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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/gsp](http://www.pc.gov.au/gsp)>.

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 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 major improvements to reporting on emergency management this year include:

- information and data on the estimated value of volunteers to State and Territory Emergency Services
- higher quality and more comprehensive technological and hazardous material incidents reporting
- data on community first responders
- a revised ambulance performance indicator framework covering nine additional ambulance performance indicators (and retaining all previous indicators)
- reporting upon four of the new ambulance performance indicators:
  - response locations
  - availability of ambulance officers/paramedics
  - workforce by age group
  - staff attrition
- complete data for the cardiac arrest survived event rate indicator (previously data were unavailable for some jurisdictions)
- comparable data for the level of patient satisfaction (previously data were classified as not directly comparable).

## **9.1 Profile of emergency management**

Emergency management is defined as a range of measures to manage risks to communities and the environment (EMA 2003). The emergency management sector includes a range of ESOs 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 addressed by emergency management includes fires, medical transport and emergencies, rescues, other natural events (such as floods, earthquakes, tsunamis, landslides, heatwaves, cyclones and other storms), 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

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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.

### *Australian Government*

The Australian Government administrative arrangements referred to in this section reflect the arrangements in place as at 19 September 2008. 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 EMA)
- providing funding for risk management programs and undertaking comprehensive risk assessment
- supporting community awareness activities (through EMA, 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

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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 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 major emergency events. There can also be substantial cooperative

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efforts across government, 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.

### *Fire service organisations*

State and Territory governments provide a range of emergency management activities through agencies historically considered as 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 accident 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.

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 rural fire services

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(although data on these agencies are not reported in this chapter unless stated). Jurisdictions with more than one fire authority may 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.

Some jurisdictions have particular arrangements for the provision of fire services to Indigenous communities. (For more information on fire services provided to Indigenous communities, see SCRCSSP 2002, p. 572.)

### *Ambulance service organisations*

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.

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).

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

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**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>Metropolitan Ambulance Service, Rural Ambulance Victoria, and Alexandra District Ambulance Service</i> — separate statutory bodies reporting to the Minister for Health
<i>Qld</i>	<i>Queensland Ambulance Service</i> — a division of the Department of Emergency Services, reporting to the Director-General, who reports to the Minister for 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 Acute Services group of the Department of Health and Human Services
<i>ACT</i>	<i>ACT Ambulance Service</i> — The ACT Ambulance Service is 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).

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

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. The S/TES has a role in searches, rescues, floods, cyclones and other storms and a major role in attending road rescue incidents and performing extrications.

### *Other ESOs*

This Report does not yet report on the performance of Australian Government or local government emergency management services or their agencies.

### *Volunteers in emergency management*

In 2007-08, over 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
<b>2005-06</b>									
ASOs	84	915	427	2 851	1 479	503	–	14	6 273
FSOs	76 195	58 849	41 324	26 890	15 120	4 765	1 018	539	224 700
S/TES	10 302	4 437	9 394	1 863	1 896	577	168	392	29 029
<b>Total</b>	<b>86 581</b>	<b>64 201</b>	<b>51 145</b>	<b>31 604</b>	<b>18 495</b>	<b>5 845</b>	<b>1 186</b>	<b>945</b>	<b>260 002</b>
<b>2006-07</b>									
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>
<b>2007-08</b>									
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>

ASO = ambulance service organisation. FSO = fire services organisation. <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 were categorised into volunteers with transport capability and first responders with no transport capability. Data for 2007-08 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: For Rural Fire Brigade and SES units, the decrease in numbers is the result of an audit of volunteer records that identified and removed records of volunteers who have left. <sup>f</sup> WA: SES data exclude 510 volunteer emergency service members who may also undertake an SES role. <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 SES volunteer time (Handmer and Ganewatta 2007) 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:* Handmer, J. and Ganewatta, G. (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 Review continues to examine data on rural and remote service provision in the emergency services sector.

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## 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:

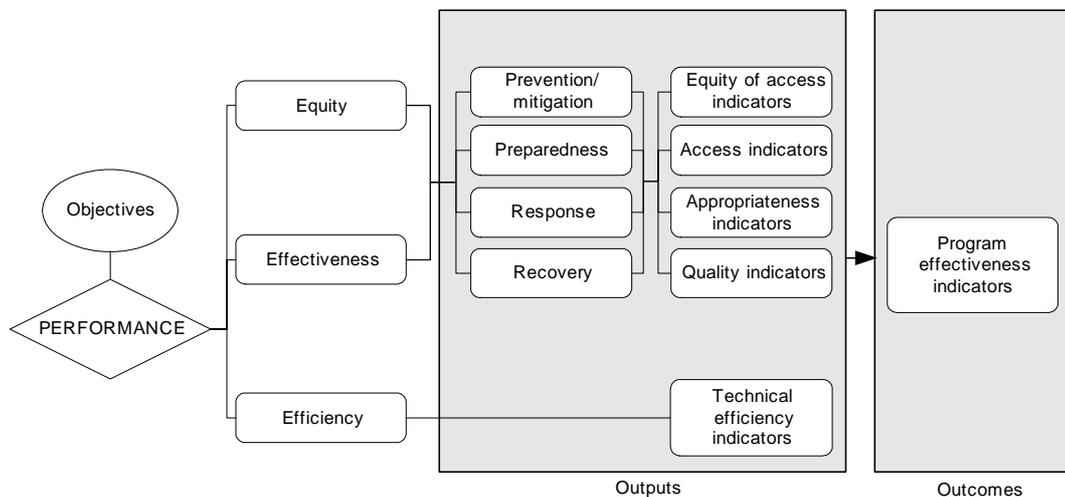
- reduce the adverse effects of emergencies and disasters on the community (including people, property, infrastructure, economy and environment)
- contribute to the management of risks to the community
- enhance public safety.

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 rescue events reflects these activities.

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

The 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’; the ‘fire injury rate’; the ‘median dollar losses from structure fire’; and ‘property losses from structure fire per person’. Outcome indicators for road rescue events are yet to be developed.

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



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

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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 (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 their response plan(s).
- *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.

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.

### **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 \$2.4 billion in 2007-08. Over the period 2003-04 to 2007-08 funding increased (in real terms) for most jurisdictions (table 9.2).

**Table 9.2 Real funding of fire service organisations (2007-08 dollars)  
(\$ million)<sup>a</sup>**

	<i>NSW<sup>b</sup></i>	<i>Vic<sup>c</sup></i>	<i>Qld</i>	<i>WA<sup>d</sup></i>	<i>SA</i>	<i>Tas</i>	<i>ACT<sup>e</sup></i>	<i>NT</i>	<i>Aust</i>
2003-04	672.6	513.2	350.8	137.7	152.9	56.9	44.4	18.6	1 947.2
2004-05	710.1	538.7	338.2	131.6	151.7	56.5	49.6	21.6	1 997.9
2005-06	725.8	564.5	346.4	147.8	153.4	51.8	56.4	22.7	2 068.8
2006-07	806.9	926.9	358.2	237.3	152.7	55.6	52.5	23.0	2 613.2
2007-08	767.2	759.3	361.8	232.3	165.8	57.0	48.5	19.2	2 411.1

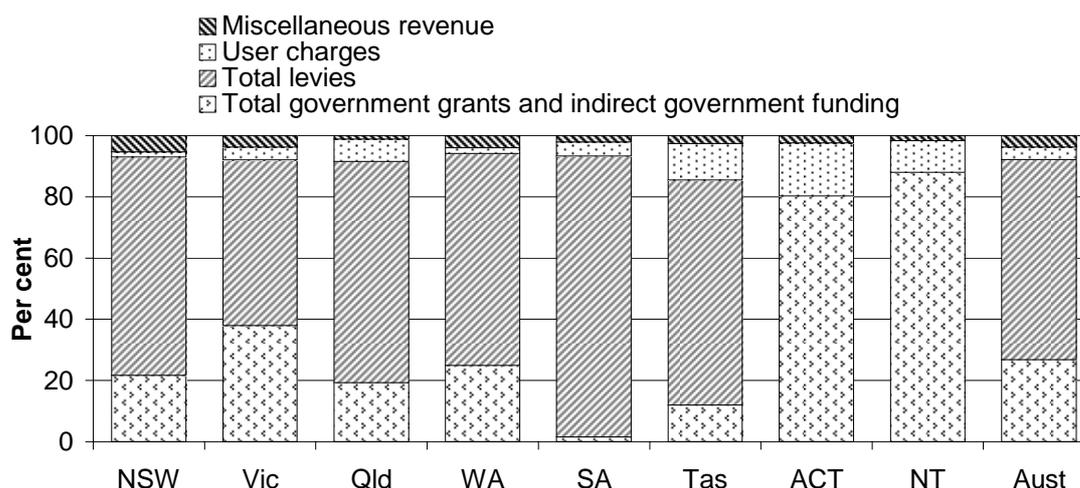
<sup>a</sup> Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007-08 = 100) (table AA.26). <sup>b</sup> NSW: Figures vary from year to year as a result of abnormal expenditure related to the response to specific major emergencies. <sup>c</sup> Vic: The 2006-07 year is the first which includes revenue for the Department of Sustainability and Environment (DSE) and explains the marked increase for that year. <sup>d</sup> WA: FESA provides a wide range of emergency services under an integrated management structure. Data for 2006-07 cannot be segregated by service and include funding related to delivery of other emergency services including SES and volunteer marine rescue. <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 under 'miscellaneous revenue' 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 2007-08 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 2007-08, 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, 26.8 per cent of funding for fire service organisations was provided by government as government grants and indirect government revenue in 2007-08 (a decrease from 33.6 per cent in 2006-07) with the proportion varying across jurisdictions (figure 9.2).

**Figure 9.2 Major sources of fire service organisation revenue, 2007-08**



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 the operational provider, including administrative, technical and communications personnel).

Nationally, 17 891 full time equivalent (FTE) paid personnel were employed by fire service organisations in 2007-08. Nationally, 13 191 FTE or 73.7 per cent of the 17 891 FTE were paid firefighters. A large number of volunteer firefighters (218 853 people) also participated in the delivery of fire services in 2007-08 (table 9A.5).

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### *Fires and other emergency incidents*

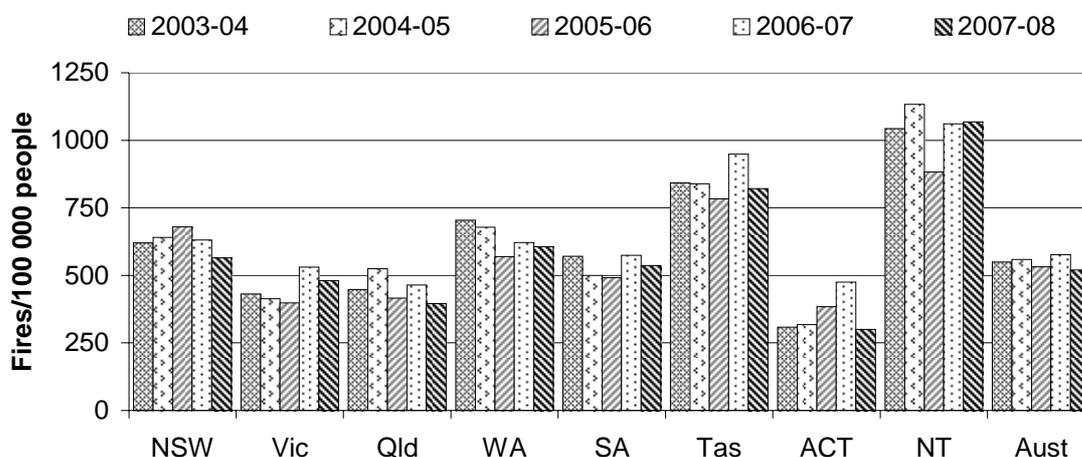
Various urban and rural fire service organisations operate within jurisdictions (table 9A.37). Complete data on reported fires and other incidents were not available in all jurisdictions

Nationally, 29.0 per cent or 110 019 of the 379 769 reported incidents attended to by fire service organisations were fires, and 70.5 per cent were other emergencies and incidents in 2007-08, with these proportions varying across jurisdictions (table 9A.2). A significant proportion of all 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, 519 fire incidents per 100 000 people were attended in 2007-08, a decrease from 577 in 2006-07 (figure 9.3).

**Figure 9.3 Fire incidents attended by fire service organisations per 100 000 people<sup>a, b, c, d, e, f, g</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% of Queensland's population. <sup>b</sup> WA: Data include reported turnouts by career and volunteer services to fire. <sup>c</sup> Tas: Data include *all* fire brigades, both full-time and volunteer. <sup>d</sup> ACT: Includes data for urban and rural fire service organisations. <sup>e</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 caused by increased growth of vegetation due a large wet season during the reporting period. <sup>f</sup> Aust: The average for Australia excludes rural fire service data as per the jurisdictions' caveats. <sup>g</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased Estimated Resident Population (ERP) data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08.

Source: State and Territory governments (unpublished). tables 9A.10 and AA.2.

### *Ignition factor for structure fires*

The ignition factors causing structure fires vary from jurisdiction to jurisdiction (table 9A.43). Nationally, the top ignition factor reported for 2007-08 was undetermined or not reported (21.6 per cent), followed by:

- other (20.9 per cent)
- unattended heat sources (15.3 per cent)
- short-circuit, ground fault and other electrical failure (10.0 per cent)
- suspicious (8.7 per cent) (table 9A.43).

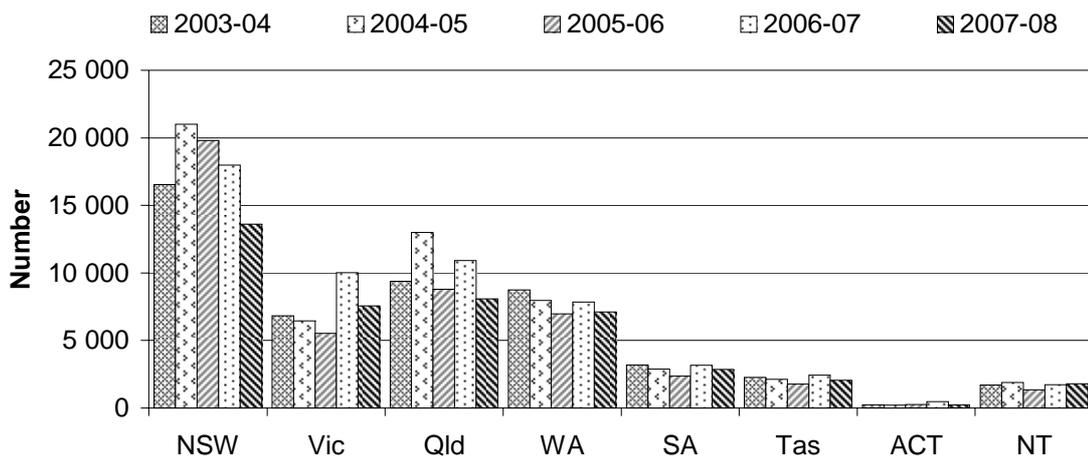
Cause identification assists fire service organisations and other emergency management stakeholders to formulate fire prevention, community safety and public education programs. Cause identification also helps formulate legislation and

standards, and is used to assist in recovery through the provision of information to facilitate insurance claims and settlements.

### *Total reported landscape fire incidents*

Nationally, 43 301 landscape (bush and grass) fire incidents were reported by fire service organisations and land management agencies in 2007-08 (table 9A.3). The number of landscape fires is influenced by a number of factors such as climate, amongst others (figure 9.4). Landscape fire incidents reported to land management agencies are excluded 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, also for some jurisdictions, land management agencies. <sup>b</sup> NSW: Data include fires 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: Due to data collection issues, data are incomplete for 2005-06. <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. Due to drought in the previous financial year and significant rainfall from December 2007 there are less landscape fire incidents for 2007-08. <sup>e</sup> WA: Data include landscape fires reported by the Department of Environment and Conservation as a lead agency, with 444 fires recorded for 2007-08. <sup>f</sup> SA: MFS industrial action 18/4/05 0800 hrs to 20/06/05 1800 hrs (no incident reports in this period). <sup>g</sup> Tas: Data include all vegetation fires, regardless 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 during the year corresponds to a milder fire season than the previous year. This number is in line with prior years. <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.

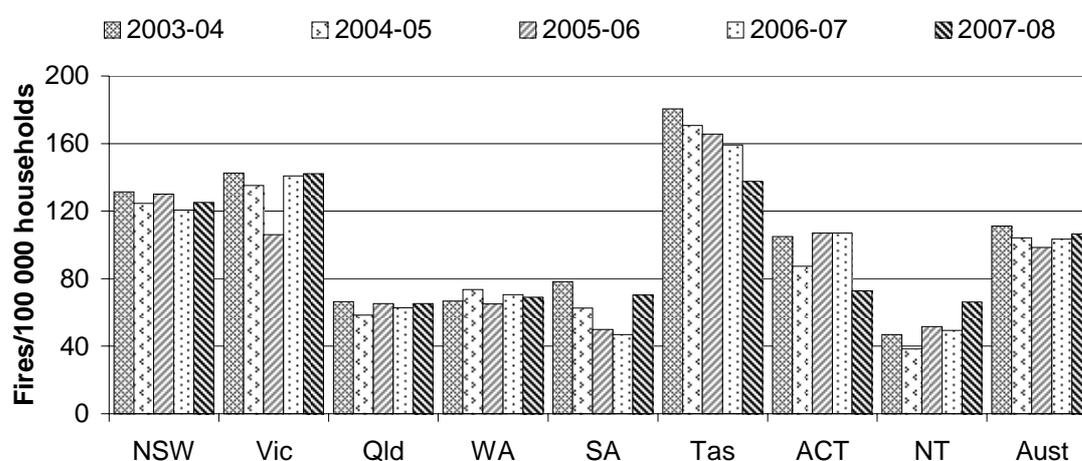
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### Accidental residential structure fires reported to fire service organisations per 100 000 households

The rate of accidental residential structure fires per 100 000 households is reported in figure 9.5. Although the national rate has been relatively constant, different trends appear within jurisdictions.

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

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<sup>a</sup> This measure may not be entirely comparable. The rate of accidental residential structure fires is affected by the number of fires where the cause has been determined and classified by fire service personnel. The household numbers used are ABS revised 2008 therefore data may differ from earlier reports. <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>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.

Source: ABS (various years) *Australian Social Trends*, Cat. no. 4102.0; 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. There are rising expectations 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 3201 hazardous materials incidents in 2007-08 (table 9.3). 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).

**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<sup>e</sup></i>	<i>SA<sup>a</sup></i>	<i>Tas</i>	<i>ACT<sup>a</sup></i>	<i>NT</i>	<i>Aust</i>
2003-04	767	1 891	253	68	1 331	24	60	122	4 516
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	414	87	180	26	179	90	3 201

<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: 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 collection and counting methods have been amended to reflect closer alignment to agreed definitions and counting rules. Past years' data have been revised for comparison purposes.

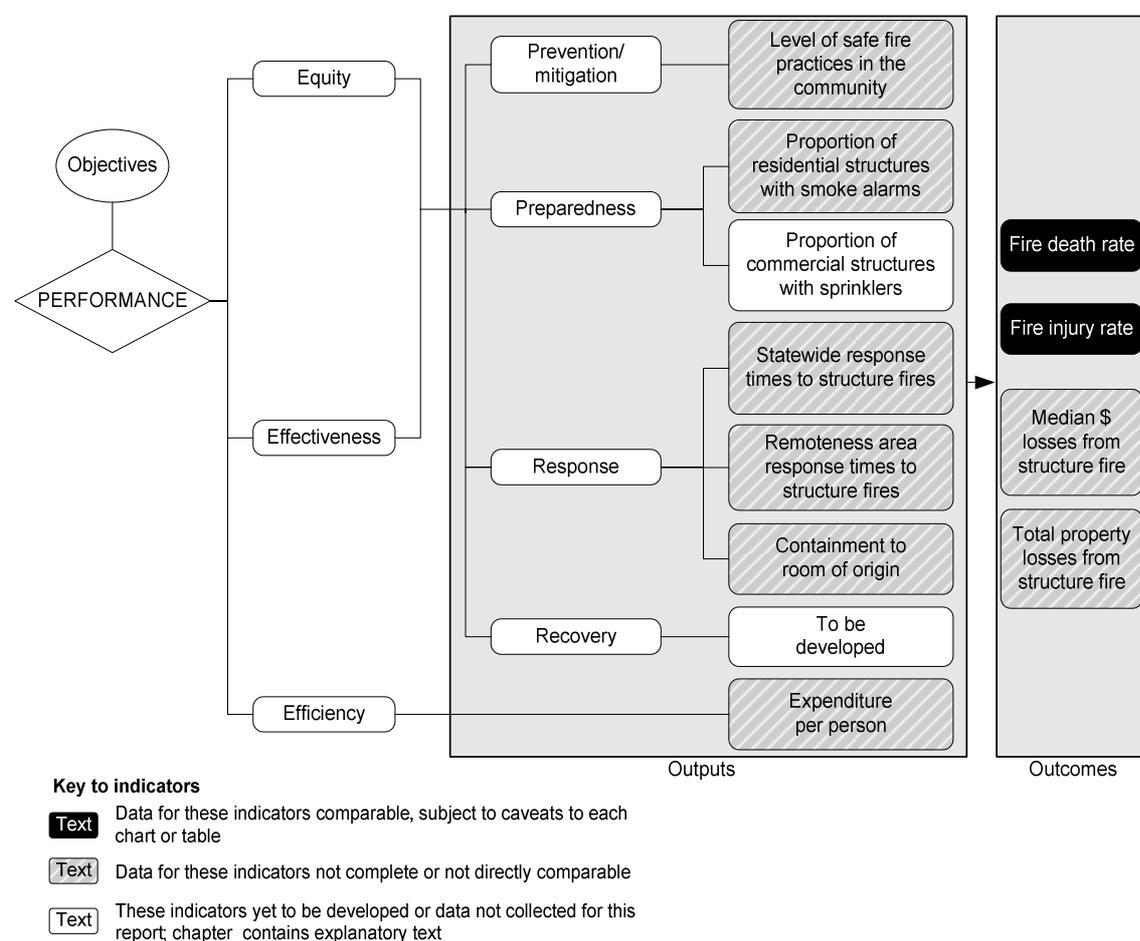
Source: State and Territory governments (unpublished).

## 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.

The performance indicator framework for fire events shows which data are comparable in the 2009 Report. For data that are not considered directly comparable, the text includes relevant caveats and supporting commentary. Chapter 1 discusses data comparability from a Report wide perspective (see section 1.6).

Figure 9.6 Performance indicators for fire events



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.

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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 1000 people). 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 and enhance the standards for the collection of fire events data, which is evident by the inclusion of rural fire service organisations data for more jurisdictions in more current 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'.

### *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.

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### *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 9.4).

#### **Box 9.4 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 are fires to 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.

Data reported for this indicator are not directly comparable. Data for this indicator were last reported in the 2002 Report and were not available for the 2009 Report.

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 were previously available from the ABS Population Survey Monitor (PSM) (ABS 2001). Since the PSM was discontinued (in November 2001), 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, those with an already high level of reported smoke alarms in home may target and survey 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.

### *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.

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*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 9.5).

**Box 9.5 Proportion of residential structures with smoke alarms**

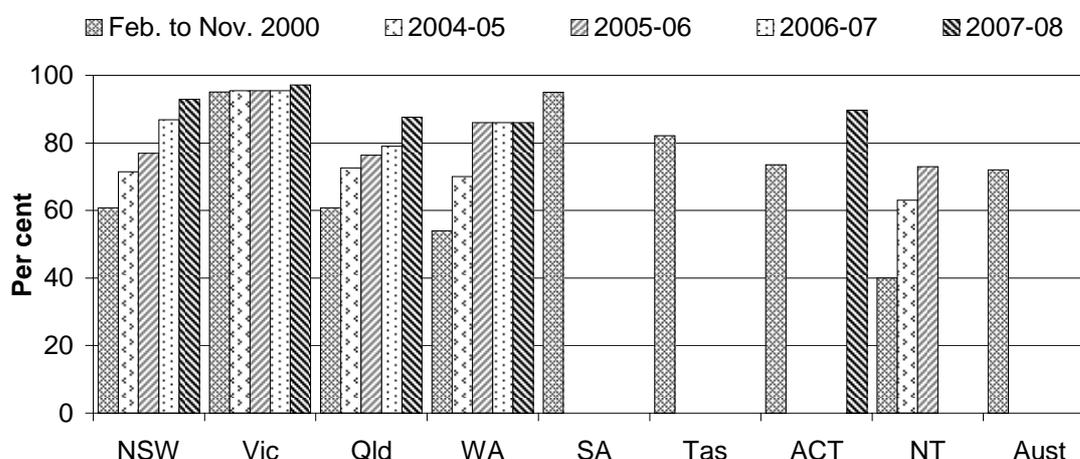
'Proportion of residential structures with smoke alarms' is defined as the number of households with a smoke alarm installed, divided by the total number of households.

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.

Nationally consistent data for all jurisdictions were last available in 2000, from the discontinued ABS PSM. Subsequent data are sourced from jurisdictional collections and are not strictly comparable (figure 9.7).

Figure 9.7 Households with a smoke alarm installed<sup>a, b, c, d, e, f</sup>



<sup>a</sup> The February 2000 to November 2000 data are from the Population Survey Monitor (PSM) and represent the last occasion on which smoke alarm data were collected for all jurisdictions. The PSM was subsequently discontinued and, from 2002-03 onwards, the data were sourced from jurisdictional collections that were not strictly comparable with the PSM because of methodological differences. <sup>b</sup> NSW: Data are sourced from the NSW Population Health Survey 2007, from the NSW Department of Health. Estimates are based on the following numbers of respondents: 2002 – 12564, 2003 – 13008, 2004 – 8892, 2005 – 10687, 2006 – 7795 and 2007 – 7301. The 95 per cent confidence interval for 2007 is (92.0–93.7). <sup>c</sup> Vic: Data for 2007-08 sourced from ABS Household Preparedness for Emergencies survey. Prior data sourced from a random telephone survey of 2304 respondents residing within the 23 local government areas significant to the metropolitan fire district which was conducted in April 2004. <sup>d</sup> Qld: Data collected by the Office of Economic and Statistical Research as part of the November 2007 Queensland Household Survey. This figure is an estimate for the whole population of Queensland. <sup>e</sup> WA: 2007-08 data are based on a random telephone survey of 300 Perth residents and 100 country residents conducted by a market research organisation in April 2008. <sup>f</sup> ACT: Data for 2007-08 supplied by ABS Household Preparedness for Emergencies survey.

Source: ABS 2001, *Population Survey Monitor*, Cat. no. 4103.0, Canberra; ABS 2008, *Household preparedness for emergencies*, Cat. no. 4818.0.55.001, Canberra; State and Territory governments (unpublished); table 9A.12.

Current nationally comparable and complete time series data are not available on proportion of residential structures with smoke alarms. Cross-sectional, nationally consistent data are available for four jurisdictions on a variety of safety precautions (NSW, Victoria, Queensland and the ACT), for October 2007 (table 9A.11). Results indicate that across those four jurisdictions:

- 7.9 per cent of households 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).

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

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### *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 9.6).

#### **Box 9.6 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.

Data for this indicator are yet to be developed.

### *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 9.7).

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**Box 9.7 Statewide, and remoteness area, response times to structure fires**

Statewide, and remoteness area, response times are defined as the time within which 50 per cent of structure fires are responded to by when the first fire appliance arrives at the scene and the time within which 90 per cent of structure fires are responded to 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 9.8.

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

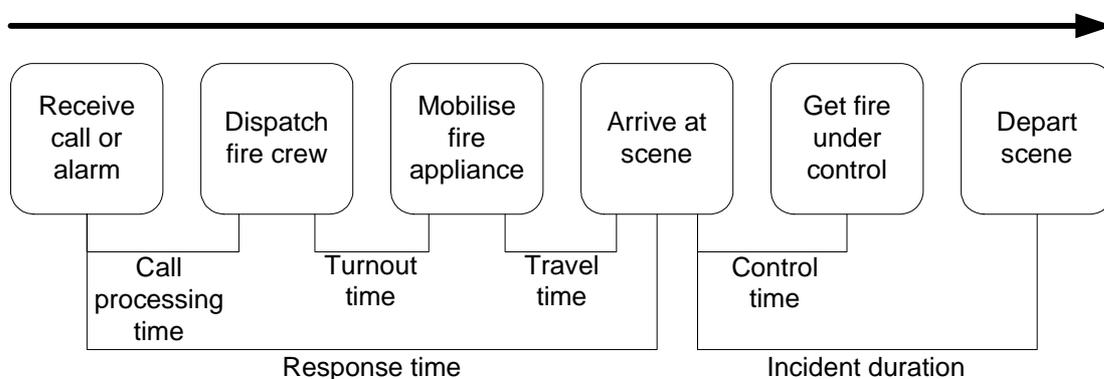
Data reported for this indicator are not directly comparable.

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, and
- crewing configurations, response systems and processes, and travel distances.

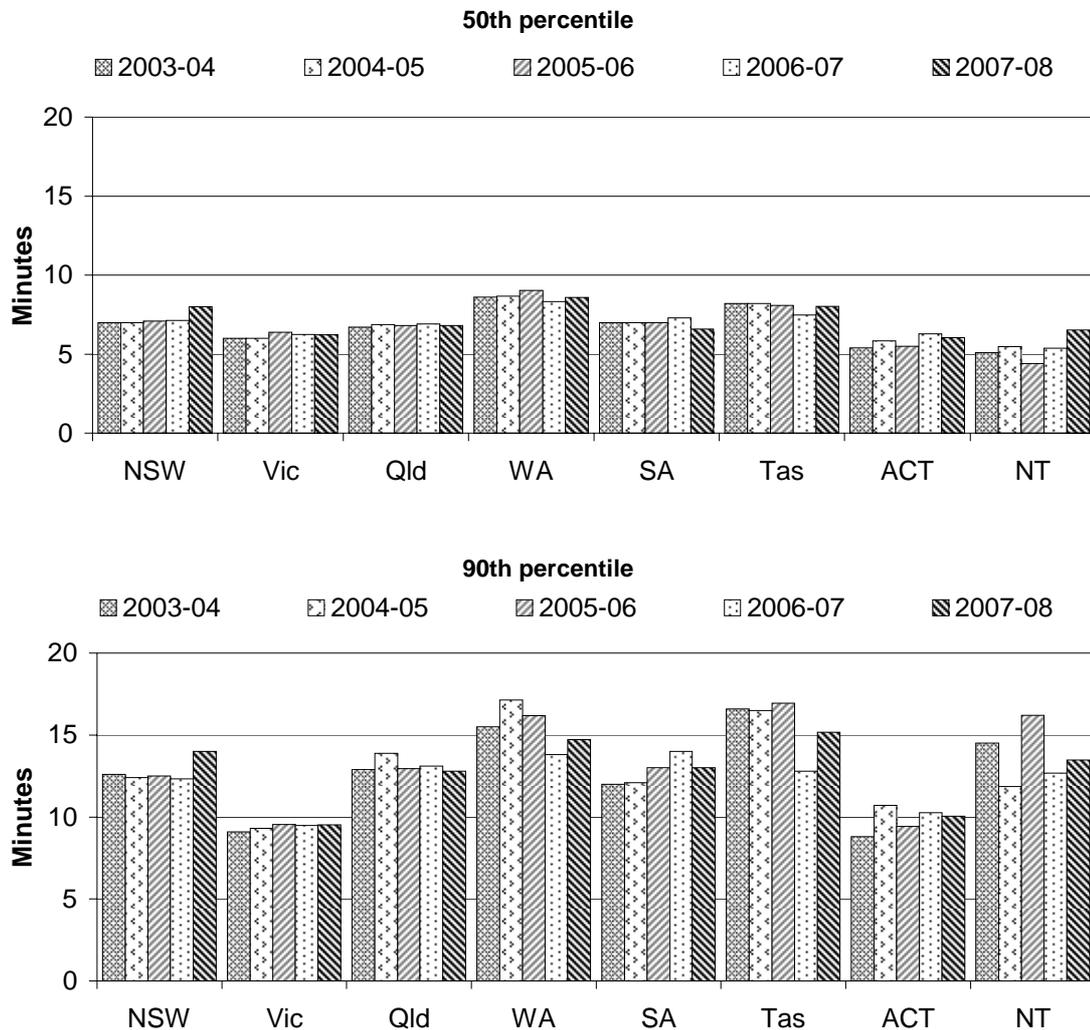
In addition, reported response times may be affected by data collection systems. Some agencies use a manual system to calculate response time figures, while other services retrieve the data from computer aided dispatch (CAD) systems.

**Figure 9.8 Response time points and indicators for fire events**



Response times vary between jurisdictions (figure 9.9). Response times can be segmented into remoteness areas based on the ABS Australian Standard Geographical Classification (figure 9.10).

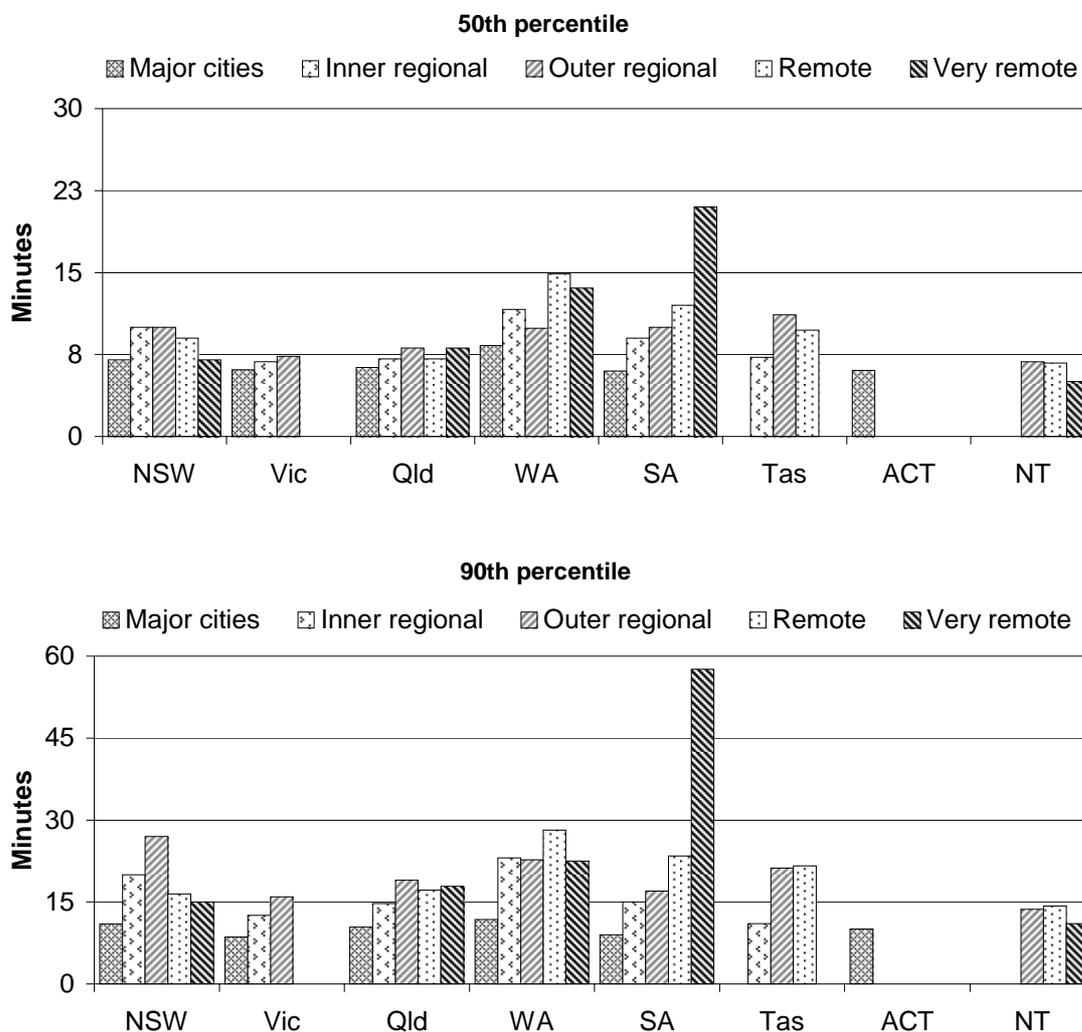
Figure 9.9 Response times to structure fires, state-wide<sup>a, b, c, d, e, f</sup>



<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. <sup>b</sup> NSW: Contributing factors that have lead to the reported increases include: improved reporting resulting in a more accurate representation of true response times in regional and remote categories and the effects of increased traffic congestion in metropolitan areas. <sup>c</sup> Vic: Response times reflect only emergency calls, not calls to all structure fire incidents. <sup>d</sup> Qld: Code 30 incidents have been excluded from all response time calculations. Two incidents were unable to be classified by remoteness and have been removed from calculation. Response times for QFRS Rural brigade crews are not included as response times are not accurately recorded. Only primary exposure incidents are included. <sup>e</sup> WA: Incidents where response time information is incomplete are excluded from response time calculations. Response times for major cities, regional and remote areas are impacted by volunteer data that, particularly in remote areas of the state are affected by significant travel time to incidents. <sup>f</sup> Tas: Data are for all fire brigades, both full-time and volunteer.

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

**Figure 9.10 Response times to structure fires, by remoteness area, 2007-08<sup>a, b, c, d, e, f, g, h, i</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. <sup>b</sup> Data may differ from those in table 9A.2 because some jurisdictions have excluded reports with incomplete time details. <sup>c</sup> NSW: Contributing factors that have led to the reported increases include: improved reporting resulting in a more accurate representation of true response times in regional and remote categories and the effects of increased traffic congestion in metropolitan areas. <sup>d</sup> Vic: Response times reflect only emergency calls, not calls to all structure fire incidents. There are no very remote areas in Victoria. <sup>e</sup> Qld: Code 30 incidents have been excluded from all response time calculations. Two incidents were unable to be classified by remoteness and have been removed from calculation. Response times for QFRS Rural brigade crews are not included as response times are not accurately recorded. Only primary exposure incidents are included. <sup>f</sup> WA: Incidents where response time information is incomplete are excluded from response time calculations. In 2007-08, data for 158 structure fires was incomplete. Response times for major cities, regional and remote areas are impacted by volunteer data that, particularly in remote areas of the state are affected by significant travel time to incidents. <sup>g</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. In 2007-08, the high 90th percentile figure for the 'Very remote' category is due to a small number of reported incidents (10), with one incident reporting a response time of 60 minutes. <sup>h</sup> Tas: Data are for all fire brigades, both full-time and volunteer. <sup>i</sup> ACT: All responses were within the major city.

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 9.8).

### Box 9.8 Containment to room of origin

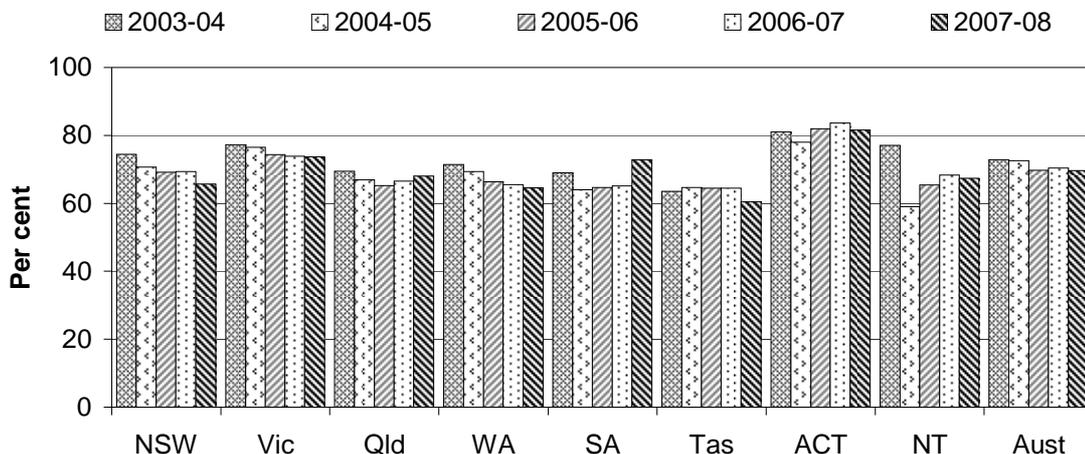
‘Containment to room of origin’ is defined as the number of structure fires contained to the object or room of origin divided by the total number of structure fires. Structure fires are those fires in housing and other buildings.

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 has varied between and within jurisdictions over time (figure 9.11).

Figure 9.11 **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 due to data collection issues. <sup>c</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. <sup>d</sup> WA: In 2007-08, 566 incidents were excluded as containment codes were not completed. <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, the proportion of incendiary and suspicious structure fires contained to the object or room of origin was 57.5 per cent and for accidental structure fires 79.6 per cent, in 2007-08. These rates have declined slightly over the five years to 2007-08 (table 9A.15).

### *Equity and effectiveness — recovery*

Recovery indicators measure governments' objective to reduce the adverse effects of fires on the community (box 9.9).

#### **Box 9.9 Performance indicator — recovery**

'Recovery' indicators measure the results of strategies and services to return agencies to a state of preparedness after emergency situations.

Recovery has been identified as a key area for development in future reports.

### *Efficiency*

#### *Expenditure per person*

'Expenditure per person' is a proxy indicator of the efficiency of governments in delivering emergency management services (box 9.10).

#### **Box 9.10 Expenditure per person**

'Expenditure per person' is defined as fire service organisation expenditure per person.

All else 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.

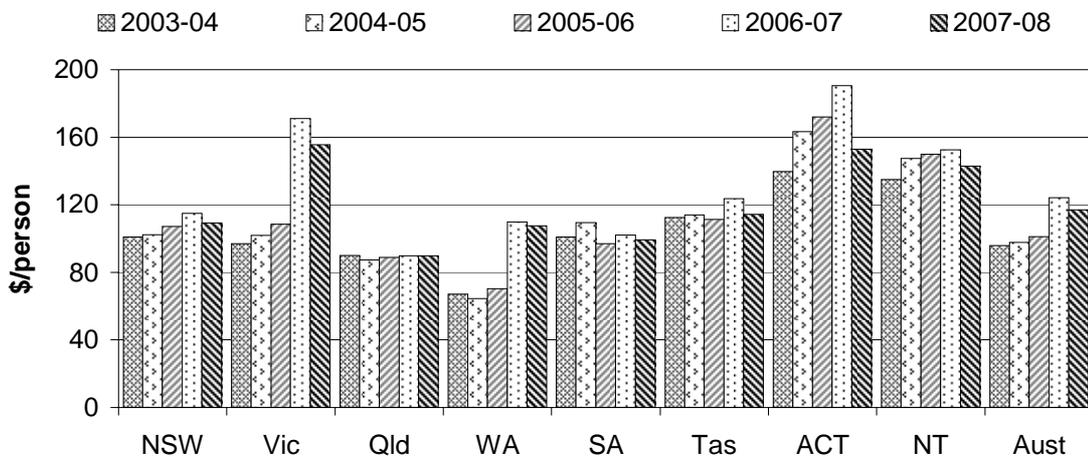
Expenditure per person is employed as a proxy for efficiency. Expenditure per fire is not used as a proxy for fire service organisation efficiency because an organisation that applies more resources to the prevention and preparedness components to reduce the number of fire incidents could erroneously 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 2007-08 was \$117.07 (figure 9.12).

**Figure 9.12 Fire service organisations expenditure per person (2007-08 dollars)<sup>a, b, c, d, e</sup>**

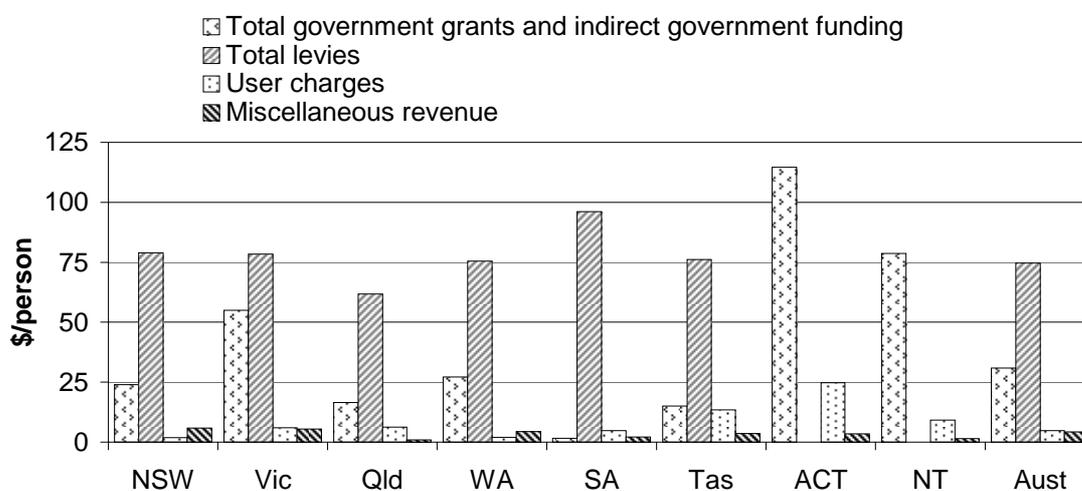


<sup>a</sup> Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007-08 = 100) (table AA.26). Due to differences in definitions and counting rules, data reported may differ from those in agency annual reports and other sources. Total fire expenditure includes 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, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08. <sup>c</sup> Vic: The 2006-07 year is the first in which the Victorian data includes expenditure for the Department of Sustainability and Environment (DSE) and explains the marked increase for that year. <sup>d</sup> WA: FESA provides a wide range of emergency services under an integrated management structure. Data for 2006-07 cannot be segregated by service and includes SES and volunteer marine services as well as fire. <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 under 'miscellaneous revenue' 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); tables 9A.17 and AA.2.

Nationally, total government grants and indirect government funding of fire service organisations per person in 2007-08 was \$30.80. Levies per person in 2007-08 averaged \$74.93 nationally, with relatively minor contributions from user charges and miscellaneous revenue. The major sources of funding varied considerably across jurisdictions (figure 9.13).

Figure 9.13 Fire service organisation funding per person, 2007-08<sup>a</sup>



<sup>a</sup> See notes to figure 9.12 and table 9A.18.

Source: State and Territory governments (unpublished); tables 9A.18 and AA.2.

### 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). The outcome indicators reported here, ‘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 9.11).

### Box 9.11 Fire death rate

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

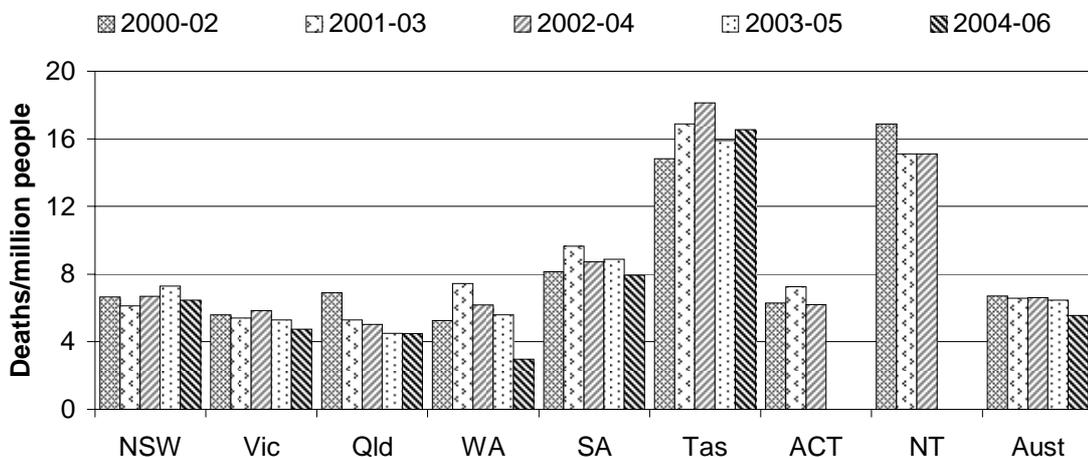
A low or decreasing fire death rate represents a better outcome.

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.

Nationally, there were 92 fire deaths in 2006. Exposure to smoke, fire and flames accounted for 71 deaths and 12 fire deaths occurred from intentional self-harm by smoke, fire and flames (table 9A.6). The fire death rate was 4.4 deaths per million people in 2006 (more recent data are not available). Fire deaths data are volatile over time, because of the small number of fire deaths. To overcome data volatility, a three year average fire death rate is reported (figure 9.14). Nationally, the three year average fire death rate was 5.6 per million people for 2004–06.

Figure 9.14 Annual fire death rate, three year rolling average<sup>a, b, c, d, e</sup>



<sup>a</sup> Fire deaths published in the 2008 and 2009 Reports for the years 1999 to 2003 inclusive, differ slightly from those published in earlier reports because ABS revisions for those years have now been incorporated. 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 revised totals are not necessarily the sum of the component cells. Cause of Death is coded according to the International Classification of Diseases (ICD) and Related Health Problems Revision 10 (ICD-10). <sup>b</sup> 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 data for the ACT, the NT and Other Territories. <sup>e</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 30 June 2002 to 2006). Calculated using the ERP at 30 June. For example, population data at June 2006 used for calculating 2006 rate.

Source: ABS (various years) *Causes of Death, Australia*, Cat. no. 3303.0 (unpublished); tables 9A.6 and AA.2.

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### *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 9.12).

#### **Box 9.12 Fire injury rate**

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

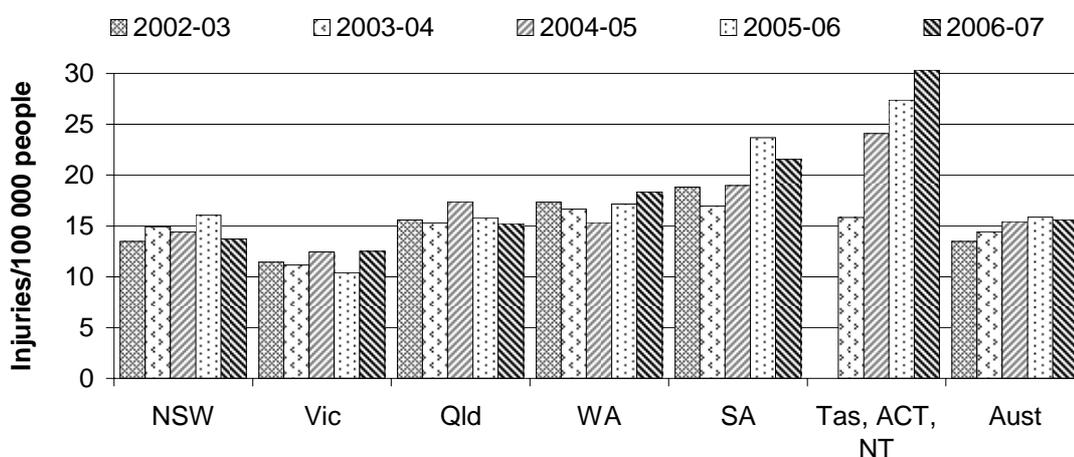
A lower fire injury rate represents a better outcome.

Fire injuries are represented by hospital admissions 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) (excluding emergency department non-admitted casualties). 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.

Nationally, there were 3305 fire injuries in 2006-07 (table 9A.7). Nationally, the fire injury rate was 15.6 injuries per million people in 2006-07 (figure 9.15). Fire injury rates are volatile over time, given the small number of fire injuries. To overcome data volatility, a three year average fire injury rate is also reported in the data attachment for periods and jurisdictions with published data (table 9A.7).

Figure 9.15 Fire injury rate<sup>a, b, c</sup>



<sup>a</sup> Fire injuries data in the 2008 and 2009 Reports differ from those in earlier reports because counting rules for fire injury data have now been more closely aligned with those for fire deaths. Fire injuries are coded according to the ICD and Related Health Problems Revision 10 (ICD-10). Reported fire injury numbers published have been expanded to 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 accidents, and emergency department non-admitted casualties. <sup>b</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2006 is used as the denominator for 2006-07. <sup>c</sup> A single, combined fire injury rate and numbers are included for Tas, ACT and NT to ensure privacy of private sector hospitals in accordance with AIHW confidentiality policies.

Source: Australian Institute of Health and Welfare (AIHW), *National Hospital Morbidity Database* (unpublished); tables 9A.7 and AA.2.

### Losses from structure fire

‘Median dollar losses from structure fire’ (box 9.13) and ‘total property loss from structure fire’ (box 9.14) are indicators of the effect of fire on property.

#### Box 9.13 Median dollar losses from structure fire

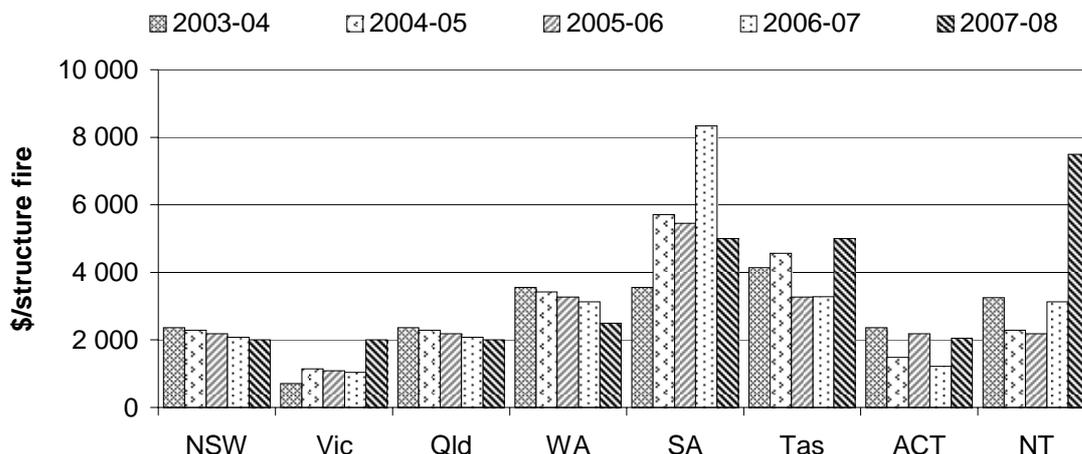
‘Median dollar losses from structure fire’ is defined as the median dollar losses from structure fire (a fire in a house or other building), adjusted for inflation. The median is the middle number in a sequence and is regarded as a more appropriate measure of ‘typical’ losses than the average (or mean)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

Lower or decreasing median dollar losses represent a better outcome.

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 9.16).

Figure 9.16 Median dollar loss per structure fire (2007-08 dollars)<sup>a, b, c, d, e</sup>



<sup>a</sup> Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007-08 = 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. <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> Tas: Data are for *all* fire brigades, both full-time and volunteer. Property loss does not include losses as a result of vegetation fires. <sup>e</sup> ACT and NT: Due to small population size, figures are affected by single large-loss events.

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

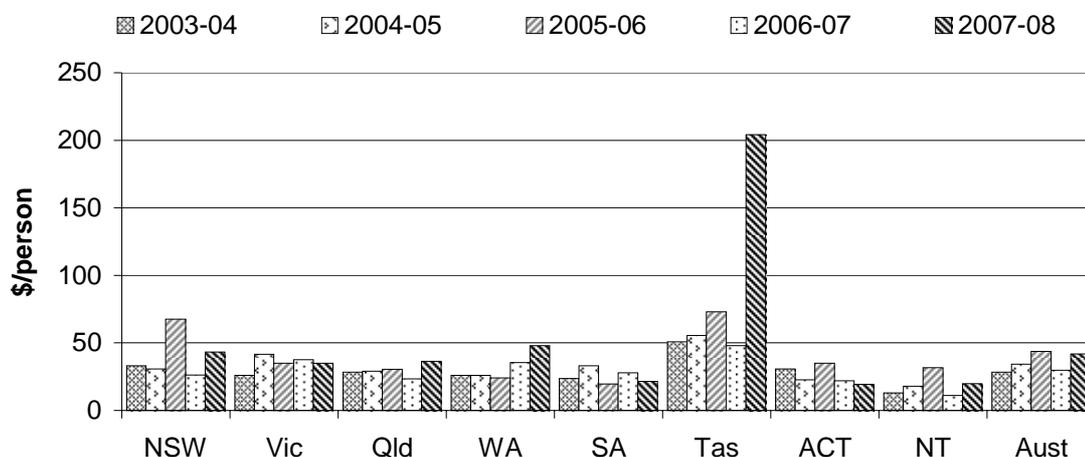
#### Box 9.14 Property losses from structure fire per person

'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.

The property loss per person (expressed in real terms) has fluctuated over time in all jurisdictions (figure 9.17). Data for the three year rolling average property loss per person are also available in the attachment tables (table 9A.9).

Figure 9.17 **Property loss from structure fire per person (2007-08 dollars)<sup>a, b, c, d, e, f, g, h</sup>**



<sup>a</sup> Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007-08 = 100) (table AA.26). Estimates have not been validated by the insurance industry or adjusted for interstate valuation differences. Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08. <sup>b</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; 2007-08, 19 at \$1+ million each with four at \$5+ million each and one at \$100 million. <sup>c</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. <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. QFRS Urban stations (Agency 1) are estimated to serve 87.6 per cent of Queensland's population. One major incident accounted for \$41m of the total property loss value. <sup>e</sup> SA: In 2006-07 there was a \$15 million fire that accounted for 35 per cent of the reported dollar loss. <sup>f</sup> Tas: Data are for *all* fire brigades, both full time and volunteer. Due to small population size, figures are impacted significantly by single large-loss events. For example, 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. <sup>g</sup> ACT and NT: Due to small population size, figures are impacted significantly by single large-loss events. <sup>h</sup> Average for Australia excludes rural fire service data for some years as per the jurisdictions' caveats.

Source: State and Territory governments (unpublished); tables 9A.9 and AA.2.

## 9.4 Road rescue events

A road rescue event is an accident or incident involving a motor vehicle and the presumption that there are injuries or 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. Emergency service organisations provide services that contribute to these objectives through the provision of effective and efficient trauma mitigation and medical and retrieval services.

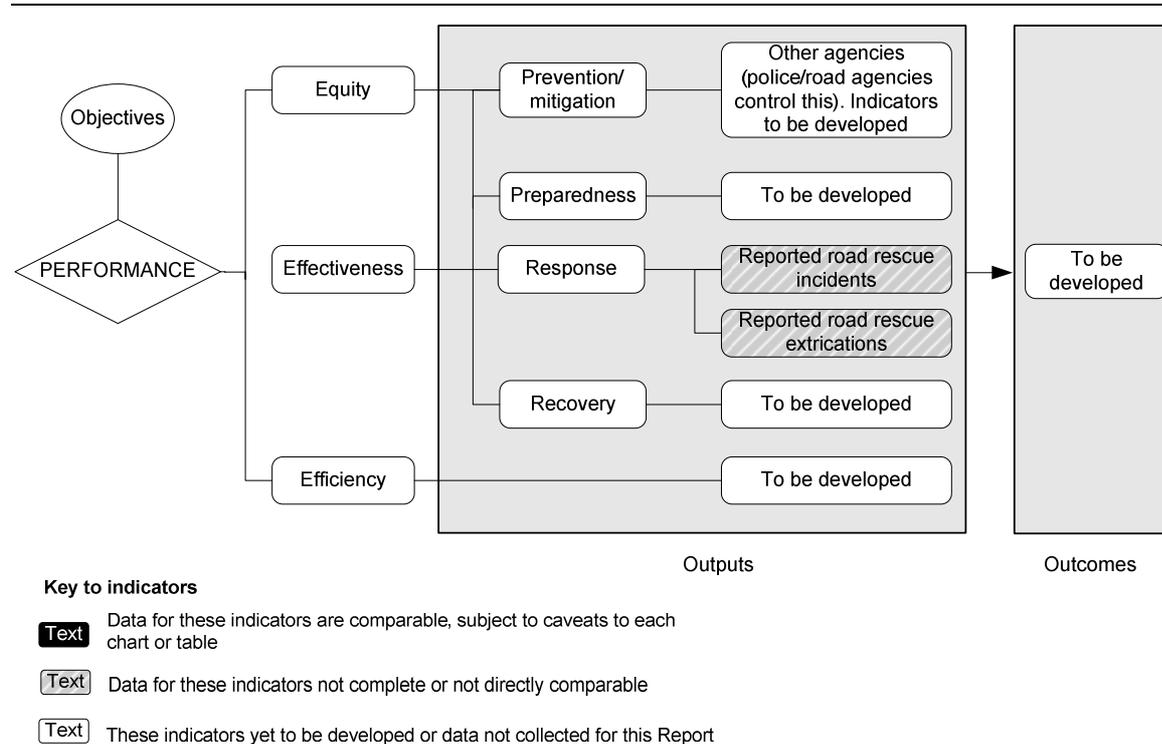
## Emergency management services for road rescue events

In all jurisdictions, a diverse range of ESOs attend road rescue events. Nationally, road rescue services are provided by over 20 organisations (table 9A.41).

### Framework of performance indicators

A revised performance indicator framework has been drafted as a preliminary framework for road rescue events and circulated for consultation. Consultation during 2008 has raised numerous, complex issues, requiring further development work. These will be resolved for the 2010 Report. In the interim, a less developed framework is at figure 9.18, reflecting reporting in the 2009 Report.

Figure 9.18 Performance indicators for road rescue events



Related road rescue events reporting is also included in the Police services chapter under road safety (section 6.6). In 2006-07, road transport accidents accounted for 1597 deaths and 35 562 hospitalisations (tables 6A.41-2). In 2007-08, road transport accidents accounted for 1510 deaths and 36 587 hospitalisations (table 6A.41).

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### *Effectiveness — response*

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

#### *Reported road rescue incidents*

'Reported road rescue incidents' is an indicator of governments' objective to reduce the adverse effects of road incidents on the community through appropriate response activities (box 9.15).

#### **Box 9.15    Reported road rescue incidents**

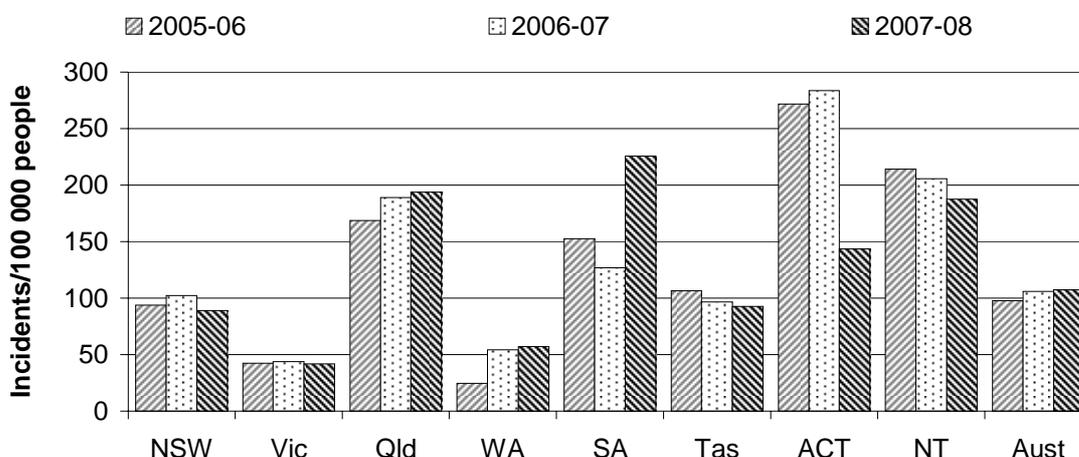
'Reported road rescue incidents' is defined as a reported accident or incident involving a motor vehicle and the presumption that there are injuries or that assistance is required from emergency services organisations. It is measured by reported road rescue incidents per 100 000 people.

Higher or increasing proportion of reported road rescue incidents attended suggests better emergency service response capacity. However, a lower or decreasing number of reported road rescue incidents, adjusted for population, is a better community outcome.

Data for this indicator are not directly comparable.

Nationally, there were 22 725 road rescue incidents in 2007-08, or 107.3 incidents per 100 000 people (table 9A.29). The number of incidents per 100 000 people varied across jurisdictions. This may reflect different collection methods and therefore a lack of comparability between jurisdictions. Collection methods have improved, and only the three most recent years are presented in figure 9.19. Earlier years are reported in attachment table 9A.29.

Figure 9.19 Reported road rescue incidents per 100 000 people<sup>a, b, c, d, e, f</sup>



<sup>a</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. <sup>b</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. <sup>c</sup> WA: Data collection and counting methods have been reviewed to achieve alignment to data definitions and counting rules. Data for 2006-07 have been revised from those earlier reported to provide a basis for comparison. <sup>d</sup> Tas: Data are for responses by fire services, ambulance services and SES. <sup>e</sup> ACT: Data analysis has been refined in 2007-08 to better reflect road rescue incidents. <sup>f</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08.

Source: State and Territory governments (unpublished); tables 9A.29 and AA.2.

### Reported road rescue extrications

‘Reported road rescue extrications’ is an indicator of governments’ objective to reduce the adverse effects of road incidents on the community through appropriate response activities (box 9.16).

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**Box 9.16    Reported road rescue extrications**

'Reported road rescue extrications' is defined as an assisted release and removal of trapped people (usually of a casualty) from motor vehicles by specially equipped and trained emergency service crews, arising from incidents reported. It is measured by reported extrications:

- per 100 000 people
- per 100 000 registered vehicles
- per million vehicle kilometres travelled.

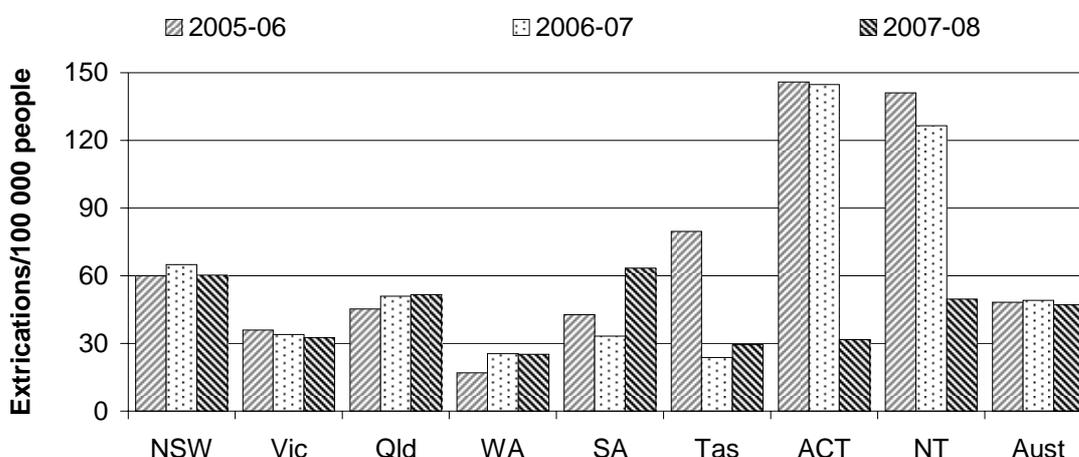
Higher or increasing proportion of reported road rescue extrications performed suggests better emergency service response capacity. However, a lower or decreasing number of reported road rescue extrications, adjusted for population, is a better community outcome.

Data for this indicator are not directly comparable.

Data for road rescue extrications per 100 000 people display some marked variations across jurisdictions (figure 9.20). These variations may reflect different collection methods and therefore lack of comparability between jurisdictions. Collection methods have improved, and only the three most recent years are presented in figure 9.20. Earlier years are reported in attachment table 9A.20.

Extrications per 100 000 registered vehicles and extrications per million vehicle kilometres travelled are reported in the attachment data table 9A.20.

Figure 9.20 Reported road rescue extractions<sup>a, b, c, d, e, f</sup>



<sup>a</sup> Vic: Due to data collection issues, data are incomplete for 2005-06. <sup>b</sup> Qld: QFRS Rural Incident Database does not currently record the necessary information to calculate this measure. <sup>c</sup> WA: Data include road rescue incidents attended by fire services and SES. <sup>d</sup> Tas: Data include responses by fire services, ambulance services and SES. <sup>e</sup> ACT: Data analysis has been refined in 2007-08 to better reflect road rescue incidents. <sup>f</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08.

Source: State and Territory governments (unpublished); tables 9A.20 and AA.2.

## 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. They include: 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 on in table 9A.26.

Ambulance data reported in this chapter are from the principal state/territory ambulance organisations, as distinct from the whole state/territory, due to private providers and other outsourced arrangements.

### Revenue

Total revenue of ambulance service organisations covered in this Report was \$1.75 billion in 2007-08. Nationally, revenue (expressed in real terms) increased each year from 2003-04 to 2007-08, with an average annual growth rate of 5.7 per cent (table 9.4).

**Table 9.4 Revenue of ambulance service organisations (2007-08 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>
2003-04	415.6	383.7	338.5	92.0	110.9	23.2	24.5	13.7	1 402.0
2004-05	430.8	427.1	341.1	105.9	121.6	27.1	18.3	17.2	1 489.1
2005-06	464.1	454.5	357.8	107.6	121.9	29.3	21.4	17.3	1 574.1
2006-07	485.4	445.4	384.8	111.7	124.8	31.4	19.6	18.4	1 621.6
2007-08	540.9	468.1	409.8	118.9	137.8	33.2	21.3	19.8	1 749.8

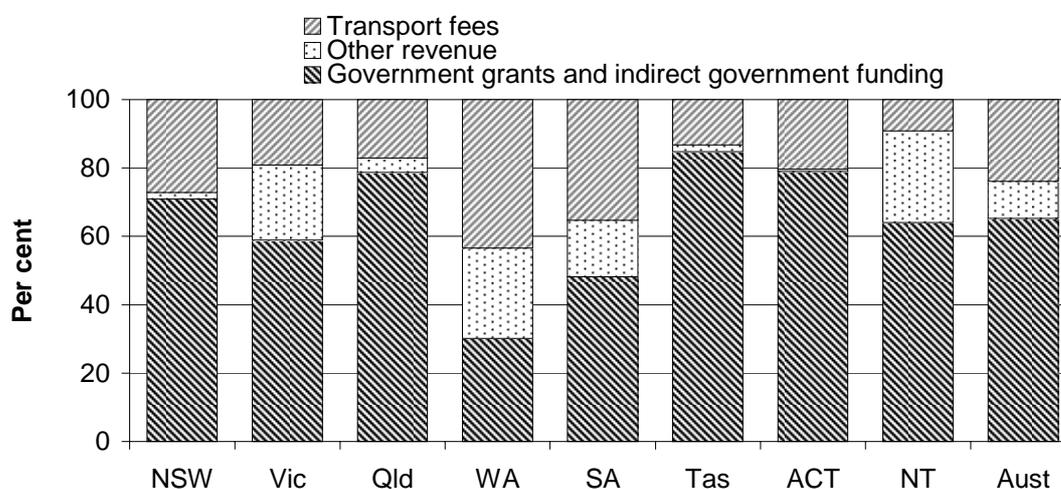
<sup>a</sup> Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007-08 = 100) (table AA.26). Due to differences in definitions and counting rules, data reported may differ from data in agency annual reports and other sources. <sup>b</sup> Totals may not sum due to rounding.

Source: State and Territory governments (unpublished); tables 9A.22 and AA.26.

Ambulance service organisations are funded by a variety of sources, with non-government sources making a significant contribution. The primary sources of funding across all jurisdictions in 2007-08 were revenue from State and Territory governments, transport fees (from government hospitals, private citizens and insurance) and other revenue (subscriptions, donations and miscellaneous revenue) (figure 9.21).

Nationally, 65.3 per cent of funding for ambulance service organisations in 2007-08 was provided as direct government revenue and indirect government revenue, with the remainder sourced from transport fees and other revenue (figure 9.21).

Figure 9.21 Major sources of ambulance service organisation revenue, 2007-08<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.

### Incidents

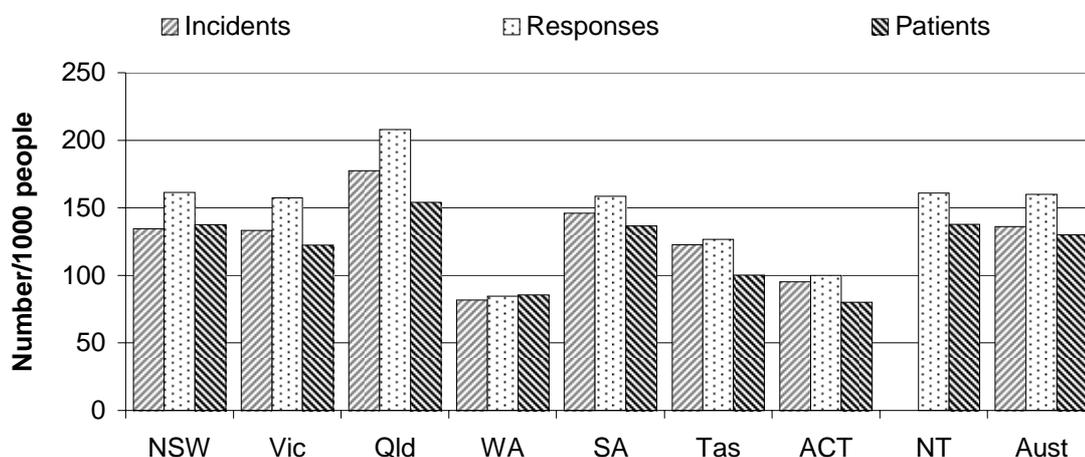
Ambulance service organisations attended 2.88 million incidents nationally in 2007-08 (excluding the NT) (table 9A.23). Most of these were emergency incidents (39.4 per cent), followed by non-emergency incidents (33.1 per cent) and urgent incidents (27.2 per cent).

### *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 160 responses per 1000 people and 130 patients per 1000 people, in 2007-08 (figure 9.22).

Figure 9.22 **Reported ambulance incidents, responses and patients, 2007-08<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, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08.

Source: State and Territory governments (unpublished); tables 9A.23 and AA.2.

### *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 2006-07, 84.5 per cent of emergency department patients in triage category 1 arrived by ambulance, air ambulance or helicopter rescue services and 47.6 per cent of patients in triage category 2. For all triage categories, 22.8 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 2006-07 (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	81.5	85.3	88.2	82.9	86.7	90.4	84.8	82.3	84.5
2 — Emergency	47.0	47.1	55.4	40.0	47.5	55.7	36.4	43.3	47.6
3 — Urgent	33.1	33.5	38.6	25.6	34.6	36.7	27.2	27.3	33.5
4 — Semi-urgent	18.5	14.2	17.7	10.1	12.7	14.1	10.1	11.2	15.5
5 — Non-urgent	5.6	2.5	4.2	2.9	5.6	2.2	2.0	4.8	4.2
<b>Total</b>	<b>23.7</b>	<b>20.6</b>	<b>27.6</b>	<b>17.5</b>	<b>25.1</b>	<b>24.1</b>	<b>17.0</b>	<b>16.9</b>	<b>22.8</b>

<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: Derived from AIHW (2008) *Australian Hospital Statistics*, National Non-admitted Patient Emergency Department Care Database.

### *Aero-medical arrangements in Australia*

There is a variety of arrangements for air ambulance or aero-medical services 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 2007-08, 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, 2007-08<sup>a, b</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	4	4	–	–	–	–	–	–	8
Operated by other service providers									
Fixed wing	1	–	13	11	7	–	–	6	38
Helicopter	5	1	16	1	3	1	1	–	28
<b>Total aircraft</b>	14	9	29	12	10	2	1	6	83
<b>Expenditure (\$'000)</b>	62 686	27 392	na	468	na	3 765	602	na	94 913

<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> Fixed wing services in WA, SA and NT 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. – 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 this service, 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 the ambulance arrival.

Nationally, 12 344 FTE salaried personnel were involved in the delivery of ambulance services in 2007-08. The majority of salaried ambulance personnel in 2007-08 were ambulance operatives (81.9 per cent) (table 9A.24).

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Nationally, 5836 volunteer personnel (comprising 4515 operatives and 1321 support personnel) participated in the delivery of ambulance services in 2007-08. 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 particularly high number of volunteer operational and corporate support personnel (table 9A.24).

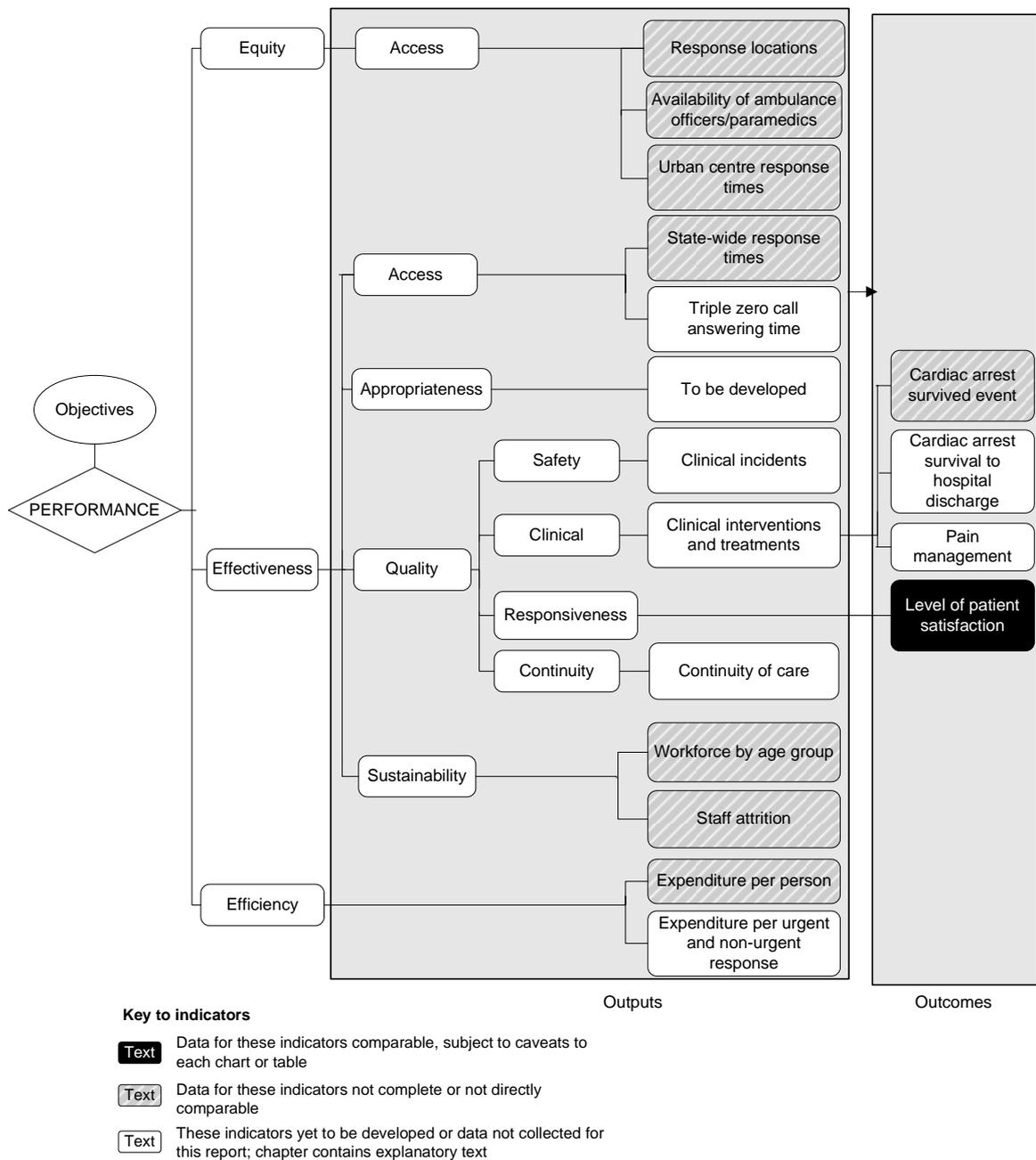
Nationally there were 809 ambulance community first responders in 2007-08 (table 9A.24). In some locations the first responder service is provided by another emergency service agency, for example, a fire service.

### **Framework of performance indicators**

Figure 9.23 presents the performance indicator framework for ambulance events. This framework, based on the general framework for the health section of the Report, replaces the framework presented in recent, previous reports, which was based on the general framework for all emergency events. This approach is consistent with the general performance indicator framework and service process diagram outlined in chapter 1. The new framework includes all previous indicators, plus nine additional indicators. Data are available for reporting on four of the new indicators in this Report.

The performance indicator framework for ambulance events shows which data are comparable in the 2009 Report. For data that are not considered directly comparable, the text includes relevant caveats and supporting commentary. Chapter 1 discusses data comparability from a Report wide perspective (see section 1.6). Definitions of all indicators are provided in section 9.8.

Figure 9.23 Performance indicators for ambulance events



Caution should be exercised in making comparisons between the ambulance service organisations because of differences in geography, population dispersal and service delivery models. Appendix A contains demographic and socioeconomic data that may assist in interpreting the performance indicators presented in this section.

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## 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 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’; ‘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 9.17).

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**Box 9.17 Response locations**

'Response locations' is defined as 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.

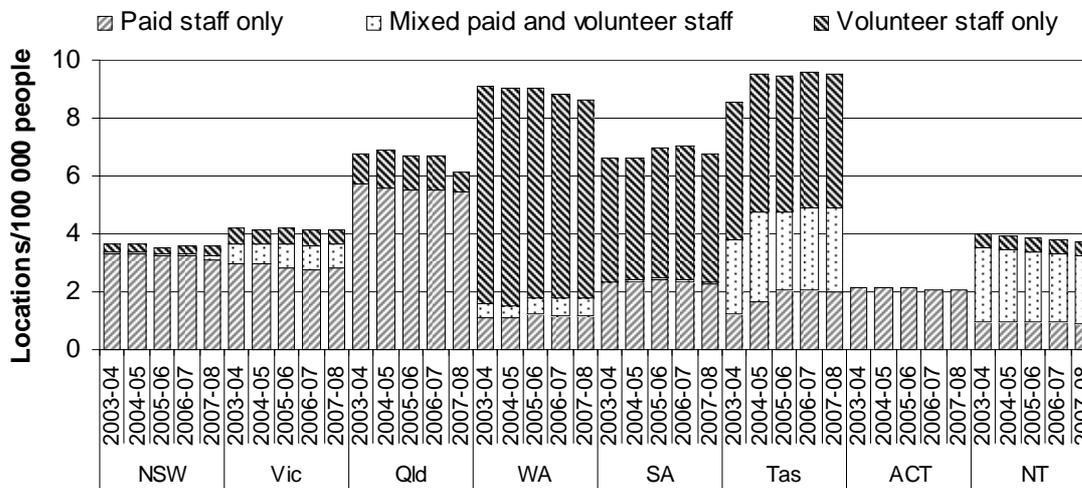
Higher or increasing numbers of paid, mixed and/or volunteer response locations, after adjusting for population, suggests better ambulance service response capacity.

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 explains the different expenditure patterns of ambulance services across jurisdictions. The service delivery strategies vary between jurisdictions, especially between urban and rural areas. In some jurisdictions smaller rural areas have salaried ambulance personnel whereas in other jurisdictions stations may have either mixed paid and volunteer personnel or wholly volunteer personnel. The service delivery strategy in smaller rural areas has a significant impact on cost and helps explain differentials in expenditure per capita between jurisdictions. For example figure 9.24 shows that WA and Tasmania have the highest numbers of stations per capita yet they both have low expenditure per capita because of their high reliance on volunteer service provision in 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 2007-08 (table 9A.27). The number of paid, mixed and volunteer response locations per 100 000 people varied across jurisdictions (figure 9.24).

Figure 9.24 Number of paid, mixed, and volunteer response locations per 100 000 people, 2007-08<sup>a, b</sup>



<sup>a</sup> Historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08. <sup>b</sup> Response locations data for 2007-08 reflect changes in the new data definition, which does not include first responder locations.

Source: State and Territory governments (unpublished); tables 9A.27 and AA.2.

### 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 9.18).

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**Box 9.18 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.

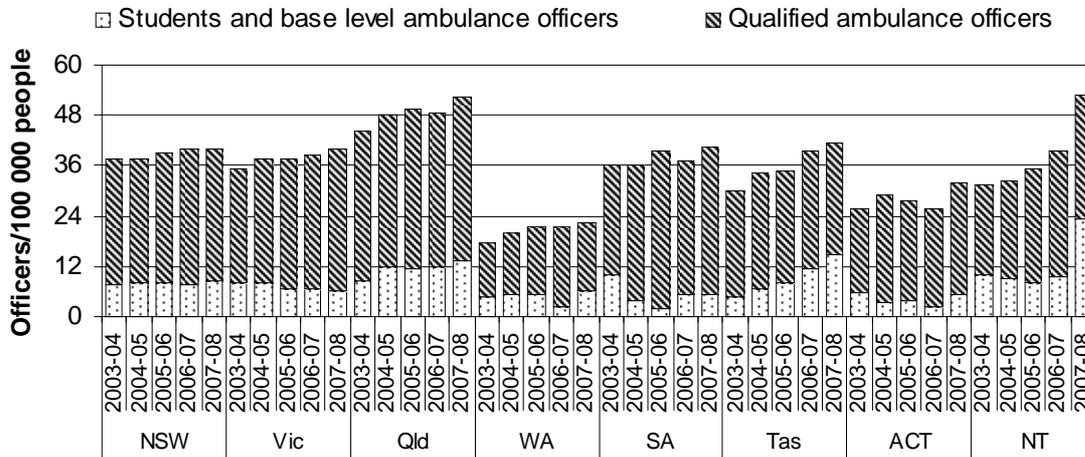
The role of paramedics is expanding to provide primary health care, improve emergency response capabilities and strengthen community healthcare collaborations in rural and remote communities (Stirling et al 2007). Many rural and remote communities do not have access to adequate health care due, in part, 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 was 41.1 FTE ambulance officers/paramedics per 100 000 people in 2007-08 (table 9A.24). The number of FTE ambulance officers/paramedics per 100 000 people varied across jurisdictions (figure 9.25).

Figure 9.25 Number of full time equivalent ambulance officers/paramedics, per 100 000 people, 2007-08<sup>a, b</sup>



<sup>a</sup> Data relate to paid staff only. <sup>b</sup> Historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08.

Source: State and Territory governments (unpublished); tables 9A.24 and AA.2.

### Response times

‘Response times’ are included as indicators of governments’ objective of providing equitable, accessible and effective ambulance services to communities (box 9.19).

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### Box 9.19 **Response times**

'Response times' is defined as the time within which 50 per cent of the first responding ambulance resources arrive at the scene of an emergency in code 1 situations and 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 9.26). 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.

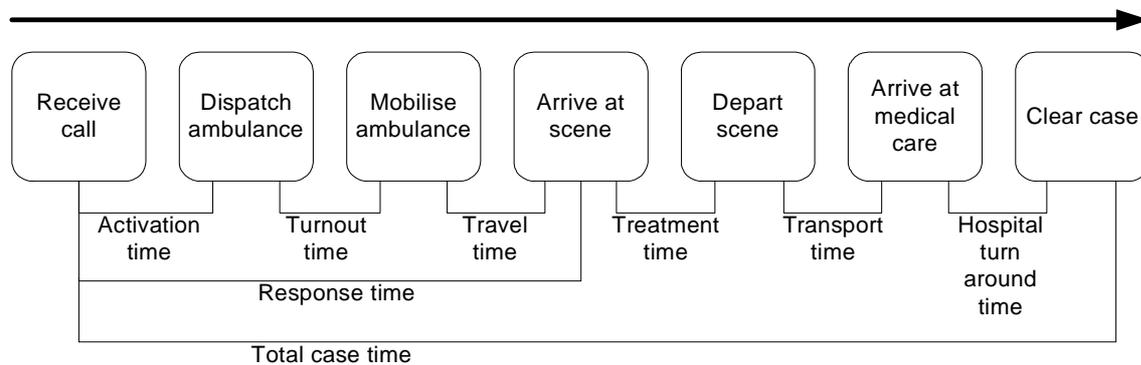
Shorter response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced.

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. For example, ambulance service response times are recorded commencing from varying time points.

**Figure 9.26 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 9.20).

**Box 9.20 Urban centre response times**

‘Urban centre response times’ is defined as described in box 9.19, for urban centre responses.

Shorter, or reducing, response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced. The population densities across Australian capital cities varies considerably (table 9A.29) and this can impact on response time performance.

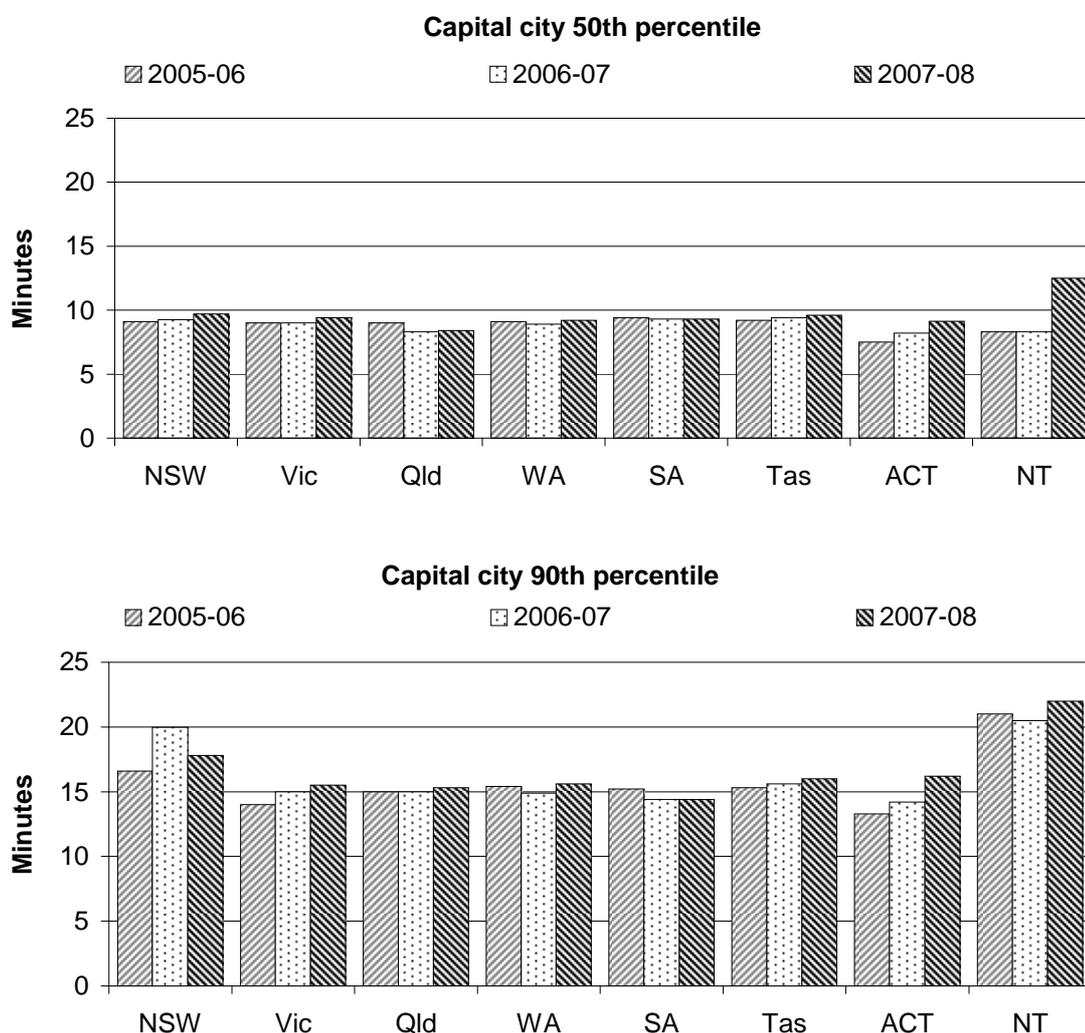
This indicator might be further developed to report data for urban centres with populations 50 000 and above in future reports.

Data for this indicator are not directly comparable.

Nationally, 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 was around 10 minutes (an estimated midpoint only). 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 was around 17 minutes (an estimated midpoint only) (figure 9.27).

Urban centre response times within most jurisdictions remained steady between 2003-04 and 2007-08 (table 9A.29).

Figure 9.27 Ambulance response times (urban centre)<sup>a, b, c, d, e</sup>



<sup>a</sup> Response times commence from the following time points: Vic (RAV) receipt of call; Vic (MAS), 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: Data are incomplete for both 2003-04 and 2004-05 due to industrial action in the months of June and 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 computer aided dispatch (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 9.21).

**Box 9.21 State-wide response times**

‘State-wide response times’ is defined as described in box 9.19, for state-wide responses.

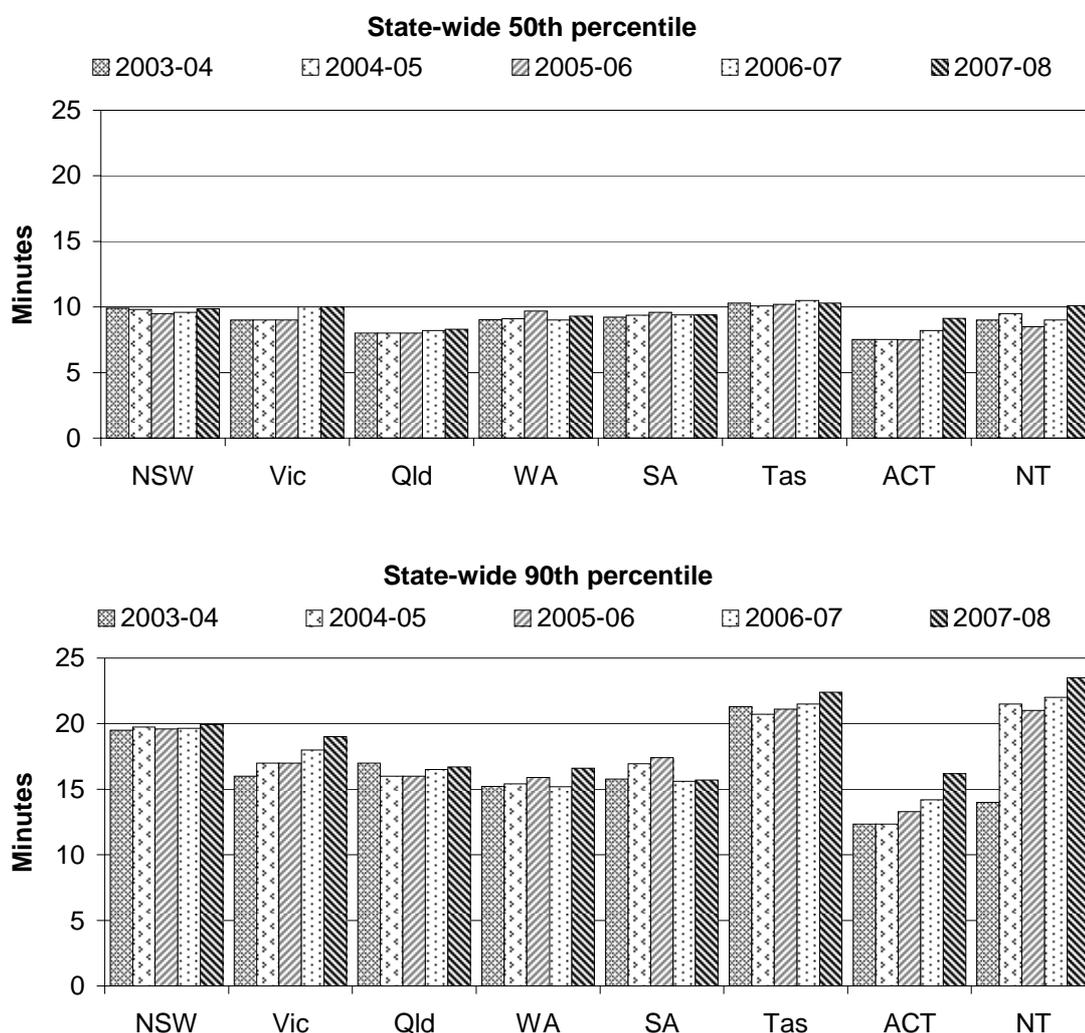
Shorter, or reducing, response times suggest the adverse effects on the community of emergencies requiring ambulance services are reduced.

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 was around 9.5 minutes (an estimated midpoint only). 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 was around 19 minutes (an estimated midpoint only) (figure 9.28).

State-wide response times within jurisdictions remained relatively steady between 2003-04 and 2007-08 (table 9A.29).

Figure 9.28 Ambulance response times, state-wide<sup>a, b, c, d, e, f</sup>



<sup>a</sup> Response times commence from the following time points: Vic (RAV) receipt of call; Vic (MAS), 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. <sup>c</sup> Vic: Data are incomplete for both 2003-04 and 2004-05 due to industrial action in the months of June and 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 computer aided dispatch (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. <sup>f</sup> Tas: The highest proportion of population is in small rural areas, relative to other jurisdictions, which increases 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 9.22). Data for this indicator were not available for the 2009 Report.

#### **Box 9.22 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 9.23).

#### **Box 9.23 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 9.24).

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**Box 9.24 Clinical incidents**

‘Clinical incidents’ is broadly defined as an adverse event that occurs because of ambulance service deficiencies and which results 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.

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 outcomes section of this chapter).

*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 9.25).

**Box 9.25 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 9.26). No data were available for the 2009 Report.

#### **Box 9.26 Continuity of care**

'Continuity of care' has been potentially 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.

### Workforce by age group

'Workforce by age group' is an indicator of governments' objective to deliver sustainable ambulance services (box 9.27).

#### Box 9.27 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.

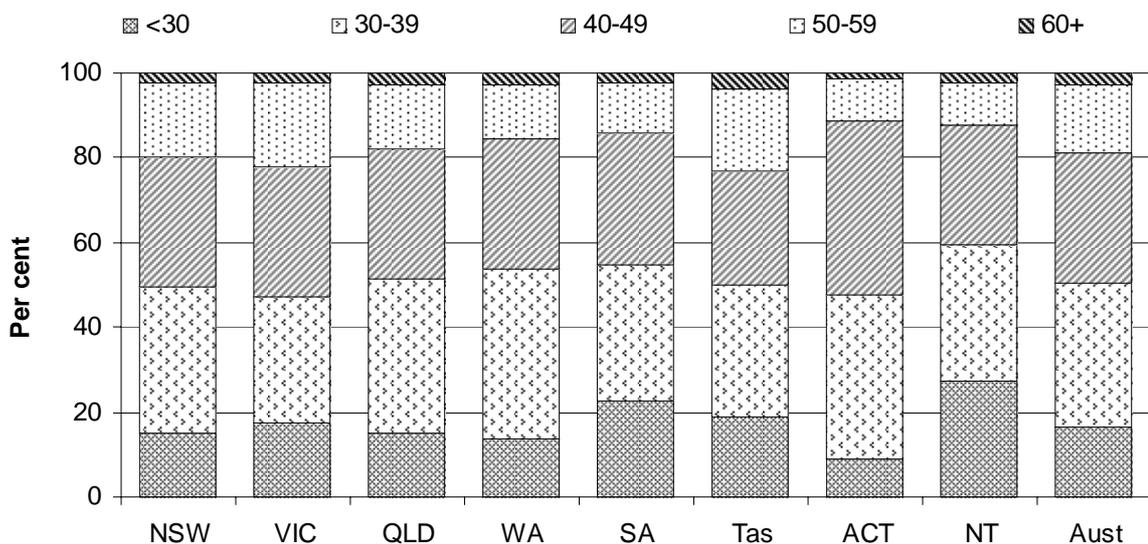
The smaller the proportion of the workforce who are in the younger age groups and/or the larger the proportion who are closer to retirement, the more likely sustainability problems are to arise in the coming decade as the older age group starts to retire.

A three year time series may be available for the 2010 Report.

Data for this indicator are not strictly comparable.

The age profile of the ambulance workforce for each jurisdiction is shown in figure 9.29. Nationally, around 81 per cent of the ambulance workforce were aged under 50, in 2007-08.

Figure 9.29 Ambulance workforce, by age group, 2007-08



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 9.28).

#### Box 9.28 Staff attrition

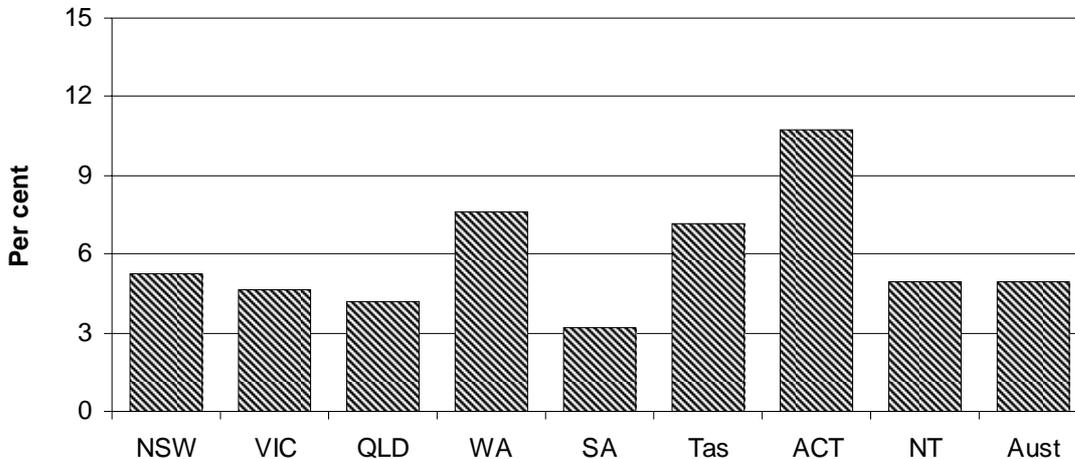
‘Staff attrition’ is defined as level of attrition in the operational workforce. It is calculated as the number of FTE employees who exit the organisation as a proportion of the number of FTE employees. It is based on staff FTE defined as ‘operational positions where paramedic qualifications are either 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 9.30. Nationally, staff attrition was 4.9 per cent in 2007-08.

Figure 9.30 Ambulance staff attrition, 2007-08



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 compared with other jurisdictions. Also, differences in geographic size, terrain,

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climate, and population dispersal may affect costs of infrastructure and numbers of service delivery locations per capita.

### *Expenditure per person*

‘Expenditure per person’ is an indicator of governments’ objective to deliver efficient ambulance services (box 9.29).

**Box 9.29 Expenditure per person**

‘Expenditure per person’ is defined as ambulance service organisation expenditure per person. Expenditure, and funding, per person is employed as a proxy for efficiency. Two measures are reported:

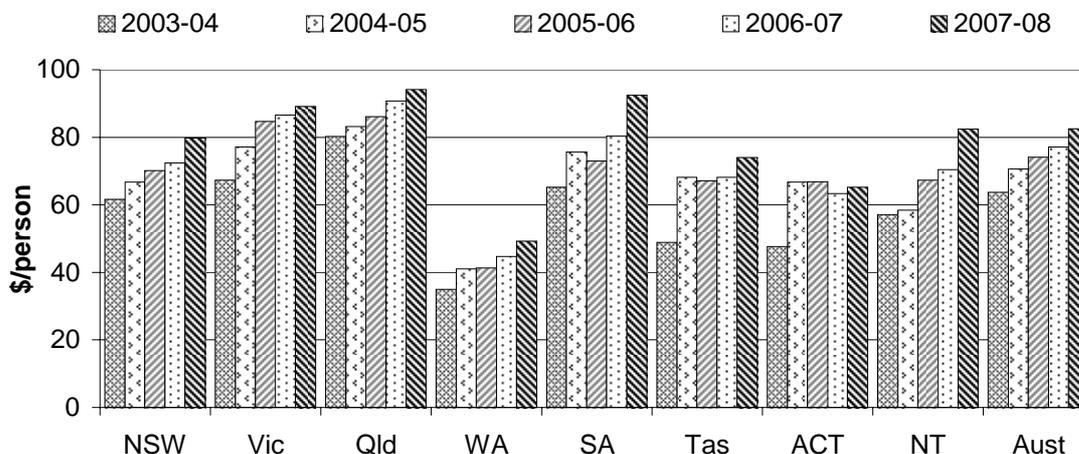
- total expenditure on ambulance service organisations per person — this measure indicates efficiency of use of resources from all sources
- total government grants and indirect government funding of ambulance service organisations per person — this measure indicates efficiency of use of resources from 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 \$82.46 in 2007-08 (figure 9.31).

**Figure 9.31 Ambulance service organisations expenditure per person (2007-08 dollars)<sup>a, b, c</sup>**

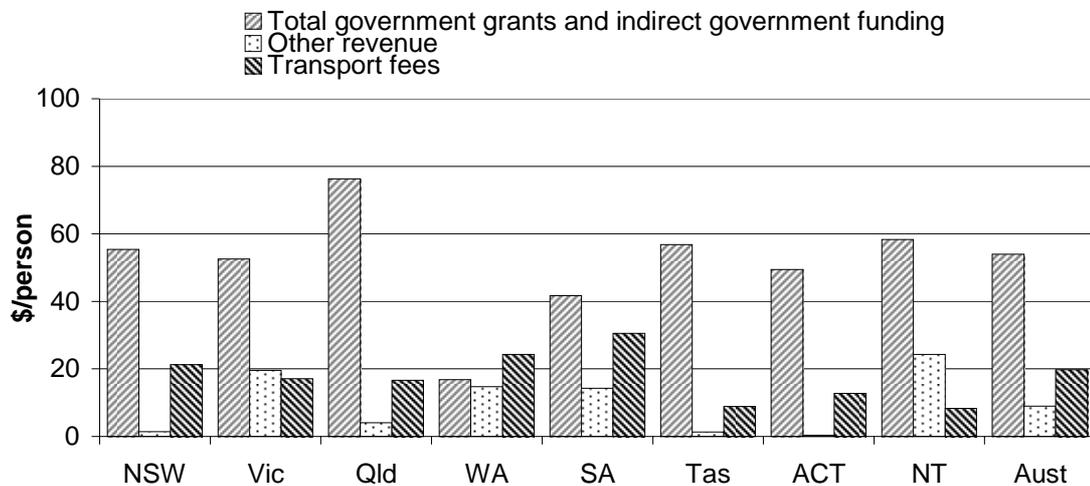


<sup>a</sup> Non-government revenue is now termed other revenue because some items in this category (for example, Veterans' Affairs) are not strictly non-government. Data have been adjusted to 2007-08 dollars using the gross domestic product (GDP) price deflator (2007 08 = 100) (table AA.26). <sup>b</sup> Historical rates in this figure may differ from those in previous Reports, as historical population data have been revised using Final Rebased ERP data following the 2006 Census of Population and Housing (for 31 December 2001 to 2005). Population data relate to 31 December, so that ERP at 31 December 2007 is used as the denominator for 2007-08. <sup>c</sup> For 2005-06 and later years, the ACT Ambulance Service data has been 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); tables 9A.32 and AA.2.

Nationally, total government grants and indirect government funding of ambulance service organisations per person was \$53.93 in 2007-08 (figure 9.32).

Figure 9.32 **Sources of ambulance service organisations revenue per person, 2007-08<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); tables 9A.33 and AA.2.

### *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 9.30).

#### **Box 9.30 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 2009 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 9.31).

### Box 9.31 Cardiac arrest survived event rate

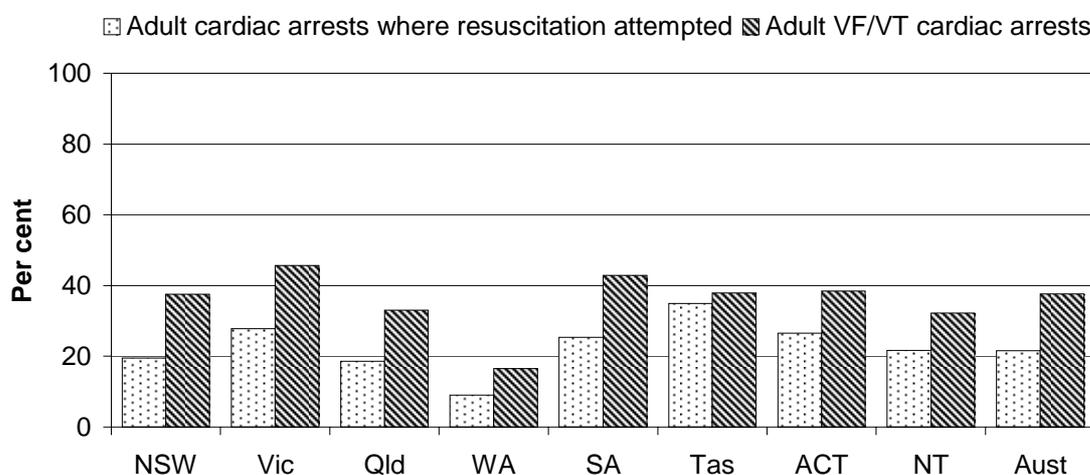
'Cardiac arrest survived event rate' is defined as the percentage of patients aged 16 years and over who: were in cardiac arrest (excluding paramedic witnessed); where any chest compressions and/or defibrillation was undertaken by ambulance/EMS personnel; and who have a return to spontaneous circulation (ROSC) on arrival at hospital. 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.

A higher or increasing rate is a desirable outcome.

Data for this indicator are not directly comparable.

The survival rate from out-of-hospital witnessed cardiac arrests varied across jurisdictions in 2007-08 (figure 9.33). Available data on the further breakdown of this indicator are reported in table 9A.28.

Figure 9.33 Cardiac arrest survived event rate, 2007-08<sup>a, b, c, d</sup>



<sup>a</sup> Rates are the percentage of patients aged 16 years or over who were in out-of-hospital cardiac arrest (excluding paramedic witnessed) for: (1) all adult cardiac arrests where any chest compressions and/or defibrillation was undertaken by ambulance/EMS personnel, where the patient has a return of spontaneous circulation (ROSC) on arrival at hospital; and (2) adult VF/VT cardiac arrests (a further breakdown of cardiac arrest data) the arrest rhythm on the first ECG assessment was either Ventricular Fibrillation or Ventricular Tachycardia, where the patient has a ROSC on arrival at hospital. For the out of hospital setting survived event means sustained ROSC with spontaneous circulation until administration and transfer of care to the medical staff at the receiving hospital (Jacobs, et al. 2004). Note that this does not reflect the proportion of patients who will survive to be discharged from hospital alive. <sup>b</sup> Vic: excludes patients with unknown rhythm on arrival at hospital. <sup>c</sup> WA: data are provided for the capital city only. <sup>d</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.

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

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### *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 9.32).

**Box 9.32 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 2009 Report.

### *Pain management*

‘Pain management’ has been identified for development as an indicator of governments’ objective to deliver effective ambulance services (box 9.33).

**Box 9.33 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 2009 Report.

### *Level of patient satisfaction*

‘Level of patient satisfaction’ is an indicator of governments’ objective to deliver responsive ambulance services (box 9.34). The performance of ambulance service organisations can be measured in terms of the satisfaction of those people who directly used the service.

### Box 9.34 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 2008).

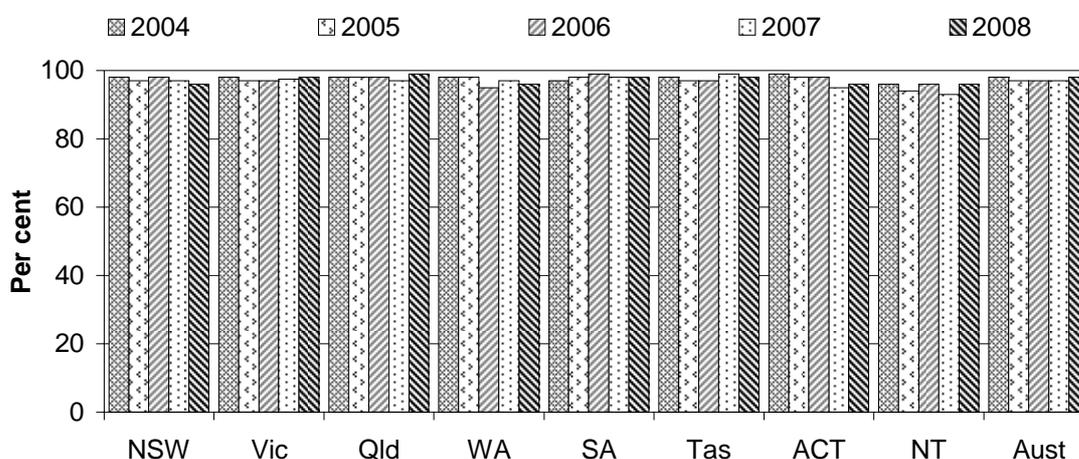
A higher level or increase in the proportion of patients who were either 'satisfied' or 'very satisfied' suggests greater success in meeting patient needs.

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 2004 to 2008 were collected by jurisdictions and collated by the CAA. The CAA survey obtained 4339 usable responses nationally from patients who used an ambulance service in 2008 (table 9A.30). The estimated satisfaction levels for ambulance patients were similar across all jurisdictions and all years (figure 9.34).

Figure 9.34 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.

Source: CAA 2004–08 *National Patient Mailout Satisfaction Research*; table 9A.30.

## 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.

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Specifically, performance indicators for fire, road 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 agency and jurisdiction across Australia. Full coverage may have to be achieved progressively after reporting has commenced. The key landscape fires performance measures likely to be included in the report are:

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

Two further measures are also under development for potential future reporting. These descriptive measures may subsequently be further developed into performance indicators:

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

## **Road rescue events**

Previous editions of this chapter have provided road rescue information on the number of road rescue incidents and the number of events in which extrications occurred. The next challenge for this chapter is to demonstrate the cost, benefits and value of the full range of emergency risk management services related to road transport accidents. This, combined with data in other chapters, will provide a more comprehensive picture of the strategies and programs delivered by governments to reduce the impact of road transport accidents.

Using the prevention–mitigation, preparedness, response and recovery framework applied in emergency management, these services could include:

- prevention of road crashes through community safety campaigns, regulation and law enforcement
- preparedness through safety engineering, vehicle technology and occupant protection (to reduce the severity of incidents)
- response, including emergency management services

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- recovery, including work to reopen roadways, repair vehicles and rehabilitate patients.

### **Ambulance events**

Specific ambulance event reporting in the next few years will focus upon further developing the newly agreed indicators. This will entail developing and implementing data collections for some, whilst refining those that already have data reported, and continuing to work towards increasing 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 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. Appendix A 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).

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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 of emergencies by a clear and tangible commitment to excellence in emergency risk management. In 2007-08 NSW commenced work on 70 new mitigation projects worth more than \$16.5 million. When complete, the projects will reduce vulnerability across the spectrum of natural hazards by reducing casualties, increasing community resilience and reducing damage to essential infrastructure. This brings the number of NSW mitigation projects completed or underway in the last 5 years to 277, and the combined value to more than \$45 million.

The Ambulance Service of NSW (ASNSW) is one of the largest ambulance services in the world, with demand for services increasing by 8 per cent per annum since 2002-03 to more than 1.1 million calls for assistance in 2007-08. During 2007-08 the ASNSW completed the consolidation of Sydney based Emergency Medical Services (EMS) helicopters at Bankstown Airport and extended the Wollongong EMS helicopter to 24 hour operation.

During 2007-08 the NSW Rural Fire Service (NSWRFS) continued to reduce community vulnerability to bushfires through ongoing implementation of risk mitigation strategies. These included assessing development applications for new construction and renovations in bushfire prone areas, and fuel management and community education activities as part of the Urban Interface Bush Fire Mitigation Plan. The NSWRFS also finalised an asset inventory of all its Brigade Stations and Fire Control Centres. The NSW Fire Brigades' operational capabilities were enhanced during 2007-08 with the opening of Castle Hill fire station and completion of major renovations of six fire stations. The proportion of NSW homes with smoke alarms increased from 87 per cent to 93 per cent underpinned by legislation and reinforced by community education. Firefighters conducted more than 10 000 visits to schools to deliver safety education and to seniors' homes to install smoke alarms or check batteries. They also delivered nearly 2 000 workplace emergency management training courses to more than 25 000 participants from external organisations.

After the significant June 2007 Hunter and Central Coast storms and floods, the SES collected post-event data to inform the review of flood planning, warning systems, and community education. The NSW State Flood Sub-plan and 18 Local Flood Sub-plans were revised. The SES contributed to 52 local government Emergency Risk Management Studies and also completed 41 risk assessments for proposed major developments on floodplains. A risk audit of 59 flood protection levees in NSW and a NSW Tsunami Risk Assessment Scoping Study were completed. In addition, the SES launched a web-based online Business FloodSafe planning resource and completed development of a Home FloodSafe resource for the general community. Training resource kits were produced to support the development of SES volunteers in community education and media management at the local level.



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## Victorian Government comments

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The start of July 2007 saw Gippsland continue its recovery from the floods caused by the heavy rain in the previous month and compounded by damage to the landscape caused by the extensive fires throughout north east Victoria earlier in the year. The region experienced further heavy rainfalls and flooding in November, although less severe than the floods in June.

A significant chemical warehouse fire occurred in West Melbourne on 22 December 2007. Concerns of community members were brought to the attention of the Emergency Services Commissioner, who initiated a number of community meetings and a forum involving local residents and emergency service agencies. Drawing on learnings from major bushfire events, opportunities for improvement in emergency management and community warning were identified for incorporation into future emergency responses within Victoria.

Southern Victoria experienced a severe windstorm on 2 April 2008 with maximum gusts around 150 km/h. The most significant impacts were in the Melbourne area with sustained power disruptions affecting 660 000 customers. Over 5300 requests for assistance were received by the Victoria State Emergency Service with all tasks completed by 6 April 2008. The Minister for Energy and Resources and the Minister for Police and Emergency Services requested the Emergency Services Commissioner to undertake a review of the whole of government management of this event.

On 1 July 2008, the Victorian Government created Ambulance Victoria, a single state-wide ambulance service incorporating the previous three services; Metropolitan Ambulance Service, Rural Ambulance Victoria and the Alexandra District Ambulance Service.

The single state-wide service ensures a model of service delivery that overcomes boundaries to ensure communities receive an equitable ambulance service, in terms of both access and outcomes. The consequential increase in financial base provides for the most appropriate resource allocation and greater flexibility to respond to changing environments and community expectations.

The Victorian Government announced in the 2008 State Budget a \$185.7 million investment to boost ambulance services. Major initiatives include two new medical helicopters and new or expanded ambulance services based in 59 towns and suburbs across Victoria. An additional 258 paramedics are being recruited across Victoria to address growing caseload and response time performance, and to provide station officers in rural branches with time off roster to undertake their responsibilities.

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## Queensland Government comments



Queensland continues to focus resources on front-line service delivery and operational excellence in an environment of increasing demand for emergency services.

In 2007-08 major internal reviews of Queensland's ambulance and fire and rescue services recommended several strategies to direct more resources to front-line service delivery to deal with significant challenges ahead.

Review recommendations complemented existing strategies focusing on strengthening Queensland communities and protecting our environment.

Employment of additional paramedics enhanced the ambulance service's ability to respond to emergency incidents and continuing strong growth in demand. In 2007-08 an additional 286 ambulance officers were employed.

In 2007-08, our paramedics attended 14 356 more Code 1 incidents in less than 10 minutes than in 2006-07. Queensland's ambulance service increased the survival rate of out-of-hospital cardiac arrest victims by almost 10 per cent.

The Community Ambulance Cover ensures Queensland residents have access to emergency ambulance cover and medically authorised non-emergency transport at no cost to the patient both within Queensland and Australia.

In 2007-08, the fire and rescue service responded to 70 145 incidents involving fires, road accidents and other rescues, and chemicals and hazardous materials.

Response time performance continued to improve in 2007-08, with the fire and rescue service reaching half of all reported structure fires within 6.8 minutes.

The proportion of Queensland homes protected by operational smoke alarms increased to 87.6 per cent. In the coming year the fire and rescue service will oversee a major upgrade in fire alarm monitoring systems in almost 7 000 Queensland buildings.

Queensland's emergency management service provided leadership for Queensland's response to the Equine Influenza outbreak in late 2007.

It also coordinated emergency services responses to severe weather events between August 2007 and March 2008, including floods in Mackay and Emerald.

The SES is a volunteer organisation that assists Queensland communities in times of emergency and disaster. Along with Rural Fire Service volunteers, honorary ambulance officers and community first responders, these 41 655 Queenslanders provide a front line of protection for their communities.

In March 2008 Queensland began rolling out its new Emergency Services Computer-Aided Dispatch system (ESCAD), further enhancing operational service delivery. ESCAD provides a single emergency response and dispatch system for ambulance and fire and rescue services.

Queensland continues to receive world-class emergency services in an operating environment where demand for services is increasing dramatically.



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## Western Australian Government comments

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Western Australia's expansive land area, topography and population dispersed across rural and remote regions provide a challenging context for the delivery of emergency services. In addition, the potential impacts of climate change, continued population growth and a booming economic climate are expected to increase pressure on the capacity to deliver emergency services.

A focus on futures planning, to inform evidence based decision making and long term flexibility, has been a priority for the Fire and Emergency Services Authority (FESA) during 2007-08. Future direction includes flexible recruitment and retention, the promotion of volunteering, integration of technology, ongoing research and improved collaboration with other emergency service providers.

In 2007-08, FESA received industry recognition for prevention and mitigation including tsunami impact modelling, the use of geospatial technology to support emergency management and fire management guidelines for rangeland areas.

Two significant Department of Environment and Conservation incidents required a multi-agency response. The Fitzgerald National Park bushfire, in the Great Southern region, took more than a week to suppress and burnt approximately 38 000 hectares. Tragically, the fire in the Goldfields Boorabin National Park, claimed three lives, burning more than 30 000 hectares over a six day period.

Water bombing aircraft played a critical role in reducing the impact of bushfires. The trial of a large capacity, long range helicopter for both aerial suppression and logistical support to semi-rural and remote rural locations was extremely successful. The aircraft was deployed to support Helitac water bombers in the metropolitan area and to ferry operational personnel to the Fitzgerald National Park fire, reducing transfer times from several hours to 15 minutes.

State Emergency Service volunteers were also busy with a response to Tropical Cyclone Nicholas in February 2008 which resulted in localised flooding in the Gascoyne, Murchison and Goldfields areas. Volunteers provided more than 15 600 hours to assist communities with flooding and storm damage.

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

Ambulance services in rural communities are largely dependent on volunteers with almost 3000 volunteers participating as ambulance operatives and in operational and corporate support capacities.

WA reported a 4.8 per cent increase in the number of incidents, higher than the rate of population growth. As a result, 2007-08 saw an increase in code 1 response times compared with the previous year. Hospital bed block and ambulance ramping have also contributed to increased response times.

Essential air ambulance coverage is provided by the Royal Flying Doctor Service's 11 fixed wing aircraft and Rescue One, the FESA Emergency Response Rescue Helicopter Service.

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## South Australian Government Comments



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 2007-08 including:

- implementing the Deputy Coroner's Wangary Bushfire Recommendations
- reviewing the *Fire and Emergency Services Act 2005*
- commencing the targeted implementation of the National Emergency Management Strategy for Remote Indigenous Communities.

Major emergency management initiatives for 2008-09 include:

- implementing government-agreed changes from the 2008 Review of the *SA Fire and Emergency Services Act 2005*
- implementing the COAG-agreed action from reviews of natural disaster management, bushfires and catastrophic disasters
- implementing new emergency management arrangements at regional level.

SA Ambulance Service highlights for 2007-08 included:

- launching a new service delivery model *Defining the road ahead: Service Delivery Model (2008–15)* including 27 new service delivery initiatives
- piloting the Single Paramedic Response INTervention team
- 98 per cent of patients being satisfied or very satisfied with the service level
- introducing the Regional Sponsored Degree Program — a recruitment and education initiative to attract staff to country ambulance stations
- launching a new 000 awareness campaign targeting country communities
- achieving eight of 12 SA Government safety performance targets
- revising the Paramedic Intern Development Program to provide more practical training to interns and increasing intakes from two to three a year.

Fire, emergency and ambulance service initiatives for 2008-09 include:

- 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 CAA and the AFAC 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.

Unlike some other jurisdictions, Tasmania's data includes information on 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 231 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 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 experienced over the last ten years.

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 successfully transferred the urban road crash rescue function from the ambulance service to the fire service in 2006-07 so this is the first year that TAS includes no road rescue data. The State Emergency Service continues to provide rural road rescue services from 23 of its 29 units.

Tasmania is currently the only state that provides a free 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 announced that it will review future ambulance funding arrangements next financial year and it has continued to increase ambulance staffing levels 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**

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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 increases costs substantially in comparison to higher urban density areas to meet benchmark response standards. The data are not fully comparable across jurisdictions and should be interpreted with caution.

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. These arrangements were put to the test during the major ICMEX exercise ‘Capital Impact’ in November 2007 which was a tactical response exercise involving CBR and USAR incidents.

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

- continuing commitment to the operation of Snowy Hydro Southcare aeromedical services with NSW
- motor Fleet cyclical replacement program funded by the government
- significant training initiatives to further staff and volunteer capabilities
- undertaking a strategic station relocation feasibility study
- continued work on the planning and relocation to a purpose built emergency services headquarters building incorporating all the operational services and support functions
- expansion of the highly successful Community Fire Unit program.

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. The Media and Community Information unit coordinated key community education campaigns including ‘Clean Up Your Backyard’ and ‘Change Your Smoke Alarm Battery’ along with the ‘Winter Fire Safety Campaign’.

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## Northern Territory government comments

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The Northern Territory Government continues its commitment to ensuring safer communities and providing excellent risk management and emergency response services. During 2007-08 the NT made significant steps forward with its emergency management and response capability.

A second year of record bad fire weather lead to fires over 242 000 km<sup>2</sup> in the rural urban interface increasing emphasis on the use of aircraft for fire suppression. This included, for the first time, fixed-wing water bombing which was instrumental in saving dozens of residential properties and rural assets.

In order to address the growing concern that better fire management will only be achieved by broad scale human behavioural change, a wide ranging interactive fire management website *Burning Issues* has been launched for middle school students.

New fire fighting appliances were purchased for the remote communities of Elliott and Timber Creek. These vehicles greatly enhance the emergency response capacity of the volunteer units in those areas and provide each of these communities with the latest in fire fighting and road crash rescue equipment.

The NT capacity to respond to an Urban Search and Rescue (USAR) incident has also improved with almost \$1 million being spent on the latest in search and rescue equipment. A total of 29 people have now received Category 2 training in USAR and USAR skills maintenance training occurs annually.

A new School Based Education Program was launched during the reporting period for children living in remote communities. The Program is aimed at Indigenous children and has been developed in a culturally appropriate way. The Program, known as Smart Sparx, was widely accepted by remote schools and is currently enjoying considerable success. The Program recently won this year's NT Safer Communities Award sponsored by Emergency Management Australia, and others and is a finalist in the National award.

The Northern Territory Emergency Services (NTES) co-ordinated the response to Cyclone Helen, a category 2 cyclone which hit Darwin and its environs in January 2007. The multi agency response involved the deployment of survey teams and a number of government agencies into the Emergency Operations Centre. The event tested the Emergency Operations Centre and the cyclone preparedness procedures of all agencies involved.

A budget increase was approved for NTES to enable the employment of a further three staff who were located in the Katherine and Darwin Regions.

The NT will continue with its all hazards approach to emergency management and preparedness to ensure it provides an effective and appropriate response under all circumstances, including natural disasters and other catastrophic events.

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## 9.8 Definitions of key terms and indicators

<b>Ambulance community first responders</b>	A type of volunteer that provide an emergency response (with no transport capacity) and first aid care before the ambulance arrival.
<b>Ambulance service response times</b>	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: <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>
<b>50<sup>th</sup> percentile ambulance service response times</b>	The time within which 50 per cent of emergency (code 1) incidents are responded to.
<b>50<sup>th</sup> percentile fire service response times</b>	The time within which 50 per cent of first fire resources respond.
<b>90<sup>th</sup> percentile ambulance service response times</b>	The time within which 90 per cent of emergency (code 1) incidents are responded to.
<b>90<sup>th</sup> percentile fire service response times</b>	The time within which 90 per cent of first fire resources respond.
<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>Ambulance expenditure</b>	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.
<b>Ambulance incident</b>	An event that results in one or more responses by an ambulance service.
<b>Ambulance non-government revenue</b>	Includes revenue from subscription fees, transport fees, donations and other non-government revenue. Excludes funding revenue from Australian, State and local governments.
<b>Ambulance patient</b>	A person assessed, treated or transported by the ambulance service.
<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.

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<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>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> <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>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</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 rescue</b>	An accident or incident involving a motor vehicle and the presumption that there are injuries or 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>Remunerated volunteer ambulance operatives: all personnel who volunteer their availability, however are remunerated in part for provision of an ambulance response (with transport capability).</p> <p>Non-remunerated volunteer ambulance operatives: 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>Non remunerated volunteer operational and corporate support staff: 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>Volunteer firefighters: 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>Volunteer support staff: 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

<b>Table 9A.1</b>	Major sources of fire service organisations' revenue (2007-08 dollars)
<b>Table 9A.2</b>	Reported fires and other primary incidents attended to by fire service organisations (no.)
<b>Table 9A.3</b>	Fire service organisations and land management agencies reported total landscape fires (bush and grass) incidents
<b>Table 9A.4</b>	Accidental residential structure fires reported to fire service organisations per 100 000 households
<b>Table 9A.5</b>	Fire service organisations' human resources
<b>Table 9A.6</b>	Fire deaths
<b>Table 9A.7</b>	Fire injuries
<b>Table 9A.8</b>	Median dollar loss per structure fire (2007-08 dollars)
<b>Table 9A.9</b>	Property loss from structure fire (2007-08 dollars per person)
<b>Table 9A.10</b>	Fire incidents attended by fire service organisations per 100 000 people
<b>Table 9A.11</b>	Household preparedness for emergencies, October 2007
<b>Table 9A.12</b>	Households with a smoke alarm or smoke detector installed
<b>Table 9A.13</b>	Response times to structure fires, state-wide (minutes)
<b>Table 9A.14</b>	Structure fires and response times to structure fires, by geographic areas
<b>Table 9A.15</b>	Structure fires contained to the object or room of origin (per cent)
<b>Table 9A.16</b>	Fire service organisations' costs (\$'000) (2007-08 dollars)
<b>Table 9A.17</b>	Fire service organisations' expenditure per person (2007-08 dollars)
<b>Table 9A.18</b>	Fire service organisations' funding per person (2007-08 dollars)

### Road rescue events

<b>Table 9A.19</b>	Reported road rescue incidents (number)
<b>Table 9A.20</b>	Reported road rescue extrications (number)

### SES/TES services

<b>Table 9A.21</b>	S/TES volunteer human resources (number)
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### **Ambulance events**

<b>Table 9A.22</b>	Major sources of ambulance service organisations revenue (2007-08 dollars)
<b>Table 9A.23</b>	Reported ambulance incidents, responses, patients and transport
<b>Table 9A.24</b>	Ambulance service organisations' human resources
<b>Table 9A.25</b>	Ambulance service organisations' human resources, operational workforce, by age group and attrition, 2007-08
<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) (2007-08 dollars)
<b>Table 9A.32</b>	Ambulance service organisations' expenditure per person (2007-08 dollars)
<b>Table 9A.33</b>	Ambulance service organisations' revenue per person (2007-08 dollars)

### **Contextual and other information**

<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, 2008
<b>Table 9A.42</b>	Reported fires and other primary incidents, urban and rural inclusions and exclusions, 2007-08
<b>Table 9A.43</b>	Top five fire ignition factors, structure fires, 2007-08

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## 9.10 References

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