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# 9 Emergency management

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### **Attachment tables**

Attachment tables are identified in references throughout this chapter by an 'A' suffix (for example, table 9A.3). A full list of attachment tables is provided at the end of this chapter, and the attachment tables themselves are available on the CD-ROM enclosed with the Report or from the Review website at [www.pc.gov.au/qsp](http://www.pc.gov.au/qsp).

Emergency management aims to reduce the level of risk to the community of emergencies occurring, reduce the adverse effects of emergency events, and improve the level and perception of safety in the community. This chapter reports on selected emergency events, including fire, ambulance (pre-hospital care, treatment and transport) and emergency road crash rescue events. While section 9.1 contains some information on the scope of emergency services organisation (ESO)

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activities, the chapter does not report on the total range of State, Territory and local government activities.

The road crash rescue events section of this chapter has been updated this year. Other improvements include revised ‘fire deaths’ data, including publication of a ten year time series in the attachment tables and expansion of time series data for ‘ambulance staff attrition’ and ‘ambulance urban centre response times’.

## **9.1 Profile of emergency management**

Emergency management is defined as a range of measures to manage risks to communities and the environment (EMA 2004). The emergency management sector includes a range of agencies engaged in areas as diverse as risk assessment, legislation, community development, emergency response, urban development and land use management, and community recovery.

The range of events encompassed by emergency management includes fires, medical emergencies and transport, rescues, natural disasters (that is, bushfire, earthquake, flood, storm, cyclone, storm surge, landslide, tsunami, meteorite strike, and tornado<sup>1</sup>), consequences of acts of terrorism, technological and hazardous material incidents (such as chemical spills, harmful gas leaks, radiological contamination, explosions, and spills of petroleum and petroleum products), and the quarantine and control of diseases and biological contaminants. Emergency management aims to create and strengthen safe, sustainable and resilient communities that can avoid or minimise the effects of emergencies and, at the same time, have the ability to recover quickly and restore their socioeconomic vitality after an emergency event.

### **Roles and responsibilities**

The practice of emergency management requires cooperation among Australian, State, Territory and local governments, industry, community organisations and the community in general.

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<sup>1</sup> This list of natural disaster events is based on the Australian Government Natural Disaster Relief and Recovery Arrangement definition. Under this definition, natural disasters do not include drought, frost, heatwave, epidemic, or disaster events resulting from poor environmental planning, commercial development or personal intervention (other than arson) (EMA 2007).

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## *Government arrangements*

### *Australian Government*

The Australian Government administrative arrangements referred to in this section reflect the arrangements in place as at 9 November 2009. The primary role of the Australian Government is to support the development, by the states and territories, of a national emergency management capability.

When the total resources of an affected State or Territory cannot reasonably cope with the needs of a disaster, assistance from the Australian Government can be sought by that jurisdiction. Australian Government assistance may take the form of:

- providing material and technical assistance to states and territories in the event of large scale emergencies (coordinated through Emergency Management Australia (EMA), a division within the Australian Government Attorney-General's Department)
- providing financial assistance to states, territories and authorities for natural disaster prevention/mitigation and for helping to bear the costs of natural disasters (through the Natural Disaster Relief and Recovery Arrangements — administered by EMA)
- providing information, best practice materials and training programs (through the Australian Government Attorney-General's Department)
- providing funding for risk management programs and undertaking comprehensive risk assessment (through the Australian Government Attorney-General's Department)
- supporting community awareness activities (through the Australian Government Attorney-General's Department and the Bureau of Meteorology and Geoscience Australia).

Australian Government agencies also have specific emergency management responsibilities, including: the control of exotic animal and plant diseases; aviation and maritime search and rescue; the management of major marine pollution and meteorological and geological hazards; the provision of firefighting services at some airports and some defence installations; human quarantine; and research and development.

### *State and Territory governments*

State and Territory governments are responsible for regulatory arrangements for protecting life, property and the environment, and they have primary responsibility

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for delivering emergency services (including fire and ambulance services) directly to the community.

### *Local governments*

Local governments in some states and territories are involved to varying degrees in emergency management. Their roles and responsibilities may include:

- considering community safety in regional and urban planning by assessing risks, and developing mitigation measures and prevention plans to address emergencies such as bushfires and structure fires, floods, storms, landslides and hazardous materials incidents
- improving community preparedness through local emergency and disaster planning
- issuing hazard reduction notices to private land holders and clearing vegetation in high risk public areas
- collecting statutory levies to fund fire and other emergency services
- allocating resources for response and recovery activities
- providing financial and operational assistance to rural fire brigades and/or other voluntary emergency service units.

### *Emergency service organisations*

State, Territory and local governments provide emergency management services to the community through a range of ESOs. The governance and reporting lines of ESOs vary across jurisdictions. These organisations range from government departments to statutory authorities, and to smaller branches, agencies or services within larger departments or authorities. In some instances, non-government organisations also provide emergency management (and other ambulance event) services, such as St John Ambulance in WA and the NT.

In all jurisdictions, there is considerable cooperation and coordination among ESOs in response to emergency events. There can also be substantial cooperative efforts across governments, particularly in the recovery stages after a major incident. Events of considerable magnitude and duration, such as earthquakes, cyclones and bushfires, can involve international, interstate and other cooperation and support. Jurisdictions are increasingly interacting and contributing to programs and operational response to a number of significant emergency events around the Pacific and Indian Ocean rim.

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### *Fire service organisations*

State and Territory governments provide a range of emergency management activities through fire service organisations, including prevention/mitigation, preparedness, response and recovery (see framework section 9.2). The role of fire service organisations varies across jurisdictions and includes involvement in an expanding range of activities (table 9A.38) including:

- developing building fire safety codes and inspecting fire safety equipment and practices
- training and educating the community to achieve community awareness and behavioural change in relation to fire safety and road safety issues
- assisting individuals and communities to prepare for bushfires and other hazards
- responding to structure, bush, vehicle and other fires
- providing rural land management advice on the role and use of fire
- providing road crash rescue and other rescue services
- managing hazardous material incidents
- administering legislation relating to fire safety, hazardous materials facilities and hazard mitigation
- investigating fire cause and origin
- wide ranging industry research activities
- a number of specialist rescue capabilities, collectively known as Urban Search and Rescue.

Fire service organisations work closely with other government departments and agencies — including ESOs such as the State Emergency Service/Territory Emergency Service (S/TES), police and ambulance services, and community service organisations — to minimise the impact of fire and other emergencies on the community. Their governance arrangements differ across jurisdictions (table 9A.37).

Separate urban and rural fire service organisations deliver fire services in most jurisdictions. Land management agencies typically also provide fire services within designated areas. However, currently NSW, Victoria, WA and Tasmania only, are able to report fire activity for land management agencies, and financial information relating to these agencies is limited to Victoria. Jurisdictions with more than one fire authority can separate services in different ways — for example, NSW separates fire services based on service function and geographic area, whereas Victoria separates fire services by geographic area only.

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Some jurisdictions have particular arrangements for the provision of fire services in Indigenous communities. (For more information on fire services in Indigenous communities see SCRCSSP 2002, p. 572. and SCRGSP 2009, p. 11.35.)

### *State Emergency Services and Territory Emergency Services organisations*

State and Territory governments contribute to a range of emergency management activities through S/TES. The activities of S/TES (table 9A.39) include prevention/mitigation, preparedness, response and recovery (see framework section 9.2). The role of S/TES across jurisdictions encompasses a variety of activities. S/TES have a role in searches, urban search and rescue, rescues, floods, cyclones and other storms and a major role in attending road crash rescue incidents and performing extrications.

### *Ambulance service organisations*

State and Territory governments provide ambulance services in most jurisdictions. In WA and the NT, St John Ambulance is under contract to the respective governments as the primary provider of ambulance services (box 9.1). Across jurisdictions the role of ambulance service organisations as an integral part of the health system generally includes:

- providing emergency and non-emergency pre-hospital and out-of-hospital patient care and transport
- undertaking inter-hospital patient transport including the movement of critical patients
- conducting specialised rescue services
- preparing for and providing capacity for the ambulance component of multi-casualty events
- enhancing the community's capacity to respond to emergencies.

Funding responsibilities of State and Territory governments include ambulance services and, jointly with the Commonwealth, emergency responses, including responding to public emergencies and support for emergency air retrieval (COAG 2009).

There are fixed and rotary wing (helicopter) ambulance services in all jurisdictions. In most jurisdictions these services are provided by the ambulance service organisations through various contractual arrangements. In WA, SA, Queensland and the NT, all or most of the cost of air ambulance services falls outside of the

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ambulance service organisations (see also section 9.5 for a discussion of air ambulance services).

**Box 9.1 Relationships of primary ambulance response and management organisations to government**

|            |   |
|------------|---|
| <i>NSW</i> | <i>Ambulance Service of NSW</i> — a division of the Department of Health reporting to the Minister for Health   |
| <i>Vic</i> | <i>Ambulance Victoria</i> — a separate statutory body reporting to the Minister for Health  |
| <i>Qld</i> | <i>Queensland Ambulance Service</i> — a division of the Department of Community Safety, reporting to the Director-General, who reports to the Minister for Police, Corrective Services and Emergency Services   |
| <i>WA</i>  | <i>St John Ambulance</i> — an incorporated not-for-profit organisation under contract to the WA Government  |
| <i>SA</i>  | <i>SA Ambulance Service (SAAS)</i> — an incorporated unit under the SA Health Care Act (from 1 July 2008)   |
| <i>Tas</i> | <i>Tasmanian Ambulance Service</i> — a statutory service of the Department of Health and Human Services   |
| <i>ACT</i> | <i>ACT Ambulance Service</i> — one of four operational services that comprise the ACT Emergency Services Agency, Department of Justice and Community Safety (the other operational services are the ACT Fire Brigade, ACT Rural Fire Service and ACT State Emergency Service). The Department reports to the ACT Minister for Police and Emergency Services |
| <i>NT</i>  | <i>St John Ambulance</i> — an incorporated not-for-profit organisation under contract to the NT Government  |

Source: State and Territory governments (unpublished).

*Other ESOs*

The ‘all-hazards all-agencies’ approach to emergency management means that there are many organisations involved in aspects of the prevention/mitigation, preparedness, response and recovery framework for emergency management. This Report focuses on selected event types in State and Territory jurisdictions, and in particular the roles of fire, S/TES and ambulance service organisations. This Report does not yet report directly on the performance of Australian Government or local government emergency management services or their agencies.

*Volunteers in emergency management*

In 2008-09, approximately 250 000 fire, ambulance and S/TES volunteers played a significant role in the provision of emergency services in Australia (table 9.1). The input by volunteers is particularly important in rural and remote service provision where caseload/incident levels are low but community safety needs are still a high priority.

Volunteers in many ESOs — including fire, ambulance, S/TES, marine rescue, and recovery and relief agencies — provide services relating to emergency situations and disasters resulting from natural hazards such as wildfires, floods, severe storms, earthquakes, cyclones, and human caused and technological events as well as medical emergencies.

**Table 9.1 Volunteers in emergency service organisations<sup>a, b</sup>**

|              | NSW <sup>c</sup> | Vic <sup>d</sup> | Qld <sup>e</sup> | WA <sup>f</sup> | SA            | Tas          | ACT          | NT <sup>g</sup> | Aust           |
|--------------|------------------|------------------|------------------|-----------------|---------------|--------------|--------------|-----------------|----------------|
| 2006-07      |                  |                  |                  |                 |               |              |              |                 |                |
| ASOs         | 121              | 897              | 416              | 2 839           | 1 619         | 507          | –            | 10              | 6 409          |
| FSOs         | 76 302           | 59 509           | 36 000           | 27 305          | 15 517        | 4 978        | 1 261        | 550             | 221 422        |
| S/TES        | 10 331           | 4 411            | 7 000            | 1 854           | 1 821         | 525          | 191          | 347             | 26 480         |
| <b>Total</b> | <b>86 754</b>    | <b>64 817</b>    | <b>43 416</b>    | <b>31 998</b>   | <b>18 957</b> | <b>6 010</b> | <b>1 452</b> | <b>907</b>      | <b>254 311</b> |
| 2007-08      |                  |                  |                  |                 |               |              |              |                 |                |
| ASOs         | 163              | 437              | 225              | 2 960           | 1 534         | 507          | –            | 10              | 5 836          |
| FSOs         | 75 474           | 58 362           | 35 000           | 27 457          | 15 744        | 4 909        | 1 367        | 540             | 218 853        |
| S/TES        | 10 114           | 4 833            | 6 430            | 1 827           | 1 828         | 560          | 205          | 293             | 26 090         |
| <b>Total</b> | <b>85 751</b>    | <b>63 632</b>    | <b>41 655</b>    | <b>32 244</b>   | <b>19 106</b> | <b>5 976</b> | <b>1 572</b> | <b>843</b>      | <b>250 779</b> |
| 2008-09      |                  |                  |                  |                 |               |              |              |                 |                |
| ASOs         | 205              | 494              | 188              | 2 566           | 1 502         | 574          | –            | 13              | 5 542          |
| FSOs         | 75 436           | 58 943           | 34 000           | 27 249          | 15 415        | 4 859        | 1 230        | 540             | 217 672        |
| S/TES        | 10 954           | 5 500            | 6 300            | 1 454           | 1 613         | 584          | 247          | 299             | 26 951         |
| <b>Total</b> | <b>86 595</b>    | <b>64 937</b>    | <b>40 488</b>    | <b>31 269</b>   | <b>18 530</b> | <b>6 017</b> | <b>1477</b>  | <b>852</b>      | <b>250 165</b> |

ASO = ambulance service organisation. FSO = fire service organisation. S/TES = State and Territory emergency services. <sup>a</sup> Numbers for FSOs include volunteer support staff plus part paid volunteers for all jurisdictions except WA and the ACT. <sup>b</sup> Previous years ASOs data may not be comparable as volunteer data for 2007-08 and subsequent years are categorised into volunteers with transport capability and first responders with no transport capability. Data for 2007-08 and subsequent years exclude first responders. <sup>c</sup> NSW: Numbers for FSOs include retained firefighters and community fire unit members. <sup>d</sup> Vic: ASOs data include some volunteers who were remunerated for some time (usually response), but not for other time (usually on-call). <sup>e</sup> Qld: The decrease in numbers is the result of an audit of volunteer records that identified and removed records of volunteers who had left. In addition, for QAS, the decrease is attributed to the removal from this category of Community First Responders and university students undergoing paramedical studies enrolled as Honorary Officers. In 2008-09 only active SES volunteers are reported. <sup>f</sup> WA: 2008-09 SES data exclude 504 volunteer emergency service members who may also undertake an SES role. The removal of duplicate records is a contributing factor to the reduction in volunteer numbers in 2008-09. <sup>g</sup> NT: Transient people in the NT result in fluctuations in the numbers of volunteers. – Nil or rounded to zero.

Source: State and Territory governments (unpublished); tables 9A.5, 9A.21 and 9A.24.

Information on the estimated value of volunteers to S/TES is outlined in box 9.2.

Although volunteers make a valuable contribution, they are not a free resource to governments. Governments incur costs in supporting volunteers to deliver emergency services in their communities, by providing funds and support through infrastructure, training, uniforms, personal protective equipment, operational equipment and support for other operating costs.

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### **Box 9.2 Value of volunteers to State/Territory Emergency Services**

State/Territory Emergency Services (S/TES) are dedicated to helping communities prepare and respond to unexpected events, and play a vital role in emergency management in all states and territories. The Australian Council of State Emergency Services (ACSES) funded a study to estimate the value of SES volunteer time based on data provided by the SES agencies in NSW, Victoria, SA and Tasmania.

Two approaches were used to estimate the economic value of SES volunteer time:

- the global substitution method, where an average wage rate is used to value all activities
- the task specific substitution method, where each task is valued at its market wage rate.

In both approaches operational tasks and time, including emergency response and community activities, were valued, as well as time spent on training, travel, administration and other tasks.

The value of volunteer time for community preparedness services, operational response, training and unit management (without stand-by time) from 1994-95 to 2004-05 averaged around \$52 million (NSW), \$19 million (Victoria) and \$12 million (SA) a year.

Stand-by time accounts for about 94 per cent of the total time in NSW and Victoria and about half the total value for NSW and 39 per cent for Victoria. The total time volunteers made available including stand-by time is worth more than \$86 million and \$41 million a year to NSW and Victoria respectively. For NSW the annual value of a volunteer's contribution was estimated as \$15 903. While the indirect or secondary benefits that may arise through volunteerism as explained through social capital theory were not valued, the study clearly shows the significant value volunteers provide to their communities.

*Source:* Ganewatta, G. and Handmer, J. (2007).

Volunteer activity has implications for the interpretation of financial and non-financial performance indicators in this chapter. Notional wages costs for volunteers are not reflected in monetary estimates of inputs or outputs, which means that data for some performance indicators may be misleading where the input of volunteers is not counted but affects outputs and outcomes. This issue may be explored in the future as the Steering Committee continues to examine data on rural and remote service provision in the emergency services sector.

## 9.2 Framework for measuring the performance of emergency management

The broad aim of emergency management is to reduce the level of risk to the community from emergencies. The framework of performance indicators in this chapter is based on objectives for emergency management that are common to all Australian ESOs (box 9.3).

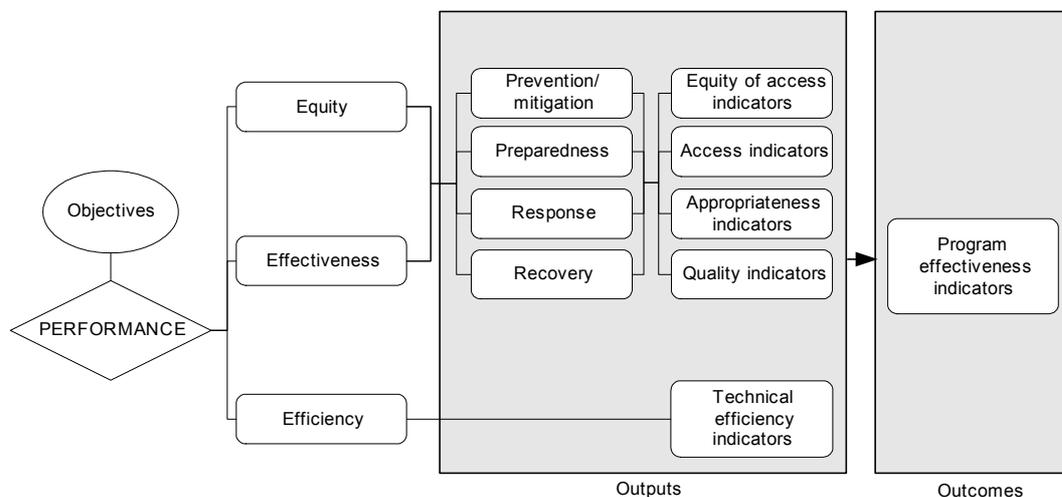
### Box 9.3 Objectives for emergency management

Emergency management services aim to provide highly effective, efficient and accessible services that:

- reduce the adverse effects of emergencies and disasters on the community (including people, property, infrastructure, economy and environment)
- contribute to the management of risks to the community
- enhance public safety.

Emergency service organisations aim to reduce the number of emergency events through prevention activities, and to reduce the impact of emergency events through community and operational preparedness. Fast, effective response and recovery services are critical to containing hazards and managing the consequences of emergency events. The prevention/mitigation, preparedness, response and recovery performance indicator framework (figure 9.1) used in this chapter for fire and road crash rescue events reflects these activities.

Figure 9.1 **General performance indicator framework for emergency management**



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The framework uses the widely accepted ‘comprehensive approach’ (prevention/mitigation, preparedness, response and recovery) to classify the key functions common to ESOs in managing emergency events. Outputs in the emergency event frameworks are grouped accordingly.

- *Prevention/mitigation* — the results of measures taken in advance of an emergency aimed at decreasing or eliminating its impact on the community and the environment. Activities that contribute to prevention and mitigation include: advice on land management practice and planning; the inspection of property and buildings for hazards, compliance with standards and building codes, and levels of safe practices; the preparation of risk assessment and emergency management plans; risk categorisation for public information campaigns; and public information campaigns and educational programs to promote safe practices in the community.
- *Preparedness* — the results of measures to ensure, if an emergency occurs, that communities, resources and services are capable of responding to, and coping with, the effects. Activities that contribute to preparedness include: public education and training; emergency detection and response planning (including the installation of smoke alarms and/or sprinklers); hazardous chemicals and material certification, and the inspection of storage and handling arrangements; the exercising, training and testing of emergency service personnel; and standby and resource deployment and maintenance. Preparedness also involves establishing equipment standards and monitoring adherence to those standards.
- *Response* — the results of strategies and services to control, limit or modify the emergency to reduce its consequences. Activities that contribute to response include: the implementation of emergency plans and procedures; the issuing of emergency warnings; the mobilisation of resources in response to emergency incidents; the suppression of hazards (for example, fire containment); the provision of immediate medical assistance and relief; and search and rescue.
- *Recovery (community)* — the results of strategies and services to support affected individuals and communities in their reconstruction of physical infrastructure and their restoration of emotional, social, economic and physical wellbeing. Activities that contribute to community recovery include: the restoration of essential services; counselling programs; temporary housing; long term medical care; and public health and safety information.
- *Recovery (ESOs)* — the results of strategies and services to return agencies to a state of preparedness after emergency situations. Activities that contribute to emergency services recovery include: critical incident stress debriefing; and the return of ESO resources to the state of readiness specified in response plans.

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Effective prevention activities reduce the requirement to respond to, and recover from, emergency events. Every jurisdiction is placing a greater emphasis on preventative activities. Efficient resource use reduces the cost of delivering a service of specified quality.

Outcome indicators in the performance framework indicate the contribution of ESOs to the community, economy and environment. Those currently reported are:

- for fire events: the ‘fire death rate’; ‘fire injury rate’; ‘median dollar losses from structure fire’; and ‘property losses from structure fire per person’
- for road crash rescue events: ‘road death’ rates; and a number of other outcome indicators reported in the Road Safety section of the police services chapter
- for ambulance events: ‘cardiac arrest survived event’; and ‘level of patient satisfaction’. ‘Cardiac arrest survival to hospital discharge’ and ‘pain management’ are identified as important outcome indicators in the ambulance events framework but data are not yet available for these indicators.

The general performance indicator framework presented in figure 9.1 has been applied to fire events (section 9.3) and road crash rescue events (section 9.4). Ambulance events are based on a different, health-related framework (section 9.5).

The Report’s statistical appendix contains data that may assist in interpreting the performance indicators presented in this chapter. These data cover a range of demographic and geographic characteristics, including age profile, geographic distribution of the population, income levels, education levels, tenure of dwellings and cultural heritage (including Indigenous and ethnic status) (appendix A).

### **9.3 Fire events**

This section contains information on the performance of ESOs in providing emergency management services for fire events. A fire event is an incident that is reported to a fire service organisation and requires a response. Fire events include (but are not limited to):

- structure fires (that is, fires inside a building or structure), regardless of whether there is damage to the structure
- landscape fires, including bushfires and grass fires, regardless of the size of the area burnt
- other fires, including vehicle and other mobile property fires, and outside rubbish fires.

## Emergency management services for fire events

Fire service organisations are the primary agencies involved in providing emergency management services for fire events. A range of other agencies may also be involved, including ambulance service organisations, S/TES, police and community services (table 9A.41).

Full reporting would ideally include information on the resources allocated by all ESOs to managing fire events. Although this information is currently unavailable, work is underway to improve data for future Reports. The descriptive information provided below on funding, incidents and human resources relate to fire service organisations only. (As discussed in section 9.1, fire service organisations are also involved in other activities not directly related to fire events.)

### Funding

Total funding of the fire service organisations covered in this Report was greater than \$3.0 billion in 2008-09. Over the period 2004-05 to 2008-09 funding increased (in real terms) for all jurisdictions except the ACT (table 9.2).

**Table 9.2 Real funding of fire service organisations (2008-09 dollars) (\$ million)<sup>a</sup>**

|         | <i>NSW</i> <sup>b</sup> | <i>Vic</i> <sup>c</sup> | <i>Qld</i> | <i>WA</i> <sup>d</sup> | <i>SA</i> | <i>Tas</i> | <i>ACT</i> <sup>e</sup> | <i>NT</i> | <i>Aust</i> |
|---------|-------------------------|-------------------------|------------|------------------------|-----------|------------|-------------------------|-----------|-------------|
| 2004-05 | 747.6                   | 567.2                   | 356.1      | 138.6                  | 159.7     | 59.5       | 52.2                    | 22.7      | 2 103.6     |
| 2005-06 | 764.1                   | 594.3                   | 364.7      | 155.6                  | 161.5     | 54.5       | 59.2                    | 23.9      | 2 177.9     |
| 2006-07 | 849.3                   | 975.7                   | 377.1      | 249.8                  | 160.7     | 58.6       | 57.5                    | 24.2      | 2 752.9     |
| 2007-08 | 805.8                   | 797.6                   | 380.1      | 244.0                  | 174.2     | 59.9       | 51.0                    | 20.2      | 2 532.7     |
| 2008-09 | 891.1                   | 1 203.0                 | 400.7      | 231.7                  | 174.4     | 60.3       | 50.6                    | 24.0      | 3 035.8     |

<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). <sup>b</sup> NSW: Figures vary from year to year as a result of abnormal expenditure related to the response to specific major emergencies. <sup>c</sup> Vic: 2006-07 is the first year which includes revenue for the Department of Sustainability and Environment (DSE) and explains the marked increase for that year. Increase in 2008-09 is due to emergency funding arising from the Black Saturday Bushfires. <sup>d</sup> WA: FESA provides a wide range of emergency services under an integrated management structure. Data for 2006-07 and subsequent years are not segregated by service and include funding related to delivery of other emergency services including SES and volunteer marine rescue. Data for the Department of Environment and Conservation are not included. <sup>e</sup> ACT: The increase in 2005-06 is due to a significant upgrade of Emergency Services Communications systems and inclusion of Joint Emergency Services Training Costs. In 2006-07 funding is included for the placement of an Ericson sky crane in the ACT as part of the National Aerial Firefighting Strategy.

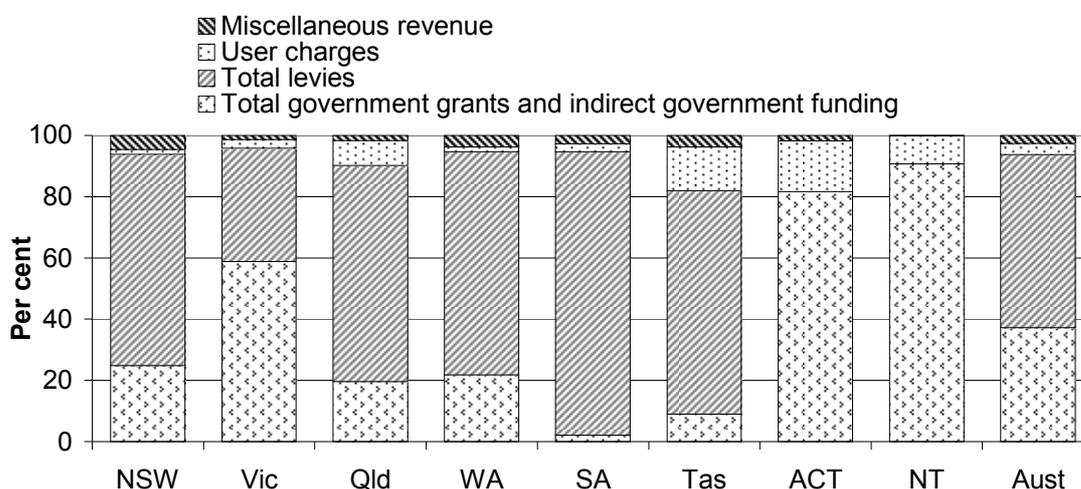
Source: State and Territory governments (unpublished); table 9A.1.

Fire levies were the primary source of funding in 2008-09 in all jurisdictions except the ACT and the NT, where Territory governments were the largest source of funds. Governments usually provide the legislative framework for the imposition of fire levies, rather than directly collecting the levies themselves. In 2008-09, fire levies

were raised from levies on property owners or, in some jurisdictions, from levies on both insurance companies and property owners (table 9A.1). In addition to relying on funded resources, all states and territories rely on volunteer firefighters, who make a significant contribution to community safety.

Nationally, 37.2 per cent of funding for fire service organisations was provided by government as government grants and indirect government revenue in 2008-09 (an increase from 26.9 per cent in 2007-08, with much of this due to government funding directed towards the 2009 Victorian fires). The proportions of funding sources varied across jurisdictions (figure 9.2).

**Figure 9.2 Major sources of fire service organisation revenue, 2008-09 (per cent)**



Source: State and Territory governments (unpublished); table 9A.1.

### Human resources

Human resources refers to any person delivering a firefighting or firefighting-related service, or managing the delivery of this service, including:

- firefighters (qualified paid and volunteer firefighters)
- support personnel (any paid person or volunteer directly supporting operational providers, including administrative, technical and communications personnel).

Nationally, 17 833 full time equivalent (FTE) paid personnel were employed by fire service organisations in 2008-09. Nationally, 13 752 FTE or 77.1 per cent of the 17 833 FTE were paid firefighters. A large number of volunteer firefighters (217 672 people) also participated in the delivery of fire services in 2008-09 (table 9A.5).

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### *Fires and other emergency incidents*

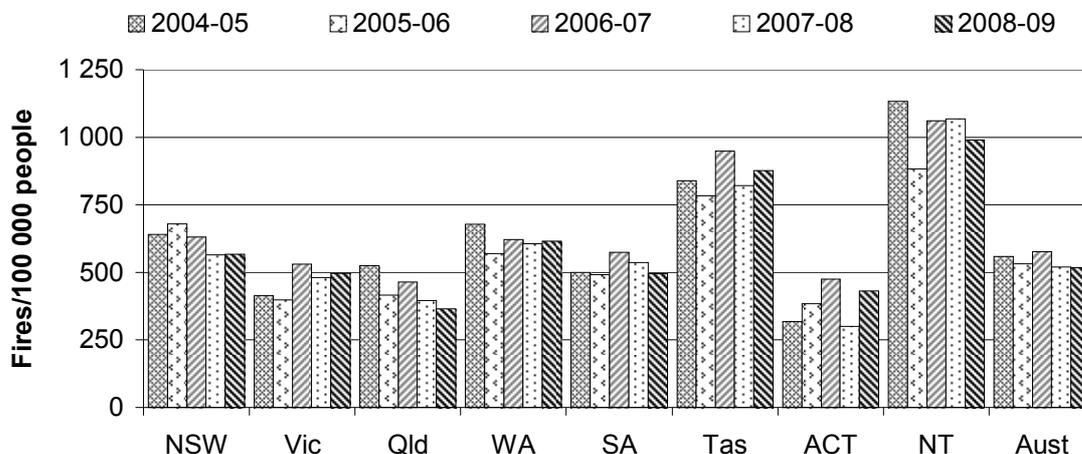
Various urban and rural fire service organisations operate within jurisdictions (table 9A.37). Complete data on reported fires and other incidents were not available in all jurisdictions.

Nationally, 29.0 per cent or 112 033 of the 386 312 reported incidents attended to by fire service organisations were fires, and 70.5 per cent were other emergencies and incidents in 2008-09 (0.5 per cent of incidents were 'not determined or not classified'), with these proportions varying across jurisdictions (table 9A.2). A significant proportion of calls for assistance across all jurisdictions are found, upon investigation, to be false alarms. However, fire service organisations are required by legislation to respond to all calls. An incident cannot be deemed to be a false report until the fire service organisation has responded and investigated the site.

### *Total fire incidents attended by fire service organisations per 100 000 people*

Nationally, 518 fire incidents per 100 000 people were attended in 2008-09, similar to the rate of 519 in 2007-08 (figure 9.3). Rates are more variable across jurisdictions and over time than the national averages.

**Figure 9.3 Fire incidents attended by fire service organisations per 100 000 people<sup>a, b, c, d, e, f, g, h</sup>**



<sup>a</sup> Qld: Accurate identification of incidents attended by both QFRS Urban and Rural crews is not possible at this stage. Reporting of incident attendance by QFRS Rural Crews is incomplete due to voluntary reporting procedures. QFRS Urban stations (Agency 1) are estimated to serve 87.6 per cent of Queensland's population. <sup>b</sup> WA: Data include reported turnouts by career and volunteer services to all areas of the State. <sup>c</sup> SA: MFS industrial action: 18/4/05 0800 hrs to 20/06/05 1800 hrs (no incident reports completed during this period so data are incomplete). <sup>d</sup> Tas: Data include *all* fire brigades, both full-time and volunteer. Due to industrial action 90 incident reports are incomplete for 2008-09. <sup>e</sup> ACT: Includes data for urban and rural fire service organisations. <sup>f</sup> NT: The high number of incidents per 100 000 people can be attributed to deliberately lit fires and the large number of grass fires in northern Australia that are caused by the annual growth of vegetation following the wet season. <sup>g</sup> Aust: The average for Australia excludes rural fire service data as per the jurisdictions' caveats. <sup>h</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December).

Source: State and Territory governments (unpublished); table 9A.10.

### *Ignition factor for structure fires*

Cause identification assists fire service organisations and other emergency management stakeholders to formulate fire prevention, community safety and public education programs. Cause identification also helps formulate legislation and standards, and is used to assist in recovery through the provision of information to facilitate insurance claims and settlements.

The most prevalent ignition factors causing structure fires varies between jurisdictions (table 9A.43). Nationally in 2008-09, the ignition factor for 20.1 per cent of structure fires was 'undetermined or not reported'. For structure fires where the cause of ignition could be determined, the most significant factors reported were:

- unattended heat sources (15.0 per cent)

- 
- short-circuit, ground fault and other electrical failure (10.5 per cent)
  - suspicious (9.1 per cent) (table 9A.43).

### *Total reported landscape fire incidents*

Landscape fire incidents include all vegetation fires, irrespective of the size of the area burnt and can vary substantially in their impact on fire resources, the community and longer term consequences. The number and severity of landscape fires is influenced by many factors, including environmental factors such as weather and climate, with the majority of landscape fires triggered by human activity (approximately 85 per cent) or lightning (approximately 15 per cent) (AIC 2008, Bryant 2008).

In early 2009, bushfire devastated Victoria, causing unprecedented loss of life and property (box 9.4).

#### **Box 9.4 Black Saturday (Victorian fires 2009)**

The Victorian Coroner's Office has confirmed the number of deaths as a result of the fires which directly affected many towns and communities; destroying homes, businesses, schools and kindergartens (Australian Government Disaster Assist 2009). Key statistics are:

- deaths: 173
- area burnt: 430 000 hectares (including 51 towns, 78 communities)
- total property dollar losses: \$1.35 billion
- homes lost: 2129, valued at \$713 million (includes contents and outbuildings).

Rebuilding homes and towns, supporting local economies, regenerating the natural environment and restoring community identity is an enormous task — for government, businesses and the communities. The Victorian and Australian governments have responded to this challenge by establishing the Bushfire Reconstruction and Recovery Authority to coordinate and oversee the rebuilding program.

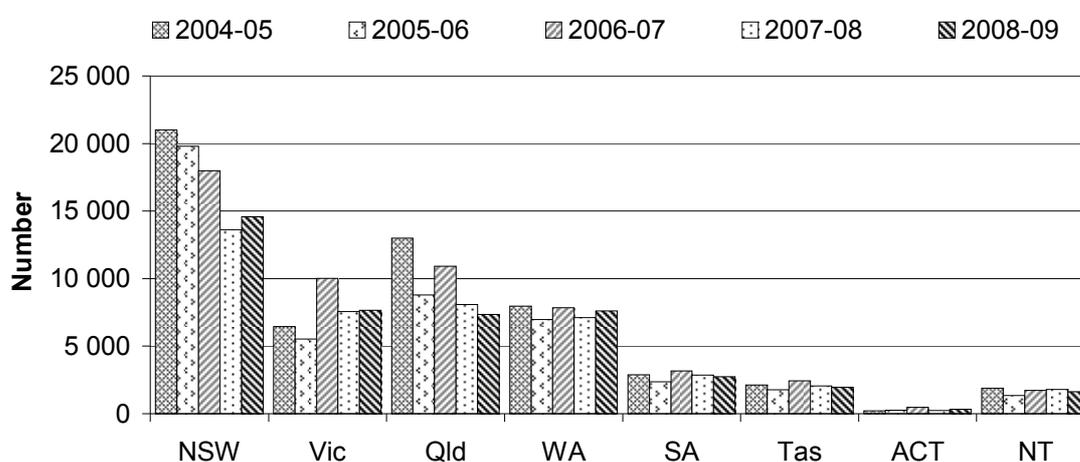
The response to these fires involved cooperation and resources from Australian, State and Territory governments. All of these governments are committed to improving policy and processes as a result of this event and are monitoring the findings and recommendations of the 2009 Victorian Bushfire Royal Commission's interim (August 2009), and final (due July 2010), reports.

Nationally, 43 901 landscape (bush and grass) fire incidents were reported by fire service organisations and land management agencies in 2008-09 (table 9A.3). The 2009 Black Saturday fires in Victoria are treated as a single landscape fire event. The consequences of the Black Saturday fire event are reflected in other data (as

noted in caveats) and indicators, including increased government funding and expenditure for Victoria in 2008-09. Where data relating to the fires are not yet available this is also noted in caveats. Some data relating to this fire event will not be recognised until future editions of the report due to the lag in reporting (for example fire deaths and fire injuries data).

The numbers of reported landscape fire incidents are in figure 9.4. Incidents reported to land management agencies are not included for some jurisdictions.

**Figure 9.4 Fire service organisations and land management agencies reported total landscape (bush and grass) fire incidents<sup>a, b, c, d, e, f, g, h, i</sup>**



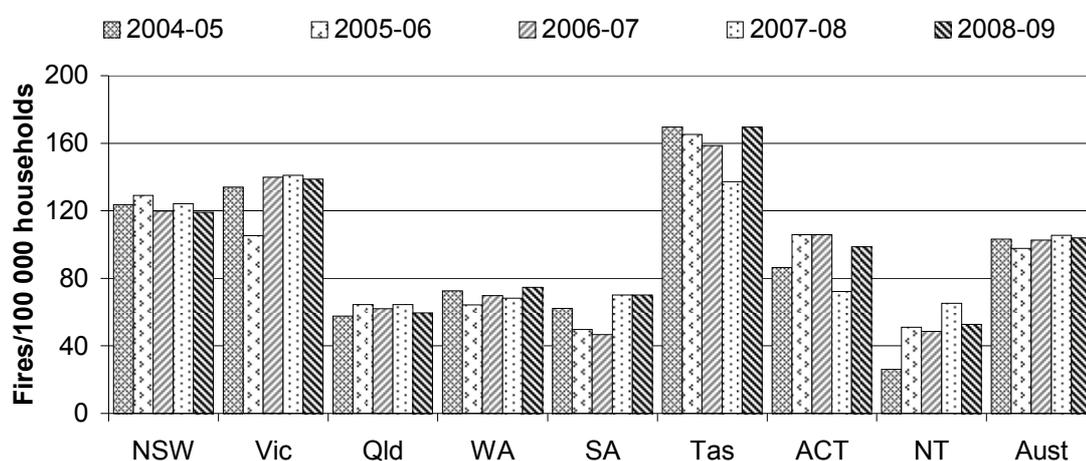
<sup>a</sup> These data may be different to those reported elsewhere because they reflect responses from fire service organisations and, where stated, land management agencies. <sup>b</sup> NSW: Includes data from the NSW Department of Environment and Climate Change, the NSW Rural Fire Service and the NSW Fire Brigades for all bush and grass fires regardless of size of area burnt. <sup>c</sup> Vic: Data include incidents from the Department of Sustainability and Environment. Due to data collection issues, data are incomplete for 2005-06. Black Saturday (Victorian fires 2009) is treated as a single landscape fire event in 2008-09. <sup>d</sup> Qld: Accurate identification of incidents attended by both QFRS Urban and Rural crews is not possible at this stage. Reporting of incident attendance by QFRS Rural Crews is incomplete due to voluntary reporting procedures. <sup>e</sup> WA: Data include landscape fires reported by the Department of Environment and Conservation as a lead agency, with 648 fires recorded for 2008-09. <sup>f</sup> SA: MFS industrial action: 18/4/05 0800 hrs to 20/06/05 1800 hrs (no incident reports completed during this period so data are incomplete). <sup>g</sup> Tas: Data include all vegetation fires, irrespective of size, from all fire brigades (full time and volunteer) and land management agencies. <sup>h</sup> ACT: A 51 per cent decrease in landscape fires from 2006-07 to 2007-08 corresponds to a milder fire season than the previous year. <sup>i</sup> NT: Excludes data from Bushfires NT and some NT Fire and Rescue Service volunteer brigades.

Source: State and Territory governments (unpublished); table 9A.3.

*Accidental residential structure fires reported to fire service organisations per 100 000 households*

The rate of accidental residential structure fires per 100 000 households is reported in figure 9.5. Rates may not be entirely comparable, as the number of accidental residential structure fires is affected by the number of fires where the cause has been determined and classified by fire service personnel. Although the national rate has been relatively constant, rates for jurisdictions show more variability over the five year period.

**Figure 9.5 Accidental residential structure fires reported to fire service organisations<sup>a, b, c, d, e, f, g</sup>**



<sup>a</sup> Rates may not be entirely comparable. The numerator (the number of accidental residential structure fires) is affected by the number of fires where the cause has been determined and classified by fire service personnel. Data for the denominator are from the ABS Australian Demographic Statistics Household projection series and are taken as the average of household data from the start and end of each financial year period to provide a financial year midpoint estimate. For example, household data for the 2008-09 financial year are the average of total households as at 30 June 2008 and as at 30 June 2009. <sup>b</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. <sup>c</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. QFRS Urban stations (Agency 1) are estimated to serve 87.6 per cent of Queensland's population. <sup>d</sup> WA: Data include reported turnouts by career and volunteer services for all areas of the State. <sup>e</sup> SA: MFS industrial action: 18/4/05 0800 hrs to 20/06/05 1800 hrs (no incident reports completed during this period). SA may be under reported because MFS data entry was not completed by the submission deadline. <sup>f</sup> Tas: Data include *all* fire brigades, both full-time and volunteer. <sup>g</sup> NT: Data are for NT Fire and Rescue Service permanent fire stations only.

Source: ABS (2009) *Australian Demographic Statistics* Table 21 Projected number of households, states and territories—at 30 June, Cat. no. 3101.0; State and Territory governments (unpublished); table 9A.4.

*Hazardous materials incidents*

Hazardous materials include paints, adhesives, solvents, fuels, soap, detergents, cosmetics, pharmaceuticals, cleaners, household chemicals, acids, farm and garden

chemicals, explosives, industrial chemicals, plastics raw materials, gases and many others. All of these materials have hazardous properties that must be controlled or contained. The materials must be effectively managed and cleaned up in an emergency, when the primary controls have failed.

Australian governments aim to minimise the adverse effects of hazardous materials incidents on the community to enhance public safety. There is increasing community expectation that governments will prevent hazardous materials incidents that threaten community safety and the environment and that fire service organisations will respond to these incidents with the minimum possible further impact on the environment.

Fire service organisations provide ‘Hazmat’ (hazardous material) services that contribute to achieving enhanced community safety and quality of life, business confidence and protection of the environment by:

- influencing government policy and legislation to ensure integration of prevention and response activities
- effective planning, prevention, safe response and recovery from incidents.

The prevention/mitigation, preparedness, response and recovery services provided and delivered by fire service organisations for hazardous materials incidents have the potential to avoid the need for downstream services. The use of downstream services may be undesirable because it reflects negative outcomes and/or involves significant social costs.

Nationally, fire service organisations responded to 3132 hazardous materials incidents in 2008-09 (table 9.3).

**Table 9.3 Number of hazardous materials incidents attended to by fire service organisations<sup>a, b, c</sup>**

|         | <i>NSW</i> | <i>Vic</i> | <i>Qld<sup>d</sup></i> | <i>WA</i> | <i>SA<sup>a</sup></i> | <i>Tas</i> | <i>ACT<sup>a</sup></i> | <i>NT</i> | <i>Aust</i> |
|---------|------------|------------|------------------------|-----------|-----------------------|------------|------------------------|-----------|-------------|
| 2004-05 | 782        | 1 714      | 296                    | 77        | 1 018                 | 22         | 77                     | 265       | 4 251       |
| 2005-06 | 848        | 1 245      | 288                    | 84        | 1 116                 | 30         | 62                     | 238       | 3 911       |
| 2006-07 | 971        | 1 637      | 324                    | 94        | 1 077                 | 36         | 127                    | 164       | 4 430       |
| 2007-08 | 777        | 1 448      | 415                    | 87        | 180                   | 26         | 179                    | 90        | 3 202       |
| 2008-09 | 911        | 910        | 430                    | 70        | 466                   | 31         | 130                    | 184       | 3 132       |

<sup>a</sup> Data may differ from those in table 9A.2 which include fires involving or releasing hazardous materials. Data also exclude minor fuel or other flammable liquid spills/leaks less than 200 litres except for SA for 2003-04 to 2006-07 and the ACT for all years. <sup>b</sup> Data represent incidents attended by FSOs. FSOs may not be notified of all hazardous materials incidents occurring in the community. <sup>c</sup> Coding of hazardous materials incidents is based on the judgment of the reporting fire officer shortly after the time of the incident. Some coding of incidents may be inaccurate due to the information available at the time of reporting. <sup>d</sup> Qld: Reporting of incident attendance by QFRS Rural Crews is incomplete due to voluntary reporting procedures.

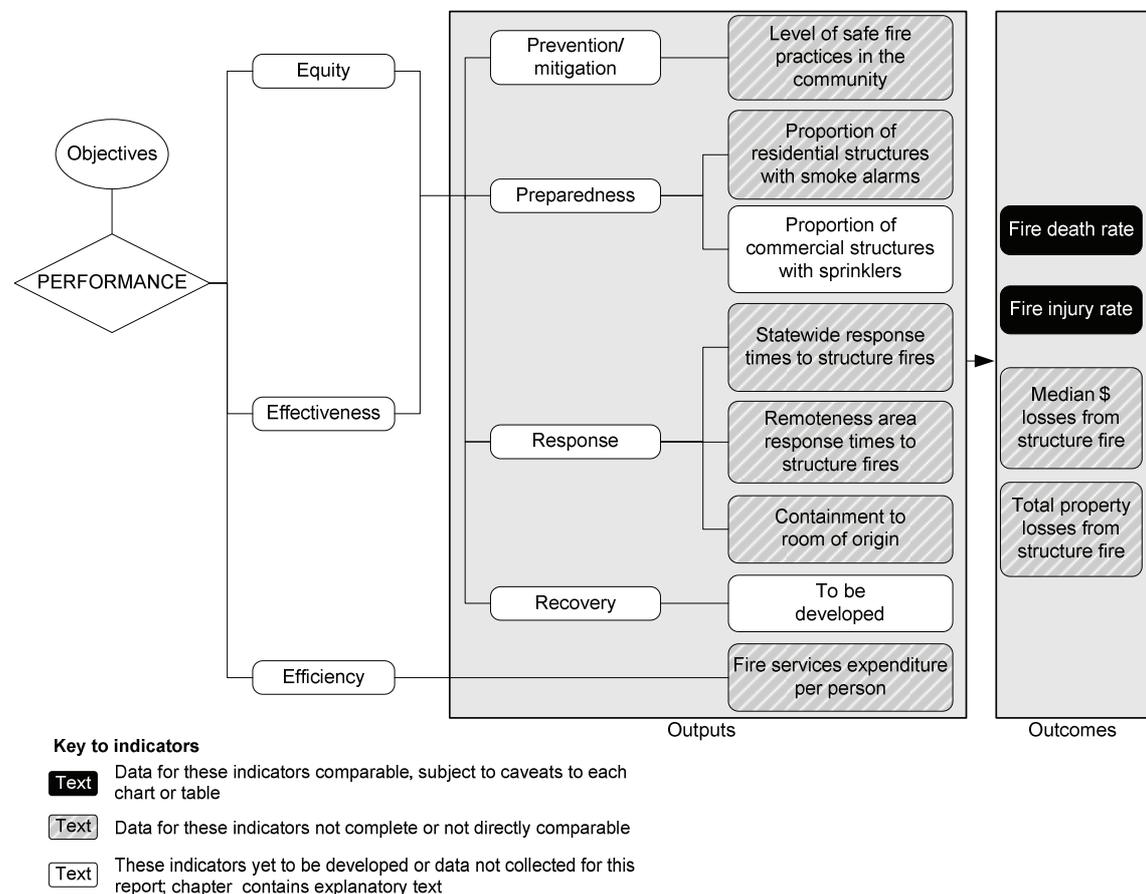
Source: State and Territory governments (unpublished).

In addition to fire service organisations, other agencies and organisations contribute to the emergency management and risk management of hazardous materials incidents. Different arrangements exist across jurisdictions (table 9A.42).

## Framework of performance indicators

Figure 9.6 presents the performance indicator framework for fire events, based on the general framework for all emergency events. Definitions of all indicators are provided in section 9.8.

Figure 9.6 Performance indicators for fire events



The performance indicator framework for fire events shows which data are comparable in the 2010 Report. For all data, supporting text and footnotes include caveats relevant to interpretation. Indicators that are considered comparable are only comparable subject to accompanying caveats. Chapter 1 discusses data comparability from a Report wide perspective (see section 1.6).

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Performance information is reported for a number of indicators. These results might have been influenced by factors such as differences in climatic and weather conditions, the socio-demographic and topographic composition of jurisdictions, property values and dwelling construction types. Importantly, jurisdictions also have diverse legislative fire protection requirements.

Results need to be interpreted with care because data might have been derived from small samples (for example, jurisdictions' fire safety measures surveys) or may be highly variable as a result of relatively small populations (as in Tasmania, the ACT and the NT).

The role of volunteers also needs to be considered when interpreting some indicators (such as fire service organisation expenditure per person). Volunteer personnel provide a substantial proportion of fire services (and emergency services more generally). While costs such as the training and equipment associated with volunteers are included in the cost of fire service provision, the labour costs of providing fire services would be much greater without volunteers (assuming these functions were still performed).

Information has not been reported for all fire events in each jurisdiction consistently over time. Reported results sometimes exclude rural fire events, so performance data are not always directly comparable across jurisdictions. Fire service organisations are cooperating to improve the standards for the collection of fire events data, which is evident by the inclusion of rural fire service organisations data by more jurisdictions in recent years. Differences in counting rules are expected to be minimised in future Reports.

## **Key performance indicator results**

### *Outputs*

Outputs are the actual services delivered (while outcomes are the impact of these services on the status of an individual or group) (see chapter 1, section 1.5). Outputs are measured by the 'level of safe fire practices in the community'; 'the proportion of residential structures with smoke alarms'; 'the proportion of commercial structures with sprinklers'; 'response times to structure fires'; 'containment to the room of origin'; and 'expenditure per person'.

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### *Equity and effectiveness — prevention/mitigation*

Equity and effectiveness indicators are linked for fire events. The equity dimension of prevention/mitigation indicators relates to whether specific parts of the community with special needs or difficulties in accessing government services benefit from fire services' activities. The effectiveness dimension of prevention/mitigation indicators relates to fire service organisations' ability to prevent fires and mitigate fire damage.

### *Level of safe fire practices in the community*

'Level of safe fire practices in the community' is an indicator of governments' objective to reduce the adverse effects of fires on the community and manage the risk of fires (box 9.5).

#### **Box 9.5 Level of safe fire practices in the community**

'Level of safe fire practices in the community' is defined as the number of households with household fire safety measures installed or prevention procedures followed, divided by the total number of households.

The higher the proportion of households with a fire safety measure installed or prevention measure followed, the less likely fires will occur or cause excessive damage. This indicator does not provide information on the degree to which practices under consideration contribute to fire prevention and mitigation.

Comparable data for this indicator were last reported by the ABS in 2001 (for the reference period February to November 2000). Since then data have been available inconsistently from various sources and are not directly comparable.

Selected fire risk management/mitigation strategies across jurisdictions are identified in table 9A.35. Nationally consistent data on household fire safety measures installed or prevention procedures followed have not been available since the ABS Population Survey Monitor (PSM) (ABS 2001) was discontinued (in November 2001). Since then, some jurisdictions have conducted their own surveys of household fire safety measures installed or prevention procedures followed. These surveys have focused on local priorities, for example, where there are already high levels of reported smoke alarms in homes, surveys may target other fire safety practices or measures. Different survey methodologies have also been used across jurisdictions. Such methodological differences between the surveys undertaken by the jurisdictions mean that nationally consistent data are not currently available.

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### *Equity and effectiveness — preparedness*

The equity dimension of preparedness indicators relates to whether specific parts of the community with special needs or difficulties in accessing government services benefit from fire services' activities. The effectiveness dimension of preparedness indicators relates to fire service organisations' ability to prepare, and assist the community to prepare, for fire events.

#### *Proportion of residential structures with smoke alarms*

The proportion of residential structures with smoke alarms is an indicator of governments' objective to reduce the adverse effects of fire on the community through preparedness measures (box 9.6).

**Box 9.6 Proportion of residential structures with smoke alarms**

'Proportion of residential structures with smoke alarms' is defined as the number of households with a smoke alarm installed, divided by the total number of households.

The higher the proportion of households with a smoke alarm installed, the greater is the likelihood that the adverse effects of fire will be avoided or reduced.

Data reported for this indicator are not complete and not directly comparable.

Current nationally comparable and complete time series data are not available on the proportion of residential structures with smoke alarms. Nationally consistent data for all jurisdictions were last available for the reference period February to November 2000, from the discontinued ABS PSM. Where available, subsequent data suggest increasing percentages of households have installed a smoke alarm/detector (table 9A.12). However, as these data are sourced from various jurisdictional collections they are not strictly comparable.

The most recent cross-sectional, nationally consistent data available relevant to the preparedness aspect of 'level of safe fire practices in the community' are for four jurisdictions on a variety of safety precautions (NSW, Victoria, Queensland and the ACT), for October 2007 (table 9A.11). Results indicated that across those four jurisdictions:

- 7.9 per cent of households had experienced a major emergency
- 46.5 per cent of households have an exit plan from dwelling
- 60.5 per cent of households have access to more than one mobile phone, and 89.3 per cent had a landline telephone connection (ABS 2008a).

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Related data for the same time period are available for WA (ABS 2008b).

*Proportion of commercial structures with sprinklers*

‘Proportion of commercial structures with sprinklers’ is an indicator of governments’ objective to prevent the adverse effects of fire on the community through preparedness measures (box 9.7).

**Box 9.7 Proportion of commercial structures with sprinklers**

‘Proportion of commercial structures with sprinklers’ is defined as the number of commercial structures with sprinklers installed, divided by the total number of commercial structures.

The higher the proportion of commercial structures with sprinklers installed, the greater is the likelihood that the adverse effects of fire are reduced. This indicator will not provide information on the operational status of sprinkler systems or their contribution to fire prevention.

Nationally comparable data are not available for this indicator.

*Equity and effectiveness — response*

The equity dimension of response indicators relates to whether specific parts of the community with special needs or difficulties in accessing government services benefit from fire services’ activities. The effectiveness dimension of response indicators relates to fire service organisations’ ability to respond to and suppress fires.

*Statewide, and remoteness area, response times to structure fires*

‘Statewide response times to structure fires’ and ‘remoteness area response times to structure fires’ are indicators of governments’ objective to reduce the adverse effects of fire on the community through timely response activities (box 9.8).

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**Box 9.8 Statewide and remoteness area response times to structure fires**

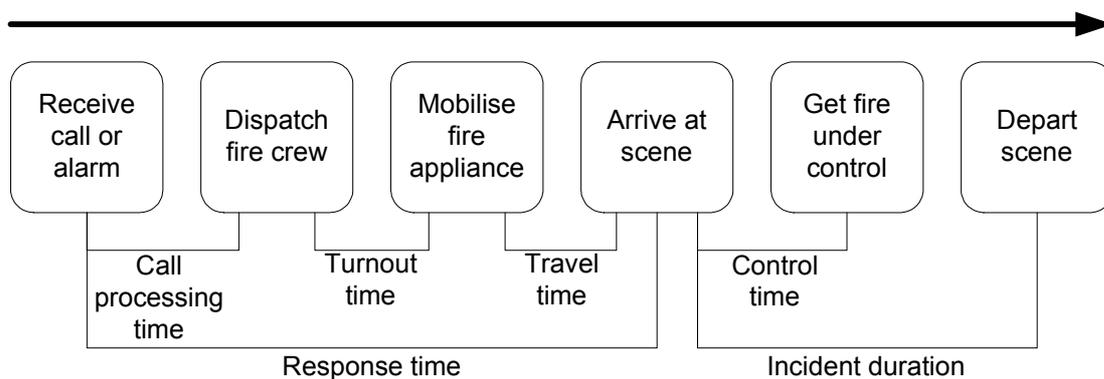
Statewide and remoteness area response times are defined as the times within which 50 per cent and 90 per cent of structure fires are responded to, measured by when the first fire appliance arrives at the scene.

Structure fires are those fires in housing and other buildings. The response time is defined as the interval between the receipt of the call at the communications centre and the arrival of the first appliance at the scene (that is, when the vehicle is stationary and the handbrake is applied). This and other intervals are illustrated in figure 9.7.

Percentile calculations are based on emergency responses to structure fire incidents and include responses by both permanent and volunteer brigades (unless otherwise noted in jurisdictions' caveats).

Shorter response times suggest the adverse effects on the community of emergencies requiring fire services are reduced. Data reported for this indicator are not directly comparable.

**Figure 9.7 Response time points and indicators for fire events**



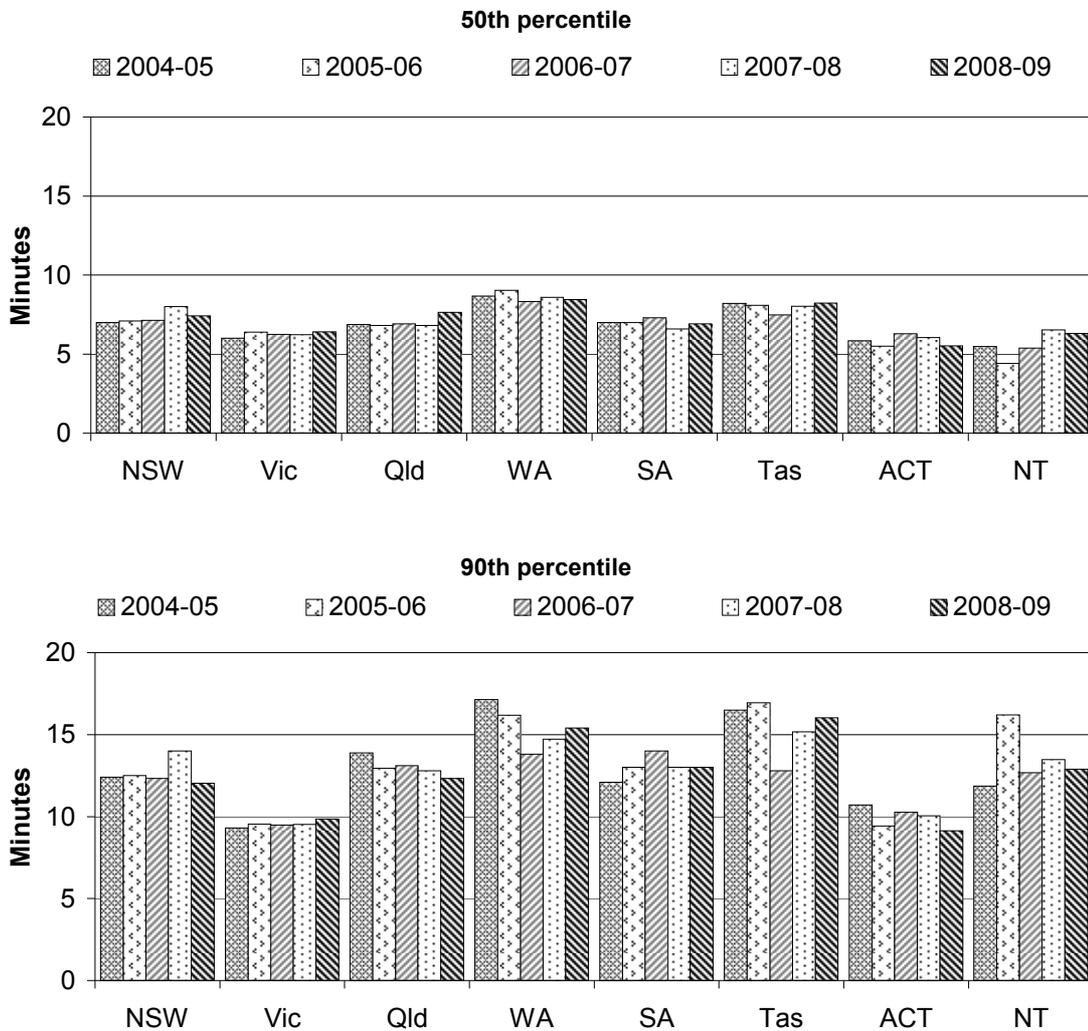
Response times need to be interpreted with caution because the data are not strictly comparable across jurisdictions. There are many factors that influence response times including:

- land area, and population size and density
- topography, road/transport infrastructure and traffic densities
- crewing configurations, response systems and processes, and travel distances.

In addition, reported response times can be affected by data collection systems. Jurisdictions use a combination of computer aided dispatch (CAD) and manual systems. The majority of data are retrieved from CAD systems, with manual systems providing approximately 10 per cent of data across all jurisdictions.

Response times vary between jurisdictions (figure 9.8).

Figure 9.8 **Response times to structure fires, state-wide<sup>a, b, c</sup>**

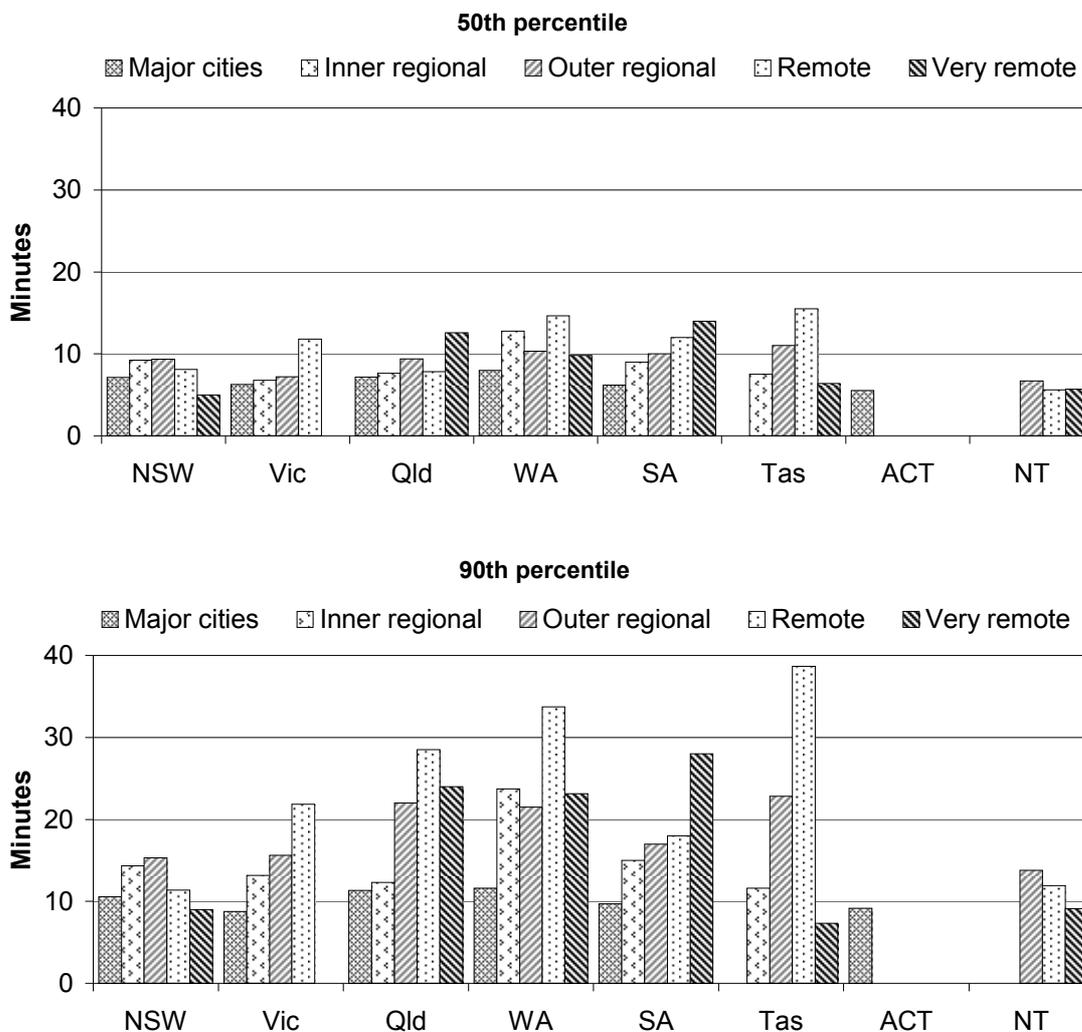


<sup>a</sup> Differences between jurisdictions in definitions of response times, geography, personnel mix, and system type (manual or CAD), affect the comparability of response times data. Data with incomplete time details are excluded from percentile calculations. <sup>b</sup> Qld: In 2008-09 90 incidents were unable to be classified by remoteness and have been removed from calculations. Response times for QFRS Rural brigade crews are not included as response times are not accurately recorded. Only primary exposure incidents are included. <sup>c</sup> WA: Response times for major cities, regional and remote areas are affected by volunteer data that, particularly in remote areas of the State, are affected by significant travel time to incidents.

Source: State and Territory governments (unpublished); table 9A.13.

Response times can be segmented into remoteness areas based on the ABS Australian Standard Geographical Classification (figure 9.9).

**Figure 9.9 Response times to structure fires, by remoteness area, 2008-09<sup>a, b, c, d, e, f, g, h</sup>**



<sup>a</sup> Differences between jurisdictions in definitions of response times, geography, personnel mix, and system type (manual or CAD), affect the comparability of response times data. Data with incomplete time details are excluded from percentile calculations. <sup>b</sup> Vic: There are no very remote areas in Victoria. <sup>c</sup> Qld: In 2008-09, 90 incidents were unable to be classified by remoteness and have been removed from calculations. Response times for QFRS Rural brigade crews are not included as response times are not accurately recorded. Only primary exposure incidents are included. <sup>d</sup> WA: Data include both career and volunteer responses. Response times for major cities, regional and remote areas are affected by volunteer data that, particularly in remote areas of the State, are affected by significant travel time to incidents. <sup>e</sup> SA: The Country Fire Service and the Metropolitan Fire Service do not have geocoded data. SA data include incident records with both alarm and arrival times. Excludes response times of 12 hours or more. The high 90<sup>th</sup> percentile result for the 'very remote' category is due to the small number of reported fires (11), with some fires having response time of 1 to 3 hours. <sup>g</sup> ACT: All responses were within the major city. <sup>h</sup> NT: NT Fire and Rescue Services respond to structure fires outside gazetted Emergency Response Areas in the NT when required impacting on some response times.

Source: State and Territory governments (unpublished); table 9A.14.

## Containment to room of origin

'Containment to room of origin' is an indicator of governments' objective to reduce the adverse effects of fire emergency events on the community by response and mitigation strategies (box 9.9).

### Box 9.9 Containment to room of origin

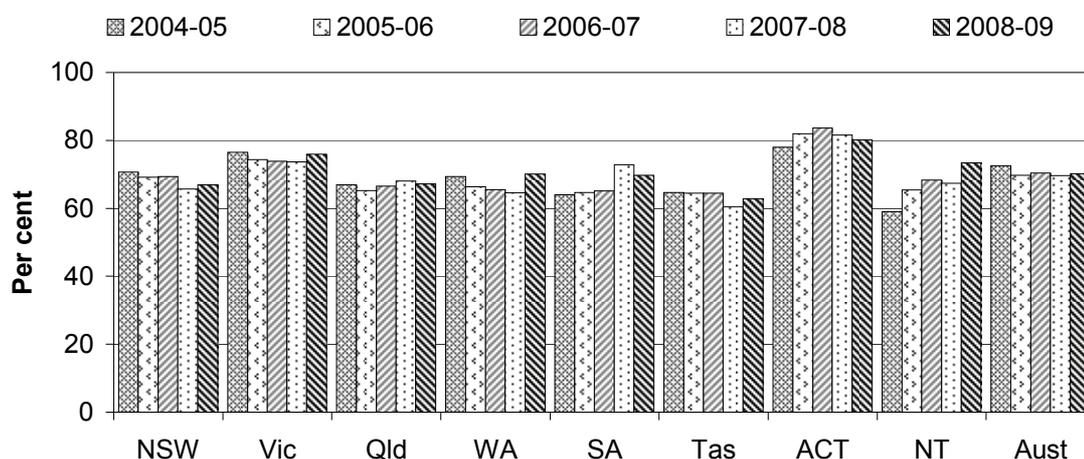
'Containment to room of origin' is defined as the number of structure fires contained to the object or room of origin divided by the total number of structure fires. Structure fires are those fires in housing and other buildings.

A higher proportion of structure fires contained to the object or room of origin is more desirable.

Data reported for this indicator are not directly comparable.

The proportion of fires, from all ignition types, contained to the object or room of origin varies between jurisdictions, and within jurisdictions over time (figure 9.10).

Figure 9.10 **Structure fires (all ignition types) contained to the object/room of origin**<sup>a, b, c, d, e, f, g</sup>



<sup>a</sup> NSW: The decline in the percentage of structure fires confined to the object or room of origin between 2006-07 and 2007-08 is artificial. The data for 2007-08 for the first time conform to the nationally agreed definition for this measure by including data from both the NSW RFS and the NSWFB. <sup>b</sup> Vic: Data are incomplete for 2005-06. <sup>c</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. <sup>d</sup> WA: Incidents where containment codes are not completed, and where the fire only affects the outside of a structure are excluded from containment calculations. <sup>e</sup> SA: Data exclude the Country Fire Service. <sup>f</sup> Tas: Data are for *all* fire brigades, both full-time and volunteer. <sup>g</sup> Aust: Average excludes rural fire service data for some years as per the jurisdictions' caveats.

Source: State and Territory governments (unpublished); table 9A.15.

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Nationally in 2008-09, the proportion of incendiary and suspicious structure fires contained to the object or room of origin was 56.9 per cent and for accidental structure fires 80.4 per cent. Nationally, rates have shown little movement over the 5 years to 2008-09. However, trends in individual jurisdictions' rates have varied (table 9A.15).

### *Equity and effectiveness — recovery*

The equity dimension of recovery indicators relates to whether specific parts of the community with special needs or difficulties in accessing government services benefit from recovery strategies, services and activities. The effectiveness dimension of recovery indicators relates to community restoration, and to communities' and fire service organisations' ability to return to a state of preparedness (box 9.10).

#### **Box 9.10 Performance indicators — recovery**

There are two elements to recovery: supporting communities in reconstruction of the physical infrastructure and restoration of emotional, social, economic, ecological and physical wellbeing following a fire event, and return of communities and fire service organisations to a state of preparedness after experiencing a fire event.

Recovery indicators are identified as a key development area for future Reports.

### *Efficiency*

#### *Fire service organisations' expenditure per person*

'Fire service organisations' expenditure per person' is a proxy indicator of the efficiency of governments in delivering emergency management services (box 9.11).

---

**Box 9.11 Fire service organisations' expenditure per person**

'Fire service organisations' expenditure per person' is defined as total fire service organisation expenditure per person in the population.

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 (response times) or less challenging fires.

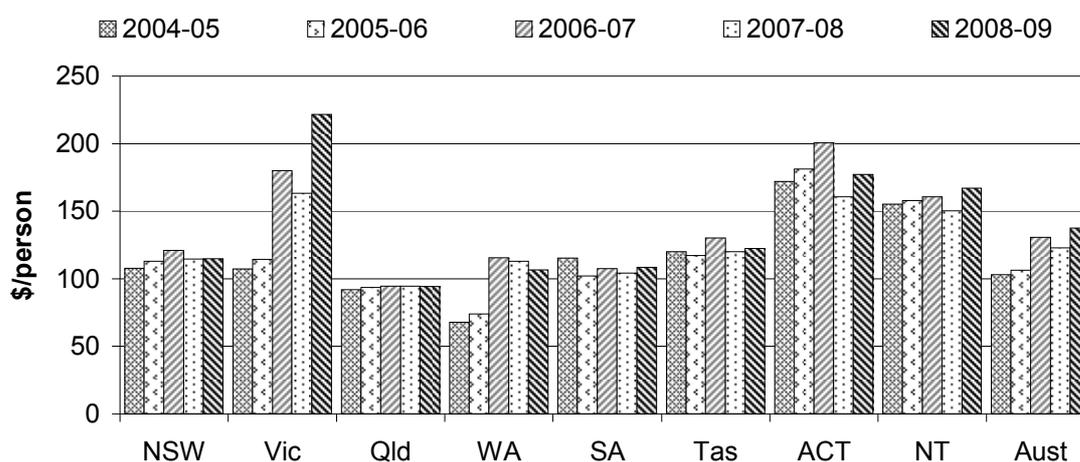
Expenditure per person is employed as a proxy for efficiency. Expenditure per fire is not used as a proxy for fire service organisation efficiency because an organisation that applies more resources to the prevention and preparedness components to reduce the number of fire incidents could erroneously appear to be less efficient.

Data reported for this indicator are not directly comparable.

Both total cost of fire service organisations and the cost to government of funding fire service organisations are reported. Both are reported, because revenue from other sources is significant for a number of jurisdictions.

Nationally, the total expenditure on fire service organisations per person in 2008-09 was approximately \$138 (figure 9.11).

**Figure 9.11 Fire service organisations expenditure per person (2008-09 dollars)<sup>a, b, c, d, e</sup>**

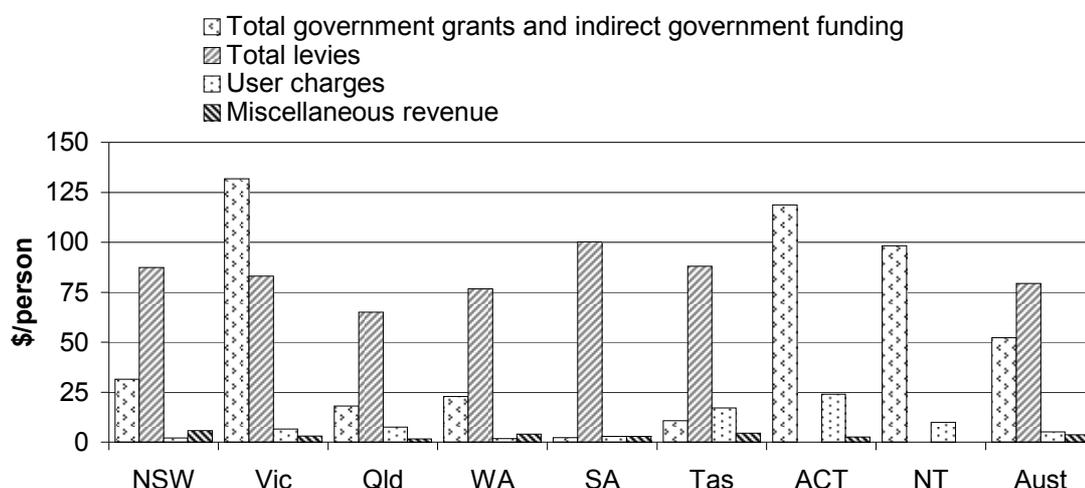


<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). Due to differences in definitions and counting rules, data reported may differ from those in agency annual reports and other sources. Total fire expenditure includes levies on insurance companies and property owners, user charges, fundraising and donations and indirect revenue. <sup>b</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December). <sup>c</sup> Vic: 2006-07 is the first year in which the Victorian data includes expenditure for the Department of Sustainability and Environment (DSE) and explains the marked increase for that year. 2008-09 data include a significant increase in expenditure due to emergency funding arising from the Black Saturday Bushfires. <sup>d</sup> WA: FESA provides a wide range of emergency services under an integrated management structure. Data for 2006-07 and subsequent years cannot be segregated by service and include SES and volunteer marine services as well as fire. Data for the Department of Environment and Conservation are not included. <sup>e</sup> ACT: The increase in 2005-06 was due to a significant upgrade of Emergency Services Communications systems and inclusion of Joint Emergency Services Training Costs. 2006-07 expenditure includes placement of an Ericson sky crane in the ACT as part of the National Aerial Firefighting Strategy.

Source: State and Territory governments (unpublished); table 9A.17.

Nationally, total government grants and indirect government funding of fire service organisations per person in 2008-09 was \$52.18. Levies per person in 2008-09 averaged \$79.36 nationally, with relatively minor contributions from user charges and miscellaneous revenue (table 9A.18). The major sources of funding varied considerably across jurisdictions (figure 9.12).

Figure 9.12 Fire service organisation funding per person, 2008-09<sup>a</sup>



Source: State and Territory governments (unpublished); table 9A.18.

## Outcomes

Outcomes are the impact of services on the status of an individual or group (while outputs are the actual services delivered) (chapter 1, section 1.5). These outcome indicators: ‘fire death rate’, ‘fire injury rate’, ‘median dollar losses from structure fire’ and ‘property losses from structure fire per person’, relate to the objective of ESOs to minimise the effect of fire on life, property and the environment. Caution should be exercised in interpreting data for some indicators, given the significant fluctuations from year to year, particularly for jurisdictions with relatively small populations.

### Fire death rate

‘Fire death rate’ is an indicator of governments’ objective to minimise the adverse effects of fire events on the community and enhance public safety (box 9.12).

#### Box 9.12 Fire death rate

‘Fire death rate’ is defined as the number of fire deaths per million people.

A low or decreasing fire death rate represents a better outcome.

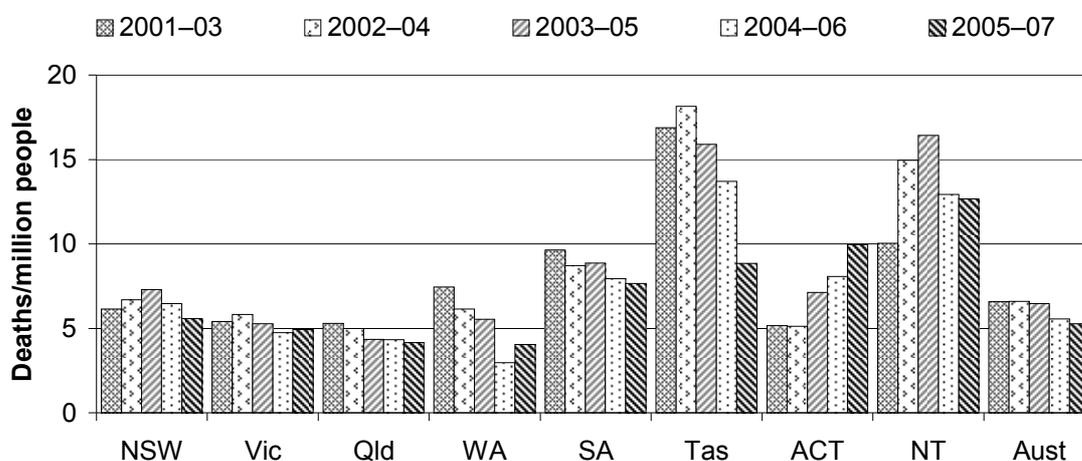
Fire deaths are identified from cause of death information supplied by the medical practitioner certifying the death or by a coroner. Fire deaths are reported by year of registration of death at State and Territory Registrars of Births, Deaths and Marriages.

Data reported for this indicator are comparable. Latest available data are for 2007.

Nationally, there were 98 fire deaths in 2007. Exposure to smoke, fire and flames accounted for 58 deaths, 15 fire deaths occurred from intentional self-harm by smoke, fire and flames and 3 deaths were due to assault. The remaining fire deaths were of undetermined intent (table 9A.6). The fire death rate was 4.7 deaths per million people in 2007.

Fire deaths data are volatile over time, because of the small number of fire deaths. To overcome data volatility, a three year weighted average fire death rate is reported (figure 9.13).

**Figure 9.13 Annual fire death rate, three year rolling average<sup>a, b, c, d, e</sup>**



<sup>a</sup> Fire deaths data may differ slightly from those published in earlier reports due to ABS revisions incorporated in the 2010 Report. Cells in table 9A.6 have been randomly adjusted to avoid the release of confidential data. Where necessary, totals have been adjusted separately to the component cells and totals are not necessarily the sum of the component cells. <sup>b</sup> Fire deaths are coded to the ICD and Related Health Problems Revision 10 (ICD-10) and include ICD fire death codes X00-X09 plus X76, X97 and Y26. Fire deaths data are reported by the State or Territory of the deceased's usual residence, and by the year the death was registered. <sup>c</sup> The small number of deaths means it is difficult to establish patterns and provide detailed analysis. <sup>d</sup> Australian totals include Other Territories. <sup>e</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Calendar year population estimates are the midpoint estimate of the relevant calendar year (that is, as at 30 June).

Source: ABS (various years) *Causes of Death, Australia*, Cat. no. 3303.0 (unpublished); table 9A.6.

Nationally, the three year weighted average fire death rate was 5.3 per million people for 2005–07.

### *Fire injury rate*

‘Fire injury rate’ is an indicator of governments’ objective to minimise the adverse effects of fire events on the community and enhance public safety (box 9.13).

### Box 9.13 Fire injury rate

'Fire injury rate' is defined as the number of fire injuries per 100 000 people.

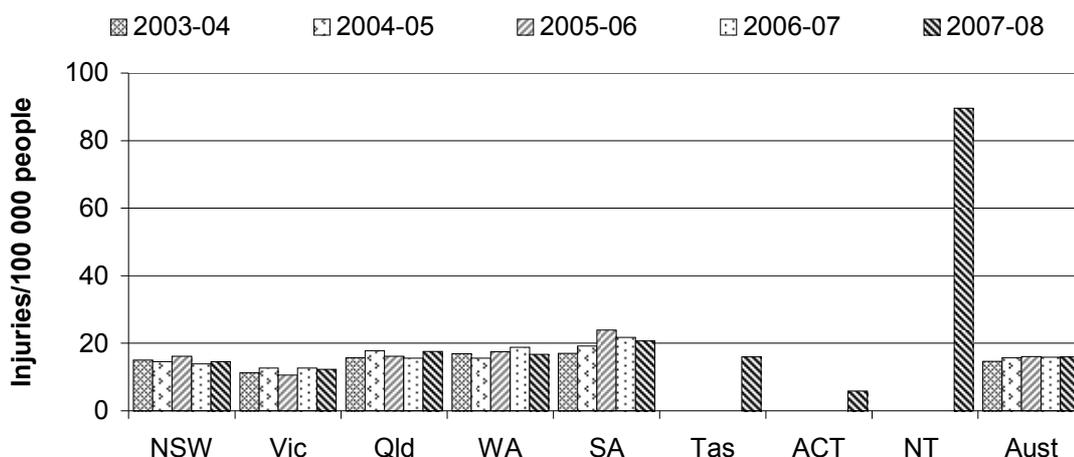
A lower fire injury rate represents a better outcome.

Fire injuries are represented by hospital admissions (excluding emergency department non-admitted casualties) and are reported by the State or Territory where the admission occurs. A person injured by fire may be treated more than once, and in more than one State or Territory. Deaths from fire injuries after hospitalisation have been removed from the fire injuries data for the time series because these are counted in the fire death rate.

Data reported for this indicator are comparable. Latest available data are for 2007-08.

Nationally in 2007-08, there were 3378 hospital admissions due to fire injury (table 9A.7) and the rate per 100 000 people was 15.9 (figure 9.14).

Figure 9.14 Annual fire injury rate<sup>a, b, c</sup>



<sup>a</sup> Fire injuries are coded to the ICD and Related Health Problems Revision 10 (ICD-10) and include ICD fire injury codes X00-X09 plus X76, X97 and Y26. Fire injuries are reported by the State or Territory where the injury is treated. Excludes secondary fires resulting from explosions, transport incidents, and emergency department non-admitted casualties. <sup>b</sup> Tas, ACT and NT: Data for 2003-04 to 2006-07 are not available. <sup>c</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December).

Source: Australian Institute of Health and Welfare (AIHW), *National Hospital Morbidity Database* (unpublished); table 9A.7.

Fire injury rates are volatile over time, given the small number of fire injuries. To overcome data volatility, three year weighted average fire injury rates are reported

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in the data attachment table for periods and jurisdictions with published data (table 9A.7).

### *Losses from structure fire*

‘Median dollar losses from structure fire’ (box 9.14) and ‘property loss from structure fire per person’ (box 9.15) are indicators of the effect of fire on property.

#### **Box 9.14 Median dollar losses from structure fire**

‘Median dollar losses from structure fire’ is defined as the median dollar losses from structure fire (a fire in a house or other building), adjusted for inflation. The median is the middle number in a sequence and is regarded as a more appropriate measure of ‘typical’ losses than the average (or mean) loss.

Lower or decreasing median dollar losses represent a better outcome.

Data reported for this indicator are not directly comparable.

#### **Box 9.15 Property losses from structure fire per person**

‘Property losses from structure fire per person’ is defined as the property loss from structure fire (a fire in housing or other building) per person, adjusted for inflation.

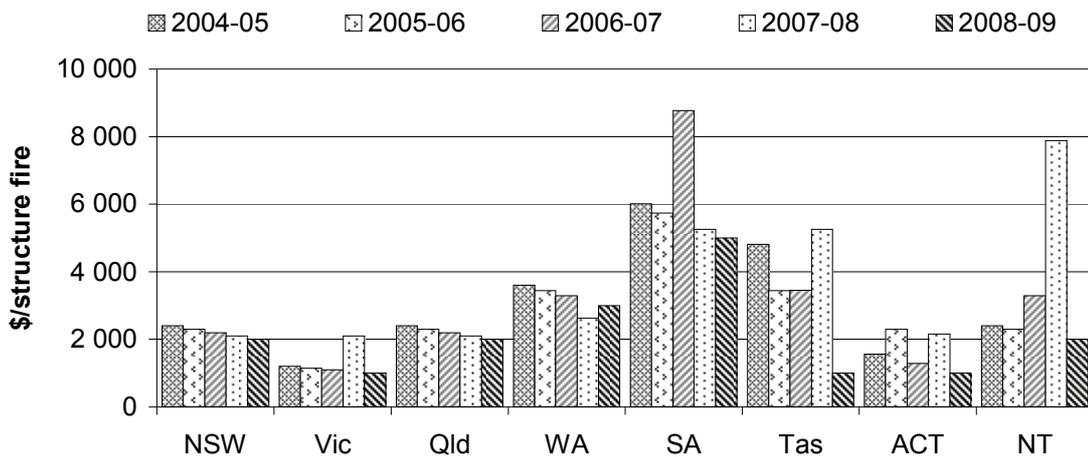
Lower or decreasing total property losses from structure fire per person represent better outcomes.

Data reported for this indicator are not directly comparable.

These data (expressed in real terms) have not been adjusted for jurisdictional differences in the costs and values of various types of building. Further, the method of valuing property loss from fire varies across jurisdictions.

The median dollar loss varies across jurisdictions and over time. No clear national trends are evident (figure 9.15).

Figure 9.15 **Median dollar loss per structure fire (2008-09 dollars)**<sup>a, b, c, d, e, f</sup>



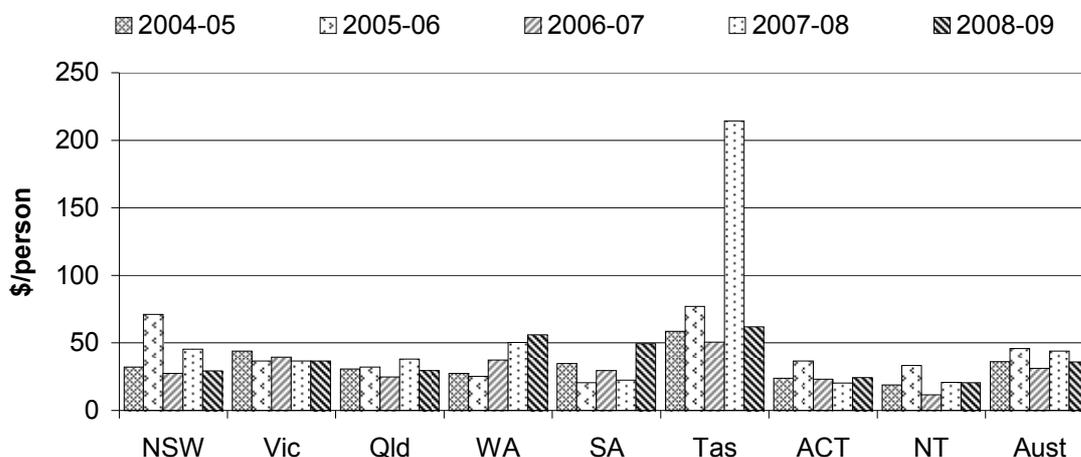
<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). Estimates have not been validated by the insurance industry, or adjusted for interstate valuation differences. <sup>b</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. 2008-09 data do not include loss arising from the Black Saturday Bushfires in 2009. <sup>c</sup> Qld: Accurate identification of incidents attended by both QFRS Urban and Rural crews is not possible at this stage. Reporting of incident attendance by QFRS Rural Crews is incomplete due to voluntary reporting procedures. <sup>d</sup> SA: 2006-07 data may be under reported because MFS data entry was not completed by the submission deadline. <sup>e</sup> WA: Dollar losses are based on estimated values provided by firefighters. <sup>f</sup> Tas: data are for *all* fire brigades, both full time and volunteer. Property loss does not include losses as a result of vegetation fires.

Source: State and Territory governments (unpublished); table 9A.8.

The property loss per person (expressed in real terms) has fluctuated over time in all jurisdictions (figure 9.16).

Data for the three year average property loss per person are also available in the attachment tables (table 9A.9).

**Figure 9.16 Property loss from structure fire per person (2008-09 dollars)<sup>a, b, c, d, e, f, g, h, i, j</sup>**



<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). Estimates have not been validated by the insurance industry or adjusted for interstate valuation differences. <sup>b</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December). <sup>c</sup> NSW: Some structure fires resulted in direct dollar loss in excess of \$1 million each. In 2004-05 there were 17 such structure fires; 2005-06, 32 with five of these at \$10+ million each and one at \$89 million; 2006-07, 15 at \$1+ million each; 2007-08, 19 at \$1+ million each with four at \$5+ million each and one of \$100 million. <sup>d</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. 2008-09 data do not include loss arising from the Black Saturday Bushfires in 2009. <sup>e</sup> Qld: Accurate identification of incidents attended by both QFRS Urban and Rural crews is not possible at this stage. Reporting of incident attendance by QFRS Rural Crews is incomplete due to voluntary reporting procedures. QFRS Urban stations (Agency 1) are estimated to serve 87.6 per cent of Queensland's population. In 2007-08 one major incident accounted for \$41m of the total property loss value. <sup>f</sup> WA: Dollar losses are based on estimated values provided by firefighters. <sup>g</sup> SA: 2006-07 data include a \$15 million fire accounting for 35 per cent of the reported dollar loss that year. Data entry for 2006-07 reported property loss from structure fire was incomplete. <sup>h</sup> Tas: Data are for all fire brigades, both full time and volunteer. For 2007-08, data include two significant fires where the property loss was \$60 million and \$20 million respectively. Property loss does not include losses as a result of vegetation fires. Due to industrial action 90 incident reports are incomplete in 2008-09. <sup>i</sup> Tas, ACT and NT: Due to small population sizes, rates in these jurisdictions may be affected significantly by single large-loss events. <sup>j</sup> Average for Australia excludes rural fire service data for some years as per the jurisdictions' caveats.

Source: State and Territory governments (unpublished); table 9A.9.

## 9.4 Road crash rescue events

A road crash rescue event is an incident involving a motor vehicle and the presumption that assistance is required from ESOs.

A primary aim of governments is to reduce death and injury and the personal suffering and economic costs of road crashes. Achieving this aim is challenging and complex. It requires a range of activities, including design and maintenance of vehicles and roads, driver training, road user education, enforcement of road rules,

emergency response and health care in the event of an incident. The agencies involved in this include emergency services organisations, police services, road and transport authorities, health and community services and others.

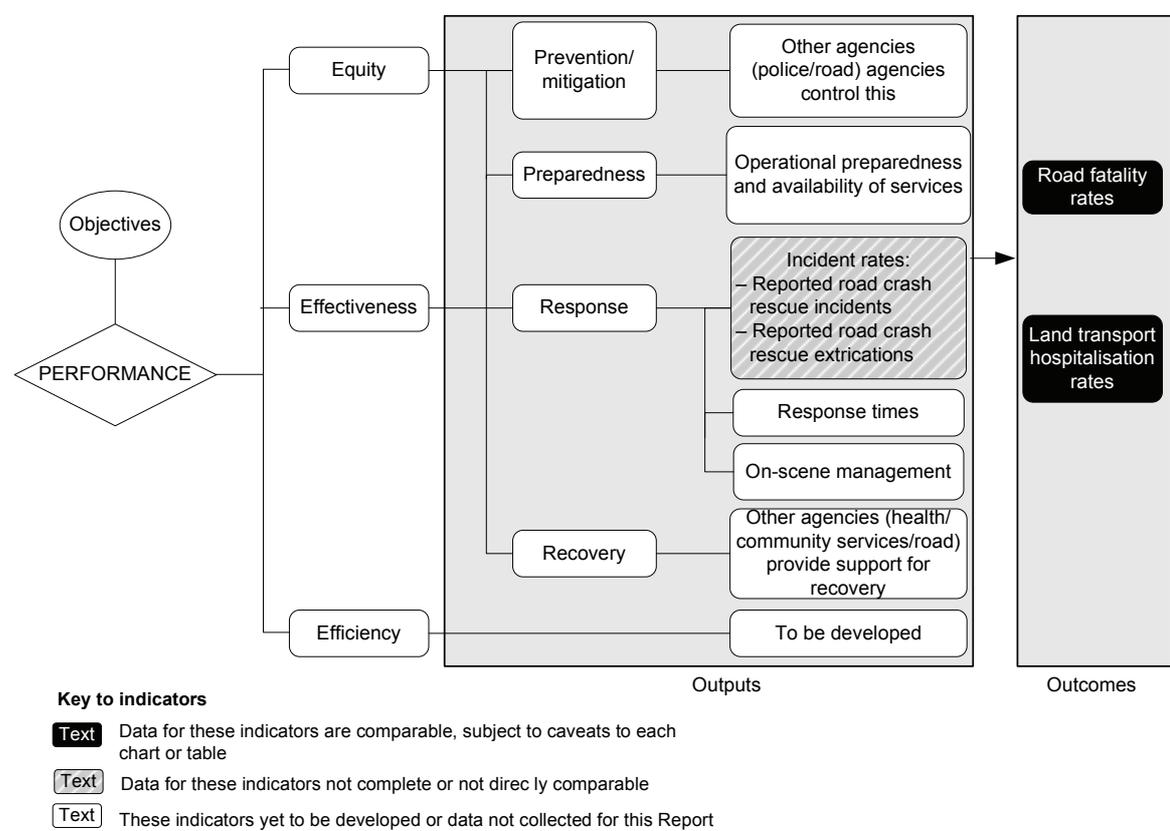
Emergency service organisations provide services that contribute to governments' aims through the provision of effective and efficient medical and rescue services. These rescue services are provided by a diverse range of ESOs; nationally, road crash rescue services are provided by over 20 organisations (table 9A.41).

Some aspects of police activities that are relevant to road crash rescue are addressed in chapter 6, section 6.6.

### Framework of performance indicators

An updated performance indicator framework is presented in this Report (figure 9.17).

Figure 9.17 Performance indicators for road crash rescue events



The framework represents the key elements of a road crash rescue reporting framework. A number of complex issues require further work to develop indicator

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definitions and identify key measures and data sources. This work will be undertaken progressively for future editions of the Report.

The focus of reporting in this section of the Report is on the preparedness, response and efficiency indicators for road crash rescue events. Related road safety reporting is included in the Police services chapter under road safety (chapter 6, section 6.6). Data relating to patient transportation are incorporated into ambulance events reporting later in this chapter (section 9.5).

#### *Equity and effectiveness — prevention/mitigation*

The prevention/mitigation and recovery elements of the performance framework for road crash rescue are largely controlled by agencies other than the ESOs covered by this chapter; for example, prevention of road crashes through community safety campaigns, regulation and law enforcement is predominately a police activity. Agencies involved in recovery range from traffic authorities reopening roadways, to the health and community sectors for rehabilitation of patients.

The National Road Safety Strategy (NRSS), and related Action Plan (ATC 2000 and 2009) provide the framework and priority areas for coordinating the road safety initiatives of Australian, State, Territory and local governments, as well as other major organisations with road safety responsibilities.

#### *Equity and effectiveness — preparedness*

‘Operational preparedness and availability of services’ indicators are linked to the NRSS and aim to improve trauma, medical and retrieval services. Indicators will focus on the number and availability of appropriately trained and authorised personnel (staff and volunteers), and location of facilities. Definitions and data are yet to be developed for reporting on a nationally comparable basis (box 9.16).

#### **Box 9.16 Operational preparedness and availability of services**

Specific measures of operational preparedness and availability of services are yet to be defined.

This indicator and associated measures are currently under development.

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### *Equity and Effectiveness — response*

The effectiveness dimension of response indicators relates to emergency service organisations' ability to respond to road crash rescue events.

#### *Reported road crash rescue incidents and extrications*

'Reported road crash rescue incidents and extrications' is an indicator of governments' objective to reduce the adverse effects of road incidents on the community through appropriate response activities (box 9.17).

#### **Box 9.17 Reported road crash rescue incidents and extrications**

'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.

'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.

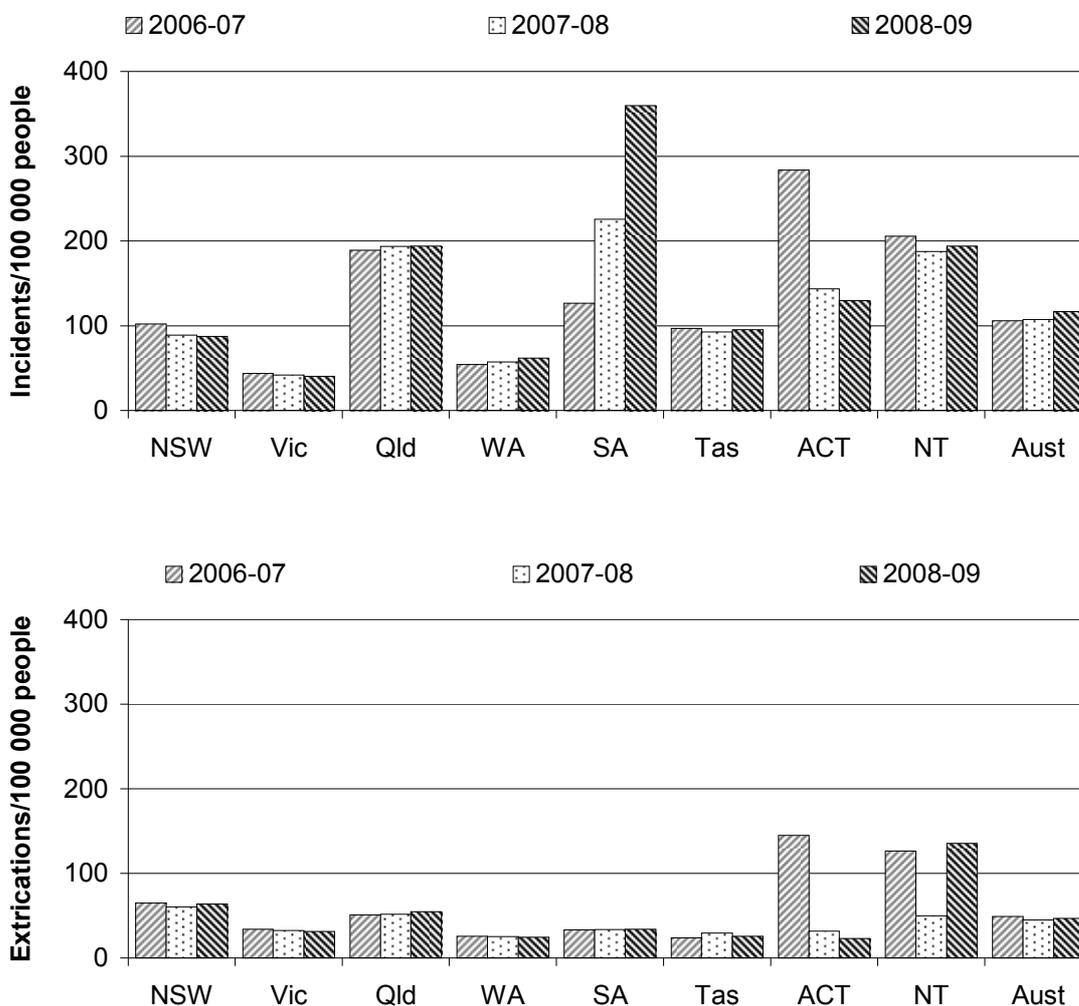
A lower or decreasing number of reported road crash rescue incidents and extrications, adjusted for population, indicates a better community outcome. Higher or increasing proportions of reported road crash rescue incidents and extrications indicate higher emergency response workloads.

Data for this indicator are not directly comparable.

Nationally, there were 25 281 road crash rescue incidents in 2008-09, or 116.8 incidents per 100 000 people (table 9A.19), and 10 134 (or 40.0 per cent) of reported incidents required an extrication response (table 9A.20).

Data for road crash rescue incidents and extrications per 100 000 people display some marked variations across jurisdictions — this may reflect different collection methods and the lack of comparability between jurisdictions. Collection methods are improving over time, making trend analysis difficult. Only the three most recent years are presented in figure 9.18.

Figure 9.18 **Reported road crash rescue incidents and extrications**<sup>a, b, c, d, e</sup>



<sup>a</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. <sup>b</sup> WA: Data include road crash rescue incidents attended by fire services and SES; Extrications data include those performed by career and volunteer fire services and SES volunteers. <sup>c</sup> Tas: Data include responses by fire services, ambulance services and SES. <sup>d</sup> ACT: Data were refined in 2007-08 to provide a more accurate reflection of road crash rescue incidents and extrications. <sup>e</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased Estimated ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December).

Source: State and Territory governments (unpublished); tables 9A.19-20.

Data for earlier years are reported in the attachment tables. Reported road crash rescue incidents per 100 000 people are reported in attachment table 9A.19. Extrications per 100 000 people, per 100 000 registered vehicles and per million vehicle kilometres travelled are reported in attachment table 9A.20.

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### *Response times*

Response times are an important element of a comprehensive road crash rescue framework. Timely, reliable, effective and safe emergency response services reduce the negative impacts of road crash events. Definitions and data are yet to be developed for reporting on a nationally comparable basis (box 9.18).

#### **Box 9.18 Response times**

Specific response times indicators and associated measures for road crash rescue are currently under development.

### *On-scene management*

On-scene management (involving coordination of emergency response personnel, traffic control and securing the scene to prevent new crashes, clean up of hazardous materials, coordination of public cooperation, etc.) is an important factor in achieving the NRSS outcomes of improved trauma, medical and retrieval services (box 9.19).

#### **Box 9.19 On-scene management**

On-scene management indicators and associated measures are currently under development.

### *Equity and effectiveness — recovery*

The recovery element of the performance framework for road crash rescue is largely controlled by agencies other than the ESOs reporting in this chapter.

Complex interface and cross-cutting issues are associated with recovery indicators. For example the level of recovery from injury after major road emergency incidents may be influenced by a number of services including: ambulance, hospital, community and primary health care and disability services.

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## *Efficiency*

The Steering Committee has identified efficiency indicators as an important element of the performance indicator framework (chapter 1, section 1.5) (box 9.20).

### **Box 9.20 Efficiency**

Appropriate efficiency indicators, and associated data sources, for road crash rescue events are yet to be developed.

## **Outcomes**

Outcomes are the impact of services on the status of an individual or group (while outputs are the actual services delivered) (see chapter 1, section 1.5).

### *Road fatality rates and land transport hospitalisation rates*

Road fatality rates and land transport hospitalisation rates are indicators of governments' objective to reduce death and injury from road crash incidents. Many agencies and factors affect these outcomes. Relevant data for road deaths and land transport hospitalisations are reported in chapter 6 (section 6.6). Nationally in 2007-08, road transport incidents accounted for 1493 deaths and 36 815 hospitalisations (tables 6A.38-39). Nationally road fatalities increased to 1556 in 2008-09 (table 6A.38).

## **9.5 Ambulance events**

This section provides information on the performance of ESOs in providing services for ambulance events and in preparing the community to respond to emergencies. Ambulance events are incidents that result in demand for ambulance services to respond, including: emergency and non-emergency pre-hospital and out-of-hospital patient care; transport; inter-hospital patient transport; specialised rescue services; ambulance services to multi-casualty events; and capacity building for emergencies.

### **Emergency management services for ambulance events**

Ambulance service organisations are the primary agencies involved in providing services for ambulance events. In a limited number of cases, other organisations provide services such as medical transport for emergencies (table 9A.41). The

descriptive information provided below on funding, incidents and human resources are for ambulance service organisations only. Ambulance assets are reported in table 9A.26.

Ambulance data reported in this chapter cover the principal providers of State and Territory ambulance services; data do not include private providers and other outsourced arrangements.

### *Revenue*

Total revenue of ambulance service organisations covered in this Report was approximately \$1.98 billion in 2008-09. Nationally, revenue (expressed in real terms) increased each year from 2004-05 to 2008-09, with an average annual growth rate of 6.0 per cent (table 9.4).

**Table 9.4 Revenue of ambulance service organisations (2008-09 dollars) (\$ million)<sup>a</sup>**

|         | <i>NSW</i> | <i>Vic</i> | <i>Qld</i> | <i>WA</i> | <i>SA</i> | <i>Tas</i> | <i>ACT</i> | <i>NT</i> | <i>Aust<sup>b</sup></i> |
|---------|------------|------------|------------|-----------|-----------|------------|------------|-----------|-------------------------|
| 2004-05 | 453.6      | 449.7      | 359.1      | 111.5     | 128.0     | 28.5       | 19.3       | 18.1      | 1 567.9                 |
| 2005-06 | 488.6      | 478.5      | 376.7      | 113.3     | 128.3     | 30.9       | 22.5       | 18.2      | 1 657.0                 |
| 2006-07 | 510.9      | 468.8      | 405.1      | 117.6     | 131.3     | 33.1       | 20.7       | 19.4      | 1 707.0                 |
| 2007-08 | 570.8      | 491.7      | 430.5      | 124.9     | 144.7     | 34.9       | 22.4       | 20.8      | 1 840.7                 |
| 2008-09 | 616.7      | 511.1      | 460.7      | 120.8     | 178.2     | 42.4       | 23.1       | 22.0      | 1 975.8                 |

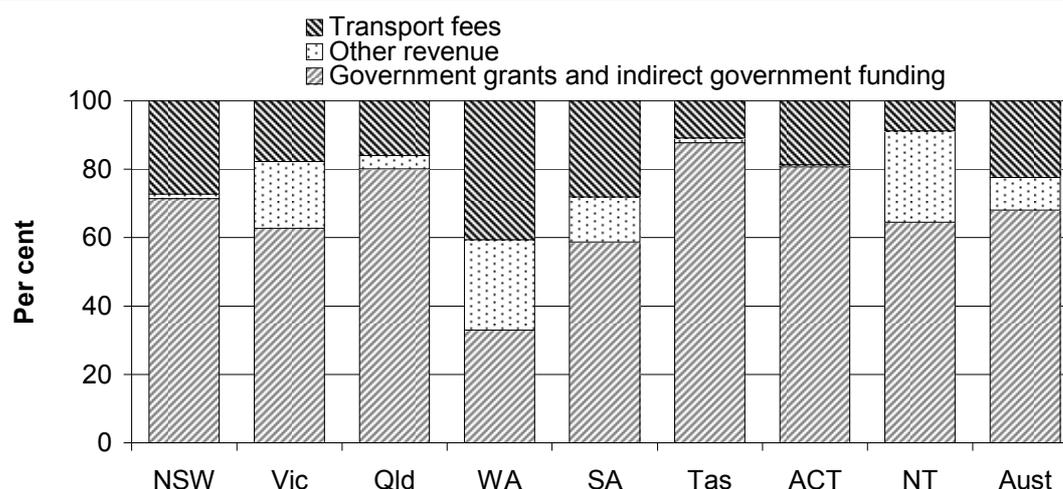
<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). Due to differences in definitions and counting rules, data reported may differ from data in agency annual reports and other sources. <sup>b</sup> Totals may not sum due to rounding.

Source: State and Territory governments (unpublished); table 9A.22.

Ambulance service organisations are funded by a variety of sources, with non-government sources making a significant contribution.

The primary sources of revenue across all jurisdictions in 2008-09 were grants from State and Territory governments, transport fees (from government hospitals, private citizens and insurance) and other revenue (subscriptions, donations and miscellaneous revenue) (figure 9.19).

**Figure 9.19 Major sources of ambulance service organisation revenue, 2008-09<sup>a</sup>**



<sup>a</sup> Other revenue is equal to the sum of subscriptions, donations and miscellaneous revenue.

Source: State and Territory governments (unpublished); table 9A.22.

Nationally, 68.1 per cent of funding for ambulance service organisations in 2008-09 was provided as direct government revenue and indirect government revenue, with the remainder sourced from transport fees and other revenue (table 9A.22).

### *Incidents*

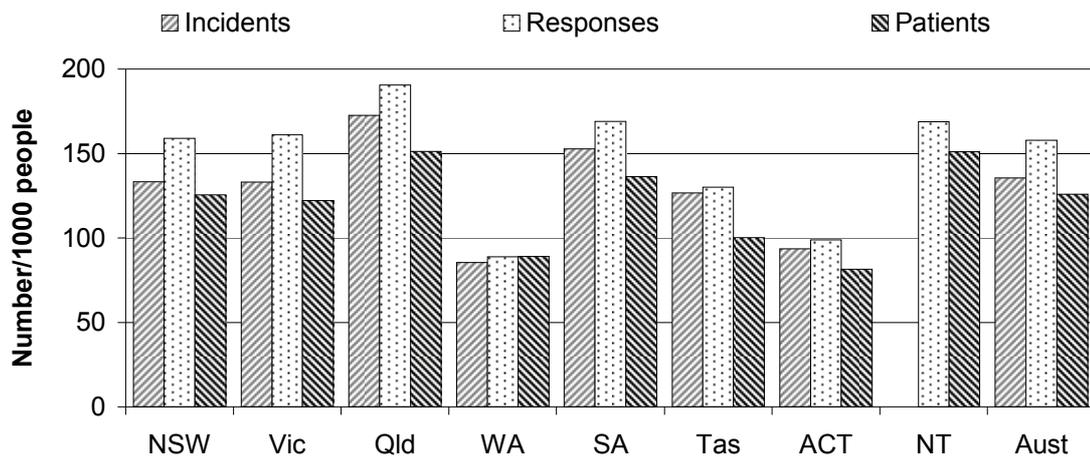
Ambulance service organisations attended 2.93 million incidents nationally in 2008-09 (excluding the NT) (table 9A.23). Most of these were emergency incidents (39.2 per cent), followed by non-emergency incidents (34.5 per cent) and urgent incidents (26.1 per cent).

### *Ambulance incidents, responses and patients per 1000 people*

The numbers of incidents, responses and patients are interrelated. Multiple responses/vehicles may be sent to a single incident, and there may be more than one patient per incident. There may also be responses to incidents that do not have people requiring treatment and/or transport.

Nationally, there were approximately 158 responses per 1000 people, and 126 patients per 1000 people, in 2008-09 (figure 9.20).

Figure 9.20 **Reported ambulance incidents, responses and patients, 2008-09**<sup>a, b, c, d, e</sup>



<sup>a</sup> An incident is an event that results in a demand for ambulance resources to respond. An ambulance response is a vehicle or vehicles sent to an incident. There may be multiple responses/vehicles sent to a single incident. A patient is someone assessed, treated or transported by the ambulance service. <sup>b</sup> Vic: Incidents and responses are for road ambulances only. <sup>c</sup> WA: Does not have a policy of automatically dispatching more than one unit to an incident unless advised of more than one patient. Separate statistics are not kept for incidents and responses. Numbers shown under incidents are cases. <sup>d</sup> NT: A response is counted as an incident. Data for incidents are not available and are not included in the rate for Australia. <sup>e</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December).

Source: State and Territory governments (unpublished); table 9A.23.

### *Triage category by ambulance transport rate*

Emergency department presentation rates and demand for ambulance services are closely linked. The majority of people who are acutely ill or injured and need to attend a hospital emergency department will call the ambulance service to provide immediate pre-hospital care and then take them to hospital.

The National Triage Scale category allocated to a patient on arrival at the emergency department is a nationally comparable measure of how acutely ill the patient is, ranging from triage category 1 (for a patient in immediate need of attention) to triage category 5 (for patients who have a presenting condition that indicates they can safely wait for 2 hours to see a doctor) (chapter 10, box 10.4).

Nationally, in 2007-08 (later data are not available), 84.0 per cent of emergency department patients in triage category 1 arrived by ambulance, air ambulance or helicopter rescue services, and 47.9 per cent of patients in triage category 2. For all triage categories, 23.2 per cent of patients arrived by ambulance, air ambulance or helicopter rescue services (table 9.5).

**Table 9.5 Emergency department patients who arrived by ambulance, air ambulance or helicopter rescue services, by triage category 2007-08 (per cent)<sup>a</sup>**

| <i>Triage category</i> | <i>NSW</i> | <i>Vic</i> | <i>Qld</i> | <i>WA</i> | <i>SA</i> | <i>Tas</i> | <i>ACT</i> | <i>NT</i> | <i>Aust</i> |
|------------------------|------------|------------|------------|-----------|-----------|------------|------------|-----------|-------------|
| 1 — Resuscitation      | 81.9       | 83.3       | 88.5       | 83.7      | 85.2      | 88.8       | 81.1       | 75.6      | 84.0        |
| 2 — Emergency          | 47.8       | 46.9       | 54.8       | 40.3      | 49.3      | 53.8       | 38.1       | 38.6      | 47.9        |
| 3 — Urgent             | 33.8       | 34.0       | 39.0       | 25.1      | 35.8      | 35.3       | 27.7       | 23.6      | 33.9        |
| 4 — Semi-urgent        | 19.1       | 14.2       | 17.8       | 9.4       | 14.4      | 14.1       | 10.4       | 10.7      | 15.8        |
| 5 — Non-urgent         | 5.8        | 2.5        | 4.6        | 2.7       | 6.3       | 2.7        | 2.5        | 5.2       | 4.4         |
| <b>Total</b>           | 24.1       | 21.1       | 28.3       | 17.0      | 26.0      | 23.6       | 17.4       | 15.8      | 23.2        |

<sup>a</sup> Data represent the 78 per cent of emergency department presentations for which patient-level data were available. Data include all presentations.

Source: AIHW (2009) *Australian Hospital Statistics*, National Non-admitted Patient Emergency Department Care Database.

### *Aero-medical arrangements in Australia*

Arrangements for air ambulance or aero-medical services vary throughout Australia. Some of these arrangements involve services provided entirely by State and Territory ambulance services or by sub-contractors to these services, while others are provided completely externally to the State ambulance services. Some arrangements involve a mix of the two, where external organisations provide aircraft and/or air crew while ambulance service organisations provide paramedics to staff the air ambulances. The result is that the revenue (funding) and expenditure for air ambulance services are included in ambulance reports from some jurisdictions while in other jurisdictions none of these costs are included.

The Australian Government also provides some capital and recurrent funding for aero-medical service provision through the Royal Flying Doctor Service, mainly for primary health services to rural and remote communities. In some jurisdictions, these same aircraft are used to transfer patients requiring higher level care.

It is not possible for ambulance service organisations to provide full activity and financial data for air ambulance services in Australia. The Council of Ambulance Authorities (CAA) has tried to identify, as comprehensively as possible, air ambulance services provided by ambulance service organisations directly, or by other service providers such as the Royal Flying Doctor Service. In doing so, the

CAA has counted the total number of aircraft available in each jurisdiction during 2008-09, and the component of expenditure that is funded through ambulance service expenditure (that is, the expenditure figures do not represent total expenditure, only that component funded through ambulance services) (table 9.6).

**Table 9.6 Aero medical resources and expenditure, 2008-09<sup>a, b, c</sup>**

|                                     | <i>NSW</i> | <i>Vic</i> | <i>Qld</i> | <i>WA</i> | <i>SA</i> | <i>Tas</i> | <i>ACT</i> | <i>NT</i> | <i>Aust</i> |
|-------------------------------------|------------|------------|------------|-----------|-----------|------------|------------|-----------|-------------|
| Operated by State Ambulance Service |            |            |            |           |           |            |            |           |             |
| Fixed wing                          | 4          | 4          | –          | –         | –         | 1          | –          | –         | 9           |
| Helicopter                          | 5          | 4          | –          | –         | –         | –          | –          | –         | 9           |
| Operated by other service providers |            |            |            |           |           |            |            |           |             |
| Fixed wing                          | 1          | –          | 14         | 12        | 7         | –          | –          | –         | 34          |
| Helicopter                          | 5          | –          | 14         | 1         | 3         | 1          | 1          | –         | 25          |
| <b>Total aircraft</b>               | 15         | 8          | 28         | 13        | 10        | 2          | 1          | –         | 77          |
| <b>Expenditure (\$'000)</b>         | 73 614     | 34 503     | na         | 1 194     | na        | 3 560      | 581        | –         | 113 452     |

<sup>a</sup> These figures do not represent the total air ambulance medical expenditure for jurisdictions, but only that funded through ambulance services and reported as part of the total ambulance service expenditure. <sup>b</sup> WA, SA and NT: Fixed wing services are provided by the Royal Flying Doctor Service (RFDS). In addition, AMS, a NT Government operated aero-medical service, operates in the 'top end' of the NT. <sup>c</sup> Tas: Aircraft and pilot are provided by the RFDS under contract, aero medical crew are provided by the State. – Nil or rounded to zero. na Not available.

Source: Council of Ambulance Authorities (CAA) (unpublished).

### *Human resources*

Data on human resources are reported by operational status on a full time equivalent (FTE) basis. Human resources include any person involved in delivering and/or managing the delivery of ambulance services, including:

- ambulance operatives (including patient transport officers, students and base level ambulance officers, qualified ambulance officers, other clinical personnel and communications operatives)
- operational and corporate support personnel (including management, operational planners and coordinators, education and training personnel, corporate support personnel, non-operative communications and technical personnel)
- remunerated and non-remunerated volunteers and ambulance community first responders. Ambulance community first responders are a type of volunteer that provide an emergency response (with no transport capacity) and first aid care before ambulance arrival.

Nationally, 13 283 FTE salaried personnel were involved in the delivery of ambulance services in 2008-09. The majority of salaried ambulance personnel in 2008-09 were ambulance operatives (82.1 per cent) (table 9A.24).

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Nationally, 5542 volunteer personnel (comprising 5051 operatives and 491 support personnel) participated in the delivery of ambulance services in 2008-09. The proportion of volunteer personnel and the nature of their role varied across jurisdictions. Given the decentralised structure of its ambulance service operations, WA has a relatively higher number of volunteer operational and corporate support personnel (table 9A.24).

Nationally there were 1345 ambulance community first responders in 2008-09 (table 9A.24). In some locations the first responder service is provided by another emergency service agency, for example, a fire service.

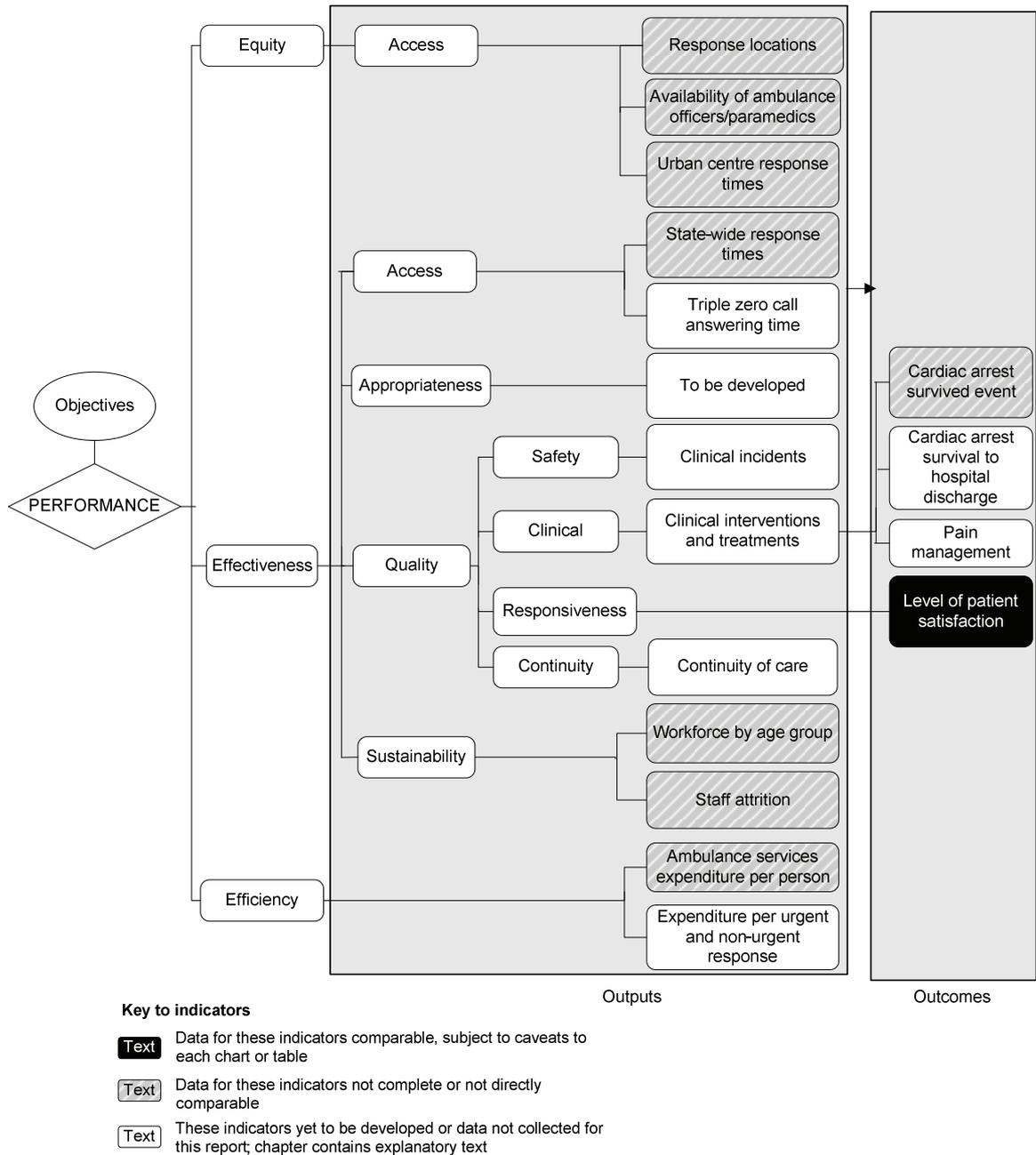
### **Framework of performance indicators**

Figure 9.21 presents the performance indicator framework for ambulance events. This framework is based on the general framework for the health section of the Report. It was introduced in the 2009 Report to replace the framework presented in previous reports — which was based on the general framework for all emergency events.

The performance indicator framework for ambulance events shows which data are comparable in the 2010 Report. For all data, supporting text and footnotes include caveats relevant to interpretation. Indicators that are considered comparable are only comparable subject to accompanying caveats. Chapter 1 discusses data comparability from a Report wide perspective (see section 1.6). Definitions of all indicators are provided in section 9.8.

Caution should be exercised in making comparisons between the ambulance service organisations because of differences in geography, population dispersal and service delivery models. The Report's statistical appendix contains general demographic and socioeconomic data that may assist in interpreting the performance indicators presented in this section (appendix A).

Figure 9.21 Performance indicators for ambulance events



## Key performance indicator results

### Outputs

Outputs are the actual services delivered (while outcomes are the impact of these services on the status of an individual or group) (see chapter 1, section 1.5). Output indicators for ambulance services are: ‘response locations’; ‘availability of

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ambulance officers/paramedics'; 'urban centre response times'; 'state-wide response times'; 'triple zero call answering time'; 'clinical incidents'; 'clinical interventions and treatments'; 'continuity of care'; 'workforce by age group'; 'staff attrition'; 'ambulance service organisations expenditure per person'; and 'expenditure per urgent and non-urgent response'.

### *Equity — access*

Equity of access indicators measure access to services by groups in the community who may have special needs.

### *Response locations*

'Response locations' is an indicator of governments' objective of providing accessible emergency ambulance services to communities (box 9.21).

#### **Box 9.21 Response locations**

'Response locations' is defined as the number of paid (or salaried), mixed and volunteer response locations per 100 000 people. Locations are primary ambulance response locations where paid, volunteer or a mix of paid and volunteer ambulance operatives are responding in an ambulance vehicle and providing pre-hospital care.

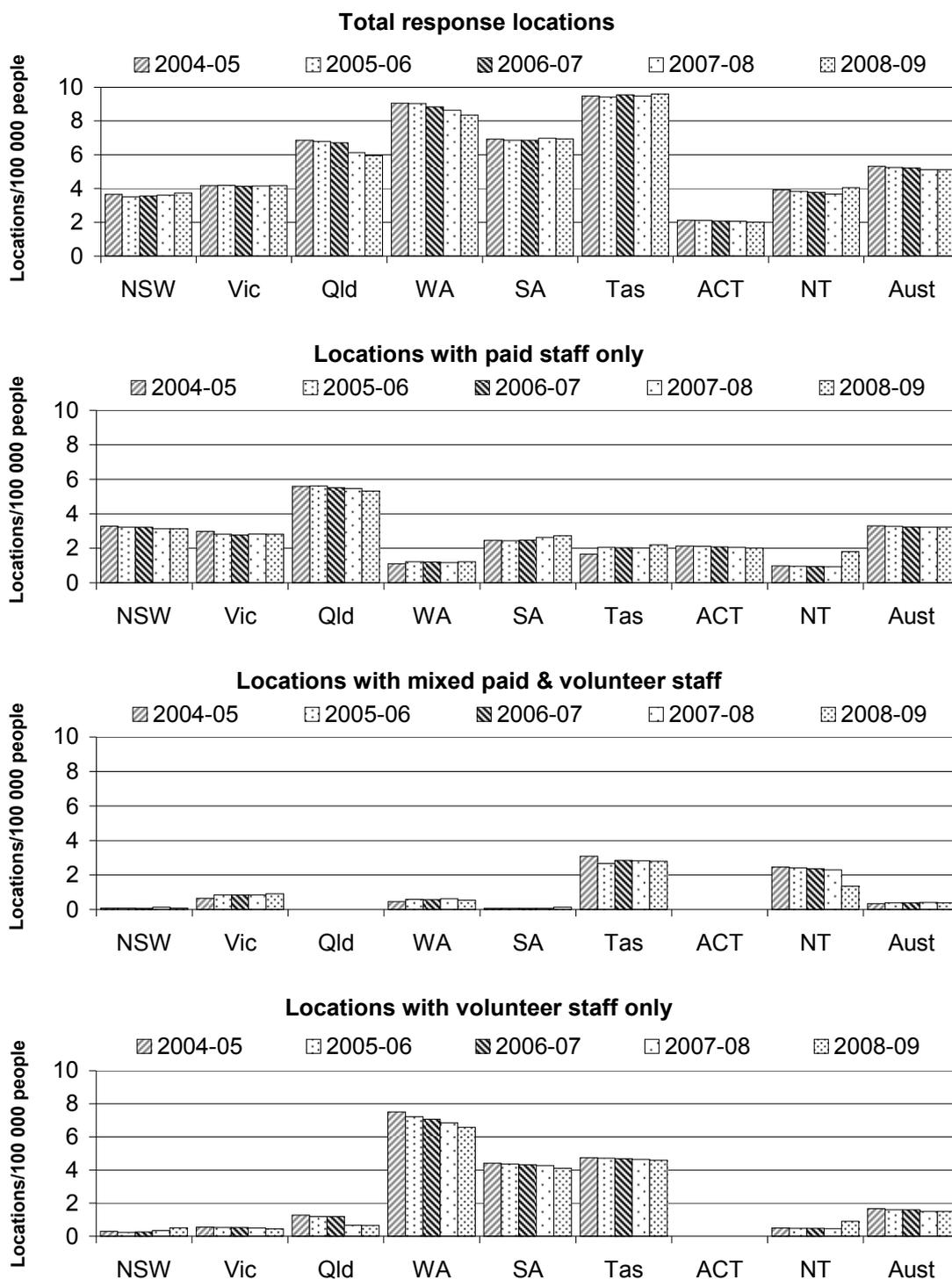
Higher or increasing numbers of paid, mixed and/or volunteer response locations, after adjusting for population, suggests better ambulance service response capacity.

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. This indicator also helps explain variation in expenditure for ambulance services across jurisdictions. For example, in some jurisdictions, smaller rural areas are serviced by paid ambulance personnel whereas in others, there may be a mix of paid and volunteer personnel or wholly volunteer personnel. Service delivery strategies have a significant impact on cost and help explain differentials in expenditure per person between jurisdictions. For example figure 9.22 shows that WA and Tasmania have the highest numbers of response locations per person yet they both have lower than average expenditure per person (figure 9.29) which is in part explained by their relatively higher reliance on volunteers for rural service delivery.

Data for this indicator are not directly comparable.

Nationally, there were 5.1 paid, mixed and volunteer response locations per 100 000 people in 2008-09 (table 9A.27). The number of salaried, mixed and volunteer response locations per 100 000 people varied across jurisdictions (figure 9.22).

Figure 9.22 Number of paid, mixed and volunteer response locations<sup>a, b, c</sup>



<sup>a</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December). <sup>b</sup> Response locations data for 2007-08 and subsequent years reflect changes in the new data definition, which does not include first responder locations. <sup>c</sup> ACT: There are no mixed or volunteer only response locations in the ACT.

Source: State and Territory governments (unpublished); table 9A.27

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### *Availability of ambulance officers/paramedics*

‘Availability of ambulance officers/paramedics’ is another indicator of governments’ objective of providing equitable and accessible ambulance services to communities (box 9.22).

#### **Box 9.22 Availability of ambulance officers/paramedics**

‘Availability of ambulance officers/paramedics’ is defined as the number of full time equivalent ambulance officers/paramedics per 100 000 people. Ambulance officers/paramedics includes student and base level ambulance officers and qualified ambulance officers but excludes patient transport officers.

Higher or increasing availability of ambulance officers/paramedics, after adjusting for population, suggests better ambulance service response capacity.

The role of paramedics is expanding to provide primary health care, improve emergency response capabilities and strengthen community healthcare collaborations in rural and remote communities (Stirling et al 2007). Many rural and remote communities do not have access to adequate health care due, in part, to the difficulty in recruiting and retaining health professionals to these areas. Paramedics provide some of these communities with extended access to health service delivery. Expanding roles are also developing in metropolitan areas as a response to overstretched emergency departments where paramedics often continue caring for the patient on arrival at hospital.

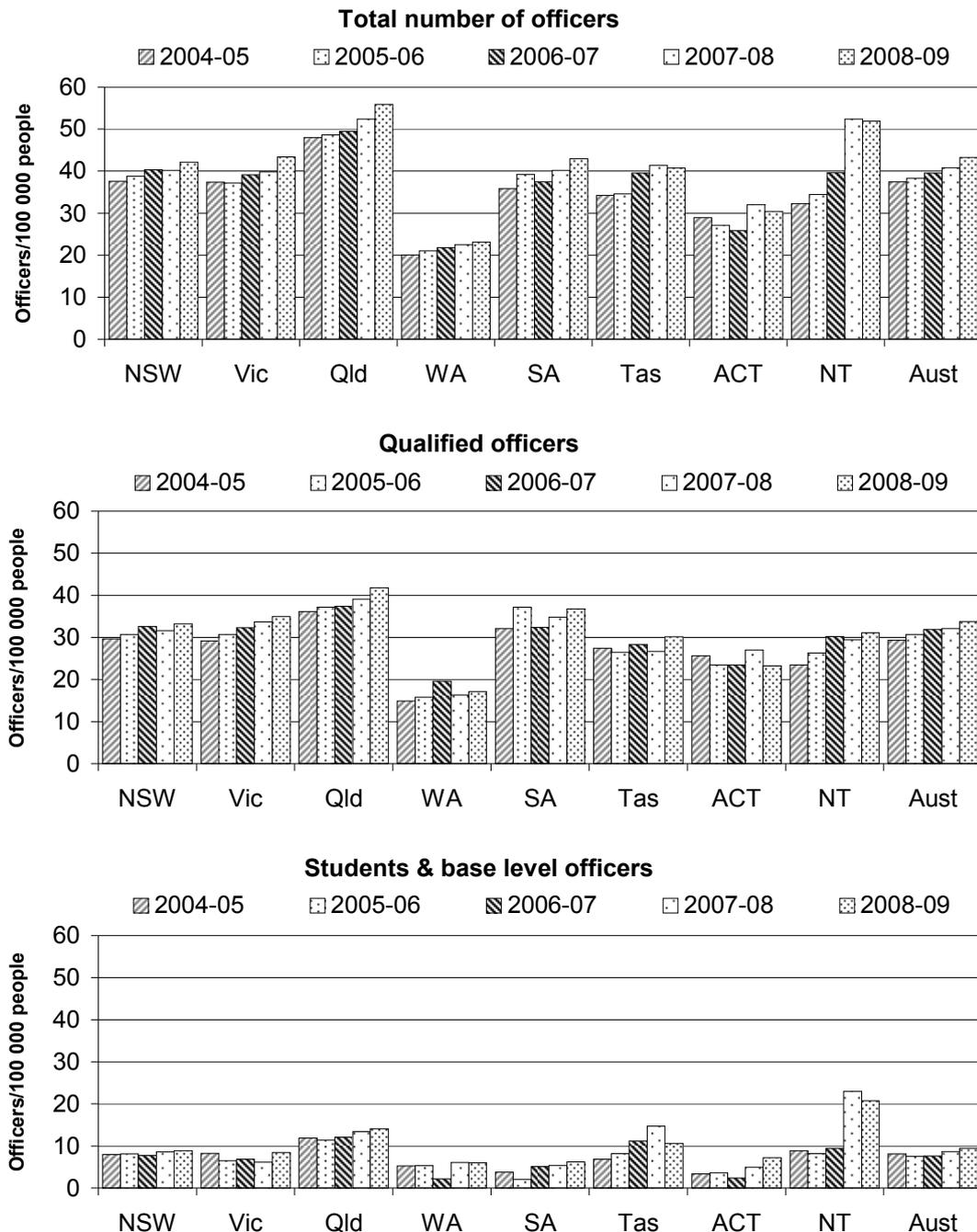
This indicator needs to be interpreted with care because ambulance responses in some jurisdictions, particularly in rural and remote locations, are predominantly provided by volunteers. Therefore the results reported may indicate a lower level of access for these jurisdictions. However, this indicator is complemented by the response locations indicator, which identifies jurisdictions that provide an ambulance response utilising volunteers. The higher the proportion of paramedics in a jurisdiction the higher the cost of service provision. In small rural areas which have low frequency of medical emergencies it is very costly to provide paramedic personnel and it also raises issues with skills maintenance for paramedics when the caseload they are exposed to is low.

Data for this indicator are not directly comparable.

Nationally, there were 43.2 FTE ambulance officers/paramedics per 100 000 people in 2008-09 (table 9A.24).

The number of FTE ambulance officers/paramedics per 100 000 people varied across jurisdictions (figure 9.23).

**Figure 9.23 Number of full time equivalent ambulance officers/paramedics<sup>a, b</sup>**



<sup>a</sup> Data relate to paid staff only. <sup>b</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December).

Source: State and Territory governments (unpublished); table 9A.24.

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## *Response times*

‘Response times’ are indicators of governments’ objective of providing equitable, accessible and effective ambulance services to communities (box 9.23).

### **Box 9.23 Response times**

‘Response times’ is defined by two measures:

- the time within which 50 per cent of the first responding ambulance resources arrive at the scene of an emergency in code 1 situations
- the time within which 90 per cent of the first responding ambulance resources arrive at the scene of an emergency in code 1 situations.

The response time is defined as the time taken between the initial receipt of the call for an emergency ambulance and the ambulance’s arrival at the scene of the emergency (figure 9.24). Emergency responses are categorised by an assessment of the severity of the medical problem:

- code 1 — responses to potentially life threatening situations using warning devices
- code 2 — responses to acutely ill patients (not in life threatening situations) where attendance is necessary but no warning devices are used.

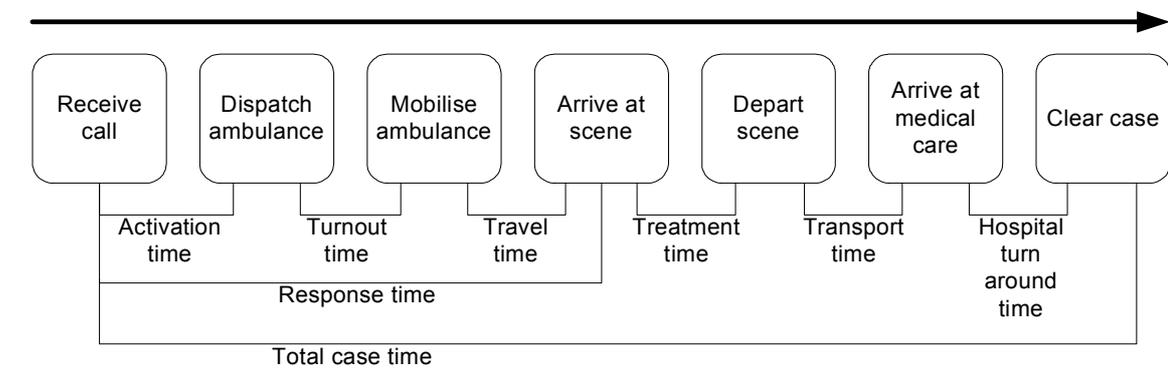
Shorter response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced.

Response time data need to be interpreted with care, because performance is not strictly comparable across jurisdictions.

- Response time data for some jurisdictions (when calculated on a State-wide basis) represent responses to urban, rural and remote areas, while others include urban areas only.
- Response time data in some jurisdictions include responses from volunteer stations where turnout times are generally longer because volunteers are on call rather than on duty.
- Response times can be affected by the dispersion of the population (particularly rural/urban population proportions), topography, road/transport infrastructure and traffic densities.

Although definitions of response times are consistent, not all jurisdictions have systems in place to capture all components of response time for all cases, from the time of the call to arrival at the scene. Differences across jurisdictions in definitions of geography, personnel mix, and system type for capturing data, affect the comparability of response times data. The commencement of recording ambulance service response times varies as per the jurisdictions’ caveats.

Figure 9.24 **Response time points and indicators for ambulance events**



### *Urban centre response times*

‘Urban centre response times’ is an indicator of governments’ objective of providing equitable and accessible ambulance services to communities (box 9.24).

#### **Box 9.24 Urban centre response times**

‘Urban centre response times’ is the response time, as defined in box 9.23, for urban centre responses.

Shorter, or reducing, response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced.

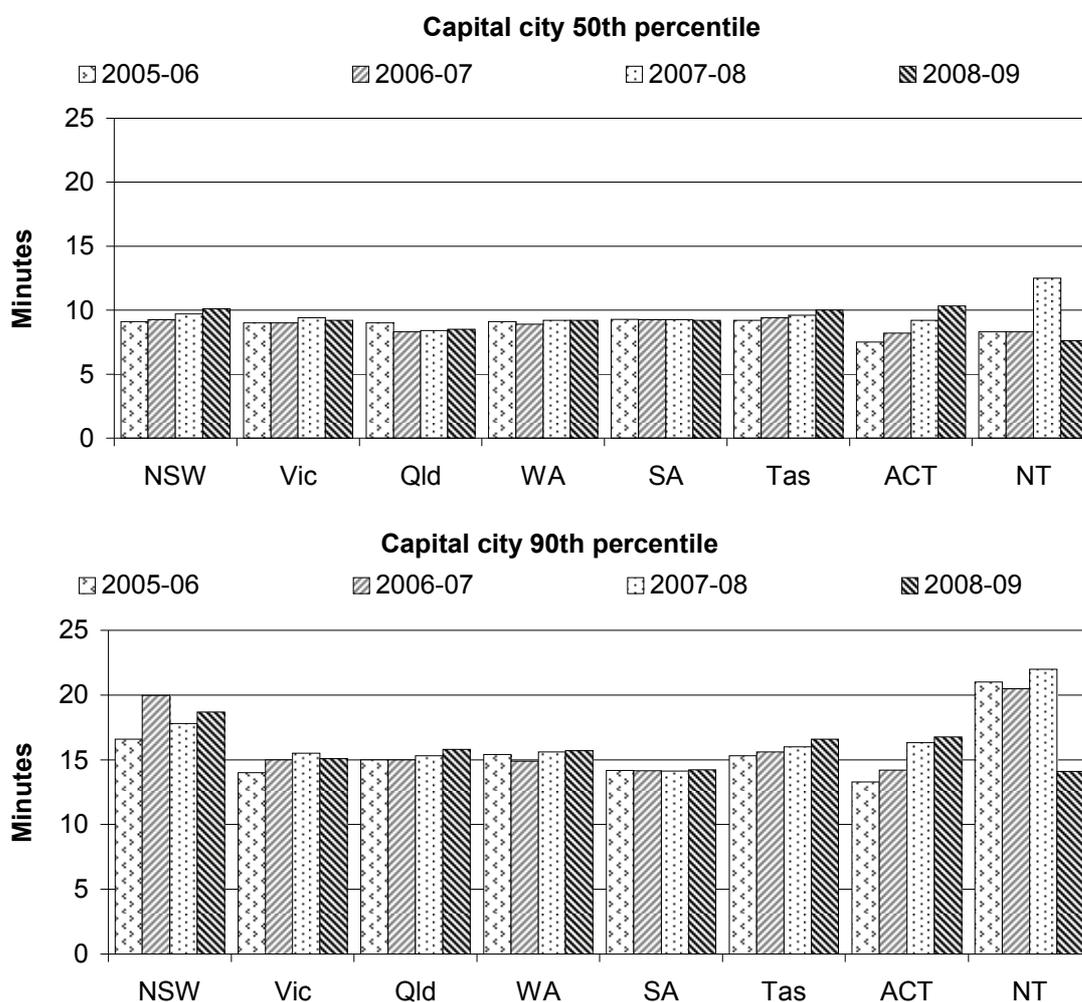
Population densities across Australian capital cities varies considerably and this can impact on response time performance. This indicator might be further developed to report data for urban centres with populations of 50 000 and above in future Reports.

Data for this indicator are not directly comparable.

Nationally in 2008-09, the time within which 50 per cent of the urban centre first responding ambulance resources arrived at the scene of an emergency in code 1 situations ranged from 7.6 to 10.3 minutes, and the time within which 90 per cent of the urban centre first responding ambulance resources arrived at the scene of an emergency in code 1 situations ranged from 14.1 to 18.7 minutes across jurisdictions (figure 9.25).

Urban centre response times within most jurisdictions remained steady between 2004-05 and 2008-09 (table 9A.29).

Figure 9.25 Ambulance response times (urban centre)<sup>a, b, c, d, e</sup>



<sup>a</sup> Response times commence from the following time points: Vic, SA and Tas first key stroke; NSW, Qld (QAS) and WA transfer to dispatch; and the NT crew dispatched. In 2007-08 the ACT response times commence from the first key stroke, whereas, in 2003-04 to 2006-07 response times commenced from incident creation. Therefore, ACT data across years are not directly comparable. Capital city response times are calculated using urban centre boundaries based on the ABS Urban Centres Localities structure. Response times for NSW and SA do not strictly adhere to the urban centre boundaries. <sup>b</sup> NSW: Did not triage emergency calls prior to 2005-06. Results for code 1 cases represent '000' and urgent medical incidents. <sup>c</sup> Vic: Prior to 2007-08, data sourced from Patient Care Records completed by paramedics; from 2007-08 metropolitan data sourced from CAD system and not directly comparable with previous years. <sup>d</sup> Qld: Casualty room attendances are not included in response count and, therefore, are not reflected in response times data. Response times are reported from the CAD data. <sup>e</sup> SA: Prior to 2006-07 code 1 response times were calculated on all responses to category 1 and 2 cases and based on patient case cards. Code 1 response times for 2006-07 are now calculated from SA Ambulance CAD data and are more aligned to the definitions provided by the CAA. Code 1 response times for 2006-07 exclude second and subsequent vehicles arriving at an incident and exclude incidents where the category of dispatch was upgraded. As a result, the data are not directly comparable with prior years.

Source: ABS (2008 and unpublished) *Statistical Geography: Volume 3 — Australian Standard Geographical Classification (ASGC) Urban Centres Localities, 2006*, Cat. no. 2909.0, Canberra; State and Territory governments (unpublished); table 9A.29.

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### *Effectiveness — access*

Effectiveness of access indicators measure how well the outputs of a service achieves the stated objective(s) of that service in a timely and affordable manner to the community.

#### *State-wide response times*

‘State-wide response times’ is an indicator of governments’ objective of providing accessible and effective ambulance services to communities (box 9.25).

#### **Box 9.25 State-wide response times**

‘State-wide response times’ is the response time, as defined in box 9.23, for state-wide responses.

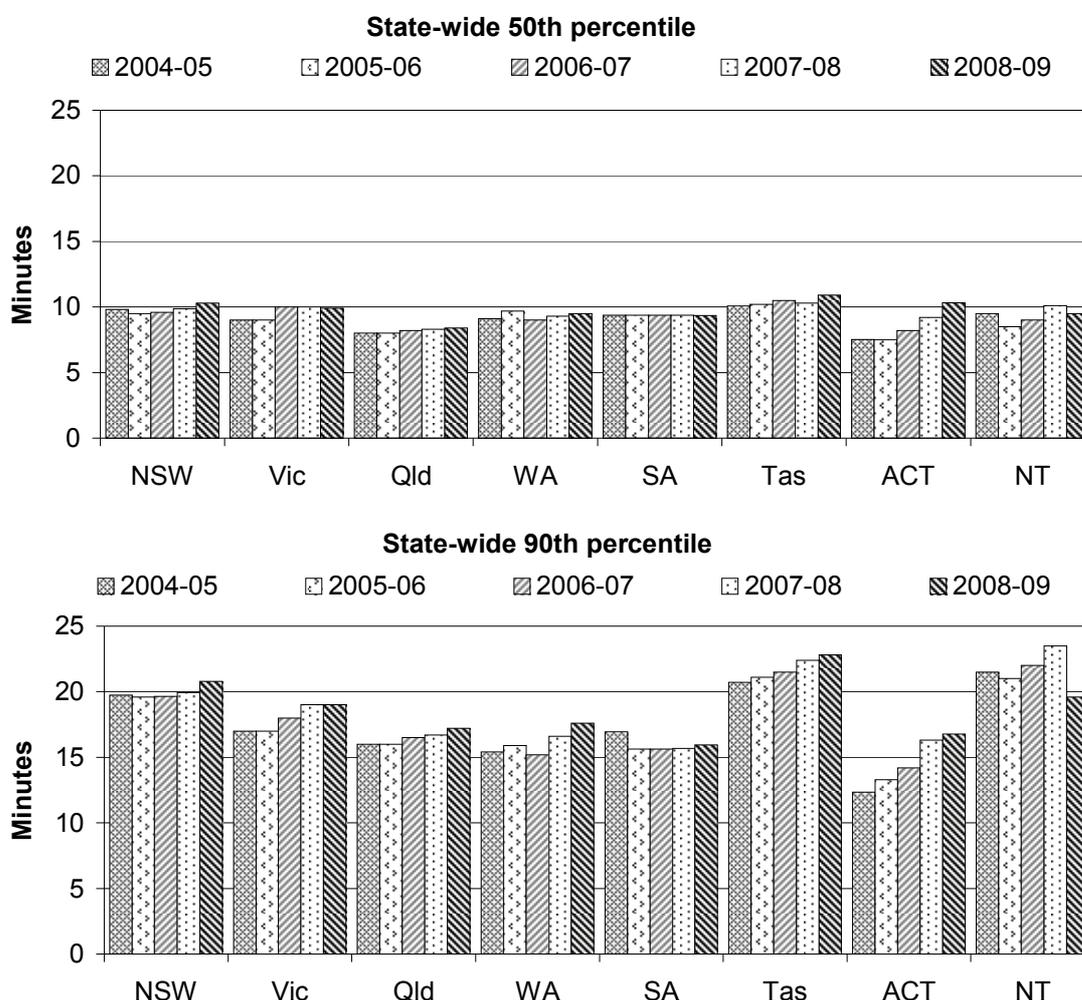
Shorter, or reducing, response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced.

Data for this indicator are not directly comparable.

Nationally, the time within which 50 per cent of the state-wide first responding ambulance resources arrived at the scene of an emergency in code 1 situations ranged from 8.4 to 10.9 minutes across jurisdictions. The time within which 90 per cent of the state-wide first responding ambulance resources arrived at the scene of an emergency in code 1 situations ranged from 16.0 to 22.8 minutes across jurisdictions (figure 9.26).

State-wide response times within most jurisdictions remained relatively steady between 2004-05 and 2008-09. Some jurisdictions’ data indicate increases in response times over this 5 year period (table 9A.29).

Figure 9.26 Ambulance response times, state-wide<sup>a, b, c, d, e, f, g</sup>



<sup>a</sup> Response times commence from the following time points: Vic (AV rural) receipt of call; Vic (AV metro), SA and Tas first key stroke; NSW, Qld (QAS) and WA transfer to dispatch; and the NT crew dispatched. In 2007-08 the ACT response times commence from the first key stroke, whereas, in 2003-04 to 2006-07 response times commenced from incident creation. Therefore, ACT data across years are not directly comparable. <sup>b</sup> NSW: Did not triage emergency calls prior to 2005-06. Results for code 1 cases represent '000' and urgent medical incidents. A volunteer ambulance service audit was undertaken in 2008-09 which led to improved reporting. <sup>c</sup> Vic: Data are incomplete for 2004-05 due to industrial action in the month of July 2004. The basis of response time reporting changed in 2007-08 and results are not directly comparable with previous years. <sup>d</sup> Qld: Casualty room attendances are not included in response count and, therefore, are not reflected in response times data. Response times are reported from the CAD data. <sup>e</sup> WA: Ambulance first responder locations data are not available for 2007-08. <sup>f</sup> SA: Prior to 2006-07 code 1 response times were calculated on all responses to category 1 and 2 cases and based on patient case cards. Code 1 response times for 2006-07 are now calculated from SA Ambulance CAD data and are more aligned to the definitions provided by the CAA. Code 1 response times for 2006-07 exclude second and subsequent vehicles arriving at an incident and exclude incidents where the category of dispatch was upgraded. As a result, the data are not directly comparable with prior years. <sup>g</sup> Tas: a high proportion of population is in small rural areas, relative to other jurisdictions, which may affect average response times.

Source: State and Territory governments (unpublished); table 9A.29.

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### *Triple zero call answering time*

‘Triple zero call answering time’ has been identified for development as an indicator of governments’ objective of providing accessible and effective ambulance services to the community (box 9.26). Data for this indicator were not available for the 2010 Report.

#### **Box 9.26 Triple zero call answering time**

‘Triple zero call answering time’ is yet to be defined.

Data collection for the triple zero call answering time indicator is under development through the CAA.

### *Effectiveness — appropriateness*

Appropriateness indicators measure governments’ objective to deliver ambulance services that meet clients’ needs (box 9.27).

#### **Box 9.27 Performance indicator — appropriateness**

‘Appropriateness’ indicators measure how well services meet clients’ needs.

Appropriateness has been identified as a key area for development in future Reports.

### *Effectiveness — quality — safety*

Quality indicators reflect the extent to which a service is suited to its purpose and conforms to specifications where specific aspects of quality can be reported against.

Safety is the avoidance, or reduction to acceptable levels, of actual or potential harm from ambulance services. Safety has been identified as a key area for development in future Reports.

### *Clinical incidents*

‘Clinical incidents’ has been identified as an overarching indicator of governments’ objective to deliver safe ambulance services to the community (box 9.28).

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**Box 9.28 Clinical incidents**

‘Clinical incidents’ are broadly defined as adverse events that occur because of ambulance service deficiencies and which result in death or serious harm to a patient.

Clinical incidents will incorporate a wider range of categories than sentinel events. (A sentinel event is an adverse event that occurs because of health system and process deficiencies and which results in the death of, or serious harm to, a patient.)

A clinical incidents indicator is to be developed in accordance with national health-wide reporting standards.

*Effectiveness — quality — clinical*

‘Clinical’ indicators measure the effectiveness and quality of clinical interventions and treatments. Clinical indicators have been identified as a key area for development in future reports.

*Clinical interventions and treatments*

‘Clinical interventions and treatments’ has been identified as an overarching indicator of governments’ objective to meet clients’ needs through delivery of quality ambulance services (box 9.29).

**Box 9.29 Clinical interventions and treatments**

‘Clinical interventions and treatments’ is yet to be defined.

In the short to medium term, the clinical dimension is likely to provide indicators of service outputs and outcomes. These indicators are currently under development through the CAA. In the longer term additional clinical measures might include indicators of the effectiveness of ambulance services interventions and treatments.

Current development work is focused on an indicator of ‘cardiac arrest survival to hospital discharge’ in the short term and, in the medium term, an indicator of ‘pain management’ (in the ambulance events outcomes section).

The indicator ‘cardiac arrest survived event rate’ reported in the outcomes section of this chapter has strong links to clinical interventions and treatments.

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### *Effectiveness — quality — responsiveness*

Responsiveness is the provision of services that are client orientated and respectful of clients' dignity, autonomy, confidentiality, amenity, choices, and social and cultural needs.

The indicator 'patient satisfaction' reported in the outcomes section of this chapter has strong links to responsiveness.

### *Effectiveness — quality — continuity*

Continuity is the provision of uninterrupted, timely, coordinated healthcare, interventions and actions across programs, practitioners and organisations. The Steering Committee has identified continuity as a key area for development in future Reports.

#### *Continuity of care*

'Continuity of care' is an indicator of governments' objective to meet clients' needs through delivery of coordinated health care, including ambulance services (box 9.30). No data were available for the 2010 Report.

#### **Box 9.30 Continuity of care**

'Continuity of care' has been broadly defined as transporting the right patient to the right hospital. Some ambulance services are using secondary triage strategies where patients with particular conditions (for example, cardiac and stroke) are transported directly to the hospital or specialised centre where the best treatment for their needs can be provided, rather than transported to the closest hospital where those services may not be available.

This indicator is under development through the CAA.

### *Effectiveness — sustainability*

Sustainability is the capacity to provide infrastructure (that is, workforce, facilities, and equipment) into the future, be innovative and respond to emerging needs of the community.

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### Workforce by age group

‘Workforce by age group’ is an indicator of governments’ objective to deliver sustainable ambulance services (box 9.31).

#### Box 9.31 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). The data are reported as percentages, by jurisdiction.

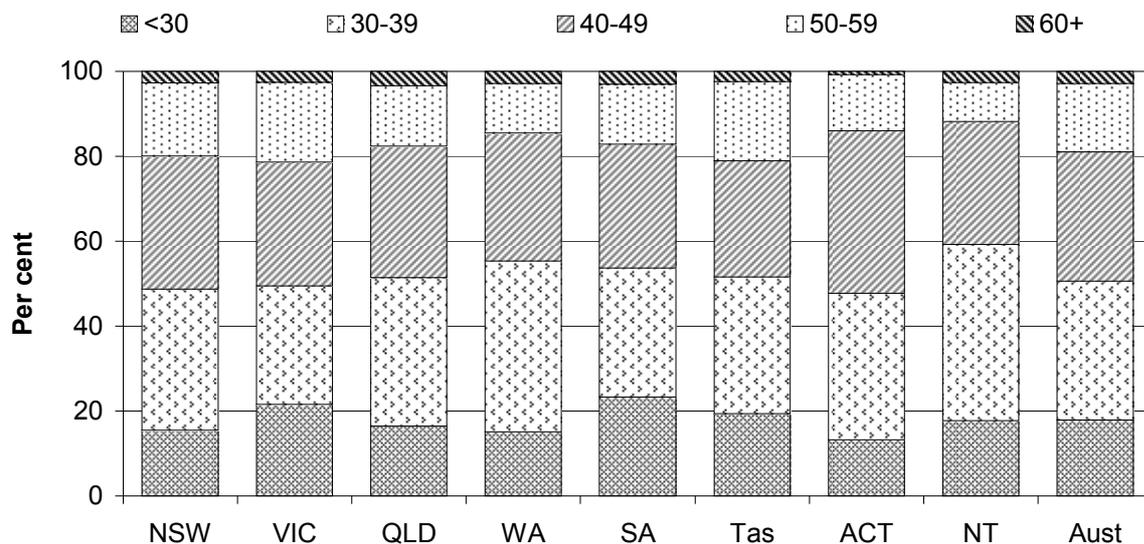
The smaller the proportion of the workforce who are in the younger age groups and/or the larger the proportion who are closer to retirement, the more likely sustainability problems are to arise in the coming decade as the older age group starts to retire.

A three year time series will be available for the attachment tables of the 2011 Report.

Data for this indicator are not strictly comparable.

The age profile of the ambulance workforce for each jurisdiction is shown in figure 9.27. Nationally in 2008-09, around 81 per cent of the ambulance workforce were aged under 50.

Figure 9.27 Ambulance workforce, by age group, 2008-09



Source: State and Territory governments (unpublished), table 9A.25.

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### Staff attrition

‘Staff attrition’ is an indicator of governments’ objective to deliver sustainable ambulance services (box 9.32).

#### Box 9.32 Staff attrition

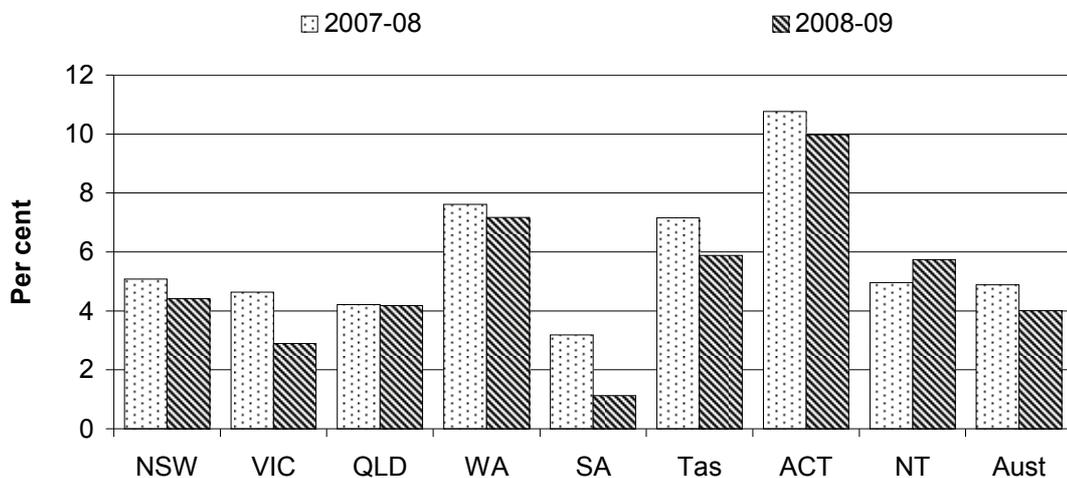
‘Staff attrition’ is defined as level of attrition in the operational workforce. It is calculated as the number of FTE employees who exit the organisation as a proportion of the number of FTE employees. It is based on staff FTE defined as ‘operational positions where paramedic qualifications are either essential or desirable to the role’.

Low or decreasing levels of staff attrition are desirable.

Data for this indicator are not strictly comparable.

The proportion of attrition in the ambulance workforce for each jurisdiction is shown in figure 9.28. Nationally, staff attrition fell from 4.9 per cent in 2007-08 to 4.0 per cent in 2008-09.

Figure 9.28 Ambulance staff attrition, 2008-09



Source: State and Territory governments (unpublished), table 9A.25.

### 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). Some jurisdictions, for example, have a greater proportion of government funding relative to levies

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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.

*Ambulance service organisations' expenditure per person*

'Ambulance service organisations' expenditure per person' is an indicator of governments' objective to deliver efficient ambulance services (box 9.33).

**Box 9.33 Ambulance service organisations' expenditure per person**

'Ambulance service organisations expenditure per person' is defined as ambulance service organisations expenditure divided by the population. Expenditure, and funding, per person are employed as proxies for efficiency. Two measures are reported:

- total expenditure (from all government and non-government sources) on ambulance service organisations per person — this measure indicates efficiency of use of resources from all sources
- total government grants and indirect government funding of ambulance service organisations per person — this measure indicates efficiency of use of resources from government sources.

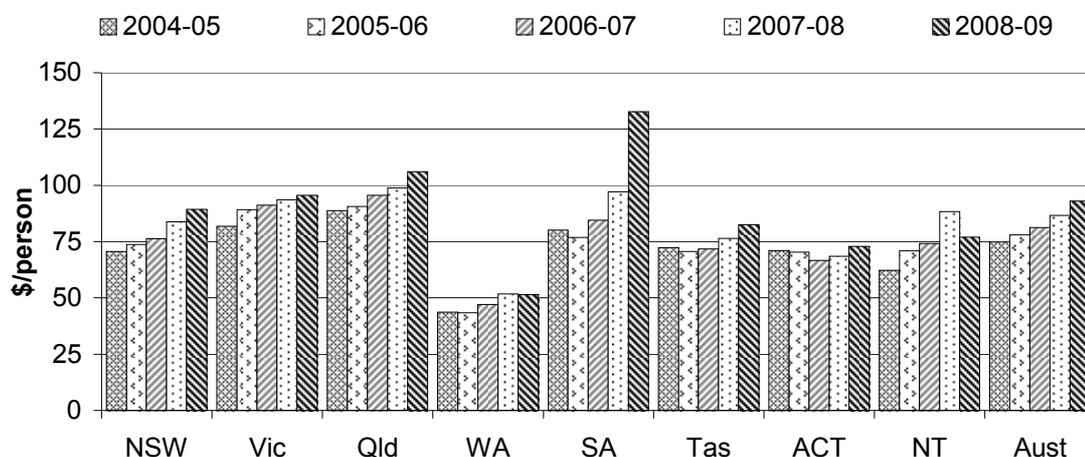
Holding other factors constant, a decrease in expenditure per person represents an improvement in efficiency. However, efficiency data are difficult to interpret. Although high or increasing expenditure per person may reflect deteriorating efficiency, it may also reflect changes in aspects of the service (such as improved response) or changes in the characteristics of emergencies requiring ambulance services (such as more serious para-medical challenges). Similarly, low or declining expenditure per person may reflect improving efficiency or lower quality (slower response times) or less severe cases.

Data for this indicator are not directly comparable.

Nationally, total expenditure on ambulance service organisations per person was \$93.01 in 2008-09 (figure 9.29).

Nationally, total government grants and indirect government funding of ambulance service organisations per person was \$62.16 in 2008-09 (figure 9.30).

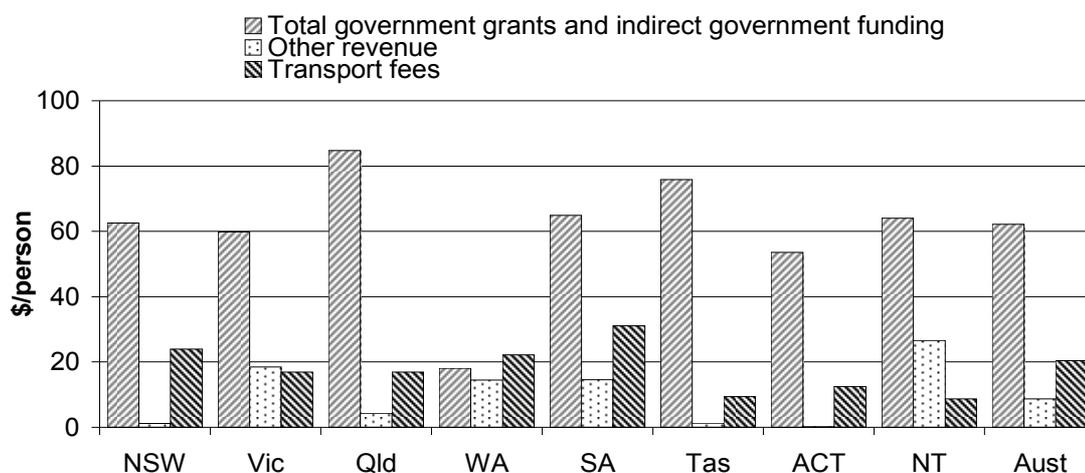
**Figure 9.29 Ambulance service organisations expenditure per person (2008-09 dollars)<sup>a, b, c, d, e</sup>**



<sup>a</sup> Data are adjusted to 2008-09 dollars using the GDP price deflator (2008-09 = 100) (table AA.26). <sup>b</sup> Historical rates in this figure may differ from those in previous Reports. Population data are revised using Final Rebased ERP data following each Census of Population and Housing (the most recent census was 2006). Financial year population estimates are the midpoint estimate of the relevant financial year (that is, as at 31 December). <sup>c</sup> WA and NT: use a contracted service model for ambulance services. <sup>d</sup> SA: 2008-09 data reflect three significant events that year: (1) increase in wages (2) subsequent back pay paid to frontline paramedics as a result of the 'work value' case (from the 2007 enterprise bargaining agreement) reaching finalisation and (3) an increase in the number of frontline paramedics recruited. <sup>e</sup> ACT: For 2005-06 and later years, ACT Ambulance Service data are collated using the new Emergency Services Agency Capability Model, which utilises a different cost attribution model for shared costs across the Emergency Services Agency. Therefore, the financial figures for 2005-06 and later years cannot be directly compared with those of previous years.

Source: State and Territory governments (unpublished); table 9A.32.

**Figure 9.30 Sources of ambulance service organisations revenue per person, 2008-09<sup>a</sup>**



<sup>a</sup> Other revenue is equal to the sum of subscriptions, donations and miscellaneous revenue.

Source: State and Territory governments (unpublished); table 9A.33.

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### *Expenditure per urgent and non-urgent response*

‘Expenditure per urgent and non-urgent response’ has been identified for development as an indicator of governments’ objective to deliver efficient ambulance services (box 9.34).

#### **Box 9.34 Expenditure per urgent and non-urgent response**

‘Expenditure per urgent and non-urgent response’ is yet to be defined. This indicator is under development through the CAA. Data for this indicator were not available for the 2010 Report.

### *Outcomes*

Outcomes are the impact of services on the status of an individual or group (while outputs are the actual services delivered) (see chapter 1, section 1.5).

### *Cardiac arrest survived event rate*

‘Cardiac arrest survived event rate’ is an indicator of governments’ objective to deliver effective ambulance services (box 9.35).

#### **Box 9.35 Cardiac arrest survived event rate**

‘Cardiac arrest survived event rate’ is defined as the percentage of patients aged 16 years and over who:

- were in out-of-hospital cardiac arrest (excluding paramedic witnessed)
- where any chest compressions and/or defibrillation was undertaken by ambulance/Emergency Medical Services (EMS) personnel, and
- who have a return to spontaneous circulation (ROSC) on arrival at hospital.

For the out-of-hospital setting, a survived event means a sustained ROSC with 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).

A further disaggregation of this indicator is defined as the percentage of patients aged 16 years and over who:

- were in out-of-hospital cardiac arrest (excluding paramedic witnessed)
- where the arrest rhythm on the first ECG assessment was either Ventricular Fibrillation or Ventricular Tachycardia (VF/VT), and
- who have a return of spontaneous circulation (ROSC) on arrival at hospital.

(Continued next page)

**Box 9.35** (continued)

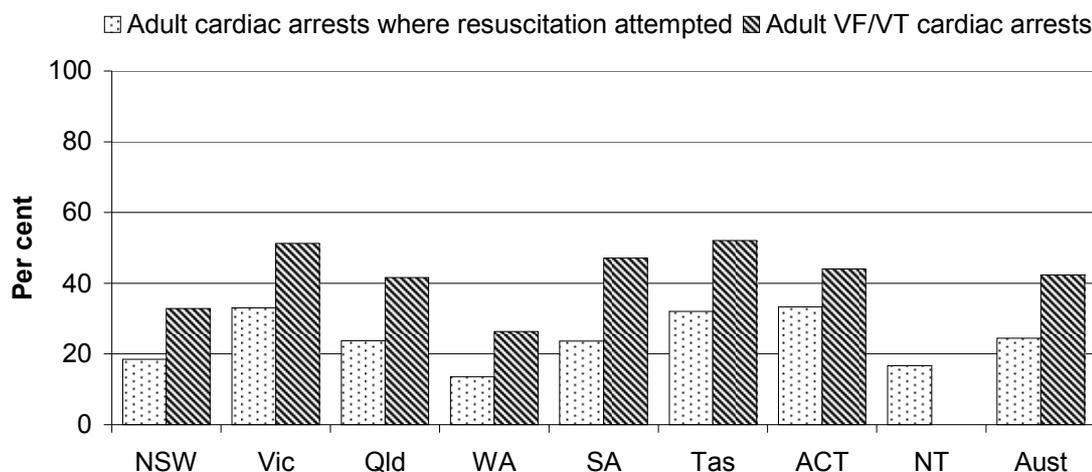
Patients in Ventricular Fibrillation (VF) or Ventricular Tachycardia (VT) are more likely to have better outcomes compared with other causes of cardiac arrest as these conditions are primarily correctable through defibrillation.

Paramedic witnessed cardiac arrests are excluded in the measures reported as these cardiac arrests are treated immediately by the paramedic and as such have a better likelihood of survival due to this immediate and rapid intervention. This is substantially different to cardiac arrests occurring prior to the ambulance arriving where such increasing periods of treatment delay are known to negatively influence outcome.

A higher or increasing rate for each measure is desirable. Data and associated measures for this indicator are not directly comparable.

The survival rate from out-of-hospital witnessed cardiac arrests varied across jurisdictions in 2008-09 (figure 9.31).

**Figure 9.31 Cardiac arrest survived event rate, 2008-09<sup>a, b, c, d, e, f, g</sup>**



<sup>a</sup> A 'survived event' is defined as the patient having return of spontaneous circulation (ROSC) on arrival to hospital (that is, the patient having a pulse). This is not the same as the patient surviving the cardiac arrest as having ROSC is only one factor that contributes to the overall likelihood of survival. <sup>b</sup> The measure 'adult cardiac arrests where resuscitation attempted' provides an overall indicator of outcome without specific consideration to other factors known to influence survival. <sup>c</sup> NSW: Data collected for the Ambulance Service of NSW are based on recorded protocols as instigated by in-field paramedics. <sup>d</sup> Vic: Excludes patients with unknown rhythm on arrival at hospital. <sup>e</sup> WA: Data are provided for the capital city only. <sup>f</sup> Tas: For 2007-08 VF/VT arrests is for two out of three regions only as no rhythm was recorded in the remaining region. <sup>g</sup> NT: For 2008-09 VF/VT arrests data are not available.

Source: State and Territory governments (unpublished); table 9A.28.

Cardiac arrest data reported in figure 9.31 are not comparable across jurisdictions and the CAA is undertaking a review to improve data comparability for this indicator.

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Available data on the further breakdown of this indicator are reported in attachment table 9A.28. Time series data, where available, are also provided in attachment table 9A.28.

### *Cardiac arrest survival to hospital discharge*

‘Cardiac arrest survival to hospital discharge’ has been identified for development as an indicator of governments’ objective to deliver effective ambulance services (box 9.36).

#### **Box 9.36 Cardiac arrest survival to hospital discharge**

‘Cardiac arrest survival to hospital discharge’ is yet to be defined.

A higher or increasing rate is a desirable outcome.

This indicator is under development through the CAA. Data for this indicator were not available for the 2010 Report.

### *Pain management*

‘Pain management’ has been identified for development as an indicator of governments’ objective to deliver effective ambulance services (box 9.37).

#### **Box 9.37 Pain management**

‘Pain management’ is yet to be defined.

This indicator is under development through the CAA. Data for this indicator were not available for the 2010 Report.

### *Level of patient satisfaction*

‘Level of patient satisfaction’ is an indicator of governments’ objective to deliver responsive ambulance services (box 9.38). The performance of ambulance service organisations can be measured in terms of the satisfaction of those people who directly used the service.

### Box 9.38 Level of patient satisfaction

'Level of patient satisfaction' is defined as the total number of patients who were either 'satisfied' or 'very satisfied' with ambulance services they had received in the previous 12 months, divided by the total number of patients that responded to the *National Patient Satisfaction Survey* (CAA 2009).

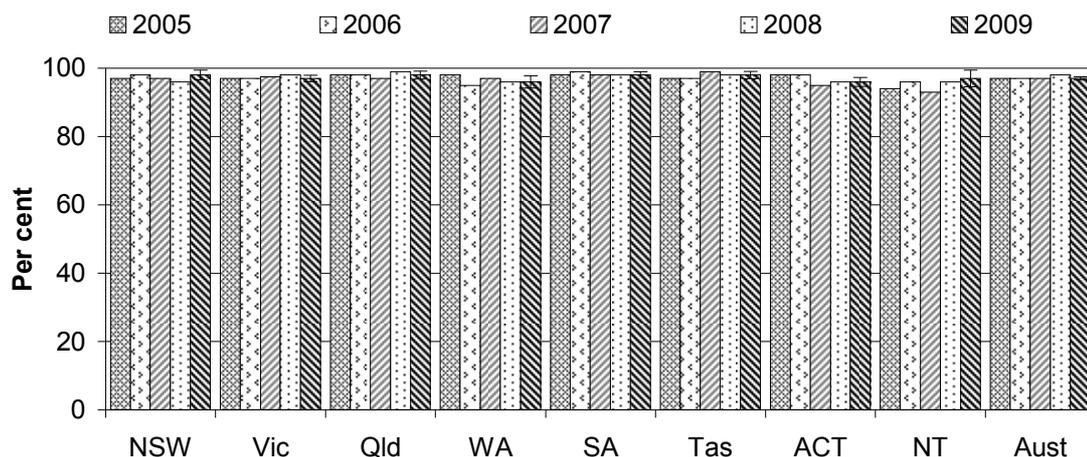
A higher level or increase in the proportion of patients who were either 'satisfied' or 'very satisfied' suggests greater success in meeting patient needs.

This indicator does not provide information on why some patients were not satisfied. It also does not provide information on the level of patient expectations.

Data for this indicator are comparable.

Data for 2005 to 2009 were collected by jurisdictions and collated by the CAA. The CAA survey obtained 4851 usable responses nationally from patients who used an ambulance service in 2009 (table 9A.30). The estimated satisfaction levels for ambulance patients were similar across all jurisdictions and all years. Standard errors for the 95 per cent confidence interval, available with latest year patient satisfaction data, indicate that there are no statistically significant differences between jurisdictions (figure 9.32).

Figure 9.32 Proportion of ambulance users who were satisfied or very satisfied with the ambulance service<sup>a</sup>



<sup>a</sup> Based on a survey of people who used an ambulance service in the previous 12 months. Jurisdictions conducted the surveys at various times during each year. Standard errors for the 95% confidence interval are included for 2009.

Source: CAA 2005–09 *National Patient Mailout Satisfaction Research*; table 9A.30.

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## 9.6 Future directions in performance reporting

A number of developments are underway to improve the comparability and accuracy of data, and to expand the scope of reporting on emergency services. Specifically, performance indicators for fire, road crash rescue and ambulance services are being improved with the assistance of the Australasian Fire and Emergency Service Authorities Council (AFAC), the ACSES and the CAA.

### Fire events

Performance measures are currently being developed for the reporting of fires in the landscape. The long-term aim is to report annually on the measures for each relevant jurisdiction across Australia. The key landscape fire performance measures that have been agreed to in concept, subject to the availability of data, for inclusion in future editions of the Report are:

- landscape fire deaths per 100 000 people
- landscape fire injuries per 100 000 people

and, subject to identification of appropriate denominators to facilitate comparative reporting:

- number of primary dwellings affected by wildfire
- total number of hours by volunteers on wildfire suppression.

The focus of current work is on developing agreed data definitions and identifying appropriate data sources.

### Road crash rescue events

An updated performance indicator framework has been included in this Report, along with text to provide a more comprehensive picture of the strategies and programs delivered by governments to reduce the impact of road trauma.

The section continues to provide road crash rescue information on the number of road crash rescue incidents and the number of events in which extrications occurred, and to reference other sections of the Report where data relevant to the performance indicator framework for road crash rescue events are published. Nevertheless the challenge remains to demonstrate the cost, benefits and value of the full range of emergency risk management services related to road trauma.

The focus of development work in the immediate future will be to derive indicator definitions, identify appropriate measures and develop data for reporting against the

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preparedness and response elements of the emergency management performance indicator framework.

### **Ambulance events**

Ambulance event reporting continues to focus upon further developing the indicators introduced to the 2009 Report. This will entail continuing development and implementation of data collections for some indicators, and refining those indicators that already have data reported, with ongoing work to increase data completeness and comparability.

### **Other event types**

Other event type services for which performance reporting has yet to be developed include: rescues (other than road crash rescues); natural emergency events (other than landscape fires); emergency relief and recovery; and quarantine and disease control.

## **9.7 Jurisdictions' comments**

This section provides comments from each jurisdiction on the services covered in this chapter.

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## **New South Wales Government comments**

“ The NSW Government continues its commitment to reducing death and injury, and the social, economic and environmental impacts caused by emergencies. In 2008-09 NSW began work on 75 new mitigation projects worth more than \$17.5 million, jointly funded by the Federal, NSW and local governments. Over the last six years a total of 368 mitigation projects have been undertaken in NSW worth more than \$70 million.

During 2008-09 the Ambulance Service of NSW provided over 1.1 million emergency and other responses, an average of 3068 per day. The Service implemented pilot programs to expand the scope of paramedic practice and decision making to allow direct referral to general practitioners, community services and other non-emergency care alternatives for low risk, low acuity patients. The Sydney-based Emergency Medical Services helicopters at Bankstown Airport were consolidated and the Wollongong EMS Helicopter extended to 24 hour operation.

During 2008-09 the NSW Rural Fire Service (NSW RFS) enhanced its operational capabilities through implementing radio upgrades and new aerial firefighting technology. The NSW Fire Brigades (NSWFB) took on the primary rescue response role in eight additional areas, bringing the total number of NSWFB rescue units to 176. Preventative measures to prepare land and properties bushfires continue to be a top priority for the fire services. This year the NSW RFS employed nine seasonal mitigation crews to assist in the preparation of hazard reduction burns and fuel management programs and delivered 53 000 hours of community awareness and engagement activities. In addition, 7399 development applications for construction and renovations in bushfire prone areas were assessed.

The NSWFB's Community Fire Units rose to 418, involving over 5800 volunteers to support community preparedness for bushfires. NSWFB firefighters visited 2900 schools and preschools, installed batteries and checked smoke alarms at 9400 seniors' homes and delivered emergency management training courses to more than 21 000 participants.

In 2008-09 the NSW State Emergency Service (SES) committed 387 520 hours to operational response, including responding to 305 flood rescues. Flood Rescue arrangements were strengthened significantly and new swiftwater techniques were accredited. The SES developed a warning system to alert key agencies and personnel of any impending tsunami and increased road crash capability to a total of 84 Road Crash Rescue Units and 10 Community First Responder Units.

NSW also provided considerable support interstate, with some 3668 RFS, NSWFB and SES staff deployed to assist with the Victorian bushfires, and 335 SES members assisting with the Brisbane storms.

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## Victorian Government comments

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South-east Australia remained in severe and protracted drought throughout 2008-09. During January 2009, many parts of Victoria recorded near record low rainfall with much of the State recording no rain. Towards the end of the month, record heatwave conditions prevailed resulting in a significant increase in demand for health and emergency services. Ambulance services experienced an increase in demand of approximately 50 per cent during this period as the incidence of heat related illness and death rapidly escalated. The State's public transport and energy infrastructure was impacted with over 200 train services cancelled on Friday 30 January at the peak of the heatwave.

In early February 2009, particularly 7 February, bushfires swept across Victoria, devastating 78 communities and 430 000 hectares of land. One hundred and seventy three people lost their lives. Destroyed along with hundreds of businesses were 2129 homes, 5 schools and kindergartens, 3 sporting clubs and numerous other buildings at an estimated dollar loss of 1.35 billion. Fire services were ably supported throughout this event by the Victoria State Emergency Service, Victoria Police, Ambulance Victoria and a broad range of Australian Government, local government and non-government organisations. Significant interstate and international mutual aid also arrived to support the State's substantial response, recovery and disaster victim identification effort.

The Victorian Government responded to this unprecedented natural disaster by establishing the 2009 Victorian Bushfires Royal Commission to investigate the causes and responses to the bushfires which swept through parts of Victoria in late January and February 2009. The Commission delivered its Interim Report on 17 August 2009 which detailed 51 recommendations. The Victorian Government supports each of these recommendations and is fully committed to their implementation. The Royal Commission's Final Report is due 31 July 2010.

The Victorian Government, in partnership with the Australian Government, also established the Victorian Bushfire Reconstruction and Recovery Authority to oversee and coordinate the largest recovery and rebuilding program Victoria has ever undertaken. The Authority is working with communities, businesses, charities, local councils and other government departments to help rebuild and re-establish communities affected by the bushfires.

Ambulance Victoria was created on 1 July 2008 following integration of the three former ambulance services. In its first year of operation, services have been significantly boosted by over 300 new paramedics based in towns and suburbs across Victoria. These additional paramedics have addressed an increasing demand for emergency ambulance services and contributed to improved response time performance.

The Government's commitment to providing high quality air ambulance services has been enhanced through the addition of two new air ambulance helicopters; one at Warrnambool to deliver emergency coverage to the south west of Victoria and the other a 24/7 retrieval service, based at Essendon, established to transport critically ill patients.

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## Queensland Government comments

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Implementation of recommendations from the Queensland Ambulance Service (QAS) Audit 2007 and Queensland Fire and Rescue Service (QFRS) Efficiency Review 2008 continued this year with substantial progress achieved in the delivery of key initiatives to enhance service delivery whilst challenged by an increased demand for services.

Demand growth for QAS urgent incidents has been less than projected in 2008-09 reflecting the success of demand management strategies implemented since the QAS Audit in late 2007. These strategies included the implementation of a Triple Zero community education campaign, aimed at promoting appropriate use of emergency ambulances, and the continuation of the Clinical Deployment Supervisor role in Brisbane and south-eastern regions.

To ensure as many resources as possible were deployed to frontline service delivery, QAS recruited an additional 253 full-time equivalents and commissioned an additional 145 ambulance vehicles in 2008-09, ensuring that the ambulance service continues to provide the highest possible level of service.

The roll-out of a new single state-wide Computer Aided Dispatch system across all ambulance and fire communication centres was completed in 2008-09, further enhancing operational service delivery.

The QFRS invested considerable time and resources across the ‘all hazards’ spectrum of services during 2008-09. This involved responding to and providing Incident Management Teams in support of operations across a broad range of incidents including cyclones, floods and oil spills. The QFRS continues to develop and deploy Technical Rescue capabilities (for example, swift water rescue) including obtaining international accreditation in Urban Search and Rescue during the Multi-Jurisdictional National Counter-Terrorism Exercise ‘Mercury 08’.

Queensland also continued to monitor the findings and recommendations of the 2009 Victorian Bushfires Royal Commission to ensure outcomes are incorporated into policy and practice where appropriate.

A number of significant events impacted Queensland during the year resulting in the activation of the Natural Disaster Relief and Recovery Arrangements on five occasions, and the State Disaster Relief Arrangements on one occasion. During the year, approximately 6300 SES volunteers committed over 109 000 hours to protect and assist their local communities. Queensland is increasing its focus on building community resilience to minimise vulnerability to disasters with the delivery of storm and cyclone season awareness campaigns and by working closely with local government to ensure contemporary Disaster Management Plans are in place.

In order to support and develop its volunteer network of approximately 41 700, Queensland significantly progressed a Volunteer Management Strategy which is a key commitment towards achieving the Queensland Government’s objective under *Toward Q2: Tomorrow’s Queensland* to increase the proportion of Queenslanders involved in their communities as volunteers.

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## Western Australian Government comments

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The Fire and Emergency Services Authority of WA (FESA) delivers emergency services throughout the State via a network of regionally-based FESA resources and with the support of local volunteers.

Western Australia's unique characteristics continue to influence the provision of emergency services. Our expansive land area, topography and widely dispersed population significantly affect infrastructure costs and response times. Growth in population and changing demographic patterns are increasing demand for services and adversely affecting volunteer numbers in some areas.

During 2008-09 FESA gained approval to draft critical amendments to the *Bush Fires Act 1954* and a comprehensive emergency services Act. These legislative amendments are intended to improve coordination and control of major bushfires and ultimately reduce the impact of emergencies on the community.

Building the capacity of staff and volunteers, as well as community stakeholders is a key strategic objective. Processes for the allocation of capital and human resourcing across the State to support effective response have been improved. FESA also continues to work closely with local governments and other partners to implement prevention and mitigation initiatives and improve community resilience to deal with emergencies.

Operational capability was enhanced with the implementation of a new service delivery model for the metropolitan region, and the expansion of our Community Fire Manager and Community Emergency Management Officer programs to support local emergency planning and emergency management.

A commitment to fire investigation and arson reduction, and raising awareness of emergency hazards for at-risk community groups is continuing.

Improved emergency management through technology has also been a major focus with the development of our StateAlert emergency warning system and continued use of spatial technology to improve planning and incident management.

Road ambulance services are delivered by non-government providers for most of the State with St John Ambulance the principal provider.

Eighty per cent of ambulance services are provided within the Perth metropolitan area. The remaining 20 per cent of the workload is delivered through a mix of career paramedics and volunteer from a large number of country response locations. In 91 per cent of all cases a career paramedic was in attendance with 9 per cent of cases performed by volunteer only crews. This model of maximising response locations for the sparsely populated and disparate communities in WA is supported by over 2500 qualified volunteer ambulance operatives.

The combination of an 8.1 per cent increase in incidents, hospital blockage and significant ramping of ambulance vehicles contributed to a reduced response capacity during the year and a deterioration of response times in comparison to the previous year. This is the subject of review in the next reporting period.

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## South Australian Government comments

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### *Fire and Emergency Services*

To improve public safety the SA Government published a *Strategic Direction 2008–2014 Statement* for fire and emergency services that commits the sector to Community Engagement, Seamless Integration, Improved Communication, Building Partnerships, Improving Community Resilience and Being Accountable.

Several key projects and initiatives were undertaken during 2008-09 including:

- amending the *Fire and Emergency Services Act 2005* to further refine governance and legislative arrangements and support the recommendations for operational improvements identified in the Bushfire Management Review and the Wangary Bushfire Coronial Inquest
- implementing initiatives and recommendations of SA's Bushfire Task Force established to examine the issues arising from the Royal Commission into the Victorian bushfires of 7 February 2009.

### *SA Ambulance Service*

Highlights for 2008-09 included:

- successfully piloting the extended care paramedic model which involved treating patients in their home and residential care facilities, contributing to a reduction in emergency department presentations and hospital admissions
- winning six of the 15 awards presented at the Council of Ambulance Authorities' national ambulance awards ceremony
- implementing an internationally-recognised call triaging system
- launching volunteer supported crewing initiatives to support volunteers in remote areas
- achieving satisfied or very satisfied service level ratings by 98 per cent of patients surveyed
- achieving emergency response time targets.

### *Fire, emergency and ambulance services*

Initiatives for 2009-10 include:

- implementing a new telephone and text messaging warning system
- implementing a new national framework for fire warnings
- participating in the SA Computer Aided Dispatch project to provide new computer aided dispatch systems
- promoting long-term retention and recruitment of volunteers
- working closely with the Council of Ambulance Authorities and the Australasian Fire and Emergency Service Authorities Council's initiatives for service excellence.

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### **Tasmanian Government comments**

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Tasmania has a number of unique characteristics that influence the provision of emergency services throughout the State and affect response/turnout times and infrastructure costs. These characteristics include a small and dispersed population, diseconomies of scale, reliance on a network of dedicated volunteers in rural and remote areas and the State's rugged topography. Tasmania's two major urban centres have low population density compared to the large urban centres in other states.

Tasmania's data includes both urban and rural fire and ambulance service performance and counts all 'call taking' time in response measurements. As Tasmania has the highest percentage of all jurisdictions of its population in rural areas and the lowest proportion (34.9 per cent, compared to a national average of 68 per cent) in highly accessible areas, reliable comparisons of response performance to other jurisdictions are difficult.

The Tasmania Fire Service (TFS) comprises four career brigades and 229 volunteer brigades that respond to fires in all metropolitan and rural areas. Tasmania reports all incidents attended by these brigades, and the TFS bears the full cost of funding both the operating and capital costs of its brigades.

The TFS continues to deliver a broad range of educational and promotional programs to assist at-risk sectors of the community to prevent fires and minimise the impact of fires that occur. Figures indicate that fire-prevention programs targeting at-risk households are particularly effective, with significant decreases in house fire rates over the last 10 years.

The TFS took over the responsibility for road crash rescue in metropolitan areas in 2006-07. The number of patient extrications undertaken by TFS for 2008-09 has increased compared to the previous period. State Emergency Services (SES) continue to provide road crash rescue services for rural areas.

The Tasmanian Ambulance Service (TAS) provides emergency ambulance care, transport services and a non-emergency patient transport service. In addition, TAS provides fixed-wing and helicopter aero-medical services.

Tasmania is currently the only State that provides a free-of-charge ambulance service to the public and consequently there is a far greater reliance on government funding for ambulance services than in all other jurisdictions. The State Government has increased funding to improve services in both urban and rural areas.

Tasmania recorded one of the highest levels of ambulance patient satisfaction of all the states. This factor reflects positively on its ambulance personnel.

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## Australian Capital Territory Government comments

“ The ACT Emergency Services Agency (ESA), which is part of the Department of Justice and Community Safety, comprises the ACT Ambulance Service, the ACT Fire Brigade, the ACT Rural Fire Service and the ACT State Emergency Service along with emergency management and support areas. It also incorporates the affiliated Snowy Hydro Southcare aeromedical services.

The ACT ESA provides services across a broad geographic base to encompass the Bush Capital Planning Model. This geographic spread provides challenges to meet benchmark response standards and community expectations.

Over the past twelve months the ESA has continued to foster the ‘all hazards all agencies’ approach to delivering emergency services and emergency management for the ACT and surrounding region. This was again demonstrated when supporting Victoria during the bushfires. Six taskforces were deployed from the ACT incorporating all agencies to assist with firefighting, incident management teams, liaison, communications, logistics and medical support.

The operational capability of the ESA was further improved or enhanced through the continued work of the following key projects:

- restructure of the ESA and its agencies
- continuing commitment to the operation of Snowy Hydro Southcare aeromedical services with NSW
- significant training initiatives to further staff and volunteer capabilities
- undertaking a strategic station relocation feasibility study
- commencement of a purpose built emergency services headquarters building incorporating all the operational services and support functions
- commencement in the construction of a multi agency training facility.

The Media and Community Information unit provided the ACT community with emergency information and education on preparing for emergency situations. This was achieved by engaging with the media, Canberra Connect and community groups providing regular information updates on websites, and attending community events. A significant project that the ESA undertook this year involved working with the culturally and linguistically diverse community in the development of information packages about how to prepare for storms and floods, fire safety in the home, and how to be bushfire aware and farm fire wise. This was additional to all the other community education campaigns still being undertaken from previous years.

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## Northern Territory Government comments

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The Northern Territory made significant steps forward with its emergency management and response capability during 2008-09. Government announced construction of a new fire station in the Darwin area for completion in 2011-12 including an additional 22 firefighters. This includes a further nine additional firefighter positions in Alice Springs and 11 firefighter and two training positions in the Darwin area over the next two years.

New first response vehicles were brought on-line at volunteer fire stations in Pine Creek and Batchelor to provide improved response capacity for the regions in terms of road crash rescue and firefighting ability. Additional grassfire units were purchased as a Territory-wide resource for hazard abatement and for use on high fire danger days when additional fire crews are placed on operational duties.

The Northern Territory Fire Alarm System Transmission (NTFAST) system was subject to a major upgrade maintaining best practice in fire alarm monitoring across the NT. The Chemical, Biological, Radiological, and Nuclear (CBRN) budget increased ensuring maintenance of equipment. This equipment will now be utilised with Hazmat and other fire service responses. The Urban Search and Rescue (USAR) procurement program, financed through the Australian Government, and managed by Emergency Management Australia was finalised.

Bushfires Northern Territory expanded its fleet and replaced aging earthmoving equipment. Funding was also provided to place the aerial fire suppression arrangements on a stable footing. Operational improvements included the creation of new positions in training and volunteer support. Bushfires Northern Territory has restructured from 10 regions into six to better enable coordinated planning and to provide a consistency of service across the NT.

Bushfires Northern Territory has advanced research into fire related carbon fluxes from its savannah burning program, with a view to enabling accredited burning projects to be included in the Carbon Pollution Reduction Scheme. Two further fire management greenhouse emissions abatement projects will occur in the NT by 2013.

The Northern Territory Emergency Service (NTES) experienced a reasonable level of emergency response activity in the reporting period. Major activities included responding to severe storms in the Alice Springs Region and MacDonnell Shire, power failure issues in Darwin and flooding events in the Barkley Region. NTES continued to develop its capability to assist the community to respond to emergencies.

Internal restructuring was completed with the implementation of an area manager system. Improved capacity to deliver remote training from Darwin continues through a volunteer portal on the Northern Territory Police, Fire and Emergency Services College e-learning website and the completion of the USAR training facility at Alice Springs.

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## 9.8 Definitions of key terms and indicators

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| <b>Alarm notification not involving fire</b> | Fire alarm notification due to the accidental operation of an alarm, the failure to notify fire services of an incorrect test by service personnel or a storm induced voltage surge.  |
| <b>All agencies</b>                          | <p>All agencies should be involved to some extent in emergency management. The context of emergency management for specific agencies varies and may include:</p> <ul style="list-style-type: none"><li>• ensuring the continuity of their business or service</li><li>• protecting their own interests and personnel</li><li>• protecting the community and environment from risks arising from the activities of the organisation</li><li>• protecting the community and environment from credible risks.</li></ul> <p>Emergency management measures may be referred to in a number of organisational and community contexts, including risk management, environmental management, occupational health and safety, quality management, and asset management.</p> |
| <b>All hazards</b>                           | <p>The all hazards approach concerns arrangements for managing the large range of possible effects of risks and emergencies. This concept is useful to the extent that a large range of risks can cause similar problems and such measures as warning, evacuation, medical services and community recovery will be required during and following emergencies. Many risks will, however, require specific response and recovery measures and will almost certainly require specific prevention and mitigation measures.</p>  |
| <b>Ambulance community first responders</b>  | <p>A type of volunteer that provide an emergency response (with no transport capacity) and first aid care before the ambulance arrival.</p>   |
| <b>Ambulance service response times</b>      | <p>The response time is defined as the time taken between the initial receipt of the call for an emergency ambulance and the ambulance's arrival at the scene of the emergency. Emergency responses are categorised by an assessment of the severity of the medical problem:</p> <ul style="list-style-type: none"><li>• code 1 — responses to potentially life threatening situations using warning devices</li><li>• code 2 — responses to acutely ill patients (not in life threatening situations) where attendance is necessary but no warning devices are used.</li></ul> <p>Response times are reported as percentiles in this report.</p>   |
| <b>Ambulance expenditure</b>                 | <p>Includes salaries and payments in the nature of salaries to ambulance personnel, capital expenditure (such as depreciation and the user cost of capital) and other operating expenditure (such as running expenditure, contract expenditure, provision for losses and other recurrent expenditure). Excludes interest on borrowings.</p>   |
| <b>Ambulance incident</b>                    | <p>An event that results in one or more responses by an ambulance service.</p>  |
| <b>Ambulance non-government revenue</b>      | <p>Includes revenue from subscription fees, transport fees, donations and other non-government revenue. Excludes funding revenue from Australian, State and local governments.</p>  |
| <b>Ambulance patient</b>                     | <p>A person assessed, treated or transported by the ambulance service.</p>  |

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| <b>Ambulance personnel</b>                           | Any person employed by the ambulance service provider who delivers an ambulance service, manages the delivery of this service or provides support for the delivery of this service. Includes salaried ambulance personnel, remunerated volunteer and nonremunerated volunteer ambulance personnel.   |
| <b>Ambulance response</b>                            | A vehicle or vehicles sent to an incident. There may be multiple responses/vehicles sent to a single incident.   |
| <b>Ambulance services</b>                            | Provide emergency and non-emergency pre-hospital and out-of-hospital patient care and transport, inter-hospital patient transport, specialised rescue services, ambulance services to multi-casualty events, and community capacity building to respond to emergencies.  |
| <b>Availability of ambulance officers/paramedics</b> | The number of full time equivalent ambulance officers/paramedics per 100 000 people. Ambulance officers/paramedics includes student and base level ambulance officers and qualified ambulance officers but excludes patient transport officers.  |
| <b>Cardiac arrest survived event rate</b>            | For the out-of-hospital setting, survived event rate means sustained return of spontaneous circulation (ROSC) with spontaneous circulation until administration and transfer of care to the medical staff at the receiving hospital (Jacobs, et al. 2004).   |
| <b>Community first responder</b>                     | See 'Ambulance community first responders'.  |
| <b>Emergency ambulance response</b>                  | An emergency ambulance response (code 1) to a pre-hospital medical incident or accident (an incident that is potentially life threatening) that necessitates the use of ambulance warning (lights and sirens) devices.   |
| <b>Events in which extrication(s) occurred</b>       | An event in which the assisted removal of a casualty occurs. An incident with multiple people extricated is counted the same as an incident with one person extricated.  |
| <b>Extrication</b>                                   | Assisted removal of a casualty.  |
| <b>False report</b>                                  | An incident in which the fire service responds to and investigates a site, and may restore a detection system.   |
| <b>Fire death</b>                                    | A fatality where fire is determined to be the underlying cause of death. This information is verified by coronial information.   |
| <b>Fire death rate</b>                               | The number of fire deaths per 100 000 people in the total population.  |
| <b>Fire expenditure</b>                              | Includes salaries and payments in the nature of salaries to fire personnel, capital expenditure (such as depreciation and the user cost of capital) and other operating expenditure (such as running expenditure, training expenditure, maintenance expenditure, communications expenditure, provision for losses and other recurrent expenditure). Excludes interest on borrowings. |
| <b>Fire incident</b>                                 | A fire reported to a fire service that requires a response.  |
| <b>Fire injury</b>                                   | An injury resulting from or relating to a fire or flames, requiring admission to a public or private hospital. Excludes emergency department outpatients and injuries resulting in a fire death.   |
| <b>Fire injury rate</b>                              | The number of fire injuries per 100 000 people in the total population.  |
| <b>Fire personnel</b>                                | Any person employed by the fire service provider who delivers a firefighting or firefighting-related service, or manages the delivery of this service. Includes paid and volunteer firefighters and support personnel.   |

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| <b>Fire safety measure</b>   | <ul style="list-style-type: none"> <li>• Operational smoke alarm or detector</li> <li>• Fire sprinkler system</li> <li>• Safety switch or circuit breaker</li> <li>• Fire extinguisher</li> <li>• Fire blanket</li> </ul>   | <ul style="list-style-type: none"> <li>• Fire evacuation plan</li> <li>• External water supply</li> <li>• The removal of an external fuel source</li> <li>• External sprinkler</li> <li>• Other fire safety measure.</li> </ul> |
| <b>Indirect revenue</b>  | All revenue or funding received indirectly by the agency (for example, directly to Treasury or other such entity) that arises from the agency's actions.  |   |
| <b>Landscape fires</b>   | Vegetation fires (for example, bush, grass, forest, orchard and harvest fires), regardless of the size of the area burnt.   |   |
| <b>Median dollar loss per structure fire</b>   | The median (middle number in a given sequence) value of the structure loss (in \$'000) per structure fire incident.   |   |
| <b>Non-urgent ambulance response</b>   | A non-urgent response (code 3 and code 4) by required ambulance or patient transport services that does not necessitate the use of ambulance warning devices (lights and sirens).   |   |
| <b>Non-structure fire</b>  | A fire outside a building or structure, including fires involving mobile properties (such as vehicles), a rubbish fire, a bushfire, grass fire or explosion.  |   |
| <b>Other incident</b>  | <p>An incident (other than fire) reported to a fire service that requires a response. This may include:</p> <ul style="list-style-type: none"> <li>• overpressure ruptures (for example, steam or gas), explosions or excess heat (no combustion)</li> <li>• rescues (for example, industrial accidents or vehicle accidents)</li> <li>• hazardous conditions (for example, the escape of hazardous materials)</li> <li>• salvages</li> <li>• storms or extreme weather.</li> </ul> |   |
| <b>Percentiles</b>   |   |   |
| <b>50<sup>th</sup> / 90<sup>th</sup> percentile ambulance service response times</b> | The time within which 50 per cent / 90 per cent of emergency (code 1) incidents are responded to by an ambulance.   |   |
| <b>50<sup>th</sup> / 90<sup>th</sup> percentile fire service response times</b>      | The time within which 50 per cent / 90 per cent of first fire resources respond.  |   |
| <b>Response locations (ambulance)</b>  | The number of paid, mixed and volunteer response locations per 100 000 people. Locations are primary ambulance response locations where salaried, volunteer or mixed ambulance operatives are responding in an ambulance vehicle and providing pre-hospital care.   |   |
| <b>Response time (fire services)</b>   | The interval between the receipt of the call at the dispatch centre and the arrival of the vehicle at the scene (that is, when the vehicle is stationary and the handbrake is applied).   |   |
| <b>Road crash rescue</b>   | An incident involving a motor vehicle and the presumption that assistance is required from emergency services organisations.  |   |

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| <b>Staff attrition (ambulance)</b>                          | 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'.  |
| <b>Structure fire</b>                                       | A fire inside a building or structure, whether or not there is damage to the structure.   |
| <b>Structure fire contained to object or room of origin</b> | A fire where direct fire/flame is contained to the room of origin (that is, excludes wildfires and vehicle fire in unconfined spaces). A room is an enclosed space, regardless of its dimensions or configuration. This category includes fires in residential and non-residential structures.  |
| <b>Urgent ambulance response</b>                            | An urgent (code 2) undelayed response required (arrival desirable within 30 minutes) that does not necessitate the use of ambulance warning devices (lights and sirens).  |
| <b>User cost of capital</b>                                 | The opportunity cost of funds tied up in the capital used to deliver services. Calculated as 8 per cent of the current value of non current physical assets (including land, plant and equipment).  |
| <b>Volunteer (ambulance)</b>                                | <p><i>Remunerated volunteer ambulance operatives:</i> all personnel who volunteer their availability, however are remunerated in part for provision of an ambulance response (with transport capability).</p> <p><i>Non-remunerated volunteer ambulance operatives:</i> all personnel engaged on an unpaid casual basis who provide services generally on an on-call basis and are principally involved in the delivery of ambulance services. These staff may include categories on the same basis as permanent ambulance operatives (with transport capability).</p> <p><i>Non remunerated volunteer operational and corporate support staff:</i> all personnel engaged on an unpaid casual basis who provide services generally on an on-call basis and are principally involved in the provision of support services. These staff may include categories on the same basis as permanent ambulance operatives.</p> |
| <b>Volunteer (fire)</b>                                     | <p><i>Volunteer firefighters:</i> staff of the fire service organisation, who deliver or manage a firefighting service directly to the community and who are formally trained and qualified to undertake firefighting duties but do not receive remuneration other than reimbursement of 'out of pocket expenses'.</p> <p><i>Volunteer support staff:</i> all staff that are not remunerated of the fire service organisation, staff shared with other services, and umbrella department's staff. For fire service organisations, any staff that are not remunerated whose immediate client is the firefighter. These can be people in operational support roles provided they do not receive payment for their services other than reimbursement of 'out of pocket expenses'.</p>  |
| <b>Volunteer (S/TES)</b>                                    | Staff of S/TES organisations that do not receive payment for their services other than reimbursement of 'out of pocket expenses'.   |
| <b>Workforce by age group</b>                               | 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).  |

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## 9.9 Attachment tables

Attachment tables are identified in references throughout this chapter by an '9A' suffix (for example, table 9A.3 is table 3). Attachment tables are provided on the CD-ROM enclosed with the Report and on the Review website ([www.pc.gov.au/gsp](http://www.pc.gov.au/gsp)). Users without access to the CD-ROM or the website can contact the Secretariat to obtain the attachment tables (see contact details on the inside front cover of the Report).

### Fire events

- Table 9A.1** Major sources of fire service organisations' revenue (2008-09 dollars)
- Table 9A.2** Reported fires and other primary incidents attended to by fire service organisations (no.)
- Table 9A.3** Fire service organisations and land management agencies reported total landscape fires (bush and grass) incidents
- Table 9A.4** Accidental residential structure fires reported to fire service organisations per 100 000 households
- Table 9A.5** Fire service organisations' human resources
- Table 9A.6** Fire deaths
- Table 9A.7** Fire injuries
- Table 9A.8** Median dollar loss per structure fire (2008-09 dollars)
- Table 9A.9** Property loss from structure fire (2008-09 dollars per person)
- Table 9A.10** Fire incidents attended by fire service organisations per 100 000 people
- Table 9A.11** Household preparedness for emergencies, October 2007
- Table 9A.12** Households with a smoke alarm or smoke detector installed
- Table 9A.13** Response times to structure fires, state-wide (minutes)
- Table 9A.14** Structure fires and response times to structure fires, by geographic areas
- Table 9A.15** Structure fires contained to the object or room of origin (per cent)
- Table 9A.16** Fire service organisations' costs (\$'000) (2008-09 dollars)
- Table 9A.17** Fire service organisations' expenditure per person (2008-09 dollars)
- Table 9A.18** Fire service organisations' funding per person (2008-09 dollars)

### Road crash rescue events

- Table 9A.19** Reported road crash rescue incidents (number)
- Table 9A.20** Reported road crash rescue extrications (number)

### SES/TES services

- Table 9A.21** S/TES volunteer human resources (number)

### Ambulance events

- Table 9A.22** Major sources of ambulance service organisations revenue (2008-09 dollars)
- Table 9A.23** Reported ambulance incidents, responses, patients and transport
- Table 9A.24** Ambulance service organisations' human resources
- Table 9A.25** Ambulance service organisations' human resources, operational workforce, by age group and attrition

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|---|---|
| <b>Table 9A.26</b>                      | Ambulance assets (number)   |
| <b>Table 9A.27</b>                      | Ambulance stations and locations, by staff type                                       |
| <b>Table 9A.28</b>                      | Cardiac Arrest Survived Event Rate  |
| <b>Table 9A.29</b>                      | Ambulance code 1 response times (minutes)   |
| <b>Table 9A.30</b>                      | Satisfaction with ambulance service organisations                                     |
| <b>Table 9A.31</b>                      | Ambulance service costs (\$'000) (2008-09 dollars)                                    |
| <b>Table 9A.32</b>                      | Ambulance service organisations' expenditure per person (2008-09 dollars)             |
| <b>Table 9A.33</b>                      | Ambulance service organisations' revenue per person (2008-09 dollars)                 |
| <b>Contextual and other information</b> |   |
| <b>Table 9A.34</b>                      | Communications and dispatching systems  |
| <b>Table 9A.35</b>                      | Selected fire risk management/mitigation strategies                                   |
| <b>Table 9A.36</b>                      | Prevention activities of fire service organisations                                   |
| <b>Table 9A.37</b>                      | Delivery and scope of activity of primary fire service organisations                  |
| <b>Table 9A.38</b>                      | All activities of fire service organisations  |
| <b>Table 9A.39</b>                      | All activities of State Emergency Services and Territory Emergency Services           |
| <b>Table 9A.40</b>                      | Treatment of assets by emergency management agencies                                  |
| <b>Table 9A.41</b>                      | Summary of emergency management organisations by event type                           |
| <b>Table 9A.42</b>                      | Reported fires and other primary incidents, urban and rural inclusions and exclusions |
| <b>Table 9A.43</b>                      | Top three known ignition factors for structure fires                                  |

## 9.10 References

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