

## **RAIL SAFETY DATA IN AUSTRALIA AT THE NATIONAL LEVEL: AN OVERVIEW**

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### **The role of the Australian Transport Safety Bureau**

Legislative responsibility for rail safety regulation in Australia is vested in the States and Territories, each of which has enacted rail safety legislation (with the exception of the Australian Capital Territory, where rail safety is administered by New South Wales). Legislative responsibility for rail safety investigation (the investigation of accidents, for example) is shared between the ATSB and the States and Territories. The Transport Safety Investigation Act enacted by the Commonwealth gave the ATSB from 1 July 2003 the power to investigate accidents on the designated interstate rail network. Responsibility for investigations on the rest of the rail network remains vested in the States and Territories.

The regulatory framework for rail safety in Australia is co-regulatory. That is, responsibility for rail safety has by and large been devolved to the rail industry, with State and Territory governments maintaining a watchful eye and undertaking investigations and audits on an annual or random basis. Under State and Territory rail safety legislation, the rail industry is required to provide the rail safety regulators in each jurisdiction with a defined set of safety data. The ATSB has no legislative power to compel the rail industry or the regulators to report data in any systematic or ongoing fashion. The ATSB entered the field of rail safety data collection and analysis in 2000, following a decision of the Australian Transport Council (comprising Commonwealth, State and Territory ministers of transport) in late 1999 that the ATSB should assist in the development of national rail safety statistics. Under an arrangement established in 2001, the rail safety regulators in each of the jurisdictions provide the ATSB with selected data, at present fairly narrow in scope. In addition, the ATSB obtains rail safety data from other sources such as the Australian Bureau of Statistics.

The ATSB also compiles data relevant to the monitoring of the safety of air, water and road transport. When investing in transport infrastructure and making decisions about how much to invest in each mode, both government and the private sector take safety issues into account. The travelling public also has an understandable interest in the relative safety of each of the transport modes, as do freight forwarders who wish to have their goods arrive on time and in good condition, unaffected by delays due to accidents. In making cross-modal comparisons, it is therefore important that there be consistency between the safety data for each mode. For example, railways in Australia have traditionally counted fatalities at railway stations (due for instance to slips, trips and falls on station steps) as 'railway accident' fatalities even when a train was not involved. In contrast, fatalities at airports and not involving an aircraft have never been considered as 'aviation accident' fatalities by the aviation industry. The railways have also traditionally considered such fatalities at railway stations (if they held a train ticket) as 'railway passenger' fatalities. Yet the death of a person following a fall on the steps of their home on their way to their car or in a shopping centre car park is never considered a 'car passenger' fatality. Differences such as these need to be identified and resolved in order to make useful cross-modal comparisons.

To facilitate comparisons between rail safety in each of the jurisdictions in Australia, comparisons between rail safety in Australia and in other countries, and comparisons between the safety of the different modes of transport (air, water, road and rail), the ATSB has referred wherever possible to national and international standards. The Australian standard AS 4292, *Railway safety management*, includes an appendix titled 'Incident definition and recording requirements'. State rail safety regulators have also devised a national standard called 'Occurrence categories and definitions'.

Both of these standards are an important first step, but they fall far short of defining a ‘minimum common dataset’ as this is understood in the field of quantitative research. An example of what can be achieved in this regard is the Austroads publication titled *A minimum common dataset for the reporting of crashes on Australian roads* (Austroads, Sydney, 1997), though the dataset was never fully implemented by State/Territory road safety authorities. (To see this publication, look at <http://www.austroads.com.au> under ‘publications database’. Type in AP 126.) An even more developed example is the National Health Data Dictionary used by hospitals in Australia. It is based on the international standard for the specification and standardisation of data elements, ISO / IEC 11179 (see <http://www.aihw.gov.au> under ‘Knowledgebase’).

The most useful standard identified by the ATSB to date is an international standard used in the public health and safety field, the *International Statistical Classification of Diseases and Related Health Problems*, published by the World Health Organisation. Commonly referred to as ‘ICD’, this standard includes a section on transport accidents. It offers a number of advantages in the study of mortality and morbidity due to transport accidents. ICD:

- focuses on accidents occurring during the ‘act of transport’ as opposed to accidents at locations (such as railway stations) and during operations (such as vehicle maintenance) subsidiary to the actual transportation of goods and persons. Transport safety is thus clearly distinguished from occupational health and safety and from safety concerns associated with transport infrastructure other than transport vehicles.
- is broadly consistent with the conceptual framework in use in aviation, marine and road safety statistics with regard to what constitutes a ‘transport accident’ (the rail industry is something of an anomaly in this respect).
- provides a solid base to which can be added, for example, data on accidents at railway stations.
- is used by hospitals and national statistical agencies worldwide and hence provides the potential for international comparisons.

ICD-based data are available in Australia from a central source, the Australian Bureau of Statistics. ICD is useful for the study of mortality and morbidity due to transport accidents, but not for the study of the circumstances surrounding those accidents.

### **Topics in rail safety**

The ATSB is attempting to explore at the national level a number of topics in rail safety and to provide analyses of use to the rail industry, policy makers and the public. The topics are railway accident casualties, railway accidents and incidents, level crossing accidents, cross-modal comparisons and international comparisons. Progress in exploring each of these topics is described later in this paper.

Rail transport activity data (for instance, kilometres travelled by trains in any given time period) are important in the calculation of rates (for instance, number of accidents for every million kilometres travelled) and are therefore also a relevant topic.

Topics such as occupational health and safety are considered out of scope. The rail industry also looks at safety on railway property generally, for example, on vacant land owned by a railway, in car parks adjacent to railway stations, in the transport of rail passengers by bus in the event of disruption to the rail service and so on. These topics are considered to be outside the scope of concerns that can usefully be addressed by the ATSB.

## **Data sources**

A number of relevant data sources have been identified by the ATSB to date as below.

### *Australian Bureau of Statistics*

Every death in Australia is registered with the Registrar-General of Births, Deaths and Marriages in the State or Territory in which the death occurred. All unnatural deaths are subject to the scrutiny of a coroner. 'Unnatural deaths' include deaths due to transport accidents, suicide, homicide, and so on. A coroner does not in all cases initiate an inquest. A coroner may decide that a medical report or a police report, for example, is sufficient to enable completion of a case report.

All death certificates and relevant descriptive material, for example, coroners' findings and reports from medical practitioners, are obtained by the Australian Bureau of Statistics (ABS) as part of the process of producing national cause of death data. The cause of death is classified by the ABS in accordance with ICD. The cause of death data form the basis of the ABS publication *Causes of Death, Australia* (3303.0). ABS also sells its cause of death data to organisations such as the ATSB for the purpose of more detailed analysis of particular topics of interest.

### *World Health Organisation*

The ABS forwards Australian cause of death data to the World Health Organisation (WHO) for inclusion in the WHO Mortality Database. The WHO receives cause of death data from many countries, including all of the more developed countries of Europe, the Americas and Asia (50+ countries), numerous less developed countries of Latin America and the Caribbean (20+) and of Asia (8+), and a few African countries (3). Data from the WHO Mortality Database are freely available from the WHO web site ([www.who.int/en/](http://www.who.int/en/)).

### *State and Territory hospitals*

Hospitals in Australia maintain databases of patient care details. Appropriately qualified researchers are able to obtain some of these data for analysis of topics of public interest. The ATSB is exploring the possibility of obtaining transport injury data from the hospitals.

### *State and Territory rail safety regulatory authorities*

The rail safety regulators in each jurisdiction supply the ATSB with selected data every six months.

### *Road crash data*

The ATSB's fatal road crash databases contain data that are useful for the study of crashes between trains and motor vehicles at level crossings.

### *State and Territory coroners*

Coroners' offices often contain a great deal of information about the circumstances surrounding deaths due to transport accidents. Road safety researchers in the ATSB have been collecting coronial information for over a decade to assist in the analysis of the circumstances surrounding fatal road crashes. Monash University in Melbourne is currently developing a National Coronial Information System, a system that aims to provide coronial information online to selected users, under strict confidentiality arrangements. If implementation of this system is successful, the ATSB hopes to be able to use coronial information to assist in the analysis of fatal rail crashes.

### *Government and rail industry investigation reports*

The rail industry and the State rail safety regulators produce numerous accident and incident investigation reports each year. These would be a valuable resource for rail safety analysts and

investigators in all jurisdictions if copies were routinely and freely circulated. The ATSB supports more open reporting of rail occurrence investigations.

### **Railway accident casualties**

The ATSB is currently compiling data on railway accident fatalities using ABS 'cause of death' data. A publication titled *Railway accident fatalities* is currently on the ATSB web site and is updated annually.

ABS's data are the highest quality data on this topic currently available in Australia. The data are based on ICD, with all the advantages this has, as described above. A time series back to 1979 is available, as are various useful disaggregations.

The ATSB is seeking to obtain data on persons injured in railway accidents. A National Transport Injury Database, based on hospital data, is currently being established for the ATSB by a consultant. The hospital data are also based on ICD. Time series back to July 1999 should be available. Findings will be published on the ATSB web site.

### **Level crossing accidents**

A publication titled *Level crossing accidents* is currently on the ATSB web site. It examines the circumstances surrounding crashes between trains and motor vehicles at level crossings and is based on analysis of relevant data in one of the ATSB's fatal road crash databases.

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### **Railway occurrences**

The ATSB is currently compiling data on rail accidents and incidents (or 'occurrences') using data supplied by State and Territory rail safety regulatory authorities. A publication titled *Railway occurrences* is currently on the ATSB web site and is updated as data are received from these authorities.

### **Rail transport activity**

The ATSB is currently compiling data on rail transport activity (ie train kilometres etc) using data supplied by State and Territory rail safety regulatory authorities. A publication titled *Rail transport activity* is currently on the ATSB web site and is updated as data are received from these authorities.

## **Cross-modal comparisons**

A paper titled *Cross-modal safety comparisons* was produced in 2002 and is available on the ATSB web site (see under Road Safety / Statistics / A-Z Topic Index). In 2004, the ATSB will be compiling data on mortality due to transport accidents (all modes) using ABS 'cause of death' data.

The ATSB is seeking to obtain data on persons injured in transport accidents (all modes). A National Transport Injury Database, based on hospital data, is currently being established for the ATSB by a consultant. The hospital data are also based on ICD. Time series back to July 1999 should be available. Findings will be published on the ATSB web site.

## **International comparisons**

The ATSB is exploring the use of World Health Organisation data (based on ICD) on railway accident fatalities in other countries. A publication titled *Transport accident fatalities: Australia compared with other OECD countries, 1980-1999* was produced in 2003 and is available on the ATSB web site. A search for data on rail transport activity overseas is also in progress.