

# **SPEED AND INTERSECTION SAFETY MANAGEMENT STRATEGY**

**Prepared for:**

**CCMTA's Standing Committee  
on Road Safety Research and Policies**

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# Executive Summary

## Background and Introduction

A review of road safety with respect to speed and intersections was undertaken by a sub-committee of the Standing Committee on Road Safety Research and Policies. This review was undertaken at the request of a number of provincial police agencies, road safety stakeholders and as a result of public advocacy.

The subcommittee was to determine the magnitude of collisions related to speed and intersections as well as to identify strategies currently in place to address these issues. In 1998 and 1999 a cross Canada survey was conducted to determine enforcement activity, collision information and related existing legislation. The results of the survey follow:

1. All provinces have a variety of fines and demerits, typically determined by the degree exceeding the speed limit
2. Some provinces implemented additional victims' surcharges such as additional fines for speeding in school, work or playground zones
3. Conviction information indicated that speeding represents a large proportion of moving violations. Caution is advised in interpreting these results, in that violation tickets represent an output measure which for speeding, because of the use of technology, is of considerably higher volume per unit of time than other moving violation strategies. In addition the quantifiable nature of speed enforcement and the assistance of technology in the verification of infractions is frequently used as the basis for traffic stops.
4. Speed is undeniably the major contributing factor to crash severity
5. All jurisdictions have established programs to address speed, primarily through police agencies

In 1999, as a result of this survey, the CCMTA Standing Committee on Road Safety Research and Policies established the Task Force on Speed and Intersection Safety Management. The review undertaken by the Task Force has resulted in the creation of the Strategy for Speed and Intersection Safety Management (SISM).

## Overall Recommendations

The Task Force on Speed and Intersection Safety Management will work with the High Risk Driver Task Force (HRD), Canadian Rural Road Safety Strategy and the Transportation Association of Canada's (TAC) Safety Committee in order to address issues in a coordinated way.

The Task Force will produce a monitoring report which will track progress on the four core SISM strategies (education/awareness, research, road infrastructure/standards and enforcement).

The monitoring report will request jurisdictions to describe any new activities or research that has taken place in the monitoring your regarding speed management, intersection management and road infrastructure and standards.

The monitoring report will request jurisdictions to describe the three top major activities that have taken place in the monitoring for related to speed management, intersection management and road infrastructure and standards.

The format/content of the monitoring report will be reviewed annually to ensure it captures the identified priorities of the SISM Committee.

### **Target/Performance Measure**

The national goal is to achieve the following targets by 2010:

- a 20% reduction in speed-related fatalities and injuries
- a 20% reduction in intersection-related fatalities and injuries

### **Core Strategies**

SISM contains 4 core strategies that focus on education/awareness, research, road infrastructure/standards and enforcement:

#### Education/Awareness

- increase the knowledge and understanding of road users surrounding the risks and consequences of unsafe driving in the topic areas of concern
- increase the public awareness of risk of apprehension for such unsafe driving behaviours
- develop key messages

#### Research

- undertake research to more fully understand driver motivation for unsafe driving practices of concern
- develop best practices for program development including public education and police enforcement
- establish agreements between CCMTA membership to establish a cooperative approach to researching topics of mutual interest thereby maximizing nationally limited research funds

#### Road infrastructure/standards

- support the development of national standards for establishing speed limits by roadway type
- support the development of a consistent national crash data collection process

#### Enforcement

- determine an optimization of enforcement resources
- coordinate enforcement activity with public education and awareness
- coordinate enforcement activity with road infrastructure improvements

To be effective, the work of this Task Force must complement and be linked together with the High Risk Driver Task Force (HRD), Canadian Rural Road Safety Strategy (CRRSS) and the Transportation Association of Canada's (TAC) Safety Committee. The outcome desired by all road safety stakeholders is crash reduction and working together SISM can contribute to this outcome. A formal link between the SISM and HRD, CRRSS and the TAC Safety Committee is recommended.

# SPEED AND INTERSECTION RELATED COLLISIONS

## 1.0 BACKGROUND

A review of road safety with respect to speed and intersections was initiated in 1997 by a subcommittee of the Standing Committee on Road Safety Research and Policies. The review was initiated in response to continued feedback/requests/concerns from provincial police services, road safety stakeholders as well as public concern.

The subcommittee was to determine the magnitude of collisions related to speed and intersections as well as to identify strategies currently in place to address these issues.

In 1998 and 1999 a survey was conducted across Canada to determine the enforcement activity, collision information and existing legislation related to these issues. Initially the survey concentrated on information on red light infractions. However, the survey results required the subcommittee to address all elements of intersection safety. The results of the survey and collision analysis are as follows:

- All provinces have a variety of fines and demerits for exceeding the posted speed. Both demerits and fines are mostly determined by how much they have exceeded the posted limit.
- Some provinces have implemented additional victim surcharges and there are variations in the fines such as ones identified for school zones, work zones and specialized safety zones.
- Conviction information indicated that speed represents a large proportion of moving violations. However, it must be recognized that these convictions are impacted by enforcement activity and the large revenues generated by speed violations. In addition speed violations are easily understood, detected and are a major contributing factor in crash severity.
- Photo radar in some fashion is implemented in some jurisdictions.
- Red light technology has been implemented in a couple of jurisdictions (since 1997 several more jurisdictions have been using this technology).
- In all jurisdictions there are established programs to address speed, primarily by enforcement agencies.
- Intersections remain at high risk for collisions both in urban and rural locations.
- These survey results and analysis of related collision information led the Road Safety Research and Policies Standing Committee (RSRP) to establish a national Task Force to develop a formal speed and intersection safety strategy for Canada. The strategy requires coordination with NORP, STRID, high risk driving frameworks and includes the development of a reduction target which would become the performance measure.

## **2.0 OBJECTIVES OF SPEED AND INTERSECTION SAFETY MANAGEMENT STRATEGY**

This report provides targets and specific strategies for jurisdictions to work towards. The strategy is designed to be challenging, and with concerted effort, it is estimated that the national target could be attained by the year 2010. The Task Force has recognized that some strategies identified to address these issues may overlap. Where overlap exists, attempts will be made to address similar issues together.

The Task Force on Speed and Intersection Safety Management has also recognized that speed and intersection safety are not mutually exclusive and it is impossible to address the strategies separately.

### 3.0 SPEED MANAGEMENT STRATEGY

#### Target/Performance Measure

The national goal is to achieve by 2010:

- ***a 20% reduction in speed related fatalities and injuries***

Assessment of progress in 2010 will be based on the comparison of the average from 1996 – 2001.

It is recognized that the exposure data measure (per kilometre travelled) is the best measure to track progress.

Where possible provinces could develop specific measures within their own jurisdiction. This could include such measures as speed surveys by roadtype, vehicle type, and time of day by kilometre travelled. This will assist in measuring jurisdictional progress and will be useful to compare to the national level.

The selected approach to this strategy will encompass integrating four elements that have proven previously to be successful in other programs. These elements are Education/Awareness, Research, Road infrastructure/standards and Enforcement.

*A note of caution, an increase in speed limits will have an adverse effect on the achievement of the stated goal.*

#### 3.1 Awareness

##### 3.1.1 Consolidate Research

- Ensure each jurisdiction has a mechanism for identifying high-risk areas.
- Jurisdictions are invited to work cooperatively with the Task Force to coordinate and consolidate research on related topic areas in order to use the available research publications and programs implemented throughout Canada and across the world.

##### 3.1.2 Consolidate Best Practices/Resource Materials

- The Task Force will continue to consolidate Best Practices material to ensure the ongoing update of resource material as well as to assist in identifying gaps in research information.

### 3.1.3 New Research Required

The Task Force is recommending a cooperative approach between the jurisdictions in achieving the following outcomes:

- undertake additional research concerning public perception of speed. It is recommended that a baseline survey be conducted by Transport Canada regarding national/provincial public awareness. It is currently believed that the majority of the public does drive over the posted speed limits and with little understanding of the increased safety risk. Factors that can influence this are social tolerance, perceived risk, time pressures and habits. Public reaction is generally influenced by the perceived risk of both enforcement and the resulting sanctions. The surveys would be conducted on an on-going basis to determine if awareness and behavior has been impacted.
- develop a profile of target groups. This would need to address the group at the highest risk to offend as well as the general population. The speed management group will require a tie to the High-Risk Driver Task Force and NORP's Young Male Drivers on Rural Road Campaign.
- undertake research on the motivation of excessive speeders and, in conjunction with the High Risk Drivers' group, the motivation and habits of aggressive drivers.
- undertake research on the effect of targeted speed reduction programs utilizing enforcement and education.
- undertake research on the effect of road infrastructure initiatives

### 3.1.4 Development of Key Messaging and Materials

The Task Force encourages jurisdictions to:

- develop awareness strategies that include components such as the issue of safety versus mobility, road user risks, knowledge and costs savings of reducing fatalities and injuries.
- implement Speed Management committees to address these strategies at the jurisdictional level.
- develop and refine key safety messages for public consumption.
- undertake media scans regarding high performance vehicles and other speed related commercials, programs and articles will be monitored and action taken at both the national and jurisdictional level. Jurisdictions and their stakeholders should work to ensure that information being provided to the public is not contrary to the safety awareness message that speeding increases the risk of injury and death.

- develop awareness campaigns, to reinforce to the public that unsafe speed is a social issue.
- develop third party endorsements from key stakeholder groups with a vested interest in road safety i.e. community safety groups, medical associations.

### 3.1.5 Additional Considerations

- Strategies and programs that have already been successfully implemented in other jurisdictions should be considered for implementation across the country.

#### **Recommendations Speed/Awareness:**

- 1. Each jurisdiction to develop a mechanism for identifying high risk locations and segments of roadways.**
- 2. A mechanism to identify offenders who create high risk needs to be developed. (High Risk Driver Task Force is developing a mechanism that may identify these individuals).**
- 3. Each jurisdiction to implement Speed Management Committees to undertake strategies on a jurisdictional basis with a variety of stakeholders including enforcement agencies (to reinforce safety messages with stakeholders, conduct media scans, promote social cost issues, implement local programs, etc.).**
- 4. Jurisdictions to consolidate and share best cross-jurisdictional practices for speed awareness activities.**

## **3.2 Education**

The Task Force encourages jurisdictions to:

- 3.2.1 Develop a strategy to implement training methods/programs, which support life long learning principles.
  - influence the public education system (curriculums) to include safe driving messages which specifically address speed
  - support the strategy for life long learning by evaluating and updating the Driver Education curriculum in both driver training schools and the public education system to ensure messages related to speed and the adoption of low risk driving habits are included.

- refine key messages to meet the needs of specific target groups including information on key relationships of speed/stopping distance, speed/force of impact
- create opportunities to educate media, journalists and auto reviewers on speed safety issues.
- deliver messages and provide support to key stakeholders to encourage community based programs.

### 3.2.2 Undertake key messaging via public education

- to ensure that the following concepts are included in educational messaging:
  - increase in speed relates to an increase in the severity of collisions
  - increase in speed relates to an increase in breaking distance
  - increase in speed reduces reaction times
  - effect of weather conditions on the need for speed reduction
  - type and age of vehicle
  - appropriate lane usage (example: moving to the right when being passed)
  - increase public perception regarding the force of impact.
  - increase the public's understanding regarding the dangers of variation of speeds.
  - increase the public's understanding that speed contributes to increased fuel consumption, effecting both personal cost and the creation of greenhouse gasses
- ensure people are re-educated in the use and limitations of specialized equipment.(advances in vehicle technology have given the public a false sense of security eg. ABS)
- develop materials to educate the public, media, journalists, auto reviewers on the numerous safety issues surrounding speed. Consider developing and distributing a publication similar to SMASHED (Transport Canada) around the theme of "Speed".
- develop simple messages to the public, for greater impact.
- develop messaging, in consultation with provincial police services, to increase the public's perceived risk of apprehension

#### **Recommendations Speed/Education:**

- 1. Each jurisdiction to ensure links between educational system (both public education and driver education systems) and road safety government agencies to ensure that lifelong learning safety messages are integrated.**
- 2. Transport Canada to be approached to develop material/publications relating to Speed similar to SMASHED-Impaired Driving material.**

### **3. Jurisdictions to consolidate and share best cross-jurisdictional practices for speed educational activities.**

#### **3.3 Road infrastructure/standards**

Encourage jurisdictions to undertake activities in the following topic areas:

##### **3.3.1 Ongoing Analysis of Speed Limits**

- develop mechanisms to assess the appropriateness of speed limits on the various roadways to ensure that safety is the key consideration rather than mobility.
- consider the Kyoto agreement, where standards may be put in place to limit fuel consumption, and thus limit the amount travelled.

##### **3.3.2 Review of Sanctions**

- increase the severity of sanctions with increase of risk levels i.e., escalation for repeat and more high risk offences.
- ensure sanctions address the high-risk group.
- ensure that sanctions and legislation deal with the public perception of speed management and not revenue generation.
- undertake a sanction and penalty review.

##### **3.3.3 Technology**

- review the capability and appropriateness of speed limiters, adaptive cruise control, intelligent vehicles, etc. for sanction where appropriate.

##### **3.3.4 Additional Considerations**

- liaison with TAC on engineering and infrastructure related speed reduction strategies
- review techniques such as traffic calming, road safety audits, continuous review, etc. for inclusion in crash reduction programs
- adopt the strategies of the High-Risk Driver Project Group
- establish standards and protocols for the use of technology for enforcement, speed limiters in vehicles, speed-reader boards, etc to ensure perception is safety management related (example photo radar)

- lobby government to influence the automobile industry to refrain from vehicle advertising that emphasizes the ability of their vehicles to contribute to speeding and aggressive driving

### **Recommendations Speed/Road infrastructure/standards:**

- 1. Jurisdiction will put a mechanism in place to ensure that safety considerations are evident during all reviews of roadway speed limits.**
- 2. Jurisdictions should support engineering practices geared toward traffic calming and continuous review.**
- 3. Jurisdictions could consider increasing severity of sanctions when any review of sanctions within a jurisdiction are considered (i.e.: escalation for repeat and more high risk offences). (Adopt strategies sanctioned by high risk driver group where appropriate.)**
- 4. Jurisdictions to encourage the development of technology, which assists in speed management (i.e.: speed limiters/cruise control, etc.)**
- 5. Jurisdictions should develop Road infrastructure/standards and protocols for the use of technology for enforcement (i.e.: photo radar) to ensure that its use is perceived as safety related.**
- 6. Jurisdictions to consolidate and share best cross-jurisdictional practices for speed related road infrastructure/standards.**

### **3.3 Enforcement**

#### **3.4.1 Optimize Enforcement**

The Task Force will undertake to determine optimal level of enforcement and support enforcement efforts at the jurisdictional level to reinforce the perceived risk of apprehension

The Task Force encourages jurisdictions to undertake activities in the following topic areas:

- advocate enforcement at high-risk locations both rural and urban.
- coordinate enforcement with education and awareness.
- support the use of both technology and conventional enforcement.
- develop partnerships between enforcement agencies and interested parties

### 3.4.2 Additional Considerations

- initiate and implement ongoing STEP campaigns.
- position signage at the entrance of cities advertising speed technology such as photo radar, laser cameras and advertise penalties.

#### **Recommendations Speed/Enforcement:**

- 1. Task Force to review research and practices within jurisdictions which have determined optimal levels of enforcement.**
- 2. Jurisdictions to use optimal levels of enforcement information to develop enforcement plans with law enforcement stakeholders. Enforcement plans to emphasize high risk locations.**
- 3. Jurisdictions to initiate speed related STEP campaigns in conjunction with community stakeholders.**
- 4. Jurisdictions should coordinate public education and awareness activity with enforcement programs to maximize the perceived risk of apprehension.**
- 5. Jurisdictions to consolidate and share best practices for speed related enforcement activities.**

## 4.0 INTERSECTION MANAGEMENT STRATEGY

### Target/Performance Measure

- ***The national goal is to implement a 20% reduction in intersection related fatalities and injuries by the year 2010***

It is recognized that the exposure data measure (per kilometre travelled) be used as it is considered the best measure available. It is recommended that provinces develop specific measures within their own jurisdiction. This could include such measures as intersection specific surveys in order to measure their own jurisdictional progress and compare to the national level.

The selected approach to this strategy will encompass four separate elements. These elements will be Awareness, Education, Road infrastructure/standards and Enforcement. In addition, intersection management is considerably different in rural versus urban areas and as such this strategy needs to be adopted and developed based on location requirements.

### 4.1 Awareness

#### 4.1.1 Consolidate Research

The Task Force is recommending a cooperative approach between the jurisdictions in achieving the following outcomes:

- consolidation, through the Task Force, of the available jurisdictional research, publications and programs implemented throughout both Canada and across the world.
- ensure each jurisdiction has a mechanism for identifying high-risk intersections.
- utilize exposure data where possible.

#### 4.1.2 Consolidate Best Practices/Resource Materials

- Consolidate Best Practices material to ensure the ongoing update of resource material as well as to have ready access to Best Practices information.
- Identify gaps in research information.

#### 4.1.3 New Research Required

The Task Force is recommending a cooperative approach between the jurisdictions in achieving the following outcomes:

- undertake research that determines factors that can influence behavior include social tolerance, perceived risk, time pressures and habits. Public reaction is generally influenced by the perceived risk of both enforcement and sanctions. It is therefore useful to understand the public's perception and awareness of driver behavior as it relates to intersections based on type of intersections such as stop signs or red lights. A baseline survey should be conducted regarding public awareness on this issue.
- develop a profile of a target group, this would address the group at the highest risk to offend as well as the general population. The Speed and Intersection Safety Management group will require a tie in with the High-Risk Driver Task Force.
- identify original research that may be required in relation to developments in technology (i.e. red-light cameras).
- identify original research that may be required in relation to road infrastructure.

#### 4.1.4 Development of Key Messaging and Materials

The Task Force encourages jurisdictions to:

- develop awareness strategies should also include components such as the issue of safety versus mobility, knowledge and costs savings of reducing fatalities and injuries.
- conduct media scans regarding commercials, programs and articles to monitor and take action at both the national and jurisdictional level.
- develop a key message to create public awareness that intersection safety is a social issue.
- implement Intersection Management committees to address strategies at the jurisdictional level.
- refine key safety messages for public consumption including pedestrians and motorists.

#### 4.1.5 Additional Considerations

- Strategies and programs that have already been successfully implemented in other jurisdictions should be considered for implementation across the country.

## **Recommendations Intersections/Awareness:**

- 1. The Task Force will consolidate all available research. This will include documented best practises. Gaps in research will be identified. (completed 2001)**
- 2. Each jurisdiction to develop a mechanism for identifying locations and segments of roadways that can be used to identify high risk intersections.**
- 3. A mechanism to identify high risk offenders needs to be developed (High Risk Driver Task Force is developing a mechanism which may identify these individuals).**
- 4. Each jurisdiction to implement Intersection Safety Management Committees to address strategies at the jurisdiction level. (Committees will reinforce safety messages, social costs of intersection collisions, media scans, stakeholder opportunities, etc.)**
- 5. Jurisdictions to consolidate and share cross-jurisdictional best practices for intersection related awareness activities.**

## **4.2 Education**

The Task Force encourages jurisdictions to:

- 4.2.1 Develop a strategy to implement training methods/programs which support life long learning principles.
  - support the strategy for life long learning. Driver Education curriculum in driver training schools and the public education system should be influenced to include messages related to intersections and the adoption of low risk habits. Through the education process messages would be refined and distributed to meet the needs of target groups including pedestrians and other road users.
  - utilize key interest groups to deliver messaging in relation to intersection safety.
  - support and encourage Community based programs, which highlight intersection safety.
  - develop materials to educate the public, media, journalists, auto reviewers on the numerous safety issues surrounding intersections.

#### 4.2.2 Educational Messaging

- inform the public regarding the high risk nature of intersection collisions including the following:
  - severity is compounded by speed;
  - the interaction between vehicles and pedestrian and bicycles;
  - the multiple and varied users of the intersection and the increased likelihood there will be other vehicles/road users in the intersection.
- educate the public regarding the role of yellow lights and red lights.
- include pedestrian and bicycle educational messages as they relate to intersection safety.
- include messaging regarding environmental factors that impact intersection safety.
- educate the public on the numerous types of intersections.
- enforcement messaging will be developed in consultation with provincial police services.

#### **Recommendations Intersections/Education:**

- 1. Each jurisdiction to ensure links between educational system (both public education and driver education systems) and road safety government agencies to ensure that lifelong learning safety messages are integrated. (Safety messages to include interaction between various motorists and pedestrians, types of intersections, yellow light/red light behaviors, etc.)**
- 2. Transport Canada to be approached to develop material (publications relating to intersections similar to SMASHED Impaired Driving material).**
- 3. Jurisdictions to consolidate and share cross-jurisdictional best practices for intersection related educational activities.**

#### **4.3 Road infrastructure/standards**

The Task Force encourages jurisdictions to undertake activities in the following topic areas (to be informed primarily by the deliberations of TAC):

##### 4.3.1 Ongoing Analysis of Intersection Configurations

- research and determine optimum signage and timing considerations for lights and intersections/configuration.

- ensure safety advancements are considered in determining design in the development of intersections and crosswalks i.e., roundabouts.
- consult with TAC Safety Committee to ensure appropriate infrastructure improvements are targeted

#### 4.3.2 Review of Sanctions

- consideration should be given to increase the severity of sanctions with increase of risk levels i.e., escalation for repeat and more high risk offences.
- sanction and penalty review.

#### 4.3.3 Technology

- Standards and protocols need to be established when technology/enforcement tools are used, to ensure perception is safety related.

#### 4.3.4 Additional Considerations

- Each jurisdiction should ensure that communication and relationships are optimized with the appropriate engineering teams.
- At a national level support strategic interaction of multidisciplinary groups.
- Strategies should address high-risk drivers and adopt strategies from the High-Risk Driver Task Force.
- Roadway engineering that support opportunities for intersection management tools should be supported.

#### **Recommendations Intersections Road infrastructure/standards:**

- 1. Jurisdictions to consider increasing severity of sanctions with increases in risk levels when any review of sanctions within a jurisdiction are considered. (i.e.: Escalation for repeat and more high risk offences). Adopt strategies sanctioned by high risk driver group where appropriate.**
- 2. Jurisdictions to encourage the development of technology that assists in intersection safety management (i.e.: intersection safety cameras).**
- 3. Jurisdictions should support engineering practices geared toward eliminating traffic hazards and more fully informing road users.**
- 4. . Jurisdictions should develop standards and protocols for the use of technology for enforcement (i.e.: red light cameras) to ensure that the public's perception is that these initiatives are safety related.**

## **5. Jurisdictions to consolidate and share cross-jurisdictional best practices for intersection related infrastructure/standards.**

### **4.4 Enforcement**

#### 4.4.1 Optimize Enforcement

The Task Force will undertake to determine optimal level of enforcement and support enforcement efforts at the jurisdictional level to reinforce the perceived risk of apprehension

The Task Force encourages the jurisdictions to:

- support and assist with enforcement at high-risk intersections.
- coordinate enforcement with education and awareness.
- adopt strategies that support the use of both technology and conventional enforcement.

#### 4.4.2 Additional Considerations

- Initiate (take the lead) and implement on going STEP campaigns.
- Signage entering cities should advertise intersection technology such as red light camera and advertise the penalties.

#### **Recommendations Intersections/Enforcement:**

- 1. Task Force to review research and practices within jurisdictions that have determined optimal levels of enforcement.**
- 2. Jurisdictions to share research on optimal levels of enforcement with law enforcement stakeholders. Enforcement plans to emphasize high risk intersections.**
- 3. Jurisdictions to initiate STEP campaigns (rural and urban) together with enforcement stakeholders.**
- 4. Jurisdictions to consolidate and share best cross-jurisdictional practices for intersection related enforcement activities.**