GOVERNMENT OF WESTERN AUSTRALIA

Sustainable Health Review

Public Submission Cover Sheet

Please complete this sheet and submit with any attachments to the Sustainable Health Review Secretariat

Your Personal Details ***This information will be used only for contacting you in relation to this submission***	
Title	Mr ☐ Miss ☐ Mrs ☐ Ms ☐ Dr ☒ Other ☐
Organisation	Australia New Zealand Society of Geriatric Medecine - WA
First Name(s)	Nicholas
Surname	Spendier
Contact Details	[redacted]

Publication of Submissions

Please note all Public Submissions will be published unless otherwise selected below

☐ I do not want my submission published

☐ I would like my submission to be published but remain anonymous

Submission Guidance

You are encouraged to address the following question:

In the context of the Sustainable Health Review Terms of Reference listed below, what is needed to develop a more sustainable, patient centred health system in WA?

- Leveraging existing investment in Primary, Secondary and Tertiary healthcare, as well as new initiatives to improve patient centred service delivery, pathways and transition;
- The mix of services provided across the system, including gaps in service provision, sub-acute, step-down, community and other out-of-hospital services across WA to deliver care in the most appropriate setting and to maximise health outcomes and value to the public;
- Ways to encourage and drive digital innovation, the use of new technology, research and data to support patient centred care and improved performance;
- Opportunities to drive partnerships across sectors and all levels of government to reduce duplication and to deliver integrated and coordinated care;
- Ways to drive improvements in safety and quality for patients, value and financial sustainability, including cost drivers, allocative and technical efficiencies;
- The key enablers of new efficiencies and change, including, research, productivity, teaching and training, culture, leadership development, procurement and improved performance monitoring;
- Any further opportunities concerning patient centred service delivery and the sustainability of the WA health system.

Attn: Sustainable Health Review,

Regarding: subacute service in Western Australia.

We write on behalf of the Australian and New Zealand Society of Geriatric Medicine (ANSZGM) – Western Australia branch. The ANZSGM is the professional society for geriatricians that acts to represent the needs of its members and the wider community in a bid to constantly review and improve the care of older people in Australia and New Zealand, with major function around education, policy development and advocacy for older people.

Please see the attached report prepared by the Western Australian Subacute, Community and Aged Care Directorate, The reduction in subacute care over the previous 4 years is a major concern. The provision of appropriate care to older people, both in an inpatient and outpatient setting, is important in maintaining health, function and independence. Subacute care, including rehabilitation and Geriatric Evaluation and Management (GEM), plays an essential role in this. Despite the increasing age of the population and presentations to hospital, the number of subacute separations has decreased over the past 4 years (see report for further details). This has probably resulted from older people unable to access subacute services post discharge from acute care and also decreased access to inpatient geriatric assessment and rehabilitation from the community because of decreased services in ambulatory care. It is likely that this has resulted in older people having greater unmet needs with increased disability and premature mortality. This trend is alarming and interventions are needed to address this.

Subacute care all too often is the first target with cost saving measures and this is adversely affecting the older patients requiring this service. At this time there is no accountability placed on the health networks to provide subacute care either in the form of targets or key performance indicators. These need urgent development.

Yours faithfully

P. Ramesh		
Dr P Ramesh	Dr Nick Spendier	Dr Leon Flicker AO
President	Secretary	Prof of Geriatric Medicine

On behalf the Western Australian Branch of the Australian and New Zealand Society for Geriatric Medicine

Australian and New Zealand Society for Geriatric Medicine (WA Division)
C/-Dept. of Rehabilitation and Aged Care, Sir Charles Gairdner Hospital
[redacted]

Government of **Western Australia**
Department of **Health**

Subacute Care Services in Western Australia 2012 - 2016

better health ▪ better care ▪ better value

Table of Contents

List of Appendices

List of Figures

List of Tables

Authors

- Kendra Beecroft, A/Senior Policy Officer, Subacute, Community and Aged Care Directorate
- Belinda Burns, Graduate Student, Subacute, Community and Aged Care Directorate
- Luke Hays, A/Manager, Subacute, Community and Aged Care Directorate
- Anne Riordan, A/Manager, Subacute, Community and Aged Care Directorate
- Andy Wu, Senior Policy Officer, Subacute, Community and Aged Care Directorate

Acknowledgements

The authors would like to acknowledge the input of stakeholders across many areas in the development of the *Subacute Care Services in Western Australia 2012-2016* report, in particular:

- Dr Peter Goldswain, Clinical Advisor, Subacute, Community and Aged Care Directorate
- Dr Andrew Wesseldine, Clinical Advisor, Subacute, Community and Aged Care Directorate
- The WA Department of Health Data Collections Directorate
- The WA Department of Health Epidemiology Unit
- The Aged Care Network Expert Reference Group
- The WA Cancer and Palliative Care Network
- The WA Country Health Service Aged Care unit
- The Training Centre in Subacute Care (TRACS WA)
- The WA Department of Health Purchasing and System Performance Division.

Suggested citation:

Western Australia. Department of Health. Subacute Care Services in Western Australia 2012-2016. Perth, W.A. Subacute, Community and Aged Care Directorate, 2017.

Executive Summary

The Subacute Community and Aged Care Directorate (SCACD) currently performs both Department of State and System Manager functions focused on cost-effective, high quality, innovative care within hospital and transition to more appropriate non-hospital environments for target populations and health areas including subacute care.

Subacute care comprises the nationally agreed care types of rehabilitation, palliative care, geriatric evaluation and management (GEM) and psychogeriatric care.[1] It is an integral part of the health care continuum and aims to improve quality of life and maximise functional independence. Well-coordinated and well-linked subacute care services improve patient functional capacity, hospital patient flow and cost management.

Understanding the drivers of subacute care utilisation and the recent trends in subacute activity is important. This information is crucial for system-wide planning for the future subacute care needs of Western Australians and for assessing the impact of planning strategies on the patient journey.

The ageing of Western Australia's population is likely to be an important driver of demand for subacute care into the future. People aged 65 years and over are dominant utilisers of subacute care services, and population growth and a higher prevalence of health conditions in this age cohort suggest that demand for subacute care services will continue to rise.

This report examines the state of subacute care in WA from a system-wide perspective with the aim of providing a better understanding of access to and utilisation of subacute care services. This is achieved using three distinct approaches:

- Estimation of the need for and drivers of subacute care in WA
- Description of recent trends in subacute care activity in WA between July 2012 and June 2016
- Examination of equity of access to subacute care by sub-populations in WA between 2012 and 2016.

This report also outlines variation in utilisation of subacute care in WA according to age and gender, Aboriginality and residential location of populations. The report shows that particular subsets of the Western Australian population may have a greater need for subacute care services per capita.

Broadly, the report found that public and private subacute admitted activity has decreased over the report timeframe and public non-admitted subacute activity decreased over the years in which data was available. Improvements in recording and reporting practices appear to have driven at least some of these decreases, but further monitoring and analysis is required to ensure adequate amounts of high quality subacute activity is purchased and delivered by the WA health system.

The report makes a number of recommendations to clarify and strengthen the System Manager's role in the planning, purchasing and delivery of quality subacute care services, including:

- Monitoring subacute care activity, equity of access and quality of care annually.
- Implementing and reporting on Key Performance Indicators (KPI).
- Developing an evidence-based subacute care activity target to inform health service purchasing.
- Further refining the System Manager's understanding of the factors affecting the access and utilisation of subacute care in WA.

1 Measuring access to health care services

Defining and measuring access to health care requires a determination of the availability of services as well as an understanding of the need for care in the population. Availability of services has historically been measured through estimates of beds per capita or health workers per capita.[2] However, these broad measures of service availability do not adequately capture the barriers to utilisation of health care services and employ a relatively crude measure of healthcare need.[2]

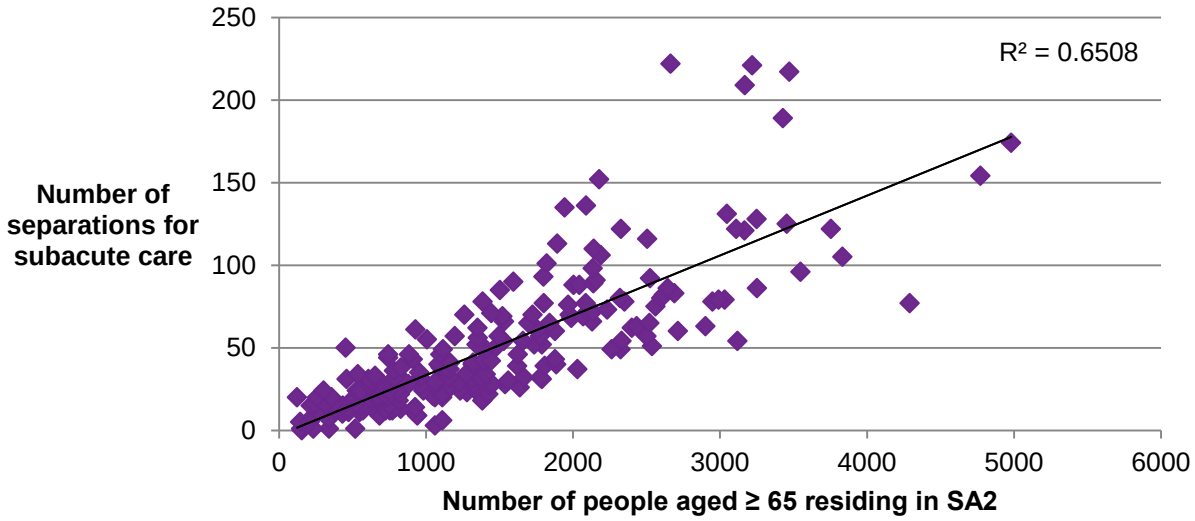
Utilisation of health care is a function of both supply and demand, and therefore provides a more useful measure of access to health care services.[3] In the case of health care, supply refers to the availability of services in time and space, while demand refers to the proportion of the population who need those services at any given time.

Drivers of utilisation of health care are likely to include such factors as:

- Demand
  - Demographic factors (ageing population, population growth, carer availability)
  - Disease prevalence/incidence
  - Consumer behaviour (preferences for non-admitted care, ageing at home)
- Supply
  - Healthcare provider behaviour (referral practices, reporting practices, cost management)
  - Types of services offered (admitted, non-admitted and community services)
  - Physical access (availability of services, distance from services, transport options)

For example, Western Australians 65 years and over are significant users of health services and are more likely to use primary and hospital based services compared to younger adults.[4] Of this group, 34.2% report using a hospital-based service in the last 12 months, 61.1% report using an allied health service and 1.9% report using a mental health service.[4] The higher utilisation of health care services by older Western Australians is a reflection of the greater prevalence of health conditions in this age cohort. Figure 1 shows the positive correlation between the number of hospital separations in Statistical Area Level 2 (SA2) regions and the number of people aged over 65 residing in the SA2 regions.

Figure 1: Number of separations in SA2* regions by the number of people aged ≥ 65 residing in that SA2



Source: WA Hospital Morbidity Dataset, 2016 and ABS Estimated Resident Population 2014.

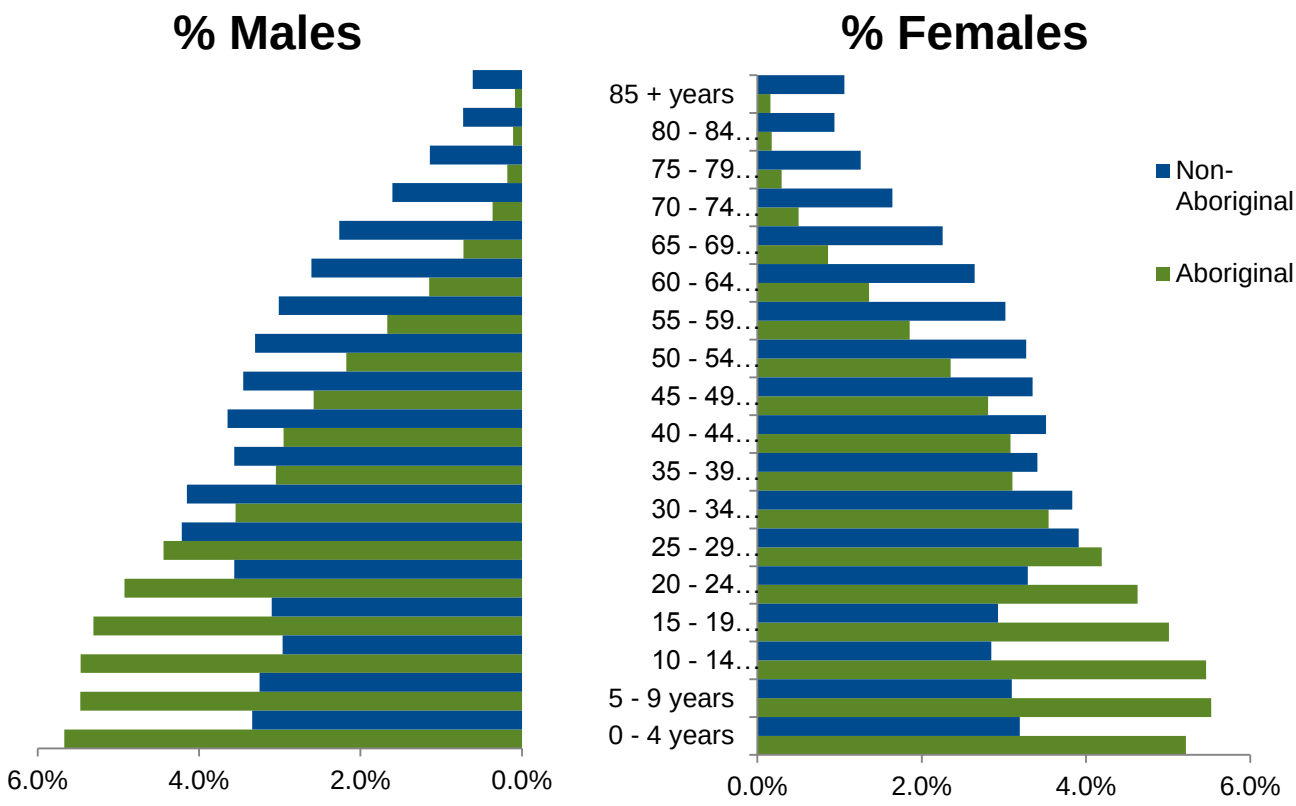
* Statistical Area Level 2 (SA2) regions are defined with the purpose of representing communities that interact together both socially and economically

Population ageing is therefore an important consideration for health service planning, since increases in the number of persons aged 65 years and over will broadly influence demand for health care. However, the population of older Western Australians is not homogenous, and only some individuals will require health care at any particular point in time.

1.1 Western Australia's older population

In 2015, the proportion of the WA population that was 65 years and over was 13.1%. This equated to 340,224 older Western Australians, with 12.3% of those individuals aged 85 years and over. Of the WA population that was 50 years and over, 1.7% is of Aboriginal descent[5] (Figure 2ure 2).

Figure 2: Population structure for non-Aboriginal and Aboriginal populations in WA 2015



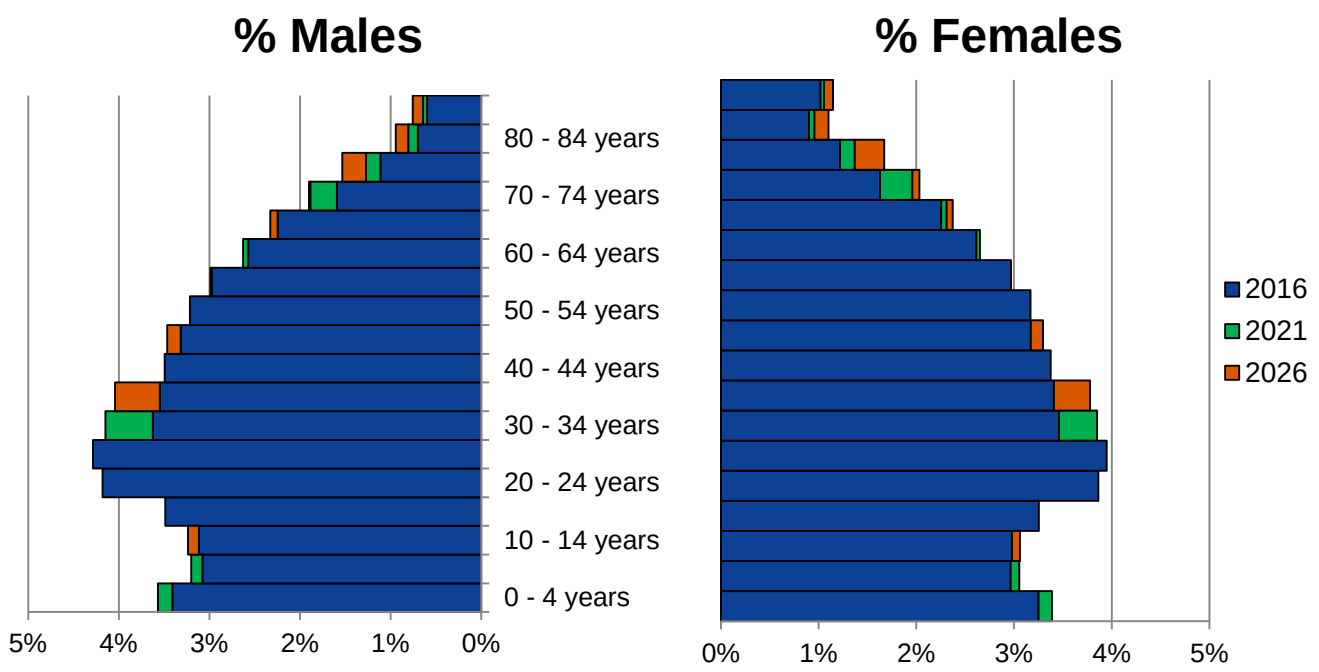
Source: Australian Bureau of Statistics, Population by age and sex (2015).

Increases in life expectancy and sustained below-replacement-level fertility have contributed to a dramatic aging of the population in Australia in recent decades that is predicted to continue.[6] WA's population is ageing both numerically and structurally (i.e. both increasing numbers and a greater proportion of older Australians relative to the working and youth populations).

The 2012 population projections from the Australian Bureau of Statistics, predict the proportion of the WA population aged 65 years and over will increase from 12.4% in 2012 to 20.7% of the total population in 2061.[6] Between 2012 and 2015, the proportion of the WA population that was aged 65 years grew by an average of 4.2% annually.[7]

Population forecasts from the WA Planning Commission (2015) show the largest proportional increases in those aged 70-74 years in 2021, followed by increases in the proportion of people aged 75-79 years in 2026 (Figure 3 and Table 1).[8]

Figure 3: Population pyramid showing forecasts for 2016, 2021 and 2026



Source: WA Planning Commission, WA Tomorrow Population Report No.10, 2015[8]

Importantly, the population aged 80 and above are often the most vulnerable in terms of need for health care services, including subacute care. Between 2016 and 2026, the total number of Western Australians aged 80 years and over is expected to increase by over 50%.

Table 1: Population forecasts for males and females aged 65 and over 2016, 2021 and 2026

	2016 population			2021 population			2026 population		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
65-69	60155	60630	120785	66140	68775	134915	75409	77690	153099
70-74	42635	43555	86190	56105	58275	114380	62205	66520	128725
75-79	29780	32600	62380	37805	40790	78595	50180	54725	104905
80-84	18690	24105	42795	23955	28505	52460	30910	36090	67000
85+	16005	27255	43260	19180	31385	50565	24750	37575	62325
Total 65-85+	**167265**	**188145**	**355410**	**203185**	**227730**	**430915**	**243454**	**272600**	**516054**
Total WA Pop	**1,353,045**	**1,323,740**	**2,676,785**	**1,505,105**	**1,470,080**	**2,975,185**	**1,658,425**	**1,615,525**	**3,273,950**
% WA pop ≥65	12%	14%	**13%**	13%	15%	**14%**	15%	17%	**16%**

	2016 population			2021 population			2026 population		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
80-84	18690	24105	42795	23955	28505	52460	30910	36090	67000
85+	16005	27255	43260	19180	31385	50565	24750	37575	62325
total	**34695**	**51360**	**86055**	**43135**	**59890**	**103025**	**55660**	**73665**	**129325**
Total 65-85+	**167265**	**188145**	**355410**	**203185**	**227730**	**430915**	**243545**	**272600**	**516054**
% 65-85+ pop ≥80	21%	27%	**24%**	21%	**26%**	**24%**	**23%**	**27%**	**25%**

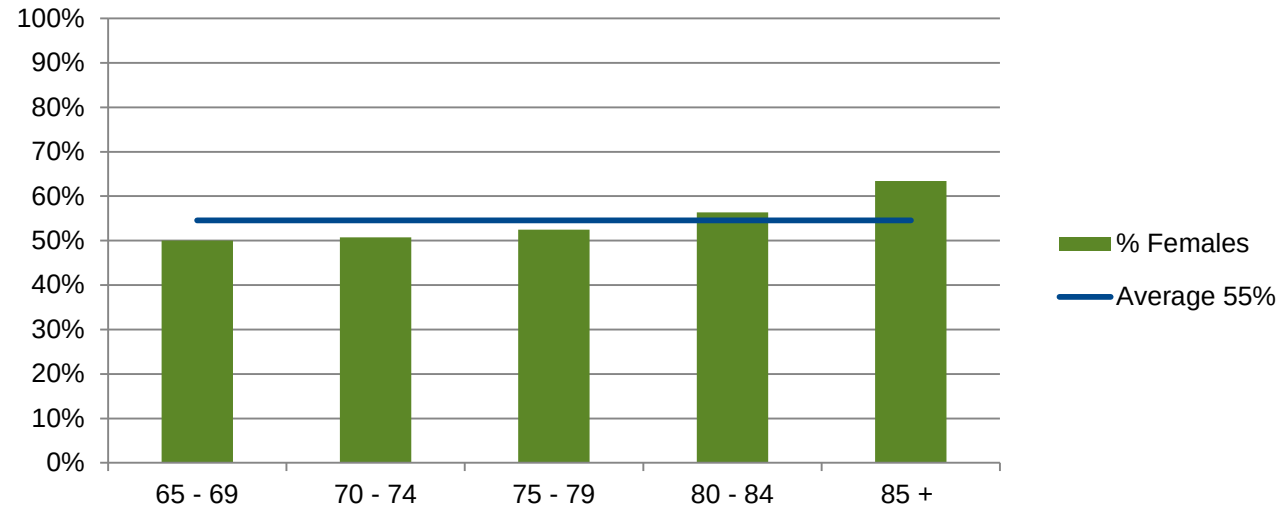
Source: WA Planning Commission, 2012

1.1.1 Socio-demographic characteristics

1.1.1.1 Sex

On average, across five-year aged groups, 55% of Western Australians aged 65 years and over were female in 2015, and the proportion of females increased with age within five-year aged groups (Figure 4).

Figure 4: Percentage of females by 5-year age groups for Western Australians aged 65 years and over in 2015



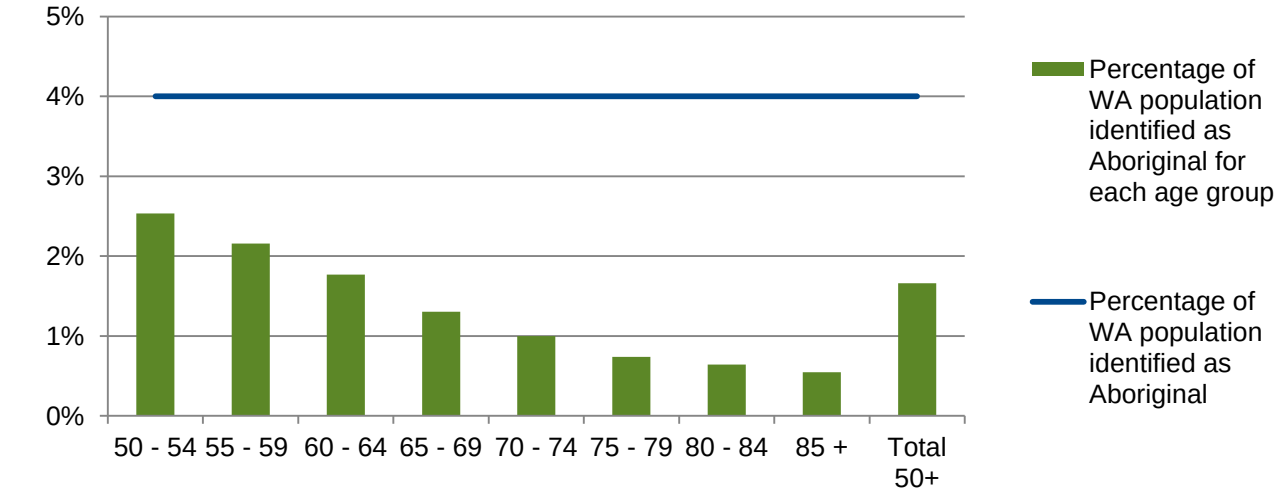
Source: Australian Bureau of Statistics, Population by age and sex (2015).

1.1.1.2 Aboriginal West Australians

It is acknowledged that Aboriginal populations generally have poorer health outcomes at an earlier age when compared with non-aboriginal populations.[9] Aboriginal people aged 50 years and over are therefore considered older for health planning purposes.

In 2015, the proportion of the older WA population that identified as Aboriginal was lower (2%) than the proportion of the entire population (4%), and the proportion declined with age (Figure 5).

Figure 5: Percentage of Western Australian Aboriginal persons by 5-year age groups, 2015



Source: Australian Bureau of Statistics, WA Department of Health Epidemiology Branch
Note: 'Older' defined as 50 years and over in line with provision of aged care services for the Aboriginal population.

1.1.1.3 Culturally and linguistically diverse Western Australians

WA's Culturally and Linguistically Diverse (CaLD) older population has a higher proportion of persons born in countries in which English is not the main spoken language, compared to other States and Territories.[10] In 2011, 17.6% of WA's older population were born in non-main English speaking countries.[11]

CaLD women from non-main English speaking countries aged between 65 and 84 years are more likely to require assistance in core activities compared to CaLD women of the same age from English speaking countries. Similarly, both men and women from non-main English speaking countries over the age of 85 are more likely to require assistance in core activities compared to people of the same age from English speaking countries.[10] This suggests that this subset of WA's population may have a greater need for health care services.

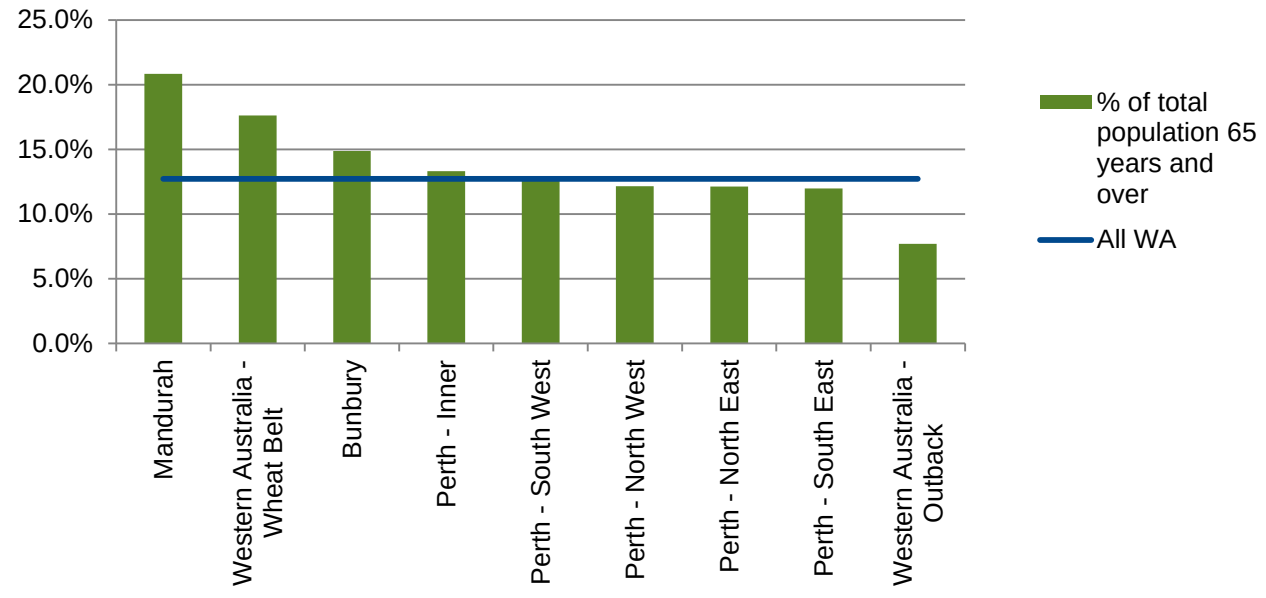
1.1.2 Where do older Western Australians currently live?

In Australia, persons aged 65 to 74 years are less likely to live in a major urban area compared to other age groups.[12] Conversely, persons aged 75 and older are more likely to live in major or other urban areas than in rural areas.[12]

The distribution of the older person population in WA may have an impact on the geographic spread of demand for health services. In 2014, Mandurah, the Wheatbelt, Bunbury, Perth's Inner and Southwest Statistical Area Level 4 (SA4) regions had a higher proportion of people aged 65 years and over compared to the WA average of 12.7% (Figure 6). These areas would be predicted to have higher-than-average need for health care services per population.

In contrast, Perth's Northwest, Northeast and Southeast SA4 regions, and the outback regions of WA had lower proportions of people in this age bracket, and are therefore predicted to have lower requirements for subacute care services per population based on this age profile.

Figure 6: Proportion of the population 65 years and over in Statistical Areas Level 4 in WA, 2014



Source: Australian Bureau of Statistics Estimated Resident Population 2014

In WA, 130 of the 250 SA2 regions had a proportion of people aged 65 and over that exceeded the state average. The Wheatbelt, coastal areas of the Mid West and the South West have the highest proportion of population over 65 years (Appendix 1). In the metropolitan area, the inner and southwest parts of Perth and the regions surrounding Mandurah contained large proportions of people over age 65 (Appendix 2).

Table2 and Table 3 provide a comparison of the 10 SA2 regions in WA with the highest *proportion* and highest *number* of their population aged 65 years and over.

Table 2: Top 10 Statistical Area Level 2 (SA2) regions with the highest proportions of population aged 65 years and over

SA2	Estimated resident population	% of population ≥ 65
Mandurah – South	10,471	28.2%
Mandurah - East	5,735	24.1%
Albany	14,925	23.3%
Greenfields	11,067	23.1%
York - Beverley	5,078	22.9%
Rockingham	16,675	22.5%
Wattleup	673	22.4%
Brookton	3,741	22.4%
Mandurah	9,892	22.0%
Denmark	5,811	22.0%

Source: Australian Bureau of Statistics Estimated Resident Population 2014.

Table 3: Top 10 Statistical Area Level 2 (SA2) regions with the highest number of people aged 65 years and over

SA2	Estimated resident population	Number of people ≥ 65
Dianella	26,274	4,981
Busselton	25,520	4,773
Halls Head – Erskine	19,829	4,291
Morley	23,337	3,835
Rockingham	16,675	3,757
Karrinyup – Gwelup – Carine	21,844	3,549
Albany	14,925	3,472
Bayswater – Embleton – Bedford	24,692	3,456
Rivervale – Kewdale – Cloverdale	25,421	3,429
Kalamunda – Maida Vale – Gooseberry Hill	15,981	3,253

Source: Australian Bureau of Statistics Estimated Resident Population 2014

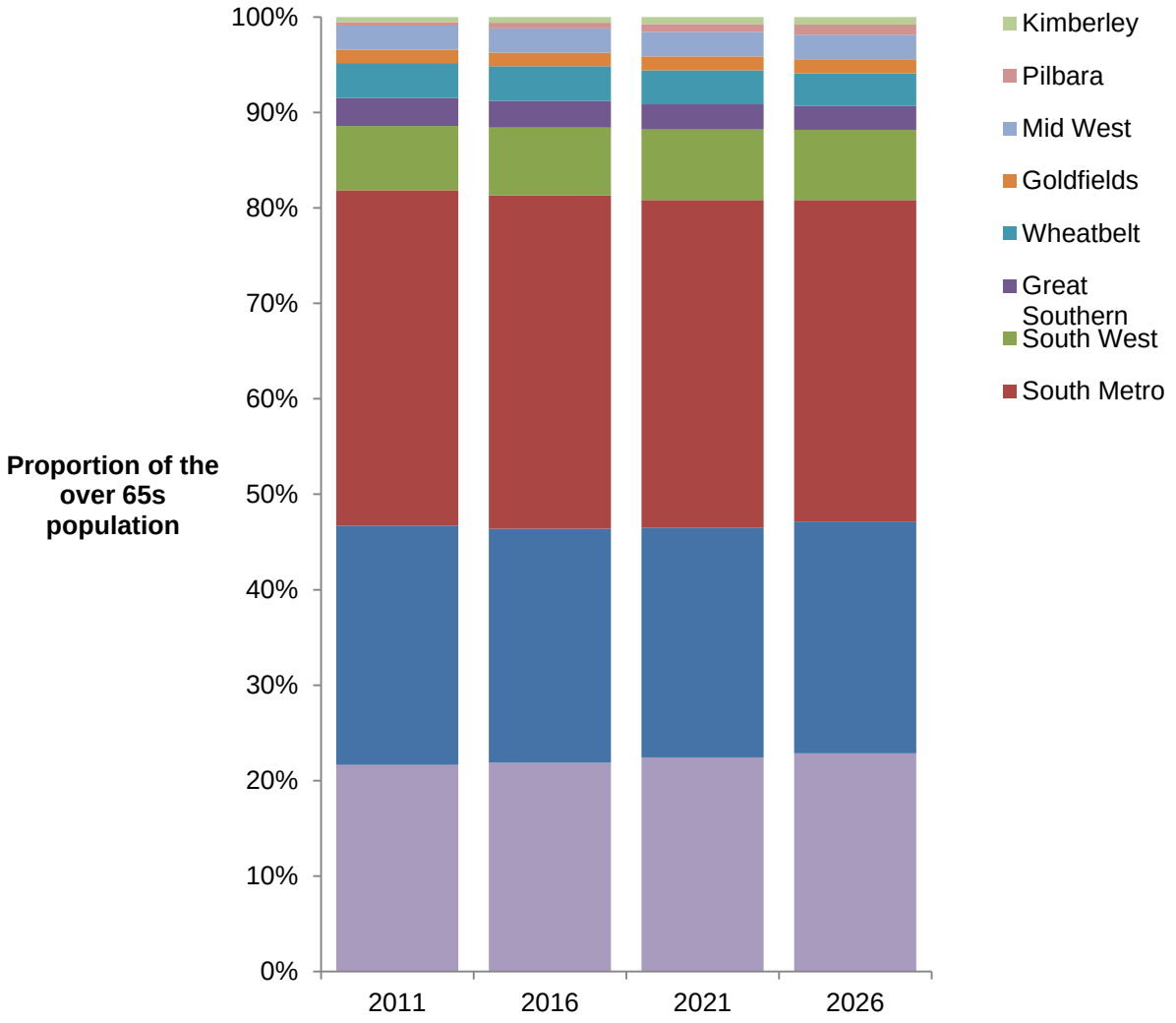
1.1.3 Where will older Western Australians live in the future?

In addition to the impact of structural and numerical ageing of the population, life stage and cohort effects are likely to influence the behaviours and expectations of service users. Although current distributions are important for service planning, the attitudes and expectations of populations should be considered in the planning of health service distribution. These may differ between different cultural groups and over time.

Although older populations relocate home less often than younger Australians,[13] those who do move tend to do so for downsizing, lifestyle or health reasons.[14] Historically, the largest net movement of people aged 60 years and over in WA has been from the Perth statistical division to the South West and Lower Great Southern.[15] Much of this internal migration has involved an influx of people aged 60 years and over moving to Mandurah from Perth and other regional areas in WA.[16]

Despite the movement of older persons among regions in WA, population projections by health region suggest that changes to the overall distribution of older persons will be slight[8] (Figure 7).

Figure 7: Historical and projected distribution of the population aged 65 and over in WA to 2026



Source: WA Planning Commission, WA Tomorrow Population Report No.10, 2015 [8]

It is important to also consider the actual numbers of older persons in WA in analysing potential service demands and gaps, and planning for future services. Table 4 shows that despite the overall distribution of older persons remaining relatively similar through to 2026, all WA regions are projected to have significant increases in the numbers of persons aged over 65 from 2016 to 2026, particularly in the South West (49%), Goldfields (51%), Pilbara (164%) and Kimberley (91%).

Table 4: Historical and projected number of persons aged 65 and over in WA from 2011 to 2026

	Number of people aged over 65 and over in WA				
Region	**2011**	**2016**	**2021**	**2026**	**Change from 2016 to 2026**
East Metro	69620	87060	107840	131340	51%
North Metro	80690	97645	115720	139400	43%
South Metro	113005	139075	164840	193580	39%
South West	21685	28300	35440	42255	49%
Great Southern	9430	11135	12715	14370	29%
Wheatbelt	11815	14470	17070	19500	35%
Goldfields	4460	5700	7075	8610	51%
Midwest	8130	10110	12390	14640	45%
Pilbara	1185	2325	3940	6135	164%
Kimberley	1735	2405	3485	4600	91%
TOTAL	321755	398225	480515	574430	44%

Source: WA Planning Commission, WA Tomorrow Population Report No.10, 2015 [8]

1.1.3.1 Living arrangements

The living arrangements of WA's older population may indirectly influence use of and preferences for health care services. Most older people (56%) lived in a private dwelling with a spouse, but older women were less likely to be living with a spouse and more likely to be living alone at all ages, compared to older men.[12] Social isolation and low social support have been linked to poorer health outcomes and higher use of medical care.[17]

1.1.4 The health of older Western Australians

In addition to the number of older persons, the health and disease profile of older persons is likely to influence demand for health care services. The prevalence of disease types in Australia's older population has changed over time. Historically the most prevalent age-related morbidities have been cardiovascular in nature. Although cardiovascular diseases continue to be common in aging populations, better acute treatment has resulted in increased prevalence of other conditions with age, including neurodegenerative and musculoskeletal disorders.[18] Increasingly, the better management of certain conditions creates a population that, while they are living longer with greater quality of life on average, need to manage multiple, co-morbid conditions.[19]

As detailed in the Health and Wellbeing of Adults in Western Australia survey,[4] for Western Australians aged 65 years and over, 45.2% rate their health as excellent or very good, compared with 65.1% of 16 to 44 year olds and 55% of 45 to 64 year olds. They report lower

physical functioning compared to younger cohorts, although emotional wellbeing is similar across age groups. Older Western Australians are less likely to report their health status as much better or somewhat better than one year ago, compared to younger cohorts. Most older Western Australians do not require aids or special equipment (e.g. cane, wheelchair, special bed or telephone), with only 12.8% of the population aged 65 and over reporting that they need such an aid.

The lifetime prevalence of some chronic conditions in Western Australians aged 65 years and over is shown in Table 5.[4] The conditions with the highest prevalence include arthritis, skin cancer and heart disease.

Table 5: Prevalence of chronic conditions in Western Australians aged 65 and over.

Condition	Prevalence (%)
Arthritis	50.4
Skin cancer	33.3
Heart disease	21.6
Diabetes	16.9
Osteoporosis	16.7
Other cancer	16.7
Injury (including falls)*	14.6
Any mental health condition*	9.2
Other respiratory condition	8.0
Stroke	7.0
Injury due to falls*	6.7
Asthma*	6.7
*Period prevalence 2015	

Source: Department of Health, Health and Wellbeing of Adults in Western Australia survey 2015[4]

1.2 Subacute care and Non-Acute (maintenance) care

Subacute care is an important part of the care continuum and has an impact on patient functional capacity, hospital patient flow and cost management. Well-coordinated and well-linked subacute care services in both admitted and non-admitted settings provide efficient care and facilitate timely discharge for patients following their acute episode. Subacute care also contributes to more efficient cost-management within the health system by facilitating timely discharge from the acute setting and by potentially reducing future demand for care by increasing independence and functional capacity.[20, 21]

Non-acute (or maintenance) is care in which the primary clinical purpose is support for the patient due to their health condition.[1] It is a separate care type but is considered alongside subacute care within the Australian National Subacute and Non-Acute Patient (AN-SNAP) classification system.

The definitions provided by the Australian Institute of Health and Welfare for subacute and non-acute care are provided below (Table 6).[1]

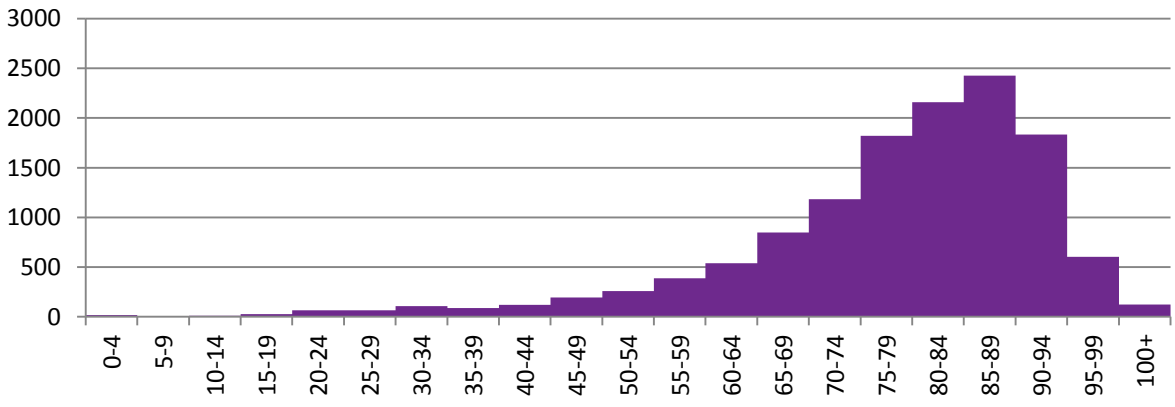
Table 6: Subacute and Non-acute Care Definitions

Subacute care types	
Rehabilitation	Goal oriented care that focuses on improving the functioning of patients who have an impairment, activity limitation or participation restriction due to a health condition. This care type is not age-specific.
Palliative Care	Care with the primary clinical purpose or treatment goal to optimise the quality of life of a patient with an active and advanced life-limiting illness. This care type is not age-specific.
Geriatric Evaluation and Management (GEM)	Care with the primary clinical purpose or treatment goal to improve the functioning of a patient with multi-dimensional needs associated with medical conditions related to ageing, such as tendency to fall, incontinence, reduced mobility and cognitive impairment. There may also be complex psychosocial needs.
Psychogeriatric	Care with the primary clinical purpose or treatment goal to improve the functional status, behaviour and/or quality of life for an older patient with significant psychiatric or behavioural disturbance, caused by mental illness, an age-related organic brain impairment or a physical condition.
Non-acute (maintenance) care	
Non-acute care	Care with the primary clinical purpose or treatment goal to support a patient with impairment, activity limitation or participation restriction due to a health condition. This care is often required over an indefinite period and is not age-specific

Source: Australian Institute of Health and Welfare, 2013.[1]

Although not all subacute care services are aimed at older people, this age cohort constitutes the majority of patients accessing all subacute care services. For example, in WA the median age of patients admitted for subacute and non-acute care is 81 years, with 85% of patients being aged 65 and above (Figure 8). The median age of patients admitted for different types of subacute and non-acute care services is similar, with rehabilitation patients having the youngest median age and GEM patients the oldest (Table 7).

Figure 8: Distribution of hospital separations for subacute and non-acute episodes of care by age in WA 2015/16



Source: WA Hospital Morbidity Dataset, 2016

Table 7: Median age of patients admitted for subacute and non-acute care in WA 2015/16

Care type	Median age
Subacute	
GEM	83.4
Rehabilitation	74.7
Palliative	76.9
Psychogeriatric	76.2
Non-acute/Maintenance	80.0
Subacute and non-acute	78.3

Source: WA Hospital Morbidity Dataset, 2016

Population growth, particularly the number and distribution of persons aged 65 years and over, can provide a rough estimate for predicting future demand for subacute and non-acute care services. However, not all people aged 65 years and over will require these types of care, and the need for these services differs among individuals.

1.3 Disease prevalence relevant to subacute care

1.3.1 Rehabilitation

People aged 60 years and over account for about 80% of rehabilitation care separations in Australian hospitals.[22] The most common diagnoses associated with rehabilitation care include osteoarthritis and joint disorders, fracture, back pain, stroke, and presence of prosthetic devices, implants or grafts.[22]

Hospitalisation rates for osteoarthritis and osteoporosis have steadily increased in Australia since 2004 and osteoporosis is also a risk factor for fractures.[23, 24] Since 2002 hospitalisations for minimal trauma hip fracture have increased in Australia, however, age-standardised rates of hospitalisations for minimal trauma hip fracture have decreased.[24, 25] This suggests that the rise in hospitalisations is primarily due to the increase in the number of older persons. Age-standardised rates of hospitalisation for back problems have increased since 2004.[26] Nationally, there has been little change in the prevalence of stroke over time.[27]

Overall, the prevalence and trends over time for conditions associated with rehabilitation care indicate that demand for rehabilitation services is likely to continue to increase in WA, with the rate likely to mirror increases in the number of older persons in the population.

1.3.2 Palliative

More than half of the admitted hospital separations involving palliative care are for patients aged 65 years and over.[28]

Nationally, 57% of palliative care separations have a cancer-related principal diagnosis, with the 5 most common cancer-related diagnoses being in the lung, other unspecified sites, respiratory and digestive, pancreas and prostate.[29] Cancer is now the largest contributor to mortality in both middle aged (45 to 64 years, since 2013) and retirement-aged (65 to 84 years, since 2006) Australians[19] This is likely to impact ongoing demand for palliative care services. Age-standardised incidence rates for all cancers combined are predicted to increase for females but plateau for males within the Australian population up to 2020.[28] Additional common diagnoses associated with palliative care include heart failure, chronic obstructive pulmonary disease (COPD), pneumonia, pneumonitis, and sepsis.[22]

The prevalence of heart failure in Australia ranges from 1.0 to 2.0%,[30] and hospital separations for heart failure have increased since 1999.[31]

While data on the prevalence of COPD and other respiratory conditions in Australia is limited, with estimates for COPD ranging between 3.5% and 10.9% depending on the criteria used and the population measured,[32] approximately 100,000 Australians die annually from chronic diseases.[33]

Overall, given the historical increases in separations for heart failure and the projected increases in cancer incidence, it is likely that the community need for palliative care will increase along with the growth of the over 65 population.

1.3.3 Geriatric Evaluation and Management (GEM)

It is reasonable to expect increases in need for GEM care in the coming decades, given the predicted increases in the very old population (Figure 3) and that many of the conditions driving need for GEM care are ageing-related.

Between 2020 and 2050, the number of Australians with dementia is projected to increase from almost 400,000 to 900,000 people.[34] In 2014, approximately 20 per cent of hospital inpatients over the age of 70 had a dementia, the rate of which increases with age.[35, 36] Patients with dementia are six times more likely to develop a delirium during their admission, have a longer hospital length of stay, a significantly higher mortality, a higher risk of adverse events for example falls, pressure injuries, medical and surgical complications, placement into long-term care, and hospital readmission.[37]

Age-standardised hospitalisations for injury due to fall have increased in Australia since 1999.[38] It is well recognised that one in three community dwelling older people over the age of 65 will experience a fall in a twelve month period. In WA the age standardised rate of injury events has increased most for people in the 65 years and above age group with the share of total costs for this age group increasing from 34.8% to 36.5%. The fall injury rate was highest in the 85 years and above age group, with the average cost of injury being $200,000.[39]

Also of note, severe incontinence is associated with ageing, with 7.2% of Australians over the age of 65 and 24.5% over 85 years of age being affected.[40]

There is also strong evidence to support the link between many of these age related conditions such as increased rates of incontinence[40] and higher risk of falls[41] in patients with dementia.

1.3.4 Psychogeriatric

Referral to psychogeriatric care depends on the severity of the behavioural condition and the presence of other, co-morbid conditions that may require continued care. As with GEM care, it is reasonable to assume that demand for psychogeriatric care will increase in association with population ageing and increasing prevalence of conditions like dementia[42] and delirium.[43] Key conditions that drive the need for psychogeriatric services also include anxiety and depression as well as cognitive impairment.

2 Trends in subacute care activity in Western Australia

In response to population ageing, as well as a drive for a more efficient health care system, national funding initiatives have contributed to growth in the provision of subacute care services in Australia since 2009. These initiatives include the National Partnership Agreement on Hospital and Health Workforce Reform (HHWR) (specifically Schedule C)[44] and the National Partnership Agreement on Improving Public Hospital Systems (specifically Schedule E)[45]. The aims of these agreements relevant to the provision of subacute care services are:

- To increase the volume and quality of subacute care services
- To improve the mix of services and distribution of subacute care across regions.

In response to the national commitment to subacute care as a critical part of the patient journey, the WA Department of Health framed the Subacute Care Plan (2009 – 2013),[46] which aimed to increase ambulatory subacute services, to move some services to secondary hospital sites, and improve efficiency in the health system.

During the tenure of the HHWR agreement, WA Department of Health provided 6-monthly report on subacute services activity to the Australian Government. During this time the reports showed that the volume of subacute care in WA increased - the total volume of subacute care activity in 2012/13 showed a 45% increase over the baseline year of 2007/08.[47]

This section summarises recent trends in the volume of subacute care services accessed by Western Australians. The following summary includes all activity which met the criteria for public hospital admission in WA between 2012/13 and 2015/16. Data, primarily from the Hospital Morbidity Data System, is provided by the Subacute Care Data Collection Unit in the Data Collections Directorate of the WA Department of Health. Data for non-acute care is provided for reference.

Methodological notes

Some methodological notes to be taken into consideration when reading this section include:

- **Only adult subacute care data is included** - The volume of patients admitted in the Child and Adolescent Health Services for subacute care is small and so only data for adult admissions is shown for longitudinal analysis.
- **Admitted palliative activity may be undercounted** – the data volume for admitted palliative data is likely to be undercounted due to the fact that the majority of patients receiving palliative care are not classified under this care type in hospitals.
- **Mental health data is excluded** - The longitudinal data set included some admitted episodes from Graylands Hospital which are now classified separately; these have been excluded from the analysis.
- **Non-admitted subacute care data** was sourced based on a list of non-admitted subacute services developed by the Subacute Community and Aged Care Directorate and as such may not represent the entirety of the WA non-admitted subacute care activity volume. As the reporting of non-admitted activity by care type has now matured, future reports will adopt care type as the delineator.
- **Non-admitted psychogeriatric data has not been included** – The data volume for non-admitted psychogeriatric activity is relatively small. Future reports will include this data set.
- **Uncommon care types have been estimated** - For some care types in some years the total number of separations was less than 5; to preserve patient confidentiality these values were recoded as “5”. The result of this is a slight overestimation in the number of separations recorded for some care types for some years.

- **Maps showing metropolitan Health Services do not include East Metropolitan Health Service (EMHS)** – Maps in the appendices are based on 2014-15 data. Future reports will include EMHS.

2.1 Subacute care as part of the care continuum

Patients who access subacute care services do so at various points in the care continuum. Subacute care is available in admitted, non-admitted and community settings. Patients requiring subacute care often first present to the hospital system as an emergency admission, and receive an acute episode of care before receiving subacute care. As such, the volume of patients receiving subacute care may be partially related to the volume of patients moving through the emergency and acute care settings.

Table 8 and Figure 9 show the total number of public hospital separations for acute, non-acute and subacute care types in WA between 2012/13 and 2015/2016. Table also shows the total number of emergency department (ED) presentations in WA.

Separations for acute care declined between 2012/13 and 2014/15, possibly reflecting changes in WA admission policy with respect to patients presenting to the ED which resulted in fewer admissions. There was an increase in acute care separations in 2015/16.

Apart from in 2013/14, total separations for subacute care have declined from 2012/13 to 2015/16 with separations for rehabilitation and psychogeriatric care declining most significantly during this time period.

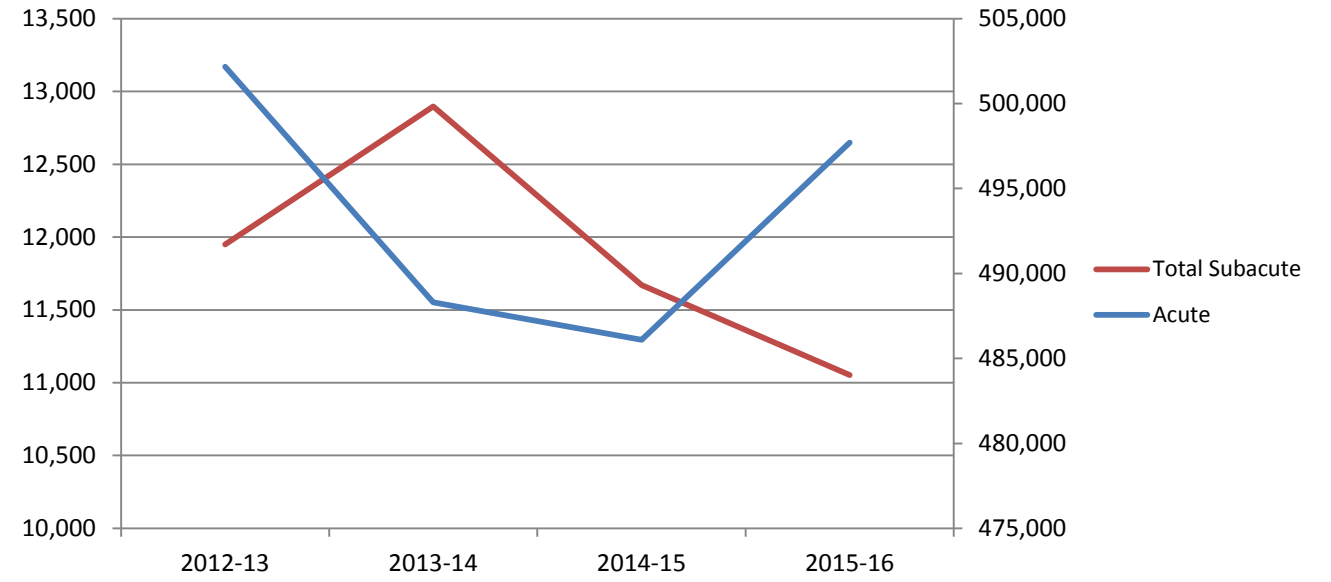
Table 8: Public patient activity volume for ED presentation, admitted care types and non-admitted subacute care in WA from 2012/13 to 2015/16

	Activity type	2012/13	2013/14	2014/15	2015/16
A	Emergency presentations	754,252	742,615	803,821	829,431
B	Acute separations	502,156	488,297	486,099	497,704
C	Subacute separations (total)	11,950	12,897	11,670	11,052
	GEM separations	1,958	2,996	2,683	2,537
	Palliative separations	1,519	1,611	1,640	1,692
	Psychogeriatric separations	883	983	672	523
	Rehabilitation separations	7,590	7,307	6,675	6,300
D	Non-acute (maintenance) separations	1,406	1,719	1,882	2,336
E	Admitted care separations (total)	527,462	515,810	511,321	523,183
F	Non-admitted subacute care service events		114,783	118,163	102,303

Source: Emergency department presentation data from Australian Institute of Health and Welfare - Emergency department care 2015-16. Acute data from Inpatient Data Collections, Subacute data from Subacute Care Data Collections, Non-admitted data from the Non-admitted Patient Activity and Wait List Data Collection (NAPAAWL DC).

All data provided by the Data Collection Directorate.

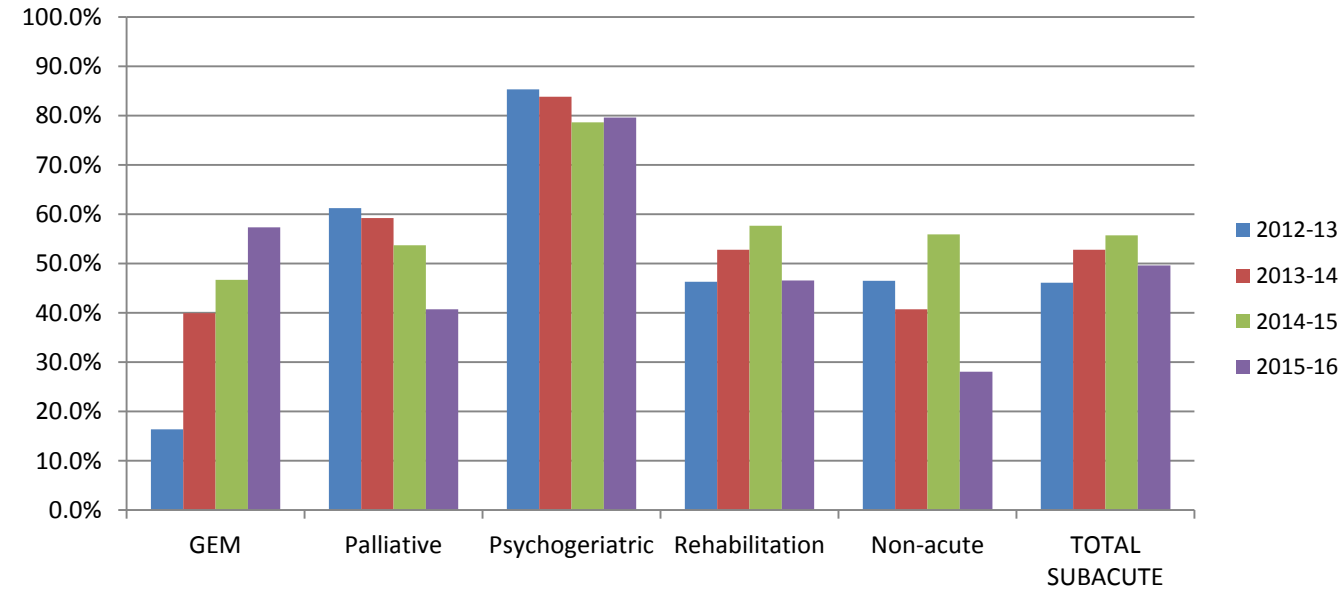
Figure 9: Inpatient separations for subacute (left axis) and acute (right axis) episodes 2012/13 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016
Note: RITH activity has been excluded from admitted activity from 2012/13 due to conversion to non-admitted activity from 01 July 2013 onwards

In the admitted setting, subacute care episodes can either be directly admitted, or occur as a care type change following an acute care admission (indirect). The proportion of episodes that are directly admitted depends on the care type for example, a larger proportion of psychogeriatric episodes are direct rather than indirect admissions. For some care types this proportion has changed since 2012/13. For GEM episodes there has been an increased trend to admit patients directly whereas palliative patients are now more likely to be indirectly admitted (Figure 10).

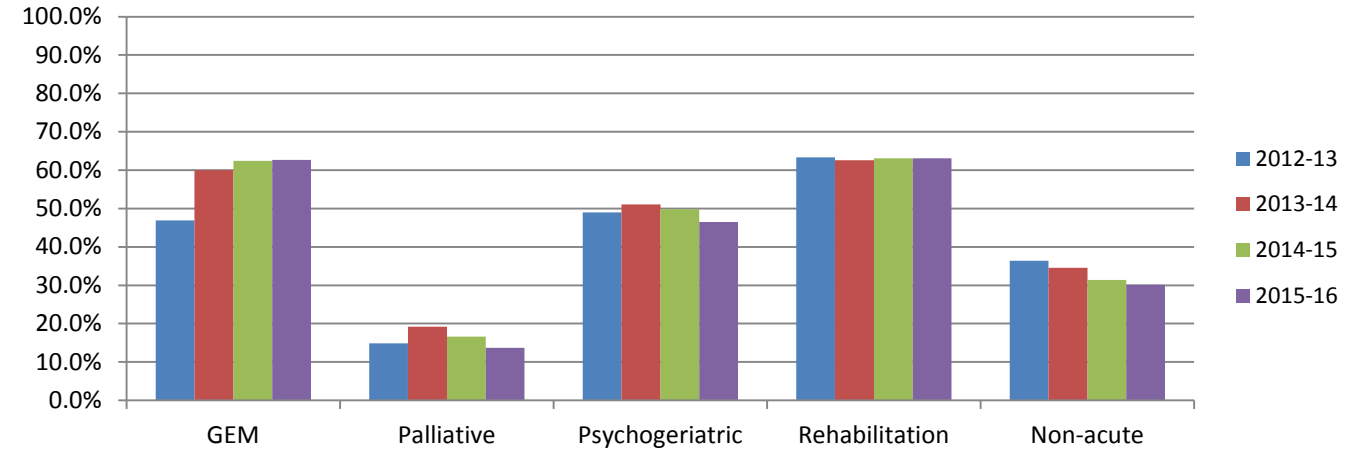
Figure 10: Proportion of subacute and non-acute episodes that were directly admitted, 2012/13 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016

The mode of separation from a subacute care episode varies by care type, and the proportion of separations for which the patients were discharged home has not changed substantially since 2012/13 (Figure 11). For GEM, psychogeriatric and rehabilitation episodes, the most frequent mode of separation was to be discharged home, whilst patients admitted for palliative care were most likely to be deceased at the end of their episode of care.

Figure 11: Proportion of subacute and non-acute separations where patient discharged home, 2012/13 to 2015/16



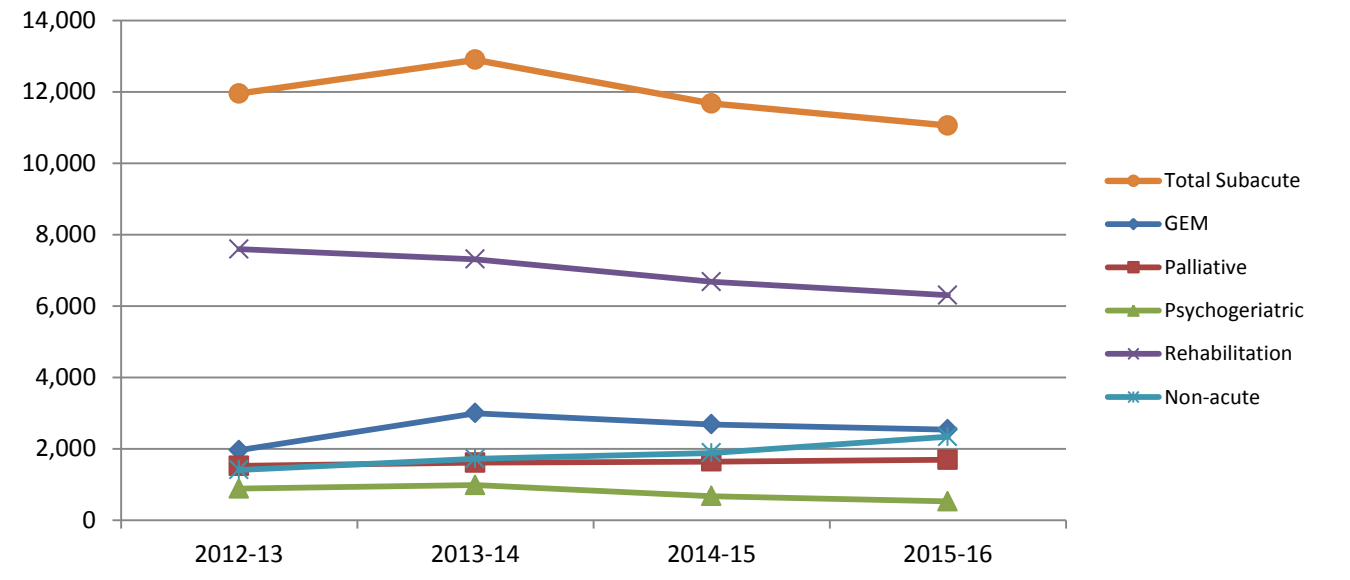
Source: WA Hospital Morbidity Dataset, 2016

2.2 Admitted subacute care activity

Figure 12 and Figure13 show the total public admitted subacute care separations and bed days as well as those for each care type from 2012/13 to 2015/16.

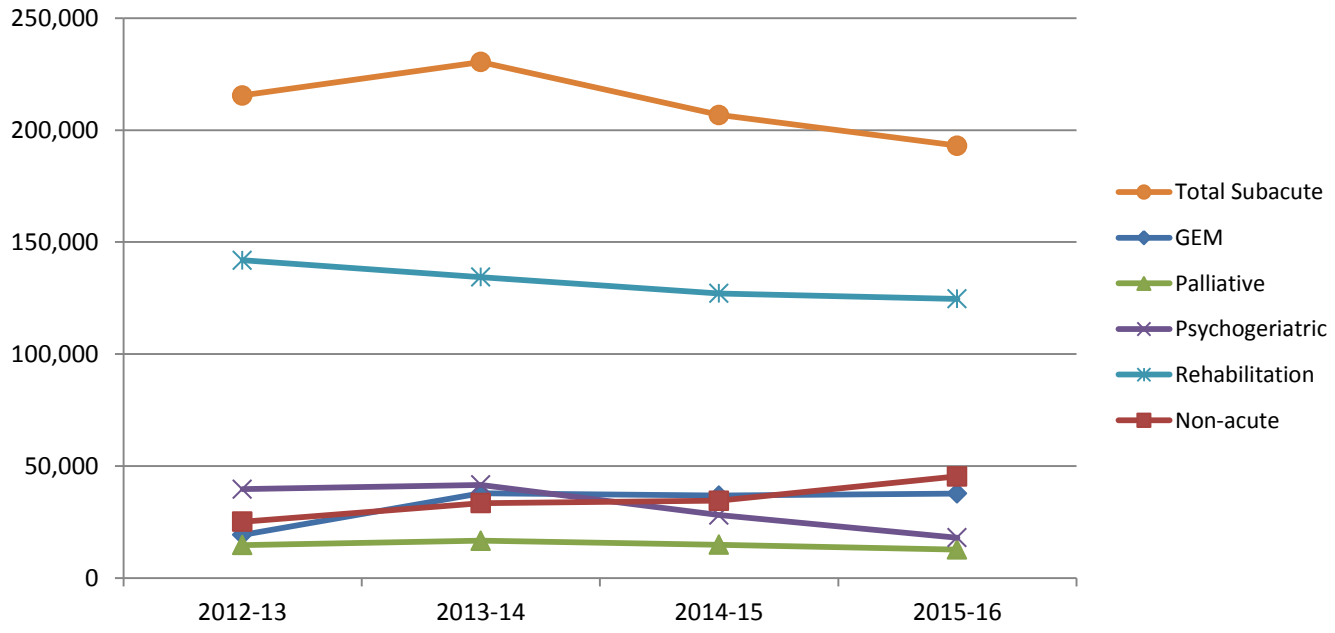
Breaking this down to care types, both the volume of admitted separations and the total number of patient days for rehabilitation care have declined annually since 2012/13. Between 2013/14 and 2015/16 separations and bed days for GEM and psychogeriatric care types also decreased, while maintenance care separations and bed days increased.

Figure 12: Inpatient separations for different subacute care types 2012/13 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016
Note: RITH activity has been excluded from admitted activity from 2012/13 due to conversion to non-admitted activity from 01 July 2013 onwards

Figure 13: Inpatient subacute and non-acute bed days in WA by care type, 2012/13 – 2015/16

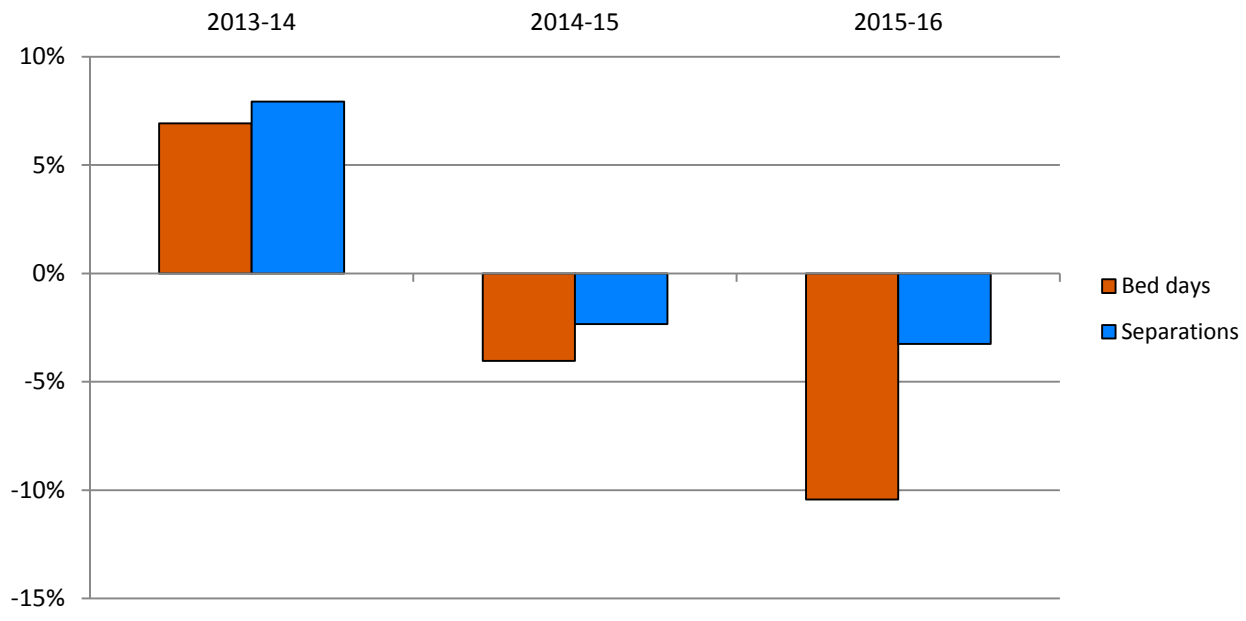


Source: WA Hospital Morbidity Dataset, 2016
Note: RITH activity has been excluded from admitted activity in 2012/13 due to conversion to non-admitted activity from 01 July 2013

As a proportion of the total admitted inpatient activity, subacute care has decreased from 3% to 2.3% of all inpatient separations and from 16.8% to 12.7% of all inpatient bed days between 2012/13 and 2015/16.

Figure 14 shows the annual percentage change in the volume of subacute care activity from 2012/13 to 2015/16.

Figure 14: Annual percentage change in the volume of subacute care activity (separations and bed days), 2013/14 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016
Note: RITH activity has been excluded from admitted rehabilitation count due to conversion to non-admitted activity

Between 2013/14 and 2015/16, the decline in the number of subacute separations did not occur equally across designated and non-designated subacute units (Table 9). For rehabilitation, the decline in separations only occurred in non-designated units, while the majority of the declines in GEM and psychogeriatric care occurred in designated units.

Table 9: Distribution of declines in GEM, psychogeriatric and rehabilitation separations between 2013/14 and 2015/16

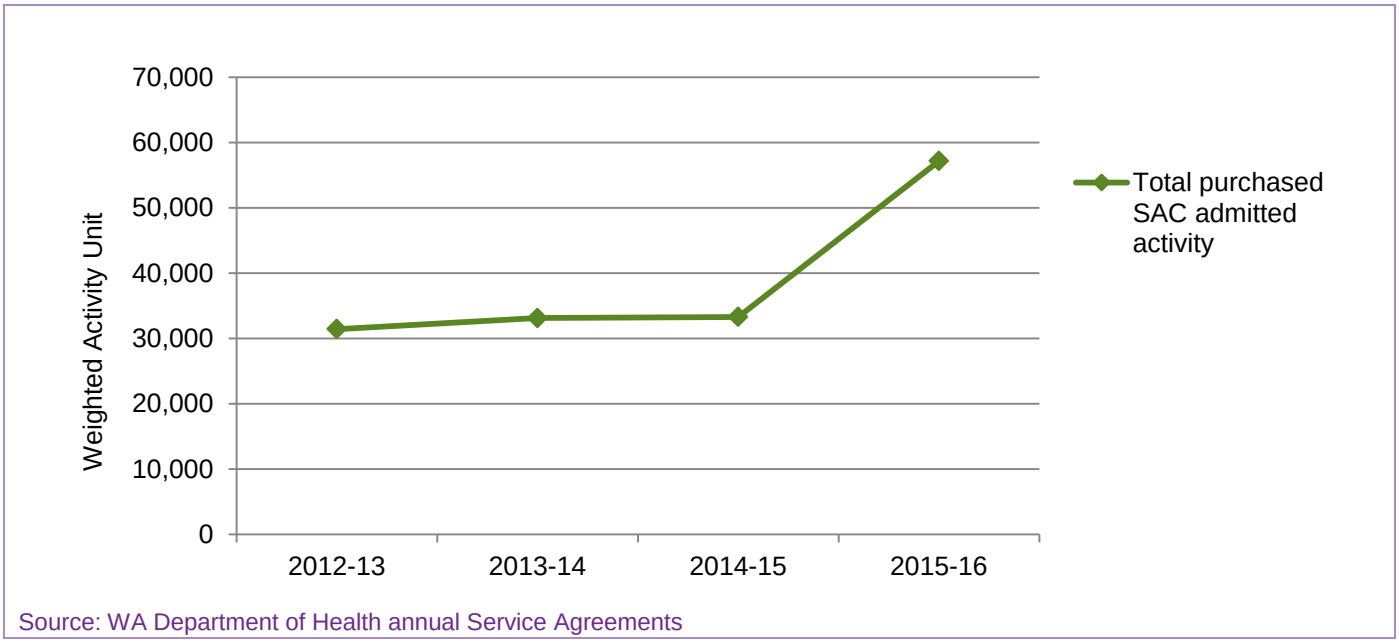
Care type	Total decline in separations between 2013/14 and 2015/16	% of decline in designated units	% of decline in non-designated units
GEM	-589	72.3%	27.7%
Rehabilitation	-1,128	0%	100%
Psychogeriatric	-361	85.6%	14.4%

Source: WA Hospital Morbidity Dataset, 2016

2.2.1 Purchased subacute care activity

Over the same time period, the annual Service Level Agreements between the Department and the Health Service Providers (HSP) show year-on-year increases in the amount of admitted subacute care activity purchased (Figure 15).

Figure 15: Total subacute care (SAC) admitted activity purchased from 2012/13 to 2015/16 (expressed in Weighted Activity Units)



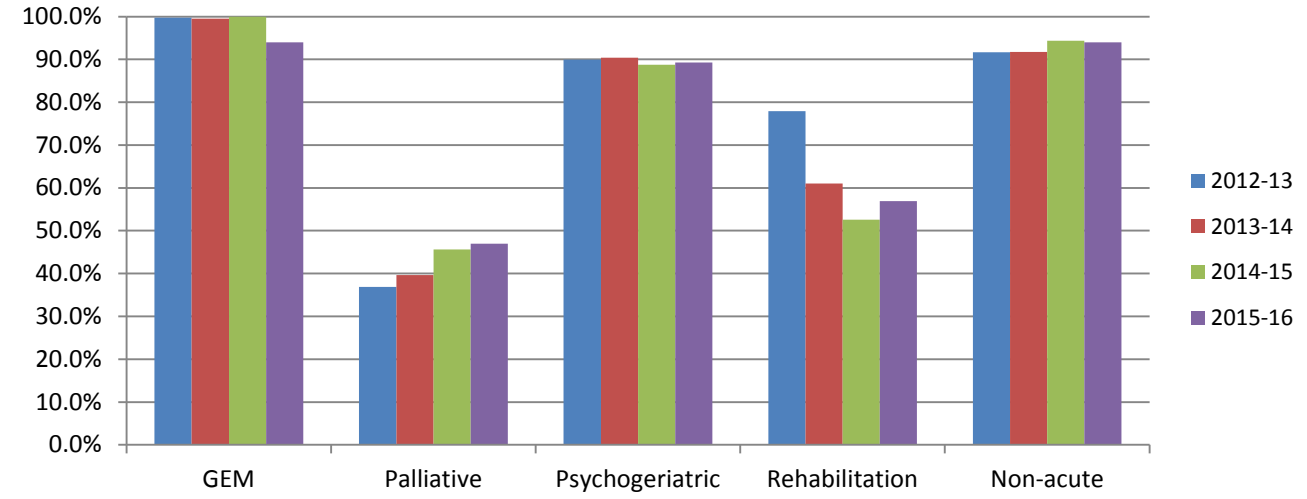
Source: WA Department of Health annual Service Agreements

There appears to be a disconnection between the total amounts of purchased admitted subacute activity as detailed in the Service Agreements and the actual admitted subacute activity volumes. It should be noted that an admitted subacute Weighted Activity Unit is based on patient complexity as well as the actual separation and length of stay.

2.2.2 Sector of care

The proportion of public subacute care episodes that are delivered by public and private service providers varies depending on the care type (Figure 16). The majority of GEM and psychogeriatric care episodes are only provided in public hospitals. Palliative and rehabilitation care are more evenly split between public and private sector service providers. For rehabilitation care, a greater proportion of episodes are now provided in the private sector compared to 2012/13, with 43.1% of rehabilitation episodes provided in private hospitals in 2015/16.

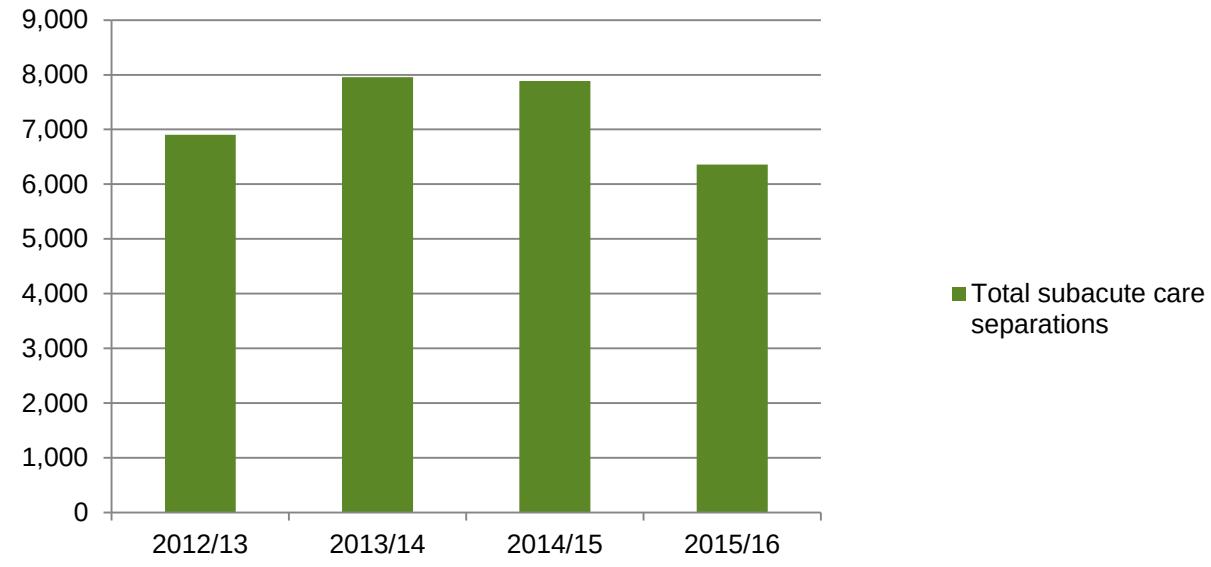
Figure 16: Proportion of subacute and non-acute separations from public hospitals, 2012/13 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016

A proportion of admitted subacute care in WA is delivered in private hospitals to private patients. The Australian Institute of Health and Welfare reports that the number of subacute separations delivered to private patients in private hospitals decreased over the above time period (Figure 17).[22, 29]

Figure 17: Total number of subacute sepatations for WA private hospital patients, 2012/13 to 2015/16



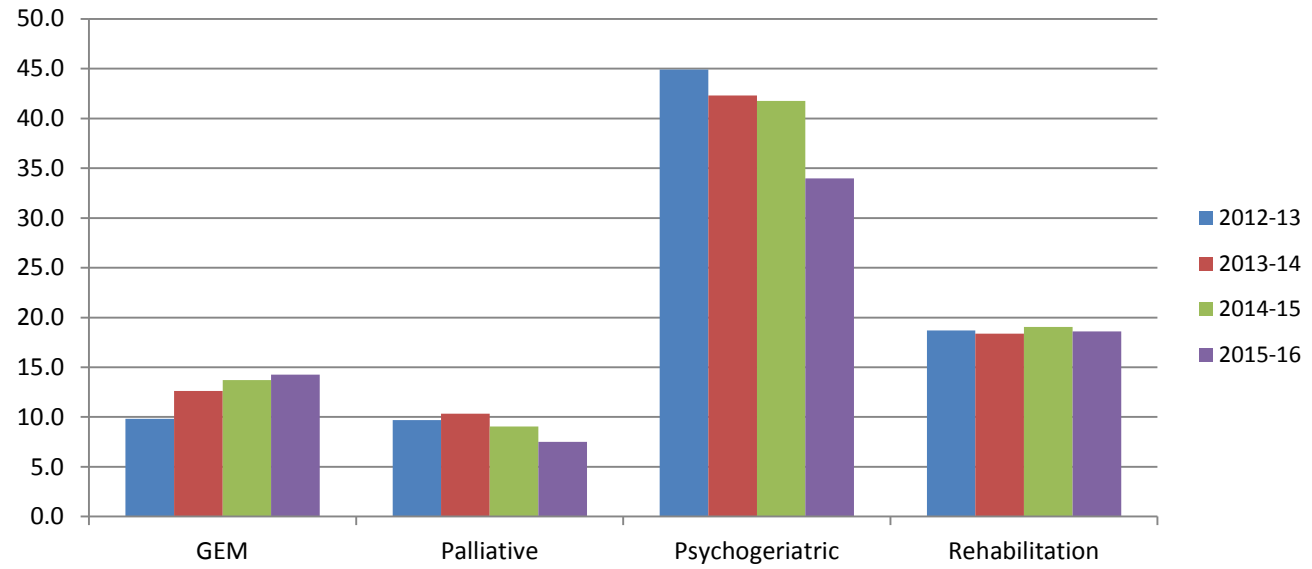
Source: Source: Admitted patient care reports, 2013-14 to 2015-16, Australian Institute of Health and Welfare

The national picture is very different in the amount of reported admitted subacute care activity. Between 2012-13 and 2015-16, the number of subacute separations for all jurisdictions increased from 425,977 to 517,506 or by 22%.[48] It should be noted that the increase in national subacute care separations over this timeframe was only 0.38% for public hospitals and 38% for private hospitals. Additionally, for those jurisdictions in which there is no equivalent of the WA Department of Health Admission, Readmission, Discharge and Transfer (ARDT) policy, there may be an over-counting of activity, including subacute care activity.

2.2.3 Efficiency of care

Average length of stay (LOS) is commonly used as a measure of efficiency of care. Figure 18 shows the average LOS from 2012/13 to 2015/16 for each subacute care type.

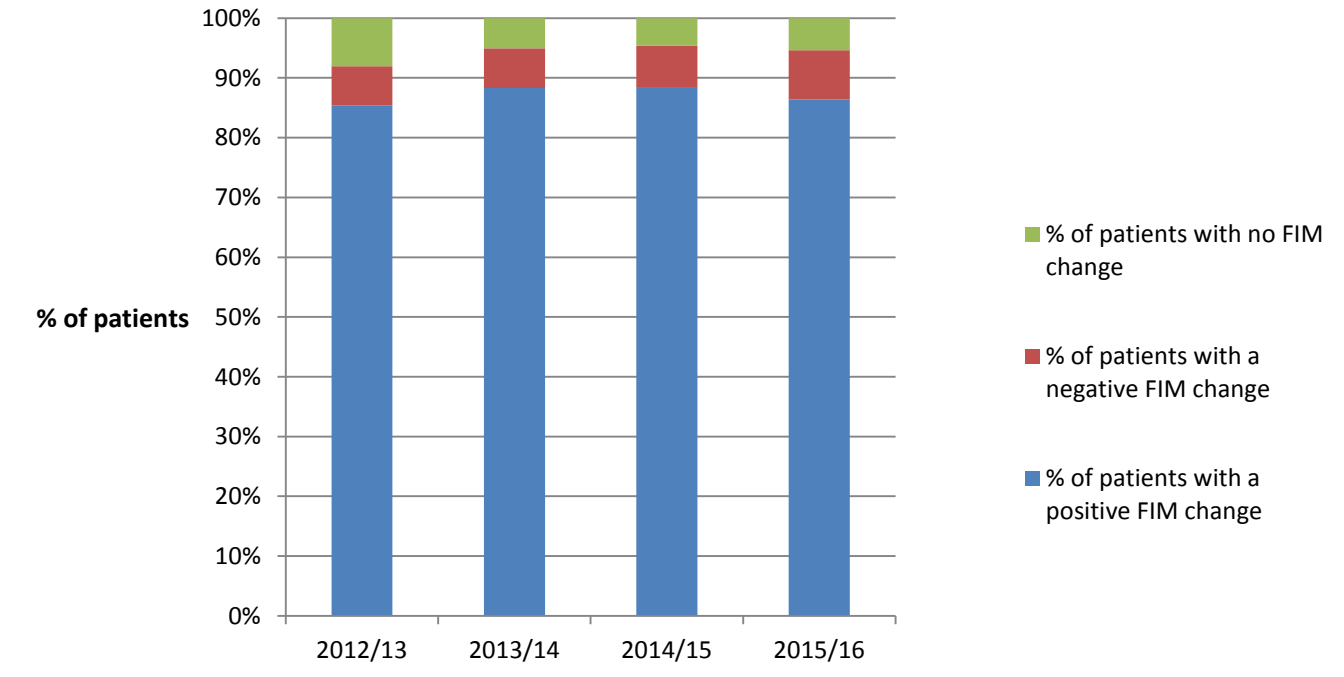
Figure 18: Average LOS for each subacute care type from 2012/13 to 2015/16



Source: Source: WA Hospital Morbidity Dataset, 2016

For GEM and rehabilitation episodes, the Functional Independence Measure (FIM) is used to measure changes in functional capacity. Approximately 87% of patients showed a positive improvement in FIM score and therefore functional capacity during their episode of care (Figure 19).

Figure 19: Proportion of patients for whom the FIM score did not change, decrease, or increase during an episode of care, 2012/13 to 2015/16



Source: WA Quality of Care Registry – Australasian Rehabilitation Outcome Centre Module 2016

The change in FIM score relative to length of stay can therefore be used as an indication of efficiency of care. Since 2012/13, there has been very little change in the average efficiency score for both geriatric and rehabilitation care types (Table 10).

Table 10: Average change in FIM score per patient day, 2012/13 to 2015/16

Average efficiency*	2012/13	2013/14	2014/15	2015/16
Geriatric care	1.15	1.20	1.23	1.14
Rehabilitation care	1.17	1.31	1.20	1.26
Number of episodes	6,975	7,576	6,604	7358

*Excludes episodes of care in which there was a negative change in FIM score

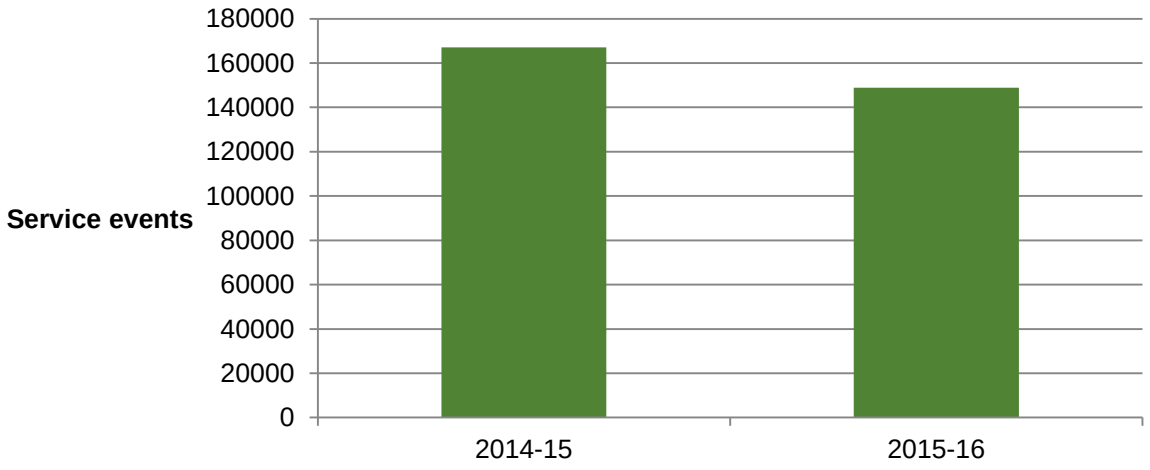
Source: WA Quality of Care Registry – Australasian Rehabilitation Outcome Centre Module 2016

2.3 Non-admitted activity

Non-admitted activity covers services provided by a Health Service Provider in a patient's home, an outpatient or community based clinic; the patient does not occupy a hospital bed[49].

Figure 20 shows the total number of service events for non-admitted services for subacute care in 2014/15 and 2015/16. Preceding years' data is not available. There was an 11% reduction in the number of non-admitted service events for subacute care over this period.

Figure 20: Total non-admitted subacute service events in WA 2014/15 and 2015/16

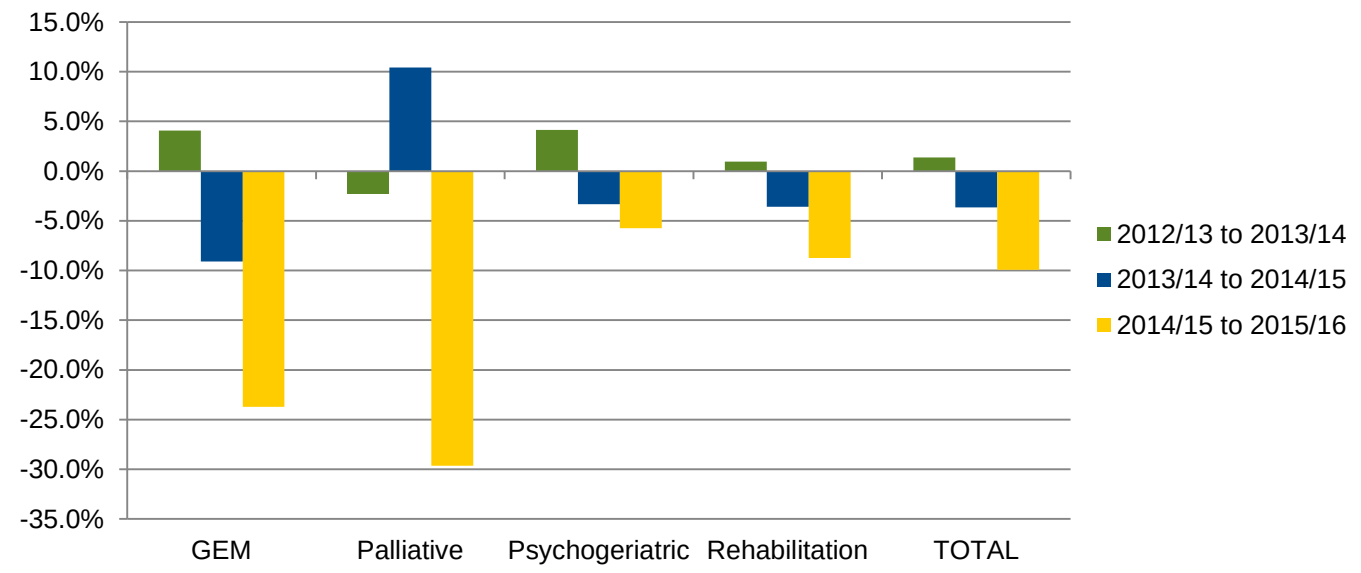


Source: WA Non-admitted Patient Activity and Wait List (NAPAAWL) Data Collection

2.4 Subacute workforce

Levels of subacute care workforce are another important indicator of service availability and supply. The total FTE for subacute care workforce increased by 1.4% between 2012/13 and 2013/14, and then decreased by 3.7% between 2013/14 to 2014/15 and 9.9% between 2014/15 to 2015/16 (Figure 21).

Figure 21: Percentage change in total FTE by subacute care type, 2012/13 to 2015/16



Source: WA Hospital Morbidity Dataset, 2016

There is variance in workforce across different subacute care types and between disciplines. For example, the decline in total FTE between 2013/14 to 2014/15 was across all subacute cost centres except palliative care. The majority (98%) of this reduction in FTE occurred in the metropolitan areas, rather than the country health services. Across all care types, the net decrease in FTE in this period was due to declines in the allied health (-4.0%) and nursing (-7.5%) workforces while FTE increased (+16.6%) for the medical workforce.

3. Equity of access to subacute care in WA

Assessing equity in access to health care is a complex task.[2, 3] As outlined in the previous chapters of this report, estimating the need for subacute care and measuring utilisation at a population level are complicated by variation in patient characteristics and by limitations surrounding data quality. However, comparing the utilisation of subacute care by different subsets of the WA population can illuminate the appropriateness of care provided across the state, and identify potential gaps in service provisioning.

Utilisation of subacute care services can be expected to vary within the WA population in association with variation in both population and system characteristics. Utilisation is thus the result of the availability of services in time and space, and the ability of individuals in the population to access them. Equity in access to health care is then a question of equal access to the same service based on need, regardless of an individual's place of residence, social and economic position.

3.1 Variation in the health needs of populations

Populations vary naturally across many dimensions, such as demographic (age/sex) structures, culture, economic status, and willingness to engage with health care services. Health care need similarly varies along with many of these population characteristics; for example, individuals aged 65 years and over are more likely to utilise health care than younger individuals because of their health needs.[50]

Additional higher needs populations in Australia include Aboriginal populations, those in lower socioeconomic groups, people with disability, prisoners, and individuals who live in rural or remote areas.[51] For example, hospitalisations for Aboriginal Australians (2015/16) is reported as being approximately 2.5 times higher than for other Australians, and separation rates in public hospitals are highest for patients living in low socioeconomic areas.[29] Finally, rates of access to rehabilitation services are lower for regional and remote people compared to people usually resident in major cities.[22]

Many of these differences in access to care are likely to be related to differences in health status among populations. It is well known that people living in more disadvantaged areas have poorer health outcomes than those living in less disadvantaged areas.[52] People living in more disadvantaged areas are more likely to have arthritis, ischaemic heart disease, diabetes, cancer and mental conditions and are more likely to smoke and to be obese.[52] Similar trends are seen in association with remoteness; people living in regional and remote areas have higher rates of disease and injury compared to those living in major cities.[51]

Services are provided in set geographic locations and individuals have variable access to these locations based on their socioeconomic circumstances.[3] Examination of the variation in utilisation of health care among different geographic regions can help to identify subsets of the population that have a greater need for health care, or that might be expected to have reduced access to services.

Geographic Information Systems (GIS) allow service planners to connect service utilisation data with data that reflect the variation in need and the environmental barriers associated with access to health care in the same population subsets.[53] This methodology is used by WA Department of Health service planners to identify disparities in need and access to health care and drive changes in service provisioning that target the populations most at need.

3.2 Utilisation by specific population subsets in WA

The following section examines access to subacute care by different subsets of the Western Australian population, using utilisation rates for admitted subacute care services in 2015/16 as a measure of access.

Methodological notes

All data reported in this section is from de-identified patient level data for hospital separations that were classified as subacute care in 2015/16. This was the most recent data available at the time of analysis.

The patient level separation data and population data from the Australian Bureau of Statistics was used to calculate rates of access that could be compared among different populations in WA. The usual residential locality of patients separated from subacute care services was used to classify separations into SA2 regions. Patients whose usual residence was not in WA could not be included (0.8% of all separations).

Maps of the crude and age-standardised utilisation rates for subacute care by SA2 region were produced by the Spatial Services Unit of the Epidemiology Branch at the WA Department of Health. The rates have been categorised using natural breaks to show regions with relatively higher and lower utilisation of subacute care services.

3.2.1 Sex

Overall, women accounted for 53.7% of the total admitted subacute separations in 2015/16 (Table 11). More women than men were admitted for rehabilitation care, psychogeriatric care and GEM, with the reverse being true for palliative care.

Table 11: Sex of patients admitted for subacute episodes in WA 2015/16

	Gender				
Care type	Male	%	Female	%	Total
GEM	1,048	41.3%	1,489	58.7%	2,537
Palliative	921	54.4%	771	45.6%	1,692
Psychogeriatric	231	44.2%	292	55.8%	523
Rehabilitation	2,919	46.3%	3,381	53.7%	6,300
Total	5,119	46.3%	5,933	53.7%	11,052

Source: WA Hospital Morbidity Dataset, 2016

3.2.2 Aboriginal Western Australians

It is important to note that the Australian Institute of Health and Welfare reports 7% of Aboriginal adults avoid health care services, including subacute care, due to reported unfair treatment in the past [54].

Of the 11052 separations for subacute care in 2015/16, 277 (2.5%) were for patients who identified as Aboriginal and the majority of these separations were for rehabilitation care (Table 12).

Table 12: Number of Aboriginal and non-Aboriginal patients admitted for subacute care types in WA 2015/16

Care type	Aboriginal Western Australians	%	Non-Aboriginal Western Australians	%	Total
GEM	17	6%	2,520	23%	2,537
Palliative	68	25%	1,624	15%	1,692
Psychogeriatric	5	2%	518	5%	523
Rehabilitation	187	68%	6,113	57%	6,300
Total	277	100%	10,775	100%	11,052

Source: WA Hospital Morbidity Dataset, 2016

The age-standardised rate of access to subacute care was 1.7 times higher for Aboriginal Western Australians compared to non-Aboriginal Western Australians (7.9 compared to 4.6 separations per 1,000 people respectively, WA Department of Health unpublished data 2015/16).

Aboriginal populations have higher rates of access to palliative care compared to the general population.[29]

3.2.3 Residential location

To assess variation in utilisation of subacute care services by different geographic populations in WA, crude rates of access were calculated (number of separations per 100,000 people) for 250 regions in WA. The regions chosen for comparison were the SA2 regions defined by the Australian Bureau of Statistics. These regions were chosen as they generally represent populations that interact together socially and economically, with an average population of 10,000 people. In addition, SA2 regions are the smallest regions for which population and utilisation data were available. Access rates shown here are for total subacute care only (i.e. all separations for any subacute care type).

Patients from across WA accessed subacute care services in 2014/15 at different rates depending on where they lived. Crude utilisation rates among SA2 regions ranged from zero to 1,536 separations per 100,000 people (Appendix 3, Appendix 4, Appendix 5).

The ten SA2 regions with the highest crude rates of access to subacute care (per 100,000 people are listed in Table 13. In all of these areas the proportion of population over the age of 65 was greater than the state average (12.7%). The Mandurah SA2, incorporating the suburbs of Mandurah and Silver Sands had the highest overall rates of access to subacute care in WA, followed by Albany. Both these SA2s have almost double the state average of their population over the age of 65.

Table 13: Ten SA2 areas with highest crude rates of access to subacute care in WA 2014/15

SA2 Name	Crude Rate per 100,000 people	Estimated Resident Population 2014[1]	Estimated Resident Population ≥ 65 years[1]	% of SA2 population > 65 years*
Mandurah	1,536.6	9,892	2,180	22.0%
Albany	1,454.0	14,925	3,472	23.3%
Armadale – Wungong – Brookdale	1,125.4	19,726	2,665	13.5%
Kelmscott	998.7	11,315	1,893	16.7%
Maddington – Orange Grove – Martin	983.5	13,727	1,943	14.2%
Bentley – Wilson – St James	976.8	22,624	3,220	14.2%
Gosnells	939.7	22,242	3,171	14.3%
Geraldton	886.7	13,082	2,505	19.1%
Narrogin	885.8	4,967	744	15.0%
Belmont – Ascot - Redcliffe	878.4	15,482	2,090	13.5%

Source: ABS estimated resident population 2014

The ten SA2s with the lowest crude rates of access to subacute care are listed in Table 14 The majority of these areas (80%) had a proportion of people over the age of 65 that was lower than the state average (12.7%). The SA2 areas College Grove – Carey Park and Koombana had low rates of access to subacute care per person, despite having relatively high proportions of their population being over 65 years of age.

Table 14: Ten SA2 areas with lowest crude rates of access to subacute care in WA 2014/15

SA2 Name	Crude Rate per 100,000 people	Estimated Resident Population 2014[1]	Estimated Resident Population ≥ 65 years[1]	% of population > 65 years*
Roebuck	0	2,513	155	6.2%
Kalgoorlie - North	10.2	9,833	519	5.3%
East Pilbara	12.2	8,213	235	2.9%
Jandakot	35.0	2,857	341	11.9%
College Grove - Carey Park	41.3	7,258	1061	14.6%
Ashburton (WA)	72.6	11,017	226	2.1%
Karratha	76.1	19,694	363	1.8%
Koombana	79.7	7,529	1112	14.8%
Banjup	81.0	17,280	927	5.4%
Success - Hammond Park	86.3	13,902	772	5.6%

Source: ABS Estimated Resident Population 2014

3.2.3.1 Variation by remoteness and socio-economic status of regions

The crude age-specific rates of access to subacute care types were directly standardised to control for differences in the age structures between SA2 regions. The resulting age-standardised rates of access are shown in Appendix 6, Appendix 7 and Appendix 8.

Variation in the age-standardised rates of access to subacute care among SA2 regions did not seem to be associated with remoteness.

The residential locations with the ten highest separation rates for subacute care are shown in Table 15, along with the decile ranking for each area within the WA Index for Relative Socioeconomic Disadvantage (IRSD). After controlling for the age structure of populations, the SA2 of Albany, Bentley-Wilson-St James, Geraldton, Narrogin and Belmont-Ascot-Redcliff were no longer in the top ten areas with the highest rates of access to subacute care. This suggests that the high rates of access to subacute care in these areas may be primarily a result of their older populations.

Table 15: Ten SA2 areas with highest age-standardised rates of access to subacute care in WA 2014/15

SA2 Name	Age Standardised Rate per 100,000 people*	Estimated Resident Population 2014*	WA decile rank – Index of Relative Socioeconomic Disadvantage**
Meekatharra	1,062.0	4,293	1
Armadale – Wungong – Brookdale	1,056.6	19,726	1
Ashburton (WA)	902.2	11,017	7
Mandurah	897.7	9,892	1
Maddington – Orange Grove – Martin	885.5	13,727	2
Derby – West Kimberly	873.8	9,110	1
Kelmscott	855.7	11,315	3
South Hedland	853.1	10,629	5
Huntingdale – Southern River	830.8	18,191	7
Gosnells	795.9	22,242	2

Source: *ABS Estimated Resident Population 2014 and **ABS Socio-economic indexes for areas 2011

Five of the 10 areas with the highest crude rates of access remained in the top ten highest even after controlling for the age structure of the populations, suggesting that factors other than the proportion of people over the age of 65 influence access to subacute care in these areas.

The IRSD captures several of the additional population characteristics that may influence health status, and therefore rates of access to subacute care. The IRSD summarises several social and economic conditions for households in a particular region, with low scores indicating relatively greater disadvantage and high scores indicating relatively lower disadvantage.[55] The IRSD scores for SA2 regions in WA are shown in Appendix 9, Appendix 10 and Appendix 11.

IRSD scores for each SA2 region are then ranked within the state and divided into 10 deciles, with the lowest 10% of SA2s assigned a rank of 1 and the highest 10% of SA2s assigned a rank of 10. There is a trend for regions that rank higher on the IRSD (i.e. regions that are more disadvantaged) to have higher and more variable age-standardised rates of access to subacute care.

The ten SA2 areas with the lowest age-standardised rates of access to subacute care are listed in Table 16. Of these SA2s, only 40% ranked in the top 3 deciles for socioeconomic disadvantage. This suggests, therefore, that there are other factors besides low socio-economic status affecting rate of access to subacute care.

Table 16: Ten SA2 areas with lowest age-standardised rates of access to subacute care in WA 2014/15

SA2 Name	Age Standardised Rate per 100,000 people*	Estimated Resident Population 2014*	WA decile rank – Index of Relative Socioeconomic Disadvantage**
Roebuck	0	2,513	2
Kalgoorlie - North	7.0	9,833	8
East Pilbara	9.2	8,213	1
College Grove - Carey Park	41.2	7,258	1
Jandakot	44.6	2,857	10
Koombana	63.7	7,529	3
Wattleup	74.3	673	5
Port Hedland	122.0	4,833	9
Winthrop	136.0	6,804	10
Success - Hammond Park	161.2	13,902	9

Source: *ABS Estimated Resident Population 2014 and **ABS Socio-economic indexes for areas 2011

4. Discussion and recommendations for state-wide subacute care planning

4.1 The role of subacute care in creating a more efficient and effective WA health system

Subacute care is an integral part of the care continuum and has an impact on patient functional capacity, hospital patient flow and cost management. Well-coordinated and linked subacute care services in both admitted and non-admitted settings provide efficient, effective care and facilitate timely discharge for patients following their acute episode.[20] In addition, non-admitted subacute care services provide a more appropriate alternative to manage the care of patients outside of public hospital system and reduce pressure on hospital bed demand.

Given the ageing population and the associated projected increase in demand on health care services including subacute care, it is vital for the WA health system to have a sustainable strategy to monitor both the activity and utilisation of subacute care services to facilitate system wide service planning.

4.2 Longitudinal trends in admitted subacute care activity

Interpreting variation in activity across years is complicated by changes in reporting practices and admission policies, making any conclusions about true changes in utilisation of services challenging. The reasons for the unexpected decline in reported inpatient subacute care in WA in recent years are likely multifactorial, and must be understood in the broader context of the WA health system. Admitted acute activity declined from 2012/13 to 2014/15, before increasing in 2015/16. The decrease in acute separations may reflect a change in the WA admission policy with respect to patients presenting to the ED and admission avoidance initiatives, which resulted in fewer admissions.

Despite the ongoing investment in subacute care in Australia since 2009 and initial increases in admitted subacute activity, the most recent data for WA shows a declining trend in subacute care services in both the public and private hospital sectors. It is unlikely that overall demand for subacute care has decreased, given the outlined patterns of population ageing and disease prevalence in WA. As such, it is important to determine why reported activity is showing this declining trend.

Some of the decline in public subacute care activity may be related to the decline in public acute care activity, given that many subacute episodes directly follow an acute episode. For example, if fewer patients are admitted to hospital for acute care who are likely to require rehabilitation (e.g. stroke), then reduced subacute activity is likely to be observed.

Public admitted subacute care activity has not declined uniformly, with rehabilitation care showing the greatest reduction. This may partly be due to the successful implementation of the ARDT Policy that provides clearer guidelines on coding hospital episodes of care.[56] In December 2014, a revision to the ARDT Policy for WA Health Services stipulated that “subacute care should be provided in a designated ward, unit or program, where the clinical staff are able to provide specialised care, facilities and equipment and are trained in the necessary functional assessment tools and data reporting requirements”.[56]

It is possible that the further reduction in public admitted subacute activity for 2014/15 and 2015/16 resulted from additional changes in reporting practices in non-designated units to comply with the policy amendment. In contrast, the declines in GEM and psychogeriatric care activity occurred primarily in designated units (72.3% and 85.6% respectively, Table).

It should also be noted that over the timeframe of this report, most Health Service Providers also began to transition from one Patient Administration System (PAS) to another. This may

have had an impact on the recording and reporting of admitted subacute care activity data although it is unlikely to explain the majority of the reductions.

In accordance with the aims outlined in the WA Department of Health's Subacute Care Plan 2009 – 2013 some part of the decline in the volume of admitted subacute care may reflect a shift in subacute care, where appropriate, from an inpatient setting to a more ambulatory setting. Evidence of corresponding increases in non-admitted subacute activity would reflect this possibility. [46] However, the only available data for non-admitted care suggest additional declines in the outpatient and community settings (Figure 20).

Nationally, admitted subacute care data in both the public and private sectors reported by other jurisdictions show an increase of 22% between 2012-13 and 2015-16.[48] Given that over the same period, this activity in WA shows a decrease is potentially of concern. While the changes in reporting practices that may help explain the decreases in WA are appropriate and represent a more accurate picture of subacute activity, further monitoring of public and private subacute activity in both the admitted and non-admitted setting is recommended, particularly in relation to future national changes.

The longitudinal trend of subacute care activity mirrors that of the public subacute care workforce; both increased in 2013/14 and then decreased in 2014/15 and 2015/16. It is unclear with the available data whether a reduction in the workforce drove a reduction in the activity, or vice versa. It should be noted that during the timeframe of this report there were a number of hiring suspensions and staffing decreases undertaken by Health Service Providers as financial controls that may have contributed to the observed reduction in subacute care workforce. Further monitoring and analysis by the System Manager is required.

Services external to the WA health system may also influence the utilisation of subacute care services. For example, while the decline in public subacute care admitted activity has not generally been offset by an increase in private activity in WA, it is true that increases in the private sector may have a future impact on the amount of activity delivered in the public sector and vice versa. Changes in the availability of other care options, such as Commonwealth-subsidised aged care services, may also influence the utilisation of inpatient subacute care by changing the flow of older patients towards or away from these services versus subacute care services. At the same time, robust subacute care services may also contribute to a reduced demand for aged care services due to an increase in the functional capacity of older patients leading to increased independence and decreased hospital lengths of stay awaiting aged care.

Changes in reporting guidelines and practices as well as external factors during the timeframe of this paper mean that there are a number of factors that may have contributed to fluctuations in the counting of health care activity and this makes it more complex to determine access to and the utilisation of subacute care services.

From 2015/16, assessing the changes in subacute care activity is likely to be less complex, at least for admitted activity, due to the stabilisation of WA subacute care data collection and increased compliance with reporting policies. Significant work has been undertaken over the timeframe of this paper to improve the quality of non-admitted data. Further work is required to integrate non-admitted data in system-wide monitoring of total subacute care across the care continuum.

4.3 Access to subacute care services in WA: is it equitable?

There are multiple aspects involved in determining an individual's level of "access" to health care. One way of measuring access to health care services is to assess utilisation of services by different subpopulations, however, even utilisation is difficult to use as a measure for improving service gaps.[57] This is because, while high utilisation by a population may indicate greater need for services, low utilisation can indicate either low need, or low access to care despite a high need for it (i.e. potential service gaps). For this reason, measures of utilisation of

subacute care necessarily should be assessed in the context of need for the population in question.

Currently, it is only possible to compare the utilisation rates of different populations with indirect measures of population need such as the number of people aged over 65. Using this measure, the variation in utilisation of subacute care in WA seems appropriately matched with population need (with some outliers): areas with more people aged 65 years and over have higher utilisation rates (numbers of hospital separations) for subacute care.

Investigating the outliers in the relationship between utilisation and the distribution of the over 65 population suggests potential areas of unmet need. Some areas show relatively low rates of utilisation of subacute care despite having a higher than average proportion of their population over 65. These areas could represent potential gaps in service availability.

In line with national findings, Western Australians who received subacute care in 2014/15 were generally more than 65 years of age (80% of separations) and were more likely to be female for all care types except palliative care. In Australia, people residing in major cities have higher rates of separation for rehabilitation care compared to people living in regional and remote areas. This was not the case in WA; utilisation of subacute care does not vary markedly with remoteness (Appendix 6).

Utilisation of subacute care is greater in more disadvantaged regions of WA. Of the ten SA2 regions that have the highest aged standardised utilisation rate of subacute care, seven are ranked in the top three deciles in WA for Relative Socioeconomic Disadvantage. This shows that patients from disadvantaged areas access subacute care services more frequently. It is important to note that the IRSD includes a measure of disability (percentage of people under the age of 70 who have a long-term health condition or disability and need assistance with core activities). This means that the SA2 regions with high subacute care utilisation rates may have higher numbers of people with disability.

Other factors can influence utilisation of services independent of need, including socioeconomic status, distance from services and transport options to reach them, family/informal carer support, willingness to engage with health care services, referral practices of medical staff and actual availability of services/beds at the time of need. These may limit access to health care but current utilisation rates do not capture this information. Further development of measures of access may be required to investigate these factors.

4.4 Recommendations for service planning

There are many factors affecting the access and utilisation of any health care service, including subacute care. This paper represents the initial step in developing a more robust understanding of the projected demand for subacute care to inform the System Manager functions in the WA health system. Further work will be required to continue to monitor the trend in subacute care activity to assist with gap analysis and system planning.

It is well recognised that there is benefit in integrated and coordinated service provision for people with complex and long term conditions. As many users of subacute care fall within this group it is important that any service planning also considers the interface between hospital and community services.[58]

The WA Health Clinical Services Framework 2014-2024 (CSF) provides a guide to the provision and delivery of public health care in WA and should be considered in any future subacute care service planning. The recommendations for subacute care planning and development listed below complement the priorities of the CSF - a patient centred approach, equity of access, prioritised resource allocation and coordinated care closer to home.[58]

Recommendations:

1. The WA Department of Health continues to monitor subacute care activity, equity of access and quality of care annually to inform it in its System Manager function of system-wide planning and purchasing for value.
2. The WA Department of Health develops and implements a Key Performance Indicator (KPI) Framework on subacute care activity, equity of access and quality of care.
3. The WA Department of Health publishes annual KPI reports to ensure transparency and accountability.
4. The WA Department of Health develops and implements an evidence-based subacute care activity target to inform health service purchasing.
5. The WA Department of Health continues to provide input on subacute care planning to the WA Health Clinical Services Framework and Health Service Providers clinical service planning areas.
6. The WA Department of Health further investigates the apparent disconnection between purchased and delivered subacute care activity.
7. The WA Department of Health further refines the System Manager's understanding of the factors affecting the access and utilisation of subacute care in WA.

The above recommendations will support the WA Department of Health in its responsibilities as the System Manager of the WA health system in relation to the planning, purchasing and monitoring of the quality and efficiency of subacute care services.

5. References

1. Australian Institute of Health and Welfare. Development of nationally consistent subacute and non-acute admitted patient care data definitions and guidelines [Internet]. Canberra: AIHW; 2013. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129543218.
2. Gulliford M, Figueroa-Munoz J, Morgan M, Hughes D, Gibson B, Beech R, et al. What does 'access to health care' mean? Journal of Health Services Research & Policy. 2002;7(3):186-8.
3. Levesque J-F, Harris MF, Russell G. Patient-centred access to health care: Conceptualising access at the interface of health systems and populations. International Journal for Equity in Health. 2013;12(1):1.
4. Tomlin S, Joyce S, Radomiljac A. Health and Wellbeing of Adults in Western Australia 2015, Overview and Trends. Western Australia: Department of Health, 2016.
5. Australian Bureau of Statistics. Population Estimates by Age and Sex, Regions of Australia (ASGS 2011), 2001 to 2015; database: Excel spreadsheet. [Internet]. 2016. ABS cat no. 3235.0:[Available from: http://stat.data.abs.gov.au/Index.aspx?DatasetCode=ABS_ERP_ASGS.
6. Australian Bureau of Statistics. Population projections Australia, 2012 (base) to 2101. Table B5: Population projections, by age and sex, Western Australia – Series B; Excel spreadsheet. [Internet]. 2013. ABS cat. no. 3222.0:[Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3222.02012%20(base)%20to%202101?OpenDocument].
7. Australian Bureau of Statistics. Australian demographic statistics, Dec 2015. TABLE 55. Estimated Resident Population By Single Year Of Age, Western Australia; excel spreadsheet [Internet]. 2016. ABS cat. no. 3101.0:[Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3101.0Dec%202015?OpenDocument].
8. Western Australian Planning Commission. Western Australia Tomorrow, Population Report No. 10, Medium-term Forecasts for Western Australia 2014-2026 and Sub-regions 2016-2026. Western Australia; Excel spreadsheet. [Internet]. 2015. Available from: https://www.planning.wa.gov.au/publications/6194.aspx.
9. Australian Institute of Health and Welfare. Indigenous Australians in aged care [Internet]. AIHW; 2012. Available from: http://www.aihw.gov.au/aged-care/residential-and-community-2011-12/indigenous-australians/.
10. WA Department of Local Government and Communities. Culturally and linguistically diverse seniors in regional Western Australia. Western Australia: Office of Multicultural Interests; 2015.
11. Department of Immigration and Border Protection. The people of Western Australia, statistics for the 2011 census [pdf online]. Canberra: Commonwealth of Australia; 2014. Available from: http://www.omi.wa.gov.au/resources/publications/LocalGovernment/The_People_of_Western_Australia_Vol1.pdf.
12. Australian Bureau of Statistics. Where and how do Australia's older people live? Reflecting a Nation: Stories from the 2011 census, 2012-2013 [Internet]. 2013. ABS cat.no. 2071.0:[Available from: http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features602012-2013].
13. Australian Bureau of Statistics. Australians' journeys through life: Stories from the Australian Census Longitudinal Dataset 2006 - 2011 [Internet]. 2013. ABS cat.no. 2081.0:[Available from: http://www.abs.gov.au/ausstats/abs@.nsf/mf/2081.0].

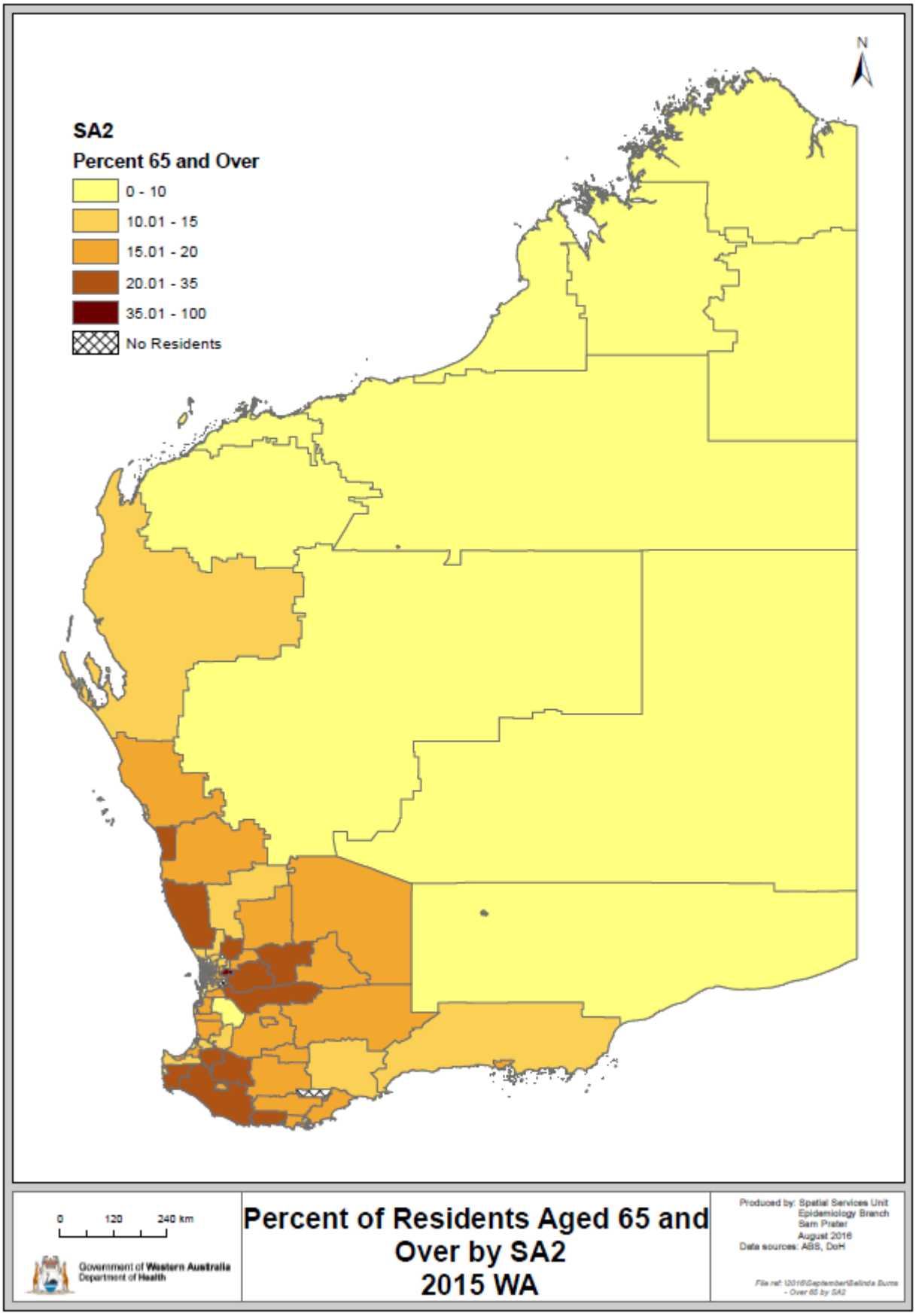
14. Australian Bureau of Statistics. Australian social trends, Dec 2010: Moving house [Internet]. 2010. ABS cat. no. 4102.0:[Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features30Dec+2010].
15. Australian Bureau of Statistics. Western Australia's baby boomers: A profile of persons born 1946-1965 [Internet]. 2003. ABS cat.no. 4149.5:[Available from: http://www.abs.gov.au/Ausstats/abs@.nsf/0/FA9A04281D0E14F0CA256D570005199E].
16. Australian Bureau of Statistics. Relocation across the nation: Internal migration and population growth, [Internet]. 2009. ABS cat.no. 4102.0:[Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features10June+2009].
17. Mahmood MA, Bauze AE, Lokhorst JT, Bi P, Saniotis A. Influence of living arrangements on health services utilisation in Australia. Australian health review : a publication of the Australian Hospital Association. 2012;36(1):34-8.
18. Flicker L. Clinical issues in aged care: Managing the interface between acute, subacute, community and residential care. Australian Health Review. 2002;25(5):136.
19. Australian Institute of Health and Welfare. Australian Burden of Disease Study: Impact and causes of illness and death in Australia 2011 - summary report [pdf online]. Canberra: AIHW; 2016. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129555176.
20. Australian Instituite of Health and Welfare. Estimating the impact of selected National Health and Hospitals Reform Commission (NHHRC) reforms of health care expenditure, 2003 to 2033 [pdf online]. Canberra: AIHW; 2009. Available from: http://www.aihw.gov.au/publication-detail/?id=6442468271.
21. Bartlett C, Butler S, Haines L. Reimagining health reform in Australia: taking a systems approach to health and wellness [pdf online]. PricewaterhouseCoopers; 2016. Available from: https://www.pwc.com.au/pdf/strategy-reimagining-health-reform.pdf.
22. Australian Institute of Health and Welfare. Admitted patient care 2014–15: Australian hospital statistics. Health services series no. 68 [pdf online]. Canberra: AIHW; 2016. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129554729.
23. Australian Institute of Health and Welfare. Estimating the prevalence of osteoporosis [pdf online]. Canberra: AIHW; 2014. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129548481.
24. Australian Institute of Health and Welfare. Hospitalisation and the treatment of osteoarthritis [pdf online]. Canberra: AIHW; 2016. Available from: http://www.aihw.gov.au/osteoarthritis/hospital-treatment/.
25. Australian Institute of Health and Welfare. Hospitalisation for osteoporosis. Canberra: AIHW, 2015.
26. Australian Institute of Health and Welfare. What role do hospitals play in treating back problems? [pdf online]. Canberra: AIHW; 2015. Available from: http://www.aihw.gov.au/back-problems/treatment-by-hospitals/.
27. Australian Institute of Health and Welfare. Stroke and its management in Australia: An update. Cardiovascular disease series no. 37 [pdf online]. Canberra: AIHW; 2013. Available from: http://www.aihw.gov.au/publication-detail/?id=60129543613].
28. Australian Institute of Health and Welfare. Cancer incidence projections: Australia, 2011 to 2020. Cancer Series no 66 [pdf online]. Canberra: AIHW; 2012. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=10737421440.
29. Australian Institute of Health and Welfare. Admitted patient care 2015-2016. Australian hospital statistics. Health Services series no. 75. [pdf online]. Canberra: AIHW; 2017 [cited 2017 May 18]. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129559534].
30. Sahle BW, Owen AJ, Mutowo MP, Krum H, Reid CM. Prevalence of heart failure in Australia: A systematic review. BMC Cardiovascular Disorders. 2016;16:32.

31. Nichols M, Peterson K, Herbert J, Alston L, Allender S. Australian heart disease statistics. Melbourne: National Heart Foundation of Australia, 2015.
32. Australian Centre for Asthma Monitoring. Asthma in Australia 2011:with a focus chapter on chronic obstructive pulmonary disease. Asthma Series no. 4. [pdf online]. Canberra: AIHW; 2011 [cited 2016 Aug 12. Available from: http://www.aihw.gov.au/publication-detail/?id=10737420159.
33. Swerissen H, Duckett, S. Dying Well. 2014.
34. Australian Instituite of Health and Welfare. Dementia in Australia [pdf online]. Canberra: AIHW; 2012. Available from: http://www.aihw.gov.au/publication-detail/?id=10737422958.
35. Australian Commission on Safety and Quality in Health Care. A bettter way to care: Safe and high-quality care for patients with cognitive impairment (dementia and delerium) in hospital - Actions for clinicians [pdf online]. Sydney: ACSQHC; 2014. Available from: https://www.safetyandquality.gov.au/our-work/cognitive-impairment/better-way-to-care/.
36. Travers C, Byrne G, Pachana N, Klein K, Gray L. Prospective observational study of dementia and delirium in the acute hospital setting. Internal medicine journal. 2013;43(3):262-9.
37. Australian Instituite of Health and Welfare. Dementia care in hospitals: costs and strategies. Canberra: AIHW; 2013. Available from: http://www.aihw.gov.au/publication-detail/?id=60129542746.
38. AIHW: Bradley C. Trends in hospitalisations due to falls by older people, Australia 1999-00 to 2010-11. Injury research and statistics no 84 [pdf online]. Canberra: AIHW; 2013. Available from: http://www.aihw.gov.au/publication-detail/?id=60129543594.
39. Hendrie D, Miller TR, Randall S, Brameld K, RE M. Incidence and costs of injury in Western Australia 2012: Report prepared for the Chronic Deisease Prevention Directorate. Western Australia: Department of Health, 2012.
40. Australian Institute of Health and Welfare. Incontinence in Australia [pdf online]. Canberra: AIHW; 2013. Available from: http://www.aihw.gov.au/publication-detail/?id=60129543605.
41. Western Australia. Department of Health. Falls Prevention Model of Care [pdf online] Perth, W.A. : Health Strategy and Networks; 2014 Available from: http://www.healthnetworks.health.wa.gov.au/modelsofcare/docs/Falls_Model_of_Care.pdf.
42. WA Department of Health. Dementia model of care. Perth: Aged Care Network; 2011.
43. WA Department of Health. Delirium model of care. Perth: Aged Care Network; 2008.
44. Council of Australian Governments. National Partnership Agreement on Hospital and Health Workforce Reform [pdf online]2008. Available from: http://www.federalfinancialrelations.gov.au/content/npa/health/national-partnership/past/National-Mental-Health-Reform-NP.pdf.
45. Council of Australian Governments. National Partnership Agreement on Improving Public Hospital Services [pdf online] 2011. Available from: http://www.federalfinancialrelations.gov.au/content/npa/health/_archive/national-workforce-reform/national_partnership.pdf.
46. Western Australia. Department of Health. Subacute care plan – Western Australia 2009 – 2013 [pdf online]. Perth, W.A.: Innovation and System Reform Division; 2009 [cited 2016 Aug 12]. Available from: https://www.health.wa.gov.au/publications/documents/SUBACUTE_CARE_PLAN_2009-13.pdf.
47. Western Australia. Department of Health. National Partnership Agreement on Hospital and Health Workforce Reform - Schedule C. Progress against Subacute Implementation Plan: Annual Report, Western Australia 2012/13. 2013.
48. Welfare AIoHa. Admitted patient care 2015-16: Australian hospital statistics. Health services series no. 75. Canberra: 2017.

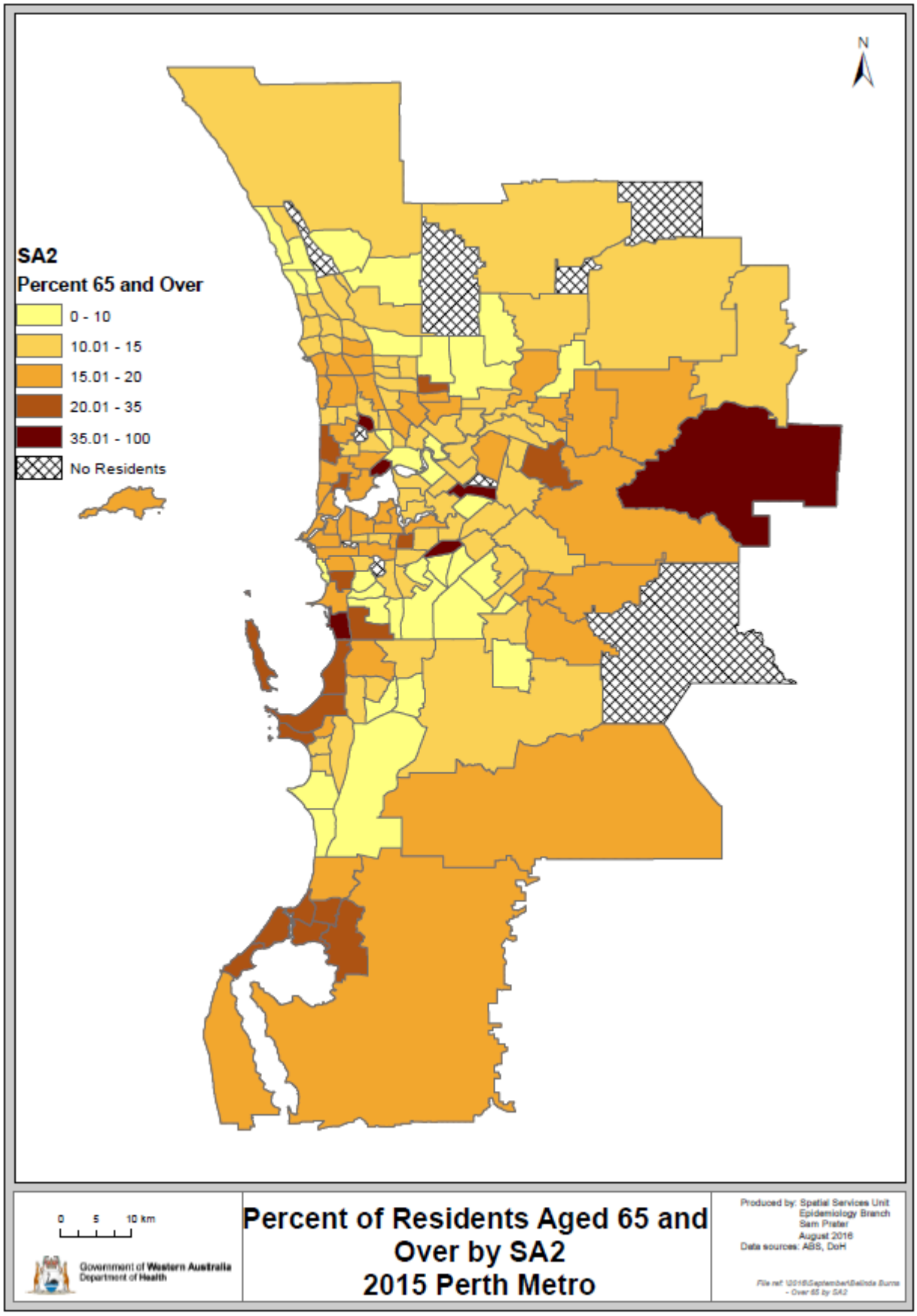
49. Independent Hospital Pricing Authority. Non-admitted care [May 2017]. Available from: https://www.ihpa.gov.au/what-we-do/non-admitted-care].
50. Australian Institute of Health and Welfare. Older Australia at a glance: 4th Edition [pdf online]. Canberra: AIHW; 2007. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442454209.
51. Australian Institute of Health and Welfare. Australia's health 2016. Australia's health series no 15 [pdf online]. Canberra: AIHW; 2016. Available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129555788.
52. Australian Bureau of Statistics. Australian social trends, Mar 2010. Health and socioeconomic disadvantage. [Internet]. Canberra: ABS; 2010. ABS cat. no. 4102.0:[Available from: http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Main+Features30Mar+2010].
53. McLafferty SL. GIS and health care. Annual Review of Public Health. 2003;24(1):25.
54. Australian Institiute of Health and Welfare. The health and welfare of Australia's Aboriginal and Torres Straight Islander peoples [pdf online]. 2015. Canberra: AIHW. Cat.no. IHW 147. Available from: http://www.aihw.gov.au/publication-detail/?id=60129550168.
55. Australian Bureau of Statistics. Census of population and housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2011 [Internet]. Canberra: ABS; 2011. ABS cat. no. 2033.0.55.001:[Available from: http://www.abs.gov.au/ausstats/abs@.nsf/mf/2033.0.55.001].
56. Western Australia. Department of Health. Admission, readmission, discharge and transfer policy for WA health services [pdf online]. Perth, W.A.: ; 2015. Available from: http://www.health.wa.gov.au/circularsnew/attachments/918.pdf.
57. Leggat S. Hospital planning: The risks of basing the future on past data. Health Information Management Journal. 2008;37(3):6-14.
58. Western Australia. Department of Health. WA Health Clinical Services Framework 2014-2024 [pdf online] Perth, W.A.: Department of Health; 2014. Available from: http://ww2.health.wa.gov.au/Reports-and-publications/WA-Health-Clinical-Services-Framework-2014-2024.

APPENDICES

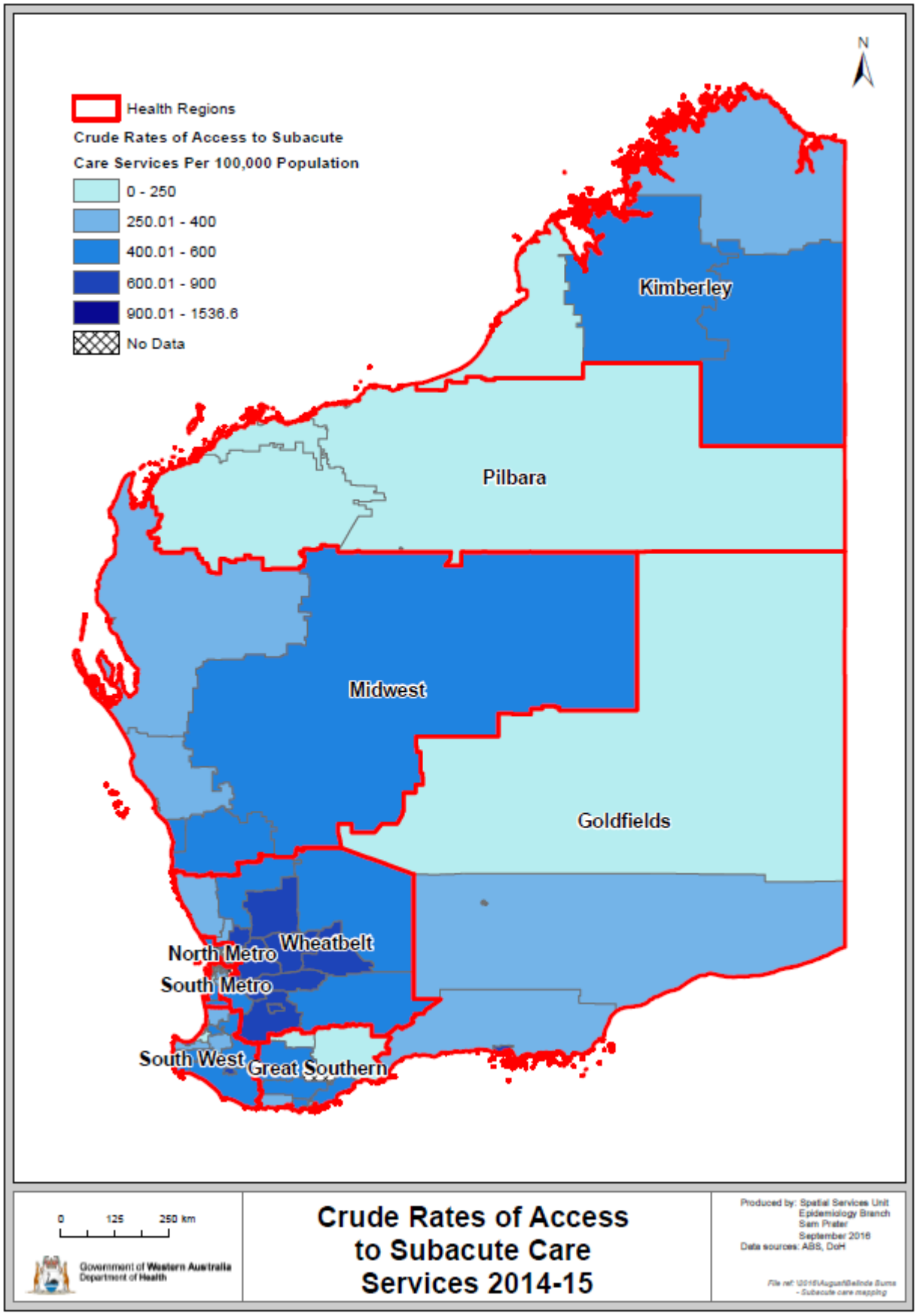
Appendix 1: Percentage of the population of SA2 regions that were 65 years and over in 2015 (Statewide)



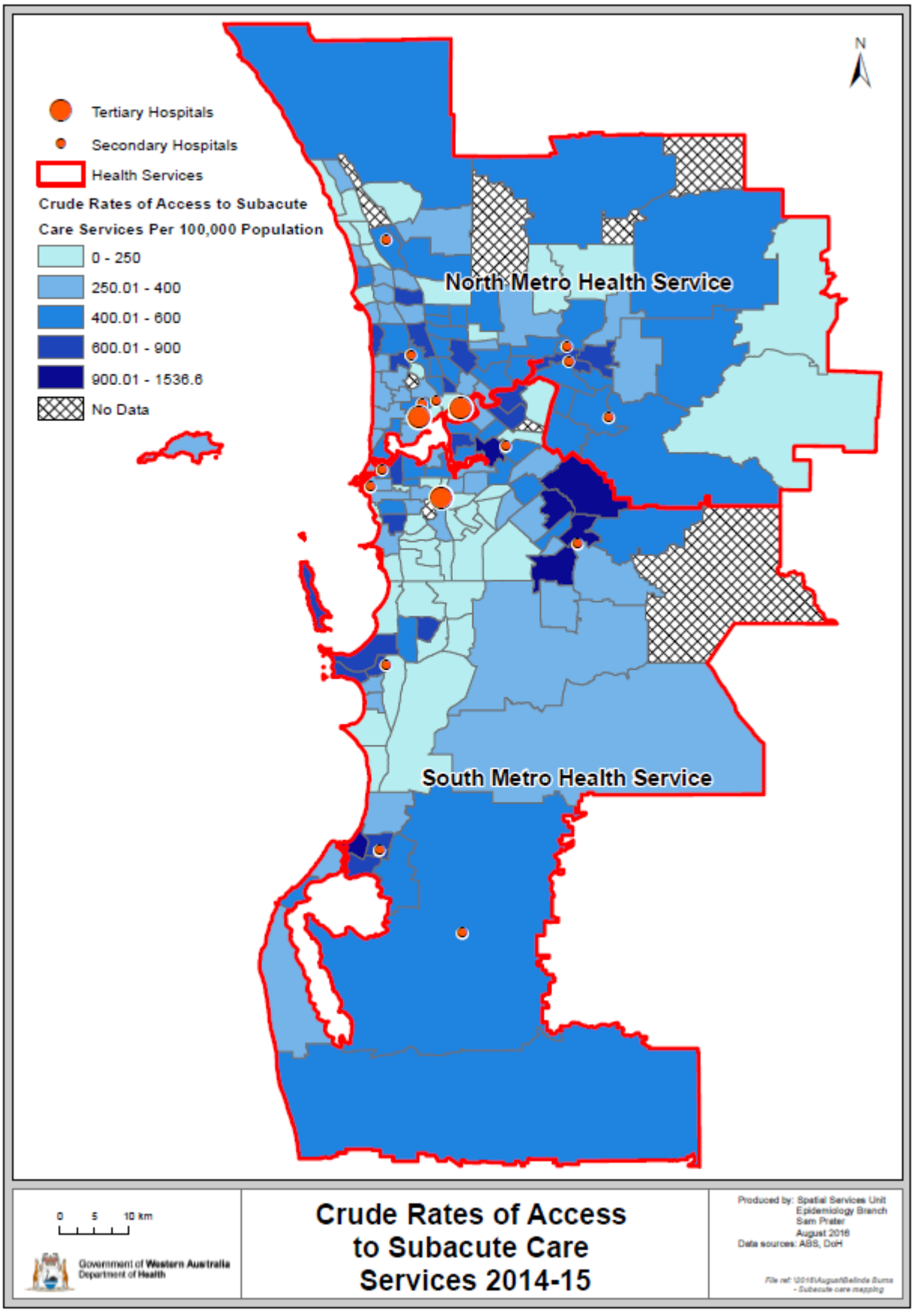
Appendix 2: Percentage of the population of SA2 regions that were 65 years and over in 2015 (Metropolitan)



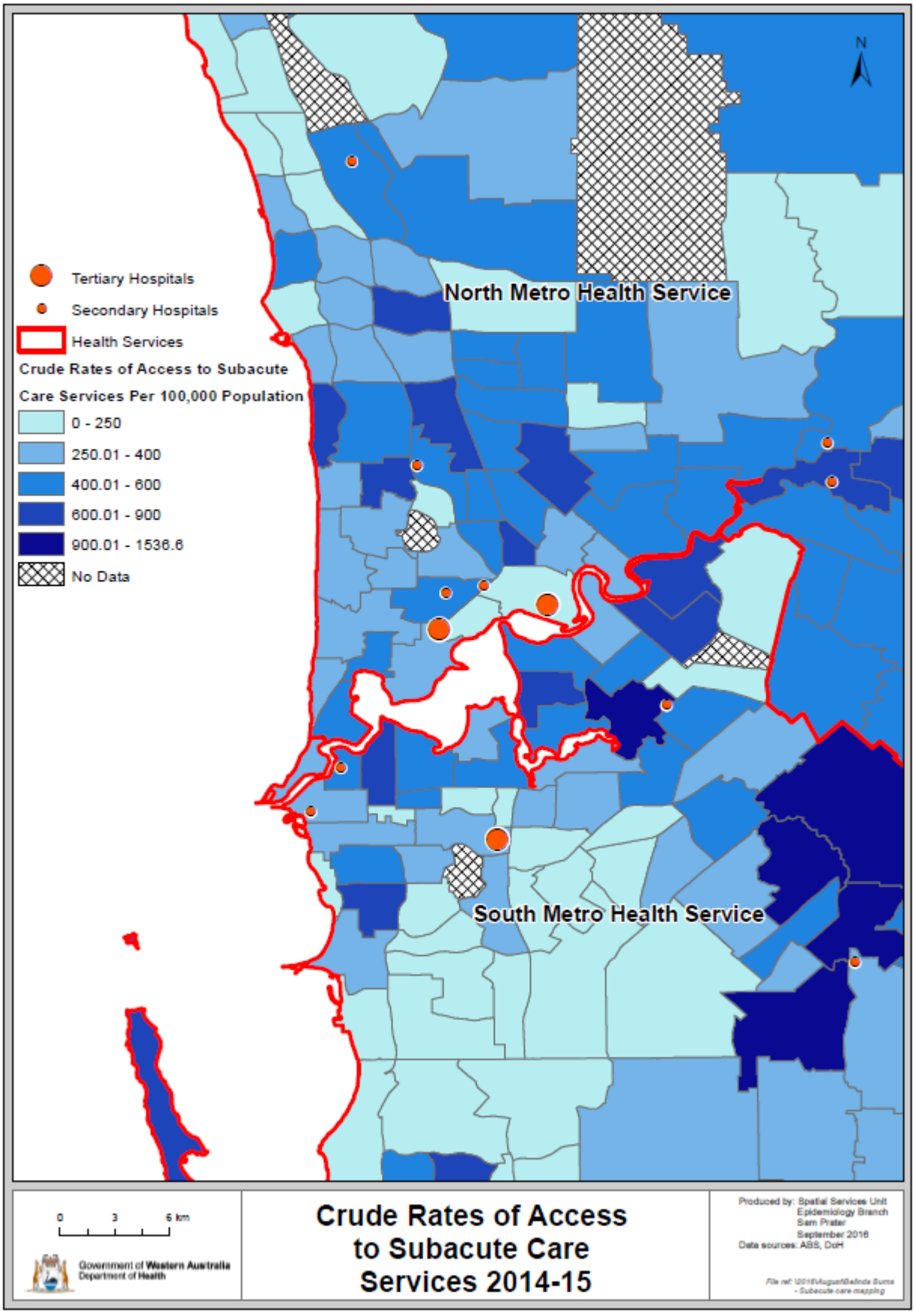
Appendix 3: Crude utilisation rates for subacute care services by SA2 region in 2014-15 (Statewide)



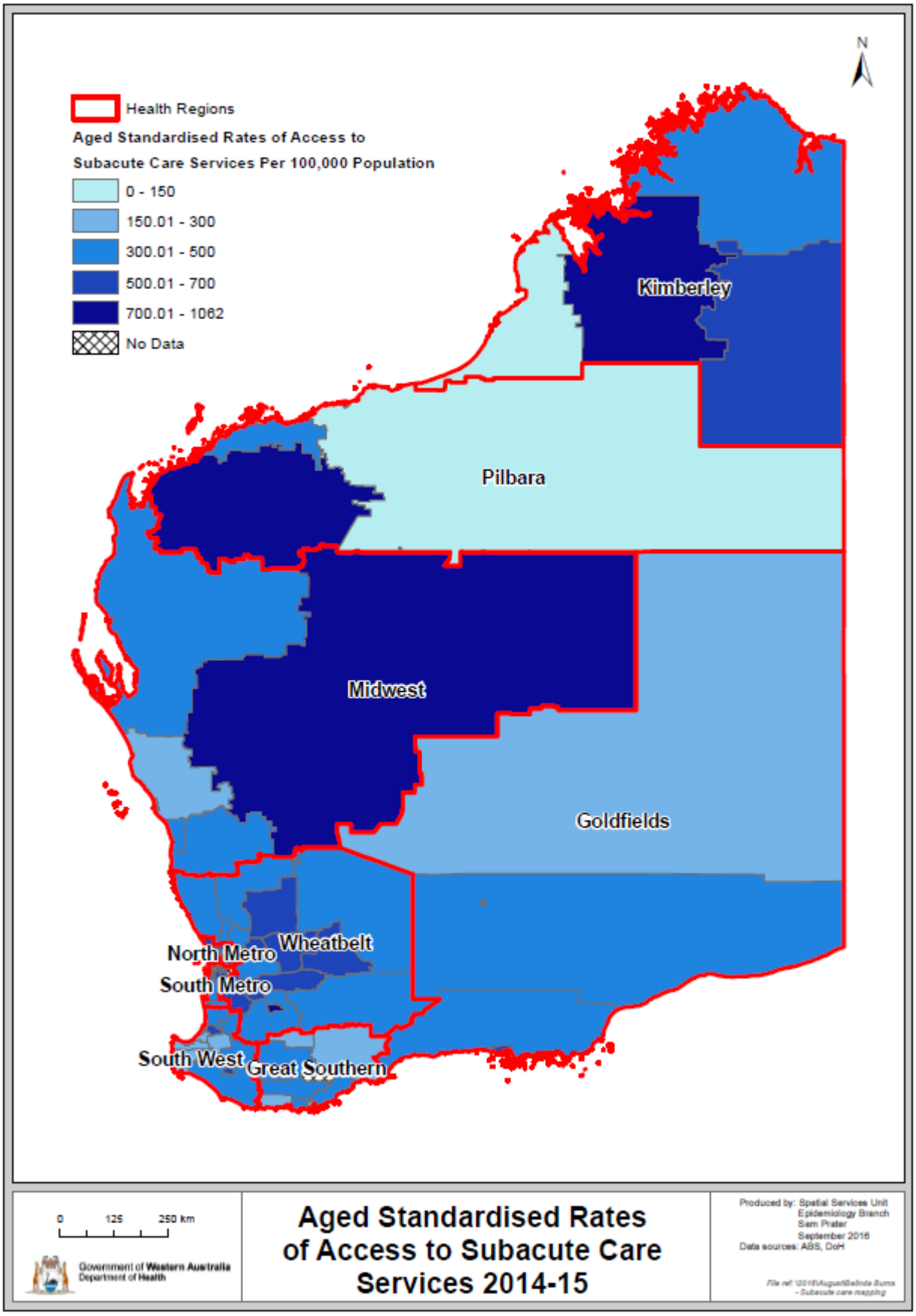
Appendix 4: Crude utilisation rates for subacute care services by SA2 region in 2014-15 (Metropolitan)



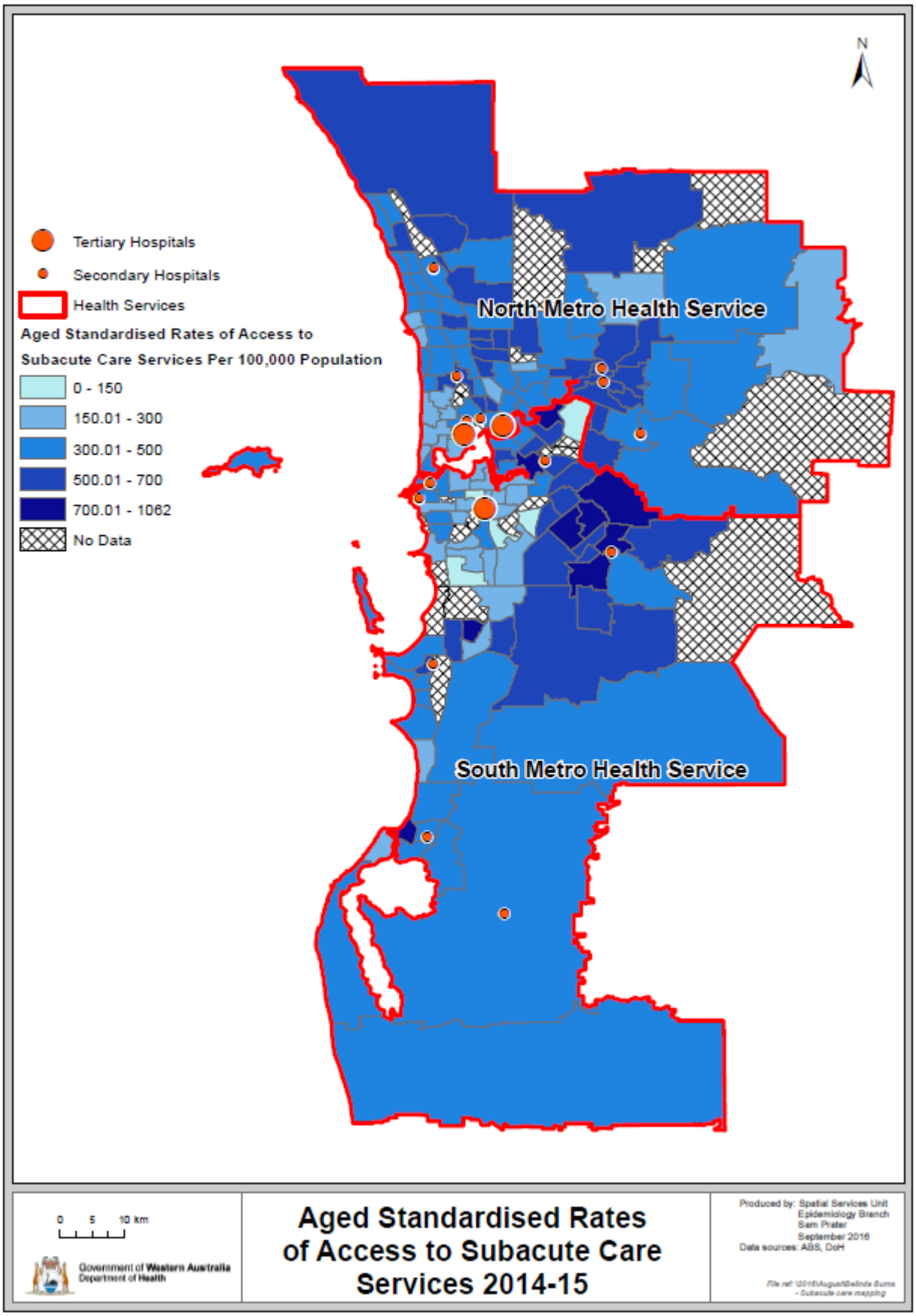
Appendix 5: Crude utilisation rates for subacute care services by SA2 region in 2014-15 (Inner metropolitan)



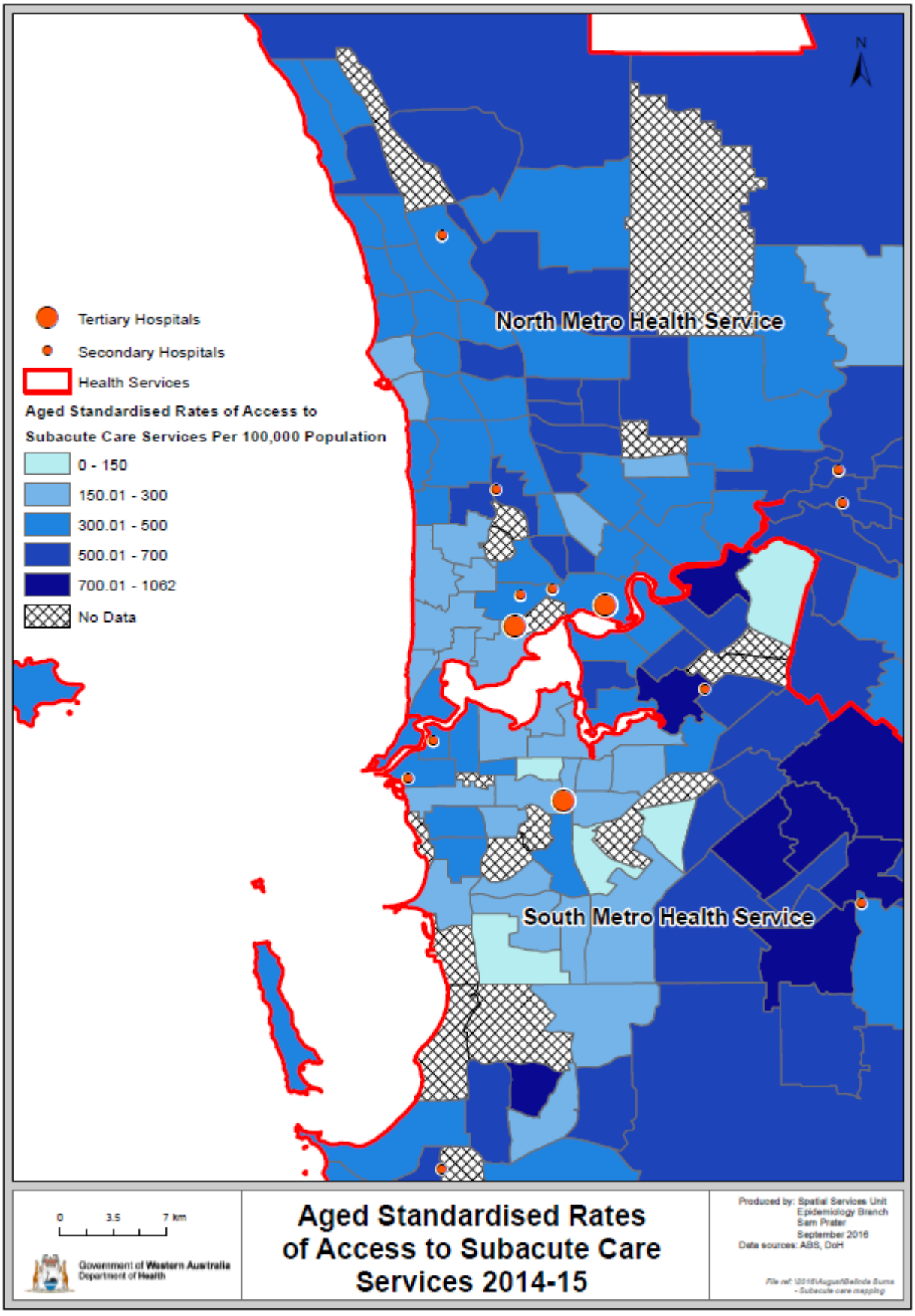
Appendix 6: Age-standardised utilisation rates for subacute care services by SA2 region in 2014/15 (Statewide)



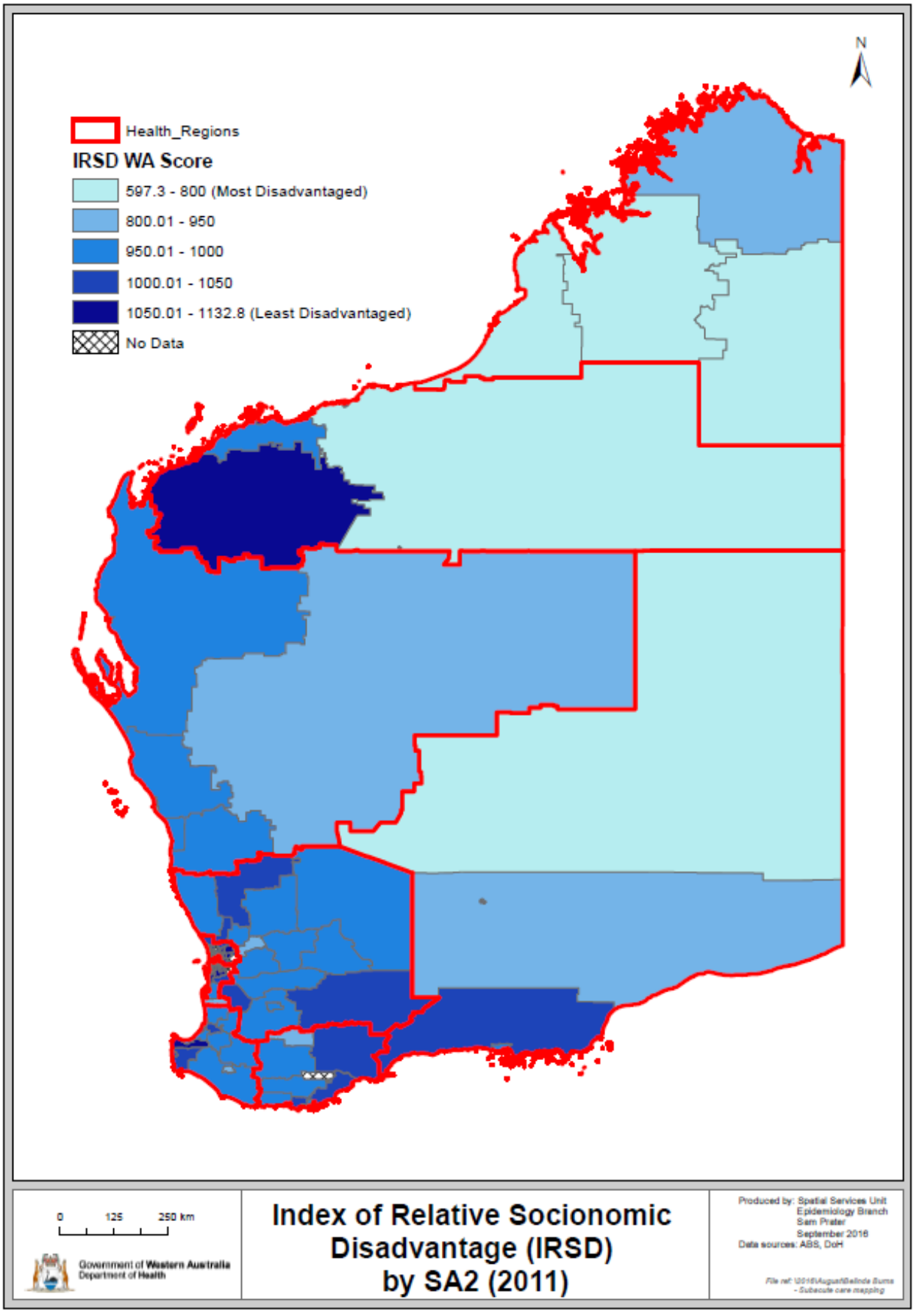
Appendix 7: Age-standardised utilisation rates for subacute care services by SA2 region in 2014/15 (Metropolitan)



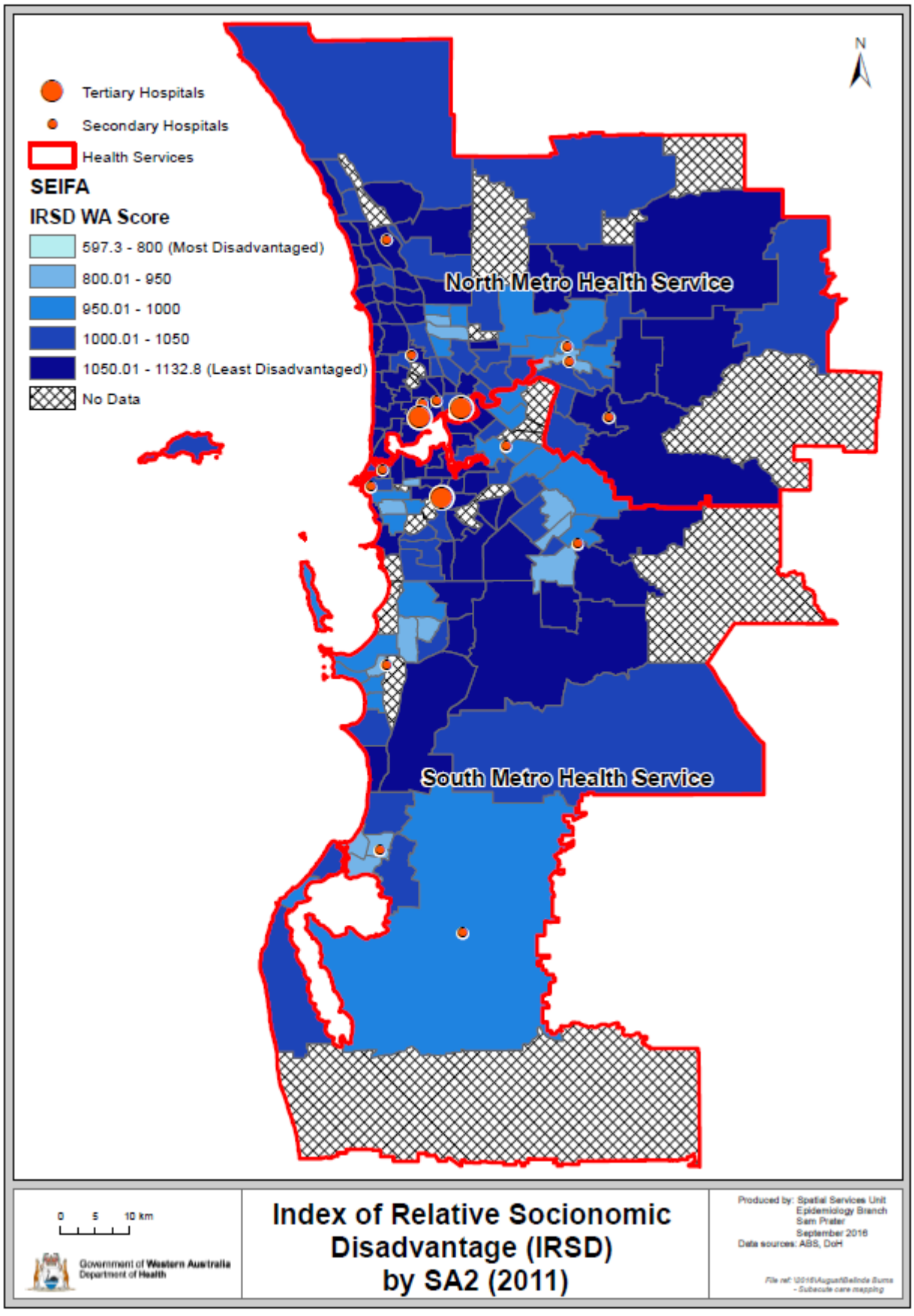
Appendix 8: Age-standardised utilisation rates for subacute care services by SA2 region in 2014/15 (Inner metropolitan)



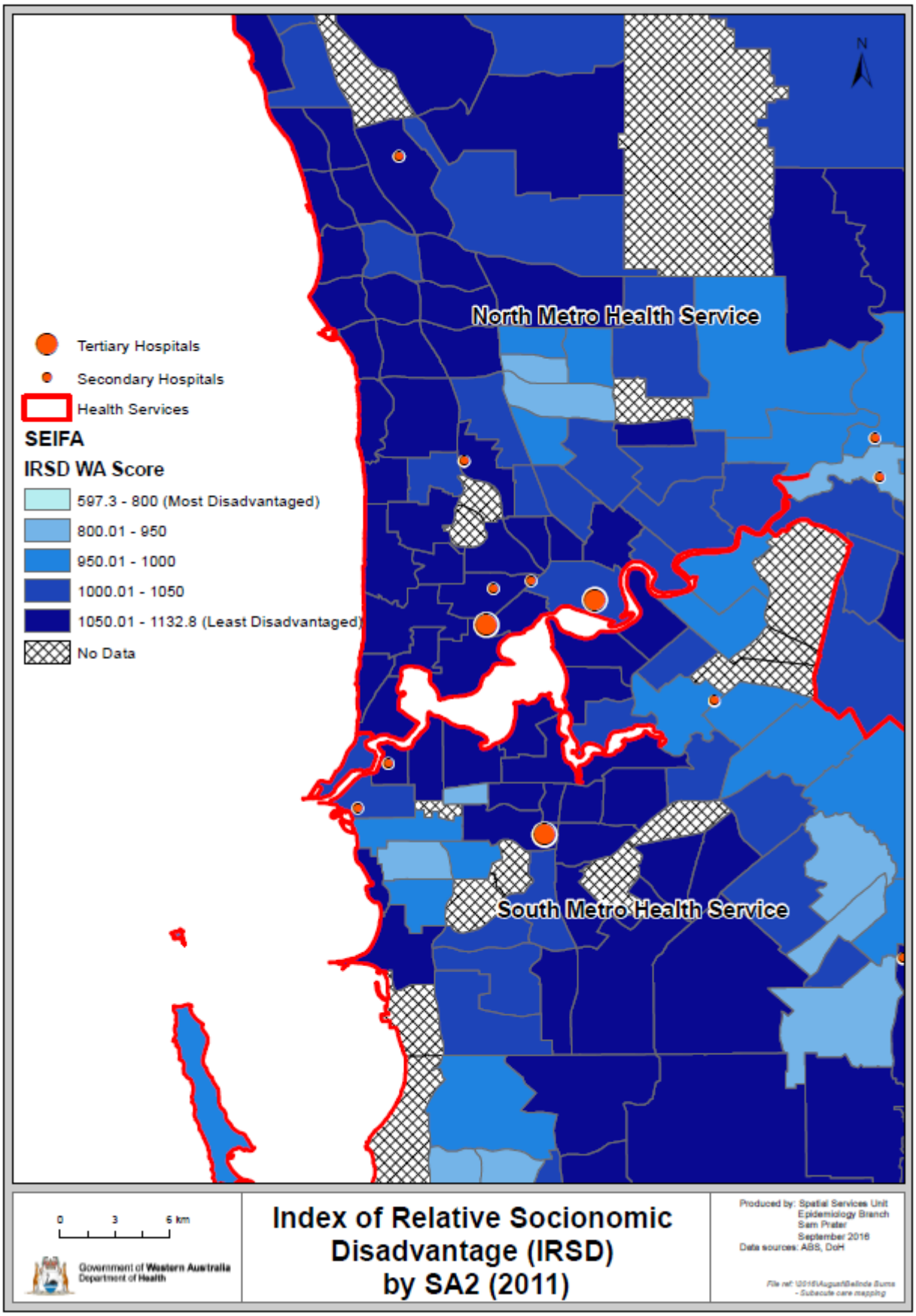
Appendix 9: Index of Relative Socioeconomic Disadvantage by SA2 region 2011 (Statewide)



Appendix 10: Index of Relative Socioeconomic Disadvantage by SA2 region 2011 (Metropolitan)



Appendix 11: Index of Relative Socioeconomic Disadvantage by SA2 region 2011 (Inner metropolitan)



This document can be made available in alternative formats on request for a person with a disability.