



FINAL REPORT

**ENVIRONMENTAL BENEFITS
OF SPEED LIMITERS FOR TRUCKS
OPERATING IN CANADA**

**Prepared for:
Transport Canada
On Behalf of
Council of Deputy Ministers
Responsible for
Transportation and Highway Safety**

**Submitted by:
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Disclaimer

This report reflects the views of the authors and not necessarily those of Transport Canada or the Council.

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EXECUTIVE SUMMARY

In November 2005, the Ontario Trucking Association (OTA) asked the Ontario government to mandate speed limiters set at a maximum speed of 105 km/h. Since then the Canadian Trucking Alliance (CTA) and its provincial affiliates have announced their support for making this policy national.

The federal, provincial and territorial governments are conducting an evaluation of the feasibility of this proposal. In October 2006 a discussion paper was prepared to clarify and present the current knowledge on fundamental issues related to the proposal and to provide guidance/direction for determining next steps.

Estimates of the fuel savings and environmental benefits in terms of reductions in greenhouse gas (GHG) emissions were included in the Discussion Paper. However, due to the time constraints associated with the preparation of that Paper, some of the procedures used for estimating the fuel savings and associated GHG emissions were based on limited information.

This paper updates these estimates using more detailed speed distribution and truck traffic volume data. The additional information allowed for more accurate and detailed estimates of the fuel savings associated with the speed limiter policy. For example, the speed data collected allowed for a speed distribution profile to be developed for most Provinces, compared to one overall speed profile that was used for the original Discussion Paper. The additional speed data also allowed separate savings estimates for highways with posted speeds of 100 km/hr and 110 km/hr.

While the total amount of truck travel involved increased, the truck speeds involved were somewhat lower than previously estimated, limiting the overall savings. The updated annual fuel savings are now estimated at 228.6 million litres, 0.6% above the previously estimated total of 227.3 million litres. This is 1.4% of the total diesel fuel consumed by road vehicles in Canada in 2006.

The annual GHG savings are now estimated at 0.64 megatonnes, compared to the previous estimate of 0.63 megatonnes. Ontario and Quebec combined account for 64% of the estimated national saving.

ENVIRONMENTAL BENEFITS OF SPEED LIMITERS FOR TRUCKS OPERATING IN CANADA

1.0 Introduction

In November 2005, the Ontario Trucking Association (OTA) asked the Ontario government to mandate speed limiters set at a maximum speed of 105 km/h. This would apply to all commercial motor vehicles operating into and through the province which were manufactured after 1995 and with a manufacturer's gross vehicle weight rating (MGVWR) greater than 11,000 kg. Since then the Canadian Trucking Alliance (CTA) and its provincial affiliates have announced their support for making this policy national.

The federal, provincial and territorial governments are conducting an evaluation of the feasibility of this proposal. In October 2006 a discussion paper was prepared to clarify and present the current knowledge on fundamental issues related to the proposal and to provide guidance/direction for determining next steps.

Estimates of the fuel savings and environmental benefits in terms of reductions in greenhouse gas (GHG) emissions were included in the Discussion Paper.

However, due to the time constraints associated with the preparation of that Paper, some of the procedures used for estimating the fuel savings and GHG emissions were based on limited information.

This paper updates these estimates using more detailed speed distribution and truck traffic volume data.

2.0 Information Update

The main work elements for this update of the fuel savings and associated GHG savings were to obtain more detailed speed distribution data and more complete truck traffic volume data. These are described in the following sections of this report.

These data are then applied to the differences in fuel consumption rates for truck speeds above the suggested speed limit of 105 km/hr to arrive at the total fuel savings if truck speeds were limited at 105 km/hr.

3.0 Truck Traffic Volumes

Truck traffic volume data were obtained from a number of sources and usually based on provincial traffic count programs. Truck types included are all forms of tractor-trailers plus straight trucks. Straight trucks were included as the OTA/CTA proposal is for the speed limiter policy be applied to vehicles with a manufacturer's gross vehicle weight rating (MGVWR) greater than 11,000 kilograms which includes most straight trucks as well as tractor-trailers. However, tractor-trailers account for about 85% to 90% of the truck travel affected¹. Tractor-trailers are typically used on longer hauls and straight trucks on local and regional trips.

Exhibit 3.1 summarizes the estimated truck travel by province and the data source. Overall, the travel data received was more detailed and up-to-date than the data available for the original Discussion Paper.

Travel within the United States on international trips is not included in the estimates as it is not known how the trucking industry will respond to the speed limiter policy for these trips. As well, collection of truck volume and speed data for each state and calculation of the amount of affected travel in each state would require a level of effort well beyond that available for this project.

¹ This percentage can be higher or lower for specific highway sections.

Exhibit 3.1: Estimated 2006 Truck Travel by Province and Source

Province	Estimated Annual Truck Travel on Provincial Highways (billions kilometres)	Data Source
Newfoundland Labrador*	0.2	Consultant estimate based on provincial traffic counting program. For Transcanada Highway only.
Nova Scotia*	0.4	Consultant estimate based on provincial traffic counting program
Prince Edward Island	n/a	Highways posted at lower speeds. Speed Limiter Policy basically not applicable.
New Brunswick*	0.4	New Brunswick Department of Highways special tabulations
Quebec	5.8	Ministère des Transports du Québec. Les Transport au Québec. October 2000. Table: Estimation du Kilometrage Annual Moyen Parcouru, 1997. Average estimate increased to 10% by consultant for 2006 estimate.
Ontario	9.9	Ministry of Transportation special tabulations
Manitoba*	0.6	Consultant estimate based on provincial traffic counting program
Saskatchewan	1.4	Saskatchewan Highways and Transportation, Travel on Saskatchewan Highways 2006
Alberta	3.7	Alberta Transportation and Utilities. Traffic Volume, Vehicle Classification, Travel and Equivalent Single Axle Load (ESAL) Statistics Report
British Columbia*	2.2	Ministry of Transportation special tabulations
Total	24.6	

*Estimate does not include all highways for which the province is responsible but does include highways with posted speeds of 100 km/hr or higher. These are the highways affected by the speed limiter policy.

4.0 Truck Speed Distribution Data

Considerable additional truck speed distribution data has been collected compared to the data available for the Discussion Paper². Data sources include:

- **New Brunswick...**NBDOT provided sample speed data for 2 sites posted at 110 km/hr, and 1 site at 100 km/hr (this data is used as a proxy for speed distributions in Newfoundland and Nova Scotia)
- **Quebec...**Transport Canada provided data for 5 Weigh-in-Motion (WIM) sites.
- **Ontario...**Data previously provided by MTO for 2 sites is supplemented by data from Transport Canada at 3 WIM sites
- **Manitoba...** Data for 5 sites was provided by Manitoba Infrastructure and Transportation
- **Saskatchewan...** Saskatchewan Highways and Transportation provided data for 4 sites posted at 110 km/hr and 7 sites posted at 100 km/hr.
- **Alberta...**Data was provided for 3 sites posted at 110 km/hr and 2 sites posted at 100 km/hr.
- **British Columbia...** Data was provided by Transport Canada for 4 WIM sites in the province. Data was also obtained from a satellite vehicle tracking technology used to track vehicle speeds along with other vehicle data. Both data sets showed the trucks speeds obtained for British Columbia are considerably lower than those obtained for other provinces. This lower speed is attributed mainly to the terrain conditions which limit the highway design speeds and hence posted speeds.

The speed distribution data sets obtained for each province were averaged to produce an average speed distribution profile by province. For provinces with roads posted at 110 km/hr, separate speed distributions were calculated for 110 km/hr posted highways and 100 km/hr posted highways.

Overall, the speed data collected is considerably more extensive than what was available for the original Discussion Paper. The additional coverage allowed a speed distribution profile to be developed for most provinces³ whereas the original work used an average profile developed from Ontario, Manitoba and Saskatchewan speed data that was applied to all of Canada. As well, the previous work was unable to differentiate by posted speeds of 100 km/hr and 110 km/hr.

Appendix A graphically illustrates the speed distribution profiles for the sites for which Transport Canada provided the data.

² In all cases, the base speed data used were collected in either 2006 or 2007.

³ For Nova Scotia and Newfoundland the speed distribution profile calculated for New Brunswick was used.

The speed distribution profiles were applied to the estimates of total truck traffic for each province to identify the annual totals of truck travel above 105 km/hr.

Due to different speed distribution profiles, separate estimates have been made for roads posted at 110 km/hr⁴ and 100 km/hr. Roads posted at 90- km/hr or less were not included in the analysis as available data indicates only minor amounts of truck travel occurs at speeds in excess of 105 km/hr on these roads⁵.

Exhibit 4.1 shows the average speed distribution for each province that was used in the analysis.

On a national basis, it is estimated that 62.4% of truck traffic is at 105 km/hr or less. Another 22.7% between 105 and 110 km/hr and a number of trucking companies currently limit their vehicles to speeds within this speed range. The remaining 14.9% are travelling at speeds above 110 km/hr and account for the majority of the fuel savings under the policy. Overall typical truck speeds were somewhat lower than those used in the original Discussion Paper as shown by Exhibit 4.2.

⁴ Applies to Nova Scotia, New Brunswick, Saskatchewan and Alberta.

⁵ Only 1.2% of the truck traffic on the TCH in northwestern parts of Ontario, where the speed limit is normally set at 90 km/hr, exceeds the proposed 105 km/hr speed limiter setting.

Exhibit 4.1: Average Speed Distribution by Province

Province	Percent of Truck Traffic Within Speed Interval Indicated				
	<105	105-110	110-115	115-120	120+
New Brunswick * (100 km/hr locations)	64.2	22.5	9.2	3.0	1.1
New Brunswick (110 km/hr locations)	55.1	31.5	9.6	2.5	1.3
Quebec	64.5	23.0	9.8	2.1	0.6
Ontario	49.1	28.0	16.6	5.0	1.3
Manitoba	75.4	19.4	4.4	0.2	0.1
Saskatchewan (110 km/hr locations)	50.1	23.2	16.1	7.1	3.5
Saskatchewan (100 km/hr locations)	54.1	28.0	12.0	3.6	2.3
Alberta (110 km/hr locations)	44.4	26.5	18.9	7.3	2.9
Alberta (100 km/hr locations)	69.7	22.5	6.0	1.3	0.5
British Columbia**	97.2	1.8	0.6	0.2	0.2
National average***	62.4	22.7	10.3	3.2	1.4

*Speed distribution data for New Brunswick used for Nova Scotia and Newfoundland.

**Terrain constraints limit vehicle speeds on most commercial vehicle routes in B.C.

***Arithmetic average of speeds shown in each column

Exhibit 4.2: Percent of Truck Traffic by Speed Interval

Estimate	Percent of truck traffic within speed interval noted				
	<105	105 - 110	110 - 115	115-120	120+
Original discussion paper	60	25	10	5	
Updated Estimate	62.4	22.7	10.3	3.2	1.4

5.0 Vehicle Speed versus Fuel Consumption Rates

Fuel consumption varies with vehicle speed. At lower speeds mechanical forces required by the engine and drive train adversely affect fuel consumption, while at higher speeds aerodynamic forces increase consumption.

Data published by Natural Resources Canada's FleetSmart Program indicates the fuel savings associated with different truck speeds⁶. These data are summarized in Exhibit 5.1 using 105 km/h as the base speed.

Exhibit 5.1: Fuel consumption vs. speed for tractor-trailer combinations

Vehicle Speed (km/h)	Percent Reduction in Fuel Consumption (for speed reduction to 105 km/hr.)
105	0
110	5
115	17
120	28
125	40

Source: Adapted from Natural Resources Canada FleetSmart Program

Limiting truck speeds at 105 km/h obviously provides fuel savings for the portion of trucks travelling above that speed.

Fuel consumption rates are exponentially related to speed (fuel consumption increases faster than speed increases). To take this into account, the fuel savings associated with reducing truck speeds were calculated for several incremental speed ranges.

Exhibit 5.2 summarizes the savings by speed interval and for the overall truck traffic volume. The fuel savings noted for each speed interval are based on the average of fuel savings at the lower end of the speed interval and fuel savings at the higher end of the speed interval as illustrated by Exhibit 5.2.

⁶ Results compare favourably with the American Trucking Association Maintenance Council Report 55 vs. 65+. An Equipment Operating Costs Comparison 1996.

Exhibit 5.2: Estimated Percent Fuel Savings due to Speed Reduction

Speed interval	% fuel savings at lower end of speed interval (from Exhibit 5.1)	% fuel savings at higher end of speed interval (from Exhibit 5.1)	Average % fuel saving for speed range
(a)	(b)	(c)	$\frac{(b) + (c)}{2}$
Less than 105	0	0	0
105 - 110	0	5	2.5
110 - 115	5	17	11
115 - 120	17	28	22.5
120+	Based on average speed of 125 km/hr		40

These fuel savings are essentially the same as those used for the original Discussion Paper, except that the improved speed data allows for the development of an additional speed interval at speeds above 115 km/hr. This further improved the overall accuracy of the fuel saving estimates.

6.0 Calculating the Fuel Savings

6.1 Base Fuel Consumption Rate

A base fuel consumption rate of 40 L/100 Km is assumed for trucks travelling at 105 km/hr. This is based on the consultant's review of the fuel consumption rates for 100 km/hr truck speeds as shown in the NRCan report "*Fuel Efficiency Benchmarking in Canada's Trucking Industry, March 2000*".

6.2 Calculation Procedures

To calculate the fuel savings associated with limiting truck speeds to a maximum of 105 km/hr, the total truck traffic within a speed interval was calculated. The fuel consumed by the truck traffic in each interval was then calculated. A sample calculation follows.

Consider an annual truck traffic volume of 500 million vehicle kilometres (MVK) with the speed distribution profile as shown in Exhibit 6.1. For the sample calculation, the national average speed distribution shown in Exhibit 4.1 is used.

Exhibit 6.1: Sample Calculation for 500 MVK of Total Travel by Speed Interval

Speed Interval	Percent of truck traffic Within the Speed Interval*	MVK of Travel within Speed Interval**
<105	62.4	312
105 - 110	22.7	113.5
110 - 115	10.3	51.5
115 - 120	3.2	16
120+	1.4	7
Total	100	500

*From Exhibit 4.1

**MVK within each speed interval is 500 MVK times the percentage of traffic within the speed interval. For example, 62.4% of the traffic is at or less than 105 km/hr; so total traffic within this speed interval is 500 MVK x 0.624 = 312 MVK

The fuel savings for the traffic volume in each speed interval is then calculated as shown in Exhibit 6.2.

Exhibit 6.2: Sample Calculation of Fuel Savings for 500 MVK of Truck Travel for Speed Distribution Profile Shown.

Speed Range	Annual VKT Millions (from Exhibit 6.1)	Total Fuel Consumption at 105 KM/hr (Millions litres)	% Fuel Consumption Premium for Higher speed (from Exhibit 5.2)	Total Fuel Consumed at Higher Speed (Millions litres)	Fuel Savings for Speed Limited at 105 km/hr (millions litres)
(a)	(b)	(c)	(d)	(e)	(f)
<105	312	124.8	0.0	n/a	0.0
105 - 110	113.5	45.4	2.5	46.5	1.1
110 - 115	51.5	20.6	11	22.9	2.3
115 - 120	16	6.4	22.5	7.8	1.4
120+	7	2.8	40	3.9	1.1
Total Fuel Savings					5.9

Column (c) = Column (b) times fuel consumption rate of 40 L/100 KM

Column (e) = Column (c) times Column (d)

Column (f) = Column (e) minus Column (c)

7.0 Estimated Fuel Savings

The calculation procedures outlined above were applied to the associated traffic volume and speed distribution profile in each province to estimate the total fuel savings of 228.6 million litres annually as shown by Exhibit 7.1. Calculation details for each province are provided in Appendix B. Ontario and Quebec combined account for 64% of the total estimated savings.

This estimated annual fuel savings of 228.6 million litres is slightly above the previously estimated total of 227.3 million litres, for an overall increase of 0.6%. While the total amount of truck travel involved increased, the truck speeds involved were somewhat lower than previously estimated, limiting the overall savings.

The estimated overall saving is 1.4% of the total 2006 diesel fuel sales for on-road vehicles⁷.

Exhibit 7.1: Estimated Fuel Savings by Province if Speed Limiter Policy Implemented

Province	Estimated Annual Total Truck Travel (billion km)	Estimated Annual Fuel Savings (millions litres)
Newfoundland	0.2	1.9
Nova Scotia	0.4	4.9
Prince Edward Island	n/a	0.0
New Brunswick	0.4	6.8
Quebec	5.8	46.3
Ontario*	9.9	100.3
Manitoba	0.6	2.8
Saskatchewan**	1.4	21.2
Alberta	3.7	42.4
British Columbia	2.2	2.0
Total	24.6	228.6

*Savings were calculated for 6.2 billion km of travel to cover traffic on roads posted at 100 km/hr. Roads posted at 90 km/hr or less were not included due to available data indicating speeds higher than 105 km/hr are not that prevalent

**Savings calculated for 1.2 billion km of travel as roads posted at 90 km/hr or less were excluded

A sensitivity test was performed at fuel consumption rates 5 L/100 km below and above the base consumption rate of 40 L/100 KM (i.e., 35 L/100 Km and 45 L/100km). This showed that the estimated fuel savings increase by 12% at the higher base consumption rate and decrease by 14% at the lower base consumption rate.

⁷ Refer to http://www40.statcan.ca/l01/ind01/l3_4006_4021.htm?hili_none Sales of fuel for road motor vehicles...total 2006 sales for Canada 16.594 billion litres.

8.0 Green House Gas Savings

Greenhouse gas savings correlate directly with fuel savings as each litre of fuel saved reduces GHG emissions by 2.8 kilograms. Based on the fuel savings of 228.6 million litres noted above, the associated annual GHG savings would be 0.64 megatonnes, slightly above the previous estimate of 0.63 megatonnes.

Exhibit 8.1: Estimated Annual GHG Savings by Province due to Implementation of Speed Limiter Policy

Province	Estimated Annual GHG Savings (megatonnes)
Newfoundland	0.01
Nova Scotia	0.01
Prince Edward Island	0.00
New Brunswick	0.02
Quebec	0.13
Ontario	0.28
Manitoba	0.01
Saskatchewan	0.06
Alberta	0.12
British Columbia	0.01
Total	0.64

9.0 Comparison to OTA/CTA savings estimates

The fuel savings by vehicle speed used by OTA/CTA in their calculations were essentially the same as those used in this estimate, as was the base fuel consumption rate for a truck speed of 105 km/hr. However, their estimated total fuel savings for Ontario is 50 million litres a year, one-half that estimated by this Paper⁸.

⁸ Estimated saving as shown in March 2006 submission to the Ontario government.

10.0 Summary

Compared to the original Discussion Paper, considerably more detailed traffic and speed data were collected and used to update the fuel savings estimates. This allowed for more accurate estimates of the fuel savings associated with the speed limiter policy to be derived.

Total kilometres of truck travel involved increased by 18% from 20.8 billion kilometres annually to 24.6 billion with Quebec and Alberta providing the greatest differences from the previous estimates. The increases are due to both increased truck traffic volume and updated estimates.

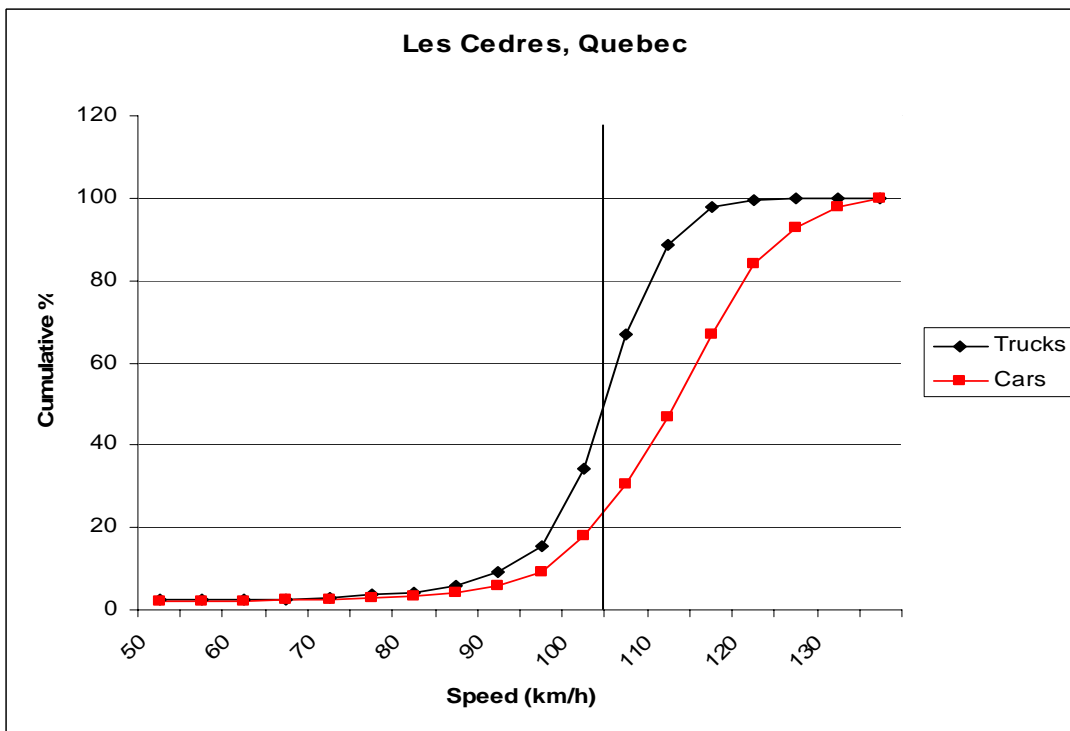
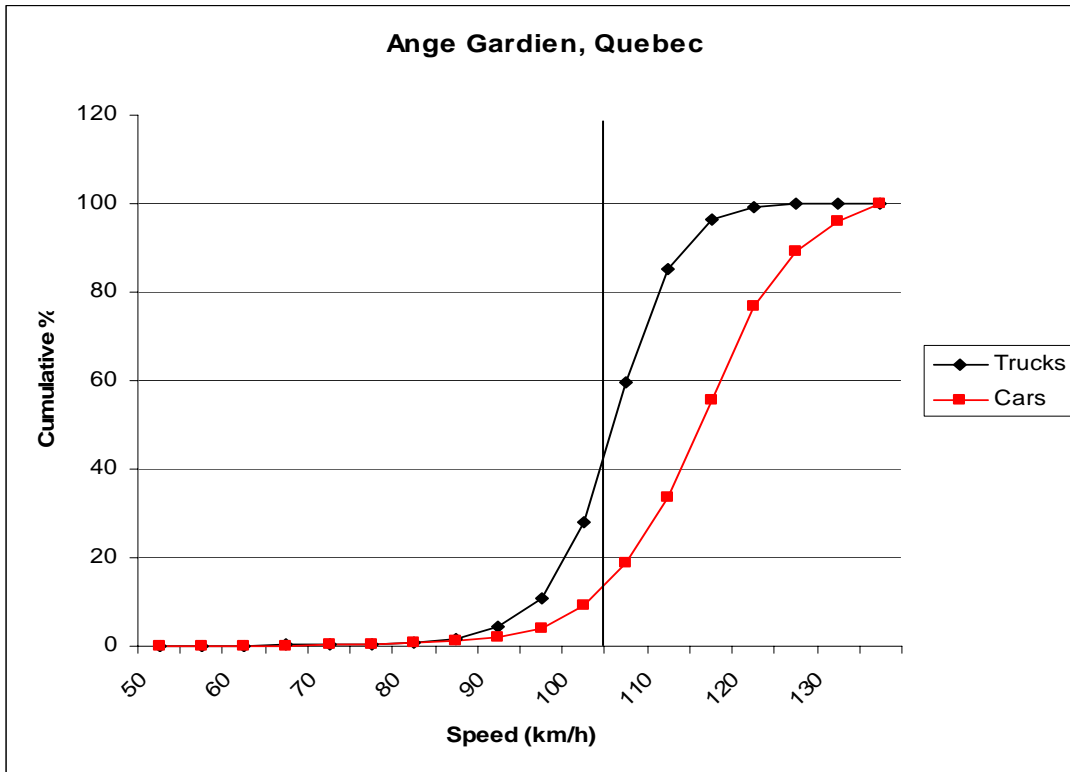
The speed data collected allowed for a speed distribution profile to be developed for most provinces⁹, compared to one overall speed profile developed from speed data for Ontario, Manitoba and Saskatchewan that was used for the original Discussion Paper. The additional speed data also allowed separate savings estimates for highways with posted speeds of 100 km/hr and 110 km/hr. The development of a separate speed profile for each province allowed for more accurate estimates of the savings at the provincial level.

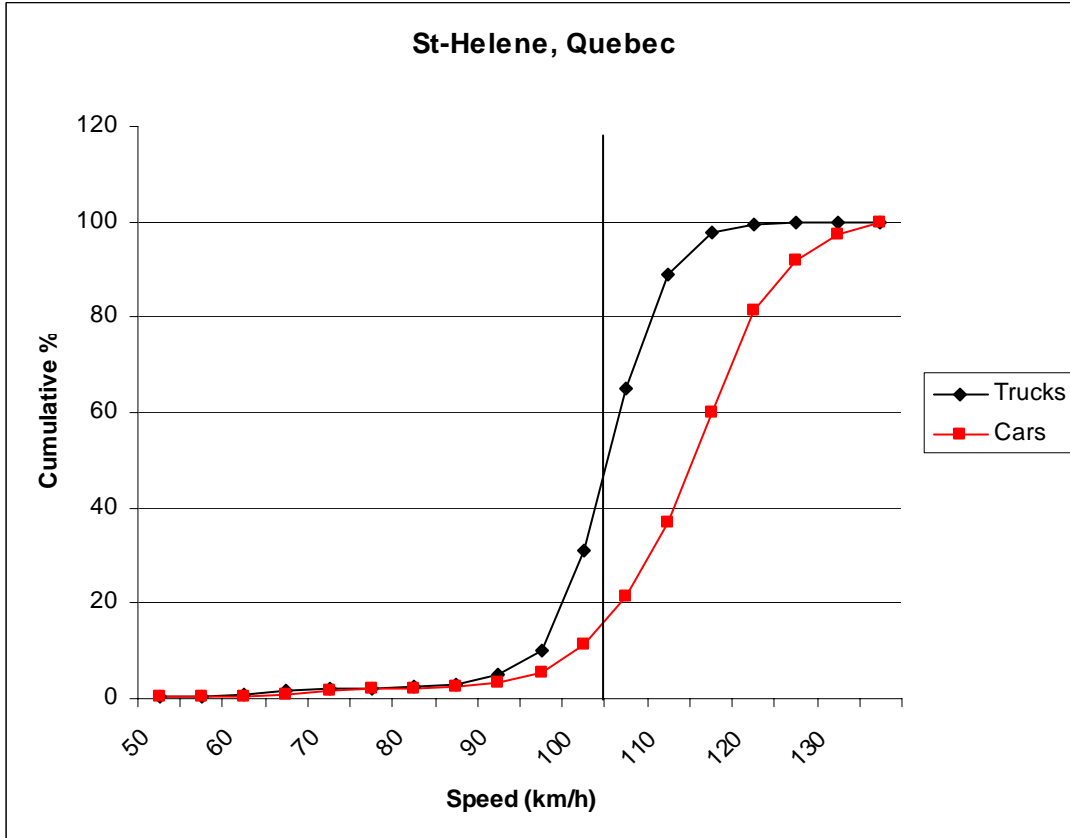
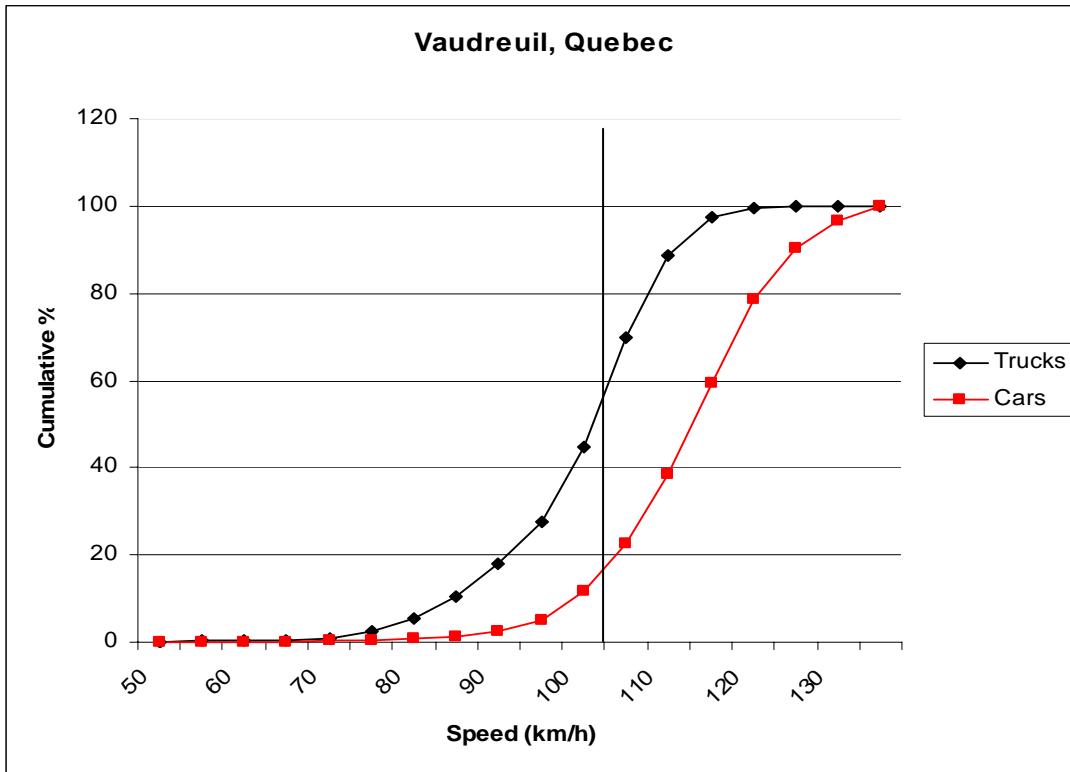
The updated estimated annual fuel savings is 228.6 million litres. This is 0.6% above the previously estimated total of 227.3 million litres. Ontario and Quebec combined account for 64% of the total estimated savings. The overall savings represent 1.4% of the total diesel fuel consumed by road vehicles in 2006. While the total amount of truck travel involved increased, the truck speeds involved were somewhat lower than previously estimated, limiting the overall savings.

The annual GHG savings are now estimated at 0.64 megatonnes, compared to the previous estimate of 0.63 megatonnes.

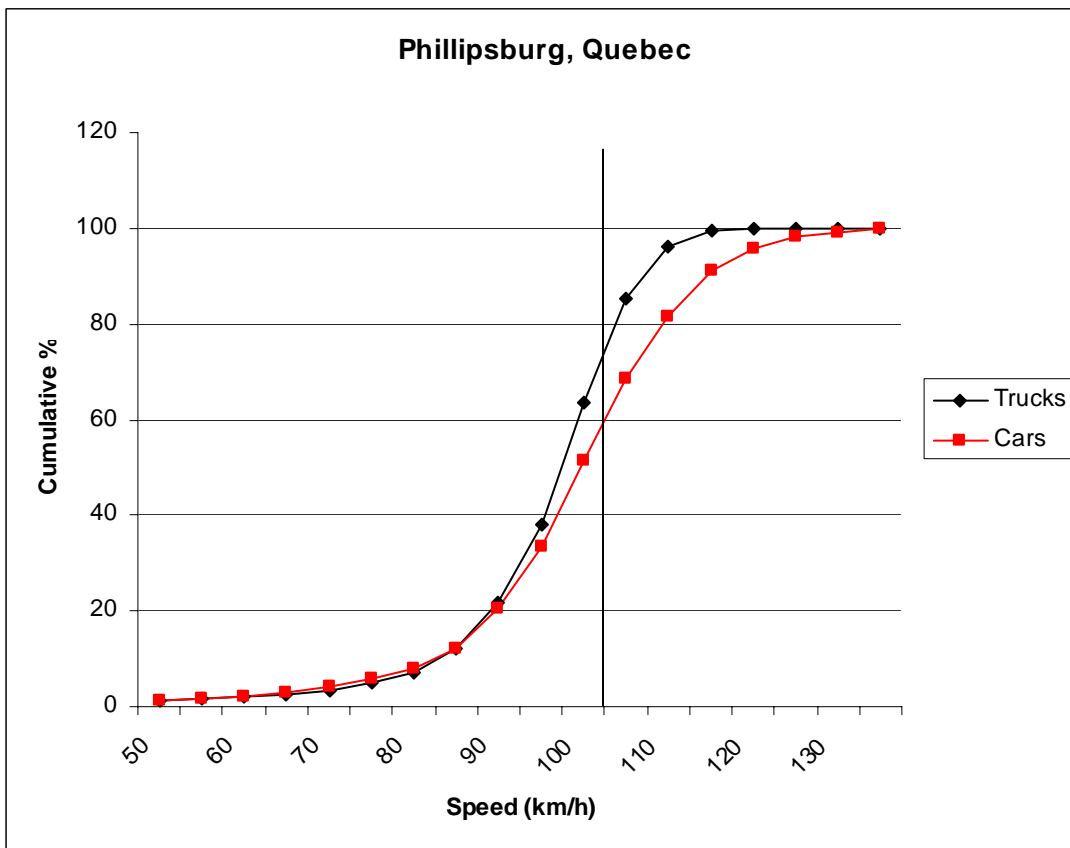
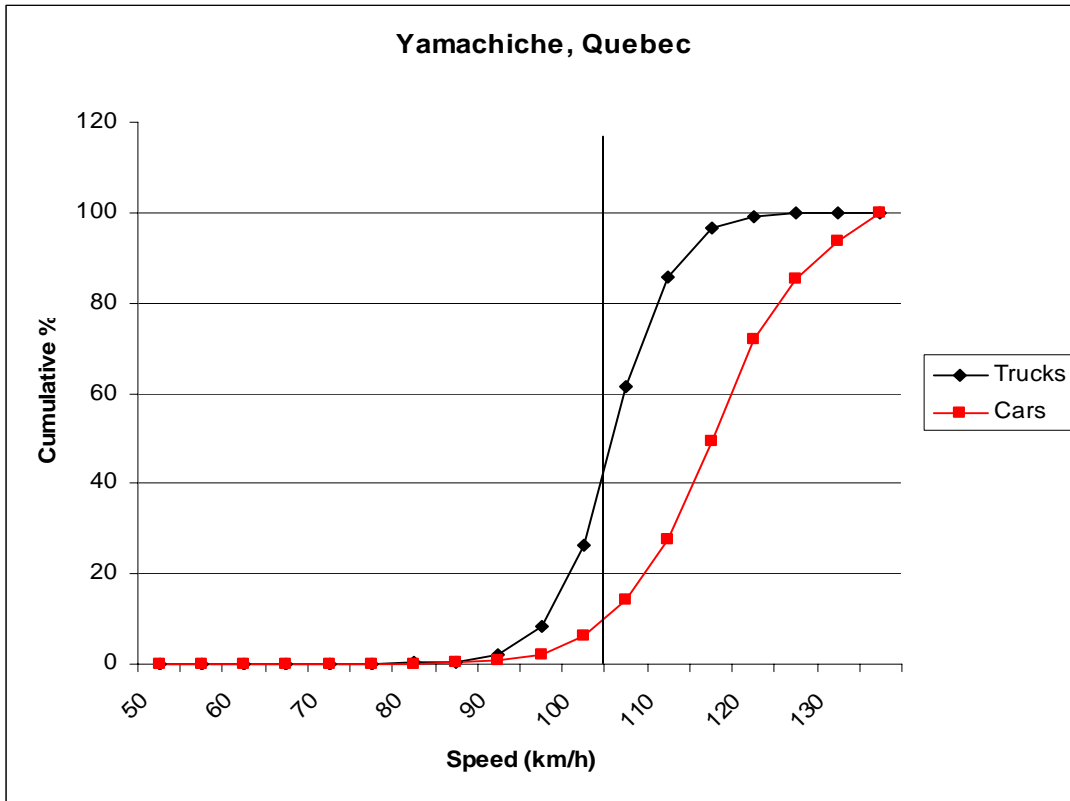
⁹ Except for Nova Scotia and Newfoundland where the data received for New Brunswick were applied

Appendix A: Truck Speed Distribution Charts

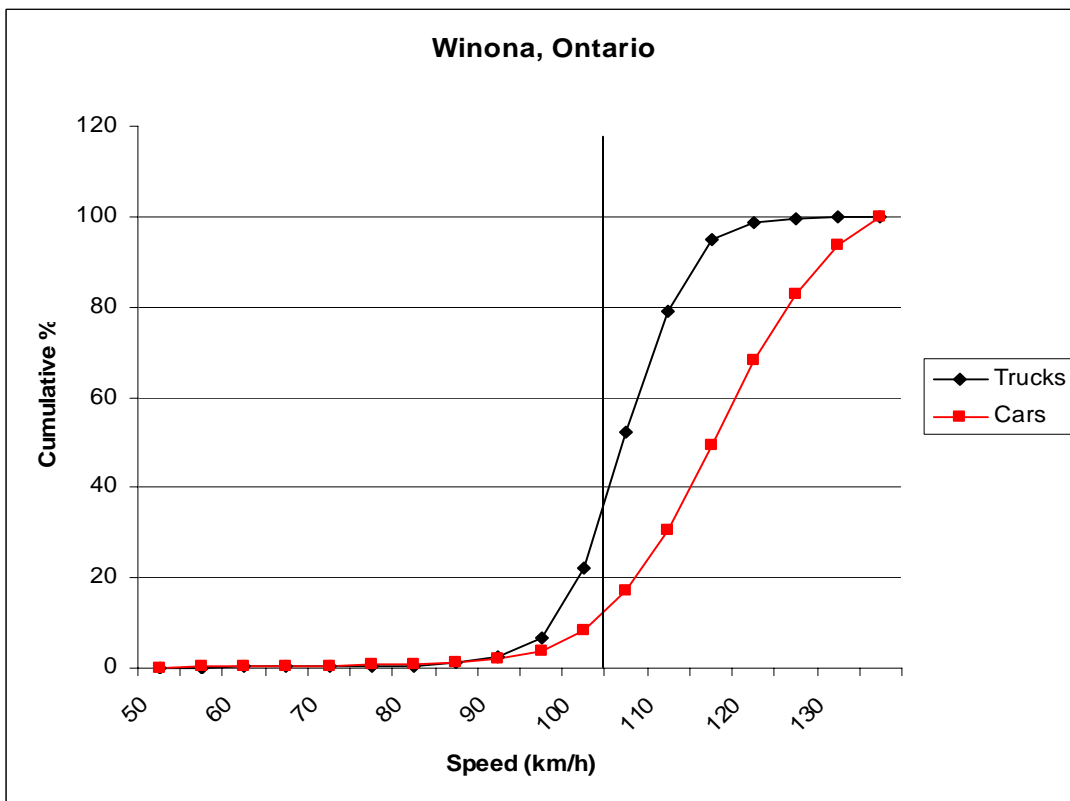
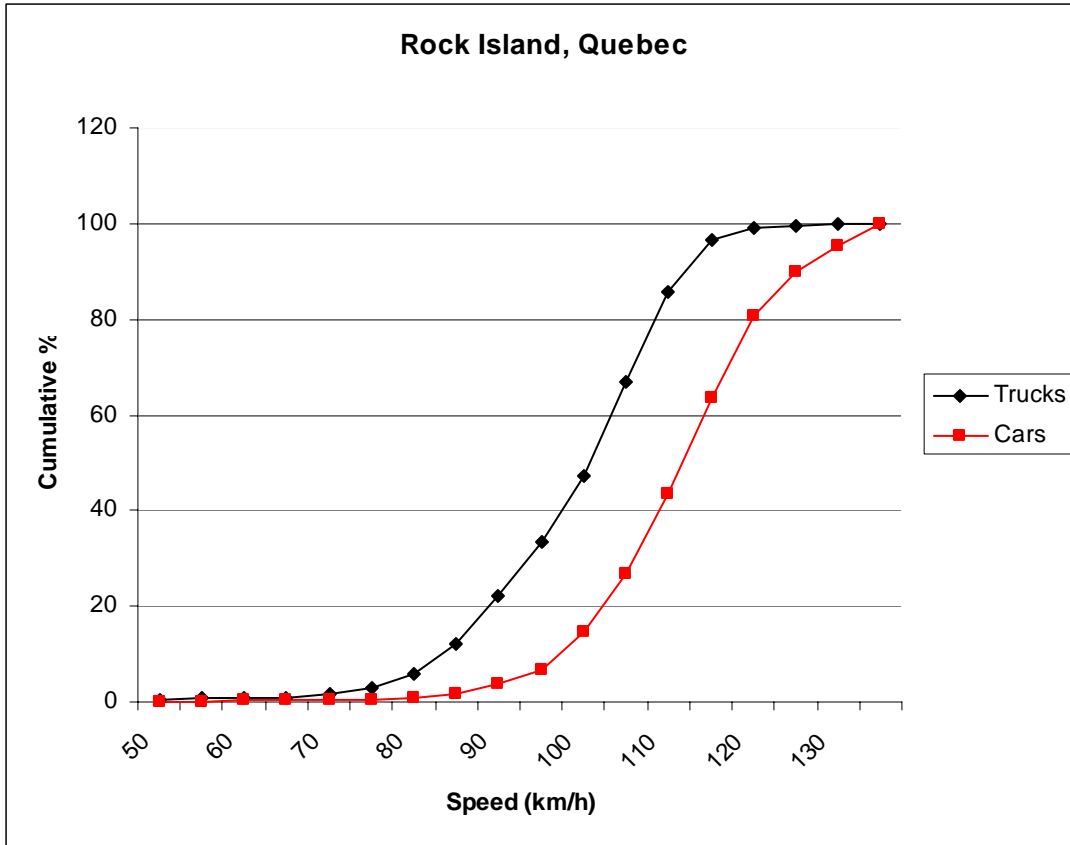


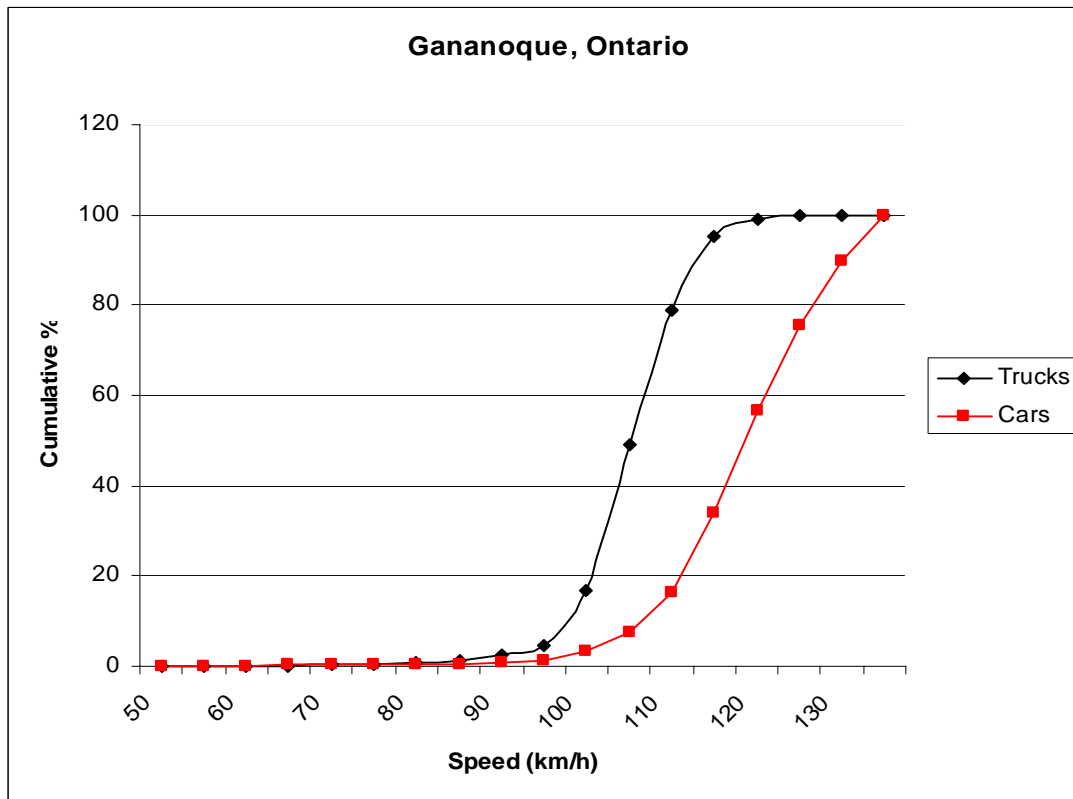
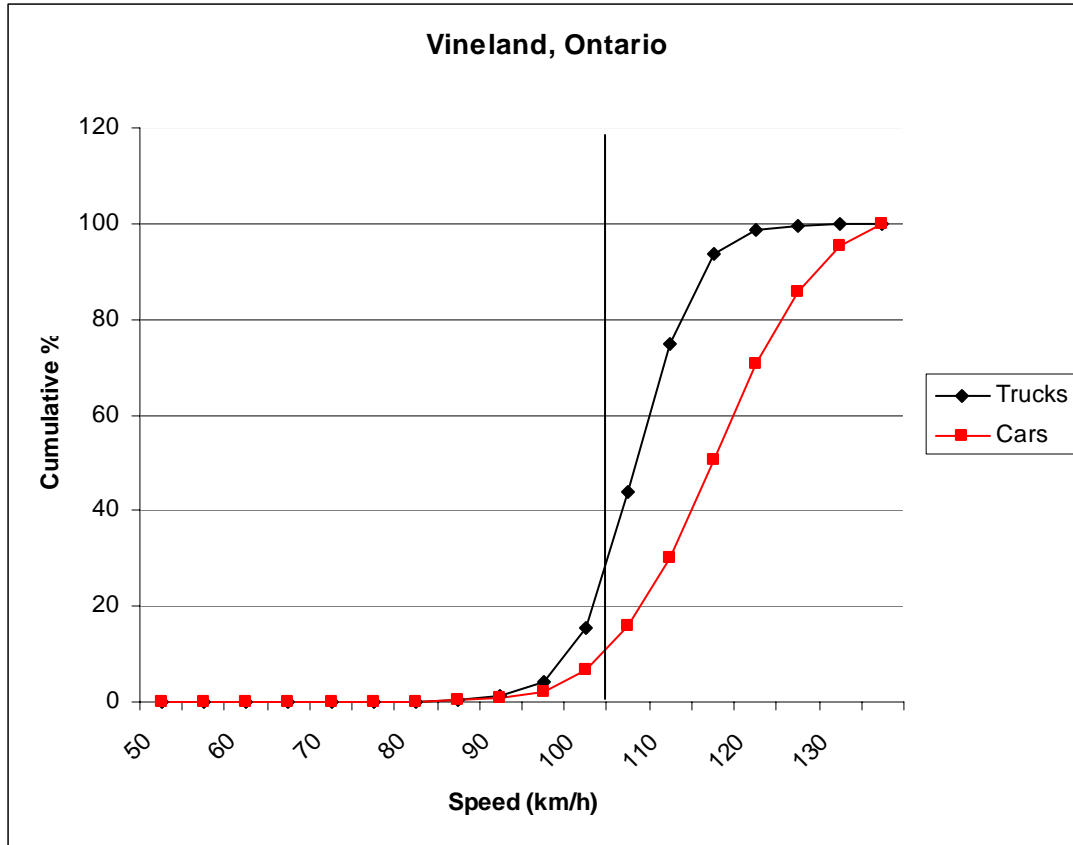


Environmental Benefits of Speed Limiters on Trucks Operating in Canada

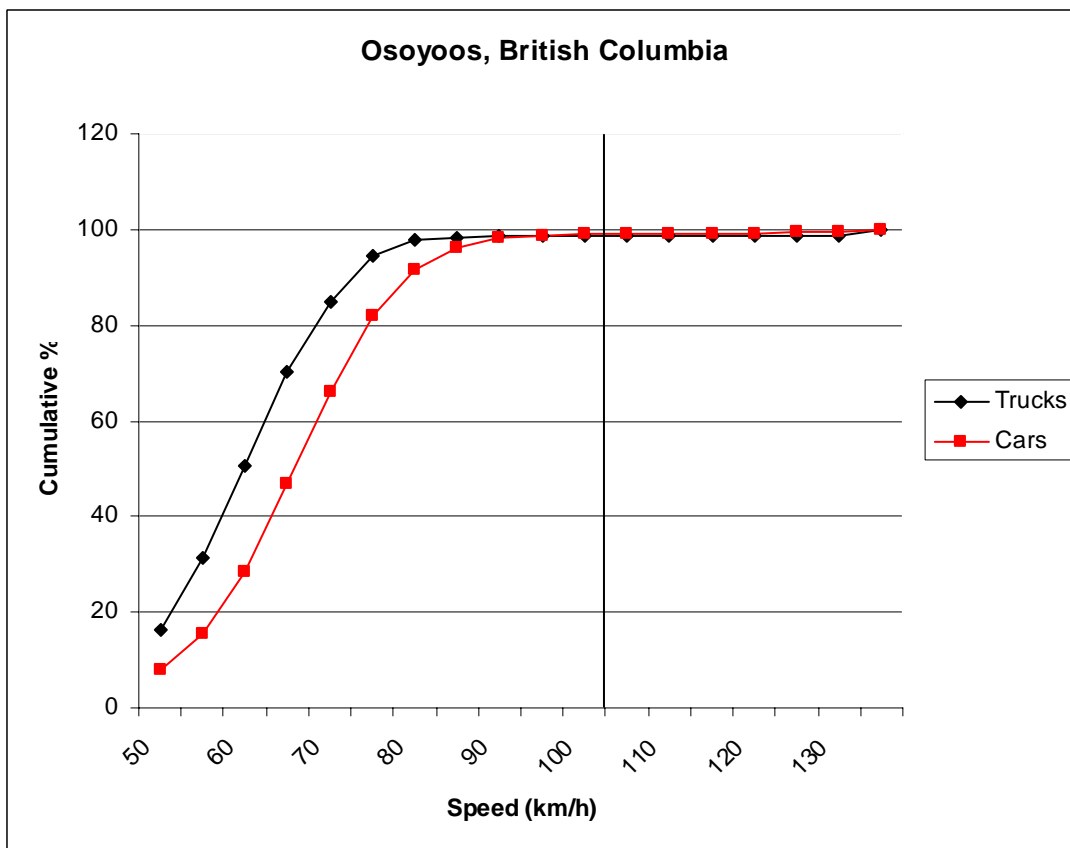
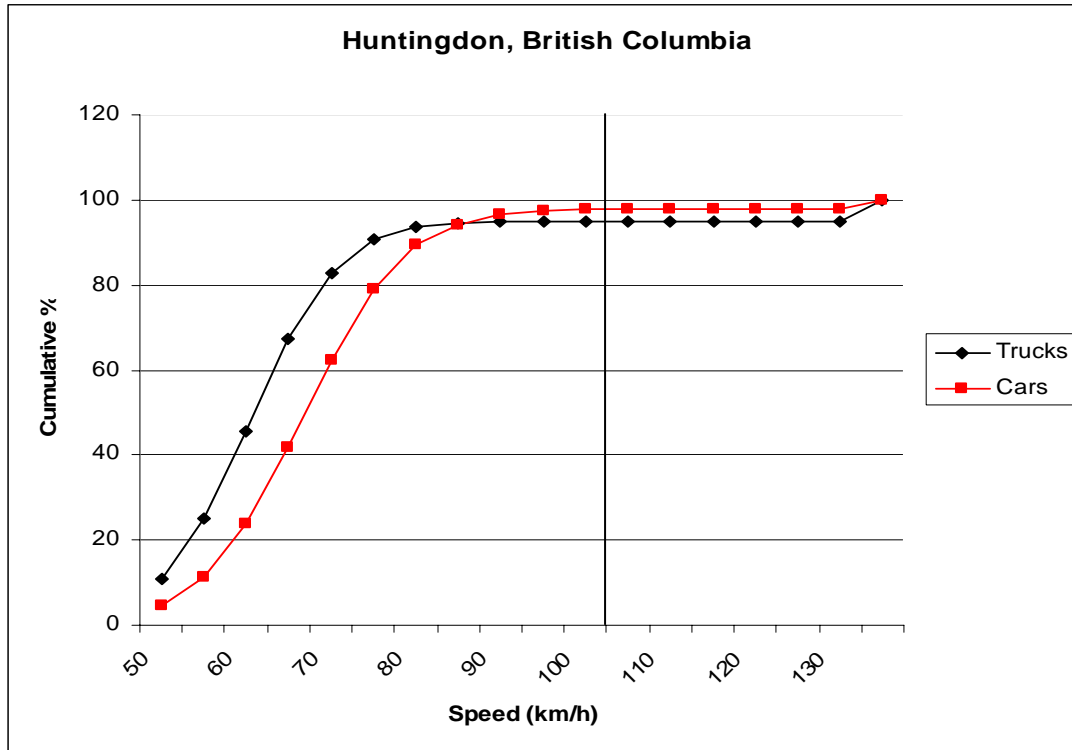


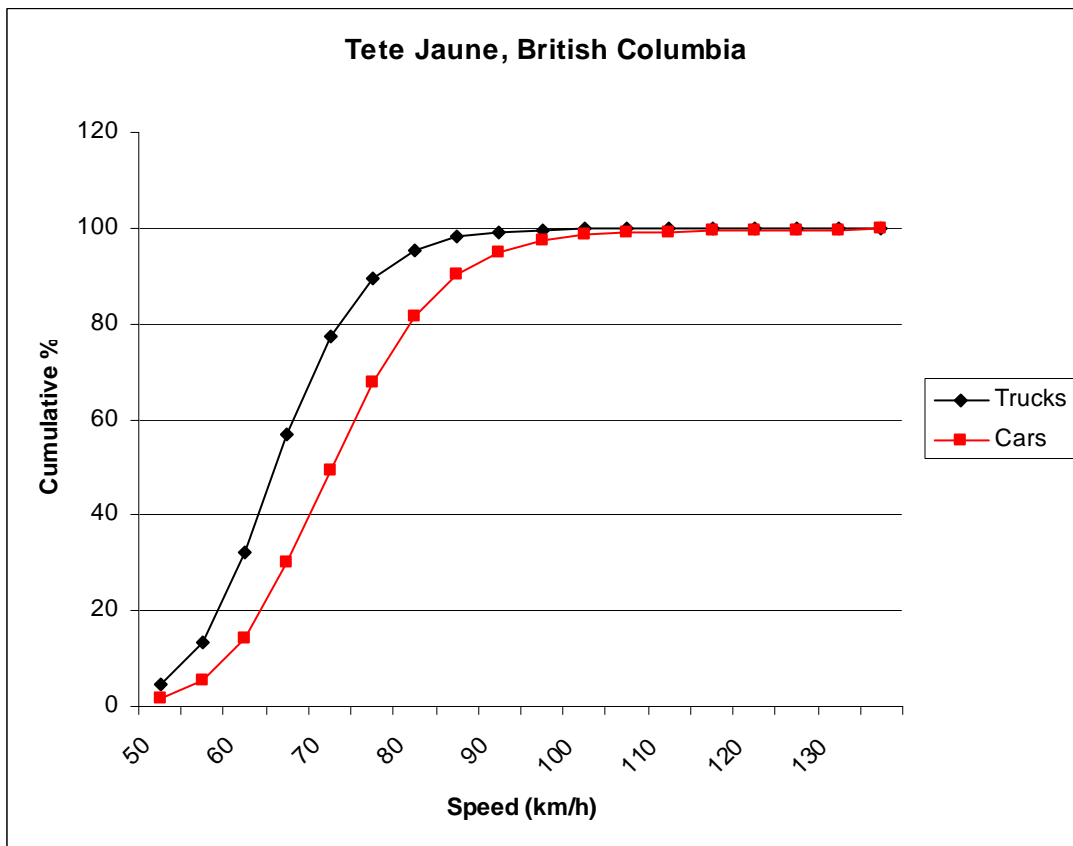
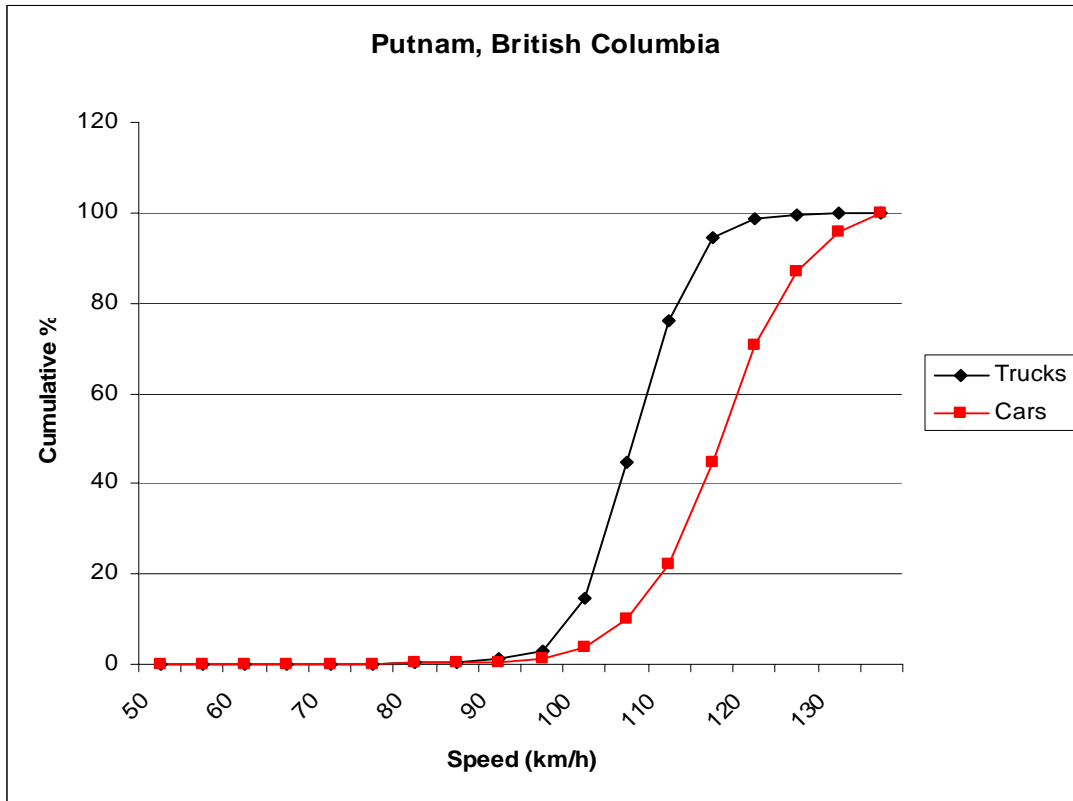
Environmental Benefits of Speed Limiters on Trucks Operating in Canada

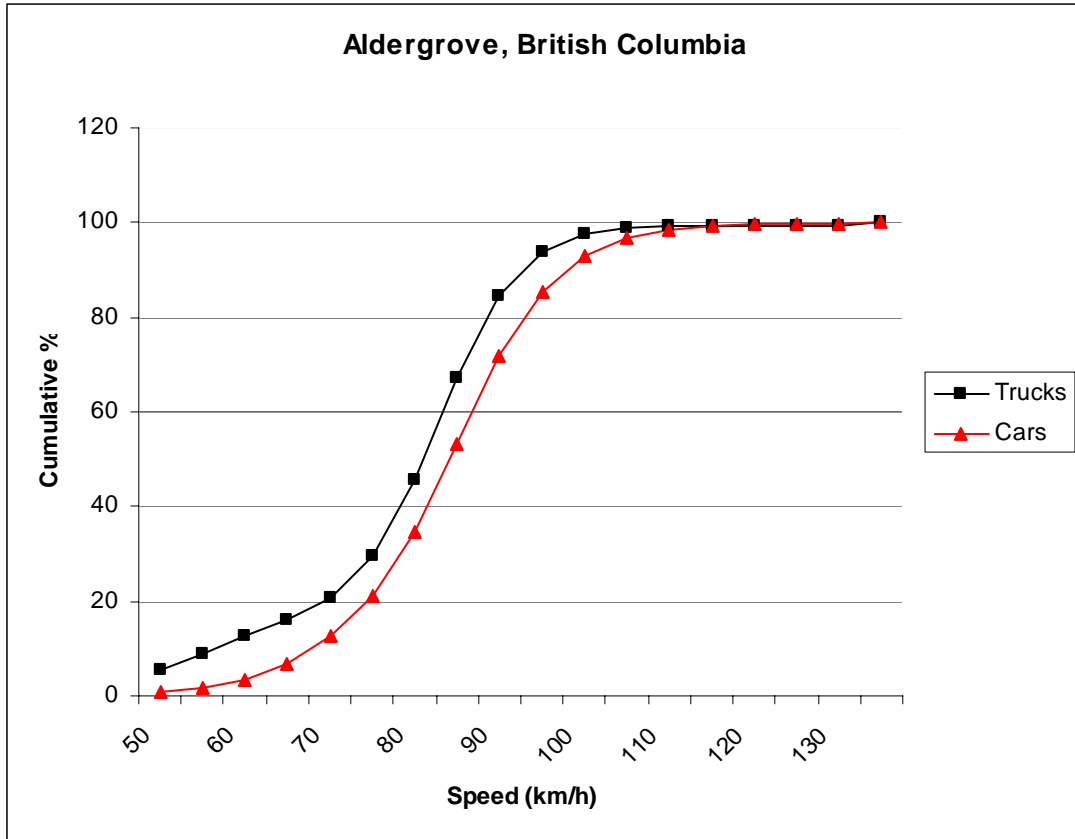




Environmental Benefits of Speed Limiters on Trucks Operating in Canada







Appendix B

Calculations of Fuel Savings by Province



Newfoundland

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	55.1	91.0	36.4	0.0	128.5	0.0
105 - 110	31.5	52.0	20.8	2.5	21.3	0.5
110 - 115	9.6	16.0	6.4	11.0	7.1	0.7
115 - 120	2.5	4.0	1.6	20.0	1.9	0.3
120+	1.3	2.1	0.8	40.0	1.2	0.3

Total VKT

Total Savings



Nova Scotia 110km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	64.3	251.0	100.4	0.0	128.5	0.0
105 - 110	22.5	88.0	35.2	2.5	36.1	0.9
110 - 115	9.2	36.0	14.4	11.0	16.0	1.6
115 - 120	3.0	12.0	4.8	20.0	5.8	1.0
120+	1.0	4.0	1.6	40.0	2.2	0.6

Total VKT

Total Savings

Nova Scotia 100km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	55.1	38.6	15.4	0.0	128.5	0.0
105 - 110	31.5	22.0	8.8	2.5	9.0	0.2
110 - 115	9.6	6.7	2.7	11.0	3.0	0.3
115 - 120	2.5	1.7	0.7	20.0	0.8	0.1
120+	1.3	0.9	0.4	40.0	0.5	0.1

Total VKT

Total Savings

New Brunswick 110km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	55.1	288	115.2	0	115.2	0
105 - 110	31.5	101	40.4	2.5	41.4	1
110 - 115	9.6	41.2	16.5	11	18.3	1.8
115 - 120	2.5	13.4	5.4	20	6.4	1.1
120+	1.3	4.5	1.8	40	2.5	0.7

Total VKT

Total Savings

New Brunswick 100km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	64.3	104.7	41.9	0.0	41.9	0.0
105 - 110	22.5	59.9	24.0	2.5	24.6	0.6
110 - 115	8.2	18.2	7.3	11.0	8.1	0.8
115 - 120	3	4.7	1.9	20.0	2.3	0.4
120+	1	2.5	1.0	40.0	1.4	0.4

Total VKT

Total Savings

Quebec

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	64.5	3250	1300	0	128.5	0.0
105 - 110	23	1150	460	2.5	471.5	11.5
110 - 115	9.8	490	196	11	217.6	21.6
115 - 120	2.1	105	42	20	50.4	8.4
120+	0.6	30	12	40	16.8	4.8

Total VKT

Total Savings

Ontario

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	49.2	3050	1220	0	1149.2	0.0
105 - 110	28	1736	694.4	2.5	711.8	17.4
110 - 115	16.6	1029	411.6	11	456.9	45.3
115 - 120	5	310	124	20	148.8	24.8
120+	1.3	80.6	32.24	40	45.1	12.9

Total VKT

Total Savings

Manitoba

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	0.754	452	180.8	0	128.5	0.0
105 - 110	0.194	116	46.4	2.5	47.6	1.2
110 - 115	0.044	26	10.4	11	11.5	1.1
115 - 120	0.007	4	1.6	20	1.9	0.3
120+	0.001	1	0.4	40	0.6	0.2

Total VKT

Total Savings

Saskatchewan 110km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	50.1	303.4	121.4	0.0	121.4	0.0
105 - 110	23.2	140.5	56.2	2.5	57.6	1.4
110 - 115	16.1	97.5	39.0	11.0	43.3	4.3
115 - 120	7.1	43	17.2	20.0	20.6	3.4
120+	3.5	21.2	8.5	40.0	11.9	3.4

Total VKT

Total Savings

Saskatchewan 100km/h

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	54.1	321.3	128.5	0.0	128.5	0.0
105 - 110	28	166.3	66.5	2.5	68.2	1.7
110 - 115	12	71.3	28.5	11.0	31.7	3.1
115 - 120	3.6	21.4	8.6	20.0	10.3	1.7
120+	2.3	13.7	5.5	40.0	7.7	2.2

Total VKT

Total Savings

**Alberta
110km/h**

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	0.444	518	207.2	0	128.5	0.0
105 - 110	0.265	309	123.6	2.5	126.7	3.1
110 - 115	0.189	220	88	11	97.7	9.7
115 - 120	0.073	85	34	20	40.8	6.8
120+	0.029	34	13.6	40	19.0	5.4

Total VKT

Total Savings

**Alberta
100km/h**

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	69.7	1990	796	0	128.5	0.0
105 - 110	22.5	582	232.8	2.5	238.6	5.8
110 - 115	6	155	62	11	68.8	6.8
115 - 120	1.3	34	13.6	20	16.3	2.7
120+	0.5	13	5.2	40	7.3	2.1

Total VKT 2774

Total Savings 17.4

British Columbia

Speed Range (km/h)	Annual VKT by Speed Range	VKT (millions)	Total Fuel Consumed at Base Speed of 105km/h (million litres)	Fuel Premium for Higher Speed (%)	Total Fuel Consumed at Higher Speed (%)	Fuel Savings Associated with 105km/h Speed Limit (million litres)
< 105	95	2138	855.2	0	128.5	0.0
105 - 110	3.4	40	16	2.5	16.4	0.4
110 - 115	0.9	13	5.2	11	5.8	0.6
115 - 120	0.5	4	1.6	20	1.9	0.3
120+	0.2	4	1.6	40	2.2	0.6

Total VKT

Total Savings