Going the Extra Mile for Safety

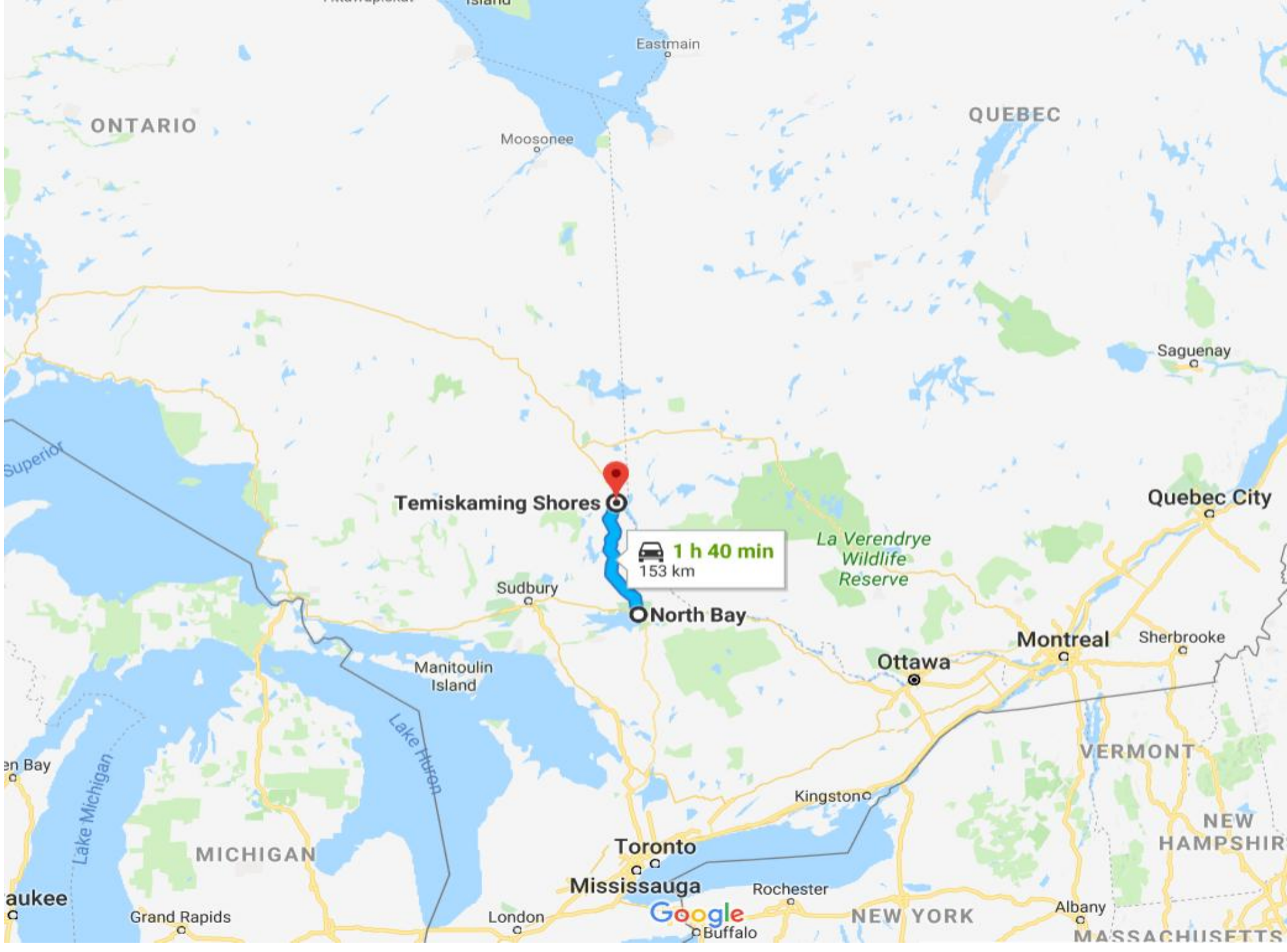
2+1 PILOT PROJECT

Road Safety Advocacy Committee

Sub- Committee of Temiskaming Shores Area Chamber of Commerce

Advocating for a 2+1 Pilot Project

GEMS


Eastmain
ONTARIO
QUEBEC
Moosonee
Saguenay
Superior
Temiskaming Shores
Quebec City
1 h 40 min
153 km
La Verendrye Wildlife Reserve
Sudbury
North Bay
Montreal
Sherbrooke
Ottawa
Manitoulin Island
Lake Huron
Lake Michigan
VERMONT
Kingston
MICHIGAN
Toronto
NEW HAMPSHIR
Mississauga
Rochester
Grand Rapids
London
Google
Buffalo
NEW YORK
Albany

Highway 11 – Vital Link

Significant Agricultural and Mining Expansion which is serviced by Highway 11

Route of choice for cross country commercial traffic with 40% truck traffic

Citizens fear driving on Highway 11 and it is our personal and economic lifeline.

Advocating for many years

Advocating for Safer Highway 11 for many years

Advocated for twinning for over 10 years

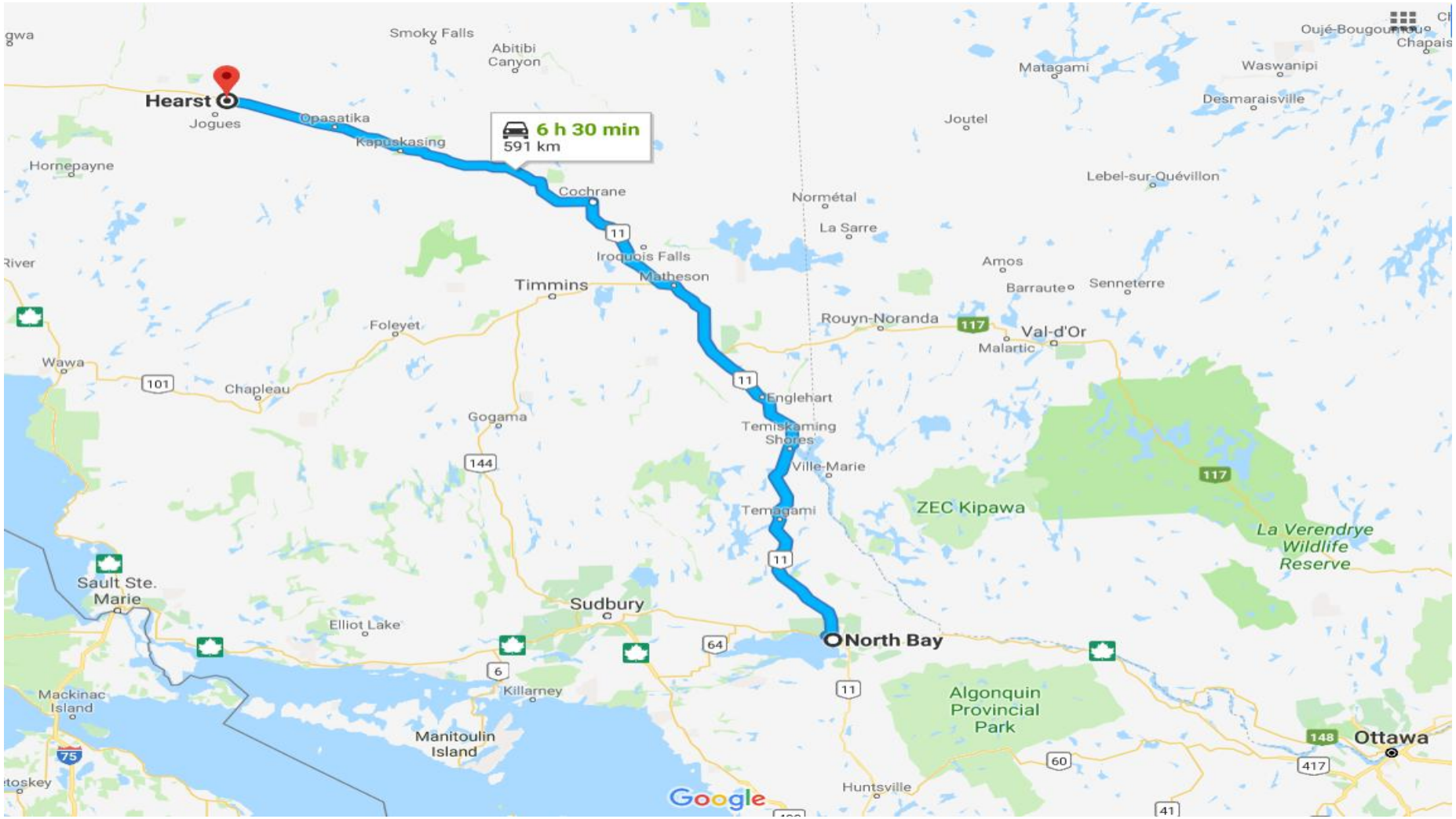
When that was turned down we brought a new idea forward.

2+1 Roads

Researched 2+1 road model extensively from sources around the world

Traveled to Sweden and Ireland to meet with many experts and toured 2+1 roads

Resolution for 2+1 Pilot Project



VISION ZERO

Innovative Road Safety Program

Established in Sweden 1997

Has now been adopted in other countries and cities around the world

VISION ZERO

Designing safe roads for humans that make mistakes

Focuses on preventing fatalities and serious Injuries

Less on Minor Injuries

VISION ZERO

Vision Zero Design principles attempt to take the Kinetic Energy out of Collisions and therefore give road users a better chance to survive.

Vision Zero Results

Location	Road related fatalities per 100,000 population
SWEDEN	2.5
Southern Ontario	3.6
Canada	5.2
Northern Ontario	8.0

Sweden 2017 Canada 2016 Ontario 2014

2+1 Roads

Were a Result of VISION ZERO

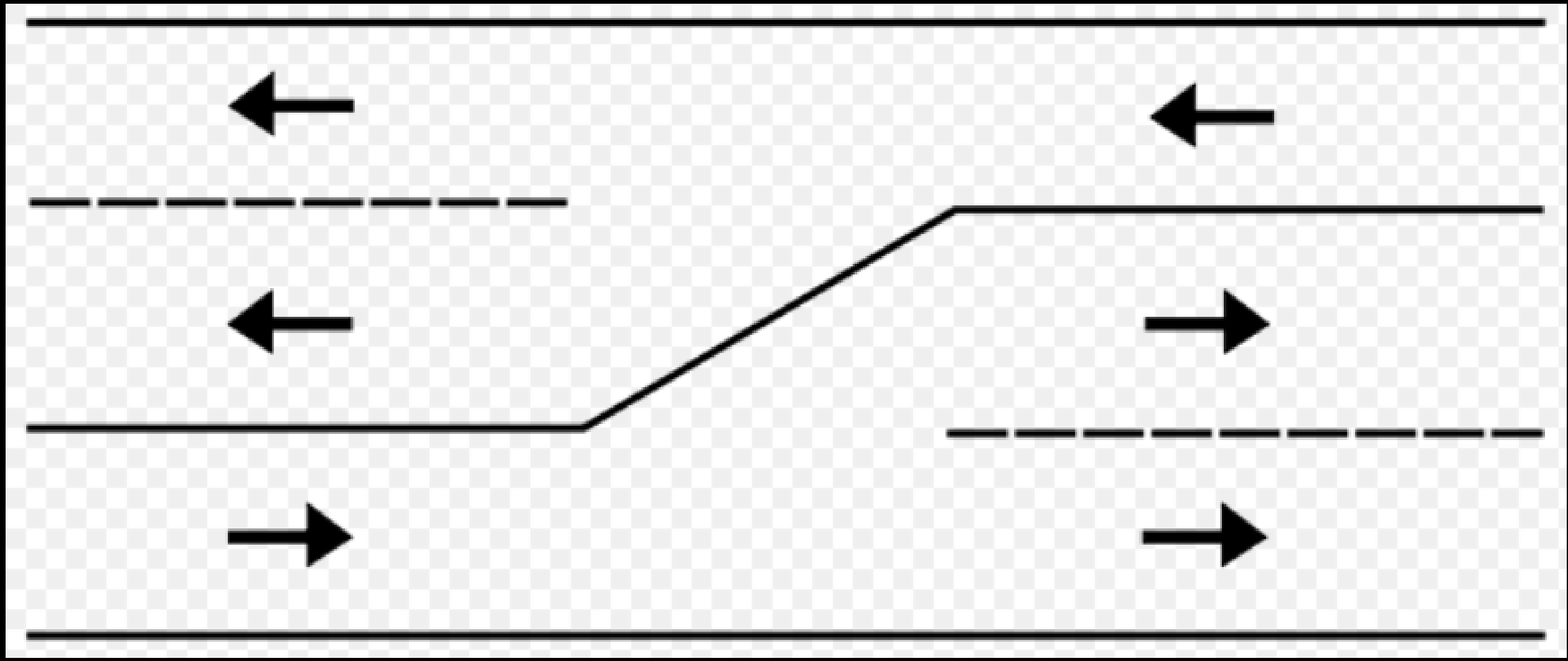
Were the most significant road safety improvement on rural roads in Sweden

Ireland followed Sweden's example in 2004 with a pilot project

Google Streetview

Google Streetview

2+1 Road Profile



Trafikverket - Sweden

THE FORGIVING ROAD ENVIRONMENT

1994-08-11 @ Karup AP, Denmark

Test: EN 1317 TB42 Vehicle mass: 10 040 kg

Impact speed: 70 km/h Impact angle: 14°

14.67V / 4.15V
-0.03 / 0.02 / 0.05
1080p/ 30fps/ MIC ON
DATE:2014/06/27 TIME:14:24:23

Nordic Road Safety - Sweden

N20
Google
Image capture: Jun 2009

2+1 Around the world

Other countries who have used this model include:

Finland

Norway

Australia

Japan

Estonia

New Zealand

Others

INTERSECTIONS – At Grade

INTERSECTIONS - RTTL

GEMS

Dragsker 7
Virbo 4
2017/01/02 02:26:39

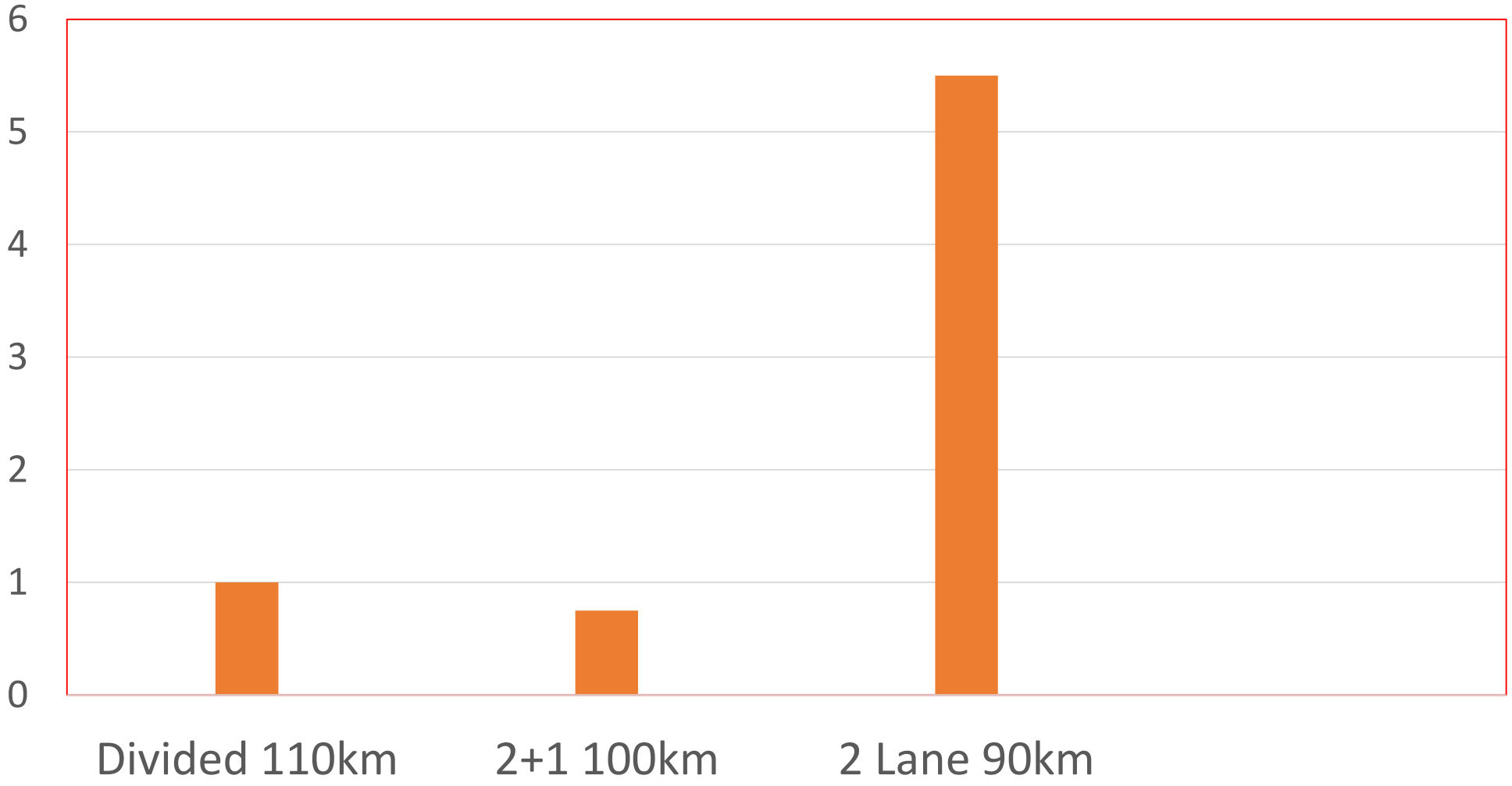
2018/12/08 06:30:32

TRUCKING

2+1 Road Safety Results Carllsson - 2009

Reduction in Fatalities	**79%**
Reduction in Motorcycle fatalities	40-50%

Relative Risk of Dying – 3 road types



A. Vadeby – 2015- VTI - Sweden

2+1 Traffic Volumes

2+1 roads work well at traffic volumes between 2000 and 20,000 AADT

Another Option to Twinning

2+1 roads are built at Significantly lower cost than twinning.

Highway 11: Operational Performance Review

E22 – Sweden

11 – Northern ON

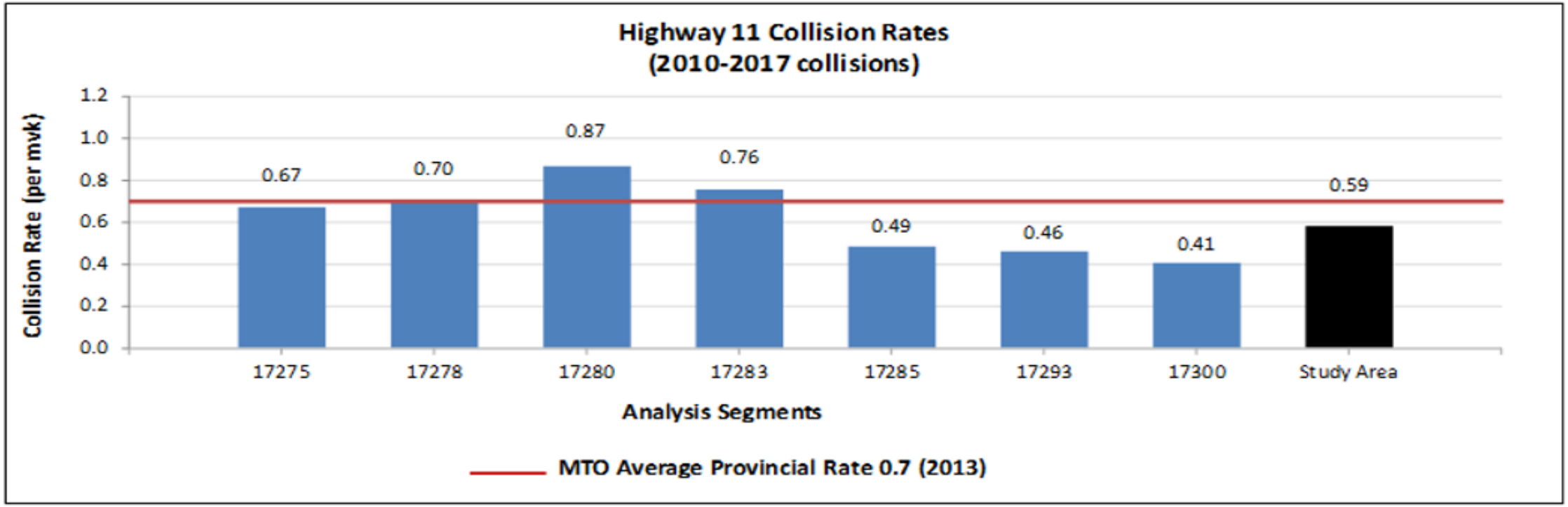
Collision data analysis

- Typical study 3–5 years of data
- 8 years of data used (2010 – 2017)
- 948 reported collisions on 133 km section of highway
  - 16 Fatals
    - 9 Approaching
    - 2 Sideswipe
    - 5 Single vehicle

#	%	Severity
717	76%	PDOnly
215	23%	Injury
16	2%	Fatal
948	***100%***	***Total***

Collision rates – Highway 11

- Compare to provincial average



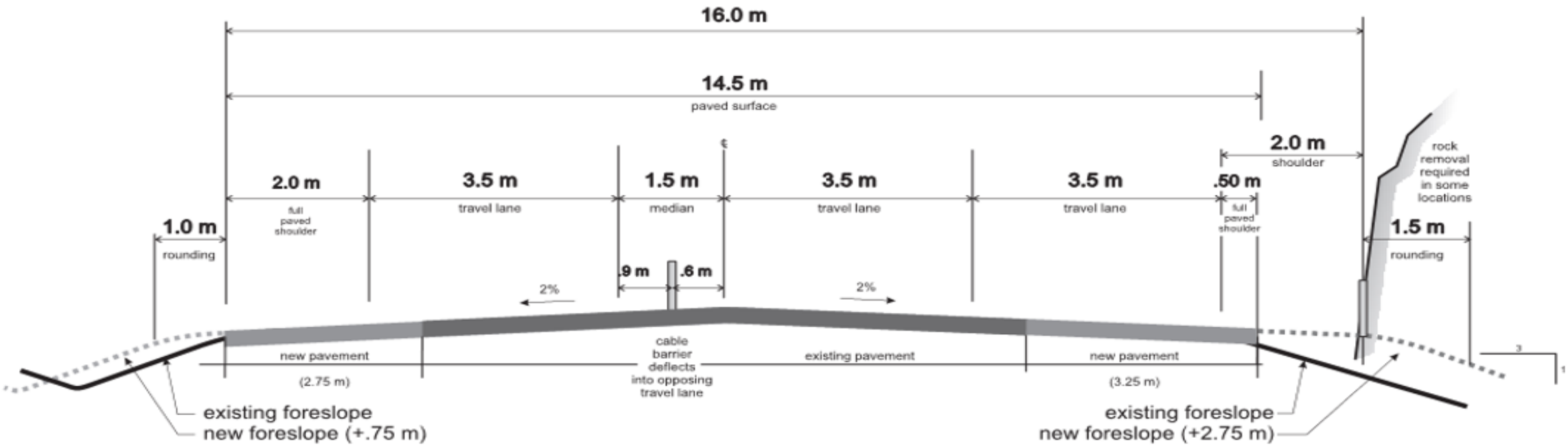
Approaching/Sideswipe collisions

- 12% of the total collisions (108)
  - 69% (9 approach/2 sideswipe) of Fatal
  - 14% (30) of Injury
- Speed to fast for conditions and loss of control
- 28% involved fatigue and inattentiveness
  - Contributing factor in 3 approach/sideswipe fatals
- 50% during snow and icy conditions
- Improper passing in only a few of these incidents

Roadside

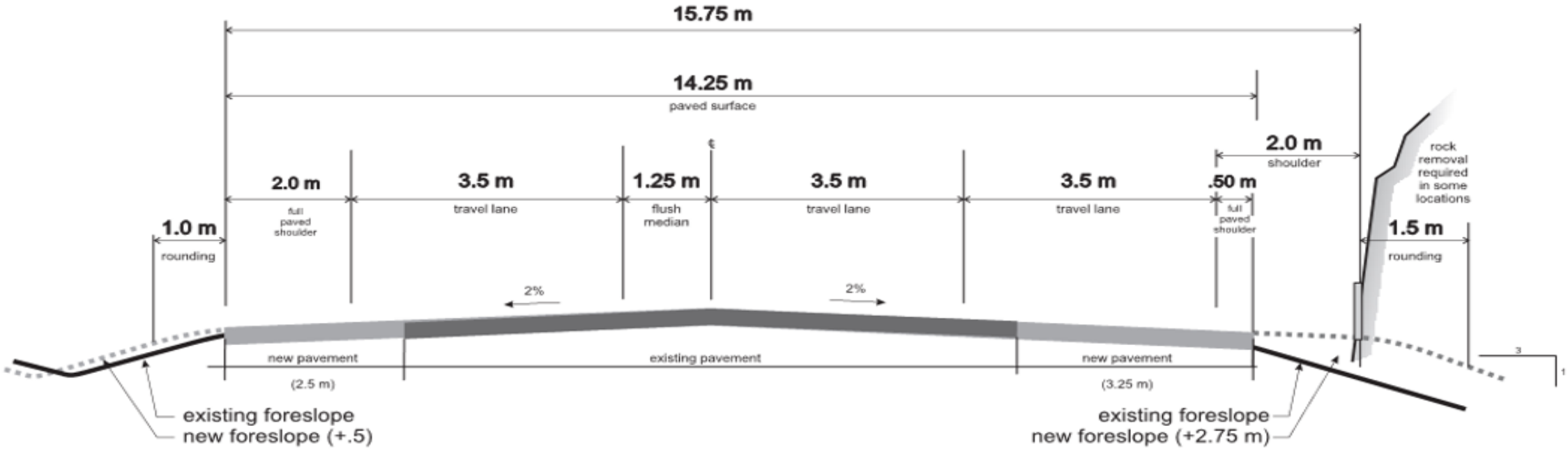
- Single vehicle (SV) collision most common
  - 72% (685) total collision
  - 31% (5) of total fatal
  - 65% (140) of total injury
- 53% (362) of SV collisions involve roadside elements
- 50% (343) of SV occurred during ice and snow covered road surface conditions

Modified (with median barrier)



- 6.0 m pavement widening

Modified (without median barrier)



- 5.75 m pavement widening

Concerns with Swedish model

- 3.25 m lanes (MTO standard 3.75m)
- 0.75 m shoulders
- Crown placement
- Clear zone provisions
  - Different clear zone guidelines
  - MTO barrier free design policy
- Median barrier deflection
  - Tort liability concern in US

2+1 Analysis Results

	2+1 Roadway (without median barrier)		2+1 Roadway (with median barrier)	
	% Reduction Fatal Collision Frequency	% Reduction Fatal & Serious Injury Collision Frequency	% Reduction Fatal Collision Frequency	% Reduction Fatal & Serious Injury Collision Frequency
Highway 11 Study area corridor	32%	16%	41%	40%

- Things to keep in mind …
  - Best case scenario:
    - Different starting point
    - Different operational characteristics
  - Significant increase in SV collisions resulting from median barrier
  - Existing passing lanes – already getting some benefit
  - Not all of study area is being treated

2+1 Traffic Operational Analysis

- Conversion of existing Highway 11 to 2+1
  - Existing: LOS C & D
  - Proposed 2+1: LOS B & C

What does this all mean?

- In general LOS C or better
- Some locations at LOS D
- Recommended for consideration:
  - Extend 2 existing climbing lanes
  - 6 New passing/climbing lanes
    - 4 NB and 2 SB

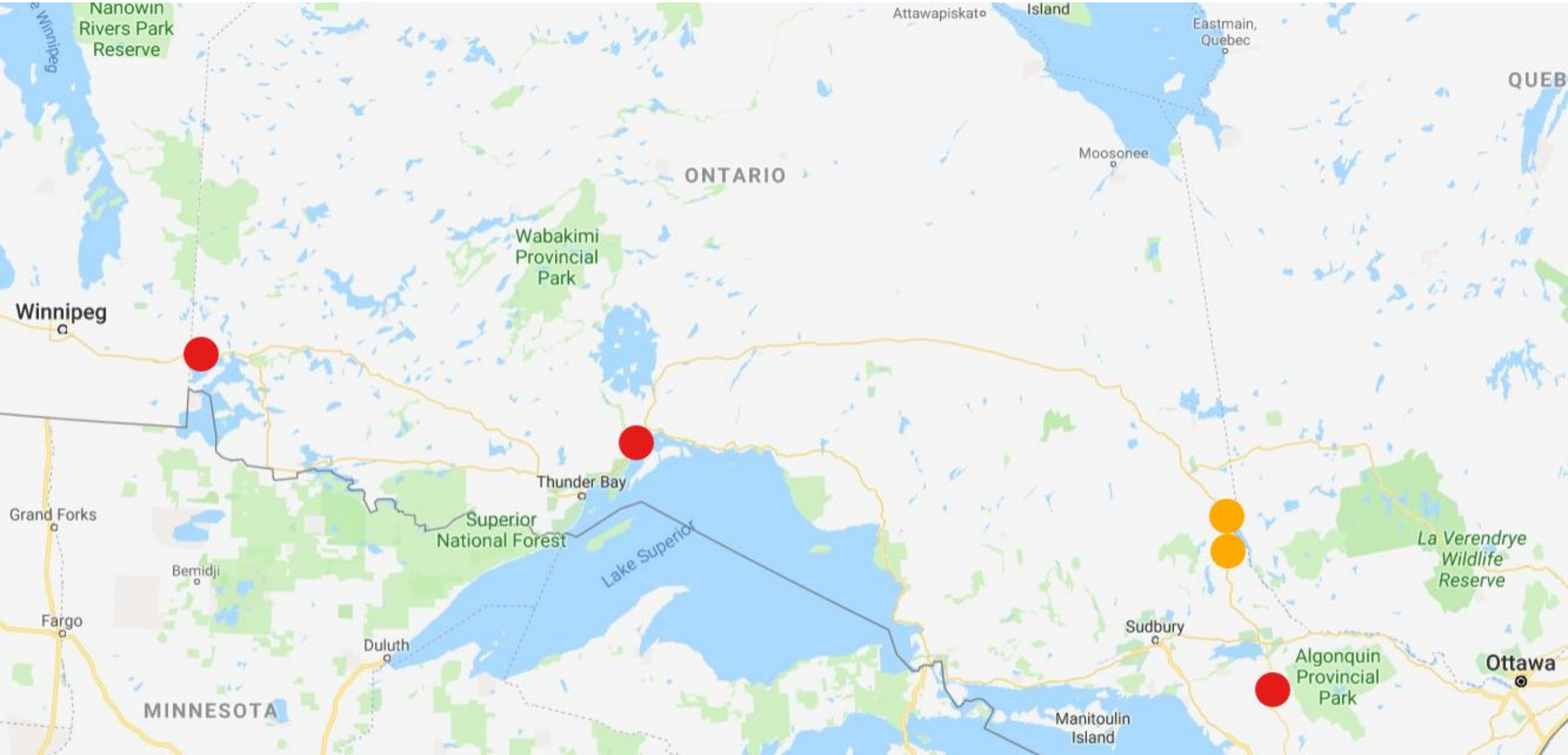
Conclusions

- Challenges for implementing 2+1
  - Guidelines and standards
    - Median barrier, cross sectional elements, pavement marking, signage, etc.
  - Difficult terrain
  - Median barrier
    - Need full evaluation of tort liability and barrier deflection issues
  - Maintenance & emergency response
    - Practices & policies require careful consideration

Countermeasures

- Centerline rumble strips
- Edge line rumble strips
- Roadside
  - Shielding & relocating hazards
  - Clear zone provisions
  - Paved shoulders
- Rest stops – MTO study currently underway
- Increased enforcement of speeds
- Changeable message signs – Incident management
- Driver education
- Potential intersection improvements

Volume Comparison - Twinning



Location	AADT - 1988	AADT - 2016	% Change	AADT – Summer
Hwy 11 – N of Temiskaming Shores	3900	7000	45%	8200
Hwy 11 - Latchford	3500	5750	40%	7800
Hwy 11 – Burk's Falls	5650	8050	30%	8850
Hwy 17 – Ontario-Manitoba	3100	4650	29%	7800
Hwy 11/17 – Nipigon -	3100	4250	28%	5700

Twinning Costs

Estimated Twinning Cost – $6.4 million/km

2+1 estimate significantly lower

Built on Same Road Bed or slightly wider

Are We spending our money wisely?

Where are we now?

- MTO indicated that the model has merit
- It reduces fatalities and serious injuries significantly
- MTO felt that a pilot might be better to try in a different location
- We suggested that a pilot could be done in new passing lanes

Where are we now ?

Have more questions regarding report

Reached out to MTO with questions

Contacted WSP with questions

Have tried to get meeting with Minister over last 4 months – no luck – will keep trying.

Next Steps

- We Need your Help
- Talk about 2+1
- Keep pressuring the MTO to continue to seriously study the 2+1 model
- We need your stories. How do your citizens feel about driving on the Hwy 11 and 17?

Remember

This is about a PILOT PROJECT

2+1 is clearly a system that has significant positive results.

It needs to be tested in Canadian conditions

Remember

- This is about stopping fatalities on Northern Ontario roads.
- This is about safer and better access to and from Northern Ontario
- This is about the mobility of Northern Ontario residents.
- This is about improving our economy in Northern Ontario

Remember

Over 50 people killed in 10 years between Hearst and North Bay

Rose - 57

Richard - 51

Remi - 44

Andrew - 17

Danny -17

Shannen - 15

Thank you

tsacc.ca/gems

Mark Wilson – 705-622-2376

Advocates say that a concrete barrier is the only way to protect people from crossover collision on Highway 401 between Tilbury and London. (Chris Ensing/CBC)

INTERSECTIONS – Grade Separated