

Speed Management Working Group Status Report

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Background

- JTRC formed 1 January 2004 from previous OECD and ECMT divisions
- 1st JTRC work programme
 - One consolidated speed project, based on proposals by Australia, Canada and Norway
- 19 countries including USA and Canada participating in speed management project

Aims of Working Group - 1

- To review current knowledge about effects of speed
 - **Road safety, pollution, energy, operational costs, travel times**
 - **Quality of life (e.g. noise), urban growth, etc**
 - **Focus on 1995-2005 period**
 - ✓ **Comprehensive prior studies:**
 - **TRB #254 Managing Speed (USA)**
 - **MASTER Project (European Commission)**
 - **Safety, Speed and Speed Management (Transport Canada)**

Aims of Working Group - 2

- To examine speed management methods
 - Current & best practices
 - Promising research
- To define a global approach to speed management, based on objective assessment of alternatives
- To make recommendations

Why “Speed Management”?

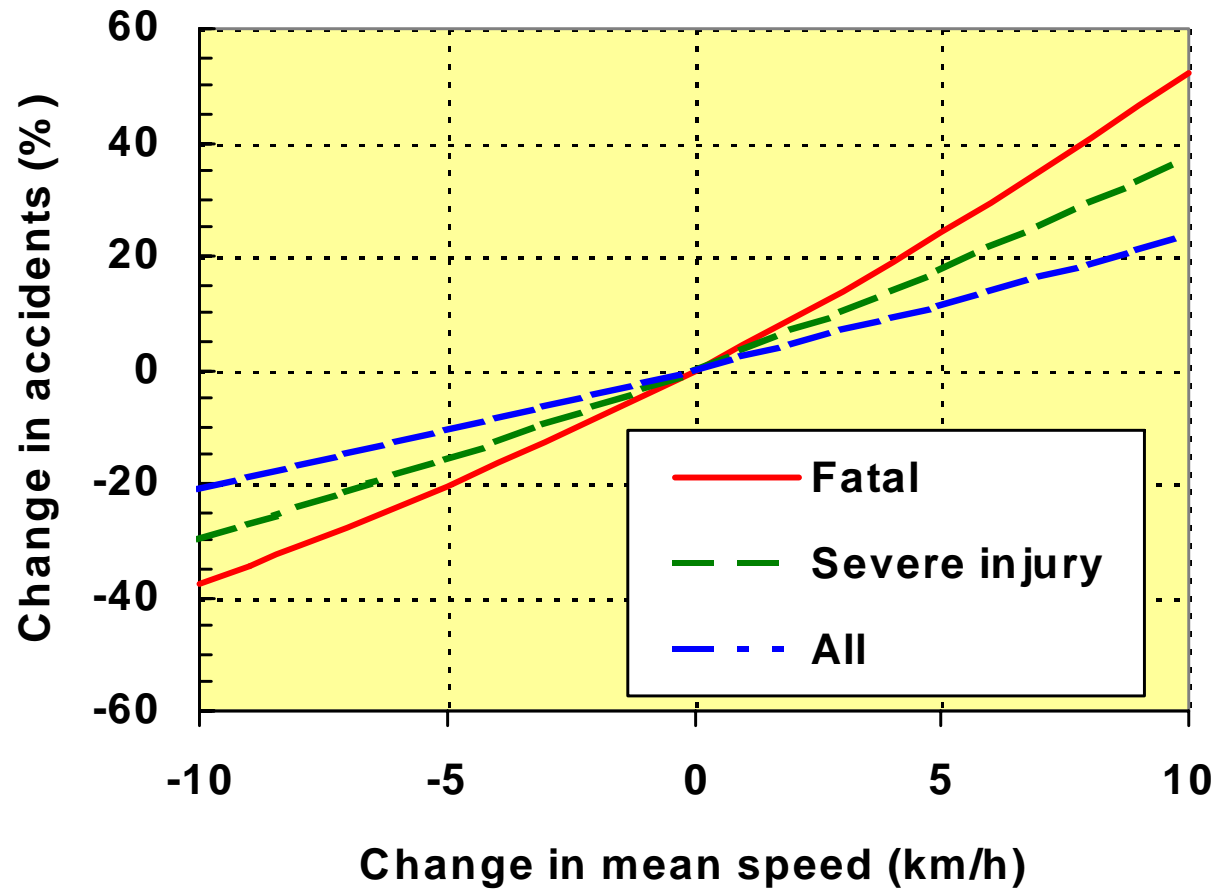
- 30% of fatal accidents due to speed
- Extensive speeding
- Speed is key to collision avoidance and mitigation of injuries
- Speed mgt methods are expanding
- Increasing awareness of speed-energy relationship
- Urban area challenges - Intersections, pedestrians, cyclists
- Road design often does not help the driver to

OCDE  respect the speed limit

Effects of speed

- Speed has consequences on:
 - Road safety
 - Traffic flows
 - Environment (pollution and noise)
 - Energy use
 - Travel times
 - Economics
 - Urban spreading
 - Quality of life...

Speed and injury severity



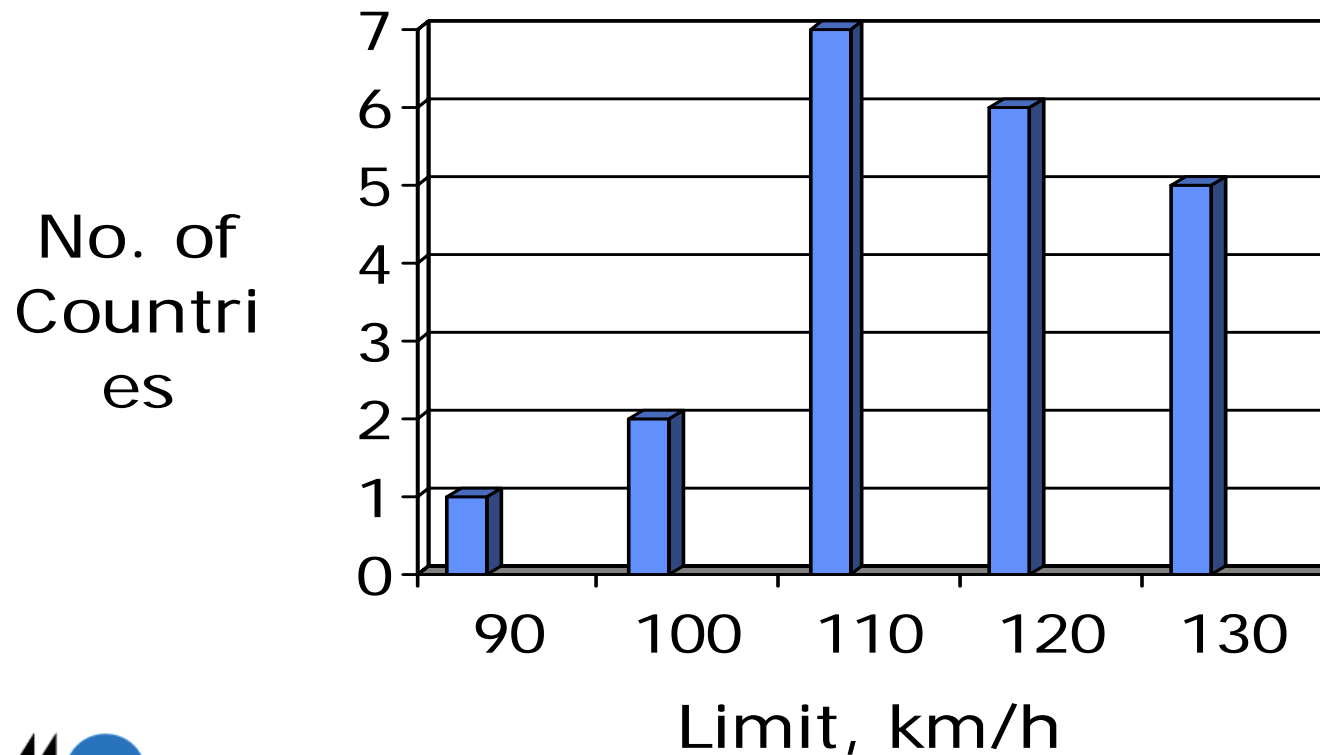
Questionnaire

in 6 parts

- Speed limits
- Actual speeds
- Effects of speed
- Speed management measures
- Enforcement
- Research on new speed management measures

Questionnaire results

National maximum speed limits



Questionnaire results

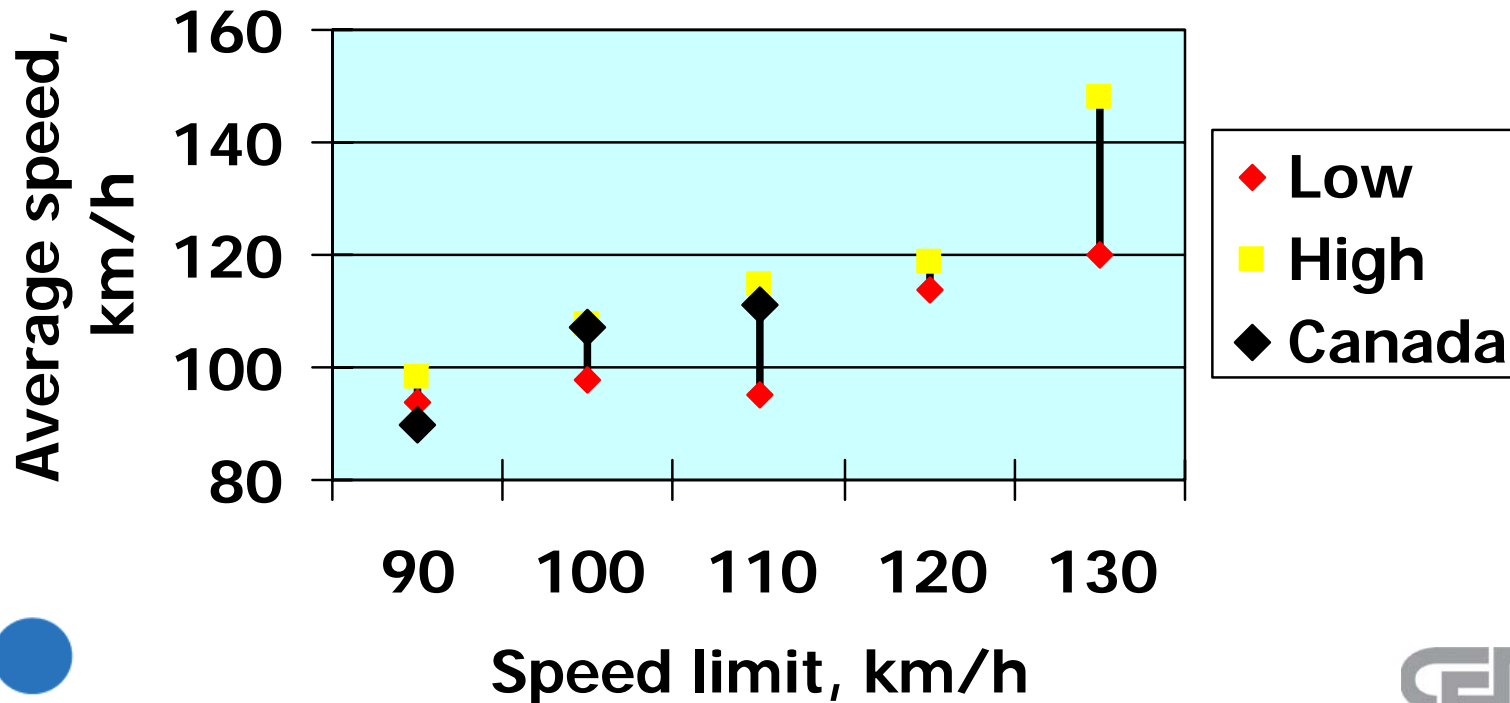
- Differential speed limits
 - Trucks and buses, e.g. 130 > 100, 110 > 90
 - Speed limiters mandatory for trucks and buses
 - Speed reductions for rain, fog, snow
 - ✓ France, Japan, Korea, Sweden, UK
 - Speed reductions for novice drivers
 - ✓ Canada, France

Questionnaire results

- Variable speed limits in common use
 - School zones
 - Work zones
 - Bridges, Tunnels
 - Congestion management – Manual & automatic systems in several countries
 - Incident management

Questionnaire results

Average speeds on main roads (19 countries)



Scope of report, 1

- **Effects of speed**
- **Road safety philosophies**
- **Driver attitudes towards speed and new measures**
- **Speed management methods**
- **Roles of the various actors**
- **Infrastructure**
- **Speed limits: How to set**
- **Driver information: Signing and signals**
- **Education and Training – Information Campaigns**

Scope of report, 2

- **Vehicle Engineering (not ITS): Governors, conventional and adaptive cruise control (ACC)**
- **ITS systems – Intelligent Speed Adaptation (ISA) and Speed Alert**
- **Enforcement**
- **An Integrated Approach to Speed Management**
- **Future technologies to manage speed**

Speed and travel times (TT)

- Higher speeds lead to reduced travel time.
- But time reduction is negligible, at least in urban areas, because of traffic signals.
- In one example, TT **increased by 16-22%**, if maximum speed was **30 km/h** instead of 50 km/h. (Toulouse, France)

Driver behaviour

- Main factors influencing the choice of the speed
 - Perceptual aspects of speed control by drivers
 - Cognitive and motivational aspects involved in the driving process
 - Attitudes, beliefs and subjective norms of drivers

What can we do?

- Effective speed management is a complex undertaking requiring the involvement of a variety of actors
- To implement a consistent speed management policy, it is necessary to assess (*inter alia*):
 - Each element of the speed management policy
 - Possible interactions
 - ✓ among speed management elements
 - ✓ Between speed management and non-speed measures within the sphere of control

Speed and infrastructure

- Examples of different measures in use
 - Gates, islands and reservations
 - Narrowing, staggering, humps
 - Roundabouts (various types)
 - 30 km/h zones
 - Differences between urban and rural areas

Infrastructure examples





Pedestrian



Protection

Roundabouts



Mini-roundabouts



Other treatments



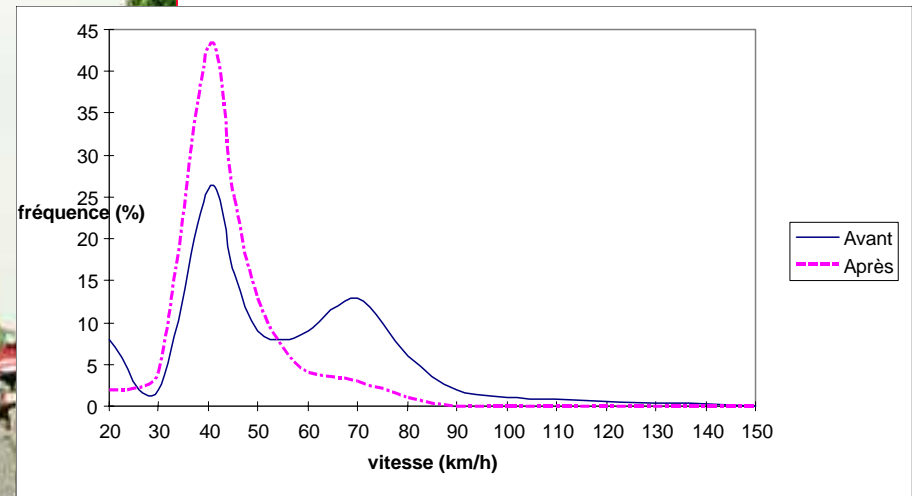
Speed limits

- Which factors are taken into account in national/regional speed limits?
- What are the means for deciding:
 - To set a local speed limit;
 - To decide the level of the limit?
- Importance of credibility
 - Widespread speeding
 - Lack of enforcement

Signing and signalling

- Signing and signalling based on rules set out in Highway Traffic Acts, etc
- Variable signing provides new possibilities (e.g.: traffic regulation on motorways)
- The driver should be continuously aware of the speed limit
- Signing and signalling efficiency cannot be measured at location level only
- Traffic lights can also be used to manage speed

Use of signalling for reducing speed

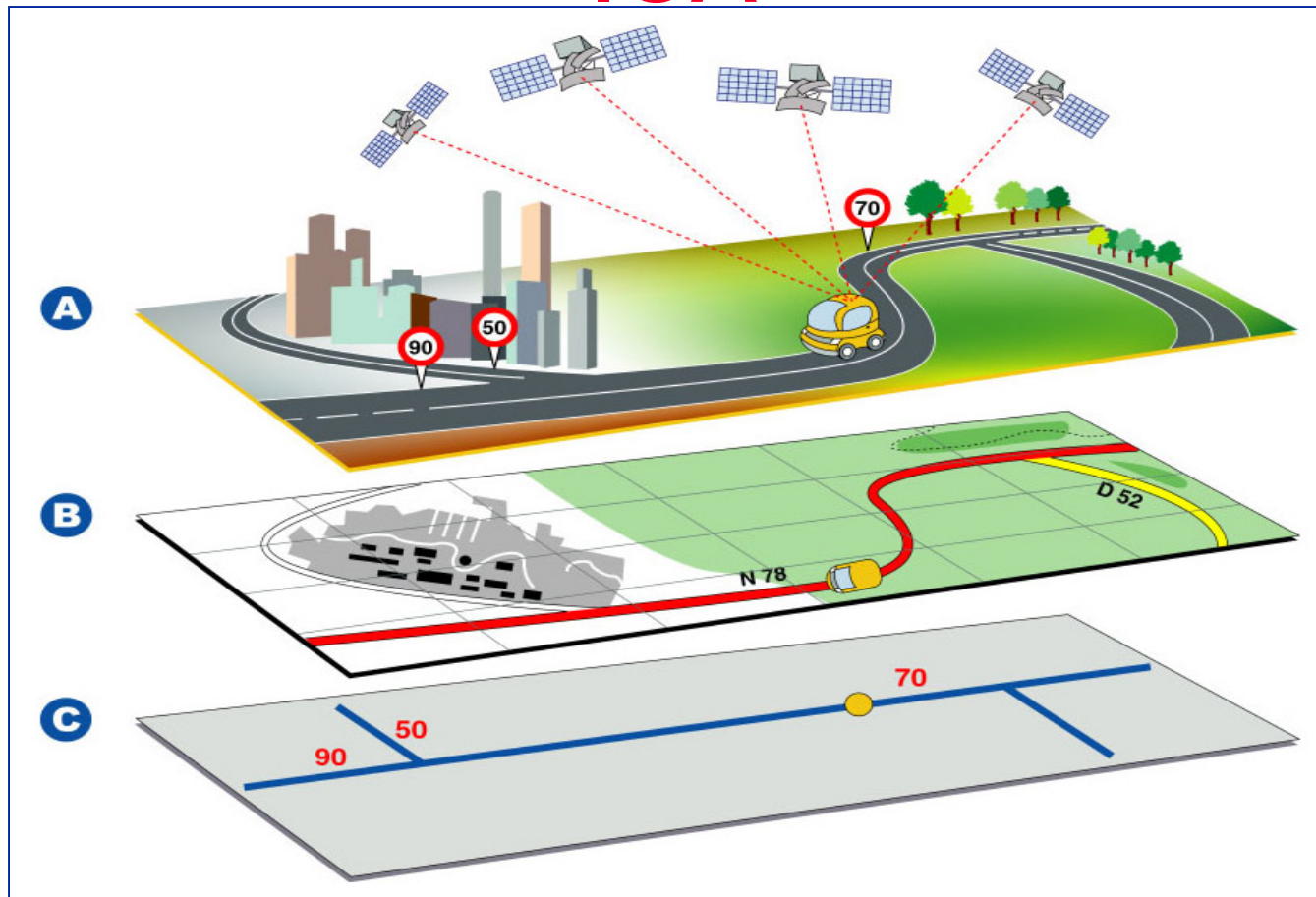


- The moderating green waves

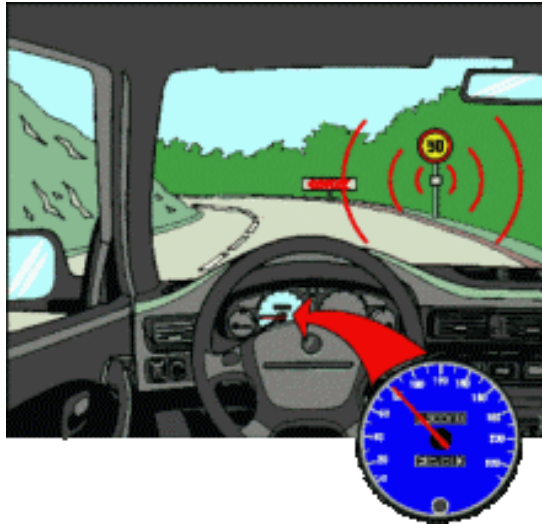
Vehicle engineering

- Different types of systems exist:
 - Conventional systems (e.g. governors, cruise control)
 - ACC (adaptive cruise control)
 - Electronic stability systems ESP, ESC, etc.
 - On-board data capture – EDR (trucks)
- What are their potential effects on speed?

Intelligent Speed Adaptation ISA



ISA - 2



- Several systems being studied
- Autonomous
- Co-op vehicle-roadside

ISA - 3

- ISA has been shown to work in small-scale trials in limited urban areas
- Large scale tests are needed to assess
 - Acceptability
 - Effectiveness (safety, energy, pollution, urban goals)
 - Negative effects (travel times?)

ISA - 4

- The problem of updating the databases is crucial
- Highway speed choice dilemma – How much uniformity is necessary?

Training and education

- Children cannot be trained to behave safely; therefore the traffic environment must be designed so that drivers adapt their behaviour to the abilities of children
- Professional training programs have a large potential to reduce crash involvement
- Long lasting effects of campaigns seem to be hard to get; campaigns should be conducted on a regular basis and more often

Enforcement

- New systems (automatic radar) are available; do they provide significant effects?
- The aim of speed enforcement is to convince drivers that the likelihood to be detected and punished is high
- Penalties should have both a *specific* deterrence effect – the impact of sanctions on apprehended drivers – and a *general* deterrence function



F.Cepas, DSCR

Integrated approach to speed management and evaluation

- How to assess and compare measures in standardized manner?
- Role of simulation models?
- How to build a general policy that encompasses speed measures focused on road, vehicle and driver?
- Institutional challenges and changes

The Future

- Existence of new concepts (too early to be integrated and evaluated):
 - Lane keeping
 - EDRs (event data recorders)
 - SARI, etc.
- Possible role and negative effects of these new approaches
- Limits on engine power and max speed: A controversial answer.... to a real problem

Next steps

- Complete and circulate draft report - June
- 4th WG meeting (with industry) - September
- Present report to JTRC - Fall
- Final report: Early 2006
- Conclusions & recommendations for the OECD Ministerial Session in May 2006 in Dublin
- Put findings to use in new national policies, speed programs and research

Acknowledgements

- **Chairman, Speed Management WG**
 - Jacques Nouvier, (CERTU, France)
- **OECD-ECMT Joint Transport Research Centre**
 - John White (Head)
 - Veronique Feypell-de la Beaumelle (Administrator)

For further information:
www.oecd.org

- And follow the links:
 - Browse ... By Topic
 - Transport
 - Joint Transport Research Centre

or

<http://www1.oecd.org/cem/JTRC/>

Conclusion / Discussion