Data quality information — Fire and ambulance services, chapter 9

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| Data quality information |
| Data quality information (DQI) provides information against the seven Australian Bureau of Statistics (ABS) data quality framework dimensions, for a selection of performance indicators and/or measures in the Fire and ambulance services chapter. DQI for additional indicators will be progressively introduced in future reports.  Technical DQI has been supplied or agreed by relevant data providers. Additional Steering Committee commentary does not necessarily reflect the views of data providers. |
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## Emergency services for fire events

### Fire incidents

#### Fire incidents per 100 000 people in the population

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC), with additional Steering Committee comments.

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| Indicator definition and description | |  | | |
| Element | Equity/effectiveness — Prevention/mitigation | | | |
| Indicator | Fire incidents | | | |
| Measures | ‘Fire incidents’ is defined as the number of fire events that are reported to a fire service organisation and require a response.  A jurisdiction’s fire service organisation includes fire service providers, land management agencies and their umbrella department/s.  Data are provided for:   * *fire incidents attended by fire service organisations per 100 000 people* — the total number of fire events that are reported to a fire service and require a response * *structure fires* — a structure fire is a fire in a building, or involving a building, whether or not there is damage to the structure * *landscape (bush and grass) fire incidents* — ‘Landscape (bush and grass) fire incidents’ includes all vegetation fires (such as bushfires or grassfires), irrespective of the size of the area burnt * *other fire incidents* — Other fire incidents include mobile property type fires (such as to cars planes, or trains). outside storage fires, special structure fires (such as to bridges or tunnels). is a fire in a building, or involving a building, whether or not there is damage to the structure.   Measures of ‘non‑fire’ incidents and false alarms incidents attended to by fire service organisations is provided as contextual information relating to the broader activities of fire service organisations.  Measures (other than ignition factors for structure types) are calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of fire incidents (by type)** | |  |  | |  |  | | **Denominator:** | **(estimated resident population)** |   Fire incidents are coded by type according to the Australian Incident Reporting System (AIRS) classification:   * Fire incident events are where the Type of Incident is a *fire or explosion*:   A23 = Division 1 (Codes 100 to 199 inclusive)   * Structure fires are where the Type of Incident is a *building fire*:   A23 = Division 1 (codes 110 to 129 inclusive)   * Landscape (bush and grass) fire incidents are where the Type of Incident is a *vegetation or other outside fire*:   A23 = Division 1 (Codes 160 to 179 inclusive). | | | |
| Data source | Numerator  State and Territory governments. The Secretariat collects data directly from all jurisdictions. Within each jurisdiction, fire service and emergency services organisations collect and compile data.  Denominator   * Population: *Australian Demographic Statistics*, Cat. no. 3101.0 (table 2A.2) | | | |
| Data Quality Framework dimensions | | |  | |
| Institutional environment | Fire incident data are collected by fire and emergency service organisations in each State and Territory according to the AIRS.  The AIRS is a nationally agreed data standard. It takes a systematic approach to collecting, recording and reporting information about responses to incidents and emergencies attended primarily by fire services. It provides a standard for the structure, definitions and integrity of the data collected.  The AFAC Australian Incident Reporting System (AIRS) User Network is responsible for sustaining the production and currency of AIRS data and support the continued development of data requirements to ensure consistent and reliable methods of data collection, compilation and analysis can be applied throughout member agencies. For further information about the AFAC knowledge data base see the AFAC National Data and Glossary.  Not all of the contributing fire and emergency services collect all of the data because each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business. In addition, many land management agencies do not record their response to fires according to the AIRS.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. | | | |
| Relevance | ‘Fire incidents’ is an indicator of governments’ objective to manage the risk of fires by preventing/reducing the number of structure, landscape and other fires.  Fire service organisations respond to all reported fires within emergency response areas. Fire agencies may choose to manage some landscape fires (rather than fight the fire), particularly in remote areas  A lower or decreasing number of fire incidents, adjusted for population/households, indicates a better community outcome. Higher or increasing proportions of fire incidents indicate higher emergency response workloads. | | | |
| Timeliness | Fire incident are published annually for the latest financial year preceding the January release of each RoGS. | | | |
| Accuracy | Text caveats in the RoGS provide generalised advice that data are not strictly comparable and cite a number of physical, operational and data collection system factors that influence fire incident data.  Jurisdictions predominately follow the data definitions. Substantive differences to the counting procedures are summarised in table 1 and include:   * *land management agencies* — not all jurisdictions report the number of fire incidents attended to by land management agencies that have a fire response role * *incomplete voluntary reporting procedures —* accurate identification of incidents attended by volunteer fire brigades is sometimes not possible * *merging of landscape fires* — jurisdictions have noted that it is common practice to merge landscape fire data (i.e. one fire incident that with another is then treated as a single event). The AIRS incident type coding requires assessment of the ‘most serious situation arising from a landscape fire’, which usually occurs after fires have merged and may result in some merged fires being counted as a single incident. | | | |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation.  Any time series changes are identified with relevant footnotes. | | | |
| Accessibility | Fire incident data are publicly available on the Productivity Commission’s website from the time of RoGS publication.  Additional data may be available upon request through AFAC. | | | |
| Interpretability | Copies of the complete AFAC AIRS data standard are available upon request through AFAC.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. | | | |
| Data Gaps/Issues Analysis | | | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Text caveats note the need for fire incident data to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. | | | |

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| Table 1 Jurisdictional practices in counting fire incidents |
| | *Jurisdiction comments* | | | --- | --- | | NSW | Included in fire incidents data are incidents recorded by:   * Fire & Rescue NSW * NSW Rural Fire Service * The Fire Management Unit, Parks and Wildlife Group of the Office of Environment and Heritage currently report to RoGS the number of landscape fires.   Land Management Agencies  NSW includes landscape incident data.  Merging of fires  na  Other significant counting practices  None | | Vic | Included in fire incidents data are incidents recorded by:   * Metropolitan Fire and Emergency Services Board * Country Fire Authority * Department of Environment Land Water and Planning   Land Management Agencies  Landscape fires data include incidents from the Department of Environment and Primary Industries (formerly Department of Sustainability and Environment) from 2004‑05 onwards.  Merging of fires  na | | Qld | Included in fire incidents data are incidents recorded by:   * Queensland Fire and Emergency Services (QFES) Urban stations. QFES Urban stations are estimated to serve 87.6 per cent of Queensland’s population. * QFES Rural brigades. Rural Fire Brigades respond to the majority of landscape fires in Queensland. In fact, they cover approximately 93 per cent of the geographical area of the State.   Prior to 2012‑13, accurate identification of incidents attended by the QFES was not possible. A trial of new procedures has seen reporting completion rates rise to over 95 per cent for Rural Fire Brigade attendances logged through FireCom during 2012‑13. New procedures were fully implemented from 1 July 2013 and have resulted in improvement to the rate of reporting for volunteer attendances.  Land Management Agencies  Queensland incident data exclude responses by land management agencies.  Merging of fires  Each fire is counted as a separate incident, whether the fires burn into each other or not.  Other significant counting practices  Data are likely to be under‑reported due to non‑completion of fire reports by QFES volunteer staff. | |  | (continued next page) | |
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| Table 1 (continued) |
| |  |  | | --- | --- | | *Jurisdiction comments* | | | WA | Included in fire incidents data are incidents recorded by:   * Department of Fire and Emergency Services (DFES) * The Department of Parks and Wildlife (P&W).   Land Management Agencies  Data for *total fire incidents* includes P&W fires.  Data for *total landscape fire incidents* includes responses by land management agencies (see above). Data are reviewed and cleansed on an annual basis to remove duplications resulting from fires managed by different agencies.  Merging of fires  WA agencies currently record all landscape fires separately, according to the number of ignitions.  Other significant counting practices  Data are likely to be under‑reported for two reasons:   * 1) Some fires are only monitored and no suppression activity takes place. P&W does not record these incidents – DFES records them as monitored fires. * 2) Local Government Bushfire Brigades may self‑mobilise to small localised incidents. Often these are not reported and are therefore not recorded. | | SA | Included in fire incidents data are incidents recorded by:   * SA Metropolitan Fire Service (MFS) * SA Country Fire Service (CFS) * Parks SA * Forestry SA.   Land Management Agencies  SA’s landscape fire incident reporting has included land management agencies such as Parks SA and Forestry SA, since these agencies have brigades registered as CFS brigades and work with CFS’s Group System.  Merging of fires  SA agencies generally record merged landscape fires as a single fire. As per AIRS manual, incidents are recorded as the ‘most serious’ situation. In SA landscape fires are generally the highest fire intensity when fires merge and often the greatest area is burnt after merging. Therefore, the ‘most serious’ situation that occurred is most likely at/after merger. Further, most forest fires, due to spotting, are usually an amalgam of many thousands of ignitions.  Other significant counting practices  Rural Prescribe Burns may be included in the AIRS database, but are later removed as a part of data quality procedures, however a small number may not get picked up. | | Tas | Included in fire incidents data are incidents recorded by Tasmania Fire Service (TFS).  Land Management Agencies  Data include all vegetation fires, regardless of size, from all fire brigades (full time and volunteer) and land management agencies.  Merging of fires  na  Other significant counting practices  None | |  | (continued next page) | |
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| Table 1 (continued) |
| |  |  | | --- | --- | | *Jurisdiction comments* | | | ACT | Included in fire incidents data are incidents recorded by:   * ACT Fire and Rescue * ACT Rural Fire Service.   Land Management Agencies  na  Merging of fires  na  Other significant counting practices  None | | NT | Included in fire incidents data are incidents recorded by:   * NT Fire and Rescue Service * Bushfires NT.   Land Management Agencies  NTFRS includes data provided by Bushfires NT.  Merging of fires  Each fire is counted as a separate incident, whether the fires burn into each other or not.  Other significant counting practices  Some duplicate counting may exist due to the amalgamation of data between NTFRS and Bushfires NT. NTFRS and Bushfires NT are currently reviewing data collection policies. | |
| **na** Not available. |
| *Source*: State and Territory governments. |
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#### Non‑fire incidents: Reported road crash rescue incidents

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Australian Council of State Emergency Services (ACSES), with additional Steering Committee comments.

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| Indicator definition and description | |  |
| Element | Equity/effectiveness — Prevention/mitigation | |
| Indicator | Fire incidents (provided as contextual information to the fire incidents indicator) | |
| Measure incidents (computation) | ‘Reported road crash rescue incidents’ is defined as the number of reported incidents involving a motor vehicle and the presumption that assistance is required from emergency services organisations.  It is measured by the rate of reported road crash rescue incidents per 100 000 people. It is calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of road rescue incidents** | |  | **——————————————————————————** | | **Denominator:** | **estimated resident population** |   According to the Australian Incident Reporting System (AIRS) classification road crash rescue incidents are where:  The Type of Incident is A23 = Division 3: 351 and 352  AND the Type of Action Taken is A24= 20–23, 29  **OR**: the No. of Injuries is D2>=1, Fatalities is D4>=1, Rescued is D5>=1  AND the Mobile Property Type is J1 = 10–29, 61–65, 67 | |
| Measure extractions (computation) | ‘Reported road crash rescue extrications’ is defined as an assisted release and removal of trapped people (usually casualties) from motor vehicles by specially equipped and trained emergency service crews, arising from incidents reported. It is measured by the rate of reported extrications per 100 000 people; per 100 000 registered vehicles; and per million vehicle kilometres travelled. It is calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of road rescue extractions** | |  | **——————————————————————————** | | **Denominator:** | **(estimated resident population)**  **(number of registered vehicles)**  **(number of vehicle kilometres travelled)** |   According to the AIRS classification road crash rescue extractions are:  The ‘Type of Incident’ is A23 = Division 3: 351 and 352  AND the: ‘Type of Action Taken’ is A24= 21–23  **AND** No. of Injuries is D2 >=1, Fatalities is D4 >=1, Rescued is D5 >=1  AND the Mobile Property Type is J1 = 10–29, 61–65, 67 | |
| Data source | Numerator  State and Territory governments. The Secretariat collects data directly from all jurisdictions. Within each jurisdiction, fire service and emergency services organisations collect and compile data.  Denominator   * Population: *Australian Demographic Statistics*, Cat. no. 3101.0 (table 2A.2) * Registered Vehicles: *Motor Vehicle Census*, Cat. no. 9309.0 * Vehicle kilometres travelled: *Survey of Motor Vehicle Use*, Cat. No. 9208.0. | |
| Data Quality Framework dimensions | | |
| Institutional environment | Road crash rescue data are collected by fire and emergency service organisations in each State and Territory according to the reporting requirements of their jurisdiction.  Not all of the contributing fire and emergency services collect all of the data because each fire and emergency service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business.  Jurisdictions that code their road crash rescue data according to the AIRS are:   |  |  | | --- | --- | | * Victoria (fire agencies only) | * Tasmania | | * Queensland | * Australian Capital Territory | | * Western Australia | * Northern Territory | | * South Australia |  |   The AIRS is a nationally agreed data standard. It takes a systematic approach to collecting, recording and reporting information about responses to incidents and emergencies attended primarily by fire services. It provides a standard for the structure, definitions and integrity of the data collected.  The AFAC Australian Incident Reporting System (AIRS) User Network is responsible for managing and reviewing the AIRS data standard. For further information about the AFAC knowledge data base see the AFAC National Data and Glossary.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. | |
| Relevance | ‘Reported road crash rescue incidents’ and ‘Reported road crash rescue extractions’ are an indicator of governments’ objective to reduce the adverse effects of road incidents on the community through appropriate response activities. A lower or decreasing number of reported road crash rescue incidents and extrications, adjusted for population, indicates a better community outcome. Higher or increasing proportions of reported road crash rescue incidents and extrications indicate higher emergency response workloads.  Each State and Territory has different road crash rescue attendance policies (table 2). As a result, road crash rescue incident data may vary according to the jurisdiction’s attendance policy, rather than the underlying number of road crash rescue incidents. | |
| Timeliness | Reported road crash rescues are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | Text caveats in the RoGS provide generalised advice that data are not strictly comparable and cite a number of physical, operational and data collection system factors that influence road rescue data.  Jurisdictions predominately follow the data definitions, although jurisdictions have indicated probable over‑counting in the data collection due to:   * *multiple agency response —* where both fire and SES services attend the same road crash event, due to data collection deficiencies several jurisdiction count this as multiple incidents * *multiple SES response —* where multiple SES services attend the same incident * *counting of ‘call‑backs’ as incidents —* in some cases SES may count events as road crash rescue ‘incidents’, which are outside the scope provided in the data definition (such as counting ‘call‑back’ incidents or traffic management incidents).   In practice there are differences in the method between (and within) jurisdictions to estimate road rescue data. Each jurisdiction’s approach is summarised in the Road crash rescue data quality appendix (table 3-4). | |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation.  Any time series changes are identified with relevant footnotes. | |
| Accessibility | Road crash rescue data are publicly available on the Productivity Commission’s website from the time of RoGS publication. | |
| Interpret­ability | Copies of the complete AFAC AIRS data standard are available upon request through AFAC.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. | |
| Data Gaps/Issues Analysis | | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Text caveats note the need for road crash rescue data to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. | |

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| Table 2 Road crash rescue policies  Attendance policies that influence the number of road crash rescue incidents attended to and recorded by emergency service organisations. |
| |  |  | | --- | --- | | *Jurisdiction’s emergency service road crash rescue attendance policies* | | | NSW | Rescue units in NSW are predominantly provided by the NSW Police, Ambulance Service of NSW, Fire and Rescue NSW, State Emergency Service, NSW Volunteer Rescue Association Incorporated, Marine Rescue NSW, and Australian Volunteer Coast Guard Association Incorporated.  Under the State Emergency and Rescue Management Act 1989 and the State Rescue Policy, the NSW Police Force has a central role in coordinating rescue. Rescue services in NSW are based on a network of ‘accredited' rescue units located throughout the State, managed by the Board through an accreditation process. A Primary Rescue Unit is a unit with trained crew, rescue vehicle and rescue equipment which has been accredited to respond first to rescue situations, on a 24 hour, seven day a week basis. | | Vic | Road rescue services are provided by 145 Road Rescue approved crews in Victoria. These crews are derived from the Country Fire Authority (CFA), Metropolitan Fire and Emergency Services Board (MFESB), Victoria State Emergency Service (VICSES), and two independent units (the Echuca‑Moama and Shepparton Search and Rescue Squads.  Road Rescue crews must be called out concurrently with ambulance to all road rescue events by communications centres unless it is known that no persons are trapped.  In addition, fire service and police will also respond concurrently.  Once verified that no persons are trapped, responding crews are immediately advised. | | Qld | Revised road crash rescue protocols were implemented in September 2009 to reduce unnecessary attendance by the QFES at mobile property crashes. Revised road crash rescue response protocols were again implemented on 18 October 2011, as part of ongoing service delivery review for QFES attendance at mobile property crashes. | | WA | In Western Australia the Hazard Management Agency is the Western Australia Police Service. Response services are provided by career and volunteer firefighters, the State Emergency Service and St John Ambulance. | | SA | The SA emergency services work to a dispatch policy that requires a fire service response as well as a rescue response for any reported vehicle accident outside the Metro Area. | | Tas | The main agencies responding to road crash rescue incidents are the Tasmania Police (TasPol), Ambulance Tasmania, Tasmania Fire Service (TFS) and State Emergency Service (SES).  The agency receiving the emergency call Triple Zero (000) for a road accident must ascertain whether any persons are trapped. Information on road crashes must be passed to the TAS, TasPol, and TFS (FireComm) control rooms. TFS (FireComm) will dispatch TFS and SES road crash rescue units when it is determined necessary.  Requests for multiple unit dispatches (TFS and/or SES) can be made if extra rescue or other services are required. There are also some dual response areas where both SES and TFS road crash rescue units are dispatched at the same time. | | ACT | The ACT Fire and Rescue has the sole responsibility for road rescue in the ACT.  ACT Fire and Rescue are dispatched whenever notified of an incident. In most cases, when the ACT Ambulance Service receives a call from the general public or from ACT Policing, the ACT CAD system creates a road rescue job for both the ACT Ambulance Service and ACT Fire and Rescue. | | NT | na | |
| **na** Not available. |
| *Source*: State and Territory governments. |
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| Table 3 Calculation of road crash rescue incidents  A summary of each jurisdiction’s approach calculating road crash rescue data and differences to the data collection manual. |
| |  |  | | --- | --- | | *Jurisdiction’s calculating road crash rescue data* | | | NSW | Rescue data reported in the RoGS are sourced from the NSW Police Force CAD. The NSW Police Force CAD has been established as the definitive list of all rescue incidents that occur in New South Wales. The State Rescue Policy defines a Rescue Incident is an event requiring the dispatch of an accredited rescue unit to effect the safe removal of persons or domestic animals from actual or threatened danger or physical harm. | | Vic | Fire agencies use the AIRS codes as provided in data dictionary to calculate the incident count. VICSES road rescue definitions are taken from the Road Rescue Arrangements Victoria document (RRAV).  Where the call out has been cancelled prior to arrival on scene, the incident is not counted towards rescue.   * Where the SES attends the incident after cancellation, the incident is counted as what the incident is found to be. (This might occur when the Unit was cancelled in error or the type of incident has changed, usually to Assist Agency). | | Qld | Queensland agencies use the AIRS codes as provided in data dictionary. | | WA | * Incidents where Fire and SES both attend are counted as one. * Only incidents involving a rescue are counted (as per the dictionary), therefore if a service is called back prior to arrival that incident would not be counted. * Road crash incidents only requiring clean‑up of fuel spills are not counted. | | SA | In SA, AIRS codes are used calculate the incident count. The incident types used are: (All over fields are correct)   * 322 – Vehicle Accident with Injuries * 352 – Vehicle Accident no injury * 351 – Vehicle Accident Rescue   At the time of the year data are extracted for RoGS, SA has not finished data cleaning. As a result some records counted in the RoGS may been inaccurately coded.  If SES get a stop call before getting out the station gate they do not record an RCR incident attendance. If they get a stop call after getting out the station gate they record and RCR incident attendance. | | Tas | * Over‑counting may occur where: * As reporting is completed by both TFS and SES on separate databases. There may be duplication of incidents (although this would be minimal). * It is also possible within the SES figures where multiple SES Units attend a single incident, that each SES Unit will submit a report for the same incident. i.e. 1 report per Unit, not one report per incident. * For Tas SES, all events attended to by a Unit is counted as an incident, irrespective of action taken (eg extrication, traffic management, called off en‑route). * For TFS the following events are not included: * ‘Cancelled prior to arrival on scene’ events * ‘No rescue service was required’ events * ‘Washaways events’. | |  | (continued next page) | |
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| Table 3 (continued) |
| |  |  | | --- | --- | | ACT | In ACT, AIRS codes are used calculate the incident count. The incident types used are:   * Type of incident (A23): * 322 – vehicle accident with injuries * 351 – vehicle accident rescue * 352 – vehicle accident no injury * AND Type of action taken (A24): 20‑23, 29   OR No. of other persons injured (D2)>=1, Fatalities (D4) >=1, Rescued is (D5) >=1 | | NT | na | |
| **na** Not available. |
| *Source*: State and Territory governments. |
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| Table 4 Calculation of road crash rescue extractions |
| |  |  | | --- | --- | | *Jurisdiction comments* | | | NSW | Rescue data reported in the RoGS are sourced from the NSW Police Force CAD. The NSW Police Force CAD has been established as the definitive list of all rescue incidents that occur in New South Wales. | | Vic | For fire services there should be no other interpretation issues associated with this data, other than those noted for incidents.  For VICSES Road Rescue Arrangements Victoria (RRAV) defines a road rescue as ‘The release and extrication of trapped people from motor vehicles’, which is what VICSES conforms to. As such, VICSES conforms with the data dictionary, but notes that:   * a person is trapped if they are unable to leave the vehicle by their own efforts, which could include a jammed door. * where Victoria Police have requested SES return to extricate a deceased after the coroner has completed his investigation a separate report is completed with an incident type of Assist Police (or assist crime scene as appropriate). | | Qld | No further details | | WA | * The data dictionary definition counts all rescues (extrications and releases). WA is now able to separate extrications and releases. * WA counts the number of incidents involving rescues not the number of persons rescued. | | SA | In SA the incident types used are: (All over fields are correct)   * Type of incident (A23): * 322 – vehicle accident with injuries * 351 – vehicle accident rescue * 352 – vehicle accident no injury   At the time of the year data are extracted for RoGS, SA has not finished data cleaning. As a result some records counted in the RoGS may been inaccurately coded. | | Tas | * For TFS, the extraction count complies strictly with the RoGS definition. * For Tas SES: * There is inconsistency in the reporting of injuries, fatalities and extrications. * D5 Number of personnel rescued by authority definition ‘Persons non‑injured, injured and deceased’ that were trapped, in difficulty that are subsequently released or rescued by the Reporting Authority. * A deceased person requiring extrication is being recorded as a fatality only. An injured person requiring extrication is being recorded as extrication only, or as an extrication and injury. | | ACT | In ACT the incident types used are   * Type of incident (A23): * 322 – vehicle accident with injuries * 351 – vehicle accident rescue * 352 – vehicle accident no injury * AND Type of action taken (A24):21‑23   AND No. of other persons injured (D2)>=1, Fatalities (D4) >=1, Rescued is (D5) >=1 | | NT | No further details | |
| *Source*: State and Territory governments. |
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### Fire risk prevention/mitigation activities

#### Accidental residential structure fires per 100 000 households

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC), with additional Steering Committee comments.

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| Indicator definition and description | | |
| Element | Equity/effectiveness — Prevention/mitigation | |
| Indicator | Fire risk prevention/mitigation activities | |
| Measures | Accidental residential structure fires is defined as those fires that are not deliberately lit and with effective educational programs can be reduced and prevented from occurring in the first instance.  Measures of ignition factors for all structure fire incidents attended to by fire service organisations is provided as contextual information.  Accidental residential structure fires per 100 000 households is calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of accidental residential structure fire incidents** | |  |  | |  |  | | **Denominator:** | **(number of households)** |   Accidental residential structure fires are where the Type of Incident is a *building fire*:  [A23 = Division 1 (codes 110 to 129 inclusive)]  AND the Fixed property use is *residential*: [A20 = 410 to 439 inclusive]  AND Ignition factor is *accidental*: [E05 = codes 300 to 790 inclusive]  AND Area of fire origin is within a *structure*: [E01 = codes 01 to 79].  Ignition factors for structure fires is Type of Incident is a *building fire*:  A23 = Division 1 (codes 110 to 129 inclusive)  CODED by Ignition factor: [E05 = all codes]. | |
| Data source | Numerator  State and Territory governments. The Secretariat collects data directly from all jurisdictions. Within each jurisdiction, fire service and emergency services organisations collect and compile data.  Denominator  Households: *Australian Demographic Statistics*, Cat. no. 3101.0 (table 2A.10). | |
| Data Quality Framework dimensions | | |
| Institutional environment | | Fire incident data are collected by fire and emergency service organisations in each State and Territory according to the Australian Incident Reporting System (AIRS).  The AIRS is a nationally agreed data standard. It takes a systematic approach to collecting, recording and reporting information about responses to incidents and emergencies attended primarily by fire services. It provides a standard for the structure, definitions and integrity of the data collected.  The AFAC Australian Incident Reporting System (AIRS) User Network is responsible for sustaining the production and currency of AIRS data and support the continued development of data requirements to ensure consistent and reliable methods of data collection, compilation and analysis can be applied throughout member agencies. For further information about the AFAC knowledge data base see the AFAC National Data and Glossary.  Not all of the contributing fire and emergency services collect all of the data because each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business. In addition, many land management agencies do not record their response to fires according to the AIRS.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. |
| Relevance | | ‘Accidental residential structure fires per 100 000 households’ is an indicator of governments’ objective to manage the risk of fires by preventing/reducing the number of structure, landscape and other fires.  Fire service organisations respond to all reported fires within emergency response areas. Fire agencies may choose to manage some landscape fires (rather than fight the fire), particularly in remote areas  A lower or decreasing number of fire incidents, adjusted for population/households, indicates a better community outcome. Higher or increasing proportions of fire incidents indicate higher emergency response workloads. |
| Timeliness | | Fire incidents are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | | Text caveats in the RoGS provide generalised advice that data are not strictly comparable and cite a number of physical, operational and data collection system factors that influence fire incident data.  Jurisdictions predominately follow the data definitions. Substantive differences to the counting procedures are summarised in the fire incidents DQI and include:   * *incomplete voluntary reporting procedures —* accurate identification of incidents attended by volunteer fire brigades is sometimes not possible. |
| Coherence | | Each State and Territory government maintains their own systems, processes, and training for estimation.  Any time series changes are identified with relevant footnotes. |
| Accessibility | | Fire incident data are publicly available on the Productivity Commission’s website from the time of RoGS publication.  Additional data may be available upon request through AFAC. |
| Interpret­ability | | Copies of the complete AFAC AIRS data standard are available upon request through AFAC.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. |
| **Data Gaps/Issues Analysis** | | |
| **Key data gaps/issues** | The Steering Committee notes the following key data gaps/issues:   * Text caveats note the need for fire incident data to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. | |

#### Residential structures with smoke alarms

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC), with additional Steering Committee comments.

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| Fire risk prevention/mitigation activities | | | | |  |
| Element | | Equity/effectiveness — Prevention/mitigation | | | |
| Indicator | | Residential structures with smoke alarms | | | |
| Measure (computation) | | ‘Proportion of residential structures with smoke alarms’ is defined as the number of households with an smoke alarm installed, divided by the total number of households. | | | |
| Data source | | State and Territory governments. Jurisdictions collect and compile data for their own jurisdiction.  Survey questions, as recommended by the Directory of National Data Items and Questions for Evaluation of Household Preparedness for Fire and Natural Disaster Emergencies, are: | | | |
|  | | *Identifier* | *Question* | | |
|  | | 188 | Q1. | Are there any smoke alarms or smoke detectors installed in [this/your] home? | |
|  | |  | Q2. | How many? | |
|  | | 189 |  | [How many are/Is it] currently in working order? | |
|  | | 190 | Q1. | [Was it/Where any of them] manually tested [in the last 12 months/since moving into [this/your] home]? | |
|  | |  | Q2. | When [was it/where they] last tested?   * Less than 3 months ago * 6 months to less than 9 months ago * 9 months to 12 months ago. | |
| Data Quality Framework dimensions | | | | | |
| Institutional environment | | Not all jurisdictions regularly collect data on residential structures with smoke alarms. Where they do, they measurement questionnaires and tools are not applied consistently across Australia (table 5). | | | |
| Relevance | | High or increasing numbers of households with a smoke alarm installed, increases the likelihood that the adverse effects of fire will be avoided or reduced. | | | |
| Timeliness | | Nationally consistent data for all jurisdictions were last available for the reference period February to November 2000, from the discontinued ABS Population Survey Monitor.  Since 2000, jurisdictions have collected data for their own states and territories, with the frequency and timeliness determined by jurisdiction requirements and available resources. | | | |
| Accuracy | | All jurisdictions collect data from a sample of households in their state or territory. These are subject to sample and non‑sample error, particular to their collection. | | | |
| Coherence | | Each State and Territory government maintains their own systems, processes, and training for estimation of residential structures with smoke alarms.  Data were sourced from jurisdictional collections that were not strictly comparable because of methodological differences.  Collection methods and time series changes for each jurisdiction are identified with relevant footnotes. | | | |
| Accessibility | | Residential structures with smoke alarms data are publicly available on the Productivity Commission’s website from the time of RoGS publication. | | | |
| Interpretability | | The *Directory of National Data Items and Questions for Evaluation of Household Preparedness for Fire and Natural Disaster Emergencies* is available on the Australian Natural Disasters Impacts Framework Project page, hosted by NSW Fire Brigade website at:  www.fire.nsw.gov.au/page.php?id=914 | | | |
| Data Gaps/Issues Analysis | | | | | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Residential structures with smoke alarms indicators lack a consistent, comparable and iterative data source. * Text caveats note the need for of residential structures with smoke alarms to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. | | | | |

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| Table 5 Residential structures with smoke alarms calculation  Jurisdiction’s method for estimating ‘Residential structures with smoke alarms’. |
| |  |  | | --- | --- | | *Jurisdiction’s collection and estimation method* | | | NSW | Data are sourced from the New South Wales Adult Population Health Survey (SAPHaPI), Centre for Epidemiology and Evidence, Ministry of Health. | | Vic | Data are sourced from Household Preparedness for Emergencies Survey, 2007‑08 (ABS cat. no. 4818.0).   * The number of households enumerated for the survey was 1207 for Victoria. * Relative standard error for Victorian estimate is 0.8 per cent.   The indicator includes those who have a smoke alarm or detector in their home. The question used to define the indicator was:  **Do you have smoke alarms installed in your home?** | | Qld | The 2013-14 result is sourced from an online survey undertaken in November 2013. The survey is conducted annually. Data are estimates for the whole population of Queensland.  The indicator includes those who have a smoke alarm or detector in their home. The question used to define the indicator was:  **Do you have smoke alarms installed in your home?**  A household is deemed to have an operational smoke alarm if, in the past 12 months, any of the following apply: ‘tested smoke alarm’; ‘vacuumed or cleaned smoke alarm’; ‘replaced smoke alarm battery’; or ‘replaced smoke alarm unit’.  Note that households without an operational smoke alarm include those where a smoke alarm is not installed and those where a smoke alarm is installed but none of the above maintenance activities have been carried out in the past 12 months. | | WA | Data are based on market research conducted annually (most recently April 2013).  The indicator includes those who have a smoke alarm or detector in their home. The question used to define the indicator was:  **Do you have smoke alarms installed in your home?** | | SA | .. | | Tas | .. | | ACT | Data are sourced from Household Preparedness for Emergencies Survey, 2007‑08 (ABS cat. no. 4818.0).   * The number of households enumerated for the survey were 1207 for the ACT. * Relative standard error for the ACT estimate is 2.0 per cent   The indicator includes those who have a smoke alarm or detector in their home. The question used to define the indicator was:  **Do you have smoke alarms installed in your home?** | | NT | .. | |
| ..Not applicable. |
| *Source*: State and Territory governments. |
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### Firefighter workforce

Data quality information for this indicator has been drafted by the Secretariat in consultation with jurisdictions, with additional Steering Committee comments.

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| Indicator definition and description | |
| Element | Equity/effectiveness — Preparedness |
| Indicator | Firefighter workforce |
| Measure (computation) | There are four firefighter workforce measures:   * the number of full time equivalent (FTE) firefighter personnel per 100 000 people * the number of fire service organisation volunteers (firefighters and support volunteers) per 100 000 people * workforce by age group * staff attrition   Full time equivalent (FTE) firefighter personnel per 100 000 people  Firefighter personnel is defined as the count of all *paid* firefighters employed on a **FTE** basis.  A *firefighter* is defined as any person employed or remunerated by the fire service organisation who delivers or manages a firefighting service directly to the community and who is formally trained and qualified to undertake firefighting duties.  *FTE* is a measure of the total level of staff resources used. One FTE is equivalent to a person employed full‑time and engaged solely in activities that fall within the scope of fire service organisations. FTE is calculated on the basis of the proportion of time spent on activities within the scope of the data collection compared with that spent by a full time staff member.  FTE firefighter personnel per 100 000 people is calculated as:   |  | | --- | | FTE firefighter personnel | | Estimated resident population |   FTE firefighter personnel per 100 000 people = 100 000 **X**  Fire service organisation volunteers per 100 000 people  The number of volunteers of fire service organisations is defined as the sum of volunteer firefighters and volunteer support staff on a **head count** basis.  A *volunteer firefighter* is defined as any person who delivers or manages a firefighting service directly to the community and who are formally trained and qualified to undertake firefighting duties, but does not receive remuneration other than reimbursement of ‘out of pocket expenses’  A *volunteer support staff* memberis defined as a person whose immediate client is the firefighter, but does not receive remuneration other than reimbursement of ‘out of pocket expenses’.  The *head count* is a count of the number of people recorded on the books of jurisdiction’s fire service organisation. The count should be calculated as the average for the financial year.   |  | | --- | | Fire service organisation volunteers | | Estimated resident population |   Volunteers per 100 000 people = 100 000 **X**  *Estimated resident population*  Population by State and Territory and Australian total. For more detail about the population data used in the Report see RoGS Statistical context (chapter 2, table 2A.2).  Workforce by age group  ‘Workforce by age group’ is defined as the age profile of the workforce, measured by the proportion of the operational workforce in 10 year age brackets (under 30, 30–39, 40–49, 50–59 and 60 and over).  Age group  Firefighter personnel who fall into the following age groups:   * under 30 year old, * 30‑39 year old, * 40‑49 year old, * 50‑59 year old * 60 years old and over   Staff attrition  Staff attrition’ is defined as the level of attrition in the operational workforce.  It is calculated as the number of FTE firefighter employees who exit the organisation as a proportion of the number of FTE employees.   |  |  | | --- | --- | | Staff Attrition | **X** 100 | | Operational workforce |   Staff Attrition rate = |
| Data source | Firefighter workforce  State and Territory governments. The Secretariat collects data directly from all jurisdictions. Within each jurisdiction, fire service and emergency services organisations collect and compile data.  Estimated resident population  *Australian Demographic Statistics*, Cat. no. 3101.0 |
| Data Quality Framework dimensions | |
| Institutional environment | Data are provided by the fire and emergency service organisations in each State and Territory in accordance to the RoGS Fire Services Financial and Staff Data Dictionary.  The RoGS Fire Services Financial and Staff Data Dictionary has been prepared by the Emergency Management Working Group (EMWG), with assistance from Australasian Fire Authorities Council (AFAC) members.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. |
| Relevance | Firefighter workforce measures are an indicator of governments’ objective to reduce the adverse effects of fire incidents on the community by providing a workforce of paid firefighter personnel and volunteers which has:   * sufficient capacity to meet community needs * sufficient capabilities to respond to a range of fire and other emergency events * the diversity and adaptability to respond to community needs, now and into the future. |
| Timeliness | Firefighter workforce data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | Firefighter workforce data are collected from each fire service organisation in Australia according to agreed definitions.  Not all of the contributing fire service organisations collect all of the data because:   * each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business * in several jurisdictions it is difficult to consolidate the workforce arrangements of the umbrella departments, fire service providers, and land management agencies. A summary of the scope of each jurisdiction’s human resource reporting is provided in table 9A.3.   Jurisdictions have reported variations from the data dictionary with respect to:   * umbrella departments — the department responsible for policy, planning, management and ensuring delivery of emergency services * fire service providers — the primary agencies involved in providing emergency management services for fire events * land management agencies — government funded agencies that have an obligation to respond in the case of structure or landscape fires and typically provide fire services within designated areas. |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation of firefighet workforce.  Any time series changes are identified with relevant footnotes in the attachment tables. |
| Accessibility | Fire services expenditure per person data are publicly available on the Review’s website from the time of RoGS publication. |
| Interpretability | Copies of the complete Fire Services Financial and Staff Data Dictionary are available upon request through the Secretariat.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. |

### Response times to structure fires

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC), with additional Steering Committee comments.

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| --- | --- |
| Indicator definition and description | |
| Element | Equity/effectiveness — Response |
| Indicator | Response times to structure fires |
| Measure (computation) | There are two measures of structure fire response times:   * response times to structure fires (*including* call taking time) * response times to structure fires (*excluding* call taking time).   Response times to structure fires *(including call taking time)*  Response times to structure fires *(including call taking time)* is defined as the interval between the receipt of the call at the dispatch centre and the arrival of the first vehicle at the scene (that is, when the vehicle is stationary and handbrake is applied).  Response times to structure fires *(excluding call taking time)*  Response time *(excluding call taking time)* is defined as the interval between the dispatch of the fire crew and the arrival of the first vehicle at the scene (that is, when the vehicle is stationary and handbrake is applied). |
| More details can be found within the text surrounding this image. | |
|  | Further guidance is provided in the Fire and Emergency Services Activity Data Dictionary as follows:   * The measures of response times are for emergency calls only — exclude all calls where vehicle travels ‘code 3’ or under normal road conditions. * Include ‘genuine’ outliers and 0 response times (i.e. where passing appliance notifies the event). * Exclude from the calculation records with incomplete time stamps. * Exclude from the calculation records where the appliance was called off en‑route to scene. * The 50th percentile (or median) — The time taken for 50 per cent of all responses to arrive at a structure fire is equal to or below the 50th percentile. * The 90th percentile — The time taken for 90 per cent of all responses to arrive at a structure fire is equal to or below the 90th percentile. * The call handling time by the Telstra ‘000’ triple‑zero operator which occurs prior to hand over to the emergency services operator is excluded.   Structure fire  A structure fire is a fire inside a building or structure, whether or not there is damage to the structure. Within the Fire and Emergency Services Activity Data Dictionary, the following guidance is provided:   * Structure fires are defined as Australian Incident Reporting System (AIRS) data element A23, type of incident codes 110‑129 inclusive.   All jurisdictions conform with the definition but SA uses a limited range of codes namely 110, 111, 112, 113, 121,123 and 126. |
| Data source | State and Territory governments. The Secretariat collects data directly from all jurisdictions.  Within each jurisdiction, fire service and emergency services organisations collect and compile data. Not all jurisdictions have systems in place to capture all components of the response time continuum from time of call to arrival at the scene, as outlined in the figure above. Some agencies use manual systems to calculate response times, while others retrieve data from computer aided dispatch (CAD) systems. |
| Data Quality Framework dimensions | |
| Institutional environment | Response time data are collected by fire and emergency service organisations in each State and Territory according to the AIRS. The majority of response time data are generated by CAD systems.  Not all of the contributing fire and emergency services collect all of the data related to the various components of response time because each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. |
| Relevance | Timeliness of response and early intervention is a precursor for preventing the spread of fire and reducing its impacts on life and property. Timeliness of arrival is used to measure the effectiveness of reducing the impacts of fire, not the actions taken after arrival.  Data are available both on a state‑wide basis and by remoteness area, with response times reported in minutes for the 50th and 90th percentiles in each category.  Data are presented by remoteness area in an attempt to correct for some of the physical and operational factors that are believed to adversely affect response times in areas that are relatively remote compared with the major cities.  Response times are classified according to the Remoteness Area (RA) classification maintained by the ABS (Australian Standard Geographical Classification (ASGC) (cat. no. 1216.0)), The delimitation criteria for RAs are based on the Accessibility/Remoteness Index of Australia (ARIA) developed by the Commonwealth Department of Health and Ageing and the National Key Centre For Social Applications of GIS. ARIA measures the remoteness of a point based on the physical road distance to the nearest Urban Centre in each of five size classes. |
| Timeliness | Response time data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | Text caveats in the RoGS provide generalised advice that data are not strictly comparable and cite a number of physical, operational and data collection system factors that influence response times.  Response time data are not collected for all incident responses.  Separate urban and rural fire service organisations — consisting of both volunteer and career/permanent personnel — provide fire response services within jurisdictions.  Resulting data issues include:   * whether structure fires attended by volunteer brigades are included in calculating a jurisdictional response time value * the percentage of structure fires attended by volunteer brigades, where: * response times tend to be calculated manually * there is potential for variation in data completeness. * In practice there are differences in the method each jurisdiction uses to estimate response time to structure fires. Each jurisdiction’s approach is summarised in the Structure fire response times appendix (page 6), including their approach to: * response time definition (table 6) * differences data collection systems and coverage (table 7) * data completeness (volunteer and permanent brigades) (table 8) * extrapolation and estimation (table 9) * percentile calculations (table 10). |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation of response times in accordance with AIRS.  Any time series changes are identified with relevant footnotes. |
| Accessibility | Structure fire and response time data are publicly available on the Productivity Commission’s website from the time of publication.  Interested parties, particularly researchers, may request access to unpublished portions of the AFAC Knowledge data base’s Core Data (de‑identified unit record data) to undertake their own statistical analysis for particular research and/or projects. For more information about access to national data see AFAC data requests. |
| Interpretability | Copies of the complete AFAC AIRS data standard are available upon request through AFAC.  The AFAC knowledge web provides links to a range of related statistics to enable a better understanding of how interrelationships between socio‑demographic, economic, geographic and environmental factors influence emergency incidents.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Response times are identified on the three point comparability scale as ‘not complete or not directly comparable’. * Text caveats note the need for response times to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. |

The following tables are a summary of each jurisdiction’s compliance in calculating the structure fires response time.

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| Table 6 Response time definition |
| |  |  |  | | --- | --- | --- | |  | *Complies with definition* | *Jurisdiction’s interpretation and/or application of definition that may impact on comparability* | | NSW | Yes (FRNSW) No (NSWRFS) | The NSW Rural Fire Service (NSWRFS) does not capture the ‘Call taking time’ data to calculate Response times to structure fires *(including call taking time)*. | | Vic | Yes | Response times are calculated from the time the Emergency Services Telecommunications Authority (ESTA) creates an event for the emergency call to arrival of the first appliance on scene. | | Qld | No | Response time for Queensland applies the following additional parameters:   * Exclude calls where A37 Delayed Arrival code is 71 (Severe weather conditions), 91 (Initial response by other agency). * Incident must be within the urban levy boundary. * Alarm time is not at the point of call pickup but at the time the incident is placed in the waiting queue (waiting assignment to a crew) and deemed an actual incident. | | WA | Yes | .. | | SA | No | SA does not capture the ‘Call taking time’ data to calculate Response times to structure fires (*including call taking time*). | | Tas | Yes | .. | | ACT | Yes | Up until and including the 2009–2010 data the ACTFB’s response times had been calculated from dispatch to arrival. This was an error in the data extraction programming and has been rectified for the 2010–2011 year to reflect the RoGS definition. | | NT | Yes | .. | |
| ..Not applicable. |
| *Source*: State and Territory governments. |
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| Table 7 Data collection and storage  Computer Assisted Dispatch (CAD), manual or combined systems |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | *System* | | *Proportion of response time data extracted from CAD systemsa* | *Additional information* | | NSW | Combination  of manual and CAD systems. | | 89 per cent | The Fire & Rescue NSW (FRNSW) collects response times using a CAD system.  The NSWRFS collects response times using a manual system. | | Vic | | Combination  of manual and CAD systems. | 93 per cent | The MFB collects response times using a CAD system.  CFA collects response times according to:   * Category 1 Brigades (Full Radio Traffic) collect response times using a CAD system. * Other brigades collect response times using a manual system. | | Qld | CAD system | | 100 per cent |  | | WA | Combination  of manual and CAD systems. | | 100 per cent | Bush Fire Brigade data may be entered manually where volunteers have self‑dispatched (<1 per cent).  Times may also be modified manually as a consequence of data auditing where incorrect times are recorded through CAD (estimated at 1 per cent of total incidents). | | SA | Combination  of manual and CAD systems | | MFS: Metropolitan Stations (arrival times) are documented via the CAD system (82 per cent). Country Stations (arrival times) are manually populated with the AIRS database (12 per cent).  CFS: CAD dispatches CFS’s structure fire responses but all (100 per cent) of CFS’s arrival times are manually entered in the incident record. For 2008–2009 CFS brigades attended 13 per cent of the structure fires we’re reporting in RoGS 2010 | All incidents are despatched from CAD for Metropolitan and Country Stations.  Call taking time for the MFS is the time incident is received on pagers or MCTs and is created from CAD.  Metro Stations mobile and arrival times are automatically populated by CAD.  Country Stations (MFS and CFS) complete hand written or electronic form for documenting mobile and arrival times (except CFS only have pagers) | | Tas | CAD system | | 100 per cent | CAD data are automatically loaded to AIRS data system. | | ACT | CAD system | | 100 per cent | CAD data are automatically loaded to AIRS data system. | | NT | Combination  of manual and CAD systems | | Data are entered directly into AIRS via CAD. Percentage (estimate of <10 per cent) of data are entered manually into AIRS by remote stations. |  | |
| a Estimates of the proportion of response time data extracted from CAD were compiled for 2008-09, unless otherwise stated. |
| *Source*: State and Territory governments. |
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| Table 8 Data completeness (volunteer and permanent brigades) |
| |  |  |  |  | | --- | --- | --- | --- | |  | *Volunteer brigade data included?* | *Percentage of data relating to volunteer brigades a* | *Other information relating to data completeness* | | NSW | Yes | Approximately 13 per cent of structure fires |  | | Vic | Yes | Approximately 29 per cent of structure fires | MFB account for around 50 per cent of all structure fires and is fully staffed by paid crews.  CFA account for around 50 per cent of all structure fires and comprises brigades fully staffed by paid crews, brigades fully crewed by volunteer fire fighters and brigades with a mixture of paid crews and volunteer firefighters.  For CFA around 58 per cent of structure fires are attended to by volunteer brigades which, after taking into account MFB activity, translates to around 29 percent of Victoria’s structure fires. | | Qld | Yes | For 2013-14, volunteer brigade data has been included and represents approximately 7.7 per cent of incident data. | Accurate identification of incidents attended by the former Queensland Fire and Rescue Service Rural brigades prior to the 2012-13 fiscal year was not possible due to incomplete voluntary reporting procedures. Improved reporting practices have resulted in a higher rate of completion of incident reports for incidents where rural brigades are responsible. New procedures were fully implemented from 1 July 2013 in an endeavour to enhance the rate of reporting for volunteer attendances.  QFES Urban stations are estimated to serve 87.6 per cent of Queensland’s population. | | WA | Yes | Approximately 21 per cent of structure fires (average over 5 years) | Response time data can only be provided if all time fields are completed. In 2014-15 approximately 24.47 per cent of total structure fires were excluded as some time fields were incomplete. | | SA | Yes | Approximately 13 per cent of structure fires | MFS Stations are all paid personnel allocated to stations. Metro Stations are all full time and Country Stations are retained.  CFS stations are all volunteer. CFS has no paid firefighters.  Both fire services have data quality assurance processes but were not able to estimate record completeness. In any case, incomplete record numbers are expected to be smaller than record numbers with keying errors. For RoGS 2009,1353 structure fires (88 per cent of the total) were used in response time calculations i.e. had the data necessary for response time calculation. | | Tas | Yes | Approximately 43 per cent of structure fires | TFS collects data from career and volunteer brigades and the data set is >98 per cent complete. | |  |  |  | (continued next page) | |
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| Table 8 (continued) |
| |  |  |  |  | | --- | --- | --- | --- | |  | *Volunteer brigade data included?* | *Percentage of data relating to volunteer brigades a* | *Other information relating to data completeness* | | ACT | No | .. | .. | | NT | No | .. | Currently there are no provisions for data entry by volunteers in the NTFRS. It should be noted that Bushfires NT provides response to grassfires only outside NTFRS Emergency Response Areas and does not provide any data to RoGS | |
| a Estimates of the proportion of data relating to volunteer brigades were compiled for 2008-09, unless otherwise stated. ..Not applicable. |
| *Source*: State and Territory governments. |
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| Table 9 Extrapolation and estimation responses |
| |  |  |  | | --- | --- | --- | |  | *Are any response time data extrapolated* | *Are any response time data estimated and if so explain the rationale and method used* | | NSW | No | Response times collected manually from volunteer brigades are estimates. Incident information provided by volunteer fire‑fighters is entered into an AIRS‑compliant database. However, the information is provided post incident. There is a margin of error, in that times are very difficult to correlate from independent sources. | | Vic | No | Where response time data are incomplete it is excluded from reporting.  CFA response time data (mostly volunteer brigades) may incorporate an estimation factor of arrival time provided by the responding operational crews, either to the nearest minute on a wrist watch, or in the case of rural volunteer brigades, estimated after the incident.  There is no estimation undertaken on data reported by the brigades. | | Qld | No | No | | WA | No | No | | SA | No | If times required to calculate response time are not documented then these records are excluded from response time calculations. | | Tas | No | No | | ACT | No | No | | NT | No | No | |
| *Source*: State and Territory governments. |
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| Table 10 Percentiles calculationa |
| |  |  |  | | --- | --- | --- | |  | *Are there any records excluded from the percentile calculations other than those recommended in the data dictionary?* | *Are outliers excluded? If so, how they are defined?* | | NSW | Records with incomplete response time data are excluded. | FRNSW — outliers are not excluded.  NSWRFS — outliers are excluded. The NSWRFS excludes records with response times that are deemed to be entry errors (for example, greater than 100 hours). | | Vic | No | Outliers are not excluded.  However, given the low number of remote structure fires, these data are incorporated into the outer regional figures for statistical purposes.  If the ESTA CAD is off‑line and ESTA is in manual mode and there is an observed timestamp issue with the manual data, then that information is excluded from the calculations. | | Qld | Exclusions include: structure fires outside the Urban Levy Boundary; delays due to extreme weather conditions or where the initial response was by another agency or brigade. | Outliers are not excluded. | | WA | No | Outliers are not excluded. | | SA | No | Outliers resulting from manual keying errors are excluded.  MFS’s historic system did not use a standard data base date/time field. Rather, they used separate fields for dates and times, so the time field could not be assumed to relate to the recorded date (that is, if the dispatch occurred five minutes before midnight and the travel time was 10 minutes then the arrival time should be for the date of arrival (not the day beforehand). Therefore, we exclude records where apparent ‘response time’ exceeds 12 hours. | | Tas | No | Outliers are not excluded. | | ACT | No | Outliers are not excluded. | | NT | No | Outliers are excluded.  Where it is clear by built‑rules related to response type and reasonable response time within or outside Emergency Response Areas. | |
| a  There are various statistical methods implemented in different software for calculating percentiles which can result in different values being calculated. |
| *Source*: State and Territory governments. |
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### Fire services expenditure per person

Data quality information for this indicator has been drafted by the Secretariat in consultation with AFAC, with additional Steering Committee comments.

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| Indicator definition and description | |
| Element | Efficiency |
| Indicator | Fire services expenditure per person |
| Measure (computation) | ‘Fire services expenditure per person’ is defined as the total fire service organisation expenditure per person in the population.   |  | | --- | | Fire service organisation expenditure | | Estimated resident population |   Fire services expenditure per person =  Fire service organisation expenditure  Expenditure includes all costs incurred by the fire service organisation, including:   * *salaries and payments in the nature of salaries* — costs in relation to compensating staff (directly or indirectly) for their labour (excluding payroll tax) * *capital costs* — costs associated with the with the use of non-current physical assets, including depreciation and the user cost of capital. The rate applied for the user cost of capital is currently 8 per cent. Excluded are capital charges and interest on borrowings (to avoid double counting). * *other operating costs* — other costs not counted in the categories above.   A jurisdiction’s fire service organisation includes:   * umbrella department — the department responsible for policy, planning, management and ensuring delivery of emergency services * fire service provider — the primary agencies involved in providing emergency management services for fire events * land management agency — government funded agencies that have an obligation to respond in the case of structure or landscape fires and typically provide fire services within designated areas.   Estimated resident population  Population by State and Territory and Australian total. For more detail about the population data used in the Report see RoGS Statistical context (chapter 2, table 2A.2). |
| Data source | Fire service organisation expenditure  State and Territory governments. The Secretariat collects data directly from all jurisdictions. Within each jurisdiction, fire service and emergency services organisations collect and compile data.  Estimated resident population  *Australian Demographic Statistics*, Cat. no. 3101.0 (table 2A.2) |
| Data Quality Framework dimensions | |
| Institutional environment | Data are provided by the fire and emergency service organisations in each State and Territory in accordance to the RoGS Fire Services Financial and Staff Data Dictionary.  The RoGS Fire Services Financial and Staff Data Dictionary has been prepared by the Emergency Management Working Group (EMWG), with assistance from Australasian Fire Authorities Council (AFAC) members.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. |

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| Relevance | The indicator is available for all fire service organisations in Australia, by State and Territory.  All else being equal, lower expenditure per person represents greater efficiency. However, efficiency data are difficult to interpret. While high or increasing expenditure per person may reflect deteriorating efficiency, it may also reflect changes in aspects of the service (such as improved response) or the characteristics of fire events (such as more challenging fires). Similarly, low or declining expenditure per person may reflect improving efficiency or lower quality responses or less challenging fires.  Expenditure per person is employed as a proxy for efficiency. Expenditure per fire is not used as a proxy for fire service organisation efficiency because an organisation that applies more resources to the prevention and preparedness components to reduce the number of fire incidents could erroneously appear to be less efficient.  Care needs to be taken when comparing efficiency data across jurisdictions because there are differences in the reporting of a range of cost items and funding arrangements (funding policies and taxing regimes). Within Australia different jurisdictions have selected different funding models to provide resourcing to fire service organisations. For example, have a greater proportion of government funding relative to levies compared with other jurisdictions. Also, differences in geographic size, terrain, climate, and population dispersal may affect costs of infrastructure and numbers of service delivery locations per person. |
| Timeliness | Fire services expenditure per person are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | Fire service organisation financial data are collected from all each fire service organisation in Australia according to agreed definitions.  Not all of the contributing fire service organisations collect all of the data because:   * each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business * in several jurisdictions it is difficult to consolidate the financial arrangements of the umbrella departments, fire service providers, and land management agencies. A summary of the scope of each jurisdiction’s financial reporting is provided in table 9A.3.   Jurisdictions have reported variations from the data dictionary with respect to:   * *Umbrella departments* — Only one jurisdiction (WA) have indicated that their financial data covers the fire events activities of their umbrella department. This is on account of the fact that in WA the Department of Fire and Emergency Services is both the fire service provider and the umbrella department.   No jurisdiction attempts to apportion the expenditure of the umbrella department to the fire service organisation.   * *Fire service providers* — All jurisdictions provide data on the expenditure of their fire service provider, which is assumed to be the largest component of fire service organisation expenditure.   However, due the different roles of fire service providers in each jurisdiction, differences are apparent in what activities the financial data cover. Variations from the data definitions scope include:   * Vic: costs *exclude* the activities of the Emergency Services Telecommunications Authority (which provide dispatch and other support services to Victorian emergency service providers). * Qld: * costs are likely to *include* the total costs of the Queensland Fire and Emergency Services (QFES), which provides a wide range of emergency services under an integrated management structure. Data cannot be segregated by service and will include State Emergency Service and volunteer marine services as well as fire services. * costs are likely to *exclude* the Public Safety Business Agency (PSBA), which provides support functions (business and corporate) to emergency service providers in including QFES. |

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|  | * WA: the fire service provider costs *includes* the total costs of the DFES, which provides a wide range of emergency services under an integrated management structure. WA indicate that data cannot be segregated by service and includes State Emergency Service and volunteer marine services as well as fire services. * SA: the fire service provider costs *exclude* the activities of the SA Fire and Emergency Services Commission, which provides fire support services. * *Land management agencies* — only three jurisdictions (NSW, Victoria and the ACT) have indicated that their financial data covers the fire events activities of their land management agencies. |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation.  Any time series changes are identified with relevant footnotes. |
| Accessibility | Fire services expenditure per person data are publicly available on the Productivity Commission’s website from the time of RoGS publication. |
| Interpretability | Copies of the complete Fire Services Financial and Staff Data Dictionary are available upon request through the Secretariat.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following issue:   * Expenditure per person is employed as a proxy for efficiency. * Care needs to be taken when comparing efficiency data across jurisdictions because there are differences in the reporting of a range of cost items and funding arrangements (funding policies and taxing regimes). * Not all of the contributing fire service organisations collect all of the data because: * each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business * in several jurisdictions it is difficult to consolidate the financial arrangements of the umbrella departments, fire service providers, and land management agencies. A summary of the actual scope of jurisdiction’s financial reporting is provided in table 9A.3. |

### Fire death rate

#### Annual fire death rate

Data quality information for this indicator has been drafted by the Secretariat in consultation with the ABS, with additional Steering Committee comments.

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| Indicator definition and description | |
| Element | Outcomes |
| Indicator | Fire death rate |
| Measure (computation) | This indicator is defined as the number of deaths from fire:  Numerator  The following International Classification of Diseases (ICD) codes are aggregated to define the data set:   * Exposure to smoke, fire and flames (ICD X00 — X09) as follows: * ICD X00 Exposure to uncontrolled fire in building or structure * ICD X01 Exposure to uncontrolled fire, not in building or structure * ICD X02 Exposure to controlled fire in building or structure * ICD X03 Exposure to controlled fire, not in building or structure * ICD X04 Exposure to ignition of highly flammable material * ICD X05 Exposure to ignition or melting of nightwear * ICD X06 Exposure to ignition or melting of other clothing and apparel * ICD X08 Exposure to other specified smoke, fire and flames * ICD X09 Exposure to unspecified smoke, fire and flames * Intentional self‑harm by smoke, fire and flames (ICD X76) * Assault by smoke, fire and flames (ICD X97) * Exposure to smoke, fire and flames, undetermined intent (ICD Y26)   Denominator  Population by State and Territory and Australian total  The measure is expressed by State and Territory and Australian total, by ICD code detail and total, as an annual, and a three year rolling weighted average rate per million people. |
| Data source | Numerator  ABS Causes of Death, Australia, Cat. no. 3303.0 (Underlying causes of death, State and Territory tables, published and unpublished data).  Denominator  ABS Estimated Residential Population, Cat. no. 3101.0 (for more detail about the population data used in the Report see RoGS Statistical context (chapter 2, table 2A.2). |
| Data Quality Framework dimensions | |
| Institutional environment | The Causes of Death collection is published by the Australian Bureau of Statistics (ABS), with data sourced from deaths registrations administered by the various State and Territory Registrars of Births, Deaths and Marriages. It is a legal requirement of each State and Territory that all deaths are registered.  The ABS operates within a framework of the Census and Statistics Act 1905 and the Australian Bureau of Statistics Act 1975. These Acts ensure the confidentiality of respondents and ABS’ independence and impartiality from political influence. For more information on the institutional environment of the ABS, including the legislative obligations of the ABS, financing and governance arrangements, and mechanisms for scrutiny of ABS operations, please see ABS Institutional Environment. |
| Relevance | The ABS Causes of Death collection includes all deaths that occurred and were registered in Australia, including deaths of persons whose usual residence is overseas. Deaths of Australian residents that occurred outside Australia may be registered by individual Registrars, but are not included in ABS deaths or causes of death statistics.  Data in the Causes of Death collection include demographic items, as well as Causes of Death information coded according to the ICD. The ICD is the international standard classification for epidemiological purposes and is designed to promote international comparability in the collection, processing, classification, and presentation of cause of death statistics. The classification is used to classify diseases and causes of disease or injury as recorded on many types of medical records as well as death records. The ICD has been revised periodically to incorporate changes in the medical field. The 10th revision of ICD (ICD‑10) has been used since 1997. |
| Timeliness | Causes of Death data are published on an annual basis.  Death records are provided electronically to the ABS by individual Registrars on a monthly basis for compilation into aggregate statistics on a quarterly and annual basis. One dimension of timeliness in death registrations data is the interval between the occurrence and registration of a death. As a result, a small number of deaths occurring in one year are not registered until the following year or later.  Preliminary Estimated Residential Population (ERP) data are compiled and published quarterly and are generally made available five to six months after the end of each reference quarter. Commencing with data for September quarter 2006, revised estimates are released annually and made available 21 months after the end of the reference period for the previous financial year, once more accurate births, deaths and net overseas migration data becomes available. In the case of births and deaths, the revised data are compiled on a date of occurrence basis. In the case of net overseas migration, final data are based on actual traveller behaviour. Final estimates are made available every 5 years after a census and revisions are made to the previous inter‑censal period. ERP data are not changed once finalised. Releasing preliminary, revised and final ERP involves a balance between timeliness and accuracy. |
| Accuracy | All ERP data sources are subject to non‑sampling error. Non‑sampling error can arise from inaccuracies in collecting, recording and processing the data. In the case of Census and Post Enumeration Survey (PES) data, every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures.  For the Causes of Death collection, which constitutes a complete census of the population, non-sample errors are most likely to influence accuracy. Non-sample error arises from inaccuracies in collecting, recording and processing the data. The most significant of these errors are: misreported data items; deficiencies in coverage; incomplete records; and processing errors. Every effort is made to minimise non‑sample error by working closely with data providers, running quality checks throughout the data processing cycle, training of processing staff, and efficient data processing procedures.  The ABS has implemented a new revisions process that applies to all coroner certified deaths registered after 1 January 2006. This is a change from previous years where all ABS processing of causes of death data for a particular reference period was finalised approximately 13 months after the end of the reference period. The revisions process enables the use of additional information relating to coroner certified deaths as it becomes available over time, resulting in increased specificity of the assigned ICD-10 codes. See Explanatory Notes 29-33 and Technical Notes, Causes of Death Revisions, 2006 in *Causes of Death, Australia*, 2010 (cat. no. 3303.0) and Causes of Death Revisions, 2010 and 2011 in *Causes of Death, Australia, 2012* (cat. no. 3303.0), for further information on the revision process.  Some rates are unreliable due to small numbers of deaths over the reference period. All rates in this indicator must be used with caution. |
| Coherence | The ABS provide source data for the numerator and denominator for this indicator. |
| Accessibility | Causes of Death data are available in a variety of formats on the ABS website, www.abs.gov.au, under Causes of Death, Australia (Cat. no 3303.0).  ERP data are available in a variety of formats on the ABS website, www.abs.gov.au, under the 3101.0 and 3201.0 product families.  Further information on deaths and mortality may be available on request. The ABS observes strict confidentiality protocols as required by the Census and Statistics Act (1905). This may restrict access to data at a very detailed level. |
| Interpretability | Data for this indicator are presented as crude rates, per million estimated resident population, and as three year rolling averages due to volatility of the small numbers involved.  Information on how to interpret and use the cause of death data is available from the Explanatory Notes in Causes of Death, Australia (Cat. no 3303.0).  Small value data are randomly adjusted to avoid the release of confidential data.  Causes of death statistics for states and territories have been compiled in respect of the state or territory of usual residence of the deceased, regardless of where in Australia the death occurred and was registered.  The ERP is Australia’s population reported by state and territory and by place of usual residence. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Timeliness — data available for the Report on Government Services are delayed by one reference year. This is due to a trade-off between accuracy and timeliness. * Volatility — due to the small numbers of fire deaths annually, there is a high level of volatility in reported indicator rates. It is important therefore to assess longer term trends where data are available. * Completeness — * Due to the impact of registration lags, processing lags and duplicate records. * Extent of coverage of the population (while all deaths are legally required to be registered some cases may not be registered for an extended time, if at all). * Accuracy — * Some lack of consistency in the application of questions or forms used by administrative data providers. * The level of specificity and completeness in coronial reports or doctor's findings on the Medical Certificate of Cause of Death. * Errors in the coding of the causes of a death to ICD-10. The majority of cause of death coding is undertaken through an automated coding process, which is estimated to have a very high level of accuracy. Human coding can be subject to error, however the ABS mitigates this risk through rigorous coder training, detailed documentation and instructions for coding complex or difficult cases, and extensive data quality checks. * Cases where coronial proceedings remain open at the end of ABS processing for a reference period are potentially assigned a less specific ICD-10 cause of death code. * Where coroner certified deaths become closed during the revisions process, additional information is often made available, making more specific coding possible. |

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#### Landscape fire death rate

Data quality information for this indicator has been drafted by the Secretariat in consultation with AFAC, with additional Steering Committee comments.

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| --- | --- |
| Indicator definition and description | |
| Element | Outcomes |
| Indicator | Fire death rate |
| Measure (computation) | Numerator  The number of people killed by landscape fires in the jurisdiction during the defined period times one million.  Denominator:  The estimated resident population for the jurisdiction on 31 December during the defined period. |
| Data source | Numerator  AFAC Landscape Fire Deaths Database [Dated] that contains data sourced from media reports, agency reports, PerilAus from Risk Frontiers and NCIS records.  Denominator  ABS Estimated Residential Population (ERP) 3101.0 (for more detail about the population data used in the Report see RoGS Statistical context (chapter 2, table 2A.2). |
| Data Quality Framework dimensions | |
| Institutional environment | AFAC maintains the Landscape Fire Deaths database on behalf of its members. It has a formal data access agreement with the Victorian Institute of Forensic Medicine to use records in the National Coroners Information System. Data sharing arrangements are in place with the Bushfire CRC that first compiled the data from the PerilAus data held by Risk Frontiers. The original data has been modified for Bushfire CRC research objectives and more recently for the Landscape Fire Performance Measures project. There is no legislative framework for the existence of the data.  The estimated resident data are from the ABS that operates within a framework of the Census and Statistics Act 1905 and the Australian Bureau of Statistics Act 1975. These ensure the independence and impartiality from political influence of the ABS, and the confidentiality of respondents. |
| Relevance | The Landscape Fire Deaths Database contains records of every death that has been attributed to a landscape fire.  Landscape fires include all planned and unplanned fires burning outside in vegetation fuels. They exclude campfires and receptacle fires.  A death that is attributed to a landscape fire as confirmed by a coroner or inquest or provisionally by the incident controller. Unconfirmed deaths are recorded as provisional until an inquest or finding is completed. Included are deaths travelling to and from fires and the full range of causes not just heat, fire and smoke. Unborn babies are excluded as are intentional self-harm, assault or murder.  The data contain other data elements that allow for analysis of the reasons, background and activities associated with the incident.  The data contains all known records back to July 2003 and all known civilian deaths back to 1900.  The indicator is titled Landscape fire death rate because although the term bushfire is more recognisable than Landscape fire the former has the correct technical meaning. Bushfires are an entire sub set of Landscape fires which also includes planned fires. Deaths from planned fires are included in the deaths data. |
| Timeliness | The data are added periodically and continually. The NCIS is interrogated annually to find any additional records and to confirm the status of any provisional records.  Historic records are periodically reviewed to add known firefighter deaths.  Releasing preliminary, revised and final ERP involves a balance between timeliness and accuracy. |
| Accuracy | The deaths data are considered accurate although it has many sources and contains both provisional and confirmed records. The number of deaths from landscape fires is well known within the industry and each record can be confirmed from multiple sources.  All ERP data sources are subject to non‑sampling error. Non‑sampling error can arise from inaccuracies in collecting, recording and processing the data. In the case of Census and Post Enumeration Survey (PES) data, every effort is made to minimise reporting error by the careful design of questionnaires, intensive training and supervision of interviewers, and efficient data processing procedures.  The records will change over time as there can be a two year delay between the death and the coronial finding. Provisional records may be later eliminated and new records added for deaths that were unknown to incident controllers.  The actual numbers can be reported and there is no requirement to randomise small numbers.  The data back to 2003 has been thoroughly researched and most records are confirmed from multiple sources.  The same data for civilian deaths from a previous source was submitted as evidence to the Victorian Bushfire Royal Commission. |
| Coherence | The management of the database by AFAC on behalf of 29 contributing agencies provides coherence.  The ABS provides the denominator for this indicator with reliable coherence. |
| Accessibility | The Landscape Fire Deaths Database contains personal identification information. This is essential in being able to eliminate potential duplicate records from different sources for the same death. There are privacy issues in being able to access the NCIS and all reported uses of the data must be de‑identified. The privacy concerns are managed by restricting access to the data with the identities retained. Analysed and de‑identified data can be freely accessed although its uses must be reported to the Victorian Institute of Forensic Medicine.  ERP data are available in a variety of formats on the ABS website, www.abs.gov.au, under the 3101.0 and 3201.0 product families. |
| Interpretability | Data for this indicator are controlled by a comprehensive Data Dictionary. Every element is defined as fully as possible. There are still some interpretations required to record a death. The degree to which the fire contributed to the death is interpreted by the coroner and then again at the time of data entry.  Data are reported by jurisdiction of the incident irrespective of the home location of the deceased. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Volatility — due to the small numbers of fire deaths annually, there is a high level of volatility in reported indicator rates. It is important therefore to assess longer term trends where data are available. A five year rolling average will be investigated. The impact of the Black Saturday fires will remain as a spike in the data for a number of years. Spikes in the trends have occurred on about a 30 year cycle. Longer term trends can also be investigated. Recent research has indicated that the 1939 fires killed more people per population than Black Saturday 2009 so there may be a long term downward trend. |

### Fire injury rate

#### Annual fire hospitalisation rate

Data quality information for this indicator has been sourced from the AIHW with additional Steering Committee comments.

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| --- | --- |
| Indicator definition and description | |
| Element | Outcomes |
| Indicator | Annual fire hospitalisation rate |
| Measures (computation) | The *numerator* is the number of hospital separations for people who sustained injuries from smoke, fire or flames.  The following International Classification of Diseases (ICD) codes are aggregated to define the data set:   * Exposure to smoke, fire and flames (ICD X00 — X09) as follows: * ICD X00 Exposure to uncontrolled fire in building or structure * ICD X01 Exposure to uncontrolled fire, not in building or structure * ICD X02 Exposure to controlled fire in building or structure * ICD X03 Exposure to controlled fire, not in building or structure * ICD X04 Exposure to ignition of highly flammable material * ICD X05 Exposure to ignition or melting of nightwear * ICD X06 Exposure to ignition or melting of other clothing and apparel * ICD X08 Exposure to other specified smoke, fire and flames * ICD X09 Exposure to unspecified smoke, fire and flames   Intentional self‑harm by smoke, fire and flames (ICD X76)   * Assault by smoke, fire and flames (ICD X97) * Exposure to smoke, fire and flames, undetermined intent (ICD Y26)   The *denominator* is the Estimated Resident Population.  A separation is an episode of care for an admitted patient, which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change of type of care (for example, from acute care to rehabilitation).  Calculation is 100 000 × (Numerator ÷ Denominator), presented as a number per 100 000. |
| Data source | Numerator: This indicator is calculated using data from the NHMD, based on the National Minimum Data Set for Admitted Patient Care.  Denominator:  For total population: Australian Bureau of Statistics (ABS) Estimated Resident Population (ERP) as at 31 December as a midpoint of the reference period.  Computation:  1000 × (Numerator ÷ Denominator), presented as a rate. |
| Data Quality Framework dimensions | |
| Institutional environment | The Australian Institute of Health and Welfare (AIHW) has calculated this indicator.  The Institute is an independent statutory authority within the Health and Ageing portfolio, which is accountable to the Parliament of Australia through the Minister for Health. For further information see the AIHW website.  The data were supplied to the Institute by state and territory health authorities. The state and territory health authorities received these data from public hospitals. States and territories use these data for service planning, monitoring and internal and public reporting. Hospitals may be required to provide data to states and territories through a variety of administrative arrangements, contractual requirements or legislation.  States and territories supplied these data under the terms of the National Health Information Agreement, available online at:  www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442472807&libID =6442472788 |
| Relevance | The purpose of the NMDS for Admitted patient care is to collect information about care provided to admitted patients in Australian hospitals. The scope of the NMDS is episodes of care for admitted patients in essentially all hospitals in Australia, including public and private acute and psychiatric hospitals, free‑standing day hospital facilities, alcohol and drug treatment hospitals and dental hospitals. Hospitals operated by the Australian Defence Force, corrections authorities and in Australia’s off‑shore territories are not included. Hospitals specialising in ophthalmic aids and other specialised acute medical or surgical care are included.  The hospital separations data do not include episodes of non‑admitted patient care provided in outpatient clinics or emergency departments.  There are a range of other burn related injuries excluded from the fire injuries data. These include:   * Contact with heat and hot substances. * Injuries due to Explosion and rupture of boilers, Explosion and rupture of gas cylinder, Discharge of fireworks, Explosion of other materials (for example, munitions, blasting material), Exposure to electric current, Exposure to excessive heat of man‑made origin, Exposure to sunlight, or Exposure to lightning, Intentional self‑harm by steam, hot vapours and hot objects, Assault by means of explosive material, Assault by steam, hot vapours and hot objects. |
| Timeliness | The reference periods for this data set are 2003‑04 to 2012‑13. |
| Accuracy | For most years the coverage of the NHMD is essentially complete. Data are not available for some years for a few small public hospitals in some jurisdictions. For 2012-13, all public hospitals were included except for a small mothercraft hospital in the Australian Capital Territory. Private hospital data were not provided for private free-standing day hospital facilities in the Australian Capital Territory, the Northern Territory and a private free-standing day hospital in Victoria. (Information on the coverage of the NHMD in other years is available online at www.aihw.gov.au/hospitals-data/national-hospital-morbidity-database/ for details).  Variations in admission practices and policies lead to variation among providers in the number of admissions for some conditions.  Cells have been suppressed to protect confidentiality (where the presentation could identify a patient or a single service provider) or where rates are likely to be highly volatile (for example, the denominator is very small). |
| Coherence | For 2010‑11, NT data are not available and are excluded from the Australian total. With this exception, data for this indicator are comparable over time. |
| Accessibility | The AIHW provides a variety of products that draw upon the NHMD. Published products available on the AIHW website are:   * *Australian hospital statistics* with associated Excel tables. * Interactive data cube for Admitted patient care (for Principal diagnoses, Procedures and Diagnosis Related Groups).   Some data are also included on the MyHospitals website. |
| Interpretability | Supporting information on the quality and use of the NHMD are published annually in *Australian hospital statistics* (technical appendixes), available in hard copy or on the AIHW website. Readers are advised to read caveat information to ensure appropriate interpretation of the performance indicator. Supporting information includes discussion of coverage, completeness of coding, the quality of Indigenous data, and changes in service delivery that might affect interpretation of the published data. Metadata information for the NMDS for Admitted patient care are published in the AIHW’s online metadata repository — METeOR, and the National health data dictionary. |
| Data Gaps/Issues Analysis | |
| Key data gaps /issues | The Steering Committee notes the following issues:   * The hospital separations data do not include episodes of non‑admitted patient care provided in outpatient clinics or emergency departments. |

### Confinement to room/object of origin

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Australasian Fire and Emergency Service Authorities Council (AFAC), with additional Steering Committee comments.

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| Indicator definition and description | | |
| Element | | Outcomes |
| Indicator | | Confinement to room/object of origin |
| Measure (computation) | | There are two measures of Confinement to room/object of origin:   * confinement of building fires to room of origin * confinement of building and other structure fires to room/object of origin.   (1) Confinement of building fires to room of origin  Confinement of building fires to room of origin is a measure of the proportion of building fires confined to the room in which the fire originated, calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of building fires\* confined to the object, part room and room of origin** | |  | **——————————————————————————** | | **Denominator:** | **the number of building fires attributed to confinement** |   \*A building fire is a fire that has caused some damage to a building structure (such as a house).  According to the Australian Incident Reporting System (AIRS) classification this is:   |  |  | | --- | --- | | A23 Type of Incident 110 – 119  where K20 Extent of Flame Damage is (1,2,3) | \* 100 | | A23 Type of Incident 110 – 119  where K20 Extent of Flame Damage is (1 to 7) |   (2) Confinement of building and other structure fires to room/object of origin  Confinement of building and other structure fires to room/object of origin is a measure of the both the proportion of building fires andother structure fires\* confined to the room/object from which the fire originated, calculated as:   |  |  | | --- | --- | | **Numerator:** | **the number of building and other structure fires\* confined to the object, part room and room of origin** | |  | **——————————————————————————** | | **Denominator:** | **the number of building fires attributed to confinement** |   \*Other structure fires are fires within a building structure (such as fires confined to rubbish bins, burnt foodstuffs and fires confined to cooking equipment) that requires a fire service response.  According to the AIRS classification this is:   |  |  | | --- | --- | | A23 Type of Incident 110 – 129  where K20 Extent of Flame Damage is (1,2,3) | \* 100 | | A23 Type of Incident 110 – 129  where K20 Extent of Flame Damage is (1 to 7) | |
| Data source | | State and Territory governments. The Secretariat collects data directly from all jurisdictions.  Within each jurisdiction, fire service and emergency services organisations collect and compile data. |
| Data Quality Framework dimensions | | |
| Institutional environment | Confinement data are collected by fire and emergency service organisations in each State and Territory according to the AIRS.  The AIRS is a nationally agreed data standard. It takes a systematic approach to collecting, recording and reporting information about responses to incidents and emergencies attended primarily by fire services. It provides a standard for the structure, definitions and integrity of the data collected.  The AFAC Australian Incident Reporting System (AIRS) User Network is responsible for sustaining the production and currency of AIRS data and support the continued development of data requirements to ensure consistent and reliable methods of data collection, compilation and analysis can be applied throughout member agencies. For further information about the AFAC knowledge data base see the AFAC National Data and Glossary.  Not all of the contributing fire and emergency services collect all of the data because each fire service has different legislated roles and responsibilities, environments and history of reporting and therefore have developed processes relevant to their business.  The data are requested and submitted to the Secretariat in accordance with the authority of the terms of reference of the Review of Government Service Provision. | |
| Relevance | Confinement of building fires to room of origin is reflective of the response strategies of the fire services to extinguish structure fires before they cause extensive building damage. It also reflective of the community’s overall mitigation and preparedness strategies such as constructing buildings that are fire resistant, installing and maintaining operational smoke alarms, and other fire safety practises.  Other structure fires confined to object of origin is reflective of the community’s overall mitigation and preparedness strategies such as constructing ‘objects’ (such as electronic appliances, cooking equipment, and chimneys) that are fire resistant. It is also reflective of the community’s response abilities to contain a fire by having working fire alarms, fire extinguishers and/or fire blankets. | |
| Timeliness | Confinement to room/object of origin data are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | Text caveats in the RoGS provide generalised advice that data are not strictly comparable and cite a number of physical, operational and data collection system factors that influence confinement data:   * Confinement data are not collected for all incident responses and excludes records where the extent of flame damage is not recorded or zero. * The calculation of this measure has been amended over time and therefore the results are not fully comparable between years. * Confinement data a collected separately by most jurisdictions’ urban and rural fire service organisations — which also consist of volunteer and career/permanent personnel. * Confinement data from rural/volunteer fire services are not available in all jurisdictions.   In practice there are differences in the method between (and within) jurisdictions to estimate confinement of structure fire data. Each jurisdiction’s approach is summarised in the confinement of structure fire appendix, including approaches to:   * confinement rate calculation (table 11) * data completeness (table 12) * extrapolation and estimation (table 13). | |
| Coherence | Each State and Territory government maintains their own systems, processes, and training for estimation of confinement to room/object of origin in accordance with AIRS.  Any time series changes are identified with relevant footnotes. | |
| Accessibility | Structure fire confinement rate data are publicly available on the Productivity Commission’s website from the time of RoGS publication.  Interested parties, particularly researchers, may request access to unpublished portions of the AFAC Knowledge data base’s Core Data (de‑identified unit record data) to undertake their own statistical analysis for particular research and/or projects. For more information about access to national data see AFAC data requests. | |
| Interpret­ability | Copies of the complete AFAC AIRS data standard, 1997, are available upon request through AFAC.  The AFAC knowledge web provides links to a range of related statistics to enable a better understanding of how interrelationships between socio‑demographic, economic, geographic and environmental factors influence emergency incidents.  Text caveats and chapter footnotes provide additional commentary on data quality, as do the footnotes in the relevant attachment tables. | |
| Data Gaps/Issues Analysis | | |
| Key data gaps/issues | | The Steering Committee notes the following key data gaps/issues:   * Confinement of structure fires to room/object of origin is identified on the three point comparability scale as ‘not complete or not directly comparable’. * Text caveats note the need for of confinement to room/object of origin to be ‘interpreted with caution because the data are not strictly comparable across jurisdictions.’   A number of factors are identified as contributing to this lack of comparability, but without detailed analysis of such factors. |

The following tables are a summary of each jurisdiction’s compliance in calculating the of confinement of structure fires to room/object of origin.

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| --- |
| Table 11 Confinement rate calculation |
| |  |  |  | | --- | --- | --- | |  | *Complies with definition* | *Jurisdiction’s interpretation and/or application of definition that may impact on comparability* | | NSW | Yes | No further information. | | Vic | Yes | No further information. | | Qld | Yes | Structure fires *within* the Urban Levy Boundary are included.  Excluded are non‑emergency calls and those where QFES experience delays due to either extreme weather conditions or where the initial response was by another agency or brigade. | | WA | Yes | Blanks in both the numerator and denominator are excluded. Only structure fires originating inside a building are included in the calculation. | | SA | na | na | | Tas | Yes | All fires coded as a ‘building fire’ (AIRS code A23 Type of Incident 110 – 119)  are included.  Blanks in both the numerator and denominator are excluded. | | ACT | Yes | Blanks in both the numerator and denominator are excluded. | | NT | na | na | |
| **na** Not available. |
| *Source*: State and Territory governments. |
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| Table 12 Data completeness |
| |  |  |  |  | | --- | --- | --- | --- | |  | *Volunteer brigade data included?* | *Urban and rural areas included* | *Other information relating to data completeness* | | NSW | Yes | Yes | No further information. | | Vic | na | na |  | | Qld | Partial — where volunteers enter an Urban Levy Boundary | Yes — where Urban Levy Boundaries are in rural areas. | Accurate identification by QFES Rural brigades (volunteers) is not possible at this stage due to incomplete voluntary reporting procedures. | | WA | Yes | Yes | Incidents where there are blanks or zeros are excluded from calculation in both the numerator and denominator. | | SA | na | na |  | | Tas | Yes | Yes | No further information. | | ACT | .. | Yes | Volunteer data are not applicable in the ACT | | NT | na | na |  | |
| **na** Not available. .. Not applicable. |
| *Source*: State and Territory governments. |
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| Table 13 Extrapolation and estimation responses |
| |  |  |  | | --- | --- | --- | |  | *Are any confinement data estimated/ extrapolated* | *If so explain the rationale and method used* | | NSW | No | When reporting on incidents coded as ‘other building fire’ (A23 Type of Incident 120 – 129), it is assumed that where fires are confined to non‑combustible containers, such as foodstuffs burnt or cooking equipment, there is no flame damage or damage is confined to the object of origin. | | Vic | na | na | | Qld | No | When reporting on incidents coded as ‘other building fire’ (A23 Type of Incident 120 – 129), it is assumed that there is either no flame damage or damage confined to the object of origin. | | WA | Yes / No | When reporting on incidents coded as ‘other building fire’ (A23 Type of Incident 120 – 129), it is assumed that there is either no flame damage or damage confined to the object of origin. | | SA | na | na | | Tas | No | When reporting on incidents coded as ‘other building fire’ (A23 Type of Incident 120 – 129), it is assumed that there is either no flame damage or damage confined to the object of origin. | | ACT | No | No further information. | | NT | na | na | |
| **na** Not available. |
| *Source*: State and Territory governments. |
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### Value of asset losses from fire events

#### Value of insurance claims from fire events

Data quality information for this indicator has been drafted by the Secretariat in consultation with EMWG, with additional Steering Committee comments.

|  |  |
| --- | --- |
| Indicator definition and description | |
| Element | Outcomes |
| Indicator | Value of asset losses from fire events |
| Measure (computation) | (1) Average domestic insurance claim from fire events   |  |  | | --- | --- | | **Numerator:** | **Incurred cost of domestic claims** | |  | **\_\_\_\_\_** | | **Denominator:** | **Total number of domestic claims** |   (2) Total commercial/domestic insurance claims from fire events per person   |  |  | | --- | --- | | **Numerator:** | **Incurred cost of domestic/commercial claims** | |  |  | | **Denominator:** | **Population of a state and territory.** | |
| Data source | Insurance claims  ISA Database (2014), unpublished  Population of state of territory  Australian Bureau of Statistics (ABS) 2014 and previous years, *Australian Demographic Statistics, December 2014* (Cat. no. 3101.0). (for more detail about the population data used in the Report see RoGS Statistical context (chapter 2, table 2A.2). |
| Data Quality Framework dimensions | |
| Institutional environment | Insurance Statistics Australia (ISA) was established in 1988 by Australian insurance companies to produce management information of relevance to the pricing and profitability of selected classes of insurance business. ISA manages data on behalf of the ISA and Insurance Council of Australia.  ISA is managed by a board of directors drawn from participating insurance companies. Finity Consulting acts as the Manager of ISA. |
| Relevance | The data collected by ISA provide a measurable impact of selected emergency events on the community. The data also allow for estimates of assets lost against several classes of emergencies.  ISA data relate to those members of the community that have household and/or commercial insurance. ISA insurance data are available for:   * *Domestic Household* — relates to building and/or contents cover for householders or house owners. For strata units, contents cover is included but building cover is excluded. * *Commercial Property* — cover for commercial property premises, which can cover loss and/or damage to buildings, contents, machinery, stock and loss of profits.   For each class of insurance the following data may be available: Incurred cost of claims; Domestic Total Number of Policies; Domestic Total Number of Claims; Average Premium; Average Sum Insured; Claim Frequency; Average Claim Size; Cost per Policy; and Loss Ratio.  ISA data are available for the following geographic dissections:   * *Domestic Household* — state and territory * *Commercial Property* — Australia total, but not by state and territory. |
| Timeliness | Data are available for financial year and calendar year.   * *Domestic Household* — data are submitted by direct insurers within three weeks following the end of March, June, September, and December each year. Reports are also produced quarterly * *Commercial Property* — data are submitted by insurers within 4 weeks following the end of June and December each year. Reports are produced biannually.   Reports are available approximately four months after the reference period. |
| Accuracy | The ISA data are the actualcost to insurers. As administrative data they are not subject to sampling error. Total claims incurred will misstate the total value of assets lost due to:   * *under insurance* — under insurance will lead to the value of asset loss data to be under stated. Insurance payouts are limited by the estimated value of assets a policy holder provides when taking out insurance. Where they have under‑estimated their assets the cost to the insurer will be below total losses to the policy holder * *ISA market share* — ISA data are incomplete, in that they only cover ISA members that submit insurance data returns. The ISA estimates that their data cover approximately 80 per cent of the Domestic Household market and 60 per cent of the Commercial Property market. * *new for old* — new for old policies will lead to the value of asset loss data to be over stated. New for old policies replace a lost ‘old’ asset for a ‘new’ equivalent asset. Given that most assets depreciate, the replacement item would ordinarily have a greater value than the item it replaces * *excess policy* — excess policies will lead to the value of asset loss data to be under stated. To avoid having to process too many small claims, most insurance policies require policy holders to pay an ‘excess’. This will mean that most small incidents will not be recorded in the insurance data. |
| Coherence | Insurance companies must adhere to common accounting practices for insurance companies, and provide data to the ISA according to an agreed classification system.  The ISA data should relate to the published emergency event series already published in the Emergency management sector overview, however further work is required to validate their coherence. |
| Accessibility | Information supplied by ISA is generally free of charge for government organisations. However, data requests are subject to approval by the Board of ISA. Before ISA can provide data, details must be provided of what the data will be used for. ISA’s written permission is required for anything that will be circulated externally. |
| Interpretability | The ISA publishes an *Operations Guidebook*, which documents the key collection processes, standards and classifications. The guidebook is available at: http://www.insurancestats.com.au/objectives.html |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following key data gaps/issues:   * Data need to be interpreted with caution as actual asset losses may differ from incurred claims due to: under insurance, market share, new for old, and excess policy (see accuracy dimension). |

## Emergency services for ambulance events

### Response Locations

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |  |
| --- | --- | --- |
| Indicator definition and description | | |
| Element | Equity — Access | |
| Indicator | ‘Response locations’ is defined as the number of paid (or salaried), mixed and volunteer response locations per 100 000 people. | |
| Measure (computation) | Numerator: Number of ambulance response locations  The total number of separate sites or response locations operated (either owned, leased or occupied) by the ambulance service and serviced by either an ambulance general purpose, special operations vehicles, salaried ambulance operatives or volunteer ambulance operatives.  Response locations excludes both ambulance community and third party first responder locations.  Denominator: Estimated resident population  Source: *Australian Demographic Statistics* (ABS Cat. no. 3101.0). For further information see Statistical context (chapter 2, table 2A.2). | |
| Data source | *Consolidated Returns*, Council of Ambulance Authorities (CAA) | |
| Data Quality Framework dimensions | | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The CAA Consolidated Returns collects data for:   * Ambulance response locations * Ambulance response locations with paid staff only * Ambulance response locations with mix of paid staff and volunteer staff * Ambulance response locations with volunteer staff only * Communication centres * Other Locations * Educational centres * Administrative centres * Fleet management centres   This indicator complements the ‘availability of paramedics’ indicator, as some jurisdictions’ ambulance workforce comprises a large proportion of volunteers, particularly in rural and remote locations. | |
| Timeliness | Response location data are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns*.  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | |
| Accessibility | The response locations data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). | |
| Interpret­ability | The response locations data are publicly available and includes definitions of the collected data. | |
| Data Gaps/Issues Analysis | | |
| Key data gaps/issues | | The Steering Committee notes the following issues:   * Some jurisdictions do not satisfy the criteria for all the staffing categories. * The data definition for response locations are collected under a revised data definition to exclude first responder locations. |

### Availability of ambulance officers/paramedics

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |
| --- | --- |
| Indicator definition and description | |
| Element | Equity — Access |
| Indicator | Availability of ambulance officers/paramedics |
| Measure (computation) | Availability of ambulance officers/paramedics is defined as the number of fulltime equivalent ambulance (FTE) officers/paramedics per 100 000 people. Ambulance officers/paramedics include student and base level ambulance officers and qualified ambulance officers but excludes patient transport officers. |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) |
| Data Quality Framework Dimensions | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission for use in the RoGS. |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the availability of ambulance officers/paramedics categories, as defined in the measure.  The availability of ambulance officers/paramedics represents one aspect of equity — indicating equal access of the population to essential/lifesaving government services. |
| Timeliness | The availability of ambulance officers/paramedics data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. |
| Accessibility | The availability of ambulance officers/paramedics data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). |
| Interpretability | The ambulance officers/paramedics data are publicly available and including definitions of the collected data. |
| Data Gaps/Issues Analysis | |
| **Key data gaps/issues** | The Steering Committee notes that in jurisdictions that utilise a higher number of volunteers, the number of paid FTE ambulance officers may be lower — suggesting a lower level of access according to the indicator. However, volunteers are often utilised to provide ambulance access to small rural areas which have low frequency of medical emergencies. Providing paid paramedics in these locations is costly and raises issues with skills maintenance for paramedics whose caseload is low. This indicator is complemented by the response locations indicator, which identifies jurisdictions that provide an ambulance response utilising volunteers. |

### Urban centre response times

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |  |
| --- | --- | --- |
| Indicator definition and description | | |
| Element | Equity — Access | |
| Indicator | Urban centre response times | |
| Measure (computation) | Response times is defined as the time taken between the arrival of the first responding ambulance resource at the scene of an emergency in code 1 incidents and the initial receipt of the call for an emergency ambulance at the communications centre.  Urban centre response times are response times applied for each jurisdiction’s capital city — boundaries are based on the ABS Urban Centres Localities structure.   * Capital cities – Sydney, Melbourne, Brisbane, Perth, Adelaide, Hobart, Canberra and Darwin. * Code 1 incident – incident requiring at least one immediate response under lights and sirens.   Measures are provided for:   * The 50th percentile (or median) — the time taken for 50 per cent of the first responding ambulance resources to arrive at the scene of an emergency is equal to or below the 50th percentile. * The 90th percentile — the time taken for 90 per cent of the first responding ambulance resources to arrive at the scene of an emergency is equal to or below the 90th percentile. | |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) | |
| Data Quality Framework Dimensions | | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission for use in the RoGS. | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the urban centre response times categories, as defined in the measure.  The Urban centre response times represents one aspect of equity — indicating the equal opportunities of access to essential government services to the population of the capital cities. | |
| Timeliness | Urban centre response times data are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | |
| Accessibility | Urban centre response times data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). | |
| Interpretability | Urban centre response times data are publicly available including definitions of the collected data. | |
| Data Gaps/Issues Analysis | | |
| Key data gaps/issues | | The Steering Committee notes that differences across jurisdictions in the geography and personnel mix can affect capital city response times data. Factors that can impact on capital city response time performance include:   * land area, and population size and density, which varies considerably across Australian capital cities * capital city topography, road/transport infrastructure and traffic densities * crewing configurations, response systems and processes, and travel distances. |

### State‑wide response times

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |
| --- | --- |
| Indicator definition and description | |
| Element | Effectiveness — Access |
| Indicator | State‑wide response times |
| Measure (computation) | Response times is defined as the time taken between the arrival of the first responding ambulance resource at the scene of an emergency in code 1 incidents and the initial receipt of the call for an emergency ambulance at the communications centre.  State‑wide response times are response times applied for state‑wide ambulance service responses.  Code 1 incident – incident requiring at least one immediate response under lights and sirens.  Measures are provided for:   * the 50th percentile (or median) – the time (in minutes) within which 50 per cent of the first responding ambulance resources arrive at the scene of an emergency * the 90th percentile – the time (in minutes) within which 90 per cent of the first responding ambulance resources arrive at the scene of an emergency. |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) |
| Data Quality Framework Dimensions | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission for use in the RoGS. |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the state‑wide response times categories, as defined in the measure.  State‑wide response times represents one aspect of effectiveness — indicating access of the population to essential/lifesaving government provided services. |
| Timeliness | State‑wide response times data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. |
| Accessibility | State‑wide response times data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). |
| Interpret­ability | State‑wide response times data are publicly available including definitions of the collected data. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes that differences across jurisdictions in the geography, personnel mix, and system type for capturing data, affect state wide response times data. Factors that can impact on state wide response time performance include:   * the dispersion of the population (particularly rural/urban population proportions), topography, road/transport infrastructure and traffic densities * crewing configurations, response systems and processes, and travel distances — for example, some jurisdictions include responses from volunteer stations (often in rural areas) where turnout times are generally longer because volunteers are on call as distinct from being on duty * land area, and population size and density — for example, data calculated on a state wide basis for some jurisdictions represent responses to urban, rural and remote areas, while others include urban centres only. |

### Triple zero (000) call answer time

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |  |
| --- | --- | --- |
| Indicator definition and description | |  |
| Element | Effectiveness — Access | |
| Indicator | Triple Zero (000) Call Answer Time | |
| Measure (computation) | Ambulance Service triple zero (000) call answering time is defined as the time interval commencing when the Telstra Emergency Call Person (ECP) has answered the 000 call and selected the desired Emergency Service Organisation (ESO) to when the ESO has answered the call.  *Note:* data sourced from Telstra may include additional time as the Telstra Emergency Call Person ensures the call has been answered which may involve some three way conversation.  The indicator measures percentage of triple zero calls that were answered by the ambulance service communication centre staff in equal or less than 10 seconds.   * Numerator – total number of triple zero (000) calls received by the ambulance service in a given financial year * Denominator – number of triple zero (000) calls answered in equal or less than 10 seconds | |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) | |
| Data Quality Framework Dimensions | |  |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission for use in the RoGS. | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of segments – total number of 000 calls and number of calls answered in equal or less that 10 seconds.  The triple zero (000) call answer time of the ambulance service represents one aspect of effectiveness — indicating access of the population to the essential/lifesaving government services. | |
| Timeliness | The Triple zero (000) call answer time data are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | |
| Accessibility | The Triple zero (000) call answer time data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). | |
| Interpretability | The Triple zero (000) call answer time data are publicly available including definitions of the collected data. | |
| Data Gaps/Issues Analysis | |  |
| Key data gaps/issues | The Steering Committee notes that data sourced from Telstra may include additional time as the Emergency Call Person (Telstra) ensures the call has been answered which may involve some three way conversation. Some services subtract a fixed time from the Telstra reported times to allow for the time after the call is answered until the Telstra agent disconnects from the call. | |

### Workforce by Age Group

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |
| --- | --- |
| Indicator definition and description | |
| Element | Effectiveness — sustainability |
| Indicator | Workforce by age group |
| Measure (computation) | ‘Workforce by age group’ is defined as the age profile of the workforce, measured by the proportion of the operational workforce in 10 year age brackets (under 30, 30–39, 40–49, 50–59 and 60 and over).  Operational workforce  Number of ambulance services personnel who fall into the following categories.   * Patient transport officers * Student ambulance officers * Qualified ambulance officers * Clinical other * Communication operatives (paramedic) * Management — operational managers (paramedic) and clinical support (paramedic)   Age group  Ambulance services personnel who fall into the following age groups:   * under 30 year old, * 30‑39 year old, * 40‑49 year old, * 50‑59 year old * 60 and over year old. |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) |
| Data Quality Framework dimensions | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the operational workforce categories and age group, as defined in the measure.  The age profile of the ambulance service workforce represents one aspect of sustainability — indicating the proportion of the workforce closer to retirement. |
| Timeliness | Workforce by age group data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. |
| Accessibility | The workforce by age group data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). |
| Interpretability | The workforce by age group data are publicly available and includes definitions of the collected data. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following issue:   * The age profile is only one aspect of workforce sustainability. Further research into understanding and measuring the profile of the ambulance workforce is required. |

### Staff attrition

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |
| --- | --- |
| Indicator definition and description | |
| Element | Effectiveness — sustainability |
| Indicator | Staff attrition |
| Measure (computation) | Staff attrition’ is defined as the level of attrition in the operational workforce.  It is calculated as the number of FTE employees who exit the organisation as a proportion of the number of FTE employees. It is based on staff FTE defined as operational positions where paramedic qualifications are either essential or desirable to the role.   |  |  | | --- | --- | | Staff Attrition | **X** 100 | | Operational workforce |   Staff Attrition rate =  Operational workforce  Number of ambulance services personnel who fall into the following categories.   * Patient transport officers * Student ambulance officers * Qualified ambulance officers * Clinical other * Communication operatives (paramedic) * Management — operational managers (paramedic) and clinical support (paramedic)   Staff Attrition  All FTE that exit the organisation during the specified financial year including resignation and retirement who fall within the categories (staff with paramedic background being either essential or desirable to the position): Patient transport officers, Student ambulance officers, Qualified ambulance officers, Clinical other, Communication operatives, and Management – operational managers and Clinical support.  **Excludes**: Staff who transfer from operational positions into non-operational positions. |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) |
| Data Quality Framework dimensions | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the operational workforce categories and staff attrition, as defined in the measure.  The ambulance service workforce staff attrition represents one aspect of sustainability — indicating the proportion of the workforce that have recently left the operational ambulance workforce. Low or decreasing levels of staff attrition are desirable. |
| Timeliness | Staff attrition data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. |
| Accessibility | The staff attrition data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). |
| Interpretability | The staff attrition data are publicly available and includes definitions of the collected data. |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The Steering Committee notes the following issue:   * The staff attrition is only one aspect of workforce sustainability. Further research into understanding and measuring the profile of the ambulance workforce is required. * Analysis of staff attrition should be done in conjunction with other measures including workforce by age group and the number of paramedics being trained. |

### Enrolments in accredited paramedic training courses

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

|  |  |  |
| --- | --- | --- |
| Indicator definition and description | |  |
| Element | Effectiveness — sustainability | |
| Indicator | Enrolments in accredited paramedic training courses | |
| Measure (computation) | ‘Enrolments in accredited paramedic training courses’ is defined as the number of students enrolled in paramedic training courses accredited by the Paramedic Education Programs Accreditation Scheme per 100 000 people.  The indicator presents total number of students enrolled in accredited paramedic training courses.  The indicator also presents number of students enrolled in last year of accredited paramedic training courses. This segment is reported to show the number of potential new trained paramedics who will enter the workforce in the coming year. | |
| Data source | Council of Ambulance Authorities (CAA) | |
| Data Quality Framework dimensions | |  |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from tertiary institutions participating in the Paramedic Education Programs Accreditation Scheme (PEPAS).  The Accreditation of entry‑level paramedic education programs has 3 stages:   * *Preliminary approval* — Preliminary approval of a new entry‑level paramedic education program is sought prior to the commencement of teaching the course and approval is normally granted prior to, or commensurate with, the entry of the first cohort into the program. * *Provisional accreditation* — A new program that has been granted preliminary approval will be eligible for provisional accreditation after the first year of teaching, subject to successful annual review. Provisional accreditation may also be granted where conditions are attached following assessment for full accreditation. * *Full accreditation* — A program is eligible for full accreditation for a period of 5 years after the first cohorts of graduates have at least 12 months of practice experience following graduation. In 2011-­‐12 the Accreditation project Site Evaluation Team (SET) completed 8 (eight) visits.   Sixteen universities are involved in Paramedic Education Programs Accreditation Scheme, each at various stages of accreditation or evaluation of their program/s.  The following Universities (programs) hold provisional/full accreditation:   * Monash University: Bachelor of Emergency Health (Paramedic); Bachelor of Nursing / Emergency Health (Paramedic) * Flinders University: Bachelor of Paramedic Science * Victoria University: Bachelor of Health Science (Paramedic) * Queensland University of Technology: Bachelor of Health Science (Paramedic) * Edith Cowan University: Bachelor of Science (Paramedical Science) * Charles Sturt University: Bachelor of Clinical Practice (Paramedic)/ Bachelor of Nursing / Bachelor of Clinical Practice (Paramedic) * Australian Catholic University: Bachelor of Nursing / Bachelor Paramedicine; Bachelor Paramedicine * Central Queensland University: Bachelor of Paramedic Science * University of Tasmania: Bachelor of Paramedic Practice * University of Queensland: Bachelor of Paramedic Science. | |
| Relevance | The indicator is available for tertiary institutions participating in the Paramedic Education Programs Accreditation Scheme, by State and Territory.  Enrolments in accredited training courses represents one aspect of sustainability.  High or increasing enrolments are desirable. | |
| Timeliness | Enrolment data are published annually for the latest calendar year preceding the January release of each RoGS.  Data are counted as the number of students enrolled as at 31 December for the forthcoming course year. | |
| Accuracy | The CAAcompile administrative data from all accredited tertiary training providers in Australia.  Data are collected according to agreed definitions provided in the CAA data dictionary. | |
| Coherence | All data are sourced from the CAA*.*  Estimates are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all tertiary institutions. | |
| Accessibility | Enrolments in accredited paramedic training courses data are publicly available in the CAA Annual Report on the CAA website annually (www.caa.net.au). | |
| Interpretability | The Enrolments in accredited paramedic training courses data are publicly available and includes definitions of the collected data. | |
| Data Gaps/Issues Analysis | |  |
| Key data gaps/issues | The Steering Committee notes the following issues:   * The enrolments in accredited paramedic training courses is only one aspect of workforce sustainability. * Analysis of Enrolments in accredited paramedic training courses should be done in conjunction with other measures including workforce by age group and staff attrition. * PEPAS is a voluntary program and as such might not represent all students enrolled in paramedic courses around Australia, it only represents those enrolled in CAA PEPAS accredited courses. | |

### Ambulance service expenditure per person

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

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| Indicator definition and description | | |  |
| Element | Efficiency | | |
| Indicator | Ambulance service expenditure per person | | |
| Measure (computation) | Ambulance service organisations expenditure per person’ is defined as total ambulance service organisation expenditure per person in the population.  Ambulance service expenditure includes salaries and payments in the nature of salaries, capital costs and other operating costs that are essential to providing ambulance services. For more detail refer to the CAA Data Dictionary. | | |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) | | |
| Data Quality Framework Dimensions | | |  |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. | | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the ambulance service organisations expenditures categories, as defined in the measure.  All else being equal, lower expenditure per person represents greater efficiency. However, efficiency data are difficult to interpret. While high or increasing expenditure per person may reflect deteriorating efficiency, it may also reflect changes in aspects of the service (such as improved response) or the characteristics of events requiring ambulance service response (such as more serious para medical challenges). Similarly, low or declining expenditure per person may reflect improving efficiency or lower quality responses or less challenging cases.  Expenditure per person is employed as a proxy for efficiency. Expenditure per ambulance event is not used as a proxy for ambulance service organisation efficiency because an organisation that applies more resources to the prevention and preparedness components of community safety to reduce the demand for ambulance services could erroneously appear to be less efficient. | | |
| Timeliness | The Ambulance service expenditure per person data are published annually for the latest financial year preceding the January release of each RoGS. | | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | | |
| Accessibility | Ambulance service expenditure per person data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). | | |
| Interpretability | Ambulance service expenditure per person data are publicly available including definitions of the collected data. | | |
| Data Gaps/Issues Analysis | |  | |
| Key data gaps/issues | The Steering Committee notes that:   * Expenditure per person is employed as a proxy for efficiency. All else being equal, lower expenditure per person represents greater efficiency. However, efficiency data are difficult to interpret (see relevance dimension). * Care needs to be taken when comparing efficiency data across jurisdictions because there are differences in the reporting of a range of cost items and funding arrangements (funding policies and taxing regimes). Some jurisdictions, for example, have a greater proportion of government funding relative to levies compared with other jurisdictions. Also, differences in geographic size, terrain, climate, and population dispersal may affect costs of infrastructure and numbers of service delivery locations per person. | | |

### Cardiac arrest survived event

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

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| Indicator definition and description | | |  |
| Element | Outcomes | | |
| Indicator | Cardiac Arrest Survived Event | | |
| Measure (computation) | ‘Cardiac arrest survived event rate’ is defined by the percentage of patients, aged 16 years and over, who were in out-of-hospital cardiac arrest and had a return to spontaneous circulation (that is, the patient having a pulse) until administration and transfer of care to the medical staff at the receiving hospital (Jacobs, et al. 2004).  Three measures are provided as the percentage of patients aged 16 years and over who had a return to spontaneous circulation in the following circumstances:   * **Adult cardiac arrest where resuscitation attempted** — where: (1) a person was in out-of-hospital cardiac arrest (which was not witnessed by a paramedic); and (2) chest compressions and/or defibrillation was undertaken by ambulance or emergency medical services personnel.   Inclusion criteria:   * Adult - 16 years and over * Resuscitation was started and continued * Cardiac aetiology is confirmed * ROSC at arrival to hospital (5 sec or more sustainable ROSC)   Exclusion criteria:   * Paramedic witnessed events * Do not attempt resuscitation orders * Dead on arrival * **Adult VF/VT cardiac arrests** — where: (1) a person was in out-of-hospital cardiac arrest (which was not witnessed by a paramedic); and (2) the arrest rhythm on the first ECG assessment was either Ventricular Fibrillation or Ventricular Tachycardia (VF/VT) (irregular and/or fast heartbeat).   Inclusion criteria:   * Adult - 16 years and over * Resuscitation was started and continued * Cardiac aetiology is confirmed * ROSC at arrival to hospital - Utstein (20 min or more sustainable ROSC) * Shockable rhythm (VT/VF)   Exclusion criteria:   * Paramedic witnessed events * Do not attempt resuscitation orders * Dead on arrival * **Paramedic witnessed cardiac arrest** — where a person was in out-of-hospital cardiac arrest that occurred in the presence of ambulance paramedic or officer.   Inclusion criteria:   * Adult - 16 years and over * Resuscitation was started and continued * Cardiac aetiology is confirmed * ROSC at arrival to hospital (5 sec or more sustainable ROSC) * Cardiac arrest occurred in the presence of a paramedic officer   Exclusion criteria:   * Do not attempt resuscitation orders * Dead on arrival | | |
| Data source | Council of Ambulance Authorities (CAA) | | |
| Data Quality Framework Dimensions | | |  |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. | | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for each of the cardiac arrest survived event categories, as defined in the measure.  The Cardiac arrest survived event represents one aspect of effectiveness - indicating governments’ objective of providing pre-hospital and out-of-hospital care and patient transport services, that are high quality, timely, and meet clients’ needs through delivery of coordinated and responsive health care. | | |
| Timeliness | Cardiac arrest survived event data are published annually for the latest financial year preceding the January release of each RoGS. | | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | | |
| Accessibility | Cardiac arrest survived event data are publicly available in the CAA Annual Report on the CAA website annually (www.caa.net.au). | | |
| Interpretability | Cardiac arrest survived event data are publicly available including definitions of the collected data. | | |
| Data Gaps/Issues Analysis | |  | |
| Key data gaps/issues | The Steering Committee notes the following issues:   * Cardiac arrest survived event is only one measure of ambulance effectiveness and ambulance quality. * Other indicators are being prepared which will together with Cardiac arrest survived event form a clearer and more complete picture of ambulance effectiveness and quality. * Cardiac arrest data are at this stage not fully comparable between States and Territories, but progress is being made to resolve issues which relate to comparability of recording and reporting cardiac data. All services are committed to setting up cardiac arrest registries which provide a detailed recording and analysis of cardiac data. * Data are not comparable between years for services as noted in caveats due to changes in systems and recording and reporting practices during the years. | | |

### Pain management

Data quality information for this indicator has been drafted by the Secretariat in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

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| Indicator definition and description | |  |
| Element | Outcomes | |
| Indicator | Pain Management | |
| Measure (computation) | ‘Pain management’ is defined as the percentage of patients who report a clinically meaningful pain reduction.  Numerator  In scope patients (see denominator) who reported a minimum 2 point reduction in pain score from first to final recorded measurement.  Denominator  Patients who:   * are aged 16 years and over and received care from the ambulance service * recorded at least 2 pain scores (pre‑ and post‑treatment) on a Numeric Rating Scale * recorded an initial pain score of 7 or above on the Numeric Rating Scale of 1–10.   Excluded are patients who refuse pain medication for whatever reason.   * Numerator — total number of patients where at least two pain values were recorded. * Denominator — number of patients with a higher/lower/same last pain value as first pain value. | |
| Data source | *Consolidated Returns*,Council of Ambulance Authorities (CAA) | |
| Data Quality Framework Dimensions | |  |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA collects administrative data annually from all statutory ambulance services, using the same core questionnaire and instructions — the *CAA Consolidated Returns*.  The ambulance service organisations send their data to the CAA. The CAA then collates all data to be provided to the Productivity Commission use in the RoGS. | |
| Relevance | The indicator is available for all statutory ambulance services in Australia, by State and Territory.  The *CAA Consolidated Returns* collects data for all paint management categories, as defined in the measure.  The pain management indicator represents one aspect of effectiveness — indicating the proportion of patients with relieved/same/worse pain value on completion of ambulance service involvement compared to the start of ambulance service involvement. | |
| Timeliness | The pain management data are published annually for the latest financial year preceding the January release of each RoGS. | |
| Accuracy | The *CAA Consolidated Returns* compile administrative data from all statutory providers of ambulance services in Australia.  They are collected according to agreed definitions provided in the CAA data dictionary. | |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Consolidated Returns.*  Estimates from the CAA *Consolidated Returns* are comparable over time and between jurisdictions, subject to caveats provided by services.  The collection, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. | |
| Accessibility | The pain management data are made publicly available annually as part of the CAA Annual Report on the CAA website (www.caa.net.au). | |
| Interpretability | The pain management data are publicly available including definitions of the collected data. | |
| Data Gaps/Issues Analysis | |  |
| Key data gaps/issues |  | |

### Level of patient satisfaction

Data quality information for this indicator has been drafted by the Emergency Management Working Group in consultation with the Council of Ambulance Authorities (CAA), with additional Steering Committee comments.

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| Indicator definition and description | |
| Element | Outcomes |
| Indicator | Proportion of ambulance users who were satisfied or very satisfied with the ambulance service |
| Measure (computation) | Level of Patient Satisfaction definition  The total number of patients who were either ‘satisfied’ or ‘very satisfied’ with ambulance services they had received divided by the total number of patients.   * **Patients —** people who were transported under an emergency event classified as code 1 (an emergency event requiring one or more immediate ambulance responses under light and sirens where the incident is potentially life threatening) or code 2 (urgent incidents requiring an undelayed response by one or more ambulances without warning devices, with arrival desirable within thirty minutes). * **Satisfaction —** descriptive statistics were used to uncover the proportion of people who were *very* *dissatisfied or dissatisfied*, *neither satisfied nor dissatisfied*, and *satisfied or very satisfied* for the various satisfaction and service quality attributes. *Unsure* and *not applicable* responses are not included as the number of these responses is generally low. |
| Data source | *Patient Satisfaction Survey*,Council of Ambulance Authorities (CAA) |
| Data Quality Framework dimensions | |
| Institutional environment | The CAA is the peak body representing the principal statutory providers of ambulance services in Australia.  The CAA provides the survey and instructions. The data are collected by each ambulance service, using the same core questionnaire. The individual service providers then send the data to the CAA.  The Ehrenberg‑Bass Institute, as an independent research body then prepares the analysis and final report of the survey. The report is sent to member services for review and sign off.  The key purpose of the *Patient Satisfaction Survey* is to track perceived service quality and customer satisfaction across Australian states and territories. |
| Relevance | The indicator is available for all ambulance services in Australia.  The sample population represents the total population that used ambulance services in the last year.  The *Patient Satisfaction Survey* collects the level of patient satisfaction against three service areas:   * *Call response time* — the time taken to answer their emergency call. * *Communication staff assistance* — the operator they spoke to when their emergency phone call was answered. * *Ambulance response time* — the time the ambulance took to arrive.   They survey collects the level of patient satisfaction against five paramedic satisfaction areas:   * *Paramedics care* — the care the ambulance paramedics took when attending them * *Treatment satisfaction* — the standard of treatment they received from the ambulance paramedics. * *Ambulance paramedics* — explanations given by the ambulance paramedics about what was happening to them and why. * *Trip/ride satisfaction* — the conditions of the trip when being transported by an ambulance. * *Overall satisfaction* — their overall satisfaction using the ambulance service |
| Timeliness | Level of Patient Satisfaction data are published annually for the latest financial year preceding the January release of each RoGS. |
| Accuracy | The data are collected by survey form, which is mailed to a randomly selected sample of ambulance services users in the past year. The sample size is 1300 users with an average 35 per cent return rate.  The standard errors for 95 per cent confidence interval for each member service are included in the RoGS.  In some cases differences in scores between states/territories are not statistically significant (ie they arose from random sampling fluctuation) which means that all states/territories can be considered equal in performance.  There are also demographic factors that could drive the differences in proportions. For example, patients are more likely to provide higher scores for call response time and ambulance arrival time than carers or relatives (when they complete the questionnaire on behalf of patients). This pattern is because many patients are unable to judge the response time accurately when they need urgent medical help. |
| Coherence | All data (numerators and denominators) are sourced from the CAA *Patient Satisfaction Survey*.  Estimates from the CAA *Patient Satisfaction Survey* are comparable over time and between jurisdictions, subject to sampling variability. Over time the sample sizes have increased in smaller jurisdictions to reduce sampling error.  The survey questionnaire, instructions, definitions and analysis are prepared and overseen by the CAA and are the same for all state and territory services. |
| Accessibility | The CAA *Patient Satisfaction Survey* report is publicly available and includes information to thoroughly explain the methods, definitions and results of the data collection. |
| Interpret­ability | The CAA *Patient Satisfaction Survey* report is made publicly available on the CAA website annually (www.caa.net.au). |
| Data Gaps/Issues Analysis | |
| Key data gaps/issues | The measurement of the current structure is not sensitive enough to readily identify improvements and declines in ambulance performance. For instance, for ‘communication staff assistance’, Tasmania scored 100 per cent of satisfied or very satisfied respondents in 2011. This is an indication that the measurement has reached the ceiling. |