

Bus Injuries

On average, each month over 125 people are seen in an emergency department for a bus related injury. The senior population have the highest rate of injury.

Results

For the purposes of this report, bus injuries include any incident where a bus occupant is injured in a transport related incident, and requires treatment in either an emergency department or requires hospitalization.

During the 2005/06 fiscal year, there were a total of 1,515 emergency department visits and 65 hospitalizations for bus injuries (See Methods Section for Data Sources). These numbers translate into provincial rates of 11.6 per 100,000 population for emergency department visits and 0.5 per 100,000 for hospitalizations (Table 1).

Females represented over 65% of emergency department visits and over 70% of hospitalizations. For emergency department visits, peaks in the number of bus injuries were seen in pre-teens and teenagers 10-19 years of age as well as in adults between the ages of 40 and 65 (Figure 1). However, the senior population, in particular those over 74 years of age, had the highest rate of emergency department visits and hospitalizations.

Injuries to the lower limbs were the most common, accounting for 26% and 35% for emergency department visits and hospitalizations respectively. Injuries to the head were the next most common type of injury for emergency department visits as well as for those admitted to hospital, accounting for 19% and 23% of emergency department visits and hospital admissions respectively. Specifically, dislocation, sprain and strain of joints and ligaments at ankle and foot level were the most commonly presented injuries for emergency department visits and fracture of the lower leg, including the ankle was the most frequently presented injury which required hospitalization. The next most common injury presented in the emergency department was open wound of the head, whereas intracranial injuries were the next most common for hospital admittance (Figure 2).

Approximately 60% of all emergency visits and hospitalized cases were the result of a

FIGURE 1. Emergency department visits for bus injuries by age and sex (Ontario, 2005/2006)

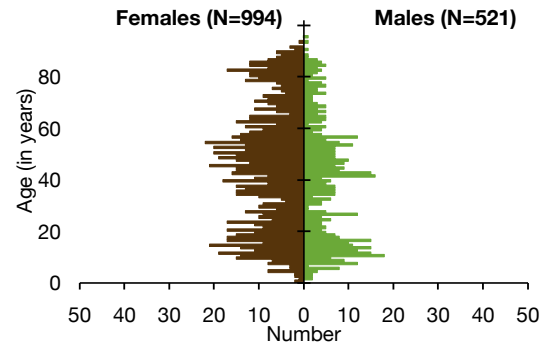
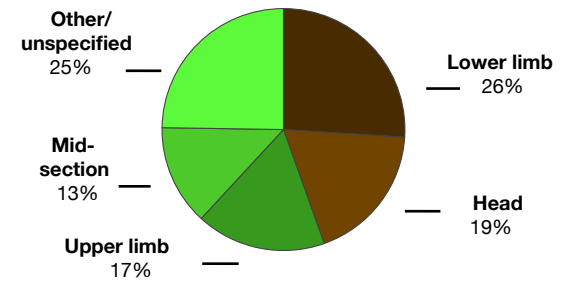


FIGURE 2. Nature of bus injuries (Most responsible diagnosis, Ontario, 2005/2006)

Emergency Department Visits



Hospitalizations

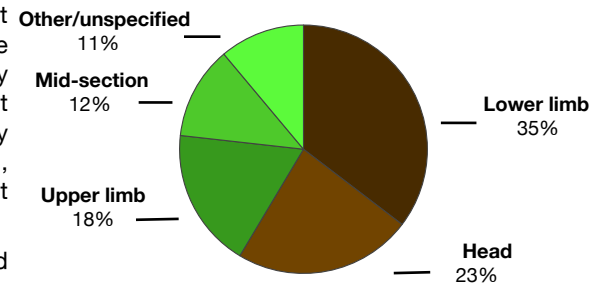


TABLE 1. Regional comparison of bus related injuries (Ontario, 2005/06)

| | South West | Central South | Central West | Central East | Toronto | East | North | Ontario |
|------------------------------------|------------|---------------|--------------|--------------|---------|------|-------|---------|
| Emergency Department Visits | | | | | | | | |
| Number | 135 | 152 | 204 | 185 | 419 | 279 | 113 | 1,515 |
| Rate per 100,000 ^a | 8.2 | 11.6 | 8.5 | 8.1 | 15.0 | 16.0 | 12.7 | 11.6 |
| Average Age | 37 | 41 | 42 | 39 | 48 | 40 | 37 | 42 |
| % Female | 59 | 72 | 56 | 60 | 70 | 67 | 71 | 66 |
| Hospitalizations | | | | | | | | |
| Number | < 5 | 8 | 11 | 10 | 14 | 12 | <5 | 65 |
| Rate per 100,000 ^a | 0.2 | 0.5 | 0.5 | 0.4 | 0.4 | 0.6 | 0.4 | 0.5 |
| Average Age | 47 | 69 | 58 | 53 | 67 | 59 | 49 | 60 |
| % Female | 50 | 63 | 64 | 70 | 71 | 75 | 100 | 71 |

a. Age-standardized rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 28 emergency department visits and <5 hospitalizations.



Ontario Injury Prevention Resource Centre



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TABLE 2. Regional comparison of ER visits for bus related injuries in the senior population, by age group (Ontario, 2005/06)

| | South West | Central South | Central West | Central East | Toronto | East | North | Ontario |
|--|------------|---------------|--------------|--------------|-----------|-----------|----------|-----------|
| Emergency Department Visits- Rate per 100,000^a | | | | | | | | |
| 70-74 years | 9.1 (5) | / (<5) | 10.1 (6) | 9 (6) | 25.3 (22) | / (<5) | / (<5) | 13 (52) |
| 75-79 years | 10.7 (5) | 15.3 (6) | 21.2 (10) | / (<5) | 28.5 (21) | 11.1 (5) | 18.6 (5) | 17.6 (58) |
| 80-84 years | 17.6 (6) | 27.9 (8) | 40.4 (13) | / (<5) | 50.2 (27) | 60 (20) | / (<5) | 34.1 (80) |
| 85-89 years | / (<5) | 46 (6) | / (<5) | / (<5) | 40.3 (10) | 72.9 (12) | / (<5) | 39.1 (43) |
| 90+ years | / (<5) | / (<5) | / (<5) | / (<5) | / (<5) | / (<5) | / (<5) | 14 (8) |

a. Age-specific rate per 100,000 population. Note: Region of residence unknown/outside of Ontario for 28 emergency department visits.

noncollision bus incident, in which the bus overturned. Another 15% of emergency department visits were for a bus occupant injured in collision with a car, pick-up truck or van.

Injury rates varied by region, with the highest overall rates reported in the eastern region of the province. Toronto had the second highest rates of emergency department visits at 15.0 (Table 1).

For each region, the senior population represented the highest rates of emergency department visits (Table 2). Although not shown, teenagers also had a relatively high rate of both emergency department visits and hospitalizations in each region of Ontario.

Of the 1,515 individuals who visited an emergency department for a bus injury, over 90% were discharged to their place of residence. Just over 3% of cases were admitted as an inpatient to another unit of the hospital directly from ambulatory care. For hospitalized cases, over 20% were transferred to another facility providing inpatient hospital care, which includes acute, sub acute, and rehabilitation care. Close to 20% were discharged to a home setting with support services and over 10% were discharged to a long term care facility. 43% were discharged home. Less than 1% of individuals died after arrival in the emergency department and approximately 5% died after hospital admission. The 65 hospitalized cases accounted for more than 239 days in acute care hospitals with an average length of stay of 3.68 days.

Discussion

This Compass highlights patterns of emergency department visits and hospitalizations for injuries to bus occupants in transport collisions in Ontario and its regions.

Public transportation is a necessity in any city. Regardless of whether or not it is a senior using a city bus or a child/teenager traveling to school on a school bus, the safety of each citizen, including the driver of the vehicle, is crucial. Each day in Ontario, over 800,000 students are transported in school buses, a type of travel considered very safe. Injuries are rare and most happen as students are boarding/leaving the bus or crossing the street.¹ Although this Compass included only cases involving collisions, the following *Managing the Risk* section outlines ways in which public health can work with the community to help reduce the risk of bus injuries, including those to children while boarding/leaving the bus.

References

1. Ministry of Transportation. School Bus Safety. Information for Riders, Parents, and Motorists. Jan 23, 2009
<http://www.mto.gov.on.ca/english/safety/schoolbus/safebus.html>

Managing the risk

❖ Seniors and Bus Transportation:

- Before getting on the bus, have bus fare ready to avoid losing balance while looking for change.
- If the bus is too crowded, wait for the next bus.
- Beware of uneven/slippery ground when getting on/off bus. Climb steps carefully.
- Use the wheelchair access to get on/off the bus, if using steps is too difficult.
- Stay alert & hold onto a safety bar when a bus is slowing down/turning. Sit down while the bus is in motion.
- Do not carry too much. Have a free hand to hold on.

❖ When using a mobility device on public transportation:

- Secure all walkers while bus is moving.
- Ask the bus driver if you need assistance. Storage may be available.
- When possible, purchase foldable mobility aids.
- Become familiar with the rules & regulations regarding mobility aids and assisted passengers. Contact the transit company in your area for specific information and regulations. In many areas, drivers must be trained to deal with these circumstances.

❖ School Bus Travel:¹

- Wait in a safe place well back from the edge of the road.
- Do not play in ditches or on snowbanks.
- Enter the bus in single file holding the hand rail.
- Find a seat & stay seated facing forward at all times.
- Keep your arms & head inside the bus
- Never distract the bus driver. Follow instructions.
- When you leave the bus, move away from the side. If you can touch the bus, you are too close.
- If you drop something near the bus, do not pick it up as the bus driver often can't see you. Ask for help.
- Walk at least 10 steps in front of the bus, along the side of the road and look at the driver for a signal before crossing.
- Look all ways before crossing the road.
- Walk to your waiting parent/caregiver.

❖ For Further Information:

The Ministry of Transportation.
www.mto.gov.on.ca

Methods

Emergency department data were obtained from the National Ambulatory Care Reporting System and acute care hospitalization data were obtained from the Discharge Abstract Database at the Canadian Institute for Health Information for the 2005/06 fiscal year. ICD-10 coding (V70-V79) was used to isolate all emergency department visits and hospitalizations for bus injuries. Note that some persons were seen in an emergency department and then admitted to hospital; however, persons can be admitted to hospital without visiting an emergency department. Regions were defined according to place of residence using the Ontario Ministry of Health Region Codes. Deaths occurring outside of the hospital setting were not included in this analysis.