Making Canadian Roads Safer - with 20-20 Vision?

Alan German

1. Everyone who has attended past conferences will be familiar with the various incarnations of Canada's national road safety plans that have been implemented in past years culminating in the current Road Safety Vision 2010.

2. We will hear an update on this programme later in the conference, but I would like to provide a few personal thoughts and perhaps stimulate some consideration of how we in this room might consider contributing to the overall goal, all with the benefit of hindsight.

3. Firstly, there is good news. Despite continuing increases in road usage, in general, fatality rates are decreasing.

4. The not-so-good news is that, while Canada makes safety advances, the rest of the world isn't standing still. Several countries have had greater success than Canada which has resulted in our ranking dropping from 5th to 10th over the past few years.

5. The bad news may be that our fatality rate is dropping more slowly than desired, especially in terms of our reaching the targets set for RSV2010.

6. The really bad news is that the 2005 fatality figures show a trend in the wrong direction. Now, we shouldn't panic. Upward fluctuations have occurred in past years, while the general trend is downward. But, since we are getting close to the finish line, we have to ask can we still achieve the goal?

7. It's instructive to look at fatal collisions. For example, what's wrong with this picture? Just about everything!

8. Here we have a young female driver, who is alcohol impaired, with indications of marijuana use, and unbelted. The vehicle mounts the curb and rolls over. Our unrestrained driver is ejected and fatally injured.

9. This combination of adverse factors is not unique. At last year's conference, we reported on a pilot study, which is a multi-agency, multi-disciplinary project, looking at the causes of fatal collisions and injury mechanisms.

10. Let's look at a few more examples from the study. Here the driver has used just about every drug known to man, travels at high speed while trying to evade police, loses control, and puts the side of the vehicle into a pole. The resulting side intrusion causes fatal head injuries to the vehicle's passenger.

11. An elderly driver falls asleep and the vehicle drifts off the road to the left. Despite the rumble strip, the driver over-steers, the vehicle trips and rolls over. The driver is belted but has no head curtain and sustains fatal head injuries.

12. A pedestrian crosses the road on a walk signal, evidently oblivious to turning traffic. The van driver is concentrating on on-coming traffic and, seeing a gap, turns left, without taking note of the pedestrian. The pedestrian is struck and killed.

13. A pedestrian is crossing a median-divided roadway at night and is struck and killed by a speeding motorist.

14. The event data recorder shows the drivers speed to be over 110 km/h in a 60 km/h zone. The driver's blood alcohol concentration is 158 mg%, double the legal limit.

15. This chart represents the results of a preliminary analysis of the major contributing factors in an initial sample of cases from the study. I think the major problem is clear.

16. It's almost entirely a behavioural problem. Vehicle factors and environmental factors, while present in some crashes, are almost non-issues.

17. It's interesting that nothing much seems to have changed in thirty years. The Treat tri-level study from the late 70's showed a vast preponderance of human factors in collision causation.

18. Now, my primary interest is in vehicle crashworthiness, so I will leave the behavioural countermeasures to other specialists But, I would like to take a brief look at what's coming down the pipe in terms of new vehicle equipment.

    Things like ESC and brake assist are becoming more commonplace in new vehicles although, as we will see in a paper to be presented later this morning, there is little public knowledge of such systems. Studies of stability control systems offer the promise of large reductions in collisions so it will be interesting to see how this translates into the future Canadian picture. Brake assist offers the promise of avoiding collisions or at least of reducing impact speed

    Intelligent speed adaptation is probably some time off, and time will tell how well this may be adopted by drivers.

    Adaptive cruise control is coming into the marketplace. While really a convenience option, it strikes me that it may result in drivers becoming more patient since the system will automatically resume the set vehicle speed after an interruption due to traffic or abrupt manoeuvres by other vehicles.

    Some effective on-board countermeasures to alcohol impairment would be very useful and research in this area is continuing. For example, a paper on trans-dermal alcohol monitoring is to be presented later in this conference. And, at least one manufacturer is looking at integrating such sensing systems into the steering wheel.

    I include event data recorders since some research shows that driver are more careful when they know that their actions are being monitored by such devices. Even if they are not entirely successful in this endeavour, they can provide excellent data both for the pre-crash and crash phases of a collision, and this can be extended into the post-crash environment through automatic collision notification systems. However, in my view, we are not doing a good job in

marketing EDR`s as a safety technology. There is far too much emphasis in the media on black boxes and big brother, and too little on the benefits of these systems.

Finally, we can think of even higher, high-tech solutions where on-board sensors and powerful image processing systems can be combined

19. In this example, the driver is alerted to an upcoming stop sign and the presence of a motorcycle on the intersecting road through a combination of imaging, GPS-mapping, and inter-vehicle communications.

20. But, for the present, perhaps we need to ask if we currently have the right tools to get the job done, or if we are using those tools to best effect. For example, do we know how much collisions cost us as opposed to the amount that we spend on safety? And here, for example, we need to be able to extract the cost of creating safe roads from the cost of building roads to merely facilitate transportation. If we were to invest even a little more in safety, what return on investment might we achieve? Do we do enough evaluation of our safety programmes, or do we continue with the same things purely because we have always done so, or because they worked in the past? If other countries are doing better than Canada, what exactly are they doing, and could we usefully adopt the same tactics?

21. Do we have the right level of public awareness? Are our partners helping us achieve our goals? The media continue to focus on everything sensational. The manufacturers are (largely) promoting vehicle performance – zoom, zoom... Here I use the example of Youtube, but this is meant to ask if we are using current technologies to the fullest. Are we still relying on paper brochures, when we should be developing short video clips? How do we best disseminate information and reach specific target groups? Certainly, we need to put the onus where it belongs - on the bad actors!

22. So, what might we do to improve the situation? Perhaps it's time for a national network of road safety expertise to be brought to bear on the problem. And, perhaps the best place to start might be by having university researchers and their hoards of young, keen students work specifically on the many problems we face. With current technologies, this could readily be achieved through a virtual network of centres of excellence, providing the possibilities for distributed effort and sharing of resulting knowledge.

23. However, such a network will not magically appear. It will require a group of individuals to show interest and commitment to the idea, to obtain the necessary funding and, above all, to take the necessary action. I believe that many of the important players in such a system are currently at this conference. So, I would encourage you to consider and discuss this idea, and see if there isn't room for it to at least take root over the next 2-3 days.