



Motor vehicle crash data in New Zealand

Prepared by Strategy and Sustainability, Ministry of Transport

FACTSHEET
2008

This factsheet provides a brief explanation of the source of the crash data used by engineers, researchers, road safety practitioners and policy makers in New Zealand.

The Police attend, investigate and report road crashes

In New Zealand motor vehicle crashes are attended and investigated by the Police. The Police report on the crashes they attend, using a standard Traffic Crash Report (TCR) form, which includes information on:

- crash location
- the road environment
- the vehicles involved in the crashes
- the vehicle drivers
- people injured or killed in the crash
- the circumstances, including notes and a diagram indicating the movements of the vehicles involved.

Police investigate crashes and complete Traffic Crash Report forms

The image shows two versions of a Traffic Crash Report (TCR) form. The left form is a standard TCR form with sections for Local Body, Crash details, Vehicle 1, Driver 1, and Driver Interview Notes. The right form is a 'Land Transport NZ COPY' of the TCR form, which includes a table for recording vehicle damage severity and location.

Right Hand Side	Front	Left	Right	Non-Occupant	Occupant
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100					

Crash data stored in Crash Analysis System (CAS)

These crash reports are forwarded to expert coders at the NZ Transport Agency who code the details in the notes and diagrams of the TCR. Standard coding schemes are used to describe the movements of the vehicles involved in the crash and the factors that contributed to the crash. The coded data, along with scanned images of the original TCR form, are stored in the Crash Analysis System (CAS).

The investigation, reporting, coding and computerising of crashes take time, so there can be a delay of several months before crash data in CAS are complete.

Police Traffic Crash Reports are coded in preparation for data entry

FACTORS PROBABLY CONTRIBUTING TO CRASHES (Version 1.6-March 2006)

DRIVER CONTROL

- 100 Alcohol or Drugs
 - 101 Alcohol suspected
 - 102 Alcohol test below limit
 - 103 Alcohol test above limit or test refused
 - 104 Alcohol test result unknown
 - 105 Visibly intoxicated non-driver (pedestrian / cyclist / passenger)
 - 106 Postmortem test negative, not suspected
 - 107
 - 108 Drugs suspected
 - 109 Drugs proven
- 110 Too Fast for Conditions
 - 111 Cornering
 - 112 On straight
 - 113 To give way at intersection
 - 114 Approaching railway crossing
 - 115 When passing stationary school bus
 - 116 At temporary speed limit
 - 117 At crash or emergency
- 120 Failed to Keep Left
 - 121 Swung wide on bend
 - 122 Swung wide at intersection
 - 123 Cutting corner on bend
 - 124 Cutting corner at intersection
 - 125 On straight section
 - 126 Vehicle crossed raised median
 - 127 Driving or riding abreast (cyclists more than 2 abreast)
 - 128 Wandering or wobbling
 - 129 Too far left / right
- 130 Lost Control
 - 131 When turning
 - 132 Under heavy braking

TYPE	A	B	C	D	E	F	G	O
A OVERTAKING AND LANE CHANGE	FAILING OUT OF OPPOSITE LANE TO RIGHT	HEAD ON	CUTTING IN OR CHANGING LANE TO RIGHT	LOSS CONTROL (OVERSPEEDING)	SEE HEAD	LOSS CONTROL (PEDESTRIAN VEHICLE)	WEAVING IN HEAVY TRAFFIC	OTHER
B HEAD ON	ON STRAIGHT	CUTTING CORNER	SWINGING WIDE	SWINGING WIDE	LOSS CONTROL ON STRAIGHT	LOSS CONTROL ON CLUNE		OTHER
C LOST CONTROL OR OFF ROAD (STRAIGHT ROADS)	OUT OF CONTROL ON ROADWAY	OFF ROADWAY TO LEFT	OFF ROADWAY TO RIGHT					OTHER
D CORNERING	LOSS CONTROL TURNING RIGHT	LOSS CONTROL TURNING LEFT	NEEDS TO INTERSECT ON END OF ROAD					OTHER
E COLLISION WITH OBSTRUCTION	PARKED VEHICLE	ACCIDENT OR BROKEN DOWN	NON-VEHICULAR OBSTRUCTION (PEDESTRIAN, ANIMALS)	WORKMAN VEHICLE	OPENING DOOR			OTHER
F REAR END	BELOW VEHICLE	CROSS TRAFFIC	PEDESTRIAN	QUELLE	SIGNAL	OTHER		OTHER
G TURNING VERSUS SAME DIRECTION	REAR OF LEFT TURNING	LEFT SIDE REE SWAY	STAYING ON LEFT SIDE	NEAR CENTRE LINE	OVERTAKING VEHICLE	TWO TURNING		OTHER
H CROSSING (NO TURNS)	RIGHT ANGLE (TOP TO LEFT)							OTHER
J CROSSING (VEHICLE TURNING)	RIGHT TURN (RIGHT SIDE)		TWO TURNING					OTHER
K MERGING	LEFT TURN IN	RIGHT TURN IN	TWO TURNING					OTHER
L RIGHT TURN AGAINST	DRIVING AGAINST TURN	MARKING TURN						OTHER
M MANOEUVRING	PARKING OR LEAVING	U TURN	U TURN	OBSTRUCTED MANOEUVRING	PARKING CORNER	PARALLEL PARKING	REVERSING ALONG ROAD	OTHER
N PEDESTRIANS CROSSING ROAD	LEFT SIDE	RIGHT SIDE	LEFT TURN LEFT SIDE	RIGHT TURN RIGHT SIDE	LEFT TURN RIGHT SIDE	RIGHT TURN LEFT SIDE	MISPLACING VEHICLE	OTHER
P PEDESTRIANS OTHER	WEAVING WITH TRAFFIC	FACING TRAFFIC	RELEASING ON FOOTPATH	CHILD PLAYING (CYCLED)	ARMING TO VEHICLE	ENTERING OR LEAVING VEHICLE		OTHER
Q MISCELLANEOUS	FEEL WHEEL OR HORN/ENGINE "AUGERING"	FEEL TRUCK MOVING VEHICLE	TRUCK	PARKED VEHICLE SWAY AWAY	EQUESTRIAN	FULL HEAVY VEHICLE	TRUCK OR LOAD	OTHER

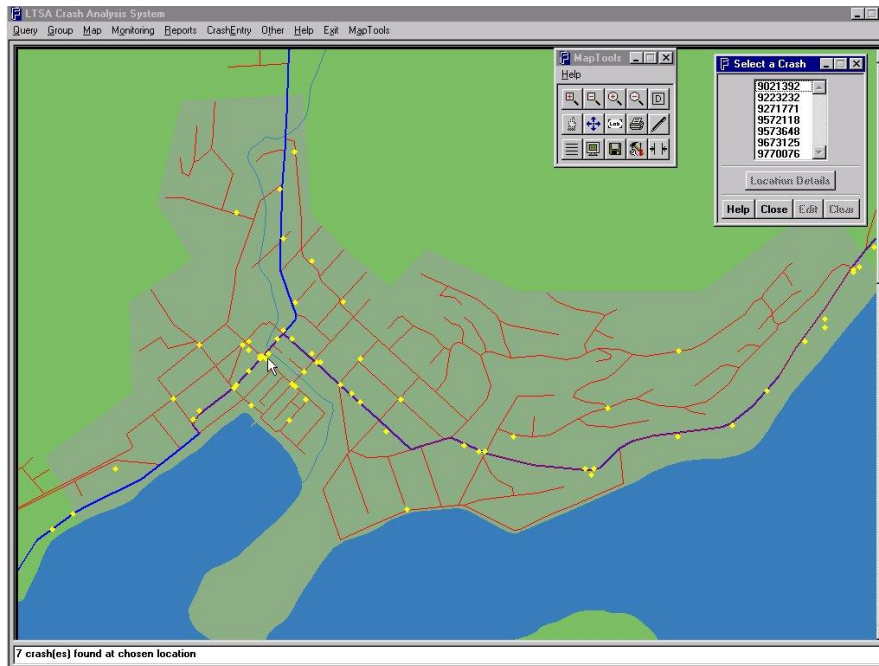
For fatal crashes, in addition to a TCR a brief preliminary report is provided by Police within 24 hours of the crash. This allows up-to-date tracking of road deaths. These preliminary reports include less detail than is available from the full crash reports, and data derived from these reports are treated as provisional until such time as the full TCR reports are available for analysis.

The Crash Analysis System (CAS)

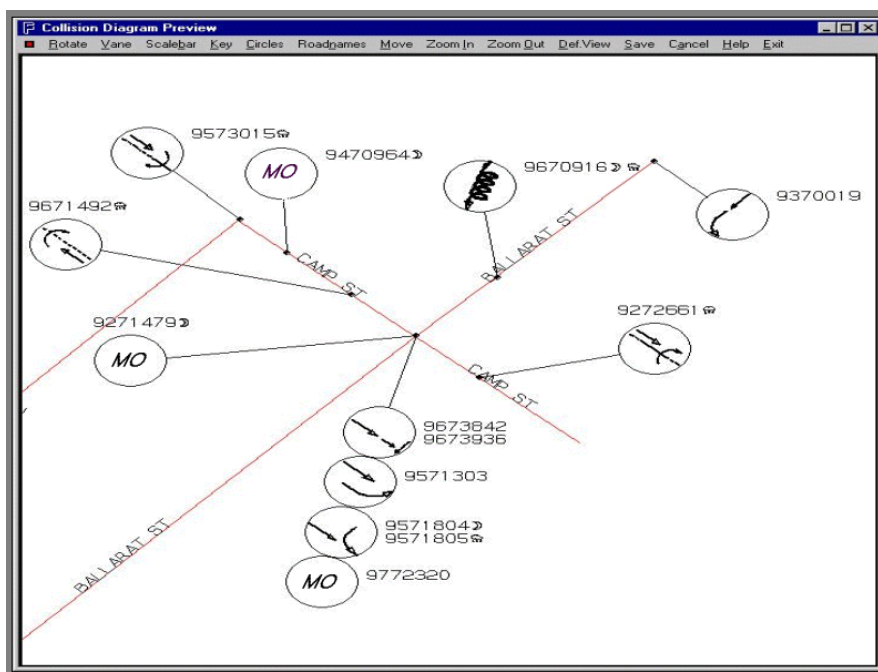
CAS is a tool that manages, analyses and maps traffic crash and related data. The major users of CAS include the NZ Transport Agency, the Ministry of Transport, the NZ Police, road controlling authorities and engineering consultants. CAS is a computer system in which engineers and researchers can:

- enter and edit road crash data
- select crashes for analysis using an in-built query tool. Crashes can be selected on the basis of a number of different attributes, for example:
 - year range
 - crash severity
 - location (e.g. local authority areas, Police districts, specific roads or intersections)
 - environment (e.g. speed limit, intersection type, road curvature, natural lighting, wet or dry road)
 - when the crash occurred (e.g. time of day, month, day of week, holiday period)
 - crash movement type (e.g. overtaking, head on, lost control on bends)
 - contributing factors (e.g. alcohol, fatigue, failed to give way)
 - types of vehicle or road user (e.g. pedestrians, cyclists, trucks).

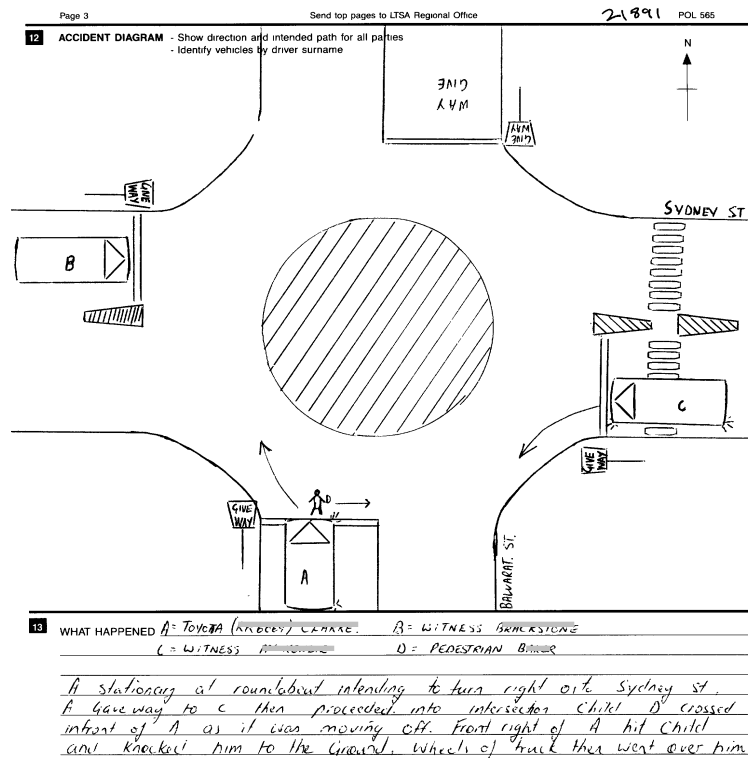
- map crashes. CAS utilises mapping data that include:
 - roads
 - cities and towns
 - railways
 - rivers and lakes
 - area boundaries, including those for territorial authorities, regional government and police districts.



- produce collision diagrams – for more detailed analysis of crash patterns for routes, areas or specific intersections:



- view images of the crash report diagrams:



- report on crashes
- monitor trends at crash sites
- identify blackspots and high-risk locations.

CAS includes crash data from 1980 to the present. Scanned images of crash diagrams are available for crashes from 1996 onwards.

Data can also be exported from CAS for more detailed statistical analysis using other statistical packages.

Crash data terminology

Crashes, casualties, drivers

Published crash data can be reported from several different perspectives:

- **crashes**
Each crash event can be reported as a single incident, regardless of how many vehicles were involved or how many people were killed or injured.
- **casualties**
There can be a number of people killed or injured in any one crash.
- **drivers/vehicles**
There can be more than one driver or vehicle involved in any one crash.

It is important to be aware of these distinctions when reading published statistics, particularly when comparing reported statistics from different sources. This is illustrated in the following example:

- In 2007 there were 376 fatal crashes in which 422 people were killed. There were 572 drivers involved in those fatal crashes and 240 of those drivers died in the crashes.
- There were 117 fatal crashes in which alcohol was a contributing factor. That was 31 percent of all fatal crashes.
- In those 117 fatal crashes involving alcohol there were a total of 128 deaths. That was 30 percent of all deaths from road crashes.
- In those 117 crashes involving alcohol there were 118 drivers who were affected by alcohol. That was 21 percent of all the drivers involved in fatal crashes.
- Of those 118 drivers affected by alcohol, 72 died in the crash. That was 30 percent of the drivers killed in crashes who were affected by alcohol.

So, while at first sight the following statements may seem contradictory, they are in fact all correct. They each describe a different aspect of the 2007 crash data.

- alcohol is a contributing factor in 31 percent of fatal crashes
- alcohol is a contributing factor for 30 percent of road deaths
- alcohol is a contributing factor for 21 percent of drivers involved in fatal crashes
- alcohol is a contributing factor for 30 percent of drivers killed in crashes.

Crash severity

In CAS, injury severity is shown using a simple three-point scale: Fatal, Serious and Minor. These injury severities are assigned by the Police officers who attend and report the crashes. The Ministry of Health's records hold more detailed medical assessments of injuries received in motor vehicle crashes.

The severity of the crash is determined by the most severe injury sustained by those involved in the crash. So, if one person was killed and two received minor injuries and another two were not injured at all, the crash severity is fatal.

In 2007 there were 376 fatal crashes in which 422 people died, 177 received serious injuries and 198 received minor injuries. There were also 156 drivers involved in these fatal crashes who were not injured. There are no details recorded in CAS about non-drivers involved in a crash if they were not injured.

Many characteristics of crashes vary with crash severity so, when reading reported crash data, it is important to take note of the crash severity. For instance, alcohol features more often in fatal crashes than in injury crashes. The following statements, based on 2007 crash data, illustrate this point:

- alcohol is a contributing factor in 31% of fatal crashes
- alcohol is a contributing factor in 14% of injury crashes.

Contributing factors

As noted above, police crash reports are forwarded to expert coders at the NZ Transport Agency where the details in the notes and diagrams of the TCR are coded. Standard coding schemes are used to describe the movements of the vehicles involved in the crash and the factors that contributed to the crash.

There is an extensive list of contributing factor codes which are used to record information about how the crash happened. There are codes that relate to drivers, pedestrians, vehicles, road conditions and weather conditions. For many crashes there may be more than one identified contributing factor.

For example, “alcohol”, “lost control when turning”, “worn tread on tyre” and “slippery road due to rain”, could all be factors contributing to a single vehicle crash in which an alcohol-affected driver ran off the road.

Or, as another example, “failed to give way at a give way sign”, “inattentive: failed to notice intersection or its give way control” and “signs damaged” could all be identified as factors contributing to an intersection crash.

In CAS no attempt is made to determine the relative importance of the contributing factors identified in a crash report, or to assign an underlying “cause” for the crash. Each of the contributing factors provides potentially useful information about the crash.

For further information on crash statistics see *Motor Vehicle Crashes in New Zealand*, the annual statistical statement produced by the Ministry of Transport. This publication is available in secondary school libraries and many public libraries.

Enquiries relating to crash statistics may be directed to the Ministry of Transport, PO Box 3175, Wellington, or by email on info@transport.govt.nz.

For more information about road safety check out the Ministry of Transport website at www.transport.govt.nz.

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