

Explanatory notes for Safe Work Australia datasets

Safe Work Australia compiles information on work-related injuries, diseases and fatalities in two primary datasets: the National Data Set for Compensation-Based Statistics and the Traumatic Injury Fatalities database. This document provides explanatory notes for the two datasets.

National Data Set for Compensation-Based Statistics

Safe Work Australia compiles national workers' compensation statistics using data obtained from workers' compensation authorities in each state, territory and the Commonwealth Government. These data are collated into the National Data Set for Compensation-Based Statistics (NDS), which is Safe Work Australia's primary source of information on work-related injuries and diseases.

Scope and coverage

The NDS is comprised of accepted workers' compensation claims, which are presented by the financial year of lodgement. A financial year begins on 1 July and ends on 30 June.

The NDS does not cover all cases of work-related injuries and diseases for the reasons below:

- While state, territory and Commonwealth Government workers' compensation legislations provide coverage for the majority of employees, some specific groups of workers are covered under separate legislations. Claims lodged by police in Western Australia and military personnel of the Australian Defence Forces are not included.
- Work-related injuries and diseases of self-employed workers are under-represented because workers' compensation schemes do not generally cover self-employed workers. Around 10% of Australian workers are self-employed. Denominators used to calculate rates only include the jobs and hours of employees who are eligible for workers' compensation.
- Mesothelioma claims are under-represented because many mesothelioma cases, which are commonly linked to work-related exposure to asbestos, are compensated through mechanisms other than workers' compensation.
- Diseases are under-represented because many diseases result from long-term exposure to agents or have long latency periods, which makes the link between the work-related disease and the workplace difficult to establish.

Serious claims

A serious claim is an accepted workers' compensation claim that involves one or more weeks away from work and excludes all fatalities, and all injuries experienced while travelling to or from work or while on a break away from the workplace.

Age of employee

The age of an employee is derived from their date of birth and the date on which the injury occurred or the disease was first reported to the employer. Data related to the open-ended age group of 65 years and above should be used with caution as claims can be made by people who are no longer in the workforce, particularly for work-related diseases that arise after employees retire. The employee estimates only count people who are currently working. It is possible that rates for this age group overstate the actual rates.

Time lost from work

Time lost from work is measured in working weeks and excludes estimates of future absences. Time lost from work comprises the total period of time for which compensation was paid. The time lost is not necessarily continuous and may occur over a number of separate periods. Where an employee returns to work on a part-time basis, they may continue to receive pro-rata payments and the total number of hours for which compensation has been paid is included in calculating the time lost.

The median is used as the measure of central tendency because long-term claims that involve lengthy periods of time lost from work would significantly skew an arithmetic mean.

Data from the preliminary year are excluded when reporting time lost from work because claims from the preliminary year are likely to be open and claimants may accrue more time off work in subsequent years.

Compensation paid

The median is used as the measure of central tendency because long-term claims that involve lengthy periods of time lost from work would significantly skew an arithmetic mean. The calculation of median payments excludes claims where only payments for goods and services, such as medical treatment, have been made. Amounts of compensation paid are rounded to the nearest \$100.

Data from the preliminary year are excluded when reporting compensation paid because claims from the preliminary year are likely to be open and claimants may accrue more compensation payments in subsequent years.

Industry classification

Information about the industry of the claimant is coded using the Australian and New Zealand Standard Industrial Classification, 2006.

The industry of the claimant is based on the industry of the business that employs the claimant. As industry is defined using the industry of the employer, a claim made by a person employed under labour hire arrangements is coded to the labour supply services industry class, which is in the administrative and support services industry. Industry of employer will be different to industry of workplace for some workers.

Occupation classification

Information about the occupation of the claimant is coded using the Australian and New Zealand Standard Classification of Occupations, First Edition.

Details of injuries and diseases

Information about injuries and diseases of claimants is coded using the Type of Occurrence Classification System, Third Edition, Revision 1. The classification system is used to code the:

- nature of injury or disease
- bodily location of injury or disease
- mechanism of injury or disease
- breakdown agency of injury or disease, and
- agency of injury or disease.

Insufficiently coded data

Some claims are not fully coded due to insufficient information being provided at the time of the claim. Where there is a significant number of incompletely coded claims, they may be separately identified in residual categories like 'other and unspecified' or 'not elsewhere classified'. These claims are included when totals are calculated.

Confidentiality

Claim numbers are rounded to the nearest 5 to help protect confidential information about employers and employees. Due to rounding, differences may appear between the reported totals and the sums of rows or columns. Rates and percentages are calculated using unrounded numbers.

Time-series analyses

Comparison of preliminary and non-preliminary data should be done with caution. Non-preliminary data are more likely to have been finalised and are generally more accurate than preliminary data.

When analysing trends over time, consideration needs to be given to legislative changes that may influence trends in workers' compensation data. Information on workers' compensation arrangements can be found in Safe Work Australia's Comparison of Workers' Compensation Arrangements in Australia and New Zealand.

Denominators used to calculate rates

Estimates of the number of employees and hours worked for each Australian workers' compensation jurisdiction are supplied annually by the ABS. The data are primarily derived from the Labour Force Survey, which are adjusted to account for differences in scope between the Labour Force Survey and workers' compensation coverage.

The ABS provides two sets of estimates for each jurisdiction—one is split by sex, age and industry and the second is split by occupation. This restricts presentation of rates to the categories supported by the ABS data. Therefore, it is not possible to calculate rates for occupational groups within specific industries.

In 2008, the ABS conducted a review of the methodology used to calculate the number of employees in each industry and the number of hours worked by each employee. After the review, the ABS implemented a number of changes to their methodology, which increased their estimates. As the ABS could only supply new estimates from 2005–06 onwards, estimates for previous years were adjusted based on the movement between the old and new estimates for 2005–06 to avoid a break in the time series. Reports from 2007–08 use these new estimates. Therefore, comparison with previous reports should not be made.

Following the review, the major change to the estimates was in the industry coding of 'jobs other than the main job' of multiple job holders. Where previously the second job was combined into the industry of the first job, these have now been separated to be shown in the industry in which the employee works in each separate job. This resulted in changes to rates in some industries. In particular, a decrease in employee estimates occurred in public administration and safety, manufacturing, and health care and social assistance as these were the industries where a greater proportion held a second job. An increase occurred in arts and recreation services, and accommodation and food services as these were the industries where the second job was most commonly worked.

While the ABS is able to adjust the employee estimates to account for the industries where the second job was worked, it is unable to adjust the hours worked in a similar manner. All hours worked are allocated to the industry of the main job.

Because eligibility for workers' compensation varies from jurisdiction to jurisdiction, further adjustments are necessary. The most significant adjustments are outlined below:

- Police in Western Australia, who are covered by a separate scheme that does not report to Safe Work Australia, are excluded from the denominators.
- Under the Queensland legislation, owner-managers of incorporated enterprises (OMIEs), who are included in the standard definition of 'employee', have the option of purchasing workers' compensation insurance for themselves. Based on 2006 census data, 10% of employed people in Queensland were OMIEs, an unknown number of whom were covered by workers' compensation. This population has been excluded from the denominators and their claims have been excluded from the numerators.

Adjustment of Victorian and South Australian data

Safe Work Australia uses one working week of time lost from work as the cut-off for the classification of accepted claims as serious claims. This cut-off was chosen because most jurisdictions have an employer excess of one week or less. Since claims with an absence of at least one week are generally processed by the workers' compensation authority, the use of a one-week cut-off ensures comparable data are compiled from all jurisdictions so that an accurate national estimate can be produced.

However, under the Victorian workers' compensation scheme, the employer can be liable for the first 10 working days lost by the injured or ill worker (for an employee working two days per week, for instance, that would amount to five weeks' pay), plus the first \$582 (as of 1 July 2010) of medical services, unless the

employer elected the 'excess buy-out' option. Since information on claims paid solely by employers is not always provided to the workers' compensation authority, the national count of serious claims is affected.

To correct for this under-counting, Victorian claims of one to two weeks' duration are increased by a factor to represent the 'missing claims'. The factor is calculated by comparing the percentage of claims of one to two weeks' duration for Victoria with the percentage of claims of one to two weeks' duration for all other Australian jurisdictions at the industry division level and by nature of injury or disease. The factoring makes the percentage of claims in each industry and nature group in Victoria match the Australian average for claims of this duration. This factoring increases Victorian claims by around 20% and the Australian count by less than 3%.

While South Australia also has a 10-day excess, a waiver of the first two weeks of income maintenance is an incentive that was introduced for employers to forward claims to WorkCoverSA within 5 days of receiving claims from injured or ill workers. This incentive has been operational since 2009–10 and has significantly improved the data quality and accuracy of time-lost information for the majority of short-duration claims.

Reliability of data

Data are subject to two types of errors—non-sampling errors and sampling errors.

Non-sampling error

Non-sampling errors may occur in any statistical collection due to:

- incorrect inclusion or exclusion of respondents or cases.
- non-response of respondents.
- inaccurate information from respondents.
- inaccurate recording of information by data collectors.
- deficiencies in data collection materials and processes.
- errors that occur during the entry, coding and editing of data.

Non-sampling errors may affect the numerator and denominator data. It is difficult to quantify non-sampling error.

Sampling error

Sampling error is a measure of the variation that occurs when a sample, rather than an entire population, is surveyed. Standard error indicates the extent to which an estimate of a sample varies from the estimate of the population from which it is drawn. When a standard error is expressed as a percentage of the estimate to which it relates, it is known as a relative standard error (RSE).

The denominator data used to calculate rates of serious claims are subject to sampling error. Rates that are calculated using denominators with high RSEs are annotated with one asterisk (*) to indicate that the RSE of the denominator is 25% or higher and two asterisks (**) if the RSE is 50% or higher.

Traumatic Injury Fatalities database

The Traumatic Injury Fatalities database (TIF) includes information on all work-related traumatic injury fatalities in Australia. This database collates information sourced from workers' compensation data, fatality notifications to Australia's various WHS authorities and information in the National Coronial Information System.

Inclusions

The TIF covers fatalities due to work-related injuries and explicitly excludes deaths attributed to disease and other natural causes. Among conditions specifically included as injuries are those arising from poisonous plants and animals, environmental conditions (e.g. frostbite), allergic reactions, and embolisms. Heart attacks and strokes are regarded as natural causes of death, but where available information shows that a work-related injury directly triggered a fatal heart attack or stroke, the fatality is included.

Worker fatalities

All identified cases of persons who died from injuries sustained while they were working are included. For this purpose, 'working' includes travelling from one workplace to another. So a trades worker or professional killed driving from one job or client to the next counts as a worker fatality. Similarly, a worker killed in an air crash on their way to a conference would be a worker fatality.

The number of worker fatalities is considered reliable. However some fatalities, particularly those related to traffic incidents, may be missed due to the way these deaths are identified. The information in the National Coronial Information System (NCIS) relies heavily on information collected by the police and the police report may not include sufficient information to identify whether or not the deceased was working at the time of the incident.

Bystander fatalities

Deaths of people in the general public are included if the actions of a worker directly contributed to the death of the person. Under this definition an 'at fault' rule is applied. Information from a variety of sources including police reports is used to determine whether or not the bystander's action directly contributed to their own death. If the bystander's actions directly contributed to the death then the death is considered to be a 'bystander fault' death and is not included in the database. The most common example of this is when a non-working person drives their car into the path of a truck and is killed.

There are many difficulties in identifying bystander fatalities – bystanders cannot seek compensation through workers' compensation; notifications depend on the work health and safety legislation of the jurisdiction; and sufficiently detailed information on the circumstances of all parties to the death is often unavailable. Estimates of bystander fatalities in the TIF should therefore be regarded as an undercount and movements over time interpreted with caution.

Deaths resulting from criminal activity

Persons sustaining fatal injuries as a result of someone else's criminal activity are included in the TIF if the decedent was at work at the time of the incident. Where the criminal activity is incidental to legitimate work activity, for example, where a worker dies of an injury sustained while under the influence of legal or illegal substances, the fatality is also included. Non-working persons fatally injured in an incident involving criminals and law enforcement officers or security officers are included as bystanders. In the case of a bystander who is killed while the police are pursuing a vehicle for a traffic or other violation the death will be included regardless of whether they were hit by the police car or the offender's car.

Exclusions

Deaths due to natural causes

Natural causes include heart attacks, strokes and where death is a natural progression from a disease. In NCIS a death is classed as natural causes when the person did not die from external causes. An external cause of death is defined as any death that resulted directly or indirectly from environmental events or circumstances that caused injury, poisoning and other adverse effects (WHO, 1992).

Deaths due to complications of surgical and medical care

Although the death of a patient who dies as a result of medical negligence or malpractice is in principle a bystander fatality, deaths arising from such iatrogenic injuries are specifically excluded from the TIF.

Deaths of persons undertaking criminal activity

Persons fatally injured while undertaking criminal activities, such as gaining illegal entry into a building or work site or crashing a car while evading a police pursuit are excluded from the TIF.

Suicide

The TIF excludes deaths resulting from self-harm because it is difficult to assess the extent of the connection between work and a decision to take one's own life.

Data sources

The TIF uses information from three datasets:

- the National Data Set for Compensation-Based Statistics (NDS)
- the Notifiable Fatalities Collection (NFC), and
- the National Coronial Information System (NCIS).

The individual records from each of the datasets are compared so that duplicates can be removed. Generally date of death, date of birth and sex are used for initial matching as these data are available for most cases. Other data items used for matching are industry and occupation of the deceased and the coding of the incident in the NDS with narratives in the NFC and NCIS. Each of these datasets has limitations, so all three datasets are needed to determine the total number of work-related fatalities that occur each year.

The National Data Set for Compensation-Based Statistics (NDS)

The scope of the NDS is all accepted workers' compensation claims made by or for an employee (other than an employee of the defence forces). The NDS is compiled annually by Safe Work Australia from data supplied by state, territory and Australian Government workers' compensation authorities. The NDS has consistent data from 2000–01 onwards.

The strengths of the NDS are that:

- it codes the industry of employer accurately
- medical professionals independently assess work-relatedness, and
- work-related travel is identified.

The weaknesses of the NDS are that:

- workers' compensation is only available to employees, so the NDS does not provide good coverage of fatalities in industries where a significant proportion of workers are self-employed
- a claim may not be lodged where there are no dependants
- date of death is not available for all fatalities although jurisdictions are progressively introducing this data item
- bystander fatalities are not included as they are not compensable within the workers' compensation system
- narratives are not provided
- coding of mechanism, agency, breakdown agency and occupation may not be complete or accurate
- location of incident is not identified so workers who died in an incident in a state different to their employer can be difficult to match to an NCIS record. This is particularly relevant to Commonwealth compensation claims with workers employed in all states and territories
- date of birth may not be accurate, and
- names are not provided.

Notifiable Fatalities Collection (NFC)

Safe Work Australia maintains a database of work-related injury fatalities notified to work health and safety authorities in each jurisdiction under their work health and safety legislation. There are 13 work health and safety jurisdictions in Australia that report to Safe Work Australia: each of the eight states and territories; the Commonwealth (Comcare); the mining sectors in New South Wales, Queensland and Western Australia; and the National Offshore Petroleum Safety and Environmental Management Authority.

Following the introduction of model Work Health and Safety legislation, the NFC was reviewed to align its scope to that of the new legislation. From 1 January 2013 improvements in the reporting of fatalities has occurred particularly in relation to work-related road fatalities.

The strengths of the NFC are that:

- it captures fatalities that may not be compensated such as deaths to self-employed, contract workers and bystanders
- information is available within a few months of the incident
- work-relatedness is assessed by work health and safety officers
- names are supplied by some jurisdictions, and
- it provides a brief narrative account of the circumstances of the fatality.

The weaknesses of the NFC are that:

- data are only available from 2003–04 onwards
- only limited information is available at the time of notification
- information on age is often inaccurate
- it tends to capture work-related fatalities only when they occur shortly after the injury, and
- prior to 1 January 2013 there was limited coverage of transport-related fatalities.

National Coronial Information System (NCIS)

The NCIS, officially launched in July 2000, is a national internet-based data storage and retrieval system of coronial cases in Australia. Each state and territory in Australia has a licence agreement with the Victorian Department of Justice permitting the transfer of coronial information for storage and dissemination via the NCIS.

For the TIF, records are extracted and examined based on the scope criteria. In particular, all deaths that are coded as work-related or where the activity is coded as paid work are reviewed, as well as deaths that involve a heavy or light commercial vehicle, aircraft or occurred at a farm, industrial or commercial workplace. Some records do not have all the relevant data available at the time when the dataset is finalised, and therefore updates to historical numbers may be evident in future releases.

The strengths of the NCIS are that:

- it includes all deaths reported to an Australian coroner
- it includes police narratives and coronial findings on the causes and circumstances surrounding the fatal incident
- some information is available within a few months of the incident, and
- work-relatedness is assessed against standard criteria.

The weaknesses of the NCIS include:

- not all work-related fatalities are correctly coded
- industry information is more closely linked to the workplace than the employer
- it can be many years before the case is closed and all files loaded and coded
- crucial data items, including name, date of birth and date of death, as well as documentation, may be missing for open cases and even some closed cases, and
- it is difficult to identify bystander fatalities.

Other data sources

The media and accident investigation reports from the Australian Transport Safety Bureau relating to plane crashes, train crashes and maritime incidents are used to supplement information found in each of the datasets.

Calculation of fatality rates

Fatality rates are calculated as the number of fatalities divided by the number of workers in the reference period and expressed as a rate per 100 000 workers. Employment figures from quarterly ABS Labour Force Survey data are used to calculate fatality rates. The number of workers is derived from the average of all persons employed over the four quarters of the year for each sex, age group, industry, occupation, or state or territory.

Because work-related injury fatalities of Australian Defence Force (ADF) personnel within Australia are in scope for the TIF, worker estimates for the public administration and safety industry division, community and personal service workers occupation, and all totals are supplemented with the average of levels of ADF permanent members reported in the Department of Defence Annual Report.

The TIF database also includes worker fatalities involving volunteers and children aged under 15 years old. The ABS Labour Force Survey data does not include either volunteers or children under 15, however due to the small numbers of these fatalities, the inclusion of these fatalities without adjusting the worker estimates does not impact on the fatality rates.