Ontario Trauma Registry 2009 Report

Major Injury in Ontario
(Includes 2008–2009 Data)

Canadian Institute for Health Information
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Acknowledgements

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The OTR is funded by the Ontario Ministry of Health and Long-Term Care and is managed by CIHI.

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Executive Summary

The source of data for this report is the Ontario Trauma Registry Comprehensive Data Set (OTR CDS). Trauma cases were selected based on an injury severity score (ISS) of more than 12 and on external cause of injury inclusion and exclusion criteria. Cases also met one of the following criteria:

- Were admitted to a participating facility; or
- Were treated in the emergency department of a participating facility (not admitted); or
- Died in the emergency department of a participating facility after treatment was initiated (not admitted).

Overall Trends

In 2008–2009, there were 4,180 cases hospitalized with major trauma in 11 participating facilities across 14 sites in Ontario. This represents an increase of 5% compared to 2004–2005 and an average annual increase of 1% from 2004–2005 to 2008–2009.

In 2008–2009, these major trauma cases accounted for 60,827 days in the participating facilities. Most (71%, n = 2,977) of these cases were male patients, and the average age of all cases was 47. The average age remained relatively stable over the last five years, increasing from 45 in 2004–2005 to 47 in 2008–2009.

Of the 4,180 cases, 13% (n = 523) died, either in hospital (n = 453) or in the emergency department (DIE) (n = 70). The number of in-hospital deaths increased by 7% from 2004–2005 to 2008–2009. The number of DIEs has decreased by 41% since 2004–2005, with an average annual decrease of 8%.

Trends by Cause

Motor vehicle collisions were the leading cause of the major injury hospitalizations (39%, n = 1,644), followed by unintentional falls (38%, n = 1,575). Where specific cause of injury is noted, injury purposefully inflicted by another person (that is, attempted homicide and assault) (9%, n = 356) and suicide and self-inflicted injury (excluding poisoning) (2%, n = 95) were the next most common causes of injury. When causes of injury were analyzed by age group, motor vehicle collisions and falls were the leading two causes in all age groups except among cases age 20 to 34. Although motor vehicle collisions (excluding cyclists) were responsible for the majority (53%, n = 413) of cases in this age group, the second most common cause of injury was injury purposely inflicted by another person (19%, n = 149).

Among the 1,644 cases injured in motor vehicle collisions, 55% (n = 912) were drivers and 20% (n = 336) were passengers. Motor vehicle collisions accounted for 35% (n = 183) of major injury in-hospital deaths.

Among the 1,575 cases injured in unintentional falls, the most commonly specified types of falls were falls on or from stairs or steps (22%, n = 349) and falls from slipping, tripping and stumbling (19%, n = 307). Falls were responsible for 44% (n = 229) of major injury in-hospital deaths.

Context of Injury

Nine percent (n = 367) of the major trauma cases were injured while involved in a sports or recreational activity. Five percent (n = 217) of admissions were documented to be work-related. More than half (56%, n = 2,359) of the cases had blood alcohol testing. Of those, 685 (29%) had a blood alcohol concentration (BAC) greater than zero and 537 (23%) had an alcohol concentration, defined as greater than or equal to 0.08% or 17.4 mmol/L, reflecting the legal positive blood alcohol limit. Cases with an alcohol concentration greater than or equal to 17.4 mmol/L represented 13% (n = 537) of all cases.

Clinical Aspects of Injury

The most common injury types were internal organ injuries (80%, n = 3,334), followed by musculoskeletal (68%, n = 2,859) and superficial (28%, n = 1,176) injuries. Ninety-two percent (n = 3,855) of cases were documented with blunt injury (including lacerations), 6% (n = 237) had penetrating injuries and 2% (n = 87) were hospitalized due to burns.

For all cases, the mean ISS was 24. In 2008–2009, the highest mean ISS occurred among cases injured in a railway incident (ISS = 31, n = 14), followed by cases due to motor vehicle collisions in traffic (ISS = 27, n = 1,425), motor vehicle boarding or alighting (ISS = 27, n = 20) and suicide and self-inflicted injury (excluding poisoning) (ISS = 27, n = 95). The highest ISS occurred among cases with burn injuries (as opposed to blunt or penetrating injuries) (ISS = 26).

The average length of stay (LOS) was relatively constant at 15 days from 2004–2005 to 2008–2009. In 2008–2009, the longest average LOS for all cases was among those admitted with burn injuries (LOS = 32 days) and among those whose injuries were related to a motor vehicle collision (LOS = 16 days).

Of the 3,657 cases discharged alive, 59% (n = 2,154) were discharged home either with or without support services, 18% (n = 649) were transferred to another acute care facility and 17% (n = 614) were discharged to a rehabilitation facility.

Chapter 1

Introduction

1.1 Purpose of Report

The purpose of this report is to provide a descriptive analysis of patients hospitalized with major trauma in the 11 lead trauma hospitals in Ontario. The data source for this report is the Ontario Trauma Registry Comprehensive Data Set (OTR CDS). Trauma cases were selected based on an injury severity score (ISS) greater than 12 and using external cause of injury inclusion and exclusion criteria.

1.2 About the Ontario Trauma Registry

1.2.1 Goal

The goal of the Ontario Trauma Registry (OTR) is to facilitate the reduction of injury admissions and deaths in the province of Ontario by identifying, describing and quantifying trauma in order to

1. Increase awareness of injury as a public health problem in Ontario,
2. Assist injury prevention and treatment programs and
3. Support injury-related analysis and research.

1.2.2 History

The OTR, funded by the Ontario Ministry of Health and Long-Term Care, was established in May 1992. A multidisciplinary advisory committee—the Trauma Registry Advisory Committee (TRAC)—provides guidance to the OTR. TRAC includes representatives from the ministries of Health and Long-Term Care, Labour and Transportation, CIHI, the Office of the Chief Coroner and the Trauma Association of Canada, as well as epidemiologists and trauma care providers.

1.2.3 Structure

For injury prevention programs to be effective, data is needed to clearly define the nature and scope of injury in the province. The use of the International Classification of Diseases (ICD) external cause of injury coding system for all injury admissions facilitates the analysis of injury data in Ontario. The OTR consists of three major sources of data, as listed on the next page. Standard and ad hoc reports from these data sets detail demographic information, cause and nature of injury admissions and deaths provincially. This information is used by researchers and injury prevention specialists to develop and monitor injury prevention programs.

The OTR is composed of three data sets:

1. The Ontario subset of the National Trauma Registry Minimal Data Set (NTR MDS) contains demographic, diagnostic and procedural information on all acute care hospitalizations due to injury in acute care facilities in Ontario. These admissions are selected from the Hospital Morbidity Database (HMDB) at CIHI and downloaded to the registry's data-processing system. As of 2002–2003, inclusion criteria were based on specific external cause of injury codes within the International Classification of Diseases and Related Health Problems, 10th Revision, Canada (ICD-10-CA). Inclusion for Ontario in the NTR MDS for 1994 to 2001 is based on specific external cause of injury codes within the International Classification of Diseases, 9th Revision (ICD-9) (E codes).

   Examples of external cause of injury codes that are included in the definition of trauma are motor vehicle collisions, including those involving pedestrians, motorcycles and bicycles; falls; drownings; and burns. External cause of injury codes that are excluded are poisoning, adverse effects and complications. Appendix B lists the external cause of injury codes that are included and excluded from the definition of trauma used for the NTR MDS.

2. The Death Data Set from the Office of the Chief Coroner contains information on all deaths in the province due to injury. There are approximately 3,500 injury deaths annually in Ontario. Reporting on all injury deaths rather than in-hospital deaths (as reported in the OTR MDS) provides a more complete picture of trauma in the province. Information contained in the database at the Office of the Chief Coroner is indispensable to injury prevention programs because a significant percentage of injured people die before admission to hospital.

   Trauma is defined in the Death Data Set using components of the Office of the Chief Coroner's classification system of death types, death factors, environments and involvements. The OTR developed a system to map the classification system used by the Office of the Chief Coroner to the external cause of injury codes to allow standardized reporting across the data sets of the OTR and comparisons to other sources of data. Information in the Death Data Set includes demographics, cause of death and factors contributing to death, such as alcohol use.

3. The Comprehensive Data Set (CDS), the data source for this report, is described in detail in the next chapter.

Chapter 2

Methods

2.1 Data Source

The data source for this report is the OTR Comprehensive Data Set (CDS). The OTR CDS consists of detailed information on patients hospitalized with major trauma in 11 participating facilities across 14 sites in the province. These lead trauma hospitals are funded by the Ministry of Health and Long-Term Care for hardware, software and dedicated trauma staff, including a medical director, trauma coordinator, data analyst and administrative assistant.

The definition of trauma in the CDS is based on the injury severity score (ISS), an international scoring system created to calculate the severity of injury, and an appropriate external cause of injury code (see Appendix B). External cause of injury code inclusion criteria have been expanded for the OTR CDS to include other causes of injury where appropriate as determined by an OTR CDS Working Group. Appendix C describes these additional guidelines.

Specialized trauma software (COLLECTOR and TRI-CODE from Digital Innovations and Tri-Analytics, Inc.) is used to collect and analyze data on approximately 4,000 cases annually. This software was customized for the province of Ontario with input from participating facilities and the Ontario TRAC. Detailed data is collected, including demographics, pre-hospital and hospital care, and patient outcomes. Data is electronically transmitted monthly to CIHI to create the CDS.

2.2 Inclusion/Exclusion Criteria

2.2.1 Definition of Trauma

Trauma is defined in the OTR CDS as any case with an ISS greater than 12 and an appropriate external cause of injury code (see Appendix B) that meets one of the following criteria:

- Admitted to a participating facility; or
- Treated in the emergency department of a participating facility (not admitted); or
- Died in the emergency department of a participating facility after treatment was initiated (not admitted).

Additional trauma definition guidelines as established by the OTR CDS Working Group and TRAC are found in appendices B and C.

2.2.2 Participating Facilities

The following 11 participating facilities (across 14 sites) provide data for the OTR CDS:

- Children's Hospital of Eastern Ontario, Ottawa
- Hamilton Health Sciences Corporation, Hamilton (two sites)
- Hospital for Sick Children, Toronto
- Hôtel-Dieu Grace Hospital, Windsor
- Kingston General Hospital, Kingston

- London Health Sciences Centre, London (two sites)
- The Ottawa Hospital, Ottawa (two sites)
- Hôpital régional de Sudbury Regional Hospital, Sudbury
- St. Michael's Hospital, Toronto
- Sunnybrook Health Sciences Centre, Toronto
- Thunder Bay Regional Health Sciences Centre, Thunder Bay

In this report, facilities are anonymized and represented by a letter of the alphabet (A to N); therefore, specific facilities cannot be identified.

2.3 Data Elements

2.3.1 Data Dictionary

The *OTR CDS Data Dictionary* was prepared by the OTR with input from participating facility staff and members of TRAC. The purpose of the document is to define each data element in the customized Ontario version of COLLECTOR. The data dictionary includes a list of commonly used abbreviations and their meanings, the field name, the field type and field length for each data element and an explanation of what is required for the data element as well as a list of menu choices wherever appropriate.

The data dictionary appendices include the definition of trauma, trauma patient definition (external cause of injury list), list of participating facilities, CIHI physician services, non-operative procedure definitions and *Motor Vehicle Collision Report* information. The latest update of the data dictionary was published in July 2005 and is available electronically through CIHI's client services website.

A complete list of OTR CDS data elements can be found in Appendix F.

2.3.2 Data Quality

There are more than 90 detailed edit checks in the COLLECTOR software package to ensure data accuracy, consistency and completeness. These edits include range checks, cross checks, validity checks, date sequence edits and edits for blank fields.

CIHI performs various validity checks on the data submitted by the lead trauma hospitals, such as checking that the diagnosis codes are valid and that the data is complete. If the data does not pass CIHI validations, a notification of errors is sent to the lead trauma hospitals, which are then asked to resubmit the corrected or complete data.

CIHI implemented the Data Quality Framework to provide a means to systematically assess, improve and document data quality for all databases at CIHI. Data quality is defined as "fitness for use" from the user's perspective. Using the Data Quality Framework, the OTR CDS is currently being assessed on the basis of five dimensions: accuracy, timeliness,

comparability, usability and relevance. Each of these five dimensions is made up of related characteristics, which are assessed using detailed criteria. A description of CIHI's Data Quality Framework is available on CIHI's website (www.cihi.ca).

2.4 Reporting Guidelines

This report

- Contains 2008–2009 data from 11 participating facilities across 14 sites transmitted to the OTR as of September 30, 2009;
- Was created based on fiscal year of discharge as approved by TRAC in October 2004 (this change was initiated in the 2005 report, which included 2004–2005 data);
- Contains totals that may not match exactly when compared with previous reports, since facilities may update data from previous years;
- Discusses five-year trends (2004–2005 to 2008–2009);
- Does not include admissions due to suicide or homicide resulting from poisoning;
- Generally counts admissions to lead trauma hospitals due to major injury, referred to as cases (because patients may be transferred between participating hospitals, the same individual patient may be included more than once in the OTR CDS);
- Includes in-hospital deaths and DIEs in participating hospitals (deaths that occurred before active treatment was initiated—that is, *dead on arrival*, *dead at scene*—are not included);
- Explores data from facility sites according to a letter of the alphabet (A to N); therefore, specific facilities cannot be identified;
- Includes data from the lead trauma hospitals by site (the data tables in Appendix H report on 14 individual sites);
- May report percentages that do not add to 100% because of rounding;
- Discusses cause of injury by the primary external cause of injury code documented (up to three codes—primary, secondary and tertiary—can be documented in the OTR CDS);
- Calculates percentages using all records as denominators unless otherwise stated;
- Includes tables produced by age and/or sex that may not sum to the total (cases with unknown age and/or unknown sex are included in the total but not in the individual age or sex categories);
- Includes information about positive BAC, both all BAC levels greater than zero and BAC levels defined as greater than or equal to 0.08% or 17.4 mmol/L (to reflect legal positive blood alcohol limit).

Chapter 3

Overall Trend Analysis

3.1 2008–2009 Highlights

In the 2008–2009 OTR CDS, there were 4,180 injury cases with an ISS greater than 12 and an appropriate cause of injury treated in 11 participating facilities (across 14 sites) in Ontario.

- The 4,180 injury cases accounted for 60,827 hospital days.
- The mean length of stay (LOS) was 15 days (median = 8).
- The mean ISS was 24 (median = 24).
- There were 523 deaths: 453 in-hospital deaths (admitted patients) and 70 DIEs.
- Of all cases, 2,977 (71%) were male.
- Direct admissions accounted for 2,207 (53%) cases (admitted directly as an inpatient, bypassing the emergency department).
- The mean age for all cases was 47 (median = 48).
- Of all cases, 1,431 (34%) were younger than age 35.
- Out-of-province residents represented 111 (3%) cases.
- Of all cases, 1,345 (32%) patients had ventilator days; the mean number of ventilator days was 6 (median = 2).
- One hundred and sixty-three (4%) cases had intracranial pressure (ICP) monitoring days; the mean number of ICP days was 5 (median = 4).
- Of all cases, 2,359 (56%) had blood alcohol testing; of those, 685 (29%) had a BAC greater than zero.
- Five hundred and thirty-seven cases had a BAC greater than or equal to 17.4 mmol/L, accounting for 13% of all cases and 23% of those who had blood alcohol testing.
- The most common injury type was an injury to an internal organ (80%), followed by an injury to the musculoskeletal system (68%) and a superficial injury (28%).
- Blunt injury was the main injury type in 3,855 (92%) cases.
- Of all cases, 217 (5%) were work-related.
- Three hundred and sixty-seven (9%) injuries occurred in a sports and recreational activity.

3.2 Trend Analysis, 2004–2005 to 2008–2009

Over the past five years, the number of cases appearing annually in the OTR CDS increased from 3,982 in 2004–2005 to 4,180 in 2008–2009 (Appendix H, Table 1). This represents a 5% increase compared to 2004–2005 and an average annual increase of 1% between 2004–2005 and 2008–2009.

Of the 4,180 cases, 523 (13%) died either in hospital or in the emergency room. The number of in-hospital deaths has increased by 7% since 2004–2005, with an average annual increase of 1%. The percentage of in-hospital deaths fluctuated between 10% and 11% over the past five years. The number of DIEs has decreased by 41% since 2004–2005, with an average annual decrease of 8% from 2004–2005 to 2008–2009. DIEs as a percentage of the total caseload fluctuated between 2% and 3% over the last five years.

The mean ISS remained relatively constant at 24 or 25 between 2004–2005 and 2008–2009.

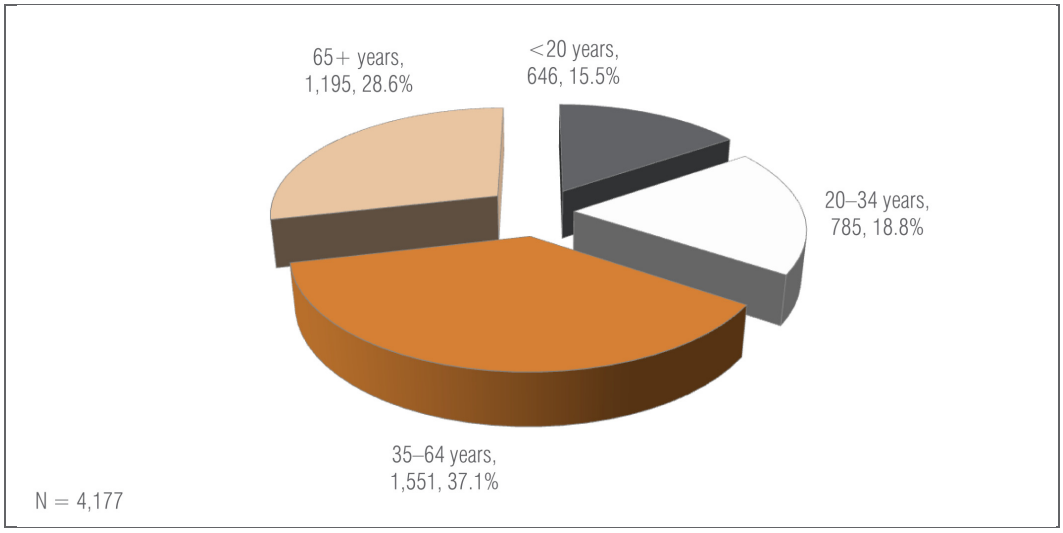
The mean LOS remained constant at 15 days over the last five years.

3.3 Demographic Analysis

Figure 1 shows the injury cases by age group.

- Those younger than age 20 accounted for 15% (n = 646) of all cases and 11% (n = 6,549) of participating hospital days.
- Those between the ages of 20 and 34 accounted for 19% (n = 785) of all cases and 17% (n = 10,384) of participating hospital days.
- Those between the ages of 35 and 64 accounted for 37% (n = 1,551) of all cases and 39% (n = 23,976) of participating hospital days.
- Those age 65 and older accounted for 29% (n = 1,195) of all cases and 33% (n = 19,918) of participating hospital days.

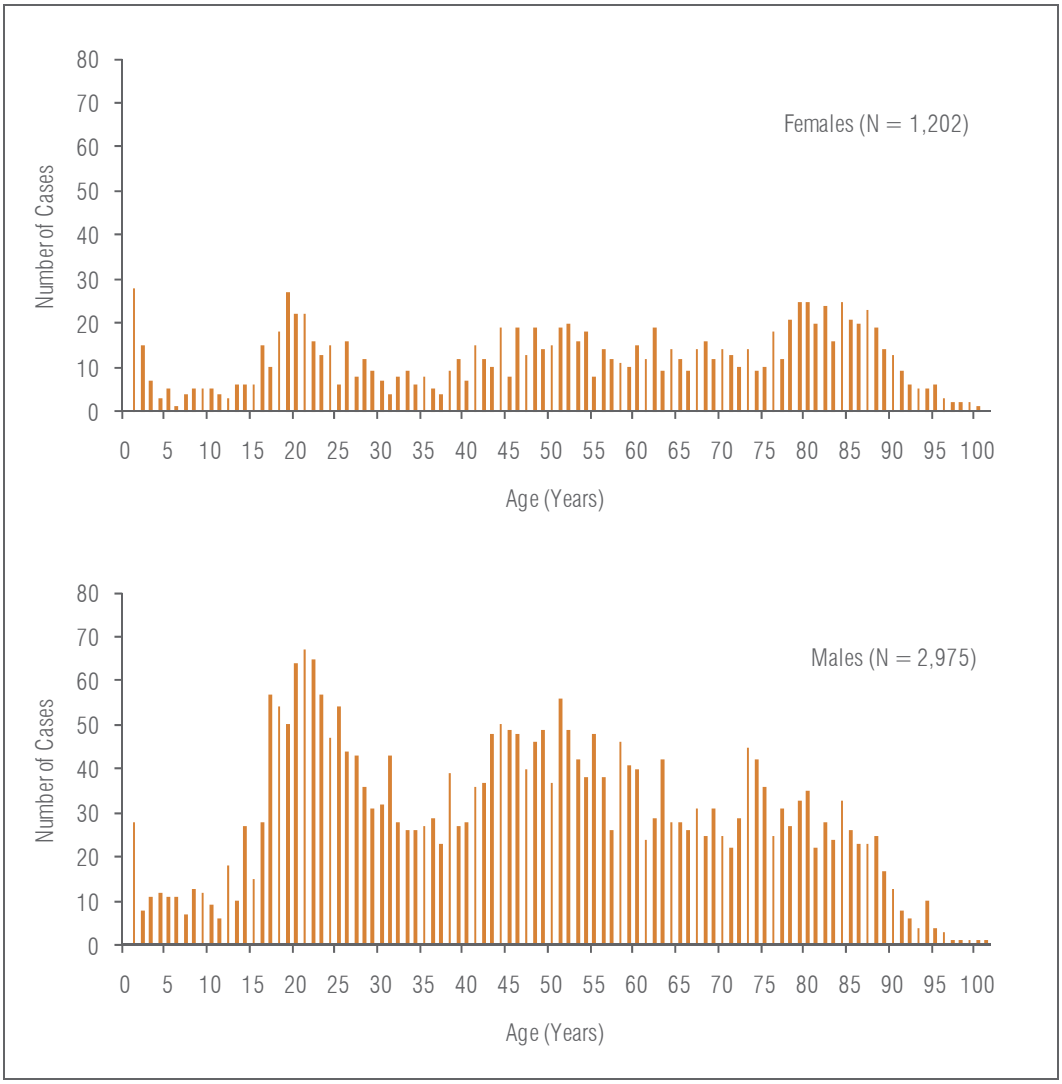
Figure 1
Injury Cases by Age Group, 2008–2009



Note
Three cases with unknown age.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

As seen in Figure 2, males accounted for the greatest (71%) number of cases, with a peak in young males around age 20.

Figure 2
Injuries by Single Year of Age and Sex, All Cases, 2008–2009



Note
Three cases with unknown age.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Chapter 4

Analysis of Causes of Injury

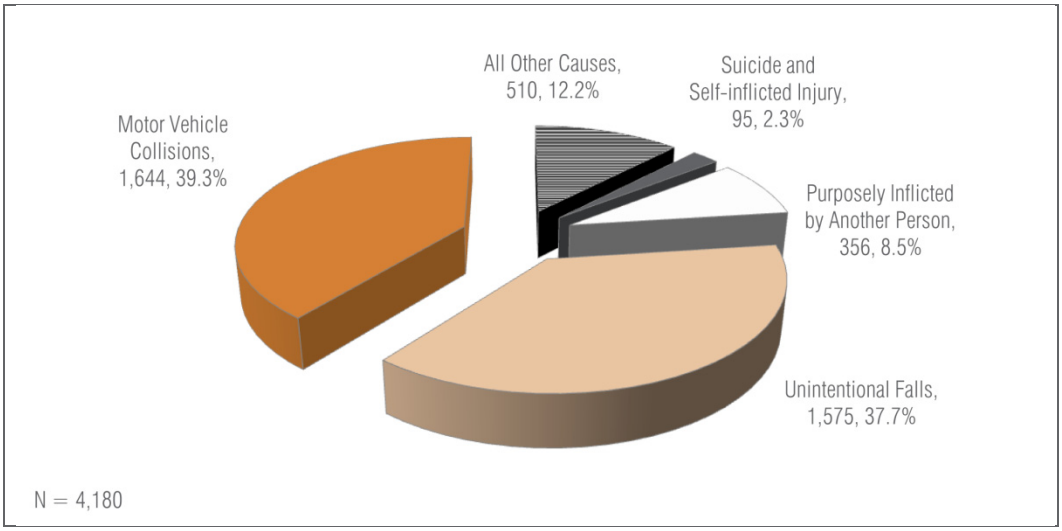
4.1 Overall Causes

Figure 3 shows the causes of injury for the 4,180 cases in the 2008–2009 OTR CDS. Motor vehicle collisions were responsible for 39% of the cases (n = 1,644). Unintentional falls were the second most common cause of major injury hospitalizations (38%, n = 1,575).

Tables 13 and 14 in Appendix H show highlights for the most common causes of injury. The mean ages for the most common causes of injury were the following:

- For motor vehicle collisions, 41 (median = 40)
- For unintentional falls, 61 (median = 67)
- For assault and injury purposely inflicted by another person, 30 (median = 25) and
- For suicide and self-inflicted injury, 40 (median = 42)

Figure 3
Causes of Injury, All Cases, 2008–2009



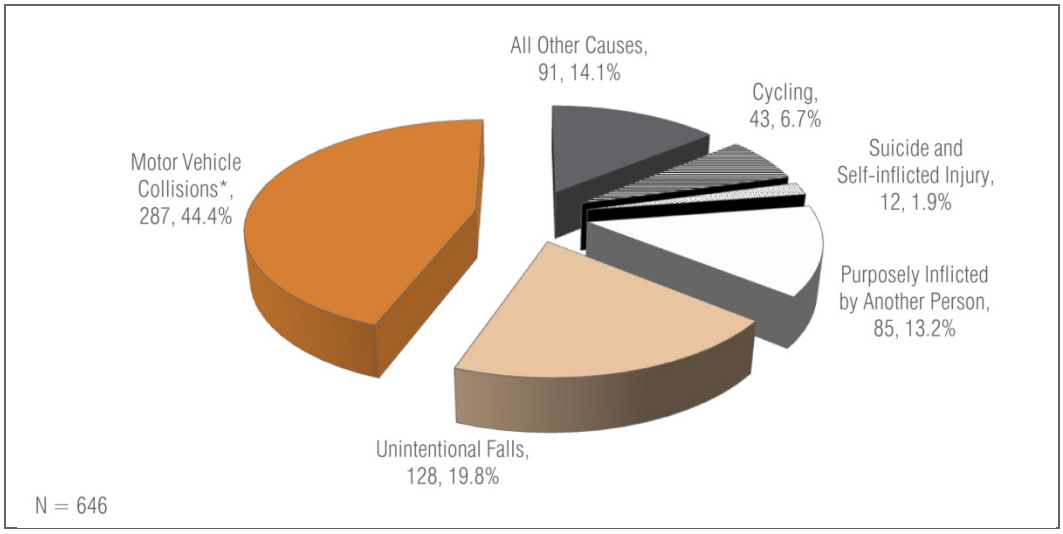
Note
Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

4.2 Causes by Age Group

4.2.1 Cases Younger Than Age 20

Figure 4 shows the causes of injury among those hospitalized for major injury younger than age 20 (n = 646). Motor vehicle collisions *excluding* those involving cyclists[i] comprised nearly half of these cases (44%, n = 287), followed by unintentional falls (20%, n = 128). Injuries purposely inflicted by another person were responsible for 13% of cases (n = 85), and cycling incidents were responsible for 7% of cases (n = 43).

Figure 4
Causes of Injury, Cases Under Age 20, 2008–2009



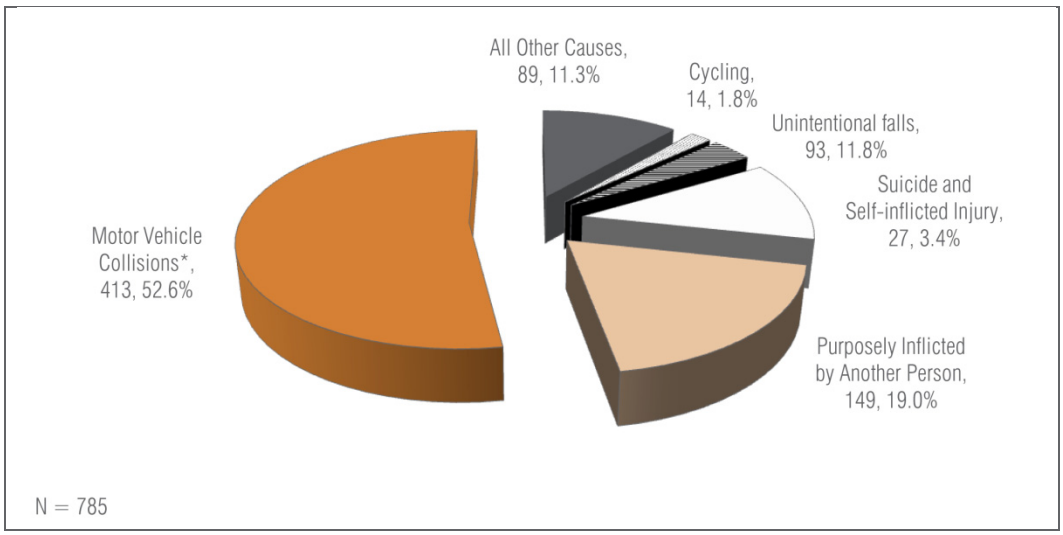
Note
* Excludes cyclists.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

i. Cycling incidents are reported separately from motor vehicle collisions in cases younger than 35 because 42% (n = 57) of cycling incidents occurred in this age group.

4.2.2 Cases Age 20 to 34

Figure 5 shows the causes of injury for cases age 20 to 34 (n = 785). Motor vehicle collisions *excluding* those involving cyclists[ii] were responsible for 53% (n = 413) of the cases. The next most common causes of injury were injuries purposely inflicted by another person (19%, n = 149) and unintentional falls (12%, n = 93).

Figure 5
Causes of Injury, Cases Age 20 to 34, 2008–2009



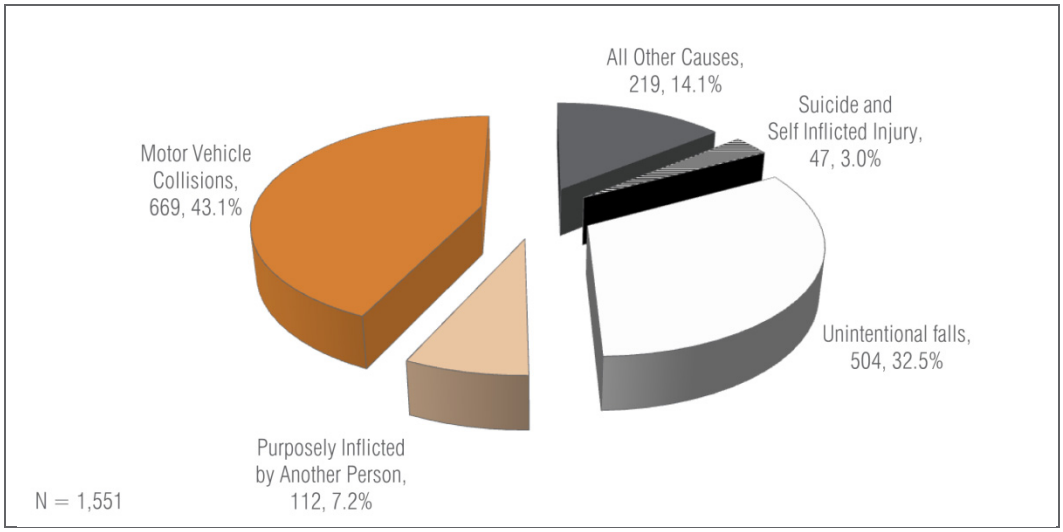
Note
* Excludes cyclists.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

ii. Cycling incidents are reported separately from motor vehicle collisions in cases younger than 35 because 42% (n = 57) of cycling incidents occurred in this age group.

4.2.3 Cases Age 35 to 64

Figure 6 shows the causes of injury for cases between age 35 and 64 (n = 1,551). Motor vehicle collisions *including* those involving cyclists were responsible for almost half of the cases (43%, n = 669), followed by unintentional falls (32%, n = 504).

Figure 6
Causes of Injury, Cases Age 35 to 64, 2008–2009

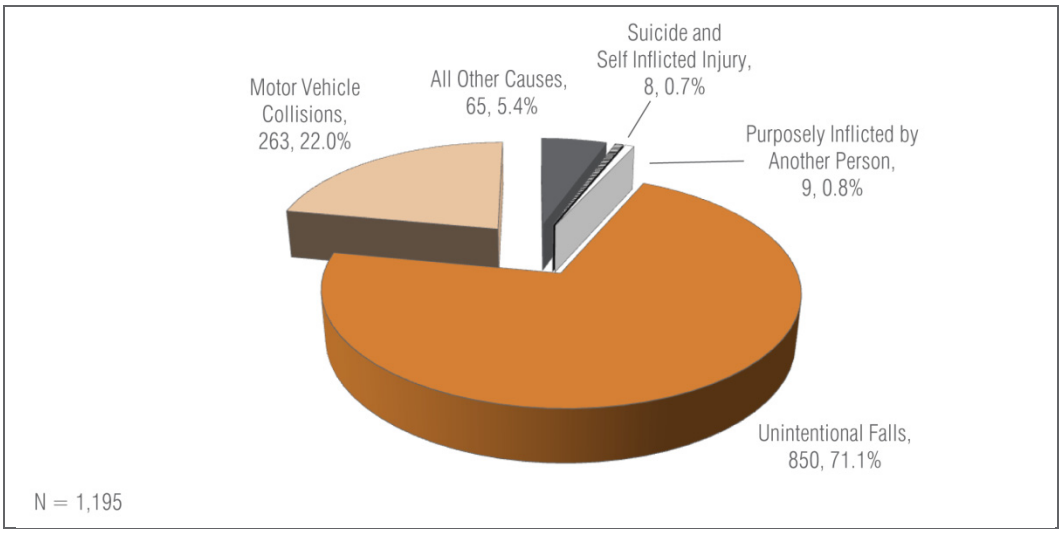


Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

4.2.4 Cases Age 65 and Older

Figure 7 shows the causes of injury for cases age 65 and older (n = 1,195). Unintentional falls were responsible for the majority of cases (71%, n = 850), followed by motor vehicle collisions *including* those involving cyclists (22%, n = 263). Together, these two causes of injury were responsible for 93% (n = 1,113) of the hospitalizations for major injury in this age group.

Figure 7
Causes of Injury, Cases Age 65 and Older, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

4.3 Motor Vehicle Collisions

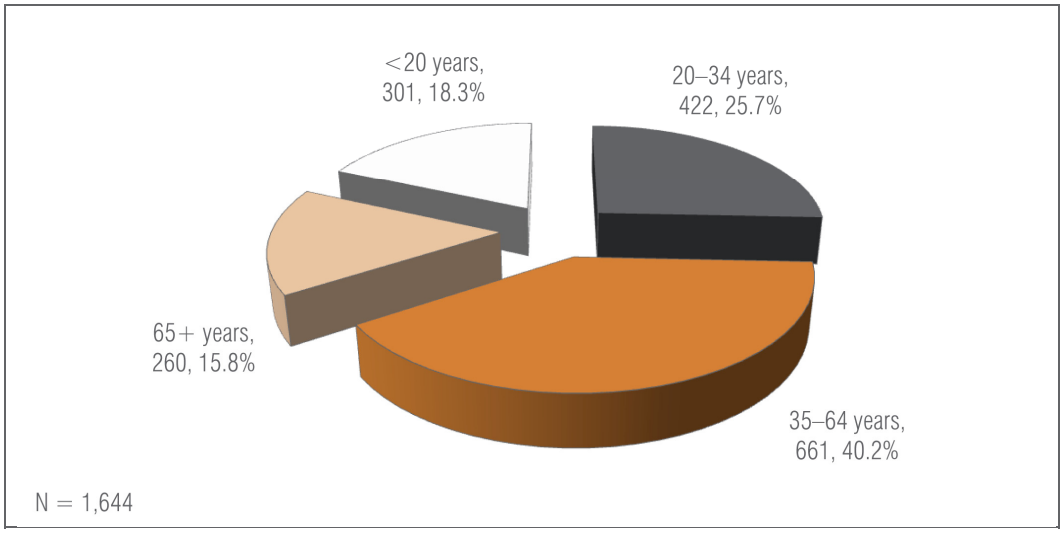
4.3.1 Motor Vehicle Traffic and Non-Traffic Incidents

A motor vehicle is defined within the ICD coding system as any mechanically or electrically powered device, not operated on rails, upon which any person or property may be transported or drawn upon a highway. Automobiles, buses, construction machinery, farm and industrial machinery, fire engines, motorcycles, motorized bicycles, trolley buses not operating on rails, trucks and vans are all included in this category. A motor vehicle collision is a transport collision involving a motor vehicle. A motor vehicle traffic collision occurs on a public highway or roadway. A motor vehicle non-traffic collision occurs entirely in any place other than a public highway.

In the 2008–2009 OTR CDS, motor vehicle traffic and non-traffic incidents accounted for 1,644 (39% of all cases) major injury admissions and 183 (35% of deaths) in-hospital deaths due to major injury.

Figure 8 shows the motor vehicle traffic and non-traffic injury cases by age group. Almost half (44%, n = 723) of the cases were younger than age 35.

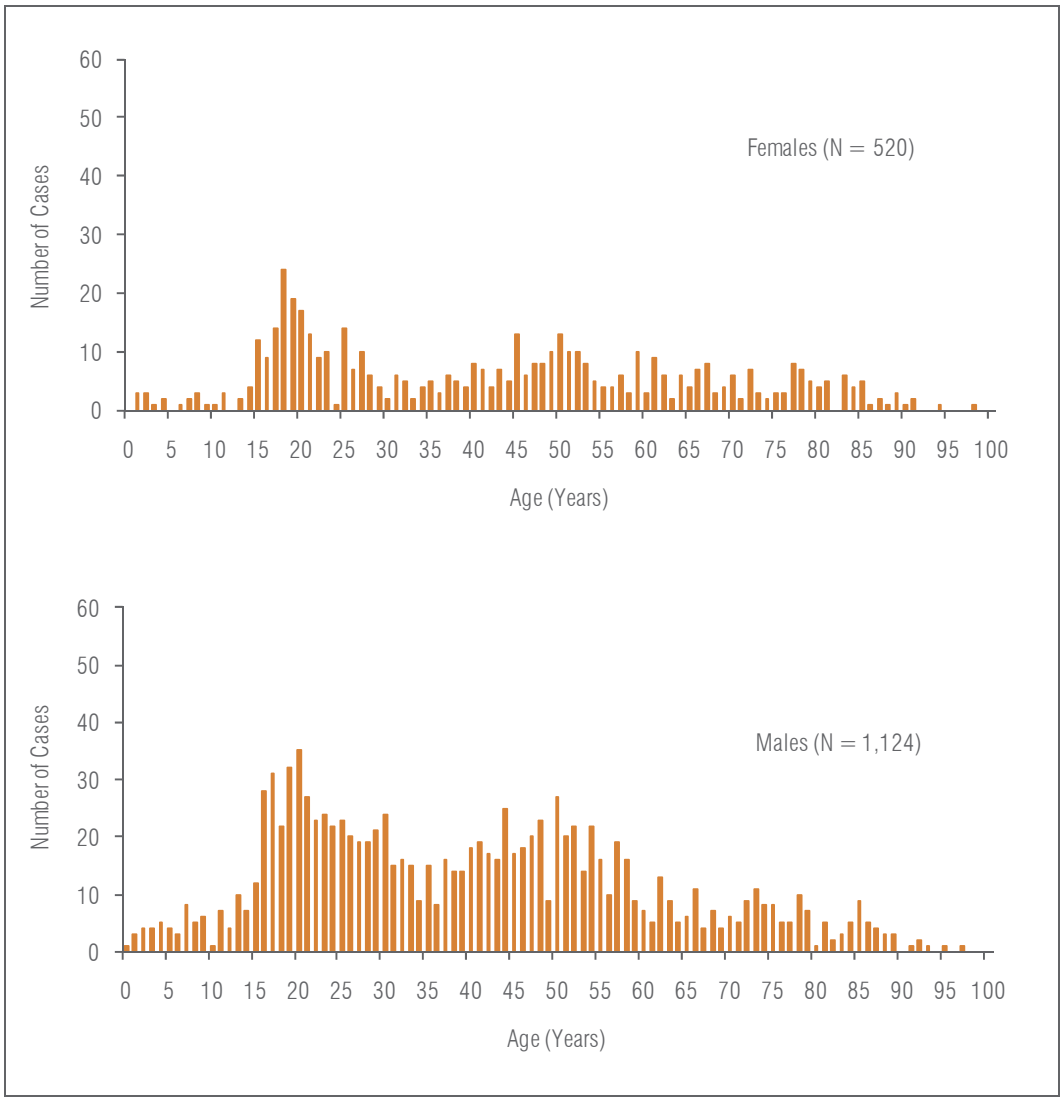
Figure 8
Motor Vehicle Traffic and Non-Traffic Incidents by Age Group, 2008–2009



Note
Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 9 shows that there were peaks in the number of traffic and non-traffic incidents in young adult males at age 20 and a smaller peak in young adult females around age 18.

Figure 9
Traffic and Non-Traffic Incidents by Sex and Single Year of Age, 2008–2009



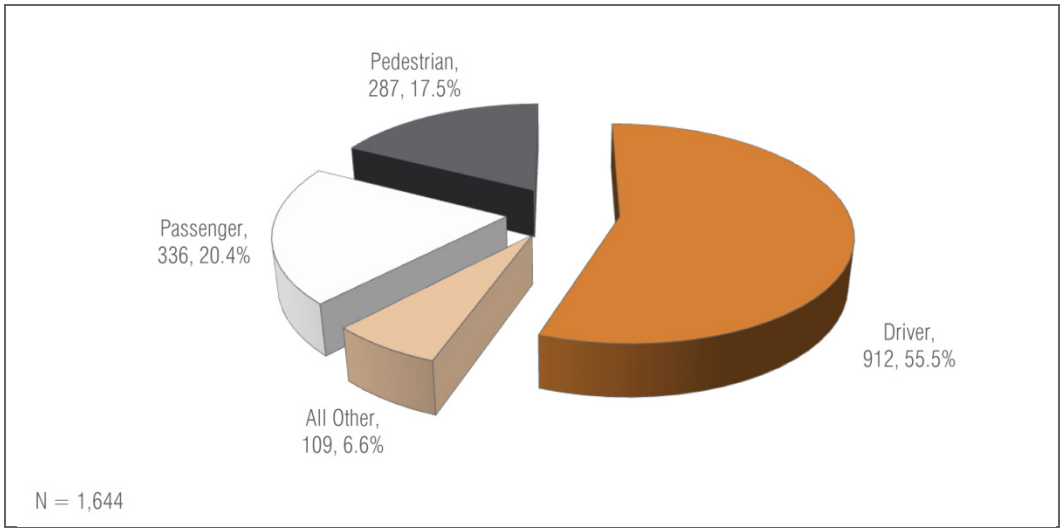
Note
Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

The mean LOS for motor vehicle collision injuries was 16 days (median = 9). The mean age was 41 (median = 40). Almost all (more than 99%, n = 1,638) motor vehicle collision injuries were documented as blunt injury. The mean ISS was 27 (median = 25). The mean LOS for motor vehicle collision deaths in 2008–2009 was 9 days (median = 2). The mean age was 49 and the median age was 51. All motor vehicle collision deaths were documented as blunt injury (100%, n = 183). The mean ISS was 38 (median = 38).

4.3.2 Injured Persons

Figure 10 shows the distribution of the 1,644 motor vehicle traffic and non-traffic injury cases in the 2008–2009 OTR CDS by injured person. More than half were drivers (55%, n = 912), including 164 motorcycle drivers. Passengers comprised one-fifth (20%, n = 336) of the injured cases, of which 11 were motorcycle passengers. Eleven percent (n = 175) of the 1,644 motor vehicle traffic and non-traffic injury cases in the 2008–2009 OTR CDS were motorcycle drivers or passengers.

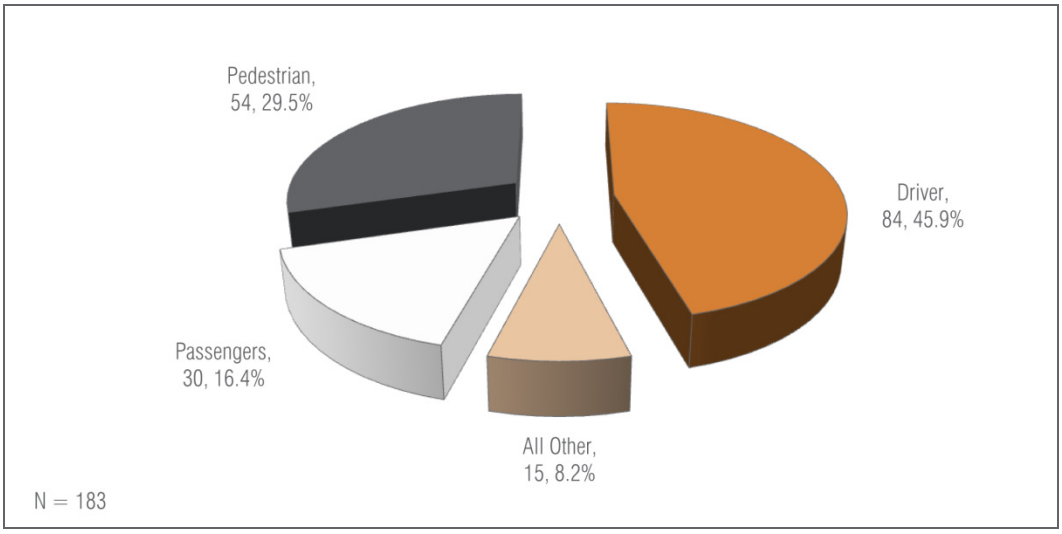
Figure 10
Motor Vehicle Collisions by Injured Person, All Cases, 2008–2009



Notes
Drivers and passengers categories include those injured while riding a motorcycle.
Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 11 shows the distribution of deaths due to motor vehicle collisions in the 2008–2009 OTR CDS, by injured person. Nearly half were drivers (46%, n = 84), which includes 11 motorcycle drivers. Almost one-third (30%, n = 54) were pedestrians.

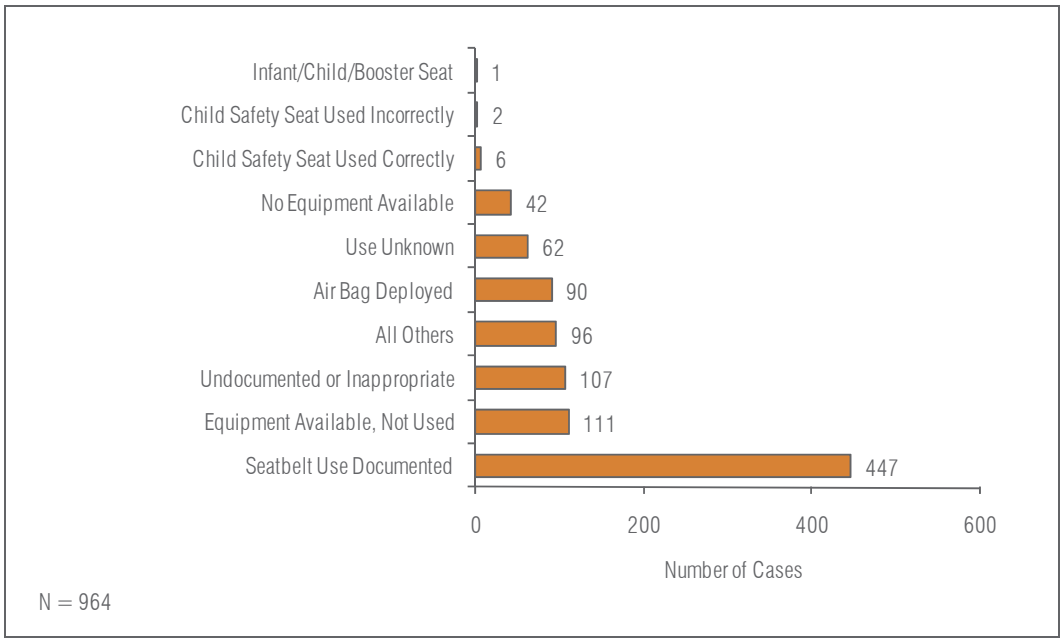
Figure 11
Motor Vehicle Collisions by Injured Person, Deaths, 2008–2009



Notes
Drivers and passengers categories include those injured while riding a motorcycle.
Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

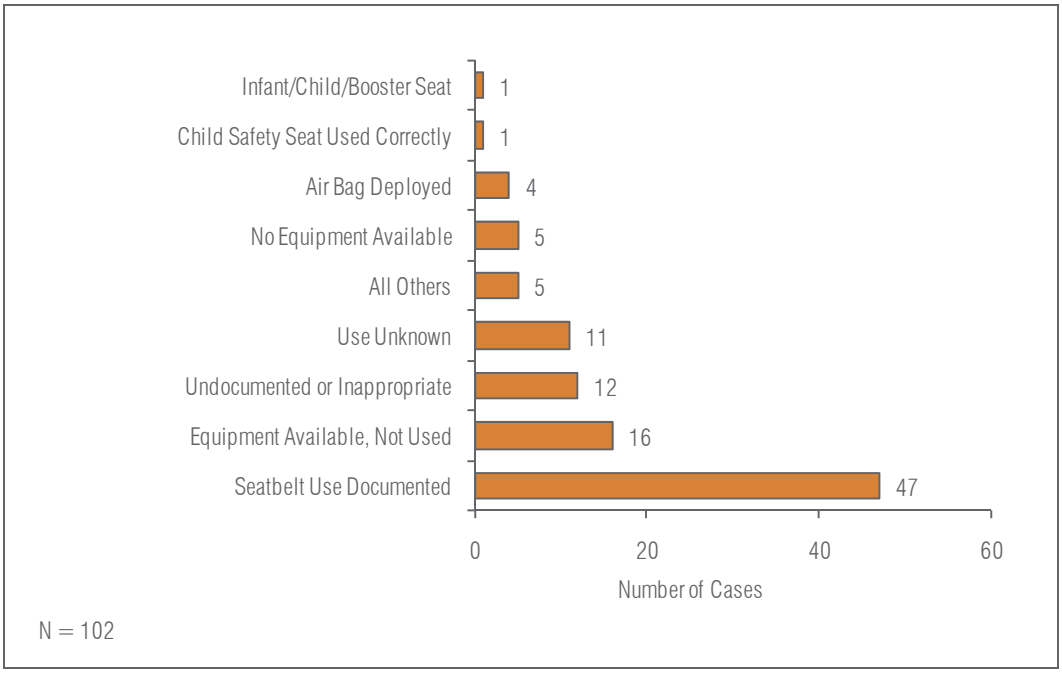
Figures 12 and 13 summarize the use of protective devices for motor vehicle collision occupants, both survivors and non-survivors (those who died). Seatbelt use was documented in fewer than half of motor vehicle occupants for both survivors (46%, n = 447) and non-survivors (46%, n = 47). For 12% of survivors and 16% of non-survivors (n = 111 and n = 16, respectively), protective equipment was noted to be available but not used.

Figure 12
Protective Devices Summary for Motor Vehicle Collisions, Occupant Survivors, 2008–2009*



Note
* Excludes boarding or alighting incidents.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 13
Protective Devices Summary for Motor Vehicle Collisions, Occupant Deaths, 2008–2009*



Note

* Excludes boarding or alighting incidents.

Source

Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

4.4 Unintentional Falls

In the 2008–2009 OTR CDS, unintentional falls accounted for 38% (n = 1,575) of all cases and 44% (n = 229) of all injury in-hospital deaths and DIEs.

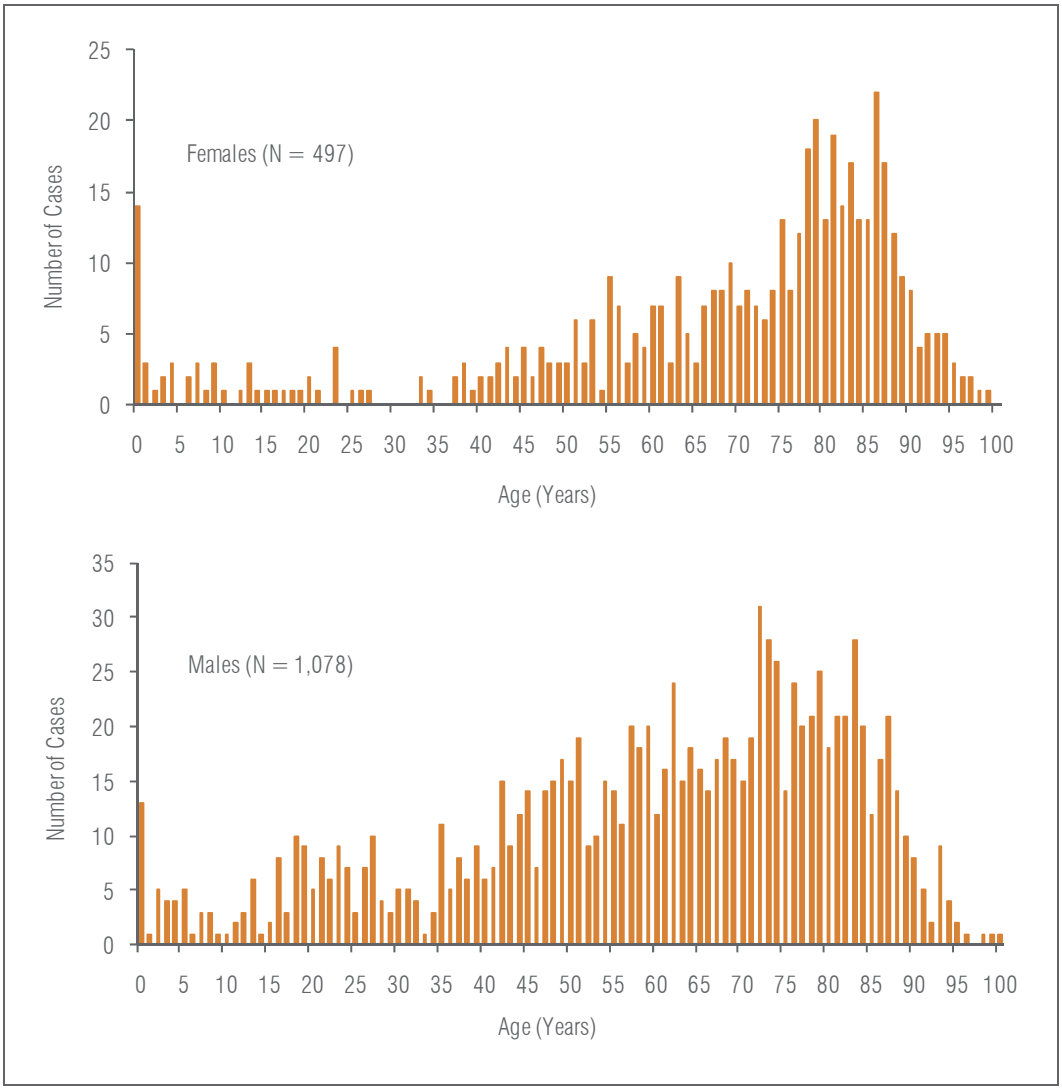
The mean LOS for falls was 15 days (median = 7). The mean age was 61 (median age = 67). Almost all (more than 99%, n = 1,573) falls were documented as blunt injury. The mean ISS was 22 (median = 22).

For in-hospital deaths due to falls (n = 229)

- The mean ISS was 26 (median = 25),
- The mean age was 73 (median = 79) and
- The mean LOS was 12 days (median = 4).

Figure 14 shows that more males experienced major injury due to falls than females. For both males and females, the number of falls increased with advancing age, peaking at age 72 for males and age 86 for females.

Figure 14
Unintentional Falls by Sex and Single Year of Age, 2008–2009

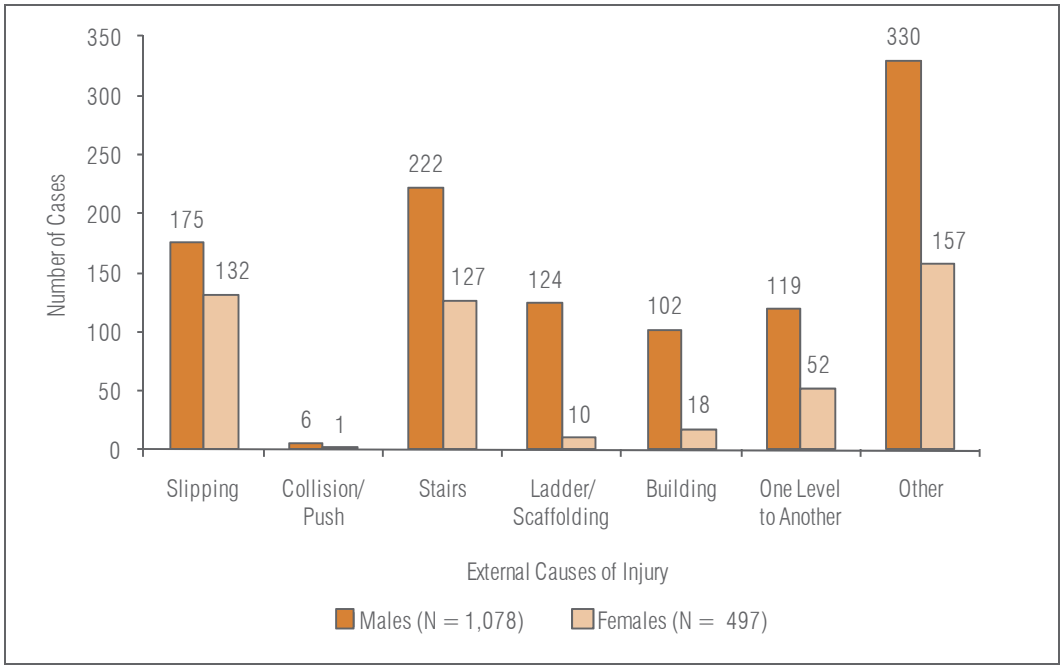


Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Among the 1,575 cases injured in unintentional falls, the most commonly specified types of falls were falls from stairs (22%, n = 349) and falls on the same level from slipping, tripping and stumbling (19%, n = 307).

Figure 15 shows the number of unintentional falls by sex for each external cause of injury code category.

Figure 15
Unintentional Falls by External Cause of Injury and Sex, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

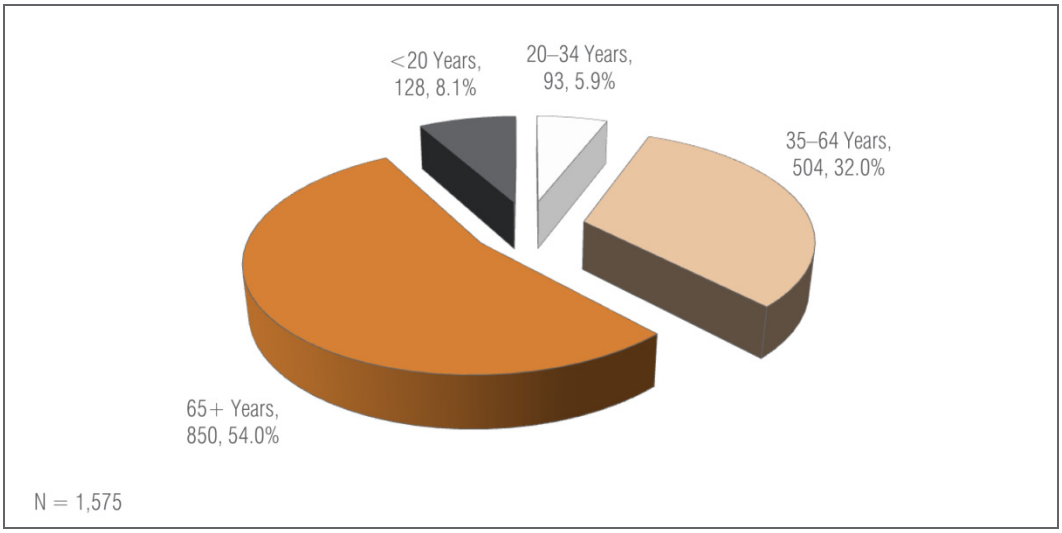
Figure 16 shows cases of unintentional falls by age group. More than half of the unintentional falls were cases age 65 and older (54%, n = 850). The most commonly specified cause of falls in this age group was falls caused on or from stairs (22%, n = 186).

Cases age 35 to 64 comprised 32% (n = 504) of all unintentional falls. The most commonly specified cause of falls in this age group was falls on or from stairs or steps (25%, n = 126).

Eight percent (n = 128) of the injuries occurred among persons younger than age 20. The most commonly specified causes of falls in this age group were falls involving skates, skis, sport boards and in-line skates (15%, n = 19).

Only 6% (n = 93) of all cases due to unintentional falls occurred among those between age 20 and 34. The most common cause of major injury hospitalization due to falls in this age group was falls from, out of or through buildings or other structures (31%, n = 29).

Figure 16
Unintentional Falls by Age Group, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

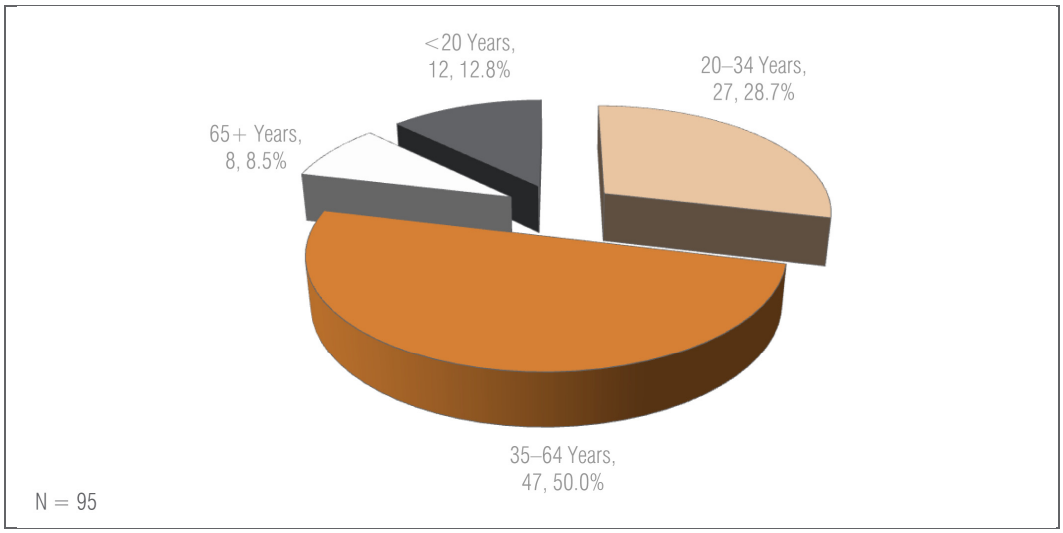
4.5 Intentional Injuries

4.5.1 Suicide and Self-Inflicted Injury (Excluding Poisoning)

There were 95 cases admitted to lead trauma hospitals due to suicide and self-inflicted injury (excluding poisoning) in the 2008–2009 OTR CDS, accounting for 2% of cases and 4% (n = 22) of all injury deaths. The majority of self-inflicted injuries admitted to lead trauma hospitals were males (62%, n = 59). The mean LOS for suicide and self-inflicted injury (excluding poisoning) was 29 days (median = 16). The mean ISS was 27 (median = 25).

Figure 17 shows self-inflicted injury cases by age group. The largest number (50%, n = 47) of cases occurred among the 35-to-64 age group and the 20-to-34 age group (29%, n = 27). The mean age for self-inflicted injury was 40 (median = 42).

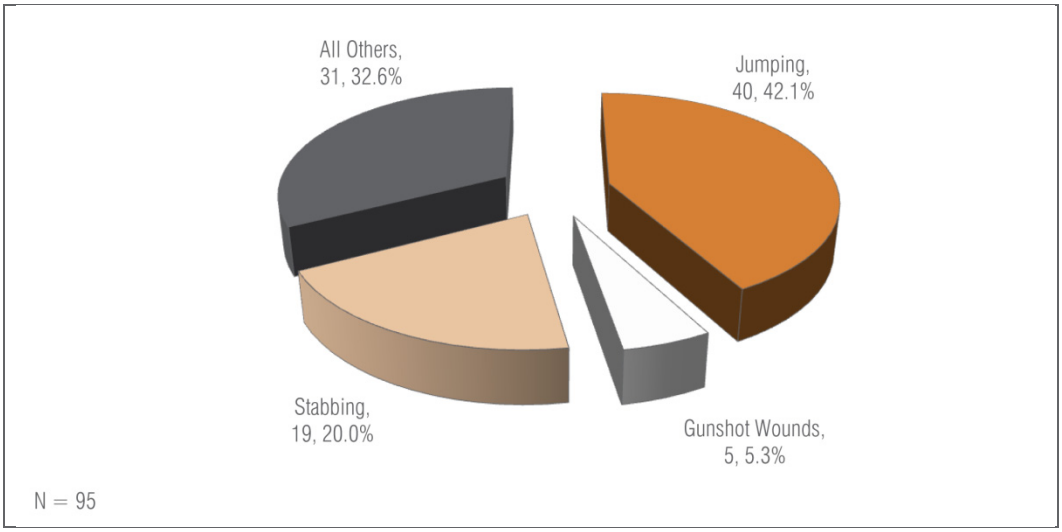
Figure 17
Suicide and Self-Inflicted Injury (Excluding Poisoning) (X70 to X84) by Age Group, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

As seen in Figure 18, the most commonly specified means of self-inflicted injury (excluding poisoning) were jumping (42%, n = 40), followed by stabbing (20%, n = 19) and gunshot wounds (5%, n = 5).

Figure 18
Means of Suicide and Self-Inflicted Injury (Excluding Poisoning) (X70 to X84), 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

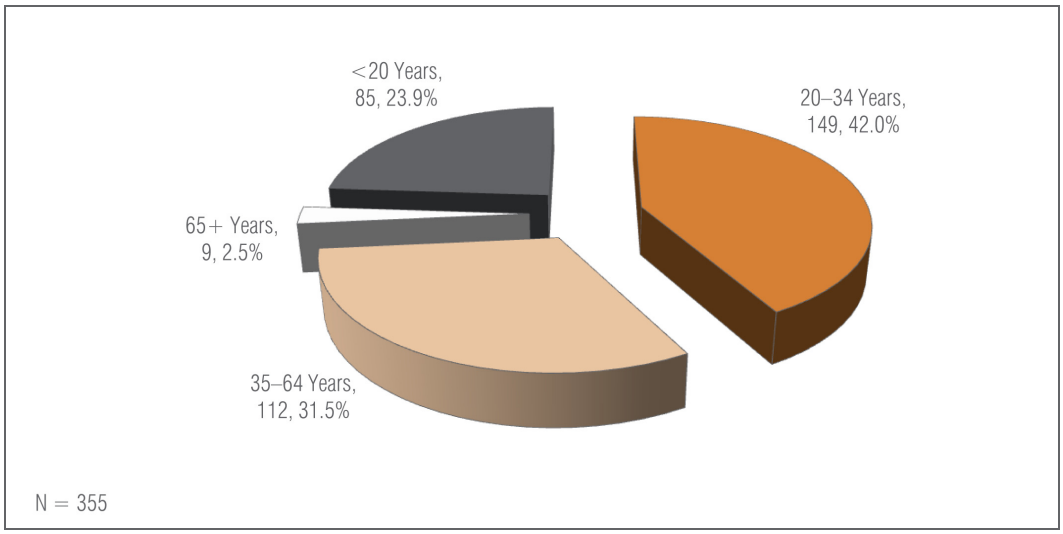
4.5.2 Assault and Injury Purposely Inflicted by Another Person

There were 356 cases admitted due to assault and injury purposely inflicted by another person in the 2008–2009 OTR CDS, accounting for 9% of cases and 8% (n = 43) of all injury deaths.

Figure 19 shows the distribution of these cases by age group. Almost half were age 20 to 34 (42%, n = 149), followed by cases age 35 to 64 (32%, n = 112). The mean age was 30 (median = 25).

The mean LOS was 11 days (median = 6). The mean ISS was 22 (median = 20). Eighty-eight percent (n = 315) of these cases were males.

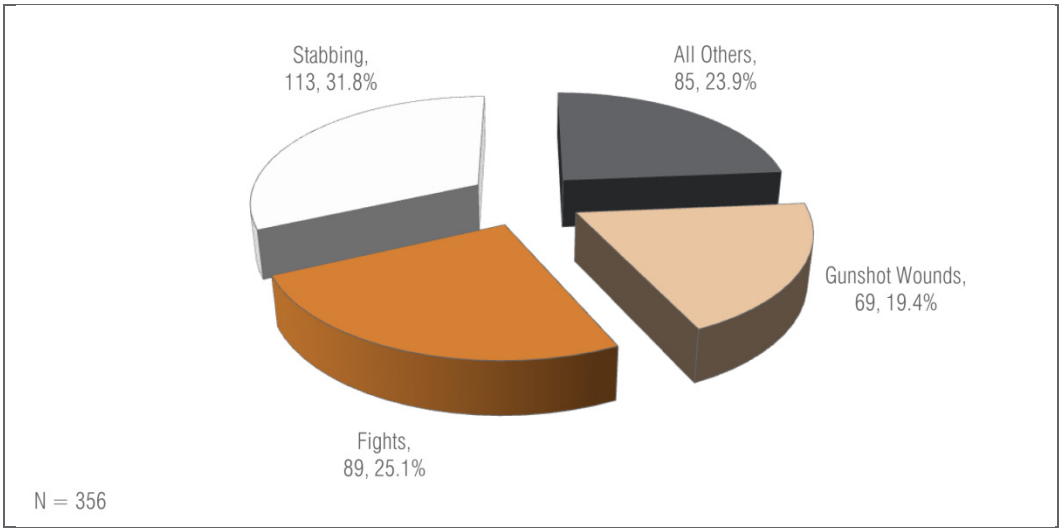
Figure 19
Injury Purposely Inflicted by Another Person (Excluding Poisoning) by Age Group, 2008–2009



Note
One case with unknown age.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 20 shows that the most commonly specified means of injury purposely inflicted by another person were stabbing (32%, n = 113) and fighting (25%, n = 89), followed by gunshot wounds (19%, n = 69).

Figure 20
Means of Injury Purposely Inflicted by Another Person (Excluding Poisoning), 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

4.6 Cycling Injuries

Injuries due to cycling are defined using appropriate ICD-10-CA external cause of injury codes identifying the injured person as a cyclist.

In the 2008–2009 OTR CDS, cycling incidents accounted for 3% (n = 136) of all cases and 2% (n = 9) of all in-hospital deaths.

For these cases

- The mean age was 37,
- The mean ISS was 24 and
- The mean LOS was 11 days.

4.7 Other Causes of Injury

In this report, 510 (12%) injury cases were reported as due to all other causes (other than motor vehicle collisions, unintentional falls and intentional injury). All other causes accounted for 46 (9%) deaths. All other causes included injuries due to railway incidents, motor vehicle boarding or alighting, other road vehicles, water transport, air and space transport, vehicle incidents not elsewhere classified, fire and flames, natural and environmental factors, drowning, suffocation, foreign bodies (excluding choking), injuries due to legal intervention, injuries in which the intentionality is undetermined and injuries due to operations of war.

Chapter 5

Context of Injury

5.1 Place of Injury

Place of injury is documented in the OTR CDS based on ICD definitions. As seen in Table 7 of Appendix H, 4,167 cases (over 99%) were documented with a place of injury:

- 1,728 (41%) indicated a street or highway, and
- 1,136 (27%) indicated home as the place of injury.

There were 13 cases (less than 1%) that did not have a place of injury documented in the 2008–2009 OTR CDS.

5.2 Work-Related Injury

Work-related injuries accounted for 217 (5%) cases. Of these cases

- The mean ISS was 24,
- The mean age was 42,
- The mean LOS in hospital was 15 days and
- The majority of work-related hospitalizations were for males (95%, n = 206).

5.3 Sports and Recreational Injury

The OTR CDS permits the documentation of whether the injured person was involved in a sports or recreational activity at the time of injury and, if so, specification of the type of activity. Currently, the sports and recreation code in the OTR CDS distinguishes 99 types of sports and recreational activities.

Nine percent (n = 367) of injuries were due to participation in sports and recreational activities as defined by the customized sports and recreational activity codes in the OTR CDS.

The most common sports and recreational injuries documented in the 2008–2009 OTR CDS were related to cycling (23%, n = 84), all-terrain vehicles (21%, n = 77), skiing (10%, n = 37), dirt biking/mini-biking/motocross (8%, n = 28) and horseback riding (4%, n = 16).

Table 1 provides further information about sports and recreational injuries and leading activities.

Table 1
Summary Statistics for Sport and Recreational Injury Activities, 2008–2009

Activity	Cases n (%*)	Mean			Males n (%†)	In-Hospital Deaths n (%†)	DIEs n (%†)
		Age (Years)	ISS	LOS (Days)			
Cycling	84 (23)	33	24	10	74 (88)	4 (5)	0 (0)
All-Terrain Vehicle	77 (21)	35	24	13	63 (82)	5 (6)	0 (0)
Skiing	37 (10)	30	25	14	33 (89)	0 (0)	1 (3)
Dirt Bike/Mini-Bike/ Motocross	28 (8)	27	23	8	28 (100)	1 (4)	0 (0)
Horseback Riding	16 (4)	37	20	7	4 (25)	0 (0)	0 (0)
All Sports/Recreation	**367**	**31**	**22**	**10**	**302 (82)**	**19 (5)**	**1 (0.3)**

Notes
* Percent of all sports and recreational injuries (n = 367).
† Percent within cause of sport and recreational injury.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

5.4 Blood Alcohol Concentration

TRAC recommended that blood alcohol concentration (BAC) be routinely collected at lead trauma hospitals on all trauma patients older than age 10 when the patient is admitted within 12 hours of the incident.

More than half (56%, n = 2,359) of the cases had blood alcohol testing reported to the OTR CDS. Of those, 685 (29%) had a BAC greater than zero, and 537 (23%) had a positive alcohol concentration, defined as greater than or equal to 0.08% or 17.4 mmol/L and reflecting the legal positive blood alcohol limit. Cases with a positive alcohol concentration represented 13% (n = 537) of all cases. Among these cases, 44% (n = 237) were admitted due to motor vehicle collisions, 29% (n = 155) were admitted due to unintentional falls and 21% (n = 111) were admitted due to injury purposely inflicted by another person.

Table 2 provides further information about cases with BAC greater than or equal to 17.4 mmol/L and the leading causes of injury among these cases.

Table 2
Summary Statistics for Cases With Blood Alcohol Concentration Greater Than or Equal to 0.08% or 17.4 mmol/L, 2008–2009

Cause	Cases n (%*)	Mean			Males n (%†)	In-Hospital Deaths n (%†)	DIEs n (%†)
		Age (Years)	ISS	LOS (Days)			
Motor Vehicle Collision	237 (44)	35	29	16	198 (84)	19 (8)	1(0.4)
Unintentional Fall	155 (29)	49	24	14	125 (81)	26 (17)	0 (0)
Intentionally Inflicted by Others	111 (21)	33	22	9	102 (92)	7 (6)	0 (0)
All Positive BAC	**537**	**39**	**26**	**15**	**451 (84)**	**56 (10)**	**1(0.2)**

Notes
* Percent of all positive BAC cases (n = 537).
† Percent within cause of injury.
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Chapter 6

Clinical Aspects of Injury

6.1 Type of Injury

Blunt injury accounted for 3,855 (92%) cases, penetrating injury for 237 (6%) and burns for 87 (2%).

6.2 Pre-Hospital Care

COLLECTOR was customized to include several data elements to describe the patient's care at the scene and en route to hospital. Included in pre-hospital care data elements are mode of transport information, vital signs and non-operative procedures at the scene.

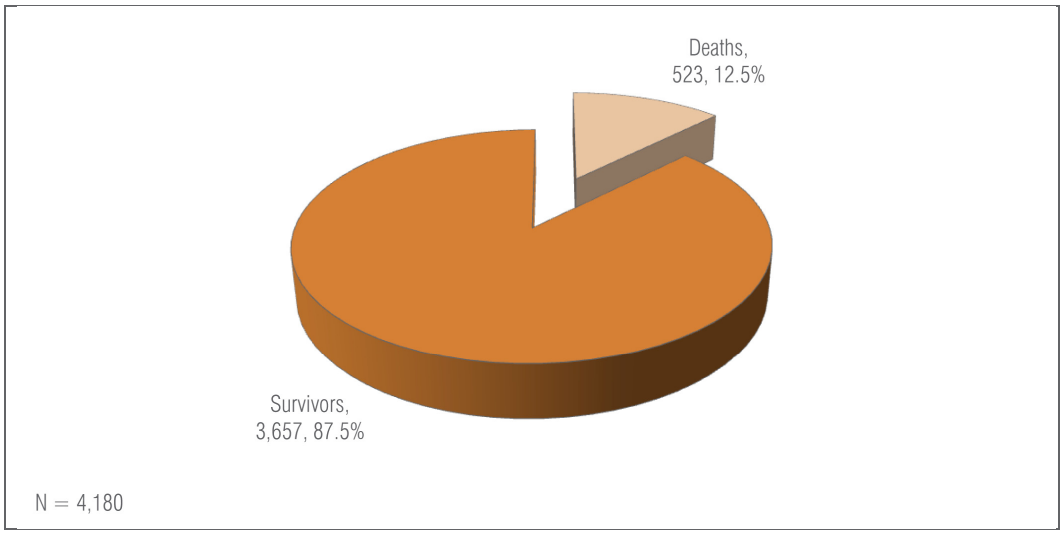
As seen in Table 9 of Appendix H

- Some 524 cases (13%) required extrication from the scene (extrication is documented if the patient was trapped and required release from the scene of the incident; examples include extrication from motor vehicles, dwellings on fire and falls);
- The mean scene time was 20 minutes (defined as the time the ambulance arrived at the scene to the time the ambulance left the scene) (median = 18); and
- The mean pre-hospital time was 80 minutes (defined as the time of incident to the time the ambulance arrived at the first hospital) (median = 53).

6.3 Discharge Disposition

Figure 21a shows the discharge disposition of all cases. In the 2008–2009 OTR CDS, 13% (n = 523) of the 4,180 cases died, either in hospital or DIE.

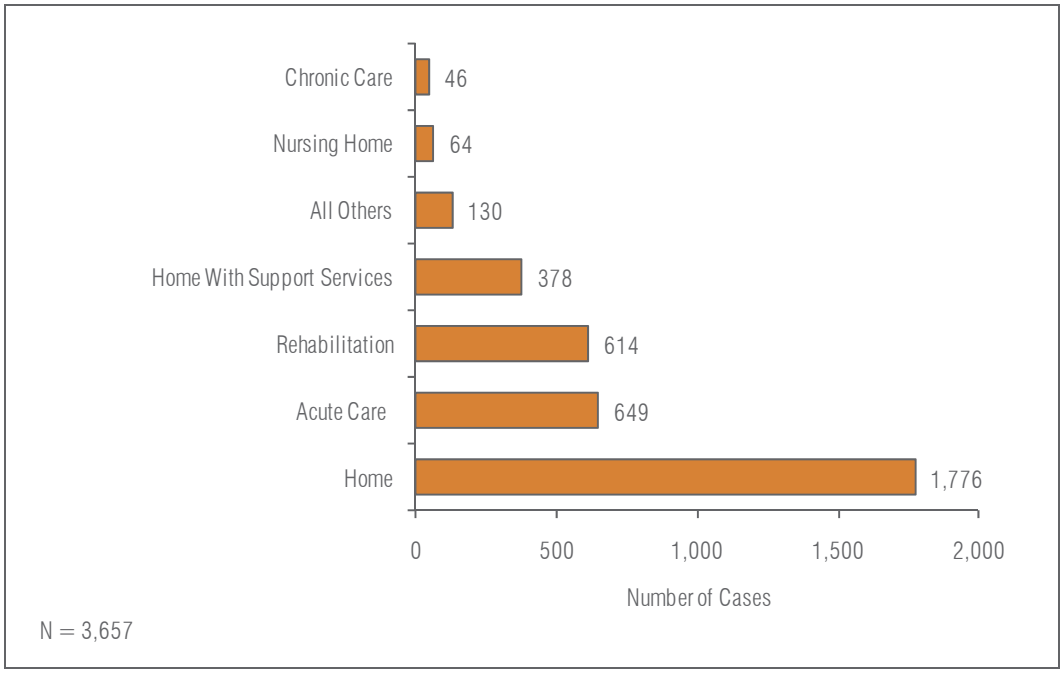
Figure 21a
Discharge Disposition, All Cases, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 21b shows the discharge disposition of the survivors: 59% (n = 2,154) were discharged home, including 378 discharged home with support services; 18% (n = 649) were discharged to an acute care facility; 17% (n = 614) were discharged to a rehabilitative facility; and 7% (n = 240) were discharged to chronic care, a nursing home or other facility.

Figure 21b
Discharge Disposition, Survivors, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

6.4 Deaths

6.4.1 All Cases

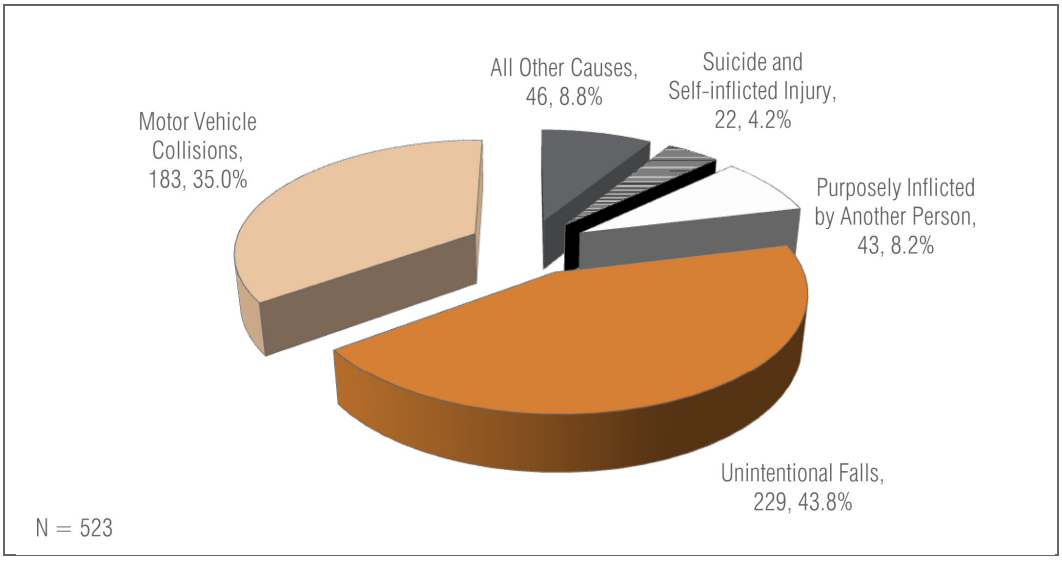
In the 2008–2009 OTR CDS, there were 523 deaths (13% of all cases). These deaths included 453 in-hospital deaths (11% of all cases) and 70 DIEs (2% of all cases).

Figure 22 shows the causes of death for these cases: 44% (n = 229) were due to unintentional falls and 35% (n = 183) were due to motor vehicle collisions.

Tables 11 and 13 in Appendix H show some statistics for all deaths:

- The mean age was 57 (median = 62)
- The mean ISS was 31 (median = 26)
- Some 69% (n = 360) were males
- Blunt injury was the primary injury type in 91% (n = 476) of deaths, while 6% (n = 33) had a penetrating injury and 3% (n = 14) had a burn injury
- The mean LOS was 10 days (median = 3)
- Deaths accounted for 7% of total hospital days (4,308 days)
- Organs were donated by 16% (n = 84) of cases who died as a result of their injury

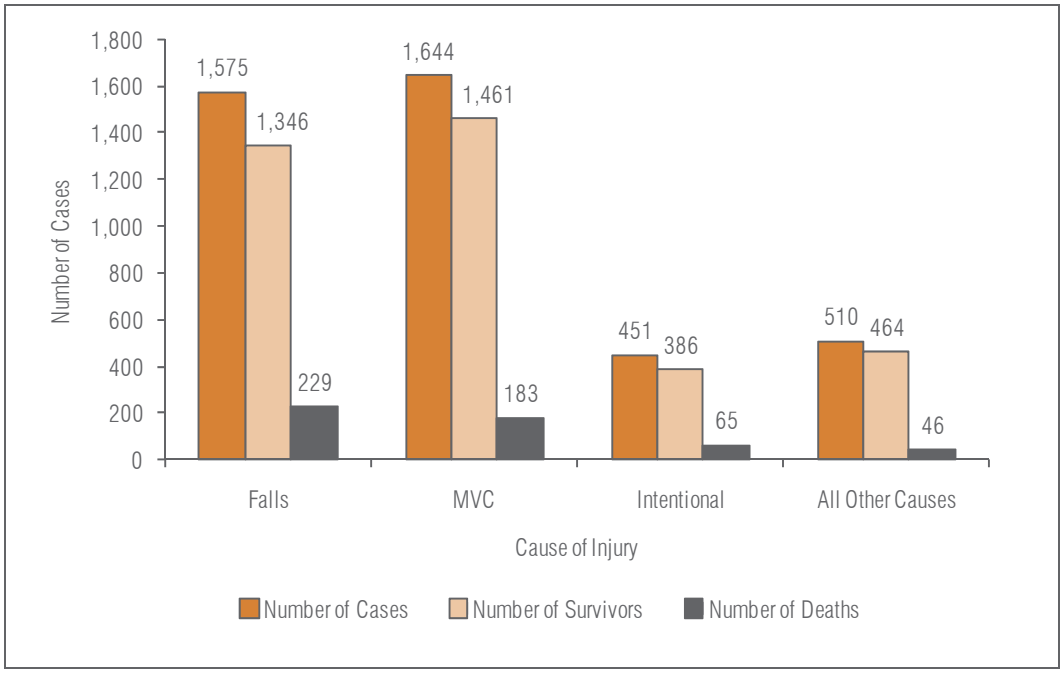
Figure 22
Causes of Death, All Cases, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 23 shows the causes of injury for cases who died compared to those who survived.

Figure 23
All Cases by Outcome and Cause of Injury, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

6.4.2 In-Hospital Deaths

In the 2008–2009 OTR CDS, there were 453 in-hospital deaths. In total, these cases were responsible for 4,308 hospital days (7% of total days). The mean LOS was 10 days (median = 3), the mean age was 59 and the mean ISS was 31. More than two-thirds of the in-hospital deaths were male (69%, n = 314).

6.4.3 Died in Emergency

In the 2008–2009 OTR CDS, there were 70 DIEs. Of these cases

- The mean ISS was 30,
- The mean age was 46 years and
- Some 66% (n = 46) were male.

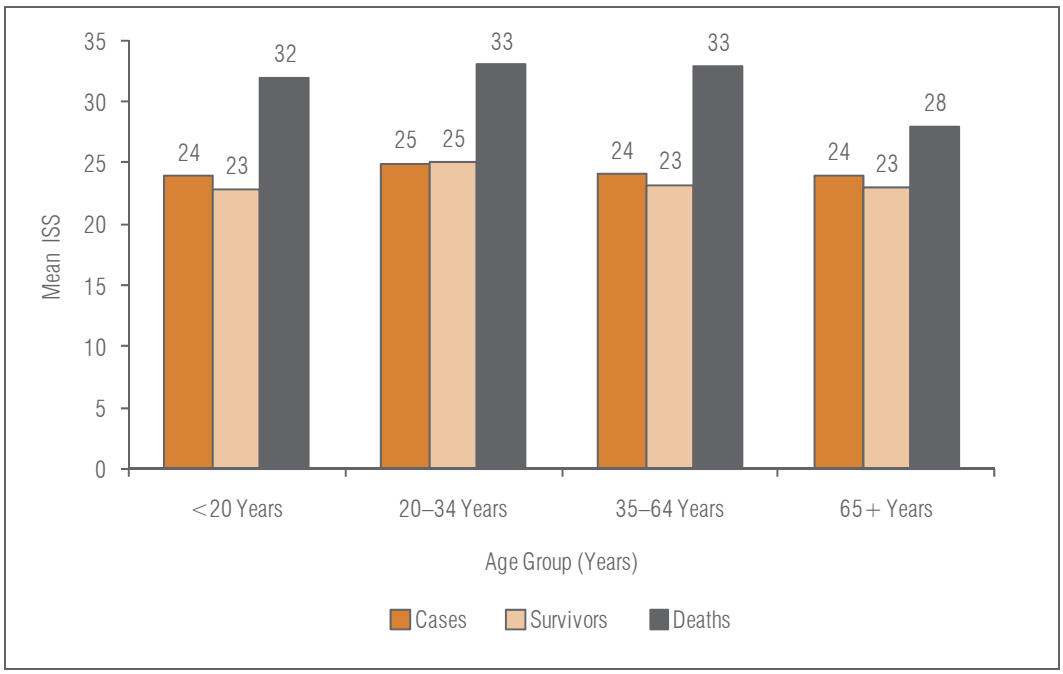
6.5 Injury Severity Score

The injury severity score (ISS) is an internationally recognized scoring system developed to assign a level of severity to injury. ISS scores range from 1 (minor) to 75 (major). Cases with an ISS greater than 12 are included in the OTR CDS.

In 2008–2009, the mean ISS was 24 (median = 24).

Figure 24 shows the mean ISS by age group and outcome. Among all cases, the mean ISS was slightly higher in the 20-to-34 age group (ISS = 25). Among deaths, the mean ISS was considerably higher for all age groups compared to survivors. The highest mean ISS for deaths was seen in the 20-to-34 age group and 35-to-64 age group (ISS = 33).

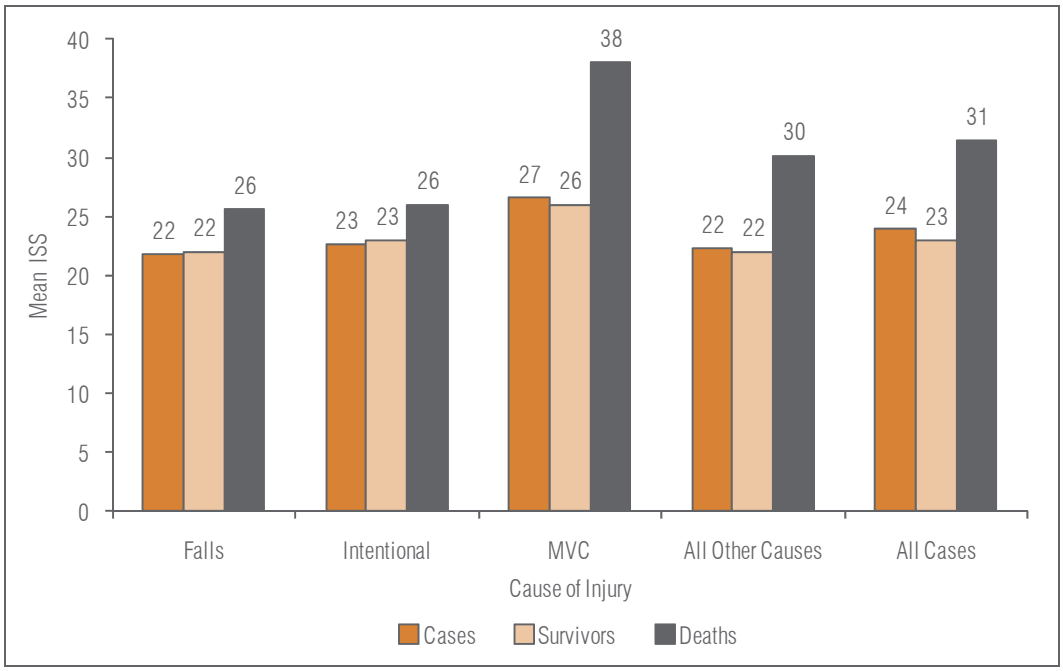
Figure 24
Mean Injury Severity Score by Outcome and Age Group, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 25 shows the mean ISS by outcome and cause of injury. Among all cases, survivors and deaths, the highest mean ISS was among motor vehicle collisions (ISS = 27, 26 and 38, respectively).

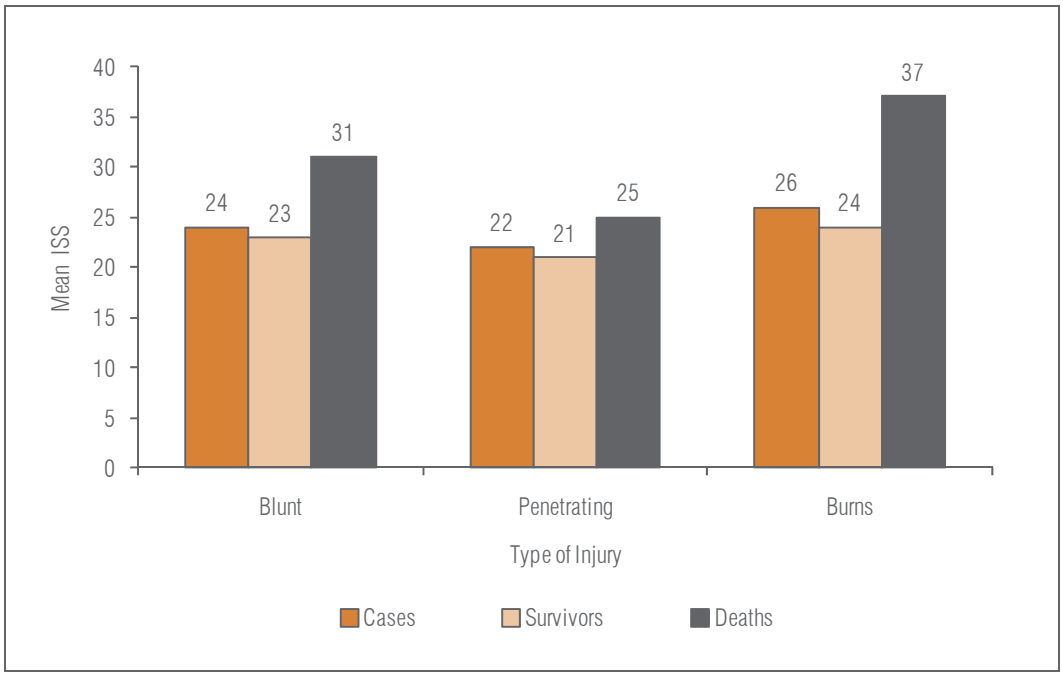
Figure 25
Mean Injury Severity Score by Outcome and Cause of Injury, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 26 shows the mean ISS by outcome and type of injury. Among all cases, survivors and deaths, the highest mean ISS was found among cases with burn injuries (ISS = 26, 24 and 37, respectively).

Figure 26
Mean Injury Severity Score by Outcome and Type of Injury, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

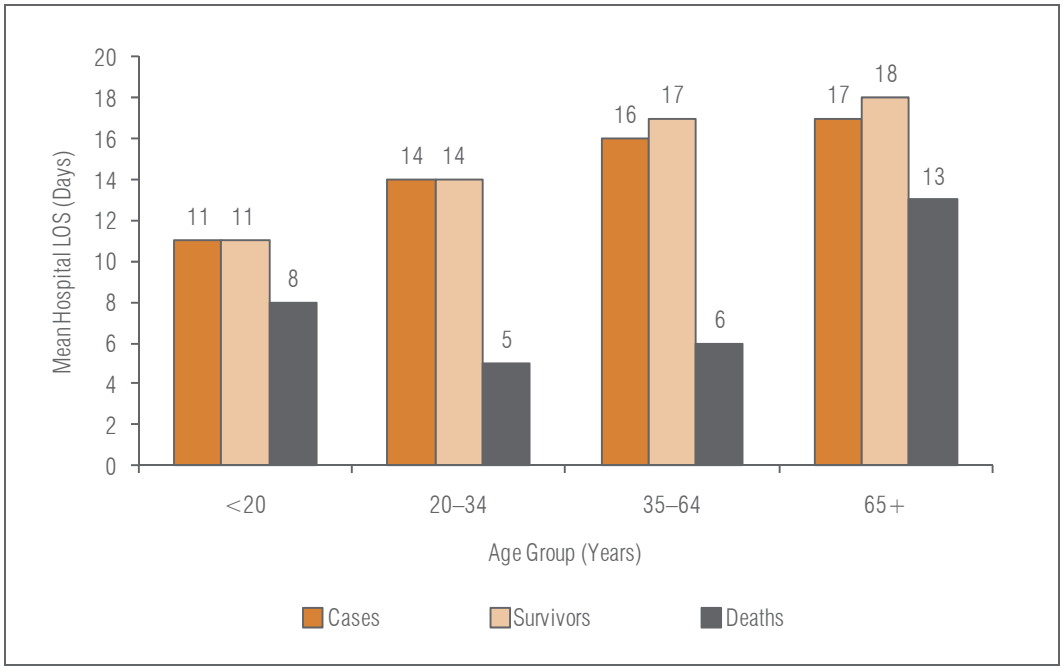
6.6 Length of Stay

LOS is defined as the total number of hospital days as calculated from date of admission to date of discharge or death. Patients who are not admitted are excluded from LOS calculations.

Injury cases in the 2008–2009 OTR CDS accounted for 60,827 hospital days with a mean LOS of 15 days (median = 8).

Figure 27 shows mean LOS by outcome and age group. Among all cases, the highest mean LOS was among cases age 65 and older (LOS = 17). Among survivors and deaths, the highest mean LOS was among cases age 65 and older (LOS = 18 and 13 days, respectively). There was a general trend of increasing LOS with increasing age.

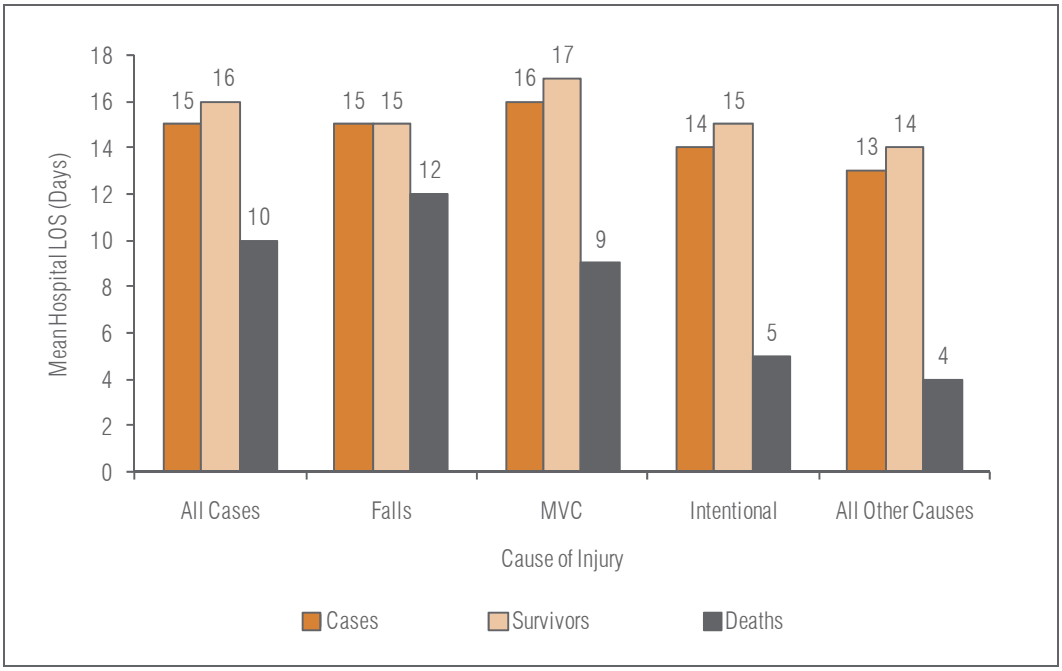
Figure 27
Mean Length of Stay by Outcome and Age Group, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 28 shows mean LOS by outcome and major cause of injury. For all cases and survivors, the highest mean LOS was for motor vehicle collisions and falls (LOS = 16 and 17 days, respectively). Among deaths, the highest mean LOS was for unintentional falls (LOS = 12 days).

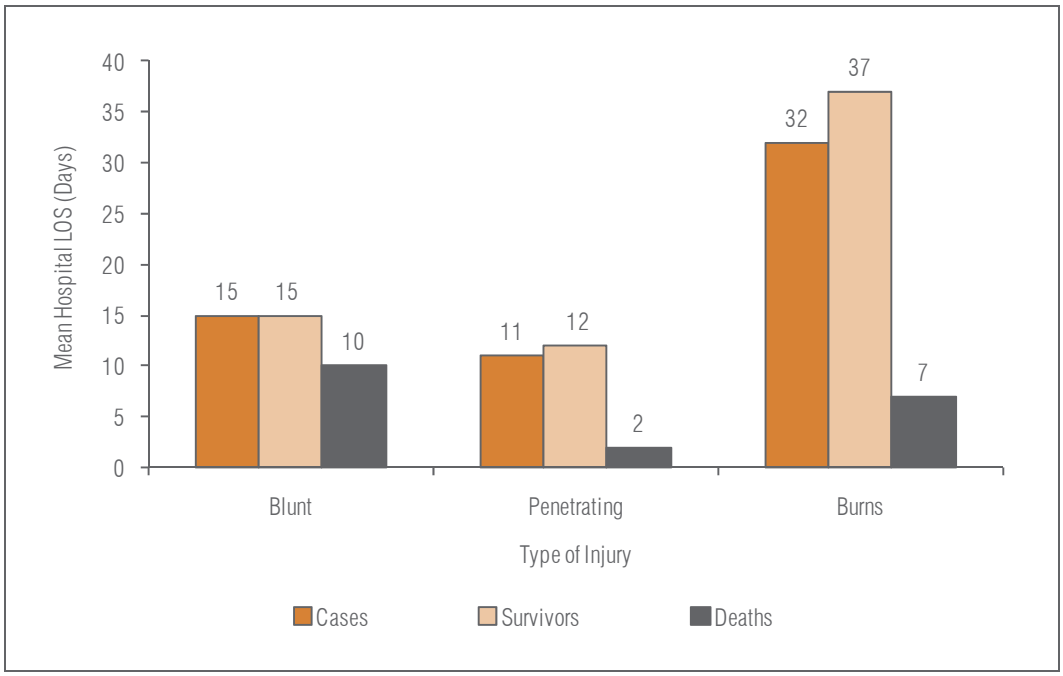
Figure 28
Mean Length of Stay by Outcome and Cause of Injury, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Figure 29 shows mean LOS by outcome and type of injury. For all cases, survivors and deaths, the highest mean LOS was among cases with burn injuries (LOS = 32, 37 and 7, respectively).

Figure 29
Mean Length of Stay by Outcome and Type of Injury, 2008–2009



Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

6.7 Special Care Units

For the purposes of the OTR CDS, special care units (SCUs) include intensive care and observation units with a normal patient-to-nurse ratio of at least 2:1.

Of the 2,456 cases (59% of all cases) in the OTR CDS who stayed in an SCU in 2008–2009, 86% (n = 2,100) were discharged from hospital alive and 14% (n = 356) died.

Table 3 shows further information for cases treated in SCUs.

Table 3
Summary Statistics for Special Care Unit Cases, 2008–2009

Discharge Status	Cases n (%*)	Mean			
		Age (Years)	ISS	SCU LOS (Days)	Hospital LOS (Days)
Discharged Alive	2,100 (86)	44	26	9	21
Died in Hospital	356 (14)	55	33	7	10
All SCU Cases	**2,456**	**46**	**27**	**8**	**19**

Note
* Percent of all special care unit cases (n = 2,456).
Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

6.8 PRE Analysis

PRE analysis is a methodology that can be used by a trauma institution for self-audit. To implement PRE using the Trauma and Injury Severity Score (TRISS),[iii] each patient is characterized by the revised trauma score (RTS) measured at hospital admission and the ISS based on surgery, CT scan, autopsy or definitive diagnosis. Each patient's values are plotted on a graph with ISS and RTS axes. Survivors (L) and non-survivors (D) have different plotting symbols. The sloping line identified as "P_s50" represents the combinations of RTS and ISS, which have a 0.50 probability of survival for patients in the baseline population (see Appendix G).

Patients whose RTS–ISS coordinates are above the P_s50 line (non-shaded region) have probabilities of survival less than 0.50. Patients whose coordinates are below the line (shaded region) have survival probabilities that exceed 0.50. Survivors whose coordinates are above the P_s50 line (non-shaded region) and non-survivors whose coordinates are below the line (shaded region) are considered atypical (unexpected in a statistical sense) and worthy of medical review. Data from such non-survivors may be reviewed for the possibility of predictive index failure, health care system failure or therapeutic failure. Reviews for exceptional survivors may provide guidelines for future patient management.

iii. TRISS is a calculated field by COLLECTOR based on the first recorded set of vital signs at the lead trauma hospital. It combines both physiologic and anatomic indices to characterize the severity of injury and estimate patient survival probability.

Appendix G shows PRE analyses for adult patients age 15 to 54 and age 55 and older for blunt and penetrating wounds. PRE analysis for pediatric patients (younger than age 15) is also shown. Due to the current software specifications, PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

6.8.1 Blunt Injuries: 2004–2005 Through 2008–2009

As indicated above, PRE analyses are available for five different groups. However, only blunt injuries to adults offer enough cases to provide meaningful comparison across the five years of data since 2004–2005.

Table 4 shows that over the past five years, the proportion of unexpected deaths among adults age 15 to 54 hospitalized with blunt injuries fluctuated from a low of 0.8% (n = 15) in 2004–2005 to a high of 1.4% (n = 25) in 2008–2009. The percentage of unexpected survivors ranged from a high of 0.9% (n = 15) in 2008–2009 to a low of 0.4% (n = 9) in 2006–2007.

Table 4
PRE Analyses of Adult (Age 15 to 54) Blunt Injuries, 2004–2005 to 2008–2009

	2004–2005 n (%)	2005–2006 n (%)	2006–2007 n (%)	2007–2008 n (%)	2008–2009 n (%)
Unexpected Deaths	15 (0.8)	19 (0.9)	24 (1.1)	28 (1.2)	25 (1.4)
Unexpected Survivors	11 (0.6)	9 (0.4)	9 (0.4)	10 (0.5)	15 (0.9)
Eligible Cases	1,951	2,048	2,202	1,931	1,735

Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

PRE analyses indicate that the percentage of unexpected deaths among cases age 55 and older fluctuated from a low of 7.0% in 2004–2005 (n = 96) to a high of 8.7% in 2008–2009 (n = 132). The proportion of unexpected survivors also fluctuated, with a low of 1.1% (n = 15) in 2004–2005 and a high of 1.5% (n = 22) in 2008–2009 (Table 5).

Table 5
PRE Analyses of Adult (Age 55+) Blunt Injuries, 2004–2005 to 2008–2009

	2004–2005 n (%)	2005–2006 n (%)	2006–2007 n (%)	2007–2008 n (%)	2008–2009 n (%)
Unexpected Deaths	96 (7.0)	102 (7.1)	118 (7.8)	120 (7.5)	132 (8.7)
Unexpected Survivors	15 (1.1)	18 (1.3)	22 (1.5)	19 (1.2)	22 (1.5)
Eligible Cases	1,374	1,432	1,517	1,608	1,517

Source
Ontario Trauma Registry, 2008–2009, Canadian Institute for Health Information.

Appendix A—Definition of Terms

Note: In this report, the terms “accident” and “accidentally” used in the International Classification of Diseases have been replaced with “incident” and “unintentionally.”

abbreviated injury scale (AIS)

The AIS was developed to provide researchers with a numeric method of ranking and comparing injuries by severity and to standardize the terminology used to describe injuries. The AIS is a consensus-derived, anatomically based system that classifies individual injuries by body region on a six-point ordinal severity scale ranging from AIS 1 (minor) to AIS 6 (currently untreatable).

acute care hospital

A hospital in which active treatment is received.

admission

An admission to a participating acute care hospital in Ontario as a result of injury, defined by an appropriate ICD external cause of injury code and an ISS greater than 12. Admissions include hospital deaths. For more information on inclusion criteria for admissions in the Comprehensive Data Set, refer to appendices B and C.

admission day

The day of the week the patient is admitted to hospital.

age group

The age groups used by the OTR for reporting were selected for comparability to other sources of information and for reporting on specific trends such as injury in children, young adults and the elderly. Generally, the age groups reported are younger than 1 year, 1 to 4, 5 to 9, 10 to 14, 15 to 19, 20 to 24, 25 to 34, 35 to 44, 45 to 54, 55 to 64, 65 to 74, 75 to 84, and older than 85. Age groups were adjusted in Table 17 to match the *Ontario Road Safety Annual Report* from the Ministry of Transportation.

aircraft

Any device for transporting passengers or goods in the air, including airplanes, balloons, bombers, gliders, parachutes and military aircraft.

autopsy

Refers to a case for which a post-mortem examination or autopsy was completed.

blood alcohol concentration (BAC)

A positive BAC is greater than or equal to 17.4 mmol/L. The TRAC recommends that BAC be routinely collected on all trauma patients age 10 and older with an ISS greater than 12 who are admitted within 12 hours of the incident.

blunt injury type

Injury type reflects the cause of injury (such as a motor vehicle collision or a blow to the head). Blunt injury may include deep lacerations but does not include any injury in which a missile such as a knife or bullet enters the body.

burn injury type

Isolated burns with an ISS greater than 12 or burns with AIS = 1 are documented as a burn injury. These cases would not be included in a TRISS analysis. A burn injury with another injury AIS greater than 1 should be documented as a blunt or penetrating injury type, depending on the other injury.

Canadian Institute for Health Information (CIHI)

CIHI was established in February 1994. This not-for-profit corporation was created by integrating the Hospital Medical Records Institute, the MIS Group and specific health information programs from Health Canada and Statistics Canada.

case

A case in the CDS is any patient who has an ISS greater than 12 and an appropriate external cause of injury code and who meets one of the following criteria:

- Admitted to a lead trauma hospital, or
- Treated in the emergency department of a lead trauma hospital (not admitted) or
- Died in the emergency department of a lead trauma hospital after treatment was initiated (not admitted).

chronic care

The level of care required by a person who is chronically ill or has a functional disability (physical or mental) whose acute phase of illness is over, whose vital processes may or may not be stable, whose potential for rehabilitation may be limited and who requires a range of therapeutic services, medical management and/or skilled nursing care plus provision for meeting psychosocial needs. The period of time during which care is required is unpredictable but usually consists of months or years.

COLLECTOR

Specialized software from Digital Innovation, Inc. and Tri-Analytics, Inc. used by participating hospitals to collect pre-hospital, demographic, nature and cause of injury and follow-up information on severely injured patients. This software was customized for use in Ontario.

Comprehensive Data Set (CDS)

One of three major data sets of the OTR, which includes data on severely injured patients admitted to trauma hospitals in the province. Inclusion in the CDS is based on injury severity.

cyclist

Any person riding on a pedal cycle or in a sidecar or trailer attached to such a vehicle.

Death Data Set from the Office of the Chief Coroner

One of three major data sets of the OTR, which includes data on all injury deaths in the province of Ontario. This data is provided by the Office of the Chief Coroner.

deaths

All deaths occurring in participating hospitals with an ISS greater than 12. Those patients who are dead on arrival are excluded.

died in emergency (DIE)

A DIE is defined as a patient who dies in the emergency department after any active treatment or resuscitation by the trauma team or emergency department physician after the patient enters the emergency department. DIEs may include patients who arrive vital signs absent (VSA) if treatment or resuscitation is initiated. Patients who are admitted to hospital and die in the emergency department while waiting for transfer are considered an in-hospital death rather than a DIE.

direct admission

A direct admission is a patient who was admitted directly to the ICU or a ward, bypassing the emergency room.

discharge disposition

A patient's discharge disposition is the location to which the patient is discharged or the services arranged for the patient immediately upon discharge from the lead trauma hospital. Discharge disposition is documented as inappropriate for deaths. Menu options for discharge disposition include home, home with support services, another acute care facility, general rehabilitation facility, chronic care facility, nursing home, special rehabilitation facility, foster care/Children's Aid and other.

discharged alive

An admitted patient who is discharged from hospital alive, including those patients who sign themselves out against medical advice.

driver

A driver of a motor vehicle is the occupant of the motor vehicle operating it or intending to operate it.

English-speaking

Refers to patients who are reasonably conversant in the English language and do not require an interpreter.

external cause of injury

The external cause of injury codes in the ICD coding system allow the classification and analysis of environmental events and circumstances as the cause of injury. External cause of injury codes vary depending on the coding system (for example, unintentional falls are

coded as E880 to E888 in the ICD-9 coding system and as W00 to W19 in ICD-10-CA). Please see the definition *ICD (International Classification of Diseases)* for an explanation of the various coding systems. All OTR reports are based on the first valid external cause code recorded unless otherwise specified. COLLECTOR allows hospitals to document up to three external cause of injury codes. External cause codes that are *included* in the trauma definition are listed in Appendix B. Note that external cause codes are termed *external causes of morbidity and mortality* (V01 to Y98) in the ICD-10-CA coding system.

extrication required

Extrication is documented if a patient was trapped and required release from the scene of the incident. Examples include extrication from motor vehicles and dwellings on fire and falls where extrication is required.

general rehabilitation

See *rehabilitation* definition. General rehabilitation involves less-intensive rehabilitation of shorter duration than special rehabilitation.

homicide

Injuries inflicted by another person with intent to injure or kill, by any means.

ICD (International Classification of Diseases)

The ICD is a WHO (World Health Organization) publication that classifies morbidity and mortality information for statistical purposes, indexing of hospital records by disease and operations and data storage and retrieval. ICD manuals may be located in hospital health record departments or in public libraries.

International Classification of Diseases, 9th Revision (ICD-9)

ICD-9 is based on the official version of the World Health Organization's ninth revision.

ICD-9-CM

In 1977, a steering committee was convened by the National Centre for Health Statistics to provide advice on the development of a clinical modification of the ICD-9 with increased detail necessary for medical research. ICD-9-CM is totally compatible with ICD-9, meeting the need for comparability of morbidity and mortality statistics at the international level.

International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada (ICD-10-CA)

ICD-10-CA is based on the WHO's ICD-10 and is wholly comparable with that classification. ICD-10 is the official classification used for reporting mortality data in Canada; ICD-10-CA is the national standard for reporting morbidity statistics.

in-hospital death

A patient who dies after arrival at the participating hospital, excluding those patients who are dead on arrival (DOA).

intracranial pressure (ICP) days

Refers to the number of days that ICP is monitored. ICP days include any part of one day up to midnight including the days the ICP is discontinued (excluding the day ICP is begun). ICP monitoring is used to evaluate a head-injury patient's response to therapy and may also be used as a treatment modality to vent cerebrospinal fluid.

injured person

An injured person is identified by a subdivision of the external cause of injury codes for all transport external cause codes. Injured persons include drivers, passengers, pedestrians, cyclists and other specified persons.

injury resulting from operations of war

An external cause of injury code category used to classify injuries to military personnel and civilians caused by war and civil insurrection and occurring during the time of war and insurrection.

injury severity score (ISS)

The ISS is an internationally recognized scoring system developed to assign a level of severity to injury. ISS scores range from 1 (minor) to 75 (major).

injury type

Refers to the patient's most serious injury; may be classified as blunt, penetrating or burns. In determining the type of injury, the cause of injury is considered. Also see definitions for *penetrating injury type*, *blunt injury type* and *burn injury type*.

injury undetermined whether unintentionally or purposely inflicted

An external cause of injury code category used when, after a thorough investigation by the medical examiner, coroner or other legal authority, it cannot be determined whether the injuries are unintentional, suicidal or intentional.

intentional injury

Intentional injury refers to injury purposely inflicted by another person or by the patient.

intubated

Refers to patients who are intubated for airway maintenance.

late effects

Conditions reported as such or occurring as sequelae one year or more after injury. Late effects are excluded from the definition of trauma.

legal intervention

An external cause of injury code category used to classify injuries inflicted by the police or other law enforcing agents, including military on duty, in the course of arresting or attempting to arrest lawbreakers, suppressing disturbances, maintaining order and other legal action.

length of stay (LOS)
Total number of hospital days as calculated from date of admission to date of discharge or death.

master numbering system
A system developed for the purpose of bringing together all health facilities and programs under one system of identification. Included are health and health-related units, facilities, clinics, programs and services. Each such organization has been assigned a unique four-digit identifying code. A two-digit alphabetic code is used to identify the type of institution.

mean
A measure of central tendency of a set of observations; the average.

median
A measure of central tendency of a set of observations; 50th percentile (the point above and below which 50% of data fall).

Minimal Data Set
One of three major data sets of the OTR, which includes data on injury admissions to acute care hospitals in Ontario. Data is downloaded from CIHI's Discharge Abstract Database.

month of admission
Reports are generated by the month in which a patient was admitted to hospital rather than discharge date.

motor vehicle
Any mechanically or electrically powered device, not operated on rails, upon which any person or property may be transported or drawn upon a highway. Any object such as a trailer, coaster, sled or wagon being towed by a motor vehicle is considered a part of the motor vehicle. This category includes automobiles, buses, fire engines, motorcycles, mopeds or scooters, vans, trucks, construction machinery, farm and industrial machinery, steamrollers, tractors, army tanks, highway graders or similar vehicles on wheels or treads, while in transport under their own power.

motor vehicle incident
A transport incident involving a motor vehicle. It is defined as a motor vehicle traffic incident or as a motor vehicle non-traffic incident according to whether the incident occurs on a public highway or elsewhere.

motor vehicle non-traffic incident
Any motor vehicle incident that occurs entirely in any place other than a public highway.

motor vehicle traffic incident
Any motor vehicle incident occurring on a public highway (or originating or terminating with or involving a vehicle partially on the highway). A motor vehicle incident is assumed to have

occurred on the highway unless another place is specified, except in the case of incidents involving only off-road motor vehicles, which are classified as non-traffic incidents unless the contrary is stated.

motorcycle

A two-wheeled motor vehicle having one or two riding saddles and sometimes having a third wheel for the support of a sidecar. The sidecar is considered part of the motorcycle.

nature of injury

Injury diagnosis codes have been divided into the following broad categories of injuries to accommodate the reporting of both ICD-9 and ICD-10-CA codes: superficial, musculoskeletal, burns and corrosion, internal organs, crushing, open wound (including traumatic amputation), blood vessels, nerves and spinal cord, other and unspecified. The specific diagnosis codes that define these categories are found in Appendix E—Nature of Injury Reporting Categories.

off-road motor vehicle

A motor vehicle of special design to enable it to negotiate rough or soft terrain or snow. Examples of special design are high construction, special wheels and tires, tread-drive and air-cushion support. This category includes all-terrain vehicles, army tanks, hovercraft and snowmobiles.

operative procedure

Up to 10 operative procedures may be documented for 5 operating room (OR) visits at the primary and secondary hospital and 10 OR visits at the participating hospital.

operating room (OR) visits per admission

Refers to the number of OR encounters for the patient's admission. Up to 99 OR visits may be documented for each patient. Detailed information is collected on 5 OR visits at the primary and secondary hospital and 10 OR visits at the participating hospital.

organ donation

Up to four specific organs or tissue samples may be documented. Participating hospitals may also document if more than four organs or tissue samples were procured.

other incidents

This category was created from several ICD-10-CA external cause of injury codes. For specific ICD-10-CA codes included in this category, please see the *External Cause Groupings* document.

other road vehicle

Any device, except a motor vehicle, in, on or by which any person or property may be transported on a highway. This category includes pedal cycles, animals carrying persons or goods, animal-drawn vehicles, animals harnessed to conveyances and streetcars.

outcome
Refers to whether the patient lived or died.

out-of-province resident
Defined as a patient whose province of residence is not Ontario.

paralytic agent
The purpose of collecting the number of paralytic agents in the CDS is not to document the number of paralytic agents administered but the number of cases in which the Glasgow Coma Scale score could not be calculated because a paralytic agent was administered. Paralytic agents stop muscular activity and help preserve or increase cerebral venous draining in severe head injury, helping to reduce or keep the ICP in the normal range.

participating hospital
One of 11 hospitals (14 sites) in the province that contributes data on severely injured patients to the CDS using specialized software and dedicated staff.

patient days
The number of days a patient is hospitalized.

pedal cycle
Any road transport vehicle operated solely by pedals, including bicycles, pedal cycles and tricycles.

pedal cyclist
Any person riding on a pedal cycle or in a sidecar attached to such a vehicle. Also see definition for cyclist.

pedestrian
Any person involved in an incident who was not at the time of the incident riding in or on a motor vehicle, railway train, streetcar, animal-drawn or other vehicle, bicycle or animal. The pedestrian category includes a person changing a tire on a vehicle, in or operating a pedestrian conveyance, making adjustments to the motor of a vehicle or on foot.

pedestrian conveyance
Any human-powered device by which a pedestrian may move other than by walking or by which a walking person may move another pedestrian, including baby carriages, wagons, ice skates, roller skates, scooters, skateboards, skis, sleds and wheelchairs.

penetrating injury type
Refers to an injury caused by a missile entering the body. Missiles include bullets, knives and items such as pieces of sharp glass or metal.

place of injury

The ICD options are used to specify place of injury for all cases in the CDS. Options include home, farm, mine, industry, recreation, street, public building, residential institution, other and unspecified. A place of injury may be documented for the primary, secondary and tertiary external cause of injury codes.

pre-hospital time

Pre-hospital time is calculated based on the incident time to the time the ambulance arrived at the first hospital.

protective device

Any device in use or not in use by the injured patient at the time of the incident. Menu options for protective devices include none, lap and shoulder belt, lap belt only, lap belt only of combined assembly, child safety seat used incorrectly, child safety seat used correctly, air bag deployed, other passive restraint device, helmet, equipment available but not used, no equipment available, use unknown, other safety equipment used, infant seat (less than 20 pounds), child seat (between 20 and 40 pounds), booster seat (greater than 40 pounds), seatbelt not further specified (NFS) and helmet flew off. Up to four menu options may be documented.

public highway

A public highway or traffic way is the entire width between property lines of every way or place, of which any part is open to the use of the public for purposes of vehicular traffic as a matter of right or custom. This category excludes private driveways, parking lots and roads in airfields, farms, industrial premises, mines, private grounds and quarries.

railway incident

A transport incident involving a railway train or other railway vehicle operated on rails, whether in motion or not.

readmission

A readmission is an inpatient admission to the same participating hospital related to a previous trauma (ISS greater than 12) within unlimited time.

rehabilitation

That required by a person whose condition is relatively stable but unlikely to be resolved through convalescence or the normal healing process and who requires a specialized rehabilitation program to restore or improve functional ability. The intensity and duration of the type of care is dependent on the nature of the disability and patient progress, but maximum benefits usually can be expected within a period of several months. Also see *special rehabilitation* and *general rehabilitation*.

residence code
Unique four-digit numbers were assigned to each municipality and settlement in the province to classify patient residence information. The first two digits represent the county, district or regional municipality in which the place is located. Digits three and four identify municipalities within the county.

roadway
That part of the public highway designed, improved and ordinarily used for vehicular travel. This excludes driveways, parking lots, ramps, roads in farms, airfields, industrial premises, private grounds, mines and quarries.

scene time
Scene time is calculated based on the time the ambulance arrived at the scene to the time the ambulance left the scene.

single year of age
Individual values for ages less than 1 year through 100 years, which may be used rather than age groups.

small boat
Any watercraft propelled by paddle, oars or a small motor with a passenger capacity of less than 10.

special care unit (SCU)
An SCU is any unit where the normal patient-to-nurse ratio is 2:1. Other beds, such as those in the emergency department or recovery room, may be documented as SCU beds if they are used for more than 24 hours as SCU beds. SCUs include surgical intensive care units (ICUs), pediatric ICUs, neuro ICUs, burn ICUs, ICU step-down/observation units and other designated SCUs. Up to five SCU visits may be documented.

special rehabilitation
See *rehabilitation* definition. Special rehabilitation involves more intensive rehabilitation of longer duration than general rehabilitation.

suicide
Self-inflicted injuries specified as intentional, excluding admissions that result from poisoning.

survivors
Refers to those patients who are discharged alive.

total admissions
Total number of patients admitted to hospital excluding those who are DOA, DIE and discharged from the emergency department.

total patient days
Sum of LOS for all admissions.

transfer
A transferred patient is one whose first contact with a hospital is with a non-participating hospital and who is subsequently transferred to a participating hospital.

transport incident
Any incident (ICD-9 codes E800 to E848 and ICD-10-CA codes V01 to V99) involving a device designed primarily for, or being used at the time primarily for, conveying persons or goods from one place to another. In classifying incidents that involve more than one kind of transport, the following order of precedence of transport incidents should be used: aircraft and spacecraft, watercraft, motor vehicle, railway, other road vehicles.

Incidents involving agricultural and construction machines, such as tractors, cranes and bulldozers, are regarded as transport incidents only when these vehicles are under their own power on a highway; otherwise, the vehicles are regarded as machinery. Vehicles that can travel on land or water, such as hovercraft and other amphibious vehicles, are regarded as watercraft when on the water, as motor vehicles when on the highway and as off-road vehicles when on land but off the highway.

trauma
Injury resulting from the transfer of energy (for example, kinetic or thermal). See Appendix B for external cause of injury codes used to define trauma.

Trauma and Injury Severity Score (TRISS)
The TRISS is a calculated score that estimates the probability of survival using ISS and Revised Trauma Score.

Trauma Registry Advisory Committee (TRAC)
The multidisciplinary group responsible for guiding the implementation and operation of the OTR.

ventilator days
The number of days the patient was intubated and mechanically ventilated intermittently or continuously, excluding non-intubated patients on bi-level positive airway pressure (BIPAP) and intubated patients on continuous positive airway pressure (CPAP). Ventilator days include any part of one day up to midnight, including the day the ventilator is discontinued and excluding the day the ventilator is begun. A ventilator day is counted if a ventilated patient is admitted and discharged in the same day or if the ventilation is started and discontinued in the same day. Routine intubation for operating room is not included.

watercraft
Any device for transporting passengers or goods on the water.

Appendix B—Trauma Definition: External Cause of Injury Code Inclusions and Exclusions

The definition of trauma as injury resulting from the transfer of energy was approved by the Ontario TRAC.

The following tables list the categories used for trauma reporting purposes based on this definition. “Incident” and “unintentional” have been substituted for the terms “accident” and “accidental” used in the ICD definitions.

A. OTR CDS ICD-10-CA Inclusions

External Cause Code Category	Definition
V01 to V99	Transport incidents
V01 to V06, V09 to V90	Land transport incidents
V91 to V94	Water transport incidents
V95 to V97	Air and space transport incidents
V98 to V99	Other and unspecified transport incidents
W00 to W19	Unintentional falls
W20 to W45, W49	Exposure to inanimate mechanical forces
W50 to W60, W64	Exposure to animate mechanical forces
W65 to W70, W73, W74	Unintentional drowning and submersion
W75 to W77, W81, W83, W84	Other unintentional threats to breathing except due to inhalation of gastric contents, food or other objects
W85 to W94, W99	Exposure to electric current, radiation and extreme ambient air temperature and pressure
X00 to X06, X08, X09	Exposure to smoke, fire and flames
X10 to X19	Contact with heat and hot substances
X30 to X39	Exposure to forces of nature
X50	Overexertion and strenuous or repetitive movements
X52	Prolonged stay in weightless environment
X58 to X59	Unintentional exposure to other and unspecified factors
X70 to X84	Intentional self-harm, excluding poisoning
X86, X91 to X99, Y00 to Y05, Y07 to Y09	Assault, excluding poisoning
Y20 to Y34	Event of undetermined intent, excluding poisoning
Y35, Y36	Legal intervention and operations of war

B. OTR CDS ICD-9 Inclusions

External Cause Code Category	Definition
E800 to E807	Railway incidents
E810 to E819	Motor vehicle traffic incidents
E820 to E825	Motor vehicle non-traffic incidents
E826	Pedal cycle incidents
E827 to E829	Other road vehicle incidents
E830 to E838	Water transport incidents
E840 to E845	Air and space transport incidents
E846 to E848	Vehicle incidents not elsewhere classifiable
E880 to E888	Unintentional falls
E890 to E899	Incidents caused by fire and flame
E900 to E902, E906 to E909	Incidents due to natural and environmental factors
E910, E913	Incidents caused by drowning and suffocation
E914, E915	Foreign bodies (excluding choking)
E916 to E928	Other incidents
E953 to E958	Suicide and self-inflicted injury (excluding poisoning)
E960, E961, E963 to E968	Homicide and injury purposely inflicted by other persons (excluding poisoning)
E970 to E976, E978	Legal intervention
E983 to E988	Injury undetermined whether unintentionally or purposely inflicted
E990 to E998	Injury resulting from operations of war

Trauma Definition: External Cause of Injury Code Exclusions

The following lists the ICD-9 and ICD-10-CA external cause codes that are *excluded* from the OTR based on the definition of trauma.

ICD-10-CA Code Exclusion	Definition	ICD-9 Code Exclusion	Definition
W78 to W80	W78 Inhalation of gastric contents; W79 Inhalation and ingestion of food causing obstruction of respiratory tract; W80 Inhalation and ingestion of other objects causing obstruction of respiratory tract	**E911, E912**	Inhalation and ingestion of food and other objects causing obstruction
X20 to X29	Contact with venomous animals and plants	**E905**	Venomous animals and plants
X40 to X49	Unintentional poisoning and exposure to noxious substances	**E850 to E858, E860 to E869**	Poisoning by drugs or gases
X51	Travel and motion	**E903**	Travel and motion
X53, X54, X57, Y06	X53 Lack of food; X54 Lack of water; X57 Unspecified privation; Y06 Neglect and abandonment	**E904**	Hunger, thirst, exposure, neglect
X60 to X69	Intentional self-harm by poisoning	**E950 to E952**	Suicide and self-inflicted injury (poisoning)
X85, X87 to X90	Assault by poisoning	**E962**	Assault by poisoning
Y10 to Y19	Poisoning of undetermined intent	**E980 to E982**	Poisoning undetermined whether unintentionally or purposely inflicted
Y40 to Y59	Drugs, medicaments and biological substances causing adverse effects in therapeutic use	**E930 to E949**	Drugs, medicinal and biological substances causing adverse effects
Y60 to Y69	Misadventures to patients during surgical and medical care	**E870 to E876**	Misadventures
Y70 to Y82	Medical devices associated with adverse incidents in diagnostic and therapeutic use	**New Category—No ICD-9 Equivalent**	
Y83, Y84	Surgical and other medical procedures as the cause of abnormal reaction of the patient or of later complication, without mention of misadventure at the time of the procedures	**E878, E879**	Complications
Y85 to Y89	Sequelae of external causes of morbidity and mortality	**E929, E959, E969, E977, E989, E999**	Late effects
Y90 to Y98	Supplementary factors related to causes of morbidity and mortality classified elsewhere	**New Category—No ICD-9 Equivalent**	

Appendix C—Definition of Trauma

The following points are guidelines for inclusion criteria for the OTR CDS. The inclusion and exclusion criteria for the OTR CDS listed below reflect discussion by TRAC, the TRAC subcommittee and the OTR CDS Working Group.

Inclusion criteria are effective for patients admitted on and after April 1, 1995.

1. Patients included in the CDS must have an ISS greater than 12 with an appropriate external cause of injury code. In addition to the included external cause of injury codes, patients admitted with the following external cause of injury codes may also be included in the OTR CDS (as of April 1, 1995).

   External Cause of Injury Code Exceptions

   - Inhalation injury as defined in the *AIS Dictionary* should be used as a reference when there is documentation of the carboxyhemoglobin level. Inhalation injury should not be used in drowning or hanging cases.
   - Ingestion poisoning resulting in a physical injury with an ISS greater than 12 can be included. An example is a perforated esophagus due to chemical ingestion. If the perforated esophagus was due to vomiting, the case would not be included.
   - AIS 90 injuries describing length of unconsciousness and level of consciousness (includes response to painful stimuli) found in the Head section of the *AIS Dictionary* can be used for hypoxic injury, including hanging, strangulation and near drowning. Any documented head injury (hypoxic brain injury, cerebral edema) from the post-mortem report or diagnostic tests (CT, X-ray) must be included for these cases. If there is no documented head injury, either from diagnostic tests or a post-mortem examination, level of consciousness cannot be used. As stated in the *AIS Dictionary*, length of unconsciousness should always be used in preference to level of consciousness. Length of unconsciousness is defined from the first time the patient is known to be unconscious to the time the patient wakes up or is pronounced dead.

2. Patients who are DIEs are included and will be included in reports created centrally. A DIE is defined as a patient who dies in the emergency department after any active treatment or resuscitation by the trauma team or emergency department physician after the patient enters the emergency department. DIEs may include patients who arrive VSA if treatment or resuscitation is initiated. Patients who are admitted to hospital and die in the emergency department while waiting for transfer are considered an in-hospital death rather than a DIE.

3. Patients who are DOA are excluded. A DOA is defined as a patient who has not had active treatment by the trauma team or emergency department physician and is pronounced dead in the emergency department.

4. The injury must have occurred within one year of hospital admission and be the first admission to the lead trauma hospital. Patients admitted with chronic subdurals are included in the OTR CDS as a new record if the injury occurred within one year and the admission is the first to the lead trauma hospital.
5. The trauma team leader or trauma team need not be activated.
6. Patients may bypass the emergency department and be admitted directly to a service.
7. Patients with an ISS greater than 12 and an appropriate external cause of injury code who are treated in the emergency department at a lead trauma hospital and transferred to another lead trauma hospital for admission should be included in both lead trauma hospitals.
8. These cases will be reported centrally in the lead trauma hospital where the majority of the critical care is given rather than using the longest LOS.
9. Only cases being given active care should be included. Patients who are admitted to a lead trauma hospital for convalescence or rehabilitation because the facility is closer to home should not be included.
10. If a trauma patient with an ISS less than 12 is admitted to hospital and then is further injured in hospital (ISS less than 12), the case should not be included in either instance. Injuries should not be combined. If the second incident results in an ISS greater than 12, the case should be included; however, the injuries from the first incident should not be included but should be listed as a comorbidity if they contribute to the patient's LOS. The only injuries used for scoring are the ones sustained related to the incident resulting in an ISS greater than 12.
11. A trauma patient (ISS greater than 12) admitted to a lead trauma hospital who is further injured in hospital (ISS greater than 12) should be considered two separate incidents and would require two records in the OTR CDS.

General Coding Guidelines

1. Every data element in the OTR CDS should be documented. As of April 1, 1995, blanks are not acceptable except in cases where data elements are skipped by COLLECTOR. All menus include “unknown” and “inappropriate” as a menu selection to facilitate documenting every data element.

   Unknown should be used in cases where the information is not documented. Unknown should also be used if there are two conflicting sources of information that cannot be verified or for data elements where the information is expected to be made available but has not arrived at the time the record is closed. In cases where there are conflicting sources of information, the medical director should be consulted.

   Inappropriate is used when the information would not be meaningful or appropriate for a specific case. An example is a BAC in a child younger than 10 years of age or occupation in a non-work-related injury.

2. Dates and times should be documented whenever they are known. Many calculations are done in COLLECTOR, including pre-hospital time, scene time and LOS. It is important that all dates and times be entered sequentially for these calculations to be done. Data checks have been built in to alert the user to times that are not sequential. For example, the time the ambulance call is received and the time the ambulance is dispatched (Screen 3.3) must be sequential. If these times are documented as the same on the Ambulance Call Report, the second time should be documented as one second later. A best guess should not be used in order to maintain the integrity of the data. It is possible to enter “U” in portions of the date and time data elements in COLLECTOR when all the information is not available. A data element has been added to COLLECTOR to document the approximate date of injury (within one week, within one month, within three months, within one year) when the actual date is not available.

3. Old injuries such as healing fractures should not be included. Only injuries that are related to the cause of admission should be documented.

4. When patients are readmitted to a participating hospital with a missed injury, the missed injury should be added to the original list of injuries. If the patient is admitted for the first time to the lead trauma hospital with a missed injury, all injuries relating to the ISS greater than 12 incident should be documented.

Appendix D—External Cause of Injury Reporting Categories

External Cause Code Group	ICD-10-CA Code	ICD-9 Code
Motor Vehicle Traffic—Driver	V30.5, V31.5, V32.5, V33.5, V34.5, V35.5, V36.5, V37.5, V38.5, V39.4, V40.5, V41.5, V42.5, V43.5, V44.5, V45.5, V46.5, V47.5, V48.5, V49.4, V50.5, V51.5, V52.5, V53.5, V54.5, V55.5, V56.5, V57.5, V58.5, V59.4, V60.5, V61.5, V62.5, V63.5, V64.5, V65.5, V66.5, V67.5, V68.5, V69.4, V70.5, V71.5, V72.5, V73.5, V74.5, V75.5, V76.5, V77.5, V78.5, V79.4, V83.0, V84.0, V85.0, V86.00, V86.08	E810 to E816, E818 to E819 (.0)
Motor Vehicle Traffic—Passenger	V30.6, V31.6, V32.6, V33.6, V34.6, V35.6, V36.6, V37.6, V38.6, V39.5, V40.6, V41.6, V42.6, V43.6, V44.6, V45.6, V46.6, V47.6, V48.6, V49.5, V50.6, V51.6, V52.6, V53.6, V54.6, V55.6, V56.6, V57.6, V58.6, V59.5, V60.6, V61.6, V62.6, V63.6, V64.6, V65.6, V66.6, V67.6, V68.6, V69.5, V70.6, V71.6, V72.6, V73.6, V74.6, V75.6, V76.6, V77.6, V78.6, V79.5, V83.1, V84.1, V85.1, V86.10, V86.18	E810 to E816, E818, E819 (.1)
Motor Vehicle Traffic—Motorcycle Driver	V20.4, V21.4, V22.4, V23.4, V24.4, V25.4, V26.4, V27.4, V28.4, V29.4	E810 to E816, E818, E819 (.2)
Motor Vehicle Traffic—Motorcycle Passenger	V20.5, V21.5, V22.5, V23.5, V24.5, V25.5, V26.5, V27.5, V28.5, V29.5	E810 to E816, E818, E819 (.3)
Motor Vehicle Traffic—Pedestrian	V02.1, V02.9, V03.1, V03.9, V04.1, V04.9, V09.2	E810 to E816, E818, E819 (.7)
Motor Vehicle Traffic—Pedal Cyclist	V12 (.4, .5, .9), V13 (.4, .5, .9), V14 (.4, .5, .9), V19 (.4, .5, .6)	E810 to E816, E818, E819 (.6)
Motor Vehicle Traffic—Other/Unspecified	V20.9, V21.9, V22.9, V23.9, V24.9, V25.9, V26.9, V27.9, V28.9, V29.6, V29.8, V29.9, V30.7, V30.9, V31.7, V31.9, V32.7, V32.9, V33.7, V33.9, V34.7, V34.9, V35.7, V35.9, V36.7, V36.9, V37.7, V37.9, V38.7, V38.9, V39.6, V39.8, V39.9, V40.7, V40.9, V41.7, V41.9, V42.7, V42.9, V43.7, V43.9, V44.7, V44.9, V45.7, V45.9, V46.7, V46.9, V47.7, V47.9, V48.7, V48.9, V49.6, V49.8, V49.9, V50.7, V50.9, V51.7, V51.9, V52.7, V52.9, V53.7, V53.9, V54.7, V54.9, V55.7, V55.9, V56.7, V56.9, V57.7, V57.9, V58.7, V58.9, V59.6, V59.8, V59.9, V60.7, V60.9, V61.7, V61.9, V62.7, V62.9, V63.7, V63.9, V64.7, V64.9, V65.7, V65.9, V66.7, V66.9, V67.7, V67.9, V68.7, V68.9, V69.6, V69.8, V69.9, V70.7, V70.9, V71.7, V71.9, V72.7, V72.9, V73.7, V73.9, V74.7, V74.9, V75.7, V75.9, V76.7, V76.9, V77.7, V77.9, V78.7, V78.9, V79.6, V79.8, V79.9, V82.1, V83.2, V83.3, V84.2, V84.3, V85.2, V85.3, V86 (.2, .30, .38), V87 (.0, .1, .2, .3, .4, .5, .6, .7, .8), V89.2	E810 to E816, E818, E819 (.4, .5, .8, .9)
Motor Vehicle Non-Traffic—Driver	V30.0, V31.0, V32.0, V33.0, V34.0, V35.0, V36.0, V37.0, V38.0, V39.0, V40.0, V41.0, V42.0, V43.0, V44.0, V45.0, V46.0, V47.0, V48.0, V49.0, V50.0, V51.0, V52.0, V53.0, V54.0, V55.0, V56.0, V57.0, V58.0, V59.0, V60.0, V61.0, V62.0, V63.0, V64.0, V65.0, V66.0, V67.0, V68.0, V69.0, V70.0, V71.0, V72.0, V73.0, V74.0, V75.0, V76.0, V77.0, V78.0, V79.0, V83.5, V84.5, V85.5, V86.50, V86.51, V86.58	E820 to E823, E825 (.0)

External Cause Code Group	ICD-10-CA Code	ICD-9 Code
Motor Vehicle Non-Traffic—Passenger	V30.1, V31.1, V32.1, V33.1, V34.1, V35.1, V36.1, V37.1, V38.1, V39.1, V40.1, V41.1, V42.1, V43.1, V44.1, V45.1, V46.1, V47.1, V48.1, V49.1, V50.1, V51.1, V52.1, V53.1, V54.1, V55.1, V56.1, V57.1, V58.1, V59.1, V60.1, V61.1, V62.1, V63.1, V64.1, V65.1, V66.1, V67.1, V68.1, V69.1, V70.1, V71.1, V72.1, V73.1, V74.1, V75.1, V76.1, V77.1, V78.1, V79.1, V83.6, V84.6, V85.6, V86.60, V86.61, V86.68	E820 to E823, E825 (.1)
Motor Vehicle Non-Traffic—Motorcycle Driver	V20.0, V21.0, V22.0, V23.0, V24.0, V25.0, V26.0, V27.0, V28.0, V29.0	E820 to E823, E825 (.2)
Motor Vehicle Non-Traffic—Motorcycle Passenger	V20.1, V21.1, V22.1, V23.1, V24.1, V25.1, V26.1, V27.1, V28.1, V29.1	E820 to E823, E825 (.3)
Motor Vehicle Non-Traffic—Pedestrian	V02.0, V03.0, V04.0, V09.0	E820 to E823, E825 (.7)
Motor Vehicle Non-Traffic—Pedal Cyclist	V12 (.0, .1, .2), V13 (.0, .1, .2), V14 (.0, .1, .2), V19 (.0, .1, .2)	E820 to E823, E825 (.6)
Motor Vehicle Non-Traffic—Other/Unspecified	V20.2, V21.2, V22.2, V23.2, V24.2, V25.2, V26.2, V27.2, V28.2, V29.2, V29.3, V30.2, V30.3, V31.2, V31.3, V32.2, V32.3, V33.2, V33.3, V34.2, V34.3, V35.2, V35.3, V36.2, V36.3, V37.2, V37.3, V38.2, V38.3, V39.2, V39.3, V40.2, V40.3, V41.2, V41.3, V42.2, V42.3, V43.2, V43.3, V44.2, V44.3, V45.2, V45.3, V46.2, V46.3, V47.2, V47.3, V48.2, V48.3, V49.2, V49.3, V50.2, V50.3, V51.2, V51.3, V52.2, V52.3, V53.2, V53.3, V54.2, V54.3, V55.2, V55.3, V56.2, V56.3, V57.2, V57.3, V58.2, V58.3, V59.2, V59.3, V60.2, V60.3, V61.2, V61.3, V62.2, V62.3, V63.2, V63.3, V64.2, V64.3, V65.2, V65.3, V66.2, V66.3, V67.2, V67.3, V68.2, V68.3, V69.2, V69.3, V70.2, V70.3, V71.2, V71.3, V72.2, V72.3, V73.2, V73.3, V74.2, V74.3, V75.2, V75.3, V76.2, V76.3, V77.2, V77.3, V78.2, V78.3, V79.2, V79.3, V80 (.3, .4, .5), V82.0, V83.7, V83.9, V84.7, V84.9, V85.7, V85.9, V86.7, V86.90, V86.91, V86.98, V88 (.0, .1, .2, .3, .4, .5, .6, .7, .8), V89.0	E820 to E823, E825 (.4, .5, .8, .9)
Motor Vehicle Boarding or Alighting	V20.3, V21.3, V22.3, V23.3, V24.3, V25.3, V26.3, V27.3, V28.3, V30.4, V31.4, V32.4, V33.4, V34.4, V35.4, V36.4, V37.4, V38.4, V40.4, V41.4, V42.4, V43.4, V44.4, V45.4, V46.4, V47.4, V48.4, V50.4, V51.4, V52.4, V53.4, V54.4, V55.4, V56.4, V57.4, V58.4, V60.4, V61.4, V62.4, V63.4, V64.4, V65.4, V66.4, V67.4, V68.4, V70.4, V71.4, V72.4, V73.4, V74.4, V75.4, V76.4, V77.4, V78.4, V83.4, V84.4, V85.4, V86.4	E817 (all 4th digits), E824 (all 4th digits)
Railway—Occupant	V81 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9)	E800 to E807 (.0, .1)
Railway—Pedestrian	V05 (.0, .1, .9)	E800 to E807 (.2)
Railway—Pedal Cyclist	V15 (.0, .1, .2, .3, .4, .5, .9)	E800 to E807 (.3)
Railway—Other	V80.6	E800 to E807 (.8, .9)
Other Road Vehicle—Pedestrian	V01 (.0, .1, .9), V06 (.0, .1, .9), V09.1, V09.3, V09.9	E826 to E829 (.0)
Other Road Vehicle—Pedal Cyclist	V10 (.0, .1, .2, .3, .4, .5, .9), V11 (.0, .1, .2, .3, .4, .5, .9), V12.3, V13.3, V14.3, V16 (.0, .1, .2, .3, .4, .5, .9), V17 (.0, .1, .2, .3, .4, .5, .9), V18 (.0, .1, .2, .3, .4, .5, .9), V19 (.3, .8, .9)	E826 to E829 (.1)
Other Road Vehicle—Animal Rider/Occupant of Animal-Drawn Vehicle	V80.0, V80.1, V80.2, V80.7, V80.8, V80.9	E826 to E829 (.2, .3)
Other Road Vehicle—Occupant of Streetcar	V82 (.2, .3, .4, .5, .6, .7, .8, .9)	E826 to E829 (.4)

External Cause Code Group	ICD-10-CA Code	ICD-9 Code
Other Road Vehicle—Other	V87.9, V88.9, V89 (.1, .3)	E826 to E829 (.8, .9)
Water Transport—Involving Drowning/Submersion	V90 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9), V92 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9)	E830, E832 (.0, .1, .2, .3, .4, .5, .6, .8, .9)
Water Transport—Incident to/on Watercraft Not Causing Drowning and Submersion	V91 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9), V93 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9)	E831, E833, E834 to E837 (.0, .1, .2, .3, .4, .5, .6, .8, .9)
Water Transport—Other/Unspecified	V94 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9)	E838 (.0, .1, .2, .3, .4, .5, .6, .8, .9)
Air and Space Transport	V95 (.0, .1, .2, .3, .4, .8, .9), V96 (.0, .1, .2, .8, .9), V97 (.0, .1, .2, .3, .8)	E840 to E845 (.0, .1, .2, .3, .4, .5, .6, .7, .8, .9)
Vehicle Incidents Not Elsewhere Classified	V89.9, V98, V99	E846 to E848
Unintentional Falls—Slipping, Tripping and Stumbling	W01	E885
Unintentional Falls—Collision With/Pushed by Another Person	W03	E886
Unintentional Falls—Fall on/From Stairs and Steps	W10	E880
Unintentional Falls—Fall on/From Ladder or Scaffolding	W11, W12	E881
Unintentional Falls—Fall From, out of or Through Building or Structure	W13	E882
Unintentional Falls—Other Fall From One Level to Another	W06 to W09, W14 to W17	E883, E884
Unintentional Falls—Other/Unspecified Fall	W00, W02, W04, W05, W18, W19	E888
Fire and Flames	X00 to X06, X08, X09	E890 to E899
Drowning	W65 to W70, W73, W74	E910
Operations of War	Y36	E990 to E998
Legal Intervention	Y35	E970 to E976, E978
Attempted Suicide and Self-Inflicted Injury (Excluding Poisoning)	X70 to X84	E953 to E958
Undetermined Whether Unintentionally or Purposely Inflicted (Excluding Poisoning)	Y20 to Y34	E983 to E988
Assault and Injury Purposely Inflicted (Excluding Poisoning)	X86, X91 to X99, Y00 to Y05, Y07 to Y09	E960, E961, E963 to E968
Suffocation	W75 to W77, W81, W83, W84	E913
Foreign Bodies (Excluding Choking)	W44, W45	E914, E915
Cutting and Piercing	W25 to W29, W60	E920
Unintentional Firearm Injuries	W32 to W34	E922
Machinery-Related Injuries	W24, W30, W31	E919
Overexertion and Strenuous/Repetitive Movements	X50	E927

External Cause Code Group	ICD-10-CA Code	ICD-9 Code
Struck by or Against Objects and Persons	W20 to W22, W50 to W52	E916, E917
Explosive Material	W39, W40	E923
Hot Substances	X10 to X19	E924
Electric Current	W85 to W87	E925
Caught, Crushed, Jammed or Pinched in or Between Objects	W23	E918
Explosion of Pressure Vessel	W35 to W38	E921
Exposure to Radiation	W88 to W91, X32	E926
Other/Unspecified	W41 to W43, W49, X58, X59	E887, E928
Natural and Environmental Factors	W53 to W59, W64, W92 to W94, W99, X30, X31, X33 to X39, X52	E900 to E902, E906 to E909

Appendix E—Nature of Injury Reporting Categories

Description	ICD-10 Code Range	ICD-9 Code Range
Superficial	S00, S05.0, S05.1, S05.8, S05.9, S10, S20, S30, S40, S50, S60, S70, S80, S90, T00, T09.0, T11.0, T13.0, T14.0	910 to 924
Musculoskeletal	S02, S12, S22, S32, S42, S52, S62, S72, S82, S92, T02, T08, T10, T12, T14.2, S03, S13, S23, S33, S43, S53, S63, S73, S83, S93, T03, T11.2, T13.2, T14.3, S09.10, S09.18, S16, S29.00, S29.08, S39.00, S39.08, S46, S56, S66, S76, S86, S96, T06.4, T09.5, T11.5, T13.5, T14.6	800 to 848
Burns and Corrosion	T20 to T32	940 to 949
Internal Organ	S06, S09.7, S09.8, S09.9, S26, S27, S36, S37, S39.6, T06.5	850 to 854, 860 to 869
Crushing	S07, S17, S28.0, S38.0, S38.1, S47, S57, S67, S77, S87, S97, T04	925 to 929
Open Wound, Including Traumatic Amputation	S01, S05.2 to S05.7, S09.2, S11, S21, S31, S41, S51, S61, S71, S81, S91, T01, T09.1, T11.1, T13.1, T14.1, S08, S18, S28.1, S38.2, S38.3, S48, S58, S68, S78, S88, S98, T05, T11.6, T13.6, T14.7	870 to 887, 890 to 897
Blood Vessels	S09.0, S15, S25, S35, S45, S55, S65, S75, S85, S95, T06.3, T11.4, T13.4, T14.5	900 to 904
Nerves and Spinal Cord	S04, S14, S24, S34, S44, S54, S64, S74, S84, S94, T06.0, T06.1, T06.2, T11.3, T13.3, T14.4	950 to 957
Other and Unspecified	S19, S29.7, S29.8, S29.9, S39.7, S39.8, S39.9, S49, S59, S69, S79, S89, S99, T06.8, T07, T09.8, T09.9, T11.8, T11.9, T13.8, T13.9, T14.8, T14.9, T15, T16, T18, T19, T33, T34, T35, T66, T67, T68, T69, T70, T71, T73 (Excludes T73.0, T73.1), T75 (Excludes T75.3)	930 to 939, 959, 990 to 994 (Excludes 933.1, 994.2, 994.3, 994.6)

Appendix F—Comprehensive Data Set Data Elements

"Restricted" in the Comments column means that the specific data element is unavailable to researchers.

Data Element—Group/Single	Data Element—Single	Comments
Accident Number		
ACS Filters		
Address (Legal Next of Kin)	Street Address City Province Country Postal Code Postal Code (Other Country)	**Restricted**
Address (Patient)	Street Address City Province Country Postal Code Postal Code (Other Country)	**Restricted**
Admission Date		
Admitting Service		
Age		
Age Units		
AIS Code		
AIS Version		
ALC Days: Number of, Reasons for, Form Completed, Date Ready		
BAC (mmol/L)	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Campus Number		
Cause of Injury: Specify		
Chart Number		**Restricted**
Collision Detail Comorbidities	Primary Impact Secondary Impact	
Complications		
Coroner Notified?		
CT Scan Location	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Date of Arrival	Primary Hospital Secondary Hospital Lead Trauma Hospital Lead Trauma Hospital ED	
Date of Birth		
Date of Departure	Primary Hospital Secondary Hospital Lead Trauma Hospital ED	

Data Element—Group/Single	Data Element—Single	Comments
Dates: Scene	Date Call Received Date Dispatched Date Arrived at Scene Date Arrived at Patient Date Departed From Scene	
Direct Admission to Service (Bypass ED)		
Disposition		
Disposition: Other		
Distance Ejected (in Metres)		
External Cause of Injury Codes (ICD-9-CM)	Primary, Secondary, Tertiary, Sports/Recreational	
External Cause Codes (ICD-10-CA)		
ED Physician (Lead Trauma Hospital)		**Restricted**
Ejected From Vehicle		
Extrication Required?		
Extrication Time		
Follow-Up: Admissions Related to Injury in Six Months Post-Discharge?		
Follow-Up: Contact		
Follow-Up: Date		
Follow-Up: Hospital Admitted To		
Follow-Up: Level of Employment		
Follow-Up: Level of Study		
Follow-Up: Percent of Previous Income		
Follow-Up: Therapy Received After Discharge?		
Follow-Up: Therapy Type (Other)		
Follow-Up: Therapy Type		
Geocode of Incident Location		
Glasgow Coma Scale	**Scene, Primary Hospital, Secondary Hospital, Lead Trauma Hospital** Eye Opening Motor Response Verbal Response Total GCS	
Health Number (Ontario)		**Restricted**
Health Number (Other Than Ontario)		**Restricted**
Heart Rate	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Height (Not Collected as of April 1, 1995)		
Home With Support Services		
Home With Support Services: Other		
ICD-9-CM Injury Codes		
ICD-10-CA Injury Codes		

Data Element—Group/Single	Data Element—Single	Comments
ICP Days	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Impact Location	Primary Impact Secondary Impact	
Impact Type		
Incident Date		
Incident Location (If out of Province): Other		
Incident Location (If out of Province)		
Incident Time		
Injury Text		**Restricted**
Injury Type (Primary)		
Institution Discharged to Outside of Ontario		**Restricted**
Institution Discharged to Outside of Canada		**Restricted**
Institution Discharged to Inside of Ontario		**Restricted**
Institution Transferred To	Primary Hospital Secondary Hospital Second Secondary Hospital Lead Trauma Hospital	**Restricted** **Restricted** **Restricted** **Restricted**
Intentional Injury		
Intubated (Was the Patient)?	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Is This a Readmission?		
ISS		
IV Lines	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Language Spoken	Patient, Legal Next of Kin	
Legal Next of Kin: Relationship to Patient		
Length of Stay	Special Care Units Lead Trauma Hospital	
MAIS		
Memo Fields	Demographic Follow-Up Injury Lead Trauma Hospital Lead Trauma Hospital Care Nursing Outcome Primary Hospital Quality Assurance Readmission Scene Secondary Hospital System	**Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted** **Restricted**
Modes of Transport	**Scene, From Primary Hospital, From Secondary Hospital** First Provider Second Provider Third Provider	

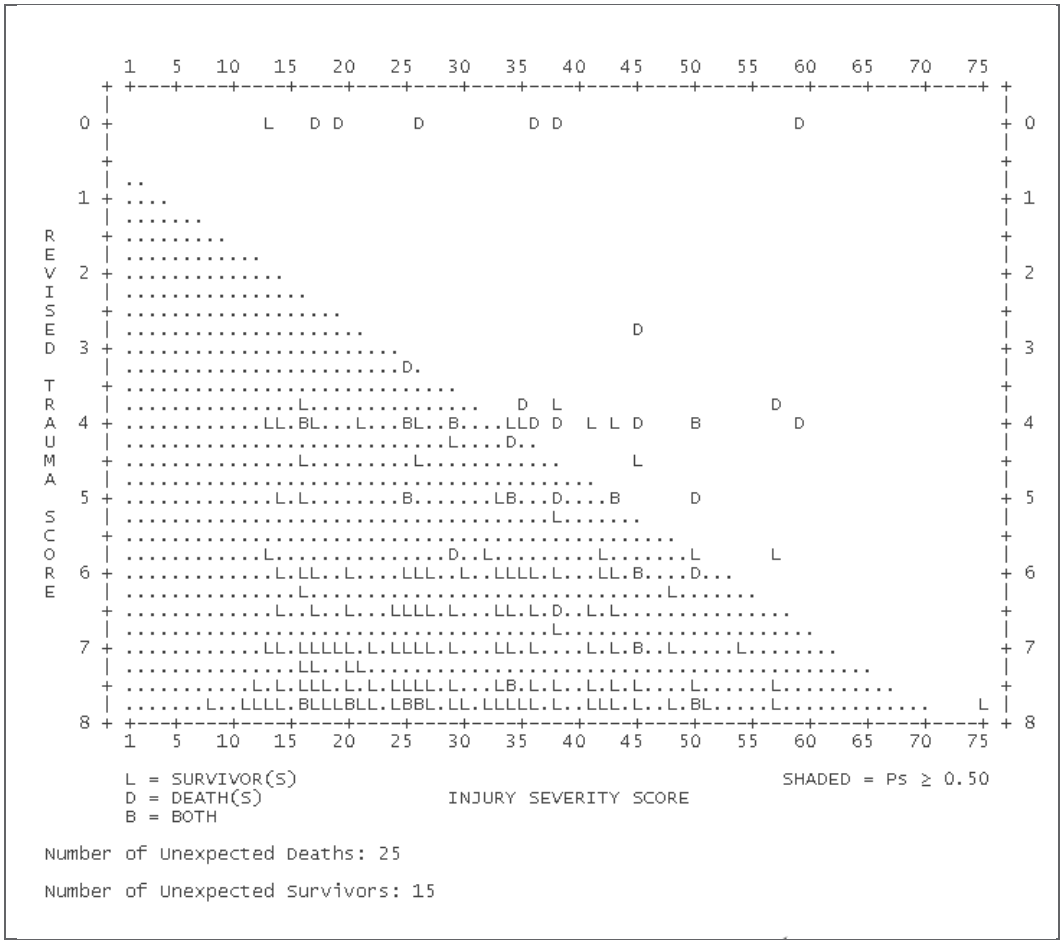
Data Element—Group/Single	Data Element—Single	Comments
Name: Legal Next of Kin (Middle Name Not Collected as of April 1, 1995)	Surname, First Name, Middle Name	**Restricted**
Name: Patient	Surname, First Name, Middle Name	**Restricted**
Non-Operative Procedures	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Occupation		
Occupation (Other)		
OR Visits: Dates	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
OR Visits: Elapsed Times	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
OR Visits: Finish Time	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
OR Visits: Number Of	Primary Hospital Secondary Hospital Lead Trauma Hospital	
OR Visits: Procedures	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
OR Visits: Services Performing Operation Procedures	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
OR Visits: Start Time	Primary Hospital (5 Visits) Secondary Hospital (5 Visits) Lead Trauma Hospital (10 Visits)	
Organ Donation: Was Family Approached?		
Organs Donated: List Of		
Organs Donated: Were Organs Donated?		
Overflow		
Paralytic Agents in Effect	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Pediatric Trauma Score	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Place of Death		
Place of Injury	Primary, Secondary, Tertiary	
Place of Injury: Specify		
Police Force		**Restricted**
Police Force Division		**Restricted**
Position in Vehicle		
Post-ED Destination		
Post-Mortem Examination Done?		
Post-Mortem Report Received?		
Post-OR Destination		

Data Element—Group/Single	Data Element—Single	Comments
Post-OR Destination: SCU		
Predot Code		
Pre-Hospital Number	**First, Second and Third Provider** From Scene From Primary Hospital From Secondary Hospital	
Pre-Hospital Time: Total		
Protective Devices		
Protective Devices (Other)		
Qualified Personnel (Number of)	**First, Second and Third Provider** From Scene From Primary Hospital From Secondary Hospital	
RANCHOS at Discharge		
Readmission	Number of Readmissions	
Referring Physician	Primary Hospital Secondary Hospital	**Restricted**
Residence Code		
Residence: Province Of		
Respiration Rate (Unassisted)	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Revised Trauma Score: Total	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Runsheet Available	**First, Second and Third Provider** From Scene From Primary Hospital From Secondary Hospital	
Scene Time: Total		
Separation	Date, Time, Status	
Service Transfers	**Type of Service, Date Admitted, Date Discharged, Length of Stay** Up to Six Service Transfers	
Sex		
Special Care Units	**Type of Special Care Unit, Date Admitted, Date Discharged, Length of Stay** Up to Five SCUs	
Systolic Blood Pressure	Scene Primary Hospital Secondary Hospital Lead Trauma Hospital	
Telephone Number (Patient)		**Restricted**
Temperature	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Time of Arrival	Primary Hospital Secondary Hospital Lead Trauma Hospital Lead Trauma Hospital ED	
Time of Departure	Primary Hospital Secondary Hospital Lead Trauma Hospital ED	

Data Element—Group/Single	Data Element—Single	Comments
Times: Scene	Time Call Received Time Call Dispatched Time Arrived at Scene Time Arrived at Patient Time Departed From Scene	
Transport Mode to Discharge Care Facility (Not Collected as of April 1, 1995)		
Trauma Number		
Trauma Team Activated		
Trauma Team Leader		**Restricted**
TRISS		
Vehicle Type		
Vehicle Type: Other		
Ventilator Days	Primary Hospital Secondary Hospital Lead Trauma Hospital	
Weight		
Work-Related?		

Appendix G—PRE Analysis

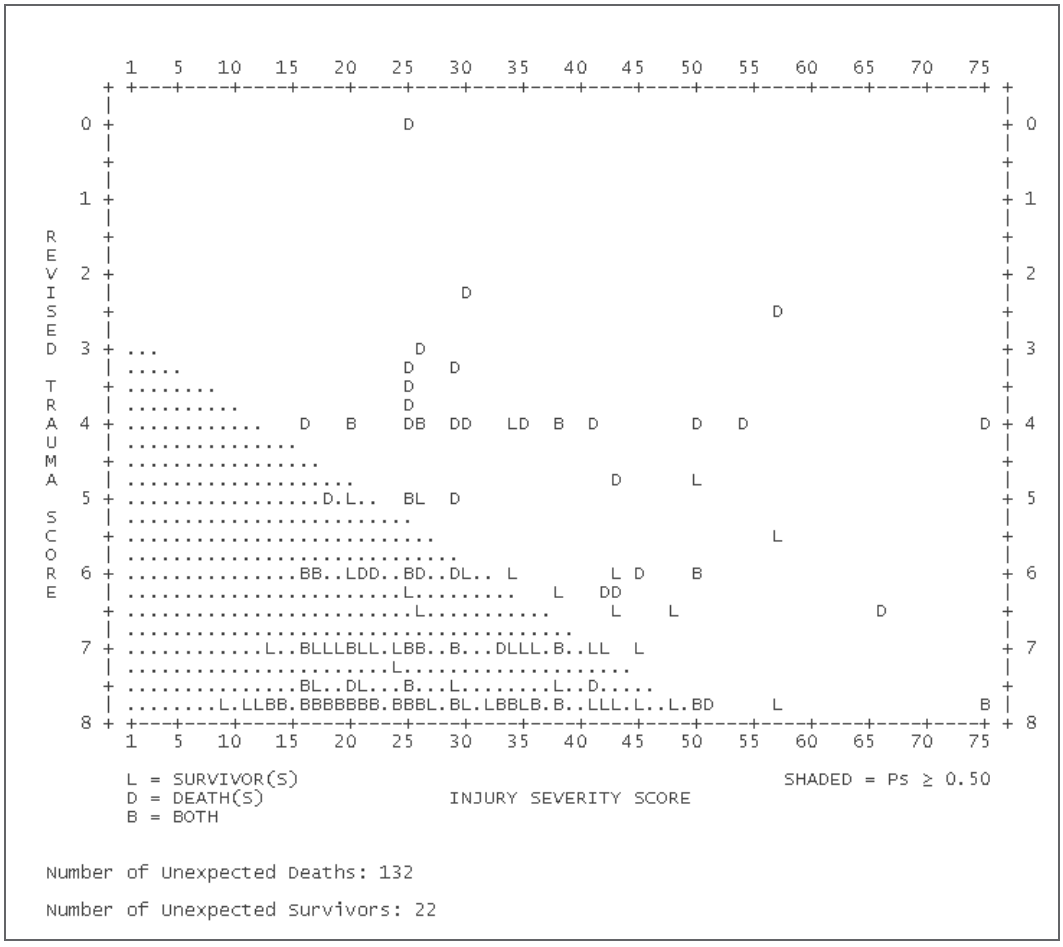
PRECHART Adult Blunt (15 to 54) 2008–2009 Data



Note

PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

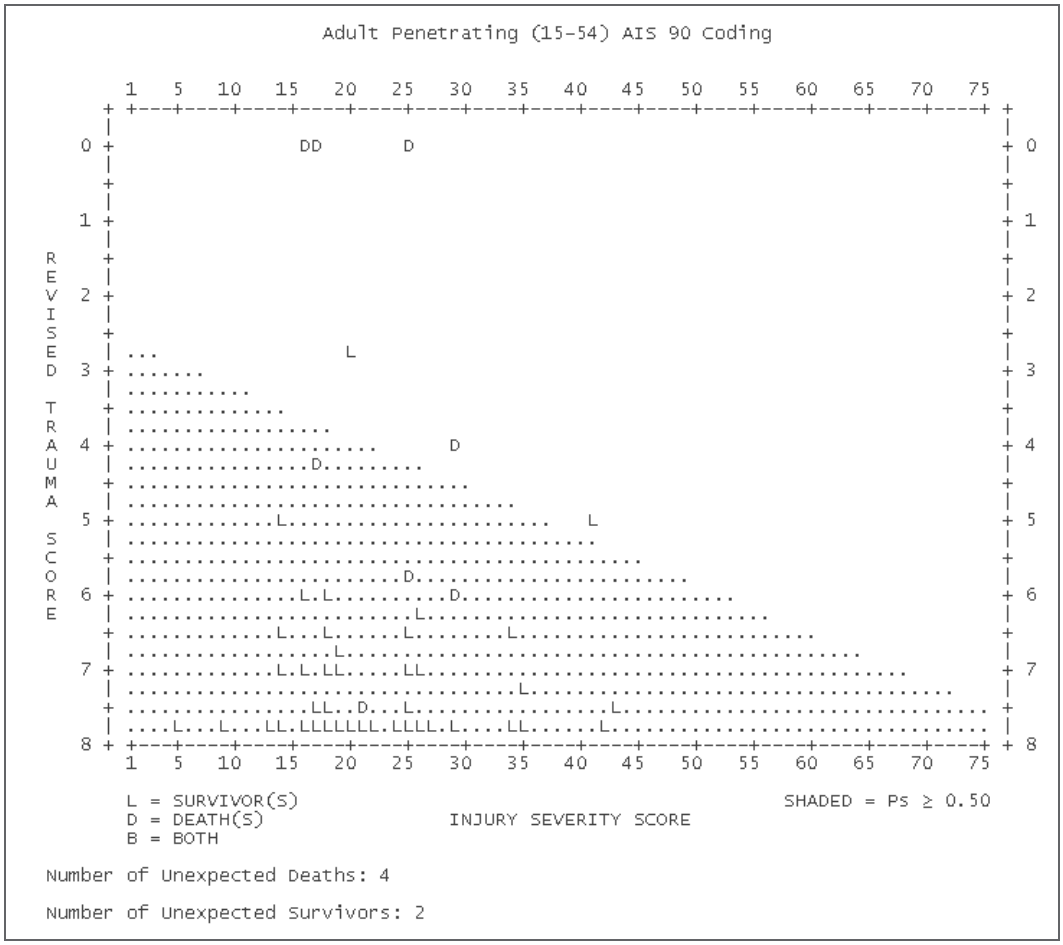
PRECHART Adult Blunt (55+) 2008–2009 Data



Note

PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

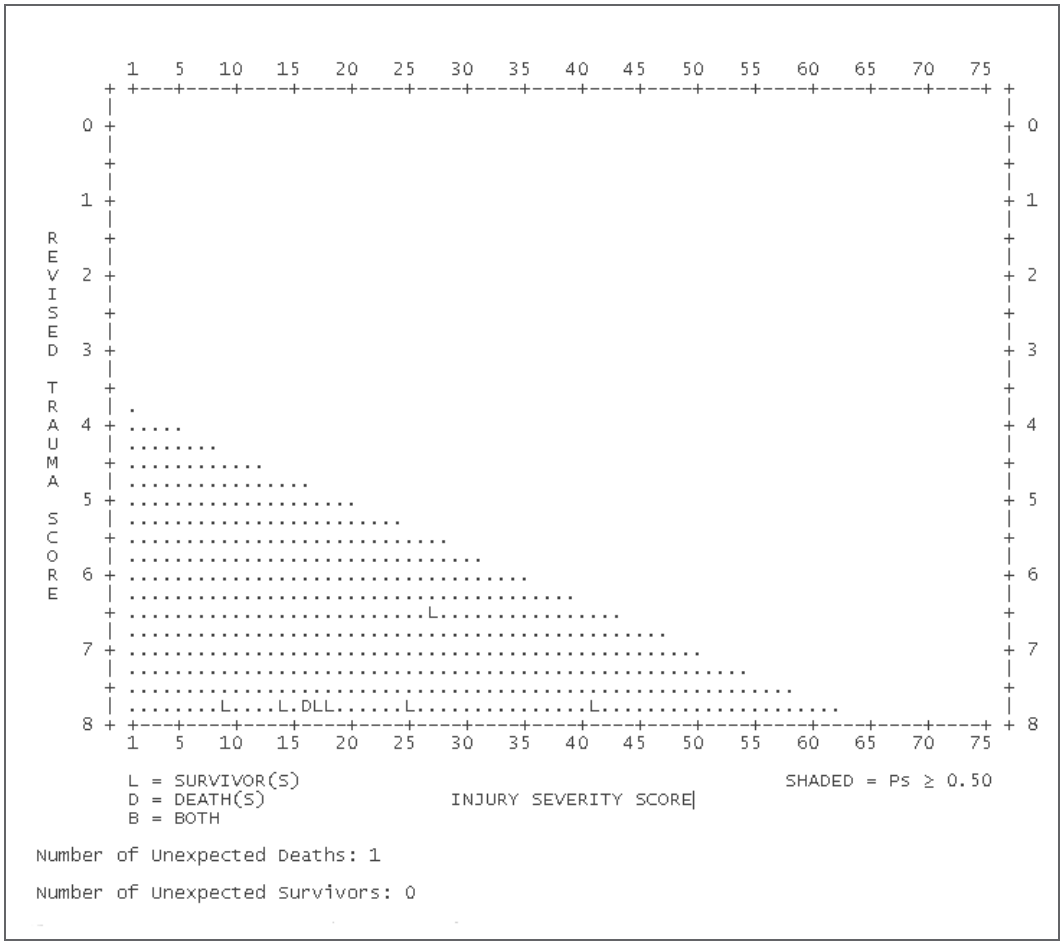
PRECHART Adult Penetrating (15 to 54) 2008–2009 Data



Note

PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

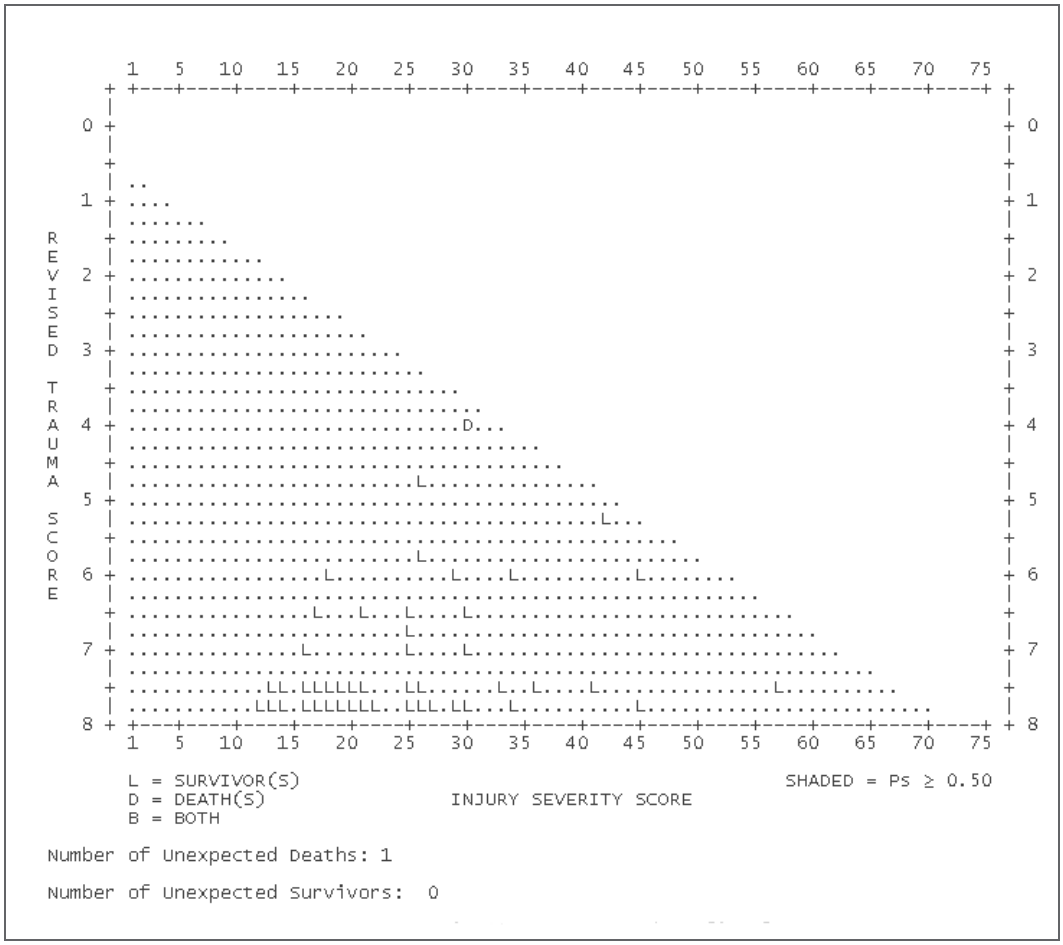
PRECHART Adult Penetrating (55+) 2008–2009 Data



Note

PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

PRECHART Pediatric 2008–2009 Data



Note

PRE analyses were conducted on cases in 2008–2009 based on fiscal year of admission and not on fiscal year of discharge.

Appendix H—2008–2009 Data Tables

Table of Contents

Table 1
Trend Analysis Report, 2004–2005 to 2008–2009

		2004–2005		2005–2006		2006–2007		2007–2008		2008–2009	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Number of Cases		3,982	—	4,140	—	4,355	—	4,370	—	4,180	—
In-Hospital Deaths		424	10.6	453	10.9	461	10.6	442	10.1	453	10.8
Died in Emergency Room		119	3.0	118	2.9	91	2.1	99	2.3	70	1.7
Direct Admissions		2,032	51.0	2,106	50.9	2,293	52.7	2,281	52.2	2,207	52.8
Males		2,814	70.7	2,958	71.4	3,123	71.7	3,061	70.0	2,977	71.2
Age Group	<20 Years	683	17.2	739	17.9	739	17.0	698	16.0	646	15.5
	20–34 Years	844	21.2	823	19.9	920	21.1	905	20.7	785	18.8
	35–64 Years	1,431	35.9	1,561	37.7	1,604	36.8	1,549	35.4	1,551	37.1
	65+ Years	1,022	25.7	1,017	24.6	1,090	25.0	1,217	27.8	1,195	28.6
	Unknown Age	2	0.1	—	—	2	0.0	1	0.0	3	0.1
Type of Injury	Blunt	3,712	93.2	3,785	91.4	4,034	92.6	4,054	92.8	3,855	92.2
	Penetrating	203	5.1	251	6.1	242	5.6	251	5.7	237	5.7
	Burns	67	1.7	104	2.5	79	1.8	65	1.5	87	2.1
External Cause of Injury	Motor Vehicle Collision	1,764	44.3	1,873	45.2	1,900	43.6	1,856	42.5	1,644	39.3
	Falls	1,359	34.1	1,314	31.7	1,469	33.7	1,500	34.3	1,575	37.7
	Intentional*	421	10.6	468	11.3	470	10.8	501	11.5	451	10.8
	All Other	438	11.0	485	11.7	516	11.8	513	11.7	510	12.2
Discharge Disposition	Death	543	13.6	572	13.8	555	12.7	542	12.4	523	12.5
	Home	1,564	39.3	1,657	40.0	1,717	39.4	1,851	42.4	1,776	42.5
	Home With Support Services	482	12.1	470	11.4	470	10.8	391	8.9	378	9.0
	Other Acute Care Facility	597	15.0	592	14.3	670	15.4	685	15.7	649	15.5
	General Rehab	349	8.8	312	7.5	353	8.1	359	8.2	305	7.3
	Chronic Care	36	0.9	44	1.1	53	1.2	40	0.9	46	1.1
	Nursing Home	65	1.6	94	2.3	84	1.9	64	1.5	64	1.5
	Special Rehab	231	5.8	254	6.1	328	7.5	296	6.8	309	7.4
	Foster Care	16	0.4	17	0.4	13	0.3	9	0.2	9	0.2
	Other	99	2.5	128	3.1	111	2.5	131	3.0	119	2.8
	Unknown	—	—	—	—	1	0.0	2	0.0	2	0.0

Table 1
Trend Analysis Report, 2004–2005 to 2008–2009 (cont'd)

		2004–2005		2005–2006		2006–2007		2007–2008		2008–2009	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Injury Severity Score	Mean	24	—	25	—	24	—	24	—	24	—
	SD	10	—	10	—	10	—	10	—	10	—
	Median	22	—	22	—	22	—	22	—	24	—
Age (Years)	Mean	45	—	45	—	45	—	46	—	47	—
	SD	24	—	24	—	24	—	24	—	25	—
	Median	43	—	44	—	44	—	45	—	48	—
Length of Stay (Days)	Mean	15	—	15	—	15	—	15	—	15	—
	SD	23	—	21	—	22	—	22	—	23	—
	Median	8	—	8	—	8	—	8	—	8	—

Notes

* Intentional injury includes suicide, excluding poisoning (ICD-10-CA: X70–X84), and injury purposely inflicted by other person (ICD-10-CA: X86, X91–X99, Y00–Y05 and Y07–Y09).
SD: standard deviation.

Table 2
Patient Days, Mean and Median Length of Stay, by Sex and Age, 2008–2009 Cases

			<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Unknown	Total
Number of Cases	Females	Count	28	30	20	25	92	72	87	101	161	128	121	207	130	1	**1,203**
		Percent	2.3	2.5	1.7	2.1	7.6	6.0	7.2	8.4	13.4	10.6	10.1	17.2	10.8	0.1	**100.0**
	Males	Count	28	42	52	76	253	290	336	366	453	342	312	284	141	2	**2,977**
		Percent	0.9	1.4	1.7	2.6	8.5	9.7	11.3	12.3	15.2	11.5	10.5	9.5	4.7	0.1	**100.0**
	Total	Count	56	72	72	101	345	362	423	467	614	470	433	491	271	3	**4,180**
		Percent	1.3	1.7	1.7	2.4	8.3	8.7	10.1	11.2	14.7	11.2	10.4	11.7	6.5	0.1	**100.0**
Length of Hospital Stay	Females	Number of Days	204	372	247	158	1,230	1,081	1,601	1,525	2,613	2,090	2,086	3,826	1,844	N/A	**18,877**
		Percent*	1.1	2.0	1.3	0.8	6.5	5.7	8.5	8.1	13.8	11.1	11.1	20.3	9.8	N/A	**100.0**
		Mean	7.3	12.4	12.4	6.9	14.0	15.4	19.1	15.6	16.9	17.0	18.6	18.8	14.4	N/A	**16**
		SD	8.3	18.2	20.9	5.9	16.8	17.6	26.1	16.5	24.9	28.1	22.6	33.1	16.9	N/A	**24**
		Median	4.0	3.5	5.5	4.0	7.0	9.5	11.0	9.0	8.0	9.0	12.0	8.0	8.5	N/A	**9**
	Males	Number of Days	96	307	599	438	2,898	3,557	4,145	5,266	6,855	5,627	5,021	4,619	2,522	N/A	**41,950**
		Percent*	0.2	0.7	1.4	1.0	6.9	8.5	9.9	12.6	16.3	13.4	12.0	11.0	6.0	N/A	**100.0**
		Mean	3.8	7.3	11.7	6.1	11.9	12.9	12.8	14.5	15.5	17.0	16.4	16.4	18.4	N/A	**15**
		SD	3.6	8.5	23.8	6.5	24.0	17.2	15.6	21.8	21.6	27.3	27.3	23.3	26.2	N/A	**22**
		Median	3.0	4.0	4.0	4.5	6.0	7.0	8.0	8.0	8.0	8.0	8.0	7.0	10.0	N/A	**7**
	Total	Number of Days	300	679	846	596	4,128	4,638	5,746	6,791	9,468	7,717	7,107	8,445	4,366	N/A	**60,827**
		Percent*	0.5	1.1	1.4	1.0	6.8	7.6	9.4	11.2	15.6	12.7	11.7	13.9	7.2	N/A	**100.0**
		Mean	5.7	9.4	11.9	6.3	12.5	13.4	14.1	14.7	15.8	17.0	17.0	17.4	16.5	N/A	**15**
		SD	6.7	13.5	22.9	6.3	22.3	17.3	18.4	20.8	22.5	27.5	26.1	27.8	22.3	N/A	**23**
		Median	3.0	4.0	4.0	4.0	7.0	7.0	8.0	8.0	8.0	8.5	9.0	7.0	9.0	N/A	**8**

Notes

* Percentage calculated within sex.

SD: standard deviation.

Table 3
Patient Days, Mean and Median Length of Stay, by Sex and Age for In-Hospital Deaths, 2008–2009 Cases

			<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Total
Number of Cases	Females	Count	1	2	2	1	10	4	1	7	12	10	13	38	38	**139**
		Percent	0.7	1.4	1.4	0.7	7.2	2.9	0.7	5.0	8.6	7.2	9.4	27.3	27.3	**100.0**
	Males	Count	4	5	5	2	22	27	22	20	32	36	33	62	44	**314**
		Percent	1.3	1.6	1.6	0.6	7.0	8.6	7.0	6.4	10.2	11.5	10.5	19.7	14.0	**100.0**
	Total	Count	5	7	7	3	32	31	23	27	44	46	46	100	82	**453**
		Percent	1.1	1.5	1.5	0.7	7.1	6.8	5.1	6.0	9.7	10.2	10.2	22.1	18.1	**100.0**
Length of Hospital Stay	Females	Number of Days	27	4	12	1	31	17	2	18	155	31	244	490	382	**1,414**
		Percent*	1.9	0.3	0.8	0.1	2.2	1.2	0.1	1.3	11.0	2.2	17.3	34.7	27.0	**100.0**
		Mean	27.0	2.0	6.0	1.0	3.1	4.3	2.0	2.6	12.9	3.1	18.8	12.9	10.1	**10**
		SD	0	1.4	7.1	0	4.3	6.5	0	3.0	9.3	4.0	23.6	26.7	15.3	**18**
		Median	27.0	2.0	6.0	1.0	1.0	1.0	2.0	1.0	11.5	1.0	8.0	5.0	4.5	**4**
	Males	Number of Days	7	8	105	10	207	114	120	59	237	260	285	896	586	**2,894**
		Percent*	0.2	0.3	3.6	0.3	7.2	3.9	4.1	2.0	8.2	9.0	9.8	31.0	20.2	**100.0**
		Mean	1.8	1.6	21.0	5.0	9.4	4.2	5.5	3.0	7.4	7.2	8.6	14.5	13.3	**9**
		SD	1.0	0.9	44.7	5.7	25.5	5.2	7.0	2.7	10.3	12.0	13.0	26.7	21.1	**18**
		Median	1.5	1.0	1.0	5.0	1.0	1.0	2.0	1.5	2.0	1.0	2.0	4.5	5.0	**3**
	Total	Number of Days	34	12	117	11	238	131	122	77	392	291	529	1,386	968	**4,308**
		Percent*	0.8	0.3	2.7	0.3	5.5	3.0	2.8	1.8	9.1	6.8	12.3	32.2	22.5	**100.0**
		Mean	6.8	1.7	16.7	3.7	7.4	4.2	5.3	2.9	8.9	6.3	11.5	13.9	11.8	**10**
		SD	11.3	1.0	37.4	4.6	21.3	5.3	6.9	2.8	10.3	10.9	17.0	26.6	18.6	**18**
		Median	2.0	1.0	1.0	1.0	1.0	1.0	2.0	1.0	4.0	1.0	3.0	5.0	5.0	**3**

Notes

* Percentage calculated within sex.

SD: standard deviation.

Cases with no length of stay recorded were excluded from length-of-stay calculations.

Table 4
Denominators by Institution Code, 2008–2009 Cases

	Institution Code														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Number of Cases	140	604	388	44	75	538	255	140	80	221	896	163	595	41	**4,180**
Number of Cases Discharged Alive	122	523	338	43	69	467	224	130	68	182	784	152	518	37	**3,657**
Number of Deaths*	18	81	50	1	6	71	31	10	12	39	112	11	77	4	**523**
Number Who Died in Emergency Room	3	15	2	0	1	6	3	0	0	13	21	2	4	0	**70**
Number of Pediatric Cases (<18 Years)	13	19	0	0	74	17	27	139	80	10	38	10	15	41	**483**
Number of Cases >10 Years†	137	602	388	44	37	537	245	52	42	217	896	159	594	17	**3,967**
Number of Cases <20 Years	14	40	19	1	74	49	34	139	80	15	83	13	44	41	**646**
Number of Cases 20–64 Years	79	360	271	25	1	326	145	1	0	122	565	96	345	0	**2,336**
Number of Cases 65+ Years	47	202	98	18	0	163	76	0	0	84	248	54	205	0	**1,195**

Notes

* The total number of deaths reported includes in-hospital deaths and deaths in the emergency department. Deaths occurring at the scene are excluded.

† Number of cases >10 years can be used for BAC calculation.

BAC: blood alcohol concentration.

This table provides denominators to allow calculation of percentages.

Table 5
Demographics by Institution Code, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Total Number of Cases	Number	140	604	388	44	75	538	255	140	80	221	896	163	595	41	**4,180**
	Percent	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	**100.0**
Direct Admissions	Number	109	281	184	32	37	255	135	35	26	182	476	111	323	21	**2,207**
	Percent	77.9	46.5	47.4	72.7	49.3	47.4	52.9	25.0	32.5	82.4	53.1	68.1	54.3	51.2	**52.8**
Readmissions	Number	0	0	4	0	0	1	0	0	0	0	65	0	0	0	**70**
	Percent	0	0	1.0	0	0	0.2	0	0	0	0	7.3	0	0	0	**1.7**
<20 Years	Number	14	40	19	1	74	49	34	139	80	15	83	13	44	41	**646**
	Percent	10.0	6.6	4.9	2.3	98.7	9.1	13.3	99.3	100.0	6.8	9.3	8.0	7.4	100.0	**15.5**
65+ Years	Number	47	202	98	18	0	163	76	0	0	84	248	54	205	0	**1,195**
	Percent	33.6	33.4	25.3	40.9	0	30.3	29.8	0	0	38.0	27.7	33.1	34.5	0	**28.6**
Out-of-Province Residents	Number	1	7	7	5	12	8	8	0	1	2	6	6	48	0	**111**
	Percent	0.7	1.2	1.8	11.4	16.0	1.5	3.1	0	1.3	0.9	0.7	3.7	8.1	0	**2.7**
Positive BAC (≥17.4 mmol/L)	Number	22	77	76	3	0	86	31	0	0	42	116	19	64	1	**537**
	Percent	15.7	12.7	19.6	6.8	0	16.0	12.2	0	0	19.0	12.9	11.7	10.8	2.4	**12.8**
Age (Years)	Mean	51.9	52.0	48.8	57.0	9.0	49.9	49.7	7.7	8.9	54.7	48.6	50.6	54.1	8.5	**47.5**
	SD	23.4	22.4	21.1	20.3	6.1	22.3	23.2	5.5	6.2	23.6	22.1	23.6	22.5	5.7	**24.5**
	Median	50.0	50.0	48.0	60.0	10.0	50.0	51.0	7.0	11.0	54.0	48.0	51.0	54.5	9.0	**48.0**

Notes
SD: standard deviation.
BAC: blood alcohol concentration.

Table 6
Injury Severity Score and Glasgow Coma Score by Institution Code, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
ISS—All Cases	Mean	22.0	25.9	23.6	19.2	20.3	24.7	23.9	21.8	22.0	22.5	26.4	22.7	23.1	21.1	**24.3**
	SD	6.8	10.0	8.9	9.9	7.4	9.9	8.8	8.2	8.6	9.3	10.8	7.6	8.8	8.1	**9.6**
	Median	20.0	25.0	22.0	16.0	17.0	25.0	24.0	17.0	17.5	20.0	25.0	21.0	22.0	17.0	**24.0**
ISS—Survivors	Mean	21.7	25.1	22.5	19.1	20.1	23.6	23.6	21.2	20.1	21.1	25.1	22.0	22.6	20.2	**23.3**
	SD	7.0	9.2	7.9	10.0	7.6	8.4	8.9	8.1	7.0	7.0	9.9	7.0	8.7	7.9	**8.8**
	Median	18.5	25.0	21.0	16.0	17.0	22.0	22.0	17.0	17.0	20.0	24.0	20.0	20.0	16.0	**22.0**
ISS—Deaths	Mean	24.2	31.2	31.2	25.0	23.5	32.6	26.5	28.6	32.3	29.1	35.4	33.0	26.2	29.5	**30.8**
	SD	4.9	13.2	11.4	0.0	4.9	14.5	8.3	6.5	9.6	14.6	12.4	8.2	9.0	4.1	**12.2**
	Median	25.0	26.0	26.0	25.0	25.5	29.0	25.0	25.5	29.0	25.0	35.0	35.0	25.0	29.0	**26.0**
GCS	Mean	13.0	13.4	13.7	14.8	14.2	13.6	13.9	14.3	14.3	12.7	13.7	14.0	13.8	14.3	**13.7**
	SD	3.5	3.1	2.9	0.9	2.0	3.1	2.8	2.1	2.2	4.1	2.9	2.7	2.6	1.8	**3.0**
	Median	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	**15.0**
GCS Incomplete Due to Use of Paralytic Agents	Number	8.0	13.0	24.0	2.0	6.0	10.0	12.0	14.0	11.0	11.0	4.0	10.0	55.0	1.0	**181.0**
	Percent	5.7	2.2	6.2	4.5	8.0	1.9	4.7	10.0	13.8	5.0	0.4	6.1	9.2	2.4	**4.3**

Notes
SD: standard deviation.
ISS: Injury Severity Score.
GCS: Glasgow Coma Score.

Table 7
Type and Place of Injury, by Institution Code, 2008–2009 Cases

Type of Injury		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Blunt	Number	136	555	370	37	72	495	245	129	76	207	761	157	577	38	**3,855**
	Percent	97.1	91.9	95.4	84.1	96.0	92.0	96.1	92.1	95.0	93.7	84.9	96.3	97.0	92.7	**92.2**
Penetrating	Number	4	49	13	3	1	24	7	6	2	10	97	5	14	2	**237**
	Percent	2.9	8.1	3.4	6.8	1.3	4.5	2.7	4.3	2.5	4.5	10.8	3.1	2.4	4.9	**5.7**
Burns	Number	0	0	5	4	2	19	3	4	2	4	38	1	4	1	**87**
	Percent	0	0	1.3	9.1	2.7	3.5	1.2	2.9	2.5	1.8	4.2	0.6	0.7	2.4	**2.1**
Sports/Recreational	Number	9	7	45	0	24	26	38	54	23	17	85	25	5	9	**367**
	Percent	6.4	1.2	11.6	0	32.0	4.8	14.9	38.6	28.8	7.7	9.5	15.3	0.8	22.0	**8.8**
Work Related	Number	4	35	26	2	0	29	10	1	0	5	60	8	37	0	**217**
	Percent	2.9	5.8	6.7	4.5	0	5.4	3.9	0.7	0	2.3	6.7	4.9	6.2	0	**5.2**

Place of Injury*		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Home	Number	42	145	86	14	23	190	88	40	25	107	177	46	140	13	**1,136**
	Percent	30.0	24.0	22.2	31.8	30.7	35.3	34.5	28.6	31.3	48.4	19.8	28.2	23.5	31.7	**27.2**
Industrial	Number	1	29	14	1	1	22	4	0	0	1	34	6	8	0	**121**
	Percent	0.7	4.8	3.6	2.3	1.3	4.1	1.6	0	0	0.5	3.8	3.7	1.3	0	**2.9**
Recreation/Sport	Number	2	8	10	1	7	5	9	15	7	4	8	4	22	1	**103**
	Percent	1.4	1.3	2.6	2.3	9.3	0.9	3.5	10.7	8.8	1.8	0.9	2.5	3.7	2.4	**2.5**
Street/Highway	Number	56	248	186	8	27	251	98	35	30	78	441	51	206	13	**1,728**
	Percent	40.0	41.1	47.9	18.2	36.0	46.7	38.4	25.0	37.5	35.3	49.2	31.3	34.6	31.7	**41.3**
Other	Number	38	173	92	20	17	61	56	50	18	31	236	55	218	14	**1,079**
	Percent	27.1	28.6	23.7	45.5	22.7	11.3	22.0	35.7	22.5	14.0	26.3	33.7	36.6	34.1	**25.8**

Note

* Place of injury is documented for all cases in the Comprehensive Data Set using ICD categories. There were 13 cases that did not have a documented place of injury.

Table 8
External Cause of Injury, by Institution Code, 2008–2009 Cases

			Institution Code														
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Unintentional Falls	Survivors	Number	49	219	80	26	19	184	79	46	11	89	229	63	241	11	**1,346**
		Percent	35.0	36.3	20.6	59.1	25.3	34.2	31.0	32.9	13.8	40.3	25.6	38.7	40.5	26.8	**32.2**
	Deaths	Number	9	41	19	1	0	28	16	0	2	19	39	5	49	1	**229**
		Percent	6.4	6.8	4.9	2.3	0.0	5.2	6.3	0.0	2.5	8.6	4.4	3.1	8.2	2.4	**5.5**
	All	Number	58	260	99	27	19	212	95	46	13	108	268	68	290	12	**1,575**
		Percent	41.4	43.0	25.5	61.4	25.3	39.4	37.3	32.9	16.3	48.9	29.9	41.7	48.7	29.3	**37.7**
Motor Vehicle Traffic	Survivors	Number	38	154	151	8	22	180	84	28	20	50	316	33	160	11	**1,255**
		Percent	27.1	25.5	38.9	18.2	29.3	33.5	32.9	20.0	25.0	22.6	35.3	20.2	26.9	26.8	**30.0**
	Deaths	Number	4	21	22	0	1	27	7	3	6	10	45	3	20	1	**170**
		Percent	2.9	3.5	5.7	0.0	1.3	5.0	2.7	2.1	7.5	4.5	5.0	1.8	3.4	2.4	**4.1**
	All	Number	42	175	173	8	23	207	91	31	26	60	361	36	180	12	**1,425**
		Percent	30.0	29.0	44.6	18.2	30.7	38.5	35.7	22.1	32.5	27.1	40.3	22.1	30.3	29.3	**34.1**
Motor Vehicle Non-Traffic	Survivors	Number	5	17	33	1	7	14	21	7	11	5	26	22	33	4	**206**
		Percent	3.6	2.8	8.5	2.3	9.3	2.6	8.2	5.0	13.8	2.3	2.9	13.5	5.5	9.8	**4.9**
	Deaths	Number	0	2	1	0	1	1	1	1	1	1	1	2	1	0	**13**
		Percent	0.0	0.3	0.3	0.0	1.3	0.2	0.4	0.7	1.3	0.5	0.1	1.2	0.2	0.0	**0.3**
	All	Number	5	19	34	1	8	15	22	8	12	6	27	24	34	4	**219**
		Percent	3.6	3.1	8.8	2.3	10.7	2.8	8.6	5.7	15.0	2.7	3.0	14.7	5.7	9.8	**5.2**
Assault and Injury Purposely Inflicted (Excluding Poisoning)	Survivors	Number	16	65	20	3	7	37	11	6	9	12	88	5	30	4	**313**
		Percent	11.4	10.8	5.2	6.8	9.3	6.9	4.3	4.3	11.3	5.4	9.8	3.1	5.0	9.8	**7.5**
	Deaths	Number	1	7	0	0	1	4	1	2	2	4	14	0	6	1	**43**
		Percent	0.7	1.2	0.0	0.0	1.3	0.7	0.4	1.4	2.5	1.8	1.6	0.0	1.0	2.4	**1.0**
	All	Number	17	72	20	3	8	41	12	8	11	16	102	5	36	5	**356**
		Percent	12.1	11.9	5.2	6.8	10.7	7.6	4.7	5.7	13.8	7.2	11.4	3.1	6.1	12.2	**8.5**
Suicide and Self-Inflicted Injury (Excluding Poisoning)	Survivors	Number	1	13	8	2	0	13	2	0	0	4	23	1	6	0	**73**
		Percent	0.7	2.2	2.1	4.5	0.0	2.4	0.8	0.0	0.0	1.8	2.6	0.6	1.0	0.0	**1.7**
	Deaths	Number	0	5	1	0	1	4	1	1	0	4	5	0	0	0	**22**
		Percent	0.0	0.8	0.3	0.0	1.3	0.7	0.4	0.7	0.0	1.8	0.6	0.0	0.0	0.0	**0.5**
	All	Number	1	18	9	2	1	17	3	1	0	8	28	1	6	0	**95**
		Percent	0.7	3.0	2.3	4.5	1.3	3.2	1.2	0.7	0.0	3.6	3.1	0.6	1.0	0.0	**2.3**

Table 8
External Cause of Injury, by Institution Code, 2008–2009 Cases (cont'd)

			Institution Code														
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
All Other	Survivors	Number	13	55	46	3	14	39	27	43	17	22	102	28	48	7	**464**
		Percent	9.3	9.1	11.9	6.8	18.7	7.2	10.6	30.7	21.3	10.0	11.4	17.2	8.1	17.1	**11.1**
	Deaths	Number	4	5	7	0	2	7	5	3	1	1	8	1	1	1	**46**
		Percent	2.9	0.8	1.8	0.0	2.7	1.3	2.0	2.1	1.3	0.5	0.9	0.6	0.2	2.4	**1.1**
	All	Number	17	60	53	3	16	46	32	46	18	23	110	29	49	8	**510**
		Percent	12.1	9.9	13.7	6.8	21.3	8.6	12.5	32.9	22.5	10.4	12.3	17.8	8.2	19.5	**12.2**

Table 9
Scene Information, by Institution Code, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Pre-Hospital Time (Minutes) 95th Percentile*	Mean	102.6	58.6	61.2	75.9	92.4	69.7	138.7	108.6	67.5	86.8	67.4	80.9	84.9	76.9	**80.4**
	SD	145.5	57.9	60.3	59.4	170.3	65.8	176.0	168.3	132.8	99.6	74.4	75.0	106.3	40.3	**104.8**
	Median	56.5	45.5	52.0	52.5	50.0	57.0	76.0	48.5	40.5	58.5	49.0	61.0	56.0	65.0	**53.0**
Scene Time (Minutes)	Mean	20.9	18.2	18.4	18.4	13.7	22.5	22.6	16.1	12.3	19.4	18.2	22.4	21.1	20.1	**19.6**
	SD	16.8	10.3	8.4	8.3	6.7	12.3	10.5	8.1	7.2	10.5	9.2	16.9	10.1	10.2	**10.9**
	Median	16.0	16.0	17.0	20.5	13.0	20.0	20.0	15.0	11.0	17.0	17.0	18.0	19.0	23.0	**18.0**
Admissions With Scene Time >1 Hour	Number	4	0	1	0	0	4	2	0	0	1	2	2	2	0	**18**
	Percent	5.1	0.0	0.4	0.0	0.0	1.7	1.2	0.0	0.0	0.6	0.5	1.9	0.6	0.0	**0.8**
Admissions With Extrication Required	Number	34	53	99	3	2	72	32	7	6	24	54	40	94	4	**524**
	Percent	24.3	8.8	25.5	6.8	2.7	13.4	12.5	5.0	7.5	10.9	6.0	24.5	15.8	9.8	**12.5**

Notes

* The 95th percentile is used for pre-hospital time calculations to exclude those who are not transported directly from the scene and therefore have long pre-hospital times (that is, days or weeks). Of the 2,492 cases with pre-hospital times in 2008–2009, 124 (5%) had times greater than 892 minutes.

SD: standard deviation.

Table 10
Participating Hospital Care, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
Length of Hospital Stay (Days)	All Cases Mean	11.2	13.7	11.6	15.7	12.5	14.6	19.8	8.6	9.7	14.7	18.6	15.0	15.5	7.9	**15.0**
	All Cases SD	12.4	19.2	18.3	36.2	39.0	18.2	32.1	13.3	15.7	18.0	28.0	26.0	20.1	9.5	**22.9**
	All Cases Median	8.0	7.0	6.0	5.0	4.0	9.0	10.0	4.0	6.0	9.0	10.0	7.0	9.0	5.0	**8.0**
	Survivors Mean	12.1	14.3	12.1	16.0	13.2	15.1	20.3	8.3	10.5	16.0	19.9	15.3	16.0	7.9	**15.7**
	Survivors SD	12.8	19.8	18.8	36.6	40.3	17.7	31.8	11.0	16.7	18.8	29.0	26.6	19.7	9.3	**23.3**
	Survivors Median	8.0	7.0	6.0	5.0	4.5	9.0	11.0	4.0	6.0	9.0	11.0	7.0	9.0	5.0	**8.0**
	Deaths Mean	3.5	8.9	8.6	3.0	3.0	10.7	15.8	12.4	4.8	6.5	7.9	10.3	12.3	7.5	**9.5**
	Deaths SD	2.9	12.5	13.7	0.0	4.5	21.2	34.7	31.2	5.7	7.7	14.7	15.0	22.5	13.0	**18.4**
	Deaths Median	3.0	4.5	3.0	3.0	1.0	3.0	3.0	2.0	2.5	2.5	2.0	2.0	4.0	1.0	**3.0**
Length of Special Care Unit Stay (Days)	All Cases Mean	5.1	6.1	6.5	5.3	3.9	10.2	9.8	5.8	6.3	5.5	9.8	7.5	10.9	4.3	**8.4**
	All Cases SD	6.2	8.2	11.1	6.1	6.2	14.1	15.2	7.5	9.9	10.2	17.9	8.7	14.6	4.5	**13.5**
	All Cases Median	3.0	3.0	3.0	2.5	1.0	5.0	4.0	3.0	2.0	2.0	4.0	5.0	5.0	3.0	**4.0**
	Survivors Mean	5.4	6.0	6.2	5.5	4.2	10.3	10.4	5.5	6.8	5.6	10.4	7.9	11.5	4.1	**8.6**
	Survivors SD	6.5	8.0	9.2	6.3	6.6	13.4	16.1	5.3	10.9	10.6	18.8	8.9	15.1	4.3	**13.7**
	Survivors Median	3.0	2.0	3.0	2.0	1.0	6.0	5.0	3.0	2.0	3.0	4.0	5.0	6.0	3.0	**4.0**
	Deaths Mean	3.5	6.9	8.5	3.0	2.0	9.6	6.0	7.7	4.8	5.4	6.1	3.4	7.2	6.5	**7.0**
	Deaths SD	2.9	9.3	19.1	0.0	2.2	17.3	7.0	15.1	5.7	8.3	8.8	5.2	9.8	7.8	**12.0**
	Deaths Median	3.0	4.0	3.0	3.0	1.0	4.0	2.0	2.0	2.5	1.0	2.0	1.0	3.0	6.5	**3.0**
Length of Stay 3+ Days	Number	121	493	306	32	48	446	207	97	61	164	724	130	479	29	**3,337**
	Percent	86.4	81.6	78.9	72.7	64.0	82.9	81.2	69.3	76.3	74.2	80.8	79.8	80.5	70.7	**79.8**
Number of OR Visits per Case	Mean	1.2	1.3	1.3	1.2	1.5	1.4	1.4	1.6	1.6	1.3	1.6	1.3	1.4	1.0	**1.4**
	SD	0.5	0.8	0.8	0.5	1.0	1.0	0.7	1.4	1.2	0.7	1.5	0.7	0.9	0.0	**1.1**
	Median	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	**1.0**
Cases With Intracranial Pressure Monitoring Days >0	Number	3	51	4	0	3	17	1	10	8	16	37	3	9	1	**163**
	Percent	2.1	8.4	1.0	0.0	4.0	3.2	0.4	7.1	10.0	7.2	4.1	1.8	1.5	2.4	**3.9**
Intracranial Pressure Monitoring Days	Mean	4.7	4.5	5.0	0.0	6.7	6.8	7.0	8.7	8.8	3.2	2.6	8.3	6.7	1.0	**4.9**
	SD	3.1	3.3	3.2	0.0	3.8	4.7	0.0	8.4	7.0	2.5	1.5	6.0	4.5	0.0	**4.3**
	Median	4.0	4.0	5.5	0.0	5.0	6.0	7.0	6.0	9.0	2.5	2.0	9.0	5.0	1.0	**4.0**

Table 10
Participating Hospital Care, 2008–2009 Cases (cont'd)

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	**Total**
Cases With Ventilation Days >0	Number	41	253	115	4	15	218	74	11	28	45	354	45	132	10	**1,345**
	Percent	29.3	41.9	29.6	9.1	20.0	40.5	29.0	7.9	35.0	20.4	39.5	27.6	22.2	24.4	**32.2**
Ventilation Days	Mean	4.3	5.6	6.7	2.0	2.8	7.4	5.9	2.0	6.5	3.7	7.0	4.3	3.4	2.8	**5.9**
	SD	7.4	7.7	10.3	1.2	2.8	8.0	8.7	1.8	15.9	4.9	14.0	7.8	2.9	2.6	**10.0**
	Median	1.0	2.0	3.0	2.0	1.0	5.0	3.5	1.0	2.0	2.0	2.0	2.0	2.5	1.5	**2.0**

Note
SD: standard deviation.

Table 11
Deaths, by Institution Code, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	Total
ISS for Deaths	Mean	24.2	31.2	31.2	25.0	23.5	32.6	26.5	28.6	32.3	29.1	35.4	33.0	26.2	29.5	**30.8**
	SD	4.9	13.2	11.4	0.0	4.9	14.5	8.3	6.5	9.6	14.6	12.4	8.2	9.0	4.1	**12.2**
	Median	25.0	26.0	26.0	25.0	25.5	29.0	25.0	25.5	29.0	25.0	35.0	35.0	25.0	29.0	**26.0**
In-Hospital Deaths	Number	15	66	48	1	5	65	28	10	12	26	91	9	73	4	**453**
	Percent	10.7	10.9	12.4	2.3	6.7	12.1	11.0	7.1	15.0	11.8	10.2	5.5	12.3	9.8	**10.8**
Died in Emergency Department	Number	3	15	2	0	1	6	3	0	0	13	21	2	4	0	**70**
	Percent	2.1	2.5	0.5	0.0	1.3	1.1	1.2	0.0	0.0	5.9	2.3	1.2	0.7	0.0	**1.7**
Post-Mortem Examination	Number	9	34	13	0	4	18	15	8	5	23	46	3	18	3	**199**
	Percent	50.0	42.0	26.0	0.0	66.7	25.4	48.4	80.0	41.7	59.0	41.1	27.3	23.4	75.0	**38.0**
Patients Who Donated Organs	Number	1	8	13	0	1	11	5	5	2	7	18	4	7	2	**84**
	Percent	5.6	9.9	26.0	0.0	16.7	15.5	16.1	50.0	16.7	17.9	16.1	36.4	9.1	50.0	**16.1**

Notes

The denominator used in the percentage calculations is the total number of admissions for a specific institution. The exceptions are the denominators for post-mortem examinations and patients who donated organs, which are the total number of deaths for a specific institution.

ISS: Injury Severity Score.

SD: standard deviation.

Table 12
Outcome Scores, by Institution Code, 2008–2009 Cases

		Institution Code														
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	**Total**
Number of Cases		140	604	388	44	75	538	255	140	80	221	896	163	595	41	**4,180**
ISS	Mean	22.02	25.92	23.59	19.23	20.33	24.74	23.94	21.77	21.98	22.51	26.36	22.73	23.06	21.12	**24.25**
	SD	6.84	10.00	8.92	9.93	7.45	9.93	8.82	8.16	8.59	9.29	10.83	7.60	8.80	8.09	**9.64**
	Median	20.00	25.00	22.00	16.00	17.00	25.00	24.00	17.00	17.50	20.00	25.00	21.00	22.00	17.00	**24.00**
RTS @ L/T	Mean	7.38	7.49	7.64	7.76	7.63	7.54	7.55	7.49	7.69	7.24	7.56	7.63	7.58	7.64	**7.54**
	SD	1.00	0.90	0.61	0.30	0.40	0.84	0.84	0.78	0.36	1.23	0.76	0.72	0.77	0.49	**0.82**
	Median	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	7.84	**7.84**
TRISS	Mean	0.89	0.88	0.92	0.95	0.96	0.91	0.91	0.95	0.98	0.85	0.90	0.92	0.91	0.97	**0.90**
	SD	0.17	0.18	0.13	0.05	0.12	0.13	0.14	0.09	0.03	0.24	0.17	0.14	0.13	0.06	**0.16**
	Median	0.95	0.94	0.97	0.96	0.99	0.94	0.94	0.98	0.99	0.94	0.95	0.94	0.94	0.99	**0.95**

Notes
ISS: Injury Severity Score.
RTS @ L/T: Revised Trauma Score at Lead/Trauma Hospital.
TRISS: Trauma and Injury Severity Score.
SD: standard deviation.

Table 13
Total Injuries and Deaths, by External Causes of Injury and Sex, 2008–2009 Cases

		Females				Males				Total			
		Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths	Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths	Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths
Total		1,203	100.0	163	100.0	2,977	100.0	360	100.0	4,180	100.0	523	100.0
Railway	Pedestrians	2	0.2	1	0.6	10	0.3	2	0.6	12	0.3	3	0.6
	Pedal Cyclists	1	0.1	1	0.6	0	0.0	0	0.0	1	0.0	1	0.2
	Occupants and Other	1	0.1	1	0.6	0	0.0	0	0.0	1	0.0	1	0.2
	Subtotal	4	0.3	3	1.8	10	0.3	2	0.6	14	0.3	5	1.0
Motor Vehicle Traffic	Pedestrians	113	9.4	25	15.3	155	5.2	27	7.5	268	6.4	52	9.9
	Pedal Cyclists	9	0.7	1	0.6	45	1.5	6	1.7	54	1.3	7	1.3
	Drivers	172	14.3	15	9.2	427	14.3	52	14.4	599	14.3	67	12.8
	Passengers	152	12.6	17	10.4	152	5.1	10	2.8	304	7.3	27	5.2
	Motorcycle Drivers	14	1.2	0	0	138	4.6	11	3.1	152	3.6	11	2.1
	Motorcycle Passengers	10	0.8	0	0.0	1	0.0	0	0.0	11	0.3	0	0.0
	Other	10	0.8	1	0.6	27	0.9	5	1.4	37	0.9	6	1.1
	Subtotal	480	39.9	59	36.2	945	31.7	111	30.8	1,425	34.1	170	32.5
Motor Vehicle Non-Traffic	Pedestrians	9	0.7	0	0.0	10	0.3	2	0.6	19	0.5	2	0.4
	Pedal Cyclists	0	0.0	0	0.0	1	0.0	0	0.0	1	0.0	0	0.0
	Drivers	17	1.4	1	0.6	132	4.4	5	1.4	149	3.6	6	1.1
	Passengers	9	0.7	2	1.2	12	0.4	1	0.3	21	0.5	3	0.6
	Motorcycle Drivers	1	0.1	0	0.0	11	0.4	0	0.0	12	0.3	0	0.0
	Motorcycle Passengers	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	Other	4	0.3	0	0.0	13	0.4	2	0.6	17	0.4	2	0.4
	Subtotal	40	3.3	3	1.8	179	6.0	10	2.8	219	5.2	13	2.5
Motor Vehicle Boarding or Alighting		6	0.5	0	0.0	14	0.5	1	0.3	20	0.5	1	0.2
Other Road Vehicle	Pedestrians	5	0.4	1	0.6	1	0.0	0	0.0	6	0.1	1	0.2
	Pedal Cyclists	3	0.2	0	0.0	77	2.6	1	0.3	80	1.9	1	0.2
	Other	15	1.2	0	0.0	10	0.3	0	0.0	25	0.6	0	0.0
	Subtotal	23	1.9	1	0.6	88	3.0	1	0.3	111	2.7	2	0.4
Water Transport		3	0.2	0	0.0	9	0.3	0	0.0	12	0.3	0	0.0
Air and Space Transport		1	0.1	0	0.0	10	0.3	2	0.6	11	0.3	2	0.4
Vehicle Incidents Not Elsewhere Classified		2	0.2	0	0.0	0	0.0	0	0.0	2	0.0	0	0.0

Table 13
Total Injuries and Deaths, by External Causes of Injury and Sex, 2008–2009 Cases (cont'd)

		Females				Males				Total			
		Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths	Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths	Number of Injuries	Percent of Injuries	Number of Deaths	Percent of Deaths
Unintentional Falls		497	41.3	76	46.6	1,078	36.2	153	42.5	1,575	37.7	229	43.8
Fire and Flames		21	1.7	3	1.8	47	1.6	8	2.2	68	1.6	11	2.1
Natural and Environmental Factors		5	0.4	0	0.0	6	0.2	1	0.3	11	0.3	1	0.2
Drowning		1	0.1	1	0.6	6	0.2	6	1.7	7	0.2	7	1.3
Suffocation		0	0.0	0	0.0	1	0.0	1	0.3	1	0.0	1	0.2
Foreign Bodies (Excluding Choking)		1	0.1	0	0.0	3	0.1	0	0.0	4	0.1	0	0.0
Suicide and Self-Inflicted Injury (Excluding Poisoning)		36	3.0	8	4.9	59	2.0	14	3.9	95	2.3	22	4.2
Assault and Injury Purposely Inflicted		41	3.4	5	3.1	315	10.6	38	10.6	356	8.5	43	8.2
Legal Intervention		0	0.0	0	0.0	8	0.3	0	0.0	8	0.2	0	0.0
Undetermined Whether Unintentionally or Purposely Inflicted		6	0.5	1	0.6	7	0.2	0	0.0	13	0.3	1	0.2
Operations of War		0	0.0	0	0.0	3	0.1	0	0.0	3	0.1	0	0.0
Other Incidents		36	3.0	3	1.8	189	6.3	12	3.3	225	5.4	15	2.9

Table 14
Injury Case Summary, by External Causes of Injury and Sex, 2008–2009 Cases

		Females					Males					Total				
		Mean			Median	SD	Mean			Median	SD	Mean			Median	SD
		Age	ISS	LOS	LOS	LOS	Age	ISS	LOS	LOS	LOS	Age	ISS	LOS	LOS	LOS
Total		51.8	24.3	16.2	9.0	23.9	45.8	24.2	14.5	7.0	22.4	47.5	24.3	15.0	8.0	22.9
Railway	Pedestrians	31.5	19.0	9.5	9.5	12.0	42.4	31.2	16.6	13.0	13.0	40.5	29.2	15.3	13.0	12.6
	Pedal Cyclists	10.0	29.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	29.0	1.0	1.0	0.0
	Occupants and Other	18.0	59.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	59.0	1.0	1.0	0.0
	Subtotal	22.8	31.5	5.3	1.0	8.5	42.4	31.2	16.6	13.0	13.0	36.4	31.3	13.1	11.0	12.7
Motor Vehicle Traffic	Pedestrians	51.4	29.5	18.3	10.0	27.2	42.4	28.4	18.5	9.0	23.4	46.2	28.9	18.4	9.5	25.0
	Pedal Cyclists	32.9	27.7	12.1	8.0	9.6	36.9	27.8	17.1	9.0	20.9	36.2	27.8	16.3	9.0	19.5
	Drivers	42.7	26.8	15.4	9.0	17.0	43.4	27.5	17.5	10.0	25.5	43.2	27.3	16.9	9.0	23.4
	Passengers	39.7	28.0	17.5	11.0	20.8	30.2	27.4	16.7	9.0	25.8	34.9	27.7	17.1	10.0	23.4
	Motorcycle Drivers	45.1	21.7	12.7	10.0	12.3	43.3	26.1	13.7	10.0	13.2	43.5	25.7	13.6	10.0	13.1
	Motorcycle Passengers	46.7	24.0	12.4	9.5	14.0	24.0	29.0	33.0	33.0	0.0	44.6	24.5	14.3	10.0	14.7
	Other	41.9	34.5	23.4	12.5	30.4	42.8	23.7	8.9	4.0	13.2	42.5	26.6	12.9	5.5	20.1
	Subtotal	43.7	27.8	16.7	10.0	21.0	40.7	27.3	16.7	9.0	23.3	41.7	27.5	16.7	9.0	22.6
Motor Vehicle Non-Traffic	Pedestrians	54.8	23.1	15.6	10.0	15.3	34.2	26.4	10.2	4.5	13.5	43.9	24.8	12.7	8.0	14.2
	Pedal Cyclists	0.0	0.0	0.0	0.0	0.0	5.0	17.0	8.0	8.0	0.0	5.0	17.0	8.0	8.0	0.0
	Drivers	23.6	28.4	11.0	10.0	8.4	36.5	24.2	11.6	6.0	16.2	35.1	24.6	11.5	6.0	15.6
	Passengers	28.1	25.0	6.8	3.0	6.8	37.3	21.3	6.3	3.5	6.9	33.3	22.9	6.5	3.0	6.7
	Motorcycle Drivers	31.0	26.0	14.0	14.0	0.0	36.5	24.9	11.6	8.0	11.8	36.0	25.0	11.8	9.0	11.3
	Motorcycle Passengers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Other	43.3	24.0	12.0	7.5	13.1	27.6	22.8	9.3	6.5	7.9	31.3	23.1	10.0	6.5	9.0
	Subtotal	33.8	26.0	11.3	10.0	10.5	35.6	24.0	11.0	6.0	14.9	35.3	24.4	11.0	6.0	14.2
Motor Vehicle Boarding or Alighting		41.7	22.7	16.2	19.0	11.5	42.6	29.0	29.6	12.0	61.5	42.4	27.1	25.9	12.0	52.4
Other Road Vehicle	Pedestrians	53.4	27.2	14.8	3.0	19.5	52.0	13.0	1.0	1.0	0.0	53.2	24.8	12.5	2.0	18.3
	Pedal Cyclists	49.7	15.0	5.3	5.0	1.5	38.2	21.0	7.5	5.0	9.5	38.6	20.8	7.4	5.0	9.3
	Other	37.7	22.5	6.5	7.0	4.4	44.8	20.7	8.4	4.5	9.6	40.5	21.8	7.3	6.0	6.8
	Subtotal	42.7	22.6	8.2	6.0	9.7	39.1	20.9	7.5	5.0	9.4	39.8	21.2	7.7	5.0	9.4
Water Transport		25.3	23.3	21.7	23.0	16.0	38.7	17.4	5.6	5.0	4.1	35.3	18.9	9.6	5.0	10.6

Table 14
Injury Case Summary, by External Causes of Injury and Sex, 2008–2009 Cases (cont'd)

		Females					Males					Total				
		Mean			Median	SD	Mean			Median	SD	Mean			Median	SD
		Age	ISS	LOS	LOS	LOS	Age	ISS	LOS	LOS	LOS	Age	ISS	LOS	LOS	LOS
Air and Space Transport		63.0	34.0	16.0	16.0	0.0	39.9	23.6	10.7	6.0	11.1	42.0	24.5	11.4	8.0	10.4
Vehicle Incidents Not Elsewhere Classified		59.5	23.0	13.0	13.0	9.9	0.0	0.0	0.0	0.0	0.0	59.5	23.0	13.0	13.0	9.9
Unintentional Falls		66.4	21.1	15.6	7.0	26.5	59.2	22.8	14.4	7.0	24.3	61.5	22.2	14.8	7.0	25.0
Fire and Flames		38.9	22.8	31.7	20.5	37.3	43.4	27.3	28.1	17.0	33.8	42.0	25.9	29.2	17.0	34.7
Natural and Environmental Factors		43.6	20.6	16.0	5.0	16.8	40.8	27.0	6.2	3.0	7.4	42.1	24.1	11.1	4.5	13.3
Drowning		8.0	25.0	1.0	1.0	0.0	25.1	23.5	1.6	1.0	1.3	22.6	23.7	1.5	1.0	1.2
Suffocation		0.0	0.0	0.0	0.0	0.0	12.0	25.0	0.0	0.0	0.0	12.0	25.0	0.0	0.0	0.0
Foreign Bodies (Excluding Choking)		61.0	16.0	28.0	28.0	0.0	28.3	25.3	20.7	8.0	22.8	36.5	23.0	22.5	18.0	19.0
Suicide and Self-Inflicted Injury (Excluding Poisoning)		42.7	27.3	32.5	24.0	37.0	39.0	26.7	26.6	13.0	29.5	40.4	27.0	28.6	16.0	32.2
Assault and Injury Purposely Inflicted		27.5	23.0	16.0	8.0	23.5	29.8	21.9	9.9	6.0	14.2	29.5	22.0	10.7	6.0	15.7
Legal Intervention		0.0	0.0	0.0	0.0	0.0	27.8	21.3	17.6	15.0	12.0	27.8	21.3	17.6	15.0	12.0
Undetermined Whether Unintentionally or Purposely Inflicted		36.9	21.2	12.5	6.5	18.0	18.6	27.7	11.1	9.0	10.3	27.0	24.7	11.8	7.0	13.7
Operations of War		0.0	0.0	0.0	0.0	0.0	28.0	17.0	9.0	4.0	8.7	28.0	17.0	9.0	4.0	8.7
Other Incidents		36.9	19.4	9.4	5.0	9.5	40.5	21.3	11.0	7.0	12.7	40.0	21.0	10.7	7.0	12.3

Notes
ISS: Injury Severity Score.
LOS: length of stay.
SD: standard deviation.

Table 15
External Causes of Injury, by Age Group, 2008–2009 Cases

		<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Unknown	Total	Percent
Number of Cases		56	72	72	101	345	362	423	467	614	470	433	491	271	3	**4,180**	100.0
Percent of Cases		1.3	1.7	1.7	2.4	8.3	8.7	10.1	11.2	14.7	11.2	10.4	11.7	6.5	0.1	**100.0**	N/A
Railway	Pedestrians	0	0	0	0	2	0	2	3	1	2	0	1	0	1	**12**	0.3
	Pedal Cyclists	0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**	0.0
	Occupants and Other	0	0	0	0	1	0	0	0	0	0	0	0	0	0	**1**	0.0
	Subtotal	0	0	0	1	3	0	2	3	1	2	0	1	0	1	**14**	0.3
Motor Vehicle Traffic	Pedestrians	0	6	9	7	26	20	21	33	50	27	27	28	14	0	**268**	6.4
	Pedal Cyclists	0	1	4	6	3	4	5	10	11	7	2	1	0	0	**54**	1.3
	Drivers	0	0	0	2	48	80	118	84	107	57	47	37	19	0	**599**	14.3
	Passengers	1	9	12	11	86	35	31	24	22	22	22	20	9	0	**304**	7.3
	Motorcycle Drivers	0	0	0	0	9	6	30	27	47	23	10	0	0	0	**152**	3.6
	Motorcycle Passengers	0	0	0	0	0	2	1	1	5	2	0	0	0	0	**11**	0.3
	Other	0	0	0	1	4	6	4	4	7	4	3	3	1	0	**37**	0.9
	Subtotal	1	16	25	27	176	153	210	183	249	142	111	89	43	0	**1,425**	34.1
Motor Vehicle Non-Traffic	Pedestrians	0	3	0	0	2	2	2	0	2	2	2	3	1	0	**19**	0.5
	Pedal Cyclists	0	0	1	0	0	0	0	0	0	0	0	0	0	0	**1**	0.0
	Drivers	0	2	4	10	23	20	20	23	24	14	3	3	3	0	**149**	3.6
	Passengers	0	2	1	1	1	2	4	6	2	0	1	1	0	0	**21**	0.5
	Motorcycle Drivers	0	0	0	0	1	1	3	3	4	0	0	0	0	0	**12**	0.3
	Motorcycle Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0.0
	Other	0	2	2	1	0	3	2	1	2	4	0	0	0	0	**17**	0.4
	Subtotal	0	9	8	12	27	28	31	33	34	20	6	7	4	0	**219**	5.2
Motor Vehicle Boarding or Alighting		0	0	0	0	1	6	2	2	3	3	1	1	1	0	**20**	0.5
Other Road Vehicle	Pedestrians	0	0	0	0	0	2	0	0	2	0	0	1	1	0	**6**	0.1
	Pedal Cyclists	0	0	3	13	11	3	2	8	20	10	8	2	0	0	**80**	1.9
	Other	0	0	0	4	0	2	4	2	6	6	1	0	0	0	**25**	0.6
	Subtotal	0	0	3	17	11	7	6	10	28	16	9	3	1	0	**111**	2.7
Water Transport		0	0	0	0	2	2	2	2	3	1	0	0	0	0	**12**	0.3
Air and Space Transport		0	0	0	0	0	2	2	2	2	2	1	0	0	0	**11**	0.3

Table 15
External Causes of Injury, by Age Group, 2008–2009 Cases (cont'd)

		<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Unknown	Total	Percent
Vehicle Incidents Not Elsewhere Classified		0	0	0	0	0	0	0	1	0	0	0	1	0	0	**2**	0.0
Unintentional Falls		27	23	22	19	37	42	51	107	170	227	274	359	217	0	**1,575**	37.7
Fire and Flames		0	3	0	4	2	5	11	12	15	5	7	4	0	0	**68**	1.6
Natural and Environmental Factors		0	2	0	0	0	1	0	2	2	2	2	0	0	0	**11**	0.3
Drowning		1	0	3	0	1	0	0	0	1	0	1	0	0	0	**7**	0.2
Suffocation		0	0	0	1	0	0	0	0	0	0	0	0	0	0	**1**	0.0
Foreign Bodies (Excluding Choking)		0	1	0	0	0	0	0	2	0	1	0	0	0	0	**4**	0.1
Suicide and Self-Inflicted Injury (Excluding Poisoning)		0	0	0	0	12	11	16	19	19	9	3	3	2	1	**95**	2.3
Assault and Injury Purposely Inflicted		21	6	0	4	54	87	62	59	41	12	5	2	2	1	**356**	8.5
Legal Intervention		0	0	0	0	1	3	3	0	1	0	0	0	0	0	**8**	0.2
Undetermined Whether Unintentionally or Purposely Inflicted		2	3	0	0	3	0	1	0	2	0	0	2	0	0	**13**	0.3
Operations of War		0	0	0	0	0	2	0	1	0	0	0	0	0	0	**3**	0.1
Other Incidents		4	9	11	16	15	13	24	29	43	28	13	19	1	0	**225**	5.4

Table 16
External Causes of Injury, by Age Group for Falls, 2008–2009 Cases (ICD-10-CA W00–W19)

		<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Total	Percent
Number of Cases		27	23	22	19	37	42	51	107	170	227	274	359	217	**1,575**	100
Percent of Cases		1.7	1.5	1.4	1.2	2.3	2.7	3.2	6.8	10.8	14.4	17.4	22.8	13.8	**100.0**	N/A
W00 Involving Ice and Snow		0	0	1	0	0	0	1	1	9	13	16	9	2	**52**	3.3
W01 Slipping, Tripping and Stumbling		0	1	5	0	2	0	6	7	21	42	49	103	71	**307**	19.5
W02 Involving Skates, Skis, Sport Boards and Rollerblades	Ice Skates	0	0	0	1	0	0	0	0	0	1	3	0	0	**5**	0.3
	Skis	0	0	0	3	0	1	0	0	0	2	1	2	0	**9**	0.6
	Roller Skates/ Rollerblades	0	0	0	0	0	0	0	0	0	0	0	1	0	**1**	0.1
	Skateboards	0	0	0	0	4	1	1	0	0	0	0	0	0	**6**	0.4
	Snowboards	0	0	0	8	2	1	0	4	0	0	0	0	0	**15**	1.0
	Other Specified	0	0	1	0	0	0	0	0	0	0	1	0	0	**2**	0.1
	Subtotal	0	0	1	12	6	3	1	4	0	3	5	3	0	**38**	2.4
W03 Collision With/Pushing by Another Person		0	0	2	1	1	0	1	0	1	0	0	0	1	**7**	0.4
W04 While Being Carried or Supported by Other Persons		9	3	0	0	0	0	1	0	0	0	1	0	0	**14**	0.9
W05 Involving Wheelchair and Other Types of Walking Devices		0	2	2	0	0	0	0	0	0	1	1	2	9	**17**	1.1
W06 Involving Bed		6	1	0	1	0	0	0	1	5	5	5	10	14	**48**	3.0
W07 Involving Chair		2	1	1	0	0	0	0	0	1	0	0	3	3	**11**	0.7
W08 Involving Other Furniture		5	0	0	0	0	0	0	0	1	0	4	2	0	**12**	0.8
W09 Playground Equipment		0	1	1	0	1	0	0	1	1	0	0	0	0	**5**	0.3
W10 On/From Stairs/Steps		1	6	2	0	7	7	14	31	41	54	66	76	44	**349**	22.2
W11 On/From Ladder		0	0	1	1	1	5	3	8	21	31	30	12	4	**117**	7.4
W12 On/From Scaffolding		0	0	0	0	0	3	0	2	5	5	2	0	0	**17**	1.1
W13 From, Out of or Through Building or Structure		0	3	2	1	6	16	13	23	20	17	13	5	1	**120**	7.6

Table 16
External Causes of Injury, by Age Group for Falls, 2008–2009 Cases (ICD-10-CA W00–W19) (cont'd)

		<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Total	Percent
W14 From Tree		0	0	1	2	1	0	1	5	3	4	1	3	0	**21**	1.3
W15 From Cliff		0	0	0	0	2	1	0	2	0	0	1	0	0	**6**	0.4
W16 Diving/Jumping Into Water		0	0	0	0	1	0	1	2	1	0	0	0	0	**5**	0.3
W17 Other Fall From One Level to Another		4	5	3	1	3	3	3	7	10	7	9	5	3	**63**	4.0
W18 Other Fall on Same Level		0	0	0	0	6	1	3	8	15	20	31	57	26	**167**	10.6
W19 Unspecified Fall		0	0	0	0	0	3	3	5	15	25	40	69	39	**199**	12.6

Table 17
External Causes of Injury, by Age Group for Traffic, Non-Traffic and Other Road Vehicle Incidents, 2008–2009 Cases

		0–4	5–9	10–15	16	17	18	19	20	21–24	25–34	35–44	45–54	55–64	65–74	75+	Unknown	Total	Percent
Number of Admissions		26	36	83	41	47	47	53	55	139	249	228	314	181	127	149	0	**1,775**	100.0
Percent of Admissions		1.5	2.0	4.7	2.3	2.6	2.6	3.0	3.1	7.8	14	12.8	17.7	10.2	7.2	8.4	0.0	**100.0**	N/A
Motor Vehicle Traffic	Drivers	0	0	4	4	16	12	14	26	54	118	84	107	57	47	56	0	**599**	33.7
	Passengers	10	12	20	17	14	24	22	8	27	31	24	22	22	22	29	0	**304**	17.1
	Motorcycle Drivers	0	0	2	0	2	3	2	1	5	30	27	47	23	10	0	0	**152**	8.6
	Motorcycle Passengers	0	0	0	0	0	0	0	0	2	1	1	5	2	0	0	0	**11**	0.6
	Pedal Cyclists	1	4	8	1	0	0	0	3	1	5	10	11	7	2	1	0	**54**	3.0
	Pedestrians	6	9	10	10	6	3	4	5	15	21	33	50	27	27	42	0	**268**	15.1
	Other	0	0	1	0	2	0	2	2	4	4	4	7	4	3	4	0	**37**	2.1
	Subtotal	17	25	45	32	40	42	44	45	108	210	183	249	142	111	132	0	**1,425**	80.3
Motor Vehicle Non-Traffic	Drivers	2	4	15	5	3	4	6	5	15	20	23	24	14	3	6	0	**149**	8.4
	Passengers	2	1	1	0	1	0	0	0	2	4	6	2	0	1	1	0	**21**	1.2
	Motorcycle Drivers	0	0	0	0	0	0	1	1	0	3	3	4	0	0	0	0	**12**	0.7
	Motorcycle Passengers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**	0.0
	Pedal Cyclists	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0.1
	Pedestrians	3	0	1	0	1	0	0	0	2	2	0	2	2	2	4	0	**19**	1.1
	Other	2	2	1	0	0	0	0	1	2	2	1	2	4	0	0	0	**17**	1.0
	Subtotal	9	8	18	5	5	4	7	7	21	31	33	34	20	6	11	0	**219**	12.3
Motor Vehicle Boarding or Alighting		0	0	0	1	0	0	0	1	5	2	2	3	3	1	2	0	**20**	1.1
Other Road Vehicle	Pedal Cyclists	0	3	16	3	2	1	2	1	2	2	8	20	10	8	2	0	**80**	4.5
	Pedestrians	0	0	0	0	0	0	0	0	2	0	0	2	0	0	2	0	**6**	0.3
	Other	0	0	4	0	0	0	0	1	1	4	2	6	6	1	0	0	**25**	1.4
	Subtotal	0	3	20	3	2	1	2	2	5	6	10	28	16	9	4	0	**111**	6.3

Note
These age groups match those in the *Ontario Road Safety Annual Report* from the Ontario Ministry of Transportation.

Table 18
Total Injuries and Injury Types, by Five-Year Age Group, 2008–2009 Cases

	<1	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	Unknown	Total	Percent†
Total*	77	88	84	150	812	966	1,081	1,164	1,468	1,042	857	902	516	4	**9,211**	N/A
Percent of Total†	1.8	2.1	2.0	3.6	19.4	23.1	25.9	27.8	35.1	24.9	20.5	21.6	12.3	0.1	**N/A**	N/A
Superficial	18	20	12	21	92	99	165	146	189	146	93	116	59	0	**1,176**	28.1
Musculoskeletal	21	26	23	42	252	291	337	381	495	338	262	238	151	2	**2,859**	68.4
Burns and Corrosion	2	3	0	3	3	8	22	18	24	7	8	5	0	0	**103**	2.5
Internal Organ	34	36	37	64	282	323	331	368	471	376	356	418	237	1	**3,334**	79.8
Crushing	0	0	0	2	5	9	4	11	9	6	5	0	3	0	**54**	1.3
Open Wound, Including Traumatic Amputation	2	3	7	13	125	155	154	156	186	111	90	90	50	1	**1,143**	27.3
Blood Vessels	0	0	0	3	21	34	27	24	28	21	13	8	7	0	**186**	4.4
Nerves and Spinal Cord	0	0	2	1	26	39	35	50	55	28	25	24	8	0	**293**	7.0
Other and Unspecified	0	0	3	1	6	8	6	10	11	9	5	3	1	0	**63**	1.5

Notes

* Total refers to the total number of injury types.

† The denominator for the percentage calculations is the total number of cases for the year.

If an admission has injuries which fall into several of the injury types, each type will be counted once. However, if a case has several injuries which all fall into one type, the case will be counted once.

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