Evaluation of the Road Safety Impact of Ontario's Speed Limiter Legislation for Large Trucks

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Outline

- Setting the context
- What do we want to know?
- How did we find answers?
- What did we find?
- Conclusions

Setting the context

- A large truck speed limiter is an electronic device that connects to a truck's diesel engine and limits fuel injection when the truck reaches a pre-set speed
- 2009 Ontario legislation mandates electronic speed limiters for large trucks (>11,793 kg*) to be set to a maximum of 105 km/h
- Ontario and Quebec are the only jurisdictions in North America that require a large truck speed limiter
- The Ontario Ministry of Transportation is committed to evaluating its road safety programs.

*Gross Vehicle Weight Rating (GVWR)

What do we want to know?

- Has Ontario's speed limiter legislation been effective in improving road safety?
- Specifically,
  - What is the effect on the frequency of collisions involving speeding large trucks on 100 km/h highways?
  - Have there been unintended consequences in large truck driver behaviour?

Summary of results

Good news

- Fewer speeding large truck drivers in collisions* since implementation of large truck speed limiter legislation

- Restriction of large truck speed was not associated with an increase in other types of collisions

* relative to all at-fault large truck driver actions

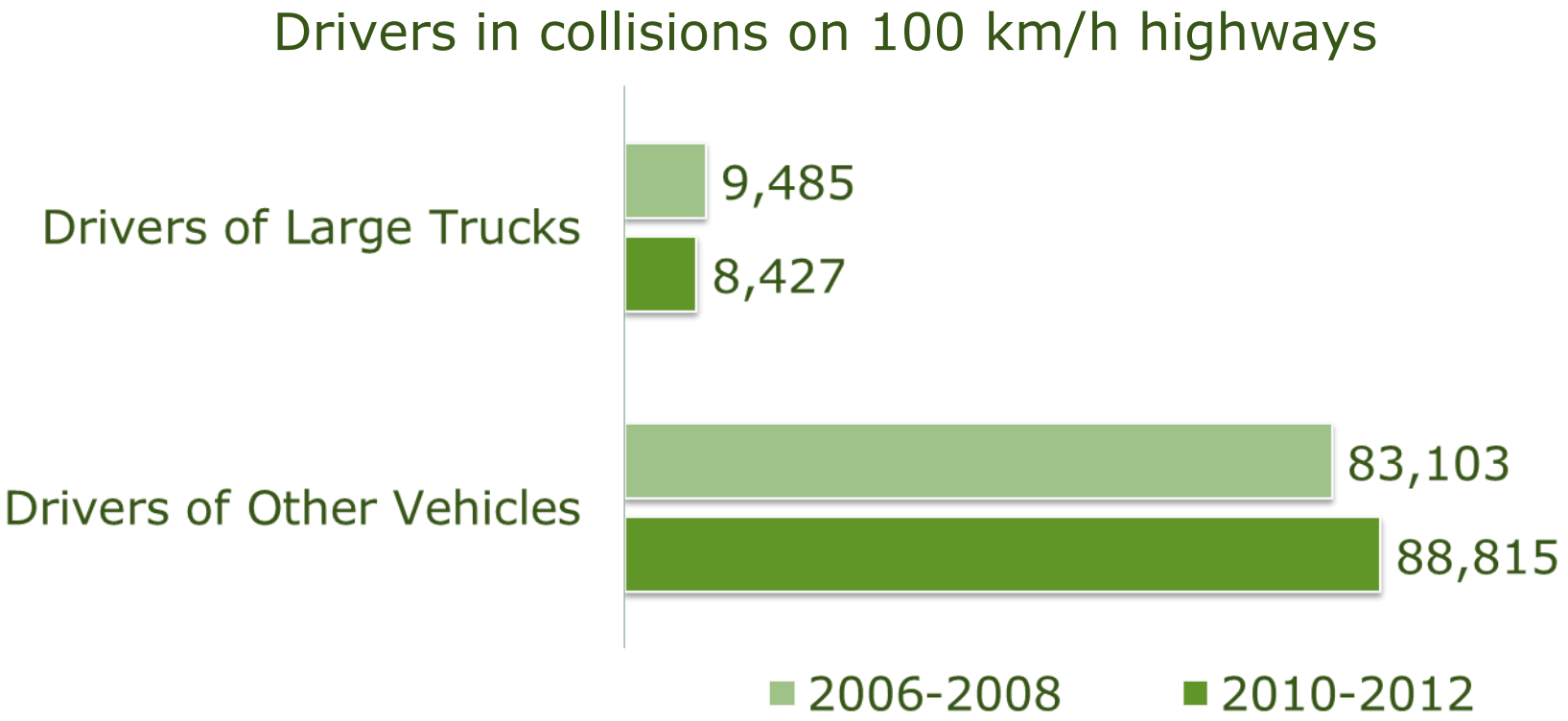
How did we find answers?

Collision Data

- Drivers of large trucks (11,793 kg+*); drivers of other registered vehicles
- Pre (2006-2008) and post (2010-2012) legislation in 2009
- Fatal, injury and Police reported property damage collisions
- High speed highways (80-100 km/h)

*Gross Vehicle Weight Rating (GVWR)

What did we find: All collisions



- 11.2% decrease for large truck drivers in collisions post 2009 speed limiter legislation

Targeted outcome measure

Outcome measure should control for exposure and isolate the expected effect of speed limiters

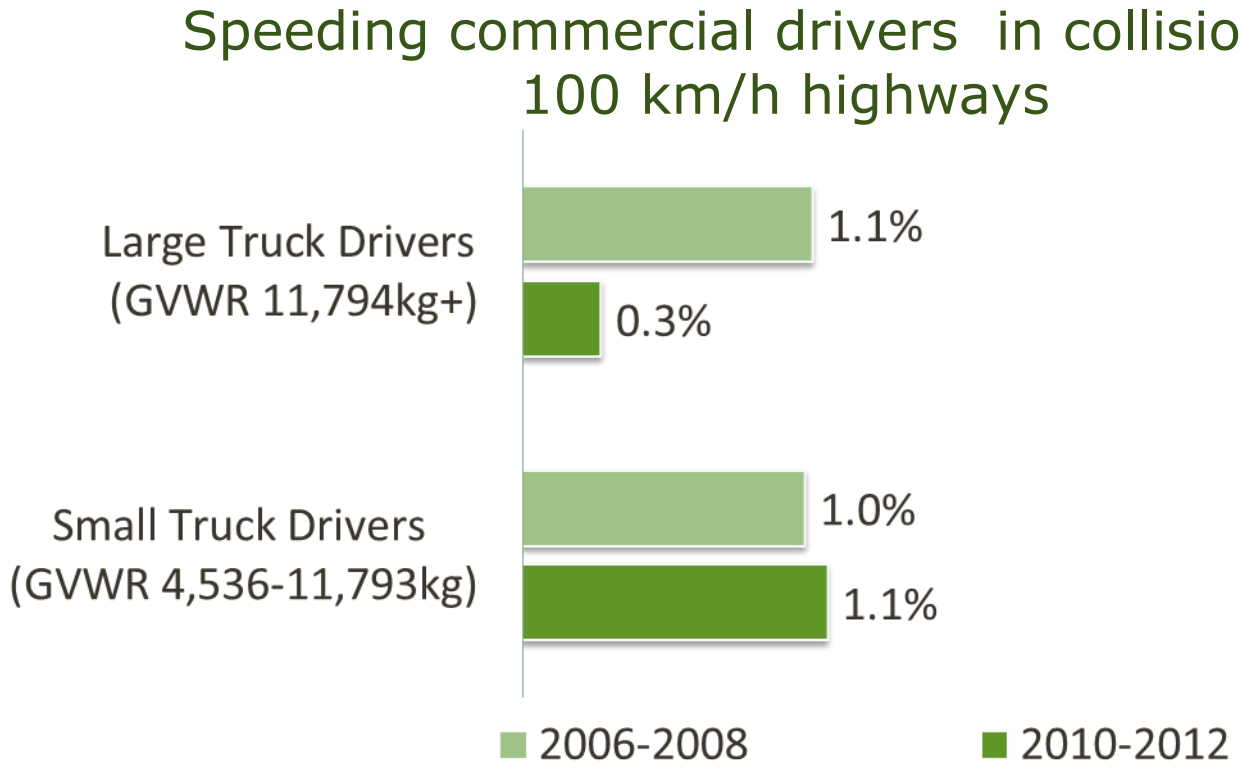
$$Outcome = \frac{Number\ of\ drivers\ at\ fault\ for\ speeding}{Number\ of\ drivers\ at\ fault}$$

- Drivers are coded as at-fault in a collision for all driver actions other than “driving properly”
- Speed is the only at-fault measure we expect to be affected by speed limiters

What did we find? Speed collisions

- Large truck drivers produced fewer at-fault speed collisions *relative to all at-fault driver actions*, post 2009.
- Decrease for LT drivers significantly greater than for drivers of other vehicles, $(p < .005)$

Alternate comparison group?



- Small truck driver collision outcomes too few for further analysis

Large truck driver behaviour

- Question: Do large truck drivers adjust their driving behaviour in an attempt to compensate for time lost?
  - Answer: No evidence to indicate worse collision outcomes for large truck drivers post 2009

No increase in large truck drivers at-fault for speed in collisions on 80 km/h roads, relative to all at-fault driver actions

Driver behaviour: Rear-end crashes

- Question: Does the speed differential created between large trucks and the general flow of traffic lead to an increase in rear-end crashes?
  - Answer: No evidence of change in proportion of large truck drivers rear-ended post 2009 on 100 km/h roads

Lead driver in rear end collision on 100 km/h roads of all drivers in collisions						
	2006-2008			2010-2012		
	Rear end	Total	% of total	Rear end	Total	% of total
Large truck driver	951	9,485	**10.03**	882	8,427	**10.47**
Other driver	15,464	83,103	**18.61**	18,939	88,815	**21.32**

Conclusions

Speed limiters contribute to overall road safety:

- 2009 Ontario legislation requires large truck speed limiters set to a maximum of 105 km/h
- Pre-post evaluation of large truck drivers in collisions indicates a decrease in speed collisions and no subsequent increase in other types of collisions
- Results being used to inform ongoing large truck safety research

Thank you!

Appendices

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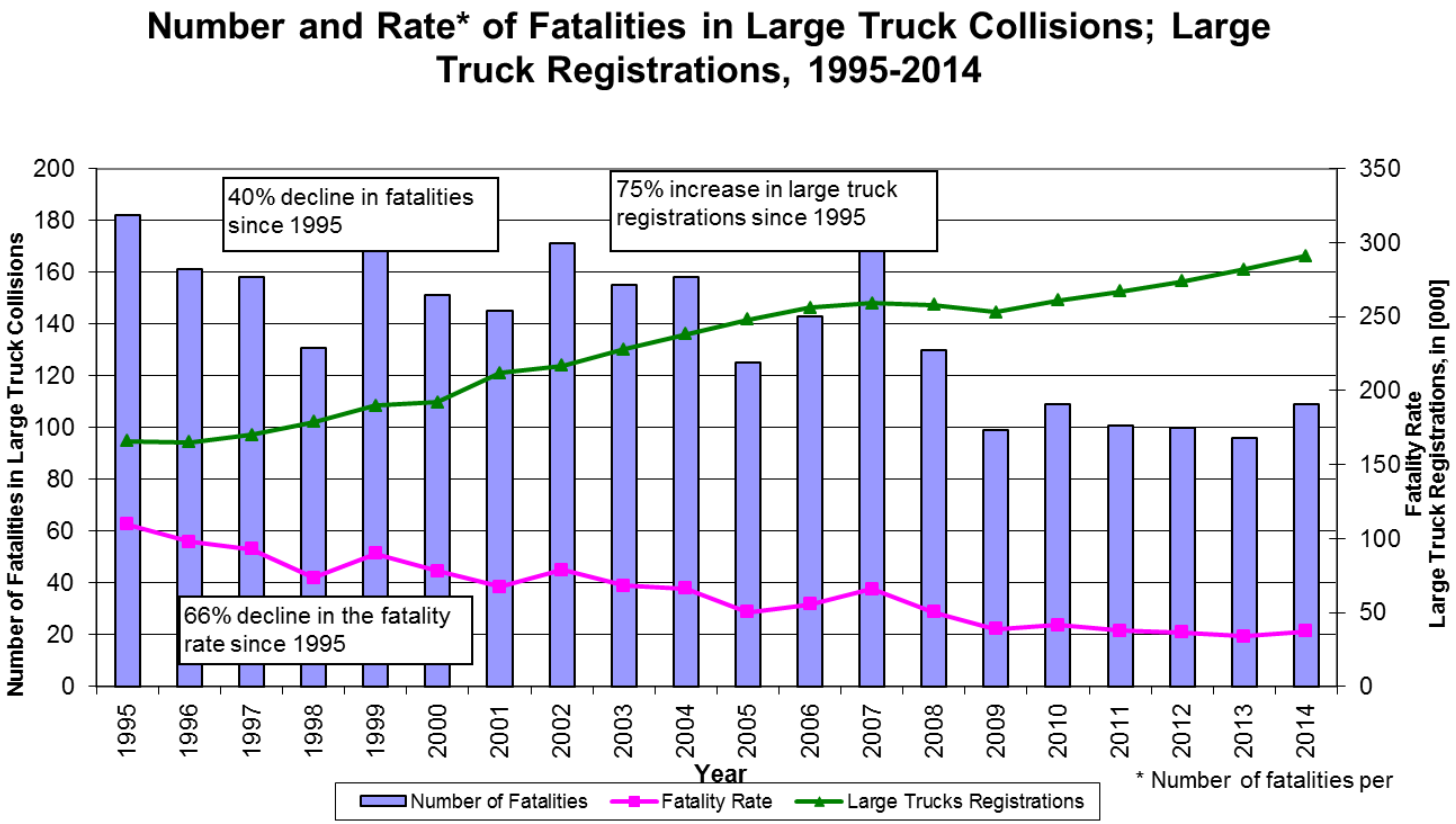
Large truck collisions



Ontario's data shows that despite an increase of 75 per cent in the number of large trucks registered in Ontario, the number of large truck fatalities decreased from 182 in 1995 to 109 in 2014, down 40 per cent.

Jurisdictional scan

Mandatory Large Truck Speed Limiter Legislation		
Jurisdiction	**Details**	**Effective Date**
Canada	Ontario and Quebec: large trucks (>11,793 kg)	2009
European Union	Large trucks (>12,000 kg) Buses (>10,000 kg)	1992
United States	None Awaiting publication of Proposed Rule (Federal)	N/A
Australia	Large trucks (>12,000 kg) Buses (>5,000 kg)	1990

- Ontario and Quebec are the only North American jurisdictions that require a large truck speed limiter
- Majority of commercial fleets in the U.S. currently use speed limiters

Speed-limiting systems (HTA 68.1): The Law

- Commercial vehicles are required to have a functioning speed-limiting system set to maximum speed of 105 km/h
- Tampering with speed limiting device is prohibited
- Commercial vehicles exempted from the law
  - Bus/mobile crane/motor home/vehicle manufactured before 1995/vehicle with GVWR under 11,794 kg/ambulance, cardiac arrest emergency vehicle, fire apparatus (see Reg for more)

Speed-limiting systems (HTA 68.1): Charges & penalties

- Charges laid:
  - Maximum road speed setting on the electronic control module (ECM) above 105 km/h
  - Indication of tampering with speed limiting device
  - Driver speed recorded at/above 115 km/h (Deeming provision)
  - Driver refusal to allow officers access to ECM

- Penalties:
  - Fines range from $250 to $20,000 (Average: $390)

https://www.ontario.ca/laws/statute/90h08?search=speed+limiting
https://www.ontario.ca/laws/regulation/900587