Government of **Western Australia**
WA Country Health Service

Goldfields Health Profile

Planning and Evaluation Unit

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Prepared by

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Acknowledgements

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Contents

NOTE:

Unless otherwise stated within this document the term rate refers to an age standardised rate. This means that the differing age and sex structures of the populations have been taken into account enabling two different areas or time periods to be compared.

Key Facts for Goldfields Residents

Executive Summary

This report represents an overview of the health of Goldfields residents, to inform evidence-based health service planning and delivery. Additional information about the region and districts within the region may be found in service plan documents located on the WA Country Health Service (WACHS) Publications page. The 2017 WACHS Child Health Profile and WACHS Health Profile Summary 2017 are also available.

Note: When State rates are referred to, the State rate is always set at 1.0 when compared against a regional rate. A higher regional rate is generally worse than the State rate and a lower regional rate is generally better than the State rate. Poor access to health care may mean a lower rate does not indicate the true health need.

If the rates are described as significantly different, this means statistically significantly different.

Population

- The Goldfields region had an Estimated Resident Population (ERP) of 54,821 in 2016.
- Based on *WA Tomorrow 2017 Projections*, the region's resident population is projected to grow by around 0.5 per cent per annum between 2016 and 2026.[i]
- The region had an Aboriginal population of 12 per cent in 2015 with a younger age structure when compared to the non-Aboriginal Goldfields population.

Economic, demographic and socio-economic factors

- Based on the 2016 census, the Goldfields region has some areas with very low Socio-Economic Indexes for Areas (SEIFA) scores.

Maternal Health

- In 2015, 5.9 per cent of Goldfields women who gave birth were aged less than 20 years (State 2.8%). This percentage for the Goldfields can be partially explained by the high percentage of teenage Aboriginal women giving birth (18%) in 2015.
- For the period 2011/12 to 2015/16, 44 per cent of Aboriginal and 14 per cent of non-Aboriginal women from the Goldfields who gave birth reported smoking during pregnancy.
- For the period 2014-2015 significantly less Goldfields Aboriginal mothers (15%) consumed alcohol during pregnancy compared to Aboriginal mothers across the State (26%).

Child and Adolescent Health

- In 2015, the proportion of Goldfields children rated as developmentally vulnerable on one or more domains ranged from 14 per cent in Esperance to 48 per cent in Leonora. The proportion rated vulnerable on two or more domains ranged from five per cent in Esperance to 26 per cent in Leonora. Coolgardie (27%) and Leonora (48%) had a higher proportion vulnerable on one or more domains than the national average (22%).

- Parents of Goldfields children were less likely to use a primary health care service, and were more likely to use a hospital, therefore had a 20 per cent higher Potentially Preventable Hospitalisations (PPH) rate than the rest of the State.
- Rates of hearing loss and Otitis Media are higher in Aboriginal children. For 2006 to 2015, the rate of disease of the ear and mastoid process hospitalisations for Aboriginal children in the Goldfields was significantly higher (2.5 times) than the non-Aboriginal rate.

Adult

- For the period 2013-2016 Goldfields adults were more likely, when compared to the State to report obesity, high blood pressure and drinking at high risk levels: risk factors linked with several chronic conditions. Goldfields adults were less likely to use a dental, allied health or primary health care service, while more likely to use a hospital service, compared with the rest of the State.
- For the period 2011-2015 the leading cause of hospitalisation by major category in Goldfields adults aged 15-64 years was 'pregnancy and childbirth'.
- Goldfields adults had significantly higher rates of PPH (1.5 times) than the State, with 12 of the top 15 causes significantly higher than the State rates.
- Goldfields adults had significantly higher rates of alcohol (1.4 times) and tobacco (1.6 times) related hospitalisations than the State rate.
- For the period 2011- 2015, road transport accidents were the leading cause of avoidable deaths in the Goldfields for young people aged 15-24 years. The rate was significantly higher (3.7 times) than the State rate.

Notifiable Diseases

- For the period 2011 to 2015, the notification rate for notifiable diseases for adults aged 15-64 years was significantly (1.3 times) higher in the Goldfields compared with the State.
- The main categories that contributed to the higher notification rate were Sexually Transmitted Infection (STI), (1.5 times) and vector-borne disease notifications (1.5 times).

Mental Health

- For the period 2011-2015, Goldfields residents aged 15-64 years, accessed community mental health services at a significantly higher rate than the State. The overall rate for Goldfields Aboriginal people was 1.4 times higher than the non-Aboriginal rate.

Older People

- For the period 2011-2015 the leading causes of hospitalisations in older age groups was renal dialysis, followed by chemotherapy and diseases of the eye.
- The rate of hospitalisation for renal dialysis in Aboriginal females in the Goldfields (65 years and over) was significantly higher (1.6 times) than the State Aboriginal female rate.
- The rate of PPH for Goldfields people aged 65 and over was significantly higher (1.2 times) than the State rate. The leading two PPH conditions in this age group were Chronic Obstructive Pulmonary Disease (COPD) and congestive cardiac failure (both 1.5 times the State rate).

Emergency Departments (ED) – all ages

- During 2016/17, 71 per cent of ED attendances in Goldfields hospitals were for semi-urgent or non-urgent cases (Triage 4 or 5), which was higher than the State at 58 per cent. Triage 4 was 2.3 times higher, and triage 5 was 3.5 times higher than the State.
- Aboriginal people accounted for 25 per cent of all ED attendances in 2016/17, but only 12 per cent of the population.

Hospitalisations– all ages

For the period 2011-2015

- The overall hospitalisation rate of Goldfields residents was significantly higher (1.1 times) than that of the State.
- The main causes of hospitalisation, was dialysis followed by digestive diseases, injury and poisoning.
- The Goldfields hospitalisation rate due to alcohol-related conditions was significantly higher (1.3 times) than the State rate.
- The hospitalisation rate for tobacco-related conditions was significantly higher (1.4 times) than the State rate.
- The Goldfields PPH rate was significantly higher than the State rate. The leading conditions were cellulitis, diabetes complications and dental presentations.
- The hospitalisation rate for Aboriginal Goldfields residents was significantly higher (>4 times) than the non-Aboriginal Goldfields rate.
- In 2016/17 74 per cent of Goldfields residents' hospitalisation occurred within the region compared with the WACHS average of 77 per cent of residents hospitalised within their region.

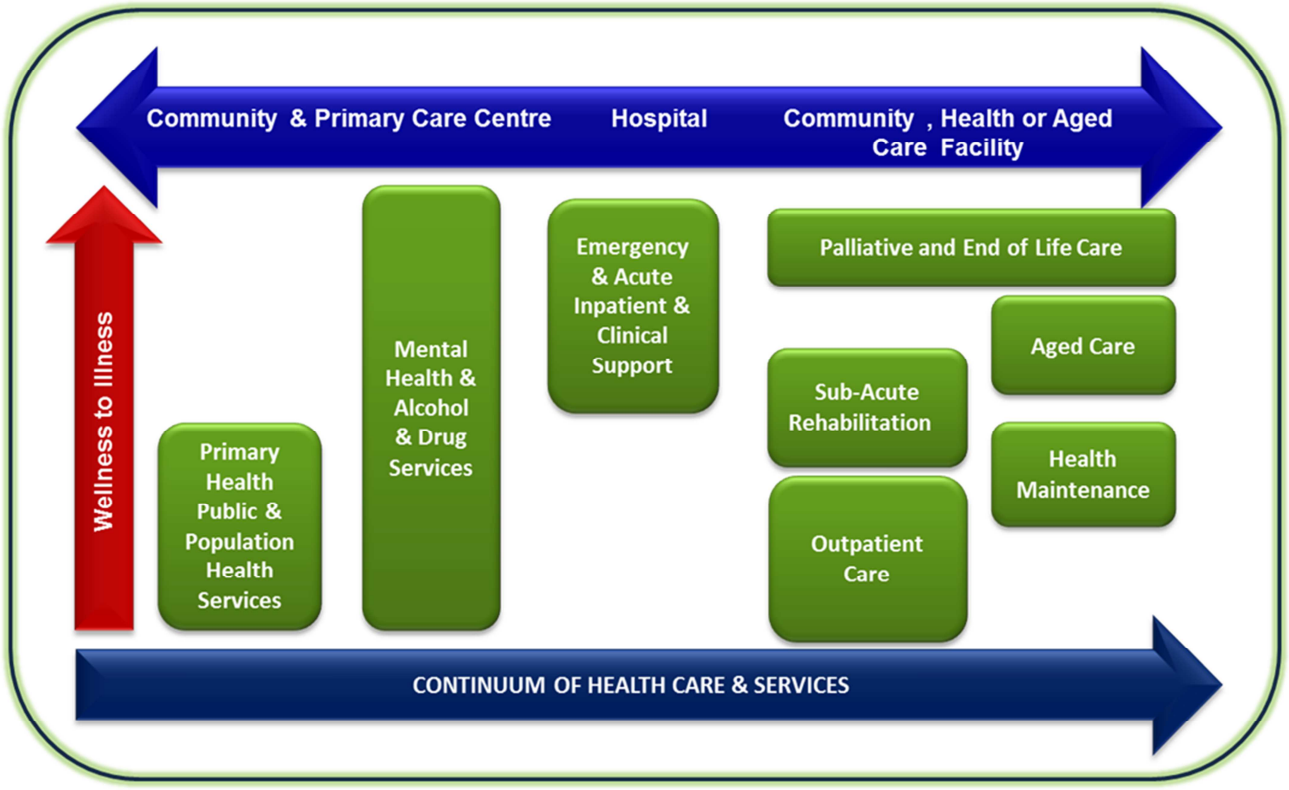
Mortality– all ages

- For the period 2011-2015, the Goldfields regional mortality rate (1.2 times) and the avoidable mortality rate (1.5 times) were significantly higher than the State.
- The deaths of 56 per cent of Goldfields residents under the age of 75 could have potentially been avoided.
- The leading causes of death were ischaemic heart diseases, lung cancer and cerebrovascular diseases.
- The mortality rate due to ischaemic heart disease, transport accidents, diabetes, assault and invasive infections were more than double for Goldfields residents when compared to the State.

Introduction

This profile includes regional information on the population, demographics, determinants of health and health statistics such as immunisation rates, mortality and hospitalisation rates for residents of the Goldfields. Where practicable the information is provided in the sequence of continuity of care, and by age group.

The information can be used to support business cases and where required focus to affect a positive outcome.



Additional information about the region and districts within the region may be found in service plan documents also published on WACHS Publications page along with the WACHS Child Health Profile and WACHS Health Profile Summary 2017.

Overview of the region

The Goldfields is located within the south eastern corner of Western Australia and incorporates eight local government areas. The area is more than three times the size of Victoria and covers almost a third of WA's total land mass, around 756,500 square kilometres. As the largest region in WA, its diverse natural environment ranges from sprawling deserts in the North and East to pristine white beaches and emerald seas in the South.[ii]

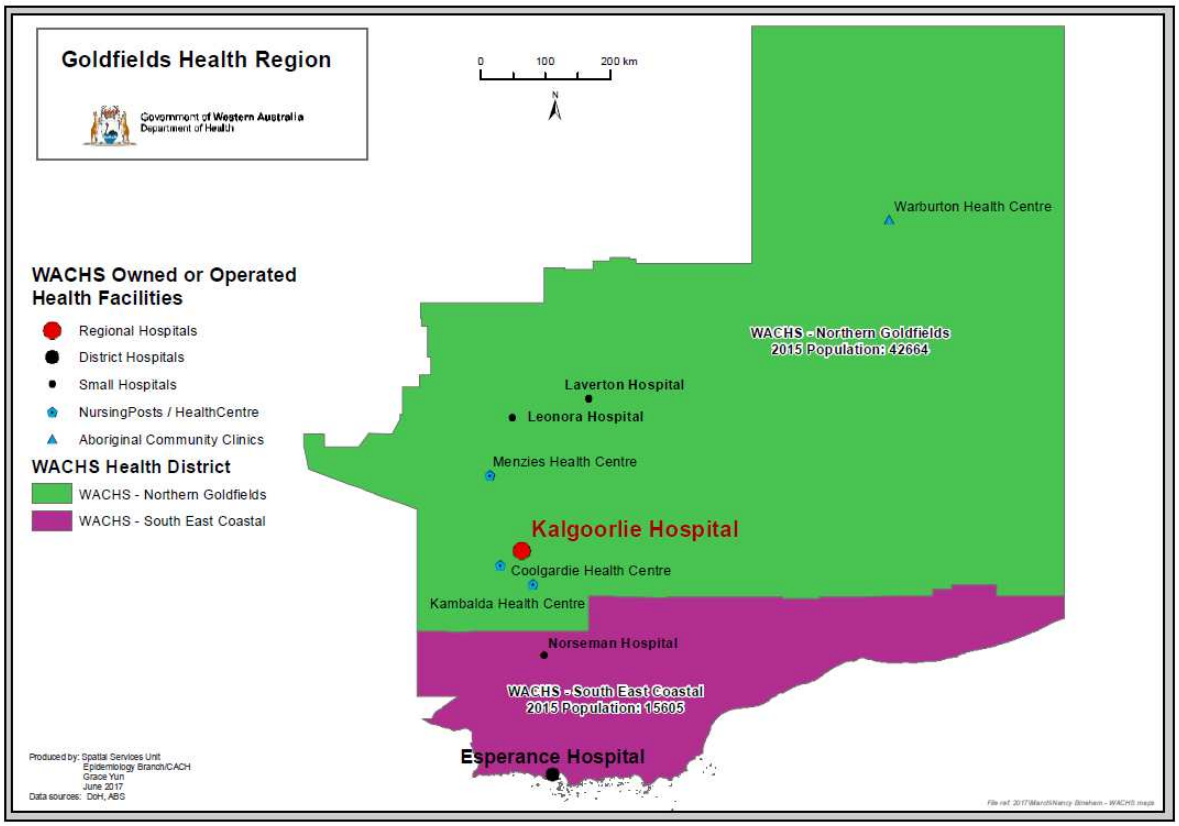
Kalgoorlie-Boulder is the regional centre, servicing other towns and providing a regional transport hub. The East-West railway passes through Kalgoorlie-Boulder, and the airport hosts regular flights in and out of Perth. In addition to a wide range of heavy industry, Kalgoorlie-Boulder has retail and tourism businesses, educational establishments, sporting and recreational facilities, combined with government agencies. Kalgoorlie-Boulder provides support to the pastoral and mining industries located in the Goldfields. Norseman is considered the gateway to the Nullarbor, whilst Laverton is the gateway to the Outback Highway (Great Central Road) which leads to Alice Springs.[ii]

In the south, Esperance is the hub, with infrastructure including shops, schools, a university, leisure/recreational facilities and government agencies. Infrastructure support and business services are also provided to Norseman. Agriculture (dominated by broad-acre farming), fishing and tourism are the dominant industries. Recent development of the Esperance Port has seen it become the third busiest in WA - supporting both the agricultural and mining industries for the entire region. The wholesale, retail and export markets of the fishing industry continue to flourish.[ii]

Remoteness

According to the Accessibility/Remoteness Index of Australia (ARIA), most of the Goldfields region is classified as very remote (99%) while the remaining one per cent (Esperance) is remote.[iii]

Figure 1: Map of Goldfields showing health districts and WACHS health facilities.



Source: Department of Health, Spatial services Unit Epidemiology Branch, Public Health Division, December 2017.

Population

The 2016 Estimated Residential Population (ERP) of the Goldfields is 54,821 which represents 10 per cent of the WACHS population and 2.1 per cent of the State's population. This is an increase of three per cent (1,550) since 2006. [iv]

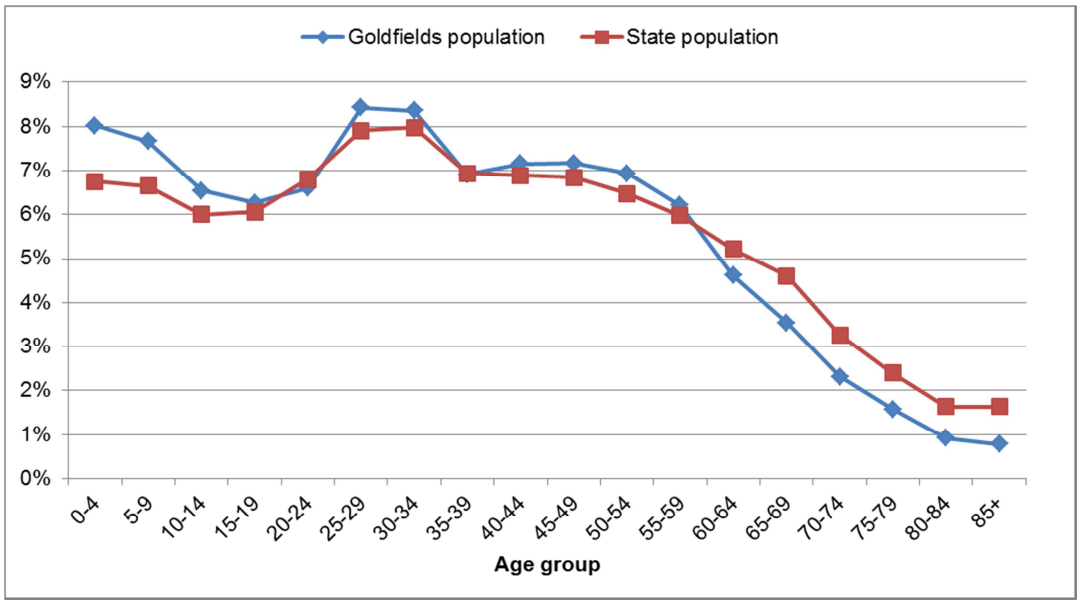
The 2015 Goldfields region population density was 0.08 people per sq. km, which is lower than the State average (1.0 per sq. km; Country: 0.24 per sq. km).[v]

The Goldfields population has a higher proportion of males (52%) than females (48%) and a younger population compared to some country regions, and is more similar to the State in general than to other WACHS regions.[iv]

Subtle differences when compared with the State are; a larger percentage of children aged 0-14 years. The pattern is similar to the State until about the age of 60, where the proportion of people in each age group over 60 is less in Goldfields than the State, refer to

Figure 2 and Table 1. The proportion of the population aged 50-74 years 24 per cent (State 26%), while three per cent are aged 75 years and over (State 6%).[iv]

Figure 2: Goldfields vs. State population age distribution 2016



Source: ABS, ERP 2016 [iv]

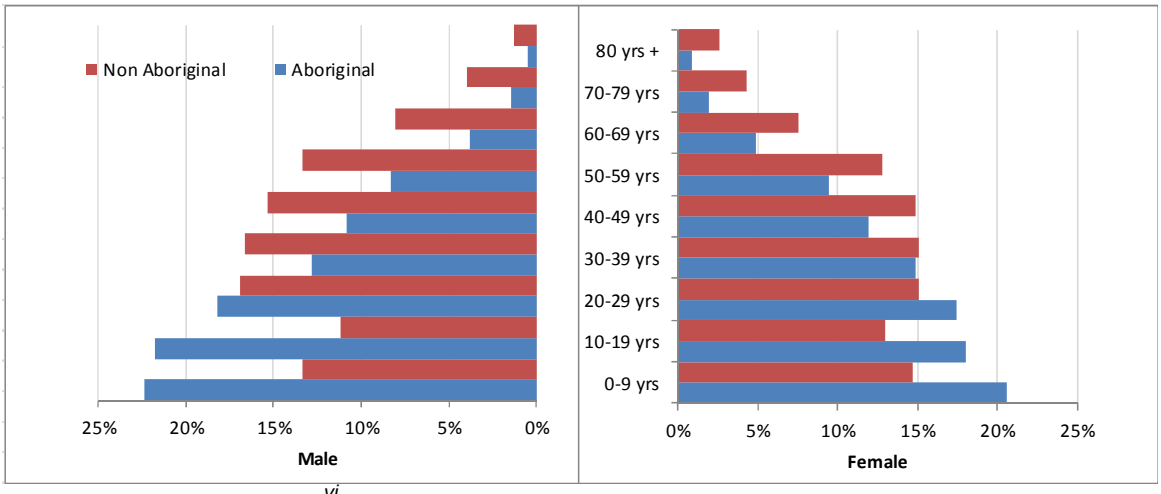
Table 1: Goldfields Estimated Resident Population 2016

Age Group	0-4	5-14	15-49	50-74	75+	Grand Total
Number	4,399	7,788	27,892	12949	1793	54,821
Proportion	8%	14%	51%	24%	3%	100%

Source: ABS, ERP 2016 [iv]

Aboriginal people account for 12 per cent of the Goldfields population which is greater than the State proportion (3.6%) based on 2015 ERP. The Aboriginal population has a younger age structure than the non-Aboriginal population (Figure 3).[vi]

Figure 3: Goldfields Estimated Resident Population (ERP) by Aboriginality 2015

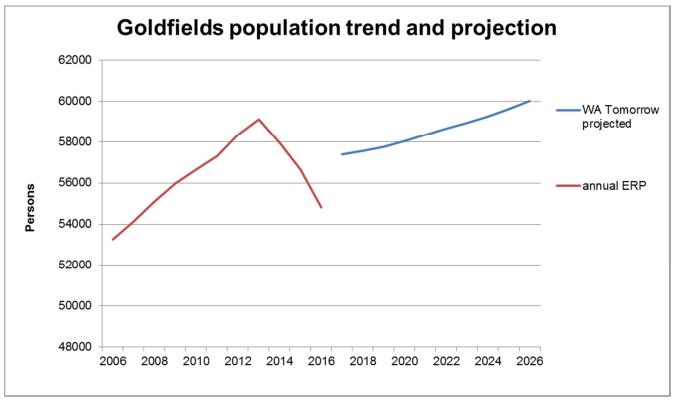


Source: ABS via DoH Epi Calculator [vi]

The Goldfields population has experienced average annual growth of 0.3 per cent per year between 2006 and 2016, but not uniform growth. Growth from 2006 to 2013 totalled 11 per cent, whereas there was a decline of seven per cent from 2013 to 2016. The permanent regional population of the Goldfields fluctuates with changes in the mining industry. The decline in population since 2013 is due to the significant reduction in the number of people who work in the remote mines.[ii&iv]

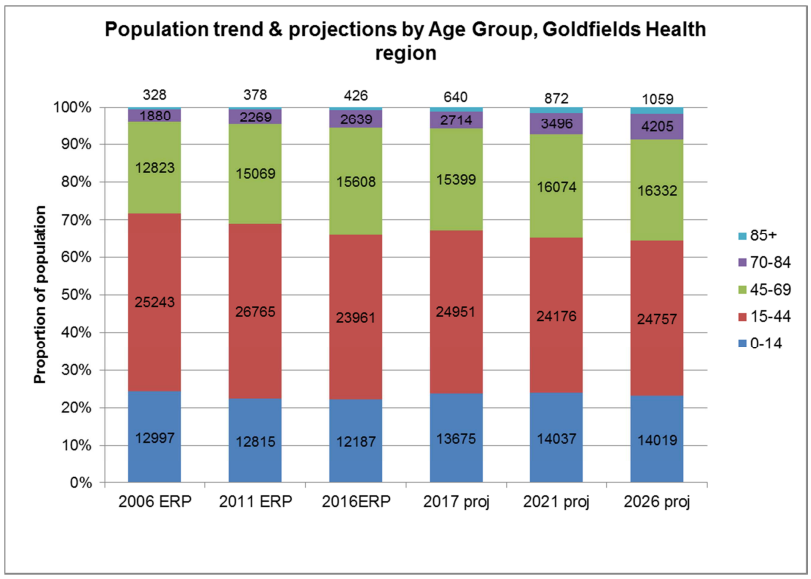
From 2017, the Goldfields population is expected to grow, at an average of 0.5 per cent per year projected until 2026. Figure 5 shows projections by age group. The older age groups are expected to grow at a higher rate than younger age groups as the proportion of people aged 70 and over is expected to grow by 1,909 people (57 per cent increase) from 2017 to 2026. The number of people in the 15-44 years age group is expected to decrease by one per cent in the same period.[vii]

Figure 4: Goldfields population projections 2006-2026



Source: Western Australia Tomorrow 2017[viii], and Australian Bureau of Statistics, ERP 2016[iv]

Figure 5: Goldfields population projections by age group 2006-2026



Source: Western Australia Tomorrow 2017[viii], and Australian Bureau of Statistics, ERP 2016[iv]

Implications for health service planning:

The population of the Goldfields is projected to grow at 0.5 per cent per year. The number of people aged 70 years and over is projected to rise by 57 per cent (1,909 people) from 2017 to 2026.

Goldfields health region has a high proportion of Aboriginal people (12%) compared to the State proportion (3.6%). The Aboriginal population of the Goldfields has a much younger age structure than the non-Aboriginal population, with 41 per cent of the population aged less than 20 years (compared with 26% for non-Aboriginal). This differing age structure will need to be taken into account in the planning of primary health services and programs.

Health services particularly chronic disease management and aged care services will need to cater for the increase in older people. This includes the use of telehealth services to improve service access and reduce travel. Partnerships with primary health providers and General Practitioner (GP) services and other non-government providers will be important for this increasing older population.

Economic, demographic and social factors

There are many elements that influence a person's health, including genetics, lifestyle, environmental, economic and social factors.[ix]

The demographics within the Goldfields are very diverse. While long travel distances are common to remote communities, they can differ in function and infrastructure. For example, a coastal fishing port and harbour will differ from a mining town or a desert Aboriginal community. The level of social and physical isolation and environmental conditions impact on health, this is often more marked for remote communities than those seen in rural and metropolitan communities.[v]

Table 2 lists some of the socio-demographic factors for Goldfields compared to the whole State, the whole of WA country and the metropolitan area (Metro).

Table 2: Goldfields vs. State vs. WACHS vs. Metro socio demographic factors 2011

Measure	Goldfields Health Region		Metro	Country	State
	Counts	%	%	%	%
Born overseas	10,935	19	34.9	18.8	30.7
People who don't speak English at home	5,390	9.4	17.1	7.1	14.5
At primary school	5,404	9.4	8.2	9.2	8.4
At secondary school	2,718	4.7	5.7	5.1	5.5
At TAFE, CAE or Uni	1,794	3.1	7.3	3.5	6.3
Left school aged less than 15 years old	4,621	10.4	8.1	10.6	8.7
Persons with tertiary qualification	15,683	35.3	45.3	38.3	43.6
Families with annual income < $20,800	634	4.8	3.9	5.1	4.2
One-parent families	1,951	14.6	14.7	14.1	14.5
Unemployed	1268	4.3	4.8	4.4	4.7

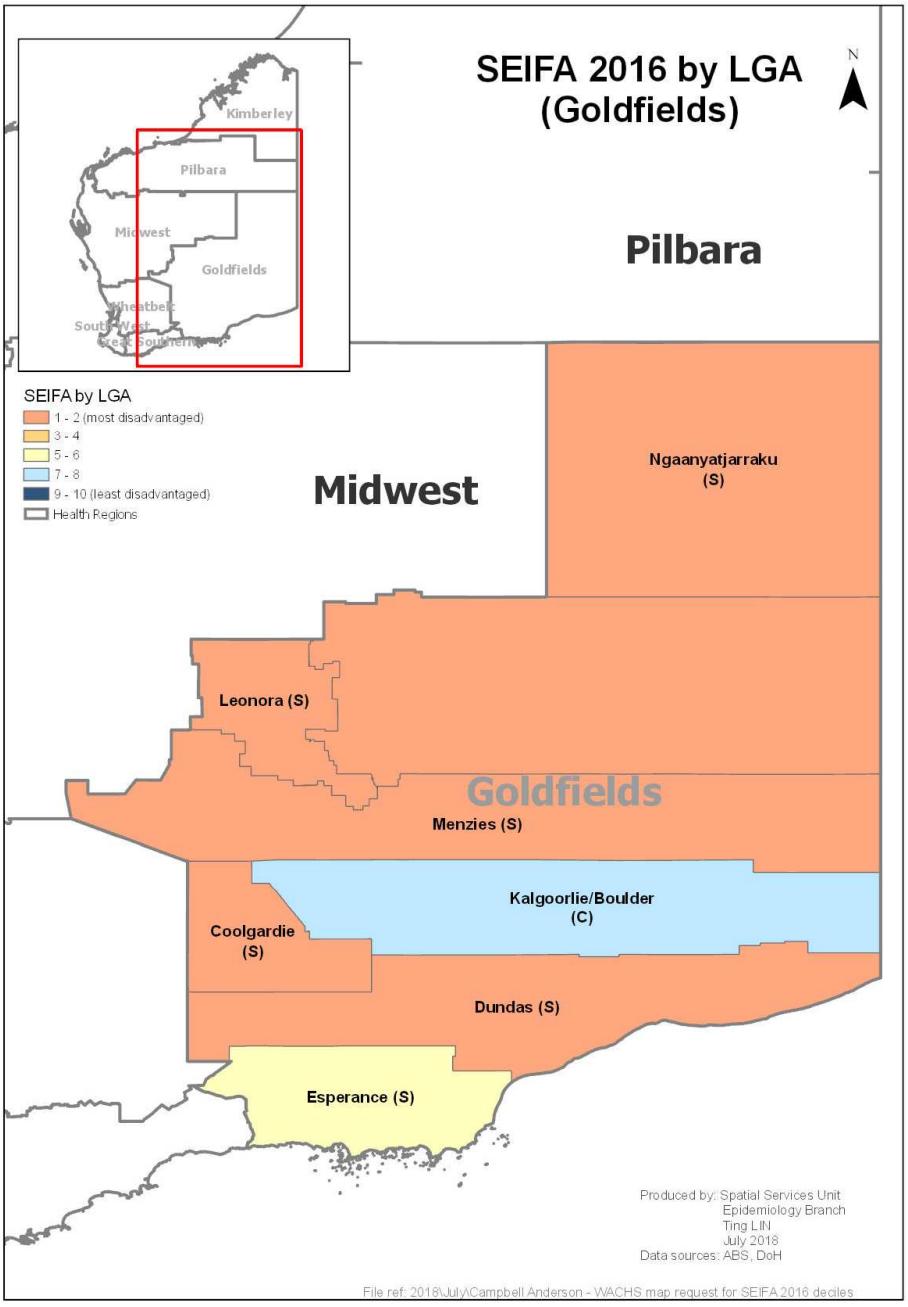
Source: ABS Census 2011 results via DoH, Health Tracks[v]

Socio-Economic Disadvantage

The Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) as a product of the Socio-Economic Indexes for Areas (SEIFA), is calculated from responses to the ABS Census. The more disadvantaged an area, the higher self-reported ill health or risk factors for ill health. A score below 1,000 indicates an area is relatively disadvantaged compared to an area with a score of at least 1000 or more.[x]

Based on the 2016 Census the lowest score for the Goldfields is 689 in Ngaanyatjarraku shire in the north east area of the Goldfields and the highest is in Kalgoorlie/Boulder shire with 991. There is a Statistical Area Level 1 (SA1) within Laverton with a score of 573 and one in Kalgoorlie/Boulder with a score of 1,142. The residents of Kalgoorlie/Boulder, Leonora and Esperance do not live in a LGA on the other hand, live in areas classed as being of greater advantage. An indication of the distribution can be seen in Figure 6.[xi]

Figure 6: Goldfields Socio-Economic Indexes for Areas distribution 2016



Source: DoH, Epidemiology GIS branch, 2018

Notes: Index of Relative Socio-Economic Advantage and Disadvantage SEIFA 2016 is released according to the Australian Statistical Geography Standard (ASGS).

Implications for health service planning:

The SEIFA Index demonstrates areas within Goldfields with high levels of disadvantage, which may be hidden if just looking at LGAs as a whole. Services and programs could be targeted to these disadvantaged areas, such as in the remote Aboriginal communities.

Maternal Health Status

Births

In 2015, the overall Goldfields age-specific birth rate was 75 per 1,000 women. This was significantly higher than the State (64 per 1,000 women). The percentage of births for women aged 35 years and over was 11.8 per cent, significantly less than the State (Table 3). For 2011-2015, the age-specific birth rate for Aboriginal women in the Goldfields was similar to that of the non-Aboriginal women (72.5 vs 75.4 per 1,000 women, respectively).[v]

Table 3: Goldfields vs. State vs. Metro maternity data 2011- 2015

Maternity data	Goldfields Health Region	Perth Metropolitan Area	WA State
Age-specific birth rate (per 1,000 women aged 15-44 years, not having had hysterectomy)	74.8	62.0	63.6
Teenage births (%) <20 years old	5.9%	2.2%	2.8%
Birth in women aged 35 years and older (%)	11.8%	22.2%	20.7%

Source: DoH, Health Tracks[v]

Within Goldfields hospitals the number of births decreased by three percent between 2012 and 2016, or an average of 0.8 per cent per annum. There was an average annual increase of 11 per cent of births to Aboriginal women while non-Aboriginal women had an average annual decrease of 2.5 per cent as given in Table 4. There was a 3 per cent decrease in the numbers of total births for Midwest residents over the same period. This included a 40 per cent increase in Aboriginal births and an eight per cent decrease in non-Aboriginal births. [xii]

Table 4: Goldfields births by Aboriginal status of mother 2012 - 2016

Birth Year	Births in a Goldfields hospital			All births by Goldfields residents		
	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
2012	86	786	872	102	868	970
2013	104	751	855	116	830	946
2014	142	756	898	153	812	965
2015	120	690	810	139	772	911
2016	132	711	843	143	795	938
Increase	53%	-10%	-3%	40%	-8%	-3%
Average annual increase	11.3%	-2.5%	-0.8%	8.8%	-2.2%	-0.8%

Source: WACHS Online data – Obstetric Deliveries ***Error! Bookmark not defined.***

Teenage mothers

In the period 2015/16, in the Goldfields, the average (mean) maternal age was 25.5 years for Aboriginal women and 28.9 years for non-Aboriginal women.[xiii]

In the Goldfields, the proportion of births to women aged less than 20 years was significantly higher (2.1 times) than the State. Between 2006 and 2015, the rates of teenage pregnancy have not changed significantly. In the period 2015/16 in the Goldfields, the proportion of births

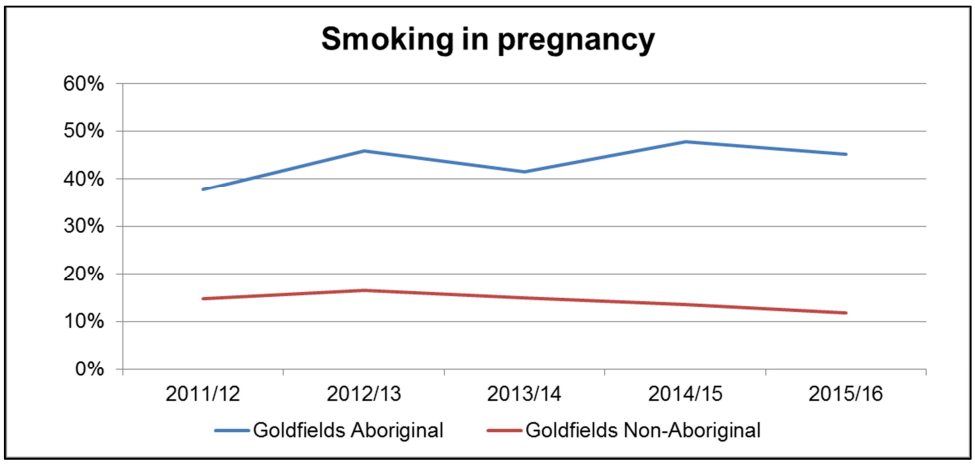
to Aboriginal teenage women was significantly higher (18%) than non-Aboriginal teenage women (3%). The high proportion of births to Aboriginal teenage women explains the high proportion of Goldfields teenage births. [iv& v]

Smoking in pregnancy

Smoking during pregnancy is associated with low birth weight, pre-term birth, placental complications and perinatal mortality.[xiv]

The five year average proportion of births to Aboriginal mothers who smoked was 44 per cent, similar to the WACHS average of 48 per cent. For non-Aboriginal mothers, the proportion of births to women who reported smoking during pregnancy trended slightly downward since 2012/13 and the five year average was 14 per cent, which was similar to the WACHS non-Aboriginal average of13 per cent.[xiii]

Figure 7: Goldfields proportion of women smoking during pregnancy 2011/12 to 2015/16



Source: Midwives Notification System[xiii]

Alcohol in pregnancy

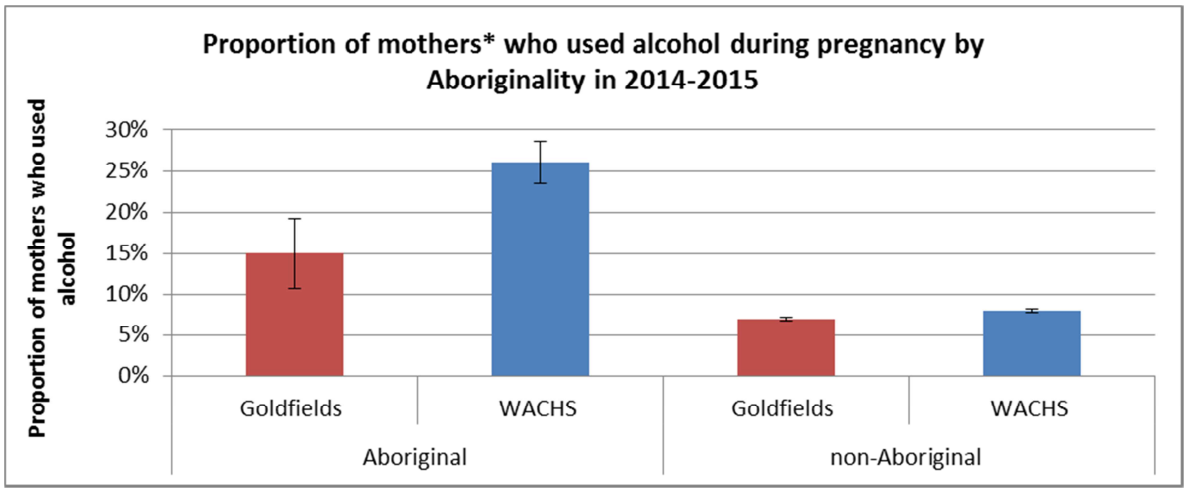
High rates of alcohol consumption while pregnant, is associated with Foetal Alcohol Spectrum Disorder (FASD) and various other impairments of the central nervous system. A 2014 report using data from 1980-2010 obtained from the WA Register of Developmental Anomalies and the Midwives Notification System, showed a birth prevalence of FASD in WA of 0.26 per 1000 births. The majority were Aboriginal (89%). The prevalence rate has doubled over the last 30 years in WA. [xiii]

In 2017 a pioneering Western Australian study, '*Prevalence and profile of Neurodevelopment and Fetal Alcohol Spectrum Disorder (FASD) amongst Australian Aboriginal children living in remote communities',* found that in remote Australian Aboriginal communities, where high rates of prenatal alcohol exposure have been recorded, FASD/partial FASD prevalence rates of 120.4 per 1,000 children have been reported.[xv & xvi]

Figure 8 demonstrates an initial indication of alcohol use in pregnancy, with data that is currently available by Aboriginality in the Goldfields region compared to that of WACHS. The data should be interpreted with caution as the question regarding alcohol consumption was only made compulsory to answer from June 2017 and regional response rates vary.[xvii]

Figure 8 demonstrates that eight per cent of Goldfields respondents reported using alcohol during pregnancy (92% of respondents did not use). A significantly smaller proportion of Goldfields Aboriginal mothers, 15% (n=32) used alcohol compared with 26% (n=340) WACHS Aboriginal mothers. Out of the 32 who had used alcohol, 11 Aboriginal respondents reported occasional alcohol, less than one (1) standard drink a week during pregnancy and 21 mothers, used alcohol at higher risk levels. Seventy-eight (7% of Goldfields' non-Aboriginal respondents) used alcohol during pregnancy. Of those who had used alcohol, 65 had occasional alcohol, less than one standard drink a week during pregnancy and 13 non-Aboriginal mothers used higher levels.

Figure 8: Goldfields vs. WACHS proportion of mothers who used alcohol during pregnancy 2014-2015



**Proportion of mothers who responded to the question, not proportion of all mothers who gave birth. WACHS response rate was 72% and Goldfields response rate 81%. No validation was carried out on the responses. Alcohol use became a compulsory field in June 2017 and will in the future provide more reliable data.*
Note: The error bars represent the 95% confidence interval of the proportion
Source: Stork Perinatal Database as at 2 June 2017, accessed via Health Support Services

A number of projects are being conducted in regions throughout the State to address alcohol use during pregnancy and to secure out more information about FASD. Details can be obtained from the Australian Indigenous Health*InfoNet* and the Telethon Kids Institute.[xviii & xix]

Gestational Diabetes Mellitus (GDM)

In 2010, the Australian Institute of Health and Welfare (AIHW) released a report on GDM discussing its impact on Australian woman and their babies. The report concluded that mothers with diabetes in pregnancy and their babies were at higher risk of adverse effects of pregnancy, labour and delivery, compared with those not affected by diabetes in pregnancy. Those with pre-existing diabetes who had diabetes in pregnancy and their babies were at higher risk of developing these adverse effects.

Aboriginal mothers and their babies experienced generally higher rates of the adverse effects of pregnancy, labour and delivery compared with non-Aboriginal mothers and their babies. The report stated that diabetes in pregnancy is an indicator of increased risk of developing Type 2 diabetes (also known as adult onset diabetes) later in life, and therefore provides an opportunity to intervene to improve health outcomes.

In the period 2011/12 – 2015/16, 9.7 per cent of Goldfields Aboriginal women who gave birth had GDM. The proportion of GDM in non-Aboriginal Goldfields women who gave birth was 6.4 per cent. The prevalence of GDM in WACHS Aboriginal mothers was 7.1 per cent and in WACHS non-Aboriginal mothers it was 5.9 per cent for the same period. [xvii]

Implications for health service planning:

In the Goldfields, Aboriginal women are more likely than non-Aboriginal women to be teenage mothers and to smoke during pregnancy. Alcohol consumption and GDM in pregnancy are risk factors for all women, suggesting the need for targeted and culturally appropriate health promotion strategies and antenatal services for these women. Strengthening partnerships with primary care providers, including local GPs and Aboriginal Medical Services (AMS) is particularly important, given the high Aboriginal population.

Resources to tackle Aboriginal maternal smoking in WA have been developed such as the Australian Indigenous Health*InfoNet* new portal launched recently.

(Source: Australian Indigenous Health*InfoNet* accessed June 2015: *http://www.healthinfonet.ecu.edu.au/about/news/3305 http://www.healthinfonet.ecu.edu.au/population-groups/preventing-aboriginal-maternal-smoking)*.

Health Status - Child and Adolescent

Low birth weight

Babies born with a low birth weight (less than 2,500g) have a higher risk of health complications. For the period 2007/08 - 2015/16, the proportion of low birth weight full term babies born to women who live in the Goldfields was 2.4 per cent (State: 2.0%). For Aboriginal people, the percent of low birth weight babies was 5.4 per cent (State: 5.1%).[xiii]

Australian Early Childhood Development Census (AEDC)

The AEDC uses the early development instrument tool to measure how young children have developed as they start their first year of full-time school. A teacher completes a checklist for each child across each of the five domains of early childhood development: physical health and wellbeing, social competence, emotional maturity, language and cognitive skills, communication skills and general knowledge. The scores of all Australian children are ranked and children ranked in the bottom 10 per cent are classed as “developmentally vulnerable” whereas those in the top 75 per cent are classed as “on track” while those in between are classed as “at risk”. Results are reported by a child’s community of residence.

Across Australia in 2015, one in five children (22%) was considered developmentally vulnerable on one or more domains of the AEDC. Furthermore, 11 per cent were developmentally vulnerable in two or more domains. The results for the Goldfields local communities are shown in Table 5.

Only four local communities had sufficient data for publishing. Coolgardie and Leonora had a higher proportion, developmentally vulnerable on one or more domains than the overall Australian proportion. The total published number of Goldfields children developmentally

vulnerable in at least one domain was 171 (77 in at least two domains) and there were additional vulnerable children in communities with numbers too low to publish.

Within the Goldfields the proportion of children rated as developmentally vulnerable on one or more domains ranged from 14 per cent in Esperance to 48 per cent in Leonora. The proportion rated vulnerable on two or more domains ranged from five per cent in Esperance to 26 per cent in Leonora. The area with the most children vulnerable was Kalgoorlie-Boulder. Out of 504 children surveyed, 110 were developmentally vulnerable on one or more domains and 51 were developmentally vulnerable on two domains. It is important to consider the number of children surveyed in relation to the proportion of children classed as developmentally vulnerable. [xx]

Table 5: Goldfields AEDC children developmentally vulnerable on at least one domain 2015

Local Community	Children Vulnerable				Total children surveyed
	One or more domains		Two or more domains		
	Number	%	Number	%	
Coolgardie	21	26.9%	9	11.5%	78
Dundas	*	-	*	-	17
Esperance	29	14.1%	11	5.3%	206
Kalgoorlie/Boulder	110	21.8%	51	10.1%	504
Laverton	*	-	*	-	8
Leonora	11	47.8%	6	26.1%	23
Menzies	*	-	*	-	0
Ngaanyatjarraku	*	-	*	-	13
Australia		22.0%		11.1%	

Source: AEDC[Error! Bookmark not defined.]
Note: AEDC data are not reported for locations in which three or fewer children had been assessed.
* Suppression of AEDC data also occurs when one or more of the following have not been met:
Fewer than fifteen children had valid AEDC scores/Less than two teachers had completed AEDC instruments for children in that location/AEDC instruments were completed for less than 80% of all non-special needs children.
Additional minor suppressions have occurred where necessary to preserve confidentiality of related suppressed cells
These tables and more information may be found at http://www.aedc.gov.au/

Implications for health service planning:

The AEDC results indicate a high need for child development services including access to multidisciplinary teams made up of medical services, child health nurses, speech pathology, physiotherapy and occupational therapy.

It is important to consider the number of children surveyed in relation to the proportion of children classed as developmentally vulnerable.

Childhood Vaccinations

Immunisation against communicable disease is an effective public health intervention that reduces the mortality and morbidity associated with vaccine preventable conditions. Australian vaccination coverage targets of greater than 90 per cent of children at two years of age and near 100 per cent of children at school entry age are recommended. The coverage needs to exceed 90 per cent to create the community immunity necessary to stop ongoing transmission of these diseases.[xxi]

In 2017, the childhood vaccination coverage for the Goldfields was above 90 per cent for all age groups (Table 6) as was the overall WACHS coverage. The State coverage however, was below 90 per cent for 24-<27 months age group).

Immunisation coverage for Goldfields Aboriginal children was significantly lower than non-Aboriginal children for the 12-<15 months and 24-<27 months age groups. For 60-<63 months, it was similar to non-Aboriginal people (Table 6).

For WACHS overall, Aboriginal children had significantly lower coverage than non-Aboriginal children for 12-<15 months, similar coverage for 24-<27 months, and significantly higher coverage for 60-<63 months.

Table 6: Goldfields vs. WACHS vs State childhood immunisation 2017

Age Group	Goldfields Health Region			WACHS			WA State		
	Aboriginal	Non-Aboriginal	Persons	Aboriginal	Non-Aboriginal	Persons	Aboriginal	Non-Aboriginal	Persons
12 to < 15 Months	92%	97%	96%	90%	94%	94%	88%	94%	94%
24 to < 27 Months	72%	94%	91%	85%	92%	91%	83%	90%	89%
60 to < 63 Months	96%	93%	93%	96%	92%	93%	95%	92%	92%

Source: Australian Childhood Immunisation Register - Coverage Report[xxii].

Health and Wellbeing Surveillance System (HWSS), 0-15 years

The Department of Health in WA conducts a continuous HWSS. This is a population survey carried out by phone, which is designed to provide results and examine trends at a population level. It is unlikely to be representative of minority groups such as Aboriginal people and the homeless as they are less likely to have phone access. Parents/guardians report on behalf of children aged 0-15 years. Due to the high proportion of Aboriginal people in the Goldfields, the prevalence count and rates are more likely to be an underestimate. [xxiii]

The HWSS (2010-2015), showed a significantly higher proportion of Goldfields' children reported using a hospital health care service in the last 12 months compared with the State (35% versus 27%) and a significantly lower proportion reported using a primary health care service (73% versus 81%). Although many State rates are not within acceptable ranges.

For the Goldfields region, the HWSS showed:

- nearly one in three children (29%) had a parent who smoked during their pregnancy although the proportion of people who reported their home was smoke free was 98 per cent;
- most children (89%) did not eat the recommended daily serves of vegetables;
- more than one in three children (39%) did not eat the recommended daily serves of fruit;
- over half of children (52%) did not do sufficient physical activity and one in twelve children (8%) reported height and weight measurements that classified them as obese;
- one in four children (23%) reported an injury requiring treatment from a medical professional in the previous year; and
- one in fifteen children (6.5%) had asthma.

Table 7: Goldfields vs. State Health and Wellbeing Surveillance System (HWSS) child population profile 2010-2015

	Goldfields* Prevalence (%)	Western Australia Prevalence (%)	Significant difference from WA*
Health Enhancing Behaviours			
Health is rated excellent or very good	84.3	87.0	-
Home is smoke free	97.7	98.2	-
Eats recommended serves of fruit daily 5-15 years (a)	61.1	67.4	-
Eats recommended serves of vegetables daily 5-15 years (b)	11.4	8.1	-
Sufficient physical activity 5-15 years (c)	48.1	46.1	-
Risk factors			
Either or both parents smoked during pregnancy	29.2	24.9	-
Sedentary for more than two hours a day 5-15 years	27.3	24.5	-
Overweight 5-15 years	19.9	16.1	-
Obese 5-15 years	8.0	6.5	-
Conditions and injury			
Current asthma	6.5	9.2	-
Injury (d)	22.7	20.7	-
Health Service Utilisation in the last 12 months			
Used a primary health care service (e)	72.7	80.7	Lower
Used a dental health care service	54.2	58.5	-
Used a mental health care service (f)	2.5	4.2	-
Used an allied health care service (g)	27.1	27.3	-
Used a hospital health care service (h)	35.3	27.2	Higher

** data excludes Ravensthorpe*
Results significantly better than the State are highlighted green, significantly worse are highlighted red. Where results could not be interpreted as either better or worse, or results are similar to the State, they have not been highlighted. Notes:
(a) The number of serves of fruit recommended for sufficient consumption in the 2013 Australian Dietary Guidelines by the National Health and Medical Research Council varies dependent on age and sex. For reporting purposes, this table just presents the prevalence of children aged 5-15 years who consume 2 serves of fruit daily, this is not equivalent to 'sufficient intake'.
(b) The number of serves of vegetables recommended for sufficient consumption in the 2013 Australian Dietary Guidelines by the National Health and Medical Research Council varies dependent on age and gender. For reporting purposes, this table just presents the prevalence of children aged 5-15 years who consume 5 serves of vegetables daily, this is not equivalent to 'sufficient intake'.
(c) Based on the 2014 Australian Physical Activity and Sedentary Behaviour Guidelines, children aged between 5 and 15 years are required to complete at least 60 minutes of moderate to vigorous physical activity each day to achieve good health. Table 5 presents the prevalence of children who are physically active 7 or more sessions per week and for at least 60 minutes a session.
(d) Injury in the last 12 months requiring treatment from a health professional
(e) Primary health care service includes medical specialist, general practitioner, community health centre, and community or district nurse.
(f) Mental health care services include psychiatrist, psychologist or counsellor.
(g) Allied health care services include optician, physiotherapist, chiropractor, podiatrist, dietitian, nutritionist, occupational therapist or diabetes/ other health educator.
(h) Hospital based health care service includes an overnight stay in hospital, an attendance at the emergency department or an outpatient clinic.
Source: WA Health and Wellbeing Surveillance System[xxiii]

Potentially Preventable Hospitalisations (PPH), 0-14 years

Hospitalisations are an indicator of severe conditions in the community and assist in targeting primary care resources to prevent hospitalisations. Many hospitalisations result from conditions where hospitalisations could potentially be avoided using preventive care and early disease management. These hospitalisations are known as PPH and are grouped into three major categories:

- Acute: This category includes dehydration and gastroenteritis, pyelonephritis (kidney infection), pelvic inflammatory disease (PID), ear, nose and throat (ENT) infections, dental conditions, appendicitis, epilepsy, gangrene and cellulitis (skin infection).
- Chronic: This category includes asthma, diabetes (excluding renal dialysis), chronic obstructive pulmonary disease (COPD), iron deficiency anaemia, nutritional deficiencies and rheumatic heart disease.
- Vaccine preventable: This category includes mumps, measles, rubella, whooping cough, influenza and pneumonia.

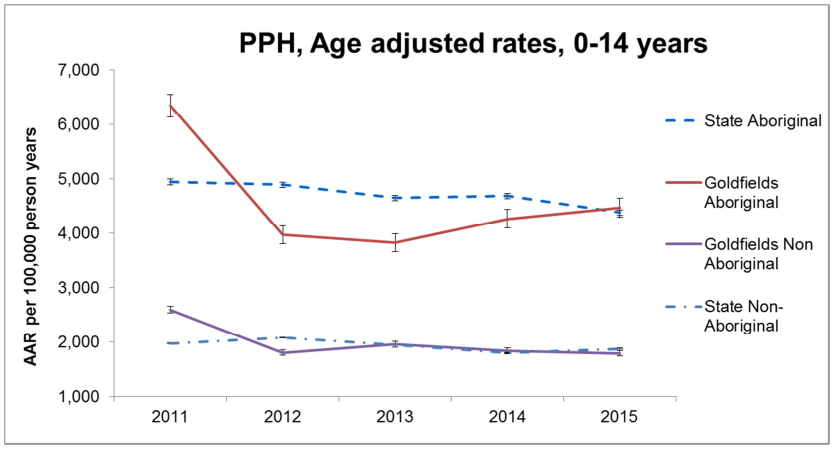
Public health measures have the greatest influence on vaccine preventable conditions. While effective clinical care with regular review is essential to reduce avoidable admissions for people with chronic conditions.

For the period 2011-2015, PPH accounted for 1,671 hospitalisations of Goldfields children aged 0-14 years (14% of all hospitalisations in children). The rate of all-cause PPH was significantly higher (1.2 times) for Goldfields children than for children in the State.[v]

Figure 9 compares age-adjusted rates from 2011 to 2015 for the Goldfields and State by Aboriginality. Goldfields Aboriginal children had significantly higher rates than their State Aboriginal counterparts in 2011. In 2012 the rate decreased significantly, and from 2012 until 2014 the regional rate was significantly lower than the State Aboriginal children. However, in 2015 the Goldfields had similar levels, compared with the State. The Aboriginal rate remains significantly higher (over two times) compared with the non-Aboriginal rate throughout the five year period.[v]

The Goldfields non-Aboriginal rate followed a similar path to the Aboriginal rate, in that, it was significantly higher than the State rate in 2011, decreased in 2012, and was similar to the State non-Aboriginal rate in 2015.

Figure 9: Goldfields vs. State PPH by Aboriginality 0-14 years 2011-2015

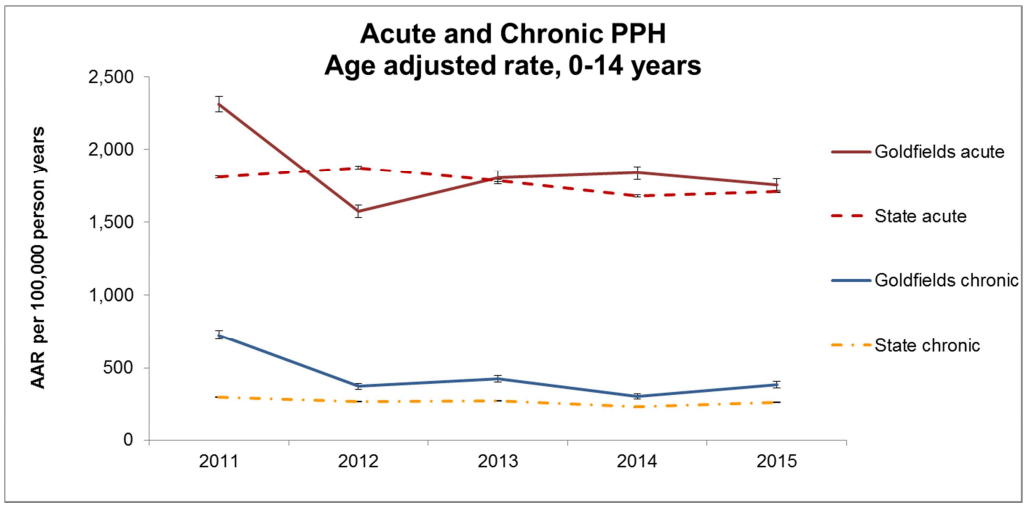


Source: DoH Health Tracks[v] (The error bars represent the 95% confidence interval of the rate).

Figure 10 compares age-adjusted rates from 2011 to 2015 for acute and chronic conditions. PPH rates for vaccine preventable conditions are significantly lower than acute and chronic conditions and are not shown in Figure 10.

Between 2011 and 2015, PPH rates for acute conditions for children in the Goldfields were significantly higher (over three times) than for chronic conditions. Goldfields PPH rate for acute conditions was significantly higher than the State acute rate in 2011, before decreasing significantly in 2012 followed by a slower yet significant increase in 2013 and then somewhat stabilising in 2014-2015. The PPH rate for chronic conditions also decreased from 2011 and fluctuated between 2012 and 2015. The chronic PPH rate was significantly higher than the State for the 2011 to 2015 period.[v]

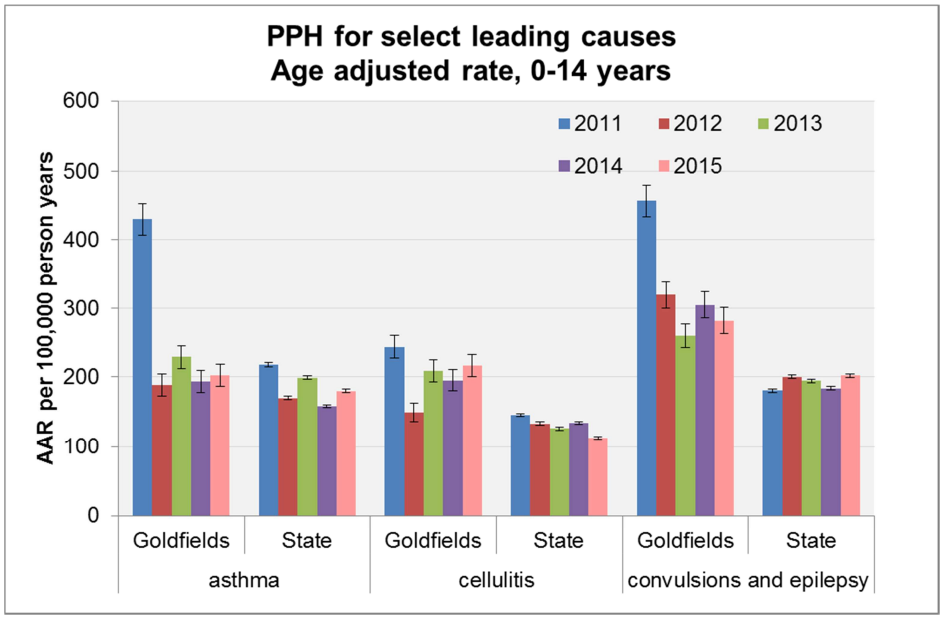
Figure 10: Goldfields vs. State PPH Acute and Chronic 0-14 years 2011-2015



Source: DoH, Health Tracks[v](The error bars represent the 95% confidence interval of the rate).

Figure 11 highlights the leading causes of PPH were asthma, cellulitis and convulsions and epilepsy. The very high rates in acute and chronic PPH in 2011 were due mainly to the significantly higher rates in PPH for asthma and convulsions and epilepsy. The Goldfields asthma rate almost halved in 2012, and then remained consistent with State rates thereafter. The convulsions and epilepsy rate decreased significantly by about a third in 2012 and remained reasonably steady, although still significantly higher than the State rate thereafter.[v]

Figure 11: Goldfields vs. State PPH asthma, cellulitis and convulsions & epilepsy 0-14 years 2011-2015



Source: DoH, Health Tracks[v](The error bars represent the 95% confidence interval of the rate).

The overall leading PPH condition, for 2011-2015 was ENT infections, which accounted for 27 per cent (457 hospitalisations) of all PPH in children in the Goldfields, refer to Table 8. A high proportion of PPH for ENT infections, convulsions and epilepsy in this age-group were in very young children aged 0-4 years.[v]

Data from a national survey in 2012-13, focussing on Aboriginal populations show that hearing problems and ear diseases, caused by chronic otitis media (middle ear infection) in childhood, is considerably higher among Aboriginal children aged 0-14 years (7%) than non-Aboriginal children (3.6%). This is of key concern as hearing loss resultant from otitis media has significant consequences for child language, social development and education.[xxiv]

For the period 2006-2015, the AAR of hospitalisations for disease of the ear and mastoid process for Aboriginal children aged 0-14 years in the Goldfields was significantly higher (1,223 per 100,000 person years) than non-Aboriginal rate for children (492 per 100,000 person years).[v]

The leading PPH for chronic conditions was asthma (10%), diabetes complications (3%) and rheumatic heart disease (3%). The PPH rates for these conditions were significantly higher than State rates, especially rheumatic heart disease which was 7.9 times higher. Goldfields children have rates significantly higher than the State for nine out of ten conditions.[v]

Table 8: Goldfields leading PPH 0-14 years 2011-2015

PPH Condition	Number of PPH	% all child PPH	SRR
ENT infections (acute)	457	27%	**1.2**
dental conditions (acute)	333	20%	**0.7**
convulsions and epilepsy (acute)	227	14%	**1.7**
asthma (chronic)	163	10%	**1.4**
cellulitis (acute)	139	8%	**1.6**
urinary tract infections, including pyelonephritis (acute)	118	7%	**1.1**
pneumonia and influenza (vaccine)	61	4%	**2.1**
diabetes complications (chronic)	52	3%	**1.6**
rheumatic heart disease (chronic)	50	3%	**7.9**
iron deficiency anaemia (chronic)	15	1%	**2.9**
All Potentially Preventable Hospitalisations (PPH) (0-14 years)	**1,671**	**100%**	**1.2**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

Injuries, 0-14 years

For the period 2011-2015, injury and poisoning hospitalisations in children aged 0-14 years in the Goldfields accounted for 1,120 hospitalisations (10% of all hospitalisations in children). The hospitalisation rate of all injury and poisoning for Goldfields children was 1,686 per 100,000 person years, which was similar to the State rate.[v]

The leading causes of injury and poisoning hospitalisations for children in the Goldfields were accidental falls, exposure to mechanical forces and transport accidents. The hospitalisation rate for transport accidents was significantly higher (1.4 times) than the State rate, while the rate for accidental falls was significantly lower, 0.8 times the State rate.[v]

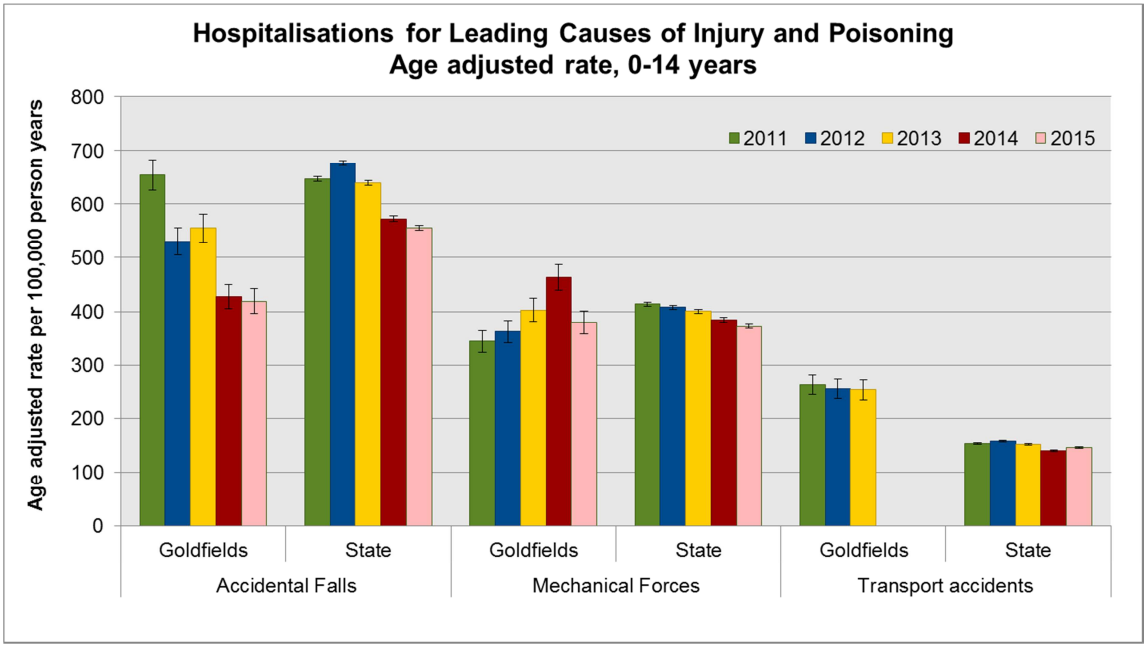
Figure 12 shows that for the period 2011-2015, the rate of hospitalisations for accidental falls in children in the Goldfields was 519 per 100,000 person years, the rate has decreased significantly since 2011 and was at its lowest in 2015. For children aged 0-4 years, accidental falls were the leading cause of all the types of 'injury and poisoning' grouped hospitalisations, however the rate was significantly lower (0.8 times) than the State rate.[v]

The rate of hospitalisations for exposure to mechanical forces in children aged 0-14 years in the Goldfields was 390 per 100,000 person years and the main forces were struck/ crushed by an object, other injuries, animals and cutting/piercing objects. The rate increased significantly between 2011 and 2014 before decreasing again in 2015. The State rate decreased from 2011 to 2015.[v]

The rate of hospitalisations for transport accidents in Goldfields children was 212 per 100,000 children, 1.4 times the State rate. The main modes of transport related hospitalisations for Goldfields children were motor vehicle or motor cycle (53% of all transport accident related hospitalisations) and pedal cyclist (21% of hospitalisations). The rate of hospitalisations for

transport accidents was significantly higher than the State throughout the 2011 to 2013 period. From 2014, the rate was suppressed to avoid an unreliable rate derived from a low count, given the numbers decreased by 47 per cent.[v]

Figure 12: Goldfields vs. State hospitalisations for leading causes of injury and poisoning 0-14 years 2011-2015



Source: DoH, Health Tracks[V] (The error bars represent the 95% confidence interval of the rate).

Notifiable Infections, 0-14 years

Death and illness resulting from communicable diseases are a major public health problem. Effective containment of many communicable diseases has occurred due to public health legislation requiring reporting of these diseases. 'Notifiable' diseases include a range of vaccine preventable diseases, vector borne diseases, food and water borne diseases, sexually transmitted infections and infections such as Severe Acute Respiratory Syndrome (SARS).

Under the provisions of the *Public Health Act 2016*[xxv], any medical practitioner or nurse practitioner attending a patient known or suspected to have a notifiable communicable disease has a legal obligation to report the diagnosis to the WA Department of Health. The *Act* states that notifications must also be made in the case of post mortem examination and by Pathologists who identify a patient may have a notifiable condition. A complete list of the current notifiable diseases can be accessed via the WA Department of Health.[xxvi]

For the period 2011-2015, the vaccine preventable disease notification rate (289 per 100,000) (influenza, pertussis, pneumococcal infection) for children was similar to the State rate for those aged 0-14 years (Table 9). The leading notifiable disease was Influenza (231 per 100,000) and was significantly higher (1.1 times) than the State rate. This was followed by varicella (chickenpox), and the notification rate was 1.5 times the State rate.

The enteric disease notification rate (289 per 100,000) (campylobacteriosis, cryptosporidiosis, salmonellosis and shigellosis) for children aged 0-14 years was similar to the State rate.

Campylobacteriosis was the third leading notifiable disease and the notification rate (84 per 100,000) was similar to the State rate.[v]

Table 9: Goldfields disease notifications 0-14 years 2011-2015

Condition	Number	SRR	AAR*
enteric diseases	204	1.1	288.6
vaccine preventable diseases	305	0.8	453.9
vector-borne diseases	14	1.2	N/A
All notifications	**568**	**1.0**	**838.7**

* Age-adjusted rate per 100,000 persons

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Goldfields Public Health receive notifications and provide public health services for Wiluna, however as Wiluna is geographically located within the Murchison health district, Wiluna public health notification data is within the Midwest Health Region.

Note: Within the data set used for this analysis there were an additional 40 cases (Male: 21, Female: 19, Unknown: 0) that could not be used due to uncertainty about their race. Thus, this Aboriginal: Non-Aboriginal comparison is based on only 71.6% of all known cases.

Source: DoH, Health Tracks[v]

In the Goldfields, for children aged 0-4 years, the notifiable disease notification rate was highest for influenza (367 per 100,000) and the rate was significantly higher (1.4 times) compared to the State rate in this age group.[v]

Most of the enteric notifications in children were for those aged 0-4 years (79%). The enteric disease notification rate for children aged 0-4 years was significantly higher (1.3 times) than the State rate.[v]

The notification rates of enteric and vaccine preventable diseases for Aboriginal children aged 0-4 years were significantly higher (3.3 times and 3.2 times respectively) than the non-Aboriginal rates.[v]

Implications for health service planning:

Goldfields children have higher potentially preventable hospitalisation (PPH) rates than the State including, ENT infections, cellulitis, convulsions and epilepsy and asthma. As potentially preventable conditions can be greatly influenced by public health measures, this suggests a need for increased prevention programs combined with maintenance programs and primary health care services.

High rates of hospitalisation due to accidental falls, mechanical forces and transport (mainly motor vehicle/motorcycle) accidents in children highlight the need for public health intervention.

Health of Adults

Self-reported risk factors, 16 years and over

Lifestyle factors are particularly important due to their relationship with chronic conditions that are considered to be preventable. Prevention and management of these modifiable risk factors can have a substantial effect on these preventable chronic conditions.[ix]

Results from the HWSS for the Goldfields population are shown in the Table 10 and Table 11. The data for adults aged 16 years and over are for 2013-2016. In summary:

- one in seven adults (15%) smoked;
- most adults (89%) did not eat the recommended daily serves of vegetables;
- more than half of adults (54%) did not eat the recommended daily serves of fruit;
- one third of adults (33%) drank alcohol at risk for long-term harm;
- one in six adults (17%) drank alcohol at risk for short-term harm, significantly higher than the State prevalence (11%);
- two in five (40%) did not do sufficient physical activity;
- more than one in five adults (21%) reported high blood pressure, significantly higher than the State prevalence (16%); and
- and three in eight (38%) reported height and weight measurements that classified them as obese, significantly higher than the State prevalence (28%).[v]

While some risk factors showed no significant difference in the prevalence of Goldfields residents compared with the State, the prevalence is still important because these behaviours are modifiable risk factors for chronic conditions.

Lifestyle risk factor information is not readily available for Aboriginal residents. For State Aboriginal people, 39 per cent were obese and 67 per cent were overweight or obese (BMI 25 or higher) in 2012-13. In 2014-15, 38 per cent of State Aboriginal people aged 18 years and over reported high or very high levels of psychological stress which is significantly more than the State prevalence of 7.6 per cent. [xxvii & xxiv]

Table 10: Goldfields vs. State lifestyle and psycho-social risk factors for persons aged 16 years and over by gender 2013-2016

Indicator	Goldfields Prevalence Estimate			Population Estimate	WA Prevalence Estimate			Comparison to WA		
	Female	Male	Persons		Female	Male	Persons	Female	Male	Persons
Health risk factors										
Currently smokes	13.3	16.3	14.9	6,977	9.8	14.6	12.2	-	-	-
Does not eat two or more serves of fruit daily	48.7	59.1	54.2	25,406	45.3	52.7	49.0	-	-	-
Does not eat five or more serves of vegetables daily	86.0	91.4	88.9	41,662	87.3	90.8	89.1	-	-	-
Drinks at high risk levels for long-term harm (1)	17.9	45.6	32.5	15,237	17.9	38.6	28.3	-	-	-
Drinks at high risk levels for short-term harm (2)	6.3	25.9	16.6	7,802	5.4	16.5	11.0	-	Higher	Higher
Completes less than 150 minutes of moderate physical activity per week (adults 18 years and over)	42.4	37.8	40.0	18,736	40.6	32.2	36.4	-	-	-
Current high blood pressure	20.5	22.2	21.4	10,036	15.6	16.6	16.1	Higher	Higher	Higher
Current high cholesterol	14.6	17.3	16.1	7,530	16.9	18.9	17.9	-	-	-
Overweight (3)	29.8	45.7	38.3	17,973	32.6	44.7	38.8	-	-	-
Obese (3)	40.7	36.1	38.2	17,933	27.4	28.2	27.8	Higher	Higher	Higher
High or very high psychological distress	8.4	6.7	7.5	3,521	9.4	7.0	8.2	-	-	-
Lack of control over life in general (4)	3.6	3.6	3.6	1,676	5.4	4.2	4.8	-	-	-

Note: Data includes Ravensthorpe SLA. Population estimate refers to the estimated number of people with the risk factor/ condition. It is derived by multiplying the Estimated Resident Population by the persons prevalence estimate.
1. Drinks more than 2 standard drinks on any one day.
2. Drinks more than 4 standard drinks on any one day.
3. Height and weight measurements have been adjusted for errors in self-report.
4. Often or always feels a lack of control over life in general.
Source: WA Health and Wellbeing Surveillance System, Epidemiology Branch, DoH[xxviii].

Self-reported chronic conditions, 16 years and over

Hospital data only captures chronic conditions hospitalisations and cannot provide a complete picture of the prevalence of chronic conditions in the community. This type of information is more appropriately collected by population based surveys, such as the WA HWSS or Bettering the Evaluation and Care of Health (BEACH) surveys, which provide a more complete picture of prevalence of chronic conditions.

The HWSS survey 2013-2016 for self-reported, doctor diagnosed chronic conditions for Goldfields adults found (Table 11):

- more than one in five adults (22%) reported an injury requiring treatment from a medical professional in the previous year;
- one in five adults reported arthritis (20%);
- nearly one in seven adults reported a current mental health problem (12%); and
- one in fourteen adults (7%) had asthma. [v]

As the HWSS may not be representative of the Aboriginal population, national levels of chronic disease among the Aboriginal population must be factored into estimates of chronic disease in the Goldfields region, given that 12 per cent of the population is Aboriginal. Nationally, Aboriginal people report a higher prevalence of most chronic conditions compared with non-Aboriginal people.[xxiv]

Table 11: Goldfields vs. State self-reported doctor diagnosed health conditions for persons aged 16 years and over by gender 2013-2016

Indicator	Goldfields Prevalence Estimate			Population Estimate	WA Prevalence Estimate			Comparison to WA		
	Female	Male	Persons		Female	Male	Persons	Female	Male	Persons
Doctor diagnosed health conditions										
Diabetes	6.3	6.6	6.4	3,019	5.9	6.4	6.2	-	-	-
Heart disease	3.4	8.1	5.9	2,746	4.5	7	5.8	-	-	-
Cancer (1)	5.2	4.9	5	2,359	6	4.9	5.5	-	-	-
Current asthma	9.3	4.6	6.8	3,209	9.8	6.9	8.4	-	-	-
Current respiratory problem (2)	1.5	1.4	1.5	693	1.9	2.2	2	-	-	-
Stroke	1.6	2	1.8	842	1.5	1.9	1.7	-	-	-
Arthritis	22.5	17.3	19.8	9,262	23	16.1	19.5	-	-	-
Osteoporosis	5.5	2.4	3.9	1,814	7.2	2.4	4.8	-	-	-
Injury (3)	16	27.8	22.2	10,414	19.7	25.8	22.8	-	-	-
Current mental health problem (4)	13.9	9.9	11.8	5,527	18.1	11.1	14.6	-	-	-

Note: Data includes Ravensthorpe SLA. Results significantly better than the State are highlighted green, significantly worse are highlighted red. Results that could not be interpreted as either better or worse, or results are similar to the State have not been highlighted.
1. Excludes skin cancer.
2. Respiratory problem other than asthma that has lasted 6 months or more.
3. Injury in the last 12 months requiring treatment from a health professional.
4. Diagnosed with depression, anxiety, stress-related or other mental health problem in the past 12 months.
Source: WA Health and Wellbeing Surveillance System, Epidemiology Branch, DoH [xxviii]

Implications for health service planning:

The rates of modifiable risk factors and self-reported chronic conditions, regardless of prevalence within an area, should be monitored as interventions designed to impact on these behaviours have greatest potential to reduce chronic conditions. Goldfields adults were more likely to smoke, report insufficient intake of fruit, drink at risk of harm and to report obesity, than adult residents of the State.

While specific information regarding the Goldfields Aboriginal population is not available, nationally Aboriginal people are more likely to smoke and to have poorer health than non-Aboriginal people. This demonstrates a need for culturally appropriate and targeted programs and services.

Self-reported service utilisation, 16 years and over

In the period 2013-2016, Goldfields residents aged 16 years and over, reported their health service utilisation in the previous 12 months, refer to Table 14:

- most adults (84%) reported having used a primary health care service, significantly lower than the State (89%);
- nearly half (49%) reported having used a dental health care service, lower than the State prevalence (55%);
- nearly half (49%) reported having used an allied health care service, significantly lower than the State; and
- one in three (34%) reported having used a hospital based health care service, significantly higher than the State (27%).[v]

Table 12: Goldfields vs. State self-reported health service utilisation for persons aged 16 years and over by gender 2013-2016

Indicator	Goldfields Prevalence Estimate			Population Estimate	WA Prevalence Estimate			Comparison to WA		
	Female	Male	Persons		Female	Male	Persons	Female	Male	Persons
Health service utilisation in the past 12 months										
Used a primary health care service (1)	89.0	79.6	84.0	39,400	92.0	86.3	89.1	-	-	Lower
Used a dental health care service	57.4	41.9	49.3	23,111	59.9	49.9	54.9	-	Lower	Lower
Used a mental health care service (2)	6.0	5.1	5.5	2,597	9.1	6.1	7.6	-	-	-
Used an allied health care service (3)	52.6	46.3	49.3	23,107	56.0	46.6	51.3	-	-	-
Used a hospital health care service (4)	32.5	35.4	34.0	15,945	27.9	25.2	26.5	-	Higher	Higher
Used an alternative health care service (5)	12.6	6.1	9.1	4,287	11.9	7.3	9.6	-	-	-
Mean number of health service visits in the past 12 months (of those who attended the service)										
Mean visits to primary health care service (1)	4.4	3.9	4.1		4.9	3.7	4.3	-	-	-
Mean visits to dental health care service	1.3	1.0	1.2		1.2	0.9	1.0	-	-	-
Mean visits to mental health care service (2)	0.5	0.3	0.4		0.7	0.4	0.6	-	-	-
Mean visits to allied health care service (3)	3.1	1.7	2.3		3.6	2.4	3.0	-	Lower	Lower
Mean visits to hospital based health care service (4)	0.5	0.7	0.6		0.6	0.5	0.6	-	-	-
Mean visits to alternative health care service (5)	0.7	0.2	0.4		0.6	0.4	0.5	-	Lower	-

Notes: Data includes Ravensthorpe SLA. Results significantly better than the State are highlighted green, significantly worse are highlighted red. Where result could not be interpreted as either better or worse, or results that are similar to the State have not been highlighted.
1. e.g. medical specialist, general practitioner, community health centre, community or district nurses.
2. e.g. psychiatrist, psychologist or counsellor.
3. e.g. optician, physiotherapist, chiropractor, podiatrist, dietitian, nutritionist, occupational therapist, diabetes/other health educator.
4. e.g. overnight stay, emergency department or outpatients.

5. e.g. acupuncturist, naturopath, homeopath or any other alternative health service.
Source: WA Health and Wellbeing Surveillance System, Epidemiology Branch, DoH[xxviii]

Implications for health service planning:

Primary health services are particularly important as they provide an opportunity to monitor modifiable risk factors and chronic conditions, and implement public health programs and interventions, such as vaccinations.

A high prevalence of a condition, but a low health service utilisation for that condition may suggest either a lack of access to services, or optimal control of the condition. It is therefore important to look at actual numbers as well as rates of conditions and service provision.

A continued focus on ambulatory and primary health care in partnership with local government, other private and not-for-profit health providers is recommended.

Where particular services such as dental and allied health services, are not being accessed as often as deemed appropriate, efforts should be made to increase the public's awareness of these services.

Hospitalisations, 15-64 years

For the period 2011-2015, the overall hospitalisation rate of Goldfields residents aged 15-64 years was significantly higher than that of the State, for both males and females.

Table 13: Goldfields hospitalisations adults 15-64 years by gender 2011-2015

	Number	SRR	AAR*
Goldfields			
Males	34,831	**1.1**	30,471
Females	41,415	**1.1**	43,051
Persons	**76,246**	**1.1**	**36,212**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

For the period 2011-2015, the overall hospitalisation rate of Aboriginal Goldfields residents aged 15-64 years was significantly higher (1.2 times) than the Aboriginal State rate. This rate was also 5.4 times higher than the non-Aboriginal Goldfields rate, refer to Table 14. These higher rates highlight the health disparity of residents in the Goldfields compared with those living elsewhere in the State and in particular, the disparity between Aboriginal and non-Aboriginal residents.[v]

Table 14: Goldfields hospitalisations Aboriginals and non-Aboriginal residents 15-64 years 2006-2015

	Number	SRR	AAR*
Goldfields			
Aboriginal	48,459	1.2	141,999
Non-Aboriginal	96,481	0.9	26,311

Note: The period Stated in this table is longer than the previous table to provide more accurate data for Aboriginals.

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

The leading cause of hospitalisation for Goldfields residents was pregnancy and childbirth. These accounted for 10% of hospitalisations in this age group. This was followed by digestive diseases (9%) and injury and poisoning (7%).

Table 15: Goldfields leading cause of hospitalisation 15-64 years 2011-2015

Rank	Cause of Hospitalisation	Number	% of all hospitalisations (15-64yrs)	State Rank
1	Pregnancy and childbirth	7,825	10%	2
2	Digestive diseases	7,135	9%	1
3	Injury and Poisoning	5,606	7%	5
4	Ill-defined conditions	4,709	6%	3
5	Musculo-skeletal diseases	4,036	5%	4
	All hospitalisations (15-64yrs)	**76,246**	**100%**	

NOTE: Leading causes exclude 'Factors influencing health status and contact with health services' and 'attending health services for examination and investigation', reproduction, specific procedures, and other circumstances, and potential health hazards related to communicable diseases, socioeconomic and psychosocial circumstances, family and personal history. This also includes renal dialysis.

Source: DoH, Health Tracks[v]

The leading causes of hospitalisation by minor category differed markedly between Aboriginal and non-Aboriginal Goldfields residents aged 15-64 years. Overall, for adults aged 15-64 years, across the State for 2011-2015, renal dialysis accounted for 343,744 separations (7% of total separations). Goldfields residents had 17,716 separations for renal dialysis (16%). Leading conditions by minor category after renal dialysis were delivery (4%), chemotherapy (3%), arthropathies (2%) and symptoms involving the digestive system and abdomen (2%).[v]

Dialysis was responsible for the highest number of hospitalisations of Aboriginal Goldfields residents for 2006-2015; 27,491 separations (45%). For non-Aboriginal residents for the period 2011-2015, the leading cause of hospitalisation was delivery (5%). Chemotherapy (3%), dialysis

(3%), arthropathies (2%) and symptoms involving the digestive system and abdomen (2%) were also leading causes (Note: the period Stated above for Aboriginal people is longer to provide more accurate and confidential data).[v]

Alcohol and tobacco related hospitalisations, 15-64 years

For the period 2011-2015, the hospitalisation rate for alcohol-related conditions was 1,124 per 100,000 person years for Goldfields adults aged 15-64 years. This was significantly higher than the State (1.4 times). The tobacco-related hospitalisation rate was 749 per 100,000 person years which was also significantly higher than the State (1.6 times).[v]

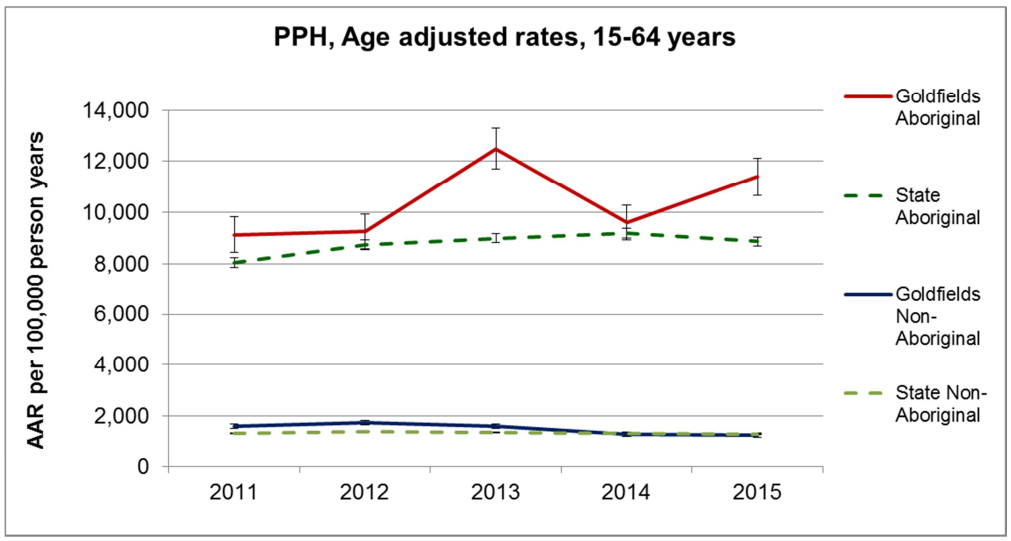
For the period 2011-2015, the rate for alcohol-related hospitalisation for Goldfields Aboriginal people was 5,044 per 100,000 person years similar to the State Aboriginal rate. However, the rate of alcohol-caused hospitalisations for Goldfields Aboriginal people was significantly higher (6.6 times) than the non-Aboriginal rate. The rate of tobacco-related hospitalisation for Goldfields Aboriginal residents was 1.2 times higher than the State Aboriginal rate and 4.2 times higher than the region's non-Aboriginal rate. For non-Aboriginal residents of the region, the tobacco related hospitalisation rate was significantly higher (1.4 times) for this age-group while the alcohol-related hospitalisation rate was similar to the State rate.[v]

Potentially preventable hospitalisations, 15-64 years

For the period 2011-2015, PPH accounted for 4,773 hospitalisations of Goldfields adults aged 15-64 years (6% of all hospitalisations in this age group). The total PPH rate for adults' aged15-64 years was significantly higher (1.5 times) for the Goldfields region than for the State.[v]

Figure 13 compares age-adjusted rates from 2011 to 2015 for the Goldfields and State by Aboriginality. Goldfields Aboriginal people aged 15-64 years had significantly higher rates than the Goldfields and State non-Aboriginal residents in the same age group, over the whole period. The Goldfields Aboriginal rate was also significantly higher than the State Aboriginal rate in 2011, 2013 and 2015 with a peak in 2013. The PPH rate for Goldfields non-Aboriginal residents was significantly higher than the State non-Aboriginal rate until 2014, when it decreased to the State level.[v]

Figure 13: Goldfields vs State PPH by Aboriginality 15-64 years 2011-2015



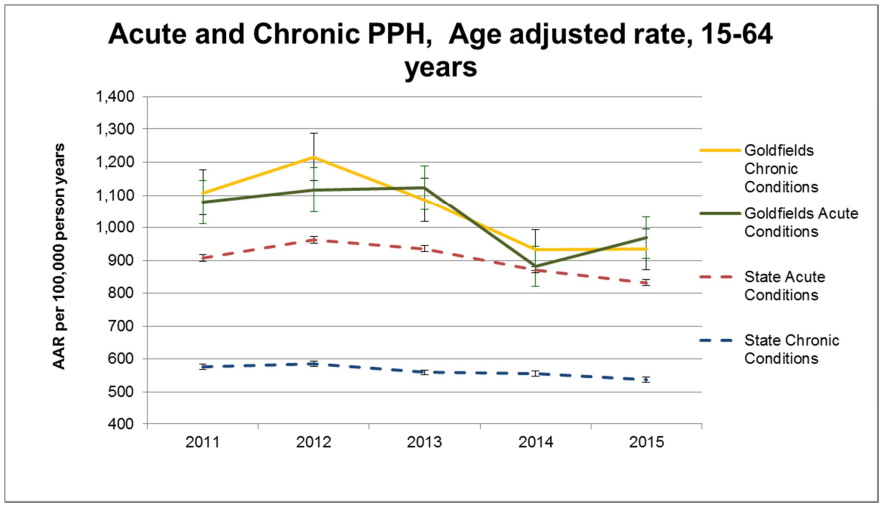
Source: DoH, Health Tracks[v] *(The error bars represent the 95% confidence interval of the rate).*

PPH rates for vaccine preventable conditions in Goldfields adults aged 15-64 years are significantly lower than acute and chronic conditions. The Goldfields and State rates increased significantly during the 2011 to 2015 period; State rate by 3.5 times and Goldfields rate by 5.6 times, however the vaccine preventable rate for Goldfields was still only about a third of the magnitude of the acute and chronic rates in 2015.[v]

Figure 14 shows the trends in PPH rates for acute and chronic conditions for adults in the Goldfields, both were significantly higher than the State rates throughout the 2011-2015 period. The PPH rate for acute conditions remained steady for 2011-2013 and decreased significantly in 2014 having no significant change in 2015. The State acute rate increased significantly in 2012 and then decreased significantly each year until 2015.[v]

The Goldfields chronic conditions PPH rate was significantly higher than the State rate but has decreased significantly each year from a peak in 2012. The State rate also decreased throughout the five year period.[v]

Figure 14: Goldfields vs. State Acute and Chronic PPH 15-64 years 2011-2015



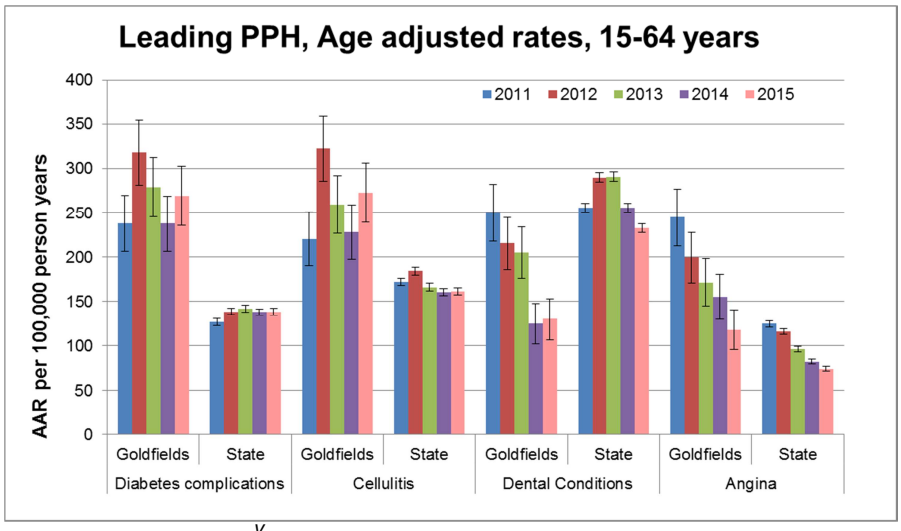
Source: DoH, Health Tracks[v]

For the period 2011-2015, the overall leading PPH condition in the Goldfields was diabetes complications, which accounted for 12 per cent of all PPH in adults aged 15-64 years. The Goldfields PPH rate was significantly higher (2 times) than the State, refer to Figure 18.[v]

The second leading cause of PPH was cellulitis followed by dental conditions and angina. The PPH rate for cellulitis was significantly higher (1.5 times) than the State rate throughout the five year time period in this age group. The rate peaked in 2012 while the State rate remained relatively steady with a slight downward trend.

The PPH rate for dental conditions in the Goldfields was lower than the State rate between 2011 and 2015 with an overall downward trend for adults aged 15-64 years while the State rate peaked in 2012-2013 before decreasing in 2014 and 2015. While the PPH rate for angina was 1.8 times the State rate. The rate decreased significantly each year between 2011 and 2015 yet remained significantly higher than the State rate.[v]

Figure 15: Goldfields vs. State Top 4 PPH 15-64 years 2011-2015



Source: DoH, Health Tracks[v]

Other leading PPH for adults aged 15-64 years in the Goldfields are shown in Table 16**.** Twelve out of fifteen conditions had rates significantly higher than the State rates.[v]

Table 16: Goldfields leading PPH 15-64 years 2011-2015

PPH Condition	Number	% all PPH (15-64 years)	SRR
diabetes complications	560	12%	2.0
cellulitis	550	12%	1.5
dental conditions	397	8%	0.7
angina	366	8%	1.8
urinary tract infections, including pyelonephritis	365	8%	1.0
convulsions and epilepsy	326	7%	1.4
asthma	313	7%	2.2
chronic obstructive pulmonary disease	313	7%	2.3
iron deficiency anaemia	266	6%	1.1
ENT infections	241	5%	1.3
congestive cardiac failure	233	5%	2.7
gangrene	158	3%	1.8
angina (chronic)	99	2%	1.6
pelvic inflammatory disease	92	2%	1.3
pneumonia and influenza (vaccine-preventable)	58	1%	2.0
All PPH (15-64yrs)	**4,773**	**100%**	**1.5**

Source: DoH, Health Tracks[v]

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Implications for health service planning:

The hospitalisation rate for Goldfields Aboriginal residents was 5.4 times higher as the non-Aboriginal rate. This highlights the health disparity between Aboriginal and non-Aboriginal people in the region and the need to prioritise investment and services that engage with and support Aboriginal people to better manage and improve their health.

The leading causes of hospitalisation was markedly different between Aboriginal and non-Aboriginal Goldfields residents. Dialysis was the leading cause for Aboriginal people, while deliveries, chemotherapy and dialysis were for non-Aboriginal people.

Goldfields Aboriginal residents had significantly higher rates for both alcohol-related (6.6 times) and tobacco–related (4.2 times) hospitalisations compared with the regional non-Aboriginal people aged 15-64 years.

For the period 2011-2015, diabetes complications were the leading PPH in Goldfields accounting for 12 per cent of all PPH in adults aged 15-64 years. As potentially preventable conditions can be greatly influenced by public health measures, this suggests a need for increased preventative programs as well as maintenance programs and primary health care services.

Notifiable Infections and Events, 15-64 years

For the period 2011-2015, the communicable disease notification rate for Goldfields residents aged 15-64 years was significantly higher (1.3 times) than the State rate. In particular, vector-borne and sexually transmitted infection (STI) notifications were1.6 times and 1.5 times higher than the State rate. Blood-borne diseases were also 1.3 times the State rate.[v]

Table 17: Goldfields resident communicable disease notification rates 15-64 years 2011-2015

Condition	Number	SRR	AAR*
sexually transmitted diseases	2,501	**1.5**	1,182
Vaccine-preventable diseases	505	**0.7**	239
Vector-borne diseases	394	**1.6**	185
Enteric infections	319	**1.0**	149
Blood-borne diseases	278	**1.3**	129
All notifications (15-64yrs)	**4,006**	**1.3**	**1,888**

** Age-adjusted rate per 100,000 person-years*

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

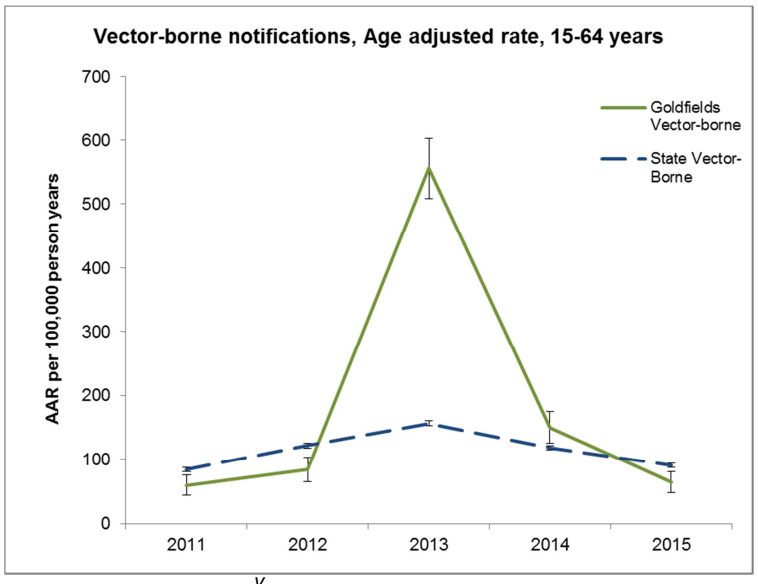
Vector-borne diseases, 15-64 years

The average number of vector-borne disease related notifications in the Goldfields region for adults aged 15-64 years was 79 persons per year between 2011 and 2015 inclusive. Most of

these notifications (80%) were for Ross River Virus (RRV). The age group most affected by RRV was those aged 45-64 years. It should be noted that there was a huge increase in disease numbers in 2013 where 242 vector-borne infections were notified, compared to 35 infections in 2012 and 64 infections in 2014. This was mainly due to the outbreak of RRV in Goldfields region as a result of unseasonable rain in March and April bringing optimal conditions for increase in mosquito numbers.[xxix]

Figure 16 demonstrates the trend between 2011 and 2015 for vector-borne notification rates compared with the State.

Figure 16: Goldfields vs. State Vector-Borne diseases 15-64 years 2011-2015

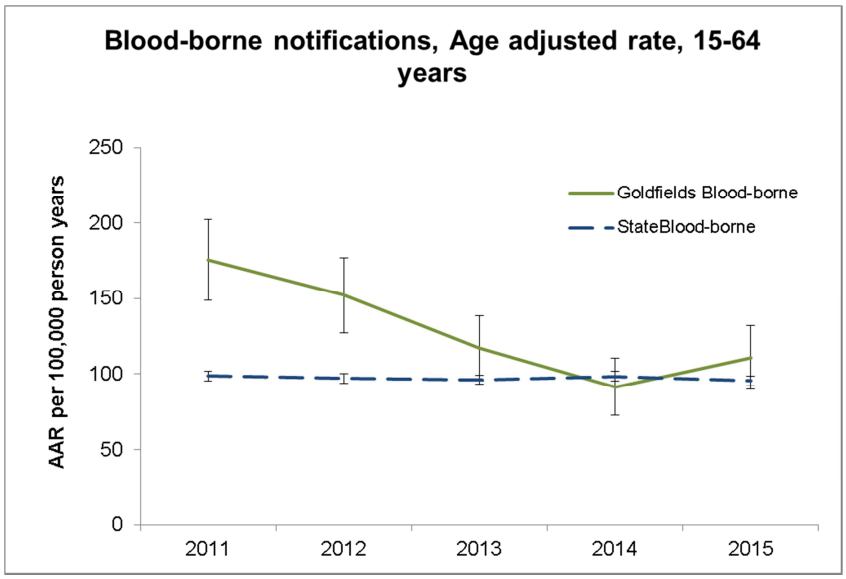


Source: DoH, Health Tracks[v] *(The error bars represent the 95% confidence interval of the rate).*

Blood-borne diseases, 15-64 years

For 2011-2015, the blood-borne disease notification rate for the Goldfields adults aged 15-64 years was significantly higher (1.3 times) than the State rate. The leading blood-borne disease notifications were hepatitis C (86 per 100,000) and hepatitis B (43 per 100,000). The hepatitis C and B notification rates were significantly higher (1.4 and 1.3 times respectively) than the State rates.The blood-borne notification rate decreased from 2011 to 2014 remaining steady in 2015 for the Goldfields, while the State blood-borne notification rate remained steady.[v]

Figure 17: Goldfields vs. State blood-borne disease notifications 15-64 years 2011-2015

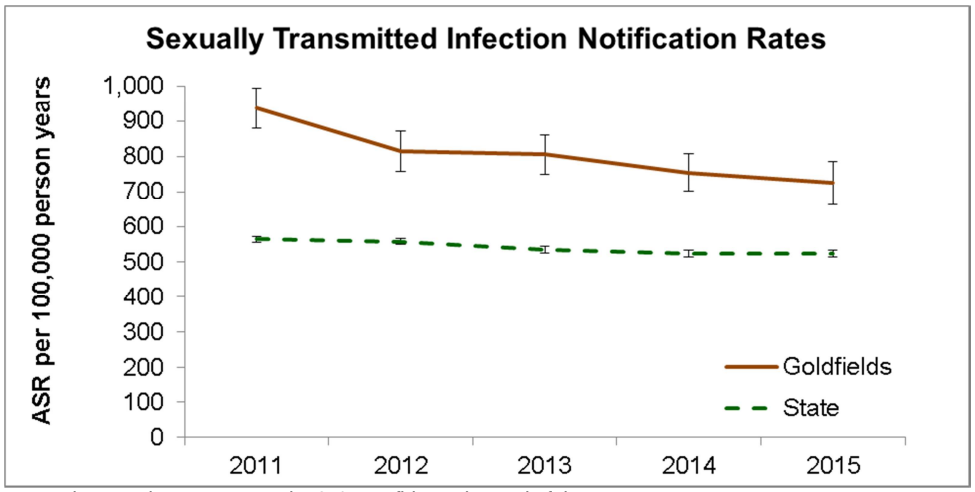


Note: The error bars represent the 95% confidence interval of the rate.
Goldfields Public Health receive notifications and provide public health services for Wiluna, however as Wiluna is geographically located within the Murchison health district, Wiluna public health notification data is within the Midwest Health Region. *Source: DoH, Health Tracks*[v]

Sexually Transmitted Infections (STIs), all ages

Notifiable STIs information for Goldfields residents is shown in Figure 18, Figure 19 and Table 18. Information for this section presents all age groups combined as per the data source. The age-standardised rate of notifiable communicable diseases was significantly higher (1.3 times) among Goldfields residents compared with the State throughout the 2011 and 2015 period, in particular vector-borne diseases (1.6 times higher) and STIs (1.5 times higher). The STI notification rate decreased between 2011 and 2015 for the Goldfields while the State rate remained steady (Figure 18). The STIs notification rate for the Goldfields remained significantly higher than the State over the whole period.[v]

Figure 18: Goldfields vs. State sexually transmitted notification rates 2011-2015



Note: The error bars represent the 95% confidence interval of the rate.

NB Goldfields Public Health receive notifications and provide public health services for Wiluna, however as Wiluna is geographically located within the Murchison health district, Wiluna public health notification data is within the Midwest Health Region. *Source: DoH, Health Tracks*[v]

There are noticeable differences in the rate of some notifiable diseases in the Aboriginal compared with non-Aboriginal populations, refer to Table 18.

Table 18: Goldfields notifiable disease by Aboriginality 2006-2015

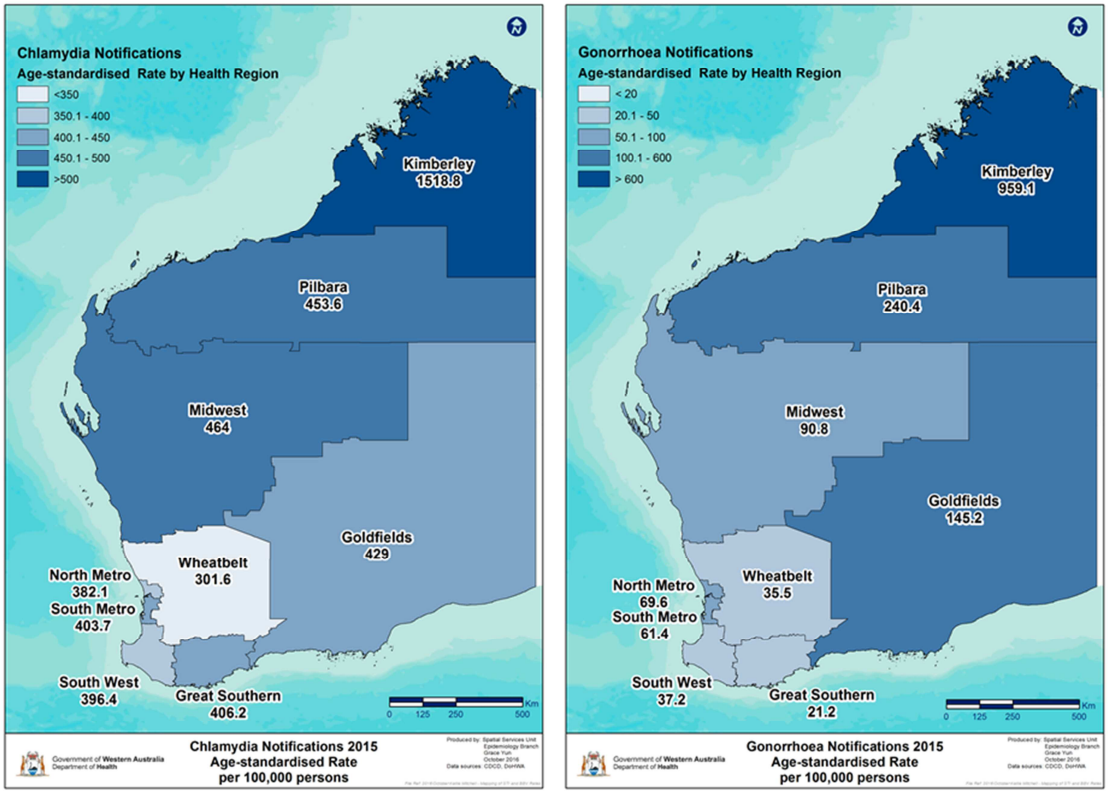
	Aboriginal		Non-Aboriginal	
	No.	ASR	No.	ASR
Sexually Transmitted Infections (STI)				
Chlamydia	1347	1606.5	2283	427.5
Gonorrhea	1227	1498.3	134	24.4
Blood Borne Virus (BBV)				
Hepatitis B	111	232	96	17.3
Hepatitis C	59	90.5	306	54.7

ASR = Age-standardised notification rate per 100,000 population
Goldfields Public Health receive notifications and provide public health services for Wiluna, however as Wiluna is geographically located within the Murchison health district, Wiluna public health notification data is within the Midwest Health Region.
Source: DoH Health Tracks 2017. Accessed 14 September 2017.

Chlamydia is the most commonly notified STI and gonorrhoea is the second most commonly notified STI in WA. During 2011-2015, there was a significant decrease in the chlamydia notification rate for the Goldfields region for both male and female residents. For males, the annual decrease in the rate was 9.5 per cent and for females it was 5.6 per cent. The State rates also decreased, but the decrease was smaller; for males by 2.5 per cent and for females 3 per cent per year.

The Goldfields gonorrhoea notification rate fluctuated during this period but there was no significant change. The State rate had an average increase of two per cent per year which was statistically significant.

Figure 19: WA Health Service Provider Notification Rate of Chlamydia and Gonorrhoea 2015



Source: The Epidemiology of Notifiable Sexually Transmitted Infections and Blood-Borne Viruses in WA 2012.[xxx]

NB Goldfields Public Health receive notifications and provide public health services for Wiluna, however as Wiluna is geographically located within the Murchison health district, Wiluna public health notification data is within the Midwest Health Region.

Implications for health service planning:

The number and trend of notifiable diseases, particularly STIs need to be considered for health promotion programs and screening. These notifications point to unsafe sexual behaviour that places the individual at risk not only of these infections, but of others, such as HIV/AIDS, and unplanned pregnancies.

Notifications for STI in younger people and the Aboriginal population may need to be specifically targeted.

Cancer Incidence, 15-64 years

Cancer is a leading cause of disease burden and contributed to one in five cases of the total disease burden in Australia in 2011. Cancer has high survival and prevalence rates, yet 94 per cent of cancer burden was due to premature death. People living in very remote and remote areas across Australia have the highest cancer death rates. The five most commonly diagnosed cancers in 2017 were breast, prostate, colorectal, melanoma and lung cancers.[xxxi]

Table 19 shows the leading cancer incidence in the Goldfields. The lung, bronchus and trachea cancer rate in Goldfields was significantly higher (1.6 times) than the State rate for 2011-2015.[v]

Table 19: Goldfields Cancer incidence 15-64 years 2011-2015

Rank	Condition	N	% all cases (15-64yrs)	SRR
1	prostate gland	105	16%	1.2
2	breast	91	14%	0.8
3	melanoma (skin)	67	10%	0.9
4	colorectal	65	10%	1.1
5	lung, bronchus & trachea	58	9%	1.6
All cancer incidence (15-64 yrs)		**640**	**100%**	**1.0**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

Mental Health, 15-64 years

Youth Suicide, 15-24 years

Table 20 shows the suicide rates for males and females between 2006 and 2015 among young people aged 15-24 years, causing five deaths in 2011-2015 in the Goldfields region. The suicide rate for males was 23 per 100,000 and for females was 10 per 100,000 person years. Both male and female rates were significantly higher than the State for this period.[v]

Table 20: Goldfields youth suicide rates by gender 15-24 years 2006-2015

Youth suicides (per 100,000 persons)* 2006-2015	Goldfields Health Region	Metro	State
Males (15-24 years)	22.9	15.1	19.6
Females (15-24 years)	10.3	6.4	7.7

** These rates have been age-standardised to the Australian 2001 population. Source: DoH, Health Tracks*[v]

Mental Health, 16 years and over

For the period 2013-2016, HWSS found that one in eight (12%) Goldfields adults aged 16 years and over reported having a current diagnosed mental health problem (females 16%, males 9%), which were lower than the State (females 17%, males 10%). However, less than six per cent

reported having used a mental health care service in the last year which was significantly different from the eight per cent at State level.[v]

HWSS collects information regarding psychological distress and perceived lack of control, which are both related to mental health and can have adverse effects on health. Eight per cent of Goldfields adults reported high or very high psychological distress, while four per cent reported lack of control over their life in general. These figures were similar to the State.[v]

This information is not available for the Goldfields Aboriginal population. However, the Aboriginal population aged 15 years and over has been found to report higher levels of psychological distress than their non-Aboriginal counterparts, with 36 per cent of West Australian Aboriginal and Torres Strait Islander people reporting high or very high psychological distress.[xxiv]

Community Mental Health Activity, 15-64 years

For the period 2011-2015, Goldfields residents aged 15-64 years accessed community mental health services at a higher rate than the State accounting for 76,992 occasions of service. Almost half of these occasions of service (46%) were in the 25-44 year age group, with the leading occasion of service was for schizophrenia schizotypal and delusional disorders.[v]

The activity rate for overall occasions of service for Goldfields adults aged 15-64 years was 1.03 times the State rate (significant but low magnitude). The rates for mood (affective) disorders (1.6 times), neurotic stress-related and somatoform disorders (1.5 times), behavioural or emotional disorders of childhood or adolescence (2.3 times) and mental retardation (1.9 times) were also significantly higher compared with the State. For the period 2011-2015 Goldfields, females had a higher rate than males for occasions of service (1.2 the State rate) while males had a lower rate compared with the State (0.8 times) in this age group. For the period 2011-2015, Goldfields Aboriginal residents aged 15-64 years accessed mental health services at 1.4 times the rate of non-Aboriginal residents.[v]

Mortality, 15-64 years

Mortality is an important indicator of the health of the population. Knowledge of the reasons for mortality can help to focus primary and community care services to prevent avoidable mortality.

The Goldfields mortality rate for adults aged 15-64 years between 2011 and 2015 was significantly higher (1.4 times) than the State rate. Leading causes included:

- Ischaemic heart disease (1.8 times the State rate) was the leading cause, with 87 per cent of cases in the 45-64 year age group;
- Intentional self-harm (1.3 times the State rate) was the second leading cause of mortality, with 67 per cent in the 25-44 year age group; and
- Lung cancer (1.9 times) transport accident deaths (1.9 times) and breast cancer (1.2 times) were the third, fourth and fifth leading causes of death and all significantly higher than the State rate.

Other causes of death with significantly higher rates than the State rate were cerebrovascular diseases (1.7 times), diabetes and impaired glucose regulation (2 times), liver cancer (2 times), influenza and pneumonia (3.7 times) and COPD (1.8 times).[v]

Alcohol and tobacco related mortality, 15-64 years

For the period 2006-2015 compared with the State, Goldfields residents aged 15-64 years had a significantly higher mortality rate due to alcohol consumption (33 per 100,000 person years; 1.6 times) and tobacco consumption (37 per 100,000; 1.7 times).

Goldfields Aboriginal residents had a similar rate for deaths from alcohol (130 per 100,000 person years) to that of the State Aboriginal people in this age group; however, it was 5.5 times the region's non-Aboriginal rate. Aboriginal residents also had a significantly higher rate for tobacco-related deaths (4.7 times) than non-Aboriginal residents in the region in this age group.

Goldfields non-Aboriginal residents had a significantly higher tobacco-related mortality rate compared with the State (1.4 times) while the alcohol-related mortality rate was similar to the State rate.[v]

Avoidable Mortality, 15-64 years

Avoidable mortality is defined as deaths before the age of 75 years from conditions which are potentially avoidable given the present health system, available knowledge about social and economic policy impacts and health behaviours.

Categories are identified using underlying cause of death ICD–10 codes in the WA cause of death database as defined by the Australian Institute of Health and Welfare (AIHW), National Healthcare Agreement: PI 16-Potentially avoidable deaths, 2015.[xxxii]

The rate of avoidable mortality for adults aged 15-64 years in the Goldfields region was significantly higher (1.5 times) than the State. The top five leading causes of avoidable mortality were ischaemic heart disease (1.8 times), suicide and self-inflicted injuries (1.3 times), transport accidents (1.9 times), breast cancer (1.2 times), and diabetes (2 times the State rate). These five conditions contributed to 40 per cent of all deaths in this age group.[v]

Implications for health service planning:

Higher PPH rates of diabetes complications and convulsions/ epilepsy highlight a need to focus on these conditions.

Ischaemic heart disease, suicide and self-inflicted injuries were leading causes of avoidable mortality in Goldfields adults. As the majority of deaths from these conditions are avoidable through the use of primary and therapeutic interventions, these statistics highlight the need for such interventions to be implemented.

The rate of deaths from transport accidents for adults in the Goldfields highlights the need for public intervention programs. Youth (15-24 years) suicide was the second leading cause of death after transport accidents in Goldfields residents. Better management of mental illnesses and active community engagement can lower the rates.

The higher rates of alcohol and tobacco-related hospitalisations and deaths could be avoided through public health programs to modify risk behavior.

Health Status of Older People – 65 years and over

Vaccinations, 65 years and over

Annual flu vaccinations and five yearly pneumonia vaccinations are recommended for people aged 65 years and over and are an important primary health intervention.

Influenza vaccinations

In 2015, 67 per cent of Goldfields residents aged 65 years and over reported having a seasonal influenza vaccination since the 1 March of the year of interview. This increased from 54 per cent in 2013. The influenza vaccination rate for the State was 58 per cent.

Pneumonia vaccinations

In the period 2015, 32 per cent of Goldfields region residents aged 65 years and over reported having a pneumonia vaccination in the previous five years. The pneumonia vaccination rate for the State was (40%).[xxxiii]

Hospitalisations, 65 years and over

Goldfields residents aged 65 years and over had 24,957 hospitalisations between 2011- 2015. The rate was similar to the State. The leading causes of hospitalisation for Goldfields residents aged 65 years and over are presented in Table 21 Renal dialysis was the main cause (4%) and the rate was similar to the State.[v]

Table 21: Goldfields leading causes of hospitalisation 65 years and over, 2011-2015

Condition	N	% all PPH (65 years and over)	SRR
Dialysis	4,516	4%	0.93
Chemotherapy	1,734	2%	0.74
Diseases of the eye & adnexa	1,502	1%	0.65
Arthropathies	742	1%	0.85
Persons encountering health services for examination & inves	700	1%	0.9
All PPH (65 yrs and over)	**24,957**	**100%**	**1**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.
Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.
Source: DoH, Health Tracks[v]

Hospitalisations for renal dialysis for Aboriginal females in the Goldfields accounted for 12 per cent of female hospitalisations in those aged 65 years and over and the rate was significantly higher (1.6 times) the State Aboriginal female rate (2006-2015).

For Aboriginal males in the Goldfields, renal dialysis only accounted for three per cent of hospitalisations in those aged 65 years and over and the rate was significantly lower than their State counterparts.

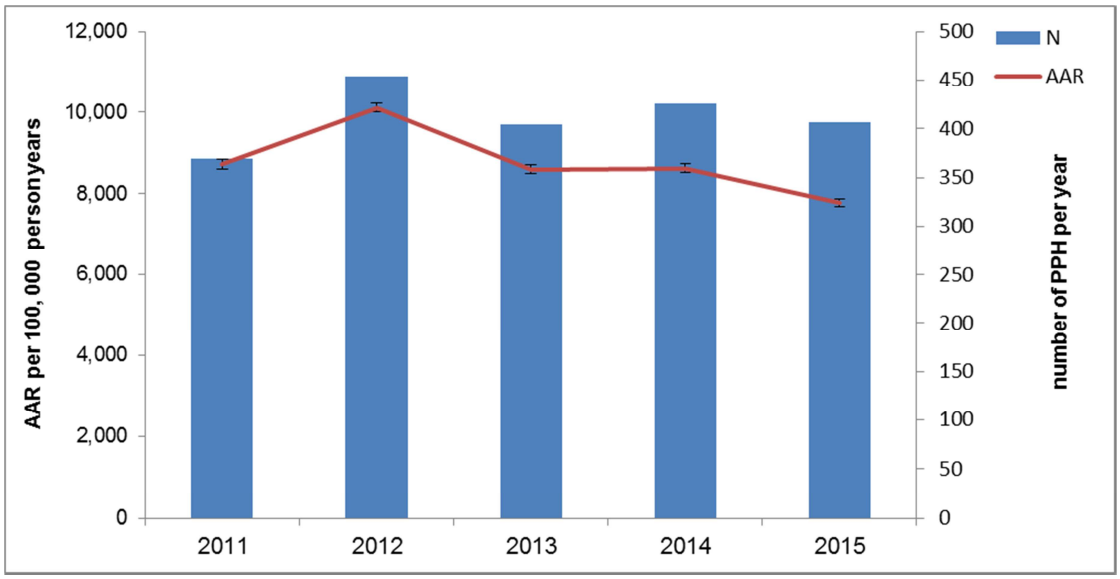
For non-Aboriginal residents in the Goldfields, chemotherapy was the leading cause but only accounted for two per cent of hospitalisations in people aged 65 years and over and the gender difference was not a factor (2011-2015).[v]

Potentially Preventable Hospitalisations (PPH), 65 years and over

For the period 2011-2015, PPH accounted for 2,060 hospitalisations of Goldfields people aged 65 years and over (8% of all hospitalisations in older people). The rate of all PPH for Goldfields residents 65 years and over was significantly higher (1.1 times) than the State rate.[v]

The Figure 20 shows the PPH trend between 2011 and 2015 for Goldfields residents aged 65 years and over. The PPH rate and numbers followed the same trend. The Aged Adjusted Rate (AAR) was significantly less in 2015 than it was in 2011 although the difference was very small in magnitude.

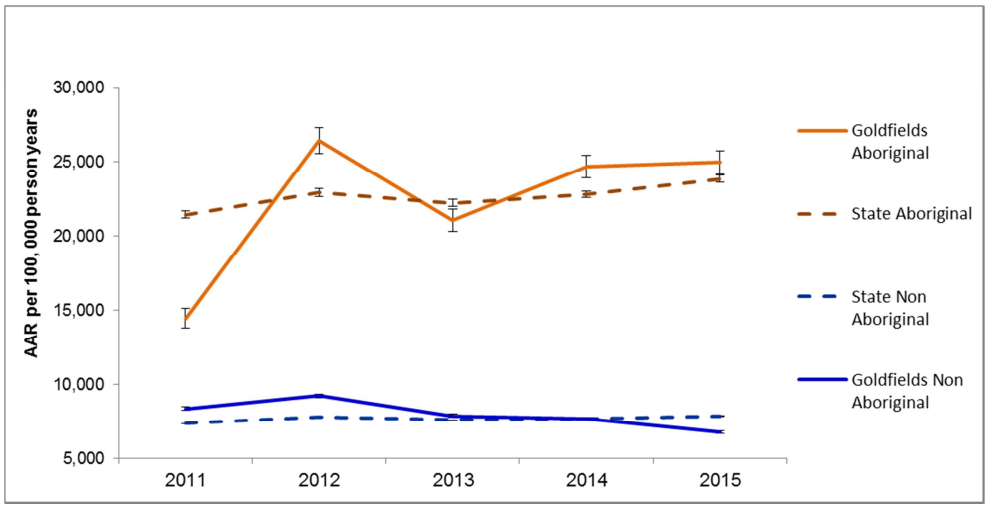
Figure 20: Goldfields PPH 65 years and over 2011-2015



Source: DoH, Health Tracks[v] *(The error bars represent the 95% confidence interval of the rate.)*

The Figure 21 compares AARs of PPH from 2011 to 2015 for the Goldfields and State by Aboriginality. Aboriginal people aged 65 years and over had significantly higher rates than non-Aboriginal people for both the Goldfields and the State. The Goldfields Aboriginal rate was significantly less than the State Aboriginal rate in 2011, however this increased significantly (almost doubled) in 2012. It varied somewhat over the period but was still significantly higher than the State rate in 2015. Goldfields non-Aboriginal people commenced the period significantly higher than State non-Aboriginal people, but by 2015 were significantly less than the State non-Aboriginal rate.[v]

Figure 21: Goldfields vs. State PPH by Aboriginality 65 years and over 2011-2015



Source: DoH, Health Tracks[v] *(The error bars represent the 95% confidence interval of the rate).*

The overall leading PPH condition for the period 2011-2015 for Goldfields people aged 65 years and over was COPD, 21 per cent of all PPH in older people in the Goldfields and significantly (50%) higher than the State rate. The next leading PPH condition was congestive cardiac failure at 15 per cent of all PPH in this age group. Other leading PPH conditions in older people are in Table 22.[v]

Table 22: Goldfields leading PPH 65 years and over 2011-2015

Condition	PPH	% all PPH (65 years and over)	SRR
chronic obstructive pulmonary disease	429	21%	1.46
congestive cardiac failure	306	15%	1.05
urinary tract infections, including pyelonephritis	254	12%	1.05
angina	205	10%	1.06
iron deficiency anaemia	191	9%	1.24
All PPH (65 yrs and over)	**2,060**	**100%**	**1.15**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

Mental Health, older people

Community Mental Health Activity, 65 years and over

There were 3,213 occasions of service for mental health in those aged 65 years and over in the Goldfields for the period 2011-2015. The rate of mental health occasions of service for Goldfields was significantly lower than the State rate.

After excluding 'diagnosis not required' category, the leading mental health occasion of service was mood disorders, accounting for 30 per cent of occasions of service, however the rate was significantly lower than the State. Although the numbers were smaller (n=109) the rate for Disorders of adult personality and behaviour were significantly higher (1.42 times) in the Goldfields than the State rate. [v]

Implications for health service planning:

High levels of hospitalisations for various cancers, respiratory conditions and preventable chronic conditions in the older age groups and dialysis in the Aboriginal older female community may indicate increased frailty, disability and functional decline at a younger than expected age. Strengthening partnerships with all primary care providers, including local GPs and Aboriginal Medical Services will assist in prevent, manage and treat these conditions in the community and avoiding hospitalisation. The WACHS-Goldfields Aged Care Resource Unit provides a range of programs which have a significant impact on maintaining the older populations in the community – ACAT, OPI, FINE and HACC. http://wachs.hdwa.health.wa.gov.au/index.php?id=3991

WACHS also provides services that are culturally sensitive and responsive, free from racial discrimination, and result in equitable outcomes for all people with a mental illness in Western Australia. Various projects and services that are available in the Goldfields region can be found here: http://wachs.hdwa.health.wa.gov.au/index.php?id=13144

Disability and Carers

In the Goldfields one per cent of residents have a core need for assistance in activities of daily living while four per cent provide unpaid care to a person with a disability. The numbers in each age group are provided in Table 23.

Overall, the Goldfields has a significantly lower proportion of people needing assistance (2.7%) compared to WACHS (3.5%). However, those aged 75 years and over have a significantly higher proportion of people needing assistance (28%) compared to WACHS (25%).[xxxiv]

Table 23: Goldfields residents who need assistance, or who provide unpaid care to person with a disability

	Have Core Need for Assistance	%	WACHS %	Provide Unpaid Care	%	WACHS %
0-14years	175	1.3%	1.6%	-	-	-
15-44 years	285	1.1%	1.3%	1,626	6.2%	7.0%
45-64 years	390	2.8%	3.4%	1,293	9.4%	12%
65-74 years	241	8.7%	7.5%	275	10%	11%

	Have Core Need for Assistance	%	WACHS %	Provide Unpaid Care	%	WACHS %
Over 75 years	454	28%	25%	103	6.3%	7.3%
All ages	1,545	2.7%	3.5%	3,297	5.7%	7.2%

Source: ABS table builder, Census 2011[xxxiv]

Where Goldfields Residents Accessed Care

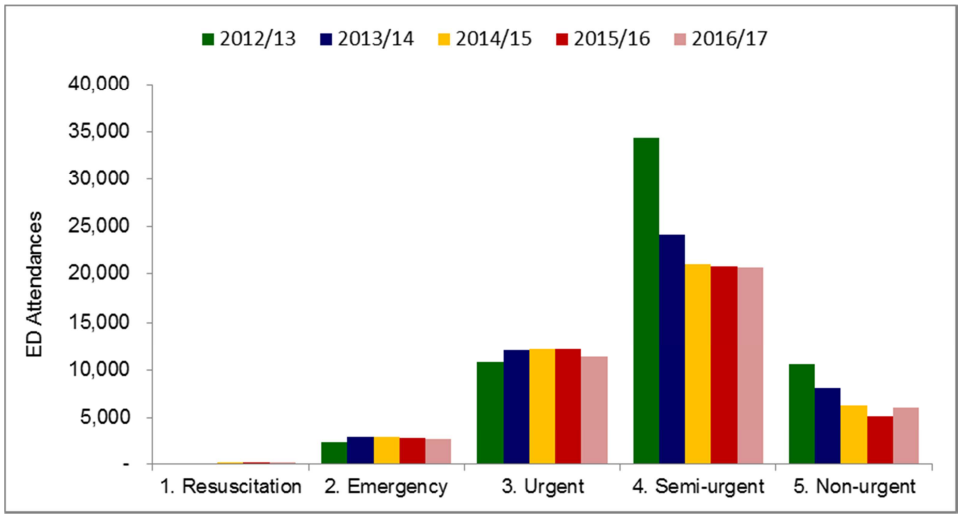
Emergency Department Attendances

Goldfields hospitals

In the period 2016/17, there were 40,930 Emergency Department (ED) attendances in Goldfields hospitals, of these attendances, ten per cent were for patients who were not residents of the region. The average annual growth rate over the last five years showed a decreasing trend of seven per cent. Most of the decrease over the five year period was in semi and non-urgent cases. [xxxv]

The ED attendances at hospitals within Goldfields are shown by triage category in Figure 22. Almost two thirds of attendances (65%) in 2016/17 were classified as semi or non-urgent (triage 4 or 5), suggesting issues that could be dealt with by GPs and primary health care services. The WACHS proportion was 66 per cent. [xxxv]

Figure 22: Goldfields hospitals emergency attendances by triage category 2012/13 - 2016/17



Source: WACHS online ED pivot as at end of Septemberr 2017[xxxv]

The leading reasons for ED attendances to hospitals in Goldfields in 2016/17 are shown in Table 24.

Table 24: Goldfields leading cause of emergency attendance at hospitals in 2016/17

Major Diagnosis Category (MDC)	Number of ED Attendances	% of Total
Musculoskeletal system and connective tissue	5,364	13%
Skin, subcutaneous tissue and breast	4,463	11%
Injuries, poisonings and toxic effects of drugs	4,264	10%
Digestive system	3,756	9%
Ear, nose, mouth and throat	3,641	9%
Total ED Attendances	**40,930**	**100%**

Source: WACHS online ED pivot as at end of October 2017[xxxv]

Aboriginal people were over-represented in the ED attendances, accounting for 25 per cent of all ED attendances in 2016/17, but only 12 per cent of the population. Across the Goldfields there are three Aboriginal Community Controlled Health Services (ACCHS) that provide a range of primary health care activity to regional centres including Bega Garnbirringu Health Service in Kalgoorlie and Tjuntjuntjara on the Spinifex Lands, 680km north-east of Kalgoorlie.[xxxvi]

Goldfields residents

For the period 2011-2015, the proportion of ED attendances for triage 4 and 5 for Goldfields residents was 71 per cent and for the State it was 58 per cent. The proportion for triage 4 was 2.3 times higher than the State, and triage 5 was 3.5 times higher than the State which was statistically significant.[v]

Implications for health service planning:

Goldfields residents present at high rates to ED, particularly in the semi and non-urgent attendances. The region also sees a reasonable proportion of attendances from non-residents. This is usually an indication of a need for increased primary health services such as increased GP and population health services.

Co-location of a range of health services and collaborative service models between GP primary care, non-government health providers (e.g. Silver Chain and Aboriginal organisations) and WACHS population health/primary health services has the potential to reduce the demand for non-urgent attendances at ED.

Hospitalisations

For the period 2011-2015, the overall hospitalisation rate of Goldfields residents was significantly higher (1.06 times) than the State rate, refer to Table 25.[v]

Table 25: Goldfields hospitalisations residents 2011-2015

Goldfields	Number	SRR	ASR per 100,000 persons
Males	54,957	**1.04**	38,809
Females	58,009	**1.08**	40,182
Persons	**112,966**	**1.06**	**40,534**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

For the period 2006-2015, the overall hospitalisation rate for Aboriginal Goldfields residents was significantly higher (1.1 times) than the Aboriginal State rate. This rate was also over four times higher than the non-Aboriginal Goldfields rate. These higher rates highlight the health disparity between Aboriginal and non-Aboriginal residents.[v]

Table 26: Goldfields hospitalisations Aboriginals and non-Aboriginal residents 2006-2015

Goldfields	Number	SRR	ASR per 100,000 persons
Aboriginal (2006-2015)	61,813	**1.12**	133,662
Non-Aboriginal (2011-2015)	79,643	**0.87**	32,186

**Note: Aboriginal residents covers a longer time frame to provide more accurate data. Caution is required when comparing the number of Aboriginal with non-Aboriginal residents in this table.*

Source: DoH, Health Tracks[v]

For the period 2011-2015 the leading causes of hospitalisation for Goldfields residents were 'digestive diseases' accounting for nine per cent of hospitalisations and 'injury and poisoning' (which can include transport accidents, other external accidental injuries, intentional self-harm, assault, and complications of medical and surgical care) accounting for seven per cent, with pregnancy and childbirth hospitalisations accounting for a further seven per cent of hospitalisations.[v]

Table 27: Goldfields leading cause of hospitalisation 2011-2015

Rank	Cause of Hospitalisation	Number	% of Total
1	Digestive diseases	9,775	9%
2	Injury and Poisoning	7,947	7%
3	Pregnancy and childbirth	7,832	7%
4	Ill-defined conditions	7,802	7%
5	Neoplasms	5,953	5%
All Hospitalisations		**112,966**	**100%**

Note: Leading causes exclude 'Factors influencing health status' and 'contact with health services' and 'attending health services for examination and investigation', reproduction, specific procedures, and other circumstances, and potential health hazards related to communicable diseases, socioeconomic and psychosocial circumstances, family and personal history. This also includes renal dialysis.

Source: DoH, Health Tracks[v]

Across the State for the period 2011-2015 by minor diagnosis category, renal dialysis accounted for 658,317 separations (13% of total separations). Goldfields residents had 22,235 separations for renal dialysis (20% of total separations). Other leading causes after renal dialysis were chemotherapy (4%), delivery (childbirth) (4%) and arthropathies (3%).[v]

The leading cause of hospitalisation differs markedly between Aboriginal and non-Aboriginal Goldfields residents. Dialysis accounted for more than half (53%) of the hospitalisations of Aboriginal Goldfields residents for the period 2006-2015.[v]

For non-Aboriginal Goldfields residents, dialysis hospitalisations were around five per cent for 2011-2015. The leading cause of hospitalisation for non-Aboriginal Goldfields residents was chemotherapy (6% of separations). The period Stated for Aboriginal people in the Goldfields is longer to provide more accurate data.[v]

Alcohol and tobacco related hospitalisations

For the period 2011-2015, Goldfields residents had significantly higher hospitalisation rates due to alcohol (1.3 times) and tobacco consumption (1.4 times), compared with the State. For non-Aboriginal Goldfields residents, the hospitalisation rate due to tobacco consumption was significantly higher (1.4 times) than the State non-Aboriginal rate.[v]

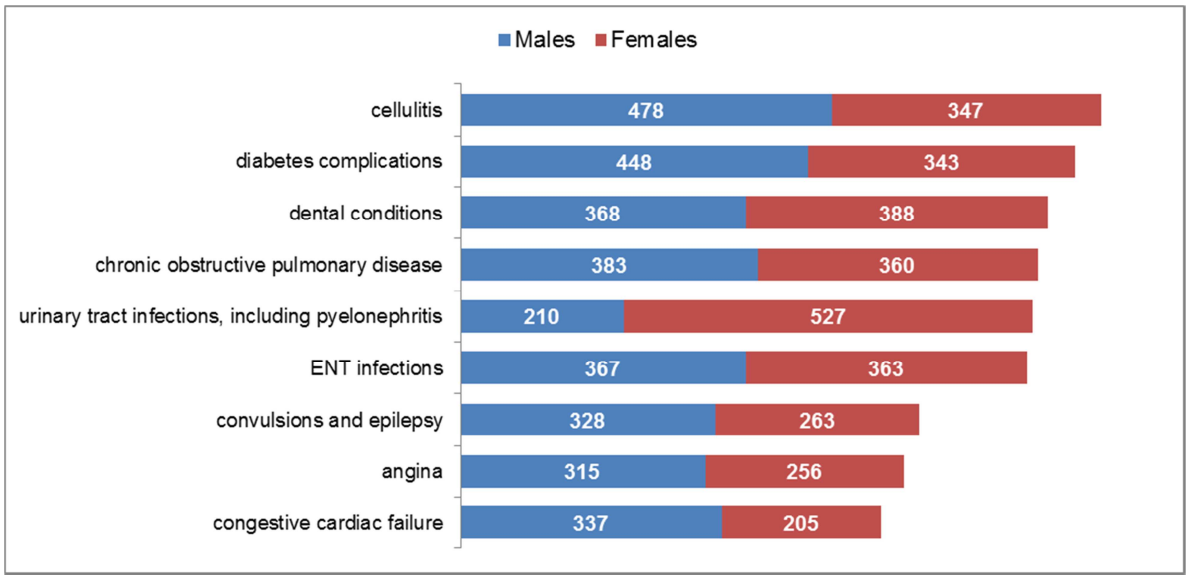
Potentially preventable hospitalisations (PPH)

Many hospitalisations result from conditions where hospitalisations could potentially be avoided using preventive care and early disease management. These hospitalisations are known as Potentially Preventable Hospitalisations and are grouped into three major categories as discussed in 'Health Status - Child and Adolescent' section.

For the period 2011-2015, PPH accounted for 8,540 hospitalisations of Goldfields residents (8% of all hospitalisations). The hospitalisation rate of all PPH was significantly higher (1.3 times) for Goldfields residents than for all residents in the State. The PPH rate for each category was also significantly higher for the Goldfields compared to the State (acute conditions 1.1 times, chronic 1.6 times, vaccine preventable 1.9 times).[v]

The leading PPH condition for Goldfields residents was cellulitis, which accounted for 10 per cent of PPH. Other conditions are shown in Figure 23 and Table 28**.** All of these conditions apart from urinary tract infections and dental conditions had rates significantly higher than the State rates.[v]

Figure 23: Goldfields leading PPH by gender PPH 2011-2015



Source: DoH, Health Tracks[V]

Table 28: Goldfields leading causes of PPH 2011-2015

Condition	Number	% all PPH	SRR
cellulitis	825	10%	1.46
diabetes complications	791	9%	1.72
dental conditions	756	9%	0.66
chronic obstructive pulmonary disease	743	9%	1.71
urinary tract infections, including pyelonephritis	737	9%	1.01
ENT infections	730	9%	1.26
convulsions and epilepsy	591	7%	1.44
angina	571	7%	1.44
congestive cardiac failure	542	6%	1.44
All Potentially Preventable Hospitilisations (PPH)	**8,504**	**100%**	**1**

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[V]

Implications for health service planning:

Goldfields residents have high hospitalisation rates compared to the whole State, particularly for conditions that are potentially preventable. Aboriginal Goldfields residents have hospitalisation rates four times higher than non-Aboriginal Goldfields residents.

Chronic conditions account for the majority of PPH. As chronic conditions can be greatly influenced by public health measures this suggests a need for increased preventative programs as well as maintenance programs and primary health care services. Cellulitis was the leading condition of PPH Improvements in the early detection and management of local infections in the community will have great benefits for Goldfields residents.

The region also has high rates of alcohol and smoking related hospitalisations in both Aboriginal and non-Aboriginal residents. This indicates a high need for increased health promotion programs and primary health services.

Where Goldfields residents used hospital services

Goldfields residents were hospitalised across the State. The proportion of resident hospitalisations in public hospitals within the region is known as self-sufficiency. The Goldfields public self-sufficiency was 74 per cent. The WACHS average (excluding Wheatbelt) was 83 per cent.[xxxvii]

Table 29: Goldfields place of hospitalisation 2016/17

Place of Hospitalisation	Number	% of Total	Beddays
Esperance	2,590	13%	6,516
Kalgoorlie	11,545	57%	22,312
Laverton	36	<1%	62
Leonora	56	<1%	108
Norseman	62	<1%	582
Wanarn Dialysis Room	55	<1%	55
Warburton Dialysis Unit	613	3%	613
Goldfields Hospitals Total	**14,957**	**74%**	**29,799**
Other WACHS	369	2%	1,136
Fiona Stanley Hospital	1,800	9%	6,328
Other Metropolitan	3,074	15%	10,081
Goldfields Residents Total	**20,200**	**100%**	**47,344**

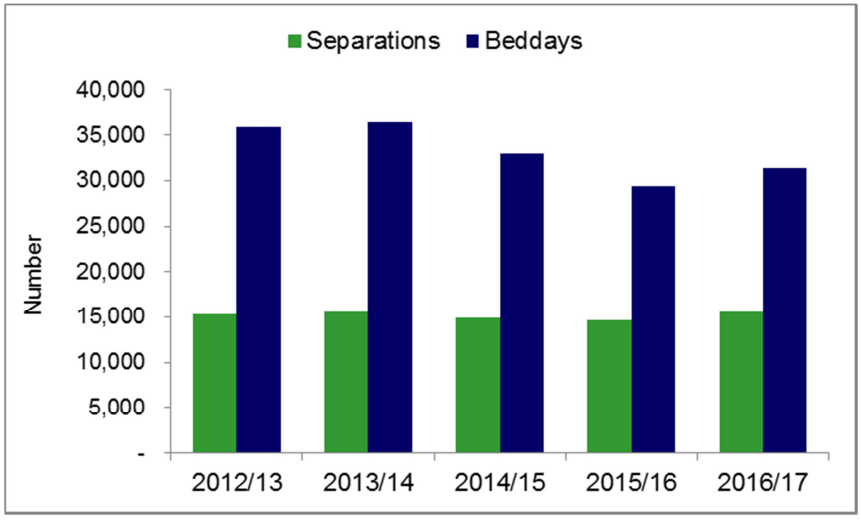
Note: Excludes unqualified neonates, boarders & NHT/Aged Care
Source: HMDS[xxxvii]

Hospitalisations within the region

Historic activity at hospitals within the Goldfields region is shown below. Between 2012/13 and 2016/17, hospital separations have been very steady and bed days have decreased at an

average of 2.6 per cent per year. This is due to an increase in same day activity (mainly renal dialysis).

Figure 24: Goldfields hospitalisations 2012/13 - 2016/17



Note: Excludes unqualified neonates and boarders and NHT/Aged Care residents
Source: HMDS[xxxvii]

Implications for health service planning:

Aboriginal Goldfields residents have a much greater need for ED and inpatient services than non-Aboriginal residents. Culturally appropriate services and programs are necessary in partnership with the ACCHOs and other providers.

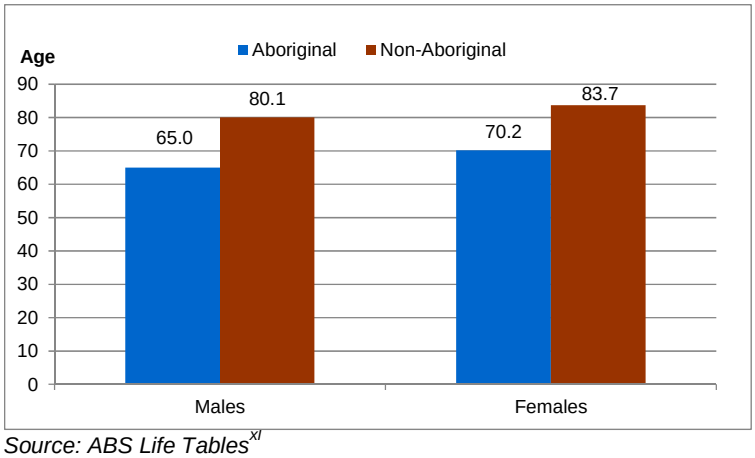
An increase in the GP sector, combined with co-located and collaborative service models between GP primary care, other non-government health providers (e.g. Silver Chain and Aboriginal organisations) and WACHS ED and population health/primary health services would contribute to improved care.

Mortality

State level ABS data from 2013 - 2015 in Figure 25 shows life expectancy at birth has increased for the total population to 80.4 years for males but decreased to 84.5 years for females, compared with the 2011- 2013 figures of 80.3 years and 84.8 years respectively. [xxxviii & xxxix]

Aboriginal people in Western Australia have a significantly lower life expectancy compared with their non-Aboriginal counterparts. According to the latest available data, the gap in 2010-2012 was estimated by ABS to be 15.1 years for males and 13.5 years for females.[xl]

Figure 25: Western Australian life expectancy at birth by Aboriginality and gender 2010-2012



Source: ABS Life Tables[xl]

Mortality rates have fallen State-wide and in Australia overall from 2005 to 2015. The Australian Aboriginal mortality rate however, remained steady during this 10-year period (Table 30).[xli]

Table 30: Australian standardised mortality rates 2005, 2014, 2015

Population	2005	2014	2015
Western Australia	5.9	5.3	5.3
Australia	6.1	5.5	5.5
Aboriginal (Australia)	10.0	9.8	9.8

Note: Deaths per 1,000 standard population. Standardised mortality rates use the age distribution of total persons in the Australian population at 30 June 2001 as the standard population.
Source: ABS Deaths[xli]

For the period 2011-2015, there were 1,370 deaths for Goldfields residents. The region's mortality rate was significantly higher (1.2 times) than the State. The top five causes of mortality for 2011-2015 are shown in Table 31. For this period, the leading cause of death of Goldfields residents was ischaemic heart disease, followed by lung cancer, cerebrovascular diseases, COPD and intentional self-harm. Ischaemic heart diseases accounted for one in six deaths and the rate was significantly higher (1.6 times) than the State rate. The COPD rate was also significantly higher (1.7 times) than the State rate.[v]

Table 31: Goldfields leading cause of mortality 2011-2015

Condition	deaths	% all deaths	SRR
Ischaemic heart diseases	204	15%	1.6
Lung cancer	85	6%	1.3
Cerebrovascular diseases	74	5%	1.3
COPD	64	5%	1.7
Intentional self-harm	51	4%	1.3
All deaths	**1,370**	**100%**	**1.3**

Notes:
Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.
Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.
Source: DoH, Health Tracks[v]

When considering mortality within a region, a longer time period is required to ensure anonymity and accuracy. For the period 2006-2015, there were 443 deaths for Aboriginal Goldfields residents. The Aboriginal Goldfields mortality rate was significantly higher (1.2 times) compared to the State and significantly higher (2 times) than the non-Aboriginal Goldfields mortality rate.

The five leading causes of mortality for Aboriginal Goldfields residents were ischaemic heart disease, diabetes and impaired glucose regulation, diseases of the liver, transport accidents and intentional self-harm. All except intentional self-harm were significantly higher than the State.[v]

For non-Aboriginal residents between 2011-2015 mortality rates were significantly higher than the State for ischaemic heart diseases (1.4 times), Lung Cancer (1.2 times) and COPD (1.6 times).[v]

Alcohol and tobacco related mortality

For the period 2006-2015 compared with the State, Goldfields residents had a significantly higher mortality rate due to alcohol and tobacco consumption (1.4 times). For non-Aboriginal people, the mortality rate for tobacco consumption was significantly higher (1.4 times) than the State. Goldfields Aboriginal people had rates similar to those of the State.[v]

Avoidable Mortality, 0-74 years

Avoidable mortality is defined as deaths before the age of 75 years from conditions which are potentially avoidable given the present health system, available knowledge about social and economic policy impacts and health behaviours, as described in 'Avoidable Mortality, 15-64 years' section.

For the period 2011-2015, 56 per cent of deaths for Goldfields residents under the age of 75 f were classified as avoidable. The rate for avoidable deaths was significantly higher (1.5 times) than the State rate. The use of screening and primary prevention could potentially have avoided over half of avoidable deaths in Goldfields residents and better treatment measures could potentially have avoided just under half of avoidable mortality

Table 32: Goldfields leading cause of avoidable mortality 0-74 years 2011-2015

Persons, 2011 - 2015	Number	% of all deaths (<75 years)	SRR
Ischaemic heart disease	102	25%	2.0
Suicide and self-inflicted injuries	50	12%	1.3
Transport accidents	38	9%	2.0
Diabetes	26	6%	2.1
COPD	22	5%	1.6
Breast cancer	21	5%	1.2
Cerebrovascular diseases	19	5%	1.4
Selected invasive infections	17	4%	2.4
Colorectal cancer	15	4%	0.9
Assault	11	3%	3.1
All avoidable deaths (<75 years)	**415**	**56%**	**1.5**
All deaths (<75 years)	**744**	**100%**	**1.4**

Note: The period Stated in this table for Aboriginals is longer than the other populations to provide more accurate data for Aboriginals.

Note: The standardised rate ratio (SRR) is the ratio between a particular health region (or district) and the State. A ratio of 1 means the regional rate is the same as the State, a value of 2 indicates the regional rate is twice that of the State, and an SRR of 0.5 indicates the rate in a region is half that of the State population.

Note: Local rates are compared to the rate of all residents of the State using the SRR and the 95% confidence interval of the SRR. Those that are significantly different to the State rate (1.0) have black font, and those that are not significantly different to the State have white font. Those between 1 and 1.5 times the State rate are highlighted orange, higher than 1.5 times the State are highlighted red while those rates less than the State are highlighted green.

Source: DoH, Health Tracks[v]

The leading causes of avoidable mortality for Goldfields residents for the period 2011-2015 are shown in the Table 32. Ischaemic heart disease, (25%), followed by suicide and self-inflicted injuries (12%), transport accidents (9%) and Diabetes (6%). The rate of avoidable mortality for Ischaemic Heart Disease was two times the State rate and this was statistically significant.[v]

Table 33 and Table 34 demonstrate the leading causes of avoidable mortality by Aboriginal status. The proportion of avoidable deaths for Aboriginal people was 62 per cent of total deaths compared with 54 per cent for non-Aboriginal people. Ischaemic heart disease was the leading cause of mortality for both Aboriginal and non-Aboriginal people, followed by Diabetes (1.7 times higher than the State rate) for Aboriginal and suicide for non-Aboriginal residents. The third leading cause was Transport accidents both for Aboriginal and non-Aboriginal people with the rate for non-Aboriginal people almost double than the State rate. The rate of transport accidents for non-Aboriginal people was non-significant compared to the State rate.

Table 33: Goldfields leading cause of avoidable mortality by Aboriginal Status 0-74 years 2006-2015

Aboriginal, 2006 - 2015	Number	% of all deaths (<75 years)	SRR
Ischaemic heart disease	61	25%	1.4
Diabetes	43	18%	1.7
Transport accidents	20	8%	1.3
Suicide and self-inflicted injuries	18	7%	0.7
Selected invasive infections	17	7%	1.7
Renal failure	12	5%	1.8
Cerebrovascular diseases	11	5%	1.2
Assault	8	3%	1.2
COPD	6	2%	0.9
Rheumatic and other valvular heart disease	6	2%	1.6
All avoidable deaths (<75 years)	**242**	**62%**	**1.3**
All deaths (<75 years)	**393**	**100%**	**1.3**

Table 34: Goldfields leading cause of avoidable mortality by non-Aboriginal Status 0-74 years 2011-2015

Non Aboriginal, 2011 - 2015	Number	% of all deaths (<75 years)	SRR
Ischaemic heart disease	71	23%	1.7
Suicide and self-inflicted injuries	40	13%	1.3
Transport accidents	30	10%	1.9
Breast cancer	19	6%	1.2
COPD	19	6%	1.6
Colorectal cancer	14	4%	0.9
Diabetes	12	4%	1.3
Cerebrovascular diseases	12	4%	1.0
Selected invasive infections	12	4%	2.1
Skin cancer	11	4%	1.1
All avoidable deaths (<75 years)	**312**	**54%**	**1.4**
All deaths (<75 years)	**575**	**100%**	**1.3**

Implications for health service planning:

56 per cent of mortality for Goldfields residents under the age of 75 were classified as avoidable. Ischaemic heart disease, suicide, and transport accidents were leading causes of avoidable mortality.

As the majority of these conditions are avoidable through primary and secondary intervention, greater focus on these interventions in the Goldfields will improve health and wellbeing.

Abbreviations

Abbreviation	Definition
AAR	Age Adjusted Rate
ABS	Australian Bureau of Statistics
ACCHS	Aboriginal Community Controlled Health Services
AEDC	Australian Early Development Census
ARIA	Accessibility/Remoteness Index of Australia
ASR	Age-standardised rate
ATSIC	Aboriginal and Torres Strait Islander Commission
BEACH	Bettering the Evaluation and Care of Health
BMI	Body Mass Index
CI	95% Confidence Interval of a rate or proportion
COPD	Chronic Obstructive Pulmonary Disease
DoH	Department of Health WA
ED	Emergency Departments
ENT	Ear, nose and throat infections
ERP	Estimated Residential Population
GDM	Gestational Diabetes Mellitus
HMDS	Hospital Morbidity Data System
HWSS	Health and Wellbeing Surveillance System
ICD–10 codes	International Statistical Classification of Diseases and Related Health Problems 10th Revision
LGA	Local Government Area
PID	Pelvic Inflammatory Disease
PPH	Potentially Preventable Hospitalisations
SEIFA	Socio-Economic Indexes for Areas
STA1	Statistical Area Level 1
STI	Sexually Transmitted Infection

SRR	Standardised rate ratio
WA Tomorrow, 2012	Department of Planning Population Projections from 2006 Census
WACHS	Western Australia Country Health Service
WAT	Western Australia Tomorrow 2015

Glossary

Term	Definition
Accessibility/Remoteness Index of Australia (ARIA)	A systematic approach to classification of areas of Australia according to levels of remoteness. Within this classification system there are five categories ranging from Major Cities to Very Remote.
Age Adjusted Rate (AAR)	Age-adjusted rate per 100,000 person years. Direct standardisation using **a range of age** groups of 2001 Australian Standard Population in order to compare rates between population groups and different years for the same population group.[v]
Age Standardised Rate (ASR)	Age-standardised rate per 1,000 or 100,000 person years. Direct standardisation using **all age groups** of 2001 Australian Standard Population in order to compare rates between population groups and different years for the same population group.
Chronic conditions	Long-term conditions that last for six months or more
Health and Wellbeing Surveillance System (HWSS)	The WA Health and Wellbeing Surveillance (HWSS) was established by the Department of Health in 2002 to monitor the health status of the general WA population. Each month, approximately 550 randomly selected households take part in a telephone survey.
ICD–10 codes	ICD-10 is the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD), a medical classification list by the World Health Organization (WHO). It contains codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases.

Statistical Areas	Are designed to maximise the spatial detail available for Census data. WA Health primarily uses SA2s in its epidemiology and mapping of health utilisation and areas. Most SA1s have a population of between 200 to 800 persons with an average population of approximately 400 persons. SA1s aim to separate out areas with different geographic characteristics within Suburb and Locality boundaries. In rural areas they often combine related Locality boundaries. SA2s generally have a population range of 3,000 to 25,000 persons and have an average population of about 10,000 persons. SA2s are aggregations of whole SA1s. They are designed to reflect functional areas that represent a community that interacts together socially and economically.[xlii]
Socio-Economic Indexes for Areas (SEIFA)	A product developed by the ABS that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census.
Standardised Rate Ratio (SRR)	Standardised rate ratio between a particular health region (or district) and the state. Indirect method used. The SRR is derived by dividing the regional AAR by the State AAR, or alternatively the dividing the regional ASR by the state ASR A ratio of 1 means that the regional rate is the same as the state, and a value of 2 indicates the regional rate is twice that of the state. A mortality ratio of 0.5 indicates that the regional rate is half that of the State.[v]
Triage	The urgency of the patient's need for medical and nursing care, as represented by a code. Triage 1 (resuscitation) Triage 2 (emergency) Triage 3 (urgent) Triage 4 (semi-urgent) Triage 5 (non-urgent)[xliii]

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