



Learning from Others: An International Study on Heavy Truck Speed Limiters

**Prepared for Transport Canada on behalf of the Council of
Deputy Ministers Responsible for Transportation and Highway
Safety**

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Disclaimer

The views expressed in this report are those of government officials, enforcement personnel, and other international stakeholders in the trucking industry and do not necessarily reflect the opinion or viewpoint of Transport Canada or the Council.

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Executive Summary

In 2006, the Canadian Trucking Alliance (CTA) called on the federal and provincial governments to mandate the activation of electronic speed limiters on all heavy trucks operating into or through Canada at no more than 105 km/h. A Discussion Paper, prepared as a preliminary assessment of speed limiters, noted possible benefits to the environment from reduced fuel consumption and potential highway safety benefits from slowing down the heavy trucks.

Following this, the CTA proposal was discussed at the Council of Deputy Ministers Responsible for Transportation and Highway Safety (CODMT). Deputies noted that further analysis was necessary to better understand the implications of a speed limiter requirement, particularly the potential impact on highway safety and small business. Federal, provincial and territorial deputy ministers agreed to work together to assess the outstanding issues and Transport Canada offered to lead the effort.

On behalf of the provinces and territories, Transport Canada has conducted a number of studies to examine the feasibility of mandating truck speed limiters. These studies included traffic modelling to better understand the safety impact from differential car-truck speeds on highways, quantifying the environmental benefits from fuel savings and reduced greenhouse gas (GHG) emissions, and an assessment of the trade and competitiveness impacts of a speed limiter mandate in both the Canadian and North American context. This report, an international assessment of other countries with speed limiter requirements in place, is part of the work that has been conducted by Transport Canada.

The aim of the international assessment is to document the experiences of three participating jurisdictions, which have had mandated heavy vehicle speed limiters for more than 10 years, and to draw parallels with the Canadian context, highlighting issues, concerns, and best practises that could inform policy decisions with respect to the Canadian speed limiter requirement.

At the time of writing this report, 33 countries were found to have heavy vehicle speed limiter legislation, most of which, like the United Kingdom and Sweden, are European Union member states, obliged by international law to implement European Commission legislation, such as the directives relating to speed limiters. Other countries with speed limiter legislation include Japan, Zambia, and most recently, India, which is implementing speed limiter regulations for Karnataka state and is considering a nation-wide speed limiter policy. See **Appendix B** for a list of known jurisdictions with mandated speed limiters and details of their legislation.

Australia, Sweden, and the United Kingdom were selected for the international assessment. Each participating jurisdiction's speed limiter legislation, national compliance approach, enforcement methods/regime, measures of effectiveness, and summary views from road transport stakeholders was documented.

The main conclusions from the report include the following:

Assessment of Speed Limiters

The European Commission and Australia implemented speed limiter legislation based on concerns over road safety due to a high incidence of accidents involving heavy trucks, and additionally, for the EC, based on concerns over the environmental impact of fuel emissions due to heavy vehicle speeding. In both cases, no research or empirical studies were done prior to enacting the legislation to justify the implementation of the speed limiter requirement.

Ten years later, no empirical studies have been done in any participating jurisdictions to directly link the use of speed limiters with improvements in road safety. Additionally, there is a lack of research on the safety impacts of truck-car speed differentials due to speed-limited trucks. It is, therefore, difficult to predict the potential road safety impacts of a speed limiter mandate in Canada.

Benefits of Legislating Speed Limiters

Speed limiters are generally believed to have had a positive impact on road safety and have contributed to a decrease in accidents involving heavy vehicles. In the U.K., for instance, heavy vehicle accidents have dropped by 26% since speed limiter legislation was enacted in 1992.

Other positive benefits from the enactment of speed limiter legislation include lower fuel consumption (from 3–11%), lower maintenance costs (tires, brakes, engine) and reduced insurance premiums, according to an assessment done by the European Commission.

Challenges as a Result of Legislation

Road safety concerns as a result of the speed limiter requirement have been noted by U.K. and Swedish officials, particularly the problem of speed-limited trucks overtaking (passing) each other on divided highways, causing traffic backlog. Other road safety issues identified in the U.K. include convoys of trucks blocking the on and off-ramps on highways. Under U.K. law, all speed-limited trucks are relegated to the inside lanes on highways of three or more lanes.

Compliance and enforcement issues center around the high incidence of tampering, problems with testing equipment, and lack of enforcement personnel to verify speed limiter compliance. Tampering has been identified by all participating jurisdictions as a challenge to the efficacy and relevance of speed limiter legislation. Drivers tamper with their limiters to increase the maximum speed of their vehicles, thus increasing their competitive advantage. In Australia, for instance, 10–30% of heavy vehicles are estimated to have tampered speed limiters. The other two jurisdictions, the U.K. and Sweden, concede that tampering is an issue but have not as yet kept statistics on speed limiter compliance.

Finding compliance testing equipment to verify speed limiter settings is a challenge, particularly in European member states. The type of testing device used in both Sweden and the U.K. which accesses the speed limiter setting via the analogue tachograph will shortly become obsolete as trucks are fitted with digital tachographs, which are now required by European law (for all new trucks registered in 2006). No new devices have been sourced to replace them.

The necessity of having sufficient enforcement personnel to verify speed limiter compliance is a key finding in this report. In Sweden, for example, only 200 officers specialize in heavy vehicle enforcement, conducting roadside inspections to check for safety standards such as speed limiters. The numbers of dedicated heavy vehicle officers are similarly low for Australia and the U.K. The importance of having sufficient enforcement personnel to check for compliance was also identified by international stakeholders in the EC report analyzing the effectiveness of the speed limiter mandate.

Best Practices and New Technologies

Developing a national regulatory approach to speed limiter compliance to ensure consistent application of the policy is viewed as a key element to success. Australia, for example, has made great strides in developing national policies to combat such issues as heavy vehicle speeding through their innovative chain of responsibility provisions. Swedish officials have also indicated the importance of a consistent approach to speed limiter compliance.

In terms of compliance and enforcement strategies, police officials in Australia and the U.K. have espoused the benefits of using intelligence-gathering techniques to target high-risk drivers/operators for roadside inspections. They believe that this is an extremely effective method resulting in a significant number of offenders being pulled off the road for speed limiter non-compliance.

International jurisdictions are continuing to explore other programs and technologies as a means of dealing with heavy vehicle speed compliance. Intelligent speed adaptation (ISA) technology has been tested in Australia, Sweden, and the U.K. as a more sophisticated alternative to simple speed regulating devices such as speed limiters. No participating jurisdictions have legislated the use of ISA systems in any vehicle type as of yet. In addition, accreditation schemes in Australia, which require participants to demonstrate safe business practices in exchange for regulatory concessions, have proven effective in reducing accident rates for participating operators.

Introduction

This report details the experiences of three international jurisdictions with national speed limiter legislation in place. It is meant to provide an overview, or snap shot, of how each has developed and implemented speed limiter legislation and supported it through compliance and enforcement strategies. It also summarizes all available qualitative data on the effectiveness of speed limiters in reducing the incidence of heavy truck accidents and provides valuable insight from key international stakeholders in the trucking industry concerning the impact that speed limiter legislation has had on their jurisdictions, any lessons learned, and recommendations.

It is important to note that the views and opinions expressed on the speed limiter issue documented throughout this report are paraphrased summaries by the author based on interviews with road transport stakeholders from government, police and road transport authorities, and trucking associations.

Background

Speed limiters, previously known as speed governors, are devices which electronically control the maximum speed attainable by a vehicle through the engine's electronic control module (ECM). In North America, speed limiters are commonly used in truck fleets for fuel savings and safety benefits gained from lower vehicle speeds.

At the time of writing this report, two provincial governments have announced their plans to legislate the use of speed limiters on all heavy trucks within their jurisdictions. The Ontario government plans to legislate speed limiters for all heavy trucks operating in the province, restricting their speed to 105 km/h. The legislation is slated to be tabled in Spring 2008 with a proposed rollout of the policy in the fall. Quebec has already introduced speed limiter legislation as part of a package of road safety measures—Bill 42. The government, however, plans on waiting to see whether or not other jurisdictions support the use of heavy vehicle speed limiters, before proceeding.

In the United States, the American Trucking Association (ATA) is actively advocating a national speed limiter mandate and has petitioned the U.S. Department of Transportation to rule on the issue. The National Highway Traffic Safety Administration (NHTSA) and Federal Motor Carrier Safety Administration (FMSCA) are currently reviewing responses to a "Request for Comments" and other relevant information before issuing a decision.

Internationally, Australia and European Union member states have had legislated speed limiters on heavy trucks for over a decade. Results from instituting a speed limiter mandate have been mixed. Speed limiters are generally believed to have contributed to a decrease in heavy vehicle accidents, yet challenges remain with respect to tampering, enforcement, and road safety concerns. Understanding the issues identified by these jurisdictions within the context of their political system, national regulatory process and enforcement regime will shed light on the benefits, challenges, and unanticipated outcomes that have come about as a result of legislating speed limiters.

Scope

The scope of the report includes an assessment of three participating jurisdictions: Australia, the United Kingdom, and Sweden. Other jurisdictions, including Germany, were initially assessed for inclusion. Because of time constraints, difficulty in establishing contacts in other countries, and data availability issues, the report was restricted to three countries. For a list of known countries with speed limiter legislation, refer to **Appendix B**.

Australia was selected for the report due to its geographic similarities with Canada—large landmass, long distances between urban centers, rough terrain—as well as for its comprehensive national strategies for heavy vehicle speed compliance.

Sweden and the U.K. were selected to highlight the differences in legislation and approach in European member states, which are required to follow European Commission directives and regulations relating to road safety.

Organization

The report is organized into five sections. Section 1 provides an overview of Australia's speed limiter legislation and policies, compliance and enforcement regime, summary of effectiveness, and new strategies and technologies for combating heavy vehicle speeding. Section 2 describes the European Commission, the governing body responsible for developing road safety legislation for European Union member states.

This section provides context for the Sweden and United Kingdom sections to follow, detailing the original rationale for mandating speed limiters, EC legislation governing member states, and a summary of studies analyzing the benefits of speed limiter usage. Section 3 and 4 provide overviews of Sweden and the United Kingdom, documenting the same topics, e.g., speed limiter legislation, as those covered in the Australian section. Section 5 summarizes the main conclusions of the report, detailing the central issues identified by participating countries in relation to speed limiters.

Methodology

Information for this report was compiled from a number of sources. An extensive literature search was conducted in the early stages of the project to obtain copies of international speed limiter legislation, European Commission directives and summary reports on speed limiter effectiveness. Other documents consulted include government reports and policy papers on road safety and compliance strategies, annual reports, and road transport statistics.

In addition to gathering information from published reports and studies, telephone interviews were conducted with a wide range of road transport stakeholders including international officials from government transport departments and agencies, traffic authorities, police detachments and trucking associations.

Australia

Overview

Geography

The continent of Australia is the sixth-largest country in the world with a geographic size of 7.6 million square kilometres. Its geography is extremely diverse ranging from snow-capped mountains, large deserts across the center of the country, to tropical and temperate forests. It is located between the Indian and South Pacific Oceans.

Australia consists of six states: New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia. It also has two mainland territories: the Northern Territory and the Australian Capital Territory.



Figure 1: Map of Australia

Map reproduced with permission from Ian Heydon, The Small Guide to a Big Country website: <http://www.smallguide.com.au/maps.html>

the commonwealth does control vehicle safety standards and the procedures for the testing and inspection of these vehicles as defined by the commonwealth of Australia's *Motor Vehicle Standards Act, 1989*.

All national transportation and road safety policies are developed not by government, but by an independent body called the National Transport Commission, or NTC. The goal of the NTC is to “develop, monitor, and maintain uniform and nationally consistent regulatory and operational reforms.” (NTC, Review of Regulatory Approaches, 2005)

The population of Australia, estimated at 20.6 million¹, is concentrated along the eastern and southeastern coasts.

Political System

Australia is a federation, similar in structure to the Canadian model, where powers are shared between the commonwealth (federal government) and the individual states and territories. Certain areas of responsibility are controlled federally, such as immigration and defense; whereas others, such as health and internal transportation, are controlled by the states and territories. Although not responsible for internal transportation, the

¹ Encyclopedia Britannica Online, 2006, <http://www.britannica.com/eb/article-9110544/Australia>

The NTC drafts reforms for road safety issues such as heavy vehicle speed compliance, driver fatigue, including regulations for standard hours—hours of service in Canada, among others.

These reforms are brought before the Australian Transport Council (ATC), which comprises all commonwealth, state, territory and New Zealand Ministers responsible for transport, road, marine, and port issues. Ministers from these jurisdictions vote on proposed NTC legislation. If a majority vote in favour of a proposal, the legislation is passed and it is up to the states and territories to then introduce the proposals into their legislatures to make them law.

Road System and Speed Limits

Australia has over 800,000 kilometres of roads, boasting the highest per capita road length of any other country in the Organization for Economic Co-operation and Development (OECD, 2004). Canada is a close second. Of those roads, however, only 18,000 kilometres are classified as national highways, located between major cities and along the eastern coastline.

Outside of major cities and coastal routes, roads are either divided highways—known as dual carriageways in Australia—or non-divided highways, also known as single carriageways. The latter road type is particularly prevalent in more rural regions of the country where long haul trucks carry their loads. It is the non-divided category of road, with no barriers between lanes, where, predictably, a disproportionate number of single and multi-vehicle accidents involving heavy trucks occur (Australian Trucking Association, 2000/2002).



Figure 2: Australian Road Network

Map reproduced with permission from Keiran Gaudry, Coastshop website: www.coastshop.com/au/index/html

A truck safety benchmarking study conducted by the National Road Transport Commission (NRTC) found that Australia's heavy vehicle crash rate was 47% higher than the US, 39% higher than the U.K. and comparable to Canada and Germany. The NRTC explained that "high quality roads and divided highways may be a major reason why the heavy vehicle industry performs better overseas than here." Also, higher speed limits in Australia than in Europe and parts of the USA, particularly for articulated trucks on roads of less than freeway standard, may also be a

contributing factor." (NTC, News Release, 2002)

Speed limits in Australia are state and territory-dependent, but typically are 50 km/h in built-up areas and 100-110 km/h on more rural routes. However, there is a special restriction for heavy vehicles. All vehicles weighing more than 12 tonnes cannot exceed 100 km/h regardless of the posted speed limit (Austroads 2005).

Trucking Industry

Trucking is the primary means of transporting goods across a country with a robust network of roads and highways but few railway lines. It accounts for nearly 80% of non-bulk² freight carried through Australia's major transport corridors. Trucks travel some 12,000 million kilometres and transport 1,500 million tonnes of freight per year (ACIL Tasman, 2004). Road freight in Australia is expected to almost double by 2020, with articulated trucks making up over half the increase (NTC, Information Bulletin, 2005).

Australia's trucking industry consists of over two million freight vehicles of which articulated trucks comprise only 61,000. The industry consists of two main groups:

- Hire and reward operators—transport and logistics companies that provide trucking services to retailers and other businesses. They account for the majority of road freight in Australia. Owner operators are frequently subcontracted by these large operations and account for 60% of all businesses in the road freight transport industry, but only 11% of the income earned (ACIL Tasman, 2004).
- Ancillary operators—businesses, such as manufacturers, who use their own fleets to carry their products. These operators possess 86% of the truck fleets in Australia, but travel less than half the distance traveled by the hire and reward operators.

The types of trucks used for transport in Australia are similar to those found in Canada: rigid trucks and articulated trucks. Another commonality is the use of road trains—known in Canada as longer combination vehicles or LCVs. Road trains are articulated trucks with two or more trailers (see **Figure 3**). B-doubles, common in Australia, are road trains with a prime mover or truck tractor and two additional trailers.



Figure 3: Australian Road Train

Photo reproduced courtesy of Wikimedia Commons, a freely licensed media file repository

Australia has the largest and heaviest road-legal vehicles in the world, with some configurations close to 200 tonnes. The majority of road trains are between 80 and 100 tonnes.

The method by which truck drivers are paid, in Australia, varies greatly across the industry. Some drivers are paid by the kilometre, others are paid by the hour or by the trip. Most long-haul truck drivers, according to the Australian Trucking Association, are paid by the kilometre. Many of these drivers are logging upwards of 175,000 km a year.

² Bulk freight is defined as minerals, unbagged grain, etc.

Government Policy on Speed Limiters

Rationale

Australians have long depended on their roads and highways to span the great distances between cities and to deliver goods throughout the country. This dependence has come at a great cost. Between 1925 and 2001, the number of deaths on Australian roads has totaled some 164,000, almost double the aggregate death toll of Australians killed in the four major wars (Australian Bureau of Statistics, 2001).

The number of road deaths involving heavy trucks was on the rise until the late 1980's. At its peak, road deaths involving articulated trucks approached 350 in 1989 (See **Figure 4**, NTC 2005).

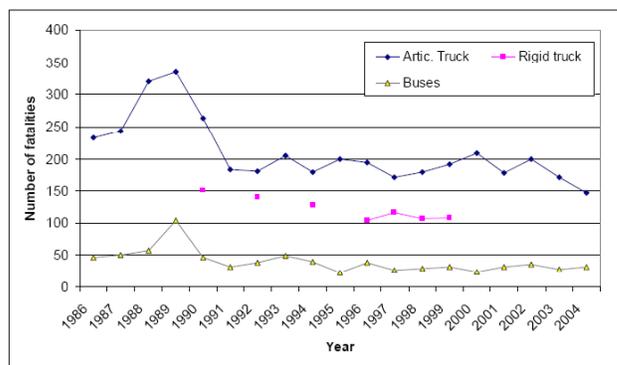


Figure 4: Fatalities Involving Heavy Trucks, 1986-2004

As a result of this growing problem, the Australian government developed a number of initiatives in road safety including improvements to road infrastructure, enactment of road safety legislation, intensive public education and enhanced police enforcement technology. Of particular note is the application of Australian Design Rules for Motor Vehicle Safety, which has been the mechanism for instituting a number of safety requirements, including the fitting of speed limiters on heavy vehicles.

Legislation

The Australian Design Rule requiring speed limiters for heavy vehicles, or **ADR 65: Maximum Road Speed Limiting for Heavy Goods Vehicles and Heavy Omnibuses**, was put into force for new vehicles registered in 1990. The rule required all heavy trucks over 12 tonnes gross vehicle mass (GVM) and all buses over 5 tonnes to be fitted with a speed limiter and that it be set to no more than 100 km/h. ADR 65 also provided flexibility for jurisdictions to regulate speed limiter settings for other vehicles classes, for example, road trains are speed limited to 90 km/h in South Australia and the Northern Territory³. (NTC, Review of Regulatory Approaches, 2005)

The Australian government did not legislate the retrofitting of pre-1990 trucks and buses with speed limiters after ADR 65 was implemented. According to government officials, there are no plans to extend ADR 65 to include other classes of vehicles, e.g., medium weight trucks, as has been done in EU countries.

³ Detailed information about jurisdictional adjustments to ADR 65 for different vehicle classes was requested from NTC officials. To date, that information has not been made available to Transport Canada.

Regulatory Approach to Compliance and Enforcement

While the commonwealth issues motor vehicle safety standards, it is up to each Australian state and territory to pass compliance and enforcement regulations, within their own legislatures, in support of these standards. Jurisdictions can either create their own regulations, which can lead to inconsistencies across the country, or they can pass into law the proposed national regulations developed by the NTC.

Jurisdictional Compliance and Enforcement Regulations

Queensland and New South Wales developed their own state-specific regulations to detect and prosecute for non-compliance with the speed limiter mandate. These regulations provided enforcement personnel with a legislative means to prosecute for breaching speed limiter vehicle safety standards based on vehicle speed exceeding the maximum limiter setting by 15km/h.

- Queensland—state legislation, in 1999, specifying that heavy vehicles detected traveling at 115 km/h could be issued a defect notice either requiring recertification of the speed limiter or confirmation that the vehicle's speed limiter was functional before the being permitted back on the road
- New South Wales—state legislation, in 2005, instituting fines for heavy vehicles detected traveling over 115 km/h. Fines could be issued up to AUD\$3,000 (C\$2660) for an individual and AUD\$15,000 (C\$13,332) for a company. (NTC, Review of Regulatory Approaches, 2005).

National Compliance and Enforcement Regulations

As noted earlier, the NTC develops national transportation and road safety regulations with the goal of achieving consistent compliance and enforcement strategies across Australia's states and territories. Since its inception in 1992, the NTC has made various attempts at designing national legislation, which promotes heavy vehicle speed compliance, including the following:

- National Three Strikes policy
- Compliance and Enforcement Bill
 - For heavy vehicle speed compliance
 - For vehicle safety standards compliance

National Three Strikes Policy

The National Three Strikes Policy, proposed in 1997, was a graduated response to heavy vehicles detected traveling in excess of 15km/h above the speed-limited speed, or 115km/h. The following are the four graduated penalties under the scheme:

- A first breach incurs a warning
- A second breach requires the operator to demonstrate that the speed limiter is operational
- A third breach results in a 28-day suspension of vehicle registration
- A fourth breach incurs a three-month suspension of vehicle registration

The innovative aspect of this approach was to classify speeding as a vehicle-related offence, allowing enforcement officials to penalize the operator, rather than the driver. The principle of making all responsible parties accountable for speeding and other offences was a precursor to the chain of responsibility approach introduced as part of the Compliance and Enforcement Bill discussed later. Three Strikes was only implemented in Victoria (1998), New South Wales (1998), and South Australia (2001). Concerns over the effectiveness of the measure, the difficulties in implementation, and the inconsistencies across jurisdictions is speculated to have led other jurisdictions to opt out of Three Strikes as a compliance tool.

Compliance and Enforcement Bill

In 2003, the Australian Transport Council approved the model bill for Road Transport Reform (Compliance and Enforcement). These reforms were designed to address many of the road transport compliance problems and included the following:

- A chain of responsibility provision that obliges all responsible parties in the transport chain⁴ to take steps to prevent a breach of transport law and holds these parties legally accountable if there is a breach. Traditionally, road transport laws have only imposed sanctions on the driver and vehicle owner.
- A wider range of enforcement powers to gather evidence of breaches of heavy vehicle laws, including search and entry powers and powers of seizure
- Innovative administrative and court-based sanctions including warnings, infringement notices with accompanying fines, and court-imposed penalties based on the severity of the infraction and the number of offences

These new measures have already been implemented for mass, dimension, and load restraint and have been in place in some jurisdictions since 2005. The NTC is currently developing the same chain of responsibility model for heavy vehicle speed compliance, due out in January 2008, and for heavy vehicle standards to address speed limiter compliance issues, due out in 2008/2009.

As for the heavy vehicle standards, the NTC determined that the most effective way to address speed limiter compliance was to develop chain of responsibility provisions. The vehicle standards compliance provisions would specify that any person in the transport chain who knows that a vehicle does not comply with vehicle standards, but does nothing to prevent it, is guilty of an offence. It is expected that these measures would lead to improved compliance in terms of fitting and maintaining speed limiters by responsible parties due to the threat of increased sanctions and penalties (NTC, Draft Proposal, 2006). For example, when these measures come into force, repair shops would be required to keep records of trucks with non-functioning speed limiters and alert the owner or transport company. No further details on this measure are currently available from the NTC.

⁴ See Appendix A for a list of all responsible bodies in the transport chain as defined in the Compliance and Enforcement Model Bill.

Enforcement

In Australia, the state and territory police are responsible for enforcing speed limiter compliance with support from the transport and road authorities. Each jurisdiction develops its own enforcement strategies. The approach detailed in this section is that used by the South Australia Police (SAPOL) only.

South Australia

The South Australian Police have a Heavy Vehicle Enforcement Group, which focuses exclusively on road safety issues relating to heavy vehicles, such as drivers hours and speed limiter compliance. SAPOL uses intelligence-gathering strategies to target heavy vehicles for roadside inspections.

Intelligence Gathering

SAPOL uses an intelligence-based policing philosophy whereby they leverage information and data gathered through their Traffic Support Branch (Intelligence section). In fact, police and transport agencies from many jurisdictions in Australia commonly share intelligence, which is beneficial considering the mobility of heavy transport operations throughout Australia.

Intelligence to guide targeting activities is also gathered from South Australia's Safe-T-Cam network, which is a network of fixed data-collection cameras located at 11 sites across the state. These cameras are suspended on overhead gantries and use Optical Character Recognition (OCR) technology to read the front number plates of heavy vehicles. OCR camera sites are linked to a further 24 sites in the adjoining state of New South Wales. Heavy vehicle speeds are logged at individual sites and journey times are tracked between camera sites enabling officers to be advised of journey time violations. The SAPOL officers can monitor this information to target drivers/operators or, during the course of an interception, refer to the Safe-T-Cam database to determine vehicle speed at the last camera site as a source of evidence for non-compliance.

Roadside Inspections

If a heavy vehicle is suspected to have a tampered speed limiter, officers will pull the vehicle over for a roadside inspection. They use a read-only diagnostic testing tool which plugs into the engine control module (ECM).

The device is able to determine the maximum speed limiter setting as well as other engine parameters⁵. Officers will subsequently do a thorough inspection of the vehicle to ensure that the tire size and transmission gear ratio have not been adjusted to allow the vehicle to exceed its maximum allowable speed. They will also check the configuration of the engine against the report generated from the ECM download and verify the incidence of any aftermarket attachments or devices used for tampering purposes.

⁵ The speed limiter testing device has the proprietary software and hardware required to access ECMs for the more common varieties of engines used in long haul operations, e.g. Cummins. According to SAPOL, long haul operators are key targets for enforcement activities.

If there is sufficient proof of tampering, the operator will be issued a defect notice prohibiting the vehicle from being driven, either immediately or at the end of the run. The defect notice will indicate the time frame required to get the speed limiter fixed and to have the repairs verified by the traffic authority before having the notice lifted. The SAPOL officer may also issue a small fine, currently AUD\$174, or C\$154, for breach of road traffic law.

Resources and Budget for Speed Limiter Enforcement

The South Australian Police Force consists of 5000 police and civilian employees servicing a population of approximately 1.5 million people. The Heavy Vehicles Enforcement Group, consisting of nine officers, is responsible for safety issues relating to heavy vehicles in general. It is difficult to quantify how much of their duties are related strictly to speed limiter enforcement.

In addition to costs associated with employing the officers, SAPOL also devotes resources to their specialized training and for the devices that they use in enforcement, such as the speed limiter testing devices, which cost approximately C\$7,000.

Summary of Effectiveness

Compliance Rates and Tampering

Speed limiter non-compliance is a significant problem in Australia. It is estimated that between 10% and 30% of heavy vehicles have speed limiters that have been tampered with and for some heavy vehicle classes it may be even higher. Road trains, for example, are estimated to have a compliance rate of only 20%, most exceeding the 90 km/h absolute limit for their speed limiters. (NTC, Review of Regulatory Approaches, 2005).

A 2006 survey of heavy vehicle drivers also corroborates the extent to which tampering is a problem in Australia. Of those surveyed, 43% of drivers indicated that they had driven a non-speed limited vehicle that should have been speed limited (NTC, Speed Behaviours, 2006).

According to officials from SAPOL, there are many ways to circumvent the speed limiter using software to change settings and through easily obtainable mechanical devices that can interfere with the input being received by the speed limiter. There is very little enforcement personnel can do to stop those who wish to offend.

The key to the SAPOL approach, however, is to develop profiles of operators who are at risk of offending, conduct roadside inspections based on this intelligence, and have highly skilled investigators who can properly check a vehicle and identify tampering.

Decrease in Heavy Vehicle Accidents

Prior to the enactment of the speed limiter legislation in 1991, the rate of fatal accidents involving heavy vehicles was extremely high, peaking in 1989 at 350 deaths. By 1991, the rate had fallen to below 200 deaths.

The dramatic reduction is thought to be a result of a number of factors including the enactment of road safety legislation, the implementation of Australian Design Rules for motor vehicle safety (particularly the requirement of speed limiters for trucks weighing over 12 tonnes), improvements to road infrastructure and new enforcement technologies such as speed cameras.

No research has been done in Australia to determine if there is a direct link between speed limiter usage and the decrease in heavy vehicle accidents. Officials from the NTC, however, believe that speed limiters have definitely contributed to improved road safety.

The NTC and enforcement officials throughout Australia continue to focus on speed compliance as a key measure in improving safety outcomes for heavy vehicles. According to a recent study, if there were 100% heavy vehicle speed compliance, this would result in a 29% reduction in heavy vehicle crashes (NTC, Review of Regulatory Approaches, 2005).

Truck-Car Speed Differentials

According to an official from the NTC, truck-car speed differentials are not causing any perceptible safety impacts because the trucks are limited to the same speed as the cars, 100 km/h. No research, however, has been done to date to study the issue.

Views/Statements from Road Transport Stakeholders

Police (South Australia) on Compliance Approach

Enforcement officials from SAPOL, as indicated in the report, advocate a targeted approach to speed limiter compliance only for those drivers/operators who are considered high risk for offending. They consider this to be the best, most efficient and cost-effective approach to dealing with compliance. SAPOL also indicated that both the Saf-T-Cam network, providing data on traveling speeds, and the handheld testing devices they use to determine speed limiter functionality are extremely useful. Tampering with speed limiters, however, remains a persistent problem. One official suggested that speed limiters are a good first step in limiting speed, but other, more sophisticated technologies, such as Intelligent Speed Adaptation (ISA), where the driver is warned when exceeding the speed limit or is limited from exceeding the posted limit, would be more effective. The Australian government as well as state and territory road transport and traffic authorities have put in place a new program using ISA technology to encourage compliance of heavy vehicles with road transport laws which is discussed later.

Transport Officials (NTC) on Speed Limiter Policies

One of the difficulties encountered with enacting speed limiter legislation using Australian Design Rules was ensuring that there was a consistent national approach that was followed by all states and territories. Attempts were made in the early nineties, such as the Three Strikes approach, which was only passed in three states and not in others due to a host of implementation problems. Australia continues to strive for a national policy and officials from the NTC feel that the chain of responsibility provisions for vehicle standards within the Compliance and Enforcement Bill will lead to improved speed limiter compliance.

As evidence, they point to the success of the Compliance and Enforcement Bill for mass, dimension and load restraint, which has been in place in some jurisdictions since 2005 and has led to increased compliance of road transport law.

The NTC suggests that in addition to mandating the use of speed limiter for heavy trucks, that our government also consider similar chain of responsibility provisions to ensure that all parties who contribute to the speeding of heavy vehicles are held accountable.

Australian Trucking Association (ATA) on Speed Limiter Policies

The ATA is a national body representing the Australian trucking industry. It comprises all state and sector-based trucking associations and has 21 members, representing 20,000 drivers. Their position on speed limiters is that they have been effective in reducing the speed of heavy trucks. The ATA, however, suggests that there are not enough enforcement officers on the road to ensure compliance. Heavy vehicle operators who have tampered with their limiters are not being adequately policed and the use of speed cameras, which are implemented only in certain jurisdictions within Australia, are no replacement for a robust police presence.

New Strategies and Technologies to Combat Heavy Vehicle Speeding

Accreditation Schemes

Other measures to improve compliance and increase road safety for heavy vehicles include accreditation schemes, such as Australia's TruckSafe program and the National Heavy Vehicle Accreditation Scheme (NHVAS).

These schemes require participating businesses to conduct regular audits to demonstrate safe business practices, similar to Canada's safety compliance audits. In return, participants are not subjected to the same levels of roadside compliance monitoring as non-participants and can also benefit from regulatory concessions.

Accreditation schemes have resulted in dramatically improved safety outcomes for their participants. TruckSafe members, for example, have 87% fewer crashes than non-accredited operators and members of government-run schemes, such as NHVAS, have 71% fewer crashes. Unfortunately, only 3% of heavy vehicle operators are currently accredited. The NTC is in the process of drafting a policy proposal to encourage more operators, particularly among smaller businesses, to participate. (NTC, Carrots and Sticks, 2007)

Intelligent Access Program (IAP): ISA Technology

IAP is a voluntary program that jurisdictions in Australia offer to encourage compliance of heavy vehicles with road transport laws by offering specific regulatory concessions. Vehicles must be equipped with vehicle telematics—a means of monitoring vehicle speed and location using global positioning systems (GPS)—which are obtained through certified IAP service providers. The IAP will provide time, date, position, speed and other parameters of any event that does not comply with the defined operating conditions, including tampering, and report the event to relevant road authorities.

Transport Certification Australia (TCA) is the designated organization which administers the IAP, certifying and auditing service providers. The TCA was established by state and territory road transport and traffic authorities and the Commonwealth Department of Transport and Regional Services in Australia.

Because the program is still in its infancy, no information is available regarding its effectiveness in improving heavy vehicle compliance with road transport laws.

European Commission

Overview

The European Commission (EC), formally called the Commission of the European Communities, is the executive branch of the European Union (EU). It is the convening body responsible for the oversight and administration of member countries in addition to proposing and consulting on legislation, implementing decisions, and upholding international treaties. There are currently 27 EU member states, including Sweden and the U.K. discussed later in this report, and three candidate countries (See **Figure 5**).



Figure 5: Map of European Union Member Countries

Map reproduced with permission from Europa, website:
http://europa.eu/abc/european_countries/index_en.htm, © European Communities, 1995-2008

The five largest countries in the EU appoint two members to the Commission and other countries appoint only one member. The Commissioners from each member country are bound to represent the interests of the EU as a whole rather than their home state.

Although the EC is responsible for proposing legislation, it is the role of the Council of the European Union, informally called the Council of Ministers, to pass laws jointly with the European Parliament, the only elected body. The Council of Ministers comprises member-state representatives specializing in portfolios including foreign affairs, finance, transport, and agriculture, among others.

The acts of Council can take the form of regulations, directives, decisions, common actions or opinions. Only directives and regulations are binding legislation for member states. Directives issued from the EC are interpreted by member states and made into national law in the form of regulations. The speed limiter legislation, **92/6/ECC**, is an example of a Commission directive. Because the legislation took the form of a directive, member states had some flexibility when drafting the regulations and could stagger implementation dates and make other adjustments that would not infringe on the objective of the core legislation.

Regulations, by contrast, must be made into national law without interpretation by the member states. Most vehicle design and safety standards are issued as regulations from the EC, such as rules relating to tachographs and hours of service. Enforcement of the regulations, however, as is the case with speed limiters, is the responsibility of the member states.

Speed Limiter Directives

Original Speed Limiter Legislation: 92/6/EEC

In 1992, the EC issued a speed limiter directive—**92/6/EEC**—requiring the installation of speed limitation devices on buses (with eight or more passenger seats), weighing in excess of 10 metric tonnes, and trucks, weighing in excess of 12 metric tonnes. The legislation was introduced in three phases:

- From January 1st, 1994 for new vehicles
- From January 1st, 1995 for vehicles registered between January 1st, 1988 and January 1st, 1994, performing international journeys
- From January 1st, 1996 for all vehicles registered on or after January 1988

The directive also required that the speed limiters for these classes of vehicles be set in such a way that the buses could not exceed 100 km/h and the trucks could not exceed 90 km/h.

Speed Limiter Legislation for Medium-Duty Vehicles: 2002/85/EC

In 2002, the EC extended the speed limiter legislation in directive **2002/85/EC** to include buses (with eight or more passenger seats), weighing less than 10 metric tonnes and trucks, weighing between 3.5 and 12 metric tonnes. The legislation was introduced as follows:

- For in-scope vehicles registered as of January 1st, 2005
- For in-scope vehicles complying with the emissions limit values set out in Directive 88/77/EEC⁶ registered between October 1st, 2001 and January 1st, 2005
- From January 1st, 2006, in the case of in-scope vehicles used for both national and international transport operations
- From January 1st, 2007 in the case of in-scope vehicles used solely for national transport operations

The directive required, as in the original 92 directive, for the speed limiters in the buses and trucks to be set so as not to allow them to exceed 100 km/h and 90 km/h, respectively.

⁶ Council directive of 3 December 1987 on the approximation of the laws of the Member States relating to the measures to be taken against the emission of gaseous pollutants from diesel engines for use in vehicle (OJ L 36, 9.2.1988, p.33)

Rationale for Mandating Speed Limiters

In 2001, prior to the enactment of speed limiter legislation for medium-duty trucks, the EC released a summary report⁷ detailing the rationale behind the original speed limiter directive as well as the justification, based on their research, for extending the scope to lighter vehicles.

Safety and the environment were the central reasons behind the EC's move to initially legislate the use of speed limiters for heavy vehicles in directive **92/6/EEC**. The EC summary report outlined four basic arguments supporting the initiative:

- Large, powerful engines found in heavy goods vehicles, if their speed is left unrestricted, impose an excessive risk for vehicle performance by compromising braking and tire performance
- Lower speeds result in less road accidents and fewer casualties
- Lower speeds mean lower fuel consumption and less vehicle emissions
- Lower speeds cause less wear and tear on the engine, brakes, and tires of these vehicles and thus indirectly contributes to improved road safety and environmental performance

For these reasons, the mandatory use of speed limiters was legislated for heavy vehicles. These vehicle classes were selected on the basis that they had the most powerful engines and that some member states had already introduced state legislation requiring the installation of speed limitation devices.

In 2002, the Commission extended the scope of the speed limiter directive to include the lighter category of buses and trucks. The rationale and justification for the extension to medium-duty vehicles, according to the summary report, was threefold:

- To further improve road safety outcomes by reducing vehicle speed
- To obtain financial gains, estimated at three billion euros. The financial benefits quoted were based on results from a study done in the Netherlands investigating the benefits of speed limiting all lighter trucks less than 12 tonnes. The study concluded that the fuel, maintenance, and other costs would save 89 million euros in the Netherlands. Extrapolating the results to reflect the number of medium-duty trucks in the EU as a whole, it was estimated by the EC that the net savings in the EU would be three billion euros.
- To eliminate an unfair competitive advantage for operators of lighter vehicles who could provide transportation services at a better rate as a result of not being speed limited

⁷ Report from the Commission to the European Parliament and the Council on the Implementation of Council Directive 92/6/EEC of 10 February 1992 on the Installation and use of Speed Limitation Devices for Certain Categories of Motor Vehicles in the Community

Summary of Effectiveness

The summary report also documented results from various studies investigating the positive and negative effects of speed limitation devices. These studies concluded that speed limiters have the following positive effects in terms of cost benefits and increased road safety:

- Lower fuel consumption (from 3–11%)
- Lower maintenance costs (tires, brakes, engine)
- Increased road safety (fewer casualties)
- More relaxed driving experience
- Reduced insurance premiums

Few negative aspects of the legislation were denoted in the report except for the problem of speed-limited trucks overtaking each other over many kilometres, causing a traffic backlog. This effect, however, was further explained to have the positive outcome of reducing the average speed of other road users.

A second problem identified was that heavy vehicles registered outside the EU are exempted from the speed limiter provision. The only solution identified was for member states to consider making the use of speed limiters obligatory for non-EU countries as part of future trade agreements.

Feedback on the effectiveness of speed limiters was also gathered from representatives from member states including those from road authorities, trucking companies and associations. Most of the input from stakeholders was positive, denoting the benefits garnered in terms of road safety and environmental benefits. Criticism of the speed limiter mandate, however, centered on the high incidence of tampering and it was concluded by all stakeholders that more enforcement is needed at least in the form of periodic verification of speed limiter devices.

Sweden

Overview

Geography

Sweden is located in northern Europe and is situated within the Scandinavian Peninsula, which it shares with Norway. Despite the size of its landmass, measuring 450,000 square kilometres, Sweden has a relatively low population density at approximately 9 million inhabitants. It is bordered to the North by the Gulf of Bothnia and the Baltic Sea.



Figure 6: Map of Sweden

Map reproduced with permission from Map of Sweden website, <http://www.map-of-Sweden.co.U.K.>. All content © 2006 Code Network Media Group

Union (EU), Sweden has delegates in the European Council of Ministers who participate in the decision-making process for new common rules (See **European Commission** section).

Sweden is divided into three regions: Norrland, a mountainous and well-forested area to the north; Svealand, with flatlands in the east and highlands to the west in Central Sweden; and Götaland, a mixture of highlands and rich plains in Southern Sweden. These three regions are further divided into 21 counties, consisting of 289 municipalities.

The majority of Sweden's population lives in the southern third of the country, primarily along the coastline in urban centers.

Political System

Sweden is a constitutional monarchy with a well-established parliamentary democracy dating from 1917. Like Canada, the reigning monarch is the head of state but exerts no political power. The prime minister is the head of government and works in conjunction with the ministries and some 300 central government agencies. The people are represented by the Swedish parliament, or Riksdag, and it is the government's role to implement their decisions and draw up proposals for new laws and amendments. In addition to the central government, each of the 21 counties has an elected government as does the 289 municipalities.

As of 1995, Sweden is also governed by the European Commission (EC). As a member of the European

Road System and Speed limits

The Swedish road network consists of high-quality public roads—primarily motorways (National highways) and dual carriageways (divided highways)—that connect major urban centers in the south and private rural roads that connect disparate villages in the more forested regions in the north. The network consists of 139,000 kilometres of public roads and 75,000 kilometres of publicly-funded private roads.



Figure 7: Map of Swedish Road Network

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Considering the low population density in Sweden, the country has a relatively large motorway system, approximately 1,500 kilometres in length. Unlike motorways in more densely populated European Union countries, Swedish motorways are typically two lanes with long distances between entries and exits. Much of the heavy truck traffic, however, occurs on dual carriageways.

As for posted speed limits in Sweden, they vary according to the type of road and the class of vehicle being driven. Heavy trucks, over 12 tonnes, are restricted from exceeding 80 km/h on any type of road. Other vehicles can travel up to 110 km/h on motorways and 90 km/h on dual carriageways.

Trucking Industry

Trucking remains the dominant means of moving goods throughout Sweden, with rail transport a distant second. In 2005, for example, a total of 422 million tonnes of goods were transported; 349 million of which by road (Swedish Association of Road Haulage Companies). Road transport, however, is used primarily for short runs involving the movement of timber and construction aggregates. Only 8% of truck transport involves runs of greater than 300 km.

For those longer runs, however, Swedish legislation allows the use of road trains, defined as an articulated truck with one or more trailers not exceeding 25.3 meters in length. The weight restriction is 60 tonnes. Only Sweden and Finland are permitted to exceed the EC directive limiting vehicle length to 18.75 meters. Swedish road trains are typically “b-doubles” or a truck trailer with two or more trailers.

The trucking industry, as in other European countries, consists of either own-account operators, which deliver their own goods, and “hire or reward” transport operators, which provide transport services to other businesses. The number of own-account trucks—weighing more than 3.5 tonnes—has steadily declined this decade and as of 2006 totals 16,654. Hire or reward trucks, by contrast, total 40,782 and are increasing in number (Statistics Sweden, 2006).

Changes are also occurring in the structure of the trucking industry. The number of haulage firms has been declining since 1990 as shown in Figure 8.

No. of hire or reward vehicles/ haulage firm	No. of haulage firms				Per cent			
	1990	1997	2001	2005	1990	1997	2001	2005
1	8,381	6,814	5,937	5,632	58.1	55.3	51.3	51.3
2-5	4,780	4,292	4,233	3,914	33.1	34.9	36.6	35.7
6-10	764	743	834	832	5.3	6.0	7.2	7.6
11-15	224	224	248	280	1.5	1.8	2.2	2.6
16-	285	250	315	312	2.0	2.0	2.7	2.8
Total	14,434	12,323	11 567	10,970	100.0	100.0	100.0	100.0

Figure 8: Road Haulage Firms, Statistics Sweden

There are now fewer firms, but they operate larger numbers of vehicles. More than a third of the vehicle fleet in Sweden belongs to firms with 11 or more vehicles; whereas the number of single-vehicle firms has decreased. In 1990, for instance, single-vehicle firms accounted for 58% of the total number of fleets: By 2005, that percentage had dropped to 51%.

Truck drivers in Sweden are generally salaried employees, paid on a monthly basis. There are also those that are paid by the hour, depending on the arrangement negotiated between the driver and their employer.

Government Policy on Speed Limiters

Rationale

As is the case with all EU member countries, the Swedish government is required under European law to adopt EC directives and regulations, including those relating to transportation and road safety. The rationale for requiring speed limiters was to reduce the accident rate of heavy vehicles and to reduce emissions harmful to the environment.

Legislation

The European Commission issued the original speed limiter directive in 1992, requiring buses (over 10 tonnes with eight or more passenger seats) and trucks (over 12 tonnes) to have speed limiters installed and set to a maximum speed of 100 km/h and 90 km/h, respectively. The Swedish government delayed implementation until 1994 to allow stakeholders in industry time to comply with the provisions of the legislation. The speed limiter requirement applied to all heavy vehicles registered since 1988.

Sweden extended the scope of the speed limiter directive to include heavy vehicles between 7.5 and 12 tonnes under the *Swedish Road Administration Regulations on Motor Vehicles and Trailers Drawn by Motor Vehicles Act*.

This act was put into effect January 2005 for new in-scope vehicles and January 2007 for in-scope vehicles of model year 2001 to 2005.

As of January 2008, medium-duty trucks greater than 3.5 tonnes and buses (with eight or more passenger seats) weighing less than 10 tonnes are required to have speed limiters set at 90 km/h and 100 km/h, respectively. This applies to all in-scope vehicles registered since 2001. Sweden, as a member-state of the EU, was obligated to implement the new regulations in response to EC directive **2002/85/EC**.

Regulatory Approach to Compliance and Enforcement

The Swedish National Road Administration (SNRA), or Vagverket, is the designated authority responsible for the entire Swedish road transport system. They manage the physical infrastructure, e.g., planning and construction of state roads, as well as interpret and draft regulations for road safety. To date, the SNRA has not developed a national approach to tackle the issue of speed limiter compliance. According to officials from the SNRA, there are no plans to do so in the foreseeable future.

Each county in Sweden represents a police district with strategies to verify and enforce speed limiter compliance for heavy vehicles. The enforcement strategy detailed in this section relates to County Skane in Southern Sweden. According to police officials, however, the compliance regime for County Skane is representative of the approach taken by most police jurisdictions in Sweden.

Enforcement

Police employ two strategies to verify heavy vehicle speed limiter compliance: roadside inspections of heavy vehicles and heavy vehicle speed compliance drives.

Roadside Inspections

The roadside inspections involve police randomly pulling over heavy vehicles for spot inspections to verify compliance with road safety standards. Officers will initially check for speed limiter compliance by checking the tachograph that all heavy vehicles are required to have on-board under European law. The time span for which they check is within the last half hour of travel time. If they suspect, based on travel speed readings from the tachograph, that the vehicle may have a non-functional speed limiter, they will do a physical inspection of the vehicle for evidence of tampering.

Some county officers use a hand-held compliance testing device to check the speed limiter setting. The officer plugs the device into the vehicle's tachograph, inputs a sample speed into the testing device and increases the speed until the device emits a signal indicating that the maximum attainable vehicle speed has been reached (see **Figure 9**).

Note that the testing device can only read settings from analogue tachographs, not digital tachographs, which are now required by European law for all new heavy vehicles registered in 2006.



If test results indicate that the vehicle can exceed the 90 km/h threshold, the driver is issued a fine of SEK\$2000 or C\$314.

The driver is permitted to finish their run but will have to get their speed limiter repaired within a few days of the infraction. Once the speed limiter has been fixed, the repair shop sends notification to a central Swedish Government database, which tracks vehicle-specific information such as infractions, annual inspections, and vehicle registration.

**Figure 9: Mobile Test Computer
1602-04**

Photo reproduced with permission from
Continental Corporation, Germany

Heavy Vehicle Speed Compliance Drives

In addition to the roadside inspections, police also conduct heavy vehicle speed compliance drives in the spring and fall. These drives involve a large number of police using radar guns to verify speeds of heavy vehicles and issuing fines for non-compliance if they find drivers exceeding their maximum speed-limited speed. Drivers will also be issued a speeding fine starting at SEK\$2000 for 10 kms over the speed-limited speed of 90 kms/h, which rises in increments of 5 kms.

Resources and Budget for Speed limiter Enforcement

There are approximately 600 county police in Sweden, 200 of which specialize in heavy vehicle enforcement. No resources are allocated to training these officers to verify speed limiter compliance or to detect incidences of tampering. They generally learn their skills on the job or as a result of knowledge transfer from more senior personnel.

The only other cost identified in relation to speed limiter compliance is equipment. The Swedish police have acquired between 10 and 20 portable test computers for checking speed limiter settings through analogue tachographs. These units cost SEK\$3000 or approximately C\$450 per unit.

Summary of Effectiveness

Compliance Rates and Tampering

Official statistics on speed limiter compliance were not available from government of police officials at the time of writing this report. Police officials contacted, however, know that there is a high incidence of tampering by the number of speeding heavy vehicles that they fine during their drives and roadside inspections.

Another method of determining the extent of speed limiter non-compliance in heavy vehicles is through the SNRA's data collection station in Southern Sweden. The instrumentation at this site, located on a traffic-dense highway, is able to determine the type of vehicle, e.g., articulated truck, passing by and the speed at which they are traveling. According to data collected at this site in 2007, 40% of heavy trucks with trailers greater than 12 tonnes were traveling faster than 95 km/h, perhaps indicative of speed limiter non-compliance. Heavy trucks of this weight category should not be able to exceed 90 km/h.

Impact of Speed Limiters on Accidents Involving Heavy Vehicles

Statistics Sweden, the central government authority for official statistics, does not track the accident involvement rate of strictly heavy vehicles (greater than 12 tonnes). The only statistics available documented fatalities resulting from all truck accidents, which remained consistent after the speed limiter legislation came into force in 1992. From 1994 to 1997, the annual fatality rate ranged from 121 to 129 persons. This may suggest that the speed limiter requirement in Sweden had little effect on road safety.

Truck/Car Speed Differentials

According to the Swedish National Road and Transport Institute (Vag-och transportforskningsinstitutet or VTI), which conducts applied research on transportation and traffic safety issues, no studies have been conducted which investigate the speed differential between heavy trucks and cars and the resulting safety impacts.

Although there are no official studies on speed differentials, interviews with police officials reveal that the main problem in this area occurs when heavy trucks attempt to pass one another on dual carriageways. Because there are sometimes small discrepancies in the speeds attainable by speed limited trucks due to factors such as tire size, a truck may try to overtake another. This could take many kilometres to accomplish which causes traffic backlog with other vehicles on the road. According to police officials, however, to the best of their knowledge, this is not causing accidents.

Views/Statements from Road Transport Stakeholders

Swedish Traffic Police (County Skane) on Speed Limiters and Compliance Issues

Police officials in County Skane endorse the use of speed limiters on heavy trucks and conclude that their use has been helpful in decreasing the incidence of excessive speeding by heavy trucks. Their main frustration, however, stems from the high incidence of tampering and the lack of consistency across counties in developing an approach to verifying and prosecuting for non-compliance. Even the use of the handheld testing device for checking speed limiter settings is only used in some counties and is not used consistently for all roadside inspections. The device will soon become obsolete, as it is not able to hook into digital tachographs, which are now mandatory on heavy vehicles in EU member countries. No replacement has been found nor have any new strategies been developed to deal with these compliance issues.

Transportation Officials (Swedish National Road Administration) on Speed Limiter Effectiveness

As with most stakeholders interviewed, officials from the SNRA are generally supportive of speed limiters as a tool to increase road safety for heavy vehicles. They concede, however, that much of the safety benefits that could result from the use of speed limiters are not being realized because of inadequate enforcement.

Despite their challenges with speed limiter policy, the SNRA is an active advocate of road safety as evidenced by their innovative and progressive Vision Zero plan, which seeks to prevent all fatalities and serious injuries by designing safer roads, vehicles and transport services. In accordance with this plan, the SNRA has made major infrastructure changes to improve road safety including the installation of centre guardrails—on 250 km of high traffic roads— and by adding additional lanes for passing—on 1,500 km of roads (Sweden Annual Report, 2006). They have also instituted a no overtaking policy on roads with high accident rates.

The Swedish Association of Road Haulage Companies

The Swedish Association of Road Haulage Companies (SARH) represents some 10,000 members with approximately 31,000 commercial vehicles. It is an umbrella organization representing 90% of haulage companies. According to an official from the SARH, speed limiters have been effective in reducing excessive speeding by heavy vehicles.

New Technologies and Strategies to Combat Heavy Vehicle Speeding

Intelligent Speed Adaptation (ISA)

Sweden, like many European countries, is exploring the benefits of ISA technology as a means to improve road safety and reduce harmful emissions. In fact, Sweden conducted the world's largest ISA trial between 1999 and 2002.

The ISA systems were installed in close to 5,000 cars, buses, and trucks and tested by 10,000 voluntary test drivers, consisting of private motorists, professional drivers and commercial drivers.

The trial, which cost SEK\$ 75 million, or approximately C\$ 12 million, was a joint project between the Swedish National Road Administration and the local authorities in four counties—Umeå, Borlänge, Lidköping and Lund. It was conducted primarily in built-up areas with speed limits primarily between 30 and 50 km/h, but there was also some testing conducted on roads with speeds ranging from 70 to 110 km/h.

Two types of systems were used during the trials: informative systems, where light and sound signals were emitted if the driver exceeded the limit; and supportive systems, which caused the accelerator pedal to resist once the speed limit had been met.

In general, the results of the trial were favourable. Test drivers felt that the system helped to improve their driving and that ISA was the best means to solve road safety problems on 50 km/h streets along with police surveillance (Vagverket, ISA for greater social responsibility). Commercial drivers were less accepting of the technology because they found it added more stress to their work environment (World's Largest ISA trial).

To date, there are no plans to legislate the use of ISA technology in any motorized vehicle. The SNRA, however, uses the systems in all of their in-service vehicles.

Speed Cameras

Speed cameras are increasingly being installed and monitored on major roads in Sweden in an effort to reduce speeding. In 2006, 700 road safety cameras were installed on 100 locations of road. Statistics on roads fitted with cameras have shown that speeding violations have dropped on both 70 km/h and 90 km/h roads. Due to the success of speed cameras, The SNRA is investigating the possibility of installing them on municipal roads (Annual Report, 2006).

Global Positioning System (GPS) Trials to Increase Heavy Vehicle Speed Compliance

The Swedish National Road and Transport Institute (VTI) has a study underway that determines the value of incentives in affecting drivers' decisions to comply with the speed limit. The study involves 10 trucking companies and 120 trucks and uses GPS to monitor vehicle speed and transmit the data to the company owners. Those drivers who comply with the speed limit receive bonuses; whereas those who speed are put on probation. Calculation of fuel savings from speed compliant vehicles is also part of the study. Results are due to be released in early 2008.

United Kingdom

Overview

Geography

The United Kingdom (U.K.), consisting of England, Northern Ireland, Scotland and Wales is located to the northwest of mainland Europe. It has a total area of approximately 245,000 square kilometres with a population close to 60 million people (the third largest in the European Union). The greatest distance between two points on the U.K. mainland is 1,300 kilometres, a two-day journey by car.



Most of England consists of lowland terrain, with some mountainous terrain in the northwest, north, and southwest of the country. Scotland's geography is more varied, with lowlands in the south and east and highlands in the north and west. Wales is mostly mountainous and Northern Ireland is primarily hilly. The U.K. lies between the North Atlantic Ocean and the North Sea.

Political System

The United Kingdom is a constitutional monarchy and parliamentary democracy with four constituent countries: England, Scotland, Wales and Northern Ireland. The latter three each have their own legislatures and Executive led by a First Minister, which controls separate law making and constitutional powers. Each nation is further subdivided into local governments.

Figure 10: Map of Great Britain courtesy of Worldatlas.com

As of 1973, the U.K. is also governed by the European Commission (EC). As a member of the European Union, the U.K. has delegates in the European Council of Ministers who participate in the decision-making process for new common rules (See **European Commission** section)

Road System and Speed Limits

The U.K. has an extensive road system, estimated to be 388,000 kilometres in length, with good coverage of both dual carriageways (divided highways) and motorways (national highways), built from the 1950s onwards.

The minor roads (or category B and C roads) comprise 338,000 kilometres, amounting to 87% of the total. Motorways and A roads (non-trunk roads) account for 1% and 12% of the road network respectively (See **Figure 11**) (DFT, Transport Statistics Bulletin, 2005).

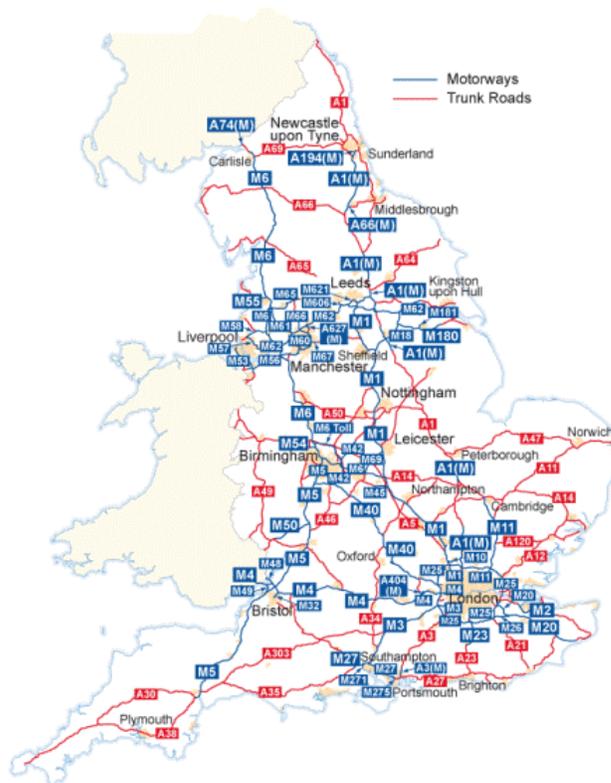


Figure 11: Great Britain Road Network

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The largest goods vehicles, articulated goods vehicles with six or more axles, accounted for 19% of all goods vehicle traffic in 2005. The traffic of these vehicles rose by 2.3 % between 2004 and 2005. In general, articulated goods vehicles (with 6 or more axles) use the motorways (57% of the time) as their principal transport route and, to a lesser extent, rural major roads (35%). The distance traveled by articulated vehicles has increased by 40% since 1995 and these vehicles account for more kilometres traveled than any other type of goods vehicle on the road.

As for speed limits in the U.K., they vary according to the type of road and the class of vehicle being driven. For heavy goods vehicles over 3.5 tonnes, the speed limit is 50 mph (80 km/h) on dual carriageways, while most of the prevailing traffic, e.g., cars and motorcycles, can travel up to 70 mph (112 km/h).

On motorways, heavy vehicles can travel up to 60 mph (96 km/h), but are speed limited to 56 mph (90 km/h). Most other

traffic, including heavy vehicles registered pre-October 2001, can travel on highways at speeds of up to 70 mph.

Trucking Industry

The U.K. trucking industry, or “haulage industry” as it’s called in the U.K., is quite similar to the Canadian model. The industry consists of three trucking groups: own-account operators, fleet operators, and owner drivers⁸.

⁸ The Department for Transport was unable to provide statistics quantifying the number of vehicles in each of the trucking groups within the U.K.. The only statistic provided was the total number of articulated vehicles over 3.5 tonnes—1.2 million. (Department for Transport, National Statistics, Road Statistics, 2005)

The own-account operators, similar to Canada's "Private" trucking group, transport their own goods. Fleet operators, by contrast, hire drivers to deliver goods for other companies and are the equivalent to Canada's "For Hire" trucking group. Large fleet operators are the predominant group in the U.K. Owner drivers—the final trucking group—are independent contractors who transport for others and typically have only a single truck.

Over the last two decades, much of the "own account" work has been taken over by the large fleet operators. Whereas formerly many large companies, like breweries and retail chains, would have their own trucks to deliver merchandise, now large fleet operators are managing the transport and the warehousing of products for their clients.

Another interesting trend is for owner drivers to be contracted to a particular company, paint their truck in the company colors, and not haul for anyone else. This is particularly predominant in certain industries such as construction.

The method by which drivers are paid depends mainly on their employer and the type of goods they are delivering. It is now increasingly common for drivers working for own-account operators and large fleets to be salaried employees, receiving overtime and benefits. The majority of drivers, however, are being paid by the hour and can sometimes receive a tonnage or mileage bonus. Drivers who are moving bulk freight loads, e.g., aggregates, over short distances can receive "trip money" where they are paid by the load.

Government Policy on Speed Limiters

Rationale

As is the case with all EU member countries, the U.K. government is required under European law to adopt EC directives and regulations, including those relating to transportation and road safety. The rationale for requiring speed limiters was to reduce the accident rate of heavy vehicles and to reduce emissions harmful to the environment.

Legislation

The European Commission issued the original speed limiter directive in 1992, requiring buses (over 10 tonnes with eight or more passenger seats) and trucks (over 12 tonnes) to be fitted with speed limiters with a maximum powered speed of 100 km/h and 90 km/h, respectively. The directive was applicable to all heavy vehicles of that weight category registered since January 1988.

The U.K. has taken the EC directive one step further and created legislation under the *Road Vehicles (Construction and Use) Regulations* requiring limiters to be fitted to all goods vehicles registered since 1992 and which exceed 7.5 tonnes. The regulations also specify the manner in which the limiter must be "sealed" as to protect it against tampering and against any interruption of its power supply. All vehicles to which this regulation applies must also be equipped with a plate within the driving compartment which shows the words "speed limiter fitted," the set speed in miles per hour to which the limiter has been calibrated and the name or trade mark of the limiter supplier.

The Construction and Use Regulations also specify that any vehicle fitted with a speed limiter is not permitted to use the outside lane of a motorway with three or more lanes. This aspect of the regulation was added as a means of relieving traffic congestion on highways within the U.K., by relegating heavy trucks to the inside lane. According to government officials and representatives from the trucking associations, however, the result has been long convoys of trucks blocking the exits to the off ramps on some highways.

Another EC directive relating to speed limiter usage for medium-duty trucks has just been fully implemented in the U.K. as of January 2008. EC directive **2002/85/EC** specifies that all goods vehicles (over 3.5 tonnes) and passenger vehicles (with eight or more passenger seats, irrespective of weight) used solely within the U.K. and registered since October 2001 must be fitted with a speed limiter set to 56 mph (90 km/h) for trucks and 62 mph (100 km/h) for buses. The U.K. had strongly opposed the adoption of this directive noting that it would be difficult to quantify the benefits of fitting speed limiters to the lighter category of vehicles.

Regulatory Approach to Compliance and Enforcement

The Department for Transport in the U.K. is responsible for developing regulations relating to transportation and road safety. To date, no national policies or regulations have been drafted which deal with speed limiter compliance and enforcement.

Although there are no guiding regulations to promote consistency amongst the constituent countries, the U.K. government relies on its executive agency—the Vehicle and Operator Services Agency (VOSA)—to develop strategies for increasing compliance and for enforcing the speed limiter directive in the U.K. VOSA provides a range of licensing, testing and enforcement services with the aim of improving the roadworthiness standards of vehicles and ensuring the compliance of operators and drivers.

Enforcement

VOSA employs primarily two strategies to ensure speed limiter compliance on trucks: annual roadworthiness tests and roadside inspections.

Annual Roadworthiness Tests

Annual roadworthiness tests are required by law in the U.K. for all motor vehicles with a design gross weight exceeding 3.5 tonnes and for all motor vehicles constructed or adapted for the purpose of forming part of an articulated vehicle. The test, which is conducted at government sites (90 across the U.K.), involves checking the vehicle to ensure proper and safe functioning, e.g., braking and light systems, as well to ensure compliance for speed limiters and tachographs. Inspectors checking for speed limiter compliance verify the following for each heavy vehicle:

- **Calibration plate**—details the set speed in miles per hour (mph) to which the limiter is calibrated and the name or trade mark of the limiter supplier. The plate is placed in a readily accessible position within the driving compartment.

- **Seal on speed limiter**—refers to the manner in which the limiter is secured to the engine so as to protect it from tampering and against any interruption to its power supply
- **Speed limiter settings**—obtained by using a portable testing device that plugs into a test socket in the tachograph. The examiner inputs a sample speed into the tachograph and increases it until the testing device emits a noise indicating that the highest attainable vehicle speed has been reached. Note that the testing device can only take readings from analogue tachographs, which is problematic because heavy vehicles are now required under European law to use digital tachographs.

Roadside Inspections

The roadside inspections are done on a targeted basis by VOSA vehicle examiners based on intelligence from a number of sources including data accessed from Automatic Number Plate Recognition (ANPR) Cameras. Based on the license plate, officers can retrieve vehicle-specific data—licensing information, violations, and annual roadworthiness test results. There are some 20,000 of these cameras at fixed sites throughout the U.K.

VOSA officers also have 14 of these cameras (approximately C\$6,000 per unit) mounted in their vehicles along with radar guns to monitor heavy vehicle speed. Intelligence obtained through the ANPR cameras aid officers in determining which heavy vehicles to target for roadside inspections.

When a heavy vehicle is pulled over for an inspection, a VOSA officer will first check the tachograph, which shows a week or more of travel speed. If a vehicle is consistently exceeding the maximum limiter settings, it is likely that tampering with the speed limiter has occurred. The officer will also check the calibration plate and the speed limiter settings via a testing device, as discussed in the previous section.

If tampering is suspected as a result of the initial inspection, the officer will do a thorough physical examination of the vehicle to determine if the speed limiter has been disconnected or if there are tampering devices installed.

Evidence of tampering results in a prohibition notice being issued. The driver is permitted to finish their run, but is prohibited thereafter from further use of the vehicle until their limiter is repaired and verified by the appropriate road authority.

Resources and Budget for Speed Limiter Enforcement

Budget for the heavy vehicle enforcement unit in the U.K., including staff salaries, compliance visits to authorized sealers of speed limiters⁹, and roadside inspections is estimated at approximately C\$750,000, annually.

⁹ In the U.K., only VOSA authorized companies—truck manufacturers, speed limiter manufacturers, maintenance or repair businesses, among others—are permitted to install speed limiters in such a way as to reduce the incidence of tampering. This process is called “sealing.” These companies are also required to install the calibration plate, which details the speed limiter setting.

Summary of Effectiveness

Compliance Rates and Tampering

No estimates or data were offered in relation to speed limiter compliance rates. The Department for Transport in concert with VOSA are in the process of investigating the best method to obtain this data and may use speed limiter test failure rates from annual inspections to gauge the prevalence of non-compliant speed limiters.

Officials from VOSA, however, do identify tampering as an issue of concern. The main methods of tampering encountered roadside include the following:

- Pulling out the speed limiter fuse, rendering the device inoperable
- Shorting out the wires entering or exiting the tachograph, which provides an inaccurate reading of the speed limiter setting
- Tampering with the engine control module by changing engine parameters. This could only be done by an individual with access to the passwords relevant to the engine model.

Decrease in Heavy Vehicle Accidents

According to the U.K.'s Department for Transport, the accident involvement rate for all articulated heavy vehicles fell from 40 vehicles in 1993 to 30 in 2005, which is a 26% decrease. Officials speculate that the implementation of speed limiter legislation in 1992 played a significant role in the decrease in accidents, although they cannot directly link the use of speed limiters to the decline.

Truck/Car Speed Differentials

No studies have been undertaken which investigate the safety impact of the speed differentials between heavy vehicles with speed limiters and other vehicular traffic. Officials from the Department for Transport as well as members of the various trucking associations have all identified the issue of convoys of heavy vehicles blocking lanes on the highways and causing a safety hazard for cars attempting to exit.

Views/Statements from Road Transport Stakeholders

Inspections Officer on Heavy Vehicle Speed Enforcement

The Vehicle and Operator Services Agency's approach of targeting high-risk drivers/operators is extremely effective and results in a significant number of offenders being pulled off the road for speed limiter non-compliance. The equipment used, both the ANPR cameras and the handheld speed limiter compliance devices, are valuable tools in aiding officers to target vehicles and to check for compliance with road safety laws.

The speed limiter testing device, however, only works on analogue speed limiters and will become obsolete once the remaining heavy vehicles are fitted with digital tachographs as required by European law. Currently, no alternative device has been found to check speed limiter compliance.

Transport Official (Department for Transport, U.K. government) on the Effectiveness of Speed Limiter Legislation

Before speed limiters became mandatory, heavy vehicle speeding was very prevalent in the U.K. In 1990, for example, up to 60% of heavy vehicles over 7.5 tonnes were breaking the motorway speed limit; whereas, in 2000, the level had dropped to 6%. To this end, speed limiters have been instrumental in lowering truck speeds and improving road safety outcomes.

Transport officials, however, have identified a problem with the speed limiter legislation, which creates an unequal position for some vehicle operators in the U.K. Because the new legislation requiring speed limiters for medium-duty trucks (over 3.5 tonnes) only applies to vehicles registered after October 2001, there is a propensity for operators to hold on to older vehicles of that weight category. These older vehicles are permitted to travel up to 70 mph (112 km/h) on the motorways, whereas the speed limited trucks cannot exceed their maximum limited speed of 56 mph (90 km/h).

The intention in not requiring the engines of medium-duty vehicles to have speed limiters was to avoid imposing excessive costs on business. Older vehicles would require the speed limiter to be retrofitted, which is more costly and complicated. The U.K. government is attempting to rectify the situation by changing domestic legislation so that the speed limit on motorways would be 60 mph (96 km/h) for all heavy vehicles, including those registered pre-2001.

Road Haulage Association on Speed Limiter Policy

The Road Haulage Association (RHA) represents the interests of stakeholders in the trucking industry. The majority of members are small to medium-sized fleet owners, some owner drivers and a small percentage of own-account operators. They have approximately 9700 members, running 100,000 lorries in the U.K.

The RHA's position on speed limiters is that they provide a useful mechanical means of ensuring that most heavy lorries do not exceed a particular speed. Because the trucks are limited to such a low speed and must stay on the inside lane, however, there is a severe problem with congestion on the highways with cars often having to stay in the outside overtaking lane if they are to get anywhere. There are also major problems on dual carriageways with trucks trying to overtake each other for many kilometres and tying up traffic.

Association of British Drivers on Speed Limiter Policy

The Association of British Drivers (ABD) is a voluntary non-profit organization representing the independent “voice of the driver.” It was founded in 1992 and represents the interests of Britain’s drivers from motorbikes to lorries. It has approximately 2000 members.

The association believes that speed limiters have a negative impact on road safety because they cause bunching of lorries on the motorways and problems with overtaking. They also produce negative psychological effects, causing lorry drivers to disassociate from the vehicle because they are forced to drive at a constant slow speed for long periods of time.

The concerns expressed by the ABD are not strictly applicable to the Canadian context because their heavy trucks are limited to a speed approximately 10 kms below the motorway speed limit and they are required by law to stay on the inside lane.

Freight Transport Association on Speed Limiter Policy

The Freight Transport Association (FTA) is the largest trade association in the U.K. representing the interests of 12,000 transportation companies in the road, shipping, and rail industries. The FTA supports the use of speed limiters because they have helped to increase safety on the motorways, improved fuel economy, and produced environmental benefits. The only problem identified by the FTA might be speed limited trucks on dual carriageways because of their difficulty in overtaking.

New Technologies for Increasing Compliance: Intelligent Speed Adaptation (ISA)

The Department for Transport has been sponsoring research into Intelligent Speed Adaptation (ISA), which would enable the speed of a vehicle to be electronically fixed to the speed limit of the road on which it was traveling. Using a Global Positioning Satellites (GPS) system to determine the position of the vehicle, the on-board speed of the vehicle would then be limited based on the speed limit requirements. The U.K. government is just beginning to investigate the benefits of this technology and is not at the stage of creating any legislation surrounding its use on the roads.

Conclusions

Looking back on the experiences of the three jurisdictions with mandated speed limiters, one can easily conclude that the impact and outcome of the initiative had markedly different effects. Through the course of writing this report, however, some common themes/issues surfaced amongst the three countries, which are summarized following, along with other important findings and recommendations based on interviews with road transport officials and from studies and reports consulted through the course of this investigation.

Assessment of Speed Limiter Effectiveness

International jurisdictions implemented the speed limiter requirement for heavy trucks either for safety reasons, as a means of reducing heavy truck accidents, or for the environment, as a means of reducing harmful emissions caused by vehicle speeding. In the case of the European Commission, both of those reasons were used to justify legislating speed limiters for heavy vehicles in 1992 under EC Directive **92/6/EEC**. In Australia, improving road safety after a rash of heavy vehicle accidents in the late 1980's was the impetus for legislating speed limiters through **Australian Design Rule (ADR) 65**. In neither case was there research done or empirical evidence gathered to support the implementation of the legislation.

After 10 years with mandatory speed limiters in both Australia and in all EU member states, no empirical research has been done in any of the participating countries to directly link the use of speed limiters with improvements in road safety. There is also a lack of research indicating if truck-car speed differentials are causing any road safety concerns due to the speed limiter requirement. It would be difficult, therefore, to quantify the safety benefits that could be gained from legislating speed limiters in Canada.

Benefits of Legislating Speed Limiters

The majority of road transport stakeholders, including government officials and enforcement personnel from all participating countries, believe that speed limiters have generally had a positive impact on road safety and have contributed to a decrease in accidents involving heavy trucks. In the United Kingdom, for instance, the number of accidents involving articulated heavy vehicles fell by 26% between 1993 (the year following mandatory speed limiters) and 2005.

The numbers of heavy vehicles involved in accidents has also decreased in Australia over the 10 years since speed limiter legislation has been in place. The difficulty, however, is determining to what extent speed limiters have contributed to the decrease. Many other factors, including improvements to road infrastructure and advances in vehicle safety standards, are also believed to have contributed to reducing heavy vehicle accidents.

Other positive effects of invoking speed limiter legislation have been noted in the European Commission report on speed limiters and include the following:

- Lower fuel consumption (from 3–11%)
- Lower maintenance costs (tires, brakes, engine)
- Reduced insurance premiums

Challenges as a Result of Legislation

Participating countries have identified a number of challenges that have resulted from legislating speed limiters for heavy trucks, which may be relevant to the Canadian context.

Tampering

Tampering has been reported by officials from Australia, Sweden, and the U.K. as being a significant problem resulting from mandating the use of speed limiters. Heavy vehicle drivers tamper with their speed limiters to increase the maximum speed of their vehicles, thus increasing their competitive advantage. Tampering can take many forms including simply pulling the fuse out of the speed limiter device, changing the settings in the engine control module (ECM), and adjusting the tire size or transmission gear ratio.

In Australia, between 10–30% of heavy vehicles are estimated to have tampered speed limiters. No official compliance rates were available from the U.K. or from Sweden. Results, however, from a heavy traffic data collection site in Southern Sweden identified that 40% of heavy trucks greater than 12 tonnes were exceeding their maximum limiter speed.

Reducing tampering rates has proven to be difficult because it requires a significant investment in enforcement personnel, training, and compliance equipment.

Overtaking on Divided Highways

Heavy trucks attempting to overtake (pass) each other on divided highways is another road safety challenge identified by officials from Sweden and the United Kingdom. Because there are only slight differentials in the maximum speeds attainable by heavy trucks, overtaking can take many kilometres to accomplish, creating a backlog of traffic. At the time of writing this report, no studies were available documenting the impact of heavy truck overtaking on road safety. Police officials in Sweden stated that they do not believe that overtaking increases the risk of heavy vehicle accidents. The problem, however, is significant enough that some counties have instituted a policy of no overtaking on certain roads with high heavy vehicle accident rates.

In the United Kingdom, overtaking by speed-limited trucks has also been identified as a threat to road safety by many stakeholders leading to backlog and congestion on divided highways. Australian officials, by contrast, did not identify heavy truck overtaking as a significant issue, likely because the speed to which heavy trucks are limited (100 km/h) is much higher than in EU countries (90 km/h), providing Australian truck drivers with a greater ability to accelerate and pass each other.

Enforcement Resources and Compliance Testing Equipment

A number of challenges have been identified in the area of compliance and enforcement of the speed limiter mandate. Many road transport officials believe that without sufficient enforcement personnel to verify speed limiter compliance of heavy vehicles, the efficacy and relevance of the policy is compromised. In Sweden, for example, there are only 200 officers specializing in heavy vehicle enforcement, who conduct roadside inspections to check for proper functioning of speed limiters and other road safety standards.

The numbers of dedicated heavy vehicle officers are similarly low for Australia and the U.K. The importance of having adequate resources to verify speed limiter compliance was also identified by EU member states in the European Commission report on speed limiters.

Another challenge in enforcing speed limiter compliance is the difficulty in finding appropriate testing equipment to verify speed limiter settings in heavy trucks. In Australia, enforcement officers have found an effective testing device that plugs into the engine control module and uses proprietary software and hardware to download engine settings such as the maximum limiter speed setting for most common varieties of engines. In Sweden and the U.K., however, officers use a testing device that accesses the maximum speed limiter setting through the analogue tachograph. This device will shortly become obsolete when heavy vehicles in EU-member countries change to digital tachographs as required by European law. No new testing equipment has been found to replace the analogue device at the time of writing this report.

Non Speed-Limited Heavy Vehicles

Drivers and operators of older vehicles to which the speed limiter legislation does not apply are holding onto their vehicles longer in order to reap commercial benefits gained from having vehicles which can run at faster speeds. In the United Kingdom, for instance, government officials have identified this problem in relation to the new speed limiter legislation that has recently come into force for medium-duty vehicles. Only those vehicles registered in 2001 and later are obliged to use speed limiters.

Older vehicles of that weight category are not required to use speed limiters, nor are they required to travel in the inside lane of motorways, which is a requirement for all speed limited trucks. Government officials in the U.K. are attempting to rectify the situation by instituting a standard motorway speed limit for all heavy vehicles, including those registered pre-2001, of 60 mph (96 km/h).

Convoys of Trucks Blocking On and Off Ramps

In the United Kingdom, traffic congestion on motorways (highways) is a common problem for motorists. Government officials acknowledge that large numbers of speed-limited trucks, relegated to the inside lane, compound the problem by making it difficult for other vehicular traffic to access the on and off-ramps. With new speed limiter legislation for medium-duty trucks having taken effect in January 2008, congestion and blockages are expected to worsen.

Best Practices and Lessons Learned

Based on their experiences with speed limiter legislation, participating jurisdictions have identified regulatory approaches and enforcement techniques that have contributed to improvements in speed limiter compliance. They have also researched new methods and technologies to augment speed limiter technology.

National Regulatory Approach to Speed Limiter Compliance

In an effort to ensure that there is a consistent approach to speed limiter compliance, many stakeholders in the trucking industry have highlighted the importance of having an effective national compliance approach. Australia, for example, has made great strides in developing national policies to combat such issues as heavy vehicle speeding through their innovative chain of responsibility (COR) provisions that focus on holding all parties in the transport chain responsible for breaches in road transport law.

The COR provisions also extend existing enforcement powers to gather evidence and define administrative and court-based sanctions for breaches of road transport law. The National Transport Commission in Australia is currently developing new legislation to deal with speed limiter compliance by applying similar chain of responsibility provisions for vehicle safety standards.

Swedish and U.K. government officials have also noted the importance of having a consistent national approach to compliance and enforcement of the speed limiter mandate. No national regulations or policies have been developed or are currently in development within either country's government.

Targeted Enforcement

Targeting enforcement only to those who are at risk of offending has proven to be an effective compliance approach in both Australia and U.K. In South Australia, for example, enforcement officers use intelligence-gathering techniques to focus interceptions only on high-risk operators/drivers.

Officials feel that this is the best use of the limited police resources they have available to check for road safety compliance issues. This approach has been successful according to police in Australia in finding and prosecuting offenders who have not complied with the speed limiter mandate.

A targeted approach to speed limiter compliance is also employed by heavy vehicle enforcement officers in the U.K. Using data from Automatic Number Plate Recognition Cameras, officers are able to identify heavy vehicle drivers/operators who have current or previous violations and are at risk of violating road transport laws. Police officials feel that this method has resulted in a significant number of offenders being pulled off the road and prosecuted for speed limiter non-compliance.

Other Methods/Technologies Used to Combat Heavy Vehicle Speeding

In addition to speed limiters, other methods and technologies have been explored and implemented in participating countries as a means of dealing with the problem of heavy vehicle speed compliance.

Accreditation schemes in Australia, for instance, which require participating heavy vehicle operators to conduct regular audits to demonstrate safe business practices in exchange for regulatory concessions have resulted in dramatically improved road safety outcomes for their participants. For example, members of the National Heavy Vehicle Accreditation Scheme (NHVAS), a government-run program in Australia, are reported to have 71% fewer accidents than non-participating operators.

The benefits of intelligent speed adaptation (ISA) technology have been explored by all participating countries in this study as a more sophisticated method of regulating speed in vehicles. Sweden, for instance, conducted the most extensive study on ISA technology between 1999 and 2002, installing close to 5,000 cars, buses, and trucks with the ISA systems which were tested by 10,000 voluntary test drivers, consisting of private motorists, professional drivers and commercial drivers. Results from the testing were generally favourable.

Australia has also moved forward with an ISA-based incentive program for heavy vehicle operators, which is just underway. The U.K. has done research into ISA technology, but has no programs planned or in place.

Because ISA technology is relatively new and still in the testing phase, none of the participating countries have developed legislation requiring the use of ISA systems in heavy trucks or other vehicle types, but there is interest in the technology as an alternative to simpler speed regulating devices such as speed limiters.

Appendix A: Definition of Responsible Person from Road Transport Reform (Compliance and Enforcement Bill) Model Provisions

A responsible person means any person having, at a relevant time, a role or responsibilities associated with road transport, and includes any of the following:

- an owner of a vehicle or combination;
- a driver of a vehicle or combination;
- an operator or registered operator of a vehicle or combination;
- a carrier of goods or passengers by road;
- a person in charge or apparently in charge of a vehicle or combination;
- a person in charge or apparently in charge of the garage address of a vehicle or combination or the driver base of a vehicle or combination;
- a person appointed under an approved road transport compliance scheme to have monitoring or other responsibilities under the scheme, including (for example) responsibilities for certifying, monitoring or approving vehicles or combinations under the scheme;
- an operator of intelligent transport technology;
- a person in charge of premises entered by an authorised officer or police officer under this Act;
- a person who consigns goods for transport by road;
- a person who packs goods in a freight container or other container or in a package or on a pallet for transport by road;
- a person who loads goods or container on a vehicle or combination for transport by road;
- a person who unloads goods or a container containing goods consigned for transport by road;
- a person to whom goods are consigned for transport by road;
- a person who receives goods packed outside Australia in a freight container or other container or on a pallet for transport by road in Australia;
- an owner or operator of a weighbridge used to weigh vehicles or combinations or an occupier of premises where such a weighbridge is located;
- a responsible entity as defined in section 83;
- an agent, employer, employee or subcontractor of any person referred to in the preceding paragraphs of this definition.

Appendix B: International Jurisdictions with Speed Limiter Legislation

Based on information gathered for this report, 33 countries currently have speed limiter legislation in place. The following table summarizes the legislative details for countries where information was available at the time of writing.

Jurisdiction	Effective Date	Vehicle Types/Classes	Application	Maximum Limited Speed	Other Details
Australia	1990	Heavy trucks > 12 t Buses > 5 t	For new trucks/buses, model year 1990	100 km/h	Federal Legislation: <i>Australian Design Rule (ADR 65) Maximum Road Speed Limiting for Heavy Goods Vehicles and Heavy Omnibuses</i>
India (Karnataka State)	2008	All transport vehicles	For new vehicles, model year 2008. As of June 30 th , applies to older vehicles	60 km/h	Government is considering country-wide speed limiter legislation
Japan	2001	Heavy trucks > 8 t		90 km/h	
Sweden	1994	Heavy trucks > 12 t Buses > 10 t (with eight or more passenger seats)	For heavy vehicles registered since 1988	90 km/h for trucks; 100 km/h for buses	Based on EC directive 92/6/EEC
	2005	Heavy vehicles between 7.5 – 12 t	For new vehicles. As of 2007, for vehicles 2001 – 2005 model year	90 km/h for trucks; 100 km/h for buses	Legislation: <i>Swedish Road Administration Regulations on Motor Vehicles and Trailers Drawn by Motor Vehicles Act</i>
	2008	Medium-duty trucks > 3.5 t and buses up to 10 t (with eight or more passenger seats)	For vehicles registered since 2001		Based on EC directive 2002/85/EC

Jurisdiction	Effective Date	Vehicle Types/Classes	Application	Maximum Limited Speed	Other Details
United Kingdom ¹⁰	1992	Heavy trucks > 12 t Buses > 10 t (with eight or more passenger seats)	For heavy vehicles registered since 1988	56 mph (90 km/h) for trucks; 62 mph (100 km/h) for buses	Based on EC directive 92/6/EEC
	1992	Heavy trucks > 7.5 t	For trucks registered since 1992	56 mph (90 km/h)	Federal Legislation: <i>Road Vehicles (Construction and Use) Regulations</i>
	2008	Medium-duty trucks >3.5 t Passenger vehicles with eight or more passenger seats	For vehicles registered since Oct. 2001	56 mph (90 km/h) for trucks; 62 mph (100 km/h) for buses	Based on EC directive 2002/85/EC
Zambia ¹¹	2005	All intercity and long distance buses		100 km/h	

¹⁰ The U.K. also instituted an additional requirement that all speed-limited vehicles are prohibited from traveling on the outside lane of a three or more lane motorway (highway).

¹¹ Speed limiters used in Zambia issue warnings (jerks and disturbances in fuel transmission) when maximum speed exceeded. Engine eventually cuts out and is not functional for 30 minutes.

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