



WAPHA
WA Primary Health Alliance

phn
PERTH NORTH, PERTH SOUTH,
COUNTRY WA
An Australian Government Initiative

Population Health Needs Assessment 2017

Extract of Aboriginal Health Data and Analysis





WAPHA
WA Primary Health Alliance

phn
PERTH NORTH, PERTH SOUTH,
COUNTRY WA
An Australian Government Initiative

Acknowledgement



WAPHA acknowledges and pays respect to the Traditional Owners and Elders of this country and recognise the significant importance of their cultural heritage, values and beliefs and how these contribute to the positive health and wellbeing of the whole community. Throughout this document the word Aboriginal is used to denote both Aboriginal and Torres Strait Islander peoples.

The following citation is suggested for use when referencing this report:

Toll K. Curtin University: Health Systems & Health Economics and WA Primary Health Alliance. (2017). Aboriginal Health Needs Assessment template: Perth North, Perth South and Country WA PHNs. WAPHA Health Planning Team



WAPHA
WA Primary Health Alliance

phn
PERTH NORTH, PERTH SOUTH,
COUNTRY WA
An Australian Government Initiative

Preface

WA Primary Health Alliance (WAPHA) is the peak planning and commissioning body for primary health care in Western Australia. WAPHA's key objectives are to:

- Increase the efficiency and effectiveness of primary healthcare services for people, particularly those at risk of poorer health and wellbeing outcomes; and
- Improve coordination of care to ensure people receive the right care in the right place at the right time.

Everything we do is underpinned by Primary Health Networks (PHN) Population Health Needs Assessments, which ensure an evidence-based approach to planning and commissioning. This ensures that the people who need services the most are prioritised.

This report is a collation of the data and analysis related to the health and wellbeing of Aboriginal and Torres Strait Islander people, taken from the PHN Population Health Needs Assessments (2017). This information was presented to the Australian Government Department of Health in November 2017. It is compiled from the Needs Assessment Reporting Template that all PHNs are required to complete and report annually as a requirement of their contract to operate as a PHN.

This report has been prepared by WAPHA to support service providers and service planners to gain value from the needs assessments undertaken across the Perth North, Perth South and Country WA PHNs. It has been developed in response to requests from our stakeholders, and is shared as part of WAPHA's commitment to promoting evidence informed approaches across primary care.

Please contact the WAPHA Health Planning Team on needs.assess@wapha.org.au with any questions, or to contribute to the ongoing needs assessment process.

Regards,

Learne Durrington
CEO
WA Primary Health Alliance



Outcomes of the core health needs analysis

Identified Need	Key Issue	Description of Evidence
HN1.1 Poor health outcomes in disadvantaged areas. Although the level of socio-economic disadvantage in the WA PHNs is above the state average, there are several sub-regions with higher disadvantage across a range of indicators.	<i>Socio-economic factors including poor rates of educational attainment, financial and housing instability, and low rates of employment are associated with long-term physical and mental health problems.</i>	<p>The Indigenous Relative Socio-economic Outcome Index (IRSEO) represents the Indigenous Areas (IAREs) of social and economic disadvantage among Aboriginal people. Indicators reflecting disadvantage include low income, low educational attainment, high unemployment, and reliance on welfare for income and housing support. A summary of key socio-economic indicators across Perth North, Perth South and Country WA PHNs are presented in Table 1, Table 7 and Table 13, with key points summarised below.</p> <p>Perth North PHN <i>Socio-economic disadvantage for Aboriginal population (refer Table 1)</i></p> <p>Aboriginal people living in the Greater Perth area are relatively less socio-economically disadvantaged (IRSEO 40) than state (IRSEO 59) and national Aboriginal populations (IRSEO 46). However, the indicators of disadvantage are consistently poorer for Aboriginal people living in Greater Perth compared to Perth North PHN averages, with nearly one in five Aboriginal persons unemployed (17.6%), and nearly half of families' solo-parented (45.1%) and jobless (42.3%).</p> <p>Place-based</p> <p>Mundaring-Swan has a high proportion of children from jobless families (36.9%), with less than 80% of children aged 16 in full-time secondary school (78.9%). Swan has the lowest rate of employment among Aboriginal women (40.6%), with nearly half of families' solo-parented (45.7%). Bassendean has a high proportion of single-parent (59.5%), jobless (47.1%) and low income Aboriginal families (18.3%). Wanneroo-North-East has one of the highest rates of Aboriginal unemployment (17.6%), with two in five children from jobless families (41.3%).</p> <p>Perth South PHN <i>Socio-economic disadvantage for Aboriginal population (refer Table 7)</i></p> <p>Aboriginal people living in the Greater Perth area are relatively less socio-economically disadvantaged (IRSEO¹ 40) than state (IRSEO 59) and national Aboriginal populations (IRSEO 46). However, the indicators of disadvantage are consistently poorer for Aboriginal people living in Greater Perth compared to Perth South PHN averages, with nearly one in five Aboriginal persons unemployed (17.6%), and nearly half of families' solo-parented (47.7%) and jobless (42.3%).</p> <p>Place-based</p>

¹ IRSEO: Indigenous Relative Socioeconomic Outcomes, reflects relative advantage or disadvantage at the Indigenous Area level, where a score of 1 represents the most advantaged area and a score of 100 represents the most disadvantaged area.

Outcomes of the core health needs analysis

		<p>Kwinana has a high proportion of low income Aboriginal families (16.8%) with two thirds of Aboriginal youth not attending secondary school full time at the age of 16 (66.7%). South Perth-Victoria Park has a high proportion of single parent (59.5%) and jobless Aboriginal families (62.4%), with high rates of unemployment (20.2%), particularly among Aboriginal women (66.9%), and a high proportion of government housing (32.8%). Around half of Aboriginal youth in Belmont and Armadale come from single parent families (58.2% and 50.6%) and are not attending secondary school full time at the age of 16 (44.4% and 49.2%).</p> <p>Country WA PHN <i>Socio-economic disadvantage for Aboriginal population (refer Table 13)</i> The IRSEO ranges from 1 to 100, where a score of 1 represents the most relatively advantaged and a score of 100 represents the most relatively disadvantaged. These are based on Indigenous Areas (IAREs), with the Country WA PHN averaging 73.4. In 2014-15, 21 per cent households of Aboriginal people in WA lived in houses of unacceptable standard.</p> <p>Place-based The highest areas of disadvantage based on the IRSEO are in the Kimberley (Fitzroy River, Great Sandy Desert, Halls Creek, and Kalumburu) and Goldfields (Laverton – Ngaanyatjaraku, Menzies – Leonora, Warburton and Wiluna), all with an IRSEO score of 90 or above². These areas (among others) are also characterised by high levels of unemployment, welfare dependence, family dysfunction and lower levels of education, surrounded by poor environmental health.</p>
<p>HN1.4 There is a need for accessible culturally safe primary care for Aboriginal people. Although there is a lower proportion of Aboriginal people living in Perth North and Perth South PHNs compared to state and national averages, there are several sub-regions with higher proportions of Aboriginal people.</p>	<p>Aboriginal people have poorer health outcomes, including early onset and poor management of long-term health conditions, high mortality and morbidity, and poorer maternal and child health outcomes.</p>	<p>The gap in health outcomes between Aboriginal and non-Aboriginal Australians is well documented, particularly around life expectancy, infant mortality, child mortality, chronic disease prevalence, potentially preventable hospitalisations and the burden of disease. Chronic disease contributes significantly to the differences in life expectancy between Aboriginal and non-Aboriginal people who experience 2.3 times the rate of disease burden, with an age standardised death rate for chronic disease 3.8 times the rate among Aboriginal people than non-Aboriginal people. A summary of indicators related to the Aboriginal health across WA, with table links and key points summarised below.</p> <p>Perth North PHN Greater Perth and Whole of PHN <i>Aboriginal population (refer Table 2)</i> A lower proportion of Aboriginal people live in Perth North PHN (1.4%) than Perth South PHN (1.8%) and state averages (3.1%), but this still accounts for a total of 14,103 Aboriginal people.</p> <p><i>Aboriginal morbidity and mortality (refer Table 3)</i></p>

Outcomes of the core health needs analysis

Aboriginal people living in Greater Perth have a lower median age of death (54.0 years) compared to the general population living in Perth North PHN (81.0 years), with younger age of mortality for Aboriginal males (51.0 years) and females (57.0 years) in Greater Perth compared to state (m: 52.0 years; f: 58.0 years) and national rates (m: 54.0 years; f: 60.0 years). Aboriginal people living in Greater Perth have higher rates of mortality due to cancer (65.2 vs 25.6 ASR per 100,000), circulatory system diseases (76.5 vs 29.7) and respiratory diseases (14.6 vs 6.6) compared to the general population living in Perth North PHN.

Hospital admissions for Aboriginal people (refer Table 4)

Higher rates of hospital admissions for Aboriginal people of all ages living in Greater Perth (93,431 ASR per 100,000 Aboriginal persons) compared to state (88,572) and national averages (55,640), with particularly high volume of admissions for mental health (3,270) compared to the national average (2,371). Lower rates of ambulatory-sensitive hospitalisations (potentially preventable hospitalisations) for Aboriginal people in Greater Perth (4,168 ASR per 100,000 Aboriginal persons) compared to state (6,356) and national rates (4,581).

Aboriginal maternal and child health (refer Table 6)

Compared to the population state rate, Aboriginal mothers living in Greater Perth are over five times more likely to smoke during pregnancy, Aboriginal babies are 2.5 times more likely to be of low birth weight, and Aboriginal children are twice as likely to be developmentally vulnerable on one or more domains, and nearly three times as likely on two or more domains.

Place-based

Aboriginal population (refer Table 2)

The highest proportion of Aboriginal people are living in Mundaring (3.6%), Swan (2.7%) and Kalamunda (1.8%), with the highest number of Aboriginal people living in Swan (3,516) and Wanneroo (2,706).

Aboriginal morbidity and mortality (refer Table 3)

The lowest median age of death for Aboriginal people living in IAREs of Wanneroo-North-East (46.0), Yanchep-Two Rocks (50.0 years), Bayswater (52.0 years) and Stirling (52.5 years). Particularly younger age of mortality for Aboriginal men (43.0 years) and women in Yanchep-Two Rocks (42.5 years). Highest rates of Aboriginal mortality due to cancer in Perth City (120.3 ASR per 100,000 persons), and circulatory system diseases in Mundaring-Swan View (125.2) and Bayswater (122.4).

Hospital admissions for Aboriginal people (refer Table 4 and Table 5)

High rates of total hospital admissions for Aboriginal people living in IAREs of Bayswater (409,173 ASR per 100,000 Aboriginal persons), Bassendean (152,709) and Perth (121,355), all well above the Greater Perth average (93,430). Particularly high admissions in:

- Bayswater (mental health, circulatory system, respiratory system, injury/poisoning)

Outcomes of the core health needs analysis

- Bassendean (circulatory system, digestive system)
- Perth (mental health, respiratory system, digestive system, injury/poisoning).

Highest rate of ambulatory-sensitive hospitalisations (potentially preventable hospitalisations) for Aboriginal people of all ages in IAREs of Perth (6,589 ASR per 100,000 Aboriginal persons), Bayswater (6,096) and Bassendean (5,554). Particularly high rates of ambulatory-sensitive hospitalisations for Aboriginal children under 14 years of age in Swan (3,541 ASR per 100,000 Aboriginal persons), and those aged over 15 years of age in Stirling (5,627).

Aboriginal maternal and child health (refer Table 6)

High rates of poor Aboriginal maternal health including smoking during pregnancy in IAREs of Perth (59.7%), Stirling (49.9%), Bassendean (48.3%) and Joondalup (48.3%), with poor Aboriginal child health including low birth weight babies in IAREs of Wanneroo-North-East (22.4%), Joondalup (22.2%) and Stirling (20.8%). More than half of Aboriginal children in Stirling (53.6%) and Bayswater (52.4%) are developmentally vulnerable across one or more physical, social, cognitive and emotional indicators, with more than one in four vulnerable across two or more of these indicators in Stirling (28.6%) and Swan (26.1%), both well above state and national averages for Aboriginal children and compared to non-Aboriginal children.

Perth South PHN

Greater Perth and Whole of PHN

Aboriginal population (refer Table 8)

A lower proportion of Aboriginal people live in Perth South PHN (1.8%) compared to the state (3.1%), but slightly higher proportion than Perth North PHN (1.4%), accounting for a total of 17,240 Aboriginal people.

Aboriginal morbidity and mortality (refer Table 9)

Aboriginal people living in Greater Perth have a lower median age of death (51.0 years) compared to the general population living in Perth South PHN (81.0 years), with younger age of mortality for Aboriginal males (51.0 years) and females (57.0 years) in Greater Perth compared to state (m: 52.0 years; f: 58.0 years) and national rates (m: 54.0 years; f: 60.0 years). Aboriginal people living in Greater Perth have higher rates of mortality due to cancer (65.2 vs 28.1 ASR per 100,000), circulatory system diseases (76.5 vs 33.8) and respiratory diseases (14.6 vs 6.6), compared to the general population living in Perth South PHN.

Hospital admissions for Aboriginal people (refer Table 10)

There were higher rates of hospital admissions for Aboriginal people of all ages living in Greater Perth (93,431 ASR per 100,000 Aboriginal persons) compared to state (88,572) and national averages for non-Aboriginal people (55,640), with particularly high volume of admissions for mental health (3,270) compared to the national average for non-Aboriginal people (2,371).



Outcomes of the core health needs analysis

There were lower rates of ambulatory-sensitive hospitalisations (potentially preventable hospitalisations) for Aboriginal people in Greater Perth (4,168 ASR per 100,000 Aboriginal persons) compared to state (6,356) and national rates (4,581). (*Refer Table 11*).

Aboriginal maternal and child health (refer Table 12)

Compared to the population state rate, Aboriginal mothers living in Greater Perth are over five times more likely to smoke during pregnancy, Aboriginal babies are 2.5 times more likely to be of low birth weight, and Aboriginal children are twice as likely to be developmentally vulnerable on one or more domains, and nearly three times as likely on two or more domains.

Place-based

Aboriginal population (refer Table 8)

A higher proportion of Aboriginal people live in Kwinana (3.6%), Armadale (2.5%) and Gosnells (2.3%), with the highest numbers of Aboriginal people living in Gosnells (2,753), Rockingham (2,560), Mandurah (2,096), Armadale (2,029) and Cockburn (1,585).

Aboriginal morbidity and mortality (refer Table 9)

The lowest median age of death for Aboriginal people living in IAREs was in Melville (35.0 years), Rockingham (40.5 years), Cockburn (47.5 years) and Mandurah (48.5 years). Particularly younger age of mortality for Aboriginal men in Rockingham (34.0 years), Cockburn (46.5 years) and Gosnells (47.0 years), and for Aboriginal women in Fremantle (47.5 years), Rockingham (48.0 years) and Cockburn (49.5 years). The highest rates of Aboriginal mortality due to cancer were in Belmont (132.4 ASR per 100,000 persons), and circulatory system diseases in South-Perth Victoria Park (177.2), Canning (131.4) and Belmont (126.4).

Hospital admissions for Aboriginal people (refer Table 10)

High rates of total hospital admissions for Aboriginal people living in IAREs of South Perth-Victoria Park (303,335 ASR per 100,000 Aboriginal persons), Fremantle (202,351), Canning (190,341) and Melville (131,328), all well above the Greater Perth average (93,430). Particularly high admissions in:

- South Perth-Victoria Park (injury/poisoning, digestive system, mental health, circulatory system)
- Fremantle (injury/poisoning, digestive system, mental health, respiratory system, circulatory system)
- Canning (injury/poisoning, mental health)
- Melville (injury/poisoning, digestive system, respiratory system).

Highest rate of ambulatory-sensitive hospitalisations (potentially preventable hospitalisations) for Aboriginal people of all ages in Fremantle (9,866 ASR per 100,000 Aboriginal persons), Belmont (7,593) and South Perth-Victoria Park (6,847). Particularly high rates of ambulatory-sensitive hospitalisations for Aboriginal children under 14 years of age in Melville (7,008 ASR per 100,000 Aboriginal persons), and those aged over 15 years of age in Fremantle (11,899) and Belmont (10,234). (*Refer Table 11*).

Outcomes of the core health needs analysis

Aboriginal maternal and child health (refer Table 12)

The poorest rates of maternal and child Aboriginal health, including smoking during pregnancy and low birth weight babies, in IAREs of Belmont, Armadale, Canning and South Perth-Victoria Park. Close to half of Aboriginal children in Belmont (47.8%) and Armadale (46.8%) are developmentally vulnerable across one or more physical, social, cognitive and emotional indicators, with more than one in three vulnerable across two or more of these indicators in Belmont (34.8%) and Armadale (30.6%), both well above state and national averages for Aboriginal children and compared to non-Aboriginal children.

Country WA PHN

The gap in health outcomes between Aboriginal and non-Aboriginal Australians is well documented, particularly around life expectancy, infant mortality, child mortality, chronic disease prevalence, potentially preventable hospitalisations, and the burden of disease. Approximately 62% of Aboriginal Western Australians live outside of major cities, compared to 22.1% of non-Aboriginal Western Australians, and generally experience higher rates of mortality and hospitalisation. There is a normalisation of poor health outcomes in local communities, which is difficult to overcome. A summary of indicators related to the Aboriginal health, hospital admissions and mortality, including child and maternal health, across Country WA PHN is presented in Table 14, Table 15 and Table 16, with key points summarised below.

Rest of Western Australia² and Whole of PHN

Aboriginal population (refer Table 14)

Aboriginal people represent 8.5% (44,058 people) of the total Country WA PHN population, as at the 2016 census³, much higher than the state rate of 3.1%.

Aboriginal morbidity and mortality (refer Table 15)

Aboriginal people living in the Rest of Western Australia have a much lower median age of death⁴ (52.0 years) compared to the general population living in Country WA PHN (76.0), Aboriginal males at 52.0 and females at 58.0, compared to the median age of death for the Country WA PHN at 73.0 and 81.0 for males and females respectively. This gives a gap of 20.3 years for males, 24.1 for females, and 21.4 years for persons.

Aboriginal people living in the Rest of WA have higher rates of mortality due to cancer (82.8 vs 27.0 ASR per 100,000), circulatory system diseases (120.1 vs 47.9) and respiratory diseases (29.4 vs 10.0) compared to the general population living in Country WA

² Area classified as non-metropolitan areas. WA is split into Greater Perth and Rest of WA for IAREs

³ This has decreased from previous estimates of 10.3% (51,162 people), which were estimates based on the 2011 census.

⁴ For years 2010 to 2014

Outcomes of the core health needs analysis

PHN.

Hospital admissions for Aboriginal people (refer Table 16)

Rates of hospital admissions for Aboriginal people in the Rest of WA are 4 times the rate of the general population in WA (85,614 ASR per 100,000 vs 21,037), and higher than the national rate for Aboriginal admissions (55,640). Of particular note, admissions for mental health, respiratory and injury, poisoning and other external causes (see also HN 2.2) are much higher for the Rest of WA, when compared to national, state, Greater Perth and the rate of the general population in WA.

Place-based

Aboriginal population⁵ (refer Table 14)

At the regional level, the proportion of Aboriginal people ranges from 2.3% in the South West (4,132 people) to 41.6% in the Kimberley (14,299 people). Some sub-regional areas are much higher in proportion, including the Indigenous Areas (IAREs) of: Fitzroy River (91.0%); Kalumburu (90.5%); Halls Creek – surrounds (84.2%); Broome – surrounds (78.5%); Great Sandy Desert (77.9%) and Outer Derby – West Kimberley (77.2%), all in the Kimberley; and Warburton (85.4%) in the Goldfields. The IAREs with the largest Aboriginal population: Geraldton (3,585 people); Broome (3,042) and Port Hedland (2,415).

Aboriginal morbidity and mortality (refer Table 15)

The Pilbara and Kimberley regions have the lowest median ages of death, at 57.0 and 59.0 respectively. The IAREs with the lowest median ages of death are Karratha (43.0) and East Pilbara (49.5)². The following IAREs have the highest rates of death by condition⁶:

- External causes: Narrogin - Wagin – Katanning, 175.3 ASR per 100,000 (Wheatbelt); Karratha, 173.1 (Pilbara); Great Sandy Desert and Halls Creek, both 158.4 (Kimberley).
- Cancer: Carnarvon – Mungullah, 149.5 (Midwest); Derby – Mowanjum, Fitzroy Crossing, Outer Derby - West Kimberley, all 133.4 (all Kimberley).
- Circulatory system diseases: Narrogin - Wagin – Katanning, 214.0 (Wheatbelt); Kalumburu, Kununurra, North Kimberley, Wyndham, all 207.9 (all Kimberley).

Data for deaths from respiratory system diseases by IARE are unavailable in most areas and needs further investigation.

Hospital admissions for Aboriginal people (refer Table 16)

Highest rate of total hospital admissions for Aboriginal people was in the IAREs of Broome (234,480 ASR per 100,000) and Port Hedland (198,292). Particularly high place-based admissions for each region were:

⁵ There are limitations in the accuracy of total number of Aboriginal people due to non-compliant participation in the census, lack of self-identification, plus the highly mobile nature of Aboriginal populations.

⁶ Aboriginal persons aged 0 – 74 years

Outcomes of the core health needs analysis

	<ul style="list-style-type: none"> • Kimberley: mental health in Wyndham; circulatory system diseases in Derby – Mowanjum; respiratory system diseases in Fitzroy Crossing and Fitzroy River; digestive system diseases in Kununurra and Wyndham; and injury, poisoning and other external causes in Fitzroy River and Wyndham. • Goldfields: mental health in Esperance – Ravensthorpe; and injury, poisoning and other external causes in Wiluna • Midwest: circulatory system diseases in Carnegie South - Mount Magnet, and high rates of injury, poisoning and other external causes in Carnegie South - Mount Magnet and Meekathara - Karalundi • Pilbara: mental health in Karratha; respiratory in Port Hedland; digestive system diseases in Karratha and Port Hedland; and injury, poisoning and other external causes in East Pilbara and Port Hedland • Great Southern: respiratory system diseases in Kojonup – Gnowangerup and mental health • South West: digestive system diseases in Harvey and surrounds; and mental health in Manjimup - Denmark – Plantagenet • Wheatbelt: mental health, respiratory system diseases and injury, poisoning and other external causes in Narrogin - Wagin – Katanning <p>Highest rate of ambulatory-sensitive hospitalisations (potentially preventable hospitalisations) for Aboriginal people of all ages were predominantly in the Kimberley IAREs, notably Fitzroy River, Fitzroy Crossing, Wyndham, Derby – Mowanjum, Argyle – Warmun, and Outer Derby – West Kimberley, all over 12,000 ASR per 100,000. The Rest of WA average rate is 7,695 for Aboriginal people.</p>
<p><i>Optimised maternal and child health care is critical to improve long-term health outcomes for Aboriginal people.</i></p>	<p>Country WA PHN</p> <p>The earliest stage of human development — the period from conception to the end of a child’s second year — has become known as the first 1000 days. The recent and growing focus on the first 1000 days is due to a mounting body of evidence that shows the significance of environments and experiences during this period. Changes or adaptations made during the first 1000 days can have lifelong effects. In WA, the rates of perinatal mortality and low birth weight babies are higher in rural regions and among Aboriginal Australians than non-Aboriginal Australians. Low birth weight babies (newborns weighing <2,500 grams) are at a greater risk of dying during their first year of life, are prone to ill-health in childhood and the development of a range of chronic diseases as adults. Refer Table 17 for a summary of indicators relating to maternal and child health.</p> <p>Whole of PHN</p> <p>Aboriginal mothers are on average younger than non-Aboriginal mothers (25.6 years compared to 30.5), with the proportion of teenage births in Country WA PHN at 8%, compared to 1% for non-Aboriginal women.</p> <p>Fetal alcohol spectrum disorders (FASD) is a spectrum of lifelong physical and neurocognitive disorders, caused by alcohol use in pregnancy. Prevalence in WA is estimated at 4.08 per 1,000 for Aboriginal births, compared to 0.03 per 1,000 for non-Aboriginal births.</p> <p><i>Low Birth Weight Babies (refer Table 17)</i></p>

Outcomes of the core health needs analysis

The Rest of WA by IARE had a rate of 14.1% for low birth weight babies, compared to the Country WA PHN and state at 5.8% and 6.0% respectively, for the years 2012 to 2014. Mothers who smoked during pregnancy (2012 to 2014) was 50.3% for Rest of WA IARE, 13.3% in Country WA PHN, compared to the state rate of 8.9%.

Teenage mothers

Although the total percentage of teenage mothers was greater for all Country WA PHN Regions than the State average, the rate is showing a general decline since 2008/09. The Pilbara and Goldfields have decreased by the largest proportion.

Early Childhood Development (refer Table 17)

Country WA PHN had a higher percentage of children who were developmentally vulnerable on one or more domains (25.3%) compared to Western Australia (21.3%) and Australia overall (22.0%). This rate is doubled for Aboriginal children by Rest of WA IARE, at 53.5%.

Children who were developmentally vulnerable on two or more domains in Country WA PHN is 13.4%, again higher than the state rate of 10.5%, but with the Rest of WA IARE much higher at 34.4%.

Place-based

Low Birth Weight Babies (refer Table 17)

The region with the highest rate of low birth weight babies (2012 to 2014) was Wheatbelt – South (7.2%) and Bunbury (6.6%)¹. For Aboriginal babies from Country WA PHN, the percentages of low birthweight babies were highest in the IAREs of Narrogin – Wagin – Katanning (24.7%), Campion (21.0%) and Harvey and surrounds (20.5%).

Mothers who smoked during pregnancy (2012 to 2014) was highest in the region of Wheatbelt – South (17.9%) and Esperance (18.0%). Aboriginal mothers who smoked, by IARE, ranged from 27.3% in Busselton to 66.7% in Campion and Shark Bay - Coral Bay - Upper Gascoyne.

Early Childhood Development (refer Table 17)

Within Country WA, Kimberley SA3 had the highest percentage of children who were developmentally vulnerable in one or more domain (43.4%), followed by Gascoyne SA3 (27.7%) and Midwest SA3 (27.6%)¹.

- This rate is much higher in Aboriginal children only. By IARE, the highest rates are in the Great Sandy Desert (88.9%), Broome and surrounds (75.7%) and Fitzroy Valley (71.4%).

Children who were developmentally vulnerable on two or more domains was highest in the Kimberley (28.3%), Midwest and Pilbara (both 14.9%).

- For Aboriginal children only, the rates are greatest in the Great Sandy Desert (70.4%), Broome and surrounds (54.1%) and

Outcomes of the core health needs analysis

		<p>Roebourne – Wickham (53.8%).</p> <p>Stakeholder feedback has indicated a need for maternal and child health services in the Shire of Leonora in the Goldfields region, following a recent reduction in service provision. There is no data available for children who are developmentally vulnerable or of low birth weight in this area, prompting the need for further investigation.</p> <p>FASD has been identified as a community priority in the Fitzroy Valley in the Kimberley region where it is estimated 1 in 8 children born in 2002 / 2003 have FASD, one of the highest rates worldwide. This has led to the Lililwan Project which aims to provide accurate prevalence data for the area. FASD is also a priority in the Goldfields.</p>
<p>HN4.2 There is a need for increased patient awareness to prevent high ED attendances for non-urgent conditions in several sub-regional areas across Perth North, Perth South and Country WA PHNs.</p>	<p><i>People presenting to ED with non-urgent conditions may lack access, availability, or awareness of appropriate and affordable primary care services.</i></p>	<p>High rates of non-urgent Emergency Department (ED) attendances indicate there may be a gap in primary care services, both during and in the after-hours period, or lack of patient awareness of where to seek the most appropriate healthcare support. A summary of the volume of non-urgent ED attendances and major diagnosis categories across Perth North, Perth South and Country WA PHNs are presented below.</p> <p>Perth North PHN</p> <p>Whole of PHN</p> <p><i>Non-urgent ED attendances for Aboriginal people</i></p> <p>Perth North PHN had slightly lower volume and proportion of non-urgent ED presentations by Aboriginal people per year compared to Perth South PHN. Top major diagnosis codes for non-urgent ED presentations for Aboriginal people in Perth North PHN in 2013-15 included injury and poisoning, factors influencing health status⁷ and skin conditions.</p> <p>Place based</p> <p><i>Non-urgent ED attendances for Aboriginal people</i></p> <p>Highest volume of non-urgent ED presentations for Aboriginal people was in Swan and Stirling. Highest proportion of Aboriginal presentations were in Perth City and Bayswater-Bassendean. High proportion of Aboriginal presentations for specific diagnosis categories observed in:</p> <ul style="list-style-type: none"> • Swan (injury and poisoning and ill-defined conditions⁸) • Stirling (ill-defined conditions) • Perth City (factors influencing health status and mental disorders)

⁷ Defined as a person who may or may not be sick encounters the health services for some specific purpose, such as to receive limited care or service for a current condition, to donate an organ or tissue, to receive prophylactic vaccination or to discuss a problem which is in itself not a disease or injury, or when some circumstance or problem is present which influences the person's health status but is not in itself a current illness or injury.

⁸ No classifiable diagnosis



Outcomes of the core health needs analysis

- Bayswater-Bassendean (factors influencing health status and skin conditions).

Perth South PHN

Whole of PHN

Non-urgent ED attendances for Aboriginal people

Perth South PHN had a higher volume and proportion of non-urgent ED presentations by Aboriginal people compared to Perth North PHN, but lower than Country PHN. Top major diagnosis codes for non-urgent ED presentations for Aboriginal people in Perth South PHN in 2013-15 included injury and poisoning, factors influencing health status, and skin conditions.

Place based

Non-urgent ED attendances for Aboriginal people

Highest volume of non-urgent ED presentations for Aboriginal people was in Gosnells, Belmont-Victoria Park and Armadale. Highest proportion of ATSI presentations were in Fremantle, Melville and Belmont-Victoria Park. High proportion of Aboriginal presentations for specific diagnosis categories observed in:

- Gosnells (digestive conditions)
 - Belmont-Victoria Park (digestive conditions and ill-defined conditions)
 - Armadale (injury and poisoning and factors influencing health status)
 - Fremantle (factors influencing health status and skin conditions)
- Melville (injury and poisoning, factors influencing health status and skin conditions).

Country WA PHN

Whole of PHN

Non-urgent ED attendances for Aboriginal people

Country WA PHN had a much higher proportion of non-urgent ED presentations by Aboriginal people, compared to the state rate. A large proportion were after hours, with the top diagnosis codes of skin conditions, injury and poisoning and musculoskeletal conditions.

Place-based

Non-urgent ED attendances for Aboriginal people

Outcomes of the core health needs analysis

The Kimberley had the highest ED attendances for Aboriginal people by volume and proportion, followed by Wheatbelt – South and the Gascoyne region. The highest rates in each of the top five diagnosis categories, by place, are as follows:

- Skin conditions: Goldfields
- Injury and poisoning: Bunbury
- Musculoskeletal conditions: Goldfields
- Ear, nose and throat: Wheatbelt - North
- Factors influencing health status: Esperance



Outcomes of the core service needs analysis

Identified Need	Key Issue	Description of Evidence
SN1.1 Similar supply rate of primary care providers in Perth North and Perth South PHNs compared to state and national rates, however lower supply of primary care services in multiple sub-regions with high socio-economic disadvantage.	<i>Inadequate supply of primary care services to meet demand, particularly in areas of high socio-economic disadvantage where there are poor health outcomes and higher demand for primary care services.</i>	<p>Providing adequate access to primary care services is particularly important to reduce the pressure on secondary and tertiary systems and will therefore be an overall increase in primary care service demand due to the growing population, particularly in sub-regions with higher than average growth rates of older adults.</p> <p>At a clinical level, primary care usually involves the first (primary) layer of services encountered in health care and requires teams of health professionals working together to provide comprehensive, continuous and person-centred care. Primary health care is first level care provided by health services and systems with a suitably trained workforce comprised of multi-disciplinary teams supported by integrated referral systems. A summary of allied health workforce support across WA is presented in Table 18, Table 20 and Table 21, with key points summarised below.</p> <p>Perth North PHN Whole of PHN</p> <p><i>Allied health workforce supply (refer Table 18)</i></p> <p>Slightly higher rates of dentists (12.80 per 10,000 resident population), nurses and midwives (173.41), occupational therapists (13.18), physiotherapists (16.96) and pharmacists (14.53) in Perth North PHN compared to Perth South PHN, state and national rates, but similar supply of General Practitioners (GPs) (9.43) and lower supply of Aboriginal health practitioners (0.12).</p> <p>Place-based</p> <p><i>Allied health workforce supply (refer Table 18)</i></p> <p>Low health professional to population ratios across nearly all disciplines in Mundaring, Swan, Wanneroo, Kalamunda and Bayswater-Bassendean. Highest GP to population ratios in Perth City (19.82 per 10,000 resident population), Cottesloe-Claremont (16.51), Joondalup (10.54), with all other regions lower than state (8.98) and national averages (9.57) averages. Particularly low GP to population ratios in Mundaring (5.20 per 10,000 resident population), Stirling (6.49), Wanneroo (6.89), Bayswater-Bassendean (6.99) and Kalamunda (7.40).</p> <p>Perth South PHN Whole of PHN</p> <p><i>Allied health workforce supply (refer Table 20)</i></p> <p>Health professional to population ratio for dentists, nurses and midwives in Perth South PHN is lower compared to Perth North PHN, state and national rates, with a considerably lower ratio of GPs (8.40 per 10,000 resident population) and Aboriginal health</p>



Outcomes of the core service needs analysis

practitioners (0.07). Low ratio of occupational therapists, pharmacists and physiotherapists to residents in Perth South PHN compared to Perth North PHN, and slightly lower or similar to national ratios.

Place-based

Allied health workforce supply (refer Table 20)

Low health professional to population ratios across nearly all disciplines in Gosnells, Serpentine-Jarrahdale, Kwinana, Rockingham and Armadale. Highest GP to population ratios in Fremantle (17.47 per 10,000 resident population), Melville (12.79) and Canning (11.35), with all other regions lower than state (8.98) and national averages (9.57). Particularly low GP to population ratios in Serpentine-Jarrahdale (4.97 per 10,000 resident population), Gosnells (5.60), Kwinana (5.92), South Perth (6.26), Belmont-Victoria Park (6.50), Rockingham (7.44) and Armadale (7.60)²⁷. Recent community consultation in Mandurah highlighted the lack of locally-based GP services in Mandurah, Pinjarra and Waroona to adequately meet service demand²⁸. Community consultation in the Waroona community also identified a need to improve the provision of GP services and primary care models to meet local service needs.

Country WA PHN

Whole of PHN

Allied health workforce supply (refer Table 21)

In 2015, overall rates of registered practitioners per 10,000 persons were lower for Country WA PHN compared with the State in the categories of: total Nurses and Midwives; Occupational Therapists; Pharmacists; and Physiotherapists. Country WA PHN had higher rates per 10,000 resident population in the categories of: Aboriginal Health Workers; Nurses and Midwives in an Aboriginal Health Service; and slightly higher ratio of General Practitioners.

Place-based

Allied health workforce supply (refer Table 21)

Wheatbelt – North has low rates of allied health workforce across nearly all categories. The Coastal Wheatbelt (Shires of Dandaragan, Gingin and Chittering) is situated on the immediate outskirts of the metropolitan region, resulting in limited facilities and service delivery, with most accessing services in the Northern metropolitan area. Projected population increases in both areas are predicted to impact this service capacity further⁵⁰. The Pilbara has low rates of Nurses and Midwives, Pharmacists and Dental Practitioners, Esperance has the lowest rate of Pharmacists and Manjimup has low rates of Occupational Therapists and Physiotherapists.

The rate of General Practitioners is lowest in the Goldfields (5.02 per 10,000), with the highest rates being in the Gascoyne (19.18) and Kimberley (15.98). Even though these regions have high workforce rates, there is also high fragmentation of services.

There are no Aboriginal Health Workers in the South West region, the Wheatbelt, Esperance or Gascoyne, and 0.50 per 10,000 in



Outcomes of the core service needs analysis

		<p>Albany. The South West, Esperance and Manjimup also have no or very low rates of Nurses and Midwives in Aboriginal Community Controlled Health Services⁹.</p> <p>Stakeholder feedback in the Great Southern has indicated a lack of and need for child development services, including access to multidisciplinary teams comprising medical services (paediatrician), child health nurses, speech pathology, physiotherapy and occupational therapy. This has increased waiting list times and the need to travel to Bunbury or Perth to access these services.</p>
<p>SN1.4 Lack of culturally safe services across Perth North, Perth South and Country WA PHNs for Aboriginal people, particularly in sub-regions with higher density Aboriginal populations.</p>	<p><i>All services should be accessible and culturally safe for Aboriginal people to encourage help-seeking behaviours</i></p>	<p>Access to mainstream health services is more difficult for the Aboriginal population due to socio-economic disadvantage, relatively poor mobility, poor record keeping, and a lack of culturally appropriate health services. The Aboriginal concept of health is not the same as Western society, and a holistic and integrated approach to Aboriginal health is required to address social determinants and better health outcomes. It is important for healthcare providers to understand differences in concepts and provide targeted services that are culturally acceptable and safe for Aboriginal people.</p> <p>Multi-agency involvement in both the funding and delivery of Aboriginal Health programs leads to significant fragmentation and lack of continuity of the holistic care approach. There is a strong need to better integrate governance systems, plans, clinical registers, workforce reforms and all joint service ventures to provide person-centred care that is culturally safe for Aboriginal people across WA.</p> <p>Perth North PHN Whole of PHN</p> <p>Qualitative feedback has indicated the following areas of need in Perth North PHN:</p> <ul style="list-style-type: none"> • Lack of culturally safe services for Aboriginal people • Low trust of non-Aboriginal services that are not culturally sensitive • Low numbers of Aboriginal people employed in the health workforce • Lack of development and demonstrated commitment to Aboriginal employment. <p>Specific areas of Aboriginal health service need in Perth North PHN include:</p> <ul style="list-style-type: none"> • Mental Health – limited culturally appropriate services and low Aboriginal mental health practitioner workforce • Alcohol and other drugs – no specific support services available delivered in community • Prison Health – increased numbers of Aboriginal Health Workers and Aboriginal Health practitioners needed within the prisons to provide a culturally appropriate and safe service • Aboriginal Aged Care – limited services available for older Aboriginal people (55+).

⁹ As shown in the National Health Workforce Dataset (2013-2015).

Outcomes of the core service needs analysis

Place-based

Recent consultation with the local Midland and Swan Aboriginal community identified a particular lack of culturally safe alcohol and drug treatment and support services and primary health care services. This is in addition to issues with ease of access and receiving appropriate culturally safe support from local service providers. Further research is needed across Perth North PHN to identify issues related to providing culturally safe services to meet the needs of Aboriginal people.

Perth South PHN

Whole of PHN

Qualitative feedback has indicated the following areas of service need in Perth South PHN:

- Lack of culturally safe services across health, education and justice for Aboriginal people
- Low trust of non- Aboriginal services that are not culturally sensitive
- Low numbers of Aboriginal people employed in the health workforce
- Lack of development and demonstrated commitment to Aboriginal employment.

Place-based

Recent consultation with the local Armadale, Mandurah and Pinjarra Aboriginal communities identified a particular lack of culturally safe alcohol and drug treatment and support services, and community health services and a lack of Aboriginal Health Workers/Practitioners, in addition to issues with ease of access and receiving culturally safe support from local service providers. Further research is needed across Perth South PHN to identify issues related to providing culturally safe services to meet the needs of Aboriginal people.

Country WA PHN

Whole of PHN

Stakeholder consultation suggests there is a fear around accessing health services for many Aboriginal people, including the fear of judgement and the fear that there is something wrong. In addition, the language and terminology used by some services is too technical and reduces understanding of what is being told.

Aboriginal Health Workers and Aboriginal Health Practitioners (AHWs and AHPs) are integral in supporting Aboriginal people to navigate the western health care system, and ensuring it is culturally appropriate. Lack of culturally safe services across sectors including health, education, justice - evidenced by underutilisation of non-AHW workforce in some regions. Aboriginal people report often feeling that health providers are not offering culturally safe services, including individual's service knowledge coupled with their personal circumstances impacting on their ability to navigate the system. There are consistent access and language barriers to visiting



Outcomes of the core service needs analysis

		<p>a GP, allied health and specialist services within communities and across the state, as well as reported experiences of widespread racism and discrimination, which can be covert in nature.</p> <p>Place-based</p> <p>Across Country WA PHN, stakeholder feedback identified a disconnect between some services and local Aboriginal communities. This can also include limited awareness of what the service can provide, but also a lack of trust and confidentiality of the service being of major concern.</p> <p>Some evidence of service areas which may not be accessible or culturally safe for Aboriginal people:</p> <ul style="list-style-type: none">• High GP, nurse, psychologist service ratio in Kimberley, yet low uptake.• No/limited AHW presence in some regions (Coastal Wheatbelt, Mullewa in Midwest, Tom Price in Pilbara).• Need to build capacity of the Aboriginal workforce in and around Kalgoorlie. Insufficient workforce numbers for Aboriginal Health Workers and Aboriginal Health Practitioners and the need for GP clinics to offer positions for local Aboriginal staff was raised.• Kalgoorlie closed their Aboriginal Medical Service (AMS) unit for maternal health, removing a culturally appropriate service.
SN1.5 Lack of transition programs to support people moving from one service to another and back into the community, particularly people travelling from country regions.	<i>Services need to be integrated and collaborative in order to provide person-centred care that meets individual needs.</i>	<p>Continuity of care may be directly impacted by the transition of patients between services, into the community after hospitalisation, and for patients travelling from their communities to access treatment in larger regional centres or metropolitan areas such as Perth or Darwin. Lack of integrated systems and processes supporting the hand-over and transfer of patient information may result in incomplete patient profiles, leading to frustration for both providers and patients, ultimately risking quality and continuity of care. General practice also plays a fundamental role in ensuring seamless transfer of care between hospital and primary care, and between GP and allied health services to support the management of complex, chronic and comorbid conditions.</p> <p>Perth North PHN Whole of PHN</p> <p>Qualitative feedback has identified that Western Australia has current inefficiencies in the co-ordination and integration of primary and secondary care services, leading to system-based problems including:</p> <ul style="list-style-type: none">• Increased waiting times for treatment in secondary care• High number of inappropriate referrals to secondary care• Inefficient use of resources and lack of system integration• Poor discharge from secondary to primary care/general practice• Lack of system integration.

Outcomes of the core service needs analysis

		<p>There is also a high level of population flow in relation to Country WA PHN residents travelling to health services and specialist appointments in Perth North PHN. There is often a lack of integration and collaboration between services in the country and metropolitan regions, and communication back to the patient. This can create isolation, a lack of understanding and inconsistent care.</p> <p>The development of HealthPathways¹⁰ enables GPs to manage and refer their patients to the most appropriate local care, working to improve the integration of care across services. As of October 2017, over 300 localised HealthPathways have been developed in a variety of diagnostic categories across Western Australia, and page views by GPs have tripled in two years (9,388 in November 2015 to 21,615 in August 2017).</p> <p>Place-based</p> <p>There is limited focus on transition-out of a range of services across Perth North PHN. Stakeholder feedback indicates issues for some in transitioning from child to adult diabetes services, and from hospital to home services for other people, people experiencing mental health issues, and homeless people in Perth North PHN. Chronic disease management for people transitioning from prison to community provided services has also been identified as an area requiring further focus. Further research is needed to identify the extent of these transition issues in specific areas across Perth North PHN.</p> <p>Perth South PHN</p> <p>Whole of PHN</p> <p>Qualitative feedback has identified that Western Australia has current inefficiencies in the co-ordination and integration of primary and secondary care services, leading to system-based problems including:</p> <ul style="list-style-type: none"> • Increased waiting times for treatment in secondary care • High number of inappropriate referrals to secondary care • Inefficient use of resources and lack of system integration • Poorly coordinated discharge processes from secondary to primary care/general practice • Lack of system integration. <p>There is also a high level of population flow in relation to Country WA PHN residents travelling to health services and specialist appointments in Perth South PHN. There is often a lack of integration and collaboration between services in the country and metropolitan regions, and communication back to the patient. This can create isolation, a lack of understanding and inconsistent care.</p> <p>The development of HealthPathways enables GPs to manage and refer their patients to the most appropriate local care, working to improve the integration of care across services. As of October 2017, over 300 localised HealthPathways have been developed in a</p>
--	--	---

¹⁰ HealthPathways is web-based information portal supporting primary care clinicians to plan patient care through primary, community and secondary health care systems within Western Australia.



Outcomes of the core service needs analysis

variety of diagnostic categories across Western Australia, and page views by GPs have tripled in two years (9,388 in November 2015 to 21,615 in August 2017).

Place-based

There is limited focus on transition-out of services across Perth South PHN. Stakeholder feedback has indicated issues for some in transitioning from child to adult diabetes services, and from hospital to home services for older people, people experiencing mental health issues, and homeless people in Perth South PHN. Chronic disease management for people transitioning from prison to community provided services has also been identified as an area requiring further focus.

There is evidence of displaced families travelling from country for treatment at metropolitan tertiary services. Stakeholder feedback from community consultations in Waroona, Pinjarra and Mandurah has indicated issues with primary care service coordination and integration impacting the continuity of care. Further research is needed to identify the extent of these transition issues in specific areas across Perth South PHN. Stakeholder feedback has also highlighted the Cockburn area as a hub for the population moving between Kwinana, Armadale, Fremantle and Rockingham to access services, indicating an area with high demand for integrated and coordinated services that need to align with usual or multiple care providers.

Country WA PHN

Whole of PHN

The Integrated Team Care (ITC) Program being delivered across Country WA PHN aims to improve health outcomes, specifically for Aboriginal people, through better access to coordinated and multidisciplinary care. An independent evaluation of the ITC program states that it has increased access to services that many clients may not have otherwise accessed, and support the client to navigate a complex system.

The development of HealthPathways enables GPs to manage and refer their patients to the most appropriate local care. Over 330 localised HealthPathways have been developed in a variety of diagnostic categories across WA (November 2017); page views by GPs have tripled in 2 years, from 9,388 in November 2015 to 21,615 (August 2017).

Place-based

Some examples of difficulties which arise due to the lack of integration and collaboration of services, especially for those travelling from country to access metropolitan services include:

- Lack of communication between service providers, transport providers and accommodation providers.
- Culture shock, isolation, lack of understanding, English is often a second language – best practice programs have a liaison officer/escort to assist.

Outcomes of the core service needs analysis

		<ul style="list-style-type: none"> A lack of communication between the tertiary and primary care sector across Country WA PHN. Discharge summaries need to be improved in order to enhance person-centred care and the quality of transfer. Lack of social services to assist with social issues, which would also improve health outcomes. <p><i>"There is no choice, it's not a holiday. We have to travel as we don't have the services here, so don't make us feel like a burden."</i></p>
SN2.1 Lack of targeted early intervention in primary care across Perth North, Perth South and Country WA PHNs. Low rates of cancer screening and childhood immunisation in several sub-regions.	Targeted early intervention and/or secondary prevention in primary care could prevent the development of chronic conditions and disease.	<p>Early intervention, detection and diagnosis is the most effective way to reduce the impact of chronic and comorbid conditions. Early intervention can produce significant long-term health care savings and improve overall quality of life. Cancer screening has been shown to reduce morbidity and mortality of cancer through early detection and treatment. Childhood immunisation is recommended as a safe and effective way of protecting against harmful diseases and reducing overall spread of disease. Jurisdictions are mandated to ensure childhood immunisation rates are at least 90%, with a national 'Strive for 95%' target. This informed the 'Western Australian Immunisation Strategy 2013-2015' which outlined a framework for enhancing all aspects of immunisation program service delivery. A summary of Aboriginal immunisation rates across WA is summarised in Table 19. Rates for Cancer screening by Aboriginality were not available at time of publication.</p> <p>Perth North PHN Whole of PHN <i>Immunisation (refer Table 19)</i></p> <p>Fully immunised children in Perth North PHN aged one year old (93.9%) are just above state rates (93.1%), but are lower for children aged two years old (89.7%) and five years old (91.1%) Rates of immunisation is lower among one-year old (84.6%) and two-year old (80.9%) Aboriginal children in Perth North PHN compared to all children in Perth North PHN and Aboriginal children in the state, but comparatively higher by five years of age (92.9%).</p> <p>Perth South PHN Whole of PHN <i>Immunisation (refer Table 19)</i></p> <p>Fully immunised children in Perth South PHN aged one year old (93.6%) and five years old (91.8%) are above state rates, but not for children aged two years old (88.5%). Rates of immunisation is lower among one-year old (84.6%) and two-year old (78.9%) Aboriginal children in Perth South PHN compared to all children in Perth South PHN and Aboriginal children in the state, but comparatively higher by five years of age (95.0%).</p> <p>Country WA PHN</p>

Outcomes of the core service needs analysis

		Whole of PHN <i>Immunisation (refer Table 19)</i> <p>Country WA PHN has higher immunisation rates for children in all age groups (1 year, 2 years and 5 years) compared to State rates, as at June 2017: 93.8%, 90.9% and 92.5%, respectively.</p> <p>For Aboriginal children in the Country WA PHN, the 2-year age group was the lowest at 84.6% fully immunised, while 95.3% of the 5-year age group were fully immunised.</p>
SN2.2 Lack of access to and awareness of appropriate primary care services across Perth North PHN. Several sub-regions with poor supply of after-hours services, particularly after-hours GP services.	<i>A lack of access to and awareness of appropriate primary care services, both in- and out- of hours, further compounds issues of service demand and timely and appropriate care, often resulting in increased reliance on unnecessary ED services.</i>	<p>Approximately 80% of non-urgent ED presentations in Western Australia occur during the normal GP operating hours of 8am and 8pm, indicating a large proportion of non-urgent ED presentations could be prevented by accessing primary care services. After-hours primary medical care provided by GPs, community health centres, and co-located general practice clinics and telephone helplines can help meet demand for those seeking medical attention outside of these hours to reduce demand on ED services. However, residents need to have adequate access to and awareness of how to access primary care services in both the 'in-hours' and 'after hours' operating times of general practice to maximise primary care utilisation and alleviate pressure on secondary and tertiary systems. A summary of indicators related to Medicare Benefits Schedule (MBS) services and non-urgent ED presentations across Perth North, Perth South and Country WA PHNs are summarised below¹¹.</p> <p><i>Services by MBS reporting group</i></p> <p>Perth North, Perth South and Country WA PHNs</p> <p>The Nurse Practice/Aboriginal Health Worker MBS reporting group has the lowest utilisation rates in Perth North PHN, compared to Perth South and Country WA PHNs, also lower than the state and national rates.</p> <p>Place-based by PHN</p> <p>Lowest utilisation, by place, in Perth North PHN is Mundaring, Joondalup and Perth City</p> <p>Lowest utilisation, by place, in Perth South PHN is Serpentine – Jarrahdale and South Perth, Cockburn and Belmont – Victoria Park.</p> <p>Lowest utilisation, by place, in Country WA PHN is Esperance, Bunbury and Augusta - Margaret River – Busselton.</p> <p>Perth North PHN</p> <p>Whole of PHN</p> <p><i>Non-urgent and after-hours ED attendances</i></p> <p>Perth North PHN had a higher rate of non-urgent ED presentations from 2013-15 than Perth South PHN, but a lower rate of non-</p>

¹¹ Content has been suppressed due to data confidentiality at time of publishing.



Outcomes of the core service needs analysis

urgent presentations for Aboriginal people. Over half of non-urgent ED attendances for Perth North PHN population occurred after-hours, with a slightly higher rate among the Aboriginal population. Stakeholder feedback indicates that some health consumers have limited knowledge of how to access after-hours GP services, with ED and ambulance services often the default option. Competition with ED services can also have a significant impact on those practices located within or close to socio-economically disadvantaged communities, as patients constrained by cost may choose to obtain free hospital services.

Place-based

Non-urgent and after-hours ED attendances

High rate of non-urgent ED presentations in Wanneroo, Swan and Bayswater-Bassendean, with high proportion of Aboriginal presentations in Perth City, and Bayswater-Bassendean. High rates of non-urgent ED attendances after hours for non-Aboriginal and Aboriginal population were in Perth City, Stirling, Bayswater-Bassendean and Kalamunda.

Perth South PHN

Whole of PHN

Non-urgent and after-hours ED attendances

Perth South PHN had a lower rate of non-urgent ED presentations from 2013-15 than Perth North PHN and Country PHN, but a higher rate of non-urgent presentations for Aboriginal people compared to Perth North PHN. Over half of non-urgent ED attendances for Perth South PHN population occurred after-hours, with a slightly higher rate among the Aboriginal population. Stakeholder feedback indicates that some health consumers have limited knowledge of how to access after-hours GP services, with ED and ambulance services often the default option. Competition with ED services can also have a significant impact on those practices located within or close to socio-economically disadvantaged communities, as patients constrained by cost may choose to obtain free hospital services.

Place-based

Non-urgent and after-hours ED attendances

High rate of non-urgent ED presentations in Kwinana, Armadale, Rockingham and Belmont-Victoria Park, with high proportion of Aboriginal people presenting to ED in Fremantle, Melville and Belmont-Victoria Park. High rates of non-urgent ED attendances after hours for the total and Aboriginal population in South Perth, Gosnells and Belmont-Victoria Park.

Country WA PHN

Outcomes of the core service needs analysis

		<p>Whole of PHN</p> <p><i>Non-urgent and after-hours ED attendances</i></p> <p>Lack of knowledge and awareness regarding after hours services available across the PHN region, which results in some people presenting to emergency departments for treatment (<i>Refer to HN 4.2</i>). Between the years 2013-15, of non-urgent ED presentations in Country WA PHN, approximately half were in the after-hours period¹², slightly lower than the state rate. These rates are similar for Aboriginal people accessing services in this PHN.</p> <p>Place-based</p> <p><i>Non-urgent and after-hours ED attendances</i></p> <p>By place, Bunbury had the highest percentage of after-hours non-urgent ED attendances, followed by Albany. The lowest areas were Gascoyne and Manjimup. For Aboriginal people, the highest usage after-hours was in Albany, followed by Bunbury and Wheatbelt – North.</p> <p>The Midwest region has a high use (and cost) of hospital services rather than effective use of primary and community care services. There needs to be a stronger message to community – ED is not your GP. There are issues with a lack of bulk-billing GPs in the Midwest which one exacerbate this matter.</p> <p>Stakeholder feedback highlighting the lack of access and awareness of primary care services:</p> <ul style="list-style-type: none"> • There needs to be more education on MBS items and billings, which should increase utilisation. • Patients largely reliant on visiting services or must travel significant distances to receive care. • No funding incentives to open after hours services. • Improved access to a GP in the after-hours period, particularly for phone orders for medicines, would assist staff to manage residents within the facility and avoid transfer and admission to ED and hospital. • South West - private hospital model, making access to public health services an issue, especially for inland areas. <p>The Pilbara region is seeing higher utilisation of ED rather than primary care due to a range of factors including: ‘frequent flyers’; corporate practices with higher fees and out of pocket expenses; a lack of after-hours services; and a lack of attracting and retaining staff.</p>
SN2.3 Services not tailored to meet	Lack of person-centred care coordination for	Complex chronic conditions and those with multiple risk factors are experienced across WA. A lack of individual, holistic care can frequently lead to ED attendances and potentially preventable hospitalisations. Further research is needed to identify the extent of

¹² Business hours classified as a weekday, 8am-6pm. After hours is outside of this time



Outcomes of the core service needs analysis

individual needs of people with multiple risk factors/chronic conditions.	<i>those with composite risk factors and comorbid chronic conditions.</i>	<p>service needs facing those with multiple risk factors or comorbid chronic conditions across Perth North, Perth South and Country WA PHNs.</p> <p>Perth North PHN Place-based Consultation with the local Swan and Midland communities identified issues with the need for local services to increase their capacity to provide culturally secure services for Aboriginal people living with co-occurring alcohol, drug and mental health issues. Service providers in these areas also reported difficulty in meeting needs of clients that presented with complex and co-occurring issues, and the difficulty in facilitating access to the right care without clients needing to wait for extended periods of time to receive help.</p> <p>Perth South PHN Place-based Stakeholder consultation with the local Mandurah, Armadale, Gosnells, Waroona and Pinjarra communities identified issues with the provision of culturally secure services for people living with co-occurring alcohol, drug and mental health issues. Service providers in these areas also reported difficulty in meeting needs of clients that presented with complex and co-occurring issues, and the difficulty in facilitating access to the right care without clients needing to wait for extended periods of time to receive help.</p> <p>Country WA PHN Place-based The Kimberley region is faced with a large number of people who are multimorbid, with alcohol and other drugs having most impact. These complex, generational issues need a holistic approach before any health condition can be prioritised.</p> <p>Similar issues are faced in the Goldfields, with an introduction of a welfare card trial in the areas of Laverton, Leonora, Coolgardie and Kalgoorlie from early 2018, in an effort to minimise harm from alcohol. Primary care support services are essential to deliver a holistic approach, they provide can provide a range of services that can impact greatly on the health and wellbeing of Aboriginal people. Further investigation is needed.</p>
---	--	--

Mental Health

Identified Need	Key Issue	Description of Evidence
Health Need 1 Reduce harmful effects of mental health conditions on a person's health outcomes	1.1 Mental illness and disorders are widely recognised as being a significant risk factor for suicide and self-harm.	Youth suicide In Western Australia, suicide is the main cause of preventable deaths for 15-24 year olds. The 2014 State Ombudsman's investigation into 36 suicide deaths by youth aged 13-17 years found that the majority had experienced trauma from abuse and/or neglect. Aboriginal youth made up 36% of suicide deaths but accounted for only 6% of the youth population in Western Australia. Suicide accounted for 21.9% of deaths among 15-19 year old males and 28.7% of deaths among 20-24 year old males in 2012. For females, these rates are 32.6% and 25.2% respectively.
Health Need 6 Demand and future demand for service related to vulnerable individuals who are not accessing services	6.1 Socio-economic factors such as over-crowding and sub-standard housing, low household income, long-term unemployment and lower educational attainment can lead to long-term physical and mental health problems.	Across all PHNs Socio-economic factors such as over-crowded housing, low household income, and high imprisonment rates put Aboriginal people at higher risk of poor physical and mental health. In addition, access to mainstream health services is more difficult for this population group due to socioeconomic disadvantage, relatively high mobility, poor record keeping and a lack of culturally appropriate mainstream health services. See Core Health Need 1.1
Service Need 4 Culturally safe mental health services for Aboriginal people, and CALD population (i.e. use of appropriate communication tools such as language, culture, print-size etc.)	4.1 Poor access of existing services by Aboriginal people, and people from culturally and linguistically diverse backgrounds, culture security of service delivery can be improved	Across all PHNs Interviews with stakeholders indicated restricted access to culturally safe services for Aboriginal people living with chronic conditions, including mental health conditions. Some of the issues identified include: <ul style="list-style-type: none"> • lack of referral by GPs to culturally-appropriate allied health providers, • cultural and language barriers, • the need to travel to Perth for some types of treatment, • lack of access to transport, and • lack of awareness of services by the community and providers.
	4.2 Lack of Aboriginal mental health services in sub-regions with higher density of Aboriginal population	Perth North PHN Mental health services in Perth North PHN, specific for Aboriginal people, have been identified in Mt Claremont (Graylands), Balga, Midland, Northbridge and East Perth. There were no Aboriginal mental health services in the Mundaring SA3, which has the highest percentage of Aboriginal people in the Perth North PHN.

Mental Health

		<p>Perth South PHN There were no services identified in Perth South PHN that specifically targeted to Aboriginal people.</p> <p>Country WA PHN The SA3s with the highest proportion of Aboriginal people are the Kimberley, Pilbara and Gascoyne.</p> <p>Kimberley SA3 Five mental health services are designated as Aboriginal mental health.</p> <p>Pilbara SA3 There are only three Aboriginal mental health services in the Pilbara: South Hedland, Karratha and Newman.</p> <p>Gascoyne SA3 There are currently no designated Aboriginal mental health services in the Gascoyne SA3.</p>
--	--	--

Alcohol and Other Drugs

Identified Need	Key Issue	Description of Evidence
<p>Health Need 1. Reduce the harmful effects of AOD consumption on a person's health outcomes.</p>	<p>1.1 There is frequently an increase in alcohol and other drug use in the period before attempted suicide, and the Aboriginal population is at double the risk of non-Aboriginal population.</p>	<p>Australia and Western Australia There is sufficient evidence that alcohol use disorder (AUD) significantly increases the risk of suicidal ideation, suicide attempt and completed suicide. A meta-analysis found a statistically significant association between AUD and suicidal ideation (OR = 1.86, 95% CI: 1.38, 2.35), suicide attempt (OR=3.13; 95% CI: 2.45, 3.81), and completed suicide (OR=2.59; 95% CI: 1.95, 3.23 and RR=1.74; 95% CI: 1.26, 2.21) among participants of 31 published studies with 420,732 participants. The WA Coroner's database indicated that nearly a third of males and a quarter of females had alcohol or other drug use issues noted three months prior to their deaths. According to the Drug and Alcohol Office Surveillance Report, suicide was the second most prevalent alcohol-related death in Australia (the highest being cancer).</p> <p>Suicide rates are consistently higher in the Aboriginal population. In 2012, there were 22.4 suicides per 100,000 Aboriginal Australians - more than double the rate of 11.0 for non-Aboriginal Australians. Aboriginal suicide is associated with alcohol or other drug use and chronic mental illness, so these are appropriate areas for intervention.</p> <p>Perth North PHN</p>

Alcohol and Other Drugs

		<p>Table 22 presents modelled estimates of avoidable death from suicide and self-inflicted injuries between 2010 and 2014 mapped to population prevalence of excessive alcohol consumption in 2014-15, and proportion of Aboriginal population in 2016. Places where alcohol and drug use is most likely to result in suicide and serious self-harm are Stirling SA3 and Balcatta-Hamersley, Stirling-Osborne Park, Tuart Hill-Joondanna SA2s within it, Bassendean-Eden Hill-Ashfield Population Health Area (PHA), Chidlow/Malmalling-Reservoir/Mundaring PHA, and Cottesloe-Claremont-South PHA.</p> <p>Perth South PHN</p> <p>Table 24 presents modelled estimates of avoidable death from suicide and self-inflicted injuries between 2010 and 2014, mapped to population prevalence of excessive alcohol consumption in 2014-15, and the proportion of the Aboriginal population in 2016. Places where alcohol and drug use is most likely to result in suicide and serious self-harm in Perth South are Dawesville-Bouvard/Falcon-Wannanup and Pinjarra PHAs within the Mandurah SA3, Armadale-Wungong-Brookdale, Camillo-Champion Lakes/Kelmscott PHAs within Armadale SA3, Coogee/North Coogee PHA within the Cockburn SA3, East Fremantle/Fremantle within Fremantle SA3, Cooalongup/Rockingham, Safety Bay-Shoalwater/Waikiki/Warnbro PHAs within the Rockingham SA3, and Brookton within Wheatbelt-South SA3.</p> <p>Country WA PHN</p> <p>Table 26 presents modelled estimates of avoidable death from suicide and self-inflicted injuries between 2010 and 2014 mapped to population prevalence of excessive alcohol consumption in 2014-15 and the proportion of the Aboriginal population in 2016. Locations where AOD use is most likely to result in suicide and serious self-harm are Geraldton/Geraldton – East PHA, Brookton in Wheatbelt-South SA3, Broome in Kimberley SA3, South Hedland in Pilbara SA3, Kalgoorlie–North in Goldfields SA3, Albany and Denmark/Plantagenet PHA in Albany SA3, Bunbury/Koombana in Bunbury SA3, Augusta/Margaret River. Suicide data is not available for Leinster-Leonora; however, a high number of completed and attempted suicides have been reported in the past 12 months for this location, with 42.4% being Aboriginal and Torres Strait Islander residents. Augusta-Margaret River-Busselton, Esperance, Gascoyne, Goldfields, and Kimberley SA3s had over 20% higher per capita alcohol consumption by estimated service population than the national and state averages in 2011/12. Pilbara and Midwest SA3s were higher than the state and national averages in 2011/12; however, there has been a declining trend since 2004/05.</p>
Health Need 7. Future demand for services related to vulnerable persons who are not accessing services.	7.1 Vulnerable groups at risk of harm from AOD use are not being identified or are not currently accessing services.	<p>Australia</p> <p>Australia's Health Report 2016 reported that unemployment, living in a lower socioeconomic area and suffering high emotional distress are all associated with high levels of illicit drug use.</p> <p>Western Australia</p> <p>The population prevalence of excessive alcohol consumption is moderately associated with the percentage of Aboriginal population ($r=0.5100$), socioeconomic disadvantage ($r=-0.6577$ with IRSD), no internet connection ($r=0.5633$), unemployment rate ($r=0.5319$),</p>



Alcohol and Other Drugs

estimated prevalence of children in low income, welfare dependent families ($r=0.6331$), and prevalence of people who leave school at year 10 or below ($r=0.63772$). However, the AOD-related hospitalisation rate is either weakly or moderately negatively associated with the above factors, indicating that vulnerable groups may not be accessing the right services for their AOD-related issues.

North Metropolitan Community Alcohol and Drug Service (NMCADS) have identified a gap for AOD service in supporting persons that disengage from services at point of referral or after initial assessment – 50% of all referrals will go onto assessment, and approximately 35% engage in ongoing treatment. Variation in referral group for engagement was also noted: justice referrals had lower rate of engagement while child protection service referrals had higher level of engagement.

Perth North PHN

Table 23 presents socioeconomic indicators by SA3 and PHA (SA2 groups) together with modelled estimates of excessive alcohol consumption prevalence and AOD-related hospitalisations. Mundaring SA3, particularly the Chidlow/Mundaring SA2s, are locations within Perth North PHN where vulnerable individuals may not be accessing appropriate treatment services, particularly among those who leave school early and/or are of Aboriginal descent.

General practitioners have also identified a need around mental health and AOD services that are no/low cost and accessible for their patients in the local areas of Joondalup, Butler, Banksia, Wanneroo, Clarkson, Wangara, and Yanchep. GPs currently refer to Better Access to Psychiatrists, Psychologists and General Practitioners through the MBS (Better Access) initiative, which is cost prohibitive for many, while clients needing services often do not meet the intake criteria for state-funded public services such as local clinics.

Perth South PHN

Table 25 presents socioeconomic indicators by SA3 and PHA (SA2 groups) together with modelled estimates of excessive alcohol consumption prevalence and AOD-related hospitalisations. Safety Bay – Shoalwater/Waikiki/Warnbro are locations within the Perth South PHN where vulnerable individuals may not be accessing appropriate treatment services, particularly among those who leave school early, are unemployed, or are living with socioeconomic disadvantage.

Since the previous needs assessment, the PHN has commissioned Richmond Wellbeing and Relationships Australia to deliver Integrated System of Care to support Aboriginal people with problematic alcohol and drug use and mental illness. Relationships Australia is also commissioned to deliver the Aboriginal Social and Emotional Wellbeing Project, whose aim is to promote social and emotional wellbeing and reduce community distress and suicide in Aboriginal communities.

Country WA PHN

Table 27 shows socioeconomic indicators by SA3 and PHA (SA2 groups) together with modelled estimates of excessive alcohol

Alcohol and Other Drugs

		consumption prevalence and AOD-related hospitalisations. Bunbury SA3, particularly Capel SA2 within it, and Augusta-Margaret River-Busselton SA3 are locations within Country WA PHN where vulnerable individuals may not be accessing appropriate treatment services, particularly among those who leave education early or live with socioeconomic disadvantage.
--	--	--

Appendix 1

Aboriginal Health Needs Analyses

Perth North Primary Health Network (PHN)

Table 1: Socioeconomic disadvantage indicators for the Aboriginal population (education, employment and housing) in Perth North PHN by IARE (2016)

Indigenous Area (IARE)	IRSO Index ¹ (2011)	Secondary school participation ² %	Unemployment (2011) %	Female labour force participation (2011) %	Aboriginal single parent families with children ³	Aboriginal low-income families %	Aboriginal jobless families with children ³ (2011) %	Children ³ in Aboriginal jobless families	Government housing ⁴ %	Housing suitability ⁵ %	Dwellings with no internet connection %
Australia	46	71.3	17.1	46.3	45.9	13.1	39.8	40.2	18.6	10.0	23.6
Western Australia	59	64.3	17.8	41.3	46.3	15.3	42.0	42.2	26.5	11.3	29.6
Greater Perth	40	71.1	17.6	46.5	47.7	12.8	41.6	44.0	16.7	7.9	19.7
Rest of Western Australia	72	61.0	17.7	38.4	45.1	17.4	42.3	41.0	35.8	14.6	38.8
Bassendean	44	66.7	17.2	46.7	59.5	18.3	47.1	52.9	27.2	8.3	26.7
Bayswater	26	63.3	15.8	50.3	50.3	16.9	45.3	49.1	20.2	9.3	23.2
Joondalup	5	70.6	9.6	66.0	29.9	5.7	28.6	39.7	4.2	4.2	9.4
Kalamunda	20	80.0	9.7	51.6	40.3	10.6	34.1	32.0	12.3	6.8	15.1
Mundaring - Swan View	51	78.9	16.0	58.2	38.5	10.7	32.1	36.9	9.4	8.6	13.6
Perth	10	90.5	16.8	47.2	27.5	9.5	32.1	20.7	12.0	4.9	16.6
Stirling	39	86.7	18.5	43.9	59.2	14.4	48.3	48.3	24.2	8.1	23.0
Swan	45	73.3	17.9	40.6	45.7	13.4	42.0	43.8	16.5	7.9	19.7
Wanneroo - North-East	43	89.2	17.6	47.2	45.2	12.8	37.0	41.3	15.0	9.0	16.2
Yanchep - Two Rocks	40	47.1	14.8	44.6	47.6	12.4	43.1	50.5	14.0	6.3	16.8

¹ Indigenous Relative Socioeconomic Outcome Index (2011) score. The index ranges from 1 to 100, where a score of 1 represents the most relatively advantaged and a score of 100 represents the most relatively disadvantaged.

² Full-time participation in secondary school education at age 16.

³ Children aged less than 15 years.

⁴ Dwelling rented from the government housing authority.

⁵ Dwellings with households requiring extra bedrooms

Table 2: Aboriginal population (Usual Resident Population) and percentage of total population by SA3 in Perth North PHN (2016)

Area	Number	%
Australia	649,171	2.8
WA	75,978	3.1
Perth North PHN	14,103	1.4
Perth South PHN	17,240	1.8
Country WA PHN	44,058	8.5
Bayswater - Bassendean	1234	1.5
Cottesloe - Claremont	357	0.5
Joondalup	1001	0.6
Kalamunda	1034	1.8
Mundaring	1501	3.6
Perth City	676	0.7
Stirling	2079	1.1
Swan	3516	2.7
Wanneroo	2706	1.4

Table 3: Aboriginal median age of death and avoidable mortality by cause* (ASR per 100,000) for the Perth North PHN by IARE (2010-2014)

Indigenous Area (IARE)	Median age at death of Aboriginal males (years)	Median age at death of Aboriginal females (years)	Median age at death of Aboriginal persons (years)	Mortality cause			
				Cancer	Circulatory system diseases	Respiratory system diseases	External causes
Australia	54.0	60.0	57.0	71.0	78.7	24.7	62.0
WA (total population)	76.0	83.0	80.0	94.3	44.0	13.1	35.4
WA (Aboriginal population)	52.0	58.0	54.0	78.0	106.0	24.9	93.7
Greater Perth	51.0	57.0	54.0	65.2	76.5	14.6	65.4
Rest of Western Australia	52.0	58.0	55.0	82.8	120.1	29.4	108.6
Bassendean	NA	NA	55.0	NA	NA	NA	NA
Bayswater	52.0	55.5	53.0	107.4	122.4	0.0	NA
Joondalup	NA	NA	51.0	NA	NA	NA	NA
Kalamunda	54.0	48.0	51.5	NA	NA	NA	84.8
Mundaring - Swan View	57.5	55.0	57.0	NA	125.2	NA	65.5
Perth	56.0	64.5	58.0	120.3	NA	NA	112.2
Stirling	52.5	57.0	54.0	104.5	77.1	35.9	93.8
Swan	56.0	58.5	57.0	44.1	72.7	NA	47.7
Wanneroo - North-East	46.0	66.5	54.0	NA	63.3	NA	57.0
Yanchep - Two Rocks	50.0	42.5	43.0	NA	NA	NA	NA

* Population aged 0-74 years

Table 4: Hospital admissions for Aboriginal people by age and selected principal diagnosis, Perth North PHN by IARE (2012-13)

Indigenous Area (IARE)	Total Admissions (ASR per 100,000)		Admissions by selected diagnosis (rate per 100,000 Aboriginal population)					
	0-14 years	15+ years	Total admissions	Mental health	Circulatory system diseases	Respiratory system diseases	Digestive system diseases	Injury, poisoning & other external causes
Australia	16,872	76,574.8	55,639.7	2,371.3	1,676.3	3,029.7	2,794.0	4,000
WA (total population) *	N/A	N/A	21,037.3	960.6	1,437.0	1,260.9	2,065.4	2,259.1
WA (Aboriginal population)	21,112.8	124,889.1	88,571.7	3,196.7	1,984.8	4,382.7	3,198.5	5,776.6
Greater Perth	14,803.9	136,246.5	93,430.7	3,270.0	1,668.3	2,485.4	2,616.5	4246.8
Rest of Western Australia	25,407.3	118,101.3	85,614.3	3,128.6	2,163.6	5,567.2	3,560.1	6,758.2
Bassendean	16,313.1	225,968.1	152,709.2	3,364.6	3,977.7	3,107.2	4,681.4	3,592.2
Bayswater	12,738.2	620,890.2	409,172.6	4,822.2	3,281.1	3,965.2	2,822.8	6,808.6
Joondalup	9,231.1	36,669.8	27,055.7	1,609.9	NA	NA	1,031.7	1,275.8
Kalamunda	13,854.3	31,545.7	25,646.3	2,036.3	NA	3,150.1	2,154.7	3,420.4
Mundaring - Swan View	24,653.2	54,643.8	42,671.1	1,739.7	1,282.9	2,403.5	1,892.0	4,165.2
Perth	13,374.8	177,325.1	121,355.4	14,017.5	2,073.3	4,705.7	4,198.7	6,881.3
Stirling	15,047.2	97,830.2	68,820.7	4,502.5	1,510.2	2,709.4	3,208.4	5,410.0
Swan	18,244.1	95,902.6	68,491.9	2,579.4	2,045.6	2,165.0	2,691.7	3,909.4
Wanneroo - North-East	10,462.7	99,506.0	67,928.1	2,063.3	1,030.0	1,803.2	2,830.4	4,187.9
Yanchep - Two Rocks	7,458.0	21,800.2	17,138.1	1,650.5	NA	NA	1,495.6	1,930.0

* Public hospital admissions (ASR per 100,000 total population)

Table 5: Ambulatory-sensitive hospitalisations (PPHs) for Aboriginal people, ASR per 100,000 Aboriginal persons, Perth North PHN by IARE (2012-13)

Indigenous Area (IARE)	All ages	0-14 years	15+ years
Australia	4,581.8	3,283.3	5,283.0
Western Australia	6,355.8	4,377.9	7,420.8
Greater Perth	4,168.2	2,476.7	5,094.7
Rest of Western Australia	7,695.1	5,662.5	8,799.1
Bassendean	5,554.2	NA	NA
Bayswater	6,096.2	NA	NA
Joondalup	1,650.0	NA	NA
Kalamunda	3,062.3	NA	NA
Mundaring - Swan View	3,511.5	3,143.1	3,830.6
Perth	6,588.8	NA	NA
Stirling	4,591.1	2,664.7	5,626.7
Swan	4,611.8	3,541.0	5,165.1
Wanneroo - North-East	3,126.3	2,878.4	3,226.1
Yanchep - Two Rocks	1,540.0	NA	NA

Table 6: Maternal and early childhood health outcomes for the Aboriginal population in Perth North PHN, by IARE

Indigenous Area (IARE)	Smoking during pregnancy % (2012-14)	Low birth weight babies % (2012-14)	Developmentally vulnerable on one or more domains % (2015)	Developmentally vulnerable on two or more domains % (2015)
Australia	47.3	11.5	42.1	26.2
WA (total population)	8.9	6.0	21.3	10.5
WA (Aboriginal population)	48.2	14.9	47.5	28.8
Greater Perth	44.5	16.3	38.4	20.3
Bassendean	48.3	NA	NA	NA
Bayswater	45.2	19.5	52.4	23.8
Joondalup	48.3	22.2	30.8	7.4
Kalamunda	41.9	12.9	48.1	25.9
Mundaring - Swan View	41.4	NA	35.3	22.2
Perth	59.7	NA	NA	NA
Stirling	49.9	20.8	53.6	28.6
Swan	38.0	11.1	45.0	26.1
Wanneroo - North-East	46.5	22.4	30.6	5.6
Yanchep - Two Rocks	32.3	11.3	42.4	18.2

Perth South PHN

Table 7: Socioeconomic disadvantage indicators for the Aboriginal population (education, employment and housing) in Perth South PHN by IARE (2016)

Indigenous Area (IARE)	IRSEO Index ¹ (2011)	Secondary school participation ² %	Unemployment (2011) %	Female labour force participation (2011) %	Aboriginal single parent families with children ³	Aboriginal low-income families %	Aboriginal jobless families with children ³ (2011) %	Government housing ⁴ %	Housing suitability ⁵ %	Dwellings with no internet connection %
Australia	46	71.3	17.1	46.3	45.9	13.1	39.8	18.6	10.0	23.6
Western Australia	59	64.3	17.8	41.3	46.3	15.3	42.0	26.5	11.3	29.6
Greater Perth	40	71.1	17.6	46.5	47.7	12.8	41.6	16.7	7.9	19.7
Armadale	49	50.8	17.9	44.3	50.6	12.5	42.4	14.3	8.4	23.0
Belmont	46	44.4	21.5	45.2	58.1	17.4	51.6	32.2	11.1	27.8
Canning	30	65.0	14.9	45.6	50.6	14.5	43.7	19.1	6.1	22.1
Cockburn	47	96.2	22.3	47.2	50.4	12.9	45.6	21.9	7.1	19.4
Fremantle	42	57.1	18.4	40.8	62.5	21.5	49.5	40.2	8.9	26.0
Gosnells	47	72.2	19.0	47.5	55.4	12.9	38.4	16.5	9.3	22.1
Kwinana	67	33.3	19.9	43.7	51.5	16.8	39.2	15.4	8.3	25.3
Mandurah	42	69.4	19.4	45.9	50.9	15.9	39.5	10.1	6.9	19.9
Melville	22	66.7	12.3	49.5	48.1	12.4	45.5	25.5	7.5	17.6
Rockingham	23	66.1	18.4	55.1	37.7	10.0	34.2	6.5	6.7	13.3
Serpentine-Jarrahdale	13	58.8	11.8	70.0	24.4	8.0	21.7	0.0	6.6	9.0
South Perth - Victoria Park	56	76.7	20.2	33.1	59.5	19.0	62.4	32.8	10.6	28.6

¹ Indigenous Relative Socioeconomic Outcome Index (IRSEO). The index ranges from 1 to 100, where a score of 1 represents the most relatively advantaged and a score of 100 represents the most relatively disadvantaged.

² Full-time participation in secondary school education at age 16.

³ Children aged less than 15 years.

⁴ Dwelling rented from the government housing authority.

⁵ Dwellings with households requiring extra bedrooms

Table 8: Aboriginal population (Usual Resident Population) and percentage of total population by SA3 in Perth South PHN (2016)

Area	Number	%
Australia	649,171	2.8
WA	75,978	3.1
Perth North PHN	14,103	1.4
Perth South PHN	17,240	1.8
Country WA PHN	44,058	8.5
Armadale	2,029	2.5
Belmont-Victoria Park	1,452	2.1
Canning	948	1.0
Cockburn	1,585	1.6
Fremantle	486	1.3
Gosnells	2,753	2.3
Kwinana	1,406	3.6
Mandurah	2,096	2.2
Melville	699	0.7
Rockingham	2,560	2.0
Serpentine-Jarrahdale	544	2.0
South Perth	535	1.3

Table 9: Aboriginal median age of death and avoidable mortality by cause* (ASR per 100,000) for the Perth South PHN by IARE (2010-2014)

Indigenous Area (IARE)	Median age at death of Aboriginal males (years)	Median age at death of Aboriginal females (years)	Median age at death of Aboriginal persons (years)	Mortality cause			
				Cancer	Circulatory system diseases	Respiratory system diseases	External causes
Australia	54.0	60.0	57.0	71.0	78.7	24.7	62.0
WA (total population)	76.0	83.0	80.0	94.3	44.0	13.1	35.4
WA (Aboriginal population)	52.0	58.0	54.0	78.0	106.0	24.9	93.7
Greater Perth	51.0	57.0	54.0	65.2	76.5	14.6	65.4
Rest of Western Australia	52.0	58.0	55.0	82.8	120.1	29.4	108.6
Armadale	52.5	63.0	58.0	53.8	92.6	0.0	60.5
Belmont	51.0	61.5	55.0	132.4	126.4	0.0	NA
Canning	48.0	61.0	57.5	NA	131.4	NA	NA
Cockburn	46.5	49.5	47.5	NA	51.7	0.0	105.6
Fremantle	53.5	47.5	50.5	0.0	NA	0.0	NA
Gosnells	47.0	56.0	52.0	114.5	82.0	NA	84.4
Kwinana	55.0	59.0	55.0	114.1	NA	NA	NA
Mandurah	NA	NA	48.5	NA	NA	NA	NA
Melville	NA	NA	35.0	0.0	0.0	NA	NA
Rockingham	34.0	48.0	40.5	NA	NA	0.0	70.6
Serpentine-Jarrahdale	NA	NA	NA	NA	NA	0.0	0.0
South Perth-Victoria Park	70.0	60.0	66.0	NA	177.2	NA	102.5

* Population aged 0-74 years

Table 10: Hospital admissions for Aboriginal people by age and selected principal diagnosis, Perth South PHN by IARE (2012-13)

Indigenous Area (IARE)	Total Admissions (ASR per 100,000)		Admissions by selected diagnosis (ASR per 100,000 Aboriginal population)					
	0-14 years	15+ years	Total admissions	Mental health	Circulatory system diseases	Respiratory system diseases	Digestive system diseases	Injury, poisoning & other external causes
Australia	16,872	76,574.8	55,639.7	2,371.3	1,676.3	3,029.7	2,794.0	4,000
WA (total population) *	N/A	N/A	21,037.3	960.6	1,437.0	1,260.9	2,065.4	2,259.1
WA (Aboriginal population)	21,112.8	124,889.1	88,571.7	3,196.7	1,984.8	4,382.7	3,198.5	5,776.6
Greater Perth	14,803.9	136,246.5	93,430.7	3,270.0	1,668.3	2,485.4	2,616.5	4246.8
Rest of Western Australia	25,407.3	118,101.3	85,614.3	3,128.6	2,163.6	5,567.2	3,560.1	6,758.2
Armadale	13,354.8	91,220.4	63,521.7	2,543.1	1,979.5	2,291.7	1,955.2	3,866.3
Belmont	19,684.3	184,665.4	127,575.0	8,118.4	1,687.5	3,879.5	3,222.9	8,139.6
Canning	23,731.6	279,859.9	190,341.6	3,391.1	1,804.0	2,564.4	1,349.7	6,243.6
Cockburn	15,312.0	115,096.7	80,039.9	3,312.4	1,608.5	2,271.8	3,016.9	5,210.5
Fremantle	21,916.9	295,957.8	202,350.6	4,799.7	3,414.8	4,670.5	6,036.7	8,453.7
Gosnells	15,308.5	77,161.2	55,464.8	3,068.2	1,274.3	1,656.7	2,108.9	3,605.4
Kwinana	11,933.2	120,015.5	82,678.9	1,318.8	1,864.0	2,416.2	2,875.2	2,846.9
Mandurah	13,754.9	61,772.4	44,948.9	2,347.4	1,375.4	2,698.1	2,042.8	2,334.4
Melville	23,482.1	189,293.4	131,327.5	3,878.2	NA	4,394.2	4,547.1	5,403.0
Rockingham	10,907.6	85,943.0	59,188.3	1,378.7	970.3	2,202.8	1,686.4	1,703.4
Serpentine - Jarrahdale	7,602.7	20,141.1	15,993.3	NA	NA	NA	NA	NA
South Perth - Victoria Park	13,747.8	462,966.4	309,335.0	4,855.8	3,142.0	3,839.7	4,419.2	6,220.0

* Public hospital admissions (ASR per 100,000 total population)

Table 11: Ambulatory-sensitive hospitalisations for Aboriginal people, ASR per 100,000 Aboriginal persons, Perth South PHN by IARE (2012-13)

Indigenous Area (IARE)	All ages	0-14 years	15+ years
Australia	4,581.8	3,283.3	5,283.0
Western Australia	6,355.8	4,377.9	7,420.8
Greater Perth	4,168.2	2,476.7	5,094.7
Rest of Western Australia	7,695.1	5,662.5	8,799.1
Armadale	3,385.0	1,565.7	4,455.7
Belmont	7,593.1	2,434.7	10,234.1
Canning	4,753.8	2,953.3	5,715.2
Cockburn	4,962.4	1,652.4	6,774.2
Fremantle	9,886.3	5,994.9	11,898.5
Gosnells	3,303.9	2,582.1	3,691.6
Kwinana	3,135.8	2,818.5	3,348.3
Mandurah	2,822.8	2,626.9	2,822.2
Melville	5,877.6	7,007.8	5,330.8
Rockingham	2,028.7	1,350.6	2,404.4
Serpentine - Jarrahdale	3,160.2	NA	NA
South Perth - Victoria Park	6,846.8	2,713.0	8,910.7

Table 12: Maternal and early childhood health outcomes for the Aboriginal population in Perth South PHN, by IARE

Indigenous Area (IARE)	Smoking during pregnancy % (2012-14)	Low birth weight babies % (2012-14)	Developmentally vulnerable on one or more domains % (2015)	Developmentally vulnerable on two or more domains % (2015)
Australia	47.3	11.5	42.1	26.2
WA (total population)	8.9	6.0	21.3	10.5
WA (Aboriginal population)	48.2	14.9	47.5	28.8
Greater Perth	44.5	16.3	38.4	20.3
Armadale	51.1	18.1	46.8	30.6
Belmont	49.1	19.1	47.8	34.8
Canning	55.7	18.8	40.7	22.2
Cockburn	39.0	17.8	39.3	24.6
Fremantle	30.6	NA	NA	NA
Gosnells	43.8	17.0	35.9	19.2
Kwinana	41.4	15.9	32.4	15.2
Mandurah	32.5	9.9	37.5	21.4
Melville	40.0	15.6	29.2	12.5
Rockingham	41.7	11.8	17.1	5.7
Serpentine-Jarrahdale	NA	NA	NA	NA
South Perth-Victoria Park	56.8	25.1	30.8	15.4

Country WA PHN

Table 13: Socioeconomic disadvantage indicators for the Aboriginal population (education, employment and housing) in Country WA PHN by IARE (2016)

Indigenous Area (IARE)	IRSEO Index ¹ (2011)	Secondary school participation ² %	Unemployment (2011) %	Female labour force participation (2011) %	Aboriginal single parent families with children ³	Aboriginal low-income families %	Aboriginal jobless families with children ³ (2011) %	Government housing ⁴ %	Housing suitability ⁵ %	Dwellings with no internet connection %
Australia	46	71.3	17.1	46.3	45.9	13.1	39.8	18.6	10.0	23.6
Western Australia	59	64.3	17.8	41.3	46.3	15.3	42.0	26.5	11.3	29.6
Greater Perth	40	71.1	17.6	46.5	47.7	12.8	41.6	16.7	7.9	19.7
Rest of Western Australia	72	61.0	17.7	38.4	45.1	17.4	42.3	35.8	14.6	38.8
Kimberley										
Argyle - Warmun	85	66.7	23.1	48.0	46.4	35.7	33.9	56.8	31.5	43.2
Broome	52	83.0	15.5	43.2	50.3	11.7	38.2	36.8	11.6	35.1
Broome - Surrounds	85	57.1	18.6	30.4	43.8	28.4	51.0	84.9	28.6	40.3
Derby - Mowanjumb	74	57.7	12.7	47.5	44.0	17.6	30.8	52.7	17.9	40.3
Fitzroy Crossing	86	75.0	10.5	31.9	46.3	21.6	47.3	79.5	27.1	69.6
Fitzroy River	90	65.2	5.5	29.1	33.9	29.3	39.6	91.3	26.5	55.3
Great Sandy Desert	96	12.0	16.1	18.5	33.9	36.9	72.5	78.2	27.7	68.1
Halls Creek	90	36.4	29.9	29.7	60.8	26.8	64.1	71.9	36.4	62.3
Halls Creek - Surrounds	85	100.0	8.9	44.0	33.3	26.6	39.3	73.5	32.4	50.0
Kalumburu	94	33.3	38.7	25.6	36.8	24.1	52.7	0.0	37.7	92.8
Kununurra	79	28.6	13.5	37.6	60.9	14.7	39.3	42.6	18.4	44.3
North Kimberley	84	0.0	15.2	28.3	47.5	28.4	46.9	41.1	21.9	54.8
Outer Derby - West Kimberley	88	61.5	10.5	31.7	39.6	37.7	46.9	88.7	38.7	40.7
Wyndham	74	0.0	19.9	42.1	50.9	13.8	54.8	48.6	18.0	59.5
Midwest										
Carnarvon - Mungullah	82	66.7	23.0	36.8	54.2	18.1	50.0	44.0	16.7	47.9
Shark Bay - Coral Bay - Upper Gascoyne	79	0.0	6.6	42.9	27.0	11.9	41.0	52.7	14.9	56.8

Carnegie South - Mount Magnet	89	36.4	30.9	31.3	44.7	15.3	49.2	33.3	9.5	60.7
Central West Coast	76	36.4	25.0	36.8	52.1	18.9	59.7	19.4	10.8	45.3
Geraldton	71	75.6	23.9	39.4	55.1	14.3	43.6	23.7	9.7	34.0
Irwin - Morawa	54	100.0	20.0	47.2	48.3	15.2	40.3	10.0	5.6	36.3
Meekathara - Karalundi	85	0.0	18.8	23.2	58.0	10.5	43.9	48.4	18.9	65.3
Goldfields										
Esperance - Ravensthorpe	54	75.6	15.8	49.5	40.0	11.4	34.7	20.3	5.7	30.0
Kalgoorlie - Dundas - Goldfields	74	71.4	18.7	31.9	54.8	14.3	45.8	11.2	13.5	36.5
Kalgoorlie - Ningia Mia	70	51.2	19.4	38.8	46.7	13.6	36.3	28.0	14.2	35.8
Laverton - Ngaanyatjaraku	92	42.9	13.0	34.6	34.7	24.3	40.2	84.4	27.9	59.2
Menzies - Leonora	90	100.0	12.9	29.7	35.9	21.2	47.9	24.7	25.8	61.9
Warburton	97	0.0	3.7	27.3	22.8	25.6	50.0	82.7	39.8	41.8
Wiluna	94	0.0	31.7	29.1	38.7	27.5	69.2	63.0	39.1	67.4
Pilbara										
East Pilbara	79	65.8	14.1	36.2	30.0	20.7	33.9	31.1	28.9	49.2
Port Hedland	56	56.3	15.7	44.5	40.4	15.4	29.7	31.2	9.1	32.6
Exmouth - Ashburton	49	70.0	9.2	54.0	24.8	16.6	25.2	10.9	7.2	27.8
Karratha	32	82.9	12.0	49.5	38.8	13.4	21.4	32.3	11.7	33.4
Roebourne - Wickham	78	63.0	17.0	36.6	41.5	17.1	36.5	33.1	20.3	45.2
Great Southern										
Albany	60	69.0	19.9	44.9	44.9	12.4	41.5	22.1	7.8	31.7
Kojonup - Gnowangerup	80	100.0	29.9	22.1	58.6	22.7	58.2	26.6	10.5	48.3
South West										
Bunbury	67	69.2	22.0	40.6	61.7	13.3	45.9	22.5	7.7	29.7
Busselton	34	100.0	10.7	45.7	39.6	13.1	34.7	18.4	6.9	12.6
Harvey and Surrounds	51	71.4	14.3	40.6	40.0	9.8	36.5	15.5	4.8	20.6
Manjimup - Denmark - Plantagenet	72	54.5	28.0	43.3	37.0	12.8	44.2	17.9	9.2	30.1
South-West	32	83.3	13.4	45.9	42.1	15.2	35.1	14.2	6.9	21.9

Wheatbelt										
Avon	77	100.0	26.3	39.9	48.3	11.0	51.6	23.2	8.8	33.6
Campion	60	100.0	23.9	44.0	48.6	20.3	37.7	23.0	3.1	38.5
Moora - Chittering	55	100.0	13.1	37.7	38.5	11.6	40.2	16.9	12.2	32.9
Narrogin - Wagin - Katanning	80	50.0	28.6	32.2	53.6	14.9	58.3	25.3	11.0	38.7
Northam	82	75.0	37.4	43.3	62.6	19.0	51.2	47.2	12.3	54.6
Hotham - Kulin	83	0.0	35.0	36.6	41.5	22.1	63.2	28.6	10.7	48.2
Murray - Waroona - Boddington	54	87.5	22.9	44.6	35.6	15.1	53.2	10.2	11.2	21.4

¹ Indigenous Relative Socioeconomic Outcome Index (IRSEO). The index ranges from 1 to 100, where a score of 1 represents the most relatively advantaged and a score of 100 represents the most relatively disadvantaged.

² Full-time participation in secondary school education at age 16.

³ Children aged less than 15 years.

⁴ Dwelling rented from the government housing authority.

⁵ Dwellings with households requiring extra bedrooms

Table 14: Aboriginal population (Usual Resident Population) and percentage of total population by SA3 in the Country WA PHN (2016)

Area	Number	%
Australia	649,171	2.8
WA	75,978	3.1
Perth North PHN	14,103	1.4
Perth South PHN	17,240	1.8
Country WA PHN	44,058	8.5
Albany	2,159	3.6
Augusta - Margaret River - Busselton	797	1.6
Bunbury	2,820	2.7
Manjimup	515	2.3
Goldfields	4,794	12.3
Esperance	622	3.9
Kimberley	14,299	41.6
Midwest	5,177	9.6
Gascoyne	1,275	13.4
East Pilbara	4,486	17.9
West Pilbara	3,828	11.1
Wheatbelt – North	2,416	4.3
Wheatbelt – South	988	4.9

Table 15: Median age of death and avoidable mortality by cause* (ASR per 100,000) for the Country WA PHN (2010-2014)

Area	Median age of death (years)	All Cancers	Diabetes	Circulatory system diseases	Ischemic heart disease	Respiratory system diseases	COPD	Suicide and self-inflicted injuries	Transport accidents
Australia	81.0	29.5	5.9	37.3	24.1	9.2	8.5	11.2	6.2
WA (Total pop.)	80.0	26.8	6.0	36.0	24.4	7.5	6.8	13.7	8.5
WA (Aboriginal pop.)	54.0	78.0	NA	106.0	NA	24.9	NA	93.7	93.7
Perth South PHN	81.0	28.1	5.1	33.8	22.6	6.9	6.4	13.2	5.7
Perth North PHN	81.0	25.6	4.6	29.7	20.3	6.6	5.9	11.6	4.6
Country WA PHN	76.0	27.0	9.8	47.9	32.7	10.0	9.2	18.0	16.3
Rest of WA (IARE)	52.0	82.8	NA	120.1	NA	29.4	NA	108.6**	108.6**
Albany	80.0	27.8	5.3	33.7	22.8	8.9	8.4	14.5	10.0
Augusta - Margaret River - Busselton	82.0	24.4	4.2	19.1	14.5	5.9	5.0	16.3	13.7
Bunbury	80.0	30.9	6.1	39.9	26.0	9.2	8.3	14.2	12.3
Manjimup	79.0	25.3	5.0	39.5	26.5	7.7	7.0	19.3	15.9
Goldfields	66.0	30.2	21.2	75.4	53.8	18.2	16.3	19.2	13.6
Esperance	77.0	28.5	13.6	55.5	43.2	8.6	7.3	18.8	14.9
Kimberley	59.0	19.7	40.0	131.2	75.6	33.9	34.5	45.9	24.3
Midwest	75.0	34.2	9.7	57.5	42.4	7.9	7.9	19.4	16.5
Gascoyne	69.0	36.4	NA	54.8	40.5	10.2	NA	17.2	13.4
Pilbara	57.0	10.0	19.1	64.3	38.2	12.6	13.0	11.0	10.9
Wheatbelt – North	76.0	28.7	6.2	38.2	27.9	8.5	7.0	17.2	32.6
Wheatbelt – South	79.0	20.7	9.4	44.6	33.4	8.5	8.5	15.1	28.0

* Population aged 0-74 years

** Deaths from external causes

Table 16: Ambulatory-sensitive hospitalisations and hospital admissions for Aboriginal people, by age and selected principal diagnosis, Country WA PHN by IARE (2012-13)

Indigenous Area (IARE)	Total ambulatory-sensitive hospitalisations (all ages)	Admissions by selected diagnosis (rate per 100,000 Aboriginal population)					
		Total admissions	Mental health	Circulatory system diseases	Respiratory system diseases	Digestive system diseases	Injury, poisoning and other external causes
Australia	4,582	55,640	2,371	1,676	3,030	2,794	4,000
WA (Total pop.)	NA	21,037	961	1,437	1,261	2,065	2,259
WA (Aboriginal pop.)	6,356	88,572	3,197	1,985	4,383	3,198	5,777
Greater Perth	4,168	93,431	3,270	1,668	2,485	2,616	4,247
Rest of Western Australia	7,695	85,614	3,129	2,164	5,567	3,560	6,758
Kimberley							
Argyle - Warmun	12,320	66,561	4,252	2,309	7,413	4,122	11,161
Broome	10,336	234,480	4,697	2,463	8,095	5,862	12,782
Broome - Surrounds	NA	NA	NA	NA	NA	NA	NA
Derby - Mowanjum	13,694	92,148	3,311	3,893	9,419	4,087	10,783
Fitzroy Crossing	14,445	95,414	3,050	2,705	10,743	4,879	10,965
Fitzroy River	14,740	97,960	3,010	3,235	10,347	5,207	12,974
Great Sandy Desert	10,554	60,505	2,107	2,662	7,721	2,768	7,865
Halls Creek	9,821	61,329	2,383	3,097	8,221	3,770	6,773
Halls Creek - Surrounds	7,211	57,324	2,169	2,132	7,575	3,103	8,223
Kalumburu	10,748	73,166	5,718	NA	9,381	6,108	10,179
Kununurra	11,865	77,257	5,518	2,940	8,545	7,426	11,758
North Kimberley	11,053	74,468	4,950	NA	7,999	5,604	10,193
Outer Derby - West Kimberley	12,251	88,965	1,733	1,266	9,878	4,397	9,777
Wyndham	14,148	74,215	6,370	2,108	8,468	7,505	13,025
Midwest							
Carnarvon - Mungullah	6,087	39,527	3,493	1,244	4,417	3,639	7,337
Shark Bay - Coral Bay - Upper Gascoyne	NA	16,535	NA	NA	NA	NA	4,275
Carnegie South - Mount Magnet	9,461	48,615	1,985	3,261	4,990	3,346	11,501
Central West Coast	4,420	77,277	3,327	NA	3,829	3,564	6,800
Geraldton	6,529	79,455	2,631	2,543	3,555	3,206	4,395
Irwin - Morawa	3,851	22,023	NA	2,963	3,427	NA	NA
Meekathara - Karalundi	6,377	45,818	2,707	2,355	4,485	2,761	9,752
Goldfields							
Esperance - Ravensthorpe	3,579	33,441	5,317	NA	2,868	2,128	4,554
Kalgoorlie - Dundas - Goldfields	8,416	48,631	3,519	2,373	5,712	2,708	4,174
Kalgoorlie - Ningia Mia	7,487	158,568	4,222	3,218	4,886	3,087	5,662
Laverton - Ngaanyatjaraku	6,111	104,176	1,218	1,773	4,494	2,427	6,113
Menzies - Leonora	5,953	106,510	2,010	2,019	5,047	1,506	5,214

Warburton	4,678	101,405	2,144	NA	5,861	2,249	4,389
Wiluna	5,592	44,069	4,080	NA	3,847	2,457	11,117
Pilbara							
East Pilbara	5,484	53,822	1,775	1,406	4,157	2,205	7,707
Port Hedland	9,931	198,292	2,846	2,453	8,913	4,320	7,309
Exmouth - Ashburton	8,287	33,550	1,868	2,396	5,640	3,578	3,656
Karratha	7,467	46,960	4,249	2,256	4,213	4,436	5,310
Roebourne - Wickham	6,764	51,940	1,756	2,834	5,133	2,699	5,094
Great Southern							
Albany	4,318	37,028	3,424	1,299	3,690	3,897	1,895
Kojonup - Gnowangerup	5,141	36,495	3,808	NA	5,119	3,440	2,041
South West							
Bunbury	4,121	63,022	2,536	1,727	2,669	3,620	4,777
Busselton	4,364	25,140	2,936	NA	1,710	2,360	2,378
Harvey and Surrounds	3,035	36,905	3,561	NA	NA	4,707	2,712
Manjimup - Denmark - Plantagenet	2,938	25,350	4,816	NA	2,491	1,860	2,427
South-West	4,335	40,428	2,331	1,522	2,863	1,723	2,284
Wheatbelt							
Avon	5,816	36,161	2,919	1,768	3,464	2,723	4,976
Campion	5,961	42,537	5,239	NA	3,515	2,449	5,493
Moora - Chittering	4,354	23,194	1,968	2,124	1,920	2,396	2,826
Narrogin - Wagin - Katanning	8,120	55,132	9,427	2,727	7,426	2,939	6,821
Northam	6,589	62,408	2,562	2,299	3,652	4,257	4,437
Hotham - Kulin	3,335	25,257	3,962	NA	1,755	1,998	4,307
Murray - Waroona - Boddington	2,842	19,653	NA	NA	NA	NA	2,769

Table 17: Maternal and early childhood health outcomes in Country WA PHN, by IARE

Area	Low birth weight babies (2012 to 2014) %	Smoking during pregnancy (2012 to 2014) %	Developmentally vulnerable on one or more domains (2015) %	Developmentally vulnerable on two or more domains (2015) %
Australia	6.1	12.3	22.0	11.1
Western Australia	6.0	8.9	21.3	10.5
Perth North PHN	6.6	6.3	19.4	9.4
Perth South PHN	6.5	9.5	20.9	9.8
Country WA PHN	5.8	13.3	25.3	13.4
Rest of Western Australia – Aboriginal population	14.1	50.3	53.5	34.4
Kimberley				
Argyle - Warmun	15.3	56.7	..	..
Broome	12.3	44.9	53.3	37.0
Broome - Surrounds	10.8	47.1	75.7	54.1
Derby - Mowanjum	13.1	64.6	38.2	20.0
Fitzroy Crossing	13.1	64.6	65.0	50.0
Fitzroy River	13.1	64.6	71.4	46.4
Great Sandy Desert	16.0	54.9	88.9	70.4
Halls Creek	16.0	54.9	..	..
Halls Creek - Surrounds	16.0	54.9	..	..
Kalumburu	14.6	58.4	..	..
Kununurra	14.6	58.4	66.7	40.9
North Kimberley	..	58.4	..	..
Outer Derby - West Kimberley	13.1	64.6	60.0	38.5
Wyndham	14.6	58.4	..	..
Midwest				
Carnarvon - Mungullah	11.8	53.5	61.5	42.3
Shark Bay - Coral Bay - Upper Gascoyne	..	66.7	..	..
Carnegie South - Mount Magnet	18.6	54.0	..	..
Central West Coast	12.8	56.4	..	..
Geraldton	14.0	48.6	53.6	36.9
Irwin - Morawa	..	40.0	25.0	6.3

Meekathara - Karalundi	18.6	54.0	..	..
Goldfields				
Esperance - Ravensthorpe	17.5	58.5	50.0	31.8
Kalgoorlie - Dundas - Goldfields	..	44.2	41.2	17.6
Kalgoorlie - Ningia Mia	14.8	35.0	42.7	25.3
Laverton - Ngaanyatjaraku	17.5	52.0	..	..
Menzies - Leonora	..	52.0	..	..
Warburton	..	52.0	..	..
Wiluna	..	54.0	..	..
Pilbara				
East Pilbara	12.0	52.0	58.8	41.2
Port Hedland	13.5	50.0	60.5	39.5
Exmouth - Ashburton	13.8	61.2	28.6	9.5
Karratha	6.5	45.9	67.4	36.6
Roebourne - Wickham	18.0	53.2	65.4	53.8
Great Southern				
Albany	17.4	39.4	42.1	23.7
Kojonup - Gnowangerup	..	45.0	..	..
South West				
Bunbury	15.4	43.1	50.0	28.9
Busselton	17.6	27.3	..	..
Harvey and Surrounds	20.5	47.7	41.7	16.7
Manjimup - Denmark - Plantagenet	..	47.8	54.2	41.7
South-West	14.5	38.8	38.2	20.6
Wheatbelt				
Avon	13.9	38.9	37.5	28.1
Campion	21.7	66.7	..	..
Moora - Chittering	..	55.8	50.0	27.8
Narrogin - Wagin - Katanning	24.7	47.6	48.5	12.1
Northam	17.5	44.8	20.8	12.5
Hotham - Kulin	..	45.2	40.0	32.0
Murray - Waroona - Boddington	..	56.3	..	..

Service Needs Analyses

Perth North PHN

Table 18: Health practitioners per 10,000 resident population for the Perth North PHN by SA3 (2015)

Area	Aboriginal health Practitioners	Dental Practitioners	Nurses & Midwives (Total)	Nurses & Midwives (AHS*)	Occupational Therapists	Pharmacists	Physiotherapists	General Practitioners**
Australia	0.22	9.04	151.41	0.69	7.54	12.37	11.92	9.57
Western Australia	0.29	9.74	140.81	0.99	10.06	12.21	13.25	8.98
Perth North PHN	0.12	12.80	173.41	0.25	13.18	14.53	16.96	9.43
Perth South PHN	0.07	8.57	114.76	0.24	8.92	12.36	12.22	8.40
Country WA PHN	0.98	5.93	124.38	3.76	6.04	7.48	7.91	9.16
Cottesloe - Claremont	0.00	27.60	571.52	0.69	28.71	36.21	51.33	16.51
Perth City	0.64	35.51	723.21	0.83	47.81	40.65	54.33	19.82
Bayswater - Bassendean	0.00	11.45	41.22	0.00	6.18	12.94	8.82	6.99
Mundaring	0.00	5.20	43.66	0.00	2.04	6.33	4.98	5.20
Swan	0.24	6.98	84.07	0.31	5.72	8.86	9.02	7.76
Joondalup	0.00	13.64	154.19	0.18	12.15	10.30	14.71	10.54
Stirling	0.00	8.98	63.66	0.24	12.92	10.81	12.97	6.49
Wanneroo	0.00	5.99	36.97	0.16	2.60	7.42	4.45	6.89
Kalamunda	0.00	6.08	40.11	0.00	3.12	8.71	5.10	7.40

* AHS = Aboriginal Health Service.

** Medical practitioners with general practice as a primary speciality.

Table 19: Fully immunised children in the Perth North, Perth South and Country WA PHNs, as at June 2017

Area	Children fully immunised at 1 year of age (12-<15 months) %	Children fully immunised at 2 years of age (24-<27 months) %	Children fully immunised at 5 years of age (60-<63 months) %
Australia (all)	93.8	90.0	93.6
Australia (Aboriginal)	92.2	88.6	95.7
Western Australia (all)	93.1	89.9	91.6
Western Australia (Aboriginal)	88.8	83.6	94.6
Perth North PHN (all)	93.9	89.7	91.1
Perth North PHN (Aboriginal)	86.4	80.9	92.9
Perth South PHN (all)	93.6	88.5	91.8
Perth South PHN (Aboriginal)	84.6	78.9	95.0
Country WA PHN (all)	93.8	90.9	92.5
Country WA PHN (Aboriginal)	90.4	84.6	95.3

Perth South PHN

Table 20: Health practitioners per 10,000 resident population for the Perth South PHN by SA3 (2015)

Area	Aboriginal health Practitioners	Dental Practitioners	Nurses & Midwives (Total)	Nurses & Midwives (AHS*)	Occupational Therapists	Pharmacists	Physiotherapists	General Practitioners**
Australia	0.22	9.04	151.41	0.69	7.54	12.37	11.92	9.57
Western Australia	0.29	9.74	140.81	0.99	10.06	12.21	13.25	8.98
Perth North PHN	0.12	12.80	173.41	0.25	13.18	14.53	16.96	9.43
Perth South PHN	0.07	8.57	114.76	0.24	8.92	12.36	12.22	8.40
Country WA PHN	0.98	5.93	124.38	3.76	6.04	7.48	7.91	9.16
Armadaale	0.00	5.23	137.01	0.00	6.85	6.97	8.22	7.60
Belmont-Victoria Park	0.00	6.90	47.37	0.00	13.40	11.81	11.01	6.50
Canning	0.00	11.35	112.54	0.39	16.83	21.63	20.65	11.35
Cockburn	0.00	5.51	45.52	0.00	5.89	9.03	6.18	7.13
Fremantle	0.00	16.19	275.67	0.00	23.38	25.95	36.23	17.47
Gosnells	0.24	3.60	31.59	0.40	2.00	6.40	3.20	5.60
Kwinana	0.00	2.69	42.80	0.81	1.35	7.00	3.77	5.92
Mandurah	0.00	7.77	91.20	0.40	3.29	9.37	6.78	7.48
Melville	0.27	15.80	349.65	0.00	18.36	25.48	29.78	12.79
Rockingham	0.00	7.29	89.48	0.23	5.58	7.68	7.68	7.44
Serpentine-Jarrahdale	0.00	3.31	23.18	0.00	0.00	3.31	1.66	4.97
South Perth	0.00	20.30	95.68	0.65	11.02	10.80	15.12	6.26

* AHS = Aboriginal Health Service.

** Medical practitioners with general practice as a primary speciality

Country WA PHN

Table 21: Health practitioners per 10,000 resident population for the Country WA PHN by SA3 (2015)

Area	Aboriginal health Practitioners	Dental Practitioners	Nurses & Midwives (Total)	Nurses & Midwives (AHS*)	Occupational Therapists	Pharmacists	Physiotherapists	General Practitioners**
Australia	0.22	9.04	151.41	0.69	7.54	12.37	11.92	9.57
Western Australia	0.29	9.74	140.81	0.99	10.06	12.21	13.25	8.98
Perth North PHN	0.12	12.80	173.41	0.25	13.18	14.53	16.96	9.43
Perth South PHN	0.07	8.57	114.76	0.24	8.92	12.36	12.22	8.40
Country WA PHN	0.98	5.93	124.38	3.76	6.04	7.48	7.91	9.16
Albany	0.50	7.15	139.95	1.16	9.47	7.15	10.47	10.30
Augusta - Margaret River - Busselton	0.00	9.58	105.01	0.60	9.98	9.38	11.18	14.17
Bunbury	0.00	7.57	131.51	0.75	5.79	7.85	8.78	7.57
Manjimup	0.00	4.81	110.30	0.00	3.50	9.63	4.81	7.44
Goldfields	3.20	3.88	108.93	5.71	4.57	6.39	4.80	5.02
Esperance	0.00	7.17	106.30	0.00	4.78	4.18	5.97	8.96
Kimberley	5.41	4.12	193.29	26.55	6.19	6.44	6.96	15.98
Midwest	1.03	6.55	140.41	2.76	6.38	7.59	8.97	10.00
Gascoyne	0.00	5.05	134.29	3.03	5.05	11.11	5.05	19.18
Pilbara	1.06	3.80	97.94	4.71	5.16	5.92	8.65	7.44
Wheatbelt - North	0.00	3.73	98.44	1.24	3.02	8.00	4.26	6.40
Wheatbelt - South	0.00	4.64	140.63	1.86	5.11	9.28	7.89	6.96

* AHS = Aboriginal Health Service.

** Medical practitioners with general practice as a primary specialty.

AOD Tables

Table 22: Perth North PHN modelled estimate of avoidable death from suicide and self-inflicted injuries between 2010-2014, mapped to population prevalence of excessive alcohol consumption, and proportion of Aboriginal people in the population, by location

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years 2010-2014		Indigenous status 2016 ERP (non-ABS)	
	Number	ASR per 100 people over 15yrs	Number	Average annual ASR per 100,000	Aboriginal people	Aboriginal population as proportion of total population (%)
AUSTRALIA	3,102,641	16.72	11,874	11.15	744,956	3.07
Western Australia	390,043	19.54	1,581	13.71	97,681	3.59
Perth North PHN	164,934	19.40	552	11.55	17,915	1.60
Wanneroo	23,208	16.30	70	8.98	3,514	1.73
Wanneroo - South	3,852	14.62	13	8.39	940	2.74
Butler - Merriwa - Ridgewood/ Clarkson	4,223	15.25	16	10.47	936	2.27
Carramar/ Tapping - Ashby - Sinagra	4,709	20.82	9	7.37	444	1.31
Madeley - Darch - Landsdale	2,145	11.51	6	6.03	141	0.54
Mindarie - Quinns Rocks - Jindalee	2,927	19.30	8	8.99	321	1.52
Wanneroo 50043	3,296	15.24	14	11.75	383	1.26
Yanchep	2,056	19.97	#	..	349	2.20
Joondalup	29,004	21.24^	72	9.07	1,104	0.64
Craigie - Beldon	2,006	23.52	7	13.87	163	1.53
Currambine - Kinross	2,457	20.66	7	9.73	87	0.56



Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years 2010-2014		Indigenous status 2016 ERP (non-ABS)	
	Number	ASR per 100 people over 15yrs	Number	Average annual ASR per 100,000	Aboriginal people	Aboriginal population as proportion of total population (%)
Duncraig/ Hillarys/ Sorrento - Marmion	7,353	22.98	11	6.02	166	0.41
Greenwood - Warwick	2,672	22.49	7	10.16	147	0.99
Heathridge - Connolly/ Joondalup - Edgewater	5,241	24.19	10	7.81	215	0.80
Joondalup - North Coast	4,576	19.10	12	8.86	124	0.40
Kingsley/ Padbury/ Woodvale	4,699	17.61	18	11.50	202	0.60
Stirling	32,278	19.05	137	14.60^	3,207	1.47
Balcatta - Hamersley/ Stirling/ Tuart Hill area	6,926	18.29	38	18.01^	452	0.95
Balga - Mirrabooka/ Nollamara - Westminster	4,191	13.40	25	14.50	1,618	3.91
Dianella/ Yokine - Coolbinia - Menora	5,699	16.09	31	15.97^	335	0.74
Innaloo - Doubleview/ Karrinyup - Gwelup - Carine	7,387	23.07	18	10.15	441	1.04
Stirling - West	8,075	24.55	25	13.63	361	0.86
Bayswater - Bassendean	12,504	17.34	58	14.29	1,687	1.84
Bassendean - Eden Hill - Ashfield	2,596	19.77	17	22.87^	535	3.10
Bayswater - Embleton - Bedford/ Maylands	6,511	19.97	22	11.93	762	1.85
Morley	2,424	12.68	13	12.29	343	1.42
Noranda	973	13.44	6	14.49	46	0.51
Perth City	18,391	20.06	53	10.01	737	0.65
Mount Hawthorn - Leederville/ North Perth	3,376	19.40	11	10.88	109	0.49
Mount Lawley - Inglewood	2,976	19.68	9	10.03	140	0.75



Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years 2010-2014		Indigenous status 2016 ERP (non-ABS)	
	Number	ASR per 100 people over 15yrs	Number	Average annual ASR per 100,000	Aboriginal people	Aboriginal population as proportion of total population (%)
Kings Park (WA)/ Perth City	6,163	21.16	20	11.92	290	0.85
Perth City - West	5,876	19.56	13	7.61	199	0.52
Mundaring	8,739	25.03^	28	13.60	1,604	3.53
Chidlow/ Malmalling - Reservoir/ Mundaring	3,765	27.62^	11	12.65	695	3.76
Glen Forrest - Darlington/ Helena Valley area	2,667	25.21	8	13.47	202	1.51
Swan View - Greenmount - Midvale	2,307	21.56	9	15.10	708	5.19
Kalamunda	9,303	19.31	37	13.65	1,278	2.01
Forrestfield - Wattle Grove/ High Wycombe	4,164	16.47	19	13.28	1,009	2.94
Kalamunda - East	5,139	22.45	18	14.05	268	0.92
Swan	16,651	16.87	69	12.83	4,431	3.26
Ballajura/ Bullsbrook	2,986	14.54	16	13.20	614	2.28
Beechboro/ Malaga	2,315	16.13	6	7.47	678	3.41
Ellenbrook/ Gidgegannup/ The Vines	6,024	18.21	18	10.93	1,142	2.36
Hazelmere - South Guildford	618	16.90	#	..	114	2.46
Lockridge - Kiara/ Midland - Guildford	2,706	16.19	14	15.11	1,207	5.41
Middle Swan - Herne Hill/ Stratton - Jane Brook	2,002	19.36	11	18.33	676	4.88
Cottesloe - Claremont	14,856	26.35*^	29	8.99	353	0.47
City Beach/ Floreat	3,051	26.34^	6	9.24	25	0.16
Cottesloe - Claremont - South	7,162	31.47*^	17	13.23	233	0.79



Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years 2010-2014		Indigenous status 2016 ERP (non-ABS)	
	Number	ASR per 100 people over 15yrs	Number	Average annual ASR per 100,000	Aboriginal people	Aboriginal population as proportion of total population (%)
Cottesloe - Claremont - Central	4,643	21.06	6	4.65	95	0.32

Key: Numbers in red denote higher than national average rate; '*' denote statistically significant; higher than national average rates that are not statistically significant are only highlighted when there is already an indicator significantly higher than the national average.

Table 23: Perth North PHN population prevalence estimates of excessive alcohol consumption mapped to associated social determinants of health, by SA3 and PHA (SA2 groups)

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	2014-15		2011	2016 ERP	2011	June 2016	June 2016	2011	2014-15
	Number	ASR per 100 people over 15yrs	IRSD Score	Aboriginal population as proportion of total population (%)	% dwellings with no Internet connection	% unemployed	% children in low income, welfare-dependent families	ASR per 100	Hospitalisations per 100,000 people (age-standardised)
AUSTRALIA	3,102,641	16.72	1000	3.07	19.65	5.88	22.47	34.28	180
Western Australia	390,043	19.54	1022	3.59	17.73	5.96	19.42	32.75	190
Perth North PHN	164,934	19.40	1045	1.60	15.51	5.80	15.68	28.72	187
Wanneroo	23,208	16.30	1026	1.73	13.66	8.54	20.03	34.54	160 [^]
Wanneroo - South	3,852	14.62	942	2.74	21.50	16.84	33.92	39.34	
Butler - Merriwa - Ridgewood/Clarkson	4,223	15.25	1009	2.27	12.44	10.65	26.42	33.52	
Carramar/ Tapping - Ashby - Sinagra	4,709	20.82	1070	1.31	9.44	5.14	12.58	31.46	
Madeley - Darch - Landsdale	2,145	11.51	1080	0.54	8.16	4.00	9.80	32.46	
Mindarie - Quinns Rocks -	2,927	19.30	1071	1.52	8.62	5.36	13.66	29.79	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Jindalee									
Wanneroo	3,296	15.24	1041	1.26	15.40	6.05	14.14	36.31	
Yanchep	2,056	19.97	1001	2.20	17.38	10.47	29.93	36.64	
Joondalup	29,004	21.24^	1082	0.64	10.71	3.96	9.67	27.75	180^
Craigie - Beldon	2,006	23.52	1032	1.53	15.04	7.59	22.22	35.45	
Currambine - Kinross	2,457	20.66	1081	0.56	7.95	4.38	11.57	29.37	
Duncraig/ Hillarys/ Sorrento - Marmion	7,353	22.98	1108	0.41	9.51	2.30	5.75	24.20	
Greenwood - Warwick	2,672	22.49	1067	0.99	13.52	5.26	10.58	30.59	
Heathridge - Connolly/ Joondalup - Edgewater	5,241	24.19	1053	0.80	11.42	6.08	14.97	28.26	
Joondalup - North Coast	4,576	19.10	1103	0.40	8.26	2.55	6.40	25.60	
Kingsley/ Padbury/ Woodvale	4,699	17.61	1082	0.60	11.69	3.46	8.23	29.23	
Stirling	32,278	19.05	1026	1.47	20.00	6.97	17.30	28.23	201^
Balcatta - Hamersley/ Stirling/	6,926	18.29	1023	0.95	22.08	5.72	14.92	31.60	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Tuart Hill area									
Balga - Mirrabooka/ Nollamara - Westminster	4,191	13.40	908	3.91	25.84	18.52	36.57	36.94	
Dianella/ Yokine - Coolbinia - Menora	5,699	16.09	1037	0.74	21.10	5.35	14.58	27.57	
Innaloo - Doubleview/ Karrinyup - Gwelup - Carine	7,387	23.07	1074	1.04	15.59	3.88	8.52	24.24	
Stirling - West	8,075	24.55	1083	0.86	15.15	3.23	9.35	21.65	
Bayswater - Bassendean	12,504	17.34	1017	1.84	20.48	5.63	17.33	31.44	179
Bassendean - Eden Hill - Ashfield	2,596	19.77	1004	3.10	21.49	6.92	22.24	34.71	
Bayswater - Embleton - Bedford/ Maylands	6,511	19.97	1021	1.85	19.56	4.98	14.98	27.79	
Morley	2,424	12.68	1006	1.42	22.45	6.69	19.21	35.26	
Noranda	973	13.44	1052	0.51	17.68	3.65	12.60	30.44	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Perth City	18,391	20.06	1068	0.65	14.57	4.49	8.20	18.15	301*^
Mount Hawthorn - Leederville/ North Perth	3,376	19.40	1071	0.49	16.68	4.27	5.81	21.89	
Mount Lawley - Inglewood	2,976	19.68	1074	0.75	14.86	4.12	7.66	19.92	
Kings Park (WA)/ Perth City	6,163	21.16	1049	0.85	12.92	5.92	18.27	16.63	
Perth City - West	5,876	19.56	1078	0.52	14.64	3.26	6.47	16.27	
Mundaring	8,739	25.03^	1039	3.53*^	16.44^	5.39*^	16.25^	33.31*^	171
Chidlow/ Malmalling - Reservoir/ Mundaring	3,765	27.62^	1054	3.76*^	13.57*^	3.98*^	13.05*^	31.88*^	
Glen Forrest - Darlington/ Helena Valley area	2,667	25.21	1074	1.51	11.94	3.51	8.87	27.68	
Swan View - Greenmount - Midvale	2,307	21.56	984	5.19	23.88	9.22	28.73	40.70	
Kalamunda	9,303	19.31	1050	2.01	14.99	3.82	14.85	33.73	131
Forrestfield - Wattle Grove/	4,164	16.47	1023	2.94	15.97	4.95	18.55	39.57	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
High Wycombe									
Kalamunda - East	5,139	22.45	1079	0.92	13.94	2.46	9.95	28.44	
Swan	16,651	16.87	1014	3.26	15.79	6.97	22.03	37.14	151
Ballajura/ Bullsbrook	2,986	14.54	1012	2.28	13.93	6.57	21.37	37.23	
Beechboro/ Malaga	2,315	16.13	991	3.41	16.67	8.58	25.30	38.09	
Ellenbrook/ Gidgegannup/ The Vines	6,024	18.21	1062	2.36	9.06	4.79	18.42	35.57	
Hazelmere - South Guildford	618	16.90	1036	2.46	17.66	5.72	16.79	36.34	
Lockridge - Kiara/ Midland - Guildford	2,706	16.19	953	5.41	25.20	10.30	30.41	36.42	
Middle Swan - Herne Hill/ Stratton - Jane Brook	2,002	19.36	1000	4.88	18.69	8.22	23.56	40.86	
Cottesloe - Claremont	14,856	26.35*^	1106	0.47	11.38	2.07	3.60	12.97	222
City Beach/ Floreat	3,051	26.34^	1130	0.16	11.29	1.58	2.23	15.53	
Cottesloe - Claremont - South	7,162	31.47*^	1091	0.79	12.80	2.50	4.60	13.08	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Cottesloe - Claremont - Central	4,643	21.06	1108	0.32	9.89	1.89	3.58	11.47	

Key: * significantly higher than PHN average; ^ significantly higher than national average.

Notes: Social determinants included when moderate association with excessive alcohol consumption ($r > 0.5$); statistical testing performed for locations where rate of excessive alcohol consumption is significantly higher while AOD related hospitalizations are lower or no different to the PHN or National averages.

Table 24: Perth South PHN modelled estimate of avoidable death from suicide and self-inflicted injuries between 2010-2014, mapped to population prevalence of excessive alcohol consumption, and proportion of Aboriginal people in the population, by location

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years		Indigenous status		Per capital alcohol consumption by estimated service population	
	2014-15		2010-2014		2016 ERP (non-ABS)		2011/12	
	Number	ASR per 100 people over 15yrs	Number	Average annual ASR per 100,000	Aboriginal people	%A&TSI	pcc/ESP	trend since 2005/06
AUSTRALIA	3,102,641	16.72	11,874	11.15	744,956	3.07	10.04	
Western Australia	390,043	19.54	1,581	13.71	97,681	3.59	11.94	
Perth South PHN	142,644	18.44	560	13.16	21,604	2.10	NA	
Mandurah	14,198	17.73	73	17.91^	2,493	2.37	13.01	
Dawesville - Bouvard/ Falcon - Wannanup	2,729	21.33	14	21.44^	270	1.63		
Greenfields/ Mandurah/ Mandurah - South	4,239	16.60	29	22.11^	1,217	3.71		
Halls Head - Erskine	2,949	18.34	8	9.54	318	1.54		
Mandurah - East	922	18.14	5	19.95	70	1.12		
Mandurah - North	2,007	15.38	7	10.98	256	1.39		
Pinjarra	1,352	18.01	10	25.99^	362	3.48		
Armadale	11,271	18.24	54	16.74^	2,630	3.04	10.58	increase
Armadale - Wungong - Brookdale	2,633	17.47	19	23.72^	1,332	6.33		
Armadale - West	2,659	19.91	13	17.62	138	0.81		
Camillo - Champion Lakes/ Kelmscott	2,709	19.47	15	19.41^	630	3.43		
Forrestdale - Harrisdale - Piara Waters	2,026	17.52	#	..	130	0.71		
Seville Grove	1,244	15.75	6	13.09	399	3.50		
Kwinana	5,235	19.12	16	10.60	1,751	4.37	10.47	upward
Kwinana - East	2,090	18.38	#	..	748	4.05		
Kwinana - West	3,145	19.65	12	13.29	1,003	4.63		
Cockburn	14,079	16.95	73	15.82^	2,313	2.07	9.48	

Banjup/ Jandakot/ Success - Hammond Park	3,903	14.84	17	11.56	413	1.10		
Beeliar/ Henderson/ Wattleup/ Yangebup	2,025	15.76	7	9.69	388	2.18		
Coolbellup/ South Lake - Cockburn Central	3,783	21.53	16	16.10	778	3.38		
Coogee/ North Coogee	1,671	18.93	11	24.47^	133	1.15		
Hamilton Hill/ Spearwood	2,697	15.41	22	22.52^	601	2.71		
Gosnells	15,694	16.20	67	12.19	3,741	2.85	8.01	
Beckenham/ Gosnells/ Maddington area	7,792	17.33	41	16.60^	2,265	3.81		
Canning Vale - East/ Huntingdale - Southern River	4,139	13.12	16	8.64	882	1.94		
Thornlie	3,763	18.45	10	8.51	595	2.26		
Melville	16,618	18.57	54	10.74	755	0.67	10.79	
Applecross - Ardross/ Bateman/ Booragoon	5,337	20.37	15	10.34	109	0.33		
Bicton - Palmyra/ Melville/ Winthrop	6,066	19.42	17	9.72	190	0.47		
Bull Creek/ Leeming/ Murdoch - Kardinya	4,494	16.03	17	10.63	150	0.43		
Willagee	721	17.91	5	21.76	306	5.58		
Fremantle	9,479	29.37*^	26	14.36	666	1.64	26.05	upward
East Fremantle/ Fremantle	5,828	29.81*^	19	17.09	250	1.01		
Fremantle - South/ O'Connor (WA)	3,651	28.69^	7	10.03	416	2.60		
Belmont - Victoria Park	11,155	17.82	40	11.38	2,133	2.73	14.4	reduce
Belmont - Ascot/ Rivervale - Kewdale area	6,118	18.06	28	14.95	1,539	3.56		
Victoria Park	5,037	17.54	12	7.31	594	1.71		
Rockingham	20,240	20.67	78	14.76^	2,488	1.81	10.41	
Baldivis/ Singleton - Golden Bay - Secret Harbour	6,654	18.65	21	12.15	693	1.25		
Cooloongup/ Rockingham/ Rockingham Lakes	3,658	17.59	23	19.79^	597	2.22		
Port Kennedy	2,344	20.97	6	8.87	298	1.90		
Safety Bay - Shoalwater/ Waikiki/ Warnbro	7,584	25.04^	28	16.32^	900	2.29		
Canning	12,836	15.59	46	9.87	1,394	1.31	8.94	upward
Canning - North	4,133	12.61	26	14.08	974	2.24		
Canning - South	6,472	17.32	11	5.20	227	0.47		
Parkwood - Ferndale - Lynwood	2,231	18.25	9	12.86	194	1.28		
South Perth	6,847	18.03	20	9.06	611	1.28	8	
Como/ South Perth - Kensington	5,151	18.01	11	6.68	404	1.16		
Manning - Waterford	1,696	18.08	9	16.02	207	1.59		

Serpentine - Jarrahdale	4,026	22.54	9	9.66	436	1.68	5.47	
Byford/ Mundijong/ Serpentine - Jarrahdale	4,026	22.54	9	9.66	436	1.68		
Bunbury**	18,606	21.69^	66	14.18^	3,532	3.13	9.75	
Harvey/ Waroona	2,804	25.44	8	13.69	455	3.24		
Wheatbelt – South**	3,712	21.69	15	15.13	1,289	5.94	8.8	reduce
Brookton	709	22.45	7	41.71^	329	8.58		

Key: Numbers in red denote higher than national average rate; ‘*’ denote statistically significant; higher than national average rates that are not statistically significant are only highlighted when there is already an indicator significantly higher than the national average.

** SA2s/ PHAs of Harvey/ Waroona (Bunbury) and Brookton (Wheatbelt – South) are classified in the Perth South PHN

Table 25: Perth South PHN population prevalence estimates of excessive alcohol consumption mapped to associated social determinants of health by SA3 and PHA (SA2 groups)

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Socioeconomic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	2014-15		2011	2016 ERP	2011	June 2016	June 2016	2011	2014-15
	Number	ASR per 100 people over 15yrs	IRSD Score	Aboriginal population as proportion of total population (%)	% dwellings with no Internet connection	% unemployed	% children in low income, welfare-dependent families	ASR per 100	Hospitalisations per 100,000 people (age-standardised)
AUSTRALIA	3,102,641	16.72	1000	3.07	19.65	5.88	22.47	34.28	180
Western Australia	390,043	19.54	1022	3.59	17.73	5.96	19.42	32.75	190
Perth South PHN	142,644	18.44	1020	2.10	17.48	6.26	19.58	32.79	162
Mandurah	14,198	17.73	978	2.37	20.98	10.09	27.66	39.85	161
Dawesville - Bouvard/ Falcon - Wannanup	2,729	21.33	999	1.63	17.40	8.85	24.87	39.92	
Greenfields/ Mandurah/ Mandurah - South	4,239	16.60	914	3.71	27.99	16.42	41.09	41.71	
Halls Head - Erskine	2,949	18.34	1025	1.54	15.46	5.87	18.78	36.04	
Mandurah - East	922	18.14	1002	1.12	20.17	8.62	25.37	41.04	
Mandurah - North	2,007	15.38	1035	1.39	13.44	6.10	20.89	37.34	
Pinjarra	1,352	18.01	964	3.48	22.91	10.79	28.04	44.06	
Armadale	11,271	18.24	996	3.04	18.84	8.46	24.61	39.19	168
Armadale - Wungong - Brookdale	2,633	17.47	902	6.33	27.59	17.18	43.08	43.61	
Armadale - West	2,659	19.91	1075	0.81	12.72	3.49	9.92	32.92	
Camillo - Champion Lakes/ Kelmscott	2,709	19.47	968	3.43	21.84	10.83	32.01	40.61	
Forrestdale - Harrisdale - Piara Waters	2,026	17.52	1103	0.71	7.28	2.81	10.30	32.16	
Seville Grove	1,244	15.75	1002	3.50	14.93	7.83	22.94	45.35	
Kwinana	5,235	19.12	970	4.37	19.90	11.49	27.96	42.38	146

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Socioeconomic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	2014-15		2011	2016 ERP	2011	June 2016	June 2016	2011	2014-15
	Number	ASR per 100 people over 15yrs	IRSD Score	Aboriginal population as proportion of total population (%)	% dwellings with no Internet connection	% unemployed	% children in low income, welfare-dependent families	ASR per 100	Hospitalisations per 100,000 people (age-standardised)
Kwinana - East	2,090	18.38	1052	4.05	10.90	6.13	17.57	37.43	
Kwinana - West	3,145	19.65	921	4.63	24.39	16.27	36.90	44.90	
Cockburn	14,079	16.95	1033	2.07	16.70	5.66	15.68	35.25	176
Banjup/ Jandakot/ Success - Hammond Park	3,903	14.84	1092	1.10	7.02	3.22	10.12	30.19	
Beeliar/ Henderson/ Wattleup/ Yangebup	2,025	15.76	1036	2.18	13.02	5.83	16.66	38.99	
Coolbellup/ South Lake - Cockburn Central	3,783	21.53	1010	3.38	19.01	7.18	20.17	34.75	
Coogee/ North Coogee	1,671	18.93	1058	1.15	16.52	3.05	10.11	35.39	
Hamilton Hill/ Spearwood	2,697	15.41	956	2.71	28.27	9.88	26.43	38.97	
Gosnells	15,694	16.20	1005	2.85	17.73	7.09	22.75	37.00	116
Beckenham/ Gosnells/ Maddington area	7,792	17.33	954	3.81	23.85	10.34	30.69	40.30	
Canning Vale - East/ Huntingdale - Southern River	4,139	13.12	1068	1.94	8.72	3.57	13.60	32.01	
Thornlie	3,763	18.45	1015	2.26	16.39	6.23	23.11	36.60	
Melville	16,618	18.57	1078	0.67	14.78	2.94	9.50	23.10	178
Applecross - Ardross/ Bateman/ Booragoon	5,337	20.37	1094	0.33	13.17	2.52	8.26	19.27	
Bicton - Palmyra/ Melville/ Winthrop	6,066	19.42	1079	0.47	16.66	2.73	7.32	24.06	
Bull Creek/ Leeming/ Murdoch - Kardinya	4,494	16.03	1080	0.43	11.99	2.59	9.23	24.16	
Willagee	721	17.91	949	5.58	26.33	10.09	29.98	33.74	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Socioeconomic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	2014-15 Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Fremantle	9,479	29.37*^	1025	1.64	19.48	6.38	15.01	24.68	344*^
East Fremantle/ Fremantle	5,828	29.81*^	1048	1.01	17.21	5.85	11.97	21.67	
Fremantle - South/ O'Connor (WA)	3,651	28.69^	991	2.60	22.94	7.27	19.03	29.22	
Belmont - Victoria Park	11,155	17.82	1008	2.73	19.99	5.38	20.87	29.05	211*
Belmont - Ascot/ Rivervale - Kewdale area	6,118	18.06	987	3.56	22.88	6.39	24.81	32.47	
Victoria Park	5,037	17.54	1035	1.71	16.62	4.25	15.35	24.60	
Rockingham	20,240	20.67	1012	1.81	16.49	7.52	20.62	38.56	118
Baldivis/ Singleton - Golden Bay - Secret Harbour	6,654	18.65	1074	1.25	7.87	4.40	15.15	36.86	
Cooloongup/ Rockingham/ Rockingham Lakes	3,658	17.59	949	2.22	26.40	12.82	30.62	39.12	
Port Kennedy	2,344	20.97	1027	1.90	9.12	6.77	20.29	39.84	
Safety Bay - Shoalwater/ Waikiki/ Warnbro	7,584	25.04^	990	2.29	18.48*^	8.67*^	24.88*^	38.95*^	
Canning	12,836	15.59	1028	1.31	16.32	4.14	15.61	26.42	134
Canning - North	4,133	12.61	969	2.24	22.01	6.04	22.32	27.07	
Canning - South	6,472	17.32	1080	0.47	10.65	2.33	9.59	24.46	
Parkwood - Ferndale - Lynwood	2,231	18.25	1023	1.28	17.50	4.78	19.27	30.80	
South Perth	6,847	18.03	1065	1.28	13.88	2.84	11.41	19.49	223*
Como/ South Perth - Kensington	5,151	18.01	1076	1.16	13.81	2.65	9.84	18.84	
Manning - Waterford	1,696	18.08	1035	1.59	14.11	3.46	14.70	21.23	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Socioeconomic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	2014-15		2011	2016 ERP	2011	June 2016	June 2016	2011	2014-15
	Number	ASR per 100 people over 15yrs	IRSD Score	Aboriginal population as proportion of total population (%)	% dwellings with no Internet connection	% unemployed	% children in low income, welfare-dependent families	ASR per 100	Hospitalisations per 100,000 people (age-standardised)
Serpentine - Jarrahdale	4,026	22.54	1047	1.68	12.82	4.39	14.04	42.02	100
Byford/ Mundijong/ Serpentine - Jarrahdale	4,026	22.54	1047	1.68	12.82	4.39	14.04	42.02	
Bunbury**	18,606	21.69[^]	999	3.13[*]	20.74^{*^}	4.74^{*^}	24.23^{*^}	42.62^{*^}	159
Harvey/ Waroona	2,804	25.44	962	3.24	25.97	5.00	23.85	45.65	
Wheatbelt – South**	3,712	21.69	987	5.94	26.57	5.15	25.85	40.01	282 ^{*^}
Brookton	709	22.45	958	8.58	29.44	8.17	31.62	42.14	

Key: * significantly higher than PHN average; ^ significantly higher than national average.

Notes: Social determinants included when moderate association with excessive alcohol consumption ($r > 0.5$); statistical testing performed for locations where rate of excessive alcohol consumption is significantly higher while AOD related hospitalizations are lower or no different to the PHN or National averages.

** SA2s/ PHAs of Harvey/ Waroona (Bunbury) and Brookton (Wheatbelt – South) are classified in the Perth South PHN

Table 26: Country WA PHN Modelled estimate of avoidable death from suicide and self-inflicted injuries from 2010-2014, mapped to population prevalence of excessive alcohol consumption, and proportion of Aboriginal people in the population, by location

SA3	Locations Public Health Areas	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years		Indigenous status	
		2014-15		2010-2014		2016 ERP (non-ABS)	
		Number of people over 15 years	ASR per 100 people over 15yrs	Estimated resident population	Average annual ASR per 100,000	Number of Aboriginal people	Aboriginal population as proportion of total population (%)
	AUSTRALIA	3,102,641	16.72	11,874	11.15	744,956	3.07
	Western Australia	390,043	19.54	1,581	13.71	97,681	3.59
	Country WA PHN	82,465	22.16	447	17.95*	58,162	10.26
Midwest		9,046	21.06	51	19.44*	6,944	11.62
	Geraldton/ Geraldton - East	3,331	19.85	27	28.46*	3,551	15.75
	Geraldton - North	1,427	23.29	#	..	727	8.90
	Geraldton - South	1,920	23.24	5	11.00	552	5.01
	Irwin/ Morawa/ Northampton - Mullewa - Greenough	2,368	20.09	13	19.43	821	5.89
	Meekatharra	^	..	5	21.86	1,294	31.51
Gascoyne		^	..	8	17.21	1,805	17.66
	Carnarvon	884	19.00	7	26.89	1,421	24.80
	Exmouth	^	..	#	..	385	8.56
Wheatbelt - North		9,784	20.81	44	17.17*	3,154	5.46
	Chittering/ Gingin - Dandaragan	2,846	23.58	9	14.61	337	2.26
	Cunderdin/ Merredin/ Mukinbudin	1,539	15.83	16	27.53*	833	6.78
	Dowerin/ Moora/ Toodyay	2,417	21.24	12	19.12	860	6.40
	Northam/ York - Beverley	2,982	21.53	7	9.48	1,124	6.58
Wheatbelt - South		3,712	21.69	15	15.13	1,289	5.94
	Brookton	709	22.45	7	41.71*	329	8.58
	Kulin/ Murray/ Wagin	2,245	21.74	#	..	420	3.28

SA3	Locations Public Health Areas	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years		Indigenous status	
		2014-15		2010-2014		2016 ERP (non-ABS)	
		Number of people over 15 years	ASR per 100 people over 15yrs	Estimated resident population	Average annual ASR per 100,000	Number of Aboriginal people	Aboriginal population as proportion of total population (%)
Kimberley	Narrogin	758	20.88	5	23.62	541	10.64
		^	..	83	45.88*	18,114	46.57
	Broome	2,468	21.89	23	33.70*	4,265	28.17
	Derby - West Kimberley/ Roebuck	^	..	30	54.64*	6,944	64.34
Pilbara	Halls Creek/ Kununurra	^	..	30	51.95*	6,905	53.26
		^	..	37	11.00	11,446	16.17
	Ashburton (WA)	^	..	0	0.00	1,319	11.69
	East Pilbara	^	..	#	..	1,971	23.67
Goldfields	Karratha	3,061	22.73	10	10.95	1,806	8.42
	Newman	^	..	#	..	964	15.14
	Port Hedland	833	24.22	#	..	467	9.29
	Roebourne	784	22.20	7	18.82	1,748	24.83
	South Hedland	1,794	23.40	12	24.57*	3,169	28.05
		^	..	41	19.18*	6,676	15.33
	Boulder/ Kambalda - Coolgardie - Norseman	^	..	15	22.63*	2,115	15.68
	Kalgoorlie	2,416	21.27	12	16.77	1,584	10.78
Albany	Kalgoorlie - North	1,979	26.30	11	24.25*	669	6.73
	Leinster - Leonora	^	..	#	..	2,308	42.41
	Esperance	2,436	24.42	10	18.49	820	6.36
		2,506	20.73*	10	15.91	506	3.30
	Albany	2,506	20.73*	10	15.91	506	3.30
	Albany - South-East or Albany - Region	2,312	23.63	#	..	413	3.46

SA3	Locations Public Health Areas	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates)		Avoidable deaths from suicide and self-inflicted injuries, persons aged 0 to 74 years		Indigenous status	
		2014-15		2010-2014		2016 ERP (non-ABS)	
		Number of people over 15 years	ASR per 100 people over 15yrs	Estimated resident population	Average annual ASR per 100,000	Number of Aboriginal people	Aboriginal population as proportion of total population (%)
	Denmark/ Plantagenet	2,656	27.56*	9	18.28	268	2.38
	Gnowangerup/ Kojonup	1,200	20.90	7	21.33	515	7.24
	Katanning	843	22.01	5	23.74	504	10.13
	McKail - Willyung	1,555	18.43	#	..	625	5.41
Bunbury		18,606	21.69*	66	14.18	3,532	3.13
	Australind - Leschenault	3,018	21.07	9	12.09	414	2.16
	Bunbury/ Koombana	4,120	19.03	23	19.50*	894	3.27
	Capel	1,196	27.52*	#	..	141	2.55
	College Grove - Carey Park/ Davenport	1,162	20.47	#	..	504	6.62
	Collie	1,860	24.61	6	13.32	377	3.73
	Dardanup/ Eaton - Pelican Point	2,603	21.38	9	13.90	358	2.26
	Gelorup - Dalyellup - Stratham	1,843	20.39	5	10.41	389	2.97
	Harvey/ Waroona	2,804	25.44	8	13.69	455	3.24
Augusta - Margaret River - Busselton		9,926	24.06*	34	16.33	964	1.81
	Augusta/ Margaret River	3,237	28.13*	11	18.32	179	1.22
	Busselton	4,080	19.34	19	18.23	670	2.43
	Busselton Region	2,609	30.12*	#	..	114	1.04
Manjimup		4,630	23.69	20	19.34	582	2.45
	Bridgetown - Boyup Brook/ Donnybrook - Balingup	2,729	26.00	10	18.45	256	2.01
	Manjimup/ Pemberton	1,901	21.01	10	20.33	326	2.97

Key: Numbers in red denote higher than national average rate; '*' denote statistically significant; higher than national average rates that are not statistically significant are only highlighted when there is already an indicator significantly higher than the national average.

Table 27: Country WA PHN population prevalence estimates of excessive alcohol consumption mapped to associated social determinants of health by SA3 and PHA (SA2 groups)

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
			2011	2016 ERP	2011	June 2016	June 2016	2011	2014-15
	Number	ASR per 100 people over 15yrs	IRSD Score	Aboriginal population as proportion of total population (%)	% dwellings with no Internet connection	% unemployed	% children in low income, welfare-dependent families	ASR per 100	Hospitalisations per 100,000 people (age-standardised)
AUSTRALIA	3,102,641	16.72	1000	3.07	19.65	5.88	22.47	34.28	180
Western Australia	390,043	19.54	1022	3.59	17.73	5.96	19.42	32.75	190
Country WA PHN	82,465	22.16	983	10.26	22.65	5.76	25.99	40.16	244
Midwest	9,046	21.06	970	11.62	24.59	7.31	31.02	41.81	187
Geraldton/ Geraldton - East	3,331	19.85	932	15.75	28.76	10.29	39.12	43.25	
Geraldton - North	1,427	23.29	1019	8.90	17.15	4.53	20.67	44.18	
Geraldton - South	1,920	23.24	1051	5.01	13.95	3.74	17.29	37.08	
Irwin/ Morawa/ Northampton - Mullewa - Greenough	2,368	20.09	980	5.89	26.12	6.04	26.36	41.17	
Meekatharra	^	..	861	31.51	39.17	11.28	91.34	43.30	
Gascoyne	^	..	949	17.66	25.30	8.50	32.42	42.07	354^
Carnarvon	884	19.00	916	24.80	28.04	11.67	42.96	43.88	
Exmouth	^	..	994	8.56	21.69	4.62	17.41	39.68	
Wheatbelt - North	9,784	20.81	983	5.46	25.10	6.24	26.44	40.86	217
Chittering/ Gingin - Dandaragan	2,846	23.58	1012	2.26	20.21	3.82	16.67	40.78	
Cunderdin/ Merredin/ Mukinbudin	1,539	15.83	978	6.78	28.06	6.23	31.02	42.45	
Dowerin/ Moora/ Toodyay	2,417	21.24	993	6.40	24.00	5.76	24.06	39.95	
Northam/ York - Beverley	2,982	21.53	954	6.58	27.38	8.77	33.35	40.45	
Wheatbelt - South	3,712	21.69	987	5.94	26.57	5.15	25.85	40.01	282*^
Brookton	709	22.45	958	8.58	29.44	8.17	31.62	42.14	
Kulin/ Murray/ Wagin	2,245	21.74	1007	3.28	23.98	3.44	21.19	38.75	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Narrogin	758	20.88	958	10.64	31.15	8.24	31.70	41.58	
Kimberley	^	..	850	46.57	30.76	14.54	45.81	42.27	557*^
Broome	2,468	21.89	986	28.17	19.89	7.43	29.05	34.51	
Derby - West Kimberley/ Roebuck	^	..	741	64.34	45.82	27.14	58.34	44.45	
Halls Creek/ Kununurra	^	..	798	53.26	34.66	15.59	53.96	49.47	
Pilbara	^	..	1015	16.17	12.71	2.88	19.04	35.39	190
Ashburton (WA)	^	..	1057	11.69	11.25	1.23	10.86	38.82	
East Pilbara	^	..	766	23.67	53.07	4.63	54.16	41.06	
Karratha	3,061	22.73	1076	8.42	8.40	2.17	16.22	31.95	
Newman	^	..	1061	15.14	7.83	2.74	12.66	35.37	
Port Hedland	833	24.22	1092	9.29	9.71	1.62	8.56	31.16	
Roebourne	784	22.20	997	24.83	16.39	2.04	21.17	32.31	
South Hedland	1,794	23.40	1016	28.05	15.80	6.18	27.54	36.87	
Goldfields	^	..	974	15.33	20.79	6.45	24.71	43.05	297^
Boulder/ Kambalda - Coolgardie - Norseman	^	..	957	15.68	23.21	6.77	28.31	46.47	
Kalgoorlie	2,416	21.27	1012	10.78	18.05	4.75	20.28	40.72	
Kalgoorlie - North	1,979	26.30	1060	6.73	14.31	2.75	13.24	37.03	
Leinster - Leonora	^	..	776	42.41	41.49	16.70	64.40	50.16	
Esperance	2,436	24.42	984	6.36	24.23	4.91	24.71	40.19	394*^
Albany	2,506	20.73	973	3.30	28.41	6.54	26.75	37.48	325*^
Albany	2,506	20.73	973	3.30	28.41	6.54	26.75	37.48	
Albany - South-East or Albany - Region	2,312	23.63	1029	3.46	17.97	4.06	17.52	36.20	

Locations	Estimated number of people aged 15 years and over who consumed more than two standard alcoholic drinks per day on average (modelled estimates) 2014-15		Socio-economic disadvantage	Proportion of Aboriginal residents	No internet connection	Unemployment rate	Children in low income and welfare dependent families	Leave school at year 10 or below	Rate of AOD-related Hospitalisations
	Number	ASR per 100 people over 15yrs	2011 IRSD Score	2016 ERP Aboriginal population as proportion of total population (%)	2011 % dwellings with no Internet connection	June 2016 % unemployed	June 2016 % children in low income, welfare-dependent families	2011 ASR per 100	2014-15 Hospitalisations per 100,000 people (age-standardised)
Denmark/ Plantagenet	2,656	27.56^	979	2.38	22.96	6.35	29.92	34.94	
Gnowangerup/ Kojonup	1,200	20.90	995	7.24	25.40	4.87	23.51	39.73	
Katanning	843	22.01	918	10.13	30.38	9.84	31.39	45.12	
McKail - Willyung	1,555	18.43	963	5.41	23.78	6.98	25.34	45.93	
Bunbury	18,606	21.69^	999	3.13*	20.74*^	4.74*^	24.23*^	42.62*^	159
Australind - Leschenault	3,018	21.07	1041	2.16	13.27	3.24	17.62	41.93	
Bunbury/ Koombana	4,120	19.03	981	3.27	24.62	6.10	31.20	41.25	
Capel	1,196	27.52^	997	2.55*^	19.65*	4.11*^	20.87*	43.19*^	
College Grove - Carey Park/ Davenport	1,162	20.47	927	6.62	28.27	7.76	42.99	43.05	
Collie	1,860	24.61	958	3.73	28.10	6.87	36.01	46.30	
Dardanup/ Eaton - Pelican Point	2,603	21.38	1033	2.26	14.71	2.92	20.03	43.81	
Gelorup - Dalyellup - Stratham	1,843	20.39	1067	2.97	9.04	2.99	16.36	36.59	
Harvey/ Waroona	2,804	25.44	962	3.24	25.97	5.00	23.85	45.65	
Augusta - Margaret River - Busselton	9,926	24.06^	1015	1.81*^	19.70*	3.95*^	19.05*^	35.43^	196
Augusta/ Margaret River	3,237	28.13^	1025	1.22	17.97	3.53	19.98	30.72	
Busselton	4,080	19.34	991	2.43	23.02	5.12	21.43	39.94	
Busselton Region	2,609	30.12^	1063	1.04	13.07	1.95	11.84	29.48	
Manjimup	4,630	23.69	975	2.45	25.38	4.52	21.42	40.40	230
Bridgetown - Boyup Brook/ Donnybrook - Balingup	2,729	26.00	989	2.01	22.45	4.34	20.52	40.20	
Manjimup/ Pemberton	1,901	21.01	960	2.97	28.53	4.72	22.40	40.61	

Key: * significantly higher than PHN average; ^ significantly higher than national average.

Notes: Social determinants included when moderate association with excessive alcohol consumption ($r > 0.5$); statistical testing performed for locations where rate of excessive alcohol consumption is significantly higher while AOD related hospitalizations are lower or no different to the PHN or National averages.