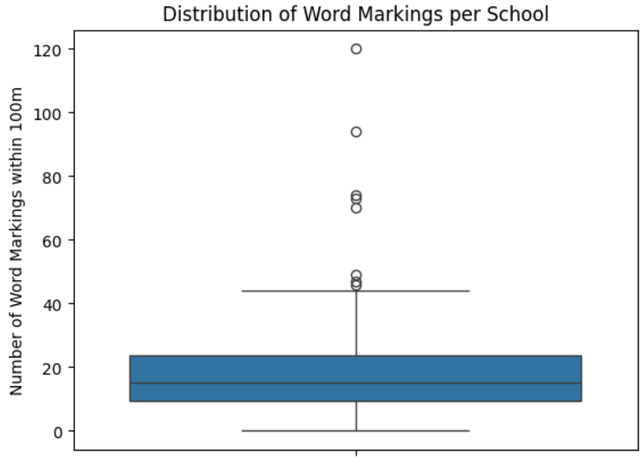
Word Markings

- Median = 15

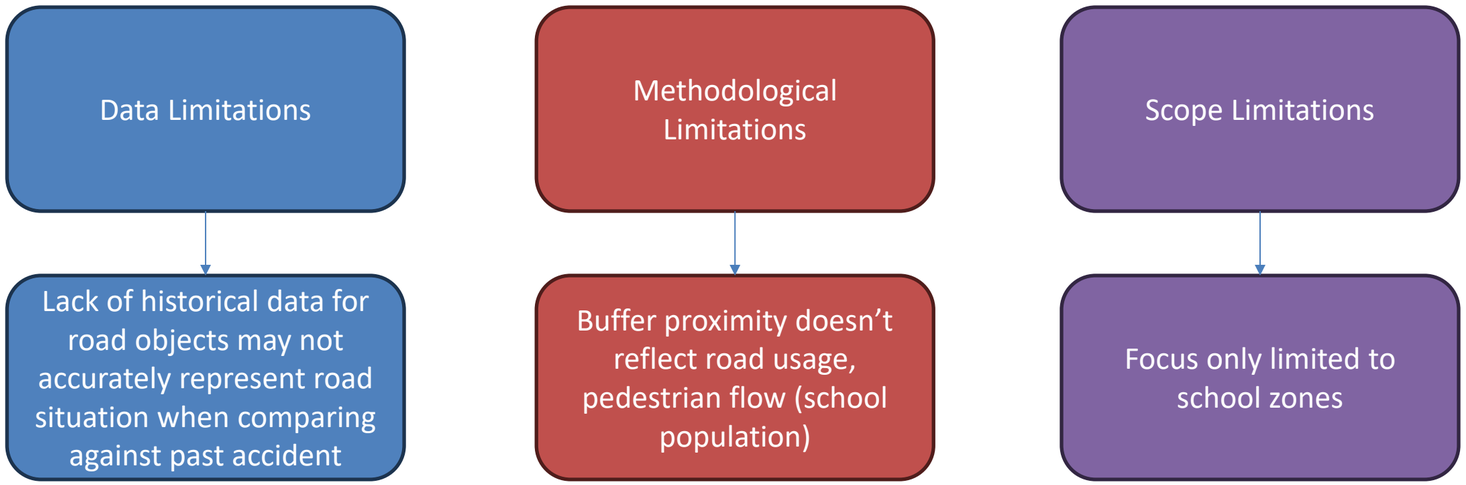




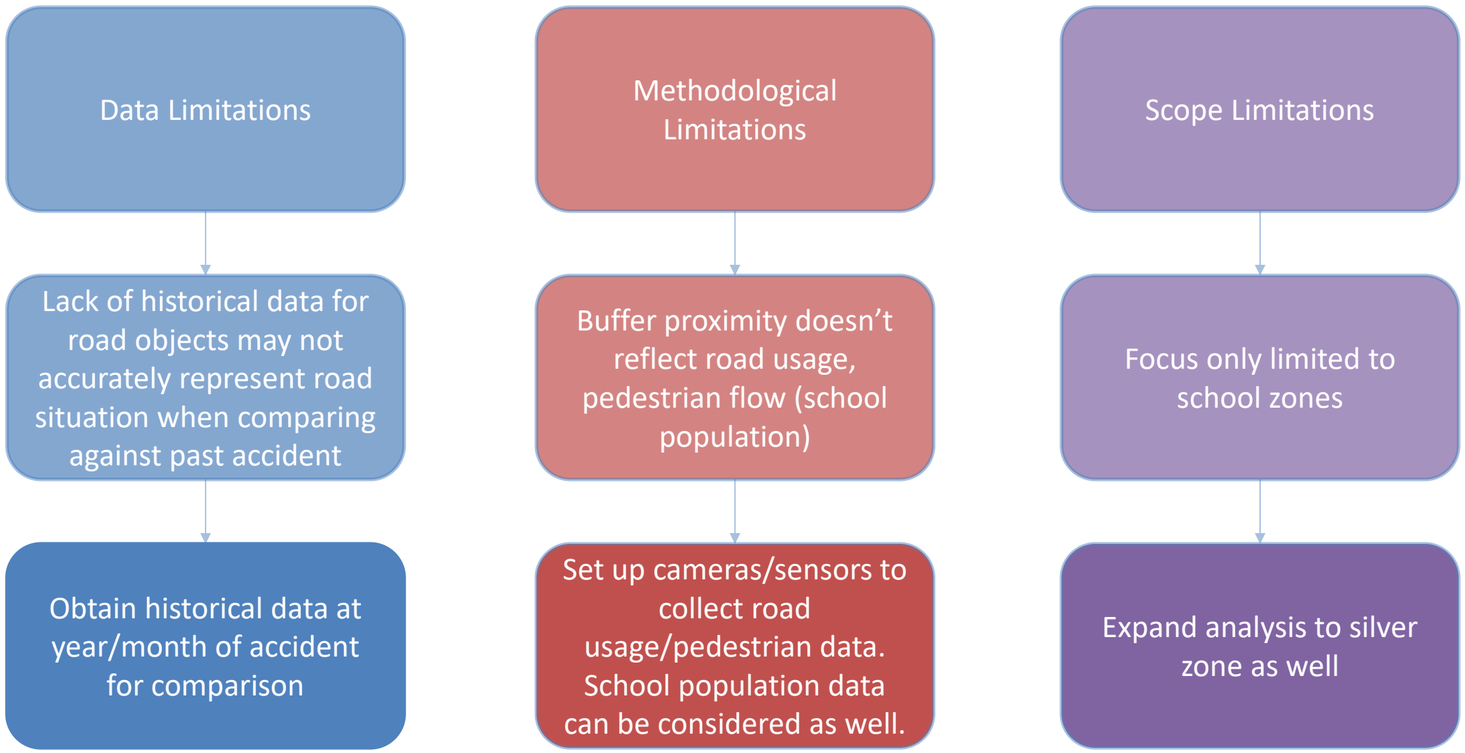




Limitations



Limitations



Recommendations

- Analysis
  - Investigate correlation between accident data (schools with most accidents) and number of road objects
- Policy
  - Prioritise schools with fewer safety features for infrastructure review
  - Develop scoring system to evaluate schools by safety readiness
- Data
  - Set up cameras and sensors to collect traffic data in school zones

Thank you!