

The economic and social contribution of St John Ambulance Australia

31 March 2010

Report by Access Economics Pty Limited for
St John Ambulance Australia

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Glossary

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
AED	automatic external defibrillator
AIHW	Australian Institute of Health and Welfare
CPR	cardiopulmonary resuscitation
CVD	Cardiovascular disease
DALY	disability adjusted life year
DoFD	Department of Finance and Deregulation
DoHA	Department of Health and Ageing
DW	disability weight
FTE	full time equivalent
GOS	gross operating surplus
NHPAC	National Health Priority Action Council
NSW	New South Wales
NT	Northern Territory
PAD	public access defibrillation
QALY	quality adjusted life year
QLD	Queensland
SA	South Australia
SCA	sudden cardiac arrest
TAS	Tasmania
WA	Western Australia
YLL	years of life lost due to premature death
YLD	years of healthy life lost due to disability

Executive summary

St John Ambulance Australia makes a substantial contribution to Australia's wellbeing. In economic terms, this value in gross terms was equivalent to around \$369 million in 2008-09 (Table i). Of this amount, St John is paid a total \$216 million (58.6%), with the other \$153 million (or 41.4%) representing St John's net economic and social contribution to Australia.

Table i: Economic contribution of St John Ambulance, 2008-09

Category	\$ million	% of total
Direct gross output	216.1	58.6%
Indirect gross output	62.5	17.0%
Total gross output	278.7	75.6%
Net savings to hospital emergency departments	18.7	5.1%
Time saved not having to go to hospital	1.3	0.4%
Reduced disability	0.2	0.1%
Lives saved	41.8	11.3%
Total first aid provision	62.0	16.8%
<i>Value of services provided*</i>	<i>50.7*</i>	<i>13.8%</i>
Value of healthy life gained	27.3	7.4%
Total first aid training	78.0	21.2%
Project Heart Start (the National Defibrillation Program)	0.7	0.2%
Total economic value of St John	368.7	100.0%

* To avoid double counting, the value of first aid training services are not included in the total as revenue from courses is included in direct gross output. However, it is displayed in the table as it was a special focus of this study.

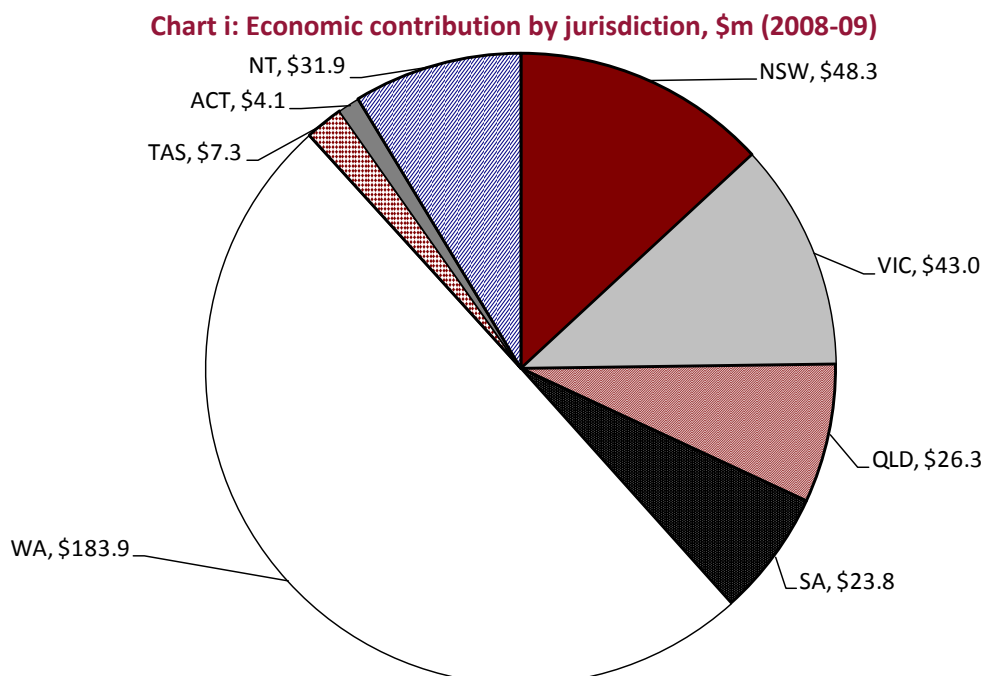
The majority of St John's economic contribution can be readily measured in dollar terms.

- Direct gross output in 2008-09 comprised sales of first aid kits, first aid training, contracts for supply of ambulance services, and payments for provision of first aid services at events totalled \$216 million (or 59% of the total).
- Indirect gross output measures the value of the multiplier effects from St John's activity through the demand it creates for upstream industries (suppliers). The \$216 million in direct gross output produced by St John resulted in a further \$62.5 million in activity among St John's suppliers (e.g. manufacturers of medicinal products, suppliers of uniforms, business service organisations). Also, in addition to the 1,587.5 full time equivalent (FTE) workers directly employed by St John, its activities support a further 281 jobs in upstream entities.
- Together, the direct and indirect gross output was valued at \$278.7 million in 2008-09.

In addition to these tangible economic benefits that are readily measured in dollars, St John provides further health and other less tangible benefits, that are also able to be quantified.

- Provision of first aid services at events and emergencies generated \$62.0 million worth of economic and social value in 2008-09. By treating people who would have otherwise had to attend hospital emergency departments, St John first-aiders saved Australia's over-burdened emergency departments around \$18.7 million. The value of time saved for injured and ill people who did not have to drive to or wait at emergency departments is around \$1.3 million. The largest benefit from St John's first aid provision is the value of healthy life saved – worth an estimated \$42.0 million in 2008-09. Most of this (\$41.8 million) derives from the 13.6 lives estimated to have been saved by St John first aid activities at events in the year.
- First aid training also contributes healthy life, valued at a further \$27.3 million in 2008-09. Together with the value of lives saved and of reduced disability from direct first aid services, St John's activities provide an estimate \$69.3 million of healthy life in 2008-09 (18.8% of St John's total contribution). The sales of first aid training (\$50.7 million) are separately itemised in the table, but are not counted in the total as they also contribute to direct gross output, so to do so would be double counting.
- Project Heart Start (the National Defibrillation Program) contributed \$0.7 million in net benefits. While this is small compared to some of St John's other services, the Program has a cost benefit ratio of 6.5:1. That means that for every dollar spent on public access defibrillation (PAD), around \$6.50 in benefits are generated.

As gross output is the largest component of the economic contribution, jurisdictions with substantial revenue from ambulance services (WA and NT) account for larger than proportional shares. South Australia also contributes beyond its size due to large volumes of first aid training and first aid provision, as does Tasmania through community services.



1 Background

St John Ambulance Australia (St John) commissioned Access Economics to quantify the economic contribution made by its organisation, with a focus on the following three programs:

1. first aid services at events and emergencies;
2. first aid training; and
3. Project HeartStart, the National Defibrillation Program.

Access Economics has estimated the economic contribution of St John as whole. This includes revenues, expenditure and employment from all St John activities, including ambulance, community services, ophthalmic, youth services and any other programs conducted by the organisation.¹

- Detailed economic analysis is only conducted for the three programs of interest (first aid services, first aid training, and Project Heart Start).
- The report contains an evaluation of St John's 'economic contribution' (its output, value added, labour income and employment multipliers), and the economic value of the health services provided by the programs of interest. Intangible social benefits, such as the personal development provided by St John youth services, were beyond scope.
- Ambulance and community services account for a large proportion of St John revenue and labour hours (paid and unpaid). Accordingly, there is a breakdown of these programs in the state-level analysis in Chapter 6, and some descriptive coverage in Appendix B:).

St John has made significant contributions to Australian society over the past 125 years, both economically and in a health care sense. Substantial numbers of Australian lives have been saved and even more have been improved as a result of the commitment and dedication shown by the volunteers and employees of St John.

Demographic change will pose a substantial challenge for Australia's health as well the health care system in years to come. Acute conditions that are associated with age, such as sudden cardiac arrest (SCA), will increase demand for services provided by St John Ambulance in the future.

1.1 St John history

The Order of St John, in its various forms, is the world's oldest health charity, having started with a hospital in Jerusalem almost a millennium ago². The St John Ambulance Association was established in England in 1877 to teach first aid, recognising the great need to address the suffering caused by increasing workplace accidents, transport and domestic accidents occurring in a rapidly industrialising and urbanising society. Ten years later, St John introduced

¹ It is sound theoretical practice to include the whole organisation in an economic contribution analysis. There is also the practical matter that it is not always possible to separate out particular programs from available accounting data.

² <http://www.orderofstjohn.org/our-history>. Today, St John Australia supports two Palestinian nurses in the St John Hospital in Jerusalem.

the world's first stand-alone ambulance service, dedicated to taking injured and ill citizens to public hospitals. Previously, ambulances had only been used to take soldiers injured in battle to military field hospitals.

St John spread to Australia in the late 19th century, with first aid classes being delivered in Victoria in 1883. St John centres were set up in other states and territories soon after. The first division of the Brigade (now known as First Aid Services or Operations) was established in New South Wales (NSW) in 1903. St John continues today to be the leading provider of first aid training and first aid services at events and in emergencies.

St John helped establish Ambulance Services across Australia. St John continues to run ambulance services in Western Australia (WA) and the Northern Territory (NT).

1.2 St John Ambulance Australia

St John provides³:

- **First Aid Training and Products** - St John is internationally recognised as a First Aid Trainer and provides both public and custom-designed courses to nearly 400,000 participants annually.
- **First Aid Services** - At public events and during national emergencies, first aid volunteers care for around 70,000 sick and injured people per year.
- **Project HeartStart Australia** – This program places life-saving defibrillators in publicly accessible locations around Australia.
- **Community Care Services** - St John delivers a diverse range of volunteer projects, which focus on the needs of members of the community who require support with everyday activities, are suffering from illness, or are isolated due to disadvantage or a lack of mobility.
- **Ambulance and paramedic care** - In the Northern Territory and WA, the ambulance service is provided through a combination of paid and volunteer staff. Paid Ambulance Officers and Paramedics are used in the metropolitan areas and larger regional centres. Volunteer Ambulance Officers are used in regional areas and some outer metropolitan areas.
- **Ophthalmic programs** - St John provides ophthalmic programs in Moree in NSW, and Oecussi (East Timor) as well as supporting the Eye Hospital in Jerusalem.
- **Youth programs and services** – These include St John Juniors and Cadets, as well as programs to support young people in the community. These programs contribute to youth leadership development, skills development and good citizenship values.

St John is a 'user pays' organisation and generates funds through the provision of ambulance services and other business activities such as first aid training. Additional funding is provided by Government departments and through grants from supporters, such as lotteries. As a non-profit organisation, all funds go back into the community, to purchase new equipment, to train personnel and/or to keep ambulances on the road.

³ www.stjohn.org.au

2 First aid provision

St John provides first aid at international events including the Olympic Games, Commonwealth Games and World Police and Fire Games. St John is also the key provider of first aid services at major sporting venues, music festivals, public celebrations and other mass gatherings.

For example, St John has provided first aid services at the Melbourne Cricket Ground (MCG) for approximately four decades and at ANZAC Remembrance Day marches since the late 1980s. In the period December 1989 to January 1998 there were 28 recorded cardiac arrests at these locations – 25 episodes were situated at the MCG and three at the Shrine of Remembrance (Wassertheil, 2000). Of these potentially fatal episodes, there were only four deaths at the scene.

In addition to delivering first aid service, St John provides public event health and safety research, leading projects in prediction of workloads, injury surveillance and models of health care provision at public events. St John also plays a vital role in most state and territory emergency management plans and has developed working relationships with other key emergency service providers including Police, Ambulance and the Fire and Rescue Services.

St John volunteers are qualified and accredited by its own Registered Training Organisation and include St John First Aiders, First Responders and Advanced Responders, as well as Doctors, Nurses and Paramedics.

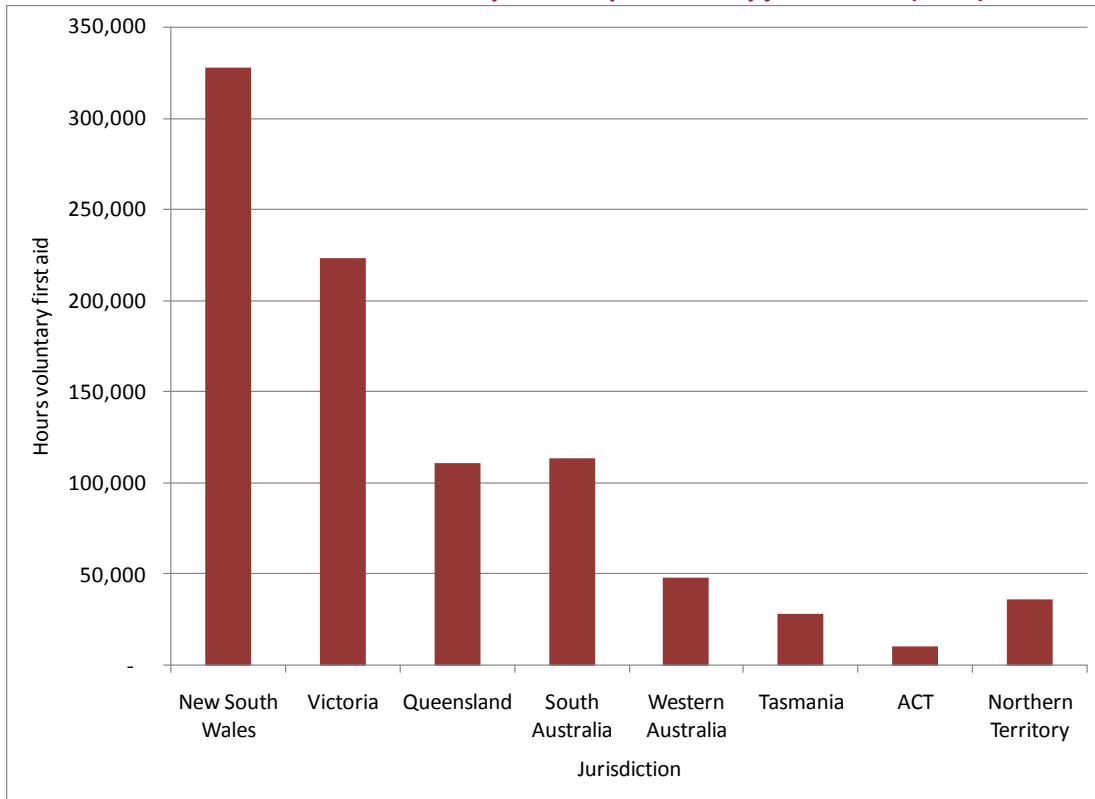
2.1 First aid – numbers of people treated and hours of treatment

In the year 2008, St John's 10,000 First Aid Services volunteers provided close to a one million (949,816) hours of pre-hospital and community care to the Australian population.

- Chart 2.1 shows each Australian jurisdiction's contribution to these hours.
- Chart 2.2 displays the hours of first aid per volunteer. On average, St John volunteers provided 89.15 hours of first aid service in 2008.

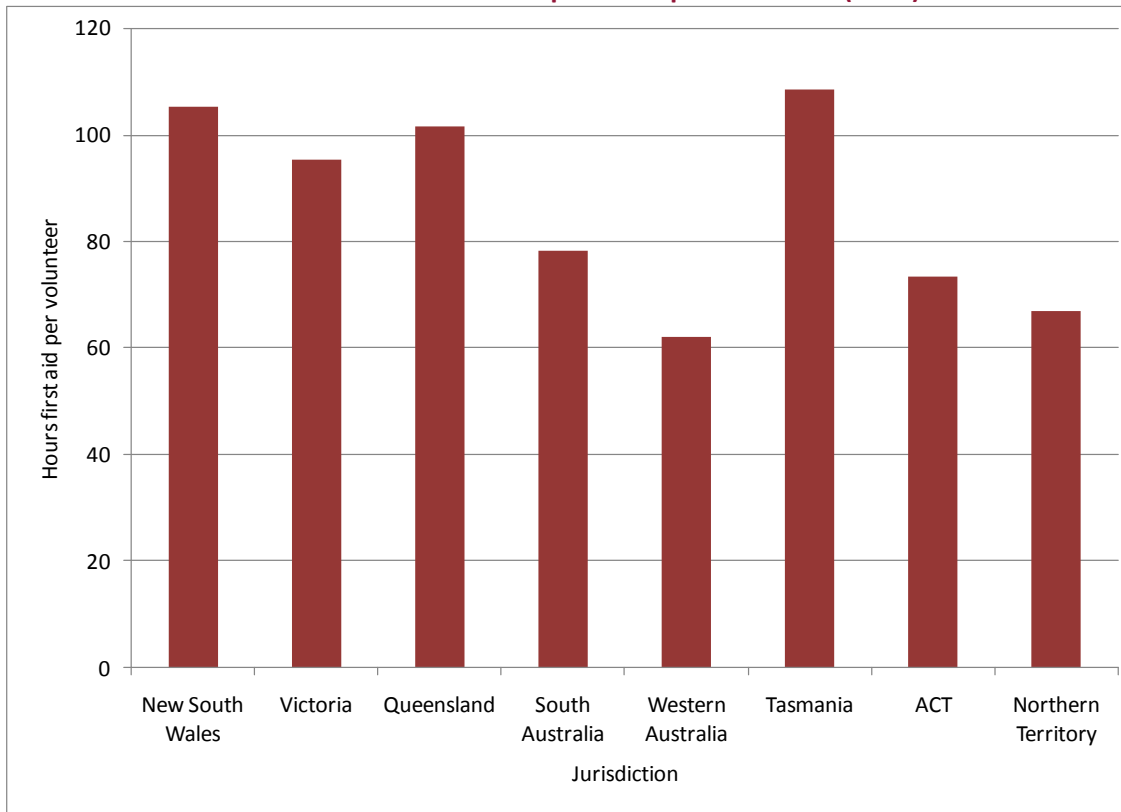
Note that most data from St John are collected by calendar year. Access Economics has based calculations on most recent data available – sometimes 2008 and sometimes 2009. Where financial year data (2008-09) these have been used. Use of these different periods was not adjusted (inflated or deflated) to account for the half-year difference, as there was some due to year-to-year volatility in any case (e.g. in numbers of first aid treatments).

Chart 2.1: Hours of voluntary first aid provision by jurisdiction (2008)



Source: St John.

Chart 2.2: Hours of first aid provision per volunteer (2008)



Source: St John.

In 2007–08, there were almost 7.9 million patients admitted to Australian hospitals (DoHA, 2009). For that year, the Australian Institute of Health and Welfare (AIHW) reported that health expenditure on private and public hospitals amounted to almost \$38.6 billion. Each year, St John ameliorates further health system expenditure through its first aid provision at community events and emergencies.

Once in hospital, the average cost of treating a patient depends on the medical staff involved, the complexity of the treatments, the drugs used and the level of care required. For example, the average cost of caring for asthma patients in public hospitals is \$1,876 per person, compared to treatment for patients with severe burns, which costs more than \$150,000 per admission (DoHA, 2009). While St John cannot treat all patients to the same level as hospital care, many people may not need hospitalisation if first aid is administered promptly.

Comprehensive data on types of casualties treated are not available for St John. However, the 2,600 people treated at a mass youth gathering in Sydney in June 2009 may provide some indications.⁴ Table 2.1 displays data demonstrating that St John’s presence at World Youth Day in 2009 resulted in over 93% of people returning to the event after first aid treatment. In the absence of a St John presence, some of these patients may have required substitute treatment at a hospital emergency department or by a general practitioner.⁵

Table 2.1: Outcome for patients treated by St John, mass youth gathering (2009)

Outcomes	Frequency	Percent
Return to event	2,430	93.2
Treated and referred to medical team	105	4.0
Transferred to hospital	70	2.7
Not treated	2	0.1
Total	2,607	100.0

Source: St John.

Using Table 2.1 above, it can be estimated that if only 2.7% patients are transported to hospital, then 97.3% of people treated by St John do not require hospitalisation. This suggests of the 71,153 sick and injured people that St John cared for in 2008, 69,232 ($0.973 \times 71,153$) people do not go to hospital emergency departments. Data for all Australia for all events are

⁴ St John provides valuable first aid services in response to natural disasters and other emergencies, as well as for public events. However (perhaps due to their regular and planned nature) the only data available to conduct this analysis were from public events. We note that the resources which St John expends to train and equip people for emergency/disaster roles provides an integral component of Australia’s national and state/territory emergency services capability and risk management. This capability is tested in training exercises and in disasters and emergencies and is included in the estimate of overall output.

⁵ Access Economics has assumed that people receiving substantial treated by St John generally have acute problems that would otherwise require a visit to the emergency department, rather than at a GP (since GPs can be harder to access particularly after hours and in regional areas, and may focus on more chronic or minor conditions). To the extent that St John patients might have instead gone to a GP, cost and time savings calculated in this section would be reduced.

not available but, if the same percentages hold as for World Youth Day⁶, then the numbers of people treated nationally may be estimated as in Table 2.2.

Table 2.2: Estimated national non-hospitalised treatments, by type (2008)

Disease	% of World Youth Day treatments	Estimated national cases
Asthma	1.9%	1,328
Cardiac, not arrest	0.3%	239
Respiratory problems	3.9%	2,709
Lacerations and minor injuries	15.9%	11,021
Heat related illness	0.2%	133
Minor health problems	60.6%	41,959
Other	17.1%	11,844
Total	100.0%	69,232

Source: St John data on World Youth Day treatment categories applied to national non-hospitalised total for 2008.

2.2 Time savings for people treated on-site

Along with the cost of a hospital stay, St John first aid can prevent indirect costs such as the opportunity cost of time spent waiting for treatment of illness and injury. At public events where St John is present, treatment is provided at First Aid tents. Patients can be treated almost immediately without being transported to hospital. Without St John first aid, it was assumed that higher triage cases would otherwise have had to travel to the nearest hospital emergency department for treatment of illness and injury.

No data were available on average commute distances from major events to the nearest hospital. A proxy was thus used based on the average commute time across Australia to paid work (The Australia Institute, 2005) of 22 minutes one-way, or 43 minutes return. The return trip also counts as lost time, even if patients are no longer suffering.

On arrival at hospital, people with severe pain, critical illness or breathing difficulties, such as an asthma attack, are categorised as Triage Category 1 and 2, with a target treatment time within ten minutes. Over three quarters of emergency department presentations will be triaged as Categories 3 and 4 and can expect to wait up to an hour for treatment (DoHA, 2009). Although their condition may be serious, these patients display less severe symptoms or injuries including mild bleeding or possible bone fractures. Weighting by the share of patients in each triage category, the target waiting time for the average person turning up at casualty is up to 52.5 minutes (Table 2.3). In reality targets are not generally achieved so waiting times are likely to be longer and the estimate of time spent is thus conservative.

⁶ World Youth Day may not be representative as it was possible a younger, fitter population without excessive alcohol consumption, compared to a typical sports crowd which would be likely to contain more older people and hence more health risks. World Youth Day was attended by some 250,000 people over five days, so it was a relatively large event and the data cover hundreds of thousands of person-days.

Table 2.3: Target casualty waiting times, public hospitals (2007-08)

Triage category	Target waiting time (minutes)	% of patients
1 Resuscitation	1	1%
2 Emergency	10	9%
3 Urgent	30	32%
4 Semi-urgent	60	46%
5 Non-urgent	120	12%
Weighted average	52.5	

Source: DoHA (2009).

Adding the 52.5 minute emergency department waiting time to the 43 minutes spent travelling to and from the hospital, it is estimated that people would spend 95.5 minutes seeking emergency department treatment. ABS (2009c) reports the 2008 average hourly total cash earning is \$30.10, so the cost to the economy of seeking treatment for illness or injury can be valued at \$47.91 per person.

For the 69,232 people not transferred to hospital, however, not all would otherwise have attended. Given the acuity profile in Table 2.2, the 'minor health problems' were viewed as not warranting a hospital attendance. Thus in total the time saving was estimated as 39.4% of 69,232 * 47.91 = \$1.3 million.

2.3 Reduced burden of disease

In addition to the opportunity costs of time saved, St John first aid can prevent loss of wellbeing (disability and premature death) caused by delayed treatment or failure to treat. To measure this benefit, health economist estimate the disability adjusted life years (DALYs) averted from treatment using disability weights, as outlined below, and multiply DALYs averted by the value of a statistical life year (VSLY).

The VSLY can be interpreted as the value of a year of life free of injury and illness (DoFD, 2008). Based on economic research, the Australian Government Department of Finance and Deregulation estimates that the VSLY in 2007 was \$151,000 (DoFD, 2008).

There are two components to the burden of disease; mortality which is measured as years of life lost (YLLs) and morbidity which is measured as years lived with disability (YLDs). YLDs in turn have two components, duration (years) and severity, the latter measured using various disability weights (DWs).

The AIHW (Mathers et al, 1999) published disability weights for a large number of diseases and injuries, based on weights originally developed by the World Health Organization, the World Bank and Harvard University (Murray and Lopez, 1996). Each health condition is assigned a specific weight between zero and one according to the amount of disability burden it causes. For example, a severe asthma episode is 0.230 (Mathers et al, 1999:198). Other weights for conditions treated by St John were derived as follows.

- Cardiac conditions (not arrests) were attributed a weight of 0.338 based on an unweighted average of individual cardiovascular diseases.

- Respiratory problems were attributed a weight of 0.115 based on an unweighted average of acute respiratory infections (excluding otitis media).
- Lacerations and minor injuries were attributed a weight of 0.115 based on sports injuries.
- The other three categories (heat related conditions, minor health problems and 'other' were attributed a weight of 0.100 based on an unweighted average of various other possible mild conditions.

By treating these acute conditions at the event, and assuming treatment ends the acuity in 93.2% of cases (from Table 2.1), the patient is saved the duration of DW that would otherwise be incurred during the trip to a hospital and the wait time for treatment, or endured in non-hospitalised cases until resolved or later treated at a general practitioner.

As summarised in Table 2.4, this represents a saving of 12.51 years not spent in the acute state, with associated reduction in pain and suffering of 1.34 YLD averted. For a 2008-09 VSLY of \$160,108 (inflated from \$151,000 in 2007 using consumer price inflation⁷), this represents a saving to society of \$213,922.

Table 2.4: Estimated reduction in pain and suffering

Disease	Assumed national cases	Time not suffering (years)	DW	YLD
Asthma	1,238	0.24	0.230	0.06
Cardiac, not arrest	223	0.04	0.338	0.01
Respiratory problems	2,525	0.49	0.115	0.06
Lacerations and minor injuries	10,271	1.99	0.120	0.24
Heat related illness	124	0.02	0.100	0.00
Minor health problems	39,106	7.58	0.100	0.76
Other	11,039	2.14	0.100	0.21
Total	64,524	12.51		1.34

Source: St John, Mathers et al (1999).

There were no data on lives saved by St John first aid. One approach to estimating such potential life saving is to look at the types of diseases and injuries treated, and assess the potential mortality rates of such a casemix if untreated. The AIHW estimate mortality rates for the three main stated conditions – asthma, cardiovascular conditions and minor injuries (Table 2.5). Of these, asthma's lower mortality rate was conservatively used in the calculations (0.03%). People with poorly controlled asthma have a greater risk of dying from their asthma (Jalaludin et al, 1999; Australian Centre for Asthma Monitoring, 2006); based on available Australian evidence, we have used a relative risk of 2 i.e. a mortality rate of 0.05% (rounded).

⁷ 4.5% in 2007-08 and 1.5% in 2008-09.

Table 2.5: Mortality rates for illness and injuries commonly treated by St John

Categories	Treatment frequency (a)	DW (b)	Prevalence (c)	Deaths (d)	Implied mortality rate (d/c)
Asthma	1.9%	0.230	1,356,620	333	0.03%
Cardiac (not arrest) ¹	0.3%	0.338	770,292	48,768	8.63%
Respiratory problems ²	3.9%	0.115	387,150 (b)	3,724	25.64%
Lacerations and minor injuries ³	15.9%	0.118	4,190 (b)	5(b)	0.05%
Heat related illness	0.2%	-	-	5(e)	-
Minor health problems	60.6%	-	-	-	-
Other	17.9%	-	-	-	-

Sources: (a) Based on St John data from World Youth Day (see Table 2.2). (b) (c) (d) Begg et al (2007); for (b) see also Table 2.4. (e) ABS (2009b).

(1) Figures are for all cardiovascular disease.

(2) Prevalence is for chronic respiratory disease, mortality is acute respiratory disease, reflecting what AIHW report.

(3) Figures are for sports injuries. Other injuries such as traffic, poison, self-inflicted etc. were not considered typical of St John attended events.

The mortality rate is applied (as with time lost above) only to treatments that are not ‘minor health problems’ i.e. to 39.4% of treatments. On this basis, St John would save around 13.64 lives a year ($69,232 * 39.4% * 0.05%$). Using a discount rate⁸ of 3% per annum and assuming 28 years of average years of life remaining (Access Economics, 2008a; Begg et al, 2007), then the value of the years of life lost per fatality at such events would be \$3.06 million. Thus the value of the estimated 35 lives saved by St John is around \$106 million per annum ($34.6 * \3.06 million). Access Economics notes that this figure should be used with some caution, as it is highly sensitive to the mortality rate assumptions used, but also considers it to be conservative.

2.3.2 Financial savings

St John first aid services reduce demand on hospital emergency departments. DoHA data provide cost details for several hundred types of cases treated, including how involved emergency departments are in each case. For people visiting emergency departments, other hospital resources may be used – diagnostic imaging, pharmacy and so on. The top 50 most emergency-intensive cases ranged from around 40% of total resources for chest pains down to around 17% for wrist, arm and foot injuries, with an average of 22%. The weighted average cost, across both public and private hospitals, of a typical emergency department procedure was \$380.⁹ Thus for the estimated 28,030 people (not minor cases) who may otherwise would have gone to casualty if St John hadn’t been there to treat them could have cost the hospital system \$10.7 million dollars.

⁸ The discount rate is applied to years of life lost in the future to better estimate the net present value of years of life lost.

⁹ Sensitivity testing was conducted using all cases for which emergency departments accounted for more than 10% of resource use. This yielded an average emergency visit cost of \$368, which is reasonably close to the top 50 figure (\$380).

St John does not receive regular funding from governments for its attendance at community and sporting events. Accordingly, this \$10.7 million represents a net saving to the hospital system.

- St John does receive some funding after assisting with emergencies. However, all the treatment data used in this report relates to community events. Further, by nature, emergency events are too irregular in frequency and magnitude to be included in a representative analysis.

Another benefit of people being treated on site by St John, rather than going to hospital, is that they then also do not require ambulance transport to hospital. St John advised that a representative ambulance cost would be the \$287 charged in most cases by its ambulance service in the Northern Territory. Thus for up to 28,030 people who would otherwise have required an ambulance, the savings are \$8.0 million.

- The cost per case is a conservative figure. St John Northern Territory also has a \$625 charge for “Code 1” cases; but Access Economics was unable to obtain data on the relative frequency of the two charges. Similarly, the NSW Ambulance Service has a base charge of \$290 per journey, plus a per-kilometre charge of \$2.60. However, there was no readily available data on the average number of kilometres covered.
- Further, this analysis also does not include cases where ambulances are called out, but then do not transport patients to hospital. This can occur either because the crew are able to provide sufficient treatment on the scene, or because the condition was not serious in the first place. Access Economics (2009b) estimated that between 20 to 30% of ambulance call outs in NSW did not result in patients being transported to hospital.
- However, offsetting the conservatism on the cost per case and on the ambulances called out and not needed is the consideration that not all of the 28,030 people may have been transported by ambulance – some may have been transported by family or friends in private vehicles.
- Since the relative magnitude of these contrary effects is not known and they work in different directions, we have not made allowance for them in the calculations.¹⁰

Thus, provision of first aid services by St John is estimated to save the hospital system an estimated \$18.7 million a year (\$10.7 million in terms of reduced need for hospital emergency department services, and \$8.0 million for reduced ambulance services).

¹⁰ The use of private vehicles would incur a cost to patients, but for the same reasons, this has not been calculated.

3 First aid training

The number of people being trained in first aid across Australia has continued to grow over recent years. In 2008, 405,639 people received certificates for successfully completing first aid training which represents an overall increase of 4.67% on 2007 numbers.

Table 3.1: First aid students trained, 2008

NSW	VIC	QLD	SA	WA	TAS	ACT	NT	Total
81,228	58,630	56,678	49,151	118,554	19,203	9,280	9,925	405,639

Note: WA, SA and NT are 2007-08 so the jurisdictions do not sum to the total. The total is used in the calculations.
Source: St John.

St John specialises in on-site training that can be focused to provide specific emphasis on risks present in a particular industry or environment. The most commonly taught course is the Senior First Aid certificate, also known as Workplace Level 2 or Apply First Aid. The Nationally Accredited Senior First Aid Course (code named HLTF301B-Apply first aid) teaches first aiders how to manage a wide range of injuries and how to care for heat and cold induced illness, poisoning, bites and stings, diabetes, seizures and other medical emergencies. Additionally, basic life support techniques such as Cardiopulmonary Resuscitation (CPR) and defibrillation are taught.

This course is designed to impart knowledge, skills and attitudes deemed necessary for giving competent care to an ill or injured person until medical aid arrives. The course is practically oriented and it is expected that successful participants will be able to, in real situations, render life saving and basic first aid to casualties in need.

Each State and Territory coordinates their own first aid courses; therefore the courses and the corresponding prices differ between each jurisdiction. However the Senior First Aid is common throughout and in most states costs around \$180 for a 15 hour, two day course. This course is taught to most St John first aiders.

For the purpose of this analysis, it is assumed that 50% of people trained by St John undertake the Senior First Aid course. It is also assumed, that after allowing for student discounts, the average course costs \$150. The other main courses are a one day course at around \$120, and half-day courses costing around \$60. St John advised that, proportionally, an average cost of \$100 for these courses would be representative.

Thus, the value of the senior first aid course is \$30.4 million (202,820 trainees, paying \$150 each). The value of the other first courses is \$20.3 million (202,820 trainees paying \$100 each). **In total, the value of St John first aid training is \$50.7 million.**

People undertake first aid training to mitigate risk and economic theory suggests that the utility derived from training is at least equivalent to the price which consumers are prepared to pay for it i.e. \$4.07 million per annum.

- However, it also important to avoid double counting. Sales of first aid training are also a component of gross output in Chapter 5 (but are not included twice in the overall summary).

There has been surprisingly little research effort devoted to assessing the cost effectiveness of first aid training. In a literature review of the value of pre-hospital emergency care, Lerner et al (2006) concluded that existing work was of 'poor quality, limited to a narrow scope, and did not reflect the broad array of care provided within emergency medical services'. From 535 potentially relevant abstracts located, only 13 studies addressed the cost of cardiac arrest, and only two met all the criteria for high-quality economic evaluation.

- Valenzulela et al (1990) calculated the cost effectiveness of paramedic provision of CPR to out-of-hospital cardiac arrest victims as US\$181,000 per quality adjusted life year (QALY)¹¹. In current Australian dollars, this is equivalent to \$281,095/QALY which is not generally considered cost effective¹².
- Groeneveld and Owens (2005) conducted a study of the cost effectiveness of CPR and defibrillation training. They discovered that training laypeople in CPR/defibrillation cost US\$202,400/QALY. In current Australian dollars, that is \$314,330/QALY, which again is not cost effective.

From these studies, the average quantity of first aid training consumed per QALY saved was \$297,713. Assuming that a similar ratio holds in Australia, then the \$50.7 million worth of first aid training provided by St John in 2008 is estimated to have yielded 170 QALYS saved (50.7 divided by 0.297). **At a VSLY of \$160,108, that translates into \$27.3 million worth of healthy life saved by people with St John first aid training.**

¹¹ Updated by Lerner et al (2006) to 2005 dollars. A QALY is similar to a DALY, but with weights derived from utility studies rather than the DWs derived through the Global Burden of Disease study. Also, while a DALY represents a year of healthy life lost, a QALY represents a year of healthy life gained.

¹² See discussion around Table 4.1 for cost effectiveness thresholds.

4 Project HeartStart

Project HeartStart Australia is a community based national project that was launched in 2004. It is a Public Access Defibrillation (PAD) program implemented by St John placing Automated External Defibrillator's (AED's) into the public domain.

The rationale behind the project is to create a high profile campaign aimed at reducing the mortality rate of pre-hospital sudden cardiac arrest (SCA). Programs were implemented where large numbers of public gather such as airports, railway stations, shopping centres, fitness centres, recreational clubs, convention centres, hotels and tourist attractions.

4.1 Cardiovascular disease in Australia

The term cardiovascular disease (CVD) refers to diseases of the heart and blood vessels. It is the leading cause of death in Australia (AIHW, 2008). Cardiovascular health is a national health priority area due to the high prevalence of CVD in Australia and its impact on morbidity and mortality. CVD includes conditions such as coronary heart disease, cerebrovascular disease (stroke), heart failure, rheumatic heart disease and hypertension (high blood pressure).

In 2007, CVD was the underlying cause of 46,626 deaths – or over a third (34%) of all deaths in Australia (ABS, 2009b). Death from Sudden Cardiac Arrest (SCA) is believed to account for approximately half of all deaths related to cardiovascular causes (NHPAC, 2006). SCA occurs when the heart has ceased to function due to an electrical malfunction, disrupting that muscle's normal rhythm. This uncontrolled electrical activity is known as fibrillation.

SCA can occur at any age and many casualties have no warning signs or symptoms. The chance of survival from an out-of-hospital cardiac arrest in Australia is less than 10% (Bernard, 1998; Finn et al, 2001). Cardiopulmonary Resuscitation (CPR) and early defibrillation are key factors that can significantly improve the chance of survival from cardiac arrest, forming part of the emergency chain of survival.

4.2 Automated external defibrillation

Using an AED, an electric shock can be delivered to defibrillate the person's heart. Using an inbuilt computer the AED assesses the victim's heart rhythm, judges whether defibrillation is needed, and then administers an appropriate level of shock. An AED unit will stun the heart, disrupting the electrical chaos caused by SCA, and allows the normal electrical sequencing of the heart and pumping action to resume.



The AED guides the user by visual and voice prompts, step-by-step through the defibrillation process. It is possible for people without training to use the AED because the AED will not allow a shock to be given if the heart is still pumping blood with palpable pulse beats. For example, if someone simply faints the AED will not allow a shock to be delivered because there is normal electrical activity in the heart.

The AED prompts the user to connect the electrodes to the AED and to stick the adhesive electrode pad(s) to the victim's bare chest. The electrodes send the heart's electrical rhythm data to the AED unit. The AED then analyses the heart rhythm, checking characteristics such as frequency, shape and heart rate. Based on these characteristics, the AED determines whether or not a shock is needed.



If a shock is needed, the AED will prompt the user to either press a button to deliver the shock or to stand back for the shock to be delivered automatically. The AED starts building up the required electrical charge and then delivers an electrical shock to the victim. The AED then re-analyses the heart rhythm to determine if another shock is needed. If so, another shock is administered. If a 'shockable' heart rhythm is not detected, the AED will prompt the user to check the victim for a pulse and to perform CPR.

4.3 PAD Demonstration Project

Over the last few years St John has installed over 300 public access defibrillators (PADs) around the country. As at December 2009, St John reports that 13 lives had been saved by this program, and the total cost was \$0.95 million (Table 4.1). Estimated lives saved in this analysis are 10% lower than actuals reported, to allow for those who would have survived without defibrillation (Campbell Research and Consulting, 2008). On this basis, the average cost per life saved is around \$81,500.

Table 4.1: Actual and predicted cumulative PAD costs (\$'000) and lives saved, 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Costs	373	594	850	954	1,022	1,083	1,137	1,184	1,224	1,259
lives saved	0.9	2.7	9.9	11.7	14.6	17.6	20.5	23.4	26.3	29.3
\$/life saved	414.9	220.0	85.9	81.5	69.9	61.7	55.5	50.6	46.5	43.1

Note: Lives saved makes allowance for the 10% of victims who may have survived absent defibrillation. Future costs are measured in net present values.

Source: St John.

However, as the table shows, this cost per life saved has been falling rapidly. This is because there are large up-front costs to purchase and install the machines, and to train people in their use. For the purposes of this evaluation, Access Economics has assumed that the useful life of a defibrillator is ten years. As all installation and training was carried out between 2006 and 2008, it is assumed that future program running costs will be equivalent to those reported for 2009 (\$0.10 million)¹³. On this basis, total costs over the ten years to 2015 will be \$1.26 million¹⁴. (That is, by amortising capital costs over a decade, average expenditure is around \$126,000 per annum.) In its first four years, the program has saved an estimated 11.7

¹³ In constant dollars.

¹⁴ Present values, using 3% discount rate.

lives, or an average of 2.93 lives per year. Assuming this continues for machines already installed, by 2015 the program will have saved 43.1 lives. On this basis, the long-term average cost per life saved by the PAD program is \$43,054.

Access Economics (2009) estimated that the average person who died from a heart attack could have otherwise expected to have lived for another 9.9 years. On this basis, by 2015, PAD will have saved 290 years of health life. Given the estimated cost of \$1.26 million, this translates to **\$4,343 per DALY, which is highly cost effective** based on common benchmarks¹⁵. For example, the World Health Organization (WHO) considers that any intervention that saves a year of healthy life (DALY) for less than three times average income¹⁶ is cost effective – which for Australia currently translates to around \$150,000¹⁷. Similarly, the Department of Finance and Deregulation estimated that the value of a year of healthy life in Australia was worth \$151,000 in 2007¹⁸. WHO considers interventions less than per capita income/DALY (around \$50,000/DALY in Australia) to be highly cost effective.

- A heart attack (acute myocardial infarction) is not quite the same thing as sudden cardiac arrest. A heart attack is the interruption of blood supply to parts of the heart, causing some heart cells to die. However, heart attacks can cause cardiac arrest. Hence, it is probably reasonable to compare life expectancy for heart attack deaths to cardiac arrest deaths.

Access Economics (2009) estimated the total cost to society of an average heart attack as being \$281,000 (including health system costs, lost productivity, carer costs, deadweight losses and burden of disease). On this basis, the savings to society from the 29.3 deaths averted by PAD would be \$8.22 million (NPV). Compared to the estimated costs of PAD to that point of \$1.26 million, this represents a **benefit-cost ratio of 6.5:1 for PAD**.

- Using heart attack costs as a proxy for cardiac arrests is conservative, as over 80% of heart attacks do not result in death – compared with less than 10% for cardiac arrest. Hence the average cost of a cardiac arrest may be higher than the average cost of a heart attack.

Over the projected ten year life of the PAD program, the net benefits to society are an estimated \$6.96 million (\$8.22 million - \$1.26 million). Dividing this by ten (years) yields an **average annual net benefit of \$0.70 million**.

¹⁵ By reaching patients early, PAD may also reduce the amount of pain and suffering – or years lived with disability (YLD) for heart attack survivors; but at this stage there is insufficient data to assess this.

¹⁶ Measured as Gross Domestic Product per capita.

¹⁷ http://www.who.int/choice/costs/CER_thresholds/en/index.html

¹⁸ In 2007 dollars, see <http://www.finance.gov.au/obpr/docs/ValuingStatisticalLife.pdf>

5 Economic contribution

The total economic activity generated by St John has both indirect and direct components.

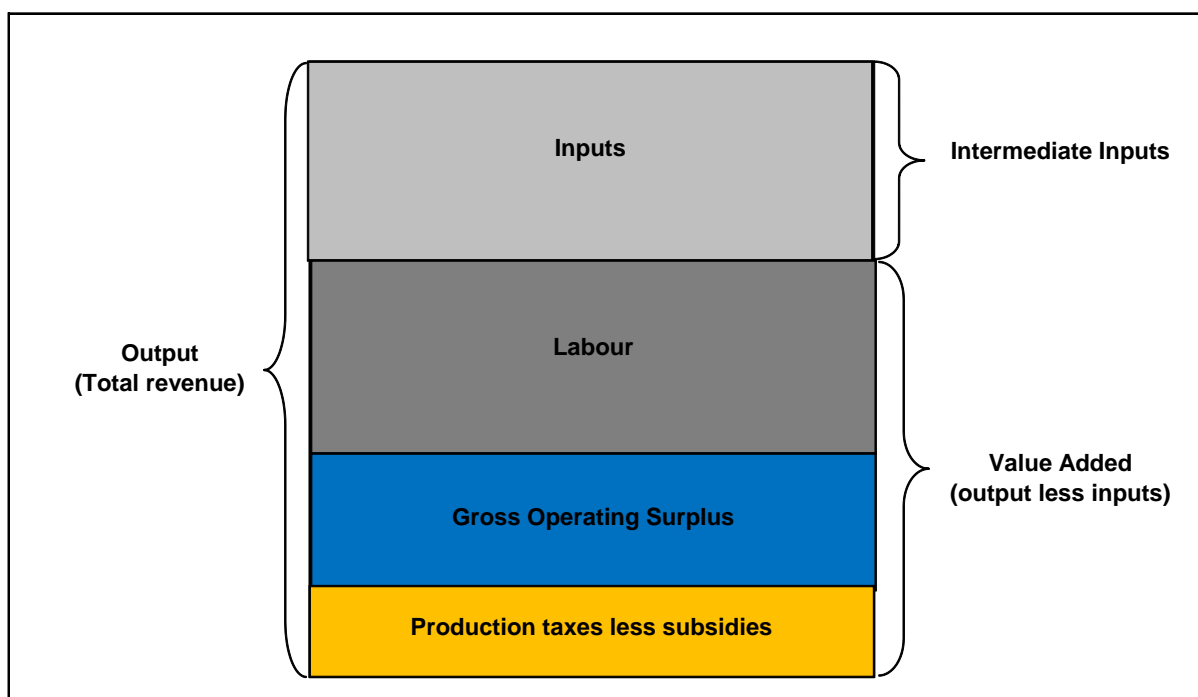
- The **direct** component measures economic activity directly associated with St John's production of goods and services. For example, labour is a key input in the service provision process, with the total salaries of workers representing an important direct measure of the activity generated by St John.
- The **indirect** component measures the economic activity generated by St John through its demand for the outputs of other industries.

There are four widely used direct measures of economic activity. Each tells a different story about the economic contribution of an economic entity (e.g. a firm).

- **Gross value added** measures the value of output (i.e., goods and services) generated by the entity's factors of production (i.e. labour and capital). The sum of value added across all entities in the economy equals gross domestic product.
- **Gross output** measures the total value of the goods and services supplied by the entity. This is a broader measure than value added because in addition to the value added generated by the entity, it also includes the value of intermediate inputs used by the entity that flow from value added generated by other entities.
- **Labour income** is a subcomponent of value added. It measures the value of output generated by the entity's direct labour inputs. The capital analogue to this measure is called **gross operating surplus** (GOS). GOS measures the value of output generated by the entity's direct capital inputs. In addition to profit this includes: depreciation, interest payments and taxation, as these are all paid from returns to capital. GOS is often measured as earnings before interest, taxation and depreciation.
- **Employment** is a fundamentally different measure of activity to those above. It measures the number of workers that are employed by the entity, rather than the value of the workers' output.

Figure 5.1 provides a useful summary of the components that make up gross output (i.e. the sum of value added and the value of intermediate inputs). Value added can be calculated directly by summing the payments to the primary factors of production – labour (i.e. salaries) and capital (i.e. GOS), as well as production taxes less subsidies. The value of intermediate inputs can also be calculated directly by summing up expenses related to non-primary factor inputs (e.g. materials from local suppliers and externally sourced services).

Figure 5.1: Measuring direct economic activity



Estimates of these direct economic activity components generated by St John are derived from data reported in its annual financial reports, and data presented by the St John finance department.

5.1 Measuring total economic activity

For entities that rely on intermediate inputs, their total economic activity will exceed their direct economic activity whenever they supply intermediate goods and services to each other. To illustrate this, consider a steel mill that uses coal as an input and a coal mine that uses steel as an input. In this case, an extra unit of steel will require the input of additional units of coal, which in turn require the input of additional units of steel, and so on. The initial extra units of steel and of coal comprise direct economic activity, while the subsequent intermediate inputs capture indirect economic activity.

In measurement terms, on the surface this looks like a classic ‘chicken and the egg’ problem, but it is actually a well-defined problem with a well-defined solution. The solution lies in the use of the measured intermediate flows between sectors reported in the Australian Bureau of Statistics (ABS, 2009a) input-output tables.

These data measure the direct economic activity of every sector in the economy, using the accounting framework summarised in Figure 5.1. The key ingredient of these data is that intermediate inputs are further broken down by source. These detailed intermediate flows can be used to derive the total change in economic activity associated with a given direct change in activity for a given sector.

A widely used measure of the spill-over of activity from one sector to another is captured by the ratio of the total to direct change in economic activity. The resulting estimate is typically referred to as ‘multiplier’. If the multiplier is unity (i.e. 1), the direct and total effects are the

same, which implies there is no indirect effect. On the other hand, a multiplier above unity implies some indirect activity, with higher multipliers indicating relatively larger indirect and total activity, flowing from same the level of direct activity.

The economic contribution of St John is described by the following multipliers.

- The **gross output multiplier** measures the total economy-wide gross output required by all industries in the economy to satisfy a one dollar increase in St John gross output.
- The **gross value added multiplier** measures the ratio of the total economy-wide gross value added required to satisfy a one dollar increase in St John gross output to the direct St John value added required.
- The **labour income multiplier** measures the ratio of the total economy-wide labour-income required to satisfy a one dollar increase in St John gross output to the direct St John labour income required.
- The **employment multiplier** measures the ratio of the total economy-wide employment required to satisfy a one dollar increase in St John gross output to the direct St John employment required.

This report provides estimates of both measures of output, gross output and value added, along with labour income and employment. Some economists argue that value added is the most appropriate measure of activity because it captures the actual value of output created. However, this view ignores the fact that the goods and services supplied by St John also generate demand for value added created by other entities through their use of intermediate inputs. Other things being equal, the value added of these suppliers would be lower without the intermediate demand. Thus the value of gross output is a legitimate measure of economic activity, because it takes into account all the value added created. Further, as a charity, making a profit is not St John's *raison d'être*, which reduces measured value added. Similarly, most of St John's workforce are unpaid volunteers, which also reduces measured value added. Accordingly, gross output is considered the most relevant measure for this exercise.

For the purposes of this exercise, it is assumed that the multipliers for St John are the same as those for the 'Health Services' sector of the economy (Table 5.1). What this means it that for every \$1 of extra output generated by a health services organisation, with a multiplier of 1.29, another 29 cents of output is generated in supplier industries (for example, pharmaceutical companies and medical equipment manufacturers). The increase in gross output will result in an extra 94 cents of value added (across both the organisation and its suppliers). Workers across the economy will receive an extra 74 cents in wages. Employment is measured slightly differently: for each million dollars¹⁹ of health services output, 11.6 jobs will be created.

¹⁹ For employment, output needs to be measured in 2004-05 dollars, as this is the base year for the current input-output tables.

Table 5.1: Health services multipliers

Measure	Multiplier
Gross output	1.29
Value added	0.94
Labour income	0.74
Employment	11.59

Source: ABS (2009a).²⁰

In order to determine how those increases are proportioned between the health organisation and its suppliers, we need to know specific details about the organisation. From compilations of jurisdictional financial data, it is estimated that St John's gross output was \$216 million in 2008-09. Of this, inputs of goods (for example first aid kit components) and services (for example, travel and accommodation) accounted for \$91 million. Wages and salaries of \$100.5 million and GOS of \$24.5 million together comprised value added of \$125 million. (GOS in turn was comprised of depreciation of \$12.9 million, interest payments of \$0.8 million and a surplus of \$10.8 million.)²¹ In 2008, St John employed 1,370 people full time, and 435 as 'temp/contract/casual' (each assumed to be half time), for a total of 1,587.5 full time equivalent (FTE) positions. Measured in current dollars, that is 7.35 FTEs per million dollars of output. Measured in 2004-05 dollars, it is 8.15 FTE per million dollars of output.

Table 5.2: St John financial data, 2008-09

Category	\$m	Percent
Inputs of goods and services	91.2	42%
<i>Labour income</i>	100.5	47%
<i>Gross operating surplus</i>	24.5	11%
Value added	124.9	58%
Gross output	216.1	100%
Employment (FTEs)	1,587.5	

Source: St John.²²

Using the information from Table 5.1 and Table 5.2, the ratio of total to direct effects can be calculated for St John (Table 5.3). For example, \$1 of additional gross output produces 94 cents of value-added across the economy (Table 5.1). That \$1 of additional gross output also produces 58 cents of value added directly within St John (Table 5.2). Thus, the ratio of total value-added to direct value-added is 1.63 ($=0.94/0.58$). This implies that for each dollar of value added created by St John, there is an extra 63 cents of value-added created elsewhere in the economy. Similarly, for each dollar of wages paid by St John, there is an extra 60 cents earned by workers in other organisations.

²⁰ The ABS's input-output tables do not supply multipliers directly; rather for each industry the tables show which other industries its inputs come from, and which other industries then use its outputs. However, it is a relatively simple matter to invert the tables, which then produces multipliers for all the industries involved.

²¹ As a charity, St John does not pay income tax.

²² Some states supplied data for calendar years 2008 or 2009, some supplied data for the 2008-09 financial year, some did not specify which time period was used. As the FY 2008-09 overlaps both the calendar years, it was chosen as the base period.

Because of the large number of unpaid volunteers at St John, employment creation is calculated on a slightly different basis to the other components. As the ABS's input-output tables provide no means for estimating the impact of unpaid employment on upstream paid employment, Access Economics has utilised the total to direct employment ratio (1.14 to 1) for the whole health services sector (ABS, 2009a), rather than estimating a ratio specifically for St John. Thus for each 100 (paid) jobs created within St John, there are 14 (paid) jobs created elsewhere (Table 5.3).

Table 5.3: Ratio of total to direct effects

Category	Ratio of Total to Direct effect
Gross output	1.29
Value added	1.63
Labour income	1.60
Employment	1.14

Source: Derived from Table 5.1 and Table 5.2 and ABS (2009a).

Another adjustment also needs to be factored in for employment. The gross output multiplier for health services is measured as 11.59 jobs per \$1 million – in 2004-05 dollars (i.e. current dollars when the input-output tables were constructed). St John's gross output in 2008-09 dollars was \$216.1 million, but measured in 2004-05 dollars it is only \$194.9 million.

Thus, the total estimated jobs created by St John is 2,258 FTEs (=11.59 *194.9). Then, using the ratio of 1:14 to 1, there are an estimated 1,977.7 FTE within St John, and 280.5 FTE elsewhere. However, St John only has 1,587.5 paid FTE. Accordingly, the other 390.2 FTE at St John (=1,977.7 – 1587.5) are assumed to be unpaid volunteers. That is, St John is assumed to generate a total of 1,868 paid FTE (1,587.5 internally, and 280.5 externally).

Table 5.4: Economic contribution of St John, 2008-09 (\$m)

	St John	Indirect	Total
Gross output	216.1	62.5	278.7
Value added	124.9	78.6	203.6
Labour income	100.5	60.3	160.8
Employment	1,587.5	280.5	1,868.0

Thus, in 2008-09, St John's activity is estimated to have generated an extra \$62.5 million output in other parts of the economy, making a total of \$278.7 million; and an extra \$78.6 million of value-added upstream, for a total of \$203.6 million in additional value added. Because of St John, workers in other organisations received an extra \$60 million in their pay packets, and an estimated 281 FTE jobs rely on St John for their existence.

6 Breakdown of contribution by jurisdiction

Table 6.1 provides a summary of the contribution by jurisdictions, which is calculated on the basis of the dot-points below. In absolute terms, WA makes the largest individual contribution to the national total – accounting for half (50%) of the total contribution. Relative to population, the NT (9%) makes an even larger contribution. In both cases, this is mostly due to a large stream of revenues for ambulance services, but the NT punches well above its weight across almost the entire spectrum of St John’s services²³. After allowing for the effects of not having ambulance services, SA (7%) also contributes more than its share due to enthusiastic provision of first aid training and first aid services, as does Tasmania (2%) with high levels of community service. For a discussion of individual territories, see Appendix A.

- *Benefits of first aid provision.* Gross savings to emergency departments (row A in Table 6.1) assumes that casualty visits prevented is proportional to hours of first aid provision. For rows B and C, jurisdiction share is proportional to hours of first aid provision. For most jurisdictions, this is roughly in line with population shares, but SA has twice the hours, and the NT nearly four times, what their populations would suggest.
- *Benefits of first-aid training.* Division of national benefits, both in terms of revenue and health (rows F and G), are assumed to be proportional to students trained in first aid (Table 3.1). This is not closely correlated with population: Victoria has only a little more than half the trainees its population would indicate, while Tasmania has more than double.
- *The PAD program.* Benefits are assumed to be proportional to the number of defibrillators in each jurisdiction²⁴. For the major states, this is roughly proportional to population²⁵, but Tasmania (15) and the NT (11) have more than double their population share, and the ACT nearly six times (29).
- *Community care.* Jurisdictional share of benefit is assumed proportional to share of national hours of community service. Again, this is not well correlated with population: the ACT has only around one fifth of what its population share would suggest, while Tasmania has nearly five times.
- *Multiplier effects.* Jurisdictional financial statements were not adequate in some cases to calculate multipliers at an individual level. Accordingly, the value of each jurisdiction’s output multiplier (row L) and its total employment contribution (row N) are assumed to be proportional to its share of national direct output. The relative importance of WA’s ambulance service can be seen from the fact that WA’s share of gross output is 62%.

²³ No data are available for community care services in the NT.

²⁴ That is, benefits are not imputed to locations where actual lives have been saved.

²⁵ NSW 92, VIC 47, QLD, 57, SA 30, WA 24.

Table 6.1: Economic contribution by jurisdiction \$m, 2008-09

	NSW	Victoria	QLD	SA	WA	Tasmania	ACT	NT
A. Net savings to emergency departments	\$6.81	\$4.64	\$2.32	\$2.36	\$1.01	\$0.59	\$0.22	\$0.75
B. Time saved not going to hospital	\$0.49	\$0.33	\$0.17	\$0.17	\$0.07	\$0.04	\$0.02	\$0.05
C. Reduced pain and suffering	\$0.09	\$0.06	\$0.03	\$0.03	\$0.01	\$0.01	\$0.00	\$0.01
D. Lives saved	\$15.22	\$10.36	\$5.17	\$5.27	\$2.25	\$1.32	\$0.50	\$1.68
E. Total first aid provision	\$22.6	\$15.4	\$7.7	\$7.8	\$3.3	\$2.0	\$0.7	\$2.5
F. Value of services provided	\$10.23	\$7.38	\$7.14	\$6.19	\$14.93	\$2.42	\$1.17	\$1.25
G. Value of healthy life gained	\$8.20	\$3.85	\$2.03	\$6.28	\$3.73	\$0.98	\$0.58	\$1.63
H. Total first aid training	\$18.4	\$11.2	\$9.2	\$12.5	\$18.7	\$3.4	\$1.7	\$2.9
I.PAD	\$0.21	\$0.11	\$0.13	\$0.07	\$0.05	\$0.03	\$0.07	\$0.03
J. Community care	\$0.33	\$0.74	\$1.53	\$0.99	\$0.31	\$0.50	\$0.01	\$0.00
K. Direct gross output	\$13.8	\$16.2	\$10.1	\$8.7	\$118.9	\$2.7	\$1.8	\$19.8
L. Indirect gross output	\$6.2	\$7.3	\$4.6	\$3.9	\$53.6	\$1.2	\$0.8	\$8.9
M. Total gross output	\$20.0	\$23.5	\$14.7	\$12.6	\$172.5	\$4.0	\$2.6	\$28.7
N. Total employment (persons, FTE)	134.2	157.9	98.5	84.2	1156.4	26.6	17.8	192.5
O. Total economic value	\$48.3	\$43.0	\$26.3	\$23.8	\$183.9	\$7.3	\$4.1	\$31.9

Note: total excludes community care and first aid training services, as these are counted under gross output.

7 Conclusions

Overall, St John makes a significant contribution to Australia's wellbeing. In economic terms, this value was equivalent to around \$369 million in 2008-09 (Table 7.1).

Table 7.1: Economic contribution of St John, 2008-09

Category	\$ million	% of total
Direct gross output	216.1	58.6%
Indirect gross output	62.5	17.0%
Total gross output	278.7	75.6%
Net savings to hospital emergency departments	18.7	5.1%
Time saved not having to go to hospital	1.3	0.4%
Reduced disability	0.2	0.1%
Lives saved	41.8	11.3%
Total first aid provision	62.0	16.8%
PAD	0.7	0.2%
Value of services provided	50.7	13.8%
Value of healthy life gained	27.3	7.4%
Total first aid training	78.0	21.2%
Community care	4.4	1.2%
Total economic value of St John	368.7	100.0%

Note: Value of first aid training services and community services are not included in the total as they are imputed to direct gross output.

The majority of this value is assigned actual dollar values in the marketplace. Sales of first aid kits, first aid training, contracts for supply of ambulance services, and payments for provision of first aid services at events totalled \$216 million (or 59% of the total).

This \$216 million in output generated by St John resulted in a further \$62.5 million in activity (17% of the total St John contribution) among St John's suppliers (e.g. manufacturers of medicinal products, suppliers of uniforms, business service organisations). Also, in addition to the 1,587.5 FTE workers directly employed by St John, its activities support a further 281 jobs in upstream entities.

By treating people who would have otherwise gone to emergency departments, St John first-aiders save Australia's over-burdened emergency departments around \$18.7 million per annum (including ambulance transports avoided). Moreover, the value of time saved to injured and ill people who did not have to drive to or wait in emergency departments is estimated at around \$1.3 million.

The value of reduced pain and suffering, and of lives saved, by St John's activities is estimated at being worth over \$69 million in 2008-09 (equivalent to 18.8% of St John's total contribution). Most of this value (\$41.8 million) comes from the 13.6 lives estimated to have

been saved by St John first aid activities at events. There is also substantial value from the reduced injury burden from people who have had St John first aid training (\$27.3 million).

Project Heart Start (the National Defibrillation Program) contributed \$0.7 million in net benefits. While this is not a large amount in absolute terms, it is large compared to annualised spending on the Program, with a cost benefit ratio of 6.5:1. That is, every dollar spent on PAD yields around \$6.50 in benefits. It is also a highly cost effective. Using the World Health Organization's benchmark, an intervention that costs less than \$50,000 per DALY averted in Australia is considered highly cost effective. PAD, at \$4,343 per DALY, costs less than one tenth of this figure. .

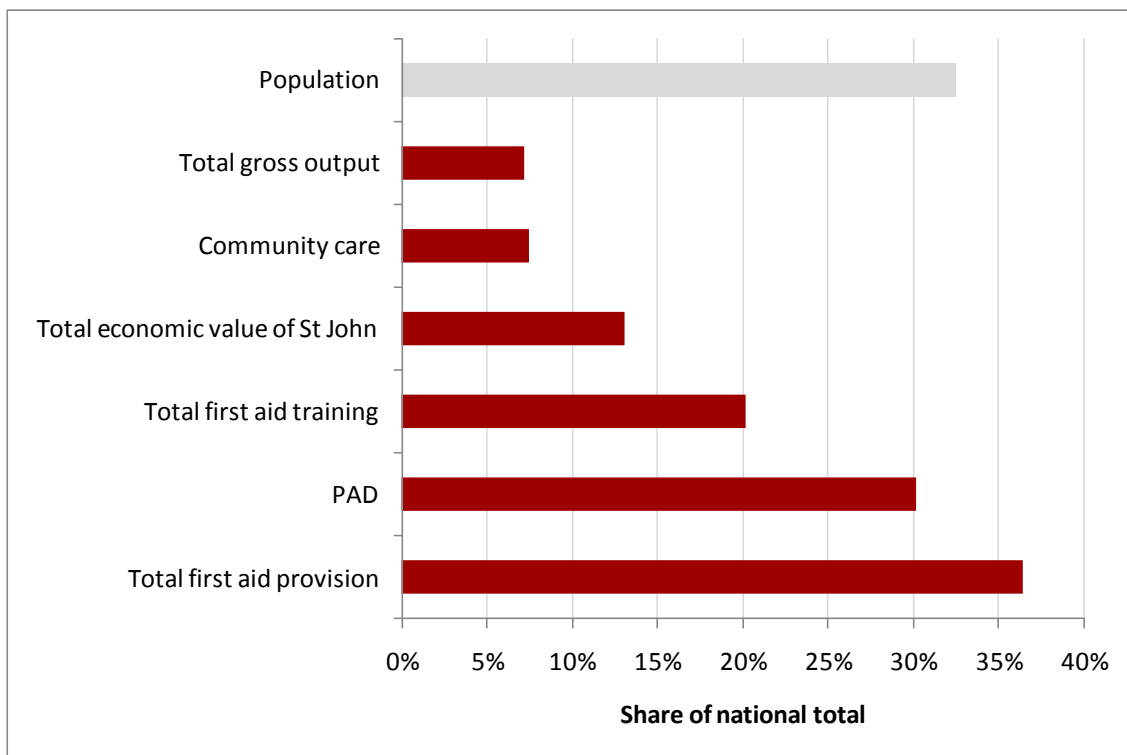
Demand for St John's services – and thus St John's economic contribution – is likely to increase in the future. Australia's population is increasing rapidly – the 2010 Intergenerational Report (Commonwealth of Australia, 2010) forecasts the population will exceed 35 million by 2050. Not only so, but our population is ageing rapidly. This will increase demand for St John's community volunteers. Older people are prone to injuries such as falls, which may lead to increased demand for first aid training by their carers. They are also more likely to suffer cardiac arrests, which will require more defibrillators. People will also spend considerably more time in retirement, with more time to attend many of the community events supported by St John. If the trends of decreased rainfall and higher temperatures reported over the last 50 years in the populous areas of Australia continue²⁶, it is also likely that there will be more bushfire and heat stroke victims who will need support from St John's emergency services.

²⁶ See http://www.bom.gov.au/climate/change/aus_cvac.shtml

Appendix A: State and territory contributions

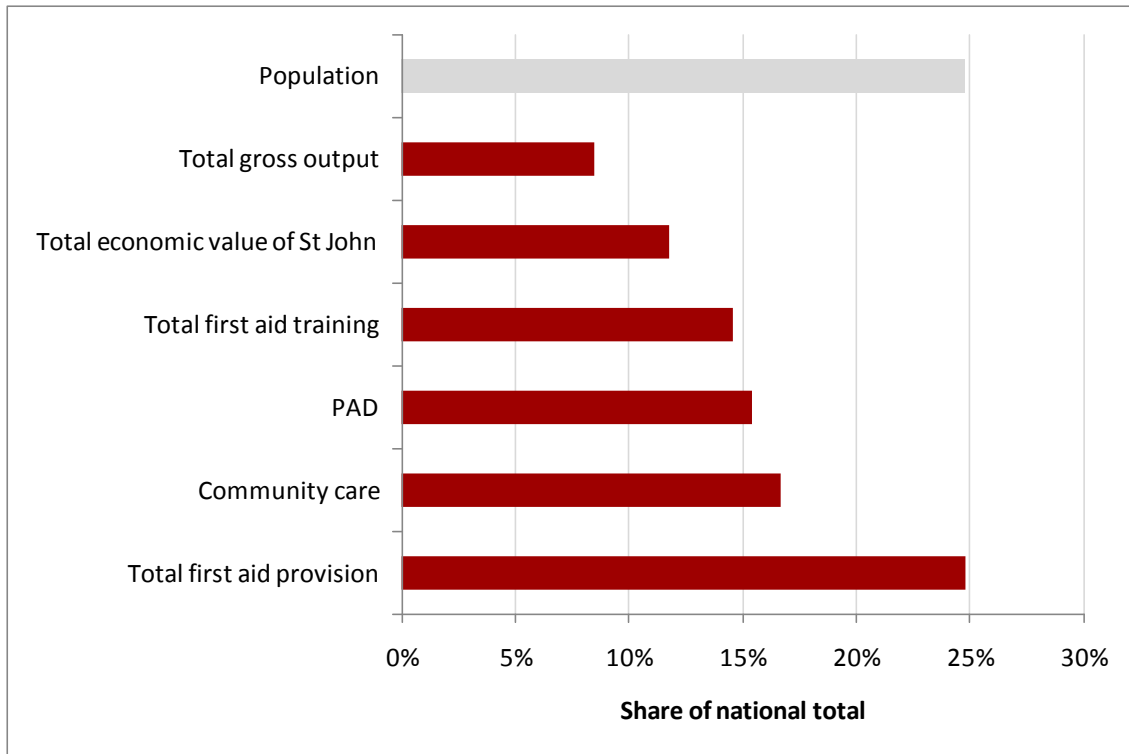
New South Wales' contribution to first aid provision is larger than its population share would suggest. However, in all other areas, NSW makes less than proportional contribution. Given St John NSW does not have an ambulance service, this is to be expected regarding gross output, and thus perhaps total economic value. NSW's contribution to PAD is roughly in line with population. While community care is small, as noted in the main body of this report, the value of community care is not (directly) included.

Chart A.1: NSW's contributions relative to population share (% total)



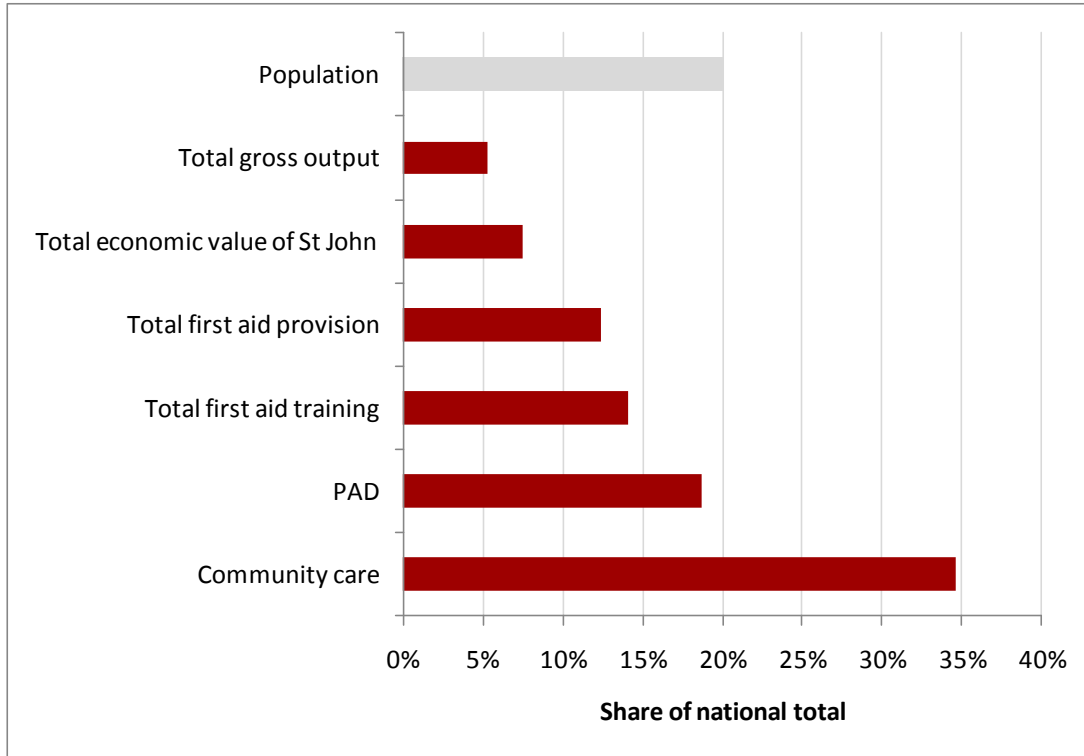
Victoria does not appear to ‘punch above its weight’ overall. However, important statistics were missing from Victoria’s most recent annual report (due to software failure) which had to be imputed in this exercise. Accordingly, Victoria’s figures should be interpreted with care. Victoria’s relative areas of strength are its first aid provision and community care. As with NSW, gross output only appears low due to the absence of an ambulance service.

Chart A.2: Victoria’s contributions relative to population share (% total)



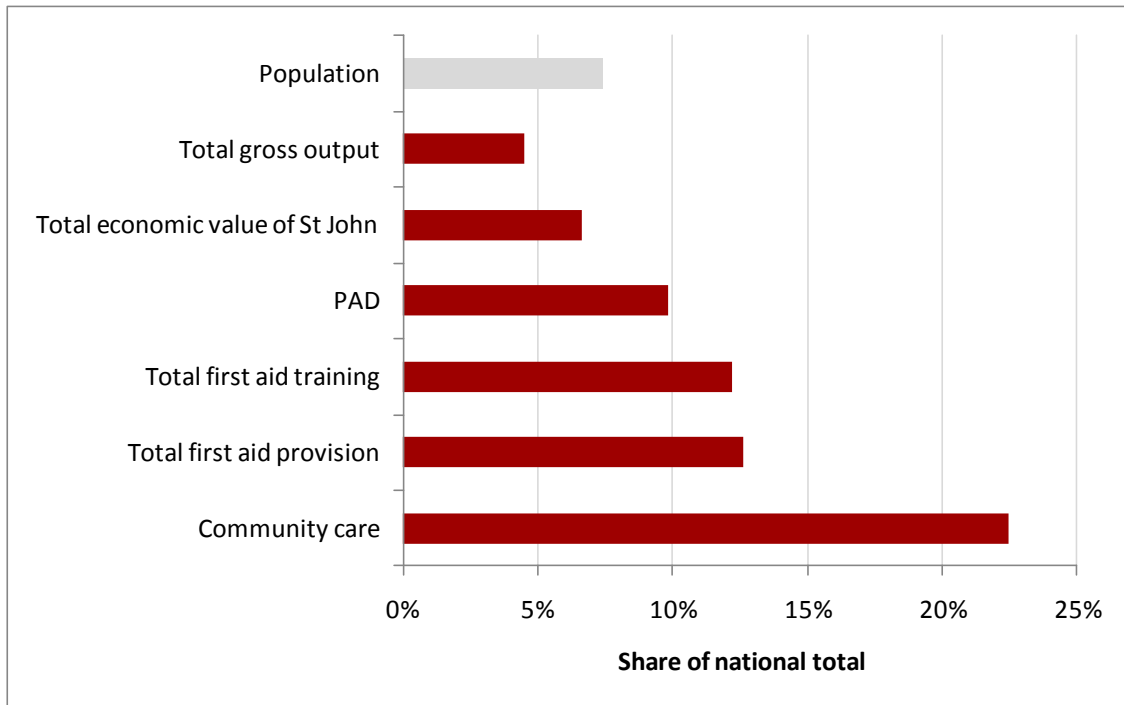
Queensland's forte is community care, which it contributes at almost twice the rate the state population would suggest. However, first aid provision is well below population share.

Chart A.3: Queensland's contributions relative to population share (% total)



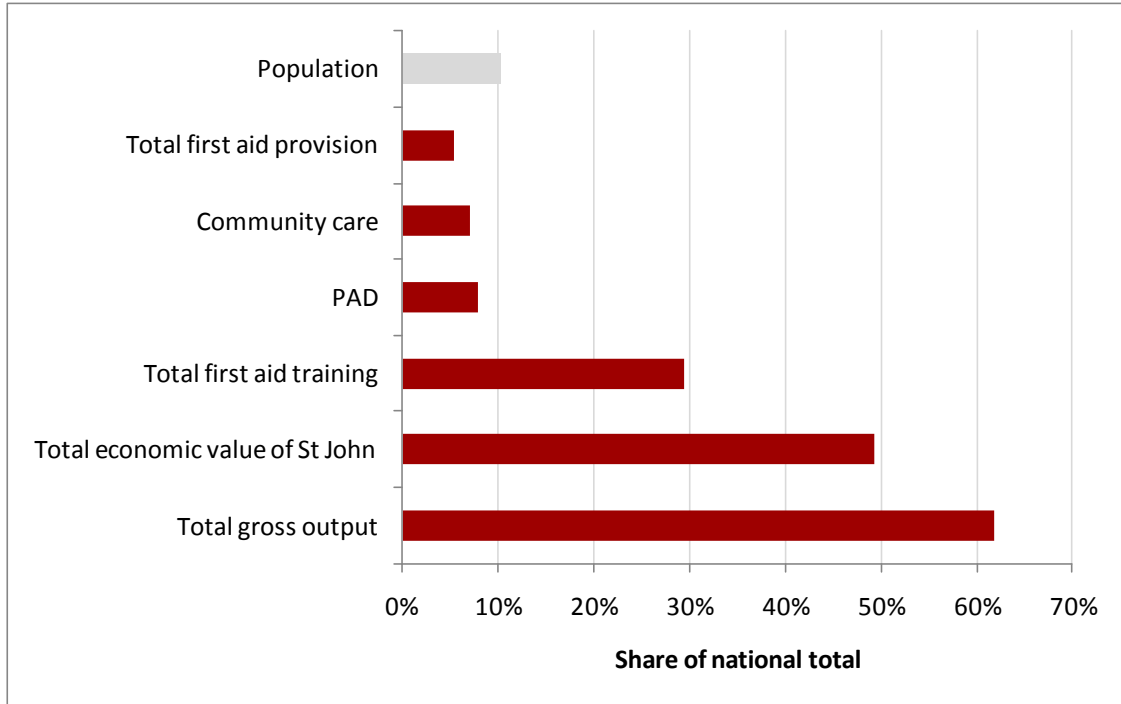
Despite not having an ambulance service, South Australia is a heavyweight in the St John confederacy. Community care, first aid provision, first aid training and PAD are all above population share. As with Queensland, community care is South Australia's stand out sector, with nearly triple the hours suggested by its population.

Chart A.4: South Australia's contributions relative to population share (% total)



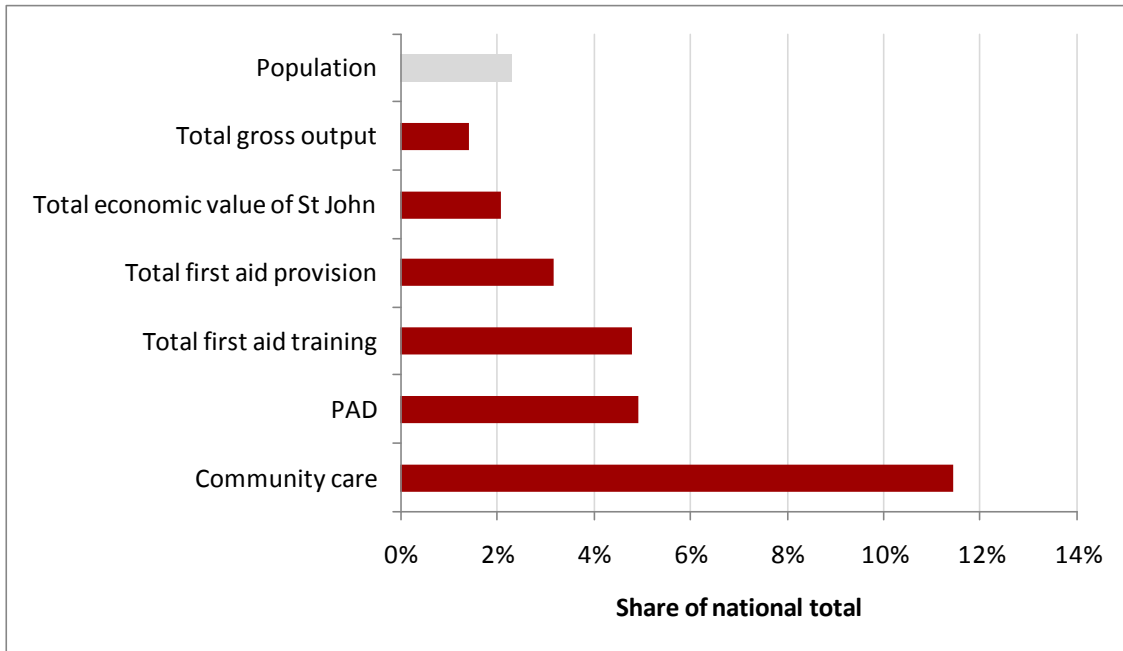
As would be expected from having an ambulance service and being much larger than NT, Western Australia dominates the jurisdictional comparison with respect to gross output, accounting for more than all the other jurisdictions put together. However, in addition, first aid training is also almost three times larger than population share.

Chart A.5: Western Australia's contributions relative to population share (% total)



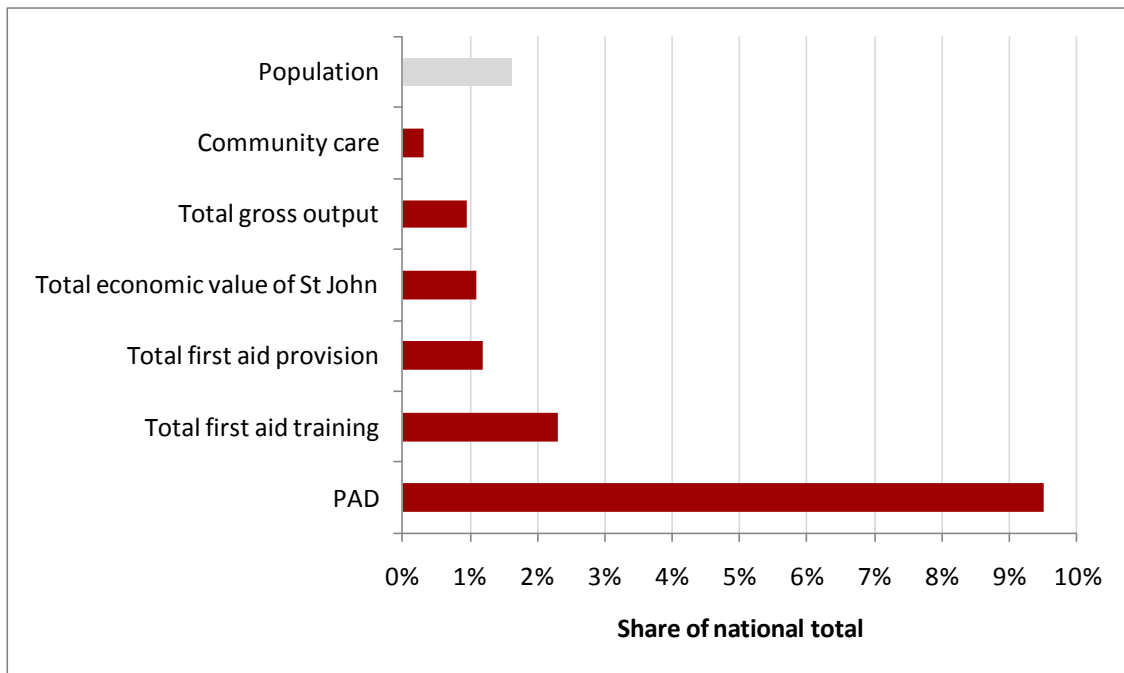
In common with Queensland, Tasmania's largest area of strength is community care. Tasmania performs well relative to the population share benchmark in first aid provision, first aid training and PAD.

Chart A.6: Tasmania's contributions relative to population share (% total)



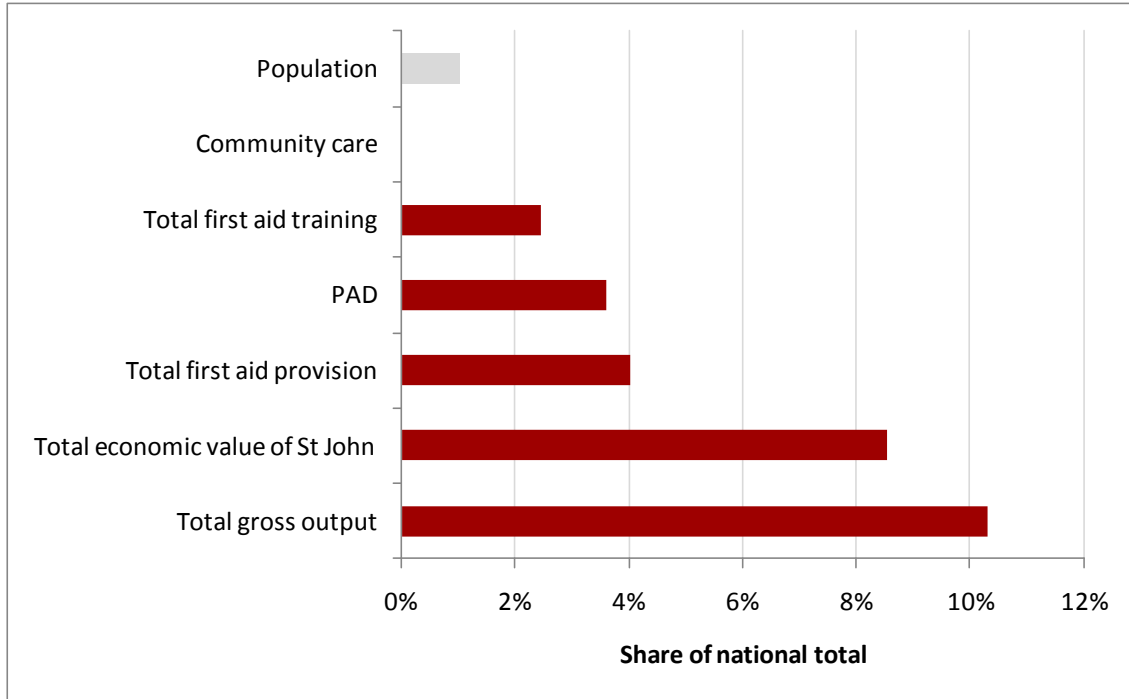
From Chart A.7, the ACT would be a relatively safe place in Australia to have a cardiac arrest, with a disproportionately high number of defibrillators. Further, because both first aid training and first aid provision are well above national averages, there would be a good chance that if you did need a defibrillator, there would be someone at hand who knew how to use it. Despite the lack of an ambulance service, the ACT's economic contribution is very close to its population share.

Chart A.7: Australian Capital Territory's contributions relative to population share (% total)



Apart from community care (for which there were no available statistics) the Northern Territory does well on all measures. While the NT does have an ambulance service, its very high economic value is not just due to ambulances: the Territory contributes beyond its size across the whole spectrum.

Chart A.8: Northern Territory's contributions relative to population share (% total)



Appendix B: Community care and ambulance services

Measuring the value of the health benefits from St John's ambulance and community services was beyond the scope of this report. However, revenue from these services (along with all other forms of revenue) are components of St John's gross output, and thus were included in the economic contribution component.

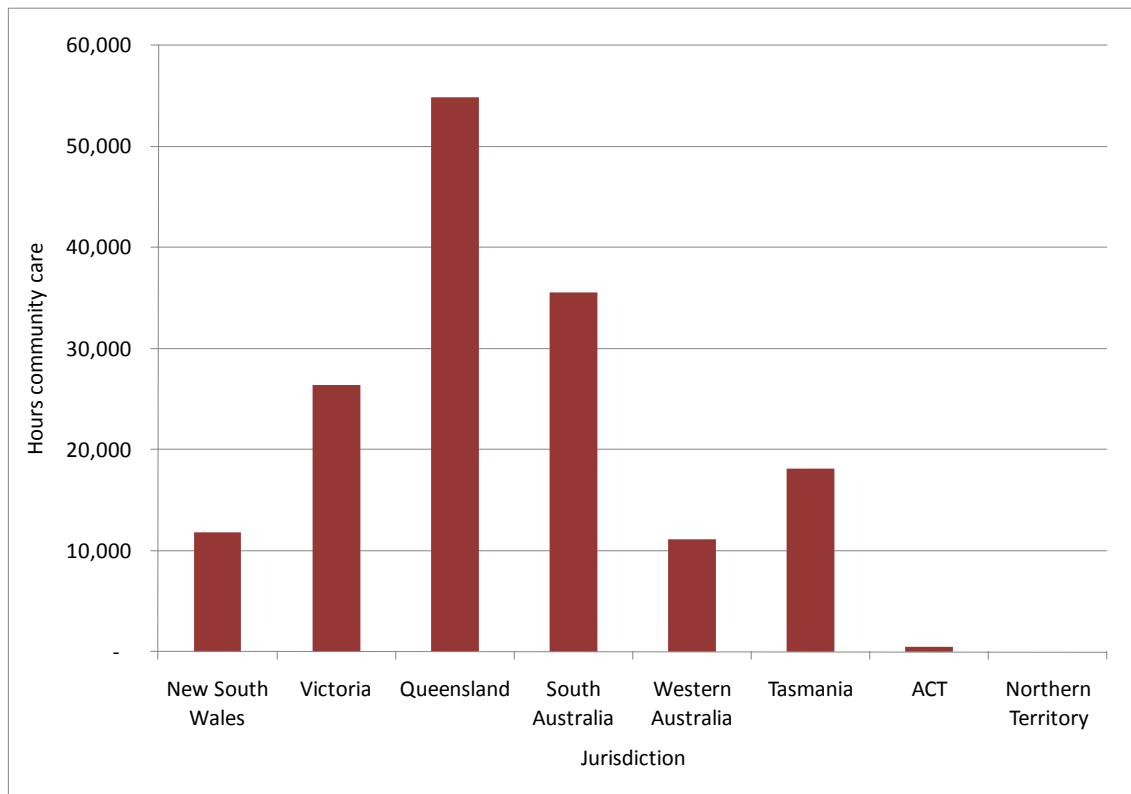
St John provides an ambulance service in the NT and WA. The NT service transported 31,333 patients and travelled a distance of 814,852 kilometres in 2009. The WA service covers the largest area of any single ambulance service in the world – 2,525,500 square kilometres or 33% of the total landmass of Australia²⁷. The WA service is split into country and metropolitan divisions. The country area is serviced by over 2,000 volunteer ambulance officers and 70 paramedics, who travel in excess of 1.6 million kilometres annually, transporting over 32,000 people. The metropolitan ambulance fleet consists of over 90 ambulances and 15 patient transport vehicles, and travels in excess of 3.5 million kilometres within the metropolitan area, transporting over 120,000 people annually. This area is serviced by 24 ambulance centres staffed by more than 500 paramedics and patient transport officers.

A further service provided by St John is community care. Established in 1987, this service is the newest arm of St John. Community care was created in response to needs identified in the community and today consists of over 2,400 community care volunteers around the country. Trained community care volunteers help a wide range of vulnerable people in different ways including assistance with household duties, companionship and transport.

Each state and territory provides programs in response to the varying needs of their local community. Chart B.1 displays the hours of community care provided by St John volunteers within Australia. There are currently no community care programs in the NT.

²⁷ www.ambulance.net.au

Chart B.1: Community care hours, by jurisdiction (2008-09)



Source: St John (no data for the NT).

An approximate value of St John’s community program can be gleaned by estimating what these services would cost if they were commercially purchased. Access Economics (2005) estimated that the average cost of formal (paid) community care services was \$25.01 per hour. Inflating this to 2008-09 implies an hourly rate of \$27.98. Thus, the estimated value of the 157,876 hours of community service provided in 2008-09²⁸ was \$4.42 million.

²⁸ Latest state annual reports cover a variety of calendar and financial years. However, all include at least six months of 2008-09, and are assumed not to differ over the other six months.

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