Examining Motor Vehicle Related Injury Rates and Graduated Drivers Licensing Programs Across Canada

Liraz Fridman,
PhD Candidate,
School of Kinesiology and Health Science, York University

CARSP

Background

- Graduated driver's licensing (GDL) has consistently been shown to reduce motor vehicle crashes in youth (Russell et al., 2011; Shope, 2007).

- A Cochrane Systematic Review concluded that stronger GDL programs (i.e. programs that involve more restrictions for novice drivers) appear to result in a greater reduction in mortality from motor vehicle crashes among young drivers (Russell et al., 2011).

Background

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RESEARCH ARTICLE Open Access

An evaluation of evidence-based paediatric injury prevention policies across Canada

Alison K. Macpherson[1], Mariana Brussoni[2], Pamela Fuselli[3], Tara Middaugh-Bonney[4], Shannon Piedt[5*] and Ian Pike[2]

Background

- Bicycle helmet legislation, booster seat requirements, and graduated driver's licensing have shown evidence of effectiveness in preventing paediatric injuries

GDL Programs in Canada

- GDL can include:
  - Mandatory vs. Voluntary Drivers Education
  - BAC restrictions
  - Nighttime driving curfew
  - Passenger Restrictions
  - ‘L’ and ‘N’ sign plates
  - Time discounts for driver education

GDL Programs in Canada

Table 1 Best Practices Summary Table (Provincial/Territorial regulation as of 2009, except where otherwise indicated)

		BC	AB	SK	MB	ON	QC	NS	NB	NL	PEI	YK	NWT	NU
Bicycle helmet	All Ages	✓	X	n/a	X	X	n/a	✓	✓	n/a	✓	n/a	n/a	n/a
	All Roadways	✓	✓	n/a	✓ (2013)	✓	n/a	✓	✓	n/a	✓	n/a	n/a	n/a
Booster seat	9 years of age & height 145 cm	✓	n/a	X	✓ (2013)	✓	X	✓	✓	n/a	✓	n/a	n/a	n/a
	Weight 18–36 kg	✓	n/a	✓ (2014)	✓ (2013)	✓	✓	✓	✓	n/a	✓	n/a	n/a	n/a
	Public education programs	✓	n/a	✓	✓	✓	✓	✓	✓	n/a	✓	n/a	n/a	n/a
	Under 12 seated in back seat	X	n/a	X	X	X	X	X	X	n/a	X	n/a	n/a	n/a
	No vehicle exemptions (e.g. for medical vehicles or public/school buses)	X	n/a	X	X	X	X	X	X	n/a	X	n/a	n/a	n/a
	Driver responsibility	✓	n/a	X	✓ (2013)	✓	X	✓	✓	n/a	✓	n/a	n/a	n/a
	Non-compliance penalties	✓	n/a	✓ (2014)	✓ (2013)	✓	✓	✓	✓	n/a	✓	n/a	n/a	n/a
	Incentive programs (e.g. providing free or discounted booster seats to families who qualify)	✓	n/a	✓ (2014)	X	✓	X	✓	X	n/a	X	✓	n/a	n/a
GDL	Learner stage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
	Intermediate stage	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
	BAC restrictions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	n/a
	Nighttime driving curfew	✓	✓	X	X	✓	X	X	X	✓	✓	✓	✓	n/a
	Passenger restrictions	✓	X	X	X	X	X	✓	✓	✓	✓	✓	✓	n/a
	Cell phone restrictions (Some provinces have now enacted cell phone restrictions outside of GDL. Those are not included here.)	✓	X	✓	X	X	X	X	X	X	✓	X	X	n/a
	'L' and 'N' sign plates	✓	X	X	X	X	X	X	X	✓	✓	✓	X	n/a
	No time discount for driver education	X	✓	✓	✓	X	X	X	X	X	✓	✓	✓	n/a

Legend:
✓ Regulation included within the law of this province/territory
X Regulation not included within the law of this province/territory
n/a Province/Territory does not have a law

Purpose

The aims of this project are to perform:

1) An interprovincial comparison of hospitalization and death rates related to MVCs;
2) Summarize differences in GDL programs across Canadian provinces

Methods – Data Sources

Hospitalizations	Deaths
Canadian Institute for Health Information (CIHI) - Discharge Abstract Database (DAD)	Vital Statistics Death Database / Provincial Coroners Data

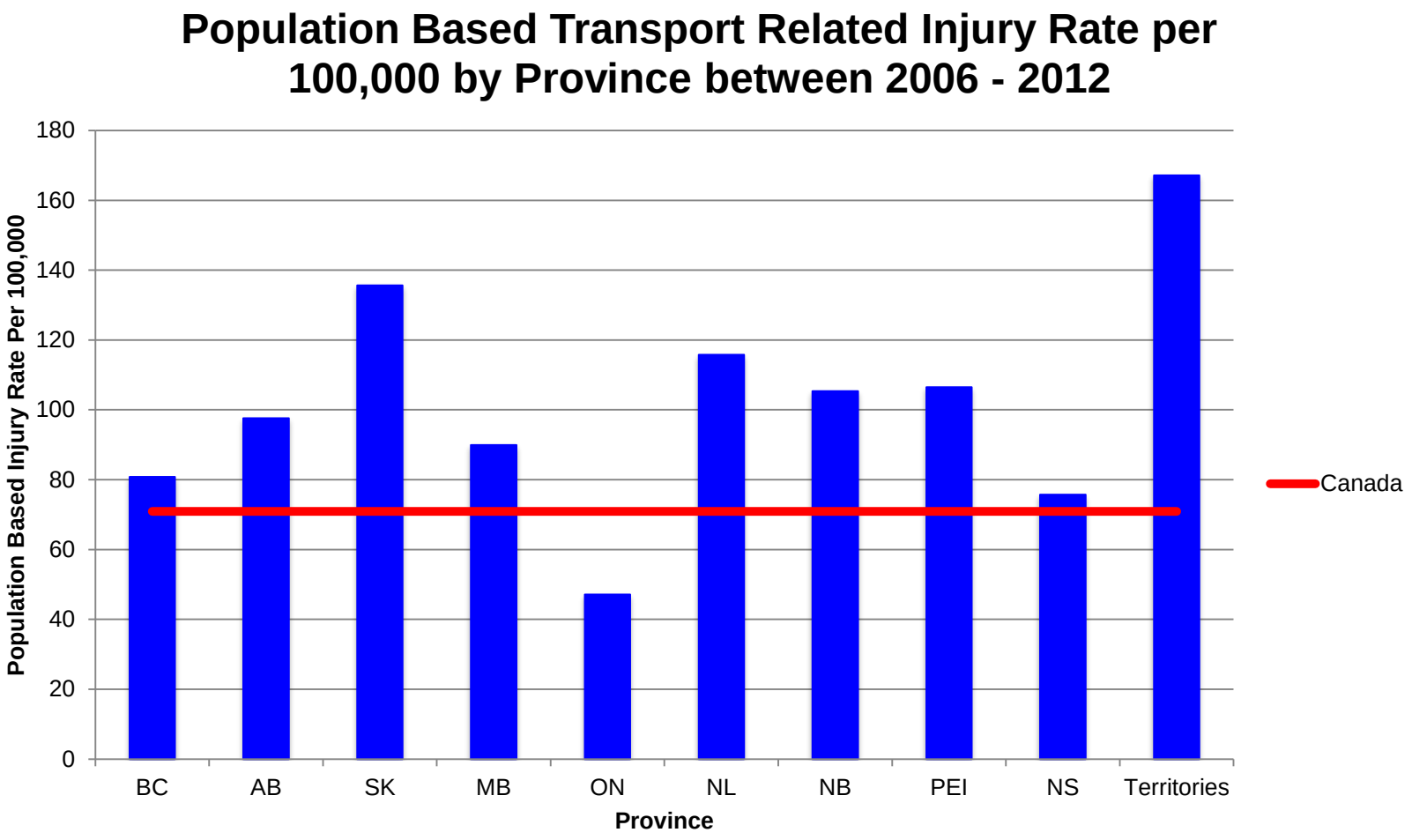
Methods – Analyses

- By broad cause (i.e. transport incidents)
- Population-based rate of hospitalizations due to specific transport injury
  - Occupant

Methods – GDL Comparisons

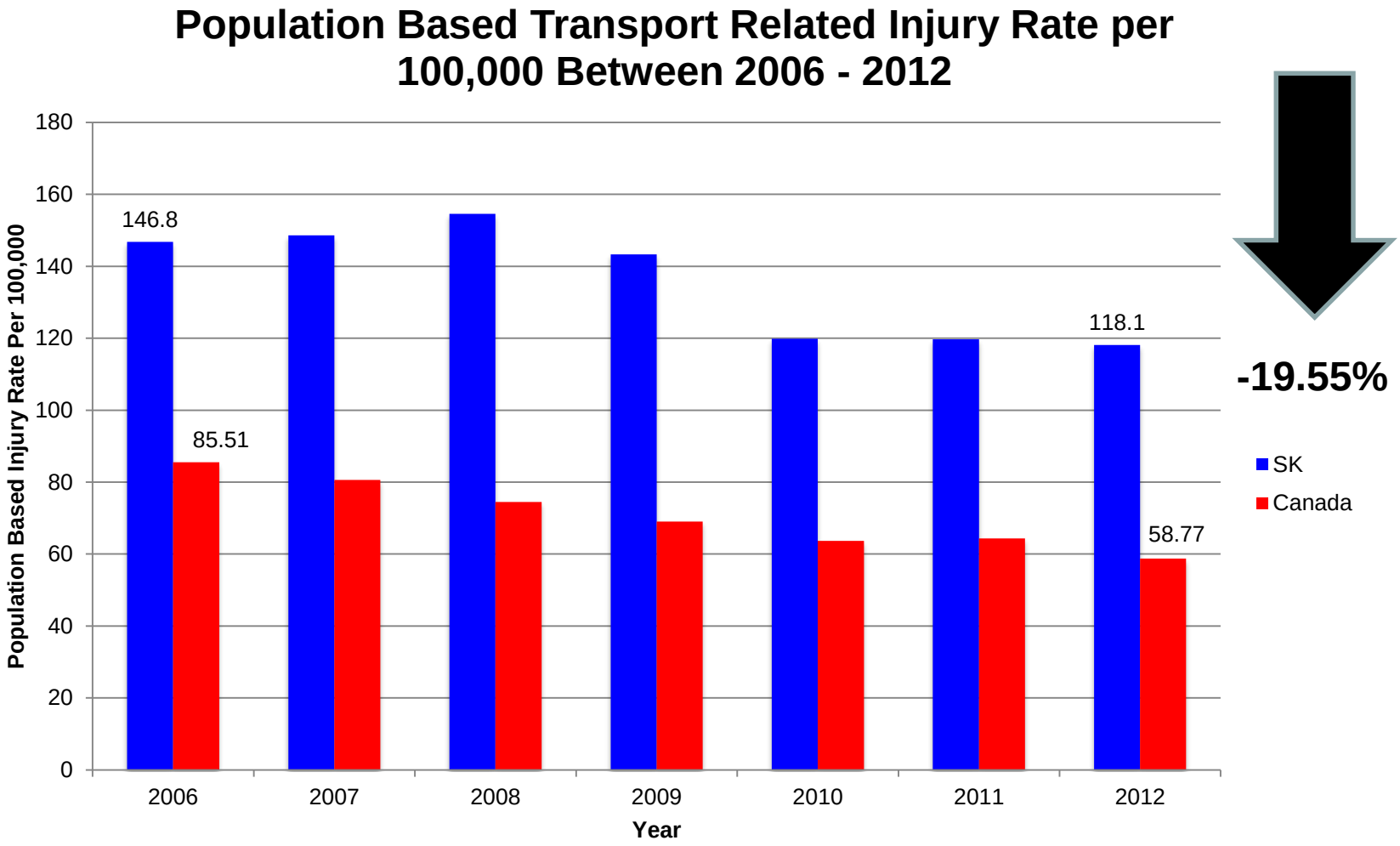
- ❑ Driver Education
- ❑ BAC Restrictions
- ❑ Nighttime Driving Curfew
- ❑ Passenger Restrictions
- ❑ ’L’ & ‘N’ Sign Plates
- ❑ Time discounts for driver education
- ❑ # of supervised hours

Results - Overall (Transport Related Hospitalizations) – 0 – 19 Year Olds



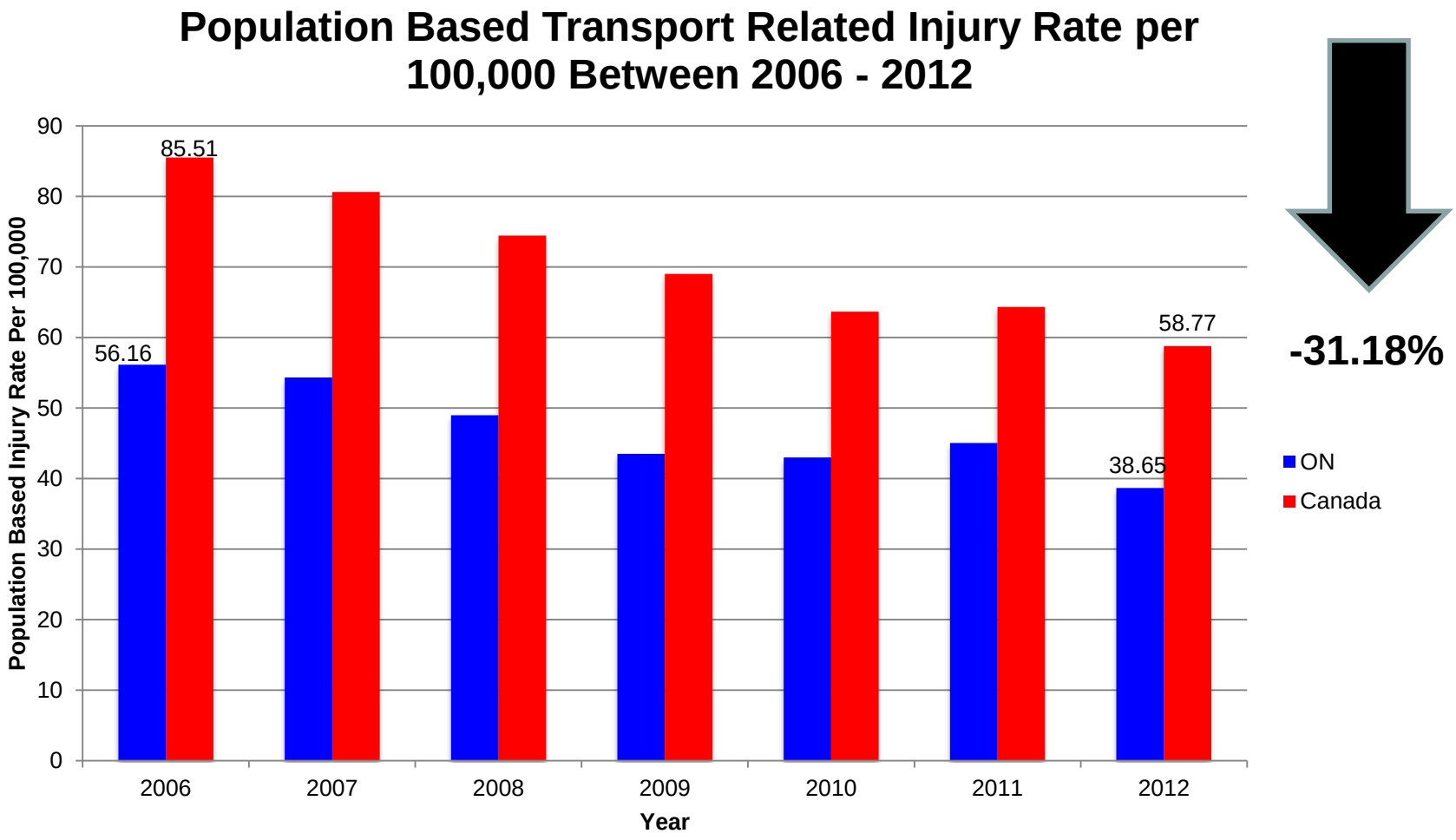
Canadian average excludes QC

Results – Saskatchewan (Transport-Related Hospitalizations) – 0 – 19 Year Olds



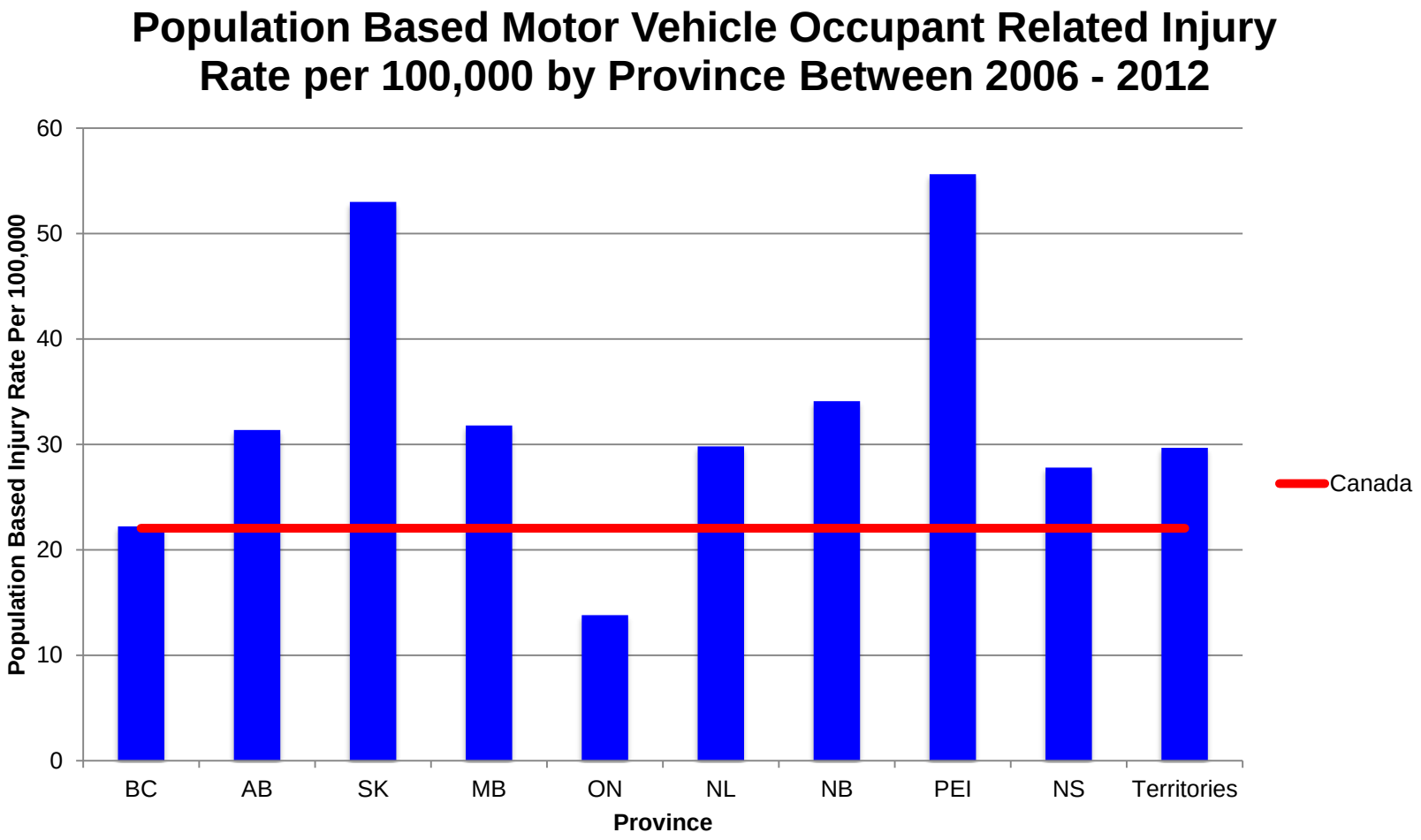
Canadian average excludes QC

Results – Ontario (Transport-Related Hospitalizations) – 0 – 19 Year Olds



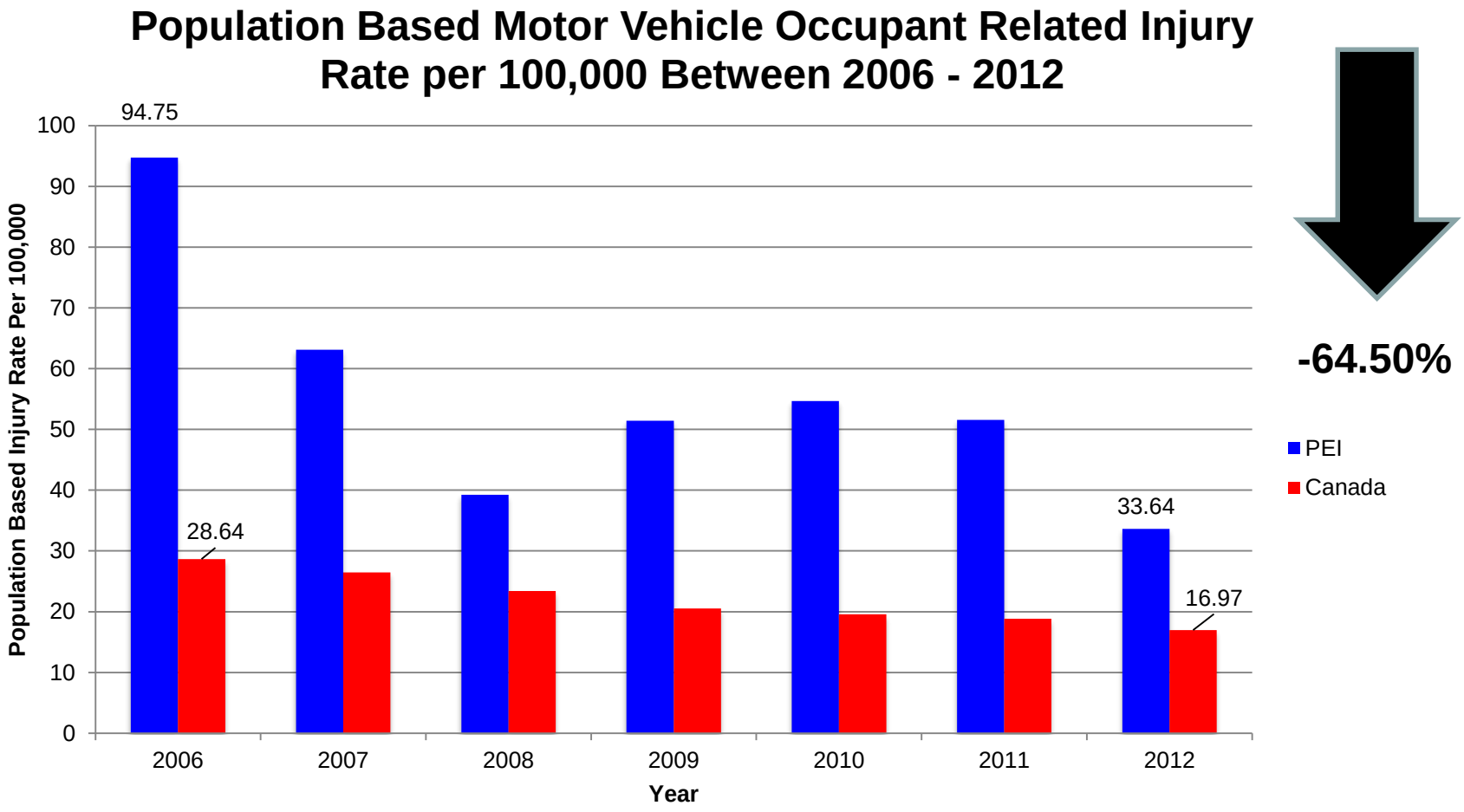
Canadian average excludes QC

Results – Overall (Motor Vehicle Occupant Related Hospitalizations) – 0 – 19 Year Olds



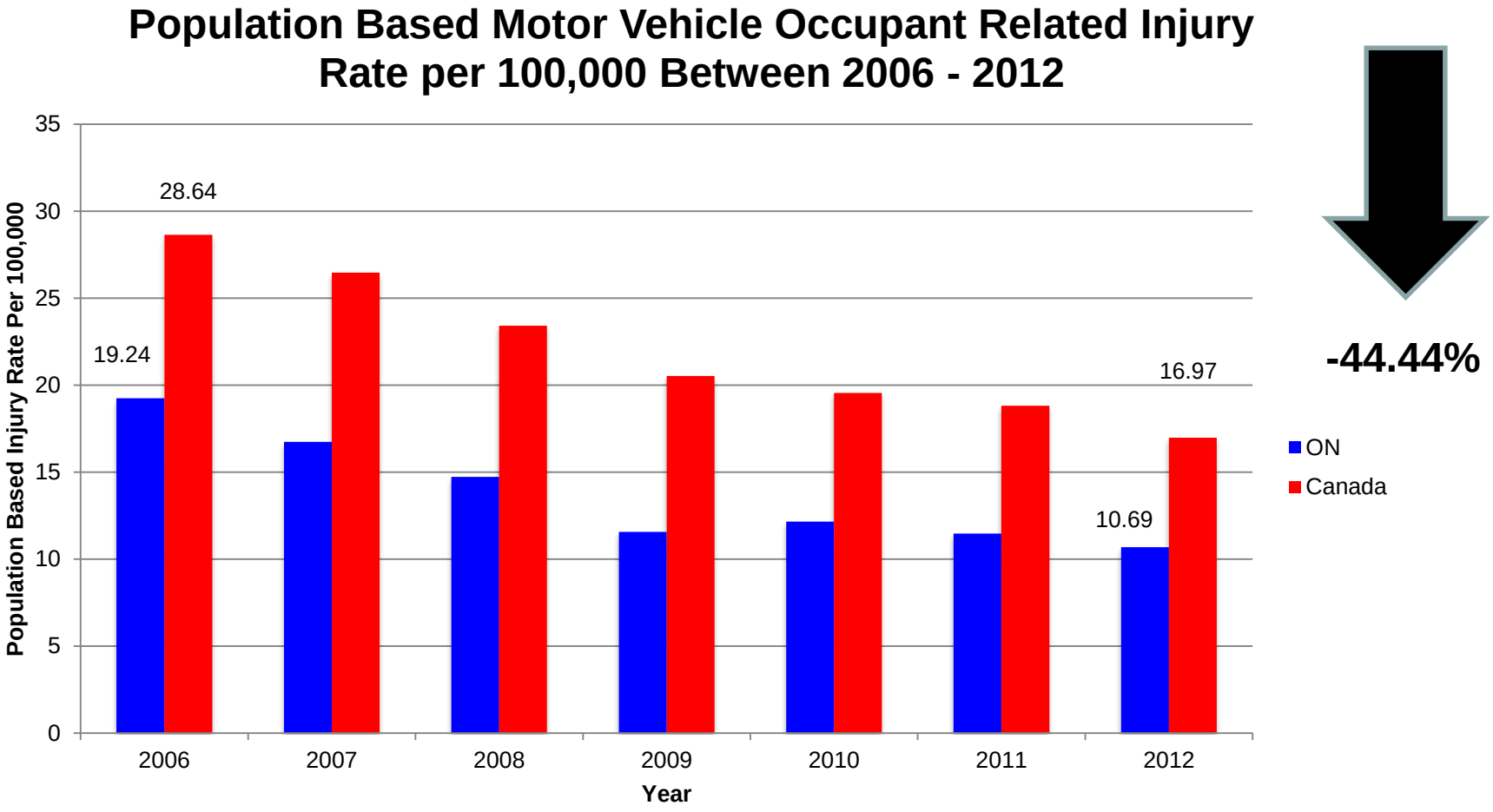
Canadian average excludes QC

Results – PEI (Motor Vehicle Occupant Related Hospitalizations) – 0 – 19 Year Olds



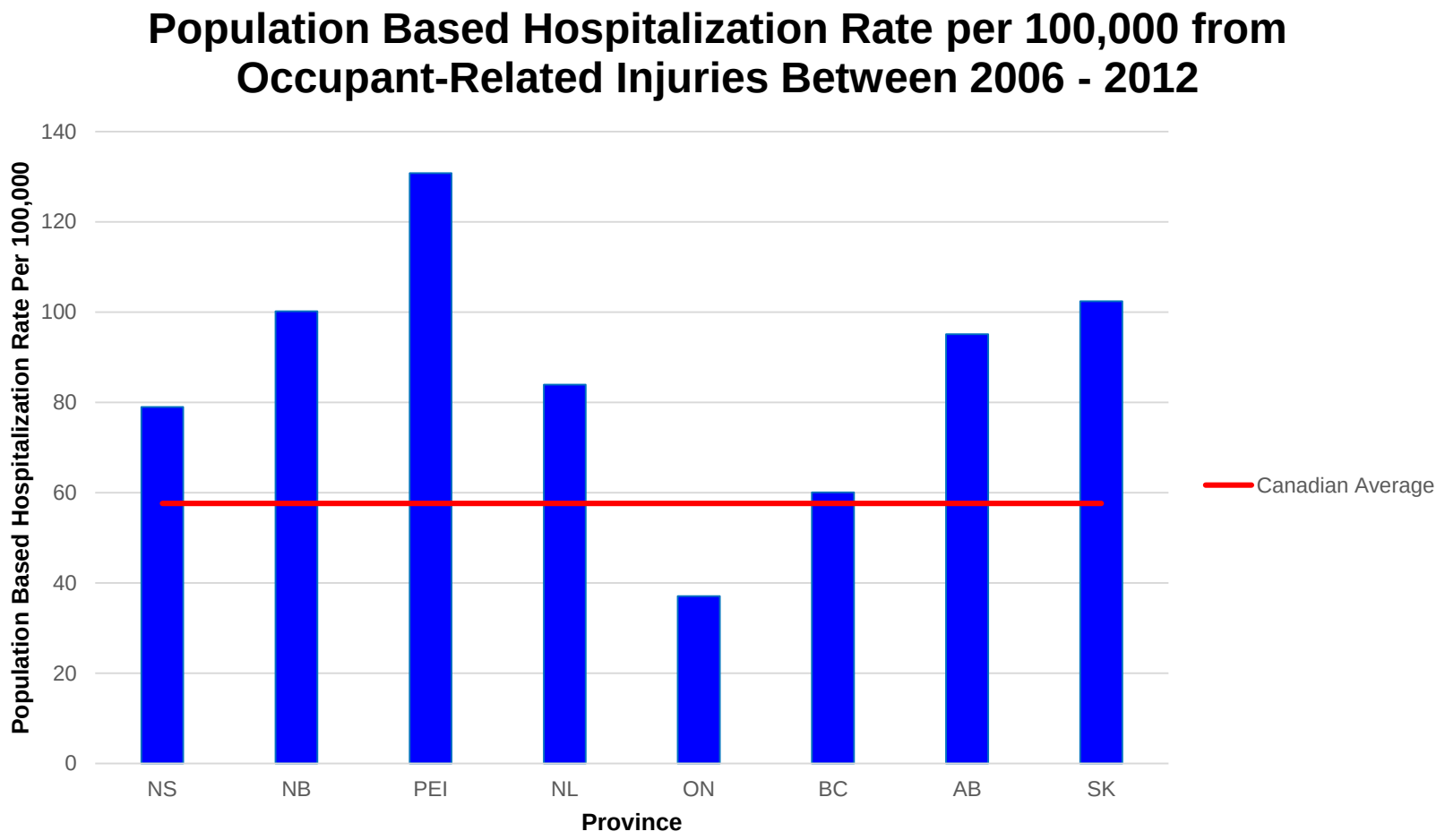
Canadian average excludes QC

Results – Ontario (Motor Vehicle Occupant Related Hospitalizations) – 0 – 19 Year Olds



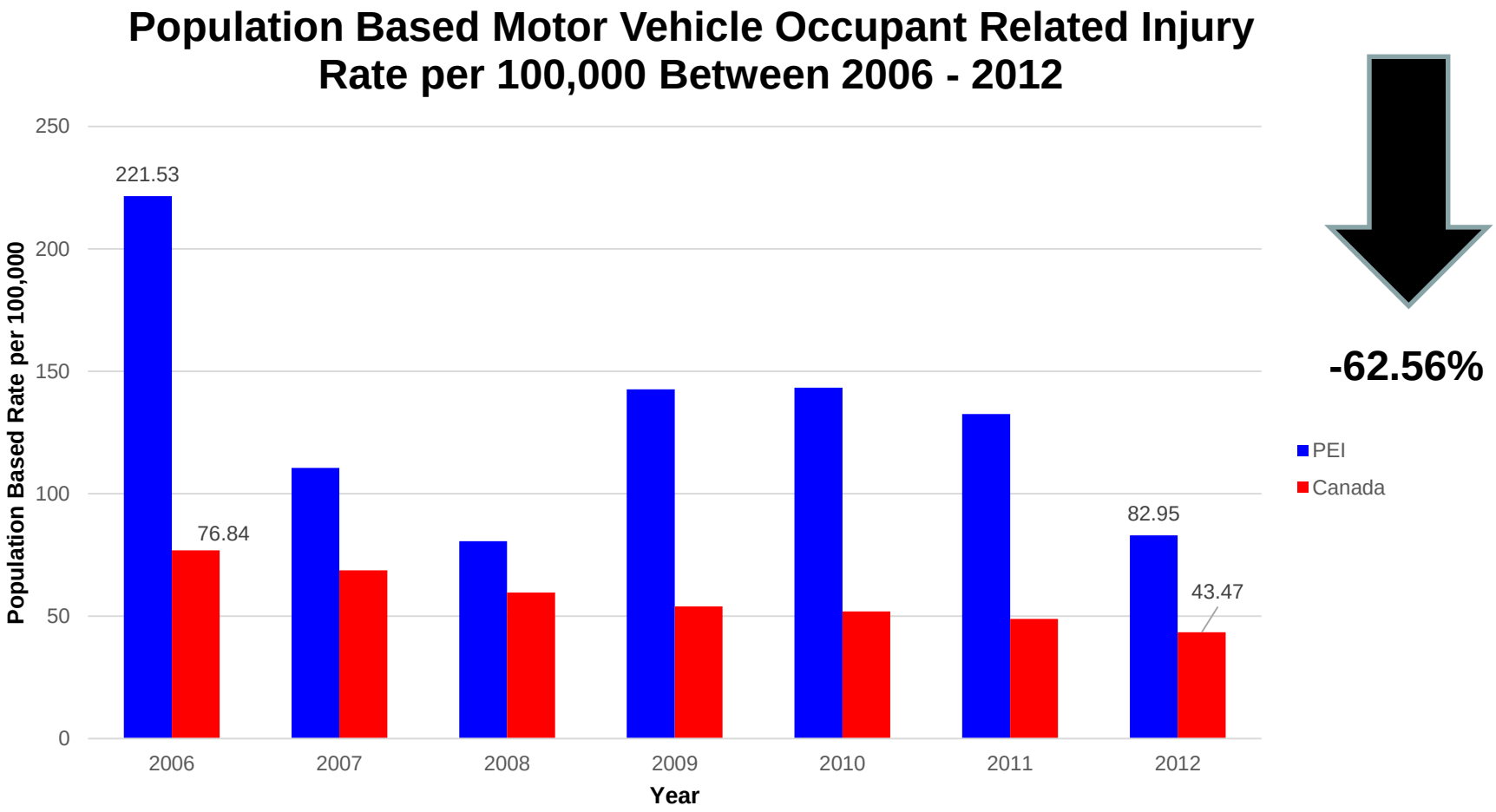
Canadian average excludes QC

Results - Ontario (Motor Vehicle Occupant Related Hospitalizations) - 15-19 Year Olds



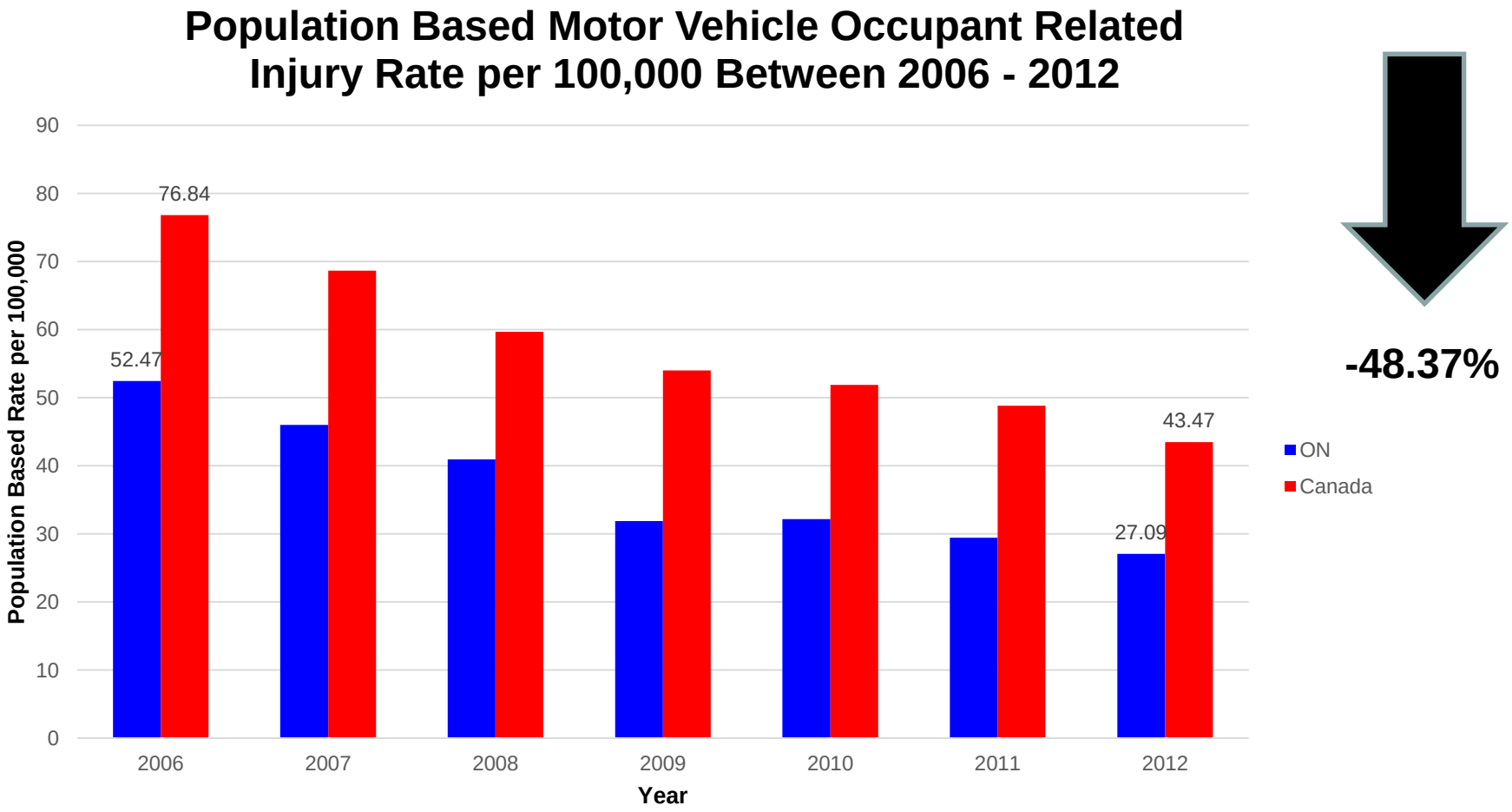
Canadian average excludes QC

Results – PEI (Motor Vehicle Occupant Related Hospitalizations) – 15-19 Year Olds



Canadian average excludes QC

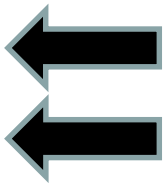
Results – Ontario (Motor Vehicle Occupant Related Hospitalizations) – 15-19 Year Olds



Canadian average excludes QC

Results – Population Based Injury Mortality Rate per 100,000 from All Transport Related Causes by Canadian Province (2006-2012)

	2006	2007	2008	2009	2010	2011	2012	% Change
BC	5.88	5.68	4.75	3.93	4.55	2.90	3.42	-41.84
AB	8.16	7.19	4.92	5.19	4.10	4.46	4.70	-42.40
SK	9.34	9.33	12.97	12.90	7.33	9.12	10.80	15.63
MB	6.65	7.29	3.48	5.35	5.32	9.03	7.74	16.39
ON	4.35	3.59	2.63	3.02	2.70	2.51	2.79	-35.86
NS	8.02	10.56	5.35	4.44	5.01	3.06	5.18	-35.41
NB	11.93	15.08	10.97	7.38	12.42	5.66	8.91	-25.31
PEI	14.80	3.01	12.07	0.00	9.11	6.07	3.06	79.32
NL	2.68	6.33	4.56	5.74	7.37	0.93	1.88	-29.85
Canada	4.51	4.39	3.43	3.49	3.37	3.05	3.44	-23.73



Results – GDL Scores

Province	Score
BC	Good = 2
AB	Good =2
SK	Fair = 1
MB	Fair = 1
ON	Good = 2
NS	Fair = 1
NB	Good = 2
PEI	Good = 2
NL	Good = 2

- Excellent: minimum of 12 months' duration in learner's phase with no time discounts, mandatory requirement for at least 50 hours of supervised practice
- Good: minimum of 12 months' duration in learner's phase (with time discounts) and/or mandatory requirements for at least 50 hours of supervised practice
- Fair: no minimum duration of 12 months and/or mandatory requirements for at least 50 hours of supervised practice
- None: No provincial graduated driver's licensing required

Conclusions

- Provinces that have implemented rigorous GDL programs have also seen a decrease in MVC related hospitalization and death rates over time

- Three main criteria that each province should employ at the learner phase: 1) minimum of 12 months' duration in the learner's phase, 2) a mandatory requirement for supervised practice of at least 50 hours, and 3) the elimination of "time discounts" for drivers who attend education programs. No province currently meets all 3 standards

Conclusions

- This is the first study to compare transport-related injuries among children and youth across Canadian provinces in terms of hospitalization, and the enactment of evidence-based policies.

- This data may influence prevention through harmonization of best-practice policy and legislation in Canada.

Limitations

- Factors other than policies/legislation such as awareness campaigns, changes to the built environment, or changes in health service utilization practices may have influenced changes in the pediatric injury rates

Acknowledgements

- Dr. Alison Macpherson
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Parachute
PREVENTING INJURIES. SAVING LIVES.

CCCIP
Canadian Collaborating Centres for Injury Prevention

Centres de données de recherche
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RDC CDR

CIHR IRSC
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