

Final Report



Motor Coach Safety Review

A Safety Review of Motor Coach
Transportation in British Columbia

Motor Coach Safety Review FINAL REPORT

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Transportation in British Columbia



Prepared for:
British Columbia Ministry of
Transportation and Infrastructure

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Table of Contents

EXECUTIVE SUMMARY	1
STATISTICAL REVIEW	1
LEGISLATIVE AND REGULATORY REVIEW	2
1.0 PROJECT DESCRIPTION	4
1.1 OBJECTIVES.....	4
1.1.1 Purpose	4
1.1.2 Definition of a Motor Coach for This Study	4
1.2 SCOPE AND METHODOLOGY	4
1.2.1 Statistical Review	4
1.2.2 Legislative and Regulatory Review.....	4
1.2.3 Other Jurisdictional Practices Review	4
1.2.4 Industry Consultation.....	5
2.0 STATISTICAL REVIEW	5
2.1 SERIOUS COLLISION DATA OBTAINED.....	5
2.1.1 British Columbia	6
2.1.2 Alberta	6
2.1.3 Ontario	6
2.1.4 Canada	6
2.2 SERIOUS COLLISION DATA ANALYSIS	6
2.2.1 British Columbia	7
2.2.2 Alberta	7
2.2.3 Ontario	8
2.2.4 Canada	9
2.2.5 Causal Factors in British Columbia	10
3.0 LEGISLATIVE AND REGULATORY REVIEW	11
3.1 NATIONAL	11
3.2 BRITISH COLUMBIA	12
3.3 DRIVER, VEHICLE AND CARRIER REQUIREMENTS.....	13
3.3.1 Driver Requirements	13
3.3.2 Vehicle Requirements.....	15
3.3.3 Carrier Requirements	15
3.4 ENFORCEMENT	16
3.4.1 Roadside Inspections.....	16
3.4.2 National Safety Code Auditing	18
4.0 OTHER JURISDICTIONS BEST PRACTICES.....	19
4.1 DRIVER.....	19
4.1.1 Hours-of-Service	19
4.1.2 Electronic Logging Devices	20
4.1.3 Entry-Level Driver Training.....	20

4.2	VEHICLE	21
4.2.1	Passenger Seat Belts.....	21
4.2.2	Speed Limiting Devices.....	21
4.2.3	Electronic Stability Control (ESC)	22
4.3	EMERGING	22
4.3.1	Advanced Trip Itineraries.....	22
4.3.2	Vehicle Integrity Component Technologies.....	23
4.3.3	Crash Avoidance Technology and Driver Assistance Systems.....	23
5.0	ENGAGEMENT WITH OTHER STAKEHOLDERS	24
5.1.1	Stakeholder Group Meeting / Industry Workshop	24
6.0	REFERENCES.....	25

LIST OF TABLES

Table 3.1	NSC Motor Coach Carrier Audits	19
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LIST OF FIGURES

Figure 2.1	Serious Collisions for Intercity Buses in BC	7
Figure 2.2	Serious Collisions for Intercity Buses in Alberta	8
Figure 2.3	Serious Collisions for Intercity Buses in Ontario	9
Figure 2.4	Serious Collisions for Intercity Buses in Canada	10
Figure 2.5	First Vehicle Contributing Factors for Serious Collisions Involving Intercity Buses	10
Figure 3.1	Percentage of OOS Buses	17
Figure 3.2	Percentage of OOS Bus Drivers	17

LIST OF APPENDICES

APPENDIX A CONSULTATIONS

APPENDIX B DEFINITIONS AND ABBREVIATIONS

APPENDIX C REGULATIONS (UNDER SEPARATE COVER)

EXECUTIVE SUMMARY

Stantec Consulting Ltd. (Stantec) completed a safety review of the motor coach bus industry in British Columbia (BC) for the Ministry of Transportation and Infrastructure (MoTI). The purpose of the review was to evaluate BC motor coach safety trends, review collision statistics, regulations relative to other jurisdictions, and assess best practices in other jurisdictions.

STATISTICAL REVIEW

Collison Frequency

Since 2003 the number of Motor Coach buses involved in serious collisions on BC highways has decreased 5.4% annually, which indicates a general and continuous improvement in motor coach safety on BC highways.

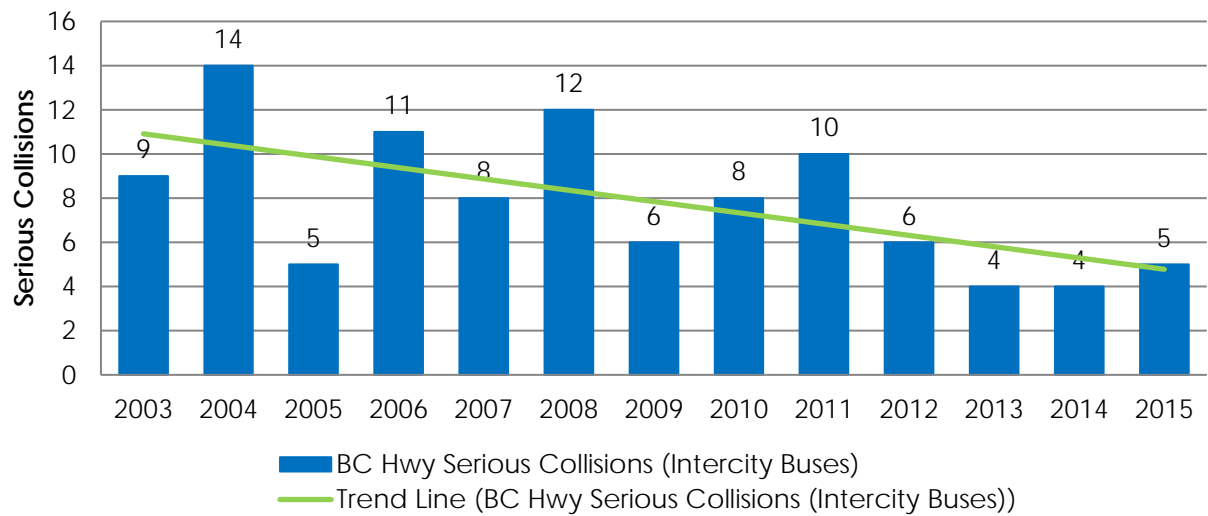


Figure i Serious Collisions Involving Intercity Buses on BC Numbered Highways¹

BC’s 5.4% annual decline is comparative to other jurisdictions, including Alberta at an annual decline of 3.3%, Ontario at a decline of 4.0% annually, and Canada as a whole with an annual decreasing trend of 2.9%.

Causal Factors

Based on the statistical research and reporting, a significant portion of the first contributing factors are driver-related (all categories except road condition and weather) at approximately 80%. The following figure provides a breakdown of the general collision categories for

¹ Data source: MoTI collision database.

MOTOR COACH SAFETY REVIEW

consideration. This far outweighs any environmental or vehicle-related factors that cause collisions.

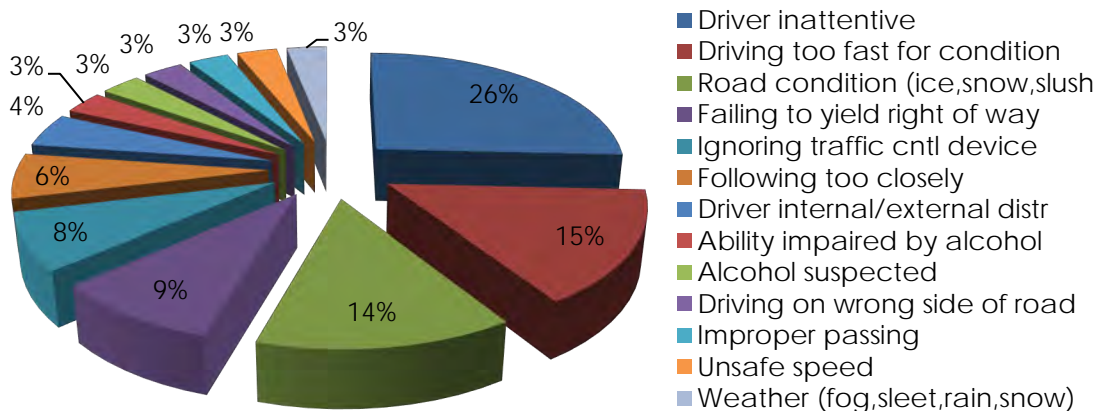


Figure ii First Vehicle Contributing Factors for Serious Collisions Involving Intercity Buses on BC Numbered Highways 2003-2015²

It's important to recognize that this causal information is based on crashes that included both intercity buses and all other vehicles involved in the crash. For example, a crash where the first contributing factor is "Driver Inattentive" may be the driver of the Motor Coach or the driver of another vehicle that caused the crash.

LEGISLATIVE AND REGULATORY REVIEW

Legislative and regulatory jurisdiction over Motor Coaches is shared between the federal and provincial government. The federal government is responsible for bus import and manufacture standards, regulating buses that travel between provinces, and working with the Canadian Council of Motor Transport Administrators for maintaining the National Safety Code.

The province is responsible for establishing legislation regulations to support the National Safety Code and for enforcement of legislation and regulations related to commercial vehicle safety such as the Commercial Transportation Act for vehicle weights and dimensions and the Motor Vehicle Act for safe vehicle operation.

BC's Commercial Vehicle Safety and Enforcement (CVSE) branch is tasked with enforcing the laws governing Motor Coaches. Regular roadside inspections are carried out on Motor Coaches throughout the province. The Out-of-Service rate stemming from these inspections is generally lower than other jurisdictions. CVSE also conducts National Safety Code audits on several carriers and target the poor performing carriers for compliance.

² Data source: MoTI Bus Collision Data on Provincial Numbered Highways 2003 - 2015.

MOTOR COACH SAFETY REVIEW

In review of the legislative and regulatory framework, British Columbia aligns well with motor coach requirements and enforcement with the other jurisdictions reviewed within this report. No major deficiencies were noted regarding legislation, regulation or enforcement practices.

OTHER JURISDICTIONAL BEST PRACTICES

A review of standards and emerging practice in North America and throughout the world was undertaken.

Transport Canada, the Canadian Council of Motor Coach Administrators (CCMTA) and the provinces, are aware of these best practices and have either begun the process to consider incorporating them into federal and provincial laws or are monitoring emerging practices to determine if they should be considered in Canada.

Practices noted include:

- *Electronic Logging Devices* - Transport Canada announced in February 2016 its intention to introduce Electronic Logging Device (ELD) regulation with implementation anticipated in late 2017/early 2018. This regulation is in-line with United States implementation and would cover cross-border and inter-provincial travel.
- *Passenger Seat Belts* - Various agencies have conducted testing on seat belts which prove that three point or lap/torso belts, when worn properly, significantly reduce the severity of injuries. Proper seat and anchorage design and construction is also required for belts to be effective. In the United States, all new motor coaches manufactured must have passenger seat belts as a standard feature. Transport Canada is considering a similar requirement for new buses
- *Vehicle Speed Limiting Devices* - speed limiting devices are mandatory for commercial vehicles in the European Union. In Ontario and Quebec they are mandatory for commercial vehicles excluding motor coaches. The United States Department of Transport has proposed a rule requiring speed limiters on buses, school buses and heavy trucks and is in the review process. A final decision is likely many years away.
- *Electronic Stability Control (ESC)* – ESC automatically applies braking force at selected wheel ends to help maintain directional control of the vehicle. In 2015 the United States National Traffic Safety Administration released its final rule requiring electronic stability control systems for commercial trucks and motor coaches and no requirement for retrofits to existing vehicles. Transport Canada has announced its intention to introduce a similar regulation with implementation anticipated Aug 2019.

1.0 PROJECT DESCRIPTION

1.1 OBJECTIVES

1.1.1 Purpose

Stantec Consulting Ltd. (Stantec) completed a safety review of the motor coach bus industry in British Columbia (BC) for the Ministry of Transportation and Infrastructure (MoTI). The purpose of the review was to evaluate BC motor coach safety trends, to review provincial legislation and regulations and to identify best practices in other jurisdictions.

1.1.2 Definition of a Motor Coach for This Study

For the purposes of this study, motor coaches include larger buses commonly identified as Over-The-Road-Buses (OTRB) with an elevated seating area over the luggage storage which typically seat over 30 passengers. School buses, shuttle buses and transit buses, intended for a different use with different licensing standards, are outside the scope of this review.

1.2 SCOPE AND METHODOLOGY

1.2.1 Statistical Review

Stantec gathered and reviewed motor coach related safety data from British Columbia, Alberta and Ontario as well as National level data. Motor coach safety data was obtained in a number of formats, including raw data, summary data, and report-form. Data was processed and evaluated to determine suitability for analysis.

Data from jurisdictions across North America was investigated. However, due to the variation in the categorization, reporting structures, and data collection methods of the different jurisdictions use of these data sets as part of this review was not feasible.

Because motor coaches travel interprovincially, and jurisdictions across the country do not collect data on motor coach vehicle kilometers travelled, it is not possible to directly compare provincial or national crash rates. Trends have been calculated to compare the relative change in crash performance across the provinces.

1.2.2 Legislative and Regulatory Review

The Legislative and Regulatory Review evaluated current motor coach regulatory framework and procedures and reviewed current methods in place to monitor the industry. Stantec reviewed vehicle safety enforcement using roadside inspection data and National Safety Code audit performance as key indicators.

1.2.3 Other Jurisdictional Practices Review

A focused review was conducted of available research publications regarding safety measures and technologies relating to the motor coach industry and operations, and their effectiveness at

MOTOR COACH SAFETY REVIEW

improving safety outcomes. This research was directed at reducing the impact of the most common motor coach collision causal factors to comment on any regulatory changes or other safety programs that would be effective.

Our review considered practices adopted in other jurisdictions across Canada as well as those adopted or going through the approval process in the United States, Europe and Australia. In addition, technical innovations not yet adopted by any jurisdiction were highlighted.

1.2.4 Industry Consultation

The motor coach industry was contacted to have discussions regarding available statistical collision data, to identify the opportunities and challenges each of the members face in the industry, identify the specific interest topics in the industry (i.e. seatbelts, technology) and to use that industry input to assist in the preparation of the report.

The Informational Session and Industry Workshop was held on January, 20, 2016. The intent was to identify each of the attending groups' successes and the challenges the operators face in the industry. Of the 28 motor coach operator members invited, 13 individuals attended representing a range of stakeholders, including:

- British Columbia Trucking Association (BCTA)
- Insurance Corporation of British Columbia (ICBC)
- Canada West Coachlines
- Perimeter Transportation
- Landsea Tours
- Vancouver Trolley
- CVS Cruise Victoria
- JTB International Travel Agency

A summary of the thoughts and ideas from the Industry Consultation is included in **Appendix A - Consultation** for consideration

2.0 STATISTICAL REVIEW

The statistical review was prepared by Stantec based on individual agency and jurisdictional responses to a survey and research of publicly available data. Stantec's role was to aggregate the data to present an overview of the motor coach safety statistics in BC, Alberta, Ontario and Canada as a whole.

2.1 SERIOUS COLLISION DATA OBTAINED

The following provides an overview of the serious collision data that was obtained to conduct this review. Serious collisions are defined as collisions that involved injury and/or fatal incidents. Statistical data was obtained for British Columbia, Alberta, Ontario, and Canada, as follows.

MOTOR COACH SAFETY REVIEW

Stantec collected a significant amount of data from each jurisdiction to use as comparable data. The data review and analysis proved that a direct comparison between jurisdictions researched for bus collision rates could not be determined due to the inconsistency in categorization and data collection methods. Even slight differences make direct comparisons difficult. The collision data trends have been shown in Table 2.1 below

Collision data for the different jurisdictions exists in varying formats based on jurisdiction specific means of data collection and reporting, ranging in years from 2000 to 2015. The presented data has been selected based on similar categories to motor coaches.

2.1.1 British Columbia

- Injury Data Online Tool (iDOT) (MV6020 Traffic Accident Report – BC Government)
- Post-Crash Inspections 2007-2015 (CVSE)
- Bus Crashes Report 2003–2013 (ICBC)

2.1.2 Alberta

- Alberta Collision Statistics (AT)

2.1.3 Ontario

- Ontario Bus Collisions (MTO)
- Ontario Road Safety Annual Reports 2010–2013 (MTO)

2.1.4 Canada

- National Collision Database 2004–2013 (Transport Canada)
- 2013 Yearly Roadcheck Blitz (CCMTA)
- American Bus Association Foundation Census Reports 2010–2013 (ABAF)

2.2 SERIOUS COLLISION DATA ANALYSIS

The collision data presented in this section is reflective of intercity bus crashes in BC, Alberta, Ontario and for Canada as a whole. In most cases, the Motor Coach specific collision data was not available. For purposes of this study intercity or commercial bus collisions were used as the best measure to approximate motor coaches.

Below is a summary of the serious collision data available from the different jurisdictions. The serious collision data presented includes both fatal and injury collisions.

- British Columbia Serious Collision data is available from 2003 to 2015 for BC Intercity Buses (see **Appendix B – Definitions and Abbreviations**) involved in Serious Collisions on provincial highways.
- Alberta Serious Collision data includes data from 2003 to 2013 for Intercity Buses.
- Ontario Serious Collision data includes data from 2003 to 2012 for Intercity Buses.
- Canada Serious Collision data includes data from 2004 to 2013 for Intercity Buses.

MOTOR COACH SAFETY REVIEW

It's important to recognize that a direct comparison of crash frequencies between jurisdictions is not appropriate as the statistics have not been adjusted for exposure. Each jurisdiction has different numbers of Motor Coaches registered in the province, different numbers of Motor Coaches coming in from other provinces and different sizes of highway systems. However, none of the jurisdictions studied collect records of number of motor coach kilometers travelled. The analysis instead focuses on the comparing the relative change in number of crashes per year as a measure of Motor Coach safety.

2.2.1 British Columbia

The data presented in this section is reflective of the bus industry in British Columbia from 2003 to 2015. All data for British Columbia was obtained from ICBC and MoTI.

BC does not collect data by bus vehicle type, such as motor coach. Serious intercity bus crashes on provincial highways are used to represent Motor Coach crashes for this report.

2.2.1.1 Collision Data

As shown in **Figure 2.1**, the number of Intercity Buses involved in serious collisions on BC numbered highways has decreased 5.4% annually since 2003 which indicates a general and continuous improvement in bus safety on BC highways. Although BC collision data is comprehensive from 2003 to 2015 (as illustrated below) only collision data up to 2013 was used in the analysis for comparative purposes against other jurisdictions.

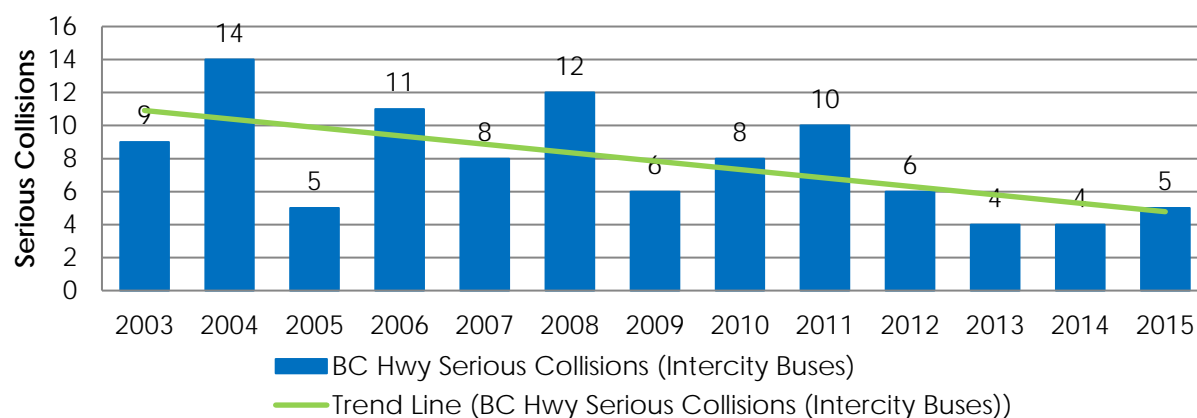


Figure 2.1 Serious Collisions for Intercity Buses in BC³

2.2.2 Alberta

The data presented for Alberta serious collision statistics is reflective of the bus industry in Alberta (AB) from 2003 to 2013. All data was obtained from Alberta Transportation (AT) and Alberta Geographical Statistics (AGS).

The Alberta serious collision data included three (3) bus categories for consideration:

³ Data source: MoTI Bus Collision Data on Provincial Numbered Highways 2003 – 2015

MOTOR COACH SAFETY REVIEW

1. Intercity Bus
2. Transit Bus, School Bus
3. Other Bus

Based on the corresponding definitions, Serious intercity bus data is used to represent motor coach crashes in this report.

2.2.2.1 Collision Data

Serious collisions involving Intercity Buses in Alberta have remained relatively consistent over the past 11 years. Serious collisions peaked in 2005 with 10 serious collisions and decreased to 5 to 7 serious collisions per year from 2006 to 2013. It is noted that in 2010, no Intercity Bus collisions were identified. Regression analysis was completed on the compiled serious collision data from 2003 to 2013 which showed a declining growth rate of 3.3% per year as presented in **Figure 2.2**. Fatalities in Intercity Bus collisions in Alberta are rare with only one (1) fatal collision in 2012.

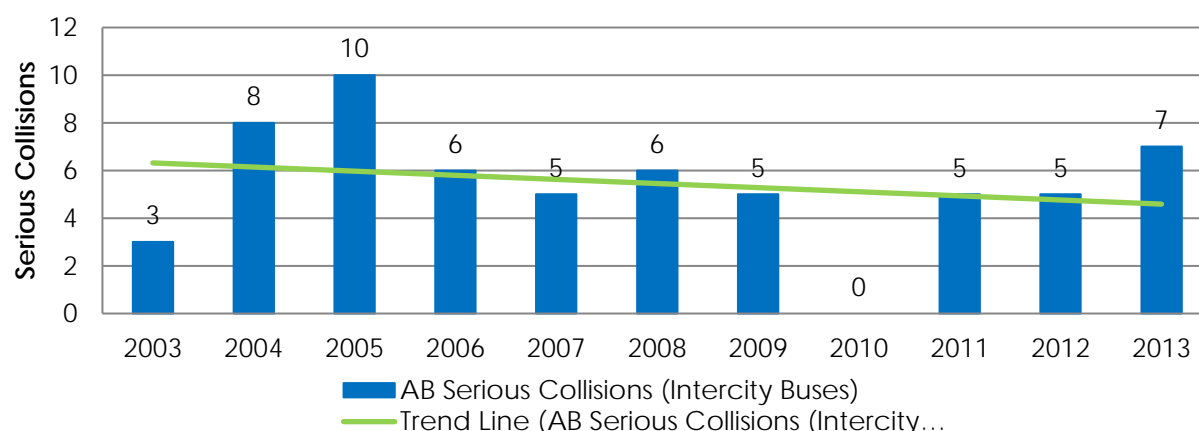


Figure 2.2 Serious Collisions for Intercity Buses in Alberta⁴

2.2.3 Ontario

Collision data was provided in annual safety reports by the Ontario Ministry of Transportation (MTO) from 2003 to 2013 which also categorized collision data by Intercity Buses as the nearest category to motor coaches (see **Appendix B – Definitions and Abbreviations**).

2.2.3.1 Collision Data

The number of serious collisions has decreased by 4.0% annually, as illustrated in **Figure 2.3**.

⁴ Data source: Alberta Geographical Statistics (SDGEO030 and SDGEO010 reports) and Statistics Canada and Alberta Traffic Collision Statistics 2003-2013

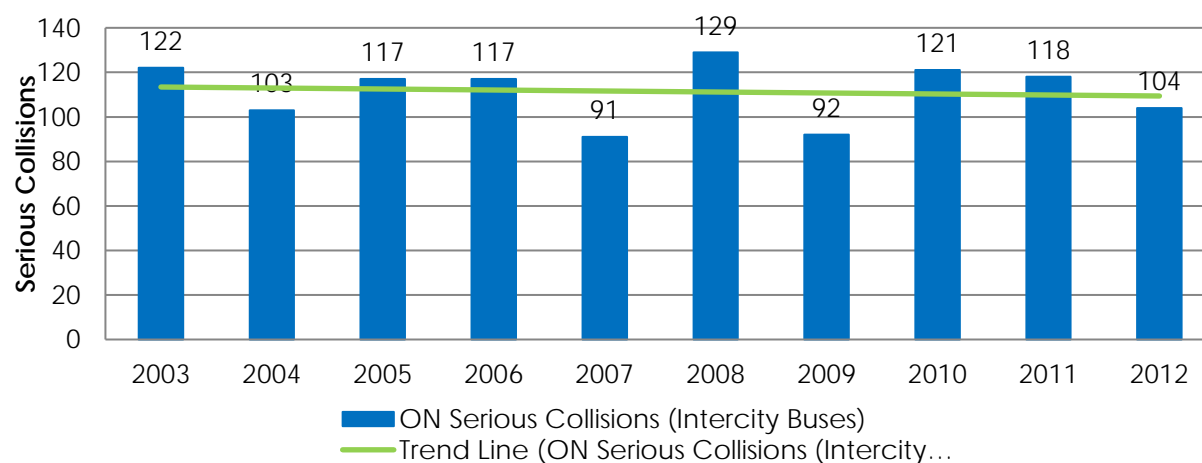


Figure 2.3 Serious Collisions for Intercity Buses in Ontario⁵

2.2.4 Canada

The data presented in this section is reflective of the Intercity Bus industry in Canada from 2004 to 2013. All collision data was obtained from Transport Canada (TC). Canada collision data was obtained from Transport Canada's National Collision Database (NCD). The database does not include collision data from November and December of 2013. As such, collision data for 2013 was not included in the regression analysis.

2.2.4.1 Collision Data

Serious collisions for Intercity Buses in Canada have remained relatively consistent from 2004 to 2012, showing a slight decrease overall. Regression analysis was completed on the number of serious collisions from 2004 to 2012 which resulted in a decline of 0.4% annually. The collisions in 2008 and 2009 appear to be anomalies, but may be the result of reporting or data collection changes.

Figure 2.4 illustrates Canada's serious collisions for Intercity Buses.

⁵ Data source: MTO Ontario Road Safety Annual Reports

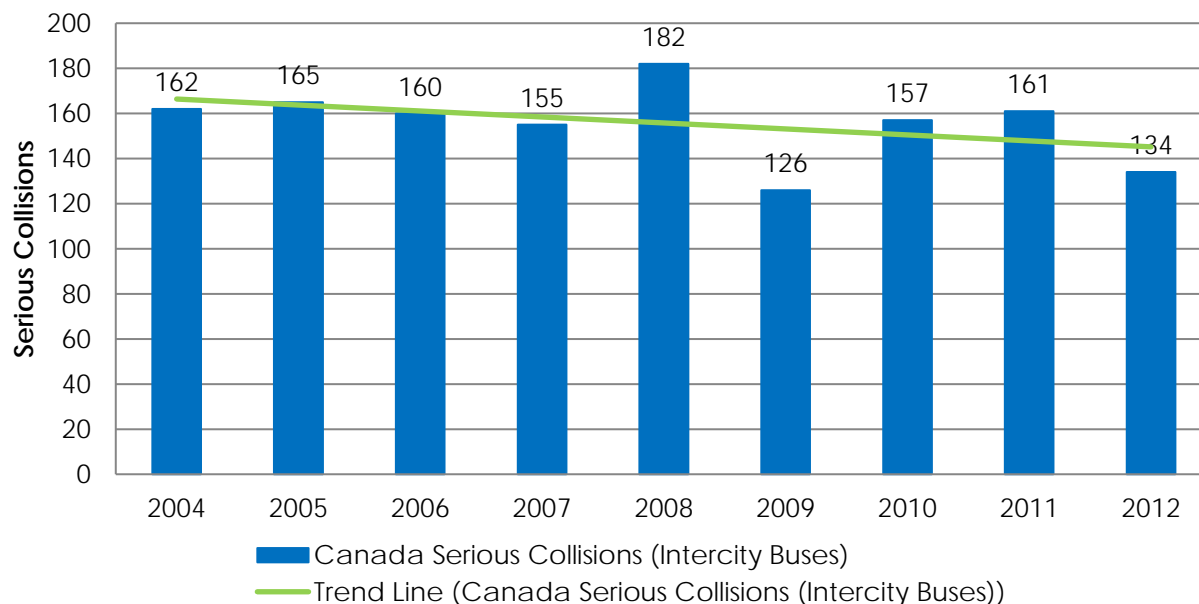


Figure 2.4 Serious Collisions for Intercity Buses in Canada⁶

2.2.5 Causal Factors in British Columbia

Based on the statistical research and reporting, a significant portion of the first contributing factors are driver-related at approximately 80%. Road conditions represent 20% with vehicle condition not factoring as a lead cause in any of the crashes. The following figure provides a breakdown of the general collision categories for consideration.

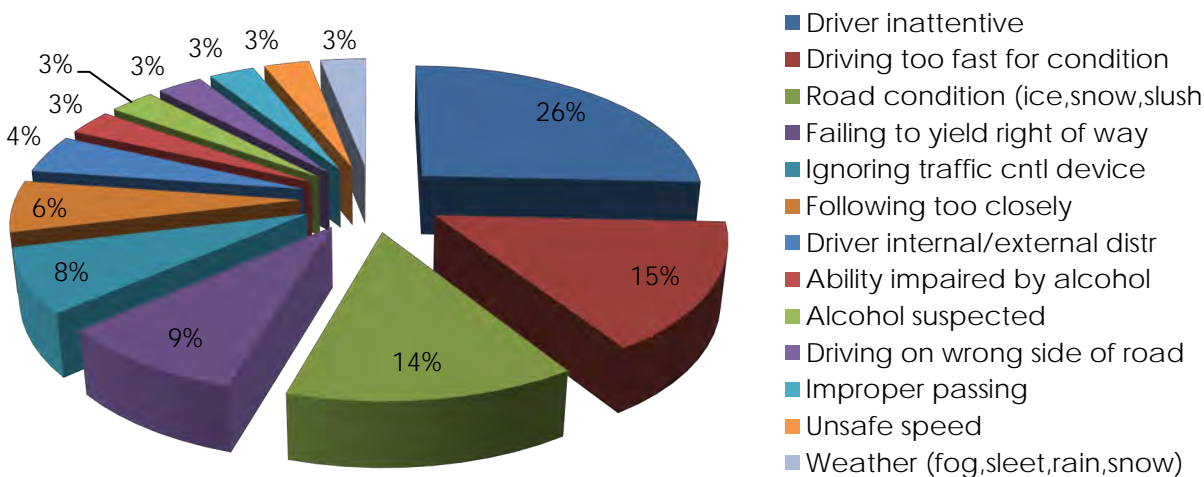


Figure 2.5 First Vehicle Contributing Factors for Serious Collisions Involving Intercity Buses on BC Numbered Highways 2003-2015⁷

⁶ Data source: Transport Canada National Collision Database

⁷ Data source: MoTI Bus Collision Data on Provincial Numbered Highways 2003 - 2015.

MOTOR COACH SAFETY REVIEW

It's important to recognize that this causal information is based on crashes that included both intercity buses and all other vehicles involved in the crash. For example, a crash where the first contributing factor is "Driver Inattentive" may be the driver of the Motor Coach or the driver of another vehicle that caused the crash.

3.0 LEGISLATIVE AND REGULATORY REVIEW

In Canada, the federal government is responsible for regulating Motor Coach manufacturing and importing standards and for regulating buses travelling between provinces or between Canada and the United States.

The Canadian Council of Motor Transportation Administrators (CCMTA) is a not for profit society comprised of representatives from all provinces and territories as well as the federal government. The CCMTA is responsible for developing and maintaining the National Safety Code – a comprehensive set of minimum performance standards for the safe operation of commercial vehicles across the country.

The provinces have the authority and responsibility to regulate and enforce all commercial motor vehicle carriers operating within their respective borders. Provincial legislation and regulations provide legal authority to the National Safety Code and provincial enforcement officers monitor and enforce commercial vehicle legislation and regulations within their borders.

3.1 NATIONAL⁸

Transport Canada administers the following acts and their respective regulations which apply to the motor coach industry across Canada:

- Canada Transport Act (CTA)
 - Transportation Information Regulations Part V – Passenger Motor Carriers
- *Motor Vehicle Safety Act (MVSA)*
 - *Motor Vehicle Safety Regulations*
 - *Canada Motor Vehicle Safety Standards (CMVSS)*
 - *Motor Vehicle Tire Safety Regulations*
- *Motor Vehicle Transport Act (MVTA)*
 - *Commercial Vehicle Drivers Hours of Service Regulations*
 - *Conditions of Carriage Regulations*
 - *Motor Carrier Safety Fitness Certificate Regulations*

The Canada Transport Act (CTA) sets out the required information carriers must provide to Transport Canada to be permitted to operate interprovincially.

⁸ Source: Transport Canada website.

MOTOR COACH SAFETY REVIEW

The Motor Vehicle Safety Act regulates the manufacturing and importation of motor coaches and related equipment. Under this act the Motor Vehicle Safety Regulations detail specific requirements for vehicle manufacture and import. The *Canada Motor Vehicle Safety Standards* (CMVSS) are a schedule under the Motor Vehicle Safety Regulations that is the primary instrument detailing bus safety requirements. The Motor Vehicle Tire Safety Regulations establish requirements for all types of tires.

The *Motor Vehicle Transport Act* (MVTA) is used to ensure that the National Transportation Policy set out in Section 5 of the CTA is carried out and establishes the application of the National Safety Code for extra-provincial motor carriers.

The *Commercial Vehicle Drivers Hours of Service Regulations* sets the hours of work and rest rules for federal motor carriers and their drivers. The *Conditions of Carriage Regulations* outlines conditions of carriage and limitations of liability that apply to extra-provincial carriers. The *Motor Carrier Safety Fitness Certificate Regulations* requires federally-regulated bus and truck motor carriers crossing provincial boundaries or international borders to obtain a safety fitness certificate before they may operate on Canadian highways. These regulations also set criteria for jurisdictions to issue or remove motor carrier safety fitness certificates.

The National Safety Code (NSC) is a set of minimum performance standards, applying to all persons responsible for the safe operation of commercial vehicles. The NSC was developed by the member jurisdictions of the Canadian Council of Motor Transport Administrators (CCMTA) in conjunction with the motor carrier industry. The NSC standards are subject to periodic review by the CCMTA to enhance their effectiveness or respond to new regulatory issues.

3.2 BRITISH COLUMBIA

As previously mentioned, each Canadian province has the authority and responsibility to regulate and enforce legal requirements for all commercial motor vehicle carriers operating within their respective borders.

The Government of British Columbia has set out the following legislation and regulations governing the motor coach industry:

- BC *Commercial Transport Act* (CTA)
 - BC *Commercial Transport Regulations* (CTR)
 - Commercial Transport Procedures Manual
- BC *Motor Vehicle Act* (MVA)
 - BC *Motor Vehicle Act Regulations* (MVAR) (including *Division 37 – Safety Code*)
- BC *Passenger Transportation Act* (PTA)
 - BC *Passenger Transportation Regulations* (PTR)

The *Commercial Transport Act* sets out licensing and registration while the subsequent regulations provide further details on the licensing, size and weight, and other regulations that pertain to the CTA. The *Commercial Transport Procedures Manual* provides inspectors with interpretation guidelines.

MOTOR COACH SAFETY REVIEW

The *Motor Vehicle Act* and subsequent *Motor Vehicle Act Regulations* detail the rules of the road in British Columbia. *Division 37* of the MVAR gives authority to the National Safety Code. It prescribes the legal requirement to obtain a safety certificate in order to operate a commercial motor vehicle in the province. It sets out constraints on the rights of a carrier that is issued a certificate, grants powers to the Director of the Commercial Vehicle Safety Enforcement (CVSE) branch, and allocates the respective responsibilities of the carrier.

When transporting passengers for hire, motor coach operators in British Columbia also require a passenger transportation license issued under the *Passenger Transportation Act* (PTA) and the *Passenger Transportation Regulations* (PTR).

The Commercial Vehicle Safety and Enforcement (CVSE) branch within the Ministry of Transportation and Infrastructure is tasked with enforcement of provincial laws and regulations as they apply to commercial vehicle operation, including Motor Coaches, in the province. CVSE promotes compliance of safety regulations within the commercial transport sector, with the goal of increasing road safety and protecting public health, the environment and transportation infrastructure.

British Columbia's legislation and regulations are consistent with national standards and with legislation and regulations in other provinces.

3.3 DRIVER, VEHICLE AND CARRIER REQUIREMENTS

3.3.1 Driver Requirements

3.3.1.1 Motor Coach Driver Licensing Standards

Relative to other jurisdictions in Canada and elsewhere, commercial driver licensing standards in BC represent current best practices or compare very favorably with practices elsewhere. Motor coach drivers are required to have a Class 2 or Class 1 driver's license and air brake endorsement. Class 2 is specific to operating buses which include school buses, special activity buses and special vehicles. Class 1 is required for heavy commercial vehicles such as tractor trailers, but also includes motor coaches and smaller commercial vehicles (essentially all vehicles except motorcycles).

To obtain a commercial license, potential drivers must be 19 years of age, have a full privilege BC driver's license or out-of-province equivalent, have no driving-related criminal convictions within the past three years and a satisfactory Drivers Medical Examination Report. This is comparable to other jurisdictions.

All jurisdictions use a combination of written tests, oral test and road tests to measure a person's knowledge and skills.

The driver must also be able to maneuver the vehicle in traffic, negotiate intersections and corners, handle the vehicle safely and satisfactorily navigate actual driving situations. Both NSC and ICBC also require commercial drivers to complete trip inspections as part of their licensing exam.

3.3.1.2 Motor Coach Driver Training Standards

Drivers must be able to pass all screening and testing required prior to obtaining a commercial driver license for the vehicle class desired. This is the current approach to determining adequate knowledge and ability to operate a commercial motor vehicle and is not a guarantee of an acceptable performance outcome.

ICBC has produced a guide for applicants that indicate the minimum required curriculum to guide trainers and applicants. This includes but is not limited to, licensing, knowledge and practice test requirements, trip inspections, hours-of-service requirements, and vehicle safety.

It is the responsibility of the carrier to ensure that their drivers are trained, but how drivers are trained is at the discretion of the individual carrier. The CVSE Branch provides guidelines for carriers in terms of driver training required of a responsible carrier and what is required to be in compliance with the *National Safety Code*.

3.3.1.3 Driver Health and Wellness

Bus and motor coach drivers may drive passengers between distant cities and provinces or work in the tourism sector where the driver is more likely to usher passengers to tour stops and await completion of the passengers' tour before making a return trip. How often, how far, and how long they drive, whether or not the driver works a regular schedule, returns home from an on-duty cycle every day, sleeps in their own bed, or sleeps in motels, eats regular scheduled meals, eats at home or in fast food restaurants, whether they have much opportunity to engage in physical exercise, and so on, all impact a driver's state of health and wellness.

In British Columbia, RoadSafetyBC is responsible for driver fitness and has adopted the principles of the CCMTA Medical Standards for Commercial Drivers as the basic requirement. There are a number of tools to help maintain driver health and wellness, and the *National Safety Code* outlines a model for administering a driver fitness program.⁹ The purpose of this model is to provide guidelines to facilitate a consistent approach to driver fitness decision-making by provincial and territorial government driver fitness authorities across Canada.

3.3.1.4 Driver Age

The NSC in BC has a standard model in which authorities are mandated to evaluate commercial drivers for driver fitness at the time of license application and then at periodic intervals:

- Up to age 45, every five years thereafter
- From age 45 to age 65, every three years thereafter
- From age 65, annually

The need for minimum qualifications for medical fitness to drive that are evidence-based and fairly and consistently applied, is widely recognized.

⁹ Source: National Safety Code Standard 6, Chapter 1.

3.3.2 Vehicle Requirements

3.3.2.1 Commercial Vehicle Inspection Program

The Commercial Vehicle Inspection Program encompasses all types of highway vehicles—both private and commercial—and is dedicated to improving vehicle and road safety in British Columbia. *Motor Vehicle Act Regulations (MVAR), Division 25* detail inspection requirements and vehicles that are subject to periodic inspections, either annually, semi-annually or one-time (such as vehicles imported to British Columbia). Vehicles found operating on a highway with safety or mechanical deficiencies may be ordered for a provincial inspection by enforcement officers.

In BC, Motor Coaches are required to be mechanically inspected to ensure compliance with vehicle safety standards every six (6) months. This is consistent with the National Safety Code

The most recent version of the National Safety Code provides a very detailed outline of inspection schedules, responsibilities and record keeping. The inspection schedules provided in *Standard 13* provide drivers with an illustration of components that should be checked daily (*Schedule 3*) and at 30 days or 12,000 kilometers (*Schedule 4*). These schedules specify potential defects for each category.

Provincial regulations pertaining to trip inspections identifies the minimum components that should be checked by the driver and aligns with *NSC Standard 11b* for periodic inspections. However, it does not identify as many components, nor is it as comprehensive as the *NSC Standard 13* in identifying potential defects in each category. Consultation with industry should be undertaken before adoption of NSC Standard 13 is considered.

3.3.3 Carrier Requirements

3.3.3.1 Motor Coach Vehicle Maintenance

According to the NSC, every commercial vehicle operator must ensure that each vehicle that is owned or leased by the operator meet national maintenance standards. In addition, every operator must have a system in place to inspect, maintain and repair each of their fleet vehicles at regular intervals. These systems are described in detail in **Appendix C – Regulations**.

The obligation to inspect and maintain vehicles is ongoing. This ongoing aspect of vehicle maintenance and inspection distinguishes this standard from the Periodic Motor Vehicle Inspections (PMVI) standard, where specific time intervals for inspection are mandated. Indeed the other inspection standards of the NSC can be seen as an audit of the regular maintenance and repair program that is implemented by a motor carrier or commercial vehicle operator.

3.3.3.2 Roadside Inspections

On-road inspections of commercial vehicles are conducted in compliance with the Commercial Vehicle Safety Alliance (CVSA) roadside inspection requirements. In BC 25,000 to 30,000 roadside inspections are conducted annually.

MOTOR COACH SAFETY REVIEW

Annually, all provinces and states in North America conduct a 72 hour roadside inspection blitz, called RoadCheck. The blitz is conducted as part of the annual Commercial Vehicle Safety Alliance Roadcheck initiative, which sees about 10,000 commercial vehicle inspectors set up road checks in approximately 1,500 locations across North America.

During the 2016 Roadcheck in Canada, CVSA certified inspectors completed 73,475 truck and bus inspections, with just over a third of them being the Level I (most in-depth) inspection. Of these, 23% resulted in vehicles being placed out-of-service.

3.3.3.3 National Safety Code Auditing Standards

Carrier audits are directly related to the safety of motor coach vehicles and BC's *NSC* program is designed to ensure that carriers are knowledgeable, regarding their *NSC* obligations, and that they receive early intervention when potential concerns are raised by a carrier's on-road performance. This is an important component of monitoring a carrier's performance and uses a series of educational and enforcement tools such as Warning Letters, Compliance Reviews, Quantifiable Audits and cancellation of *NSC* certificates through the Show Cause process. Details on obtaining and maintaining the *NSC* Safety Certificate can be found in **Appendix C - Regulations**.

The *National Safety Code* is a code of minimum performance standards applying to all persons responsible for the safe operation of commercial vehicles. Carriers must ensure that their vehicles meet maintenance and performance standards as prescribed in the regulations. Carriers are also responsible to ensure that their drivers are appropriately licensed and are complying with all hours-of-service rules as prescribed in the regulations.

NSC Standard 15 outlines Facility Auditing. The Facility Audit serves as a means of evaluating a carrier's safety/compliance performance with respect to the identification of violations and the use of consistent and acceptable sampling guidelines. In addition, the audit results can be used in conjunction with a carrier profile to establish a carrier safety rating (*NSC Standard 14 Carrier Safety Rating*). To that end, the audit must be both quantifiable, uniformly delivered within each jurisdiction and compatible with other jurisdictions.

3.4 ENFORCEMENT

3.4.1 Roadside Inspections

In BC, CVSE is tasked with regularly inspecting Motor Coaches operating in the province. For the period of 2004 to 2015, the number of Motor Coaches inspected in BC varied over time, from as low as 51 in 2007 to as high as 105 in 2004.

Beyond the annual Roadcheck, regulatory compliance checks during the year take the form of destination inspections, on-route inspections, and facility inspections.

Based on the Annual CVSA Road Check conducted every June, the Canadian Council of Motor Transport Administrators (CCMTA) data shows that British Columbia has comparable rates with Alberta, and a much lower out-of-service (OOS) rate than Ontario.

MOTOR COACH SAFETY REVIEW

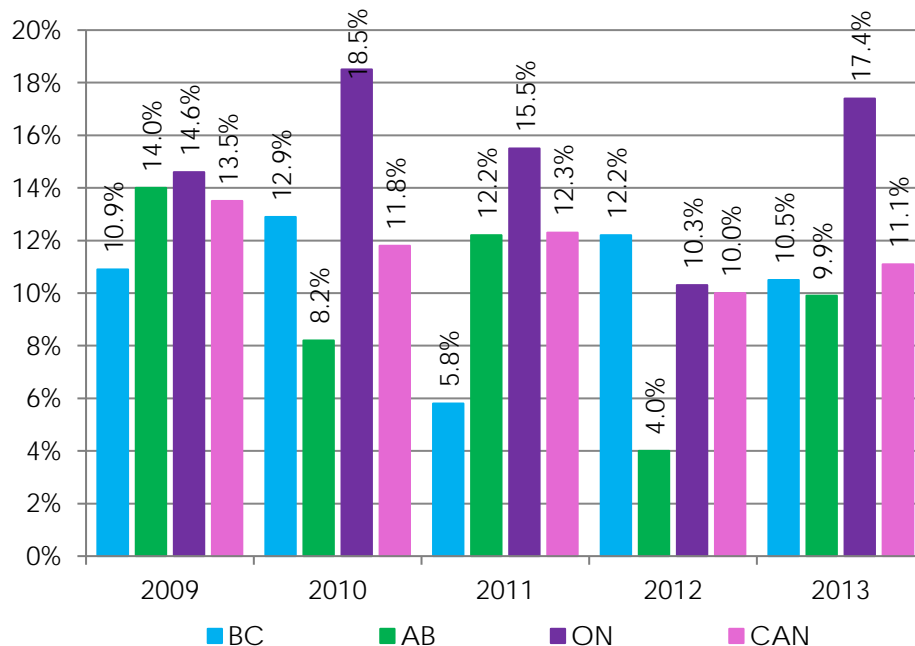


Figure 3.1 Percentage of OOS Buses¹⁰

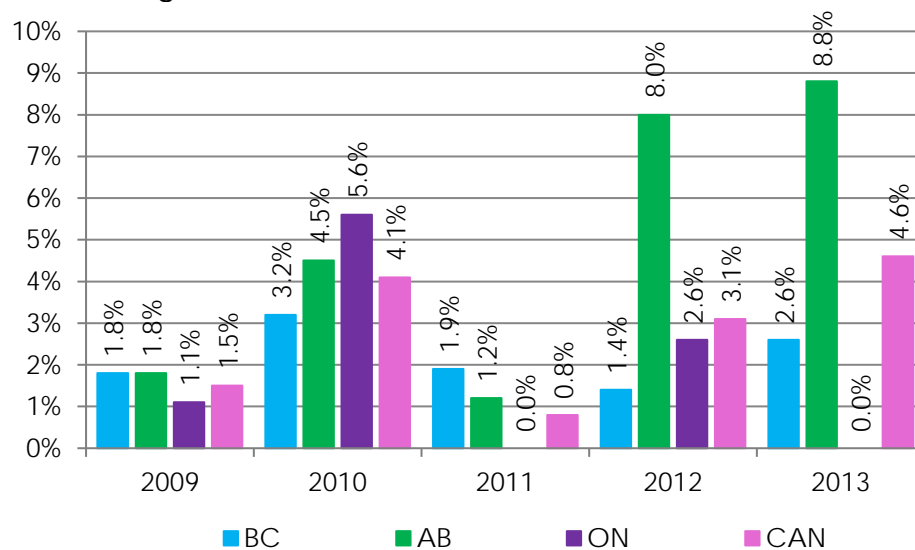


Figure 3.2 Percentage of OOS Bus Drivers¹¹

We can conclude from this data that in 2013, BC's Roadcheck shows the OOS percentages in BC are generally below the other jurisdictions.

¹⁰ Data source: CCMTA 2013 Roadcheck Results.

¹¹ Data source: CCMTA 2013 Roadcheck Results.

3.4.2 National Safety Code Auditing

The National Safety Code (NSC) audit program in BC targets carriers with the highest level of safety risk based upon on-road performance. In 2013, BC's NSC program introduced an educational compliance review allowing an earlier intervention to help carriers better understand their obligations. The introduction of the compliance review has allowed BC's NSC program to further refine the focus of the audits by using compliance reviews to target carriers whose on-road performance safety concerns were caused due to a poor level of understanding of the requirements.

The more detailed and resource-dependent full NSC Audits are focused on carriers who appear to be unable or unwilling to operate at an acceptable safety standard.

Audits are scored in four components:

1. Driver
2. Hours of Service
3. Vehicle
4. Safety Practices

The overall score for the audit is the sum of the scores for the four audit components, resulting in an Audit Status of:

- Excellent (introduced in 2015)
- Satisfactory
- Conditional (deemed by policy to be Satisfactory since 2012)
- Unsatisfactory

An Unsatisfactory rating can result in violation tickets and their associated fines. The carriers are required to identify how they will bring their companies back into compliance. An Unsatisfactory rating can also result in a recommendation to cancel their NSC Safety Certificate.

MOTOR COACH SAFETY REVIEW

Table 3.1 NSC Motor Coach Carrier Audits¹²

Audit Year	Non-Compliance Rate			Total Audits
	Satisfactory	Conditional	Unsatisfactory	
2008	2	0	6	8
2009	8	1	4	13
2010	4	1	13	18
2011	5	0	5	10
2012	5	1	7	13
2013	4	2	8	14
2014	2	3	8	13

CVSE audits approximately 13 Motor Coach carriers annually. Given these are the worst performing carriers, it is expected that most would receive an unsatisfactory rating. These results are comparable to audit results in other sections of the commercial vehicle industry.

4.0 OTHER JURISDICTIONS BEST PRACTICES

Stantec reviewed out-of-province jurisdictions to identify any potential opportunities for improvement, identify other jurisdictions best practices and identify improvements being considered by others in the industry. The findings from our review are divided into two categories, those focused on Drivers and those focused on Vehicle. Our review also identified practices that are emerging, but have not been adopted by any of the jurisdictions studied.

4.1 DRIVER

4.1.1 Hours-of-Service

- Regulations are issued by United States Federal Motor Carrier Safety Administration and the rules limit the number of daily and weekly hours spent driving and working, and regulate the minimum amount of time drivers must spend resting between driving shifts.
- In the United States, other compensated work must be counted as part of hours-of-service schedule and is recorded as "on-duty" time.
- United States hours-of-service have subcategories with more stringent maximums for certain industry sectors such as logging, but not specific to motor coach drivers.
- In Canada, the federal government and CCMTA are responsible for establishing consistent hours of service requirements across Canada. Under existing regulations a commercial vehicle driver does not need to identify "after-hours" employment when working for a non-motor carrier when reporting the hours-of-service; the after-hours work

¹² Data source: National Safety Code data from Passenger Transportation Branch

MOTOR COACH SAFETY REVIEW

can be recorded as “off-duty” time regardless of activity. Updates are not being considered at this time.

4.1.2 Electronic Logging Devices

An Electronic Logging Device (ELD) is a technology used to track the time a commercial vehicle is operating. An ELD is integrally connected to the vehicle’s engine, uses location information, and is tamper-resistant. An ELD automatically tracks vehicle movement, but allows for annotations by both the driver and the motor carrier’s agent to explain or correct records. An ELD does not necessarily have to be a physical device as it is a technology platform, and may be portable or implemented within a device not permanently installed on a vehicle.

- On December 10, 2015, a bulletin was issued by the United States Department of Transportation’s Federal Motor Carrier Safety Administration (FMCSA) announcing the final rule on the mandatory requirement for using Electronic Logging Devices (ELDs) by drivers currently required to prepare hours-of-service records of duty status. The ELDs automatically record driving time, monitors engine hours, vehicle movement, miles driven and location information.
- Transport Canada also announced in February 2016 its intention to introduce a similar regulation with implementation anticipated in late 2017/early 2018 in-line with the United States implementation. The regulation would cover cross-border and inter-provincial travel.

4.1.3 Entry-Level Driver Training

Historically, entry-level driver training has not been heavily regulated in Canada or the United States. However, there have been specific movements for improvement made and are discussed below:

- The Ministry of Transportation in Ontario mandated Entry-Level Training specifically for Class “A” Drivers. New Class “A” License candidates who apply for a license on, or after, July 1, 2017 will be required to complete a four to six week long training course prior to attempting the Class A road test.
- On March 4, 2016 the FMCSA proposed to adopt new standards to mandatory training requirements for new or upgraded commercial driver’s license based on Class “A” and Class “B” licenses, which include motor coach operators. The mandatory requirement includes seven hours of practice range training and 15 hours of behind-the-wheel (skills test) training from an approved training facility on the National registry.
- Many European countries require a minimum number of hours in classroom and on the road training within a standardized curriculum and/or a minimum number of apprenticeship hours.

CCMTA is tasked with ensuring consistency in safety requirements across Canada. With respect to driver training, CCMTA is assessing the training requirements in each province, the potential impact on reciprocity (i.e. accepting a Class 1 / Class A license from a jurisdiction that doesn’t have mandatory training) and exploring a possible national training curriculum.

MOTOR COACH SAFETY REVIEW

Consistency in commercial licensing requirements is important, not only for commercial drivers who routinely travel across provincial borders, but also to stop drivers from gaining their commercial license in a jurisdiction with lower requirements to avoid having to take the additional training required by a higher threshold province.

4.2 VEHICLE

4.2.1 Passenger Seat Belts

Various agencies have conducted testing on seat belts which prove that lap belts alone do not result in significant safety improvement and may result in neck and abdominal injury, however; three point or lap/torso belts, when worn properly, significantly reduce the severity of injuries sustained. Proper seat and anchorage design and construction is also required for lap/torso belts to be effective.

- In the United States, all new motor coaches manufactured must have passenger seat belts as a standard feature.
- Australia and the United Kingdom have instituted seat belt regulations, with Australia having more stringent testing requirements, and have come to the conclusion that retrofitting existing motor coaches with seat belts may not realize the desired benefits and the cost is prohibitive for the remaining service life of older coaches. The United Kingdom has regulations requiring seat belts be installed on tour buses and mini-buses since 2001.

The requirement for seatbelts to be installed on Motor Coaches is a manufacturing standard that falls under Federal authority. The Federal Motor Vehicle Safety Regulations require Motor Coaches to be equipped with seat belts at the driver's designated position only.

As of 2011, motor coaches have been constructed with three point passenger seat belts, as an option. This later became standard in 2013 with specific motor coach suppliers providing an option to have them removed.

The BC Motor Vehicle Act Regulations require motorists and passengers to use seat belts for all seating positions in which a seat belt is provided. For example, if a Motor Coach has passenger seat belts in place, passengers are required to use them.

Transport Canada is considering a national requirement for seatbelts on newly manufactured Motor Coaches. Provincial law puts the onus on the driver of a vehicle to ensure all passengers between 6 and 16 are properly belted in. Should national regulations requiring seatbelts on Motor Coaches be established, the province may want to consider amending provincial regulations to relieve Motor Coach drivers of this requirement.

4.2.2 Speed Limiting Devices

A speed limiting device limits the vehicle to a maximum prescribed rate of speed, and have been shown to reduce speeding (exceeding the speed limit) related collisions on bare roads but would have no benefit in inclement conditions such as snow/ice/slush covered roads.

- United States – A proposed federal rule has been submitted on the mandate for speed limiters for buses, school buses and heavy trucks by the joint efforts of the Federal Motor

MOTOR COACH SAFETY REVIEW

Carrier Safety Administration (FMCSA) and the National Highway Traffic Safety Administration (NHTSA) to the White House's Office of Management and Budget for its approval. The speed limiter mandate would apply to all vehicles over 12,200 kilograms. The proposed rule is in the review period and likely several years from making a decision.

- Quebec and Ontario – The provinces of Ontario and Quebec have mandated that speed limiters be required on all commercial vehicles and set at 105 km/h prior to entering either province. This mandate was initially established in 2009, primarily as a way to reduce greenhouse gas emissions, with improved safety and fuel economy savings as secondary benefits. In both jurisdictions Motor Coaches are exempt.
- European Union – The first European Union legislation requiring speed limiters was adopted in 1992 for large vehicles over 12 tonnes and extended to smaller commercial vehicles over 3.5 tonnes in 2002. There is now a single standard for speed limiters to be installed on all trucks of more than 3,200 kilograms and a single standard for all coaches of more than nine (9) seats.¹³

4.2.3 Electronic Stability Control (ESC)

Electronic Stability Control, or ESC, is a system constructed within the commercial vehicles at the time of manufacture that automatically applies braking force at selected wheel ends to help maintain directional control of the vehicle.

- On June 03, 2015 the United States National Traffic Safety Administration (NTSA) released its final rule requiring electronic stability control systems for commercial trucks and motor coaches. There are different lead times on compliance and is dependent on the vehicle type. The first deadline for compliance is directed to new three axle commercial trucks manufactured on or after August 1, 2017 and compliance for all commercial trucks within four years. There is no requirement for retrofits to existing motor coaches or commercial trucks.¹⁴
- In October 1, 2016 Transport Canada has proposed a new Canada Motor Vehicle Safety Standard (CMVSS) 136 governing ESC systems for certain heavy vehicles, including Motor Coaches. The proposed standard is aligned with the United States (U.S.) standard. All targeted vehicles must be equipped by August 1, 2019.

4.3 EMERGING

4.3.1 Advanced Trip Itineraries

Although not in any current legislation, having pre-arranged trip itineraries available to the carrier and driver prior to the departure can permit the driver to ascertain whether he or she will be able to adhere to the hours-of-service regulations based on his or her previous work shifts and sleep cycle in time to arrange for any adjustments as required.

¹³ CTBSSP Synthesis 16 – Safety Impacts of Speed Limiter Device Installations on Commercial Trucks and Buses.

¹⁴ Source: BCTA Bulletin on ESC. <http://www.bctrucking.com/bulletin/2015/06/04/us-final-rule-electronic-stability-control-new-trucks-buses>. Accessed January, 2016.

MOTOR COACH SAFETY REVIEW

If the trip will take longer than the hours-of-service regulations allow, relief drivers can be strategically located along the scheduled route to take over the route allowing the first driver to rest.

When emergency or unanticipated traffic delays hold up a driver mid-route, there are certain allowances in the regulations for the driver to be able to get to an appropriate rest area. For motor coach drivers, this is especially critical since the passengers would need a safe place to stay overnight.

This is not currently being considered in any jurisdiction reviewed.

4.3.2 Vehicle Integrity Component Technologies

Structural integrity of buses is critical in the event of a motor coach collision and is especially critical for bus rollover collisions.

- In July 2014, the United States National Highway Traffic Safety Administration (NHTSA) identified a potential rulemaking that would develop a new Federal Motor Vehicle Safety Standard for rollover structural integrity requirements for motor coaches. This rulemaking is developed in response to the NHTSA publication in August 2007 that identified a comprehensive motor coach safety plan identifying four specific priority items, including reducing the risk of passenger ejection from the motor coach, improving rollover structural integrity, enhancing emergency evacuation and upgrading fire safety.
- The United States Department of Transportation published a comprehensive motor coach safety action plan in November 2009 that reiterated NHTSA's motor coach safety priorities. This rulemaking also addresses six recommendations issued by the United States National Transportation Safety Board on motor coach roof strength and structural integrity.
- Australia has implemented regulations pertaining to vehicle structural integrity and occupant restraint (which includes mandatory use by passengers) after some severe motor coach collision incidents in the late 1980s and early 1990s prompted a regulatory and safety review. Between the regulations adoption in 1991 and 1997 there was a decline in severe collisions involving motor coaches.

Structural integrity requirements would fall under federal jurisdiction.

4.3.3 Crash Avoidance Technology and Driver Assistance Systems¹⁵

The term "crash avoidance" can encompass a wide variety of vehicle features designed to help the driver operate the vehicle safely. Vehicles increasingly offer advanced technologies that assist the driver with warnings or automatic braking to avoid or mitigate a crash, including lane departure warning, forward collision warning and obstacle strike warning. In some cases, they increase braking power or adjust steering response to make the driver's input more effective.

¹⁵ Source: Insurance Institute for Highway Safety website.

MOTOR COACH SAFETY REVIEW

They also may automatically brake or steer the vehicle if the driver does not take action to avoid the collision.

Forward collision detection and lane departure technologies are referred to as vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications, respectively, and are prototype safety systems in which vehicles and roadway infrastructure communicate. With V2V communication, vehicles transmit information regarding their actions to other vehicles. For example, in a long chain of vehicles, if the lead vehicle suddenly brakes, this information will be transmitted to each vehicle in the chain to alert other drivers. V2V may also allow trailing vehicles to automatically begin braking when the lead vehicle's signal is received.

With V2I communication, cars receive and transmit information to roadway infrastructure. For example, highway systems could monitor vehicle location within a lane and if the vehicle is detected drifting out of a lane, the system could alert the vehicle. In urban environments, traffic signals can alert vehicles of an impending light change so drivers can prepare to stop.

The United States National Highway Traffic Safety Administration announced it will be taking steps to enable this technology in vehicles and recently solicited feedback from the public ahead of issuing a proposed rule.

Crash avoidance and driver assistance system requirements would fall under federal jurisdiction

5.0 ENGAGEMENT WITH OTHER STAKEHOLDERS

5.1.1 Stakeholder Group Meeting / Industry Workshop

MoTI and Stantec conducted an informational session and industry workshop on January, 20, 2016 with an invitation to all 28 motor coach operator members registered with the British Columbia Trucking Association. In attendance were 13 stakeholders representing a range of company profiles. See also **Appendix A – Consultations** for a record of what was discussed at the industry workshop.

The meeting included an interactive presentation of the compiled statistical information collected to date. Some of the attendees agreed that data collection for motor coach buses is inconsistent across most jurisdictions, due to current reporting methods.

Following the statistical presentation, an open forum was held with the group regarding regulatory changes. During the discussion, it became evident that the Human Factor was the major element in the total collisions as a considerable percentage (i.e. >80%)

Beyond the human elements of collisions, the Stakeholder Group identified three general safety themes. Concepts discussed within the themes include;

- 1) Safety measures to protect the occupants in the bus when involved in a collision
 - Seat Belts Requirements
 - Smaller Window Openings
 - Airbags for Driver and Passengers

MOTOR COACH SAFETY REVIEW

- 2) Safety measures to reduce bus driver at-fault collisions
 - Driver Training
 - Camera Technology
- 3) Safety measures to generally reduce the number of collisions within the industry as a whole (e.g. external causes).
 - Global Positioning System (GPS)
 - Electronic Logging Devices (ELD's)
 - Electronic Stability Control
 - Lane Departure Warnings
 - Variable Speed Limits

It is important to note that the ideas presented above were only discussion topics with the working group and is not considered endorsement into industry mandates.

6.0 REFERENCES

Alberta Geographical Statistics Reports SDGEO030, SDGEO050 and SDGEO010.

Alberta Transportation. 2013. Alberta Traffic Collision Statistics 2013. Office of Traffic Safety. Edmonton, AB.

American Motorcoach Association Foundation. 2015. Motorcoach Census – A Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2013. Prepared by John Dunham & Associates. United States.

American Motorcoach Association Foundation. 2013. Motorcoach Census – A Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2012. Prepared by John Dunham & Associates. United States.

American Motorcoach Association Foundation. 2012. Motorcoach Census – A Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2011. Prepared by John Dunham & Associates. United States.

American Motorcoach Association Foundation. 2011. Motorcoach Census – A Study of the Size and Activity of the Motorcoach Industry in the United States and Canada in 2010. Prepared by John Dunham & Associates. United States.

British Columbia Ministry of Transportation and Infrastructure. 2012. Carrier Safety Guide – Meeting Your National Safety Code Obligations in British Columbia. British Columbia.

British Columbia Injury Research and Prevention Unit. Injury Data Online Tool (iDOT) for traffic accidents at <http://www.injuryresearch.bc.ca>. Accessed October–December 2015.

British Columbia Trucking Association. 2013. News release: Collisions Involving Heavy Commercial Vehicles. <http://www.bctrucking.com/industry/safety>. Accessed September 2015.

Canadian Council of Motor Transport Administration. 2013. Press release: Canadian Jurisdictions Conduct Yearly Roadcheck Blitz. Commercial Vehicle Safety Alliance. Canada.

MOTOR COACH SAFETY REVIEW

- Continuing Legal Education Society of British Columbia. 2013. Drug and Alcohol Testing: Recent Developments in the Law. Employment Law Conference 2013 Paper 10.1. Prepared by Eleni Kassaris and Claire Marchant of Blake, Cassels & Graydon LLP. Canada.
- Federal Motor Carrier Safety Administration. 2013. Analysis Brief: Safety Analysis and Industry Impacts of the Pre-Employment Screening Program (PSP). United States.
- Federal Motor Carrier Safety Administration. 2015. Large Truck and Bus Crash Facts 2013. Document No. FMCSA-RRA-15-004. Analysis Division. United States.
- German Federal Ministry of Transport. 2005. Motor Coach Fires – Analysis and Suggestions for Safety Enhancement. Paper No. 05-0094. Federal Highway Research Institute. Prepared by Egelhaaf, M. and Berg, F. A. of DEKRA Automobil GmbH. Germany.
- Insurance Corporation of British Columbia. 2014. Crashes involving Buses rated for specific uses by Seating Capacity (21 or less; 22–41; 42 and over) Actively Insured Buses rated for specific uses by Seating Capacity (21 or less; 22–41; 42 and over). Report No. 2014CMN1903-5 (Bus crashes). ICBC Business Insights Road Safety. North Vancouver, BC.
- Insurance Corporation of British Columbia. 2015. Driving Commercial Vehicles – A Guide for Professional Drivers – Includes Complete Information on Air Brakes. Document No. MV2677 (042015). British Columbia.
- Insurance Corporation of British Columbia. 2015. Quick Statistics. Document No. PI346 (042015). British Columbia.
- Insurance Corporation of British Columbia. 2015. Report # 2015CMN3157-0. British Columbia.
- Insurance Institute for Highway Safety. <http://www.iihs.org/iihs/topics/t/crash-avoidance-technologies/topicoverview>. Accessed February 2016.
- National Highway Traffic Safety Administration. 2009. Status of NHSTA Motorcoach Safety Plan. Paper No. 09-0448. Prepared by Alope Prasad, David Sutula, Roger Saul, John Hinch, Charles Hott, Lawrence Valvo, and Stephen Beretzky of NHTSA and Michael L. Sword of Transportation Research Center, Inc. United States.
- National Highway Traffic Safety Administration. 2009. Motorcoach Roof Crush/Rollover Testing Discussion Paper, March 2009. Docket No. NHTSA-2007-28793. United States.
- National Highway Traffic Safety Administration. 2009. Human Factors Issues in Motorcoach Emergency Egress. Human Factors Engineering Integration Division, NVS-331, Vehicle Safety Research Office. Prepared by John A. Volpe National Transportation Systems Center Research and Innovative Technology Administration. United States.
- National Institute of Standards and Technology. 2011. Motorcoach Flammability Project Final Report: Tire Fires – Passenger Compartment Penetration, Tenability, Mitigation, and Material Performance. Technical Note 1705. Prepared by NIST Engineering Laboratory. United States.
- National Highway Traffic Safety Administration. 2014. Vehicle-to-Vehicle Communications: Readiness of V2V Technology for Application. Report No. DOT HS-812-014. United States.
- Transport Canada. 2002. Document No. TP 14006E: Evaluation of Occupant Protection in Buses. Prepared by RONA Kinetics and Associates Ltd., North Vancouver, BC.
- Transport Canada. National Safety Code for Motor Carriers Part A: Statement of Principles. Canada.
- Transport Canada. Dangerous Goods Advisory Notice. Document No. TP 9554E Volume 1. Canada.
- Transport Canada. National Safety Code for Motor Carriers Standard 5: Self-Certification Standards and Procedures. Canada.

MOTOR COACH SAFETY REVIEW

Transport Canada. National Safety Code for Motor Carriers Standard 2: Knowledge and Performance Tests (Drivers). Canada.

Transport Canada. 2013. National Safety Code for Motor Carriers Standard 6: Determining Driver Fitness in Canada. Version: Edition 13. Prepared by Canadian Council of Motor Transport Administrators. Canada.

Transport Canada. 2006. Development of a North American Fatigue Management Program for Commercial Motor Carriers Phase II (Pilot Study) Development of Educational Material and Testing of Tools and Procedures to Be Used in Phase III Fatigue Management Program. Document No. TP 14828E. Canada.

Transportation Research Board. 2005. Commercial Truck and Bus Safety Synthesis 6: Operational Differences and Similarities Among the Motorcoach, School Bus, and Trucking Industries. United States.

Transportation Research Board. 2007. Commercial Truck and Bus Safety Synthesis 13: Effectiveness of Commercial Motor Vehicle Driver Training Curricula and Delivery Methods. United States.

Transportation Research Board. 2003. Commercial Truck and Bus Safety Synthesis 3: Highway/Heavy Vehicle Interaction. United States.

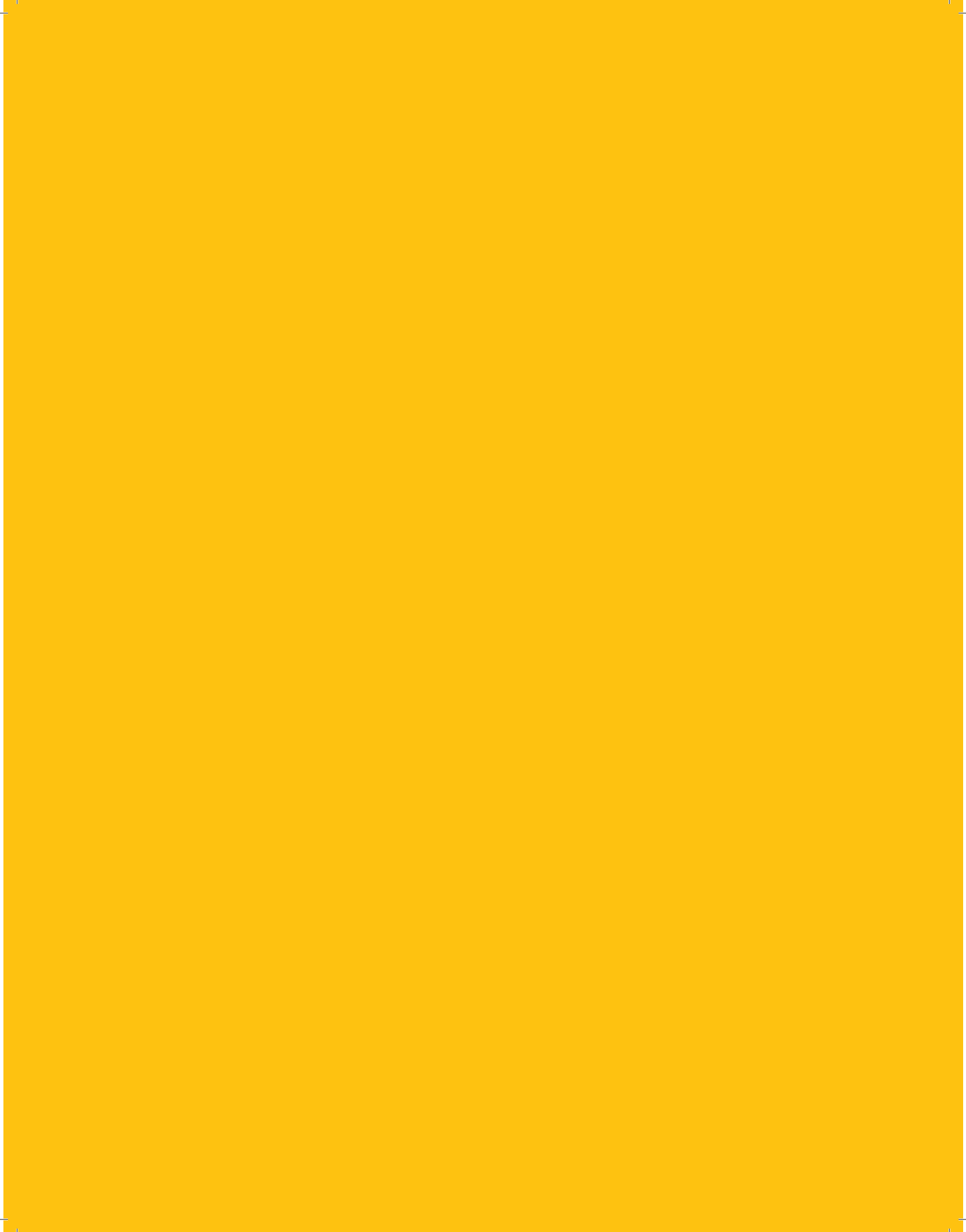
Final Report



Motor Coach Safety Review

APPENDIX A - CONSULTATIONS

A Safety Review of Motor Coach
Transportation in British Columbia



BC Motor Coach Safety Review – Industry Workshop

Motor Coach Safety Review / 115815001.204

Date/Time: January 20, 2016 / 9:00 AM
Place: BCTA Office - 100-20111 93A Ave Langley BC
Next Meeting: TBD
Attendees: Kevin Nenoro, Rosie Kingsnorth, Lorne Richard, Scott Mason, David Holmes, Joy Sengupta, Greg Kolesniak, Stacey Spencer, Brennan Driedger, Mark Francis, Jim Tarasuk, Jonathan Hoey, Louise Yako, Lindsay Samson, Perry Dennis, Steven Haywood, Perry Therrien, Jennifer Stites, Wayne Byczek
Absentees: Kristin Vanderkuip, Derek Drummond, Neil Arason; doug@omca.com
Distribution: Perry Therrien, Derek Drummond, Wayne Byczek, Jennifer Stites

Item:

1. Introduction

2. Presentation of Findings: Motor Coach Statistical Review

- 2.1. Joy Sengupta (MoTI) made a suggestion to reach out to the RCMP for accident specific data in BC, such as causal factors and at-fault information.
- 2.2. Greg Kolesniak (BCTA) noted that ICBC Breaks down BC bus data based on distance traveled and gross operating weight and that there may be an opportunity to refine the BC bus data further on this basis. A later slide showed a breakdown of buses with a seating capacity of 42+ by category and it was confirmed that this is in line with Greg's suggestion.
- 2.3. Jim Tarasuk (ICBC) asked for a clarification on how accidents are classified in terms of "severity" if they result in some combination of fatality, injury, and/or property damage only. It was noted that the highest severity type item is used in such cases to avoid double counting of number of crashes.
- 2.4. Jim Tarasuk (ICBC) asked if crash type data is limited to crashes where the bus driver was at fault or if the crash type data also includes crashes involving buses caused by other vehicles. It was confirmed that crash type data includes any crash that involves a bus, whether or not the driver was determined to be at fault.
- 2.5. Greg Kolesniak (BCTA) noted that the collision frequency data for BC appears to be increasing in 2003 and that removing this particular year may be beneficial given that it is somewhat misleading. It was confirmed that a ten year data set was selected from 2003 to 2013 to ensure a 10-year period and that an increase in 2003 may not actually be present given that the data set does not show what is occurring prior to 2003.
- 2.6. Jim Tarasuk (ICBC) noted that ICBC data shows that the "Vehicle Condition" causal factor was attributed to approximately 1% of the accidents that occurred in 2007 and he questioned the time frame assumed for causal factor data in BC. It was confirmed that the data presented covered a 10 year period overall and it was noted that the data looked to be in line with what ICBC would expect to see overall.
- 2.7. An error was noted on the "Vehicle Condition" definition which appears to be a

Item:

carryover sentence.

- 2.8. Louise Yako (BCTA) asked if the study reviews geographic location or time of specific accidents to identify any trends in BC. It was noted that this is not covered in the report, given availability of data.
- 2.9. Jim Tarasuk (ICBC) suggested that the BC causal factor data be totaled by individual category (e.g. look at total percentage attributed to “Human Action”) to see what telling point is. He noted that this exercise would likely result in “Human Action” being a contributing cause in 90% of all collisions.
- 2.10. Jim Tarasuk (ICBC) noted that in the USA, data shows that motor coach drivers are found to not be at fault in 70% collisions involving motor coaches. It was noted by Steve Haywood (MoTI) that motor coach accidents caused by external factors still need to be considered so that the industry can look at way to protect motor coach passengers regardless of which driver is at fault.
- 2.11. It was noted that it would be practical to have an idea of how many collisions in BC include motor coaches overall (e.g. pie chart showing motor coach collisions vs. all collisions). This would help to establish an overall tone for the Motor Coach industry.

3. Brainstorm

- 3.1. The Work Group described three general safety themes:
 - 3.1.1. Safety measures to protect the passengers in the bus when involved in a collision;
 - 3.1.2. Safety measures to reduce bus driver at-fault collisions; and
 - 3.1.3. Safety measures to generally reduce the number of collisions within the industry as a whole (e.g. external causes).
- 3.2. The following safety measures came out of the brainstorm session:

3.2.1. Seatbelts

- 3.2.1.1. As of 2011, motor coach buses come with three-point seatbelts as an. As of 2013, seat belts became standard. Certain motor coach suppliers (Prevost and MCI) provide an option to have them removed.
- 3.2.1.2. Retrofitting buses to include three-point harness seatbelts is very expensive because a special mounting bracket is required. The minimum cost to retrofit a motor coach bus is approximately \$50,000.
- 3.2.1.3. The working group noted that more and more passengers/customers are requesting seatbelts before they book a tour and certain customers have stated that they will not ride on a bus without them.
- 3.2.1.4. The industry is currently seeing very few passengers wearing seatbelts in motor coaches when they are provided, despite safety recommendations by tour operators. Some carriers have installed signage indicating to passengers to wear seatbelts.
- 3.2.1.5. Enforcement of seatbelts is problematic. Motor coach bus tours are not staffed with an attendant to monitor compliance and there is an issue with bus drivers becoming distracted while driving if enforcement is placed on them. Passengers typically get out of their seats to socialize and use the washroom.

Item:

3.2.1.6. The working group is supportive of legislation that would make wearing seatbelts mandatory in motor coaches, as this would provide a level of consistency across the industry. There is an issue with current legislation (although not currently being enforced) that makes the bus driver responsible for individuals under the age of 16 not wearing seatbelts. It was suggested that legislation be changed to remove the driver responsibility related to youth wearing seatbelts. The working group was supportive of making seatbelts mandatory for all new bus roll outs, similar to the USA legislation which mandates that every motor coach sold in the USA must be equipped with seatbelts. Greg Kolesniak (BCTA) noted that BCTA has a submission related to suggested seatbelt legislation that he can make available.

3.2.1.7. The working group noted that less than half of motor coaches operating in BC are likely to have seatbelts. Amongst the motor coach operators in attendance, companies reported having seatbelts in their current fleets as follows:

3.2.1.7.1. One operator noted that two of their 42 buses have seatbelts.

3.2.1.7.2. Canada West Coachlines noted that four of their buses currently have seatbelts.

3.2.1.7.3. One operator noted that 70% of his buses have seatbelts.

3.2.1.7.4. One operator noted that four of their buses currently have seatbelts.

3.2.1.8. In US, school buses that have smaller openings may be exempt.

3.2.2. Smaller window openings – similar to school buses, to prevent ejection of passengers.

3.2.3. Airbags

3.2.4. GPS systems - that provide alerts when speeding, excessive breaking, or cornering is detected.

3.2.5. Electronic On-board Recorders / Electronic Logging Devices (ELDs) – these bring more awareness to fatigue as they log duty hours, taking pressure off of the driver. Several work group participants noted that they are using this technology currently and expressed support for this as a mandate. They are mandated in the US in approximately two years. The electronic logging device is connected to an ECM/black box. Some models are manual whereas some are automatic and activate as soon as the bus is running. Cost is relatively low for this technology: \$700 for tablet plus \$35 per month. The technology removes the need for paperwork in buses. Good for complaints as well. Louise Yako (BCTA) noted that the association is supportive of mandating tracking devices.

3.2.6. Backup Cameras - Prevost provides backup cameras. The buses are built very safe and it was noted that human factor is where the focus should be.

3.2.7. Electronic stability control – This is a technology similar to ABS that uses breaks to prevent bus flipping. It is not an option in Prevost buses. The USA is requiring this technology and the working group is generally supportive of this technology. There are two versions and it was suggested that the lesser of the two be mandated.

3.2.8. Lane Departure Warnings – The Prevost Aware software provides this technology

Item:

whereby a light comes on with automatic breaking.

- 3.2.9. Variable Speed Limits** – Some members noted that they are bothered by the recent Coquihalla speed limit increases. Several drivers have commented that the increased speed limits are too fast for buses. MoTI noted that they will be deploying a pilot project along 3 highways within the province to modify the posted speeds in relation to road conditions. The variable speeds road will also be able to be speed enforced by RCMP.
- 3.2.10. Pressure to meet schedule** – Members noted that bus drivers are directed to cut down on breaks or tour stops as required to ensure that they are able to drive safely and meet schedules. It was noted that tour group pressures do exist. Schedules are requested in advance of trips but are often changed before or during the tour. Electronic logging devices help manage this by taking the pressure off the driver. In 1997, legislation was changed to make the tour company liable for unsafe schedules. One carrier noted that this legislation is referenced in all contracts. Motor Coach Canada has additional details.
- 3.2.11. Vehicle Loading** – A recent BC trucking Association bulletin was referenced noting that shippers that take longer than scheduled to load a vehicle can be ticketed if this puts truckers over the hours of service limits. This is based on US rules and stems from new regulations related to harassment. It was noted that Canada will likely be looking at similar legislation.
- 3.2.12. Speed control activation** – This provides a technological solution to drivers that are driving too fast in attempt to make a schedule. A 5km/h threshold was recommended and industry is supportive of this.
- 3.2.13. Team drivers (sleepers on vehicles)** – this was brought up but is not being used.
- 3.2.14. Training** – Canada West Coachlines noted that they conduct a winter chain-up roundtable with their drivers on an annual basis, as well as an annual road test by an outside party for new hires, plus a once a year re-test for regular drivers. Mentorship is provided to drivers by a senior after an incident occurs. Drivers are provided with a quarterly bonus based on performance. Regular drug and alcohol testing is conducted. None of this is mandatory and there is no requirement for drivers to recertify over time. NSC demerit points within risk bands were brought up. It was noted by the working group that ICBC could implement a minimum training standard for classes of licensing beyond 5 and 7 and that that they have the authority to do this.
- 3.2.15. Out of Province License Holders** – Based on working group members in attendance, there are not a lot of out-of-province license holders working for BC carriers. Change in licensing between provinces is reciprocity; therefore no road test is required.
- 3.2.16. High Profile Accidents** – A suggestion was made to review the high profile accidents and take away best practices based on these. It was noted that the recent high profile accidents have not been addressed specifically in the report because they have not yet been reported out by RCMP. It was also noted that it is important to also keep sight of the low-profile accidents that have not had media attention.
- 3.2.17. Hours of Service** - Truckers get paid per mile traveled; however, bus drivers get paid

Item:

per day and are eager to get off the road. Coach drivers do not make a lot of money because of how they are paid; they are typically retired and there are not many younger drivers in the industry. In USA, the hours a driver works at another job are captured within hours of service. CVI captures mileage travelled which is data that could be useful for the study in terms of risk attributed to higher mileage or km driven fleet wide (instead of fleet size).

3.2.18. Problem Carriers - It was noted that it is well known within the industry that certain operators are known to be putting pressure on their drivers. CVSE has talked to some shippers that need education on hours of service and could do an informal visit in this case (confidential).

3.2.19. Random Drug and Alcohol Testing - mirror the US mandatory random drug and alcohol testing for all professional drivers.

3.2.20. Camera technology – one carrier noted having forward facing cameras on all buses; although these are not yet tied to ELDs. Some carriers do have similar cameras that are tied to ELD's to capture footage for liability and for training purposes. One company is considering putting these on the side of the bus due to cyclists not using bus lanes.

4. Next steps

- 4.1. Three step process: (1) Statistical Review, (2) Regulatory Review, and (3) Final Report.
- 4.2. Louise Yako (BCTA) noted that members would be happy to vet any future recommendations if desired by MoTI.

5. Post-Meeting Comments

- 5.1. Greg Kolesniak (BCTA) requested a copy of the presentation. Data will not be distributed until the report is finalized.
- 5.2. Joy Sengupta (MoTI) made a suggestion to show the median/average distribution lines within the overall frequency comparison graph.
- 5.3. Joy Sengupta (MoTI) made a suggestion to note any legislation changes that may be the cause of any peaks and lows in crash data. He also noted that the 10 years of data may actually cover 11 years in some cases and suggested that the data range be maintained at ten years overall.

The meeting adjourned at 11:35AM

The foregoing is considered to be a true and accurate record of all items discussed. If any discrepancies or inconsistencies are noted, please contact the writer immediately.

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Attachment:

C.

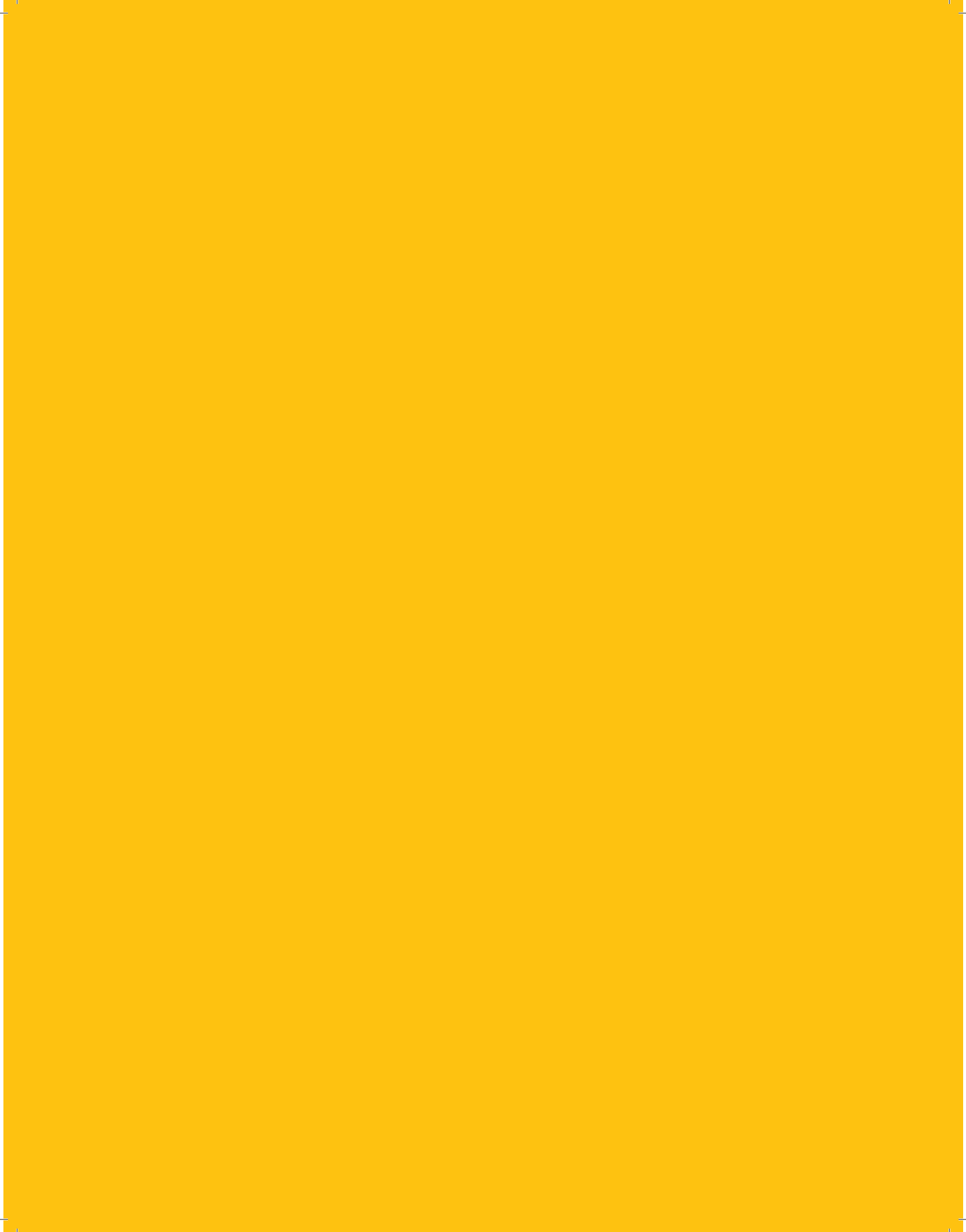
Final Report



Motor Coach Safety Review

APPENDIX B - DEFINITIONS AND ABBREVIATIONS

A Safety Review of Motor Coach
Transportation in British Columbia



DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

The following sections provide a list of definitions and their respective sources used within the main body of the report.

GENERAL

"Bus" (defined in *Motor Vehicle Act*) means a motor vehicle designed to carry more than 10 persons.

And

(defined in *Insurance [Vehicle] Act Insurance [Vehicle] Regulation*) means a motor vehicle used:

- At any time on a highway to carry passengers for compensation from an airport to limited predetermined points or from those points to an airport,
- At any time on a highway exclusively for the conveyance of a person or group of persons to whom or for whose use the vehicle is chartered at a fixed price for the use of the whole vehicle,
- To transport, without direct compensation, passengers who have a connection with the business activities of the owner or renter of the motor vehicle,
- At any time on a highway over a regular route or between fixed terminating point and on a regular time schedule by, for or on behalf of any person who charges or collects compensation for the transportation of passengers in or on the motor vehicle, and available for use by the public, or
- As:
 - o A school bus or special activity bus as defined in section 1 of the *Motor Vehicle Act Regulations*, BC Reg. 26/58, or
 - o A commercial motor vehicle owned or rented by a religious organization and used exclusively for the transportation of passengers for purposes related to the religious activities of the organization

"Motor Coach" (for the purpose of this report) is defined as larger buses commonly identified as OTRB with an elevated seating area over the luggage storage.

"Serious Collision" (for the purpose of this report) is a vehicle collision which results in either a fatal or personal injury.

"Intercity Bus" as defined in the *Motor Vehicle Act*, means a bus that:

- Conforms to the safety standards under the *Motor Vehicle Safety Act* (Canada) that are applicable to "buses" or "school buses" on the date of manufacture,
- Has a gross vehicle weight rating of not less than 9,100 kg, and

- Is operated as a commercial passenger vehicle as defined in the *Passenger Transportation Act* under the authority of
 - o A license or permit issued by the Motor Carrier Commission, or
 - o A license or temporary operating permit issued under the *Passenger Transportation Act*.

CANADA

“Intercity Bus” (Transport Canada) see definition from *Motor Vehicle Act* above. No definition is provided to accompany collision statistics.

Available NCDB Bus Codes: (09) School bus (standard large type), (10) Smaller school bus (smaller type, seats < 25 passengers), (11) Urban transit bus, **(12) Inter-city bus (used in analysis)**, (13) Bus (unspecified). **Note:** “While it is vitally important for NCDB1 to clearly distinguish each of the vehicle types, we also recognize the fact that most jurisdictions probably do not make detailed distinctions of vehicle types. It is [NCDB1] hope that, by supplying NCDB1 with the VIN file, Transport Canada can decode the exact vehicle type from the VINs. ... Vehicle Type is one of the most important data elements used by researchers and automotive engineers in collision analyses. There are very specific safety standards and regulations related to each type of vehicle. Therefore, by knowing the exact vehicle type, and the severity of the injuries, researchers and automotive engineers can better design and regulate future vehicles. Secondly, different types of vehicles tend to be involved in different collision configurations. ... By knowing as accurately as possible the vehicle type, the road safety community can better design countermeasure programs and education campaigns.” (NCDB1 Data Dictionary, Page : DD – 56-57, 2015)

“Fatal Collisions” (Transport Canada Collision Statistics) include all reportable motor vehicle crashes which resulted in at least one fatality, where death occurred within 30 days of collision, except in Quebec (8 days).

“Personal Injury Collisions” (Transport Canada Collision Statistics) include all reportable motor vehicle crashes which resulted in at least one injury but not death within the timeframes set out in “fatal collisions”.

“Fatalities” (Transport Canada Collision Statistics) include all those who died as a result of involvement in a reportable traffic collision within 30 days of its occurrence, except in Quebec (8 days).

“Injuries” (Transport Canada Collision Statistics) include all those who suffered any visible injury or complained of pain.

BRITISH COLUMBIA

“Inter-City Bus” (Insurance Corporation of BC) No definition was provided to accompany collision statistics.

Available ICBC Bus Use Categories: Rate classes 600-662: Public bus use, Airport bus use, Charter bus use; Rate classes 670-672: School bus use, Private bus use; Rate classes 680-682: Religious bus use. The use categories are grouped as noted above and are not differentiable from each other in the datasets and do not align with rate class numbers. Each of the above categories is further divided by seating capacities: 21 or less; 22 to 41; 42 and over.

“Fatal Crash” (ICBC collision data) a crash where a road user died within 30 days after the date when an injury was sustained in a crash involving at least one motor vehicle. Excludes roads

where the Motor Vehicle Act does not apply, such as forest-service roads, industrial roads and private driveways. Also excludes off-road snowmobile crashes, homicides and suicides.

“Casualty Crash” (ICBC collision data) motor vehicle crashes resulting in an injury or fatality.

“Fatal Victim” (ICBC collision data) a road user who died within 30 days after the date when an injury was sustained in a crash involving at least one motor vehicle.

“Injured Victim” (ICBC collision data) A driver, passenger, pedestrian or cyclist injured due to a motor-vehicle-related crash.

“PDO Crash” (ICBC collision data) crash incident resulting in material damages to property (vehicle or non-vehicle, such as structures) with no injuries or fatalities.

“Environmental Condition” (Injury Data Online Tool) includes contributing factors such as Road Condition (ice/snow/slush/water), Site Line Obstruction, Glare-Artificial, Glare-Sunlight, Obstruction/Debris On Road, Roadway Surface Defects, Visibility Impaired, Weather (fog, sleet, rain, snow), Road Maintenance/Construction, Previous Traffic Accident, Sign Obstruction, Domestic Animal, Wild Animal, Insufficient Traffic Control, Road/Intersection Design, Roadside Hazard, and Defective/Inoperative Traffic Control Device.

“Human Action” (Injury Data Online Tool) includes contributing factors such as Backing Unsafely, Cutting In, Driving Without Due Care, Driver Inexperience, Failing To Signal, Failing To Yield Right Of Way, Following Too Closely, Improper Passing, Driving On Wrong Side Of Road, Pedestrian Error/Confusion, Ignoring Traffic Control Device, Improper Turning, Speed Involved, Ignoring Officer/Flagman/Guard, Avoiding Veh./Ped./Cycle, Distraction, Failure To Secure Stopped Vehicle, and Driver Error/Confusion.

“Human Condition” (Injury Data Online Tool) includes contributing factors such as Alcohol Involved, Drugs Involved, Extreme Fatigue, Fell Asleep, Illness, Sudden Loss Of Consciousness, Pre-Existing Physical Disability, Medication Involved, and Deceased Prior To Collision.

“Vehicle Condition” (Injury Data Online Tool) includes contributing factors such as Accelerator Defective, Brakes Defective, Headlights Defective/Out, Brake Lights Out, Turn Signals Defective, Oversize Vehicle, Steering Failure, Tire Failure/Inadequate, Tow Hitch Failure, Driverless Vehicle, Windshield Defective, Engine Failure, Suspension Defect, Restraint System, Insecure Load, Dangerous Goods, Trailer Brakes out of Adjustment/Inop., Windows Obscured, and Illegal Vehicle Modifications.

Note: In 2008, legislation changed so that police are not required to attend all crashes and attendance is at their discretion. For this reason, there has been a marked decrease in the number of police attended reports submitted to ICBC, primarily for crashes that do not involve fatalities. Therefore, only fatal victim counts are provided by contributing factor from 2008 onwards.

ALBERTA

“Intercity Bus” (Alberta Transportation) No definition is provided to accompany collision statistics.

“Bus” (Alberta Transportation Operator Licensing and Vehicle Control Regulation) a motor vehicle that is (i) constructed or adapted to have a seating capacity of more than 15, or (ii) registered as a school bus or kindergarten bus.

“Bus” (Alberta Transportation Traffic Safety Act) a commercial vehicle (i) that is designed for carrying 11 or more persons, including the person driving the vehicle, and (ii) that is used or intended to be used for the transportation of persons, and includes any other commercial vehicle designated as a bus by regulation.

“Fatal” (Alberta Transportation Traffic Collision Statistics) A fatal injury is the death of a person that occurs as a result of a motor vehicle collision within 30 days of the collision.

“Major Injury” (Alberta Transportation Traffic Collision Statistics) Persons with injuries or complaint of pain that went to the hospital and were subsequently admitted even if for observation only.

“Minor Injury” (Alberta Transportation Traffic Collision Statistics) Persons with injuries or complaint of pain that went to the hospital, were treated in emergency (or refused treatment) and SENT HOME without ever being admitted to the hospital. (Also includes persons who indicated they intend to seek medical attention.)

“Property Damage” (Alberta Transportation Traffic Collision Statistics) A vehicle collision which resulted in property damage exceeding \$2,000.00.

“Reportable Collision” (Alberta Transportation Traffic Collision Statistics) A vehicle collision which resulted in death, injury or property damage greater than \$2,000.00. Note: the threshold changed from \$1,000.00 to \$2,000.00 in 2010.

ONTARIO

“Intercity Bus” (Ministry of Transportation of Ontario – Motor Vehicle Accident Report) a motor vehicle usually operated between urban centres, having one (1) door and baggage capacity separate from passenger cabin.

“Fatality” (Ministry of Transportation of Ontario) death of at least one person that occurred as a result of a motor vehicle collision within 30 days of that collision.

“Major Injury” (Ministry of Transportation of Ontario) persons with injuries or complaints of pain resulting from a motor vehicle collision that went to the hospital and were subsequently admitted, even if only for observation.

“Minor Injury” (Ministry of Transportation of Ontario) persons with injuries or complaints of pain resulting from a motor vehicle collision that went to the hospital, were treated in emergency (or refused treatment) and sent home without ever being admitted to the hospital. (Also includes people who indicated that they intended to seek medical treatment.)

“Reportable Collision” (Ministry of Transportation of Ontario) collision resulting in injury, fatality, or property damage of \$1,000 (1998 to 2015) or \$2,000 (as of September 2015).

MANITOBA

“Inter-City Bus” (Manitoba Public Insurance Traffic Collision Statistics Report) A vehicle category that includes a bus licensed for inter-city or provincial travel.

“Public Service Vehicle” (Manitoba Public Insurance Traffic Collision Statistics Report – vehicle registration classification) a classification of vehicle types including those defined in the Traffic Accident Report (TAR) as “Other School Vehicle”, and “Emergency Vehicles”, including ambulance, fire and police vehicles. “PSV Bus” was the only bus-related vehicle type in the number of registered vehicles by vehicle type available.

“Collision Severity” (Manitoba Public Insurance Traffic Collision Statistics Report) a classification of a collision based on the most severe result of the collision, i.e., whether someone was killed (fatal), injured (injury) or property damage only (PDO) occurred.

“Fatal Collision” (Manitoba Public Insurance Traffic Collision Statistics Report) a motor vehicle collision in which at least one person is killed as a result of the collision. The death must have occurred within thirty days of the collision occurrence.

“Injury Collision” (Manitoba Public Insurance Traffic Collision Statistics Report) a motor vehicle collision in which at least one person has been recorded as sustaining some level of personal injury, but in which no one is fatally injured or killed. Levels of injury include: ‘major’ (admitted to hospital); ‘minor’ (treated and released from hospital); and, ‘minimal’ (no hospital treatment required).

“Property Damage Only Collision” (Manitoba Public Insurance Traffic Collision Statistics Report) a motor vehicle collision in which no injury or fatality is sustained and only property damage is the result.

UNITED STATES OF AMERICA

Vehicle Registrations (FHWA):

The vehicle registration date varies among the States. Although many States continue to register specific vehicle types on a calendar year basis, all States use some form of the "staggered" system to register motor vehicles. The "staggered" system permits a distribution of the renewal workload throughout all months. Most States allow pre-registration or permit "grace periods" to better distribute the annual registration workload.

In order to present vehicle registration data uniformly for all States, the information is shown as nearly as possible on a calendar-year basis. Insofar as possible, the registrations reported exclude transfers and re-registrations and any other factors that could otherwise result in duplication in the vehicle counts.

Registration practices for commercial vehicles differ greatly among the States. Some States register buses with trucks or automobiles. To account for the variations in State practice, the Federal Highway Administration (FHWA) has supplemented the data supplied by the States with information obtained from other sources.

Motor vehicle registrations are reported by major vehicle classes: automobiles, buses, trucks, and motorcycles. Data on trucks, buses, trailers, and semitrailers are given in tables MV-9, **MV-10**, and MV-11, respectively.

“Commercial Bus” (United States Department of Transportation's Bus Vehicle Registration Data) A privately-owned fee for service bus which includes transit buses. Data estimated by FHWA from state-reported data and from other sources.

“Bus” (United States Department of Transportation's FMCSA report, data sourced from NHTSA and FARS) is defined as any motor vehicle designed primarily to transport nine or more persons, including the driver.

Available FARS Bus Codes: by type of bus: **Cross-Country Intercity Bus (Motorcoach) (used in analysis)**, School Bus, Transit Bus, Van-Based Bus, Other Bus Type, Unknown Bus Type. Note this data was not available by State.

“Fatal crashes” (Police-reported crashes collected by NHTSA) include police-reported crashes involving a motor vehicle in transport on a trafficway in which at least one person dies within 30 days of the crash. The fatality does not have to occur at the scene of the crash and includes any person involved, including non-motorists.

“Injury crashes” (Police-reported crashes collected by NHTSA) include police-reported crashes involving a motor vehicle in transport on a trafficway in which no one died but at least one person was reported to have: (1) and incapacitating injury; (2) a visible but not incapacitating injury; (3) a possible, not visible injury; or (4) an injury of unknown severity.

“PDO crashes” (Police-reported crashes collected by NHTSA) include police-reported crashes involving a motor vehicle in transport on a trafficway in which no one involved in the crash suffered any injuries.

WASHINGTON STATE

“Commercial Bus” – See “Commercial Bus” definition for United States of America.

Available HSIS Bus Codes: by commercial carrier configuration: (1) Bus; by commercial carrier cargo body type: (1) Bus; by vehicle type: **(10) Bus/Motor Stage (used in analysis)**, (11) School Bus. Note HSIS data was not available for all States.

Available HSIS Accident Severity Codes: (0) Not Stated, (1) No Injury, (2) Dead At Scene, (3) Dead On Arrival [at hospital], (4) Died At Hospital, (5) Disabling Injury, (6) Non-Disabling Injury, (7) Possible Injury, (8) Non-Traffic Injury, (9) Non-Traffic Fatality.

MAINE

“Commercial Bus” – See “Commercial Bus” definition for United States of America.

Available HSIS Bus Codes: by vehicle type: (11) Bus – before 1995; (12) School bus; **(81) 2 axle commercial bus; (82) 3 axle commercial bus (81 & 82 used in analysis)**. Note HSIS data was not available for all States.

Available HSIS Accident Severity Codes: (1/K) Fatal, (2/A) Incapacitating Injury, (3/B) Non-incapacitating Injury, (4/C) Possible Injury, (5/P) Property Damage Only.

ABBREVIATIONS

ABAF	American Bus Association Foundation
AGS	Alberta Geographical Statistics
AT	Alberta Transportation
BC	British Columbia
BC MOTI	British Columbia Ministry of Transportation and Infrastructure
BCTA	British Columbia Trucking Association
CCMTA	Canadian Council of Motor Transport Administrators
CVSA	Commercial Vehicle Safety Alliance
CVSE	Commercial Vehicle Safety & Enforcement
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GVW	Gross Vehicle Weight
HCV	Heavy Commercial Vehicles
HSIS	Highway Safety Information System
ICBC	Insurance Corporation of British Columbia
iDOT	Injury Data Online Tool
MCC	Motor Coach Canada
MCI	Motor Coach Industries
MPIC	Manitoba Public Insurance Corporation
MTO	Ontario Ministry of Transportation
NCDB	National Collision Data Base
NHTSA	National Highway Transportation Safety Administration
NSC	National Safety Code
OMCA	Ontario Motor Coach Association
OOS	Out-of-Service
OTRB	Over-The-Road-Buses
PTB	Passenger Transportation Branch
PDO	Property Damage Only
TC	Transport Canada
USDOT	United States Department of Transportation
WSDOT	Washington State Department of Transportation



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