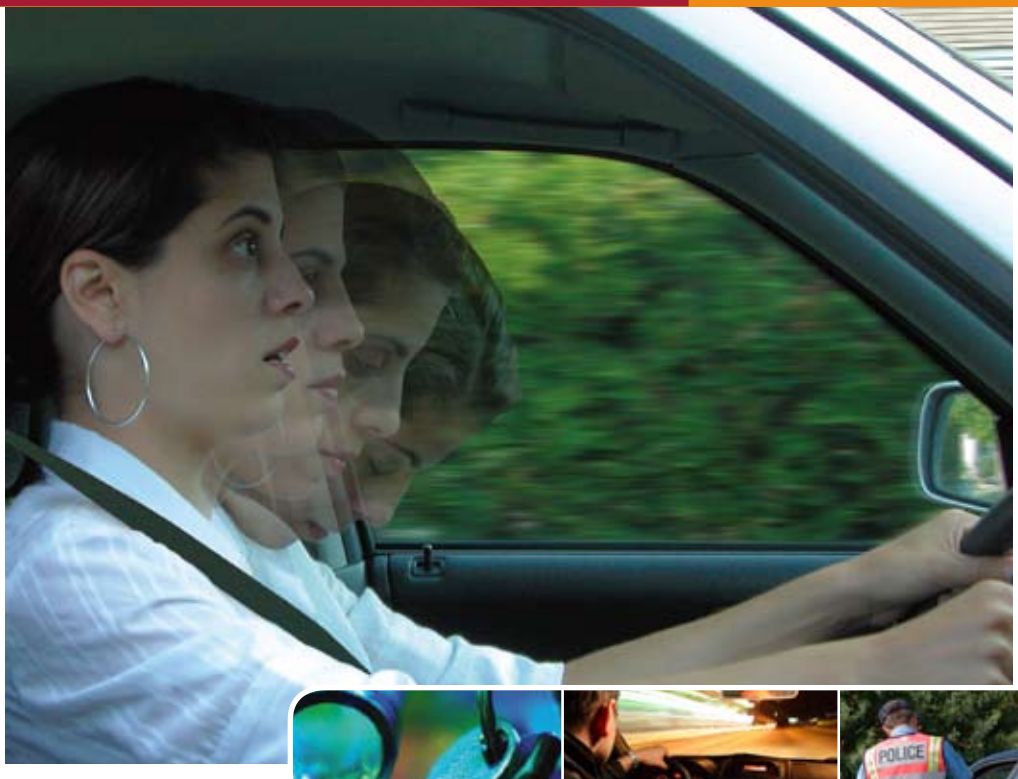
TRAFFIC INJURY RESEARCH FOUNDATION



THE FACTS ABOUT FATIGUED DRIVING IN ONTARIO

A GUIDEBOOK FOR POLICE

TIRF

The knowledge source for safe driving

The Traffic Injury Research Foundation

The mission of the Traffic Injury Research Foundation (TIRF) is to reduce traffic-related deaths and injuries. TIRF is a national, independent, charitable road safety institute. Since its inception in 1964, TIRF has become internationally recognized for its accomplishments in a wide range of subject areas related to identifying the causes of road crashes and developing programs and policies to address them effectively.

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ABOUT THE GUIDE

While some police officers have a good understanding of the magnitude and characteristics of the fatigued driving problem, many report that more information about this issue can help them target and enhance enforcement efforts. In a recent survey of some 800 police officers in Ontario, conducted by the Traffic Injury Research Foundation (TIRF), more than half of those surveyed (56.6%) felt that they had not received adequate information about ways to identify drivers who are drowsy or fatigued or to determine the role of fatigue in crashes.

Officers are not always able to determine whether fatigue played a role in a crash if adequate evidence or eyewitness accounts are not available. Good information about fatigued driving can help law enforcement personnel recognize and remove these drivers from the roadway. It can also enable officers to identify fatigue-related crashes and improve enforcement strategies to reduce this problem.

This guidebook contains the facts about fatigued drivers, fatigued driving crashes, current enforcement strategies, and ways that they can be strengthened to reduce fatigued-driving. It summarizes peer-reviewed research and the findings from two Ontario polls conducted by TIRF of more than 800 police officers in Ontario, and some 750 Ontario drivers.

ABOUT FATIGUED DRIVING

Fatigued or drowsy driving is a serious problem on Ontario roadways. Research by the Ontario Ministry of Transportation shows that some 26% of all fatal and injury crashes are estimated to be related to fatigued driving.[1] As many as 167,000 Ontario drivers may have been involved in at least one crash due to fatigued or drowsy driving in 2006.[2]

Fatigued driving refers to a "disinclination to continue performing the driving task at hand". It can occur as a result of the monotony or repetitiveness of either the driving task or the driving environment, or can occur after driving for extended periods without a rest or break.

Drowsy driving is a function of the human body's natural circadian rhythm or "sleep-wake" cycle, meaning that most people feel sleepy twice a day – at night and in the afternoon. Drivers that operate a vehicle at these times are more likely to feel drowsy.

Although the problem is not new, fatigued driving has only recently been recognized as a significant problem by law enforcement and the driving public.

Is fatigued driving an important problem?

Yes. Fatigued driving is recognized as an important problem by both police and the general public.

In 2008, TIRF conducted a survey of Ontario police officers, including RCMP, provincial, and municipal forces. A majority of officers surveyed (95.9%) identified

1 Elzohairy (2007).
2 Vanlaar et al. (2008).

fatigued driving as a serious problem and most of them (89.2%) ranked the problem as being as important as, or comparable to impaired driving. Most of the officers who were surveyed (92.4%) also stated that they had stopped a driver they suspected to be impaired only to discover that they were fatigued instead.

Police officers appear to be much more concerned with fatigued driving than the public. While almost all officers considered it to be a serious or extremely serious problem, only 59.6% of Ontario drivers agreed. The public is more inclined to believe that other issues such as impaired driving are of more concern.

This difference in perception is likely because officers, due to their experience with road crashes, are better able to recognize the danger that fatigued driving poses to drivers. More importantly, police officers, through their routine contact with the public, are well-positioned to increase the public's awareness of this problem and have a much-needed opportunity to assist the public in understanding the consequences of fatigued driving.

How common is fatigued driving?

According to the literature…

Similar to Canada, in the United States it is believed that up to 20% of serious crashes may be due to fatigued or drowsy driving.[3] Estimates place the number of fatigue-related crashes between 79,000-103,000 per year with 1,500 fatalities annually in the US.[4] The 2002 ***"Sleep in America"*** survey found that 51% of drivers admitted to driving while drowsy; 17% admitted to dozing off while driving; and 1% reported having been involved in a crash due to dozing off or fatigue.[5]

According to the public…

In a recent public opinion poll conducted by TIRF, nearly 60% of Ontario drivers, corresponding to some five million people, admitted that they have driven fatigued at least sometimes. Well over a million Ontario drivers (14.5%) also admit that they have fallen asleep or nodded off while driving at least once in the past year. Collectively, these drivers account for about 5.5 million trips in Ontario during which they fell asleep or nodded off.

According to police…

The police poll suggests that police officers estimate the fatigued driving problem to be somewhat larger. They report that slightly more Ontario drivers (72.3%) have taken to the roads while fatigued, and fairly accurately estimate that 20.8% of all

3 Horne & Reyner (1995); Horne (2000).
4 Knipling & Wang (1995).
5 National Sleep Foundation (2002).

fatal and injury crashes are fatigue-related. Officers have higher estimates (39%) of how many Ontario drivers fell asleep while driving at least once in the past year.

These statistics demonstrate that the fatigued driving problem is common among drivers, and that a better understanding of the problem is needed. This can be achieved, in part, by giving police good information so they can better detect fatigued drivers on the road and identify crashes in which fatigue is a factor. The following sections describe the characteristics of fatigued drivers and fatigued crashes and actions that officers currently apply in these situations.

Who drives while fatigued?

According to the literature…

Research has identified populations of drivers that are at risk for involvement in crashes due to fatigued driving.

These include:

> **young males – are more likely to drive late at night and to be sleep deprived;[6]**

> **persons with sleep disorders – are more likely to suffer from acute and/or chronic sleep deprivation;[7]**

> **drivers under the influence of alcohol – alcohol has sedating effects that, when combined with fatigue or drowsiness, can exacerbate performance deficits;[8]**

> **drivers under the influence of certain medications with side effects known to enhance drowsiness;[9]**

> **night or rotating shift workers – are more likely to get inadequate sleep or lack quality sleep;[10] and,**

> **commercial vehicle operators – often spend long hours driving, and are likely to experience both fatigue and drowsiness.[11]**

6 Wang et al. (1996); Pack et al. (1997).
7 Findley et al. (1989); Cohen et al. (1992); Young et al. (1997).
8 Horne et al. (2003); Lumley et al. (1987).
9 Ray et al. (1992); Ceutel (1995).
10 Dalziel & Job (1997); Marcus & Loughlin (1996); McCartt et al. (1996).
11 McCartt et al. (1997); Wylie et al. (1996).

According to the public…

In the public opinion survey conducted by TIRF, three key factors in particular were associated with drivers who fall asleep at the wheel:

- the frequency of driving;
- the gender of the driver; and,
- the reasons that drivers take a break.

First, perhaps not surprisingly, respondents who report driving while fatigued or drowsy more often are more likely to fall asleep at the wheel or nod off. Second, women were found to have a much smaller chance of falling asleep at the wheel, even when controlling for confounding factors such as mileage, frequency of driving while fatigued, age, household income, and family status.

Finally, the reasons that drivers take a break also can differentiate between people who fall asleep or nod off at the wheel and those who do not. Respondents who typically take a break because they feel fatigued or drowsy actually have a much greater chance of falling asleep at the wheel compared to those who take a break for other reasons. This may seem contradictory because one would think that those drivers who take breaks because they feel tired or fatigued are better protected from crashing than those drivers who take breaks for other reasons. However, those drivers who take breaks because they feel tired or fatigued typically wait to take a break until it is actually too late and it becomes very difficult to predict when they will fall asleep at the wheel. This puts them at a higher risk for crashing due to feeling tired or fatigued.

According to police…

About two thirds (66.4%) of officers report that fatigued driving is characteristic of certain groups. The following table summarizes police opinions about what types of drivers they believe are more at risk of driving while fatigued or drowsy.

Type of driver	Percentage
Night or rotating shift workers	61.0%
Commercial/tractor trailer drivers	56.6%
Drivers under the influence of certain medications	46.5%
Drivers under the influence of alcohol	41.3%
Taxi drivers	24.2%
Male drivers	19.5%
Elderly drivers	17.1%
Young drivers	13.9%
Female drivers	3.3%

Officer responses indicate that the majority is aware of some of the types of drivers who are more likely to drive while fatigued. They most commonly identified night or rotating shift workers (61%), commercial/tractor trailer drivers (56.6%), drivers under the influence of certain medications (46.5%), and drivers under the influence of alcohol (41.3%). One group at elevated risk that police may not recognize is young drivers. The research identifies them as likely to be sleep deprived, yet officers do not isolate them as being at a heightened risk of driving while fatigued.

Of interest, police officers also identify themselves as being at an elevated risk of driving while fatigued. This is likely a function of the long hours spent in a vehicle and the shift work. It is important that police supervisors recognize that officers are also at risk of fatigued driving.

How do drivers combat fatigue?

Public opinion surveys indicate that drivers rely upon a variety of tactics to combat fatigue, such as:

- **opening windows/turning on the air conditioning (43.7%);**
- **talking to passengers (34.2%);**
- **stopping to eat/exercise without sleeping (31.0%); and,**
- **changing radio station or CD (30.4%).**

Other common tactics utilized by drivers include drinking caffeine or taking caffeine pills, eating/drinking something, asking a passenger to take over driving duties, moving around, talking on a cell phone, or taking a stimulant.

Of concern, only 14.8% reported that they stopped to nap or sleep which is the most effective tactic to overcome fatigue or drowsiness. Although asking a passenger to take over driving duties may be effective, this is only true if the passenger is not also fatigued.

This suggests that the public is not using the best option to reduce fatigue, and police officers are well-equipped to educate drivers that stopping to nap or sleep is the first action they should take. Officers can inform drivers that none of these other actions have been shown to reduce fatigue or prevent fatigued driving crashes and that the best way to avoid a fatigued driving crash is to rest.

How do police remove fatigued drivers from the road?

Identifying the signs of fatigue is only one area where education and training are needed. Officers must also know how to deal with fatigued drivers when they encounter them. However, a majority of officers (66.9%) report that they lack sufficient tools to get these drivers off of the road.

Actions currently taken by police…

The poll revealed that officers may take a wide variety of actions when they stopped a vehicle and the driver appeared to be drowsy.

The formal actions that police officers report taking in these situations include:

- **69.2% of officers would give the driver a warning;**
- **62% of officers would arrange for alternate transportation;**
- **31.8% of officers would charge the driver with a provincial offence;**
- **4.6% of officers would charge the driver with a criminal offence; and,**
- **3.2% of officers would make an arrest.**

Officers also report a variety of discretionary actions. These include:

- **tell the driver to pull over to sleep;**
- **direct the driver to a rest stop;**
- **have a passenger take over driving;**
- **have the driver get coffee;**
- **have the driver get out of the vehicle and walk around;**
- **have the driver stay at a hotel for the night; and**
- **educate the driver about the dangers of fatigued driving.**

The diversity of responses suggests that many officers find it difficult to determine how best to handle fatigued drivers and remove them from the road. The survey results further reveal that police officers are most likely to handle a fatigued driving situation by issuing a warning. However, a warning may not remove the driver from the road. The most effective way to prevent a crash is to have the driver stop driving and get some rest. Strategies are needed to provide police with tools to remove these drivers from the roadway.

What associated driving behaviours may suggest fatigue?

There are some other driving behaviours that have been associated with fatigued driving. Police officers were asked whether or not they believed that these behaviours were related to fatigued driving. The following table summarizes those results.

Behaviour	Percentage
Inconsistent speed	84.3%
Frequent lane changes/weaving	84.2%
Not respecting road signs and traffic control devices	64.7%
Sudden braking	62.2%
Speeding	25.1%

Officers most commonly associate inconsistent speed and frequent lane changing/weaving with fatigued driving. Officers also identified sudden lane corrections, hitting the shoulder, having windows rolled down in cold weather, wide turns, failure to signal, playing loud music, and following too closely as behaviours that they correlate with fatigued driving. More research on effective ways to detect these drivers is needed.

What types of crashes are associated with fatigue?

Research suggests that the profile of fatigue-related crashes is unique and different from other types of crashes.

Studies have found that fatigue-related crashes are more likely to:

- **occur at night or in mid-afternoon;**
- **involve a single vehicle running off the roadway, or rear-end and head-on collisions;**
- **occur on higher-speed roadways;**
- **involve only the driver as an occupant, who is young and male; and,**
- **result in serious injuries.**[12]

Of these characteristics, officers most commonly associated rear-end/head-on collisions (69.9%), collisions happening at night (70.4%), and collisions involving a

12 Stutts et al. (1999).

single vehicle running off the roadway (90.4%) with fatigued driving. These data show that officers are aware that they need to consider fatigue as a contributing factor in certain types of crashes.

How do police identify fatigued driving crashes?

After a crash has occurred, police are responsible for determining whether or not fatigue played a role. This can be a challenging endeavour, as demonstrated by the following statistics. Police officers fairly accurately estimate that about 20% of all fatal or injury crashes in Ontario are fatigue-related. However, police record the driver's condition as being fatigued in only 8.4% of crashes.

This is partly due to difficulties in proving that the driver in question fell asleep at the wheel.

In most cases, this is due to a variety of reasons, including:

- **the driver is wide awake when the police arrive as a result of the crash;**
- **the driver is dead;**
- **there are no witnesses to the crash or passengers in the vehicle; and,**
- **the driver may flee the scene.**

Officers were asked what factors led them to suspect that fatigue was a factor in a crash. The following chart summarizes those results:

Factor	Percentage
Driver admitted to being fatigued or drowsy	93.2%
Nature of the crash (e.g., single vehicle running off the road at night)	87.7%
Statement of witness who attests to driver's drowsiness	77.0%
Presence of certain cues such as coffee, no skid marks, etc.	69.2%
Absence of other plausible causes (e.g., absence of impairment by alcohol, speeding, etc.)	68.2%

Other factors that police officers associate with fatigued crashes include the path of the vehicle; time of day that the crash occurred; length of the driver's trip; work schedule of the driver; evidence of over-correction; and, officer observations.
It is important that officers receive adequate training so they can consistently identify fatigue-related crashes and record them as such. Better information about

fatigued driving is the first step towards understanding the problem and developing effective solutions to prevent it. Officers need consistent strategies that they can rely upon in order to accurately determine whether fatigue was a factor in a crash, particularly in instances when statements from the driver or witnesses are not available.

How do police respond to fatigued driving crashes?

Officers report that the action they take following a fatigue-related crash can vary considerably.

For example:

- **88.6% of officers would charge the driver with a provincial offence;**
- **29.1% of officers would arrange for alternate transportation;**
- **17.2% of officers would charge the driver with a criminal offence;**
- **13.8% of officers would give the driver a warning; and,**
- **6.7% of officers would make an arrest.**

When responding to fatigued driving crashes, officers overwhelmingly reported that they would charge the driver with a provincial offence. However, they were inconsistent in determining what charge to use.

Provincial offences that police report using include:

- **failure to drive in a marked lane;**
- **failure to avoid collision;**
- **unsafe lane change;**
- **disobey sign;**
- **failure to share half of roadway;**
- **drive left of centre;**
- **leave roadway not in safety; or,**
- **follow too close.**

When charging a driver with a criminal offence, officers were more consistent.

Under the Criminal Code of Canada the only options available are:

- **dangerous driving;**
- **criminal negligence; or,**
- **impaired driving.**

Collectively, these findings indicate that when confronted with a collision, officers are often unsure of what charges can be or should be applied to a driver who is suspected of fatigued or drowsy driving or in which fatigue is identified as a primary cause.

Currently, there are no charges available that are specific to fatigued driving. For this reason, police agencies should incorporate information about appropriate criminal and provincial charges for fatigued driving in relevant training materials to encourage consistency in enforcement strategies.

Conclusion

Ontario police officers generally have a good understanding of the magnitude and characteristics of the fatigued or drowsy driving problem. More information is needed to help them recognize the many different types of drivers who are likely to suffer from fatigue or drowsiness, and to better recognize crashes in which fatigue or drowsiness may be a factor. This information should be incorporated into existing training materials to provide officers with research-based knowledge about the problem.

More importantly, it is clear that officers need more tools and guidance regarding ways to remove these drivers from the road before they are involved in a crash, and also ways to process fatigued or drowsy drivers who are involved in a crash. Information about available charges and the evidence that is needed to support these charges are the foundation for effective enforcement strategies to address this problem. Police agencies are encouraged to establish a protocol that outlines what charges can be applied and what actions can be taken by police in these instances.

Police officers, through their routine enforcement of all traffic laws, have frequent contact with the public. This creates a good opportunity to easily educate the public

about this problem and encourage behaviours to prevent it. A critical factor involves helping drivers recognize when they become fatigued or drowsy, and informing them about the best ways to avoid this.

Good enforcement strategies to combat fatigued or drowsy driving can keep drivers safe on the roads and reduce the number of crashes resulting in fatalities and injuries. At the same time, this can help researchers learn more about the problem, and develop needed laws, policies and programs to address it.

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