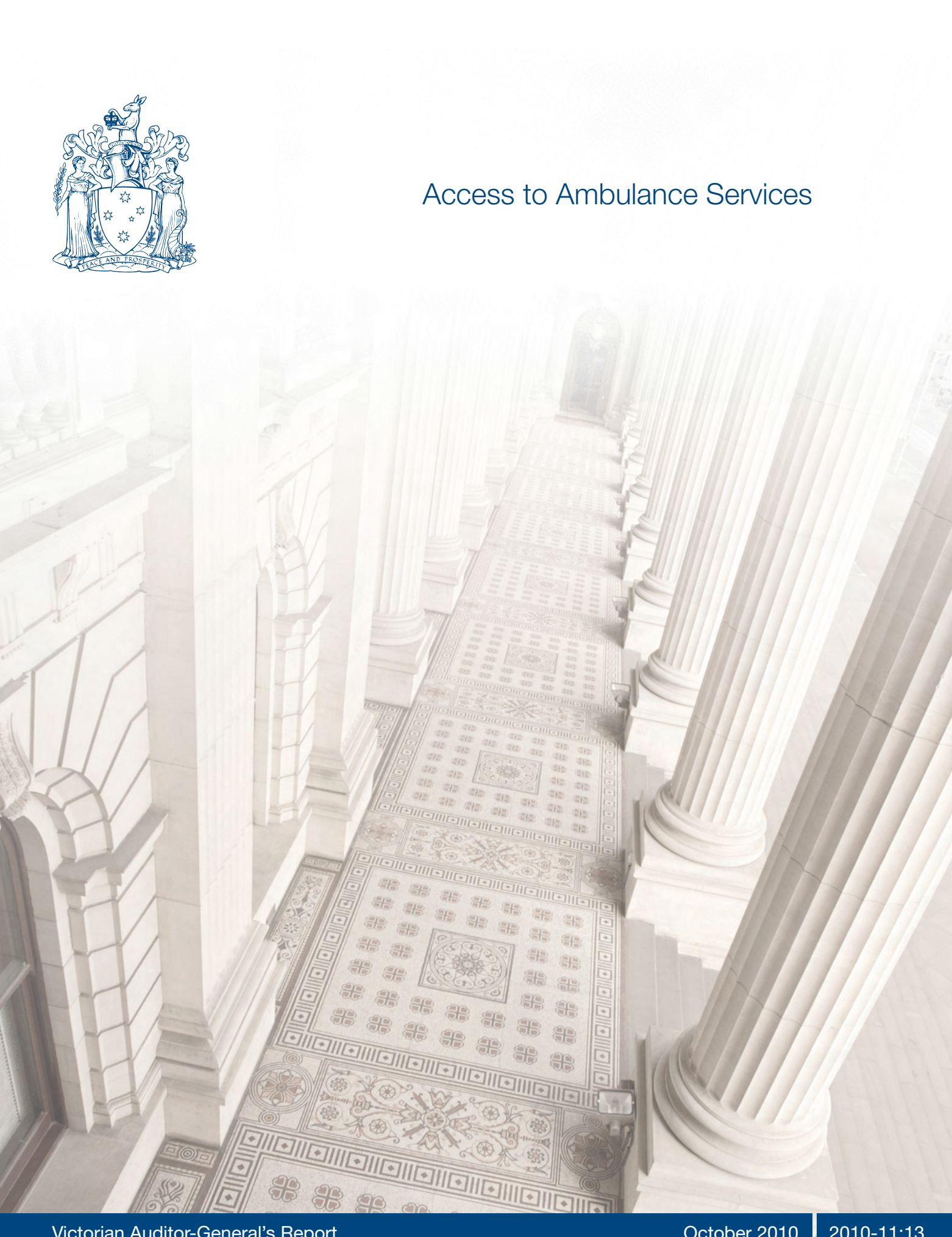
Access to Ambulance Services



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Access to Ambulance Services

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Victorian Auditor-General's Office

Auditing in the Public Interest

The Hon. Robert Smith MLC
President
Legislative Council
Parliament House
Melbourne

The Hon. Jenny Lindell MP
Speaker
Legislative Assembly
Parliament House
Melbourne

Dear Presiding Officers

Under the provisions of section 16AB of the *Audit Act 1994*, I transmit my performance report on *Access to Ambulance Services.*

Yours faithfully

D D R PEARSON
Auditor-General

6 October 2010

Contents

Audit summary

Ambulance services are an integral part of the health system. While quality of care provided by paramedics is paramount, the outcome for a patient may also be affected by the time taken to respond to an emergency.

Recently there has been concern from some quarters in the community that ambulance response times have been increasing. There is also a view that this perceived deterioration is linked to the amalgamation of metropolitan and rural ambulance services on 1 July 2008.

This audit focuses on ambulance responsiveness, particularly response times to Code 1 incidents, potentially time critical emergencies where ambulance lights and sirens are used to reduce travel time. The audit looked at data for the last six years as well as the circumstances in which Ambulance Victoria (AV) operates, in order to understand the service's performance. It also examined whether the information the community is getting about ambulance response times is reliable and presented so as to be clear and meaningful.

Conclusions

As with any merger, the amalgamation of metropolitan and rural ambulance services into AV posed risks. For example, expected new synergies might not occur and the different businesses might not be able to work together because systems are incompatible, for cultural or structural reasons, or simply because people resist change.

While AV has achieved much since amalgamation—including moving towards 'state-of-the-art' call taking and dispatch for the whole state, and greatly improving strategic planning for rural regions—a number of challenges exist that have yet to be resolved.

The time between the announcement of the merger and its implementation was short and only limited funds were provided to systematically deal with any cultural issues.

Some expected efficiencies have not been realised and the trend of deteriorating ambulance response times evident prior to amalgamation has not been arrested. Ambulances are taking longer to respond to Code 1 emergencies, with the worst performance since 2004–05 recorded in 2009–10. Response times have worsened more in rural regions than in the metropolitan area, and increased funding of $185.7 million over four years from 2008–09 has so far not led to demonstrable improvement.

It is likely the significant increase in demand for emergency services in the past six years has caused most of the increase in response time. To the extent that amalgamation and extra operational funding was intended to avoid this, this has not succeeded.

This points to unfinished work from the amalgamation, particularly addressing cultural issues that have persisted from Rural Ambulance Victoria, and in bedding down more sophisticated resource allocation in regional and rural areas. New funding provided by the Department of Health (DH) also needs to be better aligned with AV operational priorities.

Greater transparency in reporting response time performance and disclosing area-specific targets that take account of geography and branch staffing is needed to better inform the public about the level of service it can realistically expect. The present reporting of state-wide measures omits the level of detail necessary to give this understanding.

Findings

Response time performance

Performance data shows that ambulance response times have worsened in both metropolitan and regional areas over the last six years. Despite these trends the standard of responsiveness compares favourably with other states. Benchmark data shows that Victoria performs slightly better than New South Wales, its most closely comparable jurisdiction. Notably, no other jurisdiction reports higher quality care to patients.

Metropolitan areas continue to get a more timely service than rural regions. In metropolitan areas, the average response time has risen from just under 10 to almost 11 minutes. In rural regions the average response time increase is greater, shifting from 13 minutes in 2004–05 to 15 minutes in 2009–10. Although small, these rises can make an important difference in those urgent cases where hospital care is vital to recovery.

Response time performance declines as population density reduces and travel distances for paramedics increase. Performance for population centres with fewer than 7 500 people is significantly worse than for larger communities.

There is no credible evidence that the merger of metropolitan and rural services adversely affected performance, as there was a pattern of longer Code 1 response times well before amalgamation. However, it is clear that amalgamation has not yielded the expected improvements in service response times.

The task of providing a timely service throughout the state is challenging, given the travel distances, the unpredictability of when and where emergencies occur and the numbers of paramedic staff available in smaller communities. AV cannot realistically offer similar response times across the state, but it does strive for equity by working to give a similar level of response to communities of similar size. Nevertheless, it struggles to achieve this goal, with disparities in average response time evident in similar populations.

Impacts on performance

Many factors affect AV's responsiveness, only some of which are within its control. It now has sound techniques to strategically deploy its paramedic staff and fleet resources. This is a major improvement on past methods of allocating rural and regional resources, which depended on relatively unsophisticated tools, compared with the metropolitan area.

This deficiency is now being remedied, and rural and regional areas will both benefit from a more highly developed strategic resource allocation model, as well as new technology that will dispatch ambulances as efficiently as in the metropolitan area.

However, AV is not funded to add the staff needed to improve performance. Although it raises funds directly through fees and membership levies, 59.5 per cent of its revenue is from DH.

DH's most recent new funding commitment of $55.5 million included $30.6 million for additional paramedics and directed where they should be located. However, this direction did not align with AV's strategic and operational priorities for where new staff were needed and the type of staff needed. Demand and staffing are not adequately balanced, particularly in rural regions where growth in paramedic numbers has not kept pace with growth in caseload.

AV is also facing increasing demands from higher caseload numbers. The ageing population and the increase in chronic disease are factors driving demand, with Code 1 incidents rising by around 9 per cent across the state in the past three years.

Average case times are also increasing across the state, often as a result of longer time spent in hospital emergency departments. The combination of more cases and longer case times means paramedics are less available to take on new calls and this flows on to extend response times.

AV needs to address its organisational culture where problems with morale exist and where staff feel disconnected from decision-making. These issues are affecting performance in some locations. Many of these issues existed in the former Rural Ambulance Victoria, and have not been resolved by the amalgamation.

Reporting performance to the community

Although AV's performance indicators are relevant, the timeliness measures do not fairly represent the geographical variations in actual performance. The public would better understand the expected ambulance response times in their district if AV published more detailed data, in line with its internal measures and targets.

Consolidated reporting of total case times by DH, and of each component of case time would help clarify accountability and highlight systemic issues that are not evident in the current suite of health service performance measures.

Recommendations

Number	Recommendation	Page
1.	That the Department of Health reconciles new funding with Ambulance Victoria's strategic priorities, to identify and quantify any unmet resource needs.	39
2.	That Ambulance Victoria further develops its system-wide approach to better integrate both metropolitan and rural regions' needs in its strategic planning.	39
3.	That Ambulance Victoria continues to review rosters and staffing levels in rural regions to minimise recall of paramedics.	39
4.	That Ambulance Victoria implements a comprehensive strategy to drive its work on improving organisational culture.	39
5.	That Ambulance Victoria publicly reports a comprehensive suite of response time indicators, including: • national measures of response times at the 50th and 90th percentiles • a breakdown of performance by region/locality.	56
6.	That the Department of Health reports on performance for total case time, broken down by the elements attributable to the Emergency Services Telecommunications Authority, Ambulance Victoria, and hospitals.	56

Submissions and comments received

In addition to progressive engagement during the course of the audit, in accordance with section 16(3) of the *Audit Act 1994* a copy of this report, or relevant extracts from the report, was provided to the Department of Health, Emergency Services Telecommunications Authority and Ambulance Victoria with a request for submissions or comments.

Agency views have been considered in reaching our audit conclusions and are represented to the extent they are relevant and warranted in preparing this report. Their full section 16(3) submissions and comments are included in Appendix D.

1 Background

1.1 Introduction

Ambulance services are an integral part of the health system. They provide initial care and emergency transport of ill or injured persons to hospital and non-emergency transport to help people access health services. They manage and respond to major incidents and also offer community education.

The effectiveness of emergency ambulance services directly relates to patient outcomes. The timeliness and quality of clinical care administered by paramedics, and the speed with which a patient reaches hospital can affect a patient's chances of recovery. Accordingly, ambulance service performance is measured by response times, by how well paramedics follow clinical protocols, and the results for patients. Good performance requires resources, such as paramedics and vehicles, allocated according to need.

This audit focuses on emergency ambulance services, examining response time performance, and how resources are used to support performance.

1.2 Ambulance Victoria

Ambulance Victoria (AV) is the sole provider of emergency ambulance services in Victoria. In 2009–10, AV responded to 459 631 emergency incidents, an average of 1 259 each day. Around 72 per cent occurred in the metropolitan area and 28 per cent in the rural regions. In 2009–10, AV received $333.3 million in government funds, $103.9 million in revenue from transport fees, and $90.2 million from membership fees. Total revenue from operating activities was $503.7 million.

There is increasing demand for emergency ambulance services due to a range of factors, including the ageing population and higher rates of chronic disease. Since 1999-2000, emergency incidents have risen more than 50 per cent.

As well as providing emergency response, AV is responsible for non-urgent patient transport, such as when a patient needs to be moved from one hospital to another. In metropolitan areas, all non-urgent patient transfer work that requires a stretcher is contracted out. In rural regions, these transports are principally undertaken by either contracted providers or AV emergency resources.

Amalgamation

AV was created by the amalgamation of the Metropolitan Ambulance Service, Rural Ambulance Victoria and the Alexandra District Ambulance Service from July 2008. The amalgamation aimed for a single, integrated organisation to improve service. Work to merge the three organisations has involved more than 40 separate projects, including:

- creation of a new organisational structure and management group
- cultural realignment to merge the previous metropolitan and rural organisations
- implementing single systems for areas such as payroll and information management
- establishing consistent procedures, such as dispatch protocols.

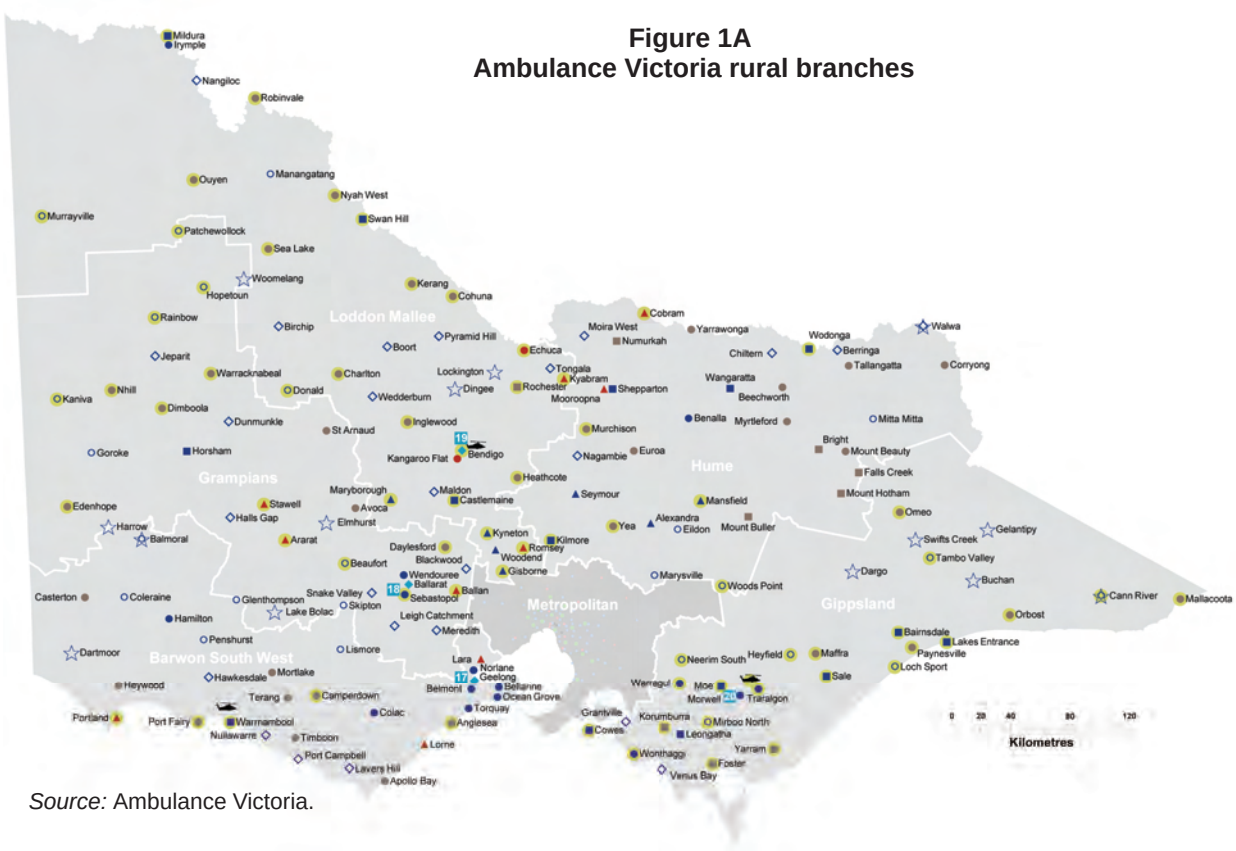
Major achievements since amalgamation have included commencing transition of rural regions to the state-of-the-art call taking and dispatch system used in Melbourne, developing strong strategic planning for rural and regional Victoria and the tendering of non-emergency patient transfer services in rural regions.

Work to complete and consolidate the amalgamation is ongoing.

Response locations

At 30 June 2010, AV had 250 ambulance branches in the state. Figures 1A and 1B show the locations by rural regions and the metropolitan area respectively.

Figure 1A
Ambulance Victoria rural branches



Source: Ambulance Victoria.

As Figure 1B shows in the metropolitan area AV had:

- 58 branches with 24-hour emergency ambulance teams, many with additional units during periods of peak ambulance demand
- 15 branches that only operate during periods of peak ambulance demand
- 4 branches on the urban fringe providing 24-hour coverage, but operating on call overnight
- 16 Mobile Intensive Care Ambulance (MICA) branches and four single responders that can provide patient assessment and care but cannot transfer patients.

Figure 1B
Ambulance Victoria metropolitan branches

Source: Ambulance Victoria.

Figure 1C shows the number of types of ambulance branches by rural region, excluding three seasonal stations based in the ski fields and volunteer-run services. There are also regional MICA units and single responders operating from Bendigo, Ballarat, Morwell and Geelong.

Figure 1C
Regional and rural ambulance branches by type and region, 30 June 2009

Region	24-hour branch	Multiple officer branch	Single officer branch	Total
Barwon South West	8	4	9	21
Gippsland	9	1	9	19
Grampians	4	1	9	14
Hume	3	7	11	21
Loddon Mallee	5	7	11	23
Total	**29**	**20**	**49**	**98**

Source: Victorian Auditor-General's Office, using Ambulance Victoria information.

AV personnel and resources

At 30 June 2010, AV had the equivalent of 2 559 full-time paramedics working from its response locations, of whom 416 were MICA paramedics. New paramedics must now complete an accredited paramedic studies degree. With extra training they can become MICA paramedics who can do more advanced clinical procedures.

AV has more than 500 stretcher vehicles to transport patients and paramedics. It also has Single Responder Units. These vehicles do not carry patients, but get MICA paramedics to a scene quickly to provide initial triage and treatment pending the arrival of a stretcher vehicle. To travel longer distances quickly and access difficult locations, AV has five helicopters and four planes.

AV crews in rural regions are also supported by Ambulance Community Officers (ACOs) and Community Emergency Response Teams (CERTs). ACOs receive training, although not to the level of paramedics, and are employed on a casual basis to respond to emergency incidents and may transport patients. CERTs are made up of trained volunteers who provide basic life support and first aid. CERTs are located in communities where the nearest ambulance branch is some distance away. Whenever a CERT is sent, an ambulance is also dispatched, but the CERT can provide initial care until the paramedics arrive. There are also three CERTs in the outer metropolitan area.

1.3 Other agencies

In addition to AV, the Department of Health (DH) and the Emergency Services Telecommunications Authority (ESTA) play key roles in supporting ambulance services.

1.3.1 Department of Health

DH is responsible for setting policy direction for ambulance services, allocating funding and monitoring performance. This is set out in the department's *Ambulance Services Policy and funding guidelines*. This annual document describes policy objectives for the ambulance services program, funding for service delivery, capital and equipment, and a performance and accountability framework.

The Minister for Health and AV agree on the *Statement of Priorities* for each year. This describes how AV is accountable for compliance with the policy and funding guidelines. The *2009–10 Statement of Priorities* also sets out strategic priorities and deliverables with performance indicators that have benchmarks and targets focusing on:

- financial performance
- timely responses
- service volumes
- quality and safety.

1.3.2 Emergency Services Telecommunications Authority

ESTA receives emergency calls from the national Triple Zero (000) service then sends out the emergency service required, which may be police, fire services, ambulance or a combination. ESTA dispatches ambulances in the metropolitan area and has recently started ambulance call taking and dispatch services for the Hume and Gippsland rural regions. By the end of June 2011, ESTA is expected to take ambulance calls and dispatch services for the whole state.

Until the remaining call taking and dispatch services transfer to ESTA, two AV operation centres will continue to undertake emergency call taking and dispatch services for the state's three other rural regions.

Call takers use protocols specified by AV to determine the need and the urgency for an ambulance. The urgency is reflected in the dispatch code:

- **Code 1—**a time critical case with a 'lights and sirens' response, such as a cardiac arrest or serious traffic accident
- **Code 2—**an acute but non time critical response without lights and sirens, such as a broken leg
- **Code 3—**a non-urgent routine case, such as a person with ongoing back pain but no recent injury, and non-emergency patient transports.

The Office of the Emergency Services Commissioner, in the Department of Justice, monitors the performance of ESTA.

1.4 Response times and performance measures

The *Ambulance Services Act 1986* sets out objectives for AV, which include to 'respond rapidly to requests for help in a medical emergency'. AV accounts for this objective by indicators measuring response times. These are in Budget Paper 3, and in DH's *Ambulance Services Policy and funding guidelines* and the annual agreement between the Minister for Health and AV, the *Statement of Priorities*. Figure 1D lists these indicators and targets.

Figure 1D
Ambulance Victoria response time performance indicators

Indicator	Target
Proportion of emergency (Code 1) incidents responded to within 15 minutes—statewide	85 per cent
Proportion of emergency (Code 1) incidents responded to within 15 minutes in centres with more than 7 500 people	90 per cent
CERT arrival prior to ambulance at cases where CERT is dispatched	85 per cent

Source: Victorian Auditor-General's Office, from Ambulance Victoria *2009–10 Statement of Priorities.*

The response time is measured from the time ESTA or AV receives the call for an ambulance to the time a paramedic, or in rural regions areas an ACO or CERT if they are first, reaches the scene of the incident. The different targets between statewide performance and densely populated areas take into account the greater distances in the country.

Factors that affect response time include:

- available resources
- demand for emergency and non-emergency ambulance services
- the travel distance and traffic conditions
- the efficiency of dispatch processes
- to the extent they tie up available resources, the total time required to complete each ambulance case, including the time to provide care at the scene and complete patient handover at hospital emergency departments.

AV's performance is also measured for the quality of its services and patient outcomes, for example compliance with clinical protocols, the level of pain reduction achieved, cardiac arrest survival rates, and patient satisfaction. AV reports performance against response and quality indicators to DH and in its annual report.

Comparison with other jurisdictions shows that AV has a good performance record on a range of quality indicators. It is equal top, along with Tasmania, in cardiac arrest survival rates and patients have consistently rated themselves as highly satisfied with the service in Victoria. Its responsiveness also compares favourably with other states. Benchmark data shows that Victoria performs slightly better than new South Wales, its most closely comparable jurisdiction.

1.5 Audit objectives and scope

The audit objective was to determine whether ambulance services are sufficiently accessible and appropriately responsive, focusing on:

- indicator data and assessment of performance trends in response times
- distribution of resources and impact on service responsiveness.

The sub-objectives were:

- to determine Ambulance Victoria's performance in response times, considering the reliability of performance data and relevance of indicators and targets
- to determine whether resource use offers equitable access and optimal responsiveness.

The audit scope included:

- Ambulance Victoria, including its rural offices and branches
- the Department of Health
- the Emergency Services Telecommunications Authority.

Part of the evidence gathering process included consultations with AV staff in Loddon Mallee, Grampians and Gippsland regions. Submissions were also received from the public.

The audit was performed in accordance with Australian Auditing and Assurance Standards.

The cooperation of AV staff with the audit process was commendable and appreciated, particularly their timely response to information requests.

1.6 Audit cost

The cost of the audit was $370 000.

1.7 Report structure

The rest of this report is structured as follows:

- Part 2—Responsiveness of ambulance services—this part analyses the performance of Victorian ambulance services before and after the July 2008 amalgamation.
- Part 3—Resource management—this part analyses how well AV manages the strategic and operational use of its resources to meet its objectives.
- Part 4—Performance measurement framework—this part analyses whether AV uses and reports relevant and appropriate performance measures that fairly represent actual performance.

2 Responsiveness of ambulance services

At a glance

Background

Ambulance Victoria (AV) has a mandate to respond rapidly to requests for help in a medical emergency. The time that an ambulance takes to attend the scene of an emergency can make a major difference to a patient's chances of recovery.

Conclusions

Responsiveness to Code 1 incidents has declined over the past six years. While performance continues to be better in the metropolitan area than rural and regional areas, response times have increased for both.

The amalgamation between the Metropolitan Ambulance Service, Rural Ambulance Victoria, and Alexandra District Ambulance Service on 1 July 2008 has had no obvious effect, in either improving or worsening the trends.

Findings

- Over the past six years in both metropolitan and regional areas the average time taken to respond to a Code 1 incident has risen. Over the past three years the difference in average response times between the two has widened, with regional responses now more than four minutes longer on average.
- AV is not meeting its publicly reported responsiveness targets, with 2009–10 performance the worst since 2004–05.
- In 2009–10, AV responded to 87 per cent of Code 1 incidents within 15 minutes in population centres of more than 7 500 people, compared with 51 per cent within 15 minutes, in areas with populations under 7 500.
- There is a clear correlation between the decline in service responsiveness and increased demand for services, as measured by case load.
- Growth in paramedic numbers has not kept pace with demand in regional areas.
- The average time to finalise a case has also increased over the period, due largely to increased handover times at hospital emergency departments.

2.1 Introduction

The amalgamation of the Metropolitan Ambulance Service, Rural Ambulance Victoria and Alexandra District Ambulance Service on 1 July 2008 to form Ambulance Victoria (AV) was intended to improve performance across the state. On top of AV's $494.4 million annual budget, additional funding of $185.7 million over four years was provided at the time of the amalgamation for new response resources, primarily for the metropolitan area.

Recently there has been public comment that since the merger, the responsiveness of ambulance services in regional Victoria has declined. Public debate and several case studies have focused on the responsiveness of the service, particularly in country areas.

In this chapter we examine AV's responsiveness over the past six years, comparing both pre- and post-amalgamation trends. In considering this data, it is important to note that the data source for metropolitan reporting changed in July 2007, and performance from 2007–08 onwards is not strictly comparable with earlier performance. However, the overall picture is clear.

To determine whether, and to what extent, there has been a decline in performance, we analysed trends in ambulance performance since 2004–05 using the two publicly reported targets:

- statewide—respond to 85 per cent of Code 1 incidents within 15 minutes
- population centres with more than 7 500 people—respond to 90 per cent of Code 1 incidents within 15 minutes.

To better understand performance AV's Code 1 response time performance is represented using:

- the average time to respond to all Code 1 incidents
- the 50th percentile, which refers to the longest response time for 50 per cent of Code 1 incidents
- the 90th percentile, which refers to the longest response time for 90 per cent of Code 1 incidents.

Response times for each ambulance branch for 2009–10 are listed in Appendix A.

2.2 Conclusions

Performance in responding to Code 1 incidents has declined over the past six years, notwithstanding a small improvement in 2008–09 following funding for additional response resources. Performance is better in metropolitan areas than in regional areas but both show negative trends, with performance in 2009–10 the worst.

There has been no sustained change in this trend since the amalgamation. Decline was evident from 2005–06 and has continued since amalgamation. It is also evident during this period that demand for emergency services has grown rapidly, and that average case times have increased.

The rate of growth in paramedic numbers, relative to demand, has been greater in metropolitan than regional Victoria, both before and after amalgamation, reflecting relative funding priorities.

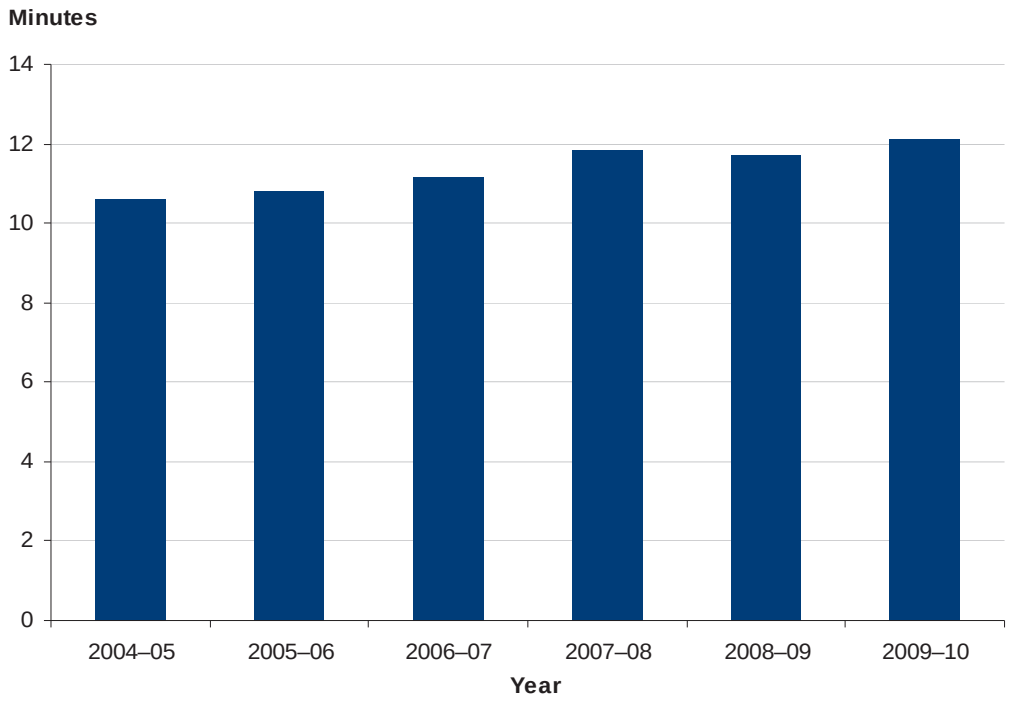
To the extent that the amalgamation was intended to address the decline in response time performance this aim has yet to be achieved.

2.3 Emergency response time trends

2.3.1 Statewide trends

The average time AV takes to respond to a Code 1 incident across the state has risen over the past six years as shown in Figure 2A. In 2009–10, AV's average response time was 12.1 minutes, 1.5 minutes higher than the 2004–05 average.

Figure 2A
Statewide average response time for Code 1 incidents

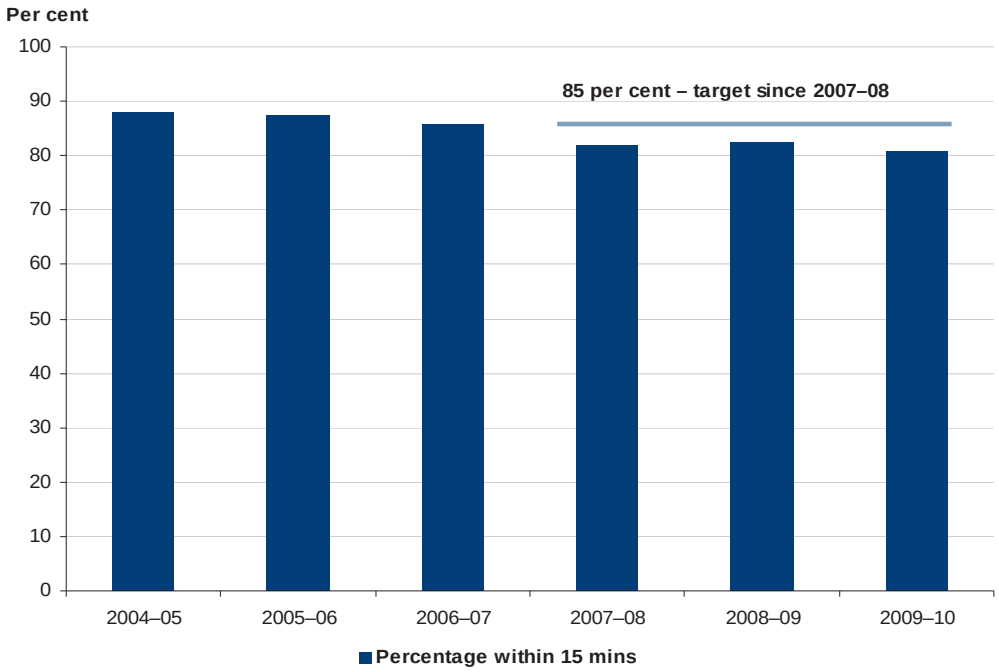


Source: Victorian Auditor-General's Office.

Averages alone cannot provide a complete picture of performance. The spread, or range, of response times is also important, particularly given the time criticality of most emergency responses. The spread of response times can be understood in terms of the proportion of cases that fall above and below a target 'percentile'. The stated response time for the 85th percentile for example, tells the reader that 85 per cent of all response times were at or below this figure.

Across the state, AV is required to respond to 85 per cent of Code 1 incidents within 15 minutes. This has not been achieved since the target was introduced in 2007–08. In 2009–10, AV attended around 81 per cent of Code 1 incidents within 15 minutes as shown in Figure 2B.

Figure 2B
Statewide percentage of Code 1 incidents responded to within 15 minutes



Source: Victorian Auditor-General's Office.

2.3.2 Metropolitan and regional trends

The average time AV takes to respond to a Code 1 incident has risen over the past six years in metropolitan and regional areas as shown in Figure 2C. The difference in the average response times between the two areas has widened since amalgamation. Rural region responses on average are now more than four minutes, or 39 per cent, longer than metropolitan.

Figure 2C
Metropolitan and rural regions average response times (minutes)

	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Metropolitan	9.88	9.86	10.26	10.86	10.50	10.88
Rural regions	13.01	13.91	14.03	14.58	14.68	15.07
Difference	**3.13**	**4.05**	**3.77**	**3.72**	**4.18**	**4.19**

Source: Victorian Auditor-General's Office.

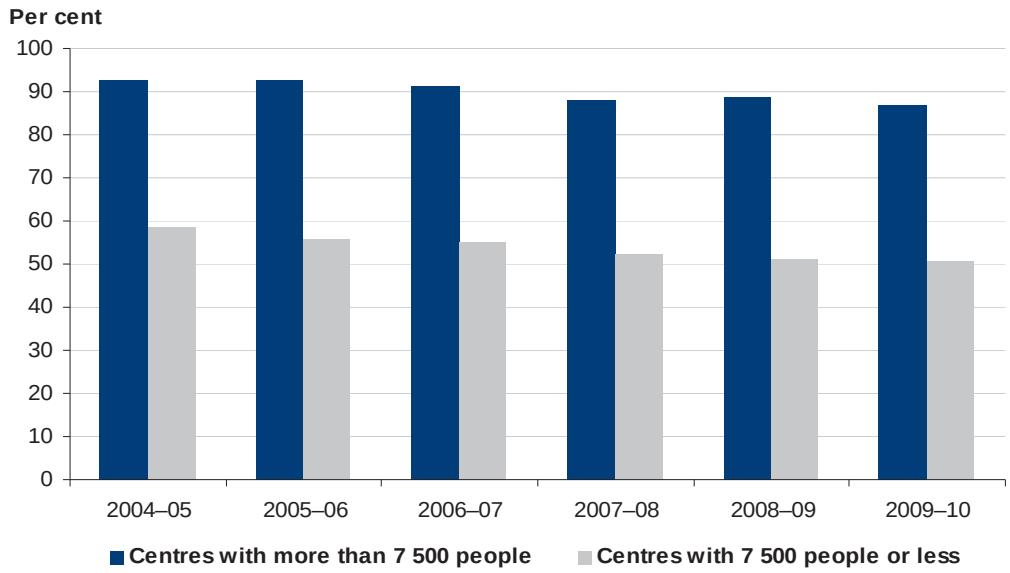
Response times to Code 1 incidents also differ significantly for the following two population groups:

- population centres with more than 7 500 people (82 per cent of the population)
- population centres with 7 500 people or fewer (18 per cent of the population).

AV's target is to respond to 90 per cent of Code 1 incidents within 15 minutes in population centres with more than 7 500 people. However, performance has steadily declined from just over 90 per cent in 2004–05 to 87 per cent in 2009–10.

While AV has not met the benchmark, its performance for this population group is far better than for population centres with fewer than 7 500 people. Performance in these areas has also steadily declined since 2004–05 and in 2009–10, AV responded to less than 51 per cent of Code 1 incidents within 15 minutes, as shown in Figure 2D.

Figure 2D
Percentage of Code 1 incidents responded to within 15 minutes



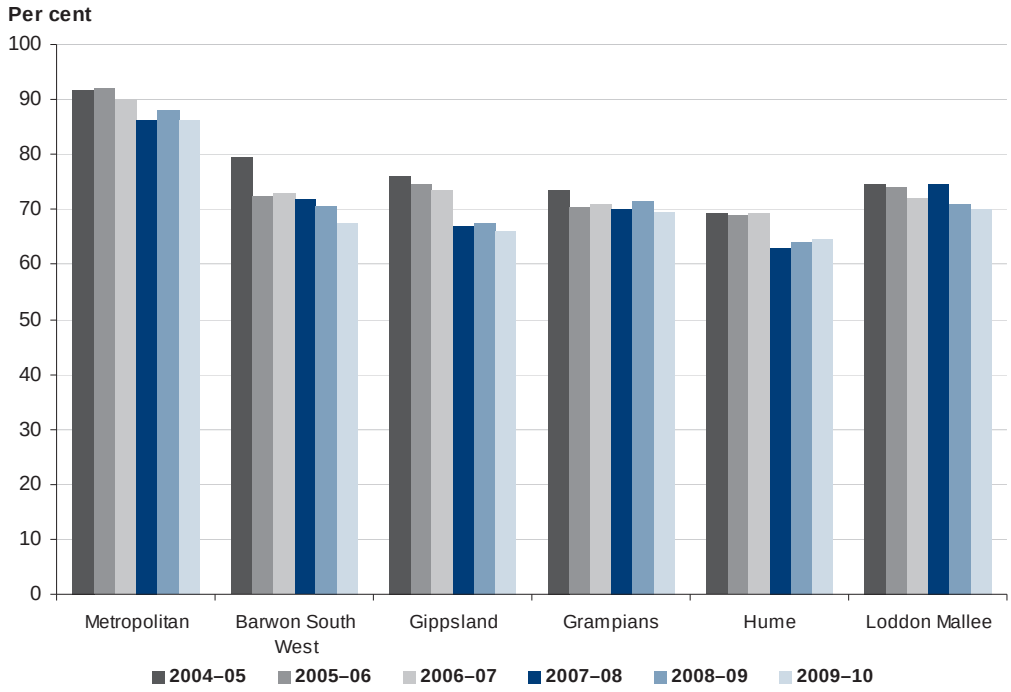
Source: Victorian Auditor-General's Office.

While not publicly reported, AV has an internal benchmark to respond to 75 per cent of Code 1 incidents in rural regions within 15 minutes. This has not been achieved in any of these regions for the five years from 2005–06.

In the last six years, response times have increased in each of the regions. While the performance in Hume has improved in the last three years, it has the lowest proportion of Code 1 incidents responded to within 15 minutes, at 65 per cent in 2009–10.

Performance in the metropolitan area shows a similar overall decline. Performance for all regions is shown in Figure 2E.

Figure 2E
Percentage of regional Code 1 responses within 15 minutes, metropolitan area and rural regions



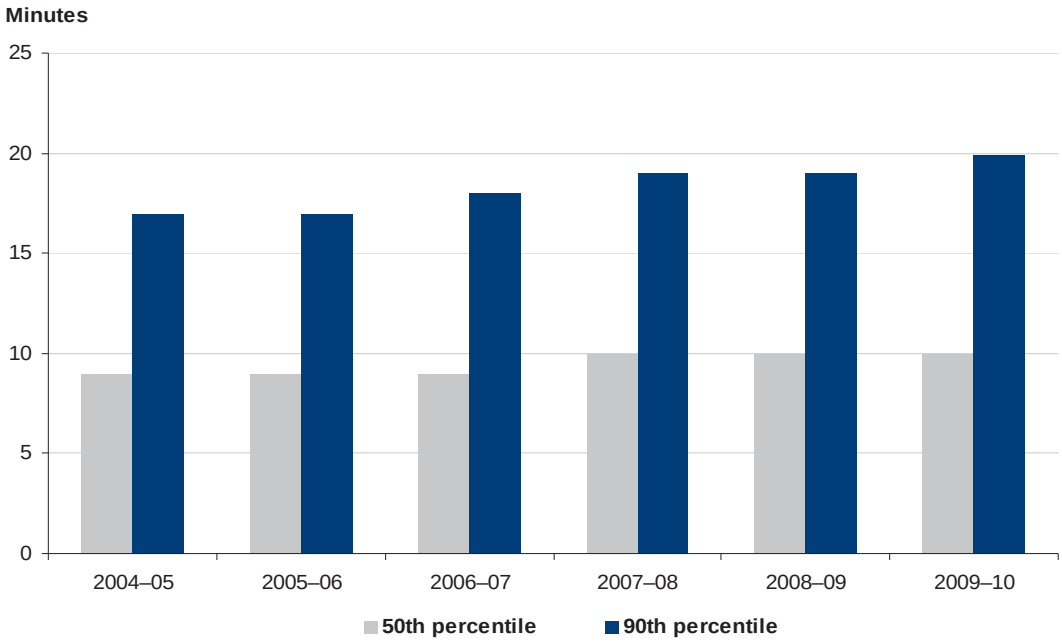
Source: Victorian Auditor-General's Office.

2.3.3 Percentile analysis

Across the state, AV's response times at the 50th percentile increased slightly, with 50 per cent of cases responded to within 10 minutes in 2009–10, compared with 9 minutes in 2004–05.

However, time taken at the 90th percentile over this period has increased at a faster rate. In 2009–10, AV responded to 90 per cent of Code 1 incidents within 20 minutes, compared with 17 minutes in 2004–05, as shown in Figure 2F. The clear inference is that more cases are taking longer to respond to now, than in 2004–05, and that this has worsened for the 50 per cent of cases that take 10 minutes or more to respond to.

Figure 2F
Statewide response times (minutes) at the 50th and 90th percentiles



Source: Victorian Auditor-General's Office.

Figure 2G shows metropolitan and rural region response times. Response times in the metropolitan area are similar to the statewide trend, with 50 per cent of cases responded to within 9 to 10 minutes. Performance at the 90th percentile is better, with 90 per cent of Code 1 incidents in 2009–10 responded to in 16.6 minutes.

In contrast, AV responded to 90 per cent of Code 1 incidents in rural regions within 26 minutes in 2009–10.

Figure 2G
Metropolitan area and rural regions response times (minutes) at the 50th and 90th percentiles

	2004–05	2005–06	2006–07	2007–08	2008–09	2009–10
Metropolitan						
50th percentile	9.00	9.00	9.00	9.58	9.33	9.62
90th percentile	15.00	15.00	15.00	16.50	15.85	16.55
Rural regions						
50th percentile	10.00	11.00	11.00	12.00	12.00	12.00
90th percentile	24.00	25.00	25.00	26.00	26.00	26.00

Note: Ambulance Victoria changed its basis of measurement in 2007–08 and estimates that this increased the reported 90th percentile result in the metropolitan area from 16.0 to 16.55 minutes, meaning that the results to 2006–07 are not directly comparable with the later results.
Source: Victorian Auditor-General's Office.

In comparison to average response times, there is no obvious pattern, or trend, in the differences between the metropolitan and regional results. The gap has been reasonably constant from 2005–06 for both the 50th and 90th percentile. In 2009–10, it narrowed slightly, after widening during 2008–09.

2.4 Service demand trends

The decline in responsiveness, reflected in increasing response times, has coincided with increases in overall demand for AV services, as measured by its caseload.

Underlying demand for services is principally driven by factors such as population growth, the ageing population, increases in chronic disease, and changes to the composition of households, with more people living alone. Other contributing factors identified through consultation and public submissions are:

- high levels of stress on other aspects of the health system, including general practitioners, hospitals and allied health services, leading to increased calls to Triple Zero (000) for assistance
- increased transport of non-emergency patients by AV, for example to meet doctor's requests to deliver patients for surgery
- health promotion campaigns leading to spikes in calls for assistance.

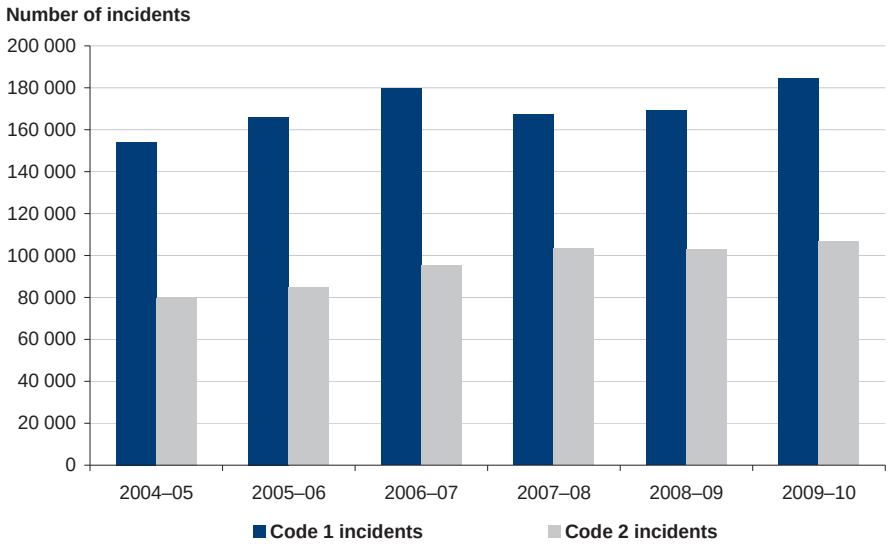
As a consequence, the number of cases AV dealt with has increased by around 25 per cent since 2004–05. This pattern is evident in both metropolitan and regional areas, as shown in Figures 2H and 2I, respectively. The rate of increase in caseload has greatly exceeded that which can be attributed to population growth over the period.

2.4.1 Metropolitan areas

In the metropolitan area, there has been a 10 per cent increase in the number of Code 1 incidents over the past three years, while Code 2 incidents increased by only 3 per cent.

It should also be noted that as this data reports the number of emergency incidents rather than the number vehicles that responded to each incident, it does not capture additional workload arising when multiple vehicles are required to respond. This is more likely to be the case in the metropolitan area.

Figure 2H
Metropolitan caseload for Code 1 and 2 incidents

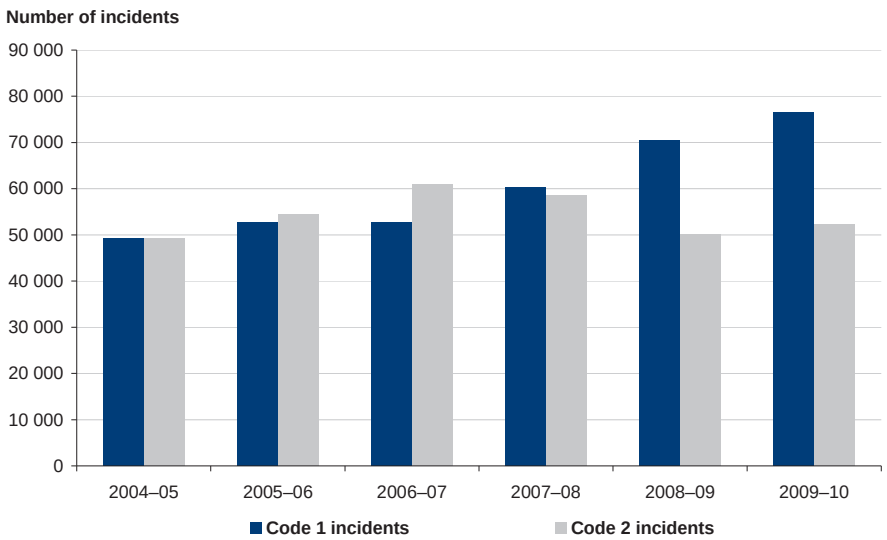


Source: Victorian Auditor-General's Office.

2.4.2 Rural regions

Over the past three years, rural regions have experienced a 9 per cent increase in the combined number of Code 1 and Code 2 incidents. The introduction of structured call taking processes in rural regions from 2008–09 resulted in more incidents being categorised as Code 1, accounting for some of the shift between the two categories shown in Figure 2I. There has been a 27 per cent increase in the number of Code 1 incidents over the past three years, while Code 2 incidents decreased by 11 per cent.

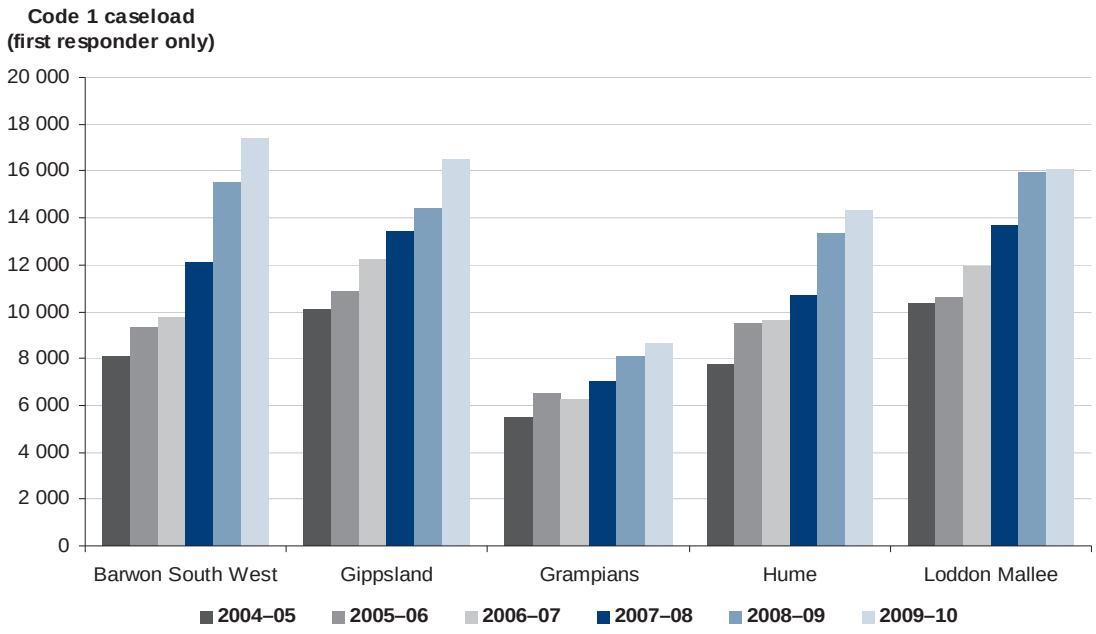
Figure 2I
Rural regions caseload for Code 1 and 2 incidents



Source: Victorian Auditor-General's Office.

Notwithstanding the re-categorisation, the increase in the number of Code 1 incidents in all rural regions continues to be marked, as shown in Figure 2J.

Figure 2J
Code 1 caseload by region



Source: Victorian Auditor-General's Office.

2.5 Ambulance staff trends

While service demand has increased, there has also been growth in the number of ambulance services staff over the period, as measured by the number of paramedics employed. Analysis of paramedic staff numbers show that metropolitan resources have increased at a greater rate than in rural and regional areas and have kept pace with demand increases. However, in rural regions, growth in staff numbers has not aligned with service demand.

In analysing the staffing situation in rural regions, it is important that the differences to the metropolitan area be taken into account. In rural regions, the casually employed Ambulance Community Officers and Community Emergency Response Teams volunteers play a vital role in ambulance response, the latter deployed as 'first responders' or to respond in combination with paramedics in some areas. Casual staff and volunteers provide an extremely important service to their communities but it is not at a level equivalent to that provided by a trained paramedic.

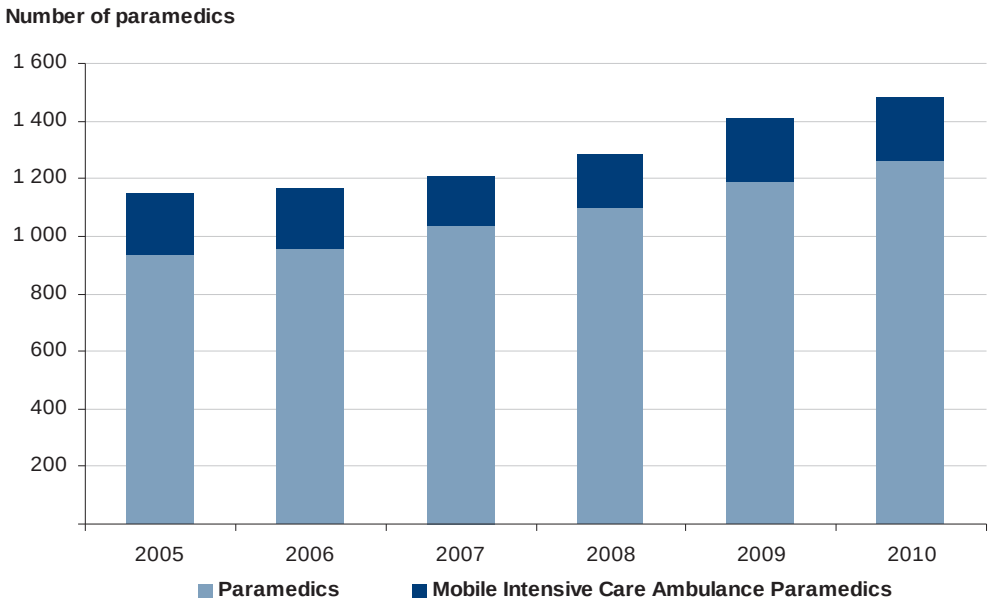
In analysing staff trends it is also important to note that AV uses overtime as part of its response to service needs. It can do this as an interim strategy until a position is filled permanently or supplement existing staff resources in periods of high demand. As overtime uses existing staff to work more hours, it masks the number of hours actually worked, if only effective full-time staff numbers are considered.

2.5.1 Metropolitan areas

In the metropolitan area, the number of paramedics has grown by 29 per cent from 2005 to 2010, which is slightly higher than the growth in service demand (Codes 1 and 2) of 24 per cent over the same period.

Figure 2K shows the growth in the number of metropolitan paramedics.

Figure 2K
Metropolitan paramedic workforce, 2005 to 2010

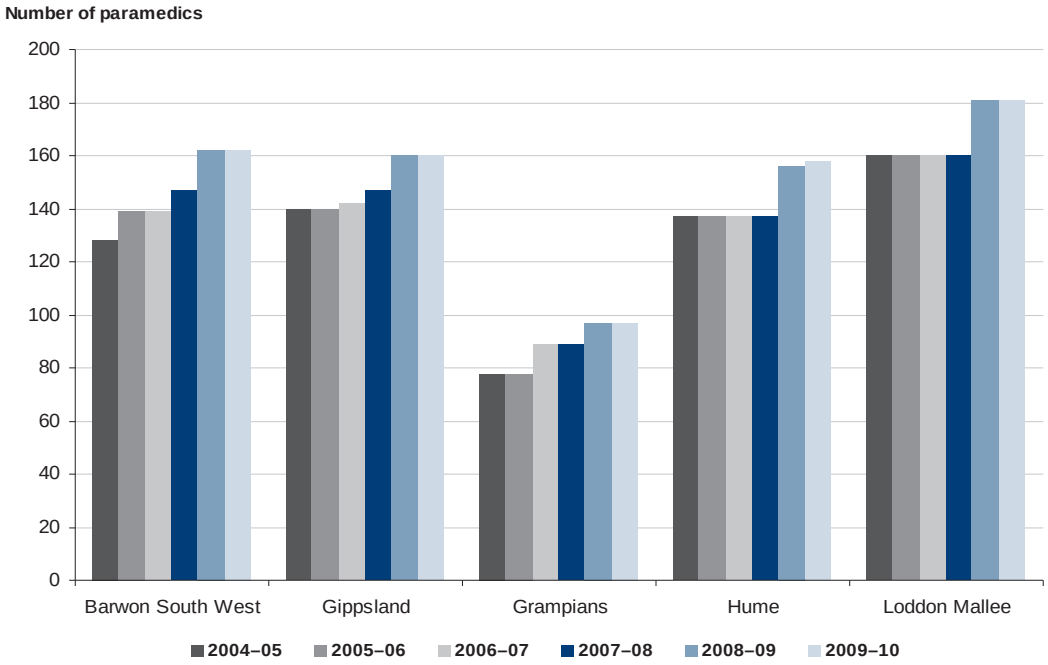


Note: Figures are taken at 30 June of each year and include small numbers of graduate-entry paramedic students working in response teams.
Source: Victorian Auditor-General's Office.

2.5.2 Rural regions

Figure 2L shows the number of paramedics in rural regions for the past six years. The 18 per cent growth in the number of paramedics has not kept pace with emergency case load growth, which rose by 31 per cent over the six years, from 98 500 cases in 2004–05 to 129 000 cases in 2009–10. In contrast to the metropolitan area, ambulance services in rural regions undertake a significant proportion of non-emergency patient transfers. In 2009–10, these transfers represented more than 20 per cent of the total ambulance workload in rural regions.

Figure 2L
Rural regions paramedic workforce, 2004–05 to 2009–10



Source: Victorian Auditor-General's Office.

There also has been no major or sustained increase in the casual and volunteer workforce over the last six years.

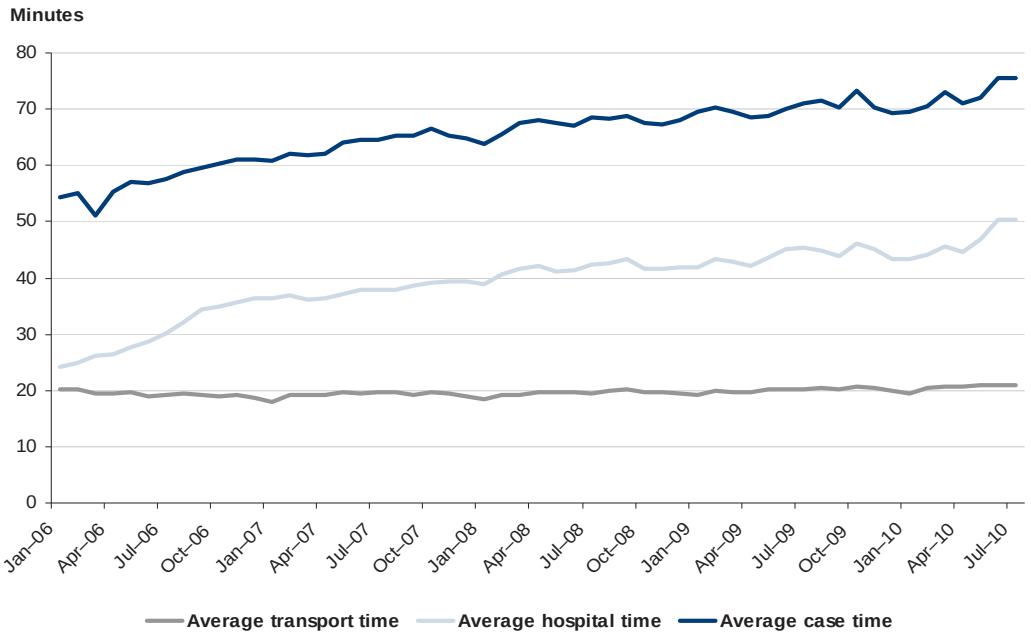
2.6 Case times and handover time at hospitals

Publicly reported response time assesses the critical time period between receipt of an emergency call and arrival at the scene of an incident. It does not measure the complete time for ambulance service provision, which includes provision of clinical care at the scene, transportation to hospital and handover of the patient at the hospital. During this total case time, paramedics are not able to respond to any other incidents. This can impact on response times.

In metropolitan areas, there has been a consistent increase in the average case time for all case codes as shown in Figure 2M. The average case time has increased by 39 per cent from January 2006 to July 2010, from less than 55 minutes to more than 75 minutes.

The data shows that a major factor leading to increased average case time is paramedics spending an increasing amount of time with patients at hospital emergency departments. Figure 2M shows that the average time at hospital has doubled, from around 25 minutes in January 2006, to around 50 minutes in July 2010.

Figure 2M
Metropolitan average case times, Codes 1, 2 and 3



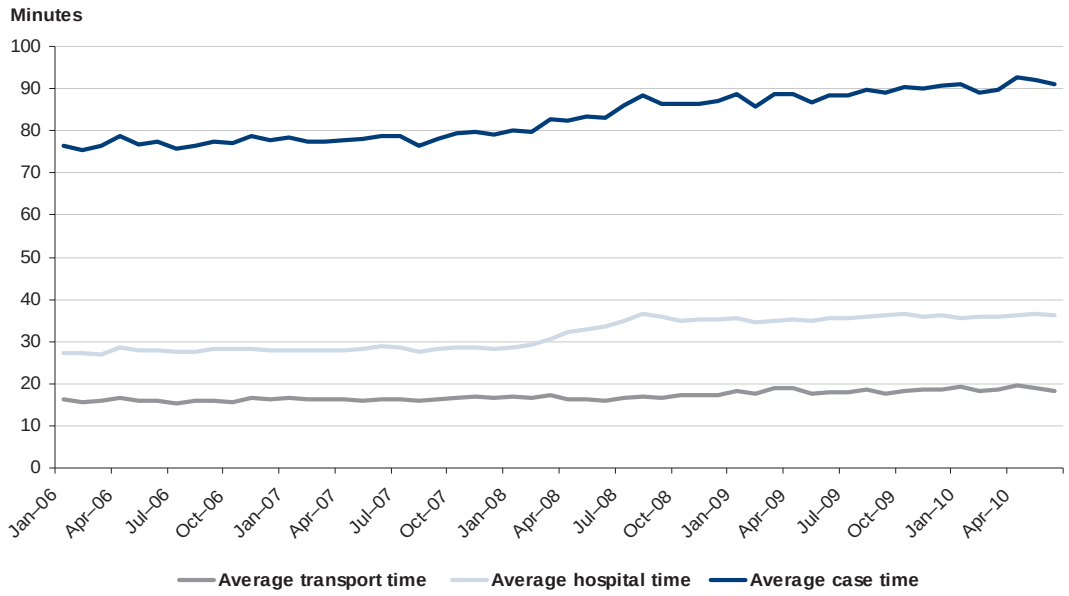
Source: Victorian Auditor-General's Office.

The main reason for the increase in the time spent at hospital has been the increase in transfer time, which is the time from arrival at hospital until the patient is handed over to hospital staff and transferred from the ambulance stretcher.

In rural regions, the average case time for Code 1 incidents has increased by 19 per cent, from 76 minutes in January 2006 to 91 minutes in June 2010, as shown in Figure 2N. Though this is a lower rate of increase than in metropolitan areas, the total case times are significantly greater.

Time spent by paramedics at hospital in rural regions has increased since 2006, but has stabilised in the last two years.

Figure 2N
Average rural and regional case times for Code 1 incidents



Source: Victorian Auditor-General's Office.

3 Resource management

At a glance

Background

Ambulance Victoria (AV) uses a strategic planning approach to make decisions on the allocation of staff and fleet across the state. It also makes tactical decisions about how to deploy these resources as emergencies arise. Its overall budget is largely determined by the Department of Health (DH), which contributes 59.5 per cent of AV revenue.

Conclusions

AV now has a sound approach to strategic planning for metropolitan and rural regions. However, the objective of equity in ambulance response times is yet to be achieved, as comparable communities do not receive similar response times.

Amalgamation has not resolved organisational culture issues that are acknowledged as impacting on performance in some locations.

Findings

- Strategic resource allocation is sophisticated in the metropolitan area and has recently been improved for rural regions
- DH has significant control over the AV budget and where new resources go, but its allocation of new funds is only partially aligned with AV strategic priorities.
- A range of organisational culture issues have persisted in AV and remain to be resolved.

Recommendations

- That the Department of Health reconciles new funding with Ambulance Victoria's strategic priorities, to identify and quantify any unmet resource needs.
- That Ambulance Victoria further develops its system-wide approach to better integrate both metropolitan and rural regions' needs in its strategic planning.
- That Ambulance Victoria continues to review rosters and staffing levels in rural regions to minimise recall of paramedics.
- That Ambulance Victoria implements a comprehensive strategy to drive its work on improving organisational culture.

3.1 Introduction

This chapter considers the most significant resource management issues that are within Ambulance Victoria's (AV) control; how it deploys staff, and the major current human resource issue of organisational culture. Funding arrangements, which are largely beyond AV's control, are also considered.

AV's approach to both the strategic and operational allocation of its available paramedic resources fundamentally affects its ability to respond to incidents. Strategic allocation refers to the deployment of staff and fleet across the state. Operational allocation refers to the deployment of resources in real time, as emergencies arise, and guides decisions about which vehicle and crew type to dispatch for any given incident. These decisions underpin AV's efforts to achieve equity in service coverage and responsiveness across the state.

3.2 Conclusions

Ambulance response times are not equitable across the state, as communities of similar size do not receive a similar standard of service response.

Performance data on ambulance response times for the 2009–10 year shows a wide variation of results indicating that in different areas there is varying capacity to meet the local community's needs.

Strategic planning of paramedic resource allocation in metropolitan areas is sophisticated but, in rural and regional areas, was not well developed before amalgamation. A new strategic planning model recently developed for rural resource allocation will enable better allocation of resources.

AV relies heavily on grant income to fund its operations. In this regard it is noted that increased funding of $185.7 million over four years from 2008–09 has not led to sustained improvements in response times. Recently announced funding of $30.6 million for additional paramedics in rural regions only, partially aligned with AV's strategic priorities.

Our analysis of the rate of utilisation of existing resources found that it is not simply a matter of applying more resources, as branches with low paramedic utilisation rates do not guarantee timely response. Smarter resource allocation, as promised in rural regions by the new strategic planning approach, can improve this situation by better identifying where new resources can be of greatest benefit.

The amalgamation has yet to resolve a range of organisational culture issues that continue to have a negative impact on performance.

3.3 Strategic allocation of ambulance staff

AV plans its resource allocation separately for metropolitan and rural and regional areas. This is because the resource planning model for the high activity and use in the metropolitan area differs from the lower activity, low use in rural regions, where travel distances are much greater.

AV's Emergency Operations Plan 2011–12 to 2014–15 brings these separate planning approaches together. The current plan emphasises equitable allocation of resources as a priority, and focuses on the resources needed to deal with demand growth, underperformance of Code 1 response times, and variances in service standards. AV's planning frameworks emphasise achieving equity between communities of similar size.

Decisions about where to allocate resources are complex, and must balance a number of goals:

- achieving equity between communities of similar size
- achieving equity across the whole population
- looking after staff wellbeing and preventing staff fatigue.

3.3.1 Metropolitan area planning model

AV's metropolitan service planning uses sophisticated computer simulations to help determine where best to position its paramedic and fleet resources. Figure 3A gives more detail.

Figure 3A
Planning for future resource requirements—metropolitan area

AV plans for its resources for the metropolitan area using a computer model, OPTIMA Predict, designed for emergency ambulance services. It has a detailed representation of the road network based on the recently updated road map used in call taking and dispatch, and it can simulate demand, taking into account AV's resources and operational practices.

The model simulates various scenarios based on call volumes for several years in advance, allowing AV to develop resource allocation strategies.

It helps determine how best to position resources for the best possible response times based on forecast demand.

AV recently updated the data in the model to improve its reliability.

Source: Victorian Auditor-General's Office.

AV's forecasts, based on expected population growth and settlement patterns, assume annual growth of 4.2 per cent in the metropolitan population. The model provides a high degree of confidence in decisions about how many resources are needed and where.

3.3.2 Rural region planning model

Planning for rural regions needs to deal with a wider range of issues than for the metropolitan area. There is a wide variation in ambulance service coverage due to distance and topography, and also significant differences in the types of ambulance branches servicing different communities.

For example, the local service could be:

- staffed 24 hours by a team of two paramedics
- a multiple officer branch, staffed by two paramedics during the day, with an on-call arrangement at night
- a single officer branch, staffed during the day shift with an on-call arrangement at night, usually supported by trained Ambulance Community Officers (ACO) employed casually and paid when called out to incidents
- an ACO branch
- a Community Emergency Response Team (CERT) location, staffed by trained volunteers only.

Before amalgamation resource allocation for rural regions was relatively simple compared to the metropolitan approach. Rural Ambulance Victoria, and later AV, employed a methodology using historic data on use, response times, demography, and hospital trends within each catchment.

The model's limits meant that decisions about adding resources focused on locations in isolation, rather than in a more holistic service-wide framework. When demand in one branch reached a certain threshold, it got more resources.

Further, the model assumed that the existing allocation was reasonable and a good basis on which to build. It did not address inequities in resource allocation, much of which were historical.

AV recognised the limits with the methodology and commenced development of a new approach to resource planning early in 2009. Figure 3B outlines the new approach, which was finalised in February 2010.

Figure 3B
New approach for resource planning in rural regions

During 2009, AV analysed a wide range of ambulance and population data to quantify current services, project future demand and assess which staff types and numbers were wanted by 2014–15 in which locations.

In consultation with the Department of Health and health sector representatives, AV developed planning criteria focused on population coverage and response times.

Consultants engaged by AV then designed two planning models to identify gaps and inequities in service delivery.

1. The Population Coverage Model

This is a 'static' model, fed mainly by travel times and population levels by Census Collection Districts. It calculates coverage of urban and rural populations for emergency response and patient transport.

The model's main function is to generate options for new branch locations and upgrades of existing branches.

2. The Incident Response Model

This is a 'simulation' model that tracks incident responses and journeys to hospital on a 24/7 basis. The main data are travel times ('lights and sirens' and normal travel speed), resource deployments, demand (geographical and temporal distributions) and parameters, such as activation time and time at the scene.

The model mainly tests the impact of a change in deployment on response time performance. It can be used to simulate resources of different types responding to incidents and transporting patients to hospital.

Source: Victorian Auditor-General's Office.

AV has based its new model for resource planning in rural regions on three objectives:

- achieving appropriate response time performance
- providing an appropriate standard of service across the rural regions
- ensuring appropriate use of on-call rosters to reduce staff fatigue and improve performance.

Our review of the analysis and forecasting documents on workforce and workload changes confirms the new planning approach is sound. However, the results of the model have not yet been tested in practice.

3.3.3 Strategic resource allocation and equity

The effectiveness of strategic resource allocation largely determines whether AV can meet its equity objectives. Atypical and unforeseen patterns of demand and staff shortages from illness or recruiting problems will also play a part to a lesser extent.

AV is aiming for equity by responding similarly to communities of similar size wherever they are in the state. AV has committed to strive for similar response times for the following cohorts:

- areas with populations of more than 50 000
- areas with populations between 7 500 and 50 000
- areas with populations below 7 500.

Appendix C shows response times during 2009–10 for urban centres grouped according to the above cohorts. It shows a wide variation in response times among communities of similar size that AV aims to service to a similar standard.

The difference in response time performance between like locations means that strategic decisions are required to use new funds to create a better balance in response capacity across the state. AV has received a funding commitment from the Department of Health (DH) for upgrades of services in 10 areas in the rural regions, using $30.6 million in new funds committed over four years from 2011–12. However, the areas funded by DH do not align with the priorities in AV's *Emergency Operations Plan 2011–12 to 2014–15*. AV's plan sets out 69 ranked priorities for additional resources. The new budget from DH funded six of these 69, but not the top priorities proposed by AV, and a further four staff upgrades which were not identified by AV as priorities. It is not clear on what basis the locations for staff upgrades were chosen by DH. Each of the upgrades DH funded was for additional Mobile Intensive Care Ambulance (MICA) single response units. DH's rationale for this decision is not evident.

Although AV's decisions to plan separately for metropolitan and rural regions is sound because of the differences between the two, it is important that these two planning tasks be brought together into an integrated statewide approach. The two sets of regions do not operate independently, as paramedics from one will at times service the other and as patient transfers occur across metropolitan and rural boundaries. An integrated statewide approach will prevent further disparities developing between the metropolitan and rural regions and will help AV in its objective of building a more equitable system across the state.

3.4 Operational allocation of ambulance staff

Strategic planning to determine what type and where to locate resources is only one part of the task of achieving the best possible responsiveness. There are a range of operational considerations that determine how well AV meets the needs placed on it. These include how it configures rosters of its available staff, including its use of casual staff and volunteers to supplement the paramedic workforce; and how it organises dispatch of ambulances to emergencies.

AV is transitioning its current responsibility for call taking and dispatch functions in rural regions to the Emergency Services Telecommunications Authority (ESTA). The ESTA computer aided dispatch (CAD) system is a more sophisticated CAD than previously used in rural regions. AV will soon have realised the full benefits of the new technology. Rostering and staffing levels, however, remain an issue, particularly in rural regions where AV is dependent on the use of on-call rosters and recall of off-duty staff, as well as deployment of casuals and volunteers to provide service coverage.

Utilisation rates, that is the proportion of time paramedics are engaged on cases, are typically low in rural and regional areas. The unpredictability of when emergencies occur, and the long time taken to deal with a case because of travel times, means that even where branch utilisation levels are low, paramedics are still not necessarily available for all incidents.

3.4.1 Staff availability and rosters

Staff profiles of AV branches affect the quality and timeliness of the service. Figure 3C summarises the staffing arrangements for each type of branch, which are based on different roster configurations and staffing levels.

Figure 3C
Ambulance branch types

Branch type	Where used	Response description
MICA branch	Metro and regional	Provides two MICA paramedics in an ambulance 24 hours, 7 days
MICA single responder	Metro and regional	Response unit without patient transport, crewed by a MICA paramedic and backed up by an emergency transport ambulance
24-hour branch	Metro and regional	Provides two paramedics in an ambulance 24 hours, 7 days
Peak period unit	Metro and regional	Regularly runs only during peak demand–usually 10 or 12 hours a day
Multi-officer branch	Metro and regional	Provides two paramedics in an ambulance, 24 hour, 7 days with overnight response on call
Single officer branch	Regional	Provides one paramedic in an ambulance 24 hours, 7 day with overnight response on call. At most single officer branches the paramedic is required to link with an ACO for a two-person response
ACO branch	Regional	Transport capable response unit crewed by two ACOs, providing on-call response
CERT volunteer unit	Predominantly regional	Unit without transport crewed by trained volunteers, available for higher priority incidents. CERTs are first responders and are backed up by a paramedic

Source: Victorian Auditor-General's Office.

We analysed the pattern of response times by region, time of day and day of the week. This analysis found overall that response times in most regions fell into a typical pattern of variation around the norm.

However, the patterns also showed that response times increase in excess of normal variation at night and, in the metropolitan area and three rural regions, on the weekend. These results warrant further examination to determine whether extra capability through roster changes is possible to smooth response times, or if increased resources are required.

When consulted, paramedics in rural and regional areas routinely cited rosters as key to improving response times. Each branch's roster, covering on-call periods, scheduled breaks and non-recall periods, as specified in AV's enterprise bargaining agreement, affects staff availability.

There is significant reliance on on-call paramedics in small branches in rural regions and both CERTs and ACOs also respond on call. Because those on call are usually not at the ambulance station at the time, the time it takes to respond to the call-out is typically longer. This leads to longer times reaching the emergency. Paramedics must take a minimum rest break after a call-out, which means they may not be available during their next rostered shift. While call-outs allow a response to the immediate emergency, their use can compromise coverage in later roster periods.

When a local branch is unavailable to respond, either because it is responding to an incident or on a rest break associated with on-call arrangements, AV may recall paramedics to duty where they are not currently rostered to respond. This may be for a response to an incident, or to provide coverage in the area (recall for cover). The practice of 'recall for cover', was affecting staff morale. Among other things, staff cited a flow-on effect on family members, as well as fatigue, and a feeling that AV was too reliant on the goodwill of staff and community volunteers to fill roster gaps. Excessive recall may require staff to work long periods or have interrupted breaks, which may also compromise their safety.

We received a number of submissions commenting on staff workload and fatigue arising from challenging rosters and the use of call-out or recall after rostered shifts. Paramedics in some areas were at times refusing recalls as they had been regularly 'called out' despite being rostered as unavailable. AV is working to address this through its fatigue prevention strategy.

We found resources in some rural regions are regularly under pressure, particularly in remote areas or in those subject to seasonal surges such as at holiday times. In some areas with few 24-hour or MICA branches, a number of branches in adjacent areas sometimes had no ambulance cover. Others were staffed by paramedics recalled to provide coverage in case there were multiple call-outs at the same time.

However, the use of recall is a financial as well as strategic decision. In the context of AV's tight budget situation, recall is a cost-effective way of meeting demand, as staff are recalled only if required rather than paid to be on duty or paid an on-call allowance in the event that they are required for an emergency.

These issues indicate that branch staff profiles are not aligned with demand in certain areas in rural regions. This is likely to be at least partly due to the less sophisticated resource allocation model used in these areas in the past which in turn constrained tactical deployment as emergencies arose. As noted above, AV has a new rural planning model which more objectively points to resource requirements than past methods. However, as the planning model identifies roster upgrades and additional resources, implementation is dependent on additional resources being made available. In the short term, AV is planning to recruit additional staff during 2010–11 to upgrade rosters at a number of branches with the aim of reducing staff fatigue.

3.4.2 Use of volunteers, casual staff and other emergency services

AV uses other staff as 'first responders' to incidents when all paramedics are assigned to other cases.

In rural regions AV uses volunteers, casual staff and partner organisations as an important part of its service delivery to the community.

Although CERTs and ACOs are not as highly trained as paramedics and only respond on-call, they allow increased coverage in rural regions. Because of the lower cost of using casuals and volunteers, CERTs and ACOs are also relatively cost-effective, compared with branches staffed by paramedics. Use of CERTs and ACOs also helps AV provide coverage in rural areas where paramedics may be less willing to be assigned.

AV partners with the Metropolitan Fire Brigade (MFB) in their response area, and is piloting similar arrangements with the Country Fire Authority (CFA) in some outer-metropolitan areas. Under the partnership, MFB or CFA members are simultaneously dispatched with AV to suspected cardiac arrest cases to provide critical initial care, such as CPR and defibrillation, if they can reach the scene faster than an ambulance. AV is currently discussing a regional pilot with the CFA.

AV also has arrangements with Remote Area Nurses (RANs) to provide a first response in a number of more remote locations.

ACOs, CERTs, RANs and arrangements with other emergency services improve the speed of a first response and are important to a timely response. However, they are not a substitute for a qualified paramedic attendance and one will follow in most cases. The community may not appreciate the different level of service that can be provided by these non-paramedic first responders, and this potentially puts pressure on these staff. This represents a particular risk to retaining CERT staff, who receive no pay but may still be subject to occupational stresses.

Those we consulted and who made submissions felt that AV was expecting volunteers to increase the hours they were available. In some areas, they said, ambulances seemed to be sent out over wider areas to cover for branches where the rostered crews were on call-outs. They were concerned about the extent to which AV was asking community volunteers to work in such circumstances, rather than helping in their own communities. They considered these incidents as risks to people being willing to continue volunteering, and thus as risks to service coverage in rural regions.

3.4.3 Dispatch

Dispatch refers to the allocation of ambulance staff to an incident. Dispatch time is included in the overall response time. Efficient dispatch is therefore a key element of timely response.

The approach to dispatch in the metropolitan area has been more technologically advanced than in rural regions, but the roll out of the ESTA CAD system across all rural regions has commenced.

Metropolitan areas

The ESTA emergency dispatchers located at the State Emergency Communications Centre use the CAD system to determine the most appropriate vehicle to dispatch for an incident. AV Duty Team Managers, based in the metropolitan area, use a computer-based resource management tool, OPTIMA Live to monitor the ambulance fleet and available resources for the metropolitan area. They assess and adjust distribution of resources based upon the modelling of OPTIMA Live. OPTIMA Live is used in comparable cities internationally.

Using mathematical algorithms, it projects the maximum likely available resources 30 minutes ahead. It is designed to increase fleet mobility, improve resource efficiency, and maximise service responsiveness.

AV uses OPTIMA Live between 7.00am and 6.30pm and in other evening peak times when needed. Coverage aligns with the standard daily peak load for ambulance services, which is about 7am to midnight. AV could run OPTIMA Live all the time, leading to better fleet use, but this would require it to reprioritise how it uses its available resources.

Figure 3D
Real time ambulance use in the metropolitan area

OPTIMA Live shows a map of all incidents over the past three years, which highlights the main incident areas. Another screen shows all incidents on the current day for the past three years, to show any spikes in activity linked to particular events.

OPTIMA Live tracks real-time updates from the CAD system, based on information sent from each ambulance. This draws a picture of ambulance availability at any time on the metropolitan network. The tool covers an area of 9 000 km^2.

OPTIMA Live continues to develop, with work-in-progress to increase its effectiveness. AV plans to evaluate it late in 2010.

Source: Victorian Auditor-General's Office.

Rural regions

As AV rural regions transfer to ESTA for call taking and dispatch, they will use the systems used in the metropolitan area. By the time all branches in rural regions transfer by mid 2011, an AV duty manager in the ESTA call centre will be responsible for monitoring the available fleet and making resourcing decisions.

Until then the dispatchers in remaining AV rural region operation centres are responsible for monitoring the availability of vehicles for dispatch in their regions. The present approach to dispatch in rural regions is less rigorous than in the metropolitan area.

Non-ESTA rural region dispatchers have a map showing the current location of all vehicles and a list of the vehicles closest to the incident is available. However, where dispatch is to a location more than 10 kilometres away, the system only calculates distances 'as the crow flies'. As a result, rather than sending the vehicle likely to arrive the fastest, it focuses on dispatching the closest available vehicle, not taking into account the layout of the road network, mountains or other factors, such as uncrossable waterways.

After the transition to the ESTA CAD system, OPTIMA Live will also be able to be used outside metropolitan areas. However, the tool may be less effective in rural regions, which have smaller fleet numbers and cover larger land areas than Melbourne. As a result, there are fewer opportunities to redeploy vehicles or identify multiple options for responding to single incidents.

3.4.4 Utilisation rate

Utilisation rate refers to the proportion of time that AV paramedic staff are engaged in operational duties, as opposed to down time, when they are waiting for a call-out.

Data show that AV utilisation rates are more consistent in the metropolitan area averaging about 49 per cent. By contrast, there is greater variation in rural regions, as shown in Figure 3E.

Figure 3E
Lowest utilisation rates, branches in rural regions

Branch	Utilisation rate (per cent)	Mean response time (minutes)	Response at 50th percentile (minutes)	Response at 90th percentile (minutes)
Branches with lowest utilisation				
Apollo Bay	4.3	14.2	12	26
Lorne	5.6	14.1	11	29
Timboon	5.8	21.7	21	35
Anglesea	6.5	17.1	15	27
Edenhope	7.2	22.5	19	41
Branches with highest utilisation				
Bendigo	59.2	14.5	11	24
Morwell	52.6	15.3	13	24
Belmont	50.4	13.8	12	23
Ballarat	49.6	14.0	11	22
Norlane	48.1	13.6	12	21

Source: Victorian Auditor-General's Office.

The relationship between utilisation and response times shows the complexity of the allocation task in rural regions. It is not necessarily the case that low utilisation implies either that there are too many resources in a branch, or that response times will be faster.

We analysed the relationship between response times and utilisation rates using data from all rural branches from 2009–10 and found only a weak correlation with faster response times at individual branches.

In rural regions in particular, low utilisation does not always correlate with lower response times because factors, such as the timing of events, distances to be covered and rosters, come into play. Low utilisation rates also do not directly indicate that a branch is wrongly located. Again distances to be covered, as well as the proximity of other services in adjacent areas need to be considered before making a judgement.

These examples demonstrate the challenges to achieving equity in responsiveness, and indicate that reducing utilisation rates will not necessarily address the decline in timeliness.

3.5 Financial resources

AV has limited control over its total income. Income from its own sources—patient transport and membership fees and interest, accounted for $197.6 million in 2009–10, which was 36.5 per cent of total income of $541.1 million. The balance of $343.5 million comprised operating and capital funds from DH of $321.9 million, and grants and donations from other sources. The funds from DH represent 59.5 per cent of AV's total revenue.

Recent additional operating funding allocations from DH included:

- $185.7 million from DH over four years to 2011–12, announced before amalgamation in April 2008
- A one-off allocation of $9 million from DH in late 2009–10 to help with certain costs of amalgamation including human resources and finance system change, technology integration and organisational change
- $55.5 million over four years to 2014–15 (principally from DH but including $11.2 million revenue from the AV membership scheme).

These allocations were to provide additional ambulance crews in specified areas. The additional funding has been built into DH's base grant to AV.

AV's recurring state funding is based on an annually indexed 'block' grant rather than on ambulance activity, such as the number of emergency responses. In addition, it is DH not AV that has the authority to approve increases in emergency patient transfer fees. This means that funding does not change as workloads and service demands increase.

In 2009–10 revenue fell short of expenditure by $2.9 million. According to the 2009–10 financial statements the net result for the year, taking into account non-operational income and factors, such as depreciation, was a $5.9 million loss.

The working capital position of AV is also not healthy and the cash reserves of the former Metropolitan Ambulance Service, (MAS) have fallen since amalgamation. The amalgamation process wasn't funded until late 2009–10. Until then transitional costs were met from reserves and operational budgets.

Budget can affect decisions about use of emergency resources for non-emergency patient transfer in rural areas and have flow on effects for response times. It is more cost-effective to use emergency staff rather than external contractors for these transfers, but the risk is in reduced responsiveness if an emergency event does occur.

Under the current funding model, to cover the rising cost of more services, AV needs either to become more efficient, improve productivity for its fee-paying services, or increase ambulance subscriptions.

The externally determined limitations on AV's budget position have a subsequent impact on overall staff numbers and performance. We note that advice commissioned for AV and DH in 2009 raised the potential for activity-based output funding to offer more certainty and transparency.

3.6 Ambulance Victoria's demand management strategy

AV cannot control demand increases caused by longer time needed to deal with emergency cases but it has some capacity to influence overall demand for its services.

In 2003, the then MAS introduced a referral service in metropolitan areas, known as RefCom, which transfers low-priority calls, unlikely to require an ambulance transport, to a clinical adviser rather than triggering an immediate ambulance call-out.

RefCom is a sound demand management strategy. AV estimates that of the 39 000 calls handled by RefCom in 2009–10, 29 000, or 8 per cent of total Triple Zero (000) ambulance calls, were referred to other health services or received telephone advice as an alternative to an emergency ambulance dispatch.

AV is expanding the RefCom service into regional and rural areas once all regions have transitioned to the ESTA CAD system. Funding of $7.3 million over four years was recently announced by DH as part of its broader package of $55.5 million. This will provide access to this demand management service across the state.

3.7 Organisational culture and practice

Organisational culture influences performance strongly. This is particularly so when AV depends on the goodwill of paramedics to cover unattended branches or to respond to call-outs when not rostered on. The cultural issues now affecting the organisation arise from the recent history of AV.

The amalgamation of Rural Ambulance Victoria (RAV) and MAS on 1 July 2008 had a lead time of only two months. AV still experiences a number of negative cultural and practice issues that were known to be present in the former RAV.

The State Services Authority review of RAV in 2006 highlighted cultural and practice issues. The review found that RAV was not working as a unified organisation and that the organisation had cultural and communication problems, including:

- a command and control leadership style
- staff feeling disempowered and not valued
- a 'them and us' culture between management and staff on the ground
- strategic directions which were not well understood or embraced by staff
- limited avenues for staff and management to communicate and consult about proposed organisational changes, emerging issues or problems.

It is not clear how far RAV had addressed the review's findings by the time it was amalgamated with MAS. An analysis of grievances aired through this audit's consultations and submissions revealed that some staff see the same problems in AV, suggesting that many or all of these issues were carried into the amalgamated body, or that unfounded perceptions have not been addressed.

A staff survey from March 2009, to help AV leadership understand the organisation's culture and how to strengthen and improve it, also showed the issues had persisted after amalgamation.

The survey identified areas and behaviours that were detracting from the performance of the organisation. Results revealed staff lacked engagement, did not support the organisation's goals and did not feel loyal. Many of the issues typified the former RAV, including employees feeling they were not involved in shaping the organisation and a perceived communication gulf between those working on the ground and management. However, these issues are now seen as symptomatic of AV rather than as a carryover from RAV.

In addition to the short lead time for the amalgamation, DH did not fully fund the organisational change apart from the $9 million in late 2009–10 for human resource and finance system change, technology integration and organisational change. In addition to the need to create linked IT and other systems, AV needed to deal with pay and work condition disparities, which were later the subject of a new Enterprise Bargaining Agreement for operational staff. Similar issues are currently being addressed through the Enterprise Agreement negotiations for administrative staff.

The issue of organisational culture and its relationship to responsiveness has been raised, both directly and indirectly through submissions and consultation with paramedics. AV has not addressed all of the cultural issues. This is demonstrated in the inconsistent documentation and disparate practices throughout the organisation.

Better practice suggests five areas for effectively managing change, which generally takes five to six years. Figure 3F measures AV's experience against these areas.

Figure 3F
Better practice change management strategy, and AV approach

Change area	Best practice strategies	AV approach
Planning	Developing and documenting the objectives of change and the means to achieve it.	Little lead time to plan before amalgamation but later employed a change management consultant.
		Culture Improvement Strategy drafted with responsibilities and time frames designated for the period 2010–13.
Defined governance	Establishing appropriate organisational structures, roles, and responsibilities for the change processes that engage stakeholders.	Clearly defined governance arrangements to engage stakeholders and support the change effort.
		Responsibilities communicated to senior operations staff.
Committed leadership	Ongoing commitment at the top to guide organisational behaviour and lead by example.	Executive communicates messages about the benefits and changes of the new structure to staff.
Informed stakeholders	Open and consultative communication.	Communication plan developed.
		Frequently asked questions fact sheet for senior managers to assist with staff concerns.
		Staff meetings and information sessions to keep employees informed about the changes, including benefits, impacts and key milestones.
		Employee workshops aimed at managing the change.
		Information regularly communicated to staff though email, bulletins.
Aligned workforce	Developing plans to align the workforce to support the changing organisation.	Organisational Development Unit set up to support alignment and performance and the need for the integration of policies and tools.
		Organisational development plan outlining immediate priorities and long-term objectives and strategies.

Source: Victorian Auditor-General's Office.

AV's organisational change activities, when considered against better practice, were not comprehensive. Insufficient budget and short lead times were constraints on what could be achieved. We note that although AV had organisational development plans, such as an AV *Leadership and Management Development Strategy 2010–2013* and a *People Strategy 2009–2012*, they were not well-established and followed through, due to lack of funding.

An internal planning forum in 2010 found that issues about people were affecting the Regional Services Division's ability to improve performance and maximise resources. They included lack of staff engagement, general issues about performance, absenteeism, inappropriate behaviour, a high level of WorkCover claims and grievances.

This strongly indicates that change management activities to date have not been effective in addressing organisational health and wellbeing issues. Consultations and submissions revealed some quarters of rural regions were hostile to what is seen as Melbourne-centric management.

Senior AV management is familiar with these issues. The executive has endorsed strategies to address staff issues including improving communication and collaboration within the organisation as well as developing a stronger performance focus.

Recommendations

1. That the Department of Health reconciles new funding with Ambulance Victoria's strategic priorities, to identify and quantify any unmet resource needs.
2. That Ambulance Victoria further develops its system-wide approach to better integrate both metropolitan and rural regions' needs in its strategic planning.
3. That Ambulance Victoria continues to review rosters and staffing levels in rural regions to minimise recall of paramedics.
4. That Ambulance Victoria implements a comprehensive strategy to drive its work on improving organisational culture.

4 Performance measurement framework

At a glance

Background

Accountability for performance is a cornerstone of public sector management and reporting. In addition to discharging public accountability, performance information is needed by management to improve services, and by the community so they know what standard of ambulance service they can expect.

Conclusions

The response time performance measures that Ambulance Victoria (AV) publicly reports are relevant, but there are limitations to their appropriateness, and they do not fairly represent the geographic variations in actual performance. The community would better understand the response times they can expect in their area if AV published a more comprehensive suite of measures, that are better aligned with internal measures.

Findings

- AV's emergency response indicators relate directly to the achievement of its objectives. However, the timeliness measures are not entirely within its control. Both hospitals and the Emergency Services Telecommunications Authority play a role in ambulance availability and responsiveness, which blurs accountability.
- The 15-minute time standard has not been based on analysis of available resources, service demand, or distances travelled.
- Internal management targets show the different expectations for rural regions and the metropolitan area, with a target of responding to 75 per cent of cases in 15 minutes for rural regions, compared with 90 per cent for metropolitan.

Recommendations

- That Ambulance Victoria publicly reports a comprehensive suite of response time indicators, including:
  - national measures of response times at the 50th and 90th percentiles
  - a breakdown of performance by region/locality.
- That the Department of Health reports on performance for total case time, broken down by the elements attributable to the Emergency Services Telecommunications Authority, Ambulance Victoria, and hospitals.

4.1 Introduction

Accountability for performance is a cornerstone of public sector management and reporting. Measuring and assessing performance goes beyond meeting financial goals. Information about non-financial performance is also needed to satisfactorily acquit the stewardship of public resources.

This is recognised and reflected in the current *Government Performance Management and Reporting Framework* (the Framework) first introduced in 1999. Agencies are required to develop performance indicators to provide information about the achievement of objectives and performance measures, to provide information about the delivery of services, referred to as 'outputs'.

The government holds agencies to account for their delivery of outputs and their achievement of annual output targets. Results of output performance measures are reported in both the Budget Papers and agency annual reports.

The *Public Finance and Accountability Bill* before Parliament has proposed stronger performance reporting, including linking agency expenditure more closely to the achievement of outcomes.

In addition to discharging public accountability, agency management needs performance information to improve services. Managers use it to decide about:

- **inputs**—such as how many and what resources are needed, and where they should be deployed
- **processes**—how to deliver services
- **outputs**—the time, cost, quality and quantities of services.

Tracking these many dimensions of performance gives management a balanced perspective. This reduces the potential for perverse incentives and unintended consequences that can arise from concentrating on only a few indicators, and/or focusing on only one dimension.

4.2 Ambulance services performance indicators

Ambulance Victoria (AV) reports on a small number of output measures for emergency services in its annual report, consistent with the measures in *Budget Paper 3*. Figure 4A summarises them. Additional quantity and quality measures, for example cardiac arrest survival rates, are included in AV's annual *Statement of Priorities*.

Figure 4A

***Budget Paper 3* Output performance measures: emergency services**

Dimension	Measure	Breakdown
Quantity	Number of cases	By road for metropolitan and rural; by air; and for pensioner/concession cardholders
Quality	Cases meeting clinical standards	Statewide and Community Emergency Response Team (CERT)
	Significant pain reduction achieved	For cardiac and traumatic pain
	Patient satisfaction	Those satisfied and very satisfied
Timeliness	CERT arrival prior to ambulance	None
	Emergency responses within 15 minutes	Statewide and for population centres above 7 500
Cost	Dollars	Total only

Note: CERT – Community Emergency Response Team consists of volunteer first aiders.

Source: Victorian Auditor-General's Office, based on 2010–11 'Service Delivery', *Budget Paper 3,* Department of Treasury and Finance

Victoria also reports nationally agreed emergency service indicators in the *Report on Government Services 2010* (ROGS) published annually by the Productivity Commission. Figure 4B summarises the measurement framework adopted and the indicators reported.

Figure 4B

ROGS output performance indicators for ambulance events

Element	Dimension	Measure	Breakdown
Equity	Access	Response locations per 100 000 people	Paid staff, paid and volunteer, volunteer only locations
		Availability of ambulance officers—full-time equivalent officers per 100 000 people	Qualified officers and student/base level officers
		Urban centre Code 1 response times	50th and 90th percentiles
Effectiveness	Access	Statewide Code 1 response times	50th and 90th percentiles
	Sustainability	Workforce by age group	10-year age bands
		Staff attrition	Total only
Efficiency		Ambulance services expenditure per person	Total expenditure, government-sourced expenditure (grants)

Note: Code 1—emergency response requiring lights and sirens.

Source: Victorian Auditor-General's Office, using data from *Report on Government Services, 2010*, Productivity Commission.

Of the above ROGS indicators, only response times relate specifically to emergency ambulance services. The rest are for emergency and non-emergency activities of AV, and do not directly compare with the emergency service output indicators in Figure 4A.

Features of performance information

To be useful, performance information needs to be:

- **relevant**—it is logically linked to the objective or service it purports to measure, and the reported results are due to the agency's activities, as determined by its ability to control or directly influence the outcome
- **appropriate**—there is enough information and context to understand the extent of achievement.

Performance information should be reported in a way that fairly represents actual performance. It should be transparent, meaningful and consistent, to assist informed decision-making.

This part of the report examines whether AV's emergency response indicators are relevant, appropriate and reliably represent the agency's performance.

4.3 Conclusions

AV reports relevant performance measures and reliable data, but its response time measures are limited in their appropriateness, and geographic variations in actual performance are not publicly reported.

More detailed measures are needed that align with those that AV management uses, and include national measures, so they can be compared. The measures need to be broken down into more detail so the public can understand what quality of ambulance service they can expect where they live. The *Your Hospitals* report and *My School* website use this approach.

The measures reported also need to adequately reflect the patient's experience from the time of the emergency call to the time they enter the emergency department of a hospital. There is no measure that reports this publicly. To this end, a new measure of the key components of total elapsed case time, dissected into the parts each agency—the Emergency Services Telecommunications Authority (ESTA), AV and the hospital system—controls, would aid transparency and help to identify systemic issues.

4.4 Relevance

AV's indicators of emergency response relate directly to one of its objectives, from section 15 of the *Ambulance Services Act 1986*, to 'respond rapidly to requests for help in a medical emergency' and thus are relevant. AV directly influences ESTA's performance by setting the process for call taking and dispatch. However, reported response time measures are not entirely within its control. This blurs accountability.

Emergency response timeliness

The Code 1 response time is the time from the call for an emergency ambulance to the ambulance's arrival at the scene. It can be divided into:

- **activation time**—the time for the communications centre to handle the call and determine which ambulance to dispatch
- **reflex time**—the time it takes for the first ambulance to arrive at the scene after dispatch.

ESTA is responsible for the activation time. It answers emergency calls forwarded to its call centres by the national Triple Zero (000) service, establishes the nature and priority of the event, and it dispatches ambulances. In those areas serviced by ESTA, the response time starts when the ESTA call operator opens the computer screen to record the call details.

The Emergency Services Commissioner, in consultation with ESTA and the emergency service agencies, determines the standards for ESTA's performance of the emergency telecommunications and other communications services. The standard for Code 1 emergency dispatch in the metropolitan area is 90 per cent within 150 seconds (2.5 minutes). Of AV's 15-minute benchmark, notionally this leaves 12.5 minutes to arrive at the incident address in order to meet its responsiveness target.

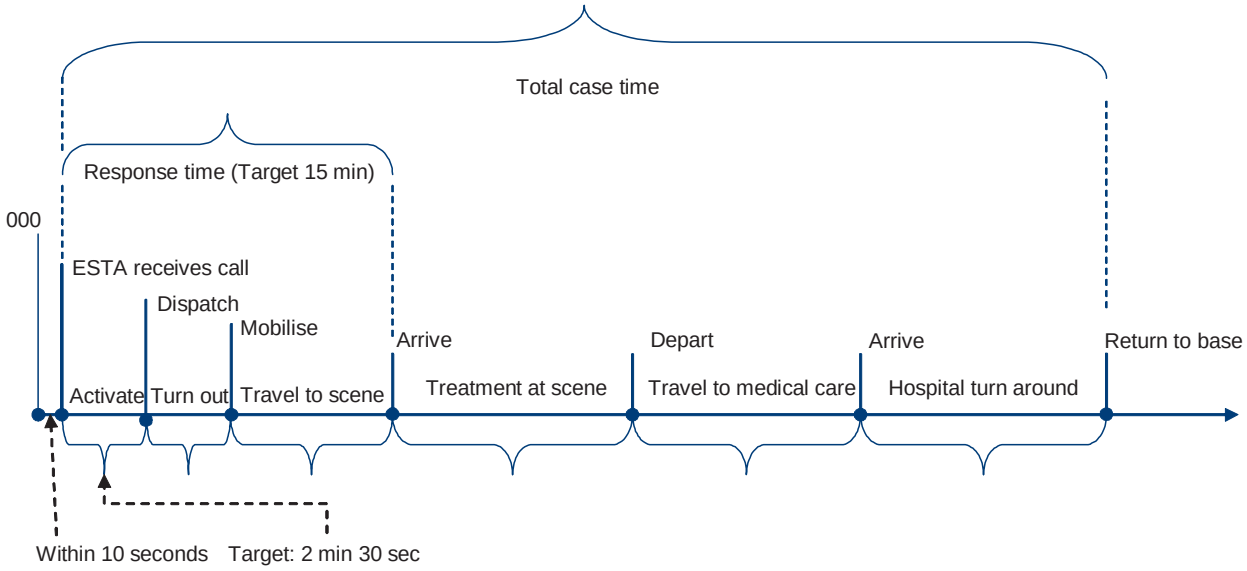
ESTA did not report on performance for this standard in its 2008–09 Annual Report. It would be appropriate for AV and ESTA to report on this component of the response time for greater transparency, and to clarify responsibility and accountability for performance.

ESTA has handled the metropolitan area of AV, and dispatch for the former Metropolitan Ambulance Service (MAS), since it commenced operations on 1 July 2005. In June 2010, the Hume region moved across to ESTA's Ballarat operations centre to provide call taking and dispatch services, and the Gippsland region followed in August 2010. Later this financial year the remaining three regions, now serviced by two local operations centres will transition to ESTA. ESTA will then be responsible for emergency ambulance call taking and dispatch services for all of Victoria. This makes the case for ESTA reporting performance on ambulance dispatch more compelling.

The patient's view

Whether what is reported is relevant can be matched against what the patient's view of the waiting time is. Figure 4C shows the waiting time for the patient, compared with the time that is recorded, and the total case time.

Figure 4C
Emergency response case time



Note: Elapsed times shown are not to scale.
Activation time target is 90 per cent within 2 minutes and 30 seconds.
Statewide response time target is 85 per cent within 15 minutes.
Source: Victorian Auditor-General's Office, based on Ambulance Victoria material.

The time taken by ESTA, plus the time taken by AV to respond closely represents actual patient waiting time up to arrival at the scene and is therefore an important measure for public reporting.

The difference between the measured and reported response time, and the actual patient waiting time is likely to be small.

The national Triple Zero (000) service usually takes no more than 10 seconds to pass a call to ESTA. For ESTA-serviced areas the time between an operator taking the call and creating an 'event' in the computer system is only a few seconds.

The time between the ambulance arriving at the scene and paramedics reaching the patient can be more variable. Factors that can affect this time include:

- whether the paramedics can safely reach the patient. Other emergency services may have to make the site safe first
- how close the ambulance can physically get to where the patient is
- the size of the property and where the patient is located
- the quality of the information given to ESTA and the paramedics about the address or patient's location.

Generally, the time between arriving at the address and reaching the patient is minimal. Once at the patient's side, a paramedic may have difficulty recording times accurately because:

- the priority at this point is providing patient care
- the paramedic is away from computer system in the vehicle that automates time data recording.

For these reasons it is reasonable that the reported response time is up to when the ambulance arrives at the scene.

Total case time

Average total case times in the city and regional areas have risen significantly and continue to rise. For metropolitan services, average case times are currently 75 minutes, up from around 55 minutes in 2006. For rural regions average case times are now 91 minutes, up from 76 minutes four years ago.

Within the total case time, average waiting times at hospital emergency departments have risen, while times, up to arrival at hospital, have fallen.

AV should also report total average case times, and separate them into the components that it, ESTA, and hospitals have control over. This would give a complete picture of the patient experience and could help manage community expectations about ambulance response times and transport to hospital in an emergency. It would also highlight parts of the system that AV cannot address and for which other agencies must take responsibility.

4.5 Appropriateness

An appropriate performance measure gives enough context for the reader to understand the results.

The context of a performance measure means using preset targets, goals or outcomes based on reasonable, preferably evidence-based standards. Agencies should be able to achieve targets, but not so easily that they always exceed them and therefore have no incentive to improve.

It is preferable if measures and results can be compared with the performance of similar organisations, which is known as external benchmarking. In addition, if the agency compares its results over years this encourages it to keep the same measures and to calculate the results consistently.

AV's reported measures, and in particular its responsiveness measures, only partly meet these tests. Public understanding of ambulance response times would improve greatly if AV was to set and report on targets for a range of times, and their relative likelihood of being achieved. AV uses this approach internally so public reporting on it would not cost significantly more.

4.5.1 Choosing the appropriate measure

AV reports timeliness as the percentage of Code 1 incidents responded to within 15 minutes. The positive attributes of this measure are that it consists of a clearly expressed, unambiguous standard, 15 minutes. It also has easily measurable targets, 85 per cent statewide and 90 per cent for centres with more than 7 500 people.

However, the evidentiary basis for the standard of 15 minutes and for the percentage targets is not obvious. Also as it was introduced only three years ago, the public can no longer compare long-term trends.

Prior to 2007–08, Victorian ambulance response times were reported against the 50th and 90th 'percentiles'. These are the maximum times taken to respond to half of all cases—also referred to as the median time—and the maximum time taken to respond to 90 per cent of all cases, respectively.

Percentiles indicate the chance that an ambulance will arrive across a range of times. For example, if the 50th percentile were 8 minutes and the 90th percentile 18 minutes, it would be reasonable to expect an ambulance to arrive within 8 minutes about half the time, and within 18 minutes most times.

Measures and targets used in other jurisdictions in Australia and overseas, some of which are percentile measures, are set out in Figure 4D.

Figure 4D
Response time indicators and targets in selected jurisdictions

Jurisdiction	Indicator	Area	Target (minutes)
Australian states and territories			
Australian Capital Territory (ACT)	50 per cent of the first responding ambulance resource arrives—Code 1 situation	All	8.0
	90 per cent of the first responding ambulance resource arrives—Code 1 situation	All	12.5
New South Wales [(a)]	50th percentile response time for potentially life-threatening cases	All	n/a
		Metro	n/a
Queensland	50 per cent of the first responding ambulance resource arrives—Code 1 situation	All	8.2
	90 per cent of the first responding ambulance resource arrives – Code 1 situation		16.8
South Australia	Respond to 50 per cent of emergency incidents	All	9.1
	Respond to 90 per cent of emergency incidents	All	16.5
Western Australia	Respond to 90 per cent of emergency calls	Metro	15.0

Figure 4D
Response time indicators and targets in selected jurisdictions – *continued*

Jurisdiction	Indicator	Area	Target (minutes)
International			
British Columbia	Average response time	All	None
	Respond to 90 per cent of most serious calls	Urban/ metro	9.0
New Zealand	80 per cent of the first responding ambulance resource arrives—Priority 1	Metro	10.0
		Rural	16.0
		Remote	30.0
United Kingdom [(b)]	An emergency response will reach 75 per cent of Category A calls	All	8.0
		Metro	14.0
	A fully equipped ambulance, if required, will attend 95 per cent of Category A or B calls	Rural	19.0

Note: (a) Specific targets are not set for New South Wales.
(b) Category A in the United Kingdom is narrower than Code 1.

Source: Victorian Auditor-General's Office.

The 50th and 90th percentiles are also reported in the ROGS by every state and territory, but there is no nationally agreed target for either.

The decision to adopt the current measure arose from a review into response time indicators in mid-2004, by the Standards Policy Consultative Committee, an industry committee chaired by the then Parliamentary Secretary for Health.

The review recommended public reporting on ambulance response times for major urban populations over 50 000, urban populations 10 000 to 50 000, and statewide. The report also considered including measures for 'Priority 0' cardiac arrest cases. The report did not recommend its introduction at the time due to difficulties in accurately recording and measuring first responder times, particularly in rural regions with no computer aided dispatch systems.

The review considered that the public would not easily to grasp reporting response times at the 50th and 90th percentiles. The committee recommended reporting as a target percentage of cases within a certain number of minutes, and targets have been set for AV in this form since 2007–08.

4.5.2 Setting appropriate targets

AV has publicly reported emergency response targets against the 15 minute standard since 2007–08. Figure 4E shows ambulance response targets up to then.

Figure 4E
Ambulance service response targets

Period	Indicator	Target (minutes)
2002–03 to 2006–07	Emergency response time (Code 1) in 50 per cent of cases—metro	8
	Emergency response time (Code 1) in 90 per cent of cases—metro	13
2003–04 to 2006–07	Emergency response time (Code 1) in 50 per cent of cases—statewide	9
	Emergency response time (Code 1) in 90 per cent of cases—statewide	15

Source: Victorian Auditor-General's Office.

This shows that the statewide standard for 90 per cent of responses was 15 minutes, and the metropolitan standard was 13 minutes, before the new regime.

Considerations in setting standards and targets

The approach to determining the number of minutes to set as part of a target should be evidence-based, using clinical research into the relationship between ambulance times and patient outcomes. Most research in this area concerns cardiac arrests. Research has found that in such cases shorter ambulance response times are associated with better patient survival rates. Despite this, research has not produced universally accepted response times for ambulance services to guide indicator targets.

Without definitive research to help set target response times, it is instructive to compare the Victorian indicators with other jurisdictions, shown in Figure 4D. This shows that the AV targets are comparable with those of other jurisdictions. Time targets under 15 minutes in Canada and New Zealand are for metropolitan and urban areas only, and the shorter time target for the ACT probably reflects its smaller geographical area. The Victorian practice of setting a shorter response time for more populous areas is also consistent with most jurisdictions, recognising that it takes longer to cover the greater distances in rural regions.

While the use of a 15-minute time standard compares with other jurisdictions, it is an arbitrary figure not based on analysis of available resources, service demand, or distances travelled.

Setting standard response targets is difficult because they are affected by the population and traffic density, topography, and road/transport infrastructure. It is unlikely that actual response times in different jurisdictions either across Australia, internationally or within one state can be compared directly.

4.5.3 Fair presentation

The way performance data is presented determines how it is interpreted, or can be interpreted.

The highly aggregated response data reported masks variances in expected and actual performance across the state. This is particularly so for small rural regions.

Internal targets

AV monitors performance in more detail in internal reports, in addition to the performance measures and targets set out in the annual Budget Papers and reported in its annual report and ROGS. At its monthly board meetings, a more comprehensive set of data is tabled, including the response time performance measures shown in Figure 4F.

Figure 4F
Internal response time measures and targets

Performance measure	Target
90th percentile response time (Priority 0)	Response time of 13 minutes (metro only)
90th percentile response time (Code 1)	Response time of 15 minutes (metro)
	Response time of 25 minutes (rural regions)
Emergency Medical Response 90th percentile (Priority 0)	Response time of 11 minutes (metro only)
Proportion of Code 1 incidents responded to in 15 minutes	90 per cent (metro)
	75 per cent (rural regions)
	85 per cent (statewide)
Proportion of Code 1 incidents responded to in 15 minutes in urban centres with population >7 500	90 per cent (metro, rural regions and statewide)

Source: Ambulance Victoria's performance indicator report, June 2010.

The targets show management's different expectations for rural regions and metropolitan areas, with a target of 75 per cent of cases responded to in 15 minutes for rural regions, compared with 90 per cent for metropolitan.

An Activity Report for the Operations Group is also tabled at each meeting showing varying regional targets for timeliness, as set out in Figure 4G.

Figure 4G
Rural region targets in AV's Activity Report for the Operations Group

Region	Target 50th percentile (minutes)	Target 90th percentile (minutes)
Hume	13	29
Gippsland	12	25
Loddon Mallee	11	23
Grampians	12	26
Barwon South West	12	23
All rural regions	**12**	**25**

Source: Ambulance Victoria's Activity Report for the Operations Group, May 2010.

AV's Emergency Operations Plan 2011–12 to 2014–15 is its main planning document that drives resource planning advice to its minister. AV's resource allocation model is aimed at achievement of targets detailed in Figure 4H.

Figure 4H
Targets in AV's Emergency Operations Plan 2011–12 to 2014–15

Area type	Target
Urban centre localities with population > 50 000	90 per cent Code 1 within 15 minutes (in each centre)
Urban centre localities with population < 50 000 and > 7 500	90 per cent Code 1 within 15 minutes (aggregated by region)
Urban centre localities with population < 7 500	65 per cent Code 1 within 15 minutes (aggregated by region)
Outside a urban centre locality boundary	42.7 per cent Code 1 within 15 minutes (aggregated by region)

Source: Ambulance Victoria's Emergency Operations Plan 2011–12 to 2014–15.

Aggregation

AV monitors performance in much greater detail than is publicly reported, and it sets targets for rural regions that reflect practical realities.

The issue with aggregated data is recognised in ROGS, published annually by the Productivity Commission, which notes that statewide response times represent responses to urban, rural and remote areas. It notes that they include responses from volunteer stations where turnout times are generally longer because volunteers are on call rather than on duty.

The Standards Policy Consultative Committee review into the reporting of response time indicators in 2004 also acknowledged:

- reporting targets (statewide and metropolitan only) were not comprehensive and consistent across the state
- reporting was highly aggregated and therefore obscured significant differences in performance in different places
- high levels of aggregation were consistent with response times being outside the target for a large number of cases.

The AV 2008–09 Annual Report section on performance shows the practical effect of reporting aggregated data. AV was able to report accurately that:

> 'Our statewide road response times improved compared with the previous year. We responded to Code 1 calls (lights and sirens) within 15 minutes in 82.5 per cent of cases. While this was an improvement on the previous year's 81.9 per cent, it was short of our statewide target of 85 per cent of cases.

> Overall, in areas with a population of more than 7,500, our response was 88.2 per cent within 15 minutes, an improvement on the previous year's 87.5 per cent. Our target response time is 90 per cent of calls within 15 minutes.'

However, within this overall achievement, responsiveness in the Barwon South West and Loddon Mallee regions for the same period fell to around 71 per cent each; and responsiveness for population centres under 7 500, fell from 52.3 per cent to 51.1 per cent. This is not clear from the publicly reported data.

The publicly reported data would have also been more transparent had it acknowledged that the internal target for rural regions is 75 per cent, not 85 per cent, as a reader with access only to AV's publicly reported performance measures might suppose. The lower target appears in AV's monthly performance indicator report, an internal management report.

If AV were to openly report such targets and its performance to the public in the rural regions it would promote local accountability. Information specific to where people live, is of interest to them, and would also help the public to understand what a realistic level of service is for their location.

In this respect, aggregated reporting on ambulance responsiveness differs from other areas of the health system. For example, reporting on emergency department and elective surgery waiting times, allows the public to compare hospitals across the state and determine what their likely waiting time will be.

4.6 Reliability of reported performance

For proper accountability, publicly reported ambulance response times should be accurate and reliable. Response time data reported by AV is generally reliable.

4.6.1 Integrity of data

Reporting on performance is only useful if the data reported is reliable. It does not need to be 100 per cent accurate: this would cost too much and be difficult to achieve in practice. However, errors in capturing, aggregating, analysing and compiling data should be minimised.

The concept of 'materiality' applies to performance data. The test is whether, if data later found to be inaccurate had been accurate at the time, the decision made would have been different.

Data collection

AV's current data collection methods and quality controls over data are sufficient and appropriate to produce materially correct information. Although rural region data, has been less reliable, this will largely be overcome once the transfer to ESTA is completed this financial year.

Until then, methods for collecting response time data vary between metropolitan and rural regions. As an example, Figure 4I shows the two ways for recording the start and arrival times for emergency ambulance responses depending on whether or not the ambulance is located within the ESTA serviced area.

Figure 4I
Different ways of recording response times, metropolitan area and rural regions

Time	Metropolitan	Rural regions
Start time	ESTA call taker 'creates an event'. The time is automatically captured in the ESTA Computer Aided Dispatch (CAD) system.	In the Hume and Gippsland regions the method is the same as in the metropolitan area. In other regions the time is automatically captured in the Rural AV CAD (RAVCAD) system when the call taker starts to enter data.
Stop time	The paramedic pushes the relevant hard-button time stamp (labelled 'arrival at-scene') on the mobile data terminal (MDT) on the ambulance's dashboard upon arrival at the address. [(a)] The MDT automatically provides the data to the Mobile Data Network.	1. The paramedic records the time of arrival in the electronic Patient Care Record (PCR) in the Victorian Ambulance Clinical Information System (VACIS). Occasionally, if there are system problems the paramedic may write down the time to record later. 2. If an Ambulance Community Officer or CERT arrives first the arrival time is entered on a paper PCR. Where paper PCRs are used, the data is entered manually into the PCR system by data entry staff in AV's finance department.

Note: (a) There are six hard-button time stamps on the MDT: 'acknowledge dispatch', 'en route', 'arrival at-scene', 'patient loaded', 'at destination' and 'ambulance clear'.
Source: Victorian Auditor-General's Office.

The process used for recording start times is highly accurate, as it automatically occurs in line with workflows, removing the chance of human error. Opportunities for error exist in the recording of stop times.

In both metropolitan and regional areas, paramedics can acknowledge or record time stamps at different times. For example, a paramedic may record the arrival time when turning into the patient's street, thereby reducing the reported time by a small amount. Or, a paramedic may forget to record the time and return to the vehicle to do this, thereby extending the recorded time. Staff training can reduce these errors but not eliminate them.

The regional areas without automated systems are more prone to errors. For example, where staff cannot use the radio network they will manually record times and later transfer them into the computer. This allows room for recording and transcription mistakes.

AV is cutting out manual time recording in rural regions by building new radio towers in 'black spots'. AV estimates that more than 97 per cent of the state is covered now. It has contracted for construction of five new radio towers in the few remaining coverage 'black spots' so the network will cover virtually all populated areas of the state. This will help improve data integrity.

AV estimates that it will transfer to statewide CAD reporting from 1 July 2011 after which it will no longer use the Victorian Ambulance Clinical Information System (VACIS) for response time reporting.

Data storage, aggregation, analysis and reporting

Data from metropolitan areas, which is most of AV's data, is likely to be of better quality and more reliable than the rural region data.

As those areas transition to ESTA this should improve, but the technical challenges of operating in rural and remote settings means their data will always be more vulnerable to error.

There have been audits of VACIS and Patient Clinical Record data that examined the reliability of the data in the AV information technology systems. AV management has actively monitored and raised issues of data quality with ESTA and in its own operations.

In 2007, MAS management analysed its datasets and assessed the likely effect of errors on reported response times. The assessment was thorough, and showed that after removing obvious errors, data inconsistencies did not substantially affect the reported results. Our analysis of the dataset for 2009–10 confirmed this.

This gives reasonable assurance over the integrity of data.

However, AV recognises it needs to do more work on data security. On formation of AV the need for system integration was prioritised above security. Now integration is achieved and the move to a single domain is under way, it is appropriate for AV to focus on statewide integrated security architecture.

The recently convened AV Security Working Group, which first met in August 2010, noted that 'Historically, after the merger security has not been seen as a high-priority focus. It was managed ad hoc without overarching policy/framework. We need to put security back to the top of the work agenda and quickly move from a reactive mode to a proactive mode'.

AV has recently updated its security policies and guidance and changed its data governance. Figure 4J outlines AV's approach to addressing information systems issues.

Figure 4J
Addressing information security challenges

AV faces a significant task in combining the operations of the rural and metropolitan ambulance services. It has to combine two legacy information technology (IT) systems with different operating procedures and practices. The technology challenges alone are complex. All of this could affect the integrity of the data collected, stored, analysed and reported.

AV is aware of the complexity and is determined to meet the challenges. The *Information Technology Strategy: 2009–2014*, developed in October 2009, is a thorough assessment of AV's IT infrastructure using a sound and rigorous process. The assessment identified 124 applications and tools within the IT system from the former Rural Ambulance Victoria and Metropolitan Ambulance Service and the new agency. Participants in the assessment were particularly revealing about the problems and complexities that affect their work.

The strategy describes many challenges to:

- ensuring data integrity–completeness and accuracy
- efficient collation of information for decision making and reporting
- providing information systems that meet staff needs in the field and in operational centres, and management, to remove the need for workarounds.

Source: Victorian Auditor-General's Office.

Recommendations

5. That Ambulance Victoria publicly reports a comprehensive suite of response time indicators, including:
   - national measures of response times at the 50th and 90th percentiles
   - a breakdown of performance by region/locality.
6. That the Department of Health reports on performance for total case time, broken down by the elements attributable to the Emergency Services Telecommunications Authority, Ambulance Victoria, and hospitals.

Appendix A.

Ambulance response times, by responding branch

Figures A1 and A2 provide Code 1 incident response times for each ambulance branch, by metropolitan and rural areas, respectively. The data relate to the incidents where the ambulance branch was the first responding unit.

It is important to note that ambulances may respond to incidents that are outside of their immediate areas. For example, an ambulance from the Maffra branch may be the first responding unit to a Code 1 incident in Traralgon. The response time for this incident would contribute to the performance results detailed below for the Maffra branch.

The darker shaded cells indicate branches that have not met Ambulance Victoria's (AV) statewide performance target of responding to 85 per cent of Code 1 incidents within 15 minutes.

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Abbotsford	596	9.3	8.4	13.7	92.6
Air MICA	142	11.0	10.3	14.8	91.5
Altona	1 615	10.7	9.7	16.0	87.6
Bacchus Marsh	879	12.9	12.1	19.4	69.2
Baxter	781	11.7	10.2	18.6	79.1
Bayside	1 754	10.1	9.0	14.3	91.7
Beaconsfield	1 233	12.7	11.2	20.5	76.5
Belgrave	540	12.6	10.9	19.6	76.7
Berwick	1 499	11.0	9.8	17.0	85.7
Boronia	858	10.5	9.3	16.0	87.8
Box Hill	1 671	10.7	9.7	15.1	89.6

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10
– continued

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Braybrook	888	11.0	9.9	16.3	85.1
Brighton	1 942	9.6	8.8	13.4	93.7
Brimbank	1 853	10.9	9.6	17.0	86.7
Broadmeadows	1 670	10.8	9.6	15.8	88.0
Burwood	707	9.1	8.5	13.1	94.5
Camberwell	1 457	10.3	9.1	15.0	90.2
Carnegie	791	10.0	9.2	14.7	91.5
Caulfield	1 868	10.1	9.1	14.6	91.1
Central	1 858	9.3	8.3	13.5	93.4
Chelsea	1 454	10.5	9.2	16.6	87.0
Cheltenham	776	9.6	8.9	13.6	93.7
City	1 989	9.4	8.3	14.3	91.0
Clyde	641	11.1	9.7	17.2	83.6
Coburg	727	9.7	8.8	14.3	91.9
Craigieburn	682	11.6	9.7	17.9	84.5
Cranbourne	1 465	11.2	9.5	17.5	83.5
Croydon	880	11.0	10.0	16.4	85.8
Clinical Support Officers	757	10.5	9.5	16.1	86.1
Dallas	1 560	11.4	10.5	16.6	83.9
Dandenong	1 781	10.7	9.6	15.8	88.4
Darley	401	12.4	11.0	19.1	70.8
Diamond Creek	605	12.3	11.2	19.1	78.5
Docklands	959	9.2	8.0	14.0	93.4
Doncaster	757	10.0	9.3	14.3	91.3
Doveton	896	11.7	10.6	16.7	83.7
Eltham	1 670	11.6	10.5	17.5	81.8
Emerald	626	17.2	15.8	28.8	45.2
Epping	1 677	11.7	10.0	18.8	81.2
Essendon	1 682	10.9	9.8	15.8	88.1
Ferntree Gully	1 726	10.3	9.3	15.2	89.6
Footscray	1 736	10.6	9.2	15.7	88.5

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10
– continued

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Frankston	1 674	10.8	9.4	16.3	85.4
Glen Iris	681	10.4	9.6	15.2	89.3
Glenroy	838	11.1	9.9	15.6	87.7
Greensborough	1 671	10.3	9.1	15.1	89.9
Greenvale	689	10.2	9.3	14.6	91.9
Hadfield	1 569	11.2	10.1	16.6	85.0
Hampton Park	795	10.8	9.7	15.8	86.8
Hartwell	1 505	10.5	9.5	15.7	88.3
Hastings	1 151	12.2	10.8	19.9	78.6
Hawthorn	688	11.0	9.5	16.4	86.5
Healesville	617	16.3	13.0	29.9	60.1
Heatherton	1 686	10.8	9.7	15.7	87.7
Highett	909	10.4	9.2	15.5	88.3
Hillside	1 528	12.5	10.7	21.0	76.2
Hoppers Crossing	891	10.5	9.4	15.4	88.9
Ivanhoe	726	10.6	9.5	15.5	88.8
Jackson's Creek	483	10.9	9.4	18.4	84.3
Karingal	1 297	12.7	11.4	20.5	75.9
Kealba	845	10.7	9.4	16.0	87.8
Kensington	633	10.3	9.5	15.2	88.9
Kew	665	9.6	8.6	14.5	91.6
Keysborough	899	10.9	9.7	15.9	87.7
Kinglake	150	19.5	16.3	38.7	42.7
Kingsbury	574	9.9	9.1	14.1	93.0
Knox	1 722	10.5	9.4	15.5	89.2
Kooyong	900	10.6	9.6	15.4	89.2
Langwarrin	597	11.9	10.6	19.2	79.1
Laverton	1 288	12.6	11.3	18.9	76.5
Lilydale	1 637	11.3	9.9	17.7	84.2
Lyndhurst	715	11.1	9.7	16.9	84.9
Melton	1 361	10.7	8.9	17.8	84.4

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
MICA 1	1 858	10.3	9.5	15.1	89.9
MICA 2	1 720	10.1	9.1	14.9	90.2
MICA 3	1 674	10.6	9.8	15.5	88.4
MICA 4	1 647	10.6	9.7	15.6	88.7
MICA 5	1 792	10.4	9.7	14.9	90.3
MICA 6	1 623	11.1	10.2	16.8	84.9
MICA 7	1 546	10.7	9.8	15.7	87.9
MICA 8	1 697	10.4	9.6	15.5	88.0
MICA 9	1 205	12.4	11.1	18.6	78.8
MICA 10	1 885	11.3	10.4	15.9	87.3
MICA 11	1 940	11.2	10.4	16.0	87.0
MICA 12	1 165	13.4	12.2	21.4	66.8
MICA 13	1 500	11.2	10.0	17.5	84.6
MICA 14	1 875	12.5	11.7	17.3	80.4
MICA 15	1 750	11.2	10.4	16.6	84.7
MICA 16	1 768	11.4	10.7	16.3	84.6
Millgrove	432	13.7	11.5	23.4	68.8
Mitcham	824	10.5	9.5	14.8	90.8
Montrose	1 586	11.6	10.1	17.9	83.5
Moonee Ponds	1 912	9.5	8.6	13.7	93.1
Mooroolbark	1 652	11.5	10.2	17.8	83.1
Mordialloc	1 457	10.9	9.7	15.9	87.4
Moreland	777	10.4	9.3	14.9	90.2
Mornington	1 384	11.6	9.3	20.7	78.3
MR300	752	9.2	8.6	12.6	95.7
MR301	931	8.7	8.0	13.0	95.3
MR302	846	8.8	8.1	12.9	95.7
Narre Warren	630	12.7	11.3	19.5	75.6
Newport	770	10.6	9.5	16.4	86.9
Noble Park	762	9.8	9.1	14.1	93.2
Northcote	1 471	10.1	8.7	14.4	91.3
Northland	654	9.6	8.9	14.1	92.4

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10
–continued

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Nunawading	1 844	10.7	9.6	15.1	89.9
Oak Park	1 551	10.9	10.0	16.1	87.1
Officer	649	12.6	10.1	23.4	72.3
Ormond	876	10.4	9.2	15.3	88.8
Pakenham	1 249	13.4	10.5	24.4	67.8
Patterson Lakes	800	11.4	10.2	16.2	86.3
Point Cook	1 393	11.7	10.8	17.7	79.5
Port Melbourne	655	10.7	8.9	16.1	87.5
Prahran	774	10.3	8.9	16.3	87.1
Preston	1 667	10.0	9.0	14.5	90.5
Regent	814	9.7	8.7	14.2	91.6
Research	700	10.1	9.5	14.6	91.4
Reservoir	1 468	11.0	9.8	16.4	86.7
Richmond	1 445	9.7	8.8	14.7	90.6
Ringwood	1 726	10.9	9.6	16.3	86.2
Rockbank	619	10.3	8.8	16.8	86.6
Rosebud	1 244	11.7	10.0	18.7	81.0
Rowville	1 553	10.9	10.0	15.4	89.1
Seaford	1 530	11.3	10.2	16.1	85.8
Skye	742	11.6	10.6	16.8	84.1
Somerville	734	11.0	9.1	20.1	81.1
Sorrento	719	14.3	12.7	22.1	65.4
South Morang	858	10.5	9.3	15.9	88.1
Southbank	736	10.0	8.8	14.9	90.1
Springvale	1 691	10.4	9.3	15.7	88.0
St Albans	1 693	10.9	9.6	15.9	88.1
Sth Melbourne	1 671	9.9	8.5	14.6	90.7
Sunbury	1 178	12.1	9.9	22.2	81.1
Sunshine	1 620	10.7	9.5	15.9	87.6
Syndal	854	10.2	8.9	14.6	91.1
Templestowe	709	11.6	10.6	16.8	84.5
Thomastown	1 816	10.9	9.7	16.0	87.4

Figure A1
Code 1 response times by metropolitan responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Thornbury	1 249	9.4	8.4	14.1	91.9
Tullamarine	897	9.7	8.6	14.8	90.0
Vermont South	1 789	10.1	9.0	14.4	91.5
Waverley	1 718	9.9	8.9	14.6	91.0
Werribee	1 833	10.5	9.6	15.5	88.6
West Melbourne	732	9.0	8.0	13.8	92.6
Wheelers Hill	1 509	11.1	10.0	16.3	86.3
Whittlesea	687	14.9	13.1	25.1	61.7
Windsor	2 060	9.2	8.2	13.5	93.6
Yarra Junction	629	14.6	12.9	22.2	63.8
Total/average	**176 811**	**10.9**	**9.6**	**16.6**	**86.2**

Notes: Data included in Figure A1 are from AV's metropolitan database, sourced from the Emergency Services Telecommunications Authority computer aided dispatch system.

The following have been removed from the table but contribute to the overall metropolitan results: (i) 194 incidents responded to by event cars, bicycle response unit, the MICA meal break unit, and field, group and team managers (ii) 1 018 incidents responded to by 10 reserve branches.

Minor differences exist in the metropolitan totals in this figure and in Part 2 of this report due to the above exclusions.

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Figure A2
Code 1 response times by rural responding branch, 2009–10

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Alexandra	342	20.5	18	35	43.0
Anglesea	349	17.1	15	27	52.7
Apollo Bay	129	14.0	11	26	69.8
Ararat	579	15.6	12	30	69.6
Avoca	166	20.7	19	35	42.8
Bairnsdale	1 409	14.1	10	25	73.4
Ballan	263	20.6	17	35	40.3
Ballarat	1 616	14.0	11	22	78.0
Ballarat (MICA)	1 077	13.4	11	21	77.3
Balmoral	15	27.3	25	38	13.3
Beaufort	65	20.6	19	28	18.5
Beechworth	236	17.1	14	30	59.7
Bellarine	1 358	16.2	15	25	53.3
Belmont	1 939	13.8	12	23	73.4
Benalla	654	14.1	10	28	71.9
Bendigo	2 568	14.4	11	24	76.3
Bendigo (MICA)	1 551	13.3	11	20	79.9
Berringa	26	22.3	22	30	26.9
Birchip	24	14.8	11	28	62.5
Blackwood	22	20.2	19	26	18.2
Boort	22	18.1	15	27	54.5
Bright	186	17.0	13	30	58.6
Camperdown	306	15.6	12	31	63.1
Cann River	30	19.9	17	32	43.3
Casterton	156	15.1	11	29	64.7
Castlemaine	619	15.1	12	26	67.9
Charlton	147	22.9	21	41	40.1
Chiltern	84	14.5	14	23	61.9
Cobram	572	14.2	12	25	71.0
Cohuna	137	19.4	17	32	47.4
Colac	607	13.5	10	27	72.8
Coleraine	52	14.9	14	24	61.5
Corryong	130	25.2	19	48	44.6
Cowes	901	13.2	11	20	74.1

Figure A2
Code 1 response times by rural responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Daylesford	261	19.9	17	33	39.8
Dimboola	161	24.4	20	48	43.5
Donald	64	19.8	17	34	43.8
Dunmunkle	75	17.2	18	27	37.3
Echuca	1 342	14.3	12	25	70.3
Edenhope	84	22.5	19	41	42.9
Eildon	45	21.7	19	30	28.9
Euroa	341	16.9	13	30	61.0
Falls Creek	16	26.8	10	55	68.8
Foster	220	20.8	18	37	40.9
Geelong	465	14.7	12	22	70.8
Geelong (MICA)	2 693	13.7	12	22	72.6
Gisborne	536	16.0	14	25	56.3
Glenthompson	34	24.7	27	35	20.6
Goroke	29	17.3	14	29	51.7
Grantville	136	18.0	18	25	30.1
Halls Gap	25	19.0	17	26	36.0
Hamilton	622	14.5	10	28	72.0
Hawkesdale	22	20.9	21	33	27.3
Heathcote	299	17.5	16	27	46.2
Heyfield	104	19.5	15	28	50.0
Heywood	152	17.0	15	30	52.6
Hopetoun	13	23.1	20	33	15.4
Horsham	1 083	11.9	9	21	82.4
Inglewood	188	23.7	21	40	33.5
Irymple	806	13.2	12	19	78.2
Jeparit	16	11.8	8	20	68.8
Kangaroo Flat	897	14.6	11	24	71.9
Kaniva	32	15.0	13	26	65.6
Kerang	237	17.5	12	32	62.9
Kilmore	1 144	18.1	17	28	41.7
Korumburra	340	15.0	12	26	58.5
Kyabram	475	16.9	15	30	55.8
Kyneton	451	16.1	14	28	56.8

Figure A2
Code 1 response times by rural responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Lakes Entrance	904	13.8	10	26	73.1
Lara	1 051	15.6	14	24	61.2
Lavers Hill	24	21.4	20	36	37.5
Leigh Catchment	18	19.2	20	26	27.8
Leongatha	584	17.7	14	34	55.5
Lismore	28	18.2	17	24	32.1
Loch Sport	83	17.9	16	27	48.2
Lorne	121	14.1	11	29	67.8
Maffra	509	17.5	16	28	47.5
Maldon	79	15.1	15	22	58.2
Mallacoota	92	19.3	16	37	45.7
Manangatang	9	27.9	22	35	0.0
Mansfield	369	22.3	16	42	49.3
Maryborough	721	13.5	10	26	73.0
Marysville	21	24.4	21	35	19.0
Meredith	36	19.6	18	31	36.1
Mildura	2 314	11.1	9	18	85.4
Mirboo North	164	19.0	15	32	51.8
Mitta Mitta	29	25.3	26	36	20.7
Moe	1 779	13.6	11	25	74.4
Moira West	86	15.7	14	24	58.1
Mooroopna	605	14.5	13	26	65.6
Mortlake	125	20.0	15	39	49.6
Morwell	1 390	15.3	13	24	63.9
Morwell (MICA)	1 178	14.9	13	24	62.1
Mount Beauty	127	17.9	14	37	59.1
Mount Buller	52	12.0	7	25	80.8
Mount Hotham	17	23.4	18	29	41.2
Murchison	259	20.8	20	32	34.0
Murrayville	13	15.1	13	29	76.9
Myrtleford	236	17.4	13	26	57.6
Nagambie	146	12.2	11	17	80.8
Nangiloc	17	19.3	14	32	47.1
Neerim South	40	24.8	18	39	32.5

Figure A2
Code 1 response times by rural responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Nhill	137	17.9	13	37	67.2
Norlane	1 980	13.6	12	21	74.0
Nullawarre	24	18.3	18	25	25.0
Numurkah	434	18.4	16	30	44.0
Nyah West	151	18.3	15	36	52.3
Ocean Grove	1 197	16.6	14	26	56.4
Omeo	43	31.9	32	55	16.3
Orbost	199	16.8	12	37	61.8
Ouyen	114	17.6	12	38	65.8
Paynesville	345	13.9	12	23	69.3
Penshurst	35	16.4	15	27	57.1
Port Campbell	22	22.5	22	35	27.3
Port Fairy	213	13.2	10	22	70.9
Portland	431	12.2	11	19	79.6
Pyramid Hill	45	20.4	18	27	31.1
Rainbow	13	19.1	15	29	46.2
Robinvale	169	16.8	13	29	62.1
Rochester	278	19.2	17	34	44.6
Romsey	279	19.3	17	34	41.2
Sale	1 199	14.5	10	26	71.7
Sea Lake	113	20.1	15	36	51.3
Sebastopol	983	12.6	10	20	78.4
Seymour	710	16.4	13	29	59.0
Shepparton	2 722	13.7	12	23	76.3
Skipton	47	21.4	19	33	38.3
Snake Valley	46	15.8	15	23	50.0
St Arnaud	141	22.0	16	44	44.0
Stawell	443	15.1	11	29	69.8
Swan Hill	803	13.1	9	23	80.9
Tallangatta	205	21.2	18	40	43.9
Tambo Valley	34	26.6	24	43	5.9
Terang	226	14.0	11	25	64.6
Timboon	129	21.7	21	35	31.0
Tongala	55	12.0	11	21	83.6

Figure A2
Code 1 response times by rural responding branch, 2009–10 – *continued*

Responding branch	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Torquay	1 115	16.4	15	27	55.3
Traralgon	1 466	13.5	11	23	73.3
Venus Bay	33	15.2	14	22	57.6
Walwa	14	28.7	24	47	28.6
Wangaratta	1 634	16.0	11	32	70.3
Warracknabeal	248	20.0	14	41	54.4
Warragul	1 729	15.4	13	25	65.6
Warrnambool	1 661	11.5	9	18	85.0
Wedderburn	86	16.9	15	28	51.2
Wendouree	1 013	14.5	11	26	72.8
Wodonga	1 977	13.2	11	22	78.8
Wonthaggi	1 242	14.6	12	27	68.3
Woodend	426	16.8	16	27	47.9
Woods Point	9	24.7	15	38	44.4
Yarram	242	16.9	15	28	51.7
Yarrawonga	573	13.1	11	22	77.7
Yea	242	22.2	18	40	42.6
Total/average	**72 690**	**15.0**	**12**	**26**	**67.6**

Notes: Data included in the above table are from AV's rural database, sourced from patient care records completed by paramedics. Rural responsiveness data are available only in whole minutes.

The following have been removed from the table but contribute to the overall rural results: (i) 31 incidents responded to by non-emergency patient transfer units (ii) 13 incidents responded to by 12 reserve branches, where the total number of incidents was two or less.

Minor differences exist in the rural totals in this figure and in Part 2 of this report due to the above exclusions.

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Appendix B.

Ambulance response times, by local government area

The following figures provide Code 1 incident response times by local government area (LGA). There are 79 LGAs in Victoria, constituted as cities (C), shires (S), rural cities (RC) and boroughs (B).

As noted in Part 4 of this report, Ambulance Victoria (AV) currently uses two legacy information technology systems—one each for rural and metropolitan ambulance services. The data refer to the first responding ambulance, either metropolitan (Figure B1) or rural (Figure B2).

The darker shaded cells indicate LGAs where AV has not met its statewide performance target of responding to 85 per cent of Code 1 incidents within 15 minutes.

Figure B1
Metropolitan Code 1 response times, by LGA, 2009–10

Local Government Area of incident	Code 1 incidents (number)	Response times (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Banyule (C)	5 147	10.5	9.6	15.2	89.1
Bayside (C)	3 613	11.2	10.0	16.3	86.2
Boroondara (C)	5 254	9.9	9.1	13.9	93.1
Brimbank (C)	8 146	10.4	9.5	15.0	90.0
Cardinia (S)	2 834	14.6	12.3	26.1	61.8
Casey (C)	9 290	11.3	10.2	16.8	84.2
Darebin (C)	7 458	9.6	8.8	13.7	93.2
Frankston (C)	7 294	10.4	9.4	15.5	88.8
Glen Eira (C)	5 641	10.2	9.3	14.7	91.1
Greater Dandenong (C)	7 967	10.4	9.4	15.2	89.6
Hobsons Bay (C)	3 823	11.2	10.3	16.4	85.7
Hume (C)	8 614	12.4	11.0	19.1	78.7
Kingston (C)	6 776	11.0	10.0	16.4	85.8
Knox (C)	5 660	10.6	9.6	15.3	89.3
Manningham (C)	3 788	11.7	10.9	16.3	85.4
Maribyrnong (C)	3 528	9.6	8.8	13.7	92.8
Maroondah (C)	4 934	9.7	8.9	14.1	92.5

Figure B1
Metropolitan Code 1 response times, by LGA, 2009–10 – *continued*

Local Government Area of incident	Code 1 incidents (number)	Response times (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Melbourne (C)	7 156	9.0	7.9	13.6	92.8
Melton (S)	3 912	12.4	10.9	19.7	74.9
Monash (C)	6 690	10.4	9.5	14.8	90.6
Moonee Valley (C)	5 354	10.3	9.4	14.6	91.2
Moorabool (S)	702	13.5	9.7	26.1	72.4
Moreland (C)	8 128	10.0	9.3	14.2	92.0
Mornington Peninsula (S)	7 928	13.0	11.3	21.6	71.7
Nillumbik (S)	1 684	14.7	13.4	23.4	60.8
Port Phillip (C)	4 440	9.7	8.8	14.2	91.8
Stonnington (C)	3 624	9.7	8.6	14.2	91.8
Whitehorse (C)	6 400	9.8	9.1	14.0	92.7
Whittlesea (C)	5 784	11.3	10.1	16.8	84.5
Wyndham (C)	4 743	12.2	10.8	19.2	77.0
Yarra (C)	4 074	8.8	7.9	12.6	94.5
Yarra Ranges (S)	6 091	13.8	11.9	22.6	68.7
Total/average	**176 811**	**10.9**	**9.6**	**16.6**	**86.2**

Note: Total includes 52 incidents with unknown LGAs and 282 incidents that occurred in rural region LGAs.

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Figure B2
Rural regions Code 1 response times, by LGA, 2009–10

Local Government Area of incident	Code 1 incidents (number)	Response times (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Alpine (S)	644	20.2	14	40	53.3
Ararat (RC)	668	18.5	13	35	61.2
Ballarat (C)	4 064	11.8	10	17	86.2
Bass Coast (S)	2 342	14.8	12	25	66.7
Baw Baw (S)	2 099	16.9	14	30	60.5
Buloke (S)	330	21.7	17	42	47.3
Campaspe (S)	1 945	16.4	13	30	60.6
Central Goldfields (S)	747	14.9	11	30	70.1
Colac-Otway (S)	812	15.5	11	30	68.1
Corangamite (S)	679	16.8	13	31	56.8
Delatite (S)	1 124	16.7	11	33	63.8
East Gippsland (S)	3 051	14.7	11	27	69.6
Gannawarra (S)	354	19.7	13	34	58.2
Glenelg (S)	736	13.7	11	25	71.5
Golden Plains (S)	488	23.2	22	33	17.8
Greater Bendigo (C)	5 187	13.6	11	22	76.7
Greater Geelong (C)	10 704	14.2	13	22	69.1
Greater Shepparton (C)	3 355	13.3	12	21	76.3
Hepburn (S)	597	22.8	21	34	24.6
Hindmarsh (S)	286	19.6	14	47	60.1
Horsham (RC)	1 073	11.8	9	20	83.7
Indigo (S)	488	19.8	18	32	41.4
Latrobe (C)	5 391	13.3	11	22	72.3
Loddon (S)	468	24.6	23	42	29.9
Macedon Ranges (S)	1 632	16.5	15	27	53.1
Mansfield (S)	6	100.3	95	104	0.0
Mildura (RC)	3 070	11.3	10	17	85.5
Mitchell (S)	1 788	17.2	16	28	49.8
Moira (S)	1 630	16.5	13	29	60.0
Mount Alexander (S)	790	16.6	13	29	60.8
Moyne (S)	618	17.5	16	29	45.6
Murrindindi (S)	662	21.3	19	37	40.5
Northern Grampians (S)	565	15.6	12	30	68.0
Pyrenees (S)	305	21.4	21	34	32.1
Queenscliffe (B)	219	19.6	18	29	36.5
South Gippsland (S)	1 279	17.1	14	30	55.2

Figure B2
Rural regions Code 1 response times, by LGA, 2009–10 – *continued*

Local Government Area of incident	Code 1 incidents (number)	Response times (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Southern Grampians (S)	702	14.3	11	26	71.2
Strathbogie (S)	612	18.1	14	33	54.9
Surf Coast (S)	1 089	16.8	14	29	54.6
Swan Hill (RC)	1 019	13.0	10	22	79.5
Towong (S)	359	22.8	19	43	44.3
Wangaratta (RC)	1 400	13.6	11	24	77.2
Warrnambool (C)	1 487	10.4	9	14	92.5
Wellington (S)	2 200	16.3	13	28	59.7
West Wimmera (S)	164	22.6	18	40	43.3
Wodonga (RC)	1 819	11.9	11	17	85.0
Wyndham (C)	18	28.5	19	33	33.3
Yarriambiack (S)	375	19.9	18	36	44.0
Total/average	**72 690**	**15.0**	**12**	**26**	**67.6**

Notes: Total includes one incident with an unknown LGA, 400 incidents that occurred in metropolitan LGAs and 782 incidents that occurred interstate.

Delatite (S) consists of Benalla (RC) and Mansfield (S).

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Appendix C.

Ambulance response times for urban centres/localities

In broad terms, an urban centre is a population cluster of 1 000 or more people, while a locality is a population cluster of between 200 and 999 people.

Figures C1, C2 and C3 show Ambulance Victoria's (AV) responsiveness performance for:

- **Category A**—urban centres with 50 000 or more people
- **Category B**—urban centres with 7 500 to 49 999 people
- **Category C**—urban centres and localities with less than 7 500 people.

For population centres with more than 7 500 people (categories A and B), AV has a target to respond to 90 per cent of Code 1 incidents within 15 minutes.

The darker shaded cells in Figure C1 and C2 indicate urban centres where AV has not met its performance target of responding to 90 per cent of Code 1 incidents within 15 minutes.

The darker shaded cells in Figure C3 indicate urban centres with less than 7 500 people and localities where AV has not met its statewide performance target of responding to 85 per cent of Code 1 incidents within 15 minutes.

Figure C1
Code 1 response times by urban centre – population 50 000 and over, 2009–10

Urban centre	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Category A—populations 50 000 and over					
Ballarat	3 816	11.6	10	16	87.7
Bendigo	4 305	12.4	11	18	84.7
Geelong	7 782	13.2	12	20	75.1
Melbourne	163 406	10.6	9.5	15.7	88.1

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Figure C2
Code 1 response times by urban centre – population 7 500 to 49 999, 2009–10

Urban centre	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Category B—populations 7 500 to 49 999					
Metropolitan					
Melton	2 130	11.8	9.4	19.9	75.9
Pakenham	1 380	11.4	9.5	18.9	82.8
Sunbury	1 396	12.6	9.7	24.2	74.6
Bacchus Marsh	561	12.7	9.1	25.3	76.5
Rural and regional: Barwon South West					
Colac	466	13.0	9	21	84.8
Hamilton	463	10.9	9	16	88.8
Lara	359	14.4	12	24	63.8
Leopold	253	14.9	14	21	62.5
Ocean Grove-Barwon Heads	615	15.6	13	25	60.5
Portland	401	12.1	11	18	82.0
Torquay	376	14.6	12	25	63.0
Warrnambool	1 417	10.2	9	14	94.1
Rural and regional: Gippsland					
Bairnsdale	988	11.3	9	16	89.6
Moe-Yallourn	1 518	12.3	10	21	76.9
Morwell	1 463	11.5	10	18	84.4
Sale	809	10.6	9	16	89.2
Traralgon	1 437	12.1	11	19	78.0
Warragul	749	12.2	9	18	86.8
Rural and regional: Grampians					
Horsham	928	10.2	8	14	91.2
Rural and regional: Hume					
Benalla	540	12.2	9	27	81.7
Shepparton-Mooroopna	2 320	11.5	10	16	88.4
Wangaratta	1 008	10.5	10	14	93.8
Wodonga	1 609	11.3	10	16	88.9
Rural and regional: Loddon Mallee					
Echuca	766	11.8	9	18	85.5
Maryborough	552	12.5	9	24	82.2
Mildura	2 145	9.7	9	14	93.8
Swan Hill	622	10.2	8	13	94.2

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Category C—populations less than 7 500					
Metropolitan					
Little River	1	19.0	19	19	0.0
Bunyip	5	40.4	21	22	0.0
Garfield (L)	1	37.0	37	37	0.0
Lang Lang (L)	4	27.0	23	35	0.0
Nar-Nar Goon (l)	1	20.0	20	20	0.0
Rural and regional: Barwon South West					
Aireys Inlet-Fairhaven	53	19.7	19	25	18.9
Allansford (L)	15	15.8	14	25	66.7
Anglesea	191	13.9	12	23	75.9
Apollo Bay-Marengo	89	11.9	10	19	79.8
Beeac (L)	10	25.5	19	42	0.0
Birregurra (L)	13	20.1	20	23	7.7
Bushfield-Woodford (L)	9	14.0	12	19	77.8
Camperdown	164	10.0	8	15	90.2
Casterton	105	9.6	9	15	90.5
Cobden	68	19.2	18	27	32.4
Dartmoor (L)	8	32.6	27	38	0.0
Derrinallum (L)	11	27.7	24	37	9.1
Dunkeld (L)	14	25.6	24	31	7.1
Heywood	66	11.5	10	19	80.3
Indented Head (L)	66	24.5	23	31	3.0
Koroit	64	17.2	17	22	29.7
Lismore (L)	25	23.9	20	37	32.0
Lorne	78	10.6	9	17	87.2
Macarthur (L)	12	34.5	30	44	0.0
Moriac (L)	7	21.7	23	24	14.3
Mortlake (L)	69	11.0	10	18	84.1
Noorat (L)	4	12.3	11	20	75.0
Penshurst (L)	19	16.3	12	28	52.6
Port Campbell (L)	15	21.9	21	31	20.0
Port Fairy	155	10.7	9	18	87.1
Portarlington	237	20.3	19	27	19.8
Queenscliff	250	19.5	17	29	38.4
Skipton (L)	26	22.9	14	43	61.5

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Barwon South West – continued					
St Leonards	111	23.4	22	33	8.1
Terang	116	11.1	9	20	82.8
Timboon (L)	38	13.8	11	22	71.1
Winchelsea	78	29.3	29	35	3.8
Rural and regional: Gippsland					
Boolarra (L)	18	26.6	25	34	5.6
Briagolong (L)	27	24.0	23	29	7.4
Bruthen (L)	24	25.1	22	38	0.0
Cann River (L)	23	21.6	15	45	56.5
Cape Paterson (L)	42	15.7	13	26	64.3
Churchill	330	17.2	16	24	41.5
Corinella (L)	29	19.7	17	30	37.9
Coronet Bay (L)	61	21.6	21	33	31.1
Cowes	538	11.9	9	20	85.9
Darnum (L)	5	12.4	11	14	100.0
Dinner Plain (L)	434	14.9	14	20	68.0
Drouin	34	14.3	14	19	61.8
Eagle Point (L)	13	24.5	19	38	30.8
Glengarry (L)	57	22.0	19	34	14.0
Grantville (L)	114	18.9	17	29	44.7
Heyfield	287	16.2	15	22	54.7
Inverloch	16	14.1	13	18	68.8
Kilcunda (L)	206	11.0	9	17	87.4
Korumburra	21	14.4	14	20	71.4
Lake Tyers Beach (L)	672	11.3	9	21	87.1
Lakes Entrance	241	9.7	8	13	92.5
Lang Lang (L)	18	20.3	19	28	22.2
Leongatha	76	19.1	16	30	47.4
Lindenow (L)	46	21.3	20	26	6.5
Loch Sport (L)	274	13.0	11	20	73.7
Longwarry (L)	21	19.6	19	25	14.3
Maffra	17	20.6	18	25	29.4
Marlo (L)	39	23.3	23	27	12.8
Meeniyan (L)	85	14.5	11	28	68.2

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Gippsland – continued					
Metung (L)	30	19.3	18	25	23.3
Mirboo North	70	17.4	16	23	45.7
Neerim South (L)	21	20.3	18	25	9.5
Newhaven	21	24.2	22	31	9.5
Newlands Arm (L)	11	28.5	20	41	36.4
Nyora (L)	118	10.3	9	16	88.1
Omeo (L)	289	12.9	12	20	75.4
Orbost	16	25.3	22	31	0.0
Paynesville	21	20.4	18	27	23.8
Poowong (L)	25	34.8	34	40	0.0
Port Albert (L)	25	12.6	12	18	76.0
Rawson (L)	85	21.8	22	26	8.2
Rhyll (L)	112	17.2	17	22	29.5
Rosedale	25	13.8	12	17	72.0
San Remo (L)	57	18.5	16	25	43.9
Smiths Beach (L)	23	13.3	13	19	69.6
Stratford	33	15.2	13	24	72.7
Sunset Strip (L)	18	21.6	21	27	16.7
Surf Beach-Sunderland Bay (L)	19	14.6	14	18	78.9
Toongabbie (L)	152	15.4	15	21	59.2
Toora (L)	2	18.5	16	21	0.0
Trafalgar	50	23.5	24	34	34.0
Tyers (L)	21	12.6	11	14	90.5
Venus Bay (L)	655	12.5	9	21	86.1
Wimbledon Heights (L)	38	18.2	17	23	31.6
Wonthaggi	40	14.7	14	17	75.0
Yallourn North	119	13.8	10	24	73.9
Yarragon (L)	40	22.0	20	30	7.5
Yarram	18	26.6	25	34	5.6
Yinnar (L)	27	24.0	23	29	7.4
Rural and regional: Grampians					
Ararat	492	14.6	11	24	79.3
Avoca (L)	74	13.4	11	24	73.0
Ballan	107	14.7	12	25	64.5

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Grampians – continued					
Bannockburn	72	22.3	22	30	6.9
Beulah (L)	16	30.3	30	32	0.0
Blackwood (L)	10	23.8	19	39	20.0
Clunes	58	28.0	28	37	5.2
Creswick	119	20.3	19	27	18.5
Daylesford	174	18.3	15	33	51.1
Dimboola	78	13.8	11	26	74.4
Edenhope (L)	38	12.0	10	17	81.6
Enfield (L)	11	20.5	20	26	18.2
Gordon (L)	16	23.5	22	30	12.5
Goroke (L)	24	22.3	14	39	50.0
Halls Gap (L)	14	18.5	15	29	50.0
Hopetoun (L)	19	34.1	38	46	10.5
Inverleigh (L)	19	29.2	26	38	10.5
Jeparit (L)	43	26.3	28	47	30.2
Kaniva (L)	31	19.7	13	37	58.1
Learmonth (L)	11	19.6	22	23	27.3
Lethbridge (L)	6	25.8	25	31	0.0
Linton (L)	19	18.5	20	25	26.3
Meredith (L)	10	22.3	17	41	30.0
Minyip (L)	39	24.3	24	35	12.8
Murtoa (L)	49	21.1	21	28	16.3
Natimuk (L)	33	20.7	19	24	0.0
Nhill	98	14.0	12	20	83.7
Rainbow (L)	31	39.0	48	55	22.6
Rupanyup (L)	23	18.6	14	36	52.2
Smythesdale (L)	7	19.9	21	22	0.0
Snake Valley (L)	9	16.0	14	23	44.4
St Arnaud	110	19.3	14	39	58.2
Stawell	334	11.5	9	19	85.9
Trentham (L)	26	30.0	24	38	3.8
Warracknabeal	157	13.8	11	28	80.9
Willaura (L)	27	27.6	28	34	0.0
Woomelang (L)	13	26.2	24	31	7.7

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Hume					
Alexandra	164	13.8	12	23	72.0
Arcadia Downs (L)	2	18.0	18	18	0.0
Avenel (L)	22	24.7	22	46	4.5
Barnawartha (L)	10	19.8	17	28	20.0
Beechworth	159	15.1	11	31	74.2
Bellbridge (L)	11	23.4	24	30	18.2
Bright	120	16.8	12	32	64.2
Broadford	211	20.5	19	27	18.5
Bundalong (L)	10	18.7	19	20	0.0
Buxton (L)	10	24.6	22	36	20.0
Chiltern	58	15.9	14	27	62.1
Cobram	389	12.3	10	19	83.3
Corryong	60	10.7	10	15	90.0
Dookie (L)	7	37.9	44	50	0.0
Eildon (L)	6	23.8	23	25	0.0
Euroa	82	27.7	27	40	18.3
Glenrowan (L)	226	14.0	11	31	79.6
Hazeldene (L)	23	15.6	16	21	39.1
Katamatite (L)	17	32.8	32	36	0.0
Kilmore	20	24.1	24	31	10.0
Mansfield	361	13.7	11	25	78.7
Marysville (L)	183	13.2	10	21	79.8
Merrigum (L)	9	25.3	18	43	33.3
Mount Beauty	10	25.3	21	36	10.0
Moyhu (L)	89	15.8	11	28	73.0
Murchison (L)	6	27.8	26	33	0.0
Myrtleford	64	13.5	12	23	81.3
Nagambie	195	17.0	12	35	62.1
Nathalia	111	12.1	10	20	82.0
Numurkah	79	15.7	14	26	59.5
Oxley (L)	314	16.9	15	27	55.1
Porepunkah (L)	8	16.6	17	18	25.0
Pyalong (L)	17	18.1	17	21	35.3
Rutherglen	5	25.0	21	25	0.0

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Hume – continued					
Seymour	1	32.0	32	32	0.0
Strathmerton (L)	447	13.0	10	19	81.4
Tallangatta (L)	15	21.6	22	27	20.0
Tallarook (L)	104	15.6	10	33	70.2
Tallygaroopna (L)	17	22.5	20	29	11.8
Tangambalanga (L)	1	19.0	19	19	0.0
Tatura	14	23.6	21	30	0.0
Tawonga (L)	205	20.3	20	27	19.5
Tungamah (L)	10	17.1	16	19	30.0
Violet Town (L)	18	27.2	26	32	0.0
Wallan	40	21.6	21	28	10.0
Wandong-Heathcote Junction	209	18.8	18	25	25.4
Waterford Park (L)	41	21.8	18	32	24.4
Wunghnu (L)	12	23.7	21	31	0.0
Yackandandah (L)	17	19.1	18	23	29.4
Yarrawonga-Mulwala (Yarrawonga Part)	34	27.8	27	32	0.0
Rural and regional: Loddon Mallee					
Barham-Koondrook (Koondrook Part)	3	23.7	25	26	0.0
Birchip (L)	24	21.5	11	44	58.3
Boort (L)	42	29.3	27	50	33.3
Bridgewater (L)	29	17.5	15	28	55.2
Cabarita (L)	3	13.7	12	19	66.7
Campbells Creek	37	14.1	12	19	81.1
Carisbrook (L)	23	14.3	13	22	69.6
Castlemaine	426	14.5	10	28	77.5
Charlton	69	16.4	10	37	68.1
Chewton (L)	24	14.2	11	24	79.2
Cohuna	72	19.9	11	43	66.7
Donald	65	21.7	17	40	43.1
Dunolly (L)	30	24.7	23	31	6.7
Elmore (L)	57	24.4	22	37	17.5
Gisborne	204	13.3	10	25	70.1

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Loddon Mallee – continued					
Goornong (L)	7	22.0	20	27	0.0
Gunbower (L)	11	21.1	21	24	9.1
Harcourt (L)	11	15.9	15	21	54.5
Heathcote	164	16.9	13	35	64.0
Inglewood (L)	63	20.2	14	42	54.0
Kerang	181	16.3	11	26	79.6
Kyabram	335	15.1	12	27	71.0
Kyneton	298	14.3	11	24	69.1
Lake Boga (L)	28	17.1	16	21	39.3
Lancefield	71	18.4	17	29	40.8
Leitchville (L)	4	18.0	17	22	25.0
Lockington (L)	31	27.8	27	34	0.0
Macedon	29	16.6	15	23	51.7
Maldon	64	15.5	15	23	53.1
Malmsbury (L)	27	18.6	17	25	40.7
Manangatang (L)	13	33.8	34	48	0.0
Marong (L)	12	18.6	18	22	25.0
Merbein	146	16.1	15	21	55.5
Mount Macedon	35	19.6	18	28	22.9
Murrayville (L)	6	10.8	12	13	100.0
Newstead (L)	18	23.4	21	33	5.6
Nyah (L)	14	14.4	12	23	71.4
Nyah West (L)	45	15.1	12	23	68.9
Ouyen	77	12.7	10	16	87.0
Pyramid Hill (L)	46	23.9	20	43	30.4
Quambatook (L)	16	33.5	33	42	0.0
Red Cliffs	170	14.0	13	19	71.2
Riddells Creek	86	18.4	17	25	37.2
Robinvale	111	15.4	11	22	78.4
Rochester	153	14.8	12	25	69.3
Romsey	150	17.7	17	29	43.3
Rushworth	92	24.8	23	38	8.7
Sea Lake (L)	54	13.7	8	23	85.2
Stanhope (L)	24	26.8	26	34	4.2

Figure C3
Code 1 response times by urban centre/locality – population less than 7 500, 2009–10 – *continued*

Urban centre/locality	Code 1 incidents (number)	Response time (minutes)			Within 15 minute target (per cent)
		Average	50th percentile	90th percentile	
Rural and regional: Loddon Mallee – continued					
Talbot (L)	22	19.8	18	26	18.2
Tongala	64	16.3	16	26	48.4
Tylden (L)	11	18.7	19	25	9.1
Underbool (L)	4	37.8	37	51	0.0
Wedderburn (L)	75	17.8	15	30	50.7
Woodend	218	13.3	11	21	73.4
Woorinen (L)	12	14.7	14	17	66.7
Wycheproof (L)	26	31.1	26	51	7.7

Source: Victorian Auditor-General's Office, using Ambulance Victoria data.

Appendix D.

Audit Act 1994 section 16—submissions and comments

Introduction

In accordance with section 16(3) of the *Audit Act 1994* a copy of this report was provided to the Department of Health, Emergency Services Telecommunications Authority and Ambulance Victoria with a request for submissions or comments.

Responses were received as follows:

The submissions and comments provided are not subject to audit nor the evidentiary standards required to reach an audit conclusion. Responsibility for the accuracy, fairness and balance of those comments rests solely with the agency head.

Submissions and comments received

RESPONSE provided by the Secretary, Department of Health

Department of Health

Secretary

50 Lonsdale Street
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Melbourne Victoria 3001
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www.health.vic.gov.au
Telephone: 1300 253 942
Facsimile: 1300 253 964

e2064608

Mr Des Pearson
Auditor-General
Victorian Auditor-General's Office
Level 24, 35 Collins Street
MELBOURNE VIC 3000

Dear Mr Pearson

Thank you for your letter dated 10 September 2010, enclosing the proposed report on 'Access to Ambulance Services'.

Consistent with section 16(3)(b) of the *Audit Act 1994,* please find attached the Department of Health's (the Department's) response for inclusion in the report.

Yours sincerely

FRAN THORN
Secretary

Att – Response provided by the Secretary of Department of Health

RESPONSE provided by the Secretary, Department of Health – continued

Response provided by Secretary, Department of Health

The Victorian ambulance service is experiencing strong demand pressures. The Victorian population is growing at 2% per annum while the use of ambulance services increased by 6% in the last financial year.

While funding for ambulance services has tripled in the last 10 years it remains a challenge to maintain response times in the context of increasing demand. The report highlights the marginal decline in response time performance in the context of increased demand.

The report also notes that despite this significant increase in demand, Ambulance Victoria's (AV) responsiveness compares favourably with other states and most importantly no other state achieves higher quality of care outcomes for patients.

The formation of AV as a single state-wide service in 2008 is a positive achievement that brought Victoria in line with all other states and territories in Australia. A merger of this scale takes substantial time to embed into organisational culture and for full benefits to be realised. AV has made considerable progress in working towards integration including the commencement of the implementation of a state-wide call taking and dispatch system, improved planning and resource allocation and increased staff flexibility. As a tangible example, the strong response of an integrated ambulance service during the 2009 bushfires was notable. Separate ambulance services could not have provided the seamless response that was achieved at that time – from the activity associated with patient transfers arising from fire related injuries and the involvement in the nursing home evacuations during the fires, and the role in providing paramedical assistance to the most badly affected bushfire communities in the recovery phase.

Substantial additional funding was provided at the time of the merger and it is anticipated that investments, such as the metropolitan single responder unit (SRU) mobile intensive care ambulance paramedic (MICA) initiative, will continue to support performance as they are embedded into the system. In addition, Government recently injected an additional $56 million to improve services in rural and regional Victoria to improve response times in those communities.

The Department also recognises that increasing demand and case complexity impact on ambulance case times and the availability of paramedics to respond to subsequent cases. There has been a 10.4% increase in acute health budgets in 2010-11. A substantial amount of work has been undertaken with hospital Emergency Departments (ED) to improve the transfer time in EDs. Strategies have included investment in new models of care including short stay units, emergency department care coordination and fast track services which promote patient flow. This is in addition to redesign projects which focus on improving the key systems and processes in the transfer of patients between ambulance and the ED.

With respect to the recommendations in the report specifically relating to the Department of Health (the Department):

Recommendation 1: Government investments to Ambulance Victoria are made taking into account the priorities identified by Ambulance Victoria and consistent with the organisations strategic plans.

Recommendation 6: The Department will consider this recommendation.

The Department will consider reporting on ambulance services in the context of performance reporting for the broader health system both in Victoria and nationally and to work collaboratively with AV to support and monitor the implementation of the recommendations in this report.

RESPONSE provided by the Acting Chief Executive Officer, Emergency Services Telecommunications Authority

000 emergencyservices telecommunicationsauthority

27 September 2010

ESTA Ref: ECO/06/07/0003

Mr Des Pearson
Victoria Auditor General
35 Collins Street,
MELBOURNE VIC 3000

Dear Mr. Pearson,

REVIEW: Draft Audit – "Access to Ambulance Services"

Thank you for the opportunity to review and provide comment on draft version of:-

"Access to Ambulance Services"

ESTA has reviewed the draft document, and overall has a high level of agreement with the content and findings of the audit, in so far as they relate to ESTA.

ESTA recommended a number of minor matters which should be incorporated to enhance the outcome of the audit, the majority of which were incorporated within the second draft of the document.

ESTA supports Recommendation 6:-

> ***That the Department of Health report on performance for total case time broken down by the elements attributable to the Emergency Services Telecommunications Authority, Ambulance Victoria, and hospitals.***

Yours sincerely,

Andrew Wellwood
Acting Chief Executive Officer

cc: Graham Thiessen ESTA
cc: Donna Scott VAGO

Victoria The Place To Be

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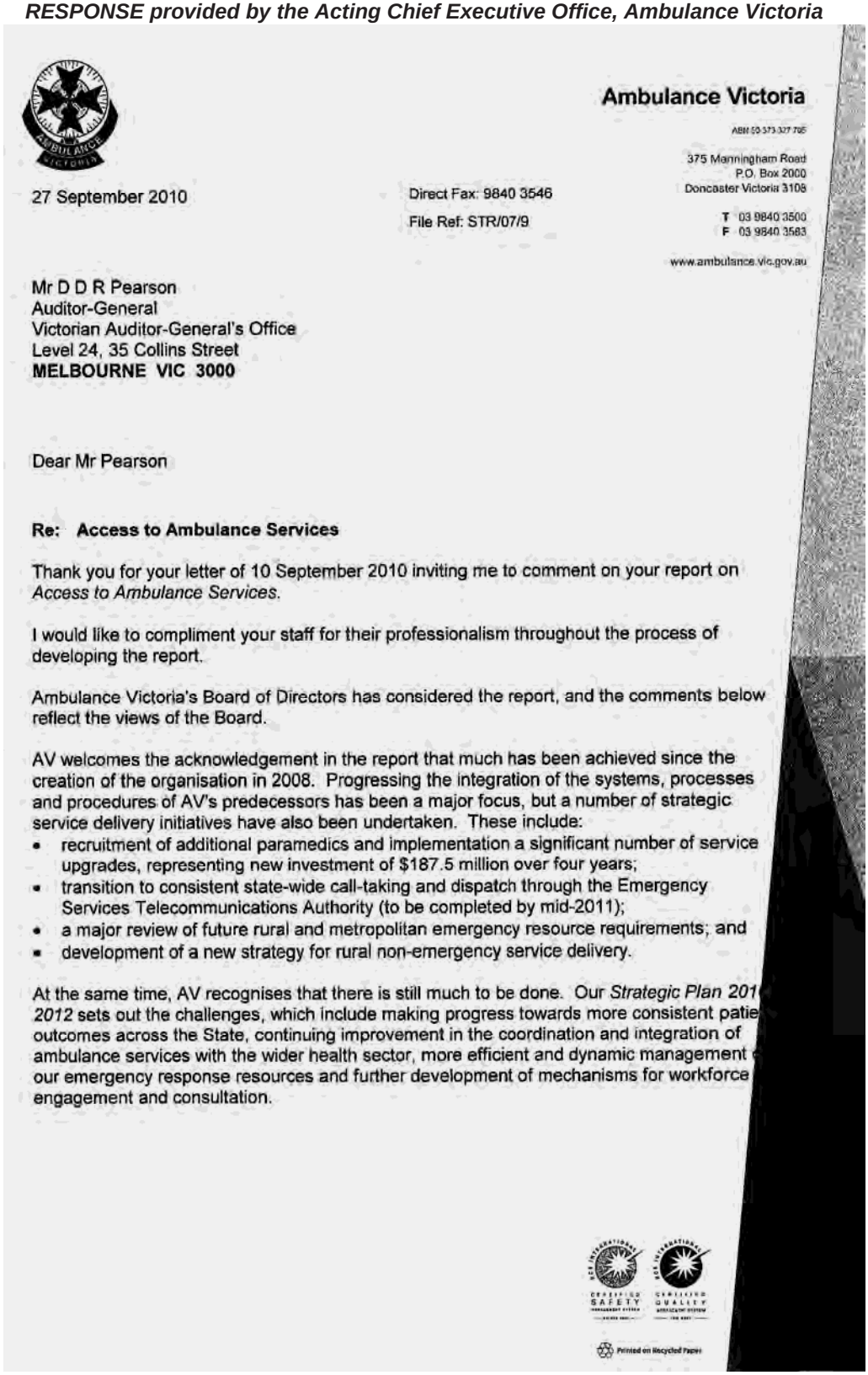
RESPONSE provided by the Acting Chief Executive Office, Ambulance Victoria



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27 September 2010

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File Ref: STR/07/9

Mr D D R Pearson
Auditor-General
Victorian Auditor-General's Office
Level 24, 35 Collins Street
MELBOURNE VIC 3000

Dear Mr Pearson

Re: Access to Ambulance Services

Thank you for your letter of 10 September 2010 inviting me to comment on your report on *Access to Ambulance Services*.

I would like to compliment your staff for their professionalism throughout the process of developing the report.

Ambulance Victoria's Board of Directors has considered the report, and the comments below reflect the views of the Board.

AV welcomes the acknowledgement in the report that much has been achieved since the creation of the organisation in 2008. Progressing the integration of the systems, processes and procedures of AV's predecessors has been a major focus, but a number of strategic service delivery initiatives have also been undertaken. These include:

- recruitment of additional paramedics and implementation a significant number of service upgrades, representing new investment of $187.5 million over four years;
- transition to consistent state-wide call-taking and dispatch through the Emergency Services Telecommunications Authority (to be completed by mid-2011);
- a major review of future rural and metropolitan emergency resource requirements; and
- development of a new strategy for rural non-emergency service delivery.

At the same time, AV recognises that there is still much to be done. Our *Strategic Plan 201 2012* sets out the challenges, which include making progress towards more consistent patie outcomes across the State, continuing improvement in the coordination and integration of ambulance services with the wider health sector, more efficient and dynamic management our emergency response resources and further development of mechanisms for workforce engagement and consultation.

RESPONSE provided by the Acting Chief Executive Office, Ambulance Victoria – continued

As recognised in the report, AV's response time performance has been affected by strong caseload growth and increasing case times. The recent Government announcement of an additional $56 million will assist in meeting response time challenges in rural Victoria. AV continues to develop the Referral Service, our primary demand management tool, which is designed to provide a more appropriate alternative to an ambulance response for low acuity 000 callers. The recently announced funding includes an amount to enable extension of the service across the State. AV is also working closely with the Department of Health and the major hospitals to reduce the time taken to transfer ambulance patients in hospital Emergency Departments. A range of other strategies are being actively pursued to improve AV response time performance.

Response time is a key measure of ambulance service performance, but it is important to recognise that it is not the only important measure of the quality of the services provided. AV's primary objective is to improve clinical outcomes for our patients, and cardiac arrest survival rates are commonly used as an indicator of the quality of ambulance services internationally. Victoria's cardiac arrest survival rates have improved very significantly over the last ten years, from 28% survival to hospital and 11% survival to hospital discharge in 2000-2001, to 53% survival to hospital and 26% survival to discharge in 2009-2010[1]. This includes a significant improvement since the creation of AV, and compares favourably with performance in other Australian and overseas jurisdictions. For example, a recent study of ten North American cities reported an overall survival to discharge rate of 21%, and the London Ambulance Service rate in 2009-2010 was 21.5%.

Pain management is another important indicator of service quality, and there have also been substantial recent improvements in the proportion of patients with severe initial pain who receive clinically significant relief[2] while in AV's care (from 87.2% in 2007-2008 to 91.1% in 2009-2010).

AV supports the thrust of all the recommendations in the report, and has the following comments.

Recommendation 1: Funding priorities

AV supports this recommendation, and will continue to work closely with the Department of Health on strategic resource priorities.

Recommendation 2: Integrated planning

AV accepts this recommendation, and is fully committed to a system wide approach to planning, encompassing ambulance service provision across all regions of the State and the broader health sector.

As recognised in the report, significant steps have been taken to ensure the needs of both rural and metropolitan regions are taken into account in AV planning. This includes the development of the first state-wide emergency operations plan for ambulance services in Victoria. This plan is based on consistent state-wide planning criteria, and also takes into account the specific issues faced in rural regions.

[1] For adult patients (> 15 years) presenting in Ventricular Tachycardia or Ventricular Fibrillation where resuscitation was attempted (excluding arrests witnessed by paramedics).
[2] For adult patients (> 14 years) suffering cardiac or traumatic pain with an initial pain score greater than 7 and a reduction in score of 2 or more.

RESPONSE provided by the Acting Chief Executive Office, Ambulance Victoria – continued

AV's integrated planning approach has already had concrete results, including the move towards state-wide consistency in call-taking and dispatch. The first phase of a state-wide non-emergency strategy is also being implemented, with development of a longer-term strategy in progress. These strategies will significantly improve the quality of services in rural Victoria.

Recommendation 3: Rosters

AV accepts this recommendation, and will continue its program of rural roster review.

As acknowledged in the report, AV has already undertaken an extensive review of rosters and appropriate resource/staffing levels. This is reflected in AV's *Emergency Operations Plan 2010-11 to 2014-15*, which includes consideration of paramedic fatigue levels as an important planning criterion.

In 2009, AV commenced a major project to assess the risks related to paramedic fatigue and to develop a fatigue risk management plan. The risk assessment has been completed, and development of a risk management system has commenced. Consultation with staff and the paramedic union is planned to commence late in 2010.

At the same time, AV is moving towards the introduction of 10 hour rest breaks. The first phase of this process involves recruiting additional staff this financial year to upgrade rosters at 12 locations and increase the number of 'relief' staff (used to cover staff absences). The aim is to reduce paramedic fatigue, with a particular focus on reducing the use of on-call rosters and (as a consequence) the reliance on paramedic recall.

Recommendation 4: Organisational culture

AV supports this recommendation.

AV's primary organisational purpose is to improve the health of Victorians through the delivery of high quality pre-hospital care and medical transport. Early development of an AV Strategic Plan was an important part of promoting the focus on health outcomes and ensuring a state-wide approach to organisational objectives.

Achieving better patient outcomes clearly requires fostering the development of staff across the organisation, and providing them with the tools, information and systems they need to do their job well. Supporting front-line managers and providing them with appropriate development opportunities was identified as crucial part of this process soon after the formation of AV. A number of programs designed to improve management practice and consistency across the organisation have been implemented since the creation of AV. These programs will continue and further evolve, helping to promote a positive and consistent organisational culture.

As acknowledged in the report, there have been some challenges in implementing AV's organisational development plans. However, the need for further work is recognised and remains one of the organisation's highest priorities for implementation.

RESPONSE provided by the Acting Chief Executive Office, Ambulance Victoria – continued

Recommendation 5: Response time reporting

AV supports this recommendation in principle, and will work in consultation with the Department of Health to develop improved public reporting of response time performance.

Please contact either myself or Alex Currell, General Manager Strategy and Planning, if you would like to discuss our comments or require any further information.

Yours sincerely

Assoc Prof Tony Walker ASM
Acting Chief Executive Officer

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Taking Action on Problem Gambling (2010–11:2)	July 2010
Local Government: Interim Results of the 2009–10 Audits (2010–11:3)	August 2010
Water Entities: Interim Results of the 2009–10 Audits (2010–11:4)	August 2010
Public Hospitals: Interim Results of the 2009–10 Audits (2010–11:5)	September 2010
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Sustainable Farm Families Program (2010–11:7)	September 2010
Delivery of NURSE-ON-CALL (2010–11:8)	September 2010
Management of Prison Accommodation Using Public Private Partnerships (2010–11:9)	September 2010
Soil Health Management (2010–11:10)	October 2010
Sustainable Management of Victoria's Groundwater Resources (2010–11:11)	October 2010
The Department of Human Services' Role in Emergency Recovery (2010–11:12)	October 2010

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