Young Drivers

You obtained a driver's licence a few months ago, so you volunteered to be the designated driver for a group of friends who have enjoyed a night out downtown. As 2a.m. approaches, you round them up and everyone piles into the car. On the ride home, the loud talking and singing of your four drunk friends makes it hard to concentrate on the road. The noise and commotion pulls constantly at your attention. Distraction takes its toll, and you blow through a stop sign that you did not notice. Suddenly, the inside of your car is lit up by the headlights of a vehicle approaching on your right. You panic. Without much driving experience, you have no driving instincts to help you respond. You slam on the brakes, but this is the wrong thing to do. The sound of screeching tires and crunching metal quickly replaces the singing that filled the car moments ago.

Young drivers are a high-risk group whose relative inexperience behind the wheel combined with the effects of youth makes them more likely to be involved in or cause crashes. Vehicle safety features reduce crash risk when paired with safe driving. In order to gain the maximum benefit from safety features, young drivers must focus first and foremost on developing safe driving habits and refining their driving skills.

Who are young drivers?

Young drivers are defined by the Traffic Injury Research Foundation (TIRF) as teens aged 15 to 19 and young adults aged 20 to 24.

How do young drivers affect traffic safety?

Young drivers are a source of concern since they represent a high risk group for road crashes. While some progress has been made in terms of reducing deaths and injuries among young road users, drivers aged 16 to 19 are still over-represented in crashes in comparison to all drivers. These drivers have a fatality rate that is four times that of drivers aged 25-34 and nine times that of drivers aged 45-54 (Mayhew et al. 2005). In 2013, there were 1,167,315 licensed drivers between the ages of 16 and 19, each of whom were likely to experience a crash-risk that was disproportionately large compared to older drivers (Transport Canada 2015).

The elevated crash risk of young drivers is evidenced in their crash rates. In 2011, the most recent year for which data is available, collisions including motor vehicle crashes were the leading cause of death among Canadians aged 15 to 24 years (Statistics Canada 2012). That year, 456 young people were killed in road crashes, including 204 teens aged 15 to 19 and 252 young adults aged 20 to 24 (Transport Canada 2013). In addition to fatalities, 39,337 young drivers were injured in motor vehicle crashes in 2009, including 18,295 teens aged 15 to 19 and 21,042 young adults aged 20 to 24 (Transport Canada 2013).

Who is most likely to get into a crash?

There is not one particular group of young drivers that is more likely to crash. This is because many of the reasons why young drivers are involved in crashes apply equally to all young drivers. Various social, biological, and lifestyle factors contribute to the elevated crash-risk of young drivers:

Inexperience: Inexperience is an important contributor to the elevated crash-risk that young and new drivers face. Visual scanning is not as rapid or frequent in young drivers, as they tend to focus more on what is directly in front of their vehicle (Isler et al. 2009). New drivers are also more likely to speed and focus on non-driving related tasks because the potentially severe consequences of these actions are not as obvious to them (Transportation Research Board 2007). They are also less likely to recognize potential hazards in the road environment.

Biology and brain development: When combined with driver inexperience, the effects of youthful age (thrill-seeking behaviour, emotionality, poor judgment) and incomplete brain development increase crash-risk.

Your brain is your vehicle's most important safety feature.

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Peers: When young drivers are behind the wheel with other young people as passengers, they face a dual challenge: driving safely and interacting with peers in ways that are socially acceptable. This latter task can detract significantly from the first, thereby increasing the likelihood of involvement in a crash and placing the driver and vehicle occupants at a higher risk of injury.

Alcohol and drugs: It is not uncommon for young people to experiment with alcohol and drugs. Due to the experimental nature of this activity, young people are less able to identify and gauge their own level of intoxication. When young drinking drivers get behind the wheel of a car, they may not be aware of their level of intoxication, nor of how impairment affects their ability to drive. As a result, young and new drivers have a significantly increased crash-risk when they drive under the influence of drugs and/or alcohol. For example, male drivers aged 16 to 20 with a blood alcohol content (BAC) above 0.15 have a crash risk that is more than 40 times higher than those aged 35 or older with the same BAC (Zador et al. 2000).

Sleep deprivation: Between school, social events, extra-curricular activities, and work, many young drivers do not get the amount of sleep required to be fully rested. On top of this, adolescents require more hours of sleep per night than the average adult. Their internal clocks are often shifted so that they prefer going to bed later and sleeping in. This is a natural sleep schedule that is often at odds with the timing of school and other activities. The effects of drowsiness in young drivers increase crash-risk by making it both harder to focus on the driving task and more likely that drivers will fall asleep behind the wheel.

What effect does youth or experience have on the ability to benefit from safety features?

Driving is a complex task that requires specific visual, manual, and cognitive skills. New drivers must focus more attention on the driving task until they become comfortable behind the wheel. Conversely, among experienced drivers driving is more intuitive and may require less concentration. In particular, it takes time for new drivers to develop a working sense of situational awareness. This refers to the driver's ability to get the 'big picture' of what is going on around them. It involves keeping an eye on other drivers and the road, anticipating changes, and identifying potentially hazardous situations. New drivers often must devote more attention to relatively simple tasks (e.g., staying in their lane) and may have less large-scale situational awareness.

Driving intelligence and situational awareness – both of which are developed and refined through experience – are key contributors to the effectiveness of vehicle safety features. Many safety features that are currently available require both situational awareness and driver experience in order for vehicle occupants to gain the safety benefits. Since these two qualities are underdeveloped in inexperienced drivers, they must pay extra attention to their own driving in order to accrue the benefits of vehicle safety features.

To illustrate, to maximize the benefits of **brake assist**, drivers must be able to recognize when an emergency stop is required. They must also have the confidence to press down hard and fast on the brake pedal. However, inexperienced drivers may not be able to quickly recognize when an emergency stop is needed, and when they do they may be too hesitant to apply the brakes with the force required to engage brake assist. In this case, it may be too late for brake assist to fully protect them.

What safety features are directly affected by youth?

The types of safety features that are most directly affected by youth and driver inexperience are those whose activation depends on drivers first reacting to a situation. For example, to activate **electronic brake-force distribution (EBFD)**, drivers must first push down the brake pedal. However, since young drivers may not be as quick to recognize when emergency braking is necessary, they may push the brake pedal too late, thereby undermining some of the benefits of EBFD. Many safety features depend on timely driver reactions and smart driver decisions, including electronic **stability control (ESC), antilock braking systems (ABS)**, and **brake assist**.

Poor weather conditions also present a challenge for safety features. Features often have to work harder and longer to safely resolve a situation. Experienced drivers are likely to tailor their

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driving speed in bad conditions and focus more on their driving. However, inexperienced drivers may be unfamiliar with adapting their driving style to match road conditions, or may be busy focusing on other aspects of their driving. As such, inexperienced drivers may inadvertently put more pressure on their safety features to perform in bad conditions by driving too fast or too close to other vehicles. Therefore, many safety features can be pushed to their limit, including traction control, brake override, adaptive headlights, forward collision warning systems, and lane departure warning systems.

The performance of vehicle safety features is often dependent to some extent on the actions of drivers. Driving safely is the best way to accrue maximum safety benefits from these features. However, since young and new drivers are still in the process of learning to drive safely, they are strongly encouraged not to rely upon safety features alone to compensate for their lack of driving experience. By focusing on the development of safe driving habits and improvements in driving skills, young and new drivers can ensure that vehicle safety features will be able to provide the most protection to drivers and vehicle occupants in the event of a crash.

Are there specific laws for young drivers?

Young and new drivers face unique challenges, one of which is gaining driving experience while remaining safe on the road. In order to help protect young and new drivers during this learning process, several laws and programs have been put in place:

Graduated driver licensing (GDL): Novice drivers have a higher risk of collision than experienced drivers (Mayhew et al. 2004). To help new drivers safely gain experience, the licensing process often takes them through a multi-stage, graduated licensing program. These programs involve a learner's stage that restricts who can ride in the vehicle with the new driver, the time of day when they can drive, and often on what roads they can drive. Drivers in the learning stage must normally hold a learner's licence for a certain amount of time before they can advance to a less restricted licence. Drivers who are still in the process of gaining a full licence also normally face stricter consequences for unsafe driving behaviour, and have tougher laws applied to them when it comes to impaired driving. This ensures that new drivers can gain experience in the safest environments and under the safest conditions (YNDRC 2012).

Age-specific laws: Road safety professionals and policy makers recognize that it is not only inexperience that contributes to the over-representation of young people in serious traffic crashes, but also various lifestyle factors. This is why Ontario has chosen to implement an age-specific law that applies to young drivers regardless of whether they have completed the GDL system. In Ontario drivers aged 21 and under must have a BAC of zero. In other words, these young drivers cannot consume any alcohol whatsoever before driving. Previously, young drivers were allowed to consume alcohol before driving as long as their BAC did not exceed .04.

Where can I find more information on young drivers?

Young and new drivers have been the topic of a wide variety of national and international research. In Canada, TIRF is a leader on the subject, publishing extensively on various aspects of young and new driver safety, as well as developing an online resource center targeted specifically for this group of drivers. TIRF's research can be accessed at **www.tirf.ca**, and the Young and New Driver Resource Centre is located at **www.yndrc.tirf.ca**.

In addition, Transport Canada has research and publications concerning young and new drivers at **www.tc.gc.ca**.

For data and research from the United States, the National Highway Traffic Safety Administration's website – **www.nhtsa.gov** – has a large collection of reports, articles, and research concerning young and new drivers across the country.

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References

Isler, R., Starkey, N., Williamson, A. (2009)."Video-based road commentary training improves hazard perception of young drivers in a dual task". Accident Analysis and Prevention. Vol. 41. 2009.

Mayhew, D.R.; Simpson, H.M.; and Singhal, D. (2005) Best practices for graduated licensing in Canada. Ottawa, ON: Traffic Injury Research Foundation.

Statistics Canada (2012). Leading causes of death in Canada 2011.

Transport Canada (2013). Canadian Motor Vehicle Traffic Collision Statistics 2011. Government of Canada.

Transport Canada (2015). Canadian Motor Vehicle Traffic Collision Statistics 2013. Government of Canada.

Transportation Research Board (TRB). (2007). Preventing Teen Motor Crashes: Contributions from the behavioural social sciences. Workshop Report. The National Academies Press. Washington, D.C.

Young and New Drivers Resource Centre (2012). Ottawa, ON: Traffic Injury Research Foundation.

Zador, L., Krawchuck, S., Voas, R. (2000). "Alcohol-related relative risk of driver fatalities and driver involvement in fatal crashes in relation to drive age and gender. Journal of Studies on Alcohol. Vol. 61.

Want to learn more?

Visit **www.brainonboard.ca** to learn more about vehicle safety features:

- Active Safety Features
- Passive Safety Features
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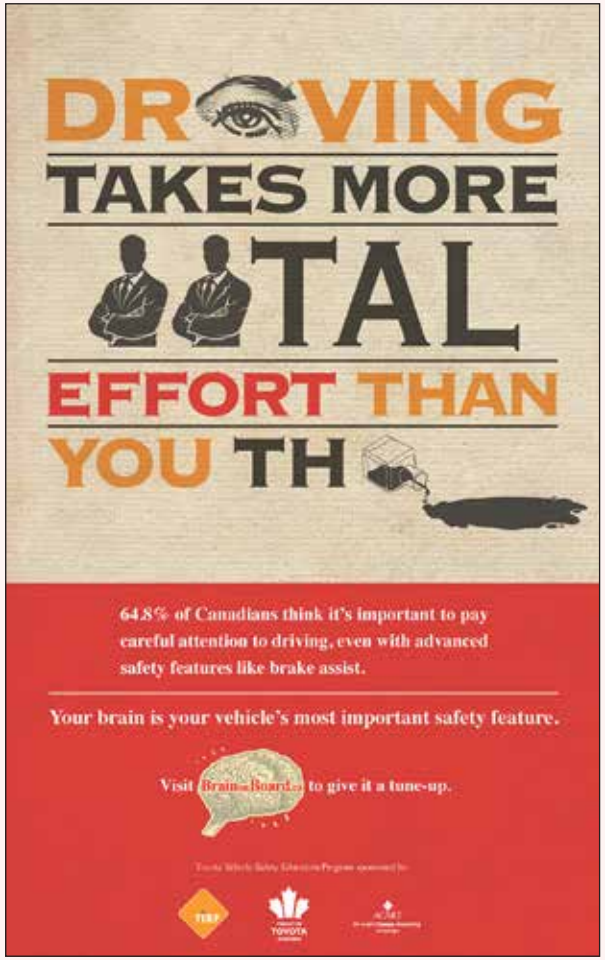

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