Overview of Nova Scotia Collision Study 2007-2011

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Background

- Road safety and collision study
  - Road user safety is a growing concern in Nova Scotia
  - To improve safety, we need to better understand road user collisions
  - To track progress in safety investment
- Collision studies common in many cities
  - Fredericton, 2012
  - Toronto, 2007
  - Vancouver, 2012

Background

- Origin of the Study
  - Dalhousie Transportation Collaboratory (DalTRAC) proposal
  - NS Road Safety Advisory Committee (RSAC)
  - NS Department of Energy
- Objective of the study
  - to identify **the patterns and trends** of all reported collisions involving all types of road users in Nova Scotia.

Data Search

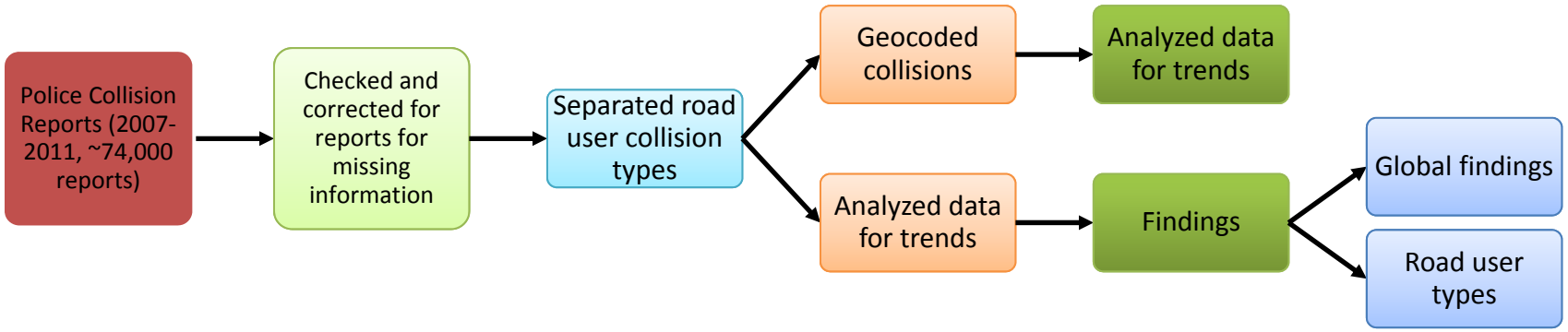
- Data Challenge
  - Who has the data?
  - NSTIR – fatality only
  - Police records, confidential issues
  - SNSMR
    - Backlog since 2006
    - System migration
    - Resource limitation
  - DalTRAC study on data challenge
- Data conditions
  - No processed data
  - Oracle data, IT issues
- Thanks to SNSMR

Data Source

- Collision records
  - Period, 2007-2011
  - Obtained from police records
- The Dataset
  - 74,414 **unique** collisions
  - involving about 208,700 individuals
- Data preparation
  - Rigorous process
    - Double entry/incomplete, inconsistent reporting
  - Cleaning for validity, consistency, uniformity
  - Locational information is limited, sparse

Database development

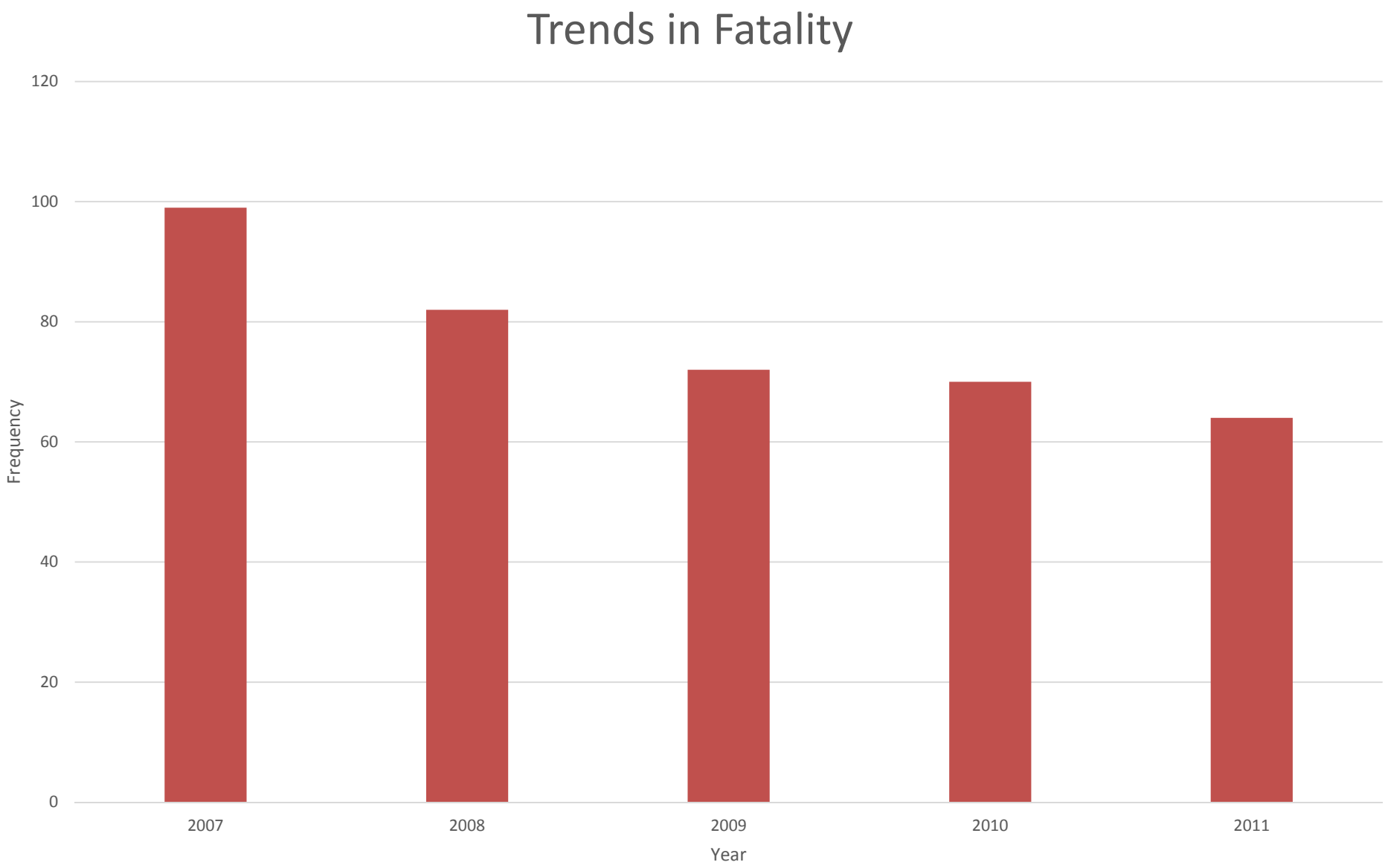
- Object-oriented database structure
- Spreadsheet applications
- Geocoding in ArcGIS



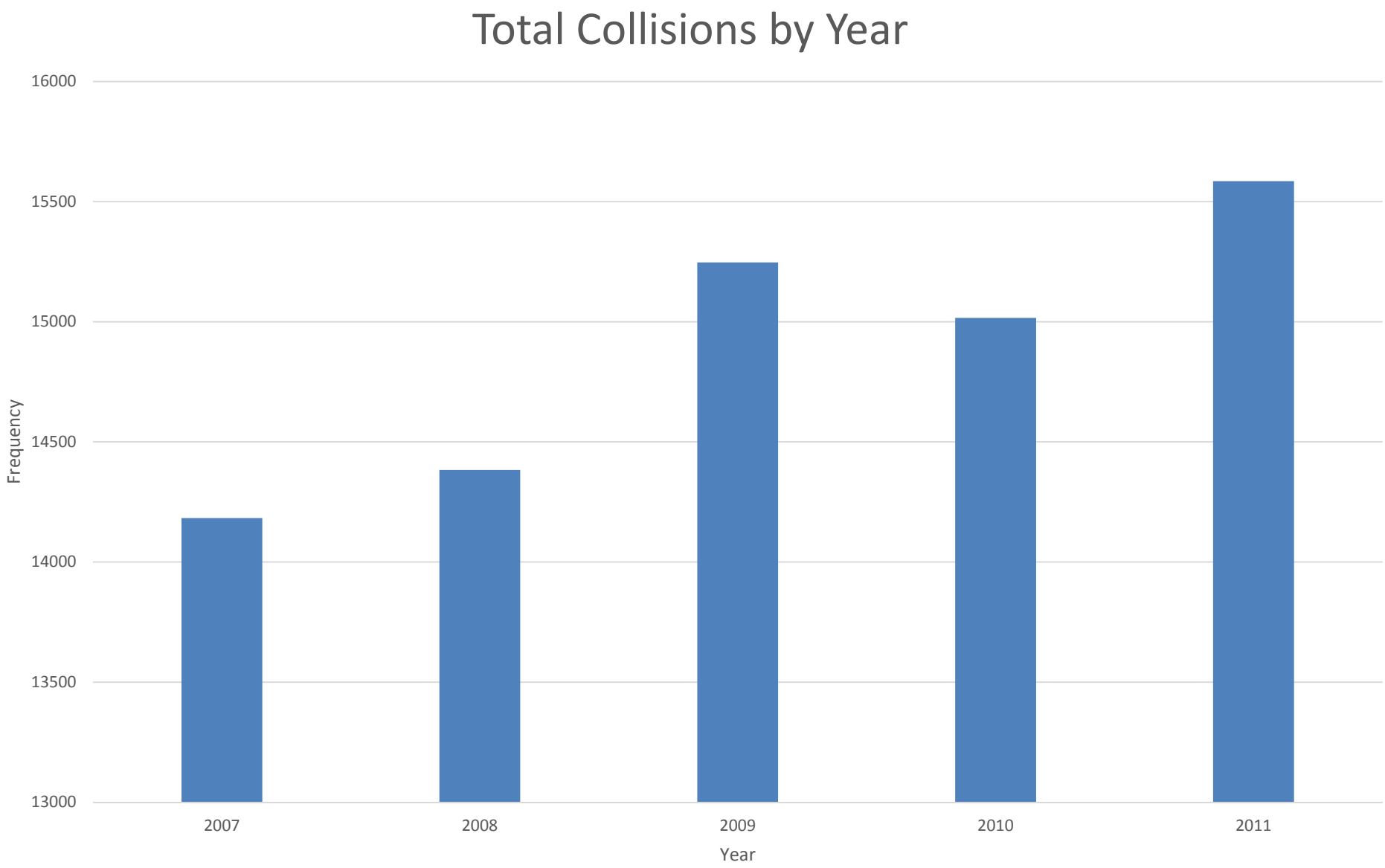
Results

- Global findings – Nova Scotia, 2007-2011
  - On average, over 14,000 collisions annually
  - Averaging 445 pedestrian and bicycle related collisions (3% of total collisions) per year
  - Average of 77 fatalities per year
- General trends
  - The number of motor vehicle collisions is increasing over the years
  - The number of fatalities is decreasing over the years

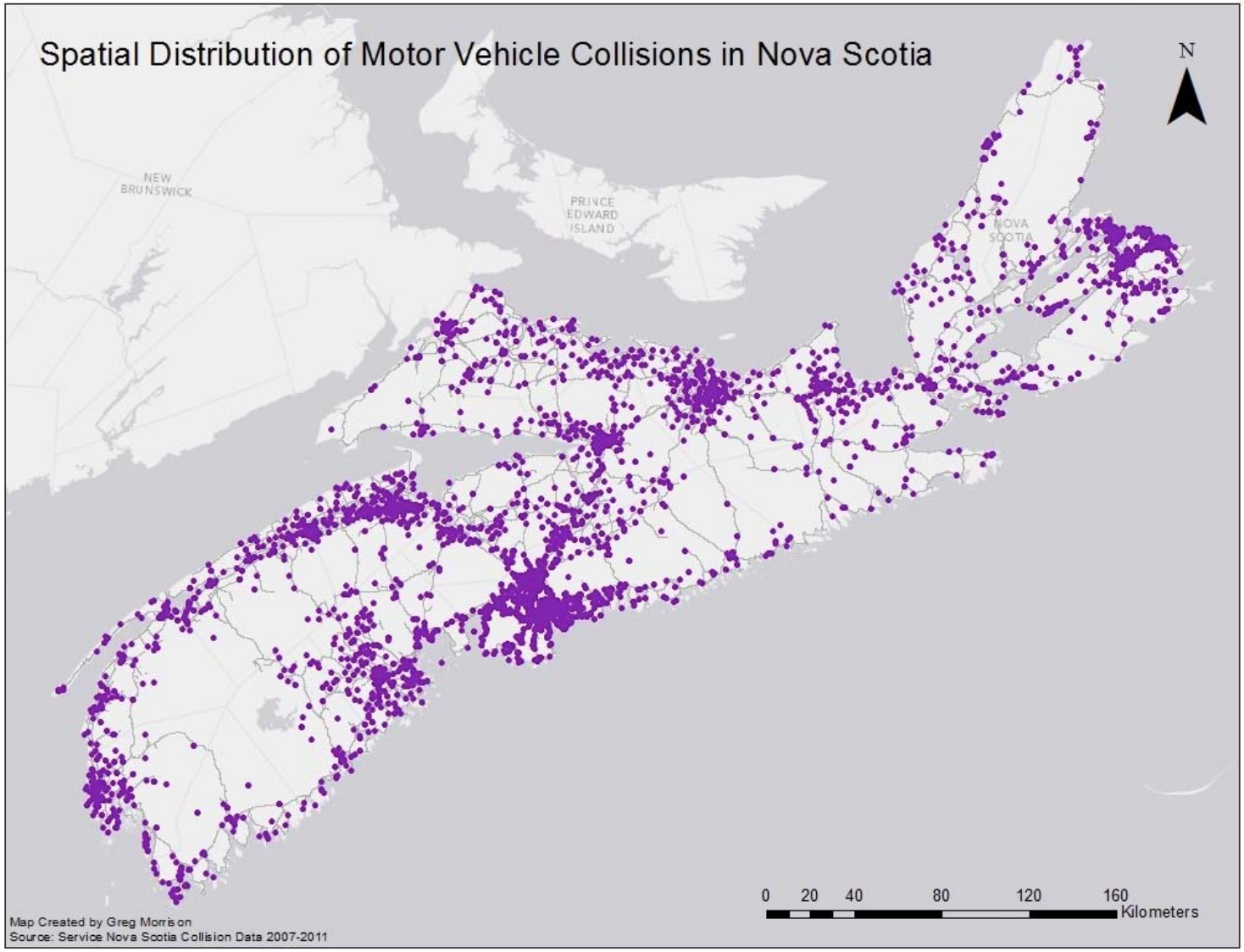
Provincial trends, 5 yrs



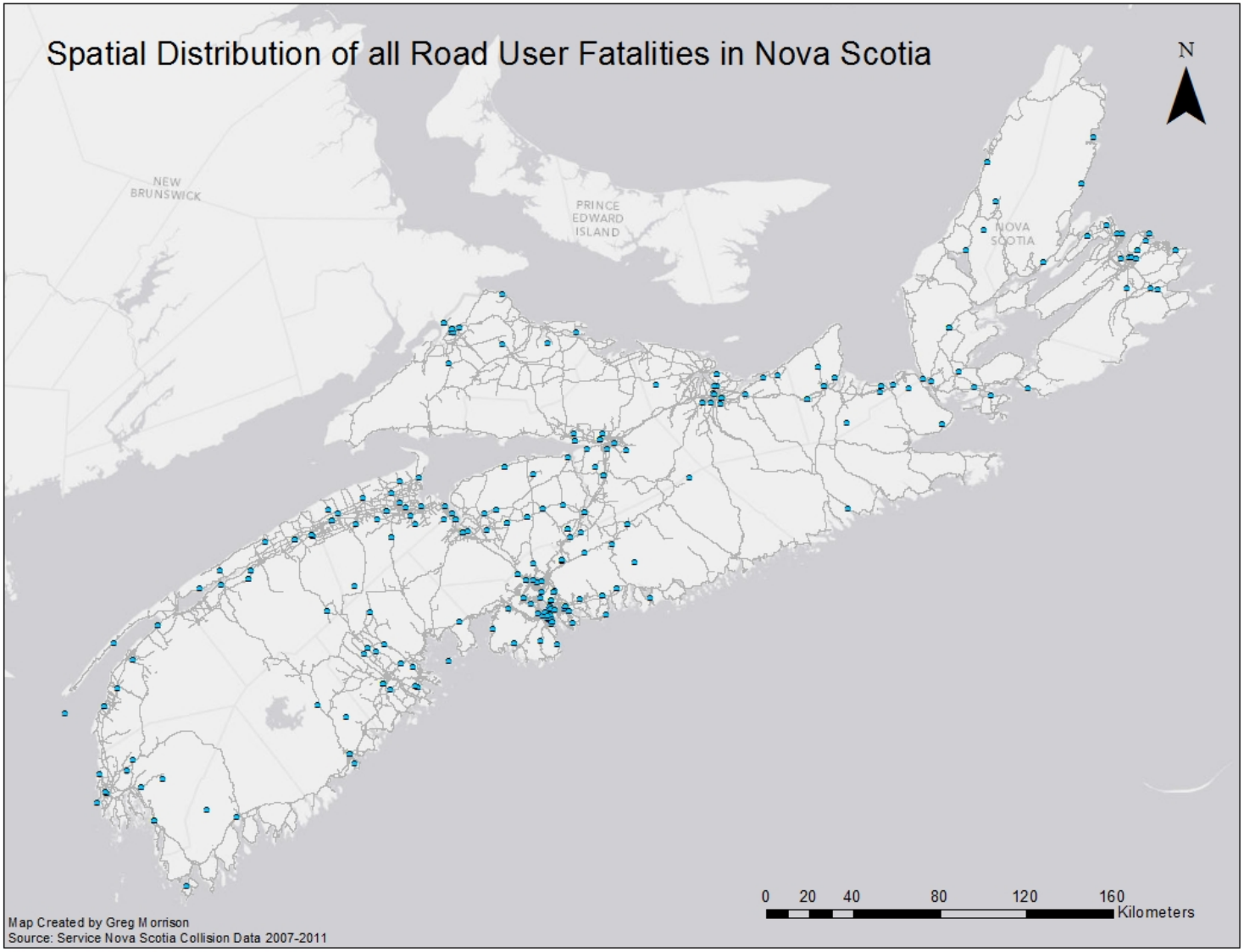
Provincial trends, 5 yrs (cond.)



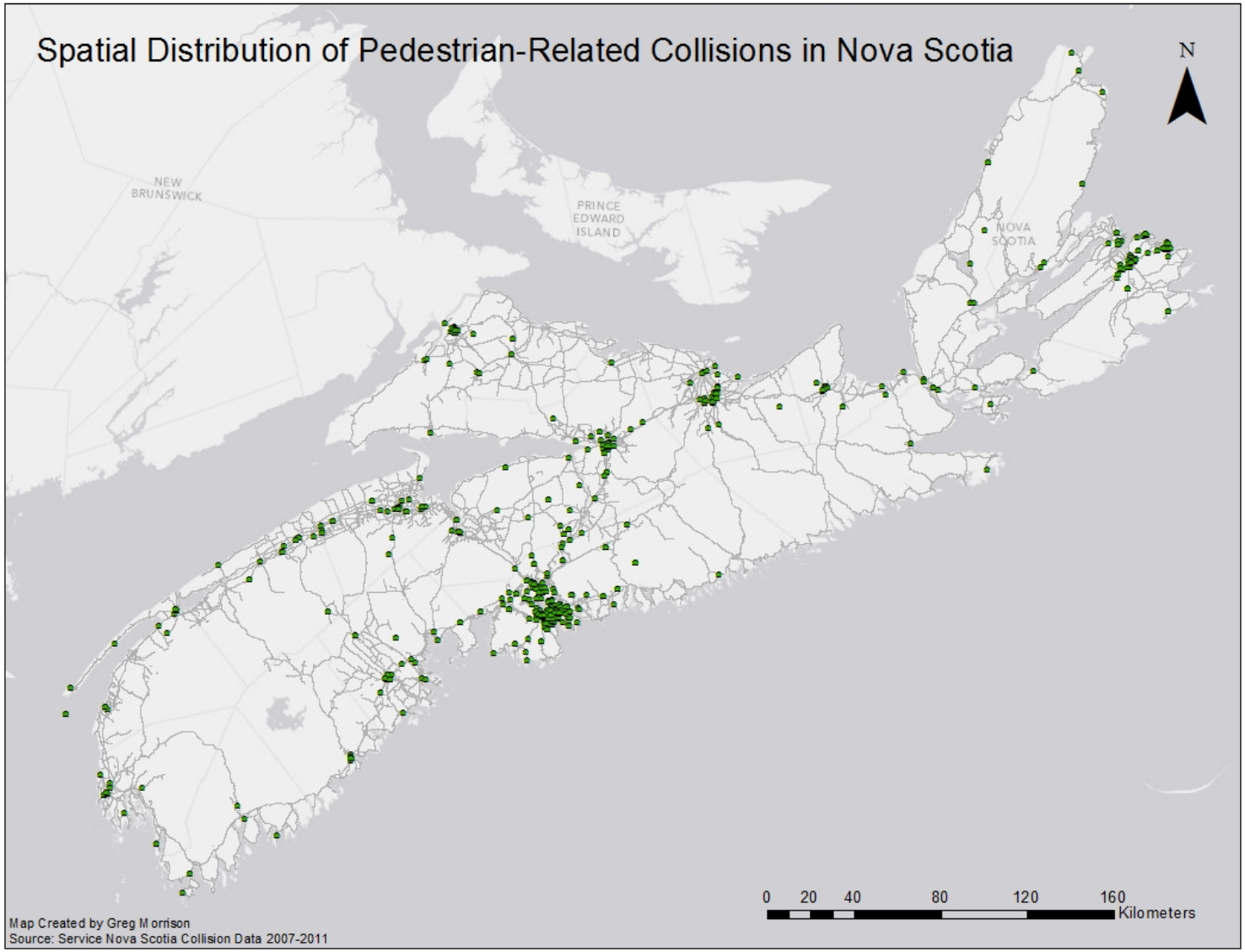
Motor Vehicle Collisions



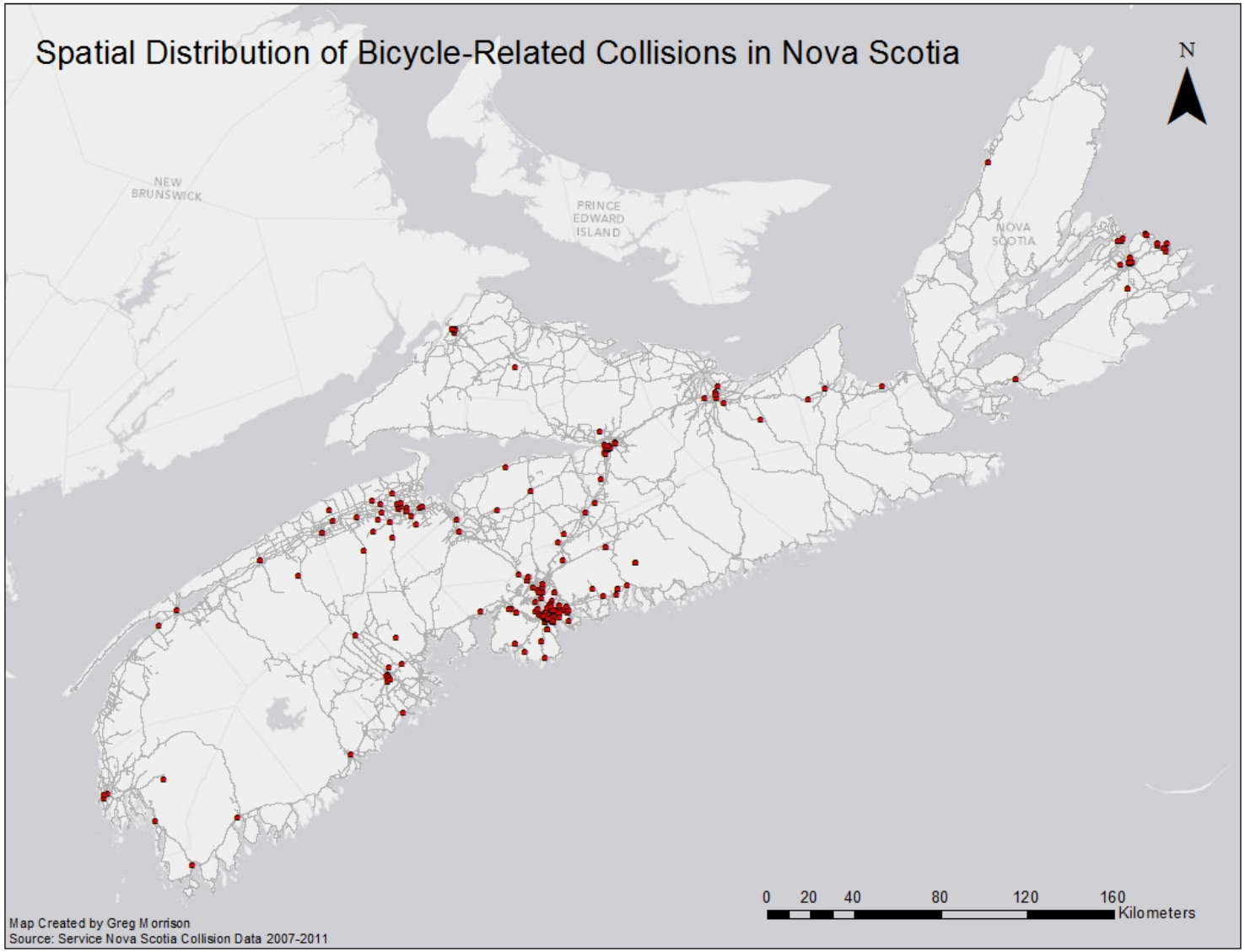
Fatal Collisions



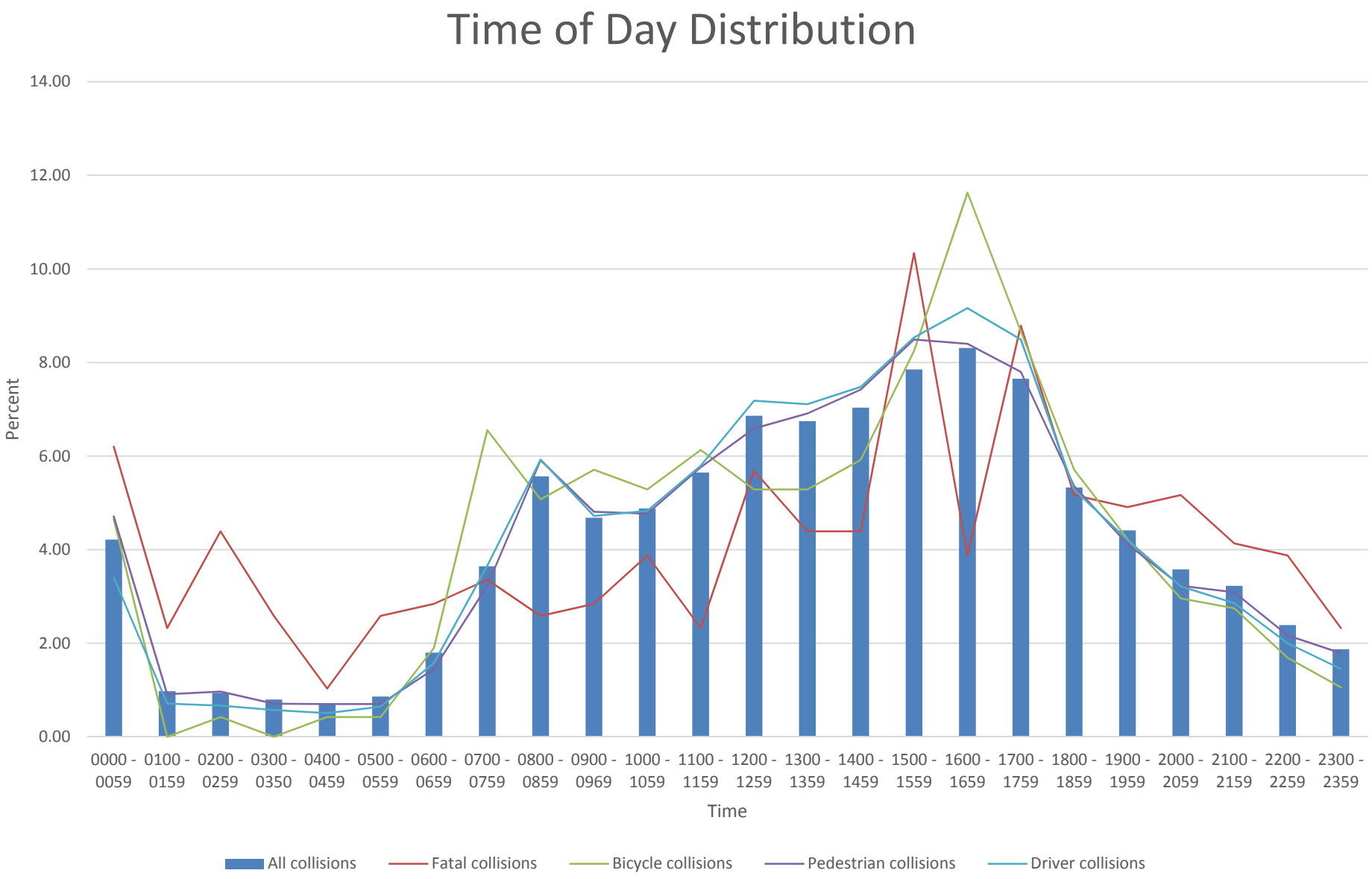
Pedestrian-Related Collisions



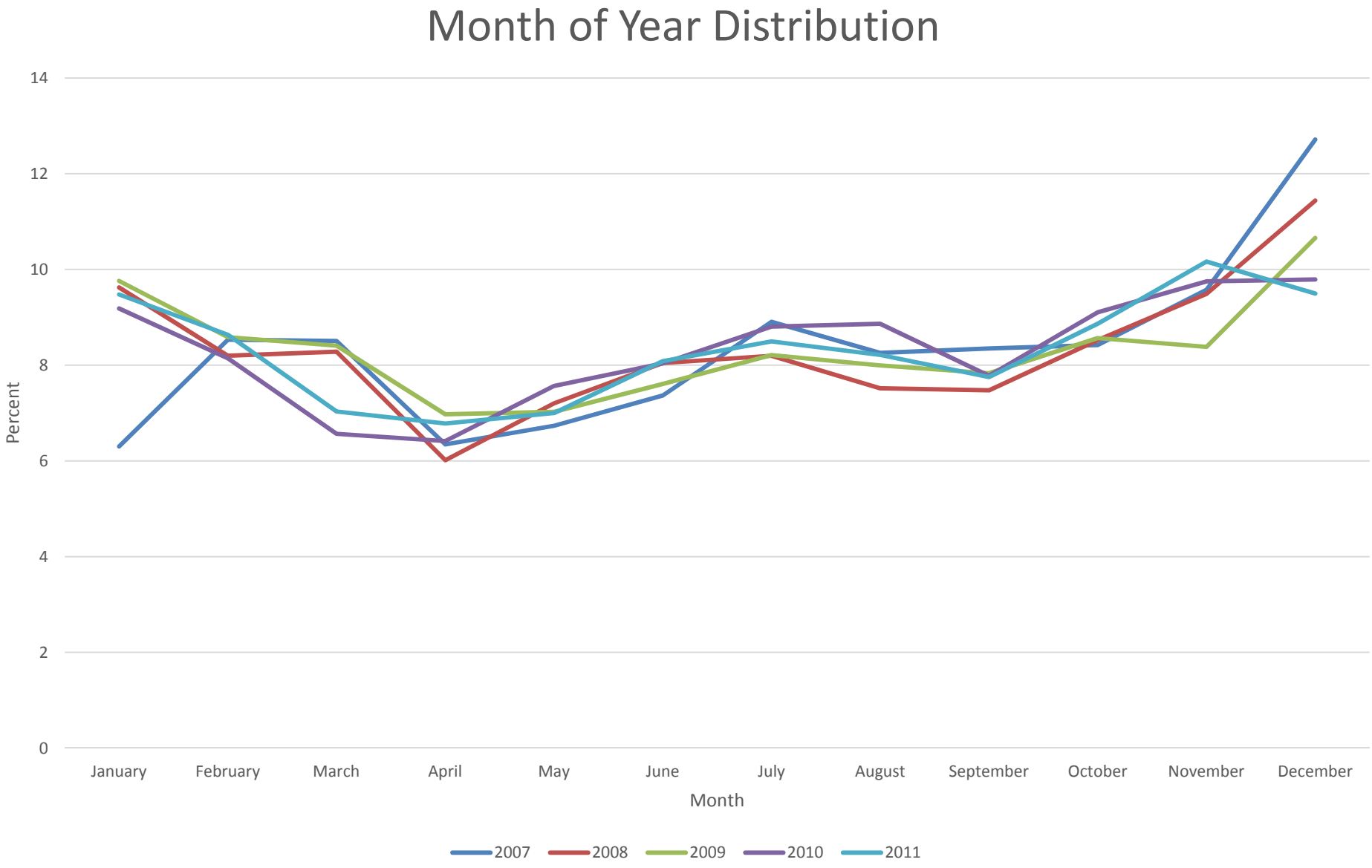
Bicycle-Related Collisions



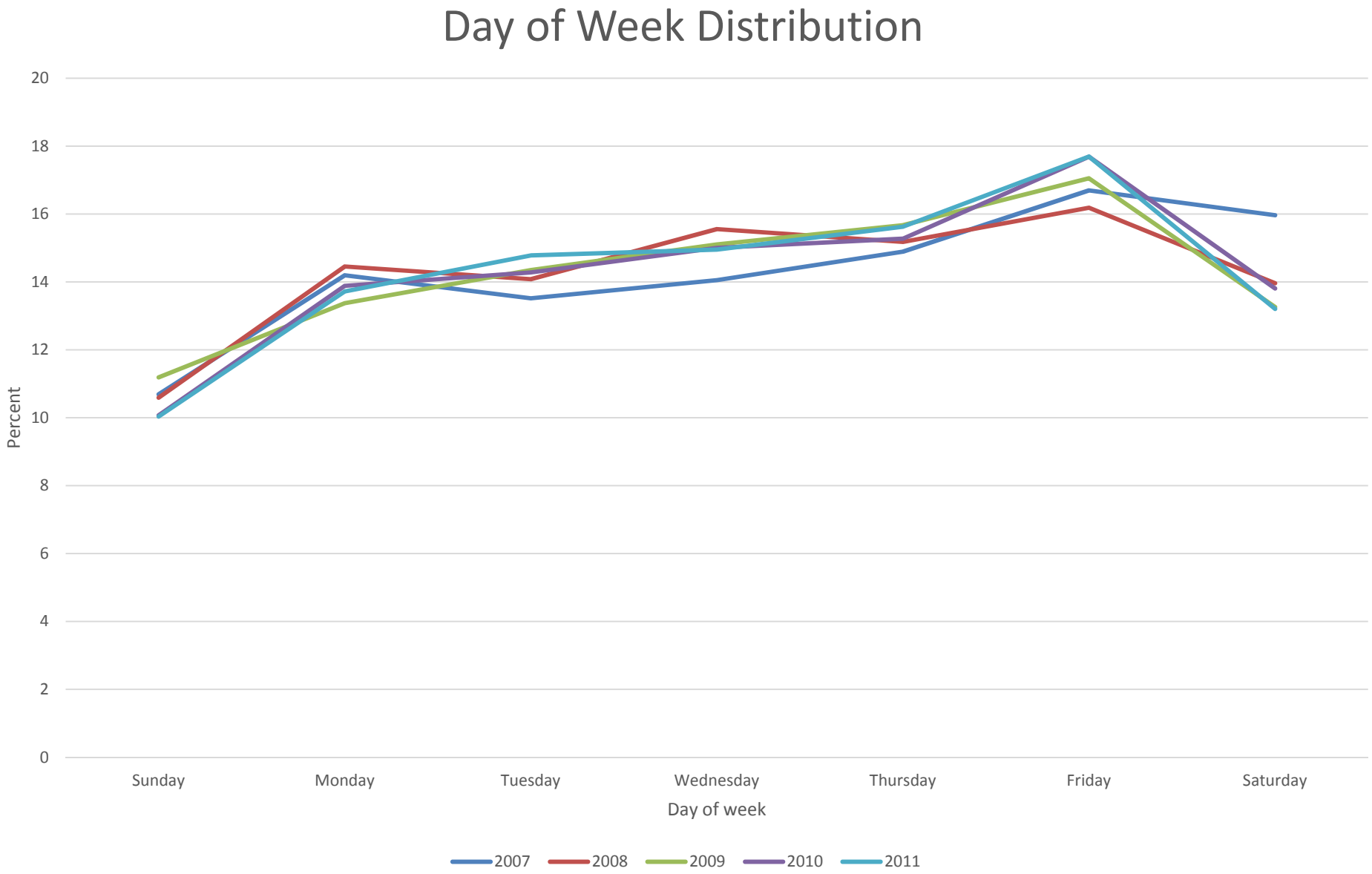
Descriptive Analysis, collision type



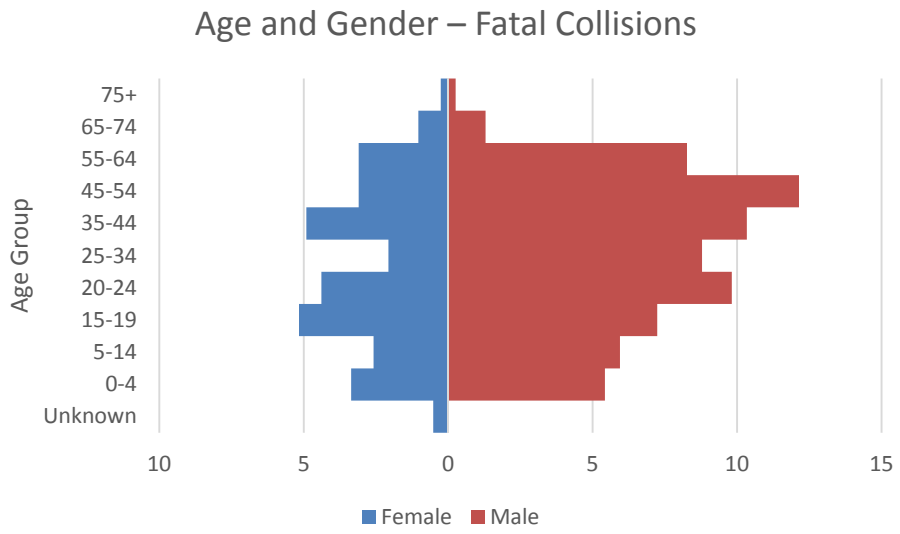
Descriptive Analysis, by year

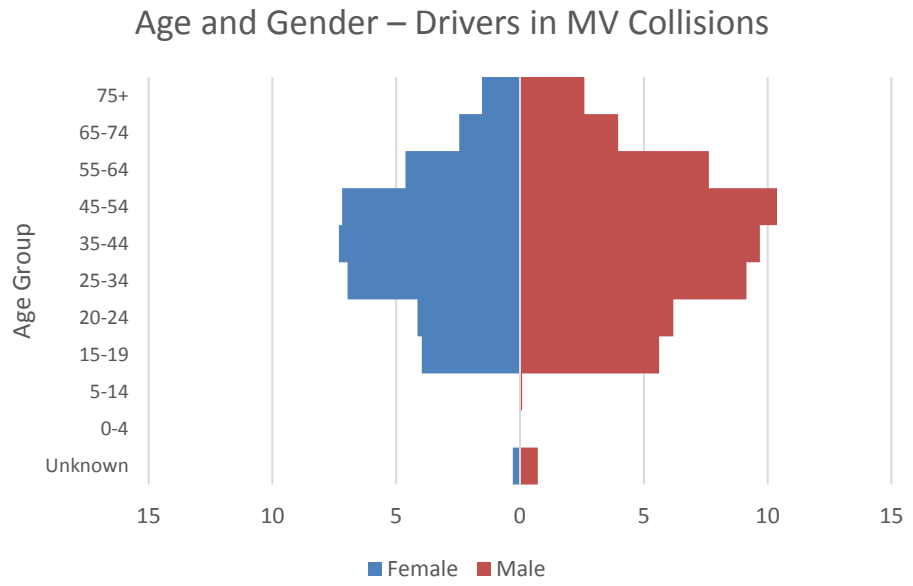


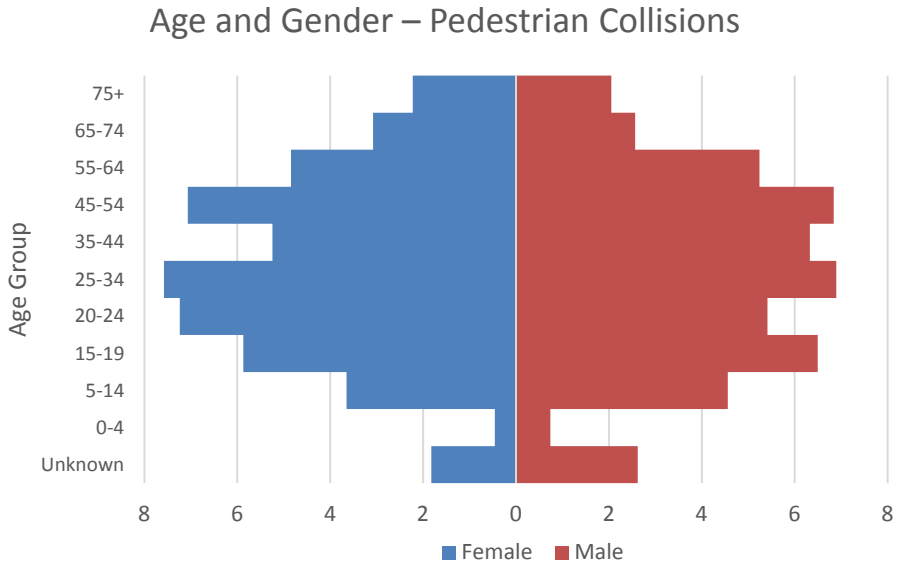
Descriptive Analysis, by year

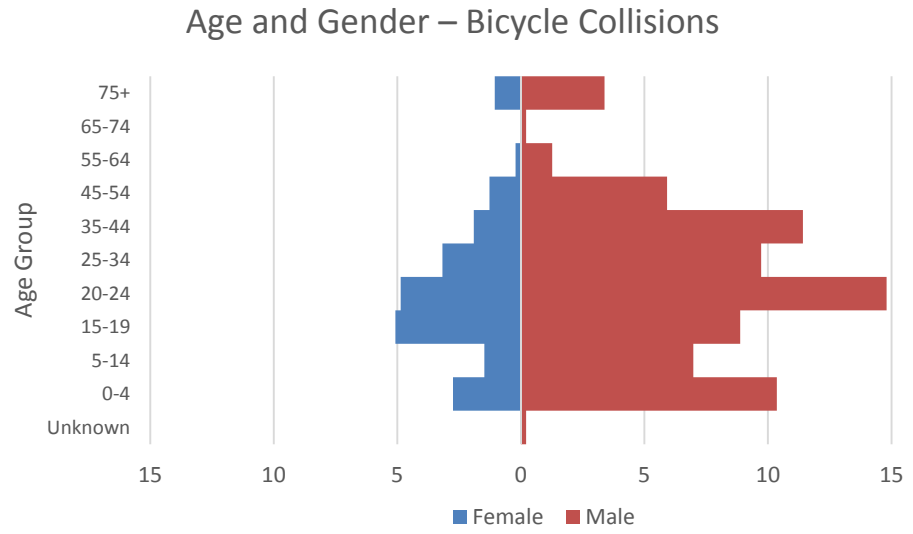


Descriptive analysis, socio-economics

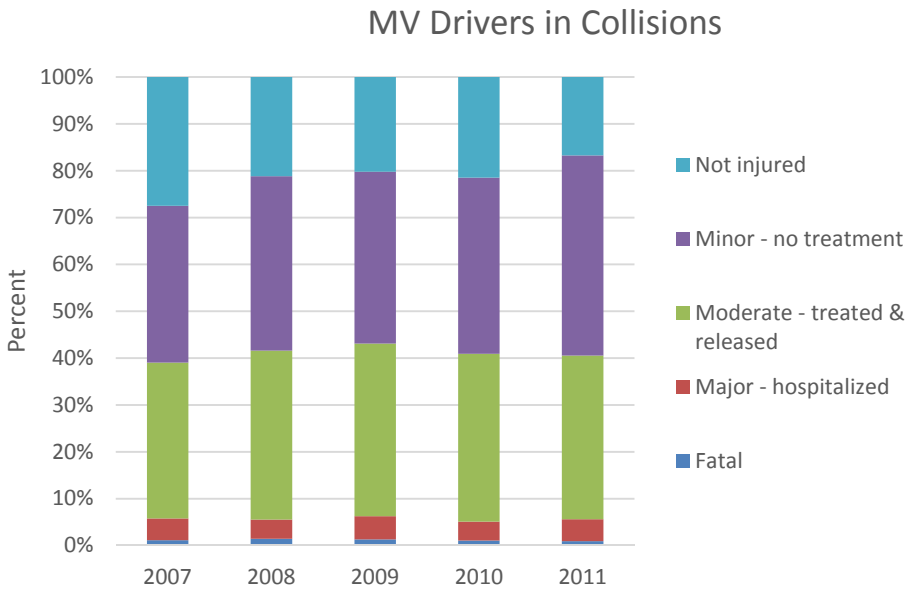


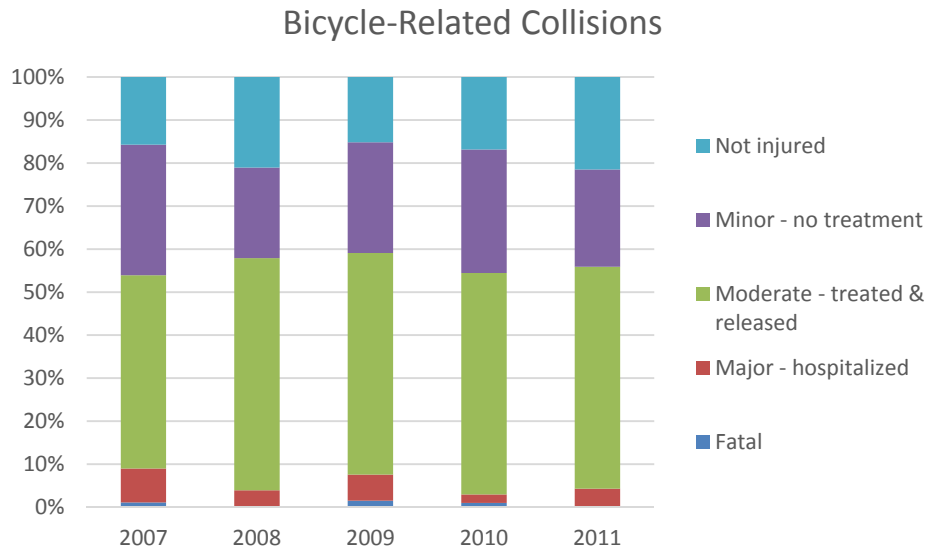


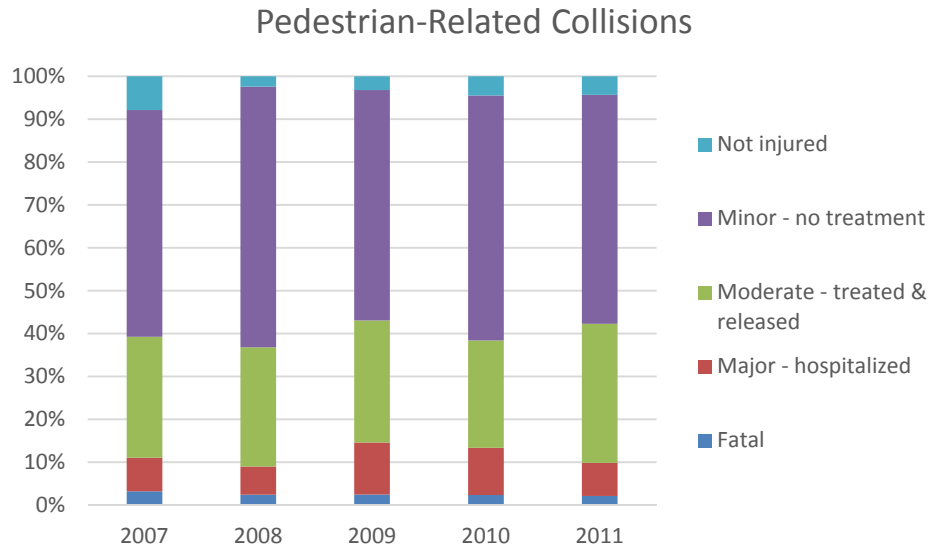




Injury Severity





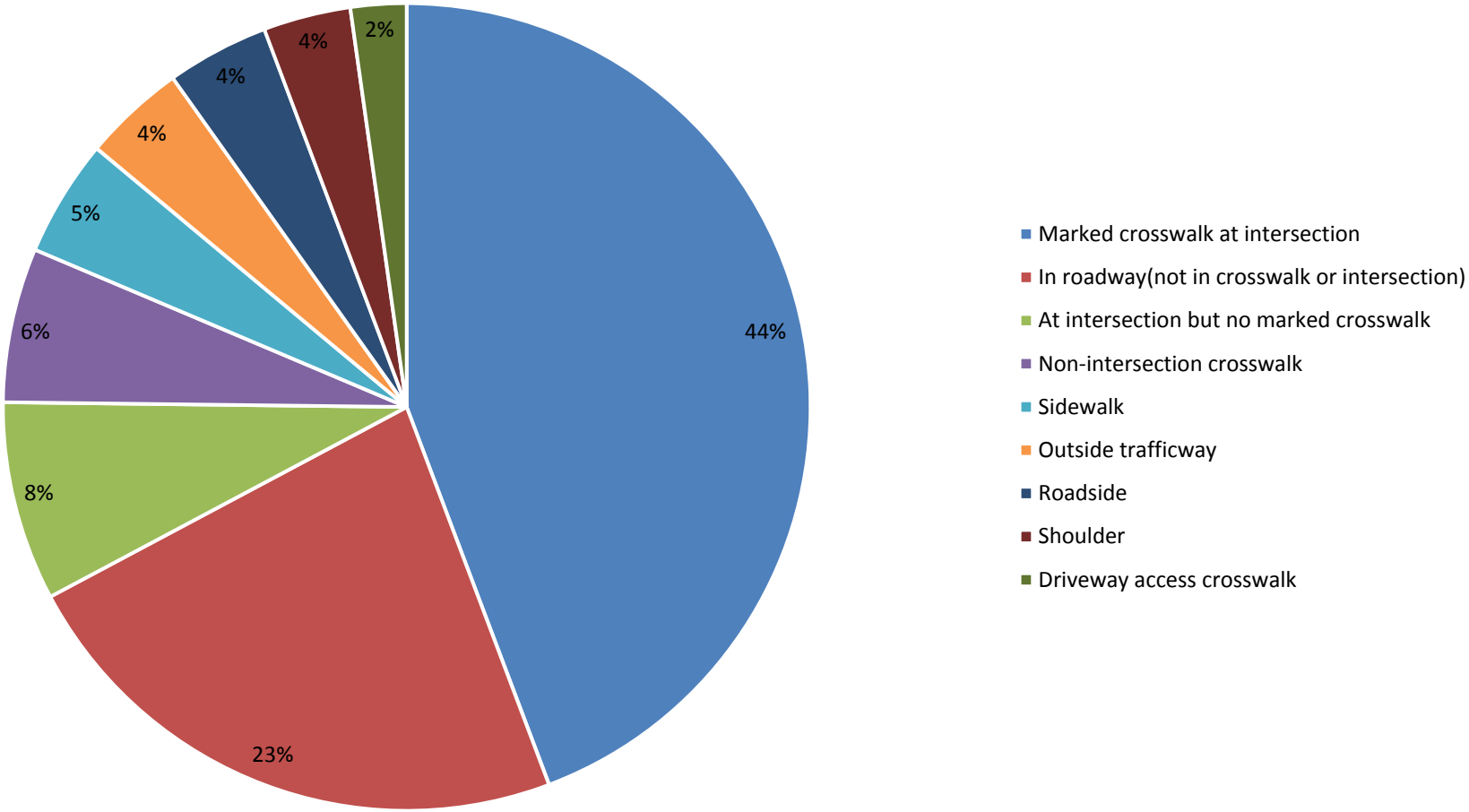


Injury Severity (contd.)

- Injury severity levels
  - Less than 1% of all collisions resulted in major injuries or fatalities.
  - 60.4% of all collisions resulted in either minor or no injuries.
  - 1.02% of all motor vehicle collisions resulted in major injuries or fatalities.
  - 10.7% of motor vehicle collisions resulted in minor or no injuries.
  - **24.39% of all pedestrian-related collisions resulted in moderate injuries.**
  - 45.45% of bicycle-related collisions resulted in moderate injuries.

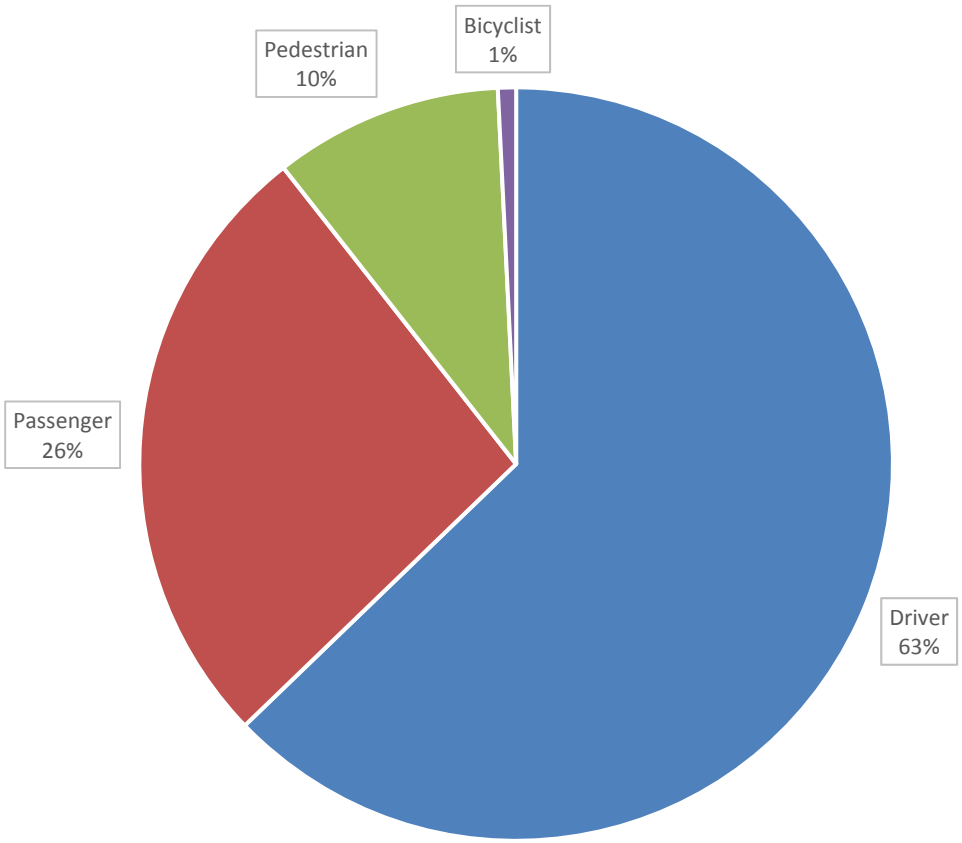
Pedestrian-Related Collisions

Reported location distribution of pedestrian-related collision, 5 yrs

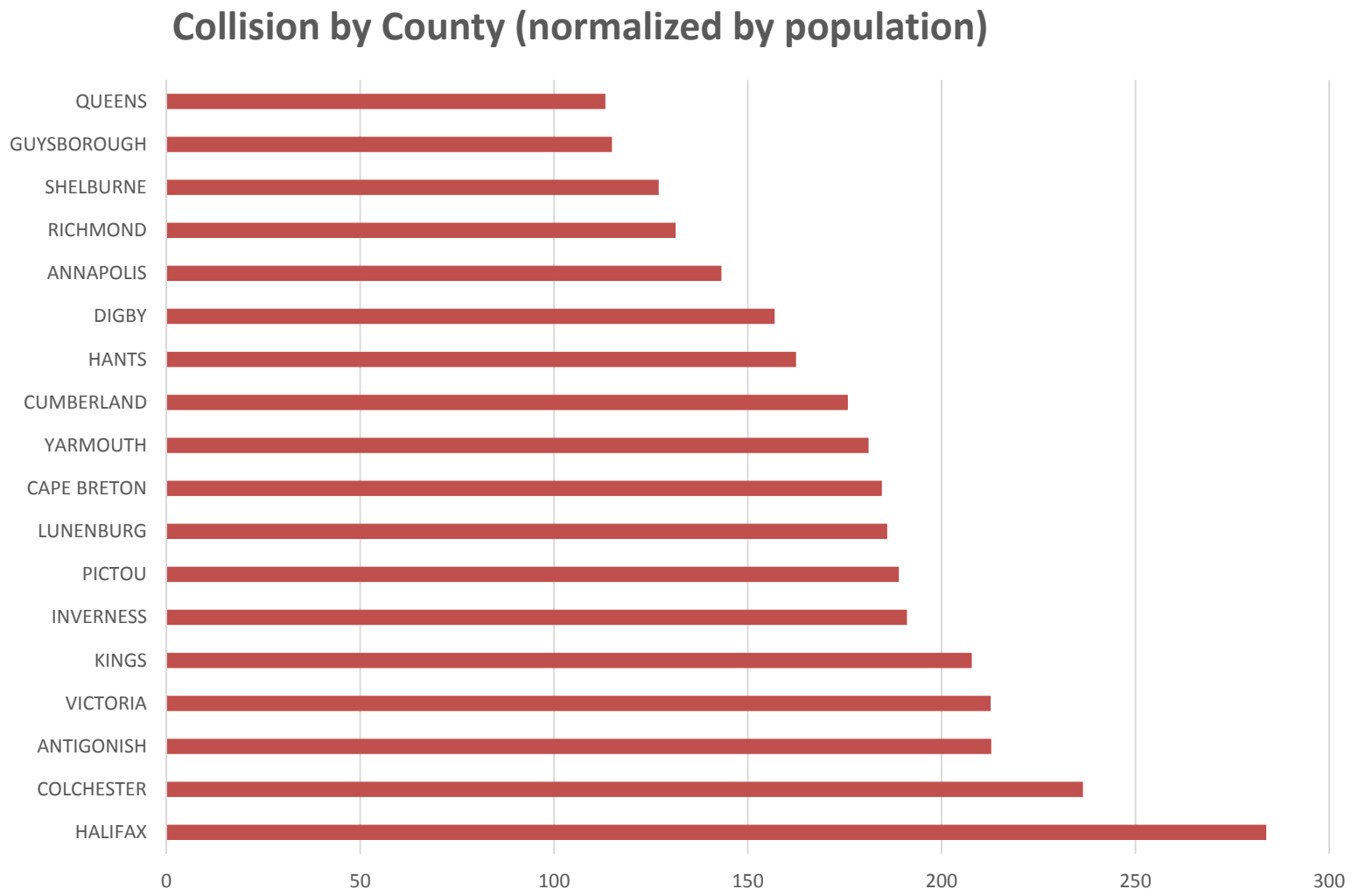


Pedestrian-Related Collisions

Fatalities by Road User Type in Nova Scotia, 5 yrs



County-level analysis



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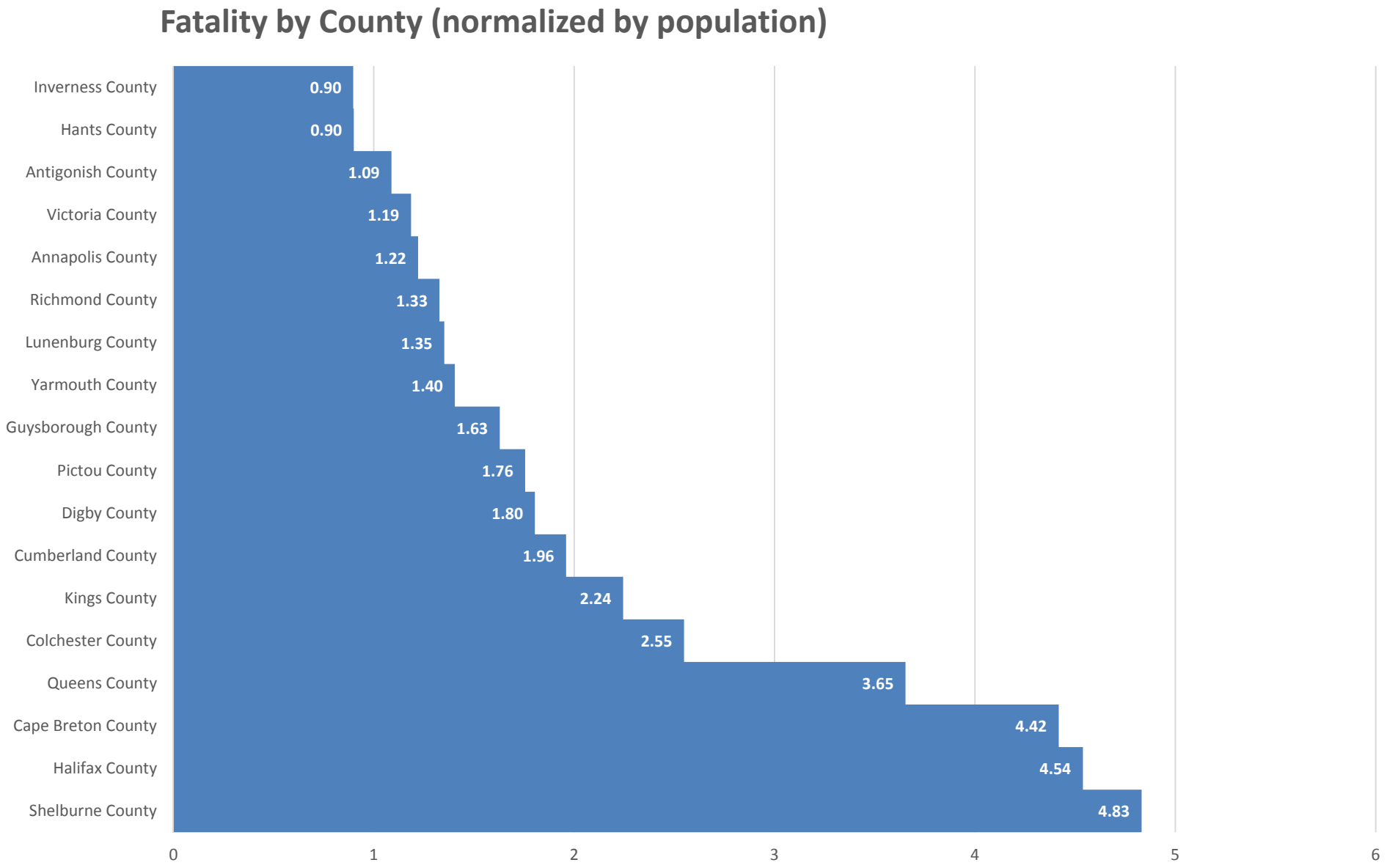

Conclusion

- Study contributions
  - First collision study since 2007
  - Summary of trends and patterns
  - In-depth statistical modelling (not reported)
    - Severity-levels of bicycle severity levels
    - Ordered Probit models
    - Accepted for publication in **93rd Annual Meetings of the Transportation Research Board, Washington DC, January 2014**
- Summary
  - More precise geocoding, analysis in progress
  - County level analysis
  - Pedestrian severity modelling

THANK YOU

Questions?

Acknowledgment

Funding agency

NS Road Safety Advisory Committee (RSAC)

Nova Scotia Department of Energy

Natural Sciences and Engineering Research Council (*NSERC)*

Discussion items

- HRM data issues
  - Available
    - Traffic counts
    - Census JTW (long-form?)
  - Travel Surveys??
    - Trip information?
    - Mode split? Destination choices?
    - Active transportation usage by trip purpose?
    - ……
  - Toronto
    - 1986, every five year intervals
- Tracking progress