"Rural Road Safety In Canada" - A Research Critique by Gorski Consulting

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In my recent interest in rural, loss-of-control collisions I stumbled upon a research report prepared for the Canadian Council of Motor Transport Administrators (CCMTA) entitled " Rural Road Safety in Canada: Traffic Collision Trends & Recommended Strategies" (2006). I have had a chance to glance through a couple of the report's pages leading to my decision to critique its content.

Here are some excerpts from the report with my comments to follow:

"Contrary to the findings of the Organization for Economic Cooperation and Development report entitled *Safety Strategies for Rural Roads,* which showed a worsening casualty trend on rural roads in recent years, Canada's rural road safety trend improved slightly during the 1985-1999 period."

It is not possible to confirm this assertion for certain except that I read further in the report that:

"It was assumed that proportional distributions of known values for all data elements described in this profile were representative of those in jurisdictions where the information was not recorded or was reported as unknown. The unknown figures were representatively factored into the national totals. All data described in this report were generated from TRAID."

This discussion of "unknowns" and how they were handled is really not clear so although I cannot comment there is really no discussion about how much "unknown" there was in the data that was being analysed. But what is more important to me is the last sentence: " All data described in this report was generated from TRAID".

My understanding of TRAID is that it is a compilation of all the data from police reports of motor vehicle accidents across Canada. That leaves me with considerable concern since I have been examining and evaluating the validity of the data contained in police reports for the last 30 years. This is not some unreasonable criticism without justification when I say that the validity of data contained in police reports of motor vehicle collisions is suspect.

From the outset police officers who complete these reports are not specialists in accident analysis. In my days of being a guest instructor at the Ontario Police College near Aylmer, Ontario in the 1980s I know that the average officer was given a single course "Traffic Law and Collision Investigation" as the sole source of their knowledge and in some instances an additional course "Advanced Accident Investigation". There is

no indication that anything has changed since that time. Neither of these short courses can prepare a police officer for the subtle differences in fact and evidence that must be learned through many years of practical experience and supplemental training, not to mention the much more detailed investigation time that is crucial in order to develop the type of data that can be classified as valid enough to be used as the basis for determining whether we as a nation have somehow bucked the worsening trend that is being reported around the world. Certainly the conclusion that "Canada's rural road safety trend improved slightly during the 1985-1999 period" must be suspect. The phrase "improved slightly" implies that the researchers can reliably know that the situation was not "deteriorated slightly", without acknowledging the possibility that the data upon which those conclusions are drawn was generated by persons with limited training and limited time to investigate an event properly.

"Many of the expected attributes of high-risk driver behavior were cited as contributing factors in rural collisions. However, the frequency with which some of these characteristics were noted as contributing factors was surprising."

Let us remember what the report is quoting. It is referring to comments made by police officers in their police reports about the behaviours of drivers in motor vehicle accidents. There is no scientific validity to this. What police officers say about driver behaviours has nothing of scientific proof or truth to it. It has everything to do with subjective opinion based on a lack of training and detailed investigation. So is Canadian government policy on roadway safety going to be based on what police officers insert in the narrative descriptions of their reports? There are many uninformed comments made in these reports often coincident with the fact that police officers are there to lay Highway Traffic Act or Criminal Charges and they say unscientific things based on the bias they carry from the role they must perform as keepers of the peace. An individual interested in proper research methods would recognize that you cannot base the policy of a whole nation upon such un-scientific material.

Just as an example of the concerns we should have with this report is that it uses the findings of these police reports to identify "notable contributing factors" to collision causes and consequences. Here is one example:

"the prevalence of non-use of seat belts among drivers fatally injured in single-vehicle crashes (more than 60% non-use for all drivers aged 16-54 years, except for 20-24 year olds, where the rate of non-use was 56.8%)"

It is fine to report these data but where is the logical questioning of how this data might have been gathered? How did the police who wrote these reports determine (reliably) that more than 60% of all fatally injured drivers in single-vehicle crashes were not wearing their seat belts? Even if a driver in a single vehicle collision was ejected this does not mean that he or she was unrestrained. You have to be able to look at the seat belt system, including its positioning and any markings to make that determination because there can be instances of ejection from a loosely worn restrain or a system can become unbuckled during the dynamic events of a rollover for various reasons. A single

motor vehicle collision contains a high number of loss-of-control, rollover types of motions where the decelerations are prolonged and there are no major, single decelerations that are necessary to produce loading marks on a seat belt. It is these loading marks that can definitively determine whether a seat belt was worn.

A concern I have with this report as well as the quoted research of the OECD is that they have combined rural collisions into three categories: 1) Single Vehicle, 2) Intersection and 3) Head-on. The OECD states that these three crash configurations "accounted for approximately 80% of all fatal rural road collisions". What is missing and important is the recognition that a large number of single vehicle and head-on collisions are essentially the same type of collision that involves the loss of control of a vehicle. The only difference is in the outcome; such that a head-on collision occurs when the loss-of-control vehicle crosses the roadway centre-line and there happens to be a vehicle present in the other lane. It is important to recognize that both single vehicle collisions and head-on collisions may be occurring from a similar source but that police data is not of sufficient quality and detail to identify what specific causal factors may have been at play. I have previously mentioned that investigators must be able to recognize the difference between a loss-of-control head-on collision and other types of head-on collisions from the physical evidence that is present. This means that investigators must study the pattern of deformation on the vehicles and recognize that loss-of-control head-on collisions cause very specific and unmistakable patterns of damage, the point of impact is similar and the final rest positions and pointing angles of the vehicles at rest are also similar. But there is little being done to train investigators how to recognize that evidence, and what procedures to use to document this important information.

In far too many instances the police data upon which the CCMTA's report is based fails to document those cases where a curve in a rural roadway may have played a significant role in the collision causation, whether that collision is a single vehicle loss of control event or a head-on collision. That happens particularly when a vehicle is travelling at very high speed and covers a lot of distance between the curve and where it first begins to deposit signs of a yaw mark on the road. In many instances this distance can be several hundred metres as the driver's inappropriate steering and braking actions lead to a progressively unstable situation. I have personally witnessed this when examining police reports and then attending the actual collision site and noting the existence of a curve in the background. If the police officer does not find any yaw marks to connect the collision to the curve the cause of the accident is often placed toward some other coding without proper evidence to do so.

Yet despite the concern that police may not be reporting the full extent to which curves play a role in serious loss-of-control collisions, the report makes the following observations.

"Among drivers who were killed:

→ Almost half (47.2%) died in crashes that occurred on sections of road that were curved, either level or with a grade. Among drivers who were seriously injured:

→ 39.6% sustained their injuries in crashes that occurred on sections of road that were curved, and were either level or had a grade."

These statistics are more in line with my experience. Curves on rural roadways are factors that seem to be present in most, serious, loss-of-control collisions that I have examined over the years.

Even without curves, loss-of-control collisions are themselves a major problem that is masked because we treat many of them as head-on collisions that are separate from single vehicle events when in fact they may come from the same cause or group of causes. And this is partly because we really do not have a handle on how these major collisions are occurring or why they are occurring. And I have to say that when the CCMTA relies on police reports to understand how and why these collisions are occurring they are likely being misled. Data is being interpreted and documented by persons who do not have the training or experience to perform the work to a satisfactory level of competence. Additionally, police are not given the time to complete many of their investigations to a degree that would reveal the important factors that were at play. The police role is to examine a collision for the purpose of determining whether a certain charge can be applied and made to stick in a court of law. That purpose can lead to quite different analysis and conclusions as compared to a fully independent researcher whose task it is to uncover what factors influenced or led to a collision. The most notable example I have seen over the years is that, invariably, police do not take into consideration the roadway conditions as a causal factor. That is not surprising because their pay cheque comes from the same pocket (the municipality) as those who are responsible for the conditions of the roadway.

The conclusions drawn in the CCMTA's report illustrates this:

"Approximately one-third of driver casualties (34.6% of those killed and 31.2% of those seriously injured) resulted from crashes on curved sections of roadway. These relatively large victim figures suggest that high-risk driving behaviours probably occurred among many of these involved drivers prior to the head-on collision."

This does not "suggest that high-risk driving behaviours probably occurred...". What it suggests to me is that these researchers used unscientific and biased police data to conclude that roadway problems were non-existent in the equation. And again, in another section of the research report:

"A public education campaign that informs motorists that one-third of all head-on crashes that produce fatal and serious injuries on rural roads occur on curved sections of roadways may make motorists think twice about carrying out dangerous manoeuvres."

These researchers have not demonstrated that crashes at curves occur primarily because motorists carry out dangerous manoeuvres. Certainly I would agree that high risk behaviors are one of the important factors but this research report has mis-represented the importance of that compared to characteristics and deficiencies in the roadway system which also needs to be considered.

Until we can gain the willingness in Canada to properly research motor vehicle accident causation by generating unbiased, sufficiently-detailed, data that is generated by qualified persons we will never spend our money to its maximum benefit.