

# Gorski Consulting Website

## Archived News - 2017 - May

**May 27, 2017**

### **Driving a Light Truck Versus a Passenger Car Can Make a Safety Difference**

Prevention of major injury and death would be a simple matter if one could predict the type of collision that would occur.

For example, if a driver knew that a head-on collision would occur with a passenger car then the driver could request a Sherman tank. The huge mass of the tank would ensure that the change-in-velocity of the driver would be very low. The extremely high stiffness of the tank would ensure that there was minimal or no structural deformation or intrusion thus preventing these factors in potentially injuring the driver. So the tank driver would do very well and the car driver would do very poorly. So the tank driver would be very happy and safe.

But now consider that the tank driver is travelling at a very high speed of 50 km/h ( a very high speed for tanks), and the tank collides with a massive concrete bridge abutment. In the previous example the kinetic energy of the collision was absorbed by the small car's structure and essentially no energy was dissipated by the tank's structure and that was terrific for the tank driver. But now the massive concrete bridge abutment is also extremely stiff and also does not dissipate any meaningful kinetic energy, just like the tank. And there is no deformation to either of the tank structure or to the very stiff concrete abutment. In this scenario the tank comes to a complete stop in an extremely short time and then it might rebound from the collision (travelling backwards) at almost the same velocity at which it entered the collision. Meanwhile, inside the tank, our contented tank driver's body is travelling forward at the same speed as the tank before the impact and as the tank comes to a stop in an extremely short time the driver's body travels forward toward the interior face of the tank only after the tank has already come to a halt. Now the impact between the tank driver's body and the interior is at an

extreme difference of 50 km/h. While “normal” collisions might be completed in just over 1/10<sup>th</sup> of a second, the collision of the tank and concrete bridge abutment would be completed much more quickly. This shortened time of change-in-velocity means that the accelerations experienced by the occupant would be much higher than normal. Thus even an unrestrained driver experiencing a change-in-velocity of 50 km/h in a normal collision would have a high likelihood of sustaining major or fatal injuries but with the higher accelerations the injury potential would be even great. But, wait there’s more, the scenario becomes even worse. Because the tank “immediately” begins to travel backwards, the tank driver’s body reaches the forward interior face of the tank when the tank is already travelling backwards at almost 50 km/h. Thus the change-in-velocity experienced by the tank driver’s body is not 50 km/h, but close to 100 km/h! At such levels of severity the tank driver would not have any opportunity to feel self-satisfied, or feel anything for that matter. So what is the point of this example?

Our point is to help readers understand that there is no ultimately safe vehicle or scenario for every occasion. We must live with trade-offs and compromises. In protecting persons in traffic collisions we try to predict what might occur and then build vehicles and the roadway environment to best reduce the overall harm. The word “overall” is extremely important just like in the previous scenario of the driver of the Sherman tank. As an example, we might make our vehicle stiffness a compromise somewhere between a soft car that crushes and dissipates energy while at the same time preventing structural intrusion into the occupant compartment that could be deadly. But there are many other trade-offs and compromises. If we had a million dollars to produce each vehicle we would all be riding the race cars that you see at professional racing circuits. But then no one would be able to afford such expensive vehicles and we might resort to chariot transportation. There are many practical compromises like these.

It becomes very important for drivers/occupants to become knowledgeable about how collisions occur and what causes injuries and death. Just like we read a label on a container of drugs we want to understand that the drug can be helpful but it could also kill you under special conditions. This is why at Gorski Consulting we spend a considerable time criticizing and complaining about what is reported about real-life collisions, or the lack of valuable information that is passed on so that the general public can be properly informed. While each real-life collision results in tragic consequences it is also an opportunity to prevent the next (future) one.

Here are some simple facts that are available in public domain statistics but are rarely discussed. What is the safety difference between being an occupant of a passenger car versus being an occupant of a light truck or van (LTV)? The cautious buyer may spend considerable time studying various crash results from agencies such as the Insurance Institute for Highway Safety or government 5-Star ratings. While one vehicle may outperform another rarely does one question how representative the crash tests are of real-world collisions. Certainly the tests look professional enough and the geometry of contact and offset all seem comparable to the uninformed eye. Do we really understand how a 50 percent-offset-frontal, controlled impact matches the real life incident? While there is plenty of propaganda from those who conduct the tests, you are unlikely to be provided with the details of how those controlled tests differ from real life. Thus while some benefit can be gained, how much benefit is there exactly?

The most recent data (2015) from the U.S. National Highway Traffic Safety Administration (NHTSA) has provided a small glimpse into this question. NHTSA provided a 13-page summary of collision statistics for “Passenger Vehicles” in which they reported the following:

- *When a passenger car and LTV hit head-on, an occupant was between 3.1 and 4.1 times more likely to be killed in a passenger car than in an LTV.*
- *When the front of a passenger car hit the side of an LTV, an occupant was between 1.3 and 1.7 times more likely to be killed in an LTV than a passenger car.*
- *However, when the front of an LTV hit the side of a passenger car, an occupant was between 13.3 and 24.8 times more likely to be killed in a passenger car than in an LTV.*

In our experience of examining real-life collisions for over 36 years, the above facts are generally consistent with what we have observed because these numbers are supposed to come from documenting real-life collisions.

The last of the three bullets above is the particular “killer” fact. When you are seated in a passenger car and your vehicle is struck in the side by a light truck or van you are in grave danger. Reversing it, if you are the occupant of a light truck or van and your vehicle is struck the front end of a passenger car, you are far more likely to survive and

sustain less injury. Yes it is a matter of mass. But it is also a matter of height. And there are other issues.

When we want to know what is safe we need to study the results of real life collisions. We need to pressure all persons of responsibility, official title, political persuasion to release the facts about those real-life collisions and to make sure that the documentation of those real-life collisions is non-partisan and independent of any agency or person who would like to play games with the public's right to know.

**May 10, 2017**

### **Allowing General Motors to Escape Liability for Ignition Switch Defect By Claiming Bankruptcy Would be a Mockery of Justice**

It is with some degree of satisfaction that news media reported a U.S. Supreme Court decision to turn away an appeal by General Motors to block “dozens” of law suits that “could expose the company to billions of dollars in additional claims” (Associated Press, April 24, 2017) with respect to the ignition switch defect that remained hidden for many years. General Motors has acknowledged that the defect led to 124 deaths and 275 injuries however actual numbers could be much larger.

It was reported that GM argued that “well-established bankruptcy law allowed the newly reorganized GM to obtain the old company's assets ‘free and clear’ of liabilities”. The fact that such a position could be carried all the way to the U.S. Supreme Court demonstrates the degree to which huge corporations such as GM can continue to fight previous court decisions against them because of their deep pockets and influence, regardless of the injustice that such actions create. Surely GM continues to be a major player in the automotive manufacturing market and the bankruptcy did not change that fact. Any reason-minded person would ask whether the bankruptcy was simply a legal way of side-stepping the fact that many innocent drivers were injured and killed for many years and GM was primarily responsible for those deaths.

The irony we see is that it was not some mechanical, electronic or spiritual entity that caused those many deaths as the media wants to portray this. It was not “GM” the corporation that was at fault. It was individuals of the corporation who made the

decisions that they did which led to those deaths. Those individuals have yet to see their day before a criminal court.

In this bazaar world of legalities, a drunk driver who kills one or two persons is sent to prison for 8 to 10 years, yet a corporate executive who is responsible for the deaths of hundreds is hidden behind the corporate shield that it was the “corporation” that was responsible for those deaths. With minute brains dinosaurs managed to survive on our planet for millions of years, yet with our vast intelligence our homo sapiens species is destined to exterminate itself in a blink of an eye because we are so much more clever at lying than we are capable of understanding the repercussions of those lies.

**May 7, 2017**

## **Red Hill Valley Parkway Crashes in Hamilton Remain a Topic of Non-Discussion**

The fact that Michael Sholer was impaired by drugs seems to be the only matter of importance with respect to his collision on January 25, 2017 on the Red Hill Valley Parkway in Hamilton, Ontario. His mini-van reportedly crossed the grass median near Dartnall Road and crashed into a commercial truck resulting in his death.

The Hamilton Spectator Newspaper reported that his sister, Melissa Sholer, is call for the installation of median barriers in the belief that such a barrier might have saved her brother.

The Hamilton Spectator also reported that Hamilton Police recently released data on 125 crashes that occurred in the past 5 years. It was reported that “half of the eight fatal crashes on the Red Hill and Linc were crossover crashes”.

Whether or not the public or officials find such data useful or relevant may be immaterial as a recently completed study by Gorski Consulting has indicated that as much as 80 % of all crashes and incidents on a curving highway may not be contained in police data. Whether a collision results in a fatality, a minor collision or a non-collision-incident is often dependent on a multitude of factors, including simple luck. Selection of 8 incidents simply because they resulted in deaths is unlikely to provide a sufficiently

detailed explanation of what needs to be changed or corrected for the benefit of the travelling public.

The geometry of the Red Hill Valley Parkway is significant in that it involves a large change in elevation and is accompanied by major curves. These changes in vertical and horizontal alignment are sometimes combined resulting in significant challenges to drivers, particularly when the road surface is wet, snowy or icy. These geometric features are combined with areas where no physical barrier exists between the opposing lanes of travel. In other areas guardrails protect from impact with overpass pillars however the ends of these guardrails are equipped with ET-Plus terminals that have a questionable history of safety performance.



An impacted ET-Plus terminal at the end of the guardrail on Red Hill Valley Parkway near Queenston demonstrates that not all barriers in a median will perform as intended and expected.



Unfortunately many police services in Ontario also have a questionable record of unbiased reporting of factors that influence collisions, favouring to report faults in driver actions and condition while failing to report issues of roadway design and maintenance. Police have never received adequate training to be able to detect roadway safety-related problems and the police culture has need emphasized the issue that **all** factors affecting road safety need to be documented and reported. These are systemic problems that have persisted over the decades without proper attention and correction.

The report that Michael Sholer was “impaired” in operation of his vehicle may be relevant to his collision but an agency independent of the police investigation needs to re-examine the matter. In the meantime the high speeds of the Red Hill Valley Parkway and the Lincoln Alexander Expressway will remain a risk to the driving public so long as proper barriers are not installed.



View looking along the Lincoln Alexander Expressway toward Dartnall Road and the Red Hill Valley Parkway. The median at this location does not contain a proper barrier and essentially nothing prevents loss-of-control vehicles from passing through it.

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