

Injury indicators: A validation tool.

Road safety indicator specifications

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The following gives the specifications of the indicators used in the project: ‘Injury indicators: a validation tool’. A manuscript describing this work was submitted to the journal Injury Prevention in April 2004.

Canadian road safety indicators

Definitions:

Traffic crash

A traffic collision which occurs on a public roadway that involves at least one motorized vehicle and results in death or injury to at least one involved person, or property damage exceeding a monetary amount (specified by law in each province or territory).

- A. The motorized vehicle does not have to be moving. If a cyclist hit a car parked at the side of the road, the event would be counted as a reportable collision if total property damage was at least (the amount specified in the jurisdiction) or if the cyclist was injured and subsequently reported the event to the police.
- B. The words “collision” and “crash” can be used interchangeably.
- C. The definitions used by Transport Canada are very similar to those used by ICD-9. The key is that the collisions/crashes must occur, or at least start, on public roadways.

Injury crash

A traffic crash (see above) that results in non-fatal injuries to one or more involved persons. These injuries can be of any severity

Injured person

A person involved in a traffic crash (see above) who suffers a non-fatal injury.

Slightly injured person

A person involved in a traffic crash (see above) who suffers non-fatal injuries that do not result in hospitalization for a period of at least 24 hours.

Seriously injured person / hospitalized person

A person involved in a traffic crash (see above) who suffers non-fatal injuries that result in hospitalization, including for observation only, for a period of at least 24 hours.

Fatally injured person

A person involved in a traffic crash (see above) who was killed outright or died within 30 days as a result of the crash (within 8 days in the province of Quebec).

Indicators

The non-fatal injury indicators to be used in this work that relate to the 2010 road safety targets are:

C1: Number of road users killed and seriously injured in motor vehicle traffic crashes.

C1.8: Number of vulnerable (pedestrians, motorcyclists and cyclists) road users killed and seriously injured in motor vehicle traffic crashes.

Specification

Sources of information

Transport Canada (TC) reports are based on information in the Traffic Accident Data File (TRAID). TRAID data are generated from provincial/territorial aggregations of police-reported crashes and compiled by TC in a standardized format.

With respect to serious injuries – according to the provinces, police make a judgement call as to whether the injury is minimal, minor (which may or may not require outpatient treatment at a hospital) or major (which means the victim will be held overnight in a hospital, including for observation only in the case of a suspected concussion). Depending on the jurisdiction, police do follow-ups to determine victims' lengths of stay either through phone calls, visits to hospitals and, in some cases, to victims' homes.

The entity that the indicator aims to reflect

C1: The magnitude of the problem of death and serious injury resulting from traffic crashes.

C1.8: The magnitude of the problem of death and serious injury to vulnerable road users resulting from traffic crashes.

NZ road safety indicators

Definitions:

Reported injury: is an injury that results from a motor vehicle accident and is reported to the police and subsequently to the Land Transport Safety Authority

Motor vehicle accident: is any accident that occurs on a public road and results in injury that is attributable directly or indirectly to a motor vehicle or its load. Accidents that do not occur on public roads are excluded, eg. tractor accidents on farms. The accident must involve a motor vehicle and result in death or personal injury to at least one person. (Eg. An accident between a cyclist and a pedestrian would not be included even if one of the people involved was killed or injured.)

Serious injuries: fractures, concussion, internal injuries, crushings, severe cuts and lacerations, severe general shock necessitating medical treatment and any other injury involving removal to and detention in hospital.

Minor injuries: Injuries of a minor nature such as sprains and bruises.

Vehicles: (Definition used for rate per 10,000 vehicles). From 1998, the first full year with Continuous Vehicle Licensing, vehicle numbers include registered cars, vans, trucks, buses, motor caravans, motor cycles and mopeds, but excludes those with an exempt or restoration licence¹.

People: (Definition used for rate per 100,000 people). Total resident population (no age limits) at 30 June (for the calendar year in question).

Indicators

The non-fatal injury indicators that relate to the 2001 road safety targets are:

NZ1: Number of reported injuries resulting from motor vehicle (MV) accidents

NZ2: Reported injuries resulting from MV accidents per 10,000 vehicles

NZ3: Reported injuries resulting from MV accidents per 100,000 people

NZ4: Number hospitalised (discharges) people for reported injuries resulting from MV accidents.

Specification

NZ1: Count

NZ2: Ratio of reported injuries to number of vehicles (unstandardised).

NZ3: Ratio of reported injuries to number of people (unstandardised)

NZ4: Count

¹ Vehicles with a restoration licence are vehicles that the owner has notified the LTSA will be taken off the road while being restored. Exempt vehicles are on the LTSA vehicle register but they are exempt from paying the full licence fee since the vehicles are primarily used off the public road (eg. tractors).

The entity that the indicator aims to reflect

- NZ1: An indicator of the non-fatal injury burden associated with MV traffic crashes.
- NZ2: An indicator of the safety of the roading system (commonly used in international comparisons).
- NZ3: An indication of the importance of road accidents as a public health issue (commonly used in international comparisons).
- NZ4: An indicator of the non-fatal serious injury burden associated with MV traffic crashes.

UK road safety indicators

Definitions

Road accident

In this context, road accidents are defined by reports to police. All road accidents involving human death or personal injury occurring on the Highway involving at least one mechanically propelled vehicle should be reported by the public to the police within 30 days of occurrence. (Legislation defines the duty of the public to report a personal injury road accident.) Examples of accidents to be reported include:

- (a) accidents which commence on the highway but which involve casualties off the highway (eg. where a vehicle runs out of control while on the highway causes casualties elsewhere);
- (b) accidents involving the boarding and alighting of buses or coaches and accidents in which passengers already aboard a bus/coach are injured, whether or not another vehicle or pedestrian is involved;
- (c) accidents to pedal cyclists, including where the pedal cyclists injure themselves or a pedestrian;
- (d) accidents resulting from deliberate acts of violence, but excluding casualties who are subsequently identified as confirmed suicides.

Examples of accidents which should not be reported include:

- (a) accidents which do not involve personal injury;
- (b) accidents on private roads (except Royal Parks) or in car parks;
- (c) accidents reported to the police 30 or more days after they occurred;
- (d) accidents involving confirmed suicides only.

Mechanically propelled vehicle

The interpretation of *mechanically propelled vehicle* varies widely between local police forces, particularly about whether pedal cycle accidents, not involving a motor vehicle, should be reported. The STATS19 [named after the code number on the data collection form] requirement is clear that all accidents involving non-motor vehicles such as pedal cycles and ridden horses on public roads should be reported, regardless of motor vehicle or pedestrian involvement.

Casualty

Any person killed or injured in a road accident including:

- (a) a person who moves quickly to avoid being involved in an accident, is successful in that, but in doing so incurs an injury (eg. twists an ankle). Also includes occupant of vehicle which manoeuvres or brakes suddenly to avoid an impact, but in so doing sustains an injury;
- (b) a pedestrian who injures him/herself on a parked vehicle;
- (c) a person who is injured after falling from a vehicle;
- (d) a person who is injured boarding or alighting a bus or coach;
- (e) a person injured whilst aboard a coach, whether or not another vehicle is involved;
- (f) a person who is injured away from the carriageway as a result of an accident which commenced on the public highway;
- (g) all casualties in accidents arising from deliberate acts of violence;

excluding:

- (h) death/injury to babies unborn up to the time of the accident;

- (i) person injured in a road accident as a result of illness (eg. fit) immediately prior to the accident, where the injury is deemed to be a result of the illness rather than the road accident. All other casualties involved in the accident should be included;
- (j) person who dies in a road accident from natural causes (eg. heart attack) and whose death is not ascribed by the Coroner's Court to have been a result of the accident. Other casualties in these accidents should be reported;
- (k) confirmed suicides. Other casualties in these accidents should be reported. Injured persons suspected of having attempted suicide should be reported;
- (l) any person who witnesses an accident and suffers shock but who is not directly involved.

Fatal injury

Cases where death occurs in less than 30 days as a result of the accident. Fatal does not include death from natural causes or suicide.

Serious injury

Serious injury includes fracture, internal injury, severe cuts, crushing, burns (excluding friction burns), concussion, severe general shock requiring hospital treatment, detention in hospital as an inpatient, either immediately or later, injuries to casualties who die 30 or more days after the accident from injuries sustained in that accident.

Slight injury

Slight injury include sprains, including neck and whiplash injury, not necessarily requiring medical treatment, bruises, slight cuts, slight shock requiring roadside attention. Persons who are merely shaken and who have no other injury should not be included unless they receive or appear to need medical treatment

Indicators

The injury indicators to be used in this work, that relate to the 2010 road safety targets, are:

UK1: Number of road users killed and seriously injured in road accidents.

UK2: Number of people slightly injured in road accidents per 100 million vehicle kilometers.

Specification

Sources of cases

UK indicators are based on information in STATS19. Whenever the police attend or are notified of a road accident which took place on public roads and in which someone was killed or injured, they complete an accident report form. Data collected vary in Local Authority and Police Areas, but each local area is required to report the same set of accident records for national purposes. These are popularly known as STATS19 records, named after the code number of the collection form. In order to facilitate uniform standards of reporting, the DTLR (previously DETR) produce a companion manual, STATS20, which provides definitions/examples of the correct way to complete the form. A further document, STATS21, describes the procedures for the submission of accident data to the DTLR.

Within each police force area, accident details are collated by a central unit managed by the county constabulary or Local Authorities. Each month, following a series of checks, data are transferred to the DTLR. This is a voluntary process. There is no statutory duty for the Police or Local Authorities to report STATS19 road accidents to Central Government. Consistency checking is carried out and inconsistencies are notified to local areas for correction.

Source of exposure data

The data used in the denominator for the rate stated in UK2 are derived from roadside counts which take two forms: occasional 12-hour counts at a large number of sites to estimate the absolute level of traffic (the ‘rotating’ census) and frequent counts at a small number of sites (the ‘core’ census) to estimate changes in the amount of traffic. For each link of the major road network, the DTLR produces estimates of annual average daily flow and annual average weekly flow. The total activity of traffic on the road network in Great Britain is measured in vehicle kilometers. Growth over time is the product of any change in the road network (kilometers) and change in traffic flow (vehicles).

Calculation of the indicator

UK1 is simply a count of all cases of killed and seriously injured road users during a calendar year that were recorded on the STATS19 database.

UK2 is the count of all slight injuries that occurred during a calendar year that were recorded on the STATS19 database divided by the estimated vehicle-kilometers driven, multiplied by 100 million.

The entity that the indicator aims to reflect

UK1: (The complement of) Safety on public roads as reflected by the number of people killed and seriously injured in accidents involving at least one mechanically propelled vehicle.

UK2: (The complement of) Safety on public roads as reflected by the rate of occurrence of casualties in accidents involving at least one mechanically propelled vehicle.