Canadian Speed Management Overview

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

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Transport Canada Transports Canada
Road Safety Sécurité routière

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
  - 500,00 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

ACC, 2

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 feasability
  - 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

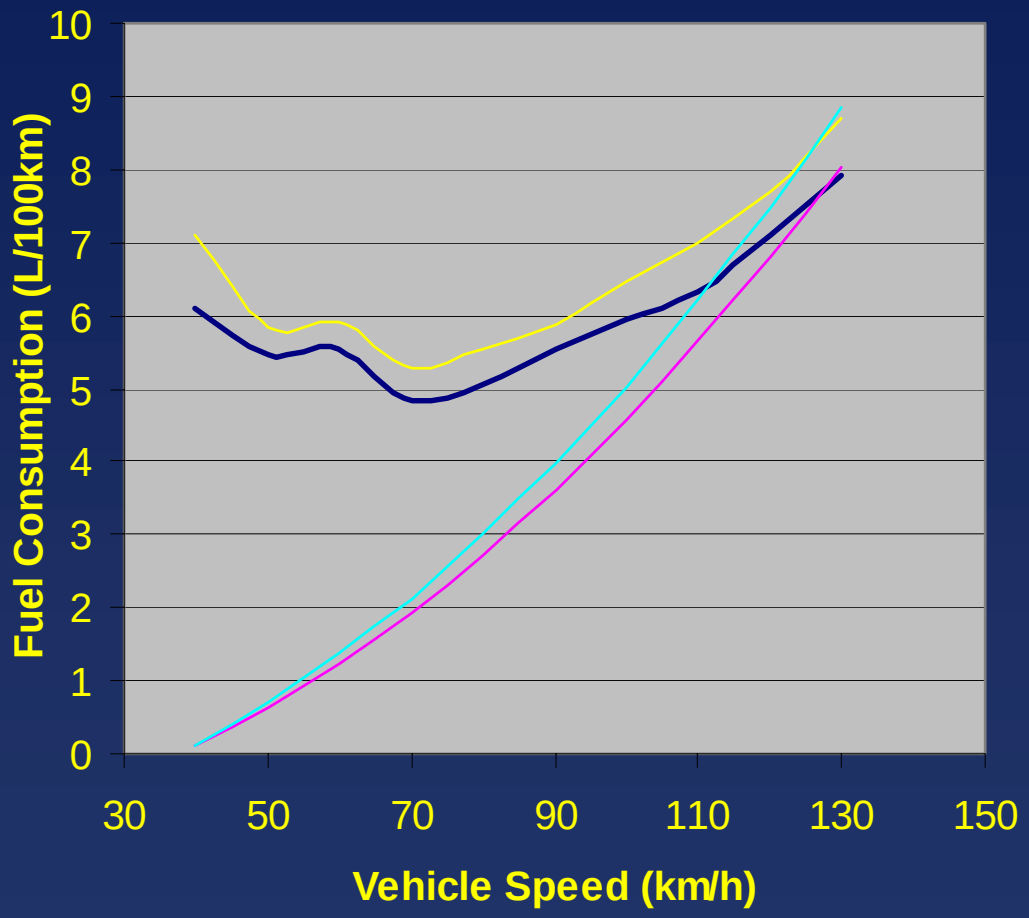
New technologies

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



2004 Chevrolet Impala

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

Transport Canada Road Safety

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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

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THE

OFF THE WALL

Nope, that's not it either. Let's try **30** ...

END

Speed Variance vs. Collision Rate