Alcohol-caused deaths and hospitalisation in Western Australia, by health services

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The maps were created with the MapInfo package. Each map was exported as a WMF file and converted into an EPS file.

This report and other drug-related publications have been converted to PDF files by Susan Jones at the WADASO. They can be down loaded as PDF documents from the WADASO's web page at: *http://www.wa.gov.au/cdco/*

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List of abbreviations

ALOS	Average length of stay (in hospital)
ASR	Age-standardised rate
HDWA	Health Department of Western Australia
HIC	Health Information Centre
HMDS	Hospital Morbidity Database System
HS	Health Service
ICD-9-CM	International Classification of Diseases (9^{th} Revision, Clinical Modification)
SMR	Standardised mortality/morbidity rate
WA	Western Australia
WADASO	Western Australian Drug Abuse Strategy Office

Summary

This report estimates, using aetiologic fractions, the impact of alcohol consumption on the health of Western Australians in terms of death and hospitalisation. Death data from 1984 to 1995, and hospitalisation data from 1993 to 1995 were examined, and the data analysed at the State level and by Health Services.

Over the periods studied, there was an average of 316 deaths, 8,548 hospital admissions and 58,627 beddays caused by alcohol each year in Western Australia. This represents approximately 3.3% of all deaths, 1.8% of all hospital admissions, and 3.0% of all hospital beddays over this period.

The estimated annual bedday cost for alcohol-caused hospitalisation was nearly $26 million - an average of $15 per head of population. The East Kimberley Health Service had the highest annual cost of alcohol-caused hospitalisation per head of population ($46 per person) while Wanneroo Health Service had the lowest ($7).

Twice as many males died and 1.5 times as many were admitted to hospital because of alcohol-caused conditions as females. The age-standardised rates for both deaths and hospital admissions were significantly higher for males compared to females.

Three alcohol-related conditions accounted for over half of alcohol-caused deaths from 1984 to 1995:

- liver cirrhosis
- stroke
- road injuries.

Three types of alcohol-related injuries accounted for nearly 60% of alcohol-caused admissions between 1993 and 1995:

- falls
- assaults
- road injuries.

Injuries were a major factor in alcohol-caused morbidity and mortality over the periods studied. There was an average of 131 deaths, 5,567 hospital admissions and 39,743 beddays due to alcohol-caused injuries each year in Western Australia. This represents approximately 41% of all alcohol-caused deaths, 65% of all alcohol-caused hospital admissions, and 68% of all alcohol-caused hospital beddays.

The study highlights the impact of alcohol use by young people as a cause of injuries. Nearly a third of deaths from alcohol-caused injuries and over a quarter of such hospital admissions were in those aged less than 25 years. Overall, there were three times as many male deaths and 1.2 times as many male hospital admissions due to alcohol-caused injuries compared to females.

Young people aged between 20 and 29 accounted for 14% of deaths, 21% of admissions, and 11% of beddays caused by alcohol. People aged 60 years and over accounted for 46% of deaths, 30% of admissions, and 54% of beddays caused by alcohol. In contrast to young people, the substantial impact of alcohol on the elderly can mainly be attributed to long term alcohol use which causes chronic illnesses.

Overall, the age-standardised rate for alcohol-caused deaths significantly decreased by 18% between 1984-1987 and 1992-1995, whereas the age-standardised rate for admissions due to alcohol significantly increased, by an average of 3.6% per year, between 1993 and 1995.

The East Kimberley Health Service had the highest crude rate for both alcohol-caused deaths and admissions. Harvey-Yarloop Health Service had the lowest crude rate for alcohol-caused deaths, whilst Wanneroo Health Service had the lowest crude rate for alcohol-caused hospital admissions.

1. Introduction

This report estimates the number of deaths, hospital admissions and beddays that were caused by alcohol consumption in Western Australia (WA). Mortality data for the period 1984 to 1995, and hospitalisation data for 1993 to 1995, were analysed. The data were examined for each of the State's Health Services (HSs).[1] The report updates and expands upon an earlier study, which estimated the number of alcohol-caused deaths between 1981 and 1990 by metropolitan LGAs (Swensen 1992).

The report contains a State overview of mortality and hospitalisation caused by alcohol consumption, trends in alcohol-caused mortality and hospitalisation, an estimate of the cost of this hospitalisation, and a summary by HS. Summary sheets for each HS, using broad categories of alcohol-related conditions [Table 1], are shown in Appendix 1.

2. Method

The number of deaths, hospital admissions or beddays caused (or prevented[2]) by alcohol consumption were estimated using the aetiologic fractions method, developed in 1990 (Holman et al 1990), and recently updated (English et al 1995). Aetiologic fractions are sex-, age-, and condition-specific.[3]

Hospitalisation and mortality data for conditions known to be related to alcohol consumption were extracted from the Hospital Morbidity Data System (HMDS)[4] and the mortality database[5], which are maintained by the Health Statistics Branch of the Health Department of Western Australia (HDWA). Although the HMDS records the principal diagnosis and up to eighteen other diagnostic codes, in this report the principal diagnosis only was used to select cases. Mortality data for the required period were selected using the year of death variable. Only people whose usual place of residence was in WA were included in the analysis.

A number of conditions are considered wholly attributable to alcohol use and have aetiologic fractions of 1.0. These are: alcoholic psychosis, alcohol dependence, alcohol abuse, alcoholic polyneuropathy, alcoholic cardiomyopathy, alcoholic gastritis, alcoholic liver cirrhosis, ethanol toxicity, methanol toxicity, alcoholic poisoning, other ethanol/methanol poisoning, and aspiration. All cases coded to these conditions are directly caused by alcohol use.

However, many alcohol-related conditions cannot be attributed wholly to the use of alcohol. In these cases, an indirect estimate of alcohol-caused mortality or morbidity is obtained by applying the aetiologic fraction (which is less than 1.0) to the number of cases of a particular condition.[6] For example, the aetiologic fraction for fire injuries is 0.44, so if there were 100 deaths or hospital admissions from fire injuries, applying the aetiologic fraction to the number of cases would estimate that 44 of such deaths or hospital admissions could be attributed to alcohol.

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[1] The allocation of postcodes to each Health Service is shown in the table in Appendix 3.

[2] Alcohol is thought to have a protective effect against cholelithiasis for both males and females, and a slight protective effect against stroke for females aged 75 to 79 years. Therefore, the aetiologic fractions for these conditions are negative.

[3] The ICD-9-CM codes and the aetiologic fractions for alcohol-related conditions are shown in Appendix 2.

[4] The HMDS covers all public and private hospitals in Western Australia, including the detoxification program run by the Alcohol and Drug Authority, but excluding psychiatric hospitals. Only episodes of treatment requiring an inpatient stay are captured on the HMDS, therefore alcohol-caused conditions which received outpatient treatment are not included in this report.

[5] The mortality database is based on notifications of deaths to the Registrar General's office.

[6] Using aetiologic fractions may give estimated numbers of cases which are not integers. This sometimes causes slight discrepancies in the totals due to rounding errors.

A number of alcohol-related conditions are thought to cause mortality or morbidity in children under 15 years old. These are road injuries, alcoholic poisoning, assault, child abuse, and drowning.[7]

The only alcohol-related condition specific to females is breast cancer.

The statistical measures used in this report were crude rates, age-specific rates, age-standardised rates, and standardised mortality rates (for deaths) and standardised morbidity rates (for hospitalisation).

Crude rates were calculated by dividing the estimated number of cases by the population of the area, and then multiplying by 1,000 to express the rates as cases per 1,000 population. Crude rates give 'the actual experience of a population' (Rothman 1986) and do not take into account the age-structure of the population.

Age-specific and age-standardised rates (ASRs) were calculated using a program called the Health Statistics Calculator.[8] Age-specific rates were calculated by dividing the number of cases in a particular age group by the population of that age group. Age-standardisation uses a standard population[9] to eliminate the effects of differences in the age structure of various populations. This allows comparisons between groups with different age compositions. In this report, age-specific and age-standardised rates are expressed per 100,000 persons.

Standardised morbidity/mortality rates (SMRs) determine whether the observed number of cases vary from that expected based on the State rate. They were calculated by dividing the observed number of cases by the expected number of cases. The expected number of cases was estimated by applying the State sex- and age-specific rates to the population of the area. The State SMR is always 1.0, therefore an SMR of 2.0 indicates that the observed rate of alcohol related mortality/morbidity in a particular area is twice that expected, based on the State rate. Confidence intervals (95%) applied to the SMRs determined whether differences were significant or not, compared to the State.

Table 1: Broad categories and ICD9-CM codes for alcohol-related conditions

Alcohol-related categories	ICD9-CM codes
Alcoholic liver cirrhosis	571.0-571.3
Alcoholism	291, 303, 305.0
Cancers	141, 143-146, 148, 149, 150, 155, 161, 174
Stroke	430-438
Other alcohol-related diseases	345, 357.5, 401-405, 425.5, 427.0, 427.2, 427.3, 456.0-456.2, 530.7, 535.3, 574, 577.0, 577.1, 696.1, 980.0, 980.1
Road injuries	E810-E819
Falls	E880-E888
Suicide	E950-E959
Assaults	E960, E965-E969
Other alcohol-related injuries	E860.0, E860.1, E860.2, E890-E899, E910, E911, E919, E920

[7] There are also aetiologic fractions for children under 15 years for the following conditions: alcoholic psychosis, alcohol dependence, alcohol abuse, alcoholic polyneuropathy, alcoholic cardiomyopathy, alcoholic gastritis, and alcoholic liver cirrhosis. However, these are chronic conditions, usually only apparent after years of heavy drinking.

[8] The *Health Statistics Calculator* was written by Dr J Codde (Director of Epidemiology and Analytical Services, HDWA).

[9] The Australian 1991 population was used as the standard.

3. Results

3.1 Deaths

3.1.1 Overview of the State

During the12-year period 1984 to 1995, there were an estimated 3,792 alcohol-caused deaths in WA, an average of 316 deaths each year. These deaths accounted for 3.3% of the total of 115,089 deaths from all causes that occurred over this period in WA. There were more than twice as many male deaths caused by alcohol compared to females [Figure 1].

Three conditions were responsible for over half of the alcohol-caused deaths between 1984 and 1995:

- alcoholic liver cirrhosis (20%)
- stroke (18%)
- road injuries (18%) [Table 2].

People aged between 20 and 29 years accounted for 14% of alcohol-caused deaths, and those aged 60 years and over accounted for 46% of such deaths. A small number of alcohol-caused deaths (an estimated 25 or 0.7%) involved children aged 0 to 4 years.

The ASR for male alcohol-caused deaths was more than double that for females (25.4 deaths per 100,000 population compared to 9.5). The age-specific rates for alcohol-caused deaths showed a minor peak in the 20 to 24 years age group, particularly for males. From the age of 30 to 34 years the rate began to steadily increase again, peaking in the oldest age group. [Figure 1]. This pattern of mortality reflects the high rates of injuries caused by excessive alcohol intake in young people, and the preponderance of deaths from chronic conditions with long latent periods (e.g. alcoholic liver cirrhosis) that are related to long-term alcohol use.

Figure 1: Estimated numbers and age-specific rates for alcohol-caused deaths, by age group and sex, Western Australia, 1984-1995

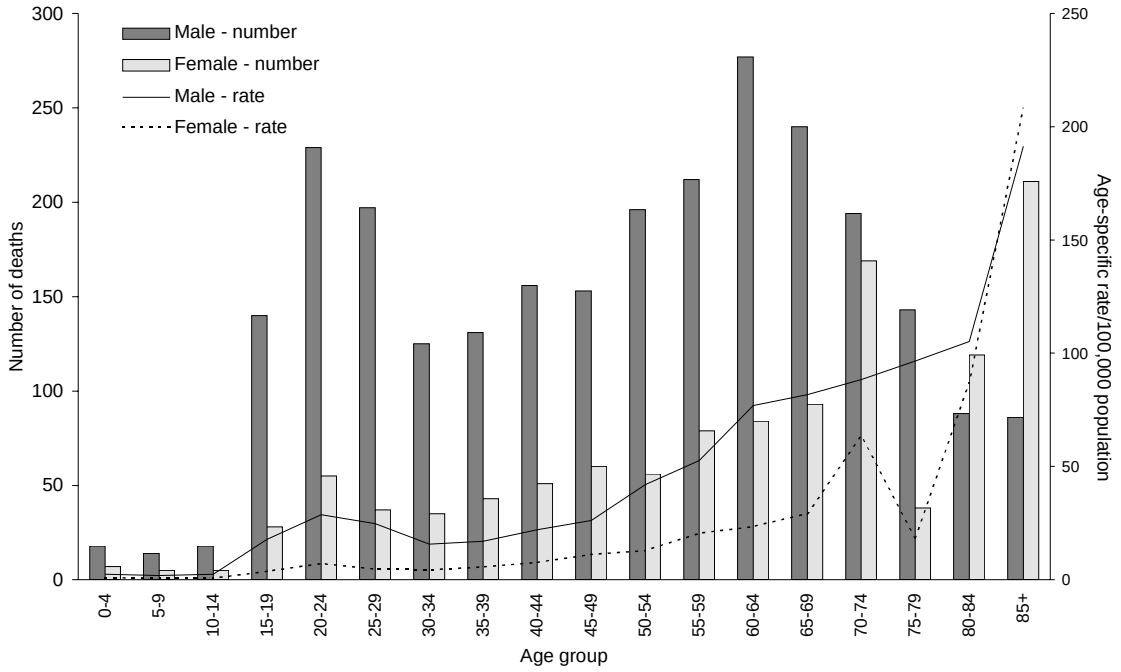


Table 2: Estimated number and percentage of alcohol-caused deaths, by alcohol-related conditions and sex

Western Australia, 1984-1995

Alcohol-related conditions	Males		Females		Persons	
	Number	%	Number	%	Number	%
Oropharyngeal cancer	65	2.5	9	0.8	74	2.0
Oesophageal cancer	39	1.5	8	0.7	47	1.2
Liver cancer	36	1.4	11	0.9	47	1.2
Laryngeal cancer	27	1.0	3	0.3	30	0.8
Female breast cancer	0	0.0	57	4.9	57	1.5
Alcoholic psychosis	29	1.1	9	0.8	38	1.0
Alcohol dependence	152	5.8	38	3.2	190	5.0
Alcohol abuse	9	0.3	6	0.5	15	0.4
Epilepsy	18	0.7	11	0.9	29	0.8
Hypertension	21	0.8	16	1.4	37	1.0
Alcoholic cardiomyopathy	124	4.7	13	1.1	137	3.6
Supraventricular cardiac dysrthythmias	3	0.1	5	0.4	8	0.2
Stroke	310	11.8	376	32.0	686	18.1
Oesophageal varices	2	0.1	1	0.1	3	0.1
Gastro-oesophageal haemorrhage	2	0.1	0	0.0	2	0.1
Alcoholic gastritis	1	0.0	0	0.0	1	0.0
Alcoholic liver cirrhosis	582	22.2	185	15.8	767	20.2
Cholelithiasis	-1	0.0	-1	0.0	-2	0.0
Acute pancreatitis	18	0.7	13	1.1	31	0.8
Chronic pancreatitis	11	0.4	6	0.5	17	0.4
Psoriasis	0	0.0	0	0.0	0	0.0
Ethanol toxicity	2	0.1	3	0.3	5	0.1
Road injuries	575	22.0	102	8.7	677	17.9
Alcoholic poisoning	15	0.6	3	0.3	18	0.5
Other alcohol/methanol poisoning	2	0.1	0	0.0	2	0.1
Fall injuries	113	4.3	146	12.4	259	6.8
Fire injuries	22	0.8	14	1.2	36	0.9
Drowning	68	2.6	12	1.0	80	2.1
Aspiration	66	2.5	34	2.9	100	2.6
Occupational & machine injuries	6	0.2	0	0.0	6	0.2
Suicide	221	8.4	32	2.7	253	6.7
Assault	77	2.9	61	5.2	138	3.6
Child abuse	1	0.0	0	0.0	1	0.0
Total	**2,618**	**100.0**	**1,174**	**100.0**	**3,792**	**100.0**

3.1.2 Trends

ASRs for the following three time periods were calculated: 1984-1987, 1988-1991, and 1992-1995, to determine trends in alcohol-caused death rates in WA. The male alcohol-caused death rate significantly decreased, from 28 deaths per 100,000 population in 1984-1987 to 23 in 1992-1995; an overall reduction of 20%. However, the female death rate for alcohol-caused conditions showed no significant change. The overall trend in the alcohol-caused death rate over the period was a significant reduction of nearly 18%. The male ASRs were between 2.5 and 2.8 times higher than those for females.

3.1.3 Alcohol-caused injuries

Between 1984 and 1995 there were an estimated 1,570 deaths due to alcohol-caused injuries; this is 41% of all alcohol-caused deaths and an average of 131 deaths per year. Of these 32% (35% of males; 22% of females) occurred in young people less than 25 years old. A similar proportion of deaths from alcohol-caused injuries occurred in the 25 to 44 years age group [Table 3].

Overall, there were nearly three times as many male deaths from alcohol-caused injuries as female. In those aged between 15 and 24 years there were five times as many deaths of males compared to females. This highlights the risks associated with excessive alcohol use by young males. Among the elderly, there were slightly more female deaths from alcohol-caused injuries than males.

The age group with the highest proportion of deaths from alcohol-caused road injuries was 15 to 24 years. Deaths from alcohol-caused suicides, assaults and drownings mainly occurred in the 25 to 44 years age group. Deaths from alcohol-caused falls, aspiration, and fire injuries mainly affected the 65 years and over age group - an estimated 70% of alcohol-caused falls among males and 93% among females occurred in this age group. This result may be artificially high because falls are common among the elderly and the aetiologic fractions estimate that 34% of all falls are as a result of alcohol.

3.1.4 Health Services

An estimated 2,548 deaths, or 67% of alcohol-caused deaths, occurred in the metropolitan area over the period 1984 to 1995. This is lower than the proportion of the population of WA who live in the metropolitan area (73%).

More males died from alcohol-caused conditions than females in all HSs [Table 4]. The estimated numbers of alcohol-caused deaths by broad categories of alcohol-related conditions for each HS are presented in Appendix 1.

The crude death rate relates the number of deaths to the size of the population. About half the HSs had crude alcohol-caused death rates significantly different to the State rate of 0.2 deaths per 1,000 persons. The HSs with the highest crude rates for alcohol-caused deaths were: East Kimberley (0.65), West Kimberley (0.58), and Inner City (0.51) [Table 4].

To allow comparisons between HSs which may have different age structures, SMRs were calculated [Figure 2]. Males in Bentley, East Kimberley, East Pilbara, Gascoyne, Inner City, Northern Goldfields, and West Kimberley HSs had significantly higher SMRs than the State, whilst those in the Armadale/Kelmscott, Bunbury, Harvey-Yarloop, Kalamunda, Lower North Metropolitan, and Wanneroo HSs had SMRs significantly lower than the State.

Females in the East Kimberley, East Pilbara, Inner City, Northern Goldfields, and West Kimberley HSs had significantly higher SMRs than the State, whilst those in the Lower North Metropolitan, South East Coastal, and Wanneroo HSs had SMRs significantly lower than the State.

Overall, the East Kimberley HS had the highest SMR (4.67), and Harvey-Yarloop HS had the lowest SMR (0.41). The confidence intervals for females are larger because less females died from alcohol-caused conditions than males.

All but one of the HSs with significantly higher SMRs than the State SMR also had higher crude rates than the State, suggesting that factors other than age are contributing to this high mortality rate. Other factors could be high proportions of Aboriginal people and low socio-economic status.

Table 3: Number and percentage of deaths from alcohol-caused injuries, by age, sex and type of injury

Western Australia, 1984-1995

	0-14		15-24		25-44		45-64		65+		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Males												
Road injuries	43	7.5	264	45.9	188	32.7	50	8.7	32	5.6	575	100
Suicide	0	0.0	57	25.8	102	46.2	50	22.6	11	5.0	221	100
Fall injuries	0	0.0	5	4.4	12	10.6	15	13.3	79	69.9	113	100
Assault/child abuse	7	9.0	14	17.9	39	50.0	17	21.8	0	0.0	78	100
Drowning	0	0.0	11	16.2	38	55.9	15	22.1	5	7.4	68	100
Aspiration	0	0.0	2	3.0	16	24.2	24	36.4	24	36.4	66	100
Fire injuries	0	0.0	2	9.1	7	31.8	4	18.2	8	36.4	22	100
Alc/meth poisoning	0	0.0	3	17.6	11	64.7	3	17.6	0	0.0	17	100
Machine injuries	0	0.0	1	16.7	4	66.7	0	0.0	0	0.0	6	100
Total	**50**	**4.3**	**359**	**30.8**	**417**	**35.8**	**178**	**15.3**	**159**	**13.6**	**1,166**	**100**
Females												
Road injuries	12	11.8	46	45.1	39	38.2	5	4.9	0	0.0	102	100
Suicide	0	0.0	6	18.8	13	40.6	9	28.1	3	9.4	32	100
Fall injuries	0	0.0	0	0.0	4	2.7	4	2.7	136	93.2	146	100
Assault/child abuse	5	8.2	16	26.2	24	39.3	9	14.8	5	8.2	61	100
Drowning	0	0.0	1	8.3	5	41.7	3	25.0	5	41.7	12	100
Aspiration	0	0.0	2	5.9	3	8.8	5	14.7	24	70.6	34	100
Fire injuries	0	0.0	1	7.1	2	14.3	2	14.3	7	50.0	14	100
Alc/meth poisoning	0	0.0	0	0.0	0	0.0	2	66.7	1	33.3	3	100
Machine injuries	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	100
Total	**17**	**4.2**	**72**	**17.8**	**90**	**22.3**	**39**	**9.7**	**181**	**44.8**	**404**	**100**
Persons												
Road injuries	55	8.1	310	45.8	227	33.5	55	8.1	32	4.7	677	100
Suicide	0	0.0	63	24.9	115	45.5	59	23.3	14	5.5	253	100
Fall injuries	0	0.0	5	1.9	16	6.2	19	7.3	215	83.0	259	100
Assault/child abuse	12	8.6	30	21.6	63	45.3	26	18.7	5	3.6	139	100
Drowning	0	0.0	12	15.0	43	53.8	18	22.5	10	12.5	80	100
Aspiration	0	0.0	4	4.0	19	19.0	29	29.0	48	48.0	100	100
Fire injuries	0	0.0	3	8.3	9	25.0	6	16.7	15	41.7	36	100
Alc/meth poisoning	0	0.0	3	15.0	11	55.0	5	25.0	1	5.0	20	100
Machine injuries	0	0.0	1	16.7	4	66.7	0	0.0	0	0.0	6	100
Total	**67**	**4.3**	**431**	**27.5**	**507**	**32.3**	**217**	**13.8**	**340**	**21.7**	**1,570**	**100**

Table 4: Estimated number and crude rates[1] for alcohol-caused deaths by Health Services and sex

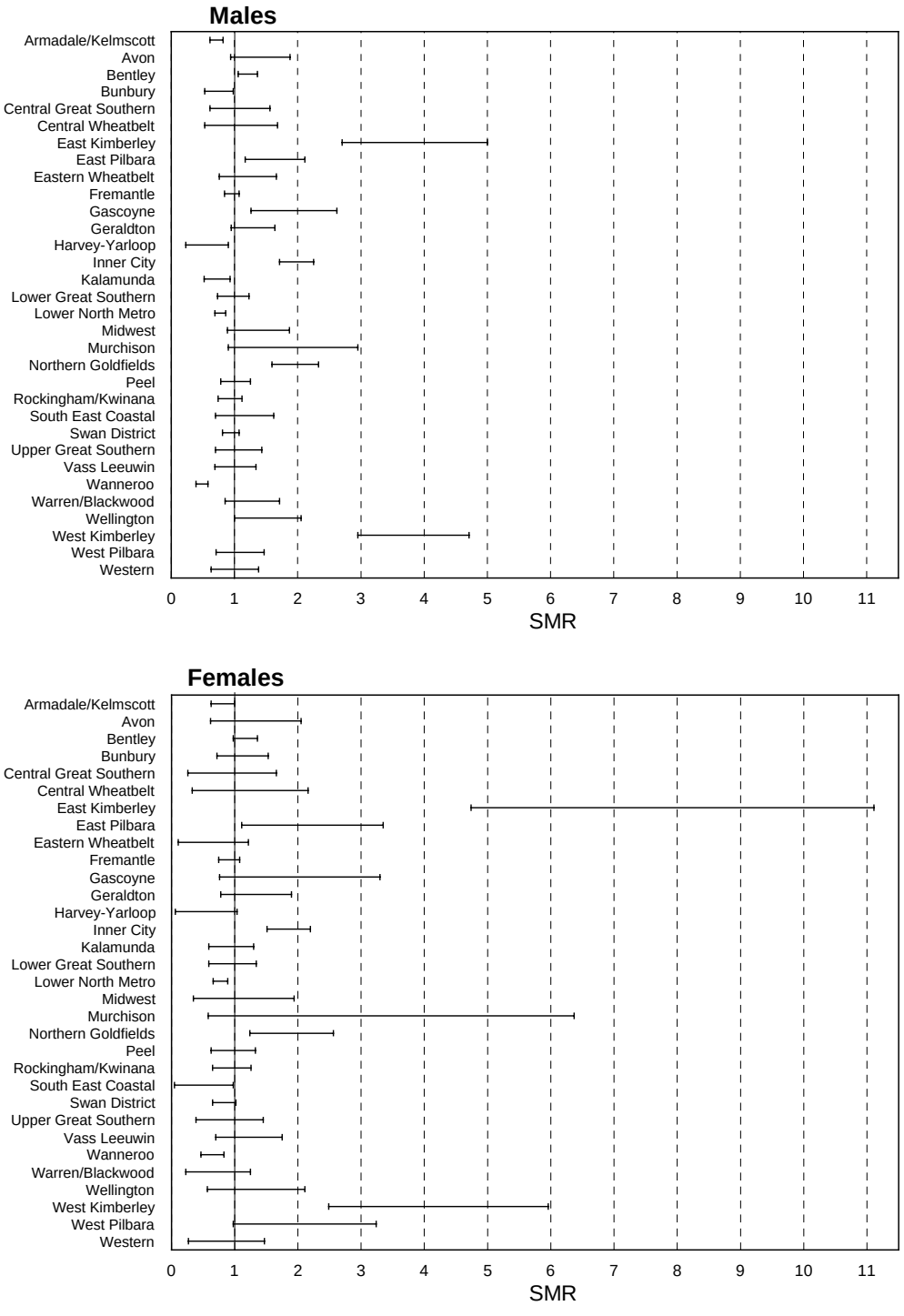
Western Australia, 1984-1995

	Males		Females		Persons	
	Number	**Crude rate**	**Number**	**Crude rate**	**Number**	**Crude rate**
Armadale/Kelmscott	172	*0.18	78	*0.08	250	*0.13
Avon	32	*0.36	12	0.14	44	0.25
Bentley	260	*0.38	147	*0.20	407	*0.29
Bunbury	43	*0.20	28	0.13	71	0.16
Central Great Southern	19	0.25	6	0.09	25	0.17
Central Wheatbelt	14	0.30	7	0.16	21	0.23
East Kimberley	44	*0.78	23	*0.48	67	*0.65
East Pilbara	50	0.33	16	0.13	66	0.24
Eastern Wheatbelt	26	0.28	6	*0.08	32	0.19
Fremantle	267	0.28	121	0.12	388	0.20
Gascoyne	31	*0.46	9	0.15	40	*0.32
Geraldton	58	0.34	21	0.13	79	0.23
Harvey-Yarloop	9	*0.12	4	*0.06	13	*0.09
Inner City	218	*0.66	112	*0.35	330	*0.51
Kalamunda	50	*0.18	28	0.10	78	*0.14
Lower Great Southern	61	0.28	27	0.13	88	0.21
Lower North Metro	339	0.25	184	0.13	523	0.18
Midwest	31	*0.35	6	*0.08	37	0.23
Murchison	14	*0.45	4	*0.19	18	0.35
Northern Goldfields	111	*0.45	33	0.16	144	*0.32
Peel	74	0.33	31	0.14	105	0.24
Rockingham/Kwinana	91	0.26	39	0.11	130	0.18
South East Coastal	24	0.27	4	*0.05	28	0.17
Swan District	208	0.25	78	0.09	286	*0.17
Upper Great Southern	34	0.27	12	0.11	46	0.19
Vass Leeuwin	38	0.32	19	0.16	57	0.24
Wanneroo	106	*0.11	52	*0.05	158	*0.08
Warren/Blackwood	31	0.30	9	0.09	40	0.20
Wellington	32	*0.38	11	0.14	43	0.26
West Kimberley	74	*0.82	24	*0.31	98	*0.58
West Pilbara	31	*0.19	13	0.10	44	0.15
Western	28	0.26	8	0.09	36	0.18
State	**2,618**	**0.28**	**1,174**	**0.13**	**3,792**	**0.20**

[1] These crude rates are expressed as the number of admissions per 1,000 population

* indicates a significant difference ($p < 0.05$) relative to the State.

Figure 2: Standardised mortality rates, with 95% confidence intervals, by Health Services and sex, Western Australia, 1984-1995



3.2 Hospitalisation

3.2.1 Overview of the State

During the three-year period 1993 to 1995, there were an estimated 25,643 alcohol-caused hospital admissions which accounted for a total of 175,881 alcohol-caused beddays in Western Australia. This is an average of 8,548 admissions and 58,627 beddays each year. These accounted for 1.8% of the total of 1,409,804 admissions and 3.0% of the total of 5,953,758 beddays from all causes that occurred over this period.

The estimated average annual cost of alcohol-caused hospitalisation in WA was nearly $26 million.

Three types of injuries were responsible for nearly 60% of alcohol-caused hospital admissions between 1993 and 1995:

- falls (33%)
- assaults (15%)
- road injuries (10%) [Table 5].

The top three conditions responsible for the most alcohol-caused hospital beddays were slightly different:

- falls (47%)
- road injuries (9.2%)
- alcoholic psychosis (7.3%) [Table 6].

There were 1.5 times as many male alcohol-caused admissions as female [Figure 3] but only 1.1 times as many male alcohol-caused beddays as female. This is because females had a longer average length of stay (ALOS) than males (8.1 days compared to 6.0 days).

Figure 3: Estimated numbers and age-specific rates for alcohol-caused hospital admissions, by age group and sex, Western Australia, 1993-1995

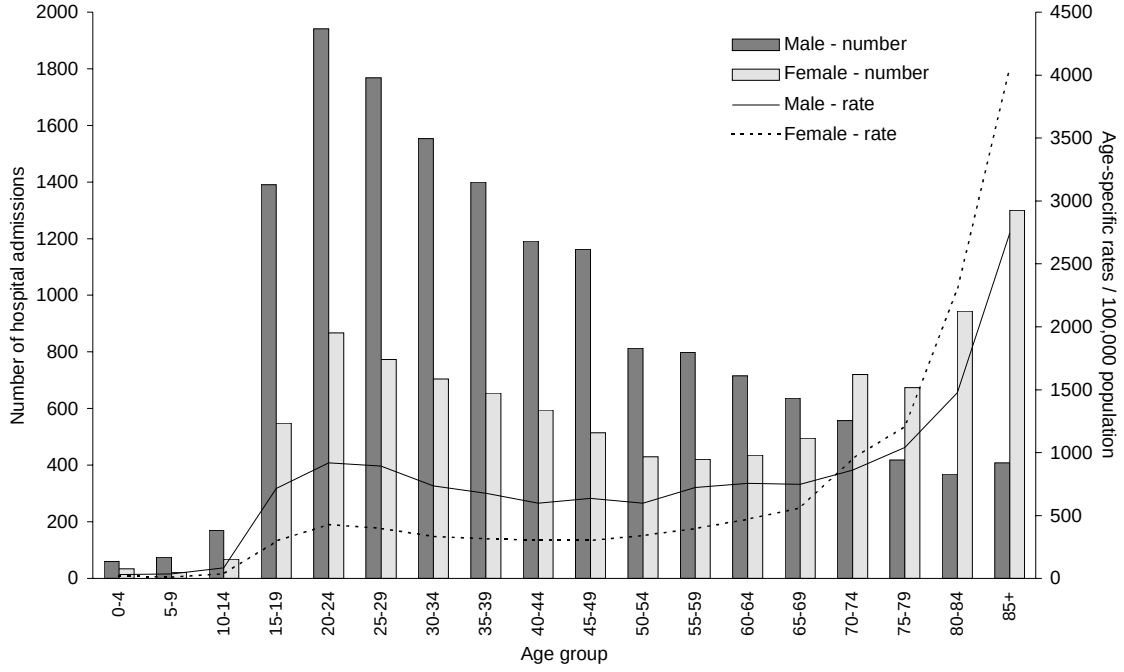


Table 5: Estimated number and percentage of alcohol-caused hospital admissions, by alcohol-related conditions and sex

Western Australia, 1993-1995

Alcohol-related conditions	Males		Females		Persons	
	Number	%	Number	%	Number	%
Oropharyngeal cancer	75	0.5	16	0.2	91	0.4
Oesophageal cancer	37	0.2	9	0.1	46	0.2
Liver cancer	24	0.2	11	0.1	35	0.1
Laryngeal cancer	42	0.3	4	0.0	46	0.2
Female breast cancer	0	0.0	91	0.9	91	0.4
Alcoholic psychosis	1,053	6.8	245	2.4	1,298	5.1
Alcohol dependence	1,360	8.8	547	5.4	1,907	7.4
Alcohol abuse	835	5.4	485	4.8	1,320	5.1
Epilepsy	331	2.1	238	2.3	569	2.2
Alcoholic poly neuropathy	12	0.1	9	0.1	21	0.1
Hypertension	102	0.7	80	0.8	182	0.7
Alcoholic cardiomyopathy	44	0.3	2	0.0	46	0.2
Supraventricular cardiac dysrthythmias	155	1.0	90	0.9	245	1.0
Stroke	530	3.4	469	4.6	999	3.9
Oesophageal varices	78	0.5	24	0.2	102	0.4
Gastro-oesophageal haemorrhage	102	0.7	47	0.5	149	0.6
Alcoholic gastritis	341	2.2	95	0.9	436	1.7
Alcoholic liver cirrhosis	619	4.0	247	2.4	866	3.4
Cholelithiasis	-123	-	-179	-	-302	-
Acute pancreatitis	226	1.5	103	1.0	329	1.3
Chronic pancreatitis	349	2.3	160	1.6	509	2.0
Psoriasis	3	0.0	1	0.0	4	0.0
Ethanol toxicity	1	0.0	3	0.0	4	0.0
Road injuries	2,068	13.4	580	5.7	2,648	10.3
Alcoholic beverage poisoning	24	0.2	21	0.2	45	0.2
Other alcohol/methanol poisoning	7	0.0	2	0.0	9	0.0
Fall injuries	3,642	23.6	4,824	47.2	8,466	33.0
Fire injuries	270	1.7	88	0.9	358	1.4
Drowning	58	0.4	29	0.3	87	0.3
Aspiration	40	0.3	24	0.2	64	0.2
Occupational & machine injuries	393	2.5	83	0.8	476	1.9
Suicide	380	2.5	328	3.2	708	2.8
Assault	2,346	15.2	1,426	14.0	3,772	14.7
Child abuse	11	0.1	7	0.1	18	0.1
Total	**15,433**	**100.0**	**10,210**	**100.0**	**25,643**	**100.0**

Table 6: Estimated number and percentage of alcohol-caused hospital beddays, by alcohol-related conditions and sex

Western Australia, 1993-1995

Alcohol-related conditions	Males		Females		Persons	
	Number	%	Number	%	Number	%
Oropharyngeal cancer	731	0.8	138	0.2	869	0.5
Oesophageal cancer	358	0.4	68	0.1	426	0.2
Liver cancer	211	0.2	87	0.1	298	0.2
Laryngeal cancer	314	0.3	27	0.0	341	0.2
Female breast cancer	0	0.0	577	0.7	577	0.3
Alcoholic psychosis	5,618	6.1	1,720	2.1	7,338	4.2
Alcohol dependence	9,052	9.7	3,830	4.6	12,882	7.3
Alcohol abuse	2,841	3.1	1,152	1.4	3,993	2.3
Epilepsy	1,285	1.4	1,210	1.5	2,495	1.4
Alcoholic poly neuropathy	206	0.2	99	0.1	305	0.2
Hypertension	527	0.6	427	0.5	954	0.5
Alcoholic cardiomyopathy	385	0.4	14	0.0	399	0.2
Supraventricular cardiac dysrthythmias	397	0.4	337	0.4	734	0.4
Stroke	6,480	7.0	5,977	7.2	12,457	7.1
Oesophageal varices	186	0.2	80	0.1	266	0.2
Gastro-oesophageal haemorrhage	309	0.3	130	0.2	439	0.2
Alcoholic gastritis	863	0.9	230	0.3	1,093	0.6
Alcoholic liver cirrhosis	4,874	5.2	2,379	2.9	7,253	4.1
Cholelithiasis	-553	-	-722	-	-1,275	-
Acute pancreatitis	1,466	1.6	628	0.8	2,094	1.2
Chronic pancreatitis	1,800	1.9	878	1.1	2,678	1.5
Psoriasis	27	0.0	6	0.0	33	0.0
Ethanol toxicity	2	0.0	3	0.0	5	0.0
Road injuries	13,101	14.1	3,150	3.8	16,251	9.2
Alcoholic beverage poisoning	34	0.0	33	0.0	67	0.0
Other alcohol/methanol poisoning	13	0.0	4	0.0	17	0.0
Fall injuries	30,155	32.5	53,202	64.1	83,357	47.4
Fire injuries	2,211	2.4	987	1.2	3,198	1.8
Drowning	220	0.2	43	0.1	263	0.1
Aspiration	158	0.2	128	0.2	286	0.2
Occupational & machine injuries	1,018	1.1	269	0.3	1,287	0.7
Suicide	1,514	1.6	1,400	1.7	2,914	1.7
Assault	6,940	7.5	4,520	5.4	11,460	6.5
Child abuse	101	0.1	28	0.0	129	0.1
Total	**92,842**	**100.0**	**83,039**	**100.0**	**175,881**	**100.0**

The highest number of alcohol-caused hospital admissions (2,810) involved people aged 20 to 24 years, but the highest number of alcohol-caused hospital beddays (26,178) involved those aged 85 years and over. People aged 60 years and over accounted for 30% of alcohol-caused admissions and 54% of alcohol-caused beddays. Those aged between 20 and 29 years accounted for 21% of such admissions and 11% of such beddays. An estimated 96 alcohol-caused admissions and 474 beddays

(0.4% of alcohol-caused admissions; 0.3% of alcohol-caused beddays) involved children aged 0 to 4 years.

The ASR for male alcohol-caused hospital admissions was significantly higher than that for females (624 admissions per 100,000 population compared to 385 per 100,000).

The age-specific rates for alcohol-caused hospital admissions showed a minor peak in the 20 to 29 years age group and, after a slight fall, continued to increase with age, peaking in the oldest age group [Figure 3]. Male admission rates were higher than those for females until the 70 to 74 years age group.

3.2.2 Trends

ASRs were calculated to look at the trend in rates of alcohol-caused hospital admissions in WA from 1993 to 1995. There was a significant increase in the alcohol-caused admission rate for both sexes, by an average of 3.4% per year for males and 3.8% for females). Overall, the ASR increased from 490 admissions per 100,000 population in 1993 to 525 in 1995 and the average annual increase was 3.6%. The male ASRs were 1.6 times as high as those for females.

3.2.3 Alcohol-caused injuries

Between 1993 and 1995 there were an estimated 16,648 hospital admissions and 119,229 beddays due to alcohol-caused injuries. This is 65% of all alcohol-caused hospital admissions and 68% of all beddays, and an average of 5,549 admissions and 39,743 beddays per year. The average bedday cost of this hospitalisation is approximately $17.5 million per year.

Of the admissions due to alcohol-caused injuries, 26% (34% of males; 15% of females) occurred in young people less than 25 years old. Thirty-one percent of hospital admissions due to alcohol-caused injuries occurred in people aged 25 to 44 years, and 42% in those aged 45 years and over [Table 7].

Overall, there were 1.2 times as many male hospital admissions for alcohol-caused injuries as female. In those aged less between 15 and 25 years there were nearly three times as many male admissions compared to females, indicating that young males are particularly at risk. Among the elderly, there were more than twice as many female admissions for alcohol-caused injuries than males.

The age group with the highest proportion of hospital admissions for both alcohol-caused road injuries and alcohol/methanol poisoning was 15 to 24 years. Admissions for most of the other alcohol-caused injuries mainly affected the 25 to 44 years age group. Alcohol-caused falls were the exception, with over a third of male admissions and 70% of female admissions from this cause being in the 65 years and over age group [Table 7]. This is because falls are common among the elderly and the aetiologic fractions estimate that 34% of all falls are caused by alcohol.

3.2.4 Health Services

An estimated 14,550 hospital admissions, or 57% of alcohol-caused admissions, occurred in the metropolitan area. There were more male admissions for alcohol-caused conditions than female admissions in all HSs [Table 8]. The estimated numbers of alcohol-caused admissions, the ALOS, and hospitalisation costs by broad categories of alcohol-related conditions for each HS are presented in Appendix 1.

The crude death rate relates the number of deaths to the size of the population. Most of the HSs had crude rates for alcohol-caused admissions significantly different to the State rate of five admissions per 1,000 population. The HSs with the highest crude rates of alcohol-caused hospital admissions were: East Kimberley (27.6 admissions per 1,000 population), West Kimberley (23.6), and Gascoyne (15.0) [Table 8].

Table 7: Number and percentage of hospital admissions for alcohol-caused injuries, by age, sex and type of injury

Western Australia, 1993-1995

	0-14		15-24		25-44		45-64		65+		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Males												
Fall injuries	0	0.0	714	19.6	998	27.4	672	18.5	1,257	34.5	3,641	100
Assault/child abuse	68	2.9	840	35.6	1,171	49.7	249	10.6	29	1.2	2,357	100
Road injuries	205	9.9	934	45.2	712	34.4	143	6.9	74	3.6	2,068	100
Machine injuries	0	0.0	118	30.1	172	43.9	79	20.2	23	5.9	392	100
Suicide	0	0.0	120	31.7	209	55.3	43	11.4	6	1.6	378	100
Fire injuries	0	0.0	89	32.7	126	46.3	42	15.4	15	5.5	272	100
Drowning	0	0.0	15	25.0	38	63.3	6	10.0	1	1.7	60	100
Aspiration	0	0.0	4	10.0	6	15.0	13	32.5	17	42.5	40	100
Alc/meth poisoning	8	25.8	9	29.0	8	25.8	4	12.9	2	6.5	31	100
Total	**281**	**3.0**	**2,843**	**30.8**	**3,440**	**37.2**	**1,251**	**13.5**	**1,424**	**15.4**	**9,239**	**100**
Females												
Fall injuries	0	0.0	230	4.8	495	10.3	680	14.1	3,418	70.9	4,823	100
Assault/child abuse	32	2.2	438	30.6	809	56.5	131	9.1	23	1.6	1,433	100
Road injuries	59	10.2	283	48.7	212	36.5	27	4.6	0	0.0	581	100
Machine injuries	0	0.0	22	26.8	36	43.9	16	19.5	8	9.8	82	100
Suicide	0	0.0	136	41.6	144	44.0	40	12.2	7	2.1	327	100
Fire injuries	0	0.0	24	27.3	29	33.0	20	22.7	15	17.0	88	100
Drowning	0	0.0	5	17.9	22	78.6	1	3.6	0	0.0	28	100
Aspiration	0	0.0	1	4.2	10	41.7	5	20.8	8	33.3	24	100
Alc/meth poisoning	6	26.1	8	34.8	3	13.0	5	21.7	1	4.3	23	100
Total	**97**	**1.3**	**1,147**	**15.5**	**1,760**	**23.8**	**925**	**12.5**	**3,480**	**47.0**	**7,409**	**100**
Persons												
Fall injuries	0	0.0	944	11.2	1,493	17.6	1,352	16.0	4,675	55.2	8,464	100
Assault/child abuse	100	2.6	1,278	33.7	1,980	52.2	380	10.0	52	1.4	3,790	100
Road injuries	264	10.0	1,217	45.9	924	34.9	170	6.4	74	2.8	2,649	100
Machine injuries	0	0.0	140	29.5	208	43.9	95	20.0	31	6.5	474	100
Suicide	0	0.0	256	36.3	353	50.1	83	11.8	13	1.8	705	100
Fire injuries	0	0.0	113	31.4	155	43.1	62	17.2	30	8.3	360	100
Drowning	0	0.0	20	22.7	60	68.2	7	8.0	1	1.1	88	100
Aspiration	0	0.0	5	7.8	16	25.0	18	28.1	25	39.1	64	100
Alc/meth poisoning	14	25.9	17	31.5	11	20.4	9	16.7	3	5.6	54	100
Total	**378**	**2.3**	**3,990**	**24.0**	**5,200**	**31.2**	**2,176**	**13.1**	**4,904**	**29.5**	**16,648**	**100**

To allow comparisons between HSs which may have different age structures, SMRs were calculated [Figure 4]. Males in the Avon, Central Great Southern, Central Wheatbelt, East Kimberley, East Pilbara, Eastern Wheatbelt, Gascoyne, Geraldton, Inner City, Midwest, Murchison, Northern Goldfields, South East Coastal, Upper Great Southern, Wellington, West Kimberley, and West Pilbara HSs had significantly higher SMRs than the State, whilst nine HSs had significantly lower SMRs.

Females, in the Avon, Central Great Southern, Central Wheatbelt, East Kimberley, East Pilbara, Eastern Wheatbelt, Gascoyne, Geraldton, Inner City, Lower Great Southern, Midwest, Murchison, Northern Goldfields, Upper Great Southern, Wellington, West Kimberley, West Pilbara, and Western HSs had significantly higher SMRs than the State, whilst eight HSs had significantly lower SMRs.

Overall, the East Kimberley and West Kimberley HSs had the highest SMRs (6.9 and 5.7 respectively) and Wanneroo HS had the lowest SMR (0.6).

Table 8: Estimated number and crude rates[1] for alcohol-caused hospital admissions by Health Services and sex

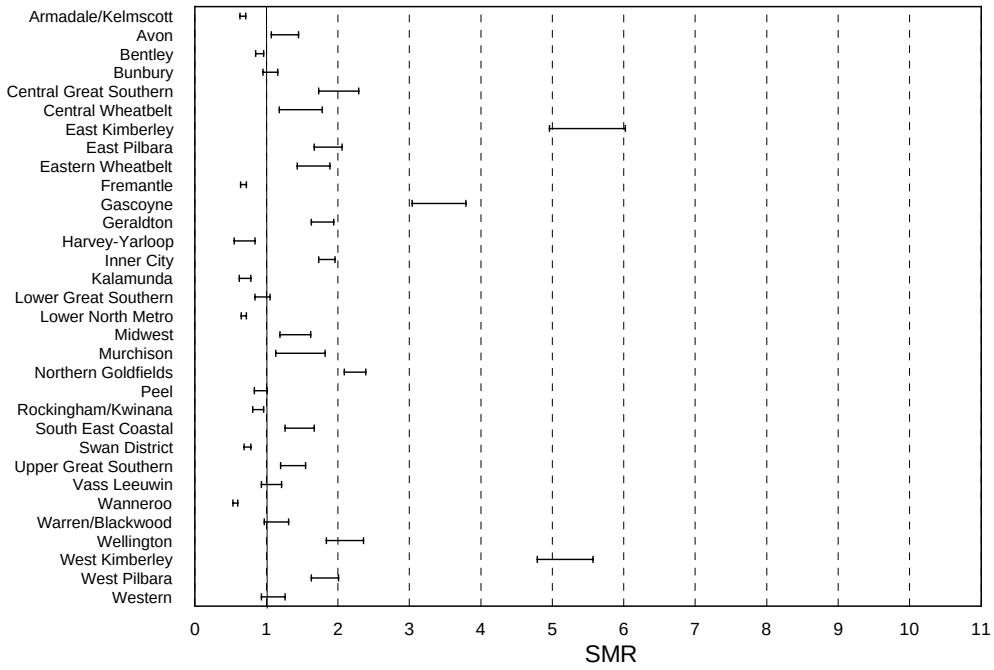
Western Australia, 1993-1995

Health Service	Males		Females		Persons	
	Number	Crude rate	Number	Crude rate	Number	Crude rate
Armadale/Kelmscott	1,013	*3.9	679	*2.6	1,692	*3.2
Avon	173	*7.3	127	*5.5	300	*6.4
Bentley	1,041	6.0	814	*4.5	1,855	5.3
Bunbury	382	6.3	247	4.1	629	5.2
Central Great Southern	203	*11.5	100	*6.1	303	*8.9
Central Wheatbelt	94	*8.5	69	*6.5	163	*7.5
East Kimberley	415	*29.1	312	*25. 8	727	*27.6
East Pilbara	363	*10.3	300	*10.7	663	*10.4
Eastern Wheatbelt	205	*9.6	105	*5.8	310	*7.9
Fremantle	1,088	*4.2	798	*2.9	1,886	*3.5
Gascoyne	323	*20.1	134	*9.3	457	*15.0
Geraldton	497	*10.4	246	*5.3	743	*7.9
Harvey-Yarloop	88	*3.9	61	*2.9	149	*3.4
Inner City	1,010	*12.7	678	*8.7	1,688	*10.7
Kalamunda	288	*4.0	217	*3.0	505	*3.5
Lower Great Southern	326	*5.6	269	*4.7	595	5.1
Lower North Metro	1,575	*4.5	1,271	*3.4	2,846	*3.9
Midwest	173	*7.9	91	*4.9	264	*6.5
Murchison	73	*9.2	39	*7.5	112	*8.6
Northern Goldfields	859	*13.1	420	*7.8	1,279	*10.7
Peel	411	*5.6	280	3.9	691	4.7
Rockingham/Kwinana	568	*5.2	282	*2.5	849	*3.8
South East Coastal	197	*8.5	92	*4.4	289	*6.5
Swan District	1,015	*4.3	718	*3.1	1,733	*3.7
Upper Great Southern	240	*8.0	160	*5.8	400	*7.0
Vass Leeuwin	230	*6.4	147	4.2	377	5.3
Wanneroo	934	*3.1	563	*1.9	1,497	*2.5
Warren/Blackwood	177	*6.6	110	*4.4	287	5.5
Wellington	256	*12.1	182	*9.2	438	*10.7
West Kimberley	691	*28.1	401	*18.4	1,092	*23.6
West Pilbara	335	*9.7	185	*6.2	540	*8.1
Western	170	6.2	114	*4.7	284	5.5
State	**15,433**	**6.0**	**10,210**	**4.0**	**25,643**	**5.0**

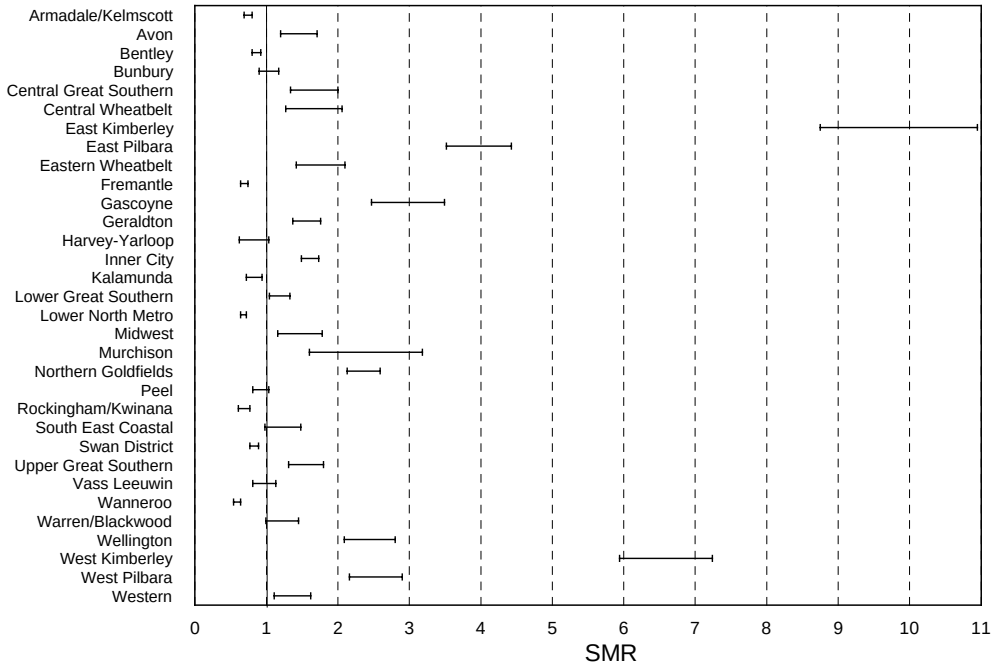
[1] These crude rates are expressed as the number of admissions per 1,000 population
* indicates a significant difference ($p < 0.05$) relative to the State.

Figure 4: Standardised morbidity rates for alcohol-caused conditions, with 95% confidence intervals, by Health Services, Western Australia, 1993-1995

Males



Females



All the HSs with significantly higher SMRs than the State also had higher crude rates than the State, suggesting that factors other than age are contributing to these high admission rates. Other factors could be high proportions of Aboriginal people and low socio-economic status.

The annual average cost of alcohol-caused hospitalisation per head of population in WA was $15. Wanneroo HS had the lowest annual cost ($7 per head of population) and East Kimberley HS the highest annual cost ($46) [Table 9].

Table 9: Estimated number, total cost, and cost per head of population of alcohol-caused hospital beddays, by Health Services

Western Australia, 1993-1995

Health Service	Total number of beddays	Average annual bedday cost[1] (thousands)	Annual cost[1] per head of population
Armadale/Kelmscott	12,755	$1,871	$11
Avon	1,735	$254	$16
Bentley	14,578	$2,138	$18
Bunbury	4,122	$605	$15
Central Great Southern	1,829	$268	$24
Central Wheatbelt	872	$128	$18
East Kimberley	2,746	$403	$46
East Pilbara	3,123	$458	$22
Eastern Wheatbelt	1,629	$239	$18
Fremantle	15,187	$2,227	$13
Gascoyne	2,027	$297	$29
Geraldton	3,712	$544	$17
Harvey-Yarloop	1,618	$237	$16
Inner City	13,393	$1,964	$37
Kalamunda	3,552	$521	$11
Lower Great Southern	3,511	$515	$13
Lower North Metro	27,162	$3,984	$16
Midwest	1,373	$201	$15
Murchison	521	$76	$18
Northern Goldfields	7,176	$1,052	$26
Peel	5,326	$781	$16
Rockingham/Kwinana	5,953	$873	$12
South East Coastal	1,500	$220	$15
Swan District	11,273	$1,653	$11
Upper Great Southern	2,047	$300	$16
Vass Leeuwin	2,269	$333	$14
Wanneroo	10,045	$1,473	$7
Warren/Blackwood	4,346	$637	$37
Wellington	2,309	$339	$25
West Kimberley	4,604	$675	$44
West Pilbara	2,024	$297	$13
Western	1,588	$233	$13
State	**175,902**	$25,799	**$15**

[1] Calculated using the average cost of $440 from: *Time Series Analysis, 1994/95.* Finance and Assets, Health Department of Western Australia, 1996

4. Conclusion

Prevalence of alcohol use

Alcohol is one of the most commonly used drugs in Australia. Eighty per cent of the West Australian population over the age of 18 years drink alcohol either regularly or occasionally; 64% drink regularly (76% of males; 54% of females) and 15% drink occasionally (11% of males; 19% of females) (National Health and Medical Research Council 1992).

Population surveys of alcohol consumption account for only 60% of alcohol sold. This is because of a number of biases, such as under-reporting and under-sampling of heavy and problem drinkers (Poikolainen 1985). However, two major surveys in WA over the last few years have found that:

- Overall, 76% of Western Australians had consumed an alcoholic drink in the three months preceding the survey, and 60% in the week preceding the survey (Daly et al 1996).
- Almost 70% of regular drinkers between the ages of 18 - 44 years drink on three days or less in the week, with almost 50% of all alcohol consumed being on the day of heaviest consumption. The days of heaviest consumption are Saturday, Friday and Sunday, in that order (Health Promotion Services 1994).

Costs to the community

In 1992, the tangible and intangible costs of alcohol abuse in Australia were estimated at more than $4,494 million (Collins and Lapsley 1996). This estimate includes such factors as production costs, health care, road crash costs, resources used in addictive consumption, and death. This estimate did not assess the cost of absenteeism from work due to alcohol. However, the cost to Australian industry for absenteeism from work because of alcohol use has been estimated to be approximately $500 million per year (Hocking et al 1994).

In WA, the estimated average cost for alcohol-caused hospitalisation alone was nearly $26 million per year, or $15 per head of population. This is lower than the annual cost per head of population for smoking-caused hospitalisation ($21) (Unwin et al 1997), but much higher than that for drugs other than tobacco or alcohol ($3) (Unwin et al - in preparation). Over two-thirds of the cost of alcohol-caused hospitalisation was accounted for by injuries, which could be prevented.

Social effects

In WA, alcohol consumption is responsible for about 17% of all drug-caused deaths (Unwin 1996), 3.3% of all deaths, 1.8% of all hospital admissions and 3.0% of all beddays.

Of the three diseases that accounted for over half the alcohol-caused deaths, two - alcoholic liver cirrhosis and stroke - are conditions that result from heavy long-term alcohol consumption and therefore affect older people. The other major cause of alcohol-caused death, road injuries, and the three types of injury responsible for the greatest proportion of alcohol-caused hospital admissions (falls, assaults, and road injuries) are the result of acute alcohol consumption and mainly affect young people.

In WA during 1995, of fatal road crashes where the blood alcohol concentration (BAC) of drivers or riders involved was recorded, 25% were found to have a BAC of more than 0.05%. A further 34% of pedestrians involved in fatal crashes had a BAC of more than 0.05% (Traffic Board of Western Australia 1996, p.22). However, other drugs as well as alcohol may have been involved in some of these crashes (Swensen 1996).

Research into the relationship between alcohol consumption and crime (Burns & Coumarelos 1993; National Symposium on Alcohol Misuse and Violence 1994) found that:

- there are correlations between alcohol consumption and crime rates
- there is a high incidence and prevalence of alcohol abuse in offenders
- a substantial number of offenders use alcohol before offending

- and many offences are committed on or near licensed premises.

Trends
The findings of this report, of a reduction in the ASRs for alcohol-caused deaths between 1984 and 1995 of 18%, are consistent with another report (Unwin 1996), that reported a reduction of 15% between 1984 and 1994. However, the current report found that there was a significant increase in the ASRs for alcohol-caused hospital admissions of, on average, 3.6% per year.

Variations in alcohol-caused mortality and morbidity between different geographical areas of WA are partly due to the different age and sex structures of the populations. Areas with high proportions of young males may have higher levels of social and health problems caused by excessive alcohol use. However, these effects often persist after using age-standardising techniques and more detailed information is required to explain these variations.

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Appendix 1: Regional profiles of the impact of alcohol consumption on the health of Western Australians

Armadale/Kelmscott Health Service

Estimated Resident Population in 1995: 176,286
Projected population size in 2001: 192,871

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	42	43	8.7	2.9
Alcoholism	9	188	6.7	9.9
Cancers	19	23	5.6	1.0
Stroke	46	82	13.8	8.9
Other alcohol-related diseases	13	121	5.1	4.8
Road injuries	56	235	6.9	12.7
Falls	12	665	9.7	50.7
Suicide	24	63	3.7	1.8
Assaults	10	196	2.6	4.0
Other alcohol-related injuries	17	77	5.4	3.2
Total	248	1,693	7.5	100.0

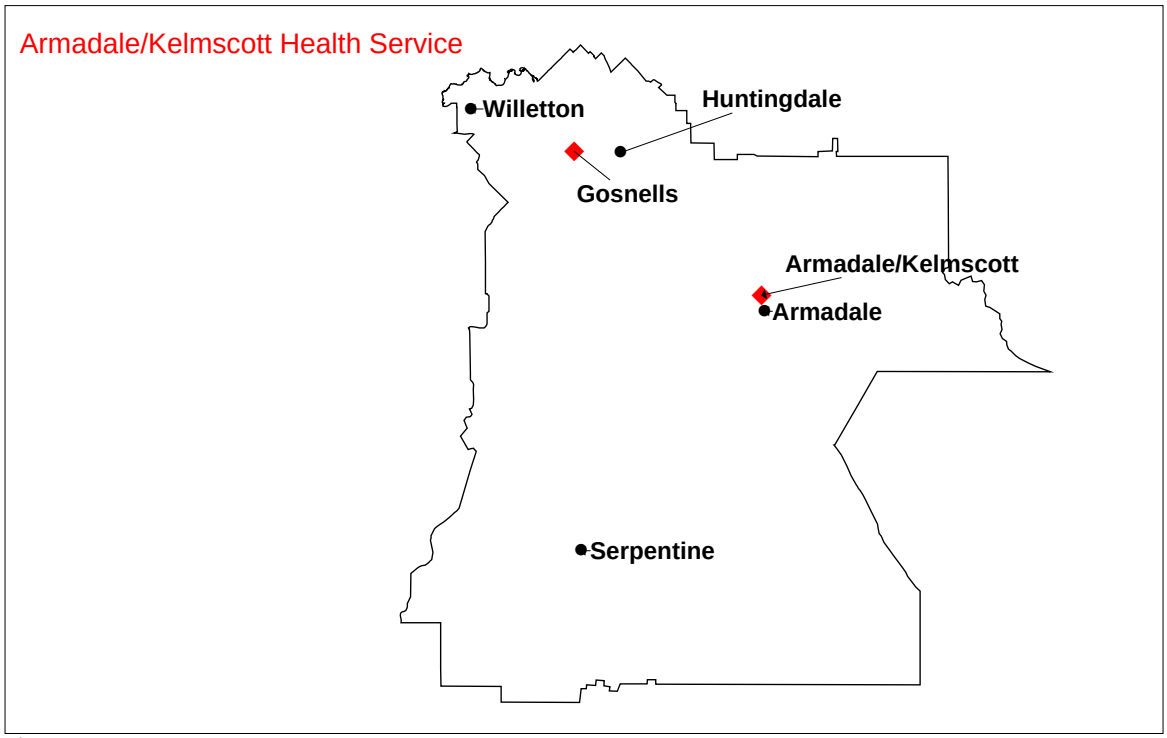
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Armadale/Kelmscott Health Service was 20 people per year.
- The number of alcohol-caused deaths per head of population was significantly lower in the Armadale/Kelmscott Health Service (13 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Armadale/Kelmscott Health Service was significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Armadale/Kelmscott Health Service was $1,870,587[1] per year, equivalent to $11 per head of population.
- The average number of alcohol-caused hospital admissions in the Armadale/Kelmscott Health Service was 564 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Armadale/Kelmscott Health Service (324 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Armadale/Kelmscott Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Avon Health Service

Estimated Resident Population in 1995: 15,998
Projected population size in 2001: 16,708

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	8	13	7.0	5.2
Alcoholism	3	50	2.9	8.5
Cancers	4	5	13.6	3.9
Stroke	6	11	10.7	6.8
Other alcohol-related diseases	5	18	3.2	3.3
Road injuries	10	35	6.6	13.2
Falls	3	119	7.7	52.7
Suicide	3	4	4.3	1.0
Assaults	1	34	1.9	3.6
Other alcohol-related injuries	2	9	3.3	1.7
Total	45	298	5.8	100.0

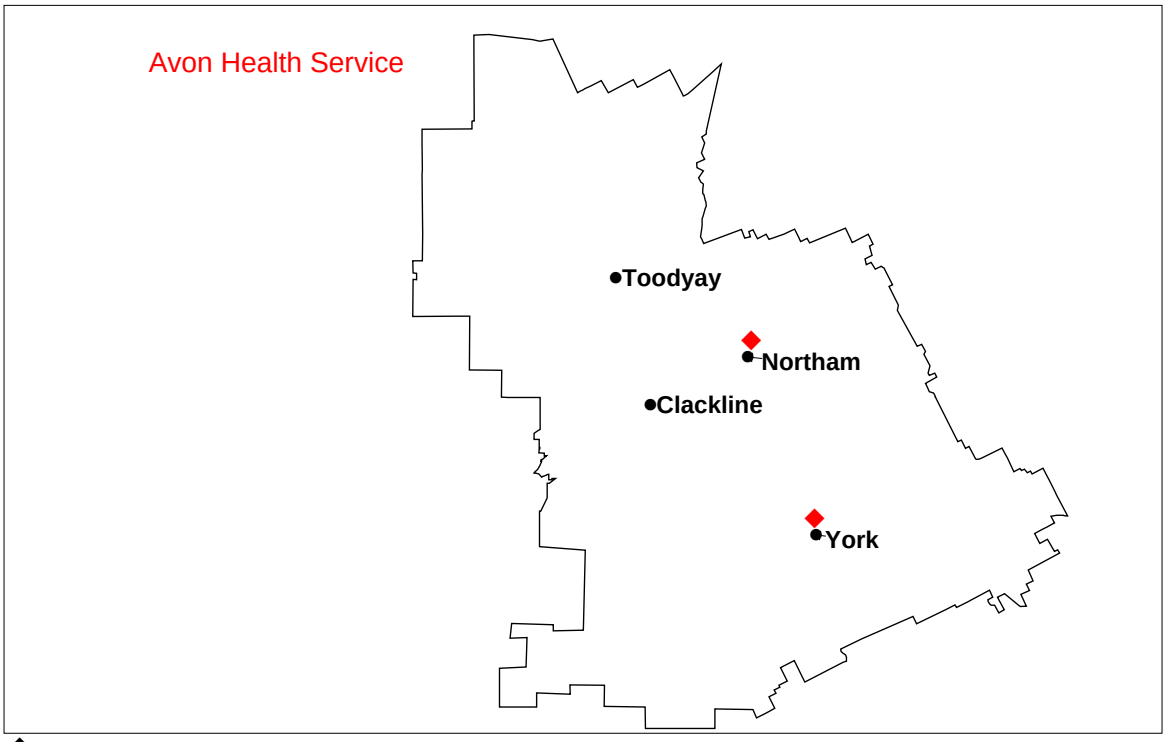
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Avon Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Avon Health Service (26 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Avon Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Avon Health Service was $254,760[1] per year, equivalent to $16 per head of population.
- The average number of alcohol-caused hospital admissions in the Avon Health Service was 99 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Avon Health Service (633 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Avon Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Bentley Health Service

Estimated Resident Population in 1995: 118,381
Projected population size in 2001: 119,957

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	90	80	8.2	4.5
Alcoholism	20	255	5.6	9.7
Cancers	28	26	8.4	1.5
Stroke	92	82	13.4	7.5
Other alcohol-related diseases	27	133	5.0	4.6
Road injuries	48	169	7.3	8.5
Falls	41	779	10.2	54.7
Suicide	24	72	3.8	1.9
Assaults	10	197	3.7	5.1
Other alcohol-related injuries	28	62	4.8	2.0
Total	408	1,855	7.9	100.0

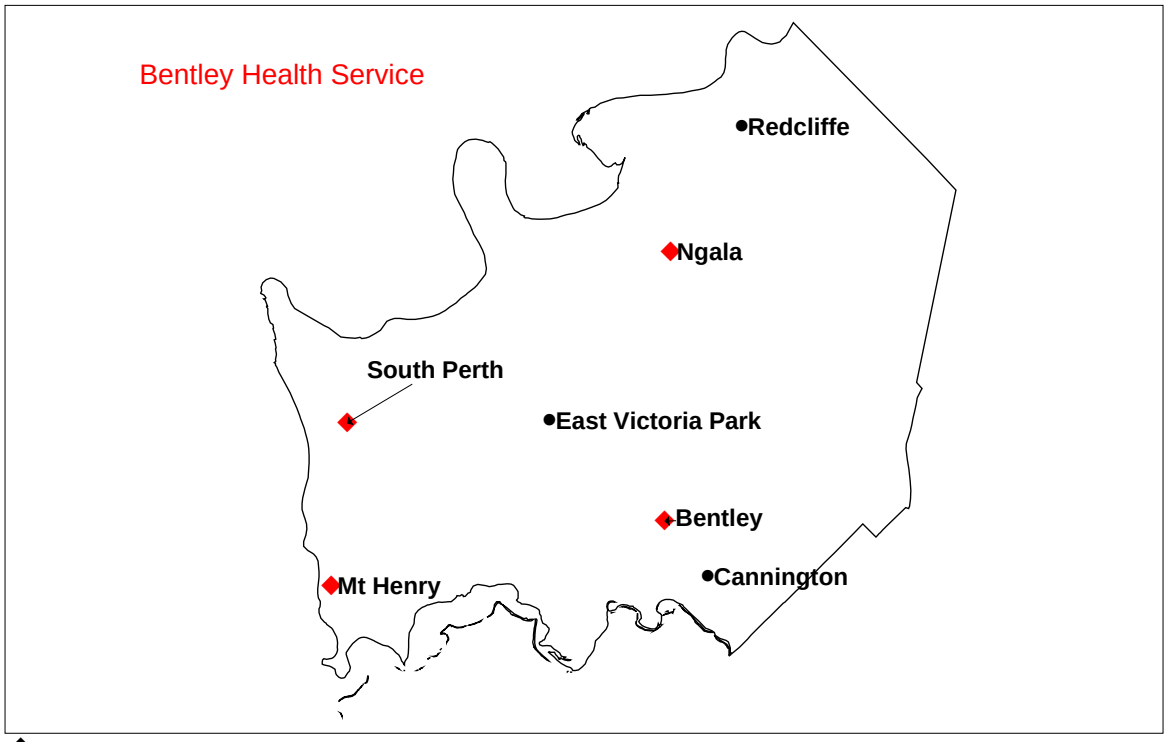
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Bentley Health Service was 34 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the Bentley Health Service (29 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Bentley Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Bentley Health Service was $2,137,960[1] per year, equivalent to $18 per head of population.
- The average number of alcohol-caused hospital admissions in the Bentley Health Service was 618 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Bentley Health Service (525 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Bentley Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Bunbury Health Service

Estimated Resident Population in 1995: 40,883
Projected population size in 2001: 43,563

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	11	7	13.3	2.3
Alcoholism	3	100	5.8	14.0
Cancers	5	7	10.0	1.7
Stroke	16	37	10.8	9.7
Other alcohol-related diseases	3	49	4.6	5.4
Road injuries	16	83	4.8	9.7
Falls	8	227	9.0	49.4
Suicide	4	17	3.4	1.4
Assaults	2	70	2.6	4.4
Other alcohol-related injuries	1	32	2.7	2.1
Total	69	629	6.6	100.0

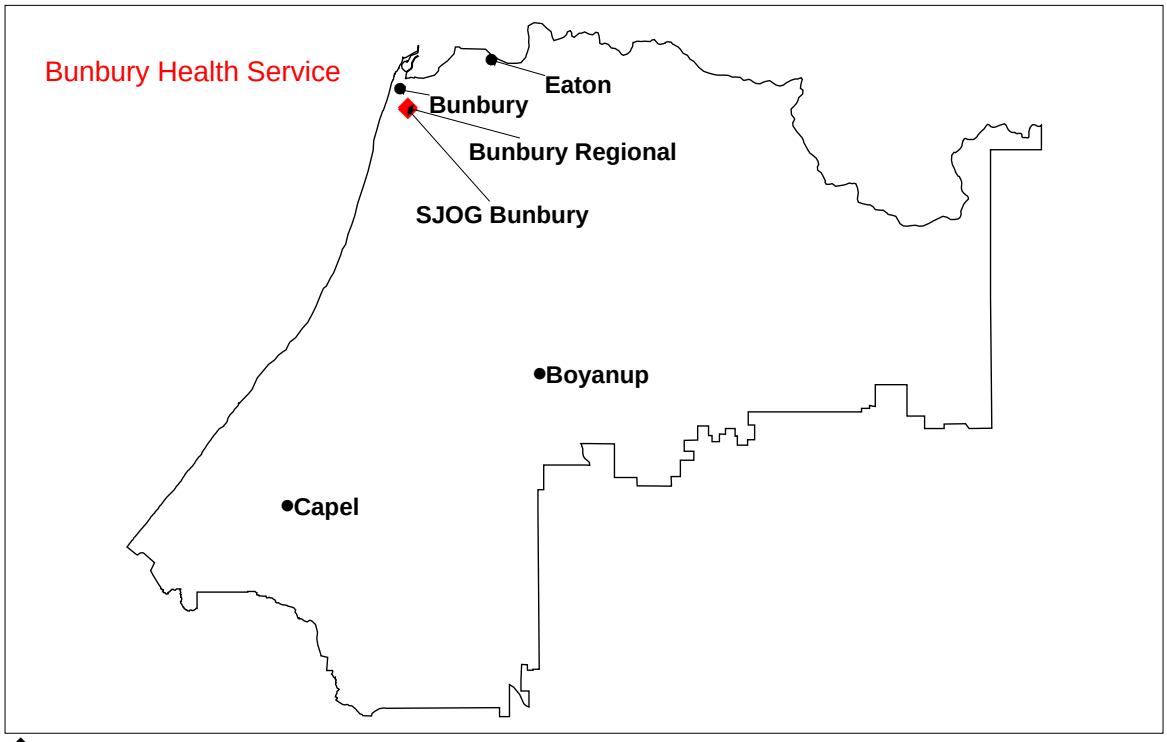
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Bunbury Health Service was 5 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Bunbury Health Service (16 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Bunbury Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Bunbury Health Service was $604,853[1] per year, equivalent to $15 per head of population.
- The average number of alcohol-caused hospital admissions in the Bunbury Health Service was 209 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Bunbury Health Service (521 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Bunbury Health Service was not significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Central Great Southern Health Service

Estimated Resident Population in 1995: 11,204
Projected population size in 2001: 10,577

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	4	6	8.8	2.9
Alcoholism	0	78	4.2	18.1
Cancers	0	3	8.0	1.3
Stroke	5	9	7.4	3.7
Other alcohol-related diseases	1	38	3.8	7.8
Road injuries	8	30	8.0	13.2
Falls	1	77	10.4	43.9
Suicide	2	3	2.3	0.4
Assaults	0	46	2.5	6.3
Other alcohol-related injuries	2	12	3.8	2.5
Total	23	302	6.1	100.0

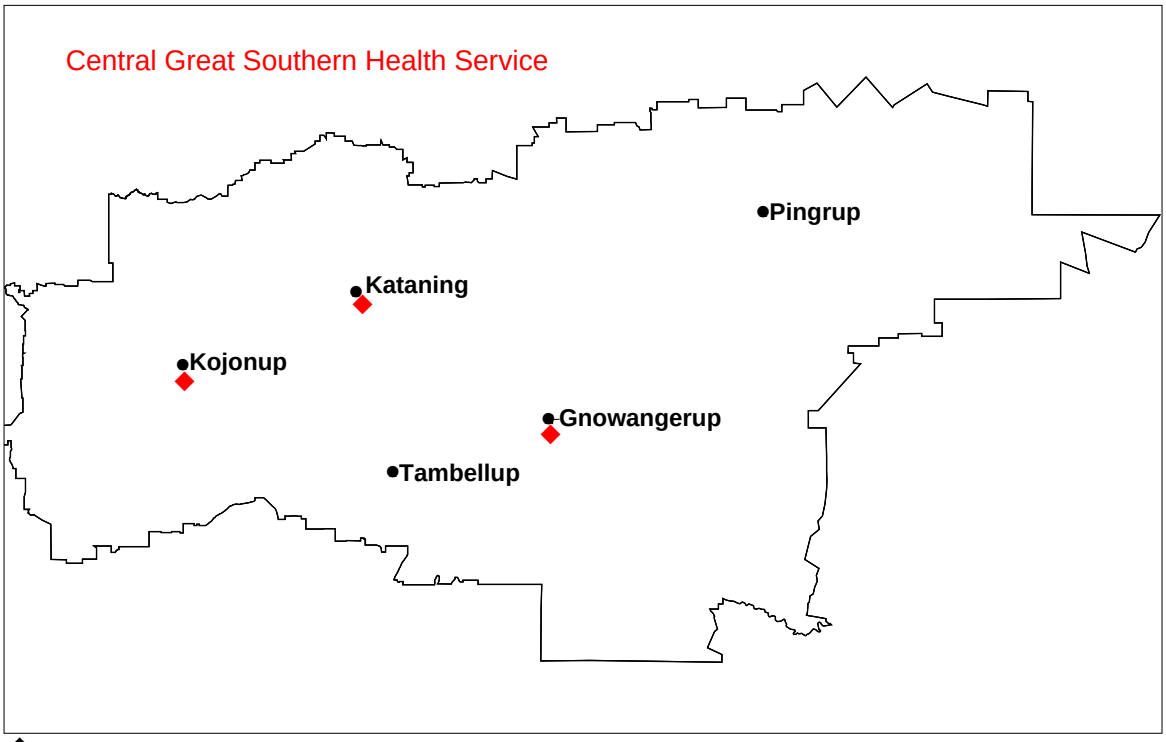
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Central Great Southern Health Service was 1 person per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Central Great Southern Health Service (16 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Central Great Southern Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Central Great Southern Health Service was $268,547[1] per year, equivalent to $24 per head of population.
- The average number of alcohol-caused hospital admissions in the Central Great Southern Health Service was 100 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Central Great Southern Health Service (883 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Central Great Southern Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Central Wheatbelt Health Service

Estimated Resident Population in 1995: 7,140
Projected population size in 2001: 6,996

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	6	1	35.0	4.0
Alcoholism	0	37	4.1	17.6
Cancers	0	2	6.0	1.4
Stroke	3	5	6.6	3.8
Other alcohol-related diseases	1	7	7.6	6.1
Road injuries	6	19	3.2	6.9
Falls	2	64	7.1	52.1
Suicide	1	2	5.5	1.3
Assaults	0	15	1.5	2.6
Other alcohol-related injuries	1	11	3.4	4.2
Total	20	163	5.3	100.0

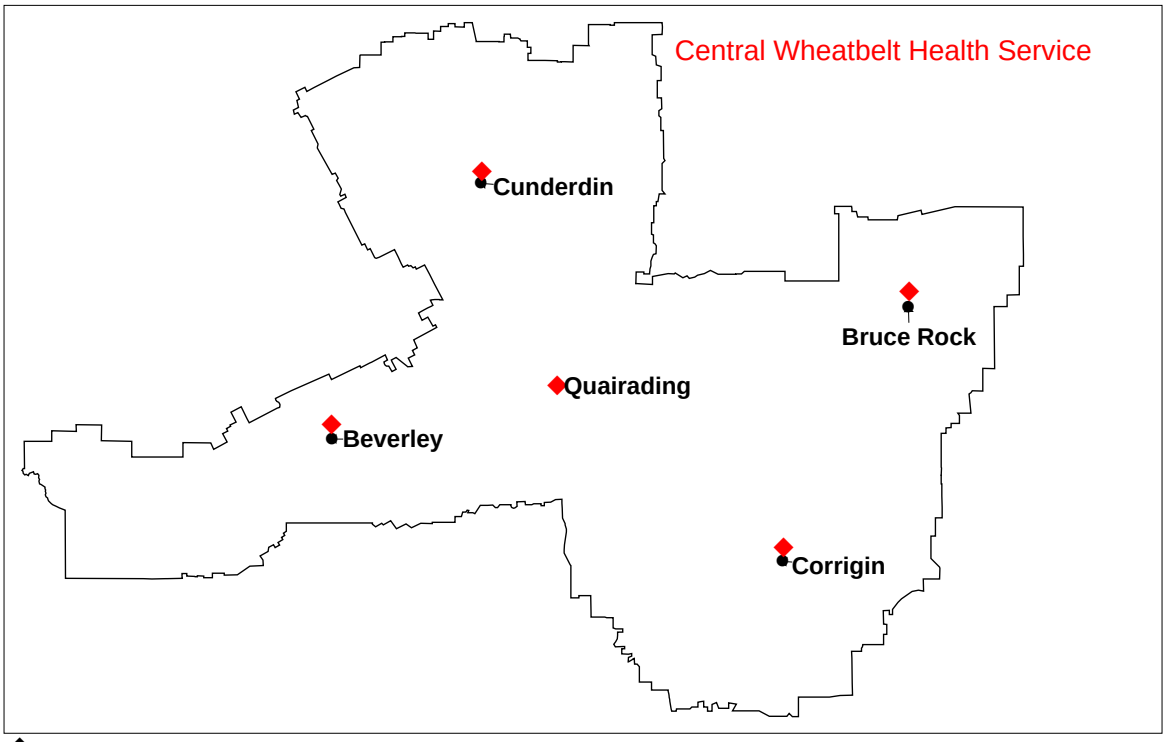
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Central Wheatbelt Health Service was 1 person per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Central Wheatbelt Health Service (22 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Central Wheatbelt Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Central Wheatbelt Health Service was $127,747[1] per year, equivalent to $18 per head of population.
- The average number of alcohol-caused hospital admissions in the Central Wheatbelt Health Service was 54 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Central Wheatbelt Health Service (754 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Central Wheatbelt Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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East Kimberley Health Service

Estimated Resident Population in 1995: 9,120
Projected population size in 2001: 10,332

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	7	17	5.4	3.3
Alcoholism	16	160	3.0	17.3
Cancers	1	0	0	0.1
Stroke	6	7	10.3	2.6
Other alcohol-related diseases	9	68	3.0	7.5
Road injuries	10	61	5.2	11.5
Falls	0	70	4.4	11.1
Suicide	1	6	3.3	0.7
Assaults	7	314	3.3	38.2
Other alcohol-related injuries	8	26	8.2	7.7
Total	65	729	3.8	100.0

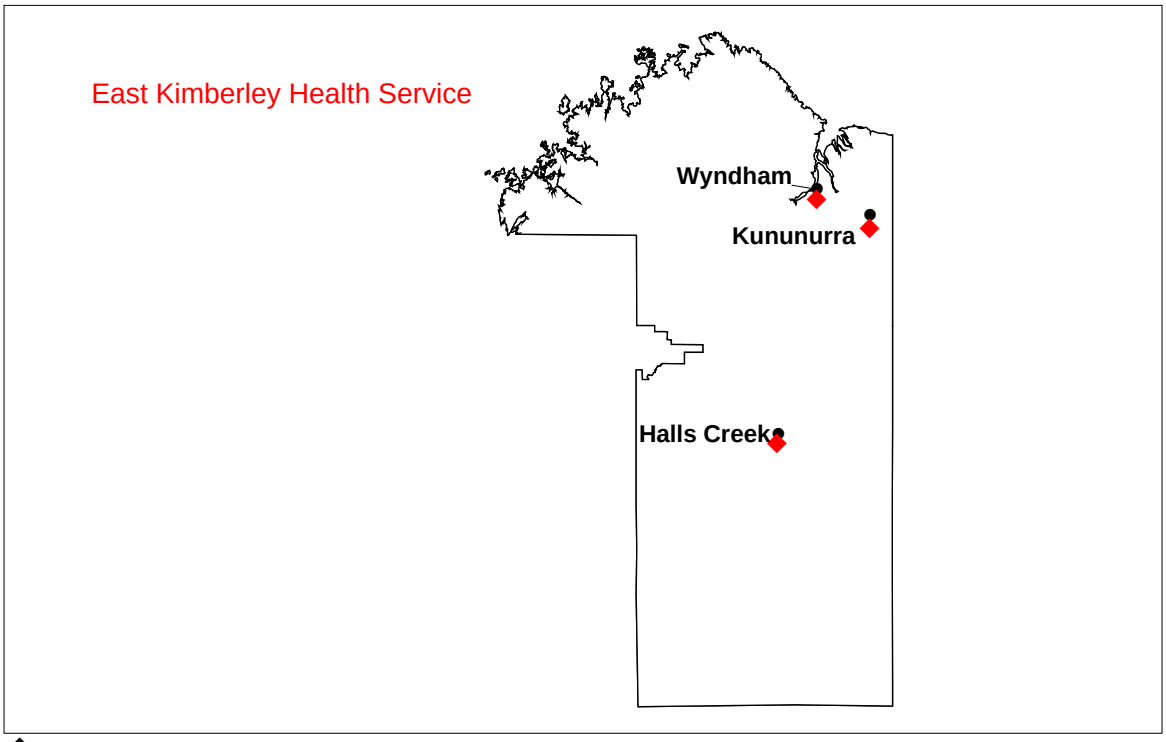
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the East Kimberley Health Service was 5 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the East Kimberley Health Service (63 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the East Kimberley Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the East Kimberley Health Service was $402,747[1] per year, equivalent to $46 per head of population.
- The average number of alcohol-caused hospital admissions in the East Kimberley Health Service was 243 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in East Kimberley Health Service (2763 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the East Kimberley Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

East Pilbara Health Service

Estimated Resident Population in 1995: 20,833
Projected population size in 2001: 22,515

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	12	20	6.2	4.0
Alcoholism	11	84	5.0	13.6
Cancers	2	6	7.2	1.4
Stroke	4	10	13.8	4.4
Other alcohol-related diseases	6	52	3.4	5.7
Road injuries	20	52	5.3	8.7
Falls	2	90	4.8	14.0
Suicide	3	8	3.8	1.0
Assaults	6	308	4.3	42.3
Other alcohol-related injuries	0	31	5.0	5.0
Total	66	661	4.7	100.0

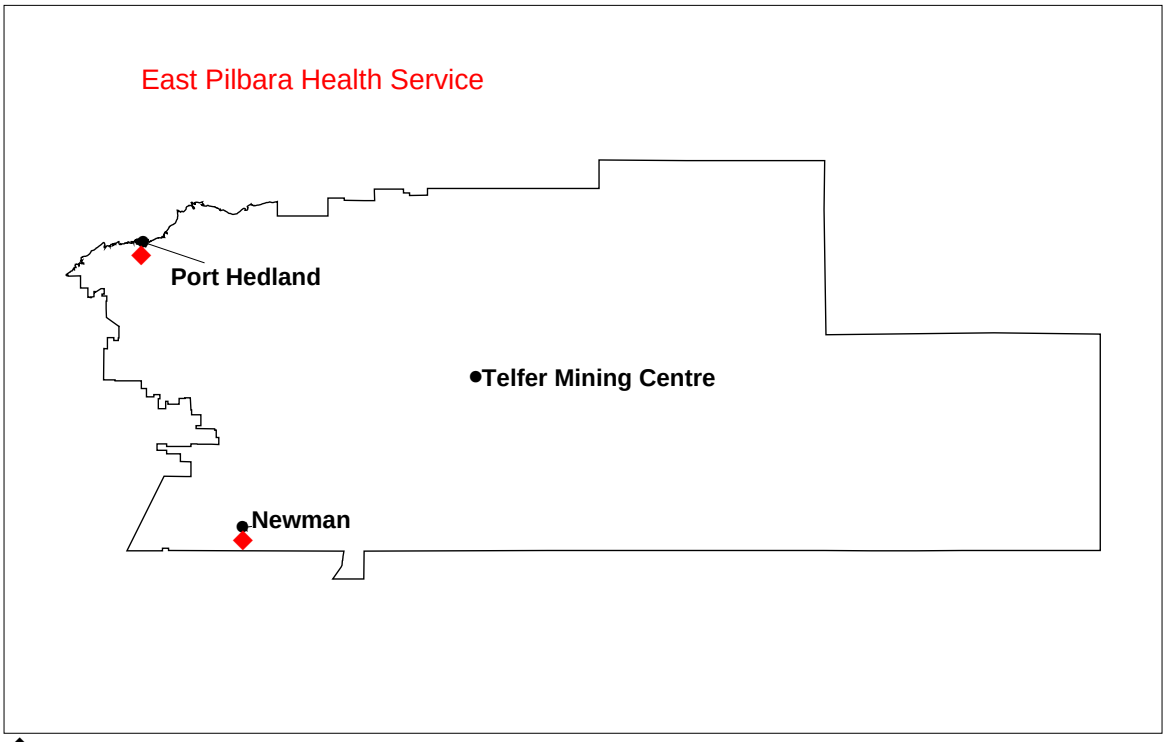
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the East Pilbara Health Service was 5 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the East Pilbara Health Service (24 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the East Pilbara Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the East Pilbara Health Service was $458,040[1] per year, equivalent to $22 per head of population.
- The average number of alcohol-caused hospital admissions in the East Pilbara Health Service was 220 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in East Pilbara Health Service (1040 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the East Pilbara Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Eastern Wheatbelt Health Service

Estimated Resident Population in 1995: 12,988
Projected population size in 2001: 12,442

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	5	13	6.7	5.3
Alcoholism	1	67	5.2	21.5
Cancers	2	2	10.5	1.3
Stroke	4	9	7.1	3.9
Other alcohol-related diseases	3	33	3.3	6.7
Road injuries	10	46	3.6	10.3
Falls	1	92	7.2	40.4
Suicide	2	5	3.6	1.1
Assaults	1	29	2.7	4.8
Other alcohol-related injuries	0	17	4.5	4.7
Total	29	313	5.2	100.0

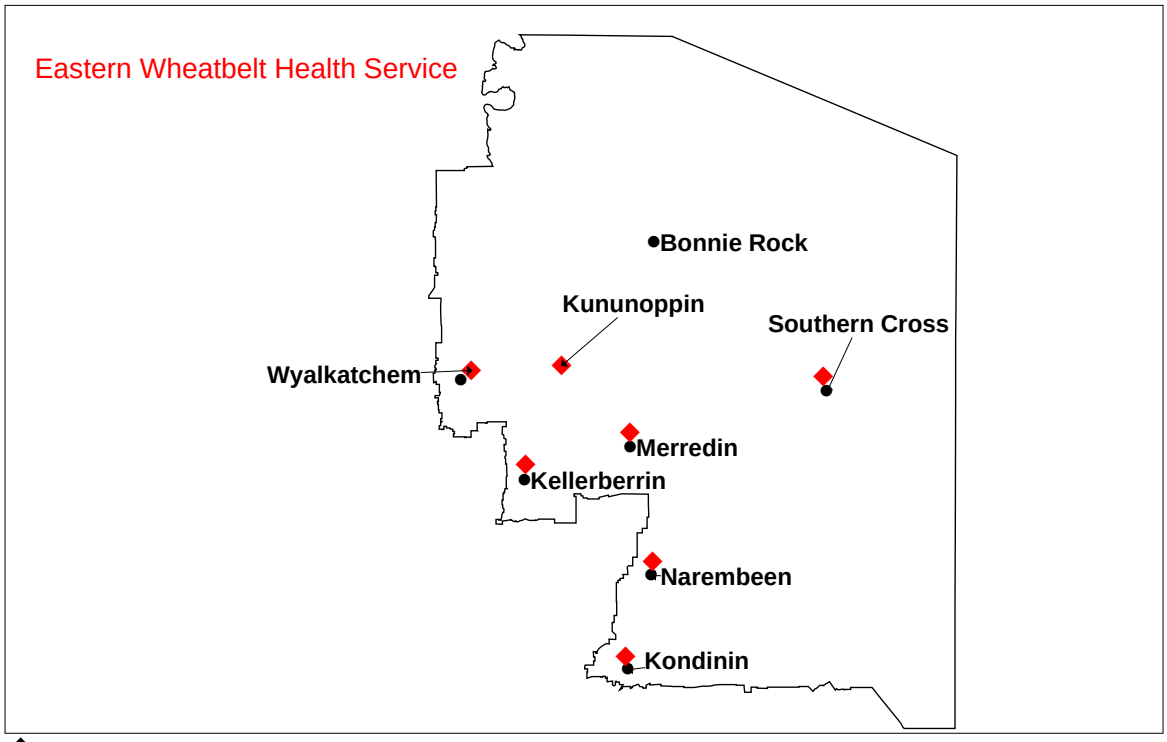
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Eastern Wheatbelt Health Service was 2 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Eastern Wheatbelt Health Service (17 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Eastern Wheatbelt Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Eastern Wheatbelt Health Service was $238,920[1] per year, equivalent to $18 per head of population.
- The average number of alcohol-caused hospital admissions in the Eastern Wheatbelt Health Service was 104 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Eastern Wheatbelt Health Service (793 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Eastern Wheatbelt Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Fremantle Health Service

Estimated Resident Population in 1995: 180,382
Projected population size in 2001: 189,079

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	108	76	6.7	3.4
Alcoholism	23	311	6.4	13.2
Cancers	28	34	7.0	1.6
Stroke	75	98	12.9	8.4
Other alcohol-related diseases	29	157	4.3	4.5
Road injuries	45	173	6.8	7.8
Falls	24	724	11.1	53.1
Suicide	22	61	4.5	1.8
Assaults	7	173	2.6	2.9
Other alcohol-related injuries	27	78	6.6	3.4
Total	388	1,885	8.1	100.0

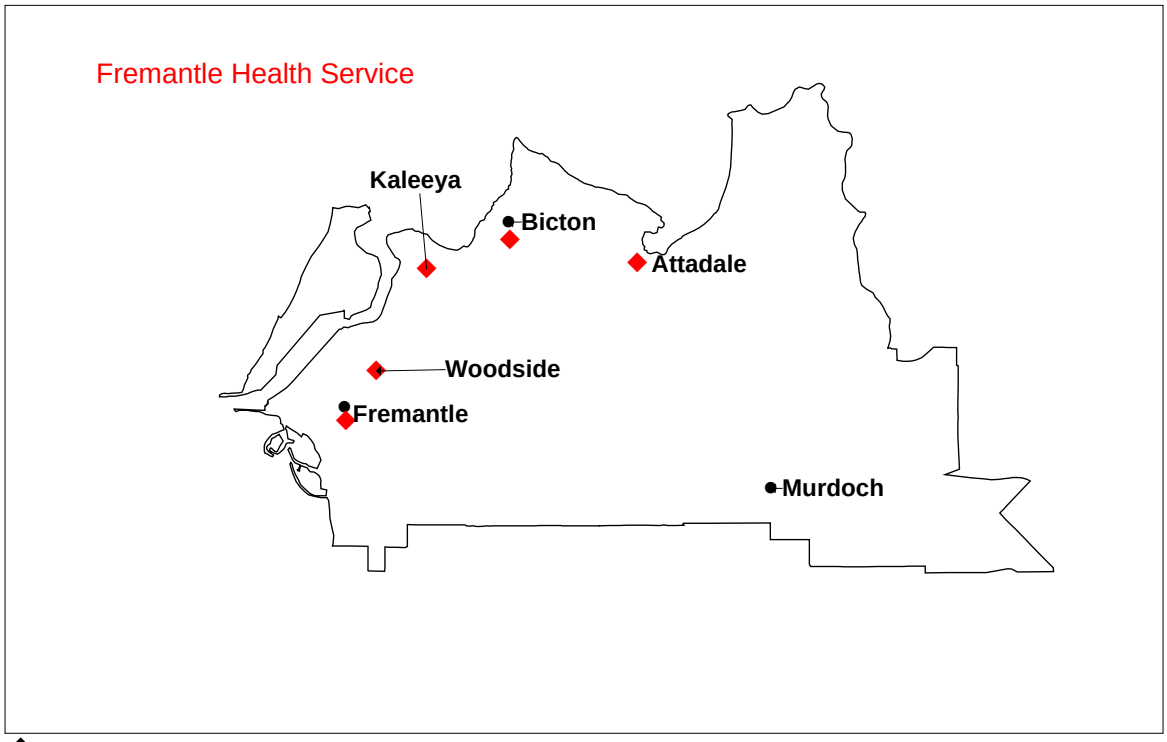
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Fremantle Health Service was 32 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Fremantle Health Service (20 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Fremantle Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Fremantle Health Service was $2,227,573[1] per year, equivalent to $13 per head of population.
- The average number of alcohol-caused hospital admissions in the Fremantle Health Service was 628 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Fremantle Health Service (353 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Fremantle Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Gascoyne Health Service

Estimated Resident Population in 1995: 10,210
Projected population size in 2001: 10,754

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	4	10	7.0	3.4
Alcoholism	3	122	3.9	23.7
Cancers	2	2	13.5	1.3
Stroke	5	8	9.8	3.8
Other alcohol-related diseases	4	84	4.4	18.3
Road injuries	8	24	5.3	6.3
Falls	1	82	5.6	22.8
Suicide	2	5	2.2	0.5
Assaults	3	110	2.7	14.9
Other alcohol-related injuries	7	9	11.0	4.9
Total	39	456	4.4	100.0

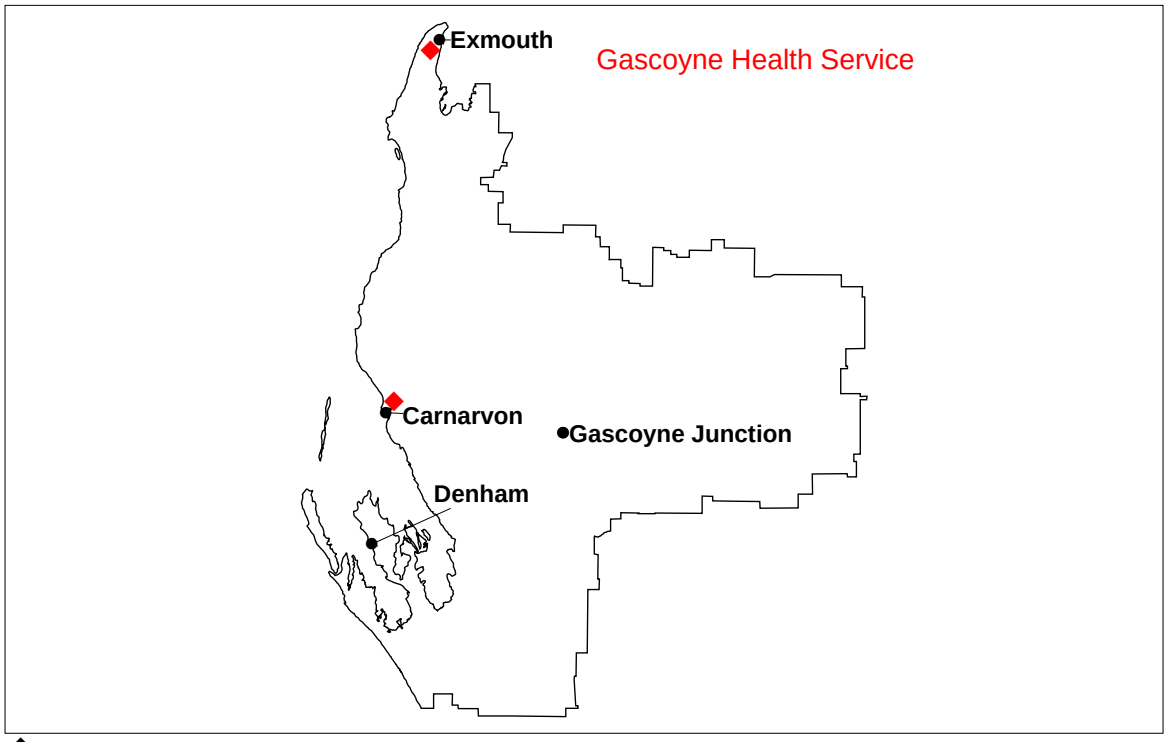
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Gascoyne Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the Gascoyne Health Service (31 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Gascoyne Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Gascoyne Health Service was $297,587[1] per year, equivalent to $29 per head of population.
- The average number of alcohol-caused hospital admissions in the Gascoyne Health Service was 152 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Gascoyne Health Service (1497 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Gascoyne Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Geraldton Health Service

Estimated Resident Population in 1995: 32,022
Projected population size in 2001: 35,786

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	21	17	11.6	5.3
Alcoholism	4	211	3.4	19.4
Cancers	7	6	6.5	1.1
Stroke	12	16	12.1	5.2
Other alcohol-related diseases	2	79	3.1	6.6
Road injuries	15	60	4.3	6.9
Falls	7	179	8.2	39.4
Suicide	5	20	2.5	1.3
Assaults	2	130	3.4	11.8
Other alcohol-related injuries	5	24	4.6	3.0
Total	80	742	5.0	100.0

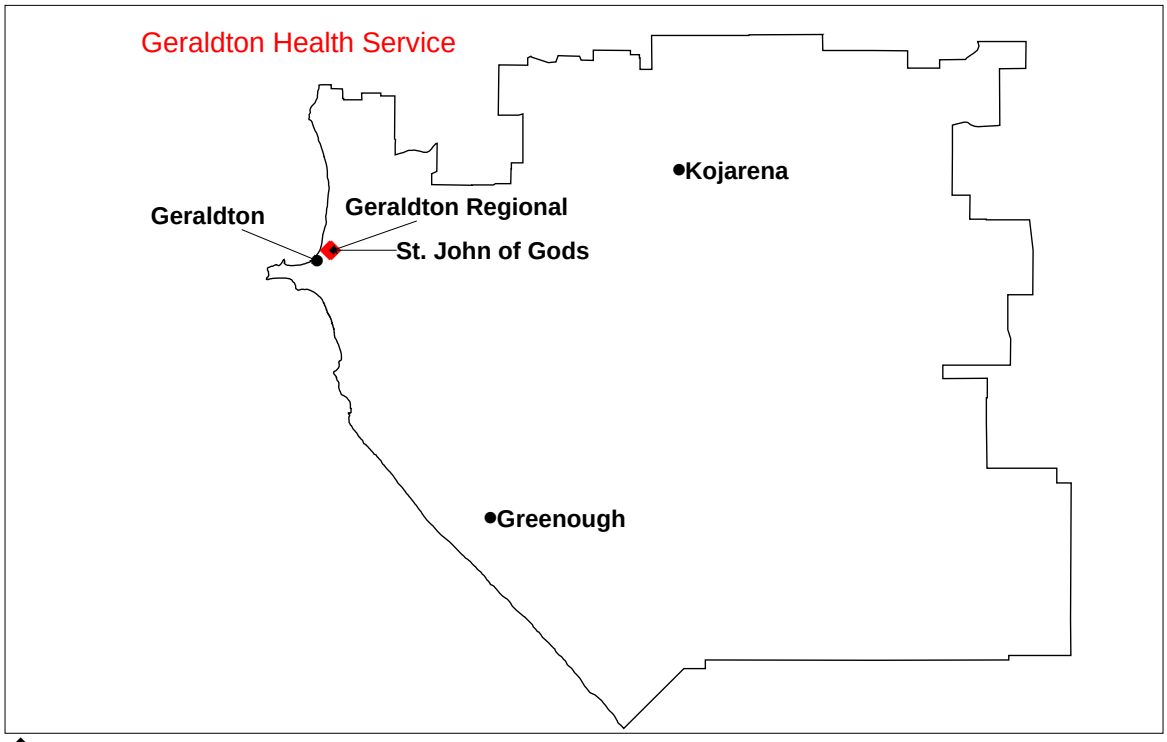
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Geraldton Health Service was 6 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Geraldton Health Service (24 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Geraldton Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Geraldton Health Service was $544,573[1] per year, equivalent to $17 per head of population.
- The average number of alcohol-caused hospital admissions in the Geraldton Health Service was 247 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Geraldton Health Service (788 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Geraldton Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Harvey-Yarloop Health Service

Estimated Resident Population in 1995: 15,035
Projected population size in 2001: 17,055

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	1	4	6.0	1.5
Alcoholism	4	38	4.0	9.3
Cancers	1	1	6.0	0.4
Stroke	2	5	16.2	5.0
Other alcohol-related diseases	0	5	3.2	1.0
Road injuries	5	22	5.2	7.1
Falls	0	50	22.8	70.6
Suicide	0	2	4.0	0.5
Assaults	0	16	2.1	2.1
Other alcohol-related injuries	0	6	6.8	2.5
Total	13	149	10.9	100.0

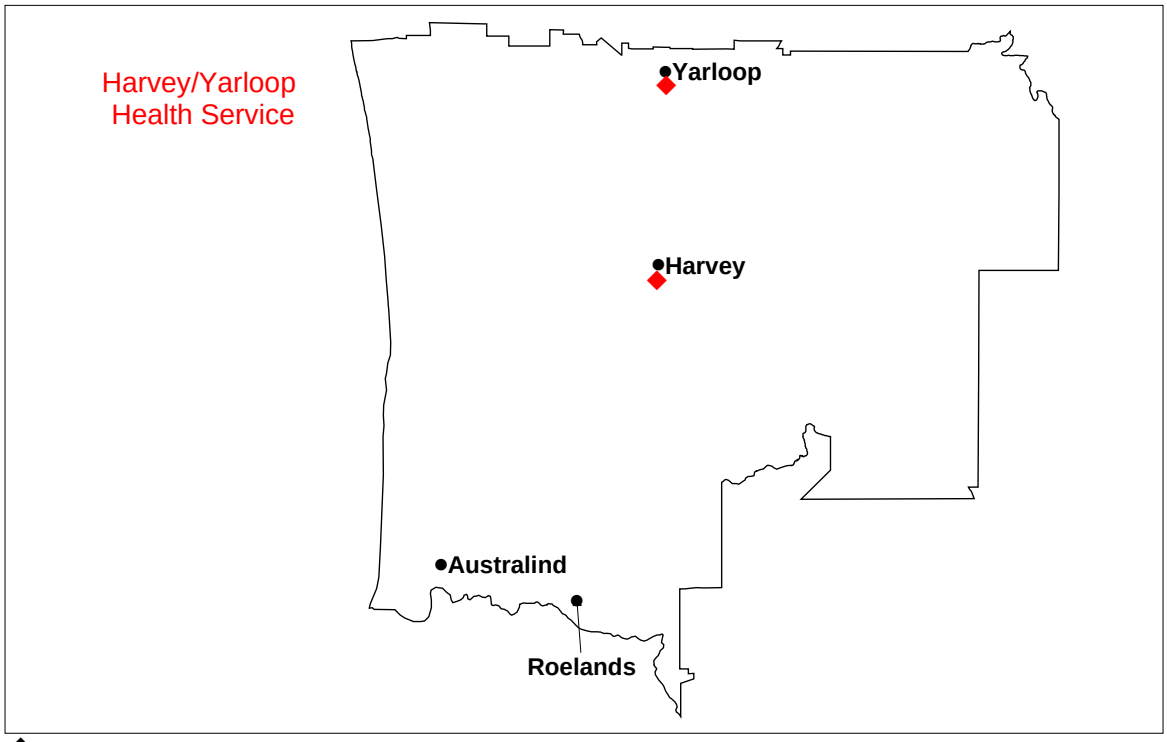
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Harvey-Yarloop Health Service was 1 person per year.
- The number of alcohol-caused deaths per head of population was significantly lower in the Harvey-Yarloop Health Service (9 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Harvey-Yarloop Health Service was significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Harvey-Yarloop Health Service was $237,160[1] per year, equivalent to $16 per head of population.
- The average number of alcohol-caused hospital admissions in the Harvey-Yarloop Health Service was 49 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Harvey-Yarloop Health Service (339 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Harvey-Yarloop Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Inner City Health Service

Estimated Resident Population in 1995: 51,173
Projected population size in 2001: 51,886

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	71	59	8.4	3.7
Alcoholism	29	409	6.2	19.1
Cancers	23	18	12.7	1.7
Stroke	70	58	14.7	6.4
Other alcohol-related diseases	28	119	5.4	4.8
Road injuries	27	105	7.6	5.9
Falls	34	637	10.8	51.3
Suicide	18	74	3.9	2.2
Assaults	10	155	2.6	3.0
Other alcohol-related injuries	20	52	5.1	2.0
Total	330	1,686	7.9	100.0

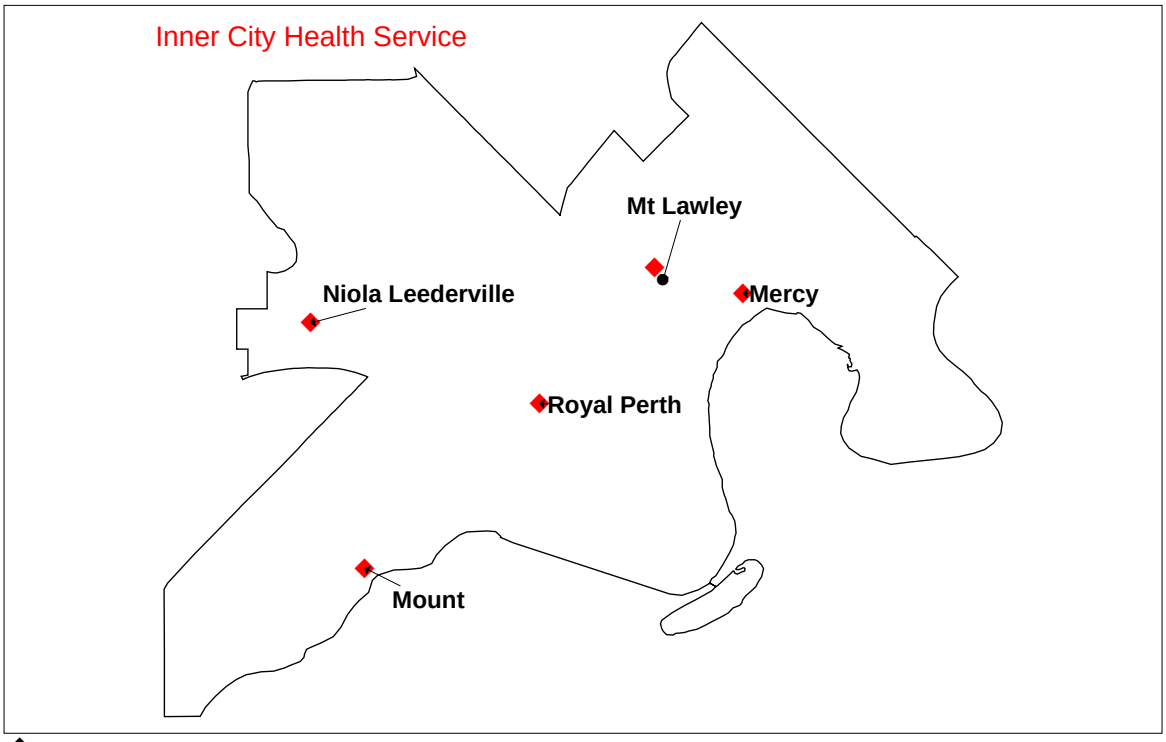
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Inner City Health Service was 27 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the Inner City Health Service (51 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Inner City Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Inner City Health Service was $1,964,307[1] per year, equivalent to $37 per head of population.
- The average number of alcohol-caused hospital admissions in the Inner City Health Service was 562 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Inner City Health Service (1072 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Inner City Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Kalamunda Health Service

Estimated Resident Population in 1995: 48,251
Projected population size in 2001: 54,477

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	12	9	18.2	4.6
Alcoholism	4	73	6.8	13.9
Cancers	5	7	8.3	1.6
Stroke	12	20	11.4	6.4
Other alcohol-related diseases	3	25	4.5	3.2
Road injuries	21	66	5.0	9.3
Falls	4	230	8.1	52.5
Suicide	7	14	5.9	2.3
Assaults	3	42	2.7	3.2
Other alcohol-related injuries	5	21	5.0	3.0
Total	76	507	7.0	100.0

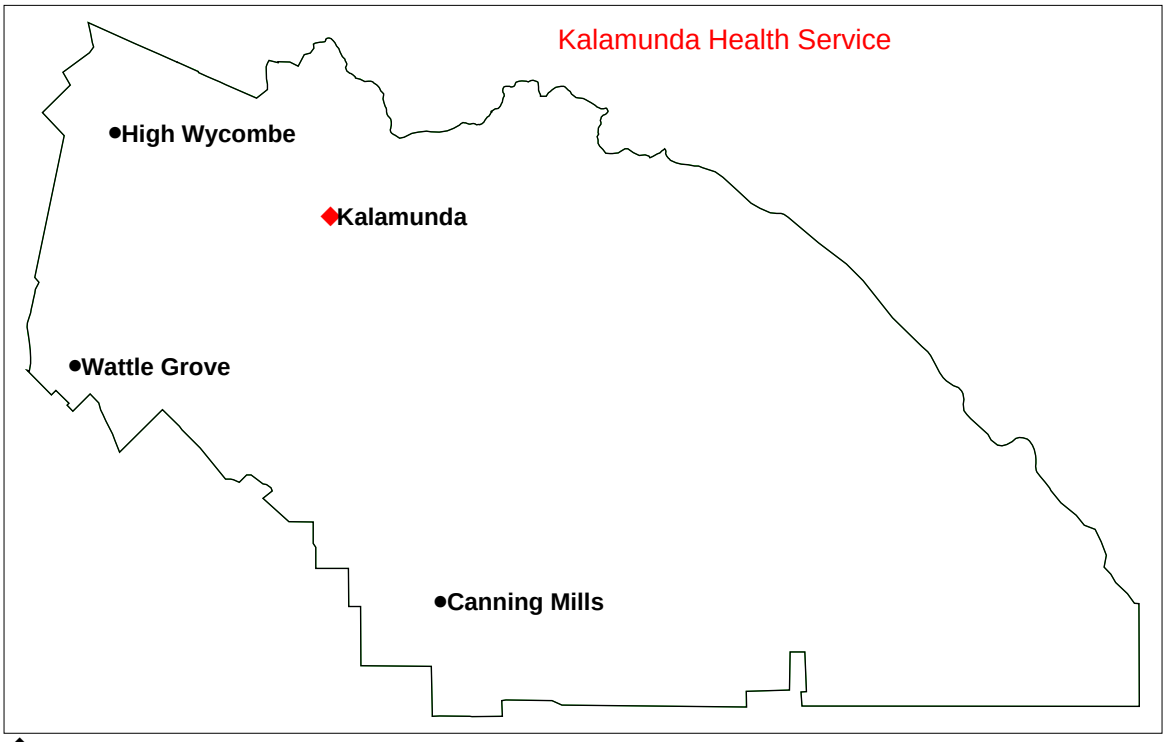
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Kalamunda Health Service was 6 people per year.
- The number of alcohol-caused deaths per head of population was significantly lower in the Kalamunda Health Service (14 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Kalamunda Health Service was significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Kalamunda Health Service was $520,960[1] per year, equivalent to $11 per head of population.
- The average number of alcohol-caused hospital admissions in the Kalamunda Health Service was 169 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Kalamunda Health Service (350 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Kalamunda Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Lower Great Southern Health Service

Estimated Resident Population in 1995: 39,312
Projected population size in 2001: 43,181

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	12	6	9.3	1.6
Alcoholism	4	115	4.1	13.3
Cancers	6	7	8.7	1.7
Stroke	20	32	10.3	9.4
Other alcohol-related diseases	4	63	2.9	5.1
Road injuries	17	67	5.3	10.2
Falls	6	209	8.6	51.5
Suicide	5	15	3.1	1.3
Assaults	2	62	1.9	3.4
Other alcohol-related injuries	11	20	4.5	2.5
Total	87	596	5.9	100.0

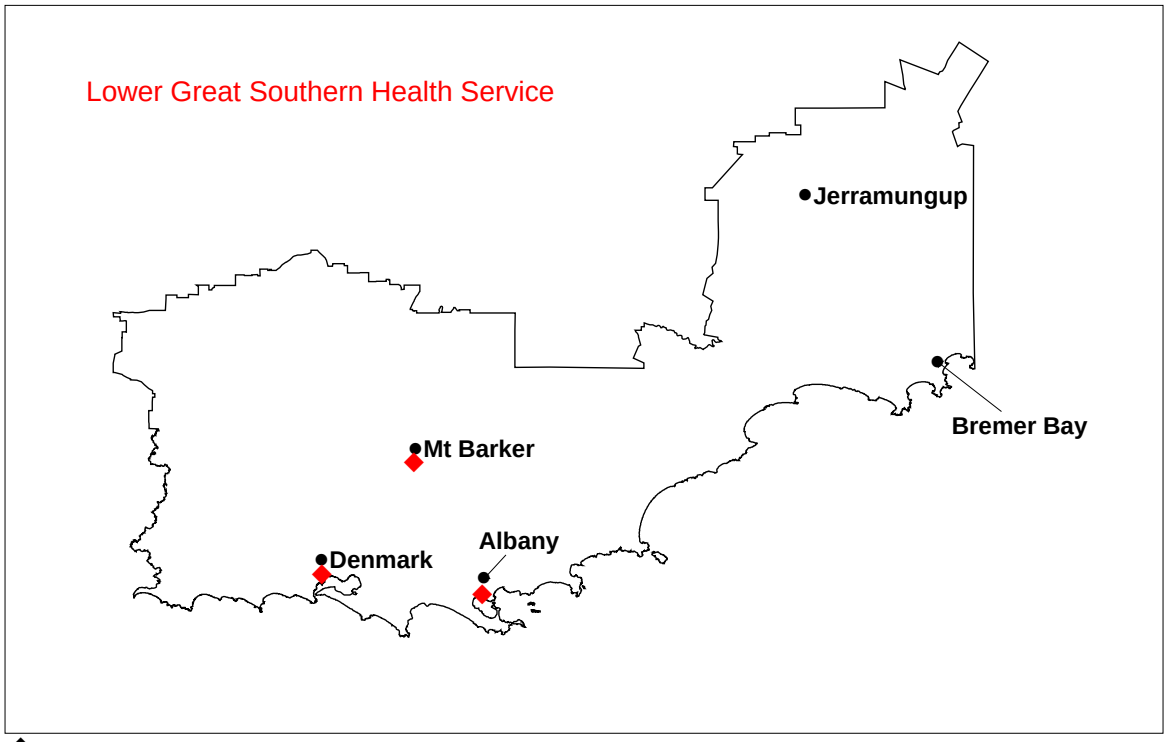
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Lower Great Southern Health Service was 7 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Lower Great Southern Health Service (20 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Lower Great Southern Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Lower Great Southern Health Service was $514,800[1] per year, equivalent to $13 per head of population.
- The average number of alcohol-caused hospital admissions in the Lower Great Southern Health Service was 198 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Lower Great Southern Health Service (514 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Lower Great Southern Health Service was not significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Lower North Metropolitan Health Service

Estimated Resident Population in 1995: 244,897
Projected population size in 2001: 244,521

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	102	125	9.6	4.4
Alcoholism	29	435	7.3	11.7
Cancers	39	41	7.6	1.1
Stroke	116	139	14.6	7.5
Other alcohol-related diseases	33	207	5.6	4.3
Road injuries	72	245	7.7	6.9
Falls	48	1,228	12.8	58.0
Suicide	39	92	5.1	1.7
Assaults	16	235	3.3	2.9
Other alcohol-related injuries	31	99	4.2	1.5
Total	525	2,846	9.5	100.0

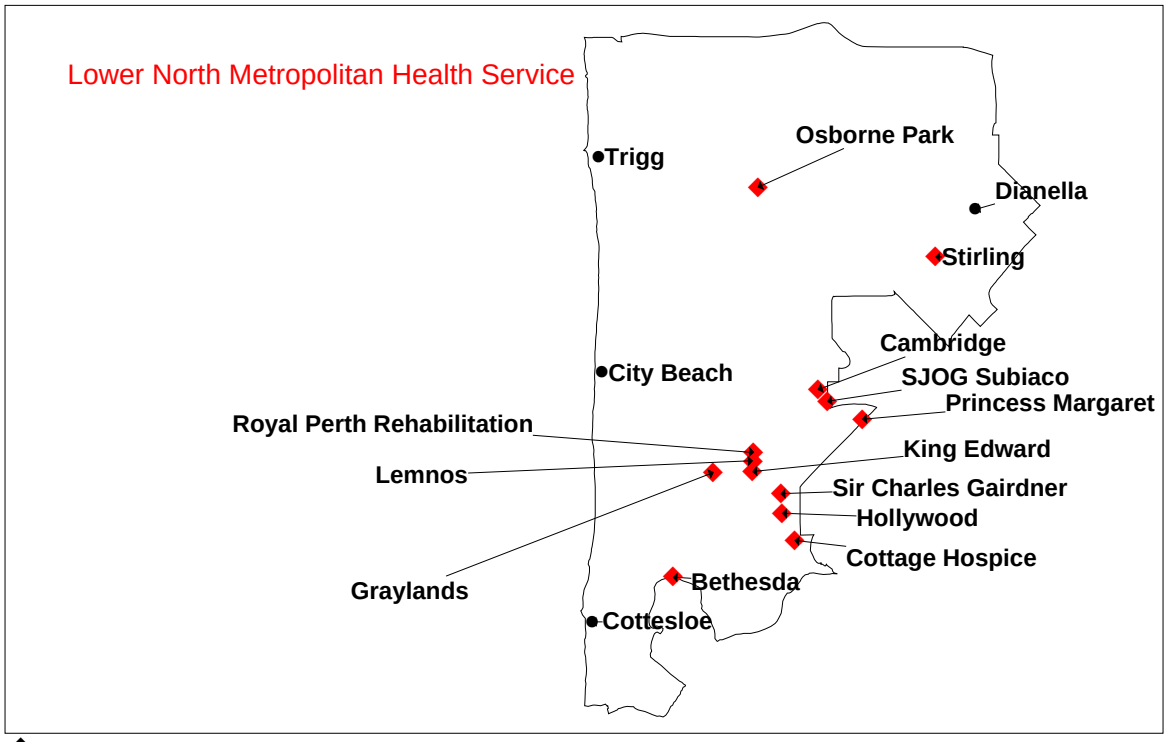
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Lower North Metropolitan Health Service was 43 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Lower North Metropolitan Health Service (18 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Lower North Metropolitan Health Service was significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Lower North Metropolitan Health Service was $3,983,907[1] per year, equivalent to $16 per head of population.
- The average number of alcohol-caused hospital admissions in the Lower North Metropolitan Health Service was 948 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Lower North Metropolitan Health Service (392 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Lower North Metropolitan Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Midwest Health Service

Estimated Resident Population in 1995: 13,503
Projected population size in 2001: 14,048

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	14	6	6.8	3.0
Alcoholism	1	77	4.4	24.4
Cancers	2	2	13.5	2.0
Stroke	3	9	12.4	8.2
Other alcohol-related diseases	4	30	3.6	7.9
Road injuries	7	22	4.0	6.3
Falls	2	70	5.9	29.9
Suicide	2	3	6.7	1.5
Assaults	3	32	5.8	13.6
Other alcohol-related injuries	1	12	3.7	3.2
Total	39	263	5.2	100.0

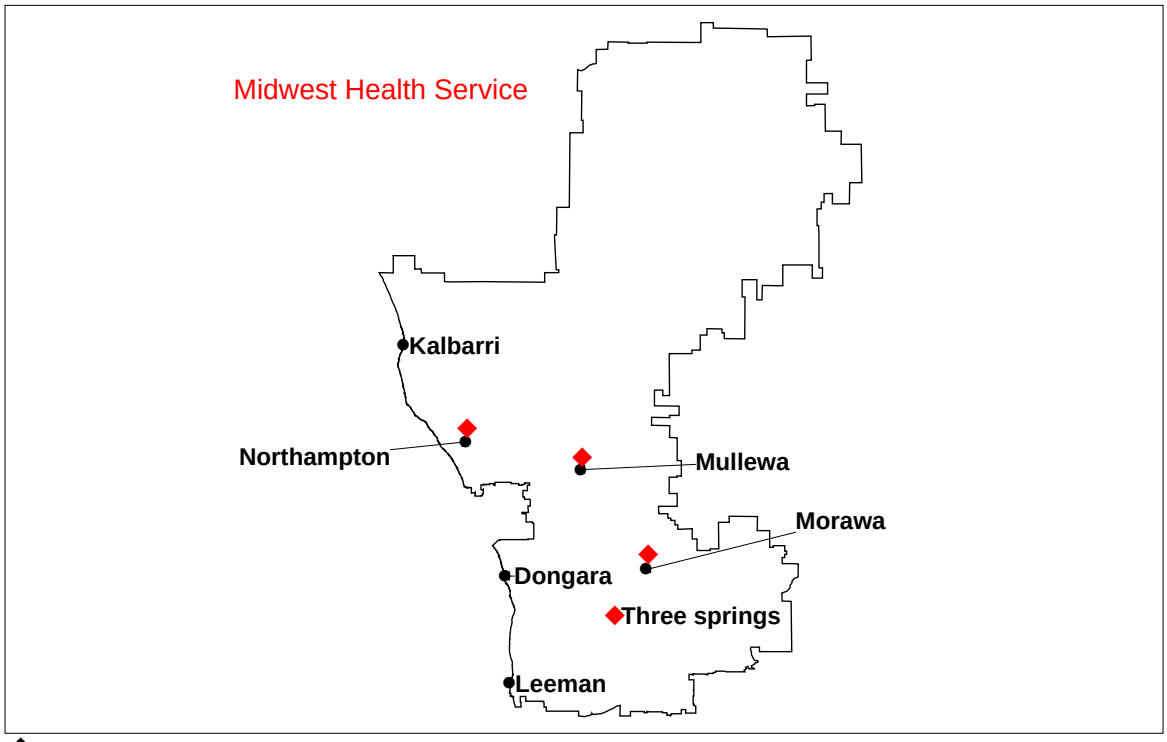
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Midwest Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Midwest Health Service (24 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Midwest Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Midwest Health Service was $201,227[1] per year, equivalent to $15 per head of population.
- The average number of alcohol-caused hospital admissions in the Midwest Health Service was 87 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Midwest Health Service (647 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Midwest Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Murchison Health Service

Estimated Resident Population in 1995: 4,386
Projected population size in 2001: 4,760

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	2	0	0.0	0.0
Alcoholism	2	10	4.4	8.4
Cancers	0	0	0.0	1.1
Stroke	1	3	5.7	3.3
Other alcohol-related diseases	1	14	5.3	14.2
Road injuries	7	16	5.0	15.3
Falls	1	27	5.1	26.4
Suicide	1	2	3.0	1.1
Assaults	1	31	2.7	16.1
Other alcohol-related injuries	1	8	9.1	14.0
Total	17	111	4.7	100.0

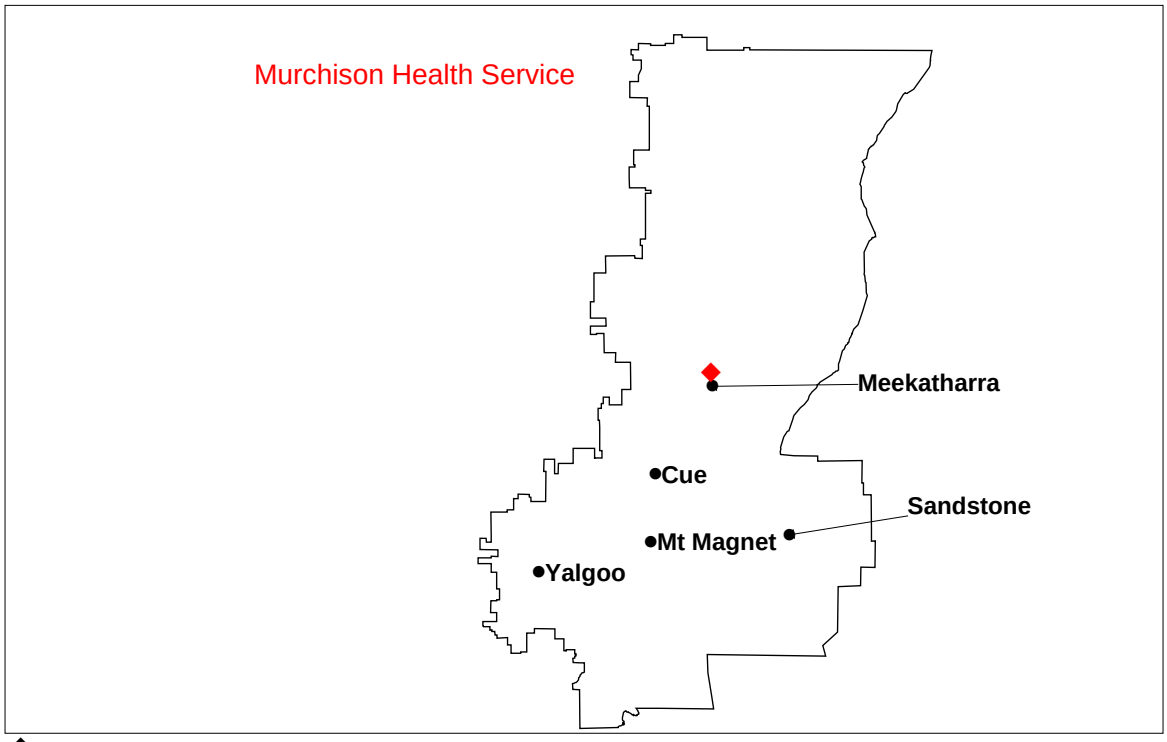
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Murchison Health Service was 1 person per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Murchison Health Service (33 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Murchison Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Murchison Health Service was $76,560[1] per year, equivalent to $18 per head of population.
- The average number of alcohol-caused hospital admissions in the Murchison Health Service was 37 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Murchison Health Service (849 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Murchison Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Northern Goldfields Health Service

Estimated Resident Population in 1995: 40,877
Projected population size in 2001: 43,187

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	33	38	10.0	5.3
Alcoholism	14	249	4.4	15.3
Cancers	6	7	11.1	1.1
Stroke	14	13	18.6	3.4
Other alcohol-related diseases	11	178	4.3	10.6
Road injuries	32	150	6.6	13.8
Falls	6	237	8.6	28.4
Suicide	8	24	4.3	1.4
Assaults	14	311	3.2	13.9
Other alcohol-related injuries	6	70	7.0	6.9
Total	144	1,277	5.6	100.0

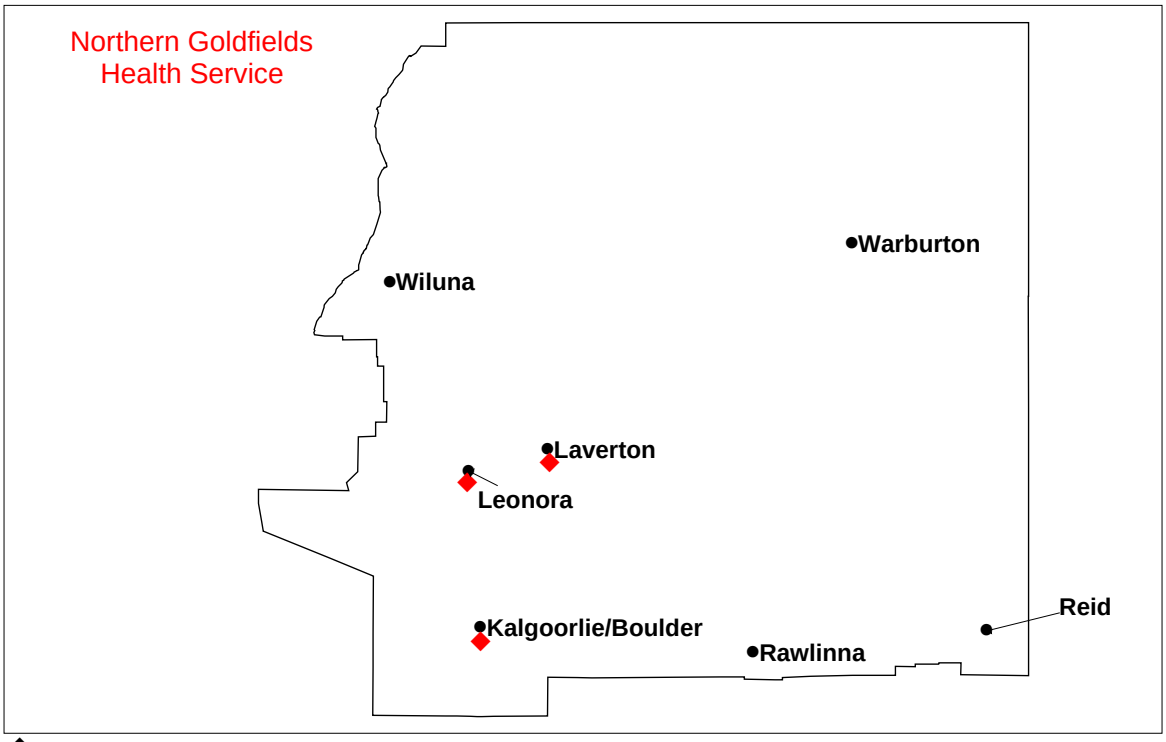
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Northern Goldfields Health Service was 12 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the Northern Goldfields Health Service (32 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Northern Goldfields Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Northern Goldfields Health Service was $1,052,480[1] per year, equivalent to $26 per head of population.
- The average number of alcohol-caused hospital admissions in the Northern Goldfields Health Service was 425 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Northern Goldfields Health Service (1068 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Northern Goldfields Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Peel Health Service

Estimated Resident Population in 1995: 50,640
Projected population size in 2001: 64,263

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	17	30	8.3	4.7
Alcoholism	5	143	4.4	11.8
Cancers	9	13	7.4	1.8
Stroke	22	45	10.8	9.1
Other alcohol-related diseases	9	53	5.7	5.6
Road injuries	24	62	7.2	8.3
Falls	6	245	11.6	53.4
Suicide	7	15	4.0	1.1
Assaults	2	58	2.2	2.4
Other alcohol-related injuries	4	25	3.7	1.7
Total	105	689	7.7	100.0

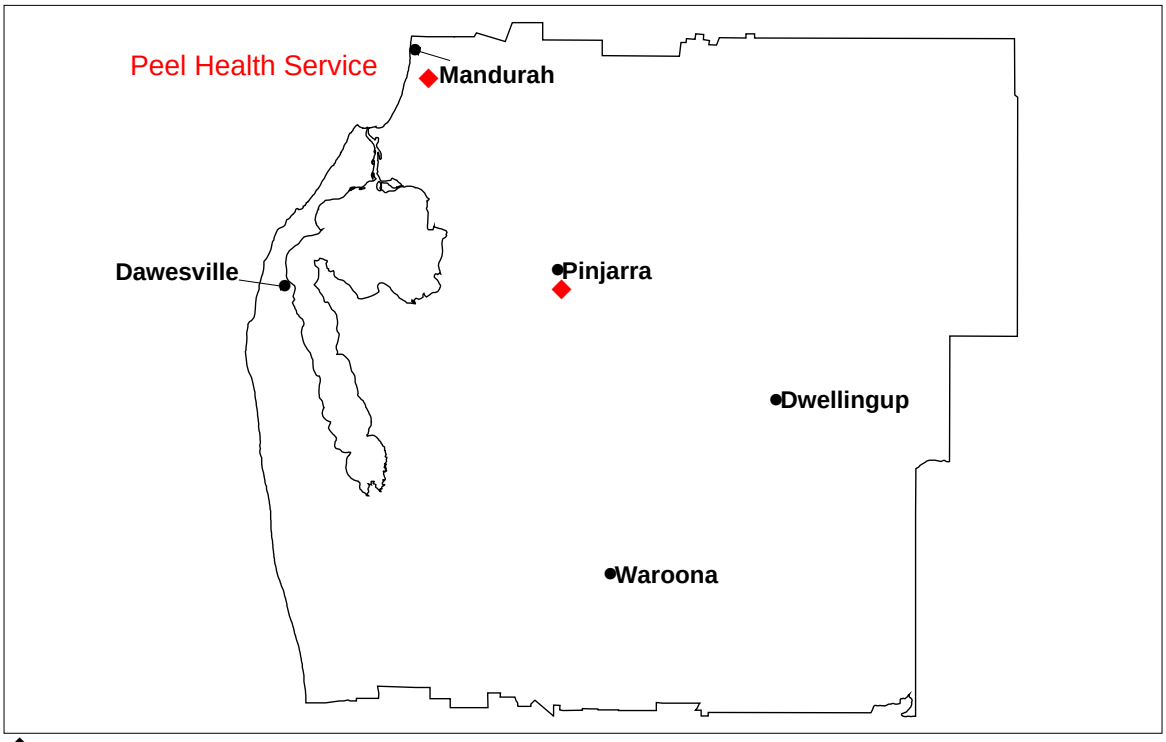
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Peel Health Service was 8 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Peel Health Service (24 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Peel Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Peel Health Service was $781,293[1] per year, equivalent to $16 per head of population.
- The average number of alcohol-caused hospital admissions in the Peel Health Service was 229 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly lower in Peel Health Service (474 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Peel Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Rockingham/Kwinana Health Service

Estimated Resident Population in 1995: 77,462
Projected population size in 2001: 97,732

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	37	28	8.0	3.7
Alcoholism	4	117	6.0	11.7
Cancers	10	14	6.8	1.6
Stroke	24	42	10.2	7.2
Other alcohol-related diseases	4	81	5.0	6.8
Road injuries	26	102	6.0	10.2
Falls	7	291	10.0	48.7
Suicide	10	32	4.7	2.5
Assaults	2	103	2.6	4.5
Other alcohol-related injuries	6	38	4.6	3.0
Total	130	848	7.0	100.0

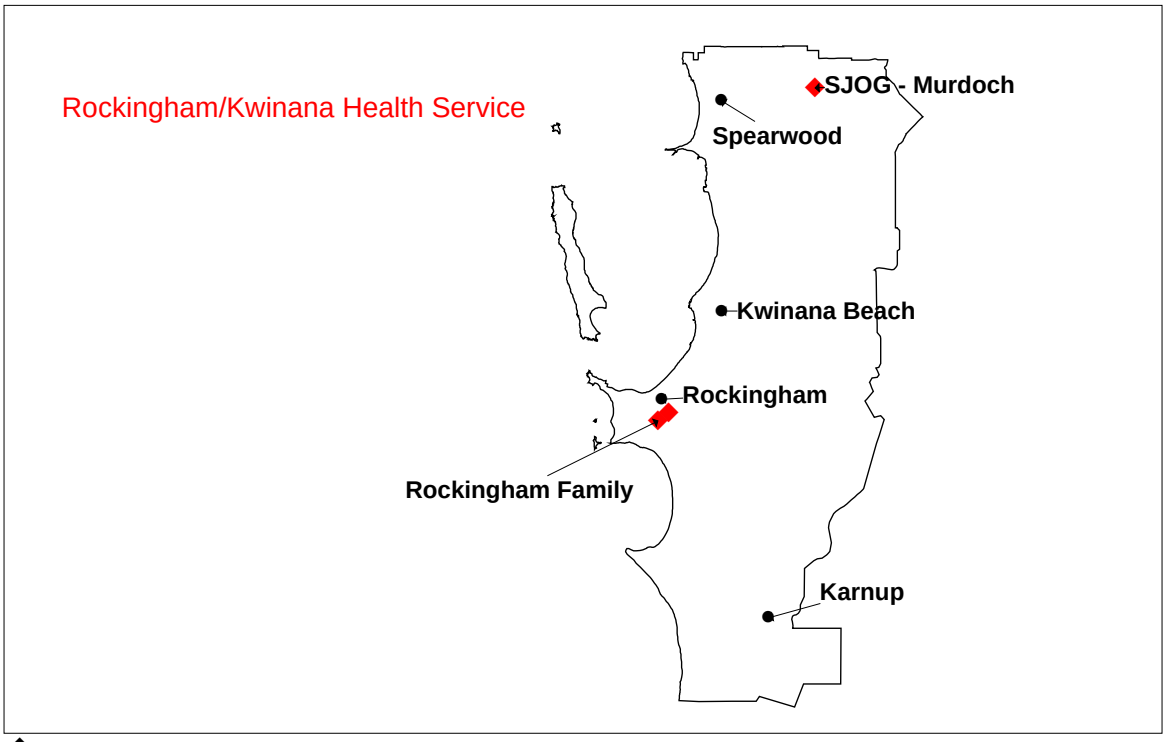
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Rockingham/Kwinana Health Service was 10 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Rockingham/Kwinana Health Service (18 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Rockingham/Kwinana Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Rockingham/Kwinana Health Service was $872,813[1] per year, equivalent to $12 per head of population.
- The average number of alcohol-caused hospital admissions in the Rockingham/Kwinana Health Service was 282 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Rockingham/Kwinana Health Service (384 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Rockingham/Kwinana Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

South East Coastal Health Service

Estimated Resident Population in 1995: 14,951
Projected population size in 2001: 15,656

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	4	2	7.0	0.9
Alcoholism	2	46	4.5	13.8
Cancers	1	2	8.0	1.1
Stroke	4	11	19.5	14.4
Other alcohol-related diseases	0	30	4.4	8.9
Road injuries	8	41	3.5	9.6
Falls	1	86	7.4	42.4
Suicide	3	5	1.8	0.6
Assaults	2	47	1.5	4.8
Other alcohol-related injuries	2	20	2.7	3.5
Total	27	290	5.2	100.0

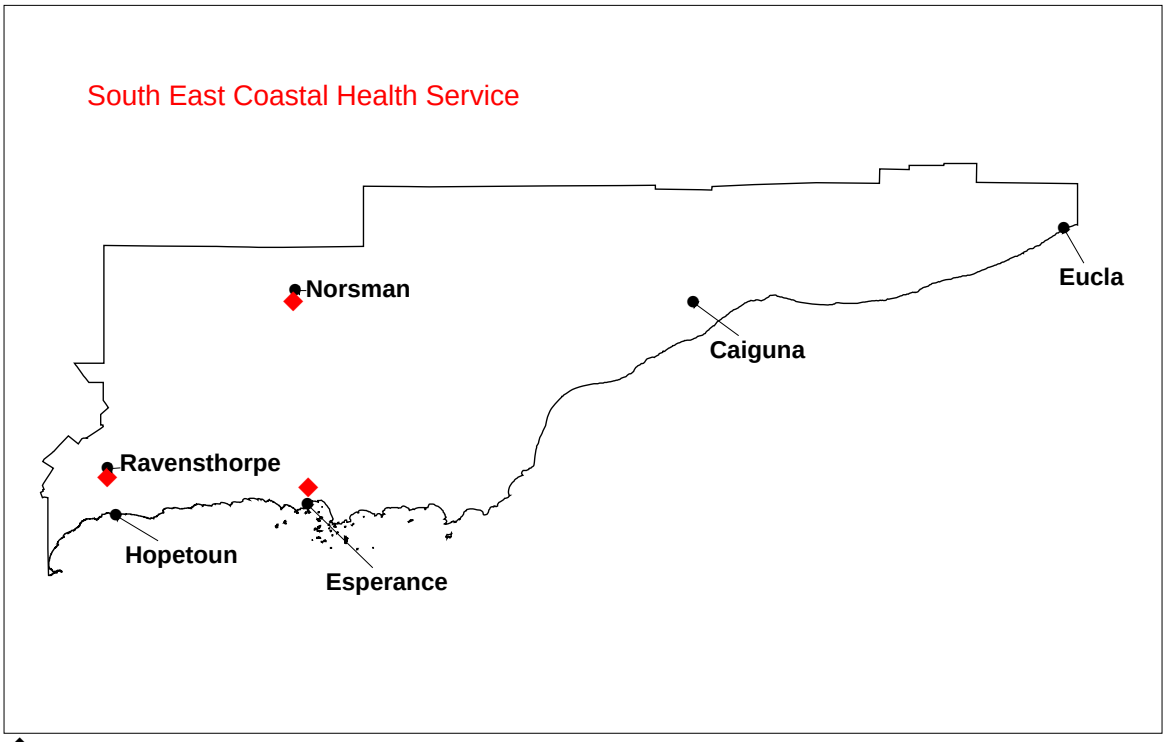
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the South East Coastal Health Service was 2 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the South East Coastal Health Service (16 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the South East Coastal Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the South East Coastal Health Service was $219,707[1] per year, equivalent to $15 per head of population.
- The average number of alcohol-caused hospital admissions in the South East Coastal Health Service was 96 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in South East Coastal Health Service (657 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the South East Coastal Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Swan District Health Service

Estimated Resident Population in 1995: 160,010
Projected population size in 2001: 185,512

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	62	55	8.3	4.0
Alcoholism	14	233	6.6	13.7
Cancers	21	23	7.2	1.5
Stroke	51	78	12.6	8.7
Other alcohol-related diseases	25	136	5.3	6.4
Road injuries	56	208	5.7	10.5
Falls	15	644	7.8	44.4
Suicide	21	65	3.8	2.2
Assaults	8	210	2.8	5.2
Other alcohol-related injuries	14	80	4.9	3.5
Total	287	1,732	6.5	100.0

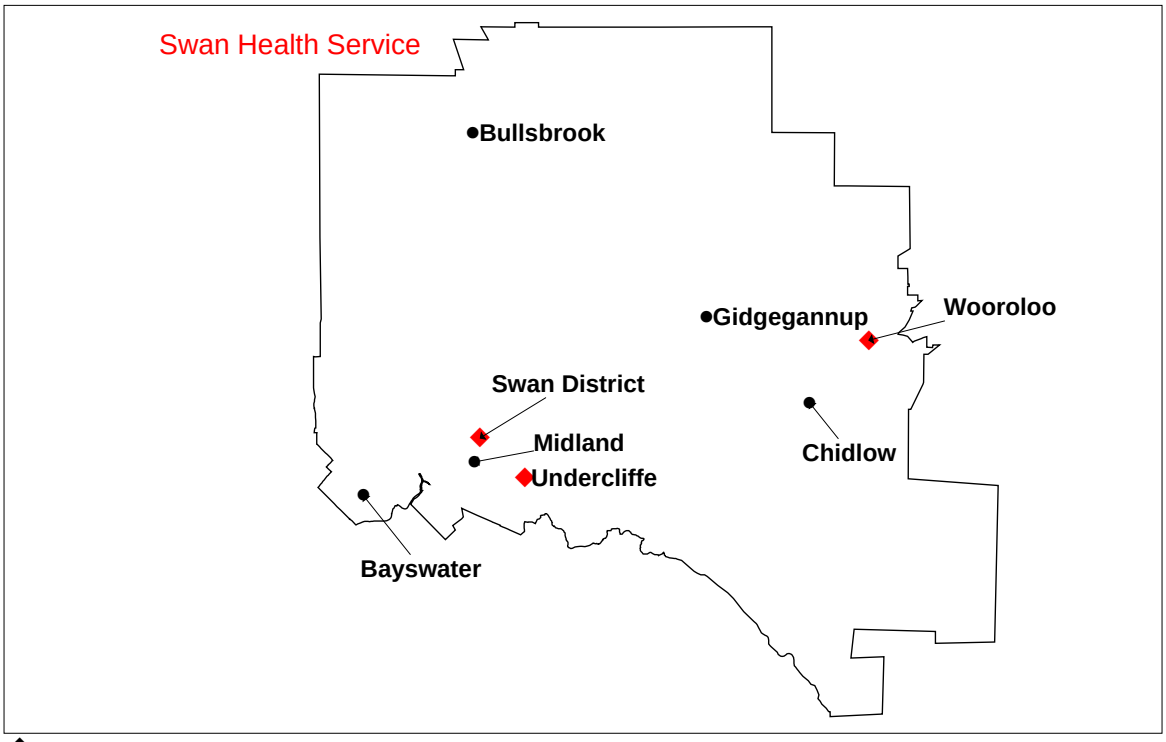
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Swan District Health Service was 23 people per year.
- The number of alcohol-caused deaths per head of population was significantly lower in the Swan District Health Service (17 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Swan District Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Swan District Health Service was $1,653,227[1] per year, equivalent to $11 per head of population.
- The average number of alcohol-caused hospital admissions in the Swan District Health Service was 577 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Swan District Health Service (369 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Swan District Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Upper Great Southern Health Service

Estimated Resident Population in 1995: 18,901
Projected population size in 2001: 19,311

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	10	26	7.0	8.9
Alcoholism	2	56	2.6	7.0
Cancers	2	3	11.0	1.6
Stroke	8	16	9.1	7.1
Other alcohol-related diseases	2	29	2.8	4.0
Road injuries	15	62	4.2	12.7
Falls	2	137	7.0	46.7
Suicide	2	6	2.3	0.7
Assaults	0	44	3.0	6.5
Other alcohol-related injuries	2	19	5.2	4.8
Total	45	398	5.1	100.0

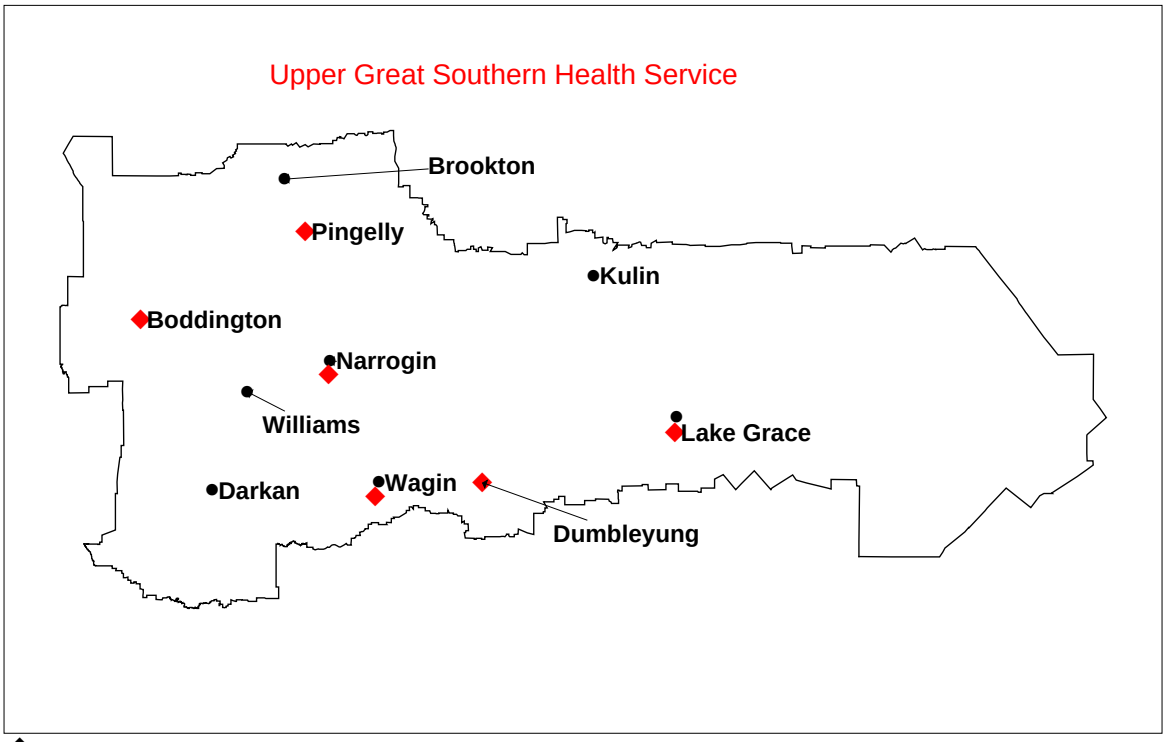
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Upper Great Southern Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Upper Great Southern Health Service (19 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Upper Great Southern Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Upper Great Southern Health Service was $300,080[1] per year, equivalent to $16 per head of population.
- The average number of alcohol-caused hospital admissions in the Upper Great Southern Health Service was 132 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Upper Great Southern Health Service (692 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Upper Great Southern Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Vass Leeuwin Health Service

Estimated Resident Population in 1995: 24,800
Projected population size in 2001: 28,857

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	8	3	8.7	1.1
Alcoholism	1	55	7.0	16.9
Cancers	5	6	9.3	2.5
Stroke	11	20	8.9	7.8
Other alcohol-related diseases	7	26	3.0	3.4
Road injuries	11	58	5.0	12.7
Falls	5	153	7.6	51.0
Suicide	4	6	2.5	0.7
Assaults	2	31	1.8	2.5
Other alcohol-related injuries	4	20	1.7	1.5
Total	58	378	6.0	100.0

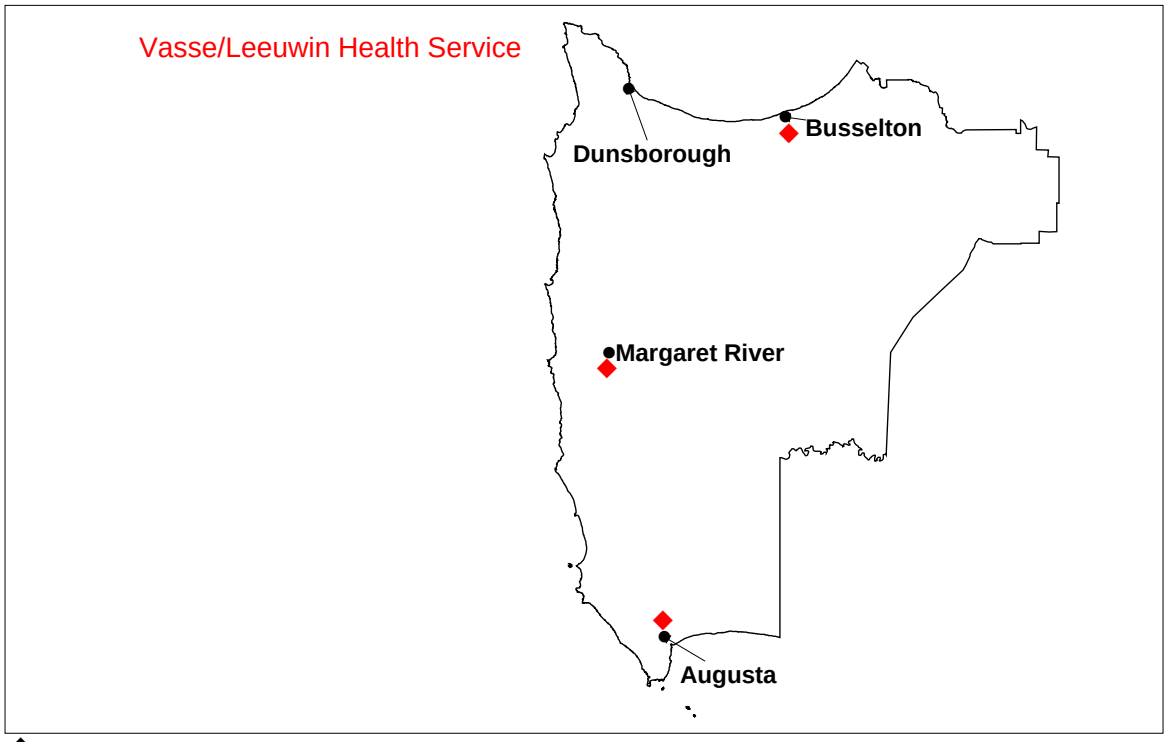
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Vass Leeuwin Health Service was 4 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Vass Leeuwin Health Service (25 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Vass Leeuwin Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Vass Leeuwin Health Service was $332,787[1] per year, equivalent to $14 per head of population.
- The average number of alcohol-caused hospital admissions in the Vass Leeuwin Health Service was 126 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Vass Leeuwin Health Service (533 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Vass Leeuwin Health Service was not significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



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Wanneroo Health Service

Estimated Resident Population in 1995: 205,314
Projected population size in 2001: 247,060

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	18	58	8.3	4.8
Alcoholism	6	213	6.9	14.6
Cancers	14	25	7.9	2.0
Stroke	27	78	10.8	8.4
Other alcohol-related diseases	8	128	5.4	6.9
Road injuries	37	197	8.1	15.9
Falls	6	507	7.5	37.8
Suicide	18	52	4.7	2.4
Assaults	11	167	3.1	5.1
Other alcohol-related injuries	12	72	2.9	2.1
Total	157	1,497	6.7	100.0

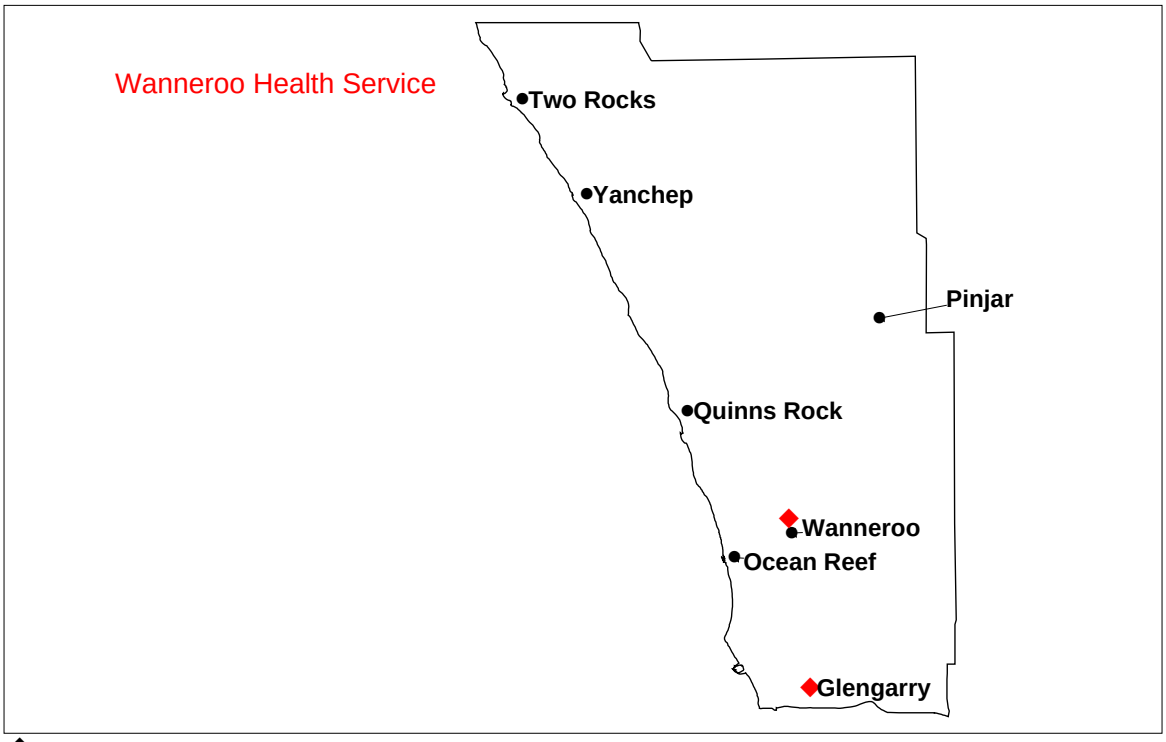
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Wanneroo Health Service was 13 people per year.
- The number of alcohol-caused deaths per head of population was significantly lower in the Wanneroo Health Service (8 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Wanneroo Health Service was significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Wanneroo Health Service was $1,473,120[1] per year, equivalent to $7 per head of population.
- The average number of alcohol-caused hospital admissions in the Wanneroo Health Service was 499 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly lower in Wanneroo Health Service (252 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Wanneroo Health Service was significantly lower than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Warren/Blackwood Health Service

Estimated Resident Population in 1995: 17,367
Projected population size in 2001: 18,162

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	4	4	12.8	1.2
Alcoholism	3	27	7.7	4.8
Cancers	2	3	7.7	0.5
Stroke	7	13	13.6	4.1
Other alcohol-related diseases	2	28	5.3	3.4
Road injuries	11	51	3.7	4.3
Falls	4	125	27.7	79.5
Suicide	4	5	2.2	0.3
Assaults	0	17	2.8	1.1
Other alcohol-related injuries	2	13	2.9	0.9
Total	39	286	15.2	100.0

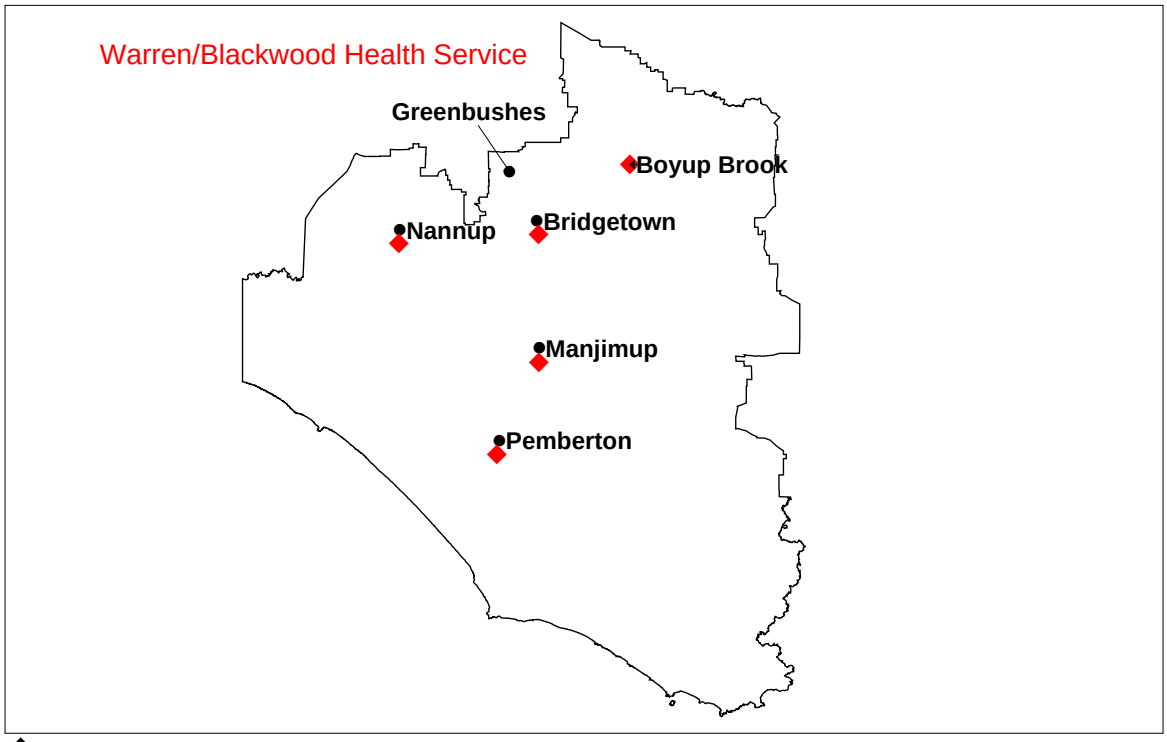
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Warren/Blackwood Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Warren/Blackwood Health Service (20 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Warren/Blackwood Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Warren/Blackwood Health Service was $637,707[1] per year, equivalent to $37 per head of population.
- The average number of alcohol-caused hospital admissions in the Warren/Blackwood Health Service was 95 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Warren/Blackwood Health Service (550 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Warren/Blackwood Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Wellington Health Service

Estimated Resident Population in 1995: 13,533
Projected population size in 2001: 14,277

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	11	12	7.9	4.1
Alcoholism	4	89	3.2	12.3
Cancers	2	3	4.3	0.6
Stroke	5	13	12.5	7.0
Other alcohol-related diseases	6	107	4.1	19.2
Road injuries	9	36	5.2	8.1
Falls	2	120	8.1	42.2
Suicide	2	4	2.3	0.4
Assaults	0	44	1.7	3.2
Other alcohol-related injuries	0	10	6.6	2.9
Total	41	438	5.3	100.0

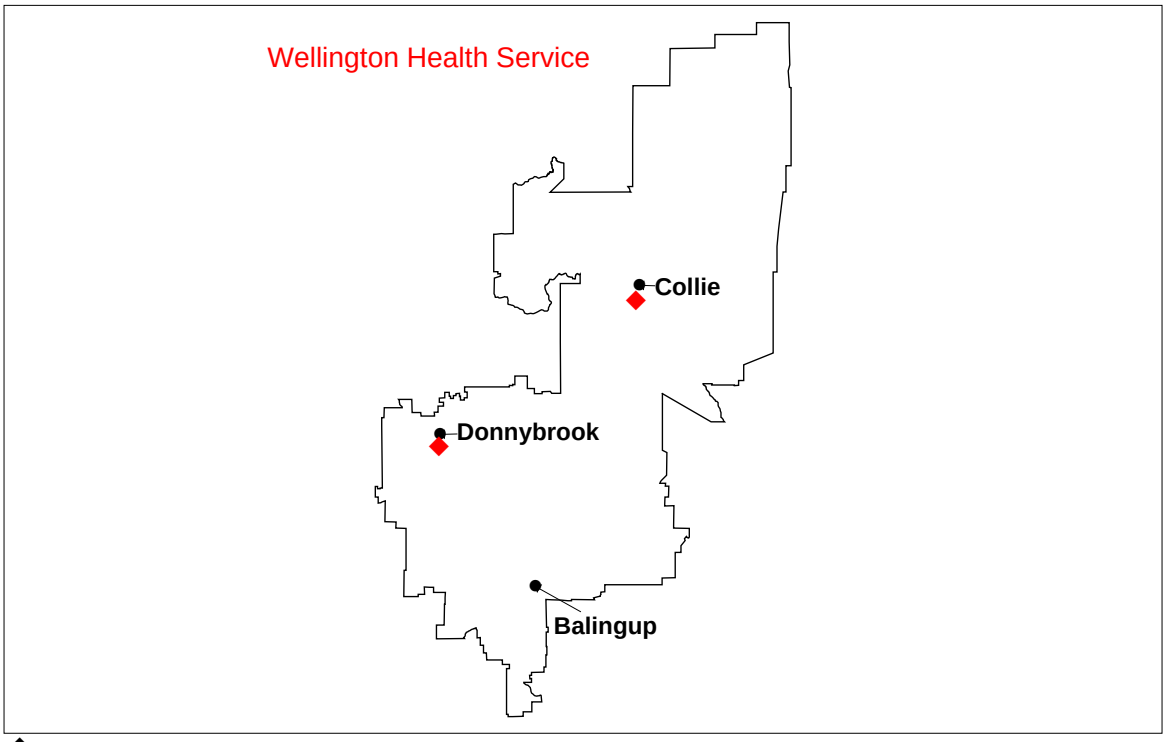
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Wellington Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly higher in the Wellington Health Service (25 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Wellington Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Wellington Health Service was $338,507[1] per year, equivalent to $25 per head of population.
- The average number of alcohol-caused hospital admissions in the Wellington Health Service was 146 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in Wellington Health Service (1068 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Wellington Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

West Kimberley Health Service

Estimated Resident Population in 1995: 15,840
Projected population size in 2001: 18,186

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	20	53	6.4	7.3
Alcoholism	17	261	4.5	25.6
Cancers	3	5	7.6	0.8
Stroke	6	12	10.3	2.7
Other alcohol-related diseases	6	129	3.1	8.7
Road injuries	17	67	4.0	5.8
Falls	3	126	5.8	15.9
Suicide	3	14	5.3	1.6
Assaults	8	391	3.1	26.6
Other alcohol-related injuries	12	34	6.8	5.0
Total	95	1,092	4.2	100.0

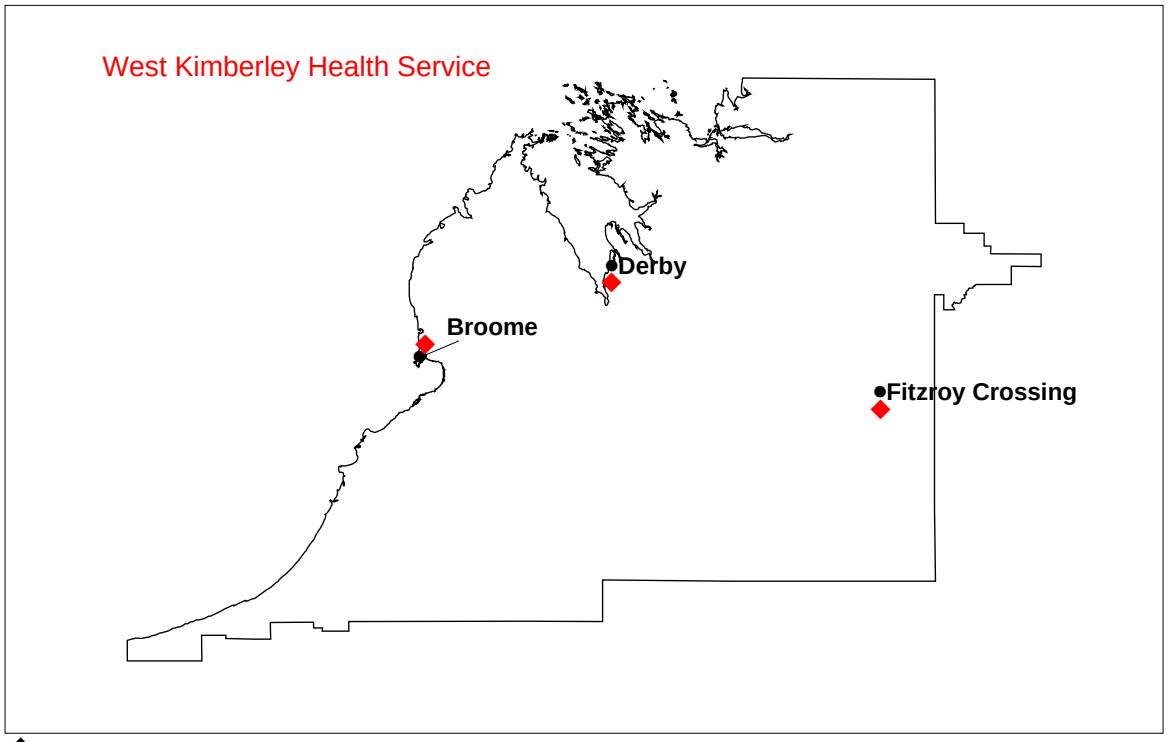
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the West Kimberley Health Service was 7 people per year.
- The number of alcohol-caused deaths per head of population was significantly higher in the West Kimberley Health Service (56 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the West Kimberley Health Service was significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the West Kimberley Health Service was $675,253[1] per year, equivalent to $44 per head of population.
- The average number of alcohol-caused hospital admissions in the West Kimberley Health Service was 364 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in West Kimberley Health Service (2358 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the West Kimberley Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

West Pilbara Health Service

Estimated Resident Population in 1995: 22,113
Projected population size in 2001: 23,127

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	5	24	8.1	9.6
Alcoholism	4	129	3.2	20.3
Cancers	2	7	8.9	3.1
Stroke	4	5	7.6	1.9
Other alcohol-related diseases	5	43	3.6	7.7
Road injuries	15	52	4.1	10.4
Falls	1	105	3.6	18.6
Suicide	3	7	3.7	1.3
Assaults	3	148	3.1	23.0
Other alcohol-related injuries	2	18	4.7	4.2
Total	44	538	3.8	100.0

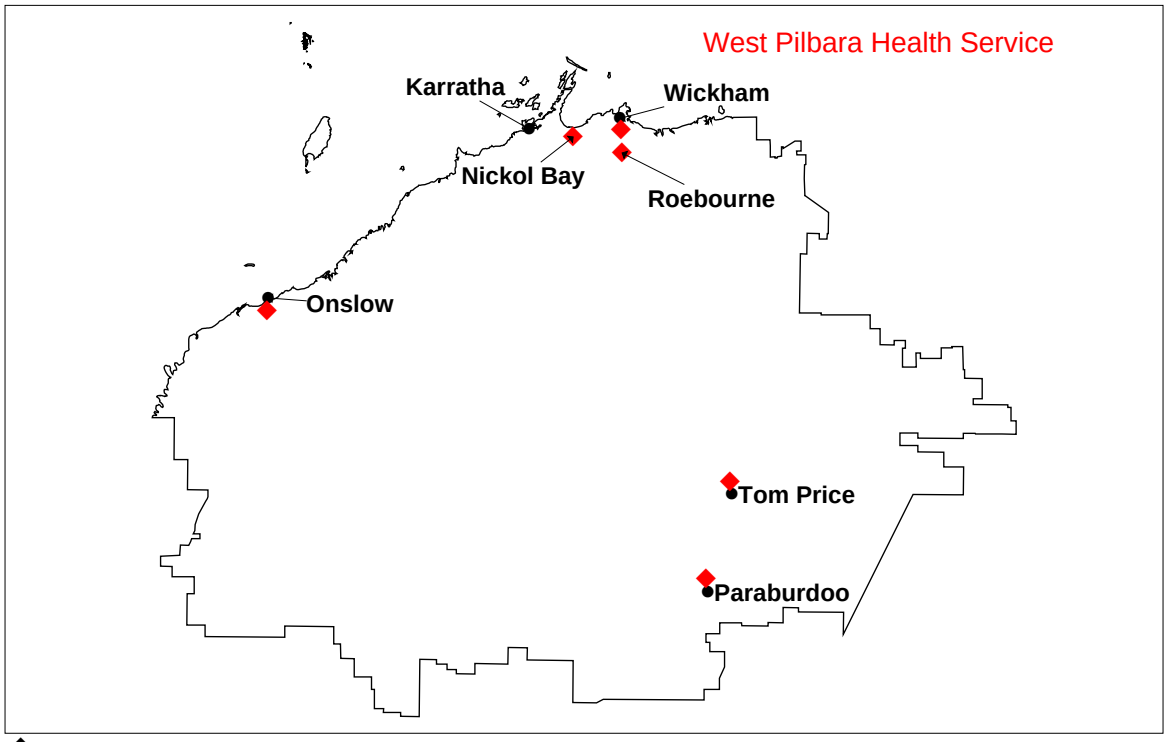
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the West Pilbara Health Service was 3 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the West Pilbara Health Service (15 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the West Pilbara Health Service was not significantly higher than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the West Pilbara Health Service was $297,000[1] per year, equivalent to $13 per head of population.
- The average number of alcohol-caused hospital admissions in the West Pilbara Health Service was 179 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was significantly higher in West Pilbara Health Service (810 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the West Pilbara Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Western Health Service

Estimated Resident Population in 1995: 17,350
Projected population size in 2001: 17,930

Estimated alcohol-caused mortality and morbidity

Alcohol-related conditions	Deaths (1984-95)	Hospitalisation (1993-95)		
	Number of deaths	Number of admissions	Ave. length of stay (days)	% of alcohol-caused cost
Alcoholic liver cirrhosis	7	21	9.4	12.5
Alcoholism	2	88	4.9	27.4
Cancers	2	5	9.4	3.0
Stroke	5	12	10.8	8.2
Other alcohol-related diseases	3	18	3.8	4.3
Road injuries	10	33	3.8	7.8
Falls	2	68	6.8	29.1
Suicide	2	4	6.3	1.6
Assaults	0	21	2.0	2.7
Other alcohol-related injuries	0	12	4.5	3.4
Total	33	282	5.6	100.0

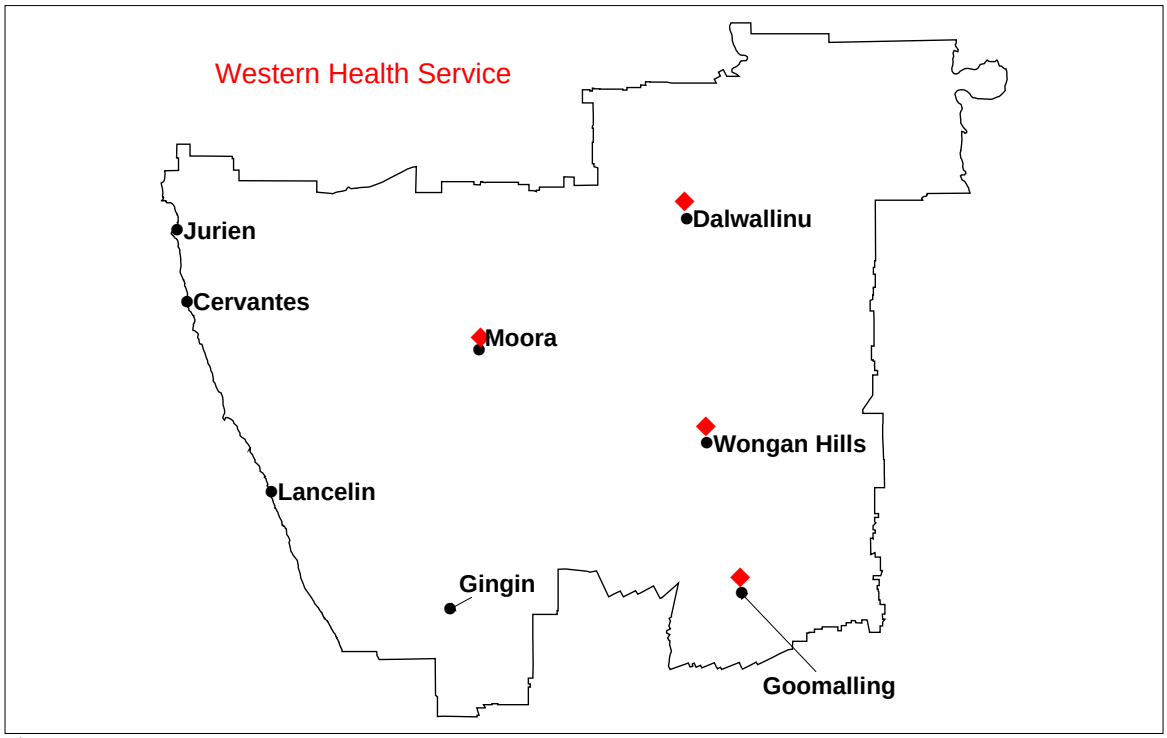
Deaths (1984-1995)

- The average number of alcohol-caused deaths in the Western Health Service was 2 people per year.
- The number of alcohol-caused deaths per head of population was not significantly lower in the Western Health Service (16 per 100,000) compared to the State (20 per 100,000).
- The observed number of alcohol-caused deaths in the Western Health Service was not significantly lower than the number expected, based on the State rate.

Hospitalisation (1993-1995)

- The average cost of alcohol-caused hospitalisation in the Western Health Service was $232,467[1] per year, equivalent to $13 per head of population.
- The average number of alcohol-caused hospital admissions in the Western Health Service was 94 admissions per year.
- The number of alcohol-caused hospital admissions per head of population was not significantly higher in Western Health Service (545 per 100,000) compared to the State (502 per 100,000).
- The observed number of alcohol-caused hospital admissions in the Western Health Service was significantly higher than the number expected, based on the State rate.

[1] Time Series Analysis, 1994/95. Finance and Assets, Health Department of WA, 1996.



◆ indicates the approximate site of a hospital. Where the name of the hospital is the same as the town or suburb the hospital name is omitted.

Appendix 2: Age-specific aetiologic fractions for conditions caused or prevented by alcohol, by sex

Appendix 3: The allocation of postcodes to Health Services and Health Zones

Health Zone	Health Service	Postcodes
Great Southern	Central Great Southern	6317-6318, 6320, 6335-6336, 6341, 6343, 6394-6395, 6316
	Lower Great Southern	6321-6324, 6326-6328, 6330, 6333, 6337-6338, 6396-6397
	Upper Great Southern	6306, 6308-6309, 6311-6313, 6315, 6350, 6352-6353, 6355-6358, 6361, 6363, 6365, 6367, 6370, 6372, 6390-6393
Goldfields	Northern Goldfields	6429-6442, 6444, 6646, 0872
	South East Coastal	6346, 6348, 6443, 6445-6448, 6450
Kimberley	East Kimberley	6740, 6743, 6770
	West Kimberley	6725, 6728, 6731, 6733, 6765
Midlands	Avon	6302, 6380, 6401, 6403, 6560, 6562, 6564, 6566
	Central Wheatbelt	6304, 6373, 6375-6376, 6383-6386, 6405, 6407, 6409, 6417-6419, 6428
	Eastern Wheatbelt	6368, 6369, 6410-6415, 6420-6427, 6463, 6470-6473, 6475-6477, 6479-6480, 6484-6785, 6487-6490, 6359
	Western	6041-6044, 6460-6462, 6464-6468, 6501-6513, 6516, 6521, 6568-6569, 6571-6572, 6574-6575, 6603, 6605-6606, 6608-6609
Midwest	Gascoyne	6532, 6537, 6701, 6705, 6707
	Geraldton	6530, 6528
	Midwest	6514-6515, 6517-6519, 6522, 6525, 6535-6536, 6613-6614, 6616, 6618, 6620, 6623, 6625, 6627-6628, 6630-6632
	Murchison	6612, 6635, 6638-6640, 6642
Pilbara	East Pilbara	6721-6724, 6753, 6755, 6758, 6760-6762
	West Pilbara	6710-6716, 6718, 6720, 6751-6752, 6754

continued…

Appendix 3: continued

Health Zone	Health Service	Postcodes
South West	Bunbury	6226, 6228-6230, 6236-6237, 6271
	Harvey- Yarloop	6218, 6220-6221, 6223-6224, 6227
	Peel	6205-6208, 6210-6211, 6213-6215
	Vasse - Leeuwin	6280-6282, 6284-6286, 6288, 6290
	Warren - Blackwood	6243-6244, 6252, 6254-6256, 6258, 6260, 6262, 6275, 6398
	Wellington	6225, 6239-6240, 6251, 6253
East Metro	Bentley	6100, 6101-6107, 6151-6152
	RPH & Inner City Health Service	6000, 6004-6007, 6016, 6050-6053
	Kalamunda Hospital & Health Service	6057-6058, 6076
	Swan	6054-6056, 6062-6063, 6066-6068, 6070-6074, 6081-6084, 6553-6556, 6558
North Metro	Lower North Metro	6008-6012, 6014-6015, 6017-6022, 6029, 6060-6061, 6161
	Wanneroo	6023-6028, 6030-6037, 6064-6065
South Metro	Armadale - Kelmscott	6108-6113, 6147-6149, 6155, 6201-6203, 6206
	Fremantle Hospital & Health Service	6153-6154, 6156-6160, 6162-6164, 6150, 6166
	Rockingham- Kwinana	6165, 6167-6176

Note: This table reflects how postcodes were allocated to Health Services in this report. As new postcodes are being created all the time and the boundaries for Health Services and Health Zones may change, this table is constantly being updated.

Appendix 4: Data relating to the figures in this report

Figure 1: Estimated numbers and age-specific rates for alcohol-caused deaths, by age group and sex

Western Australia, 1984-1995

Age group	Number of hospital admissions		Age-specific rate / 100,000 popn.	
	Males	Females	Males	Females
0-4	18	7	2.4	1.0
5-9	14	5	1.9	0.7
10-14	18	5	2.4	0.7
15-19	140	28	17.9	3.8
20-24	229	55	28.8	7.2
25-29	197	37	24.8	4.8
30-34	125	35	15.7	4.4
35-39	131	43	17.0	5.7
40-44	156	51	22.2	7.7
45-49	153	60	26.3	11.2
50-54	196	56	42.1	12.9
55-59	212	79	52.6	20.6
60-64	277	84	76.9	23.5
65-69	240	93	81.7	29.3
70-74	194	169	88.4	63.3
75-79	143	38	96.5	18.5
80-84	88	119	105.2	86.9
85+	86	211	191.4	208.0

Figure 2: Standardised mortality rates (95% confidence intervals), by Health Services and sex

Western Australia, 1984-1995

Health Service	Males		Females	
	Lower CI	Upper CI	Lower CI	Upper CI
Armadale/Kelmscott	0.61	0.82	0.63	1.00
Avon	0.94	1.88	0.62	2.05
Bentley	1.06	1.36	0.98	1.36
Bunbury	0.53	0.98	0.72	1.53
Central Great Southern	0.61	1.56	0.26	1.66
Central Wheatbelt	0.53	1.68	0.33	2.16
East Kimberley	2.70	5.00	4.74	11.11
East Pilbara	1.17	2.11	1.11	3.35
Eastern Wheatbelt	0.76	1.66	0.11	1.22
Fremantle	0.84	1.07	0.75	1.08
Gascoyne	1.26	2.62	0.76	3.30
Geraldton	0.95	1.64	0.78	1.90
Harvey-Yarloop	0.23	0.90	0.06	1.04
Inner City	1.71	2.25	1.51	2.20
Kalamunda	0.52	0.93	0.59	1.30
Lower Great Southern	0.73	1.23	0.59	1.34
Lower North Metro	0.69	0.86	0.66	0.89
Midwest	0.89	1.87	0.35	1.94
Murchison	0.90	2.95	0.58	6.37
Northern Goldfields	1.59	2.33	1.24	2.56
Peel	0.78	1.25	0.63	1.33
Rockingham/Kwinana	0.74	1.12	0.65	1.26
South East Coastal	0.70	1.62	0.05	0.98
Swan District	0.81	1.07	0.65	1.02
Upper Great Southern	0.70	1.43	0.39	1.45
Vass Leeuwin	0.69	1.34	0.70	1.75
Wanneroo	0.39	0.58	0.47	0.83
Warren/Blackwood	0.85	1.71	0.23	1.25
Wellington	1.00	2.05	0.57	2.11
West Kimberley	2.95	4.71	2.49	5.96
West Pilbara	0.71	1.47	0.98	3.24
Western	0.63	1.38	0.27	1.47
State	**0.96**	**1.04**	**0.94**	**1.06**

Figure 3: Estimated numbers and age-specific rates for alcohol-caused hospital admissions, by age group and sex

Western Australia, 1993-1995

Age group	Number of hospital admissions		Age-specific rate / 100,000 popn.	
	Males	Females	Males	Females
0-4	61	35	31.6	19.1
5-9	75	22	37.3	11.6
10-14	170	69	85.5	37.0
15-19	1,391	549	715.8	297.6
20-24	1,942	868	919.5	428.4
25-29	1,768	774	893.2	398.3
30-34	1,553	705	736.3	334.3
35-39	1,400	655	677.8	316.3
40-44	1,192	595	599.2	303.6
45-49	1,163	515	636.1	302.8
50-54	813	430	597.3	341.1
55-59	798	421	722.2	397.3
60-64	716	436	756.7	471.3
65-69	637	496	747.7	561.5
70-74	558	720	861.9	951.6
75-79	419	674	1,040.7	1,209.8
80-84	369	944	1475	2,292.9
85+	408	1,301	2,744.3	4,049.9

Figure 4: Standardised morbidity rates (95% confidence intervals), by Health Services and sex

Western Australia, 1993-1995

Health Service	Males		Females	
	Lower CI	Upper CI	Lower CI	Upper CI
Armadale/Kelmscott	0.63	0.71	0.69	0.80
Avon	1.07	1.45	1.20	1.71
Bentley	0.85	0.96	0.80	0.92
Bunbury	0.95	1.16	0.90	1.17
Central Great Southern	1.73	2.29	1.34	2.00
Central Wheatbelt	1.18	1.78	1.27	2.06
East Kimberley	4.96	6.02	8.75	10.95
East Pilbara	1.67	2.06	3.52	4.43
Eastern Wheatbelt	1.43	1.89	1.42	2.10
Fremantle	0.64	0.72	0.64	0.74
Gascoyne	3.04	3.79	2.47	3.49
Geraldton	1.63	1.94	1.37	1.76
Harvey-Yarloop	0.55	0.84	0.62	1.03
Inner City	1.73	1.96	1.49	1.73
Kalamunda	0.62	0.78	0.72	0.94
Lower Great Southern	0.84	1.05	1.04	1.33
Lower North Metro	0.65	0.72	0.64	0.72
Midwest	1.19	1.62	1.16	1.78
Murchison	1.13	1.82	1.60	3.18
Northern Goldfields	2.09	2.39	2.13	2.59
Peel	0.83	1.01	0.81	1.03
Rockingham/Kwinana	0.81	0.96	0.61	0.77
South East Coastal	1.26	1.67	0.98	1.48
Swan District	0.69	0.78	0.77	0.89
Upper Great Southern	1.20	1.55	1.31	1.80
Vass Leeuwin	0.93	1.21	0.81	1.13
Wanneroo	0.53	0.60	0.54	0.64
Warren/Blackwood	0.97	1.31	0.99	1.45
Wellington	1.84	2.36	2.09	2.80
West Kimberley	4.79	5.57	5.94	7.24
West Pilbara	1.63	2.01	2.16	2.90
Western	0.93	1.26	1.11	1.62
State	**0.98**	**1.02**	**0.98**	**1.02**