# Hospitalisation due to drugs other than tobacco or alcohol in Western Australia, 1991-1995

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## List of abbreviations

| | |
|---|---|
| ALOS | Average length of stay |
| ASR | Age-standardised rate |
| ecode | External code |
| HMDS | Hospital Morbidity Database System |
| HDWA | Health Department of Western Australia |
| HZ | Health Zone |
| ICD-9-CM | International Classification of Diseases (9$^{th}$ Revision, Clinical Modification) |
| IDU | Injecting drug use |
| SMR | Standardised morbidity rate |
| WA | Western Australia |

# Summary

## State overview

- This report estimates, using aetiologic fractions, the number of people admitted to hospital (9,795), hospital admissions (11,573), and beddays (52,783) caused by the use of drugs other than alcohol or tobacco in Western Australia (WA) over the period 1991 to 1995.
- Over the period studied, an estimated 0.5% of all hospital admissions and beddays were caused by other drugs.
- The estimated annual bedday cost for other drug-caused hospitalisation was $4.6 million.
- More females were admitted to hospital for conditions caused by other drugs than males, and the female age-standardised admission rate was significantly higher than that for males.
- For different drugs, peaks in the age-specific rates for admissions and beddays occurred in different age groups. Also, the peaks for admissions and beddays did not necessarily occur in the same age groups, indicating that length of stay varied with age.
- People aged 15 to 34 years accounted for 62% of admissions, and 50% of beddays caused by other drugs.
- Children under five years old accounted for 1.7% of hospital admissions, and 5.2% of beddays caused by other drugs.
- The drug group responsible for the most hospital admissions was tranquillisers.

## Opioids

- During the period 1991 to 1995, there were an estimated 1,020 people admitted to hospital, 1,253 hospital admissions, and 5,840 beddays caused by opioids in WA.
- The estimated average annual cost of opioid-caused hospitalisation was $0.51 million.
- Nearly half of the opioid-caused hospital admissions were for dependence and over a third were for suicide attempts.
- There were more female admissions due to opioid-caused suicide attempts compared to males. Attempted suicides accounted for 42% of opioid-caused admissions in females but only 30% of opioid-caused admissions in males.
- People aged between 15 and 34 years old accounted for 68% of opioid-caused admissions and 58% of opioid-caused beddays.
- There was no significant difference between the age-standardised rate for male opioid-caused hospital admissions and that for females.

## Drug-caused attempted suicides

- During the period 1991 to 1995, there were an estimated 5,740 people admitted to hospital, 7,614 hospital admissions, and 27,526 beddays due to drug-caused suicide attempts in WA.
- The estimated average annual cost of hospitalisation for drug-caused suicide attempts was $2.42 million.
- Attempted suicides were the most common cause of drug-related admissions, accounting for two-thirds of such admissions between 1991 and 1995.
- The drug group most commonly responsible for hospitalisation due to drug-caused suicide attempts was tranquillisers - associated with 35% of such admissions.
- The age-standardised rate for female hospital admissions due to drug-caused suicide attempts was significantly higher than the male rate.
- People aged between 15 and 34 years old accounted for 61% of hospital admissions for drug-caused suicide attempts and 48% of beddays.
- The female age-specific admission rates for drug-caused suicide attempts showed a higher and earlier peak in females compared with males .

## Trends

- Over the period 1991 to 1995, the age-standardised rates for hospital admissions due to all other drugs, opiates, and drug-caused suicide attempts all increased significantly. The admission rate for opioids, in particular, showed a dramatic increase, by an average of 65% per year.

## Health Zones

- The East Metropolitan HZ had significantly higher crude admission rates for all other drugs, opioids, and drug-caused suicide attempts than the State.

# 1. Introduction

This report estimates the number of people admitted to hospital, hospital admissions and beddays caused by drugs other than tobacco or alcohol[1] in Western Australia (WA) over the period 1991 to 1995. The study also examines opioid-caused admissions to WA hospitals, in response to recent community concern in the State about the number of young people dying of heroin overdoses.

The reference to 'other drugs' in this report overcomes the limitations of the artificial distinction created by the terms illicit and licit. Hospital admissions attributed to illicit drug use often involve combinations of pharmaceutical and non-pharmaceutical drugs. Even in cases where licit drugs are thought to be responsible, it may be difficult to determine whether they were obtained legitimately.

The report contains a State overview of hospitalisation caused by other drug use, an estimate of the cost of this hospitalisation, trends in other drug-caused hospitalisation, and a summary by Health Department 'Health Zones'[2] (HZ) [Figure 1]. The analyses are repeated for hospitalisation due to opioids[3] and drug-caused suicide attempts.[4] Summary sheets for each HZ, using broad categories of drug-related conditions[5], are shown in Appendix 1.

It is expected that the morbidity data by Health Zone contained in this report will be used to construct baselines, against which the effectiveness of the activities of Local Drug Action Groups throughout the State can be evaluated. The role of community based organisations in developing initiatives to address problems of drug abuse has been recognised by the WA Government.[6] .

# 2. Method

Hospitalisation data for the years 1991 to 1995 inclusive were extracted from the Hospital Morbidity Data System (HMDS). [7] It was necessary to look at five years of data because of the small number of cases in non-metropolitan areas. Cases of conditions known to be related to the use of other drugs were selected using the principal diagnosis or the external code (ecode).[8] Only records where the postcode of residence could be coded to a Western Australian Health Zone were selected. The number of people admitted for other drug-caused conditions was obtained by using data from the Western Australian Health Services Data Linkage project. This assigns each individual a unique number which allows records belonging to the same individual to be identified. This enables an individual's history of health care to be followed, even though they may have been admitted into different WA hospitals.

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[1] Drugs other than alcohol or tobacco are subsequently referred to as 'other drugs' in this report.

[2] A table showing how postcodes were allocated to each Health Zone is shown in Appendix 4.

[3] The opioid group of drugs includes many prescription drugs. Examples of opioids are: heroin, Methadone, Temgesic, Codiphen, Veganin, Palfium, Digesic, Doloxene, Proladone, Omnopon, Fortral.

[4] Drug-caused attempted suicides are identified by the following ICD9-CM codes: E950.0 (opioids); E950.1 (barbiturates); E950.2 (other sedatives); E951.1 (volatile substances); E950.3 (tranquillisers and other psychotropic agents); E950.4-E950.5 (other/unspecified drugs). Attempted suicides are included in the specific drug groups in Appendix 3 but are also analysed separately.

[5] These conditions, together with their IDC-9-CM codes, are shown in Appendix 3.

[6] Strategy Plan Against Drug Abuse, *Together Against Drugs*, June 1997.

[7] The HMDS is maintained by the Health Statistics Branch of the Health Department of Western Australia (HDWA). It 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 other drug-caused conditions which received outpatient treatment are not included in this report.

[8] The HMDS records up to eighteen extra diagnostic codes. For some conditions, these extra diagnoses were used to identify the specific drug responsible for the admission.

The numbers of persons admitted, hospital admissions and beddays caused by the use of other drugs 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. The 1995 aetiologic fractions methodology quantifies morbidity caused by the following groups of illicit drugs: cannabis, opioids, stimulants, hallucinogens, and anabolic steroids. To avoid underestimating the impact of other drugs, the aetiologic fractions were extended to include conditions known to be caused by such licit drugs as barbiturates, anti-depressants, sedatives, tranquillisers, and volatile substances[9]. The ICD-9-CM codes and the aetiologic fractions for conditions related to other drug use are shown in Appendix 2.

Most of the conditions connected with the use of other drugs are wholly attributable. This means that all cases coded to these conditions are directly caused by drug use, and the aetiologic fraction is 1.0. However, conditions such as, antepartum haemorrhage, low birthweight, hepatitis, AIDS, and infective endocarditis cannot be attributed wholly to the use of drugs. In these cases, an indirect estimate of drug-caused morbidity is obtained by applying the aetiologic fraction (which is less than 1.0) to the number of hospital admissions for a particular condition.[10] For example, the aetiologic fraction for hepatitis B is 0.29, so if there were 100 hospital admissions for hepatitis B, applying the aetiologic fraction to the number of cases would estimate that 29 of such admissions could be attributed to other drug use.

Two conditions related to other drug use are thought to affect children (low birthweight, and newborn drug toxicity[11]), and two are specific to females (antepartum haemorrhage and maternal drug toxicity).

The statistical measures used in this report were crude rates, age-specific rates, age-standardised rates (ASRs), and standardised morbidity rates (SMRs). These rates were calculated using a program called the Health Statistics calculator.[12]

Crude rates were calculated by dividing the estimated number of cases by the population of the area, and then multiplying by 100,000 to express the rates as cases per 100,000 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 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[13] 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 population.

Standardised morbidity rates were calculated by dividing the observed number of cases by the expected number of cases. The expected number of cases were 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 drug-caused 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.

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[9] This approach was followed in an earlier report (Unwin 1996), but the program to extract and allocate cases to particular drug groups has been refined since this report was written.

[10] 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.

[11] Low birthweight is specific to females between the ages of 25 and 39 years, but fractions are applied to babies of both sexes.

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

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

# 3. Results

## 3.1 Statewide

### 3.1.1 Overview

During the five-year period 1991 to 1995, an estimated 9,795 people were admitted to hospital, totalling 11,573 hospital admissions and 52,783 beddays due to other drugs in WA. This is an average of 1,959 persons, 2,315 admissions, and 10,557 beddays per year [Table 1]. These accounted for 0.5% of the total of 2,222,511 admissions and 9,732,937 beddays from all causes that occurred over this period. The estimated average annual cost of hospitalisation caused by other drugs in WA was $4.6 million.

Overall, there were about 1.3 times more females admitted to hospital, female admissions and beddays caused by other drugs than males. This was mainly because of the large number of admissions for conditions due to licit drugs, such as tranquillisers, sedatives, and antidepressants. There were twice as many females admitted for conditions caused by antidepressants than males. However, there were more male admissions for conditions due to opioids, psychostimulants, hallucinogens, volatile substances, drug psychoses, and conditions related to injecting drug use (IDU) than females [Table 1].

The average length of stay (ALOS) for different conditions varied. The longest hospital stays were for infective endocarditis (18.3 days), poisoning by other sedatives/hypnotics (17.8 days), and low birthweight babies (15.3 days) [Table 1]. The ALOS for conditions due to specific drug groups were similar for males and females, except for conditions caused by volatile substances, and hallucinogens, for which females spent longer in hospital compared to males [Table 2]. Although males spent longer in hospital than females for conditions arising from complications of pregnancy and infancy, this is an artifact of the aetiologic fraction methodology. Fractions for this group of conditions apply to all babies and females of childbearing age.[11] As babies usually spend more time in hospital per admission than adults this will increase the ALOS for males.

The drug groups responsible for the most admissions were tranquillisers (2,817), followed by unclassified drugs (2,561), antidepressants (1,530), and opioids (1,253) [Table 1]. Attempted suicides were the most common cause of drug-related admissions, accounting for two-thirds of such admissions between 1991 and 1995. The next most common cause was drug dependence, which accounted for 13% of drug-caused admissions. The other causes accounted for smaller proportions of admissions: drug psychoses 5.4%; drug use disorders 5.3%; complications of pregnancy and infancy 4.2%; accidental poisoning 3.2%; conditions related to IDU 2.0%; and undetermined cause 1.2% [Table 3].

People aged between 15 and 34 years old accounted for 62% of other drug-caused admissions and 50% of other drug-caused beddays. An estimated 199 admissions and 2,749 beddays caused by other drugs (1.7% of other drug-caused admissions; 5.2% of other drug-caused beddays) involved children aged 0 to 4 years. This highlights the risk that drug-taking poses to foetuses and babies.

The highest number of other drug-caused hospital admissions (1,984) involved people aged 25 to 29 years [Figure 1], but the highest number of other drug-caused hospital beddays (7,684) involved the 30 to 34 years age group. Overall, the number of female admissions for other drug-caused conditions was higher for all age groups, resulting in a significantly higher ASR for females than for males (158 admissions / 100,000 population compared with 119).

The age-specific rates for hospital admissions caused by other drugs peaked in the 25 to 29 years age group for both males and females [Figure 1]. For different drugs, peaks in the age-specific rates for admissions and beddays occurred in different age groups [Figure 2]. For example, admission rates for volatile substances, and hallucinogens peaked in the 15 to 19 years age group, and those for psychostimulants peaked in the 20 to 24 year age group, whereas admission rates for the other drug groups were more evenly distributed over the age groups.

## Table 1: Estimated number of other drug-caused hospital admissions and beddays, ALOS, and approximate cost, by drug-related conditions

*Western Australia, 1991-1995*

| Drug-related conditions | Number of admissions | Number of beddays | ALOS (days) | Cost[1] |
|---|---|---|---|---|
| **Opioids** | | | | |
| Accidental poisoning - heroin | 34 | 155 | 4.6 | $68,200 |
| Suicide - heroin | 112 | 354 | 3.2 | $155,760 |
| Poisoning - heroin | 11 | 30 | 2.7 | $13,200 |
| Methadone dependence | 1 | 7 | 7.0 | $3,080 |
| Accidental poisoning - methadone | 5 | 8 | 1.6 | $3,520 |
| Suicide - methadone | 28 | 79 | 2.8 | $34,760 |
| Other/unknown opioid dependence | 602 | 3,480 | 5.8 | $1,531,200 |
| Other/unknown opioid use disorder | 109 | 508 | 4.7 | $223,520 |
| Accidental poisoning - other opioid | 35 | 227 | 6.5 | $99,880 |
| Suicide - other/unknown opioid | 310 | 978 | 3.2 | $430,320 |
| Poisoning - other/unknown opioid | 6 | 14 | 2.3 | $6,160 |
| **Sub-total: opioids** | **1,253** | **5,840** | **4.7** | **$2,569,600** |
| **Barbiturates/sedatives/hypnotics** | | | | |
| Accidental poisoning - barbiturates | 3 | 14 | 4.7 | $6,160 |
| Suicide - barbiturates | 22 | 70 | 3.2 | $30,800 |
| Other sedative/hypnotic dependence | 128 | 1,297 | 10.1 | $570,680 |
| Other sedative/hypnotic use disorder | 121 | 423 | 3.5 | $186,120 |
| Accidental poisoning - other sedative/hypnotic | 19 | 64 | 3.4 | $28,160 |
| Suicide - other sedative/hypnotic | 564 | 1,600 | 2.8 | $704,000 |
| Poisoning - other sedative/hypnotic | 6 | 107 | 17.8 | $47,080 |
| **Sub-total: barbiturates/sedatives/hypnotics** | **863** | **3,575** | **4.1** | **$1,573,000** |
| **Tranquillisers** | | | | |
| Accidental poisoning - tranquillisers | 135 | 567 | 4.2 | $249,480 |
| Suicide - tranquillisers | 2,657 | 9,386 | 3.5 | $4,129,840 |
| Poisoning - tranquillisers | 25 | 49 | 2.0 | $21,560 |
| **Sub-total: tranquillisers** | **2,817** | **10,002** | **3.6** | **$4,400,880** |
| **Antidepressants** | | | | |
| Antidepressant use disorder | 4 | 13 | 3.3 | $5,720 |
| Accidental poisoning - antidepressants | 53 | 206 | 3.9 | $90,640 |
| Suicide - antidepressants | 1,457 | 6,116 | 4.2 | $2,691,040 |
| Poisoning - antidepressants | 16 | 88 | 5.5 | $38,720 |
| **Sub-total: antidepressants** | **1,530** | **6,423** | **4.2** | **$2,826,120** |
| **Psychostimulants** | | | | |
| Cocaine dependence | 3 | 17 | 5.7 | $7,480 |
| Cocaine use disorder | 4 | 19 | 4.8 | $8,360 |
| Amphetamine/other psychostimulant dependence | 87 | 457 | 5.3 | $201,080 |
| Amphetamine use disorder | 145 | 521 | 3.6 | $229,240 |
| Accidental poisoning - psychostimulants | 19 | 77 | 4.1 | $33,880 |
| Suicide - psychostimulants | 73 | 145 | 2.0 | $63,800 |
| Poisoning - psychostimulants | 2 | 2 | 1.0 | $880 |
| **Sub-total: psychostimulants** | **333** | **1,238** | **3.7** | **$544,720** |
| **Hallucinogens** | | | | |
| Cannabis dependence | 17 | 65 | 3.8 | $28,600 |
| Cannabis use disorder | 40 | 106 | 2.7 | $46,640 |
| Hallucinogen dependence | 1 | 1 | 1.0 | $440 |
| Hallucinogen use disorder | 28 | 198 | 7.1 | $87,120 |
| Accidental poisoning - hallucinogens | 19 | 21 | 1.1 | $9,240 |
| Suicide - hallucinogens | 18 | 22 | 1.2 | $9,680 |
| Poisoning - hallucinogens | 3 | 3 | 1.0 | $1,320 |
| **Sub-total: hallucinogens** | **126** | **416** | **3.3** | **$183,040** |
| **Other/combination psychotropic agents** | | | | |
| Suicide - other/comb psychotropic agent | 621 | 3,420 | 5.5 | $1,504,800 |
| Poisoning - other/comb psychotropic agent | 20 | 78 | 3.9 | $34,320 |
| **Sub-total: other/comb psychotropic agents** | **641** | **3,498** | **5.5** | **$1,539,120** |

*continued…*

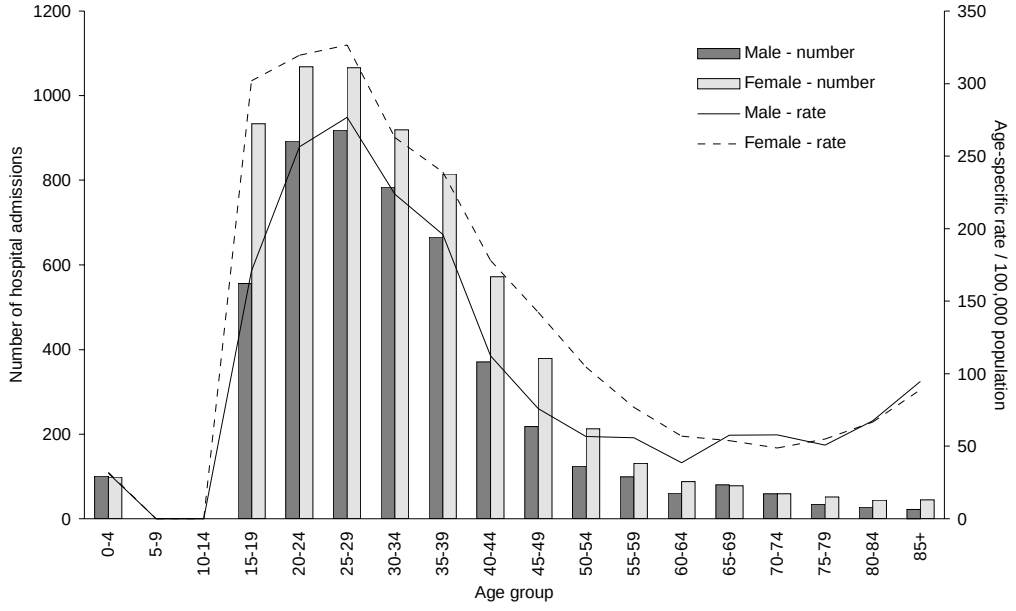
*Table 1: continued*

| Drug-related conditions | Number of admissions | Number of beddays | ALOS (days) | Cost[1] |
|---|---|---|---|---|
| **Volatile substances** | | | | |
| Volatile substance dependence | 55 | 248 | 4.5 | $109,120 |
| Accidental poisoning - volatile substances | 46 | 79 | 1.7 | $34,760 |
| Suicide - volatile substances | 4 | 4 | 1.0 | $1,760 |
| Poisoning - volatile substances | 1 | 1 | 1.0 | $440 |
| **Sub-total: volatile substances** | **106** | **332** | **3.1** | **$146,080** |
| **Unclassified drugs** | | | | |
| Combination/unspecified drug dependence | 601 | 4,837 | 8.0 | $2,128,280 |
| Other/mixed/unspecified drug use disorder | 163 | 744 | 4.6 | $327,360 |
| Suicide - other/unspecified drugs | 1,748 | 5,352 | 3.1 | $2,354,880 |
| Poisoning - other/unspecified drugs | 49 | 162 | 3.3 | $71,280 |
| **Sub-total: unclassified drugs** | **2,561** | **11,095** | **4.3** | **$4,881,800** |
| **Drug psychoses** | | | | |
| **Sub-total: drug psychoses** | **622** | **5,486** | **8.8** | **$2,413,840** |
| **IDU-related conditions** | | | | |
| Hepatitis B | 27 | 153 | 5.7 | $67,320 |
| Hepatitis non-A, non-B | 184 | 386 | 2.1 | $169,840 |
| AIDS/HIV | 14 | 34 | 2.4 | $14,960 |
| Infective endocarditis | 8 | 146 | 18.3 | $64,240 |
| **Sub-total: IDU-related conditions** | **233** | **719** | **3.1** | **$316,360** |
| **Complications of pregnancy/infancy** | | | | |
| Maternal drug dependence | 114 | 679 | 6.0 | $298,760 |
| Antepartum haemorrhage | 158 | 610 | 3.9 | $268,400 |
| Newborn drug toxicity | 58 | 431 | 7.4 | $189,640 |
| Low birthweight | 159 | 2,439 | 15.3 | $1,073,160 |
| **Sub-total: complications of pregnancy/infancy** | **489** | **4,159** | **8.5** | **$1,829,960** |
| **TOTAL: ALL DRUGS** | **11,573** | **52,783** | **4.6** | **$23,224,520** |

[1] Cost estimates are based on the number of beddays using: *Time Series Analysis, 1994/95*. Finance and Assets, Health Department of WA, 1996.

Admission and bedday rates did not necessarily peak in the same age groups, indicating that length of stay varied with age. For example, the age-specific rate for admissions due to tranquillisers peaked in the 25 to 29 years age group (69 admissions / 100,000 population), whereas the peak rate for beddays due to this group of drugs occurred in people aged 85 years and over (756 beddays / 100,000).

**Figure 1: Estimated numbers and age-specific rates for hospital admissions caused by other drugs, by age group and sex, WA, 1991-1995**



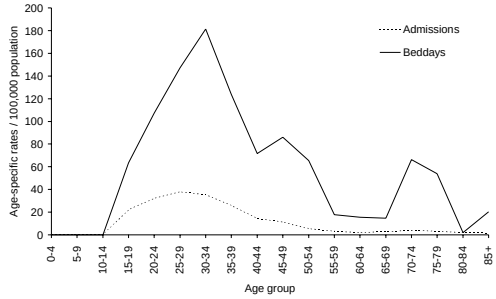
## Table 2: Estimated number of people admitted to hospital, hospital admissions, beddays, and ALOS, by drug group and sex

*Western Australia, 1991-1995*

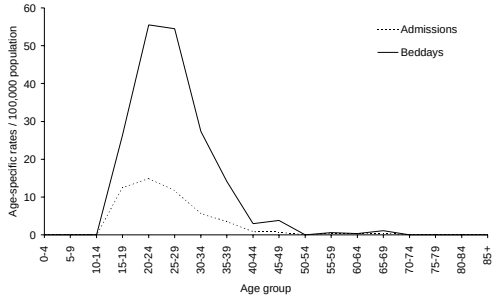
| Drug-related conditions | Persons | Admissions | | Beddays | | ALOS |
|---|---|---|---|---|---|---|
| | | Number | % | Number | % | (days) |
| **MALES** | | | | | | |
| Opioids | 536 | 656 | 13.1 | 2,926 | 13.5 | 4.5 |
| Barbiturates/sedatives/hypnotics | 288 | 344 | 6.9 | 1,257 | 5.8 | 3.7 |
| Tranquillisers | 935 | 1,092 | 21.8 | 3,294 | 15.2 | 3.0 |
| Antidepressants | 453 | 507 | 10.1 | 1,888 | 8.7 | 3.7 |
| Psychostimulants | 169 | 190 | 3.8 | 801 | 3.7 | 4.2 |
| Hallucinogens | 91 | 93 | 1.9 | 184 | 0.8 | 2.0 |
| Other/comb psychotropic agents | 244 | 273 | 5.4 | 1,243 | 5.7 | 4.6 |
| Volatile substances | 66 | 69 | 1.4 | 130 | 0.6 | 1.9 |
| Unclassified drugs | 996 | 1,192 | 23.8 | 5,362 | 24.7 | 4.5 |
| Drug psychoses | 300 | 341 | 6.8 | 2,732 | 12.6 | 8.0 |
| Conditions related to IDU | 128 | 155 | 3.1 | 481 | 2.2 | 3.1 |
| Complications of pregnancy/infancy | 93 | 101 | 2.0 | 1,408 | 6.5 | 13.9 |
| **All drugs** | **4,299** | **5,013** | **100.0** | **21,706** | **100.0** | **4.3** |
| **FEMALES** | | | | | | |
| Opioids | 484 | 597 | 9.1 | 2,914 | 9.4 | 4.9 |
| Barbiturates/sedatives/hypnotics | 440 | 519 | 7.9 | 2,318 | 7.5 | 4.5 |
| Tranquillisers | 1,380 | 1,725 | 26.3 | 6,708 | 21.6 | 3.9 |
| Antidepressants | 871 | 1,023 | 15.6 | 4,535 | 14.6 | 4.4 |
| Psychostimulants | 132 | 143 | 2.2 | 437 | 1.4 | 3.1 |
| Hallucinogens | 33 | 33 | 0.5 | 232 | 0.7 | 7.0 |
| Other/comb psychotropic agents | 314 | 368 | 5.6 | 2,255 | 7.3 | 6.1 |
| Volatile substances | 32 | 37 | 0.6 | 202 | 0.6 | 5.5 |
| Unclassified drugs | 1,166 | 1,369 | 20.9 | 5,733 | 18.4 | 4.2 |
| Drug psychoses | 254 | 281 | 4.3 | 2,754 | 8.9 | 9.8 |
| Conditions related to IDU | 65 | 77 | 1.2 | 236 | 0.8 | 3.1 |
| Complications of pregnancy/infancy | 325 | 388 | 5.9 | 2,752 | 8.9 | 7.1 |
| **All drugs** | **5,496** | **6,560** | **100.0** | **31,077** | **100.0** | **4.7** |
| **PERSONS** | | | | | | |
| Opioids | 1,020 | 1,253 | 10.8 | 5,840 | 11.1 | 4.7 |
| Barbiturates/sedatives/hypnotics | 728 | 863 | 7.5 | 3,575 | 6.8 | 4.1 |
| Tranquillisers | 2,315 | 2,817 | 24.3 | 10,002 | 18.9 | 3.6 |
| Antidepressants | 1,324 | 1,530 | 13.2 | 6,423 | 12.2 | 4.2 |
| Psychostimulants | 301 | 333 | 2.9 | 1,238 | 2.3 | 3.7 |
| Hallucinogens | 124 | 126 | 1.1 | 416 | 0.8 | 3.3 |
| Other/comb psychotropic agents | 558 | 641 | 5.5 | 3,498 | 6.6 | 5.5 |
| Volatile substances | 98 | 106 | 0.9 | 332 | 0.6 | 3.1 |
| Unclassified drugs | 2,162 | 2,561 | 22.1 | 11,095 | 21.0 | 4.3 |
| Drug psychoses | 554 | 622 | 5.4 | 5,486 | 10.4 | 8.8 |
| Conditions related to IDU | 192 | 489 | 4.2 | 4,160 | 7.9 | 8.5 |
| Complications of pregnancy/infancy | 419 | 232 | 2.0 | 717 | 1.4 | 3.1 |
| **All drugs** | **9,795** | **11,573** | **100.0** | **52,783** | **100** | **4.6** |

**Figure 2: Age-specific rates for hospital admissions and beddays, by age group and drug group, WA, 1991-1995**

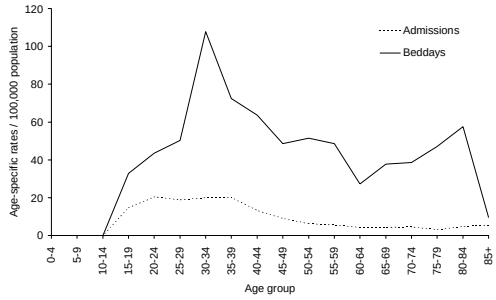
**a) Opioids**



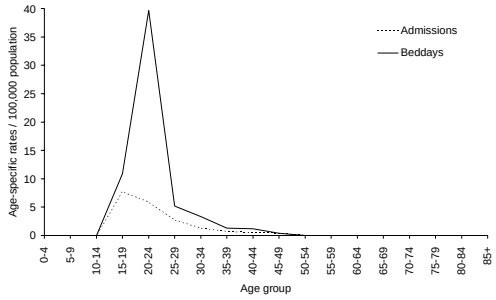

**e) Psychostimulants**



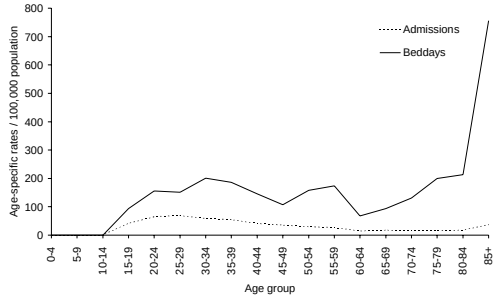

**b) Sedatives and barbiturates**



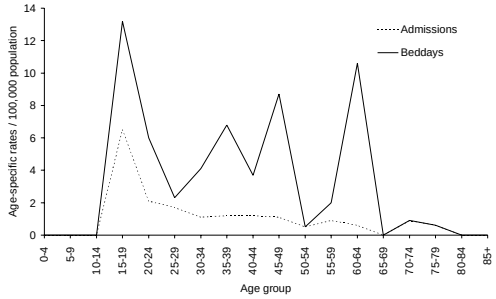

**f) Hallucinogens**



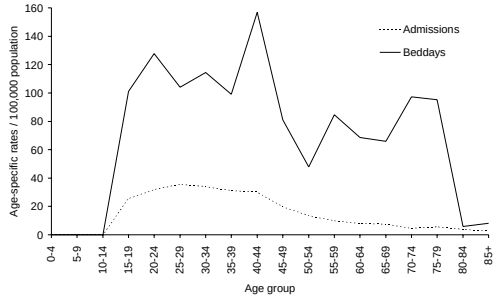

**c) Tranquillisers**



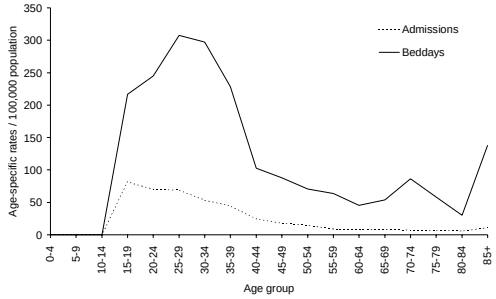

**g) Volatile substances**




**d) Antidepressants**




**h) Unclassified drugs**



## Table 3: Estimated number of other drug-caused hospital admissions and beddays, ALOS, and approximate cost, by cause

*Western Australia, 1991-1995*

| Drug-related conditions | Admissions | | Beddays | | ALOS | Cost[1] |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | (days) | |
| **Dependence** | | | | | | |
| Methadone | 1 | 0.0 | 7 | 0.0 | 7.0 | $3,080 |
| Other opioids | 602 | 5.2 | 3,480 | 6.6 | 5.8 | $1,531,200 |
| Other sedatives/hypnotics | 128 | 1.1 | 1,297 | 2.5 | 10.1 | $570,680 |
| Cocaine | 3 | 0.0 | 17 | 0.0 | 5.7 | $7,480 |
| Amphetamines | 87 | 0.8 | 457 | 0.9 | 5.3 | $201,080 |
| Cannabis | 17 | 0.1 | 65 | 0.1 | 3.8 | $28,600 |
| Hallucinogens | 1 | 0.0 | 1 | 0.0 | 1.0 | $440 |
| Volatile substances | 55 | 0.5 | 248 | 0.5 | 4.5 | $109,120 |
| Unclassified drugs | 601 | 5.2 | 4,837 | 9.2 | 8.0 | $2,128,280 |
| **Sub-total: dependence** | **1,495** | **12.9** | **10,409** | **19.7** | **7.0** | **$4,579,960** |
| **Drug use disorders** | | | | | | |
| Other opioids | 109 | 0.9 | 508 | 1.0 | 4.7 | $223,520 |
| Other sedatives/hypnotics | 121 | 1.0 | 423 | 0.8 | 3.5 | $186,120 |
| Antidepressants | 4 | 0.0 | 13 | 0.0 | 3.3 | $5,720 |
| Cocaine | 4 | 0.0 | 19 | 0.0 | 4.8 | $8,360 |
| Amphetamines | 145 | 1.3 | 521 | 1.0 | 3.6 | $229,240 |
| Cannabis | 40 | 0.3 | 106 | 0.2 | 2.7 | $46,640 |
| Hallucinogens | 28 | 0.2 | 198 | 0.4 | 7.1 | $87,120 |
| Unclassified drugs | 163 | 1.4 | 744 | 1.4 | 4.6 | $327,360 |
| **Sub-total: drug use disorders** | **614** | **5.3** | **2,532** | **4.8** | **4.1** | **$1,114,080** |
| **Accidental poisoning** | | | | | | |
| Heroin | 34 | 0.3 | 155 | 0.3 | 4.6 | $68,200 |
| Methadone | 5 | 0.0 | 8 | 0.0 | 1.6 | $3,520 |
| Other opioids | 35 | 0.3 | 227 | 0.4 | 6.5 | $99,880 |
| Barbiturates | 3 | 0.0 | 14 | 0.0 | 4.7 | $6,160 |
| Other sedatives/hypnotics | 19 | 0.2 | 64 | 0.1 | 3.4 | $28,160 |
| Tranquillisers | 135 | 1.2 | 567 | 1.1 | 4.2 | $249,480 |
| Antidepressants | 53 | 0.5 | 206 | 0.4 | 3.9 | $90,640 |
| Psychostimulants | 19 | 0.2 | 77 | 0.1 | 4.1 | $33,880 |
| Hallucinogens | 19 | 0.2 | 21 | 0.0 | 1.1 | $9,240 |
| Volatile substances | 46 | 0.4 | 79 | 0.1 | 1.7 | $34,760 |
| **Sub-total: accidental poisoning** | **368** | **3.2** | **1,418** | **2.7** | **3.9** | **$623,920** |
| **Suicide** | | | | | | |
| Heroin | 112 | 1.0 | 354 | 0.7 | 3.2 | $155,760 |
| Methadone | 28 | 0.2 | 79 | 0.1 | 2.8 | $34,760 |
| Other opioids | 310 | 2.7 | 978 | 1.9 | 3.2 | $430,320 |
| Barbiturates | 22 | 0.2 | 70 | 0.1 | 3.2 | $30,800 |
| Other sedatives/hypnotics | 564 | 4.9 | 1,600 | 3.0 | 2.8 | $704,000 |
| Tranquillisers | 2,657 | 23.0 | 9,386 | 17.8 | 3.5 | $4,129,840 |
| Antidepressants | 1,457 | 12.6 | 6,116 | 11.6 | 4.2 | $2,691,040 |
| Psychostimulants | 73 | 0.6 | 145 | 0.3 | 2.0 | $63,800 |
| Hallucinogens | 18 | 0.2 | 22 | 0.0 | 1.2 | $9,680 |
| Other/comb psychotropic agent | 621 | 5.4 | 3,420 | 6.5 | 5.5 | $1,504,800 |
| Volatile substances | 4 | 0.0 | 4 | 0.0 | 1.0 | $1,760 |
| Unclassified drugs | 1,748 | 15.1 | 5,352 | 10.1 | 3.1 | $2,354,880 |
| **Sub-total: suicide** | **7,614** | **65.8** | **27,526** | **52.1** | **3.6** | **$12,111,440** |
| **Undetermined cause (poisoning)** | | | | | | |
| Heroin | 11 | 0.1 | 30 | 0.1 | 2.7 | $13,200 |
| Other opioids | 6 | 0.1 | 14 | 0.0 | 2.3 | $6,160 |
| Other sedatives/hypnotics | 6 | 0.1 | 107 | 0.2 | 17.8 | $47,080 |
| Tranquillisers | 25 | 0.2 | 49 | 0.1 | 2.0 | $21,560 |
| Antidepressants | 16 | 0.1 | 88 | 0.2 | 5.5 | $38,720 |
| Psychostimulants | 2 | 0.0 | 2 | 0.0 | 1.0 | $880 |
| Hallucinogens | 3 | 0.0 | 3 | 0.0 | 1.0 | $1,320 |
| Other/comb psychotropic agent | 20 | 0.2 | 78 | 0.1 | 3.9 | $34,320 |
| Volatile substances | 1 | 0.0 | 1 | 0.0 | 1.0 | $440 |
| Unclassified drugs | 49 | 0.4 | 162 | 0.3 | 3.3 | $71,280 |
| **Sub-total: undetermined cause** | **139** | **1.2** | **534** | **1.0** | **3.8** | **$234,960** |

*continued…*

*Table 3: continued*

| Drug-related conditions | Admissions | | Beddays | | ALOS | Cost[1] |
|---|---|---|---|---|---|---|
| | Number | % | Number | % | (days) | |
| **Mental disorders** | | | | | | |
| Drug psychoses | 622 | 5.4 | 5,486 | 10.4 | 8.8 | $2,413,840 |
| **Sub-total: mental disorders** | **622** | **5.4** | **5,486** | **10.4** | **8.8** | **$2,413,840** |
| **Complications of pregnancy/infancy** | | | | | | |
| Maternal drug dependence | 114 | 1.0 | 679 | 1.3 | 6.0 | $298,760 |
| Antepartum haemorrhage | 158 | 1.4 | 610 | 1.2 | 3.9 | $268,400 |
| Newborn drug toxicity | 58 | 0.5 | 431 | 0.8 | 7.4 | $189,640 |
| Low birthweight | 159 | 1.4 | 2,439 | 4.6 | 15.3 | $1,073,160 |
| **Sub-total: comp of pregnancy/infancy** | **489** | **4.2** | **4,159** | **7.9** | **8.5** | **$1,829,960** |
| **Conditions related to IDU** | | | | | | |
| Hepatitis B | 27 | 0.2 | 153 | 0.3 | 5.7 | $67,320 |
| Hepatitis non-A, non-B | 184 | 1.6 | 386 | 0.7 | 2.1 | $169,840 |
| AIDS/HIV | 14 | 0.1 | 34 | 0.1 | 2.4 | $14,960 |
| Infective endocarditis | 8 | 0.1 | 146 | 0.3 | 18.3 | $64,240 |
| **Sub-total: conditions related to IDU** | **233** | **2.0** | **719** | **1.4** | **3.1** | **$316,360** |
| **TOTAL - ALL CAUSES** | **11,574** | **100.0** | **52,783** | **100.0** | **4.6** | **$23,224,520** |

[1] Cost estimates are based on the number of beddays using: *Time Series Analysis, 1994/95*. Finance and Assets, Health Department of WA, 1996.

### 3.1.2 Opioids

During the five-year period 1991 to 1995, there were an estimated 1,020 people admitted to hospital, 1,253 hospital admissions and 5,840 beddays caused by opioids in WA [Table 2] - an average of 204 persons, 251 admissions, and 1,168 beddays each year. These accounted for 10% of people admitted, 11% of hospital admissions and beddays due to other drugs over this period in WA. The estimated average annual cost of opioid-caused hospitalisation in WA was $0.51 million.

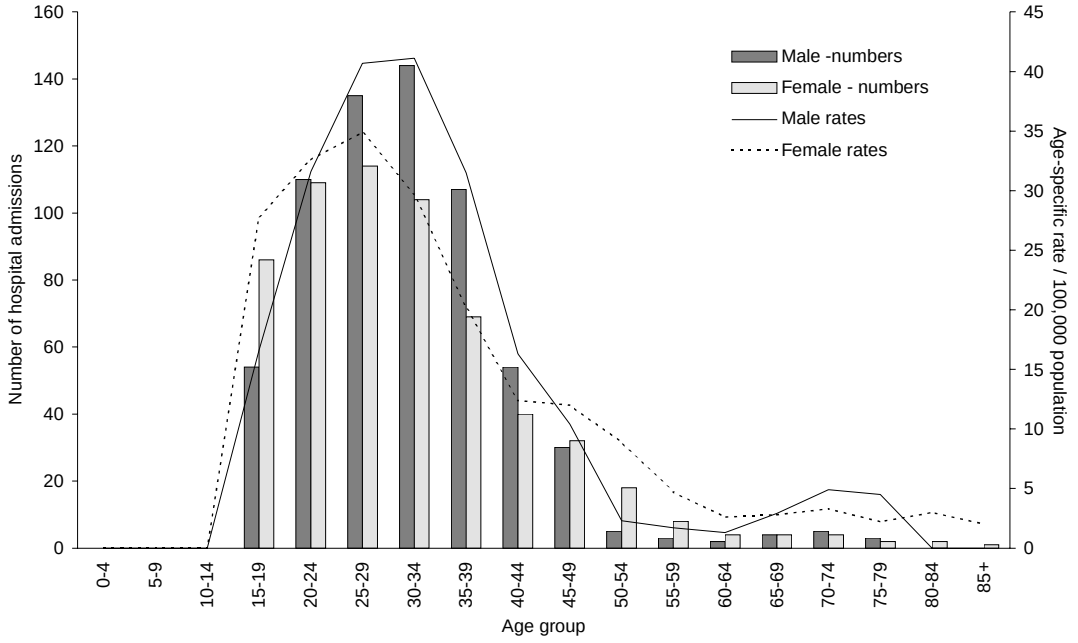
Males had slightly more persons admitted, hospital admissions and beddays due to opioids than males, but females had a slightly longer ALOS (4.9 days compared to 4.5 for males) [Table 2].

Nearly half of the opioid-caused hospital admissions were for dependence and over a third were for suicide attempts. However, because dependence cases had the longest ALOS (5.8 days), these admissions accounted for 60% of opioid-caused beddays, whereas suicides accounted for only 24% of such beddays. There were more female admissions due to opioid-caused suicide attempts compared to males. Attempted suicides accounted for 42% of opioid-caused admissions in females but only 30% of opioid-caused admissions in males [Table 4].

The highest number of opioid-caused hospital admissions (249) involved people aged 25 to 29 years, and the highest number of opioid-caused beddays (1,270) involved people aged 30 to 34 years [Figure 3]. People aged between 15 and 34 years old accounted for 68% of opioid-caused admissions and 58% of opioid-caused beddays.

Numbers and rates for opioid-caused hospital admissions were higher for females in the very young (15-19 years), the middle aged (45-64 years) and the aged (80 years and above). The peak in age-specific rates for opioid-caused hospital admissions was earlier in females (35 admissions per 100,000 population in the 25 to 29 years age group) compared with males (41 admissions per 100,000 in the 30 to 34 years age group) [Figure 3]. There was no significant difference between the age-standardised rate for male opioid-caused hospital admissions (15.4 admissions per 100,000 population) and that for females (14.4 admissions per 100,000).

## Figure 3: Estimated numbers and age-specific rates for opioid-caused hospital admissions, by age group and sex, WA, 1991-1995




## Table 4: Estimated number of opioid-caused hospital admissions and beddays, by cause and sex

*Western Australia, 1991-1995*

| Opioid-related conditions | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| | No. of admissions | No. of beddays | No. of admissions | No. of beddays | No. of admissions | No. of beddays |
| **Dependence*** | | | | | | |
| Methadone dependence | 1 | 7 | 0 | 0 | 1 | 7 |
| Other/unknown opioid dependence | 334 | 1,741 | 268 | 1,739 | 602 | 3,480 |
| **Sub-total: dependence** | 335 | 1,748 | 268 | 1,739 | 603 | 3,487 |
| **Use disorder** | | | | | | |
| Other/unknown opioid | 62 | 270 | 47 | 238 | 109 | 508 |
| **Sub-total: use disorder** | 62 | 270 | 47 | 238 | 109 | 508 |
| **Accidental poisoning** | | | | | | |
| Heroin | 25 | 120 | 9 | 35 | 34 | 155 |
| Methadone | 4 | 6 | 1 | 2 | 5 | 8 |
| Other opioid | 22 | 119 | 13 | 108 | 35 | 227 |
| **Sub-total: accidental poisoning** | 51 | 245 | 23 | 145 | 74 | 390 |
| **Suicide** | | | | | | |
| Heroin | 72 | 199 | 40 | 155 | 112 | 354 |
| Methadone | 12 | 29 | 16 | 50 | 28 | 79 |
| Other/unknown opioid | 113 | 405 | 197 | 573 | 310 | 978 |
| **Sub-total: suicide** | 197 | 633 | 253 | 778 | 450 | 1,411 |
| **Undetermined cause (poisoning)** | | | | | | |
| Heroin | 10 | 29 | 1 | 1 | 11 | 30 |
| Other/unknown opioid | 1 | 1 | 5 | 13 | 6 | 14 |
| **Sub-total: undetermined cause** | 11 | 30 | 6 | 14 | 17 | 44 |
| **TOTAL** | **656** | **2,926** | **597** | **2,914** | **1,253** | **5,840** |

* Dependence includes opioid dependence (304.0) and combinations of opioid dependence with any other drug dependence (304.7).

### 3.1.3 Attempted suicides using drugs

During the five-year period 1991 to 1995, there were an estimated 5,740 people admitted to hospital, 7,614 hospital admissions and 27,526 beddays due to drug-caused suicide attempts in WA [Table 3] - an average of 1,148 persons, 1,523 admissions, and 5,505 beddays each year. These accounted for 59% of people admitted, 66% of hospital admissions, and 52% of beddays from all drugs other than alcohol and tobacco over this period in WA. The estimated average annual cost of hospitalisation for drug-caused suicide attempts in WA was $2.42 million.

The drugs most commonly responsible for hospitalisation due to drug-caused suicide attempts were tranquillisers, which were associated with 35% of such admissions and 34% of such beddays. Antidepressants were responsible for 19% of admissions for drug-caused suicide attempts and 22% of beddays for drug-caused suicide attempts [Table 5].

Females had over 1.5 times more persons admitted, hospital admissions and beddays from drug-caused suicide attempts than males [Table 5]. Females also had a higher ALOS for drug-caused suicide attempts than males (3.8 days compared to 3.3 days). Among females, 62% of people admitted, 71% of hospital admissions and 57% of beddays caused by other drugs were due to suicide attempts. Corresponding figures for males were 54%, 59% and 45% respectively.

The highest number of hospital admissions from drug-caused suicide attempts (1,279) involved people aged 20 to 24 years and the highest number of beddays (3,910) involved people aged 30 to 34 years. People aged between 15 and 34 years old accounted for 61% of hospital admissions from drug-caused suicide attempts and 48% of beddays.

The female age-specific admission rates for drug-caused suicide attempts showed a higher and earlier peak in females (243 admissions per 100,000 population in the 15 to 19 years age group) compared with males (158 admissions per 100,000 in the 25 to 29 years age group) [Figure 4]. Female age-specific admission rates were higher than for males, and the age-standardised rate for female hospital admissions due to drug-caused suicide attempts (112 admissions per 100,000 population) was significantly higher than the male rate (70 admissions per 100,000).

**Figure 4: Estimated numbers and age-specific rates for hospital admissions from drug-caused suicide attempts, by age group and sex, WA, 1991-1995**

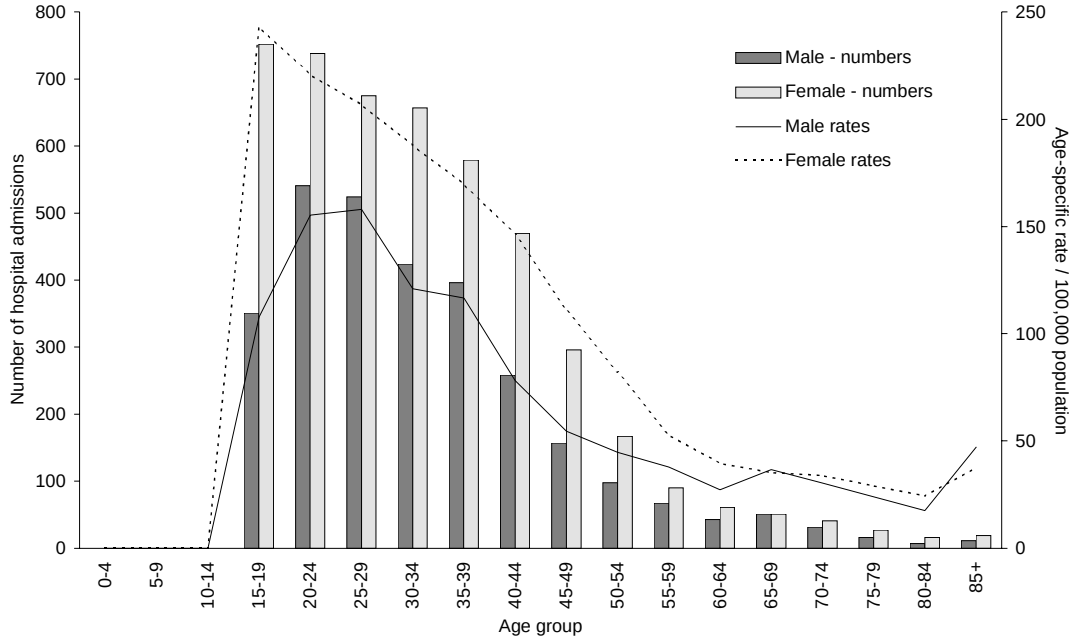


**Table 5: Estimated number of hospital admissions and beddays due to attempted suicide using drugs, by drug and sex**

*Western Australia, 1991-1995*

| Drug used in suicide attempt | Males | | Females | | Persons | |
|---|---|---|---|---|---|---|
| | No. of admissions | No. of beddays | No. of admissions | No. of beddays | No. of admissions | No. of beddays |
| Heroin | 72 | 199 | 40 | 155 | 112 | 354 |
| Methadone | 12 | 29 | 16 | 50 | 28 | 79 |
| Other/unknown opioid | 113 | 405 | 197 | 573 | 310 | 978 |
| Barbiturates | 12 | 29 | 10 | 41 | 22 | 70 |
| Other sedative/hypnotic | 219 | 649 | 345 | 951 | 564 | 1,600 |
| Tranquillisers | 1,031 | 3,056 | 1,626 | 6,330 | 2,657 | 9,386 |
| Antidepressants | 479 | 1,786 | 978 | 4,330 | 1,457 | 6,116 |
| Psychostimulants | 31 | 85 | 42 | 60 | 73 | 145 |
| Hallucinogens | 15 | 17 | 3 | 5 | 18 | 22 |
| Other/comb psychotropic agent | 267 | 1,225 | 354 | 2,195 | 621 | 3,420 |
| Volatile substances | 2 | 2 | 2 | 2 | 4 | 4 |
| Other/unspecified drugs | 722 | 2,283 | 1,026 | 3,069 | 1,748 | 5,352 |
| **Total** | **2,975** | **9,765** | **4,639** | **17,761** | **7,614** | **27,526** |

## 3.2 Trends

In WA over the period 1991 to 1995, the hospital admission rates due to all other drugs, opiates, and drug-caused suicide attempts all increased significantly [Figure 5; Table 6]. The admission rate for opioids, in particular, showed a dramatic increase, by an average of 65% per year between 1991 and 1995. Females had higher ASRs than males for hospital admissions due to all other drugs, and drug-caused suicide attempts.

**Figure 5: Age-standardised rates for hospital admissions caused by other drugs, opioids, and drug-caused suicide attempts, by year and sex, WA, 1991-1995**

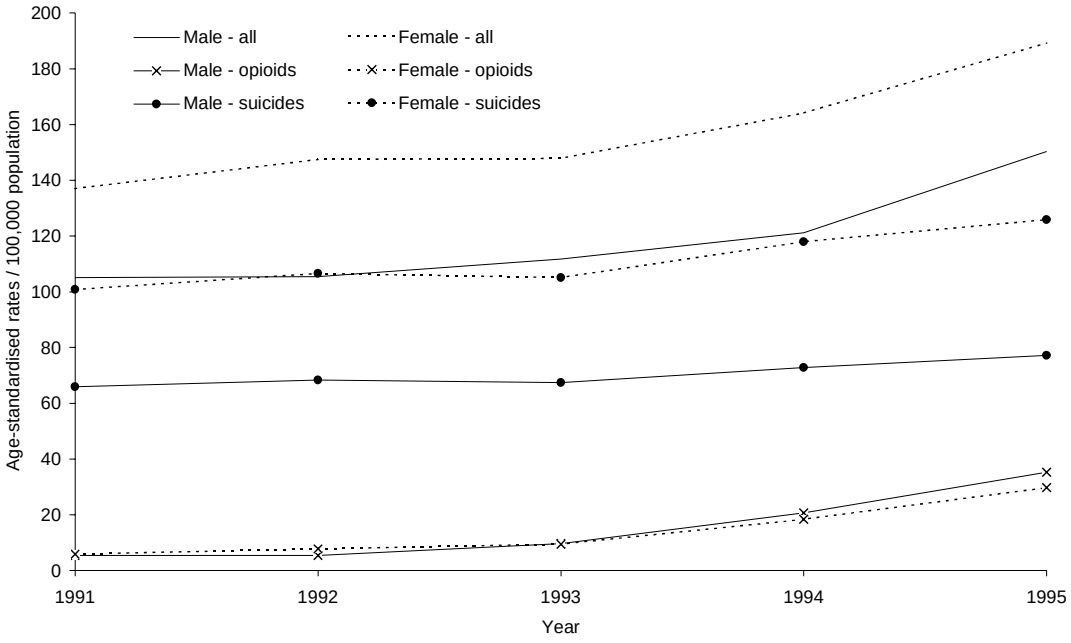


**Table 6: Average annual percentage increase in hospital admission rates caused by other drugs, opioids, and drug-caused suicide attempts, by sex**

*Western Australia, 1991-1995*

| | All other drugs | Opioids | Drug-caused suicide attempts |
|---|---|---|---|
| Males | 9.6% | 74.6% | 3.9% |
| Females | 8.2% | 55.9% | 5.8% |
| Persons | 8.8% | 65.2% | 5.1% |

**Note:** The rate of change of the ASRs is the average per year over the period 1991-1995. All the changes in the above table were significant ($p<0.05$).

## 3.3 Health Zones

### 3.3.1 Overview

Seventy-six percent of people admitted to hospital, 77% of admissions and 82% of beddays due to other drugs, occurred in the metropolitan area. This largely reflects the population distribution of WA (73% of the population lived in the metropolitan HZs during the period studied). Metropolitan HZs had similar or longer ALOS than the State, whilst country HZs had shorter ALOS [Table 7].

The female crude admission rate for other drugs was significantly greater than for males in all HZs except the Midlands and the Great Southern HZs [Figure 6]. In the Pilbara HZ, the female crude rate was double that of males. Overall, the East Metropolitan HZ had a crude admission rate for other drugs significantly higher than the State, the Goldfields and Midwest HZs had rates not significantly different to the State, and the rates in other HZs rates were significantly lower than the State [Table 7].

**Figure 6: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions caused by other drug use, by Health Zone and sex, WA, 1991-1995**

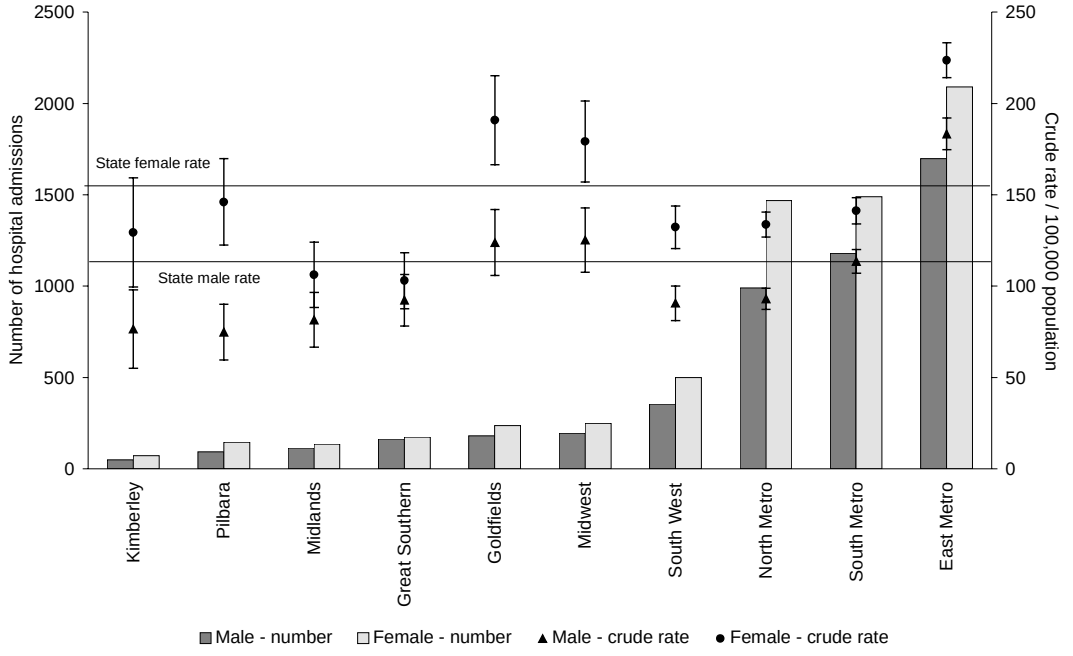


**Table 7: Estimated numbers of persons admitted, hospital admissions, and beddays, crude admission rates, ALOS, and bedday cost of other drug-caused hospitalisation, by Health Zones**

*Western Australia, 1991-1995*

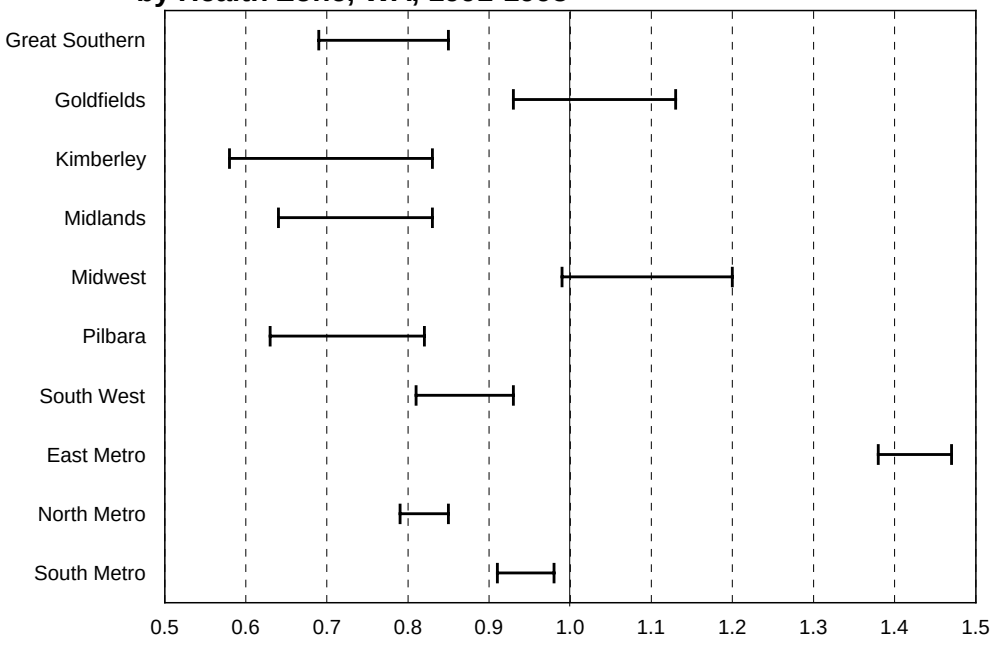
| Health Zone | Number of persons | Number of admissions | Crude adm rates / 100,000 pop | Number of beddays | ALOS (days) | Total bedday cost[1] |
|---|---|---|---|---|---|---|
| Great Southern | 287 | 337 | *97.5 | 1,244 | 3.7 | $547,360 |
| Goldfields | 377 | 417 | 154.5 | 1,259 | 3.0 | $553,960 |
| Kimberley | 108 | 121 | *101.1 | 360 | 3.0 | $158,400 |
| Midlands | 213 | 248 | *92.9 | 1,008 | 4.1 | $443,520 |
| Midwest | 379 | 443 | 150.7 | 1,435 | 3.2 | $631,400 |
| Pilbara | 212 | 238 | *106.8 | 765 | 3.2 | $336,600 |
| South West | 756 | 852 | *111.1 | 3,589 | 4.2 | $1,579,160 |
| East Metropolitan | 3,101 | 3,788 | *203.6 | 17,080 | 4.5 | $7,515,200 |
| North Metropolitan | 2,106 | 2,459 | *113.7 | 12,792 | 5.2 | $5,628,480 |
| South Metropolitan | 2,257 | 2,670 | *127.5 | 13,251 | 5.0 | $5,830,440 |
| **State** | **9,795** | **11,573** | **137.7** | **52,783** | **4.6** | **$23,224,520** |

[1] Calculated using the number of beddays and the average cost from: *Time Series Analysis, 1994/95.* Finance and Assets, Health Department of WA, 1996

* Indicates a significant difference (p=<0.05) relative to the State rate.

Due to variations in the age structure of the HZs and the low number of admissions in some HZs, SMRs were calculated to determine whether the observed number of hospital admissions varied from that expected based on the State rate. The SMRs in the Goldfields and Midwest HZs were similar to that of the State. The East Metropolitan HZ had a significantly higher SMR than the State, and the other HZs had significantly lower SMRs than the State [Figure 7].

**Figure 7: Standardised morbidity rates for other drug-caused hospital admissions, by Health Zone, WA, 1991-1995**



### 3.3.2 Opioids

There were no significant sex-related differences in the crude admission rates for opioids in any of the HZs [Figure 8]. Overall, the East Metropolitan HZ had a crude admission rate for opioids significantly higher than the State, and the Great Southern, Goldfields, Kimberley, Midlands, South West, and North Metropolitan HZs had rates significantly lower than the State [Table 8].

**Table 8: Estimated numbers of persons admitted, hospital admissions, and beddays, crude admission rates, ALOS, and bedday cost of opioid-caused hospitalisation, by Health Zones**

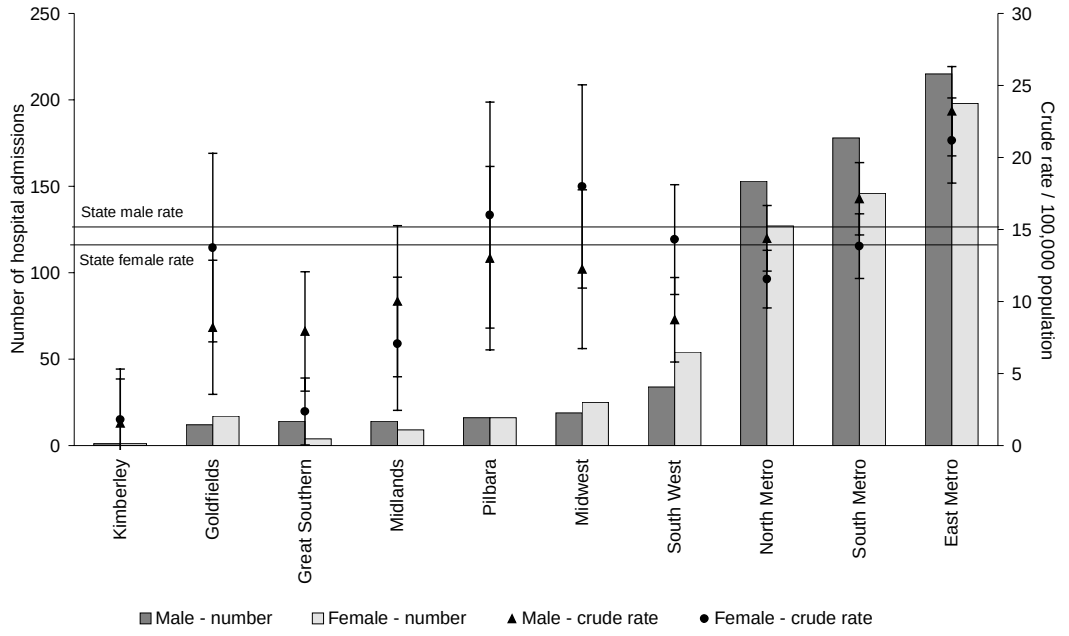
*Western Australia, 1991-1995*

| Health Zone | Number of persons | Number of admissions | Crude adm rates / 100,000 pop | Number of beddays | ALOS (days) | Total bedday cost[1] |
|---|---|---|---|---|---|---|
| Great Southern | 14 | 18 | *5.2 | 92 | 5.1 | $40,480 |
| Goldfields | 25 | 29 | *10.7 | 81 | 2.8 | $35,640 |
| Kimberley | 2 | 2 | *1.7 | 3 | 1.5 | $1,320 |
| Midlands | 20 | 23 | *8.6 | 116 | 5.0 | $51,040 |
| Midwest | 36 | 44 | 15.0 | 154 | 3.5 | $67,760 |
| Pilbara | 25 | 32 | 14.4 | 112 | 3.5 | $49,280 |
| South West | 72 | 88 | *11.5 | 540 | 6.1 | $237,600 |
| East Metropolitan | 338 | 413 | *22.2 | 1,811 | 4.4 | $796,840 |
| North Metropolitan | 222 | 280 | *12.9 | 1,377 | 4.9 | $605,880 |
| South Metropolitan | 266 | 324 | 15.5 | 1,554 | 4.8 | $683,760 |
| **State** | **1,020** | **1,253** | **14.9** | **5,840** | **4.7** | **$2,569,600** |

[1] Calculated using the number of beddays and the average cost from: *Time Series Analysis, 1994/95.* Finance and Assets, Health Department of WA, 1996

* Indicates a significant difference (p=<0.05) relative to the State rate.

**Figure 8: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions caused by opioids, by Health Zone and sex, WA, 1991-1995**



### 3.3.3 Attempted suicides using drugs

The female crude admission rate for suicide attempts using drugs was significantly greater than that for males in all HZs except the Midlands and Great Southern HZs [Figure 9]. In the Pilbara, Kimberley, and Goldfields HZs, the female crude rate was at least 1.5 times that of males. Overall, the East Metropolitan HZ had a significantly higher crude admission rate for drug-caused suicide attempts than the State, crude rates in the Goldfields and Midwest HZs were not significantly different to the State, and the rates in the other HZs were significantly lower than the State [Table 9].

**Table 9: Estimated numbers of persons admitted, hospital admissions, and beddays, crude admission rates, ALOS, and bedday cost of hospitalisation for drug-caused attempted suicides, by Health Zones**

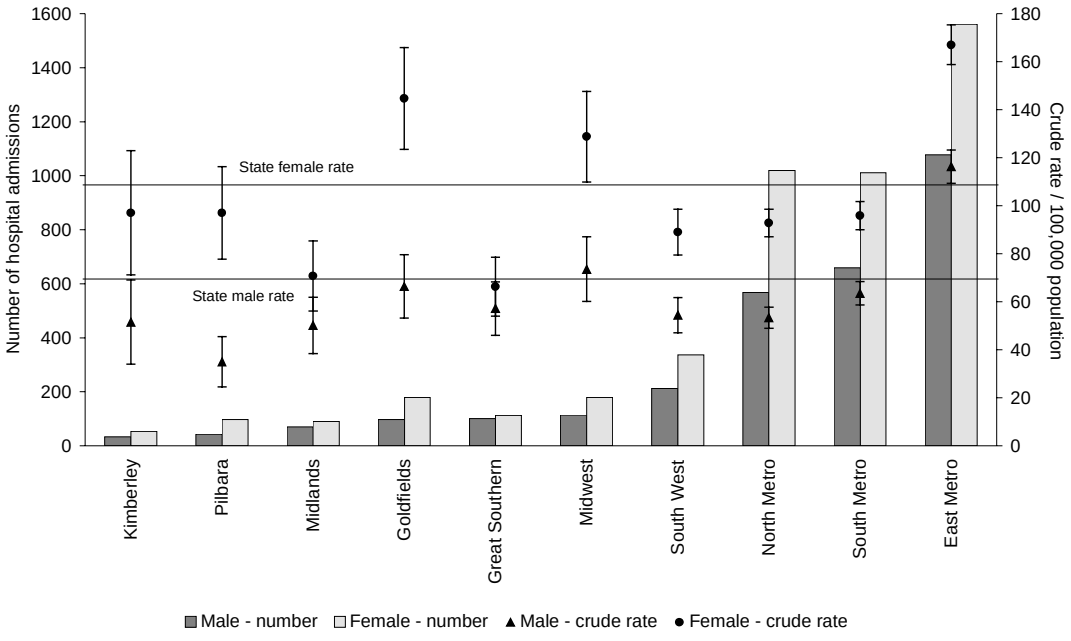
*Western Australia, 1991-1995*

| Health Zone | Number of persons | Number of admissions | Crude adm rates / 100,000 pop | Number of beddays | ALOS (days) | Total bedday cost[1] ($) |
|---|---|---|---|---|---|---|
| Great Southern | 167 | 213 | *61.7 | 679 | 3.2 | $298,760 |
| Goldfields | 232 | 276 | 102.3 | 663 | 2.4 | $291,720 |
| Kimberley | 75 | 87 | *72.7 | 178 | 2.0 | $78,320 |
| Midlands | 125 | 160 | *60.0 | 490 | 3.1 | $215,600 |
| Midwest | 226 | 293 | 99.7 | 708 | 2.4 | $311,520 |
| Pilbara | 120 | 140 | *62.8 | 308 | 2.2 | $135,520 |
| South West | 446 | 548 | *71.5 | 1,831 | 3.3 | $805,640 |
| East Metropolitan | 1,857 | 2,638 | *141.8 | 9,943 | 3.8 | $4,374,920 |
| North Metropolitan | 1,194 | 1,588 | *73.4 | 6,634 | 4.2 | $2,918,960 |
| South Metropolitan | 1,300 | 1,671 | *79.8 | 6,092 | 3.6 | $2,680,480 |
| **State** | **5,740** | **7,614** | **90.6** | **27,526** | **3.6** | **$12,111,440** |

[1] Calculated using the number of beddays and the average cost from: *Time Series Analysis, 1994/95.* Finance and Assets, Health Department of WA, 1996

* Indicates a significant difference (p=<0.05) relative to the State rate.

**Figure 9: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions for drug-caused attempted suicides, by Health Zone and sex, WA, 1991-1995**



# 4. Conclusion

*Prevalence of drug use*
Many of the drugs included in this study are illegal, and it is difficult to estimate the prevalence of their use in the general population. However, surveys and information from other sources have indicated that the use of illicit drugs is restricted to a small proportion of Australians, and is more common amongst people aged 20 to 29 years (Commonwealth Department of Health, Housing, Local Government and Community Services 1993, page xvi). This is supported by the hospital admission rates reported in this study.

The exception is cannabis, which has been used by a third of the Western Australian population (Task Force on Drug Abuse 1995). Although cannabis is the most commonly used illicit drug, in WA it accounted for only 57 hospital admissions between 1991 and 1995, and no deaths between 1984 and 1994 (Unwin 1996).

*Use of hospital services*
This study found that, over the period 1991 to 1995, rates of admissions to WA hospitals due to the use of illicit drugs were low, particularly considering that admissions to the Alcohol and Drug Authority's detoxification hospital, the Central Drug Unit, are recorded by the HMDS. Possible explanations for this are: the prevalence of the use of these drugs is low; users of illicit drugs are reluctant to seek medical assistance; or that many of these drugs do not cause health problems that are apparent to users. In the case of heroin, the recent increase in overdose deaths and research showing that users rarely contact ambulance services for assistance, would suggest that the low rate of heroin-related admissions may be because heroin users are reluctant users of hospitals. It may also be partly explained by the State's methadone program, which gives heroin users the opportunity to change high risk behaviours.

*Costs to the community*
In 1992, the tangible and intangible costs of illicit drug abuse in Australia were estimated at more than $1,683 million (Collins and Lapsley 1996). This estimate includes such factors as production costs, health care, law enforcement, resources used in addictive consumption, and death. It does not include the abuse of licit drugs other than alcohol and tobacco.

In WA, the estimated average cost for other drug-caused hospitalisation alone was over $5.1 million per year, or $3 per head of population. This is much lower than the annual cost per head of population for tobacco-caused hospitalisation ($21) (Unwin et al 1997) and alcohol-caused hospitalisation ($15) (Unwin et al - in preparation).

*Social effects*
Although illicit drug use incurs lower hospitalisation costs than alcohol and tobacco, it is of concern because of the associated harmful health and social effects. In WA, the use of drugs other than tobacco and alcohol is responsible for about 3% of all drug-caused deaths (Unwin 1996), 10% of all drug-caused hospital admissions, and 7% of all drug-caused beddays.

In 1992, WA had the highest recorded drug offence rate in Australia (801 offences / 100,000 population). WA also showed the largest increase in drug offence rates, increasing more than seven times since the 1980 rate of 109 offences / 100,000 (Department of Human Services and Health 1994, page 106).

*Opioids and tranquillisers*
There is evidence that heroin deaths have increased in a number of Western countries since the early 1990s. A recent review of opioid deaths in WA has found that the number of opioid deaths had increased by more than four fold, from 20 deaths in 1990 to 81 deaths in 1995, with a small drop occurring in 1996 when 65 deaths were recorded (Swensen 1997). In the current study, heroin was identified as the drug responsible in only 12.5% of opiate-caused admissions. This is

probably an underestimate of morbidity attributable to heroin, as heroin users are reluctant users of hospitals, contributing to the premature mortality associated with this drug.

Although hospitalisation rates due to opioids have shown a striking increase over the period studied in this report, this is unlikely to reflect patterns of heroin use. It is more likely due to a dramatic increase in the medical use of opioids experienced in Australia over the last decade. Between 1986 and 1995, the amount of oral morphine used medicinally in Australia rose from 117kg per year to 578kg and the amount of all other oral opioid drugs used medicinally increased from 93kg to 149kg (Bell 1997). Even given this large increase in the rates of opiate-caused admissions, over the period 1991 to 1995 tranquillisers were responsible for more than twice as many hospital admissions as opiates.

*Attempted suicides using drugs*

Drugs were the most commonly used method of attempting suicide in WA between 1981 and 1993, implicated in 76% of male suicide attempts and 91% of female suicide attempts (Serafino, Swensen & Thomson 1996). Because of the high proportion of suicide attempts involving drugs the age-specific rates for all suicides followed a similar pattern to that for drug-caused suicide attempts in this report, with the female peak in the 15 to 19 years age group and a lower, later peak for males.

Serafino et al (1996) found a decrease in attempted suicides using drugs over the period 1981 to 1993 (by 1.8% for males and 2.9% for females), but the current report shows that drug-caused suicide attempts have increased by an average of 5.1% per year between 1991 and 1995. Although the methodologies are slightly different, Figure 5 suggests that an increase has occurred in the last few years.

# 5. References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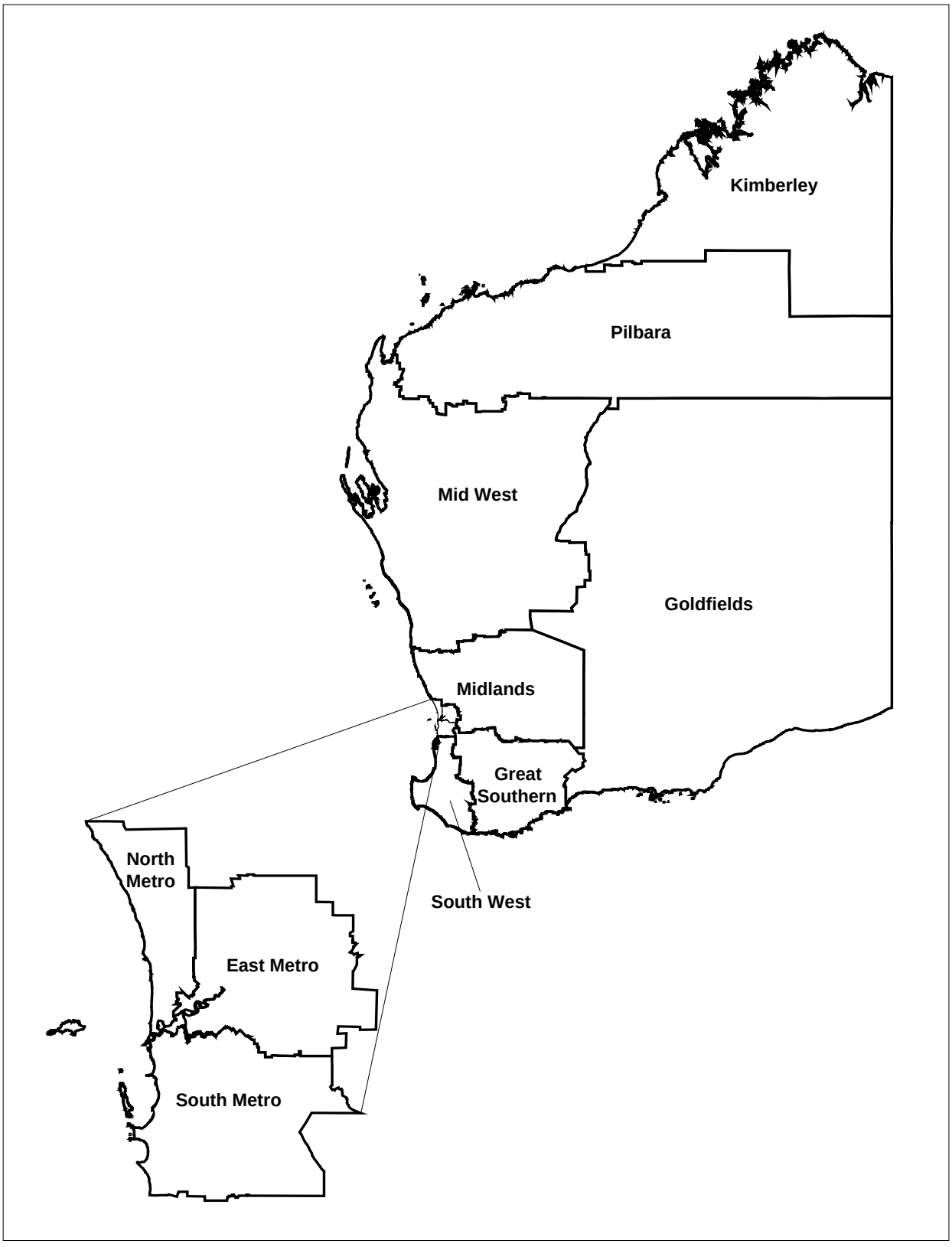
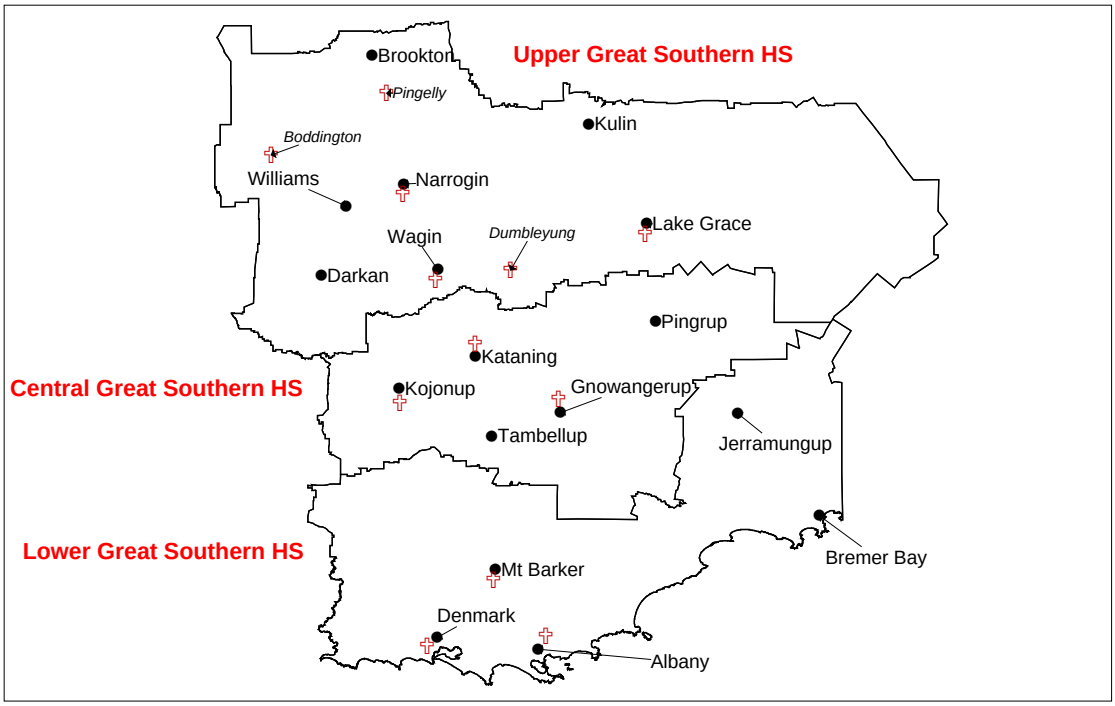
## Appendix 1: Summary sheets of other drug-caused hospitalisation, by Health Zone



## Great Southern Health Zone




✞ 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.

## Great Southern Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Central Great Southern Health Service | 11,204 | 16 | 10,577 | 14 |
| Lower Great Southern Health Service | 39,312 | 57 | 43,181 | 59 |
| Upper Great Southern Health Service | 18,901 | 27 | 19,311 | 26 |
| **Great Southern Health Zone** | **69,417** | **100** | **73,069** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

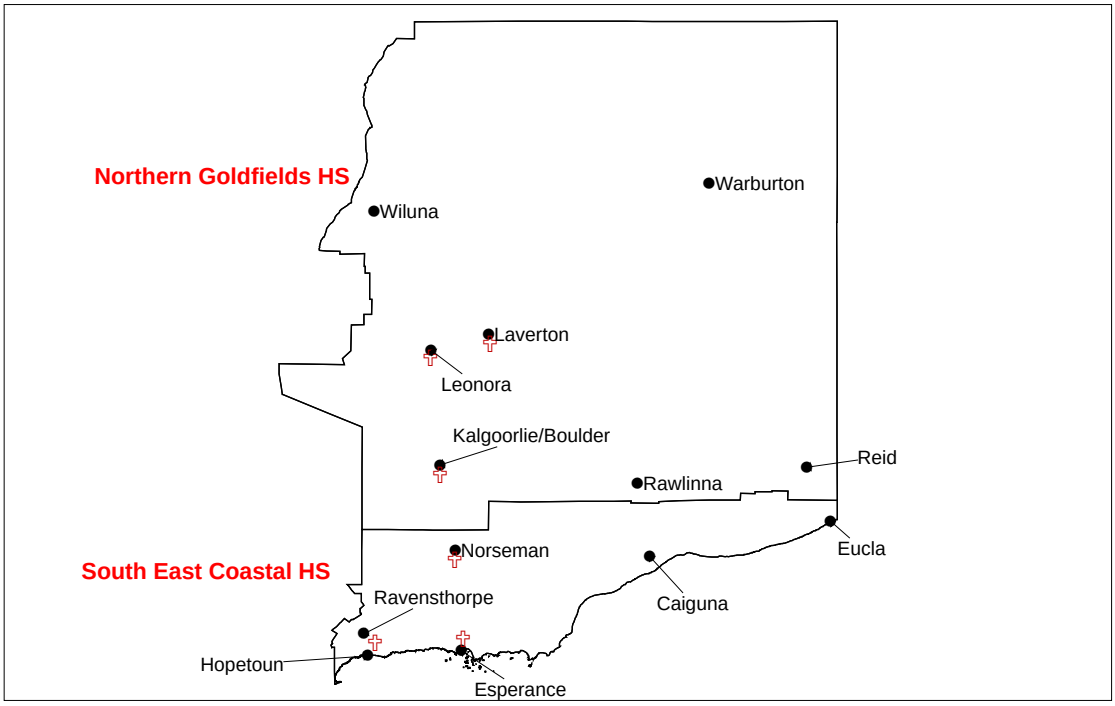
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 14 | 18 | 5.1 | 7.4 |
| Barbiturates,sedatives and hypnotics | 14 | 14 | 3.9 | 4.3 |
| Tranquillisers | 64 | 74 | 3.3 | 19.5 |
| Anti-depressants | 29 | 33 | 3.2 | 8.4 |
| Psychostimulants | 4 | 4 | 2.8 | 0.9 |
| Hallucinogens | 8 | 10 | 2.5 | 2.0 |
| Other psychotropic agents | 15 | 17 | 5.9 | 8.0 |
| Volatile substances | 5 | 6 | 1.2 | 0.6 |
| Unclassified drugs | 84 | 104 | 3.2 | 26.9 |
| Drug psychoses | 27 | 31 | 4.2 | 10.5 |
| IDU conditions | 9 | 10 | 2.4 | 1.9 |
| Complications of pregnancy/infancy | 14 | 17 | 7.0 | 9.6 |
| **Total** | **287** | **337** | **3.7** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the Great Southern Health Zone was $109,472 per year, equivalent to $1.58 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the Great Southern Health Zone (108 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $8,096 per year in the Great Southern Health Zone, equivalent to $2,891 per person admitted.
- Psychotropic agents accounted for 43% of other drug-caused hospital beddays in the Great Southern Health Zone, costing an average of $47,256 per year.
- Between 1991 and 1995, an estimated 167 people were admitted to hospital a total of 213 times in the Great Southern Health Zone for attempting suicide using drugs, costing an average of $59,752 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## Goldfields Health Zone




✞ 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.

## Goldfields Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Northern Goldfields Health Service | 40,877 | 73 | 43,187 | 73 |
| South East Coastal Health Service | 14,951 | 27 | 15,656 | 27 |
| **Goldfields Health Zone** | **55,828** | **100** | **58,843** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

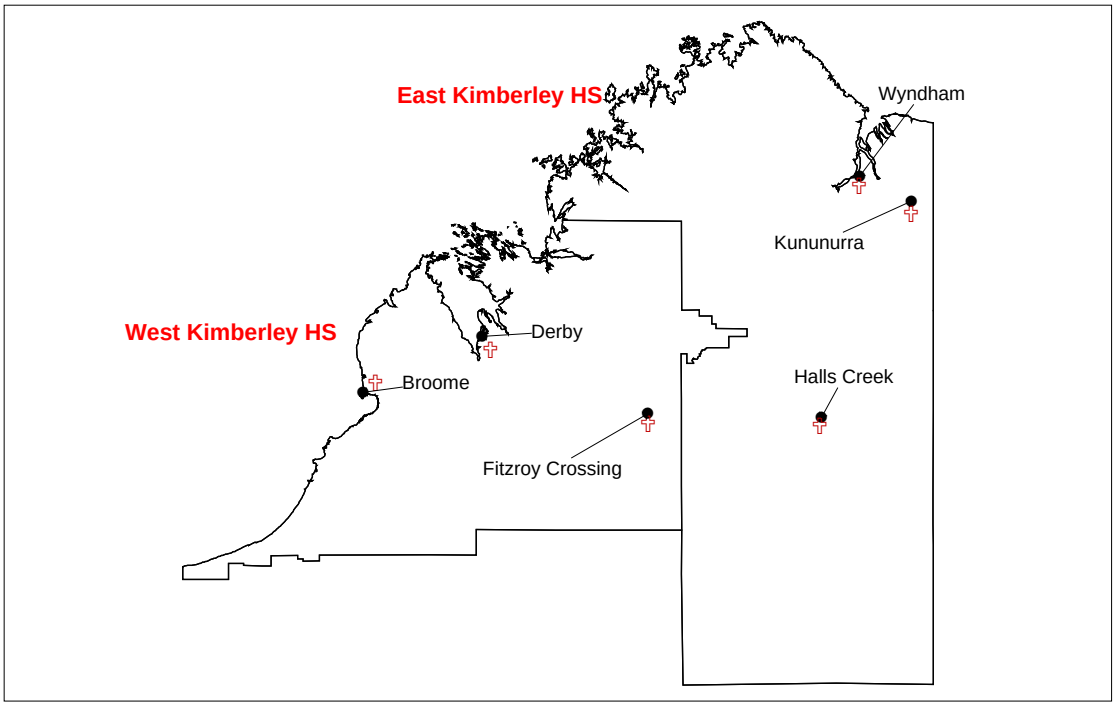
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 25 | 29 | 2.8 | 6.4 |
| Barbiturates,sedatives and hypnotics | 24 | 25 | 1.5 | 2.9 |
| Tranquillisers | 82 | 88 | 2.6 | 18.0 |
| Anti-depressants | 45 | 55 | 2.9 | 12.5 |
| Psychostimulants | 18 | 19 | 2.7 | 4.1 |
| Hallucinogens | 7 | 7 | 1.4 | 0.8 |
| Other psychotropic agents | 17 | 18 | 4.7 | 6.7 |
| Volatile substances | 20 | 22 | 2.6 | 4.5 |
| Unclassified drugs | 98 | 106 | 2.5 | 21.3 |
| Drug psychoses | 20 | 24 | 5.0 | 9.6 |
| IDU conditions | 4 | 5 | 6.2 | 2.5 |
| Complications of pregnancy/infancy | 17 | 19 | 7.0 | 10.6 |
| **Total** | **377** | **417** | **3.0** | **100.0** |

### Summary


- The average cost of hospitalisation caused by other drug use in the Goldfields Health Zone was $110,792 per year, equivalent to $2.05 per head of population.
- The age-standardised admission rate for conditions caused by other drugs in the Goldfields Health Zone (145 per 100,000 population) was not significantly different to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $7,128 per year in the Goldfields Health Zone, equivalent to $1,426 per person admitted.
- Psychotropic agents accounted for 45% of other drug-caused hospital beddays in the Goldfields Health Zone, costing an average of $49,984 per year.
- Between 1991 and 1995, an estimated 232 people were admitted to hospital a total of 276 times in the Goldfields Health Zone for attempting suicide using drugs, costing an average of $58,344 per year.


* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## Kimberley Health Zone




✞ 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.

## Kimberley Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| East Kimberley Health Service | 9,120 | 37 | 10,332 | 36 |
| West Kimberley Health Service | 15,840 | 63 | 18,186 | 64 |
| **Kimberley Health Zone** | **24,960** | **100** | **28,518** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

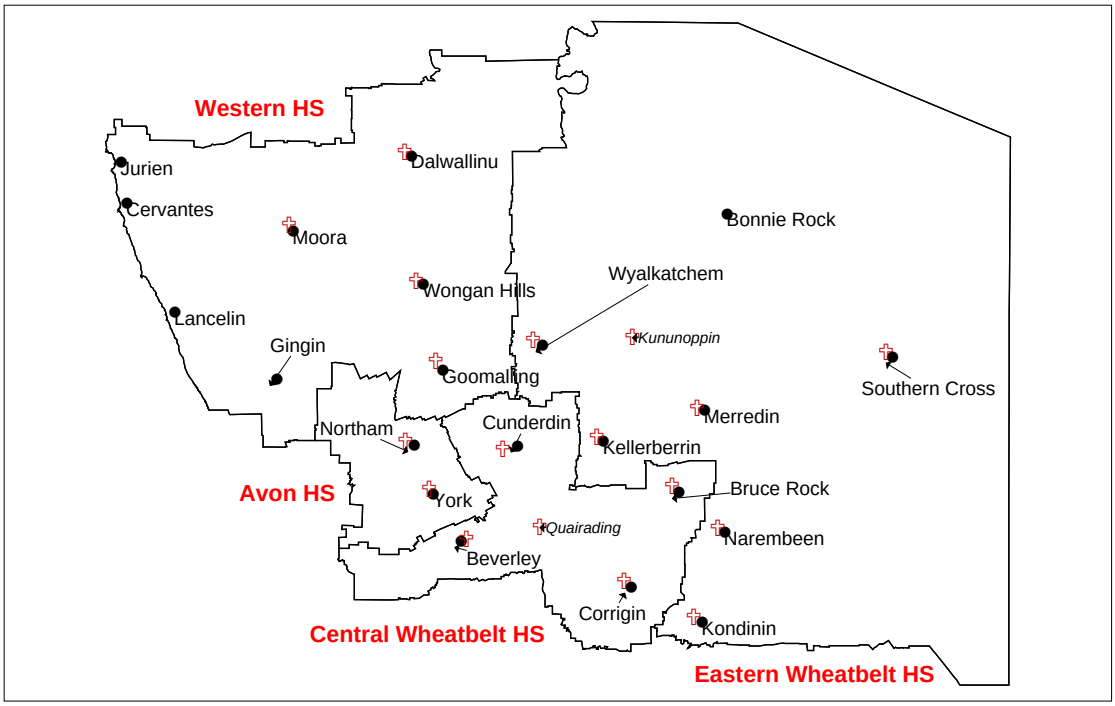
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 2 | 2 | 1.5 | 0.8 |
| Barbiturates,sedatives and hypnotics | 4 | 4 | 10.3 | 11.4 |
| Tranquillisers | 27 | 30 | 1.8 | 15.3 |
| Anti-depressants | 9 | 10 | 3.6 | 10.0 |
| Psychostimulants | 2 | 2 | 1.0 | 0.6 |
| Hallucinogens | 2 | 2 | 1.0 | 0.6 |
| Other psychotropic agents | 3 | 3 | 2.3 | 1.9 |
| Volatile substances | 2 | 2 | 1.5 | 0.8 |
| Unclassified drugs | 41 | 47 | 1.8 | 23.9 |
| Drug psychoses | 5 | 5 | 3.0 | 4.2 |
| IDU conditions | 3 | 4 | 5.3 | 5.8 |
| Complications of pregnancy/infancy | 8 | 10 | 8.9 | 24.7 |
| **Total** | **108** | **121** | **3.0** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the Kimberley Health Zone was $31,680 per year, equivalent to $1.32 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the Kimberley Health Zone (95 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $264 per year in the Kimberley Health Zone, equivalent to $660 per person admitted.
- Psychotropic agents accounted for 40% of other drug-caused hospital beddays in the Kimberley Health Zone, costing an average of $12,584 per year.
- Between 1991 and 1995, an estimated 75 people were admitted to hospital a total of 87 times in the Kimberley Health Zone for attempting suicide using drugs, costing an average of $15,664 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## Midlands Health Zone




✞ 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.

## Midlands Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | 1995 | % of HZ | 2001 | % of HZ |
| Avon Health Service | 15,998 | 30 | 16,708 | 31 |
| Central Wheatbelt Health Service | 7,140 | 13 | 6,996 | 13 |
| Eastern Wheatbelt Health Service | 12,988 | 24 | 12,442 | 23 |
| Western Health Service | 17,350 | 32 | 17,930 | 33 |
| **Midlands Health Zone** | **53,476** | **100** | **54,076** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

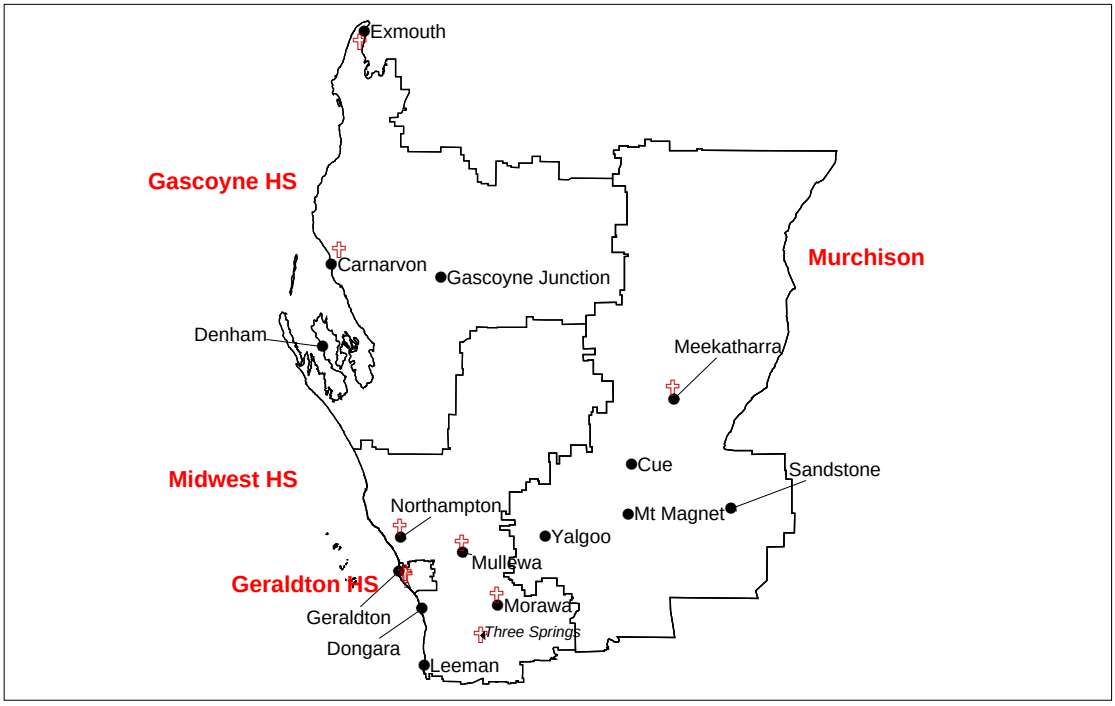
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 20 | 23 | 5.0 | 11.5 |
| Barbiturates,sedatives and hypnotics | 20 | 23 | 3.9 | 8.8 |
| Tranquillisers | 45 | 50 | 3.3 | 16.5 |
| Anti-depressants | 27 | 32 | 3.1 | 9.7 |
| Psychostimulants | 6 | 8 | 5.9 | 4.7 |
| Hallucinogens | 1 | 1 | 1.0 | 0.1 |
| Other psychotropic agents | 10 | 10 | 1.9 | 1.9 |
| Volatile substances | 2 | 2 | 1.0 | 0.2 |
| Unclassified drugs | 58 | 70 | 3.5 | 24.2 |
| Drug psychoses | 10 | 12 | 6.3 | 7.4 |
| IDU conditions | 3 | 3 | 3.3 | 1.0 |
| Complications of pregnancy/infancy | 11 | 14 | 10.1 | 14.0 |
| **Total** | **213** | **248** | **4.1** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the Midlands Health Zone was $88,704 per year, equivalent to $1.66 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the Midlands Health Zone (101 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $10,208 per year in the Midlands Health Zone, equivalent to $2,552 per person admitted.
- Psychotropic agents accounted for 42% of other drug-caused hospital beddays in the Midlands Health Zone, costing an average of $36,960 per year.
- Between 1991 and 1995, an estimated 125 people were admitted to hospital a total of 160 times in the Midlands Health Zone for attempting suicide using drugs, costing an average of $43,120 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## Midwest Health Zone




✞ 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.

## Midwest Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Gascoyne Health Service | 10,210 | 17 | 10,754 | 16 |
| Geraldton Health Service | 32,022 | 53 | 35,786 | 55 |
| Midwest Health Service | 13,503 | 22 | 14,048 | 21 |
| Murchison Health Service | 4,386 | 7 | 4,760 | 7 |
| **Midwest Health Zone** | **60,121** | **100** | **65,348** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

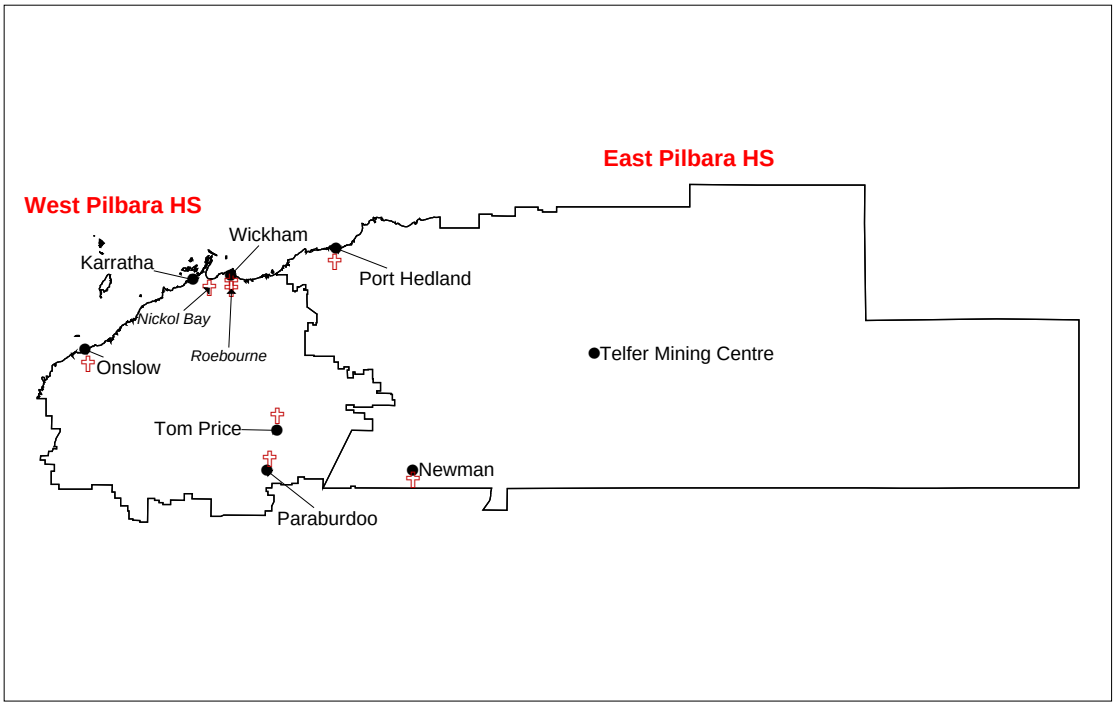
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 36 | 44 | 3.5 | 10.7 |
| Barbiturates,sedatives and hypnotics | 20 | 20 | 1.8 | 2.4 |
| Tranquillisers | 72 | 83 | 3.1 | 18.2 |
| Anti-depressants | 51 | 55 | 2.5 | 9.5 |
| Psychostimulants | 16 | 20 | 3.7 | 5.2 |
| Hallucinogens | 11 | 11 | 1.5 | 1.1 |
| Other psychotropic agents | 16 | 17 | 3.4 | 4.0 |
| Volatile substances | 3 | 3 | 4.0 | 0.8 |
| Unclassified drugs | 107 | 137 | 2.9 | 27.2 |
| Drug psychoses | 21 | 24 | 5.6 | 9.4 |
| IDU conditions | 6 | 6 | 2.2 | 0.9 |
| Complications of pregnancy/infancy | 20 | 23 | 6.6 | 10.5 |
| **Total** | **379** | **443** | **3.2** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the Midwest Health Zone was $126,280 per year, equivalent to $2.15 per head of population.
- The age-standardised admission rate for conditions caused by other drugs in the Midwest Health Zone (151 per 100,000 population) was not significantly different to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $13,552 per year in the Midwest Health Zone, equivalent to $1,882 per person admitted.
- Psychotropic agents accounted for 40% of other drug-caused hospital beddays in the Midwest Health Zone, costing an average of $50,952 per year.
- Between 1991 and 1995, an estimated 226 people were admitted to hospital a total of 293 times in the Midwest Health Zone for attempting suicide using drugs, costing an average of $62,304 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## Pilbara Health Zone




✞ 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.

## Pilbara Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| East Pilbara Health Service | 20,833 | 49 | 22,515 | 49 |
| West Pilbara Health Service | 22,113 | 51 | 23,127 | 51 |
| **Pilbara Health Zone** | **42,946** | **100** | **45,642** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

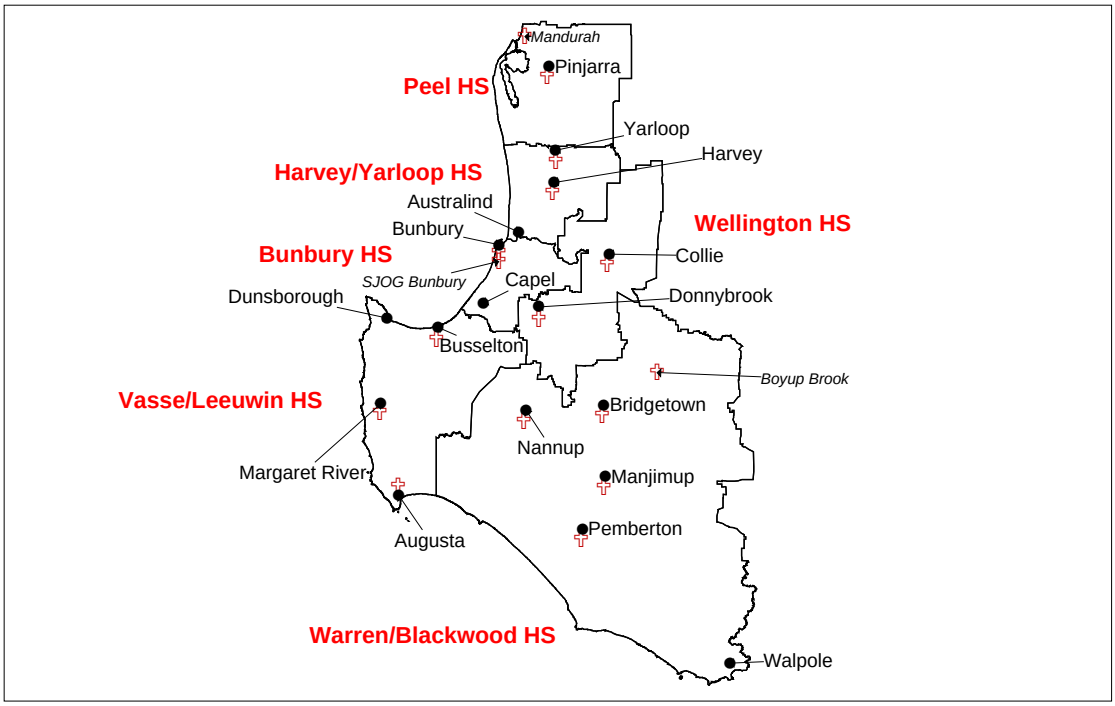
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 25 | 32 | 3.5 | 14.6 |
| Barbiturates,sedatives and hypnotics | 17 | 18 | 2.2 | 5.1 |
| Tranquillisers | 34 | 40 | 2.5 | 13.1 |
| Anti-depressants | 27 | 28 | 3.6 | 13.2 |
| Psychostimulants | 14 | 16 | 1.8 | 3.7 |
| Hallucinogens | 1 | 1 | 1.0 | 0.1 |
| Other psychotropic agents | 4 | 4 | 2.0 | 1.0 |
| Volatile substances | 2 | 2 | 2.0 | 0.5 |
| Unclassified drugs | 62 | 66 | 2.6 | 22.2 |
| Drug psychoses | 9 | 11 | 6.0 | 8.6 |
| IDU conditions | 4 | 5 | 3.4 | 2.2 |
| Complications of pregnancy/infancy | 13 | 15 | 8.0 | 15.7 |
| **Total** | **212** | **238** | **3.2** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the Pilbara Health Zone was $67,320 per year, equivalent to $1.51 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the Pilbara Health Zone (108 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $9,856 per year in the Pilbara Health Zone, equivalent to $1,971 per person admitted.
- Psychotropic agents accounted for 36% of other drug-caused hospital beddays in the Pilbara Health Zone, costing an average of $24,376 per year.
- Between 1991 and 1995, an estimated 120 people were admitted to hospital a total of 140 times in the Pilbara Health Zone for attempting suicide using drugs, costing an average of $27,104 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## South West Health Zone




✞ 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 West Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Bunbury Health Service | 40,883 | 25 | 43,563 | 23 |
| Harvey-Yarloop Health Service | 15,035 | 9 | 17,055 | 9 |
| Peel Health Service | 50,640 | 31 | 64,263 | 35 |
| Vass Leeuwin Health Service | 24,800 | 15 | 28,857 | 15 |
| Warren / Blackwood Health Service | 17,367 | 11 | 18,162 | 10 |
| Wellington Health Service | 13,533 | 8 | 14,277 | 8 |
| **South West Health Zone** | **162,258** | **100** | **186,177** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

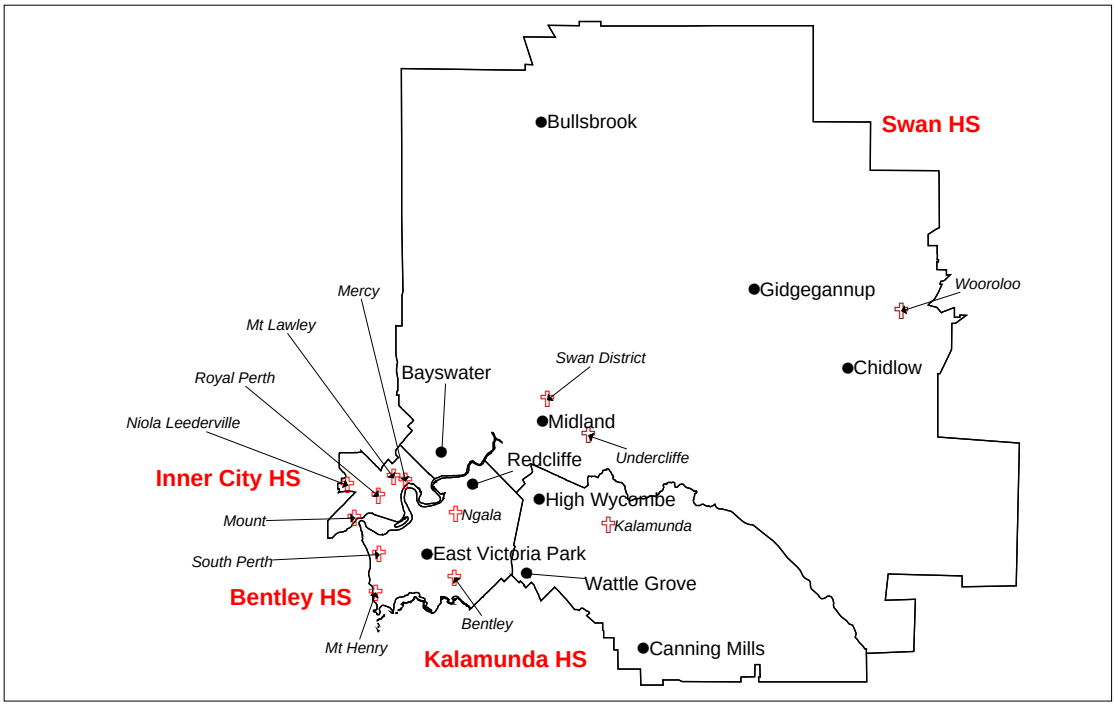
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 72 | 88 | 6.1 | 15.0 |
| Barbiturates,sedatives and hypnotics | 54 | 63 | 4.3 | 7.6 |
| Tranquillisers | 142 | 157 | 3.7 | 16.2 |
| Anti-depressants | 110 | 128 | 3.0 | 10.7 |
| Psychostimulants | 22 | 22 | 5.4 | 3.3 |
| Hallucinogens | 16 | 16 | 1.5 | 0.7 |
| Other psychotropic agents | 43 | 49 | 5.4 | 7.4 |
| Volatile substances | 12 | 12 | 2.0 | 0.7 |
| Unclassified drugs | 192 | 209 | 3.2 | 18.6 |
| Drug psychoses | 44 | 50 | 6.2 | 8.7 |
| IDU conditions | 16 | 18 | 3.7 | 1.8 |
| Complications of pregnancy/infancy | 33 | 40 | 8.3 | 9.3 |
| Total | **756** | 852 | 4.2 | 100.0 |

### Summary


- The average cost of hospitalisation caused by other drug use in the South West Health Zone was $315,832 per year, equivalent to $2.06 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the South West Health Zone (119 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $47,520 per year in the South West Health Zone, equivalent to $3,300 per person admitted.
- Psychotropic agents accounted for 46% of other drug-caused hospital beddays in the South West Health Zone, costing an average of $144,760 per year.
- Between 1991 and 1995, an estimated 446 people were admitted to hospital a total of 548 times in the South West Health Zone for attempting suicide using drugs, costing an average of $161,128 per year.


* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## East Metropolitan Health Zone




✞ 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 Metropolitan Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Bentley Health Service | 118,381 | 31 | 119,957 | 29 |
| Kalamunda Health Service | 48,251 | 13 | 54,477 | 13 |
| Inner City Health Service | 51,173 | 14 | 51,886 | 13 |
| Swan Health Service | 160,010 | 42 | 185,512 | 45 |
| **East Metropolitan Health Zone** | **377,815** | **100** | **411,832** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

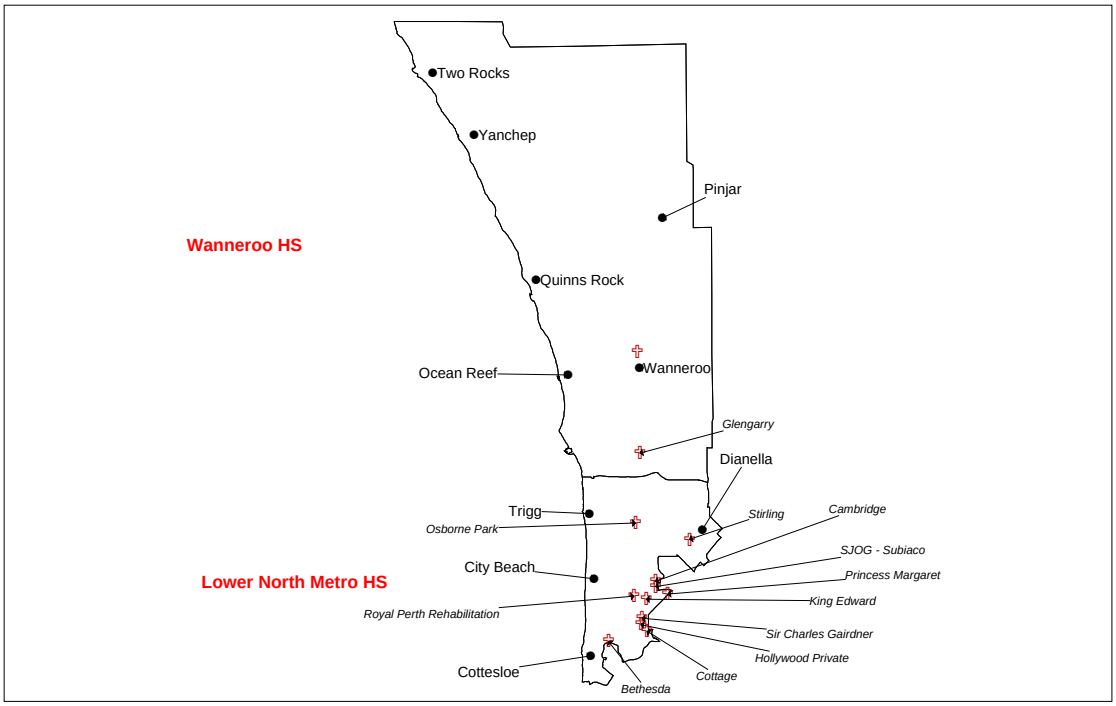
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 338 | 413 | 4.4 | 10.6 |
| Barbiturates,sedatives and hypnotics | 259 | 323 | 3.2 | 6.0 |
| Tranquillisers | 821 | 1,058 | 3.4 | 21.0 |
| Anti-depressants | 410 | 469 | 5.1 | 14.0 |
| Psychostimulants | 93 | 109 | 3.5 | 2.2 |
| Hallucinogens | 37 | 37 | 6.2 | 1.3 |
| Other psychotropic agents | 223 | 259 | 5.4 | 8.2 |
| Volatile substances | 25 | 28 | 2.3 | 0.4 |
| Unclassified drugs | 584 | 734 | 4.8 | 20.8 |
| Drug psychoses | 151 | 169 | 8.0 | 7.9 |
| IDU conditions | 55 | 68 | 3.6 | 1.4 |
| Complications of pregnancy/infancy | 105 | 120 | 8.7 | 6.1 |
| **Total** | **3,101** | **3,788** | **4.5** | **100.0** |

### Summary


- The average cost of hospitalisation caused by other drug use in the East Metropolitan Health Zone was $1,503,040 per year, equivalent to $4.04 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly higher in the East Metropolitan Health Zone (197 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $159,368 per year in the East Metropolitan Health Zone, equivalent to $2,358 per person admitted.
- Psychotropic agents accounted for 53% of other drug-caused hospital beddays in the East Metropolitan Health Zone, costing an average of $793,672 per year.
- Between 1991 and 1995, an estimated 1,857 people were admitted to hospital a total of 2,638 times in the East Metropolitan Health Zone for attempting suicide using drugs, costing an average of $874,984 per year.


* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## North Metropolitan Health Zone




✞ 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.

## North Metropolitan Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Lower North Metropolitan Health Service | 244,897 | 54 | 244,521 | 50 |
| Wanneroo Health Service | 205,314 | 46 | 247,060 | 50 |
| **North Metropolitan Health Zone** | **450,211** | **100** | **491,581** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

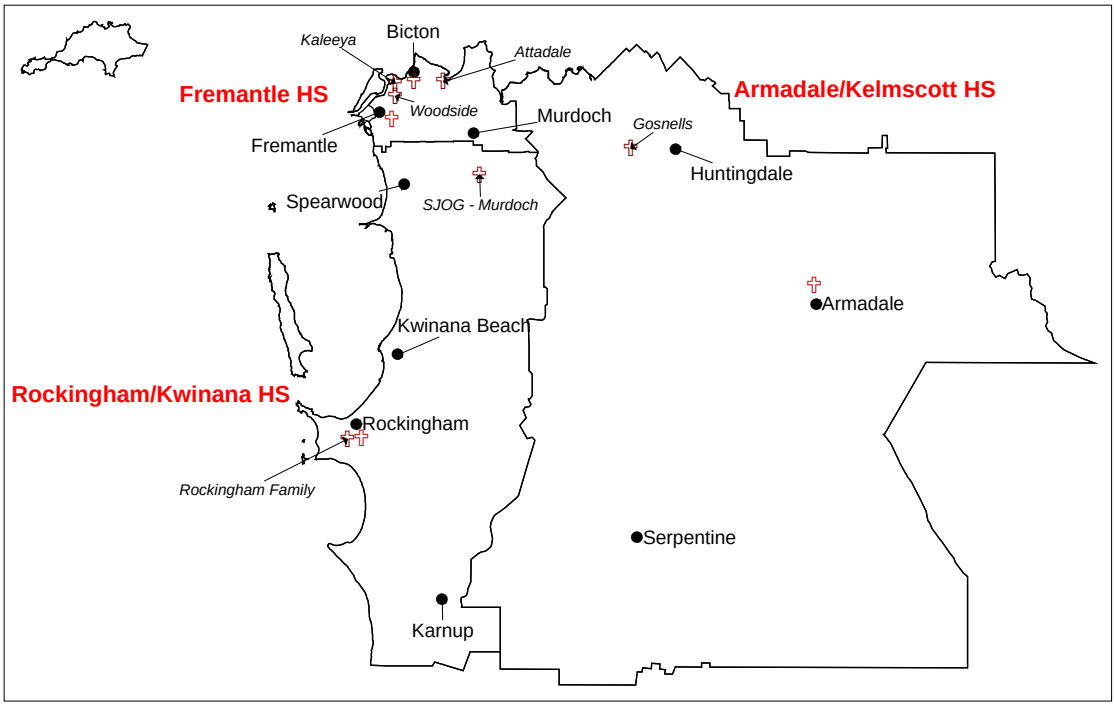
| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 222 | 280 | 4.9 | 10.8 |
| Barbiturates,sedatives and hypnotics | 143 | 173 | 6.2 | 8.4 |
| Tranquillisers | 543 | 647 | 3.9 | 19.6 |
| Anti-depressants | 304 | 359 | 4.4 | 12.5 |
| Psychostimulants | 51 | 54 | 3.6 | 1.5 |
| Hallucinogens | 13 | 13 | 3.4 | 0.3 |
| Other psychotropic agents | 121 | 142 | 6.1 | 6.7 |
| Volatile substances | 10 | 10 | 4.9 | 0.4 |
| Unclassified drugs | 435 | 488 | 4.9 | 18.7 |
| Drug psychoses | 133 | 139 | 12.3 | 13.3 |
| IDU conditions | 46 | 58 | 2.8 | 1.3 |
| Complications of pregnancy/infancy | 85 | 96 | 8.6 | 6.5 |
| **Total** | **2,106** | **2,459** | **5.2** | **100.0** |

### Summary

- The average cost of hospitalisation caused by other drug use in the North Metropolitan Health Zone was $1,125,696 per year, equivalent to $2.60 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the North Metropolitan Health Zone (113 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $121,176 per year in the North Metropolitan Health Zone, equivalent to $2,729 per person admitted.
- Psychotropic agents accounted for 49% of other drug-caused hospital beddays in the North Metropolitan Health Zone, costing an average of $552,024 per year.
- Between 1991 and 1995, an estimated 1,194 people were admitted to hospital a total of 1,588 times in the North Metropolitan Health Zone for attempting suicide using drugs, costing an average of $583,792 per year.

* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

## South Metropolitan Health Zone




✞ 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 Metropolitan Health Zone

| | Population estimates* | | | |
|---|---|---|---|---|
| | **1995** | **% of HZ** | **2001** | **% of HZ** |
| Armadale / Kelmscott Health Service | 176,286 | 41 | 192,871 | 39 |
| Fremantle Health Service | 123,030 | 28 | 123,183 | 26 |
| Rockingham / Kwinana Health Service | 134,814 | 31 | 163,628 | 34 |
| **South Metropolitan Health Zone** | **434,130** | **100** | **479,682** | **100** |

### Hospitalisation caused by other drug use, 1991-1995

| Other drug-related conditions | Number of persons | Number of admissions | Ave. length of stay (days) | % of drug-caused cost |
|---|---|---|---|---|
| Opioids | 266 | 324 | 4.8 | 11.7 |
| Barbiturates,sedatives and hypnotics | 173 | 200 | 4.5 | 6.8 |
| Tranquillisers | 485 | 590 | 3.9 | 17.2 |
| Anti-depressants | 312 | 361 | 3.9 | 10.7 |
| Psychostimulants | 75 | 79 | 4.2 | 2.5 |
| Hallucinogens | 28 | 28 | 2.3 | 0.5 |
| Other psychotropic agents | 106 | 122 | 5.7 | 5.2 |
| Volatile substances | 17 | 19 | 5.8 | 0.8 |
| Unclassified drugs | 502 | 600 | 5.0 | 22.5 |
| Drug psychoses | 134 | 157 | 10.0 | 11.9 |
| IDU conditions | 46 | 56 | 2.3 | 1.0 |
| Complications of pregnancy/infancy | 113 | 134 | 9.0 | 9.1 |
| **Total** | **2,257** | **2,670** | **5.0** | **100.0** |

### Summary


- The average cost of hospitalisation caused by other drug use in the South Metropolitan Health Zone was $1,166,088 per year, equivalent to $2.79 per head of population.
- The age-standardised admission rate for conditions caused by other drugs was significantly lower in the South Metropolitan Health Zone (130 per 100,000 population) compared to the State (138 per 100,000 population).
- Opioid-caused hospitalisation cost an average of $136,752 per year in the South Metropolitan Health Zone, equivalent to $2,571 per person admitted.
- Psychotropic agents accounted for 43% of other drug-caused hospital beddays in the South Metropolitan Health Zone, costing an average of $500,808 per year.
- Between 1991 and 1995, an estimated 1,300 people were admitted to hospital a total of 1,671 times in the South Metropolitan Health Zone for attempting suicide using drugs, costing an average of $536,096 per year.


* The 1995 population estimate was based on the ABS Estimated Resident Populations for 1995. The 2001 estimate was based on population projections from the Ministry of Planning, 1996.

# Appendix 2: Age-specific aetiologic fractions for conditions caused by other drugs, by sex

# Appendix 3: Broad categories and ICD-9-CM codes for drug-related conditions

| Tobacco-related categories | ICD9-CM codes |
|---|---|
| Opioids | 304.0*, 304.7*, 305.5*, E850.0-E850.2, E950.0*, E980.0* |
| Sedatives & barbiturates | 304.1*, 305.4*, E851, E950.1, E980.1, E852, E950.2, E980.2 |
| Tranquillisers | E853, E950.3*, E980.3* |
| Anti-depressants | 305.8, E854.0, E950.3*, E980.3* |
| Psychostimulants | 304.2, 304.4, 305.6, 305.7, E854.2, E950.3*, E980.3* |
| Hallucinogens & cannabis | 304.3, 305.2, 304.5, 305.3, E854.1, E950.3*, E980.3* |
| Other/comb. psychotropic agents | E854.8, E950.3*, E980.3* |
| Volatile substances | 304.6, E862.0-E862.1, E862.4, E862.9, E866.6, E951.1, E981.1 |
| Unclassified drugs[14] | 304.8, 304.9, 305.9, E950.4-E950.5, E980.4-E980.5 |
| Drug psychoses | 292 |
| Complications of pregnancy/infancy | 640, 641, 656.5, 764, 765, 648.3, 760.72, 760.73, 760.75, 779.5 |
| IDU conditions | 70.2-70.5, 279.1, 42-44, 421 |

* Indicates conditions for which the extra diagnosis fields were used to try to identify the specific drug responsible.

[14] 'Unclassified drugs' includes combinations of drugs, and other or unspecified drug use.

# Appendix 4: Allocation of postcodes to each Health Service and Health Zone

| 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 4: 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 Zones 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 5: Data relating to the figures in this report

### Figure 1: Estimated numbers and age-specific rates for hospital admissions caused by other drugs, by age group and sex

*Western Australia, 1991-1995*

| Age group | Number of hospital admissions | | Age-specific rate / 100,000 popn. | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| 0-4 | 101 | 98 | 31.2 | 32.0 |
| 5-9 | 0 | 0 | 0.0 | 0.0 |
| 10-14 | 0 | 0 | 0.0 | 0.0 |
| 15-19 | 556 | 934 | 170.8 | 301.9 |
| 20-24 | 893 | 1,068 | 256.4 | 319.5 |
| 25-29 | 918 | 1,066 | 276.7 | 326.6 |
| 30-34 | 784 | 919 | 223.7 | 262.8 |
| 35-39 | 666 | 815 | 196.0 | 238.9 |
| 40-44 | 371 | 572 | 112.3 | 178.0 |
| 45-49 | 218 | 379 | 75.8 | 142.4 |
| 50-54 | 124 | 213 | 56.6 | 104.7 |
| 55-59 | 99 | 131 | 55.8 | 76.8 |
| 60-64 | 61 | 88 | 38.7 | 57.0 |
| 65-69 | 80 | 78 | 57.6 | 53.9 |
| 70-74 | 59 | 59 | 57.8 | 48.8 |
| 75-79 | 34 | 51 | 50.9 | 54.9 |
| 80-84 | 27 | 44 | 67.5 | 66.7 |
| 85+ | 22 | 45 | 94.6 | 89.0 |

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

*Western Australia, 1991-1995*

| Age group | Number of hospital admissions | | Age-specific rate / 100,000 popn. | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| 0-4 | 0 | 0 | 0.0 | 0.0 |
| 5-9 | 0 | 0 | 0.0 | 0.0 |
| 10-14 | 0 | 0 | 0.0 | 0.0 |
| 15-19 | 54 | 86 | 16.6 | 27.8 |
| 20-24 | 110 | 109 | 31.6 | 32.6 |
| 25-29 | 135 | 114 | 40.7 | 34.9 |
| 30-34 | 144 | 104 | 41.1 | 29.7 |
| 35-39 | 107 | 69 | 31.5 | 20.2 |
| 40-44 | 54 | 40 | 16.3 | 12.4 |
| 45-49 | 30 | 32 | 10.4 | 12.0 |
| 50-54 | 5 | 18 | 2.3 | 8.9 |
| 55-59 | 3 | 8 | 1.7 | 4.7 |
| 60-64 | 2 | 4 | 1.3 | 2.6 |
| 65-69 | 4 | 4 | 2.9 | 2.8 |
| 70-74 | 5 | 4 | 4.9 | 3.3 |
| 75-79 | 3 | 2 | 4.5 | 2.2 |
| 80-84 | 0 | 2 | 0.0 | 3.0 |
| 85+ | 0 | 1 | 0.0 | 2.0 |

## Figure 4: Estimated numbers and age-specific rates for hospital admissions from drug-caused suicide attempts, by age group and sex

*Western Australia, 1991-1995*

| Age group | Number of hospital admissions | | Age-specific rate / 100,000 popn. | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| 0-4 | 0 | 0 | 0.0 | 0.0 |
| 5-9 | 0 | 0 | 0.0 | 0.0 |
| 10-14 | 0 | 0 | 0.0 | 0.0 |
| 15-19 | 351 | 752 | 107.8 | 243.1 |
| 20-24 | 541 | 738 | 155.3 | 220.8 |
| 25-29 | 524 | 675 | 157.9 | 206.8 |
| 30-34 | 424 | 657 | 121.0 | 187.9 |
| 35-39 | 396 | 579 | 116.6 | 169.7 |
| 40-44 | 258 | 470 | 78.1 | 146.3 |
| 45-49 | 157 | 296 | 54.6 | 111.2 |
| 50-54 | 98 | 167 | 44.8 | 82.1 |
| 55-59 | 67 | 90 | 37.8 | 52.8 |
| 60-64 | 43 | 61 | 27.3 | 39.5 |
| 65-69 | 51 | 51 | 36.7 | 35.2 |
| 70-74 | 31 | 41 | 30.4 | 33.9 |
| 75-79 | 16 | 27 | 23.9 | 29.1 |
| 80-84 | 7 | 16 | 17.5 | 24.3 |
| 85+ | 11 | 19 | 47.3 | 37.6 |

## Figure 5: Age-standardised rates for hospital admissions caused by other drugs, opioids, and drug-caused suicide attempts, by year and sex

*Western Australia, 1991-1995*

| | 1991 | 1992 | 1993 | 1994 | 1995 |
|---|---|---|---|---|---|
| Male - all | 105.1 | 105.4 | 111.7 | 121.2 | 150.3 |
| Female - all | 137.0 | 147.5 | 147.9 | 164.1 | 189.3 |
| Male - opioids | 5.4 | 5.4 | 9.7 | 20.7 | 35.3 |
| Female - opioids | 5.9 | 7.8 | 9.5 | 18.4 | 29.8 |
| Male - suicides | 65.9 | 68.3 | 67.4 | 72.8 | 77.2 |
| Female - suicides | 100.8 | 106.6 | 105.1 | 118 | 125.9 |

## Figure 6: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions caused by other drug use, by Health Zone and sex

*Western Australia, 1991-1995*

| Health Zone | Number of admissions | | Crude rate | | 95% confidence intervals | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| Kimberley | 49 | 72 | 76.5 | 129.4 | 21.4 | 29.9 |
| Pilbara | 92 | 146 | 74.8 | 146.1 | 15.3 | 23.7 |
| Midlands | 114 | 135 | 81.6 | 106.2 | 15.0 | 17.9 |
| Great Southern | 163 | 174 | 92.3 | 103.0 | 14.2 | 15.3 |
| Goldfields | 181 | 236 | 123.8 | 190.8 | 18.0 | 24.3 |
| Midwest | 194 | 249 | 125.2 | 179.2 | 17.6 | 22.2 |
| South West | 353 | 499 | 90.6 | 132.2 | 9.5 | 11.6 |
| North Metro | 990 | 1,469 | 93.0 | 133.7 | 5.8 | 6.8 |
| South Metro | 1,180 | 1,490 | 113.6 | 141.3 | 6.5 | 7.2 |
| East Metro | 1,698 | 2,090 | 183.4 | 223.7 | 8.7 | 9.6 |
| **State** | **5,013** | **6,560** | **118.7** | **157.0** | **3.3** | **3.8** |

## Figure 7: Standardised morbidity rates for other drug-caused hospital admissions, by Health Zone

*Western Australia, 1991-1995*

| Health Zone | Lower confidence interval | Upper confidence interval |
|---|---|---|
| Great Southern | 0.69 | 0.85 |
| Goldfields | 0.93 | 1.13 |
| Kimberley | 0.58 | 0.83 |
| Midlands | 0.64 | 0.83 |
| Midwest | 0.99 | 1.2 |
| Pilbara | 0.63 | 0.82 |
| South West | 0.81 | 0.93 |
| East Metropolitan | 1.38 | 1.47 |
| North Metropolitan | 0.79 | 0.85 |
| South Metropolitan | 0.91 | 0.98 |

## Figure 8: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions caused by opioids, by Health Zone and sex

*Western Australia, 1991-1995*

| Health Zone | Number of admissions | | Crude rate | | 95% confidence intervals | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| Kimberley | 1 | 1 | 1.6 | 1.8 | 3.1 | 3.5 |
| Goldfields | 12 | 17 | 8.2 | 13.7 | 4.6 | 6.5 |
| Great Southern | 14 | 4 | 7.9 | 2.4 | 4.2 | 2.3 |
| Midlands | 14 | 9 | 10.0 | 7.1 | 5.2 | 4.6 |
| Pilbara | 16 | 16 | 13.0 | 16.0 | 6.4 | 7.8 |
| Midwest | 19 | 25 | 12.3 | 18.0 | 5.5 | 7.1 |
| South West | 34 | 54 | 8.7 | 14.3 | 2.9 | 3.8 |
| North Metro | 153 | 127 | 14.4 | 11.6 | 2.3 | 2.0 |
| South Metro | 178 | 146 | 17.1 | 13.8 | 2.5 | 2.2 |
| East Metro | 215 | 198 | 23.2 | 21.2 | 3.1 | 3.0 |
| **State** | **656** | **597** | **15.5** | **14.3** | **1.2** | **1.1** |

## Figure 9: Estimated numbers and crude rates (with 95% confidence intervals) for hospital admissions for drug-caused attempted suicides, by Health Zone and sex

*Western Australia, 1991-1995*

| Health Zone | Number of admissions | | Crude rate | | 95% confidence intervals | |
|---|---|---|---|---|---|---|
| | Males | Females | Males | Females | Males | Females |
| Kimberley | 33 | 54 | 51.5 | 97.0 | 17.6 | 25.9 |
| Pilbara | 43 | 97 | 35.0 | 97.1 | 10.5 | 19.3 |
| Midlands | 70 | 90 | 50.1 | 70.8 | 11.7 | 14.6 |
| Goldfields | 97 | 179 | 66.4 | 144.7 | 13.2 | 21.2 |
| Great Southern | 101 | 112 | 57.2 | 66.3 | 11.2 | 12.3 |
| Midwest | 114 | 179 | 73.6 | 128.8 | 13.5 | 18.9 |
| South West | 212 | 336 | 54.4 | 89.0 | 7.3 | 9.5 |
| North Metro | 568 | 1,020 | 53.4 | 92.8 | 4.4 | 5.7 |
| South Metro | 660 | 1,011 | 63.5 | 95.9 | 4.8 | 5.9 |
| East Metro | 1,077 | 1,561 | 116.3 | 167.0 | 6.9 | 8.3 |
| **State** | **2,975** | **4,639** | **70.5** | **111.0** | **2.5** | **3.2** |