Region of Waterloo

Region of Waterloo Road Safety Program

Council Information Session

February 7, 2023

Overview

- Overview of Regional road network
- 2020 Collision Statistics
- Principles and Myths

Overview

- Road Safety Program - Specifics
- Traffic calming
- Roundabouts – Common concerns and misconceptions
- What's coming

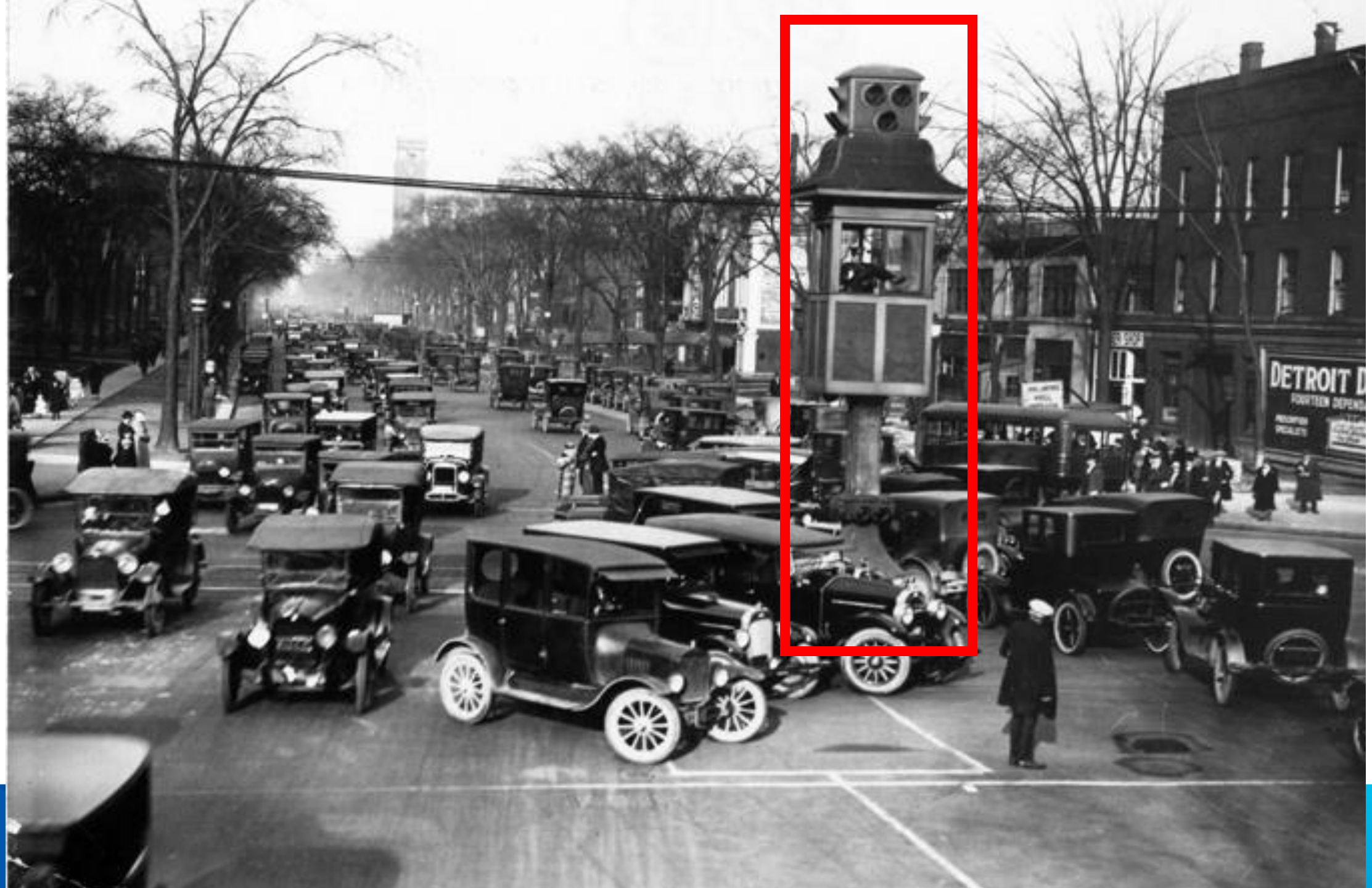
Overview of Regional Road Network

Overview of Regional road network

- 700 centreline kilometres - Main arterial roads
- Franklin Blvd, Homer Watson Blvd
- University Avenue, Erbs Road
- Roseville Road, Arthur Street
- Main purpose:
  - Move large volumes of people and goods
  - Connectivity

Overview of Regional road network

- 534 traffic signals (incl. local roads)
- 37 roundabouts
- 33,000 road signs
- 170 bridges
- 350 km of storm sewers
- 2,500 km of pavement markings
- 3,300 road sections and intersections monitored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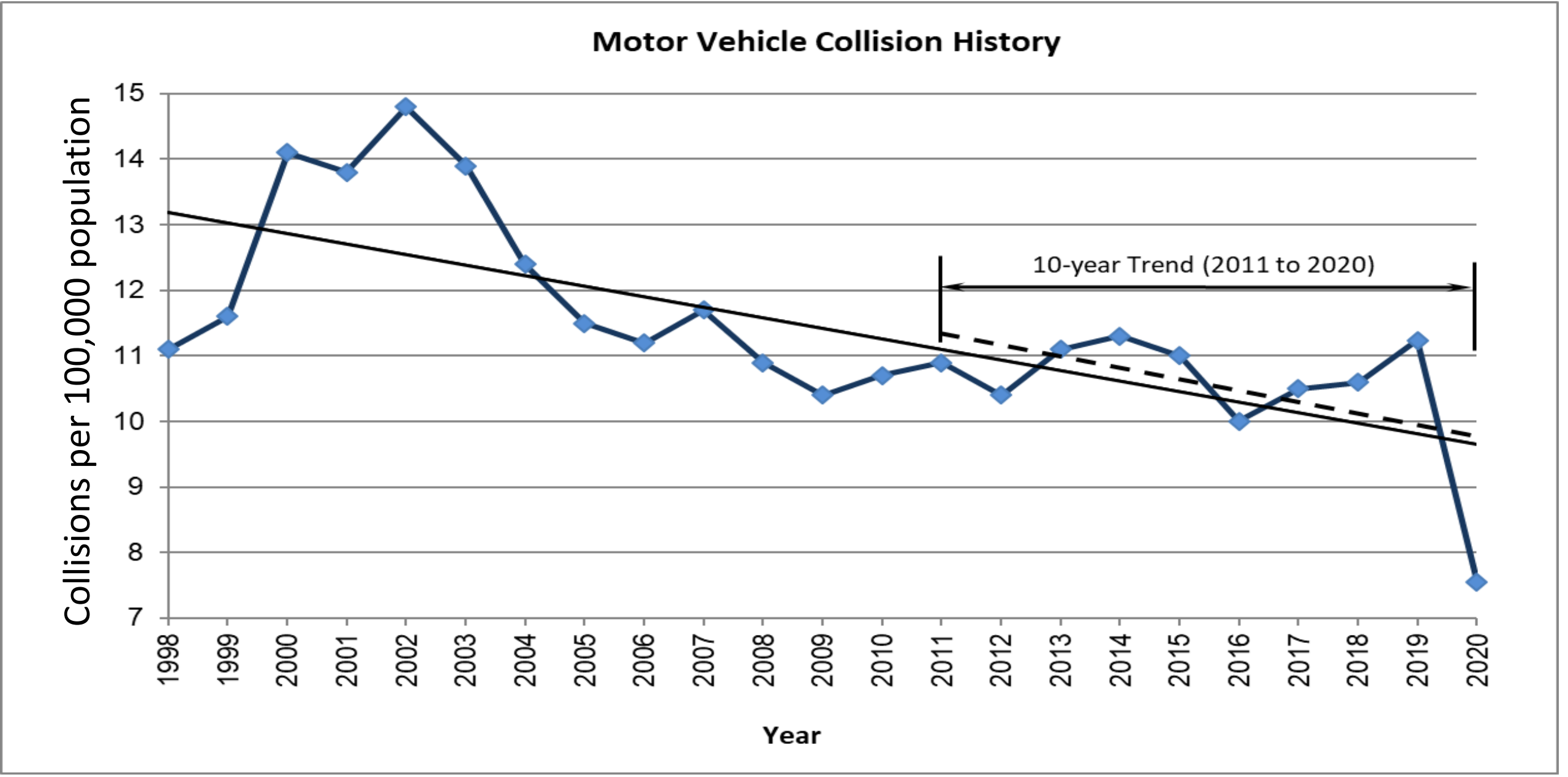
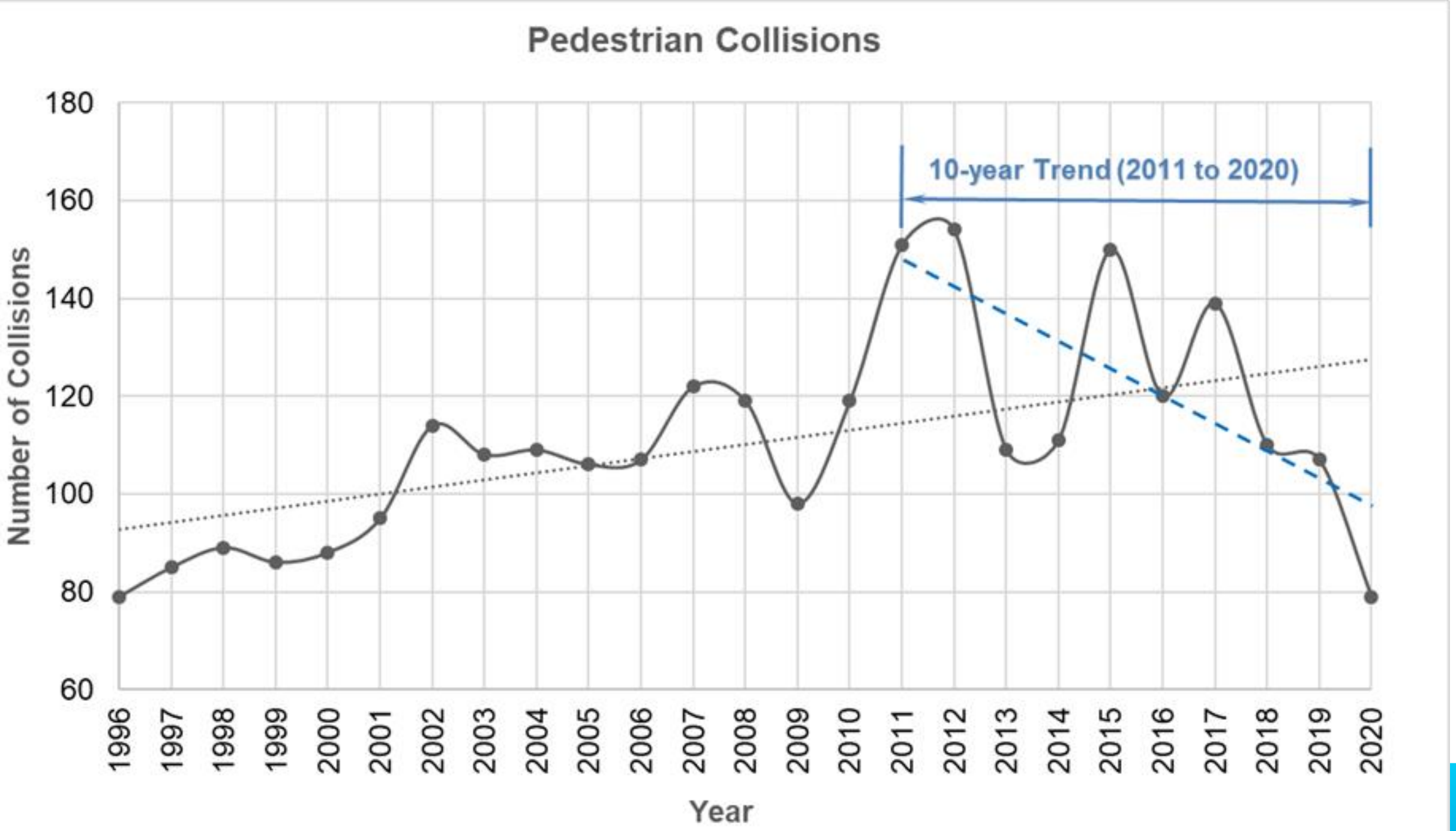
2016 - 2020 Collision Statistics

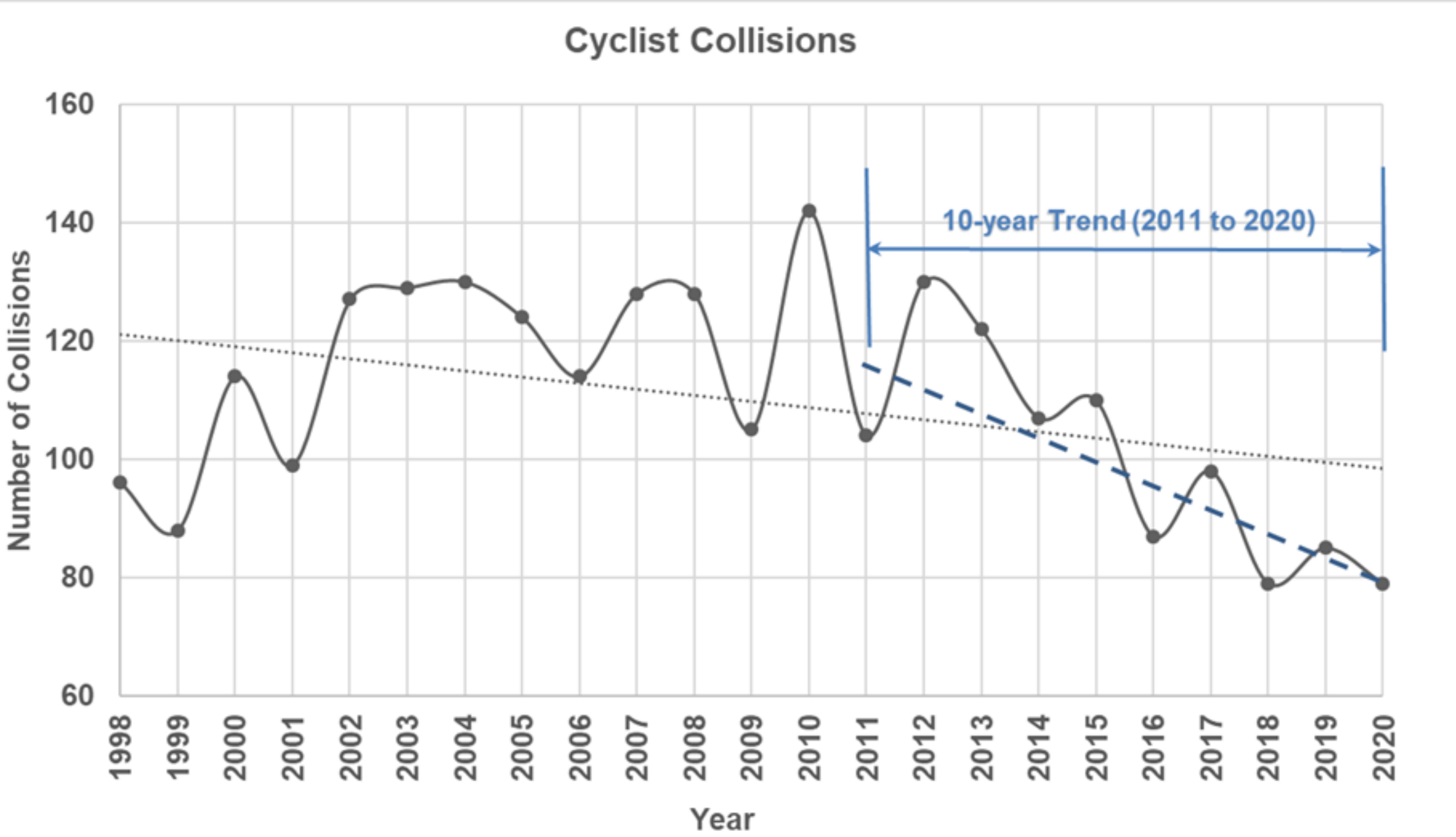
2016-2020 Collision Statistics

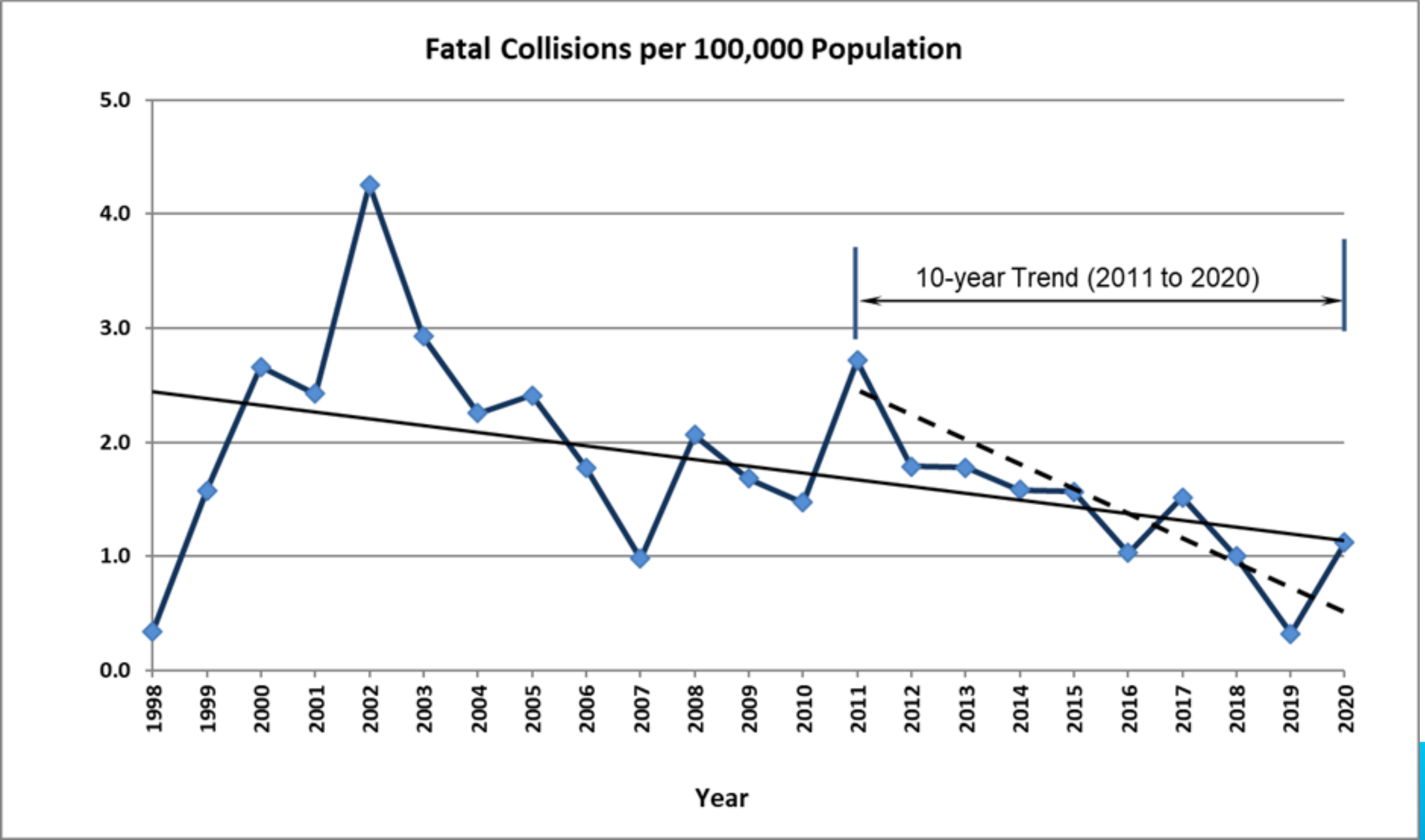
Each Year

- 6000 reported collisions
- 1500 injury collisions; 4 every day
- 110 pedestrian collisions
- 90 cyclist collisions
- 6 fatal collisions


Motor Vehicle Collision History
Collisions per 100,000 population
15
14
13
12
11
10
9
8
7
10-year Trend (2011 to 2020)
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year


Pedestrian Collisions
10-year Trend (2011 to 2020)
Number of Collisions
180
160
140
120
100
80
60
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year


Cyclist Collisions
160
140
120
100
80
60
Number of Collisions
10-year Trend (2011 to 2020)
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year


Fatal Collisions per 100,000 Population
5.0
4.0
3.0
2.0
1.0
0.0
10-year Trend (2011 to 2020)
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year

Principles and Myths

Principles – What is Safe?

Definition:

Not likely to be hurt or harmed in any way

Is a road ever safe?

Principles – Subjective VS Objective Safety

Subjective Safety

- How safe you feel

Objective Safety

- Is a quantitative measurement
- Example: frequency of collisions, severity of collisions

Myths - True or False

Installation of traffic signals reduces collisions

False

- In almost every case where we have installed a traffic signal, collisions have increased after installation
- Why?

Myths - True or False

On busy arterial roads, unmarked crosswalks are safer for pedestrians than marked crosswalks

<u>True</u>

- Why?
- Pedestrians are more careful

Myths - True or False

If you lower the posted speed the road will be safer

<u>False</u>

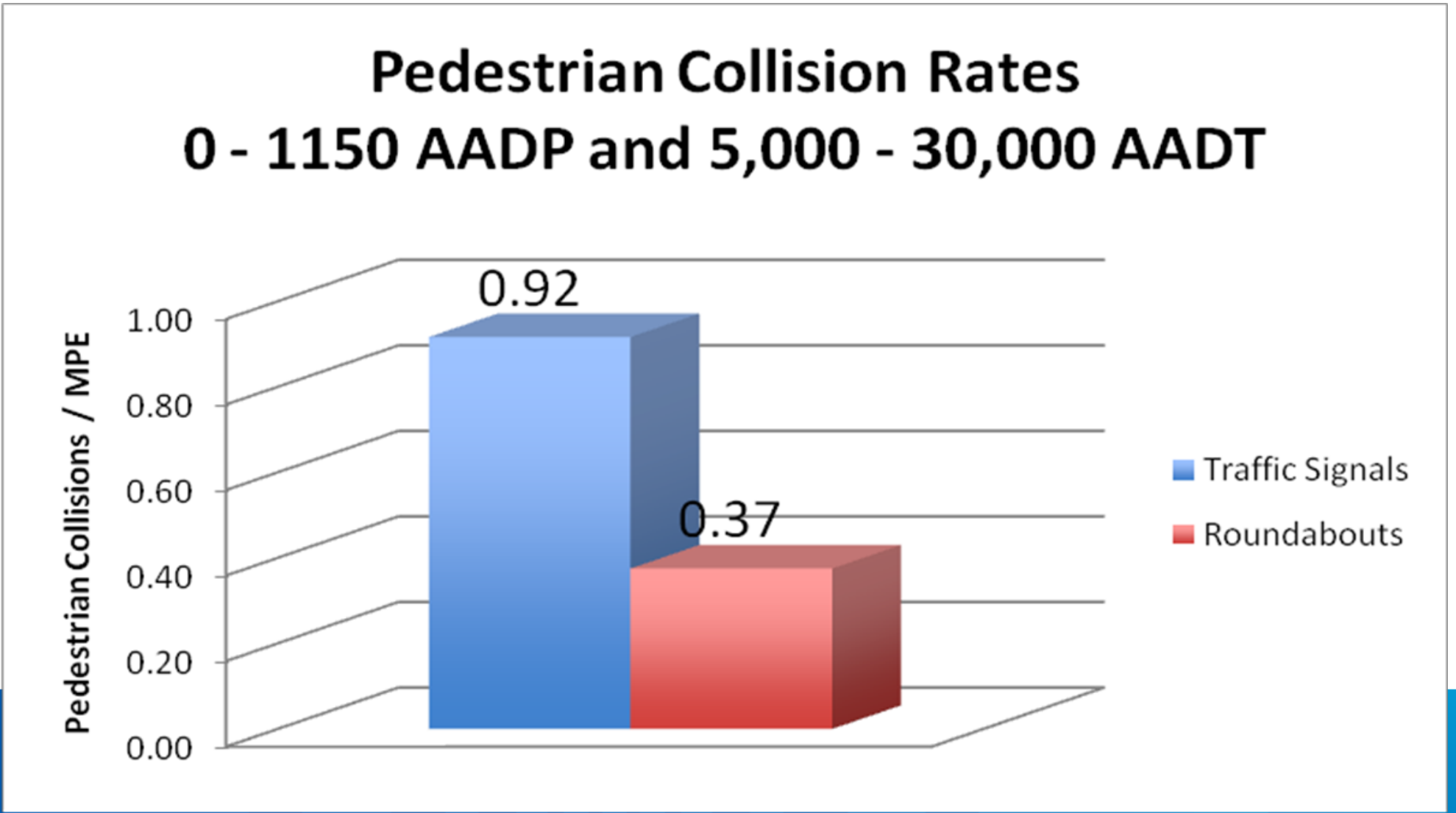
- Average operating speeds will stay the same
- With a few compliant drivers, speed differential increases

Myths - True or False

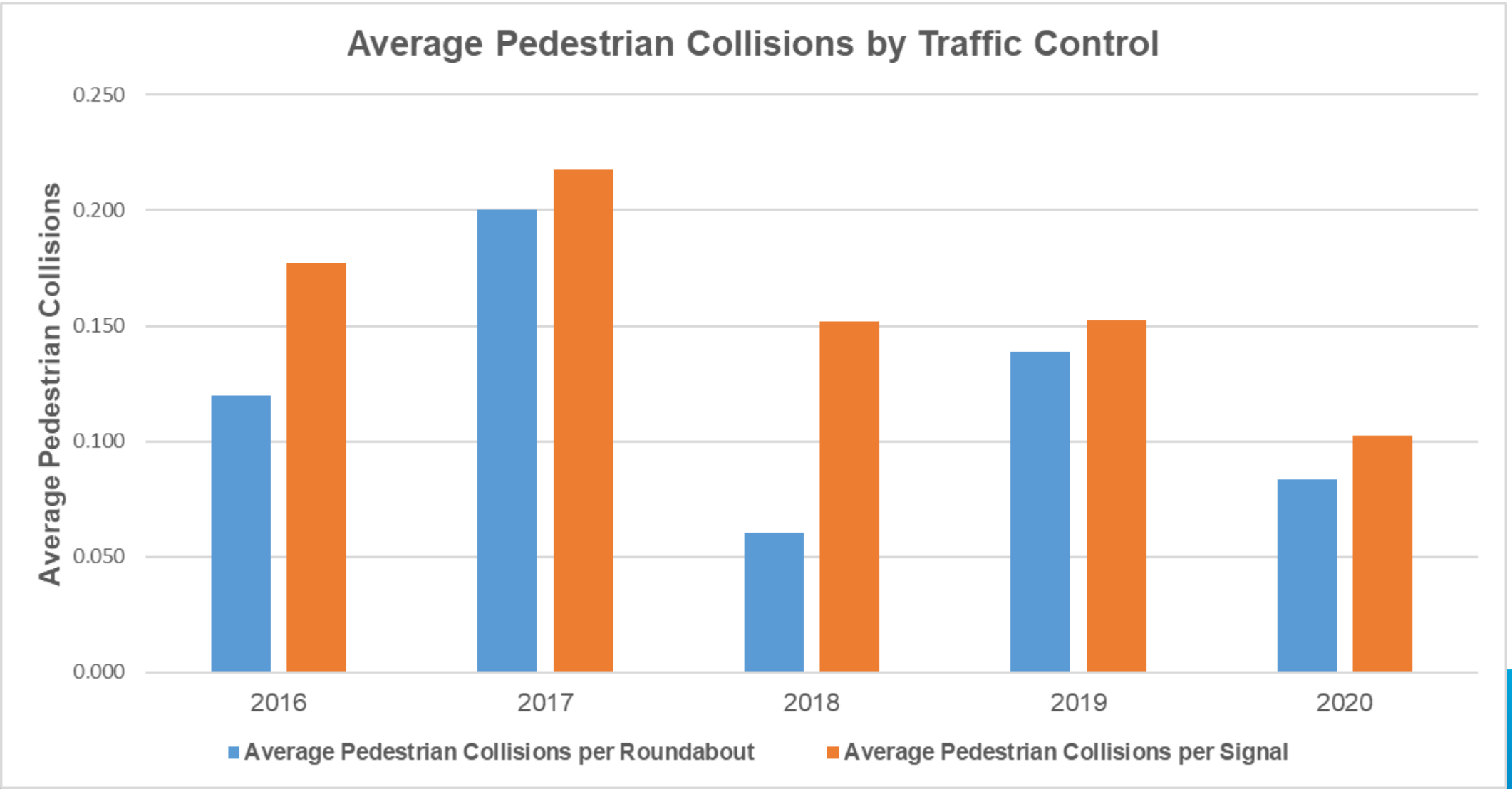
Traffic signals are safer for pedestrians than roundabouts

Traffic signals are safer for pedestrians than roundabouts - False

Traffic signals are safer for pedestrians than roundabouts - False



Traffic signals are safer for pedestrians than roundabouts - False



Region of Waterloo Road Safety Program

Road Safety Program

- Committed to making Regional roads as safe as possible for all users
- In-line with Vision Zero Principles

Objective: Reduce or eliminate all serious injuries and fatalities, with particular emphasis on vulnerable users

Road Safety Program

Strategic Vision that recognizes:

- All collisions are preventable;
- Collisions are a result of user behavior and road design;
- All users make mistakes, resulting in collisions;
- Everyone has a part to play in road safety

Road Safety Program

Key elements of the Road Safety Program:

- Science based
- Data driven
- Follows the 3 "E" model

Road Safety Program - Engineering

- Network Screening
- Annual Collision Report
- Road Safety Countermeasures Program

Road Safety Program - Engineering

- Collision Ranking by Impact Type
- Fatal Collision Reviews
- Safety Improvements in Capital Program

Road Safety Program - Engineering

- Policies
- Systemic Safety Programs
- Ongoing research
- Ongoing assessments of current policies and practices
- Pilot projects

Road Safety Program - Education

- Driver education and pedestrian safety campaigns
  - Drive to Stay Alive
  - The Glare
  - Extra-Sec Check – Safe Roads
    - https://www.regionofwaterloo.ca/en/safe-roads/roundabouts.aspx
  - Numerous roundabout education campaigns

Road Safety Program - Education

- Driver education and pedestrian safety campaigns
  - Radio spots, TV, Kitchener AUD Jumbotron
  - Videos, pamphlets, bus back and bus stop ads
  - In-business and school outreach
  - Social media

Road Safety Program - Education

Road Safety Program - Enforcement

Ongoing collaboration with Regional Police

- Selective Traffic Enforcement Program (STEP)
- Enhance enforcement at identified sites

Road Safety Program - Enforcement

Camera-based Automated Enforcement

- Red-Light Cameras Program
- Automated Speed Enforcement (ASE)
- Monitoring/Researching School-Bus Stop-Arm Camera

Road Safety Program - Collaboration

Traffic Coordinators Committee

- Eight municipalities and Police Services
- Mandate:
  - Information sharing
  - principles alignment
  - Consistency in approach to traffic engineering matters

Traffic Calming

Traffic Calming

- Historically in general, not applicable to Regional roads (speed bumps, chicanes, etc.)

- Need to consider urban VS rural context

Traffic Calming – What Does Not Work

- Lowering posted speed limits
- Adding traffic control (AWS, signals)
- Localized police enforcement
- Community safety zones
- Driver feedback signs
- Special pavement markings

Driver Feedback Signs

Traffic Calming – What Does Work

- Urbanizing road (curbs, sidewalks, etc.)
- Roadway right-sizing
- Narrower lanes
- Raised medians and refuge islands
- Driveways
- Development close to road

Raised Median/ Pedestrian Refuge Island

Traffic Calming – Other Tools

- Vertical speed "bumps" – not applicable
- Chicanes - under review
- Raised intersections – under review
- Gateway features – under review
- Flexible bollards/signs on rural roads – under review

Speed Bump

Not applicable

Speed Hump or Speed Table

Under review

Chicane

Under review

Raised Intersection

Under review

Raised Median Gateway Feature

Under review

Flex Bollards Pilot Project

Under review

Roundabouts : Common Concerns and Misconceptions

"Region's roundabouts are too small They are bigger in Europe"

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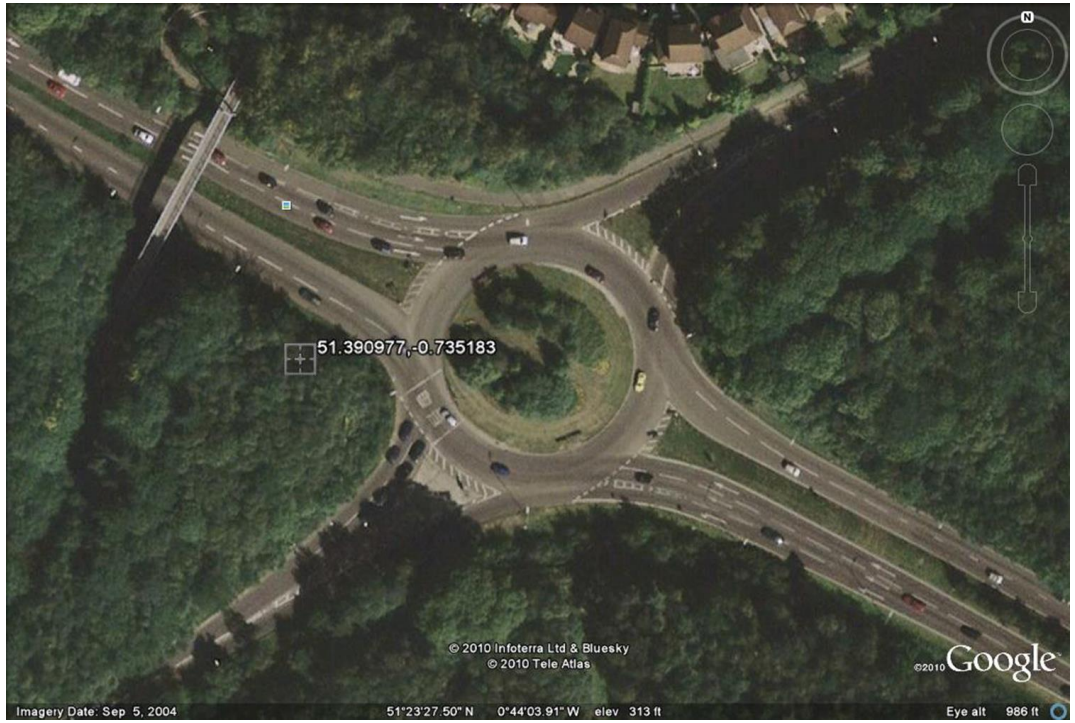

Central Island Landscaping

"Landscaping in the middle makes it dangerous because drivers can't see the other side"

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Why add landscaping in the middle?

- Excessive sight distance can lead to high vehicle speeds, especially at the entries
- Central island landscaping also makes a roundabout more visible, especially at night

"Landscaping in the middle makes it dangerous because drivers can't see the other side"

- Landscaping in the middle should be high enough to screen traffic on the other side and prevent a “see through” problem
- It should not pose a hazard to errant motorists

"Landscaping in the middle makes it dangerous because drivers can't see the other side"

What A Driver Needs To See

Region Roundabout Landscaping

"Crosswalks are located too close to the roundabout"

"Crosswalks are located too close to the roundabout"

Design Guidance

- Most roundabout design guides recommend crosswalk set back 1-2 car lengths
- UK standards dictate that all pedestrian crossings be located within 5m to 20m

"Crosswalks are located too close to the roundabout"

Safety Studies

- 2012 study by New Zealand Transport revealed most ped crashes were occurring at crossing far away, in part due to higher speeds
- Recommended setback < 20metres

- Region design 12 metre setback (OTM)

What's Coming?

Upcoming Road Safety Program Report

What's Coming – 2023-2024

- Review of flexible bollards for traffic calming
- Planned expansion of ASE
- New education campaign

What's coming – 2023-2024

- Review of need for flashing beacons at roundabout pedestrian crossings

- Review of lighting at existing roundabouts

What's coming – 2023-2024

- Study on traffic calming in rural hamlets
- Review of warrants for All-Way Stop (AWS) in rural/local context
- Review of additional control for pedestrian crossings

What's coming - Ongoing

- Evolving intersection design (protected intersections)
- Participation in provincial and national traffic-safety guidelines

- Annual Road Safety Program reports


QUESTIONS????

References

- Region of Waterloo 2020 Collision Report
  - https://www.regionofwaterloo.ca/en/living-here/resources/Documents/Future-Construction/2020-Annual-Collision-Report.pdf
- Transportation Association of Canada: Canadian Roundabout Design Guide, January, 2017
- Auckland Transport: Improved multi-lane roundabout designs for urban areas, May 2012
- FHWA: Safety Effects of Marked VS Unmarked Crosswalks at Uncontrolled Locations, September, 2005