ROAD SAFETY ISSUES

Pedestrians: What Do We Know?

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This fact sheet contains an overview of the pedestrian safety issue. It summarizes the latest statistics in relation to the number of pedestrians killed and injured each year, describes high-risk groups of pedestrians, and key factors that contribute to pedestrian collisions. It also reviews common characteristics associated with pedestrian collisions, the types of drivers involved in these collisions, and ways that pedestrians and drivers can better protect themselves on the road.

How many people are killed and injured in collisions involving pedestrians?

Almost 9,000 pedestrians were killed and hundreds of thousands were injured in Canada in road collisions between 1989 and 2009. According to Transport Canada, an analysis of pedestrian collisions revealed that 60% of pedestrians killed in traffic crashes were trying to cross the road.

- Since 2009, there have been slightly more than 300 pedestrians killed each year in road crashes. This accounts for more than 15% of all road fatalities. In addition, pedestrians also represent approximately 14% of all serious injuries (Transport Canada 2015).
- While the total number of pedestrians killed on Canada's roadways each year seems to be declining, the percentage of deaths among these victims as a percentage of all road user deaths does not show a similar decline.
- This suggests that while fewer Canadians are dying on the roadways overall, it is drivers and passengers of vehicles who are benefiting the most from progress in road safety, and to a lesser extent, vulnerable road users such as pedestrians.

Why are pedestrians more likely to be killed or injured in collisions?

It has been estimated that pedestrians are **284 times** more likely to be killed or injured in a collision than motorists (CCMTA 2013). Pedestrians are more likely to be killed and injured as compared to other groups of road users because they lack the hard, protective exterior of a vehicle, or safety features to protect them. As such, it is essential that drivers keep this fact in mind when they are behind the wheel. In addition, pedestrians are smaller and therefore less visible to motorists, and this problem is pronounced when pedestrians are not crossing at intersections or designated crosswalks as drivers are less likely to expect pedestrians on the roadway. To illustrate, a TIRF national opinion poll in 2008 revealed that 67% of Canadians had often observed people jaywalking (Vanlaar et al.2009).

At the same time, intersections have also become larger and more complex with more lanes of traffic and designated turning lanes. This means that there is much more information for pedestrians (and drivers) to process and it takes much longer to cross these intersections.

Older pedestrians are also often at increased risk because of mobility issues as well as declines in vision, hearing and perceptual skills that are common with age. As such, these pedestrians may have difficulty seeing oncoming traffic, judging distance, hearing cues, and may also walk more slowly than pedestrians of other age groups. Similarly, younger pedestrians are also at greater risk due to less developed cognitive, visual, and auditory senses and their smaller size. Finally, distraction among pedestrians is also a growing concern.

Who is more often at fault in pedestrian collisions?

In recent years, drivers are more often at fault in collisions with pedestrians, although this is not always the case. According to Transport Canada, national data reveal that 33% of fatally injured pedestrians were struck by a driver who had committed a traffic infraction prior to the crash. At the same time, research also shows that 33% of fatally injured pedestrians were at-fault for the crash (Transport Canada 2011). In other words, both drivers and pedestrians are sometimes at fault in pedestrian collisions. This means that both drivers and pedestrians need to ensure that they follow rules of the road as this enables other road users to better anticipate their behaviour and reduce risks. At the same time, drivers have an additional responsibility to drive defensively and cautiously in pedestrian areas due to the much greater vulnerability of pedestrians.

What types of driver characteristics are common in collisions with pedestrians?

Common errors among drivers involved in pedestrian collisions include:

- failing to yield the right of way to pedestrians;
- distraction and inattention; and,
- speeding.

Of importance, the vehicle speed when pedestrians are struck is a determining factor in the seriousness of injuries they will incur. When pedestrians are struck at 50 km/h, they are 8 times more likely to be killed than if they are struck at 30 km/h; pedestrians generally have a 50% chance of survival at speeds of 40-45 km/h, hence the move in several jurisdictions to reduce speeds on urban roads to 40 km/h.

Speeding is a particular concern among young drivers as 18% of drivers who kill a pedestrian are aged 16-24 and likely speeding. Young drivers have slower reaction times and their hazard perception skills are not well-developed. They scan the road less, are less likely to detect hazards and take longer to respond to them which put pedestrians at risk.

More recently, a 2010 review of pedestrian deaths in Ontario by the Office of the Chief Coroner (2012) revealed that just five pedestrian circumstances accounted for 70% of deaths:

- pedestrian hit at a mid-block location while crossing;
- pedestrian hit on the sidewalk and/or shoulder of the road;

- vehicle was going straight through the intersection while the pedestrian crossed without the right-of-way;
- vehicle turning left while the pedestrian crossed with the right-of-way at the intersection; and,
- vehicle turning right while the pedestrian crossed with the right-of-way at the intersection.

In addition, several factors emerged as causal in these deaths including vehicle speed, distractions among pedestrians, failure to yield by the driver, pedestrians crossing against the signal, mid-block crossings, and pedestrian disabilities.

Where do pedestrian collisions most often occur?

A majority (75%) of pedestrian fatalities occur on urban roads and pedestrian collisions more often occur on urban roads with speeds of 70 km/h or less, and near intersections when pedestrians are crossing a roadway (Transport Canada 2015).

- Intersections pose a high-risk area due to the large volume of vehicles and foot traffic which increases the chance of collisions.
- Pedestrian collisions are also common close to a bus stop, a school zone, or a multi-lane road.
- More than half (55%) of pedestrian casualties occur at night and/or with low-light conditions, and since there are also fewer pedestrians at night they are truly over-represented in collisions during this period (CCMTA 2013).

What types of pedestrians are most at risk for collision involvement?

Generally speaking, pedestrians who are male, who are aged 56 and older or aged 14 years and younger are more often involved in pedestrian collisions as compared to pedestrians of other ages. In addition, pedestrians impaired by alcohol and drugs also account for a significant proportion of pedestrian fatalities and injuries. Each of these groups is briefly described below and the data are from a TIRF analysis of these crashes using TIRF's National Fatality Database.

Male pedestrians. Between 2000 and 2010, 63% of fatally injured pedestrians were male, whereas 37% were female. Among seriously injured pedestrians, slightly more than half (56%) were male, while 44% were female.

Older pedestrians. Pedestrians that are older are more often involved in collisions due to declines that are associated with age. For example, older pedestrians are more fragile and experience declines in mobility that result in a slower walking pace or the need for walking aids or mobility devices. Declines in perceptual skills such as difficulty seeing, hearing, or recognizing cues that it is safe to walk are also more pronounced with aging.

In particular, as not only drivers but pedestrians age, it becomes more difficult for them to estimate speed and distance. In other words, older pedestrians are less able to accurately gauge how quickly vehicles are approaching and how long it will take them to cross the street safely. This is particularly a concern in relation to mid-block crossing among older pedestrians (i.e., when pedestrians attempt to cross the road from the middle of a block instead of at an intersection with a crosswalk). To illustrate, an Australian study (2015) revealed that pedestrians over 75 years old were more likely to cross the street when there was not enough time for them to cross safely, based on the speed of approaching vehicles combined with their walking speed (Oxley et al. 2005). Conversely, a study in France (Lobjois & Cavallo 2007) showed that older pedestrians (defined as aged 65+) selected larger gaps in traffic compared to younger pedestrians so that they had more time to safely cross which was necessary due to slower walking speeds. These different results may be a function of different age categories that were used in each study or other differences in methodology, however this provides some context for the over-representation of older pedestrians in collisions. According to Transport Canada, 35% of fatally injured pedestrians were aged 65 or older even though they represent just 13% of the population, and 63% of pedestrians killed at intersections were 65 or older (Transport Canada 2011).

Similarly, a more recent TIRF analysis of national pedestrian data between 1995 and 2010 revealed that pedestrians aged 56 or older are more likely to be fatally or seriously injured than younger pedestrians. In addition:

  - » Almost 43% of pedestrian fatalities were aged 56 or older.
  - » Among pedestrian fatalities aged 56 and older, half were female.
  - » Among seriously injured pedestrians, one-quarter (25%) were aged 56 or older.
  - » Almost one-third (30%) of seriously injured female pedestrians were aged 56 or older (Vanlaar 2013).

- **Younger pedestrians.** Children aged 14 years and younger are also a high-risk group for fatalities and injuries in pedestrian collisions.
  - » According to a review of the pedestrian issue by the Canadian Council of Motor Transport Administrators (CCMTA) in 2013, the overall physical, cognitive, visual, auditory development of children puts them at a disadvantage as a pedestrian.
  - » Children aged 5 to14 years are at greatest risk of pedestrian fatalities and have the highest incidence of pedestrian-related injuries.
  - » On average, 30 child pedestrians younger than 14 years are killed and 2,412 are injured every year.
  - » 6% of fatally injured pedestrians were under the age of 16 and of these, 20% ran out into the street;
  - » Pedestrian-related injuries contribute to almost 12 percent of all injury-related deaths of children younger than 14 years of age. (CCMTA 2011; PHAC 2012)

- **Alcohol-impaired pedestrians.** Alcohol consumption by pedestrians remains a contributing factor in a large number of pedestrian fatalities.
  - » Almost half (46%) of fatally injured pedestrians tested positive for alcohol in 2010; this represents a slight increase from 45.2% in 1990.
  - » Between 2000 and 2010, among fatally injured pedestrians, males were more likely than females to have consumed alcohol prior to the crash.
  - » Almost half (46%) of males had been drinking compared to 29% of fatally injured female pedestrians.
  - » Among fatally injured pedestrians who had been drinking, 87.7% had BACs over the illegal limit of .08 and 67.6% had BACs over twice the illegal limit (Vanlaar 2013).
- **Drug impairment.** The use of drugs among pedestrians is also a source of concern, although testing rates for drugs are low for vulnerable road users killed in road crashes. Just one-third (37%) of pedestrians killed are tested for drugs compared to a testing rate of 65% for alcohol.
  - » Among fatally injured pedestrians who were tested for the presence of drugs, 39% of pedestrians tested positive.
  - » Data show that between 2000 and 2010, the percentage of fatally injured pedestrians testing positive for drugs increased from 37.5% to 40.7% (Vanlaar 2013).

Is the public concerned about the issue of pedestrian safety?

In the past several years, the issue of pedestrian safety has been reported as being less of a concern to Canadians as compared to other road safety issues such as distraction, drinking and driving, and young drivers. For example, in 2008, pedestrians behaving unsafely were the 2nd lowest concern for the public at 43%, according to polls. This may be due to the fact that in this same year, 29% of Canadians reported they had a near miss with a pedestrian or cyclist and just 1.5% reported experiencing a collision (Vanlaar et al. 2009).

Of importance, these low levels of concern make it difficult to increase pedestrian safety and efforts are needed to increase public concern to generate higher levels of support for pedestrian safety initiatives. As evidence of this, other countries such as Sweden and the Netherlands that have achieved much greater progress in reducing pedestrian collisions have accomplished this due, in part, to much higher levels of concern among the public.

What types of strategies can help to improve pedestrian safety?

There are several strategies that are available to help improve pedestrian safety. Each of these strategies is briefly described below.

- Most provincial Highway Traffic Acts underscore that the relationship between drivers and vulnerable road users, such as pedestrians, should be based upon mutual respect.

To this end, vehicles must provide sufficient space to cyclists on the road as well as yield to pedestrians at all times. At the same time, it is equally important that pedestrians also follow road rules by obeying traffic signals and crossing roads in the designated areas.

- Education campaigns are particularly well-suited to this road safety issue because pedestrian collisions are often due to both drivers and pedestrians not following the rules of the road at various times. In other words, drivers and pedestrians are often equally at fault in these types of collisions. In addition enforcement may be more problematic for police officers who may be reluctant to issue citations to pedestrians for jaywalking.
- Some jurisdictions in Canada are examining speed limits in areas with high pedestrian volume since pedestrians are more likely to survive collisions with vehicles at lower speeds of 30 km/h 40 km/h and less likely to survive collisions at 50 km/h.
- Vehicle safety technologies are advancing with the development of external airbags and hazard warning systems that can help to protect pedestrians in collisions with vehicles.
- Finally, many countries, including Canada are adopting a new philosophy to guide road safety plans that emphasizes the 'safe systems' approach. This approach encourages the physical separation of more vulnerable road users such as pedestrians and cyclists, from other vehicle traffic.

What can pedestrians do to better protect themselves on the road?

To better protect themselves on the road, pedestrians should never assume that drivers can see them. Not only does the pillar of the windshield obstruct the driver's field of view, but drivers of heavy trucks and larger vehicles such as SUVs that are higher than street level often find it difficult to see smaller pedestrians. As such, pedestrians are encouraged to make eye contact with drivers to ensure that they have been seen before crossing the street. In addition:

- cross only at marked crosswalks/traffic lights;
- be alert to all traffic, especially turning vehicles;
- steer clear of hedges, parked cars and other obstacles;
- avoid jay-walking and rushing into the street;
- wear lighter coloured or reflective clothing when walking at night;
- avoid traveling on foot while intoxicated; and,
- do not begin to cross the road when there is not enough time to make it safely across.

CCMTA recommends that young pedestrians between the ages of five to 10 years can benefit from education either at home or at school about how to safely walk to and from school. Seniors can also benefit from 'refresher' materials or courses. Servers in bars may also be well-positioned to encourage pedestrians who have been drinking to take a cab rather than walk.

What can drivers do to better protect themselves on the road and avoid collisions with pedestrians?

To better avoid collisions with pedestrians, vehicle drivers are encouraged to:

- always look for pedestrians and be prepared to stop, especially on residential streets and near schools and bus stops;
- be patient when pedestrians need extra time to cross the road; and,
- drive the speed limit.

Where can I find additional information about pedestrians?

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