Canadian Speed Management Overview

James G. White
Engineering Advisor
Road Safety and Motor Vehicle Regulation
Transport Canada

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Context

**Federal**
- Motor vehicle safety and emissions standards
- Safety research coordinating role
- Limited highway improvement funds
- Canada has signed the Kyoto Protocol on the reduction of greenhouse gases

**Provincial and municipal**
- Own the road system
- Speed limits
- Driver licencing and control
Context – Canada-US

- **The border is key**
  - 500,000 people and 45,000 trucks cross the border each day
  - Interoperability is extremely important

- **Private vehicle fleet – Same vehicles, but Canadians buy smaller ones on average**

- **Canada and US rank 8th and 9th in deaths per vehicle-km traveled (1st UK, 2nd Sweden, 3rd Netherlands)**
Policy developments

Highway speed policy

- Speed limit increases on some highways
  - Limited major divided highways (AB, SK, NB, NS)
  - 100 → 110 km/h (62 → 68 mph)

- Analyses show increased compliance rather than increased speed
Policy developments

Road safety vision

- Many countries have adopted vision statements.
- Speed management is important element
- Transport Canada Road Safety Vision 2010
  - Decrease fatal and serious injuries, compared to 1996-2001 average:
    - 30% overall (progress: -1.2/-2.3%)
    - 20% in speed-related crashes (progress: +3.6/-3.2%)
Program developments

**Urban areas**
- Photo enforcement increasing
- Traffic calming measures increasing slowly
- Roundabouts seen as practical step in many locations
Driver-measures

- Graduated driver licencing is working
  - 15 to 30 % reduction in serious crashes involving learning drivers

- GDL linked to speed limits in Ontario
  - Restricted to 90 km/h roads
  - No driving on divided highways
  - Less opportunity for very high speed by susceptible drivers
  - High public acceptance
New program development

- CCMTA Speed and Intersection Safety Management committee
- 4 core strategies:
  - Education/awareness
    - Improving driver knowledge of speed risks
  - Research
    - Driver motivation
    - Determine best practices in education and enforcement
Current research

- **Infrastructure**
  - National standards for speed limits
  - Consistent national crash data

- **Enforcement**
  - Optimizing resource uses
  - Coordination with public education and infrastructure improvements
New technologies - Adaptive cruise control (ACC)

Research review findings

- ACC may provide
  - more uniform speed
  - improve flow
  - decreased rear-end collisions
  - reduced fuel consumption
  - Useful effects at relatively low penetration rates
TC research findings

- Behavioral adaptation tests
  - With ACC:
    - Drivers diverted more attention to a distracting task
    - Drivers responded slower to a hazard detection task
    - Drivers varied lane position more

- Technical tests also showed some problems
  - Following on curves
  - Object acquisition
  - Performance in rain or snow
  - Technology-specific differences (radar, laser)
New technologies

TC Current research

- Intelligent speed adaptation (ISA)
  - GPS + maps > speed limit information to vehicle
  - European trials have proven system feasibility
  - 20-25% injury reductions estimated in urban areas
  - Small scale on-road test in Ottawa area
    - Compare subjects driving with/without ISA for 1 month
New technologies

TC Current research, cont’d

- Fuel consumption cost display
  - How will drivers respond to real time fuel cost data, e.g. $ per mile, $ per trip?
    » Slow down?
    » Drive less?
    » Combine trips?
    » Change routes?

- Assessment models for new technologies
Fuel consumption vs. speed
Transport Canada/Environment Canada tests

- Standard Temperature
- Standard Temperature RLP
- Cold Temperature
- Cold Temperature RLP

Vehicle Speed (km/h)

Fuel Consumption (L/100km)
Review of Speed Research
Safety, Speed and Speed Management – A Canadian Review
(IBI, 1997)

- Changing speed limit has limited effect on safety
- Changing speed limit has little effect on travel speed
- Drivers select travel speed based on physical cues such as road design
Review of Speed Research - 2
Safety, Speed and Speed Management – A Canadian Review
(IBI, 1997)

- No consistent method / authority for setting speed limits
- Changing posted speed limit does not automatically mean a change in safety
- Unclear under what conditions changing speed limit will lead to change in safety
- Enforcement effects are short lived
Review of Speed Research - 3
Safety, Speed and Speed Management – A Canadian Review
(IBI, 1997)

- Changes to speed limits have little effect on driver behavior
- Drivers respond more to physical cues than speed limits
- A complex issue involving driver, vehicle and road factors
- Approach must be multi-disciplinary
Speed Management Program Development Suggestions
Derived from 1997 review

- Better data and analysis to identify factors
- More research on driver response to physical environment
- More reasonable speed limits to increase driver compliance
- Develop a uniform knowledge-based method of setting speed limits
Speed Management Program
Development Suggestions

- Search out best practices, but look for reasons for variance
- Be open to new technologies, but do or demand large-scale and time-series field tests.
- If you implement it, evaluate it.
  - Speed change
  - Costs
  - Benefits (safety, GHG, fuel)
Speed Management Program Development Suggestions

☑ Seek common cause and synergy.
  - Partner agencies with different basic interests.
  - Transportation <> Environment <> Energy <> Enforcement
  - Example – Canadian ACC research funding
    » 75% - Federal Energy R&D fund
    » 25% - Transport Canada
www.tc.gc.ca

> Road Safety
Nope, that’s not it either. Let’s try 30 …
Speed Variance vs. Collision Rate

Source - Solomon (1964)