CHAPTER ONE

PREVALENCE AND HARMS OF DRUG USE

This chapter provides an overview of the available research evidence on rates and patterns of licit and illicit drug use and drug-related harm in Australia. The first section summarises the extensive data on the rates of licit and illicit drug use, and trends over time in such use, as revealed in population-based surveys. These include the National Drug Strategy (NDS) Household surveys, the National Survey of Mental Health and Well-Being (NSMHWB), High School and TAFE surveys, and special purpose surveys of specific populations of drug users. Studies of injecting drug users (IDUs), such as the Illicit Drug Reporting System, are also referred to in order to better characterise the Australians who inject drugs. Research on patterns of drug use in special populations, such as Aboriginal and Torres Strait Islanders, and Australians from culturally and linguistically diverse backgrounds is also summarised. Where possible, comparisons are made between Australia and other countries in terms of the rates and patterns of licit and illicit drug use.

The second section describes what is known about the costs of licit and illicit drug use to users. The best available data on these costs concerns their adverse effects on the health of users as revealed by epidemiological research. The best data is on the adverse health effects of alcohol and tobacco. The health costs of illicit drug use are less well characterised. The possible role of illicit drug use in criminal behaviour is less well understood. There is even less evidence on the effects of licit and illicit drug use on the families of drug users, in part because this is a much more difficult area to assess.

The third section briefly reviews the limited evidence on the social and economic costs to Australian society of licit and illicit drug use. Where possible comparisons are made between Australia and other countries in terms of the social and economic impacts of drug use.

1.1 CURRENT DATA ON PREVALENCE AND TRENDS

The overall rates of use of the main licit and illicit drugs in Australia are best assessed by household surveys of drug use in a representative sample of Australian adults. In these surveys adults are asked whether they have ever used each of a list of drugs ("lifetime use") and if they have, how often they have used in the past year ("recent use"). Surveys depend upon respondents being truthful about drug use. Extensive research in the USA, Europe and Australia suggests that most respondents are reasonably honest if given credible assurances that their answers will be anonymous and confidentiality will be maintained (Hall et al, 1999a). We can be most confident about reports on the use of alcohol, tobacco and cannabis. There may be more under-reporting of more socially disapproved and stigmatised forms of drug use, such as, heroin use (Hall et al, in press). Surveys also have limitations in estimating rates of use of the less frequently used illicit drugs like heroin because samples of 10,000 or more adults will identify very few people who report the use of these drugs. Surveys therefore provide reasonable information on the rates of use of alcohol, tobacco, and the more widely used illicit drugs in Australia, such as cannabis, amphetamines and hallucinogens.

Additional information from special purpose surveys can supplement the survey data for drugs like cocaine and heroin. School surveys of drug use provide important information on rates of licit and illicit drug use among adolescents in high school, the age group in which alcohol, tobacco and some illicit drug use first begins. Surveys of the users of less commonly used illicit drugs provide important information on patterns of licit and illicit drug use among heavier consumers of such drugs and information on the type of problems reported by drug users.

The most recent national survey of drug use was the 1998 NDS household survey (Australian Institute of Health and Welfare, 1999) the results from which are presented below. Figure 1 presents rates of lifetime use and use within the preceding 12 months. As might be expected, alcohol and tobacco are much more commonly used than any of the illicit drugs. The only illicit drug whose rate of use approaches that of alcohol and tobacco is cannabis (or marijuana). The rates of use of the other illicit drug types in the lifetime and past year is uniformly much lower. Table 1 provides the same data expressed in terms of the estimated number of Australia adults who have used each of these drugs in their lifetime and in the past year.

Figure 1: Prevalence of drug use in Australia, 1998 NDS Survey

Source: AIHW (1999)
NB: Figures for analgesics and tranquillisers refer to non-medical use

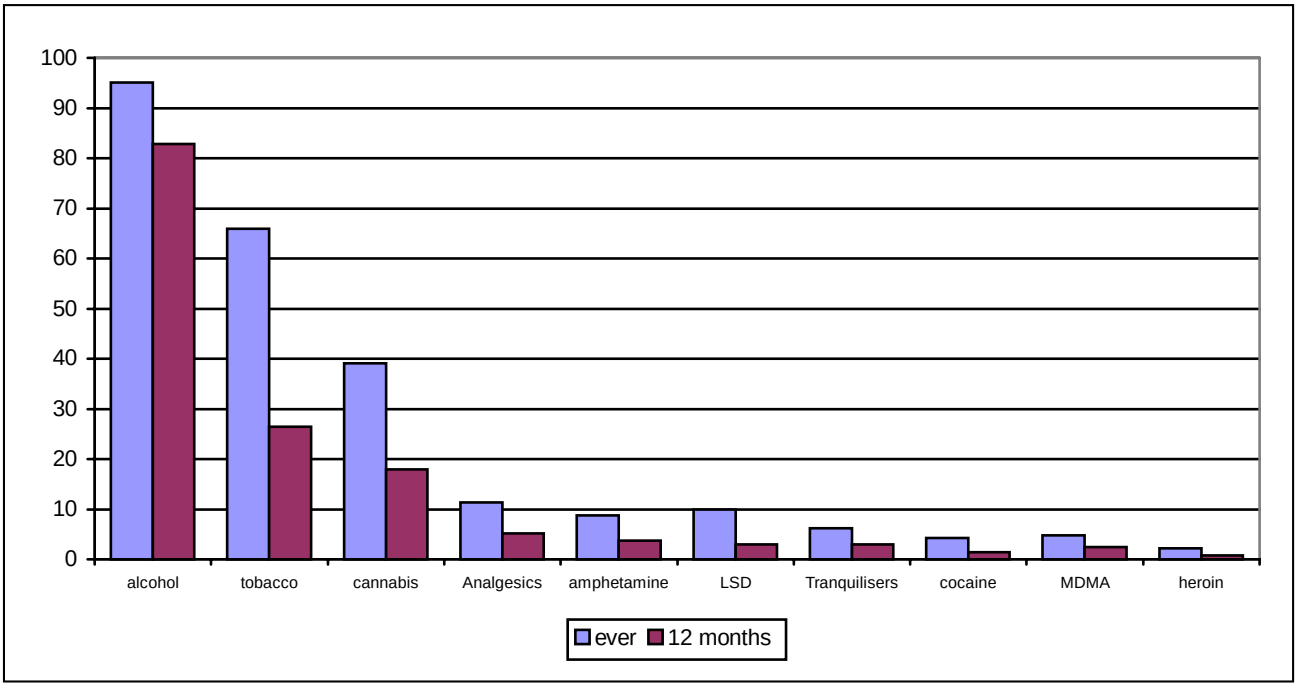


Table 1: Number of persons who reported lifetime and 12-month use of drug types, 1998 NDS household survey[1]

	Lifetime users	12-month users
Alcohol	13,880,000	11,819,000
Tobacco	9,951,000	3,319,000
Cannabis	5,678,000	2,572,000
Analgesics	1,674,000	742,000
LSD	1,441,000	436,000
Tranquillisers	899,000	430,000
Cocaine	624,000	201,000
Ecstasy	695,000	351,000
Heroin	322,000	114,000

1. Based on population estimate of 15,083,745 persons aged 14 years and over

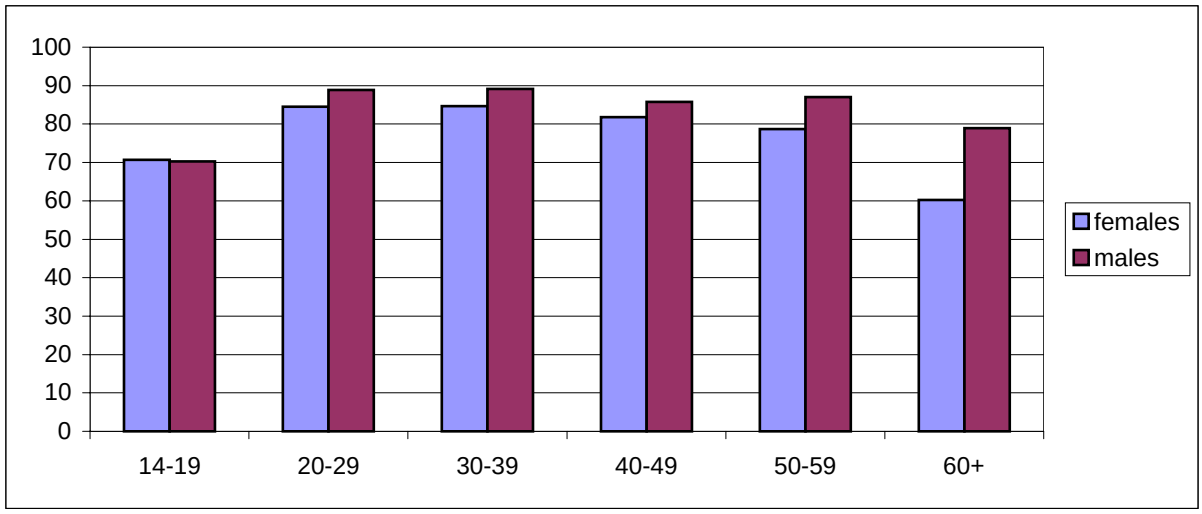
1.1.1 Licit Drugs

1.1.1.1 Alcohol

Alcohol remains the most widely used drug in Australia, with 91% of the population having tried alcohol at some time in their lives, and 81% having used it in the last 12 months (AIHW, 1999). Alcohol is also the drug most people are likely to have been offered, and the drug they are most likely to have regularly consumed. Figure two shows the prevalence of recent alcohol use by age and gender. With the exception of the youngest and oldest age groups, the prevalence of regular and occasional alcohol use among males was generally similar across the age groups. This was true to a lesser extent among females. There are age and gender differences in how often people use alcohol. Women report drinking less often than males aged 20-59, as do the elderly. Recent alcohol use was least common among females aged 60 and older (60%).

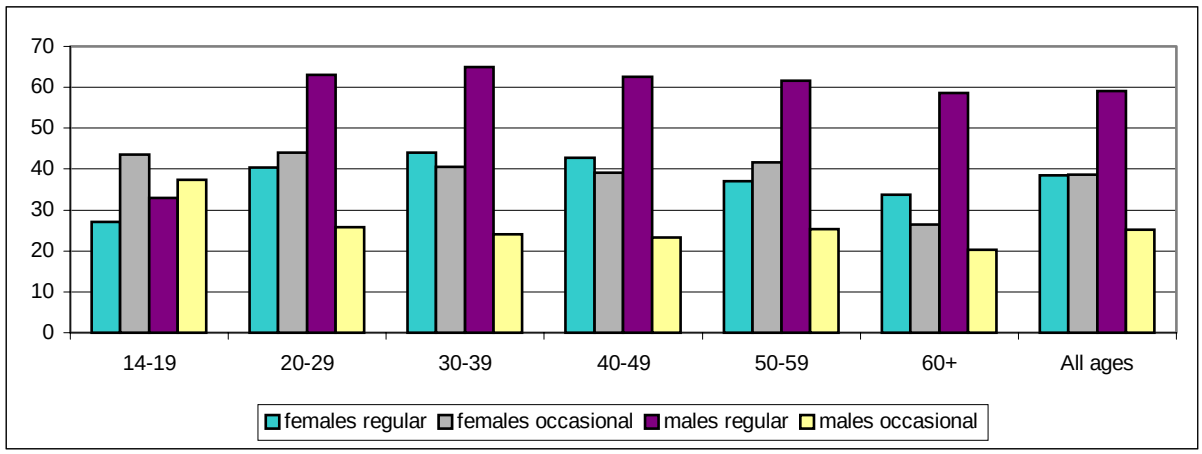
Over two thirds of teenagers were recent drinkers (Figure 2), with 30% having consumed alcohol at least once a week in the preceding 12 months (Figure 3). Male teenagers (33%) were more likely than female teenagers (27%) to be regular drinkers. From age 20 onwards, most drinkers in 1998 were regular drinkers, with males being, on average, 50% more likely than females in each age groups to drink regularly. Between the ages of 20 and 59 years, approximately one half of the Australian population were regular drinkers (AIHW, 1999). The proportion of Australians aged 14 years or older who consumed alcohol on a regular basis increased from 44% in 1995 to 49% in 1998.

Figure 2: Prevalence of 12-month alcohol use by age and gender, 1998 NDS survey



Source: Darke, Ross, Hando, Hall & Degenhardt (2000)

Figure 3: Prevalence of regular and occasional alcohol use by age and sex, 1998 NDS survey



Source: AIHW (1999)

In 1998 almost half (48.8%) of all recent drinkers usually consumed 1-2 standard drinks on an occasion when they drank. Males (64%) were more likely than females (38%) to typically drink three or more drinks. Approximately 68% of males and 48% of females aged 14 years or older reported drinking at least once a week in the preceding 12 months, with 15% and 6% respectively reporting that they drink daily.

In 1997 the alcohol consumption per capita was estimated to be approximately 7.6 litres of pure alcohol per person (Higgins, Cooper-Stanbury & Williams, 2000). This was consistent with estimates for the preceding 5 years (range 7.6 to 7.8 litres). The 1997 per capita consumption equates to every Australian having consumed an average of 95 litres of beer, 19 litres of wine and 1.3 litres of pure alcohol from spirits (Higgins et al, 2000). If we restrict the analysis to persons aged 18 and over, there has been a decline in the per capita consumption of alcohol over an eight year period, from 11.5 litres of pure alcohol per person in 1990, to 10.1 litres in 1997 (Higgins et al, 2000). This reduction is largely due to a reduction in consumption of regular strength beer, which has decreased from 129 to 94 litres per person among persons aged 18 years or older.

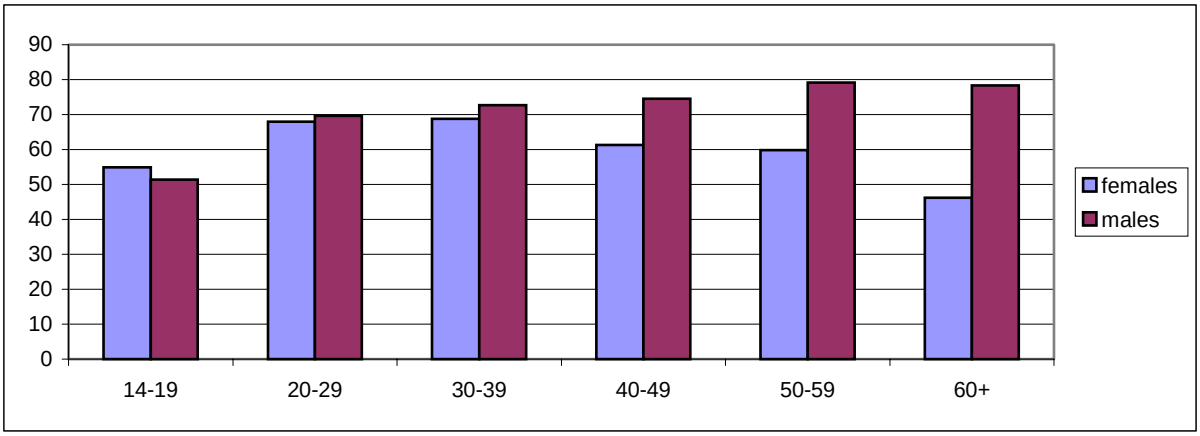
The National Health and Medical Research Council defines low risk drinking to be not more than four standard drinks per day for males and not more than 2 standard drinks per day for females, with two alcohol–free days each week (NHMRC, 1992). According to Makkai and McAllister (1998), tertiary educated persons are more likely to drink alcohol than persons without post-secondary qualifications but they are less likely to report harmful or hazardous drinking patterns. The unemployed consistently report the highest levels of harmful/hazardous drinking, with married/widowed persons being more likely to be non-drinkers and less likely to report harmful/hazardous drinking (Makkai & McAllister, 1998).

1.1.1.2 Tobacco

The 1998 NDS household survey indicated that two-thirds of Australians aged 14 years and older had used tobacco at some time in their lives. The lifetime use of tobacco has declined from 82% in 1985 to 66% in 1998. The largest decline has been among men, down by 17% (from 89 to 72%). The drop among women has been 14% (from 74 to 60%).

Figure 4 indicates that the lifetime use of tobacco is highest for males aged 50-59 years (79%) and females aged 30-39 years (69%). Generally speaking, the younger the age group examined, the smaller the difference in rates of lifetime tobacco use among males and females.

Figure 4: The lifetime prevalence of tobacco use by age and gender, 1998 NDS survey



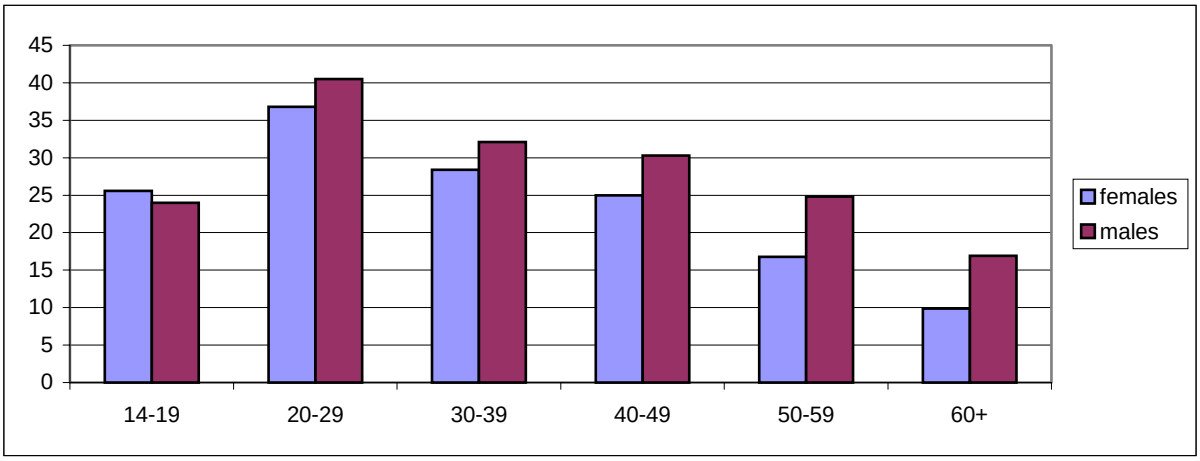
Source: Darke et al (2000)

The overall prevalence of recent use/use in the past 12 months in the 1998 NDS survey was 26%, a similar finding to the 1991, 1993 and 1995 (28%, 28% and 27%) NDS surveys. Males (25%) were more likely than females (20%) to smoke regularly (i.e. daily or most days), with 22% overall being regular smokers. The age group which had the highest proportion of recent smokers was 20-29 years and the age group with the lowest proportion was 60 years or older (Figure 5). The 14-19 year age group was the only one in which the prevalence of recent tobacco use was greater among females than males.

Despite a decline in the *lifetime* prevalence of tobacco use overall, a 6 percentage point increase in *recent* use occurred among males and females aged 14-19 years (AIHW, 1999). Recent tobacco use was reported by 19% of males aged 14-19 years in 1995 versus 25% in 1998. Similarly, recent use was reported by 20% of females aged 14-19 years in 1995 versus 26% in 1998. This represents a 30% increase in recent tobacco use of those aged 14-19 years. Friends and acquaintances were most likely to be the source of first supply of cigarettes to

persons under the age of 18 years.

Figure 5: Prevalence of recent tobacco use, 1998 NDS survey



Source: Darke et al (2000)

Data from the NSMHWB showed that among Australian adults, tobacco smokers were slightly more likely to be male, and to come from a younger age group than non-smokers (Degenhardt & Hall, 2000). Current smokers were less likely to have completed further education than non-smokers: 40% had not completed secondary education compared to 32% of non-smokers; while 53% of non-smokers had completed post-secondary qualifications, compared to 44% of smokers. Rates of unemployment were also higher among smokers than non-smokers (8% versus 3%; Degenhardt & Hall, 2000). These patterns are consistent with the patterns found in epidemiological research conducted in other countries.

The Australian School Students Alcohol and Drug Survey provides data on the use of tobacco by school students in 1996. Because of the differences in survey population, age range, definitions and methodology, the results are not strictly comparable with the results from the 1998 NDS survey. The school student survey found that 8% of boys and 7% of girls aged 12 years had smoked on at least one of the seven days prior to the survey (Hill, White & Letcher, 1999). Among 17-year-old students, this proportion rose to 28% for males and 34% for females. Tobacco use on at least three days in the week preceding interview was reported by 15% of school students overall (Lynskey, White, Hill, Letcher & Hall, 1999).

The per capita cigarette consumption in Australia has reduced from 2,710 in 1986 to 2,017 in 1996. The measure used to indicate trends in tobacco consumption is the volumes of tobacco and tobacco products cleared through excise and customs (Higgins et al, 2000). Having examined the excise and customs data for 1991-92 to 1997-98, Higgins and colleagues (2000) indicate that there appears to have been a reduction in overall demand for tobacco over the past two to three years, following a peak in cleared volumes in 1994-95.

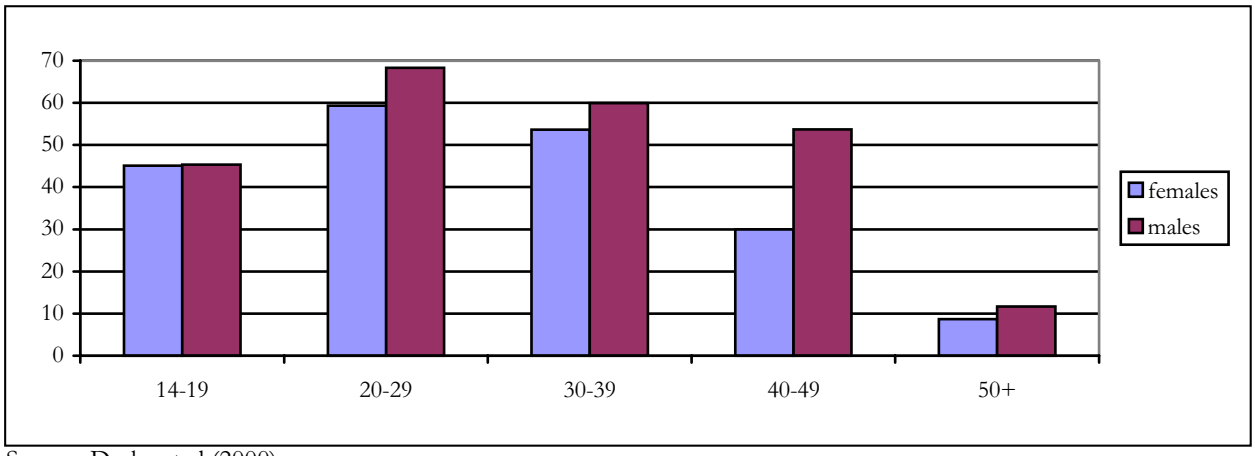
1.1.2 Illicit Drugs

1.1.2.1 Cannabis

Cannabis remains the most commonly used illicit drug in Australia, with 39% of the population having tried cannabis at some time in their lives, and 18% having used it in the preceding 12 months (AIHW, 1999). Population based surveys indicate that among 14-19 year olds the lifetime use of cannabis is as high as 45%.

The lifetime use of cannabis is strongly related to age and gender (Figure 6; see also Donnelly & Hall, 1994). Men are more likely to have used cannabis than women, with 44% of males versus 35% of females reporting lifetime use in the 1998 survey. As evident in Figure 6, cannabis use is strongly related to age, with older adults much less likely to have used cannabis than younger adults (see also Makkai & McAllister, 1998).

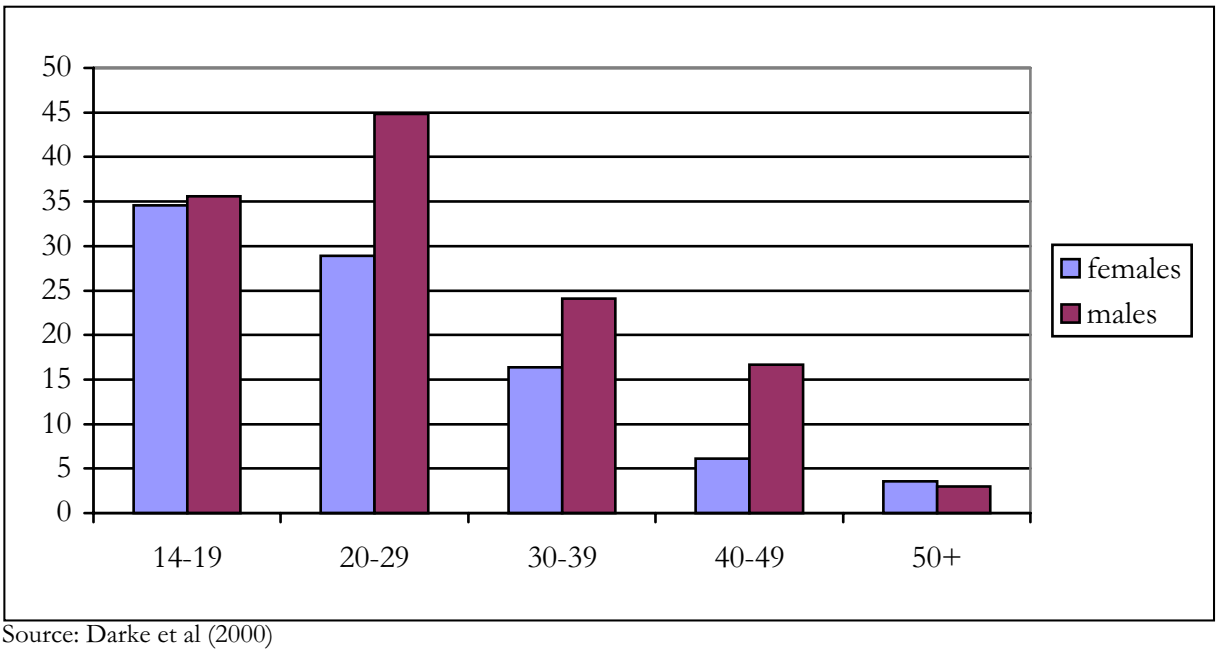
Figure 6: Prevalence of lifetime cannabis use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

The rate of cannabis use in the past 12 months was 18% in the 1998 NDS. This was a slight increase on rates of use in previous household surveys, which found rates of 12 to 13% (Makkai & McAllister, 1997). Current use of cannabis was more common among males (21%) than females (15%) (Figure 7) but there were no differences among the youngest age group. The prevalence of current cannabis use was higher among 14-19 year olds (35%) and 20-29 year olds (37%) than among the overall 1998 sample. This is consistent with previous NDS surveys.

Figure 7: Prevalence of 12-month cannabis use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

The 1996 Australian School Student's Alcohol and Drugs Survey found that 36% of students aged 12-17 had used cannabis (Lynskey et al, 1999). Earlier studies of drug use among school aged youth in various Australian states conducted in the early 1990's reported rates of cannabis use between 25-30% (Cooney, Dobbinson & Flaherty, 1994; Odgers, Houghton & Douglas, 1997; Christie et al, 1990; Roy Morgan Ltd, 1993). The 1996 school survey results suggest that there has been an increase in the use of cannabis use among youth during the 1990s, a finding that is supported by the NDS household surveys. The 1996 survey of TAFE students indicates that regular cannabis use is common among students (aged 16-25), with 24% having used at least 3-5 times a month preceding interview (AGB McNair, 1998).

Cannabis users are most often males, who are under 35 years of age and more likely to be unemployed than non-users. While persons with higher education levels are more likely to have tried cannabis at some time in their lives, persons with lower levels of education are more likely to be regular users (Makkai & McAllister, 1997). Current cigarette smokers are more likely to use than non-smokers, and regular drinkers are more likely than occasional or non-drinkers, to be regular users of cannabis (Commonwealth Department of Health and Family Services, 1996).

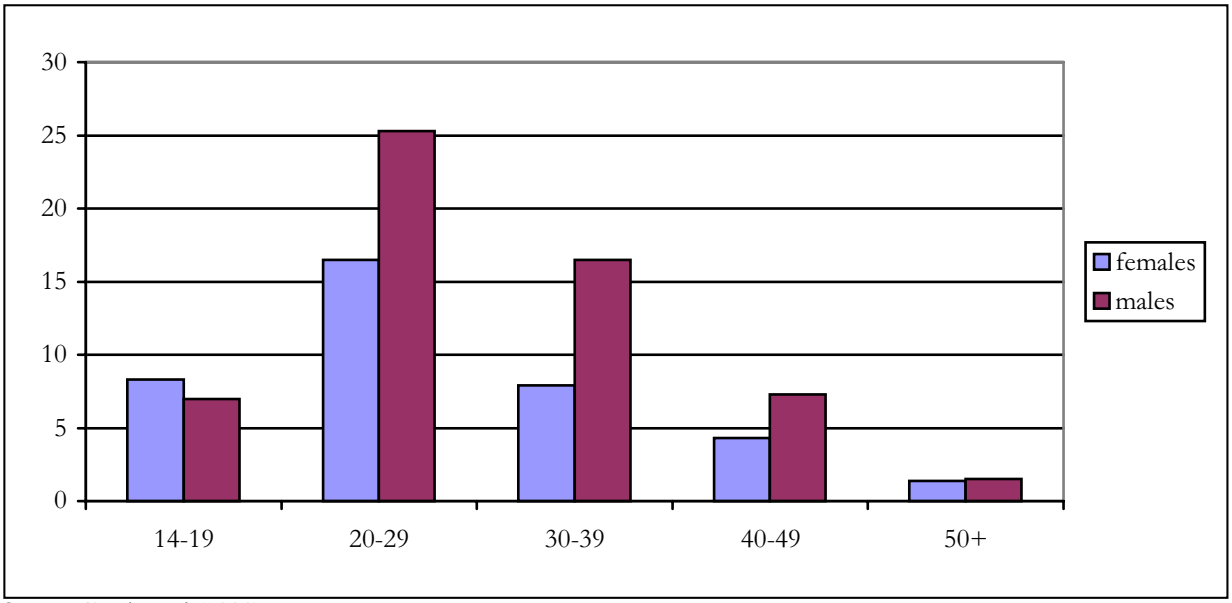
Cannabis is most typically smoked, and the types of cannabis most commonly used are heads and leaf (Makkai & McAllister, 1997). The preferred mode of administration among younger users is a bong or pipe; older users are more likely to smoke joints. In Australia, about 10% of people who have ever used cannabis become daily users, and another 20-30% use weekly (Hall & Solowij, 1998).

Over the past decade there seems to have been a small increase in the lifetime use of cannabis among young people. While the price of cannabis over recent years appears to have remained stable, there is evidence of an increase in the use of stronger, hydroponically grown cannabis (McKetin et al, 1999). The health implications of any increase in potency are unclear, but if the prevalence of use continues to rise and the THC content remains high, it is likely that there will be an increase in the number of people seeking treatment for cannabis-related problems (Hall & Swift, 1999).

1.1.2.2 Amphetamines

Amphetamines are the most commonly used illicit drugs after cannabis, with around 9% of the adult population having used them at some time in their lives (AIHW, 1999). The rate of use on the whole adult population conceals a substantially higher rate of use among younger people. For example, in the 1998 survey, the lifetime use of amphetamines was (25%) among males aged 20-29 years (Figure 8).

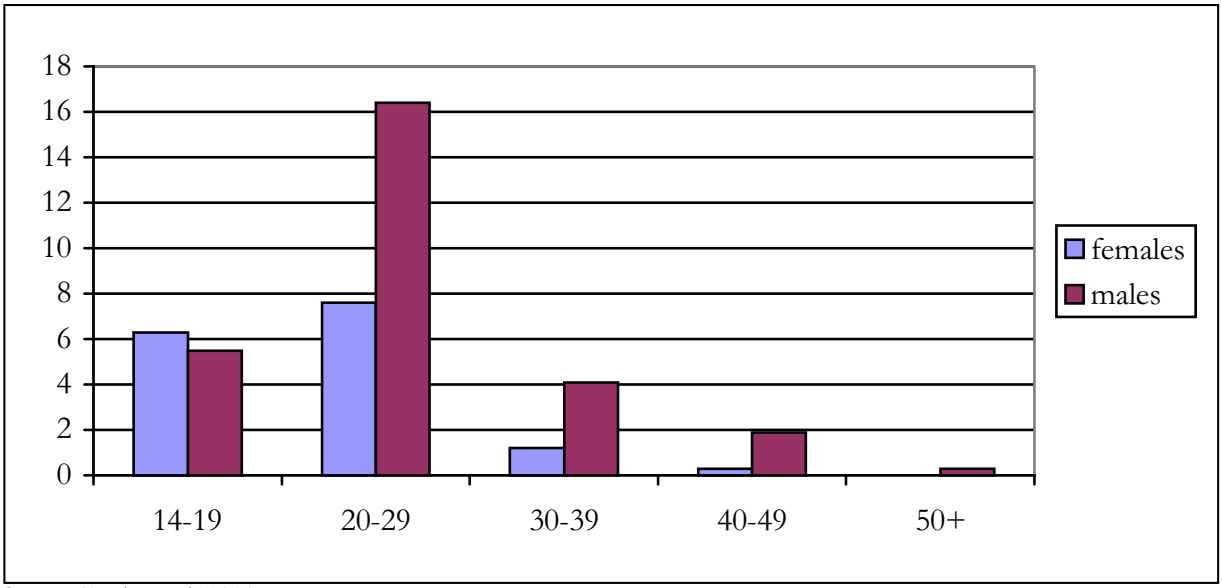
Figure 8: Prevalence of lifetime amphetamine use by age and gender, 1998 NDS survey



Source: Dark et al (2000)

The age-related patterns of recent amphetamine use in the 1998 NDS survey (Figure 9) were consistent with those in previous surveys (Makkai & McAllister, 1998). In the 1998 survey, males were much more likely than females to have ever used amphetamines (11% v 7%), and to have used them in the previous 12 months (5% v 2.5%).

Figure 9: Prevalence of 12-month amphetamine use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

The 1996 Australian School Student's Alcohol and Drugs Survey found that amphetamines had been used in the 12 months preceding interview by 4.8% of school students aged 12 to 17 years (Lynskey et al, 1999). The prevalence of amphetamine use was higher among males than females (5.3% v 3.9%). The 1996 survey of TAFE students (aged 16-14 years) found that 22% had tried amphetamines (AGB McNair, 1998), with males (26%) being more likely than females (18%) to have tried stimulant drugs (i.e. amphetamines and/or cocaine).

The mean age of samples of regular amphetamine users recruited through media and word of mouth has been 24 to 26 years (Hando & Hall, 1994; Darke et al, 1994a; Vincent et al, 1998). Two thirds of amphetamine users in Australian studies have been male (Darke et al, 1994a; Hando & Hall, 1994; Vincent et al, 1998). This predominance of males is true for both injecting amphetamine users and those who use it by other routes of administration. The majority of amphetamine users sampled in these Australian studies were currently unemployed (Darke et al, 1994a, 1999b; Hall et al, 1993b; Hando & Hall, 1994; Hando et al, 1997b; Vincent et al, 1998).

The age of initiation of amphetamines is in the mid to late teens, generally by non-injecting routes of administration. In the general population, around 17% of those who had used amphetamines users in the last year reported injection as one of the routes of administration (1998 NDS Household Survey); while over half reported swallowing (58%) or snorting (60%) the drug. The transition to injecting the drug is common among regular users who prefer this route (Darke et al, 1994a, 1999b; Hando & Hall, 1994). Approximately a half of samples of regular amphetamine users regularly inject the drug. Most of these initiated their use by oral or nasal ingestion before moving to injecting. Moving back from injecting to other routes of administration is rare, and usually only occurs after severe vascular damage has occurred (Darke et al, 1994a). The injection of amphetamines is associated with higher levels of dependence on the drug, more frequent use of the drug, and higher rates of psychopathology (Chesher, 1991; Darke et al, 1994a; Gawan & Ellinwood, 1988; Jaffe, 1985, Bell, 1973).

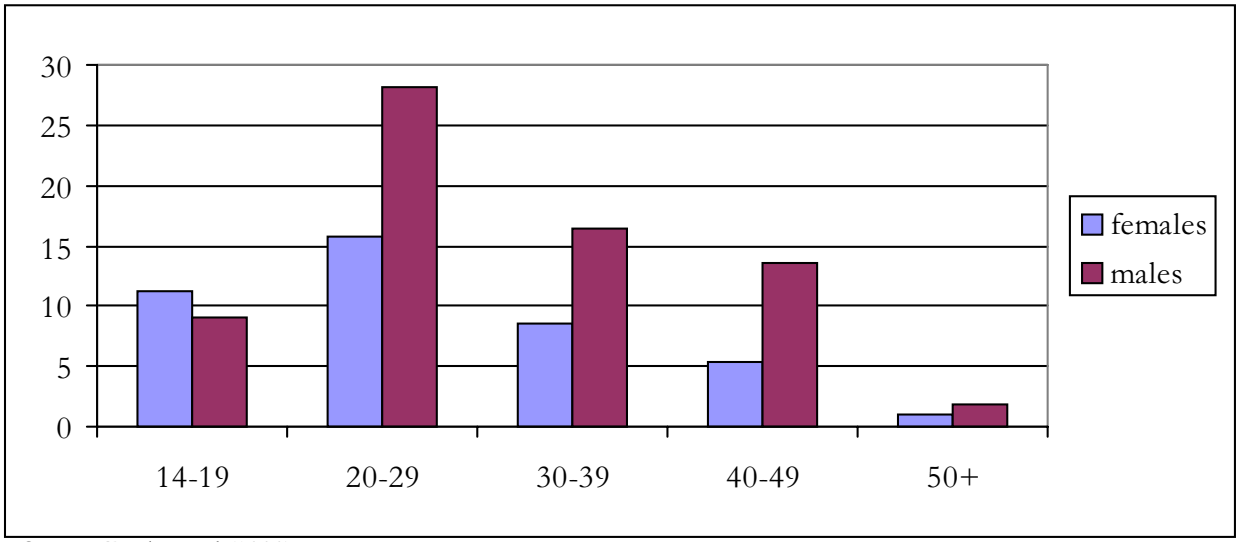
The use of amphetamine typically occurs in young people who engage in "polydrug" use, that is, they use alcohol and tobacco and a range of illicit drugs, including benzodiazepines and psychostimulants other than amphetamines, often concurrently (Darke & Hall, 1995; Darke et al, 1999b; Hando & Hall, 1994).

Since the mid-1980s, rates of amphetamine use may have increased slightly in Australia. However, there is no evidence for an increase in such use over the previous three years, and recent data indicate that the use of amphetamines may be in decline, as cocaine rises in popularity (McKetin et al, 1998, 1999). The purity of amphetamines at street level is low (4-7%), and the price has remained stable. Of those who continue to use the drug, however, injection remains common.

1.1.2.3 LSD/Hallucinogens

The lifetime use of hallucinogens reported in the 1998 NDS survey was 10% (AIHW, 1999), which suggests a slight increase in use since the 1993 and 1995 surveys (7% and 6%, respectively). Lifetime use was most likely to have occurred among those aged 20 to 29 years, with prevalence being greater among males than females (28% v 16%) (Figure 10). A notable proportion of 14-19 year olds also reported hallucinogen use, with lifetime prevalence being greater among females (11%) than males (9%).

Figure 10: Prevalence of lifetime hallucinogen use by age and gender, 1998 NDS survey

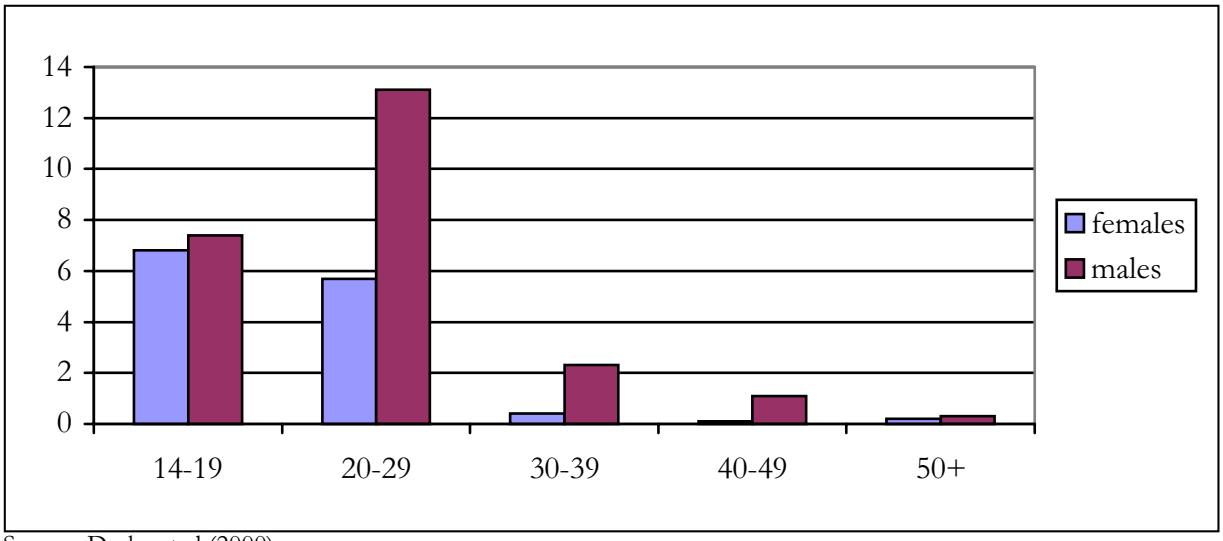


Source: Darke et al (2000)

The 1996 survey of TAFE students (aged 16-25 years) in NSW (AGB McNair, 1998) found that 26% of respondents reported having tried hallucinogens (defined as LSD or mushrooms) at some time in their lives. Males were more likely to have done so than females (30% v 19%). Only 2% of students reported weekly use of hallucinogens, with males more likely than females to do so (3% v 1%). Students in metropolitan NSW were more likely to have used hallucinogens than those in rural NSW (27% v 22%). The national lifetime prevalence of hallucinogen use among high school students in 1996 (Letcher & White, 1998) was similar to that reported by students in NSW during 1992 (9% in both surveys).

Use of hallucinogens in the previous 12 months fluctuated between one and two percent from 1988 to 1995, with 3% reporting use in the 1998 NDS survey (AIHW, 1999; Makkai & McAllister, 1998). Age and gender patterns for 12 month use were similar to those for lifetime use (Figure 11). The proportion of 14-19 year olds reporting recent hallucinogen use rose from 3% in 1995 to 7% in 1998 (Moon, Meyer & Grau, 1999). The proportions of 20-24 year olds reporting recent hallucinogen use rose 4% from almost 8% in 1995 to 12% in 1998.

Figure 11: Prevalence of recent hallucinogen use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

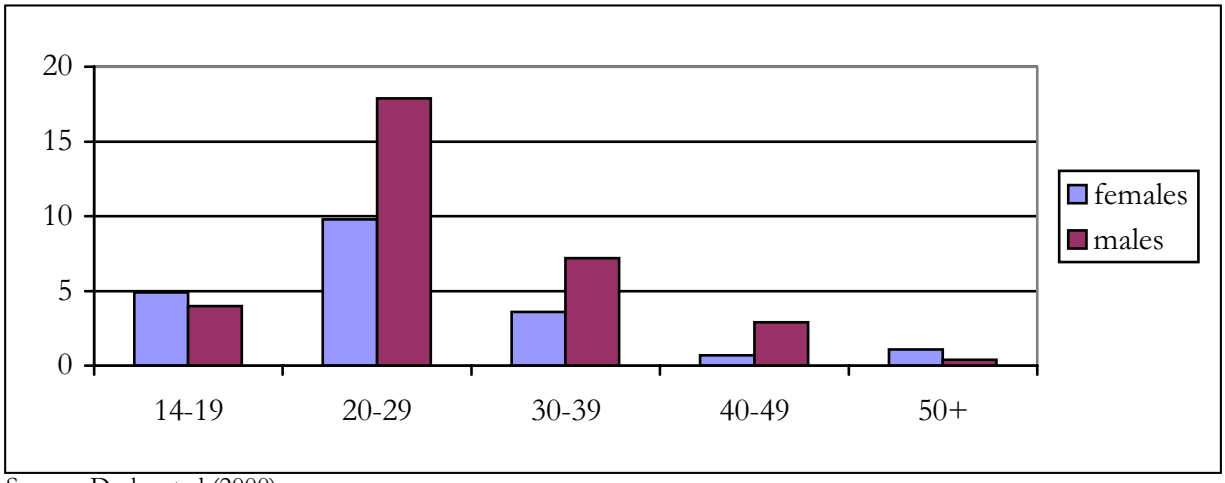
There has been very little research conducted on LSD users and population based surveys have asked about hallucinogen use generally, rather than about LSD use in particular. Hallucinogen users are most commonly male, young (aged 14-29 years), polydrug users, who were born in Australia or the British Isles (AIHW, 1999, Makkai & McAllister, 1998; Fitzgerald & Hamilton, 1994). Unemployed persons are more likely to have used hallucinogens, and to have used them in the preceding 12 months, than are people who are in the workforce (Makkai & McAllister, 1998).

LSD appears to be a drug that is used infrequently, mainly for recreational purposes, in the company of others (Makkai & McAllister, 1998; Fitzgerald & Hamilton, 1994). While LSD is usually swallowed it may also be injected (Moore et al, 1992, Darke et al, 1995c). Injectors of LSD are also likely to have injected other drugs. Hallucinogens (including LSD) appear to be commonly used in conjunction with other psychoactive drugs, such as, amphetamines and MDMA (AIHW, 1999; Fitzgerald & Hamilton, 1994).

1.1.2.4 MDMA

Population based surveys indicate that the prevalence of MDMA (Methylene-dioxymethamphetamine) or 'ecstasy' use has increased from 2% in 1995 to 5% in 1998 (AIHW, 1999). The lifetime prevalence of MDMA use is greatest for both males (18%) and females (10%) in the 20-29 year age group (Figure 12).

Figure 12: Lifetime prevalence of MDMA use by age and gender, 1998 NDS survey



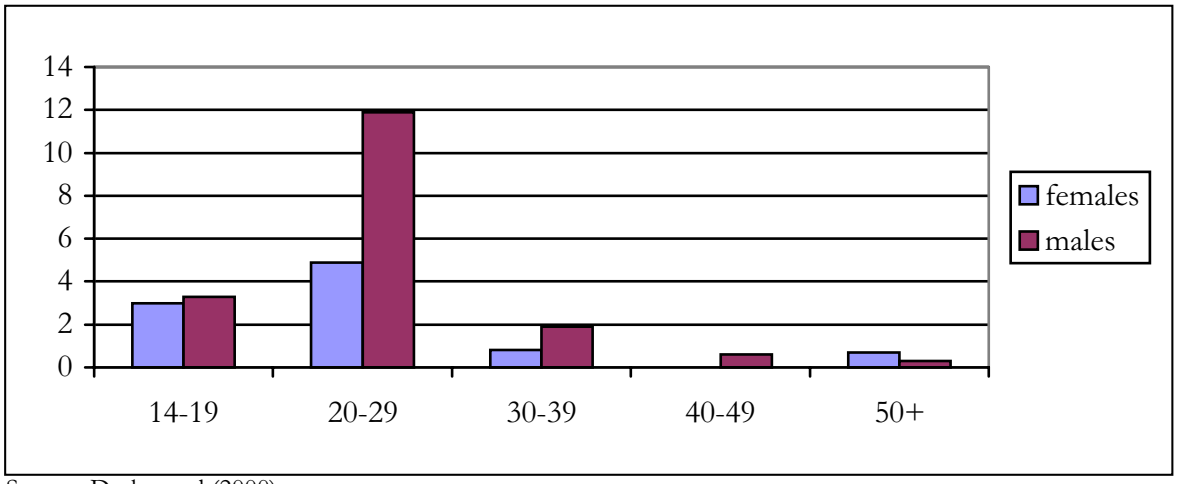
Source: Darke et al (2000)

In 1996, the lifetime prevalence of ecstasy use among NSW TAFE students (aged 16-25 yrs) was 13%, with use more common among males than females (14% v 11%) (AGB McNair, 1998). Ecstasy use was more common among metropolitan and employed students. Weekly use of ecstasy was reported by 2% of the TAFE sample, and was most common among 20-21 year olds. The lifetime prevalence of ecstasy use among high school students in 1996 (Lynskey et al, 1999) was 4%, with use marginally more often reported by males (4 % v 3%).

Data from the 1998 NDS survey indicate that 2% of people aged 14+ reported MDMA use within the preceding 12 months. This was a small increase compared to the previous three NDS household surveys, where use had remained stable at around 1%.

The prevalence of MDMA use varies slightly according to gender with 2% of females and 3% of males having reported MDMA use (Figure 13). This is consistent with data from previous surveys. In the 1998 NDS survey, MDMA use in the past 12 months was most common among those aged 20-29 years: around 5% of females and 12% of males (Figure 13).

Figure 13: Prevalence of recent MDMA use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

The availability of MDMA has also increased, as suggested by the proportion of the population who have been offered MDMA. In 1988 4% of the population had been offered the drug versus 7% in 1991 (Makkai & McAllister, 1998). Cause for concern is the high prevalence of exposure among young people, with 10% of 14-19 year olds and 14% of 20-29 year olds in the 1998 NDS survey having had the opportunity to use MDMA, compared to 5% of the total sample. Ecstasy had been used in the preceding year by 1.8% of high school students interviewed in 1996 (Lynskey et al, 1999). Recent use was more common among male students (3.3% v 2%).

MDMA users are most often in their twenties, fairly well educated, and much less likely to be unemployed than the users of other illicit drugs (Topp et al, 1998). The prevalence of MDMA use is slightly higher among males than females.

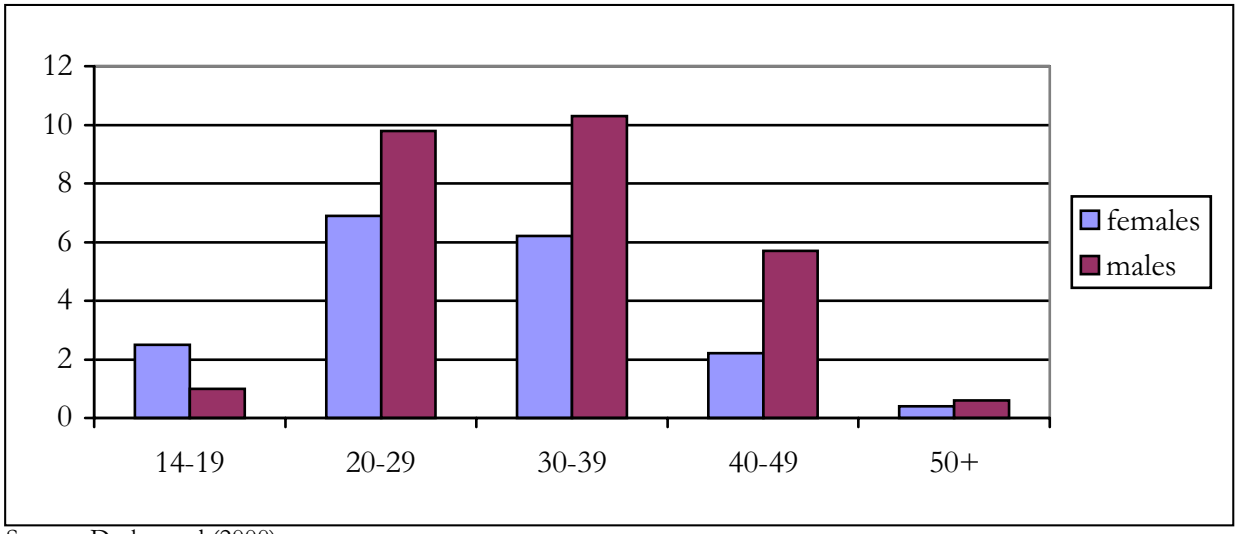
MDMA users rarely use MDMA alone (Solowij et al, 1992; Topp et al, 1998). More typically MDMA is used with small groups of friends, larger groups of friends or with partners. While MDMA is primarily taken orally, there has been an increase in the minority who inject it (Topp et al, 1998). Injectors are less likely than other MDMA users to identify with the dance party scene, and have typically injected other drugs. While weekly or more frequent MDMA use does not appear to be the norm, recent research suggests that such frequent MDMA use is becoming more common, as is bingeing (Topp et al, 1998).

Topp and colleagues (1998) suggest that a change in the pattern of MDMA use has occurred during the 1990s. Current MDMA users started using at a younger age than older users, and appear to be using it more frequently and heavily. The incidence of bingeing on MDMA appears to have increased, as does the prevalence of the parenteral use of this drug. The increase in the use of MDMA by injection has been noted among surveys of MDMA users and of IDU (Topp et al, 1998; Hando et al, 1998a).

1.1.2.5 Cocaine

The 1998 NDS survey revealed that 4% of persons reported lifetime use of cocaine. This is a marginally higher proportion than the 3% reported in most previous NDS surveys (Makkai & McAllister, 1998). Males (5%) were more likely to report lifetime use than females (3%; Figure 14). Lifetime use was most common among those aged between 20 and 39 years.

Figure 14: Prevalence of lifetime cocaine use by age and gender, 1998 NDS survey

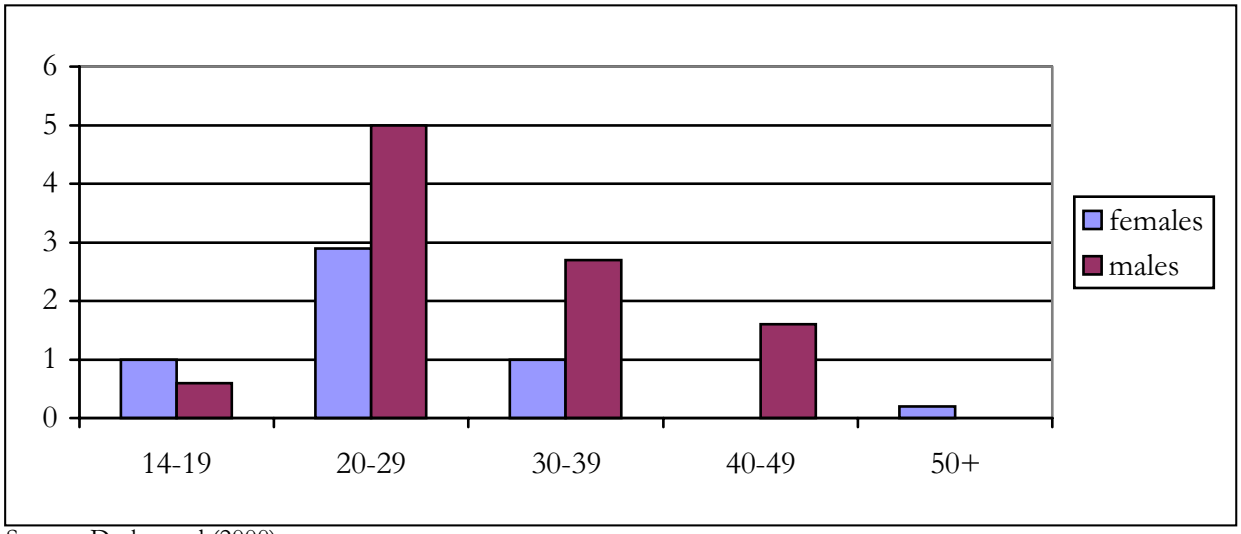


Source: Darke et al (2000)

Lifetime cocaine use among TAFE students (aged 16-25yrs) in 1996 was 9%, with 1% being weekly users (AGB McNair, 1998). The lifetime prevalence among high school students (aged 12-17 yrs) in 1996 was 4% (Lynskey et al, 1999).

Between 1985 and 1995, recent cocaine use was stable at around 1%. The 1998 survey suggested a very small increase in prevalence to 1.4%. Use in the previous 12 months was slightly more common among males in the 1998 NDS survey (Figure 15). Cocaine use in the past 12 months was most common among those aged 20-29 years.

Figure 15: Recent prevalence of cocaine use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

The prevalence of recent cocaine use among high school students (aged 12-17 years) in the 1996 national survey was 2%, with males being more likely to report such use (3% v 2%) (Lynskey et al, 1999). Approximately half of these students had only used cocaine once or twice in the preceding year.

Males are more likely than females to report lifetime cocaine use but there is less difference in rates of use in the past 12 months. Cocaine users are typically in their twenties, and the rate of use is highest among the unemployed (AIHW, 1999; Makkai & McAllister, 1998). There appear to be two types of cocaine users (Hando, Flaherty & Rutter, 1997a), differentiated according to their socio-economic status (SES). Those of a lower SES have low levels of education, are more likely to be unemployed, and are typical 'hard-core' drug users who inject it. Those of a higher SES are on regular or above average incomes, and come from a range of educational and occupational backgrounds.

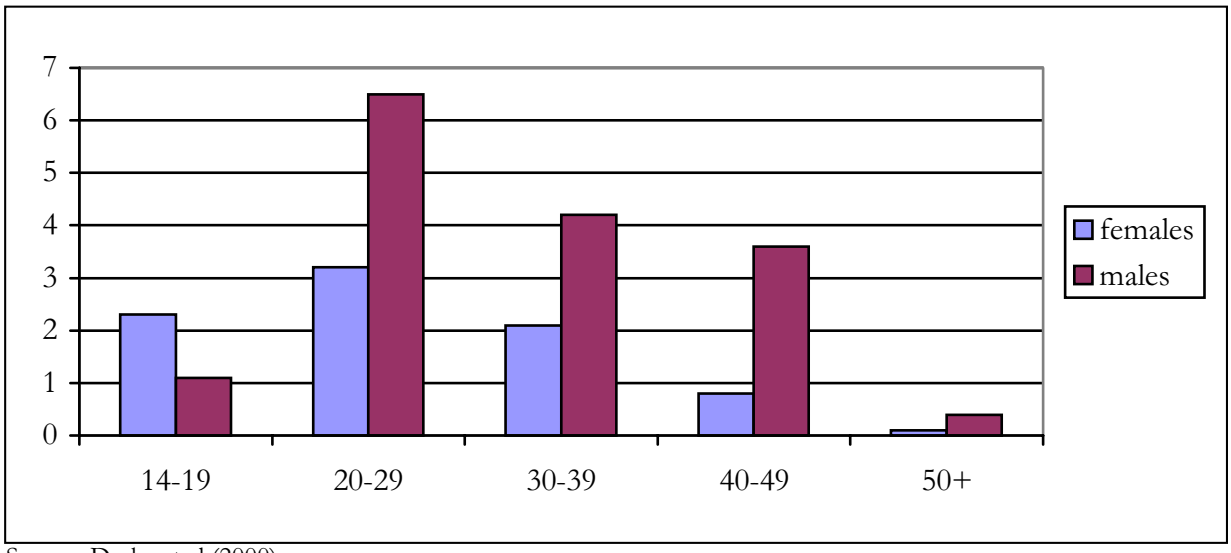
Patterns of cocaine use appear to vary according to the SES of the user, with those of a lower SES being more likely to primarily inject cocaine, to use the drug as often as possible and to inject other drugs. Those of a higher SES are more likely to primarily administer cocaine intra-nasally. Polydrug use is common in both groups (Hando et al, 1997a).

The 1998 Illicit Drug Reporting System (IDRS) indicated that the use of cocaine among IDU had sharply increased in Australia, and in Sydney in particular (McKetin et al, 1999). The proportion of injectors who reported any cocaine use increased in 1999 but the frequency with which they used cocaine declined (McKetin et al, 2000). Purity of cocaine is now high (50-64%) in NSW and the price has fallen substantially suggesting that cocaine has become more readily available in NSW. The use of cocaine appears to have diffused to the broader IDU population, with cocaine supplanting amphetamines among many injectors as the stimulant drug of choice.

1.1.2.6 Heroin

The most recent NDS Household Survey (1998) found that the reported prevalence of lifetime heroin use was 2%. This is similar to the previous five NDS Household Surveys (1985, 1987, 1991, 1993, 1995), which have consistently found the lifetime population prevalence of heroin use to be in the range of 1 to 2% (Makkai & McAllister, 1998). Heroin use is more likely among males overall (3% vs. 1% of females). This difference does not appear to exist among those in the 14-19 year age group (Figure 16), but the numbers on which this is based are very small. Lifetime heroin use was most common among those aged 20-29 years. Care should be taken in the estimates of the prevalence of current heroin use, due to the small numbers of the samples involved. Nonetheless, the estimates of rates of heroin use over the years of the surveys have been consistently low (Makkai & McAllister, 1998).

Figure 16: Prevalence of lifetime heroin use by age and gender, 1998 NDS survey

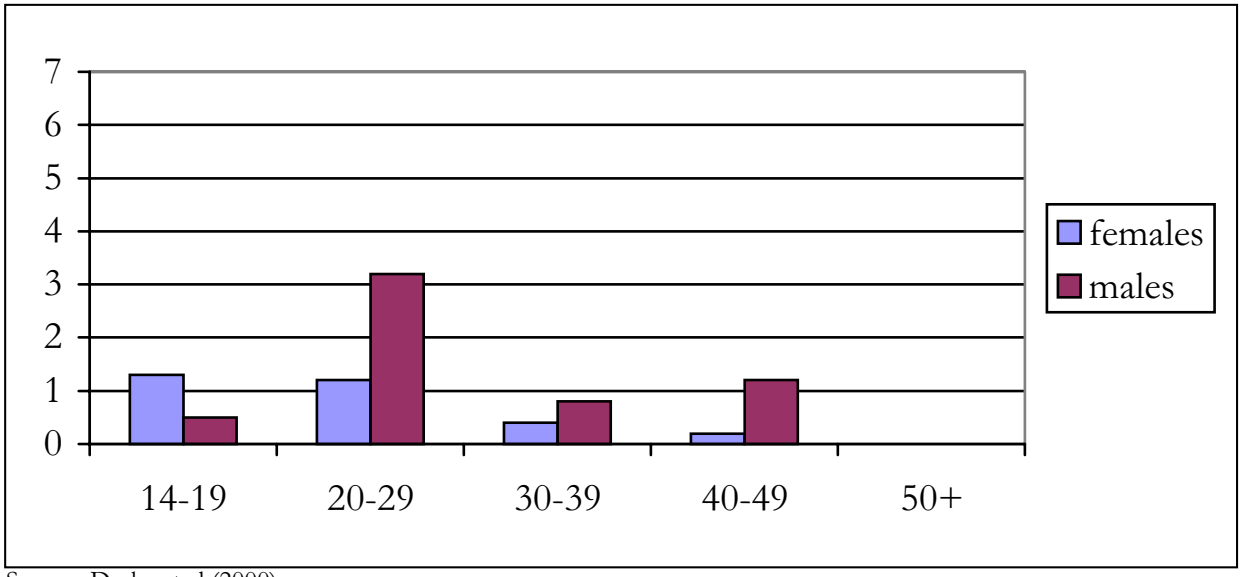


Source: Darke et al (2000)

Heroin had been tried at some time in their lives by 5% of NSW TAFE students (aged 16-25yrs) who were surveyed in 1996. Heroin use was more common among males than females (6% v 4%) (AGB McNair, 1998) and among students at metropolitan rather than rural TAFE colleges (6% v 4%).

Estimates of heroin use in the past 12-months among the population have ranged from a minimum of 0.2% in 1993 to a maximum of 0.5% in 1991. The estimate increased in the 1998 survey to 0.8%. Although these estimates were based upon small samples of users, an examination of age and gender patterns has been attempted here (Figure 13). Overall, 12-month use was more common among males (1%) than females (0.5%). However, it appears that heroin use in the past 12 months was more common among females aged 14-19 years (1%) than it was among males of the same age (0.5%; Figure 17). The rate of heroin use among females was highest in this age group. In contrast, among males use in the past 12 months was most common in the 20-29 year age group (3%).

Figure 17: Prevalence of recent heroin use by age and gender, 1998 NDS survey



Source: Darke et al (2000)

More recently, figures on the prevalence of heroin use in the preceding 12 months, and estimates of dependent use have been published from the National Survey of Mental Health and Well-Being (Hall *et al*, 1999a). This was a national study, based upon a representative sample of 10,600 adults aged 18 years or older. The prevalence of use of heroin more than 5 times within the preceding 12 months was 1.2%. Among males, 1.3% reported such use in the preceding 12 months, compared to 1.0% of females.

The persons who are most likely to use heroin generally come from a disadvantaged background, have had problems at school and home, and are often impulsive. Affiliations with substance using peers also increase the likelihood of substance use, although the reason for this association is unclear (Hall et al, 1999a).

Hall et al (in press) have estimated the number of dependent heroin users in Australia, using three different methods of estimation (back-projection, capture-recapture and multiplier). The estimates are based on opioid overdose deaths in Australia, numbers of first time entrants to methadone maintenance treatment and heroin-related arrests in NSW. It should be borne in mind that there is no 'gold standard' method of estimating the size of a hidden population. Hall and colleagues (in press), however, found reasonable convergence between estimates produced by different methods applied to a range of data sources. The three methods of estimation produced estimates in between 67,000 and 92,000 for Australia (Table 2). The median estimate was 74,000 dependent heroin users in 1997-1998, a population prevalence of 6.9 per 1000 adults aged 15 to 54 years. NSW accounted for just under half (48%) of the estimated number of heroin dependent persons in Australia (35,4000) and Victoria accounted for 27% (19,600) (Hall et al, in press).

Table 2: Estimates of the number of dependent heroin users in NSW and Australia (rounded to nearest 1000)

Method of estimation	Estimate for Australia	Range of estimates
Back projection		
National overdose deaths	67,000	39,000 - 120,000 *
NSW MMT entrants	71,000	47,000 - 109,000 *
Capture-recapture		
MMT episodes	82,000	68,000 – 109,000 #
Arrests for heroin offences	86,000	78,000 – 102,000 #
Multiplier estimates		
OD fatalities:		
(x100)	74,000	-
(x125)	92,000	-
MMT entrants		
(x3)	68,000	-
Median estimate	**74,000**	-
Mean estimate	**77,000**	-

Key: * ranges from sensitivity analyses; # confidence intervals around estimates; no ranges for multiplier estimates

The mean age of heroin users in cross sectional samples has typically been approximately 30 years, with ages ranging from late teens to late 40s (ANAIDUS, 1991; Darke et al, 1996c; Hando et al, 1998a; Maher et al, 1998). Australian studies have repeatedly reported a male to female ratio in the order of 2:1 (eg. ANAIDUS, 1991; Loxley et al, 1995; Darke & Ross, 1997b, Darke et al, 1997b; Hall et al, 1993a; Hando et al, 1998a). The overwhelming majority of heroin users surveyed in Australia have been unemployed. The "typical" heroin user is thus an unemployed male in their twenties or thirties. While, some recreational heroin use may occur, the long-term dependent user has the largest impact on public health and public order.

Cross sectional studies have typically given the age of first use of heroin as occurring in the late teenage years (18 or 19), with regular use commencing within 12-24 months (ANAIDUS, 1991; Crofts, et al, 1996a; Darke et al, 1998a, Hando et al, 1998a; O'Brien et al, 1996; McKetin et al, 1998; Swift et al, 1999). The initiation of heroin use usually occurs after a lengthy history of drug use, with early intoxication with alcohol at age 12 or 13 being the most common starting point of the heroin career. Large proportions of heroin users in Australia have injected amphetamines prior to the commencement of heroin use (Darke et al, 1999b). However the IDRS has noted the tendency for newer heroin users in South Western Sydney to begin by injecting heroin (Maher, 1996; Hando et al, 1998a; McKetin et al, 1998).

The overwhelming majority of Australian heroin users inject the drug. However, recent Australian research has documented a diffusion of non-injecting routes of administration, such as heroin smoking, particularly among Indochinese youth in Australia (Hando et al, 1998a; Maher et al, 1998; Swift et al, 1999). Heroin smokers are at risk of making the transition to injecting heroin (Swift et al, 1999). Polydrug use is the norm among heroin users, and illicit drug users in general (ANAIDUS, 1991; Darke & Hall, 1995; Darke & Ross, 1997b; Hando *et al*, 1998a; Loxley *et al*, 1995; Ross *et al*, 1996, 1997).

A number of data sources indicate that the use of heroin appears to be increasing in Australia (Australian Bureau of Criminal Intelligence, 1997; Hall et al, in press; Hando et al, 1998a; McKetin et al, 1999). The age of onset of heroin use is falling, with initiation among younger cohorts occurring in the mid-teens (Lynskey & Hall, 1998a; Hall et al, 1999). The smoking of heroin is increasing in popularity, which can be expected to result in an increase in the number of heroin injectors (Hando et al, 1998a; Maher et al, 1998; Swift et al, 1999). The rate of heroin-related deaths continues to rise steeply (Hall & Darke, 1998; Lynskey & Hall, 1998a) and is consistent with an increase in heroin use. Heroin-related deaths are strongly associated with polydrug use, particularly the use of other central nervous system depressants such as alcohol and benzodiazepines (Darke & Ross, 1999a, 1999b; Darke et al, 1997; Darke & Zador, 1996; Zador et al, 1996).

1.1.2.7 Psychoactive Pharmaceutical Drugs

Another area of concern is the non-medical use of psychoactive pharmaceutical drugs, prescribed and over the counter drugs that affect the central nervous system. These include analgesics or pain-relieving drugs, sedatives or tranquillisers such as the benzodiazepines and antidepressant drugs. According to the 1998 NDS survey, painkillers or analgesics had been used for non-medical purposes at some time by 11% of males and 7% of females and tranquillisers/sleeping pills had been used by 6% of males and 7% of females. The most commonly used tranquillisers are the benzodiazepines such as Valium and Serepax. While the lifetime non-medical use of tranquillisers increased by 50% from 1995 to 1998 (4% v 6%), the lifetime use of analgesics remained stable (12% v 11%) (AIHW, 1999). Respondents in the NDS surveys were not questioned about their antidepressant use.

Figures 18 and 19 indicate that the lifetime and recent prevalence of analgesic use in 1998 was greatest among 14-29 year olds. Similarly, the lifetime and recent non-medical use of tranquillisers was greatest among 20-29 year olds (Figures 20 and 21).

Figure 18: Prevalence (%) of lifetime analgesic use by age and gender, 1998 NDS survey

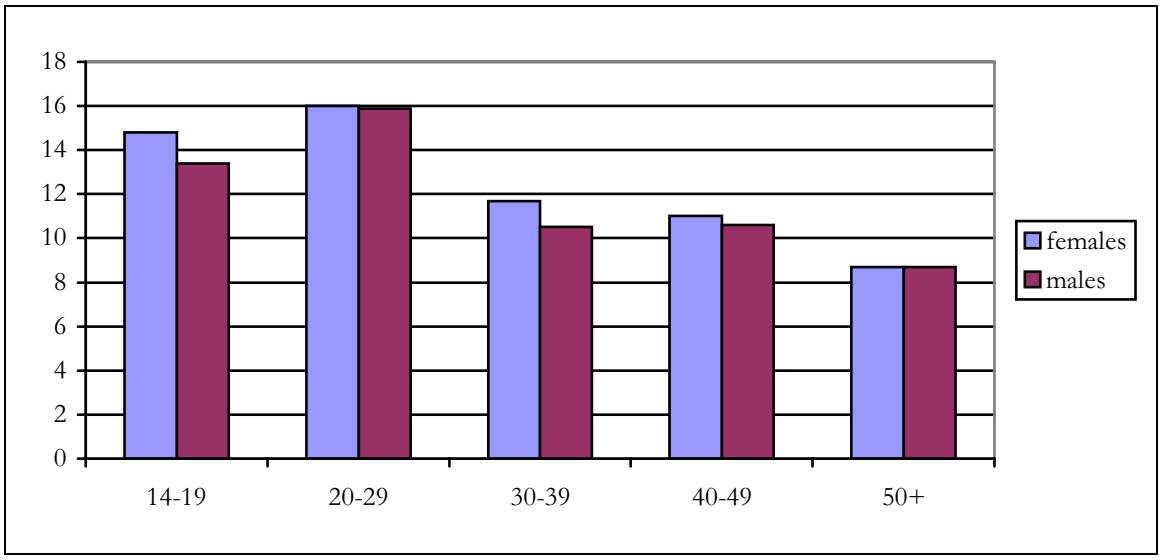


Figure 19: Prevalence (%) of 12-month analgesic use by age and gender, 1998 NDS survey

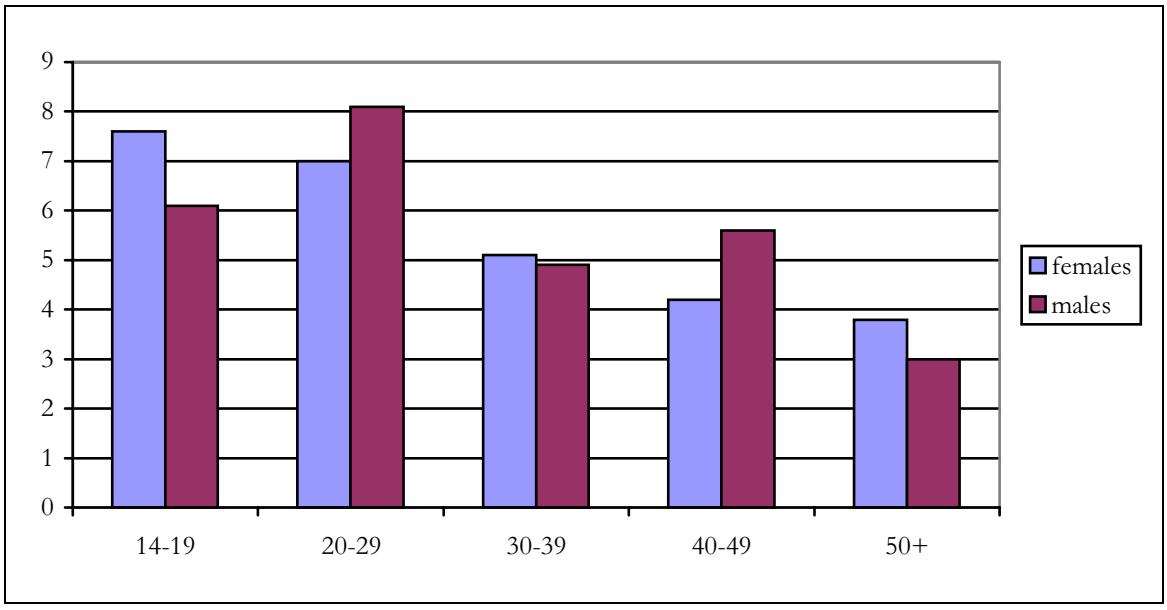


Figure 20: Prevalence (%) of lifetime tranquilliser use by age and gender, 1998 NDS survey

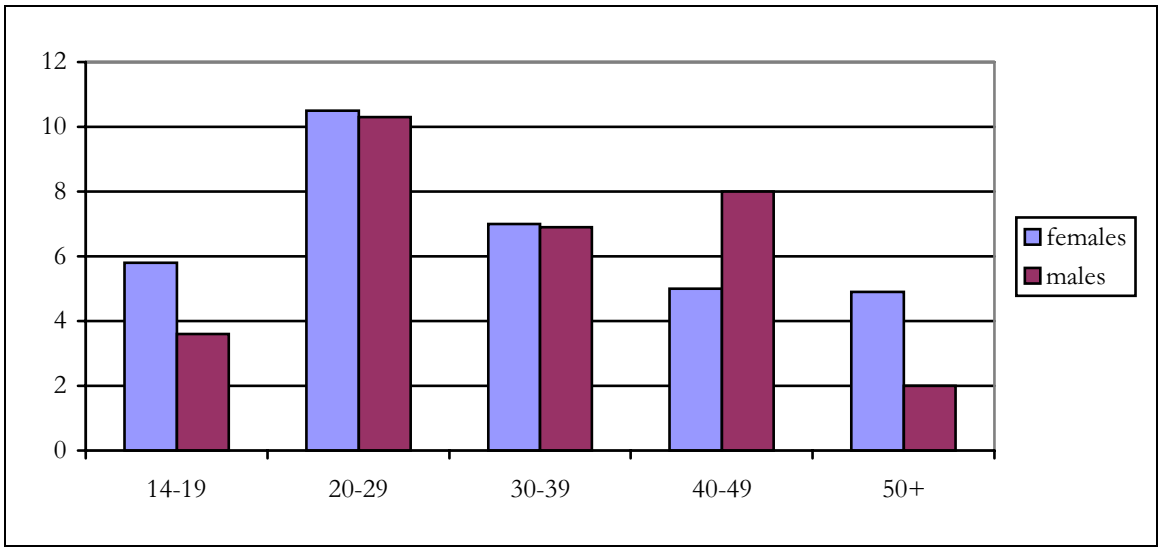
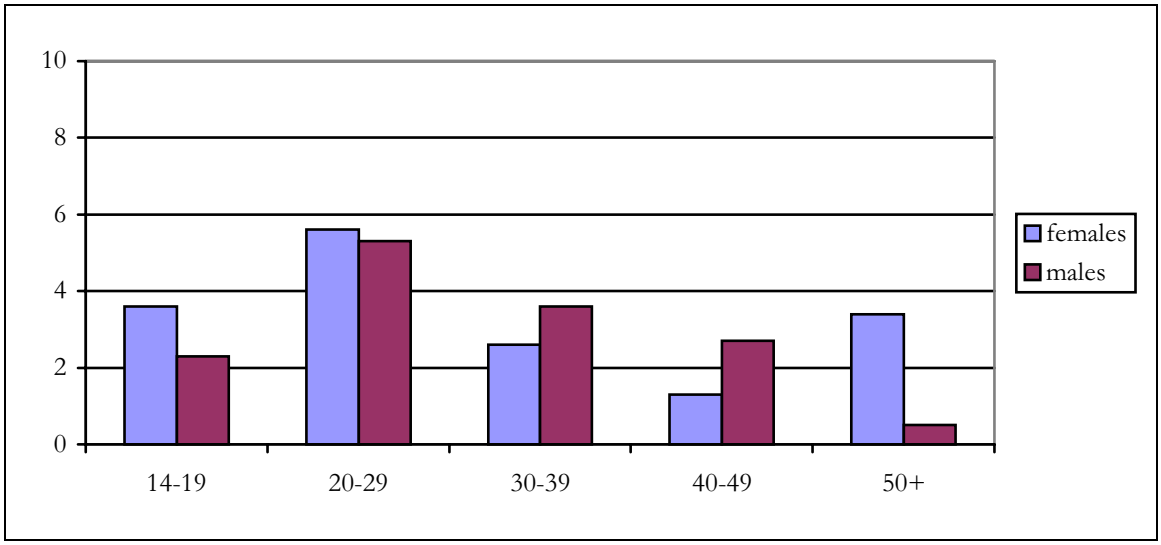


Figure 21: Prevalence (%) of 12-month tranquilliser use by age and gender, 1998 NDS survey



One fifth of high school students (aged 12 to 17) surveyed in 1996 reported that they had used tranquillisers for non-medical reasons at some time in their lives (Letcher & White, 1998). This rate is higher than that for the general population in the NDS surveys but this may be due, in part, to differences in sampling and the survey questions used. The use of 'sleeping tablets' was reported by 16% of TAFE students (aged 16 to 25) in 1996 but students were not specifically asked about non-medical use (AGB McNair, 1998).

Analgesics were the most commonly used substance (licit or illicit) by high school students (aged 12 to 17) in 1996. By the age of 12 over 95% of students had used analgesics in their lifetime (Letcher & White, 1998). Unlike the NDS survey, the school survey did not ask specifically about non-medical use. Similarly, 91% of TAFE students (aged 16-25 yrs) in NSW had used analgesics at some time in their lives, with female students being significantly more likely to have done so (95% v 90%) (AGB McNair, 1998).

Within the 12 months preceding the 1998 NDS survey, analgesics had been used for non-medical purposes by 5% of males and females, and tranquillisers or sleeping pills had been used for non-medical purposes by 3% of males and females. Overall there was a slight increase from 1995 to 1998 in the recent use of analgesics (4% to 5%) and tranquillisers (1% to 3%) (AIHW, 1999).

Over two-thirds of secondary students had used analgesics in the four weeks prior to the 1996 survey and this included 42% of students who had used analgesics in the week prior to the survey (Letcher & White, 1998). More girls than boys were regular users of analgesics, with around 50% of girls 15 and over having used analgesics in the week prior to the survey compared with around 35% of boys. Between 4% and 5% of students had used tranquillisers in the month prior to the survey, and around 3% had used them in the week before the survey. This level of use was consistent across age groups (Letcher & White, 1998).

Three of the top ten prescription medications distributed through community pharmacies in 1997-1998 were substances that affect the nervous system (paracetamol, codeine and temazepam) (Higgins et al, 2000). The number of prescriptions for drugs that affect the nervous system has risen steadily since 1991-92 largely because of an increase in the number of prescriptions for analgesics and antidepressants (Higgins et al, 2000). The most commonly distributed analgesics through community pharmacies are paracetamol and paracetamol with codeine 30mg which account for 70% of all prescriptions for analgesics in 1997-98 (Higgins et al, 2000).

The defined daily dose (DDD) is the dose of a drug required to treat an adult for one day. As shown in Table 3, there has been a steady increase in the number of prescribed DDDs for both opioid and non-opioid analgesics from 1991-92 to 1997-98. The number of DDDs for minor tranquillisers (anxiolytics and hypno-sedatives) has remained fairly stable (Higgins et al, 2000). Over this period the DDDs for antidepressants have almost tripled. Estimates of the aggregate community use of prescriptions for antidepressants during 1997 suggest that the most commonly prescribed antidepressants in Australia are the tricyclics (48%) and Selective Serotonin Re-uptake Inhibitors or SSRIs (37%) (Commonwealth Department of Health & Family Services, 1998).

Table 3: Defined daily doses (DDDs) for analgesics, minor tranquillisers and antidepressants, Australia, 1991-92 to 1997-98

	Year ending 30 June						
	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Substance	**(DDDs per 1,000 population per day)**						
Analgesics							
Opioids	6	6	7	8	9	9	10
Non-opioids	10	11	12	12	13	13	13
Tranquillisers (minor)	29	27	27	26	27	26	26
Antidepressants	12	13	15	19	24	28	33

(Reproduced after Higgins et al, 2000)

The rapid decline in recent tranquilliser use, from a prevalence of 15% in the 1988 NDS survey to 3% in 1998, is probably due to the greater reluctance of medical practitioners to prescribe the drugs because of media concerns about dependence and adverse health effects among long-term users (Makkai and McAllister, 1998). Benzodiazepine use, however, remains common among injecting drug users. Nearly two-thirds (63%) of injectors interviewed in the 1999 IDRS reported having used these drugs in the preceding 6 months, and 14% reported having injected them (McKetin et al, 2000). Previous research has shown that the injection of benzodiazepines among IDUs is not restricted to liquid formulations. (Darke et al, 1995b).

While approximately one in twenty (5.2%) Australians report having used analgesics in the preceding 12 months for non-medical purposes, use of these substances among IDU is much higher. The 1999 IDRS IDU surveys (in NSW, SA and VIC) showed that approximately one third (32%) had used other opiates in the preceding six months (McKetin et al, 2000). The injection of prescription opiates was common in the Northern Territory where 70% of respondents reported morphine as their last drug injected. Prescription morphine was the opiate of choice among IDU in Tasmania and the Northern Territory, with most IDU injecting MS Contin or Kapanol tablets.

In keeping with the rise in DDDs for antidepressants, there is recent evidence that the use of antidepressants is common among IDU (Hando et al, 1998a; McKetin et al, 1999; Darke & Ross, 1999; Darke & Ross, 2000). The use of SSRIs (selective serotonin re-uptake inhibitors) and the older style tricyclic antidepressants is common (Darke & Ross 2000). This is cause for concern given that antidepressants have been shown to potentiate the effects of opioids (Preskorn, 1994; Linnoila et al, 1983). While SSRIs were the type of antidepressant most commonly used, nearly a half (45%) of current antidepressant users had used tricyclics in the preceding six months. This is disturbing because the tricyclics are more toxic in overdose than the newer SSRIs (Battersby et al, 1996; Farmer & Pinder, 1989; Henry, 1989; Montgomery et al, 1989). IDUs do not appear to have particular preferences for certain types of antidepressants, and these drugs appear to have little abuse potential, which is contrary to the situation with benzodiazepines (Darke & Ross, 2000; Darke et al, 1995b).

1.1.3 Special Population Groups

1.1.3.1 Rural Versus Urban Populations

The best data on rates of drug use in urban and rural areas comes from the National Survey of Mental Health and Well-being (1997). As shown in Table 4, there are some interesting differences in patterns of licit and illicit drug use between Australians who live in major urban centres and those who live in rural centres and other rural areas. Residents of rural areas are a little more likely than urban residents to smoke tobacco, drink alcohol and to drink alcohol daily but they are a little less likely to use cannabis and other illicit drugs. The rates of injecting drug use are too low to be confident about the direction of differences but suggest that there are lower rates of injecting drug use in rural populations.

Table 4: Prevalence (%) of substance use according to rural-urban status, NSMHWB 1997

	Capital city and metro	Rural centres	Other rural areas
Regular tobacco use	22.7	26.3	23.4
Alcohol use	73.0	74.9	74.9
Daily alcohol use	18.6	20.6	23.4
Cannabis use	7.4	6.3	6.4
Other drug use	3.8	3.0	2.9
Any injecting drug use	0.5	0.3	0.3

1.1.3.2 Persons from Culturally and Linguistically Diverse Backgrounds

There is only limited population data on patterns of drug use among persons from different cultural backgrounds. The only data on the population prevalence of problematic substance use comes from the National Survey of Mental Health and Well-Being (NSMHWB), which grouped people according to their country of birth as: Australian, other English speaking country, and non-English speaking country. These broad groupings were used because it would have been very expensive to recruit and interview adequate numbers of persons from the different ethnic backgrounds in the NSMHWB. Table 5 shows the prevalence of drug use and drug use disorders according to the groupings used in the NSMHWB.

Those who were born in non-English-speaking countries were the least likely to report the use of licit or illicit drugs. Rates of tobacco and alcohol use were similar among those who were Australian-born and those who came from another English speaking country (around one quarter reported regular tobacco use, and three quarters reported alcohol use). The rates of illicit drug use were also highest among those who were Australian-born or born in other English-speaking countries. Being born in a non-English-speaking country appears to predict reduced rates of all types of drug use.

Table 5: Prevalence (%) of substance use and substance use disorders according to country of birth, NSMHWB 1997

	Australia	Other English speaking country	Non-English speaking country
Regular tobacco use	23.9	23.5	19.6
Alcohol use	75.5	79.4	58.0
Daily alcohol use	19.8	23.7	14.9
Cannabis use	7.9	7.0	3.0
Other drug use	3.7	4.6	2.1
Injecting drug use	0.5	0.5	0.4

Based on 1998 NDS survey data, persons born overseas are less likely than Australian-born non-indigenous people to have ever consumed alcohol (96% v 85%), tobacco (77% v 65%), cannabis (41% v 32%) or use any illicit drug (46% v 38%) (Higgins et al, 2000). A similar pattern is noted in patterns of drug use in the preceding 12 months (see Tables 6 and 7).

Table 6: Summary of drug use among persons born overseas, Australia, 1998

Substance	Ever used (%)	Used in past 12 months (%)
Alcohol	85	75
Tobacco/cigarettes	65	24
Cannabis	32	13
Any illicit drug	38	16

Table 7: Summary of drug use among Australian-born non-indigenous people, Australia, 1998

Substance	Ever used (%)	Used in past 12 months (%)
Alcohol	96	84
Tobacco/cigarettes	77	25
Cannabis	41	19
Any illicit drug	46	23

Source: Higgins et al, (2000)

In 1992 the Drug and Alcohol Multicultural Education Centre (DAMEC) in Sydney and the NSW Drug and Alcohol Directorate undertook a series of studies looking at drug use among people from specific culturally linguistic diverse backgrounds (Bertram & Flaherty, 1992, 1993; Everingham, Martin & Flaherty, 1994; Everingham & Flaherty, 1995; Jukic, Pino & Flaherty, 1996). All samples were recruited by a cluster sampling technique, through a door-to-door interviewing procedure, and their reported drug use was compared to that in the most recent NDS household survey. The prevalence of drug use reported in each of the studies is summarised below.

Drug Use Amongst Vietnamese Speakers in Sydney (Bertram & Flaherty, 1992)

A sample consisting of 341 Vietnamese-speaking people aged 15 to 65 years were asked about their drug use. The prevalence of tobacco use among males on the day of the survey was ten times that reported by females (42% v 4%). Tobacco use on the day of the survey was higher among Vietnamese-speaking males than in the general community (37% v 26%), and much lower among Vietnamese speaking women than in the general community (4% v 22%).

Reported use of alcohol at least once in the week preceding the survey was also much higher among men than women (44% v 9%). Alcohol use was higher among men in the general community than among Vietnamese speaking males (62% v 43%). Similarly, alcohol use was much higher among women in the general community than among Vietnamese speaking women (39% v 8%).

Men were most likely to report that they usually had one or two drinks (52%). Fewer men (10%) reported usually consuming more than four drinks. Most women reported that they did not drink or had not done so in the past 12 months (70%). A fifth (21%) reported usually consuming a 'few sips' of alcohol, and very few reported usually consuming more than two drinks per day (4%). The reported rates of use of analgesics, minor tranquillisers, cannabis and other illegal drugs was lower than in the general community.

Drug Use Amongst Spanish-speakers in Sydney and Wollongong (Bertram & Flaherty, 1993)

A sample of 436 Spanish-speaking people aged between 15 and 65 were interviewed. Males were more likely than females to have smoked tobacco on the day of the survey (28% v 15%). Tobacco use among males was comparable to that in the general community (29% v 26%), but was lower among Spanish-speaking women (15% v 22%).

Reported use of alcohol at least once a week in the week prior to interview was also higher among males than females (53% v 34%). Reported alcohol use was higher among males in the general community than among Spanish-speaking males (62% v 53%), and marginally higher among women in the general community than among Spanish-speaking women (39% v 33%).

Males were most likely to report usually consuming one or two drinks (50%). Few males (14%) reported usually consuming more than four drinks. Most females reported that they usually consumed one or two drinks (52%) and few reported usually consuming more than two drinks (11%). Similar to the general community, one quarter of women under 25 years reported usually consuming more than two drinks.

Use of tranquillisers in the month preceding interview was marginally higher among Spanish-speakers compared to the general community (8% v 6%). Reported use of analgesics, cannabis, and other illegal drugs was lower than in the general community, except in the case of cannabis use among people under 25 years where rates were similar to those in the general community.

Drug Use Amongst Greek Speakers in Sydney (Everingham, Martin & Flaherty, 1994)

A sample of 450 Greek-speaking people aged 15 to 65 years was interviewed. Regular tobacco use was higher among males than females (31% v 10%). Amongst those who had ever smoked, reported regular use of tobacco was higher among Greek men compared to the general community (47% v 31%) and lower for Greek speaking women (24% v 30%).

Reported regular use of alcohol (at least one day in the past week) was also higher among males than females (60% v 34%). When compared to the general community, Greek-speakers reported a similar prevalence of regular alcohol use among males (60% v 61%), and a somewhat lower prevalence among females (34% v 49%).

Males were most likely to report usually consuming one or two drinks per drinking day (58%), with 18% usually consuming more than four drinks at a sitting. The majority of women (87%) only consumed one or two drinks per drinking day, and few (11%) reported usually consuming more than two drinks.

Reported tranquilliser use within the preceding year was found to be lower among Greek-speakers (6%) compared to the general community (10%). Reported use of cannabis and other illegal drugs was lower than in the general community. Regular analgesic use was also lower than in the general population (26% v 36%).

Drug Use Amongst Chinese Speakers in Sydney (Everingham & Flaherty, 1995)

A sample of 422 Chinese-speaking people aged 15 years and over were asked about their drug use. Regular use of tobacco by men (26%) was higher than that reported by women (2%). Amongst those who had ever smoked, regular use of tobacco was highest among Chinese-speaking men compared to the general community (46% v 31%), but lower for Chinese-speaking women (13% v 30%).

Alcohol use (at least one day in the past week) was higher among males than females (38% v 15%). Both men and women were most likely to report usually consuming only one or two drinks per drinking occasion (76% and 96% respectively). Only 5% of male drinkers reported usually consuming more than four drinks at a sitting.

Although 13% of the sample reported having tried tranquillisers, the rate of use within the preceding year was lower among Chinese-speakers (4%) than in the general community (10%). Reported use of cannabis and other illegal drugs was lower than in the general community. Regular analgesic use (once a week or more) was also significantly less common than in the general population (5% v 27%).

Drug Use Amongst Arabic-Speakers in Sydney (Jukic, Pino & Flaherty, 1996)

A sample of 560 Arabic-speaking people aged 15 years and over was recruited. Use of tobacco on a daily basis was higher among Arabic-speakers than the general community (53% v 26%). When analysed by gender, regular tobacco use was found to be higher among both Arabic-speaking males (54% v 35%) and females (53% v 32%).

Reported use of alcohol was significantly lower among females than males (41% v 69%). Almost twice as many Christians as Muslims had tried alcohol (73% v 38%). Males were twice as likely as females to report usually drinking at least once a week (45% v 21%). The majority of Arabic-speaking drinkers (77%) stated that they usually had two standard drinks or less on any one occasion. Amongst male and female drinkers, the levels of potentially harmful drinking (males consuming more than four drinks and females consuming more than two drinks regularly) were found to be only 6% and 8% respectively. The prevalence of alcohol use among Arabic-speaking males (51%) and females (26%) in the week preceding interview was significantly lower than the prevalence of use in the general community (males: 70%, females: 50%).

More than half (59%) of Arabic- speakers had used analgesics at some point in their lives (61% males v 58% females). Females were more likely than males to have used painkillers in the preceding 12 months (58% v 45%). When weighted to the general community, both Arabic males (49% v 2%) and females (60% v 2%) were more likely to report consuming analgesics in the preceding 12 months relative to the general community. Lifetime use of minor tranquillisers (12%), cannabis (6%) and heroin (<1%) was lower than that in the general community.

1.1.3.3 Indigenous Australians

The number of Indigenous persons surveyed in the 1998 NDS household survey was small (just over 200 people), and therefore prevalence estimates should be treated with caution (Higgins et al, 2000). Better national estimates of Indigenous drug use can be obtained from the 1994 NDSHS Urban Aboriginal and Torres Strait Islander Peoples Supplement (CDHSH, 1996), and for tobacco and alcohol from the 1994 National Aboriginal and Torres Strait

Islander Survey (ABS 1996).

The 1998 NDS household survey indicates that the drugs that were most commonly used by Indigenous people were alcohol (81% in the past 12 months) and tobacco (50% in the past 12 months) (Table 8). Over half of Indigenous people aged 14 years and over had ever tried cannabis, compared with 41% of Australian-born non-Indigenous people (Higgins et al, 2000). Approximately 59% of Indigenous people had tried at least one illicit drug, with almost a quarter (23%) having used one in the 12 months preceding interview. Indigenous people were a little less likely than Australian-born non-Indigenous people to have ever used alcohol (94% v 96%) or to have used it in the preceding 12 months (81% v 84%).

Table 8: Summary of drug use, Indigenous persons, Australia, 1998

Substance	Ever used (%)	Used in the past 12 months (%)
Alcohol	94	81
Tobacco/cigarettes	77	50
Cannabis	55	22
Any illicit drug	59	23

Source: Higgins et al (2000)

While not directly comparable (due to differences in sampling and other methods) the lifetime and recent use of alcohol appears to have increased among Indigenous persons from 1994 (CDHSH, 1996) to 1998 (AIHW, 1999) (Tables 8 & 9).

Table 9: Summary of drug use among Indigenous persons, Australia, 1994

Substance	Ever used (%)	Used in the past 12 months (%)
Alcohol	84	62
Tobacco/cigarettes	77	54
Cannabis	48	22
Any illicit drug	54	29

Source: National Drug Strategy Household Survey, Urban Aboriginal and Torres Strait Islander Peoples Supplement 1998

There are some interesting differences between Indigenous and non-Indigenous Australians in patterns of alcohol and tobacco use that were highlighted in the 1994 survey of urban Aboriginal and Torres Strait Islander (ATSI) people (CDHSH, 1996). While a smaller proportion of urban ATSI people drink alcohol than the general population living in urban areas (62% v 72%), those that do drink alcohol consume much higher quantities than the general population. Among current Indigenous drinkers 68% usually consumed harmful quantities of alcohol when they drank as against 11% of the general population (CDHSH, 1996). More than half (54%) of urban ATSI people were current regular or occasional smokers, compared to only 29% of the general population.

Also of concern in Aboriginal and Torres Strait Islander Communities is the sniffing of petrol and other inhalants, and the use of KAVA.

Historically the use of petrol as an inhalant has been largely confined to the Top End of the Northern Territory and the tri-state region of Central Australia. Qualitative data suggest that petrol sniffing has been practiced in some communities since the 1970s. Brady (1992) noted reports of petrol sniffing in a number of communities as early as the 1950s.

To date, petrol sniffing and other inhalants have been used by young people in remote geographical locations. Males are more likely to sniff petrol than females and the average age is late adolescence.

There are a number of communities where petrol sniffing appears to have become entrenched. It is estimated that there are some 200-300 chronic petrol sniffers (Burke, 1998). Prolonged sniffing can lead to brain damage and long term disability.

Petrol sniffing is cyclical in nature and varies greatly among communities, gender and age groups. Its pattern is unpredictable, although mobility at particular times can lead to outbreaks in other regions. For example, at ceremony time it has been reported that outbreaks of sniffing have occurred as young people move into different regions.

The inhalation of other volatile hydrocarbons, such as glue and aerosols, is also a concern with incidents of glue sniffing by young Aboriginal and Torres Strait Islander people being reported around the country. Brady (1992) has reported that in New South Wales 42% of Aboriginal school children surveyed knew between 1 and 10 other young people using glue, petrol, thinner or aerosols as inhalants, and 8% knew someone younger than nine years of age inhaling such substances.

Kava is an intoxicating non-alcoholic beverage prepared from the root and stem of the plant *Piper methysticum*, grown throughout Melanesia, Polynesia and Micronesia. In Australia, it is a problem for some Top End Aboriginal communities, particularly in East Arnhem Land.

Kava use was, in some communities in the past, encouraged as a substitute for alcohol. It was argued that, unlike alcohol, a person consuming kava was not prone to acts of aggression (Cawte, 1986).

Long term consumption of kava can lead to toxic effects, ataxia and ascending paralysis without loss of consciousness. Health effects of heavy kava use are more likely to result in general ill health. Ill health is also evident in the high carriage rate of hepatitis B which can be attributable to unhygienic methods of preparation and consumption.

1.1.3.4 Persons With Psychotic Illnesses

One group in the population that appears to be at greater risk of problematic drug use are persons who have psychotic disorders, such as schizophrenia. Analysis of data from the National Survey of Mental Health and Well-Being revealed that in the Australian population, people who screened positively for psychosis (likely "cases") have higher rates of illicit drug use than those who do not screen positively (Degenhardt & Hall, 2000). Regular tobacco use was reported by 60% of cases under the age of 50 years, compared to 27% of non-cases. A greater proportion of cases also reported regular alcohol or cannabis use.

These survey findings were corroborated by data from the Low Prevalence Study (LPS), which was carried out in Perth, Melbourne, Brisbane and Canberra as an additional part of the NSMHWB (Jablensky et.al., 1999). This was a survey of persons who met criteria for psychotic disorders such as schizophrenia and who had been treated by general practitioners or were in contact with social welfare services. In this sample, three quarters of males (73%) and half of females (56%) were tobacco users, and four in ten (37%) were near daily alcohol users.

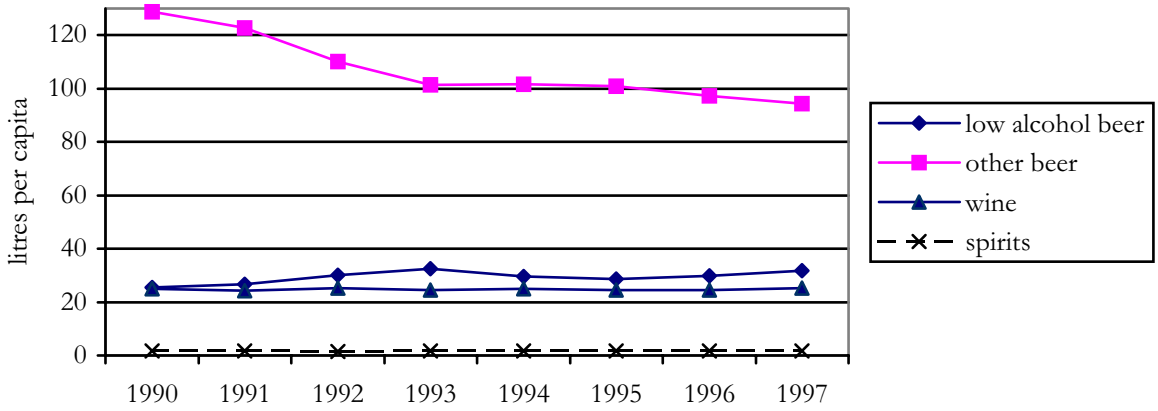
1.1.4 Trends in Drug Use

1.1.4.1 Prevalence of Use

Alcohol

In Australia, the lifetime prevalence of alcohol use has been relatively stable over the past decade (1985-1998), with more than 90% of persons reporting the use of alcohol at some point in their lives (AIHW, 1999; Makkai & McAllister, 1998). Similarly, there has been little change over the past decade in rates of alcohol use within the past year, with around 80% of adults reporting alcohol use (AIHW, 1999; Makkai & McAllister, 1998). There has, however, been a change in the type of beverage consumed. The per capita consumption of full strength beer has declined and the consumption of low alcohol beer has increased (Figure 22).

Figure 22: Apparent per capita consumption of alcohol, 1990 to 1997

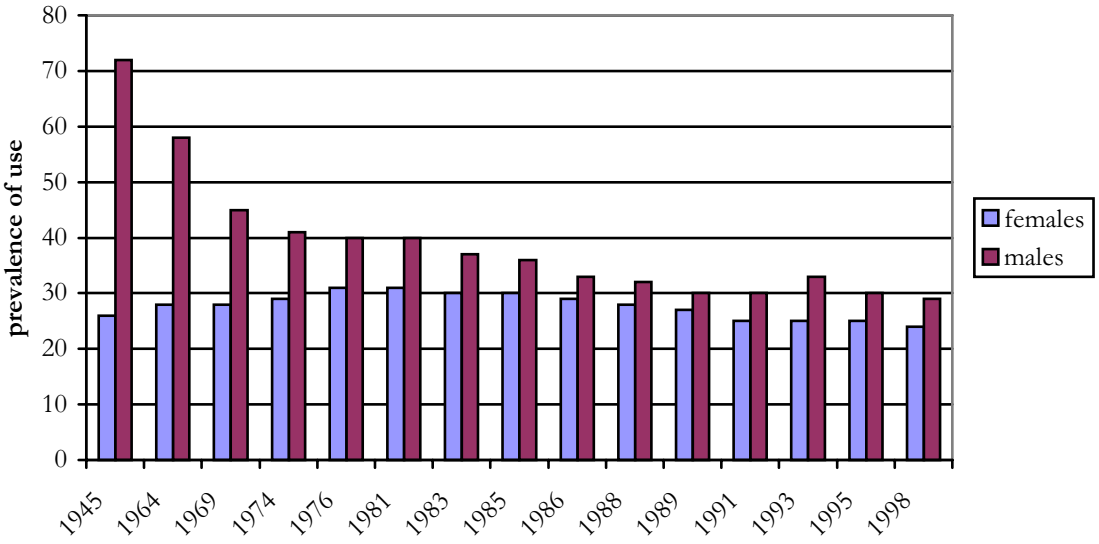


Source: Higgins et al., (2000)

Tobacco

Over the past fifty years, there has been little change in the prevalence of current tobacco smoking among women in Australia – in 1945, 26% were smokers, compared to 24% in 1998 (Figure 23; caution needs to be taken in the interpretation of this figure as the estimates are derived from surveys using different methodologies). However, there has been a marked decrease in the prevalence of smoking among men. In 1945, almost three in four men smoked (72%), compared to 29% of men in 1998. This change has meant that there is now little difference between men and women in the proportion who smoke tobacco.

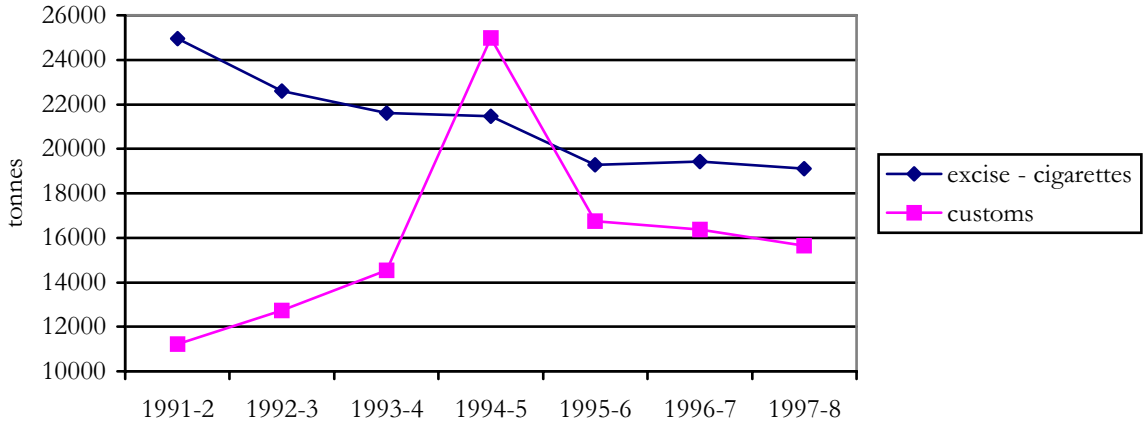
Figure 23: Prevalence of current tobacco use among Australian adults, 1945-1998



Sources: Makkai & McAllister (1998); AIHW (1999).

This reduction in the rates of tobacco smoking has been paralleled by a reduction in the volumes of tobacco cleared at customs and excise (Figure 24). There appears to be a reduction in the demand for tobacco over the past two to three years, after a peak in 1994-95.

Figure 24: Volume of tobacco cleared through customs and excise, 1991-2 to 1997-8



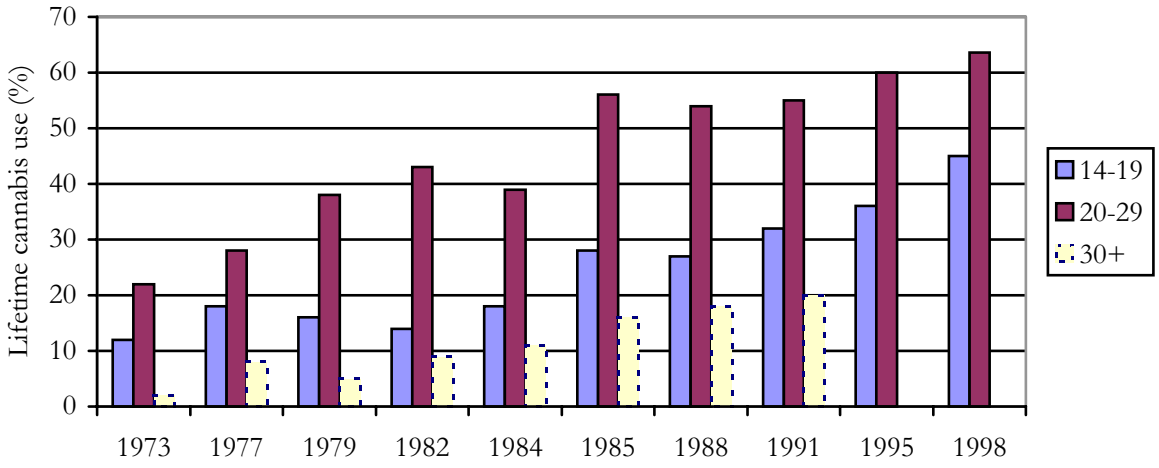
Source: Higgins et al., (2000)

Cannabis

Since 1985, the rate of lifetime cannabis use has increased from 28% in 1985 to 39% in 1998 (AIHW, 1999; Makkai & McAllister, 1998). The rate of lifetime use of cannabis has been increasing since 1973 for all age groups, with the 20-29 year age group persistently reporting the highest rate of lifetime use (Figure 25).

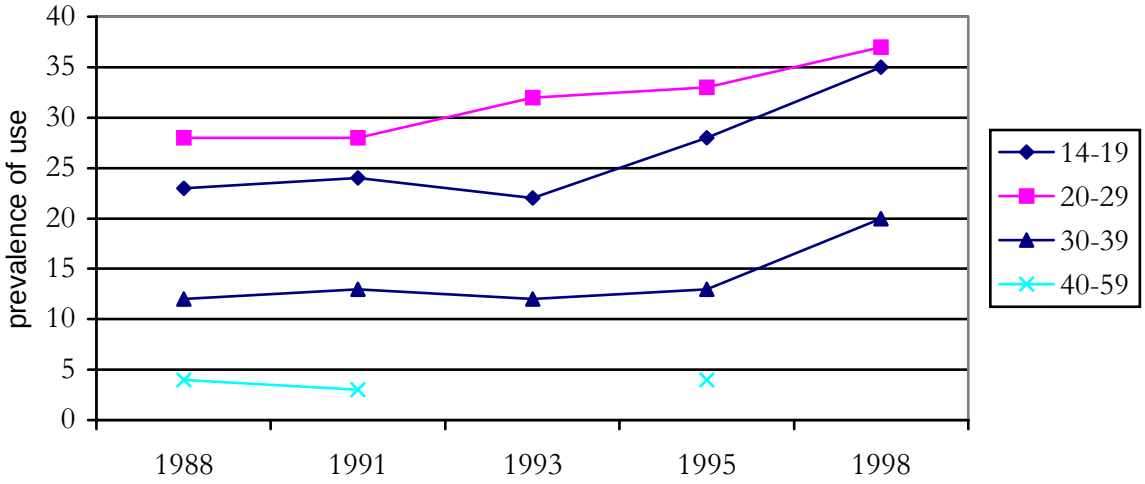
Recent use of cannabis has also increased since 1988. The highest rate of past year use was also reported by the 20-29 year age group. However rates of use have increased among the 14-19 year age group whose rates are increasingly similar to those in the 20-29 year age group (Figure 26).

Figure 25: Lifetime prevalence of cannabis among Australians 1973-1998 by age (1)



Sources: AIHW (1999); Donnelly & Hall (1994)
(1) Note: Sources not comparable, therefore data not available for 30+ age group for 1995 and 1998

Figure 26: Past year cannabis use among Australians 1988-1998 by age(1)

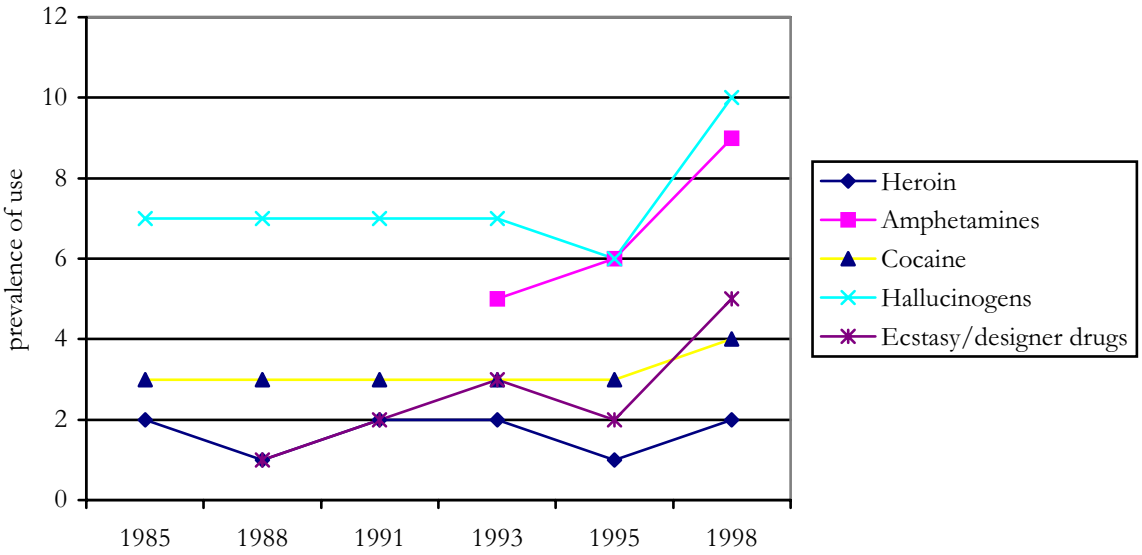


Sources: Makkai & McAllister (1998); AIHW (1999).
(1) Note: Sources not comparable, therefore data not available for 40-59 age group for 1993 and 1998

Other illicit drugs

There was an apparent overall increase in the rate of lifetime use of a number of illicit drugs in 1998 (Figure 27). Lifetime use of heroin remained steady at between 1-2% but the illicit use of amphetamines has increased steadily since 1993, with 10% of the population reporting lifetime use in 1998 compared to 5% in 1993. Because of the limited sample size in the NDS Surveys, especially before 1998, it is impossible to determine with any confidence whether rates of illicit drugs other than cannabis and amphetamines have increased.

Figure 27: Prevalence of lifetime use of illicit drugs among Australians, 1985-1998



Sources: Makkai & McAllister (1998); AIHW (1999).

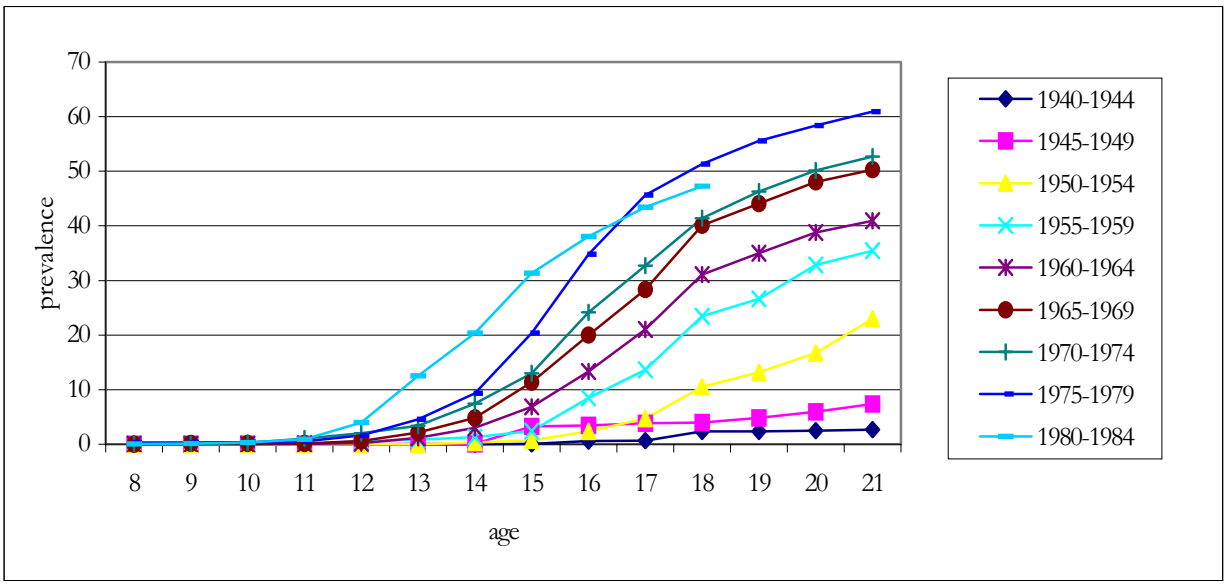
1.1.4.2 Age of Initiation of Substance Use

Initiation of drug use at a younger age is associated with a variety of adverse consequences. These include an increased likelihood of problem drug use (Fergusson et al., 1994; Fergusson & Horwood, 1997; Grant and Dawson, 1998; Grant and Dawson, 1997; Khuder et.al., 1999), and the development of problems in other areas of life related to drug use, including sexual activity, criminal activity, and reduced educational attainment (Brook et al, 1999; Lynskey & Hall, 1998a).

Studies have suggested that in Australia, persons born in successive decades ("birth cohorts") have differed in the age at which they begin to use alcohol and other drugs (Degenhardt, Lynskey & Hall, 2000; Lynskey & Hall, 1998a). For example, a study using data from the 1998 NDS survey examined the prevalence of lifetime use, and use by age 15 years, of a range of licit and illicit drugs, in nine five-year cohorts among persons born between 1940 and 1984 (Degenhardt et al., 2000).

The lifetime prevalence of alcohol and tobacco use was similar in all birth cohorts, with the majority of persons reporting that they had used these drugs. By contrast, the prevalence of illicit drug use – cannabis, amphetamines, LSD and heroin – increased with each successive birth cohorts. For example, while only 14% of those in the 1940 to 1944 birth cohort reported ever having used cannabis, around two thirds (63%) of those born between 1975-1979 reported having done so (Figure 28).

Figure 28: Year of first use of cannabis according to birth cohort, 1998 NDS survey



Source: Degenhardt, Lynskey & Hall (2000)

More recent birth cohorts were also likely to report first use of licit and illicit drugs at a younger age. Over half (56%) of those in the 1980-1984 birth cohort reported alcohol use by age 15 years, compared to 16% of those in the 1940-1944 birth cohort. Similarly, almost a third of those in the 1980-1984 birth cohort (31%) reported cannabis use by age 15 years, compared to under 4% of those born between 1940-1959. This pattern is graphically illustrated in Figure 28. More recent birth cohorts had higher prevalence rates of use by age 21 years, with steeper lines indicating that greater numbers in these cohorts reported use at a younger age.

Patterns of amphetamine, hallucinogen, and heroin use were similar to those found for cannabis. Those born more recently are much more likely to have use these illicit drugs, and are likely to have done so by an earlier age.

These findings are consistent with other research (e.g. Johnson & Gerstein, 1998; Lynskey & Hall, 1998a). They are also consistent with what is known about changes in the availability of illicit drugs, namely, that illicit drugs have become much more widely available in Australia over the past three decades. This means that older birth cohorts probably had very limited access to illicit drugs when they were adolescents and young adults. However, increased availability does not wholly explain the lower ages of first illicit drug use because the age of first use of *licit* drugs has also decreased in more recent birth cohorts. Instead, it is likely that broader social changes and attitudes towards the use of alcohol, tobacco *and* illicit drugs also contribute to these patterns.

1.2 COSTS TO USERS

English et al (1995) provided an important assessment of the harm to health caused by alcohol, tobacco and illicit drug use in 1992. They used three measures of harm. The first was the number of premature deaths attributed in whole or part to each drug ("drug-related mortality"). The second was the number of life years lost as a consequence of each death. This measure ("person years of life lost (PYLL)) takes account of the fact that different drugs cause deaths at different ages. The third was a measure of "treated morbidity", the extent to which each drug caused diseases and conditions that required hospitalisation. This was assessed by the number of hospital bed days attributed in whole or part to conditions caused by the use of each of these three drug classes.

The results of this analysis are shown in Tables 10, 11 and 12. Tobacco accounted for the most deaths, years of life lost and bed days, followed by alcohol, with illicit drugs in third place. The main difference was that more deaths were attributed to all three types of drug use in the English et al analysis, and there were more deaths attributed to alcohol using the newer method of estimating relative risk (see Table 10).

Tobacco caused a great many more deaths (18,920) than alcohol (3,660) and illicit drugs (488). Alcohol, and to a lesser extent, illicit drugs, narrowed the gap when life years lost were considered because both contribute to deaths among adults at an earlier age than tobacco. In terms of hospital bed days, the difference between alcohol and tobacco narrowed further because the chronic alcohol-related conditions that affect adults in middle life require substantial medical treatment.

Table 10: Drug-related deaths in Australia 1992

	Alcohol	Tobacco	Illicits
Males	2,530	13,857	384
Females	1,130	5,063	104
Persons	3,660	18,920	488

Table 11: Drug-related years lost (PYLL) in Australia 1992

	Alcohol	Tobacco	Illicits
Males	43,183	63,646	13,892
Females	12,267	24,620	4,007
Persons	55,450	88,266	17,899
Mean PYLL	15.2	4.7	36.7

Table 12: Drug-related bed days in Australia 1992

	Alcohol	Tobacco	Illicits
Males	443,834	551,347	21,812
Females	287,335	261,519	18,710
Persons	731,169	812,866	40,522

1.2.1 Harms Associated with Alcohol Use

Alcohol is the second largest cause of drug-related mortality in Australia after tobacco (AIHW, 1999). The AIHW estimates that in 1997 there were almost 4,000 deaths and just under 100,000 hospital episodes attributed to alcohol. The main causes of alcohol-related deaths and hospital episodes were cirrhosis of the liver, strokes and motor vehicle accidents (AIHW, 1999). The National Survey of Mental Health and Well-Being (NSMHWB, 1997) estimated that 6.5% of the Australian population met criteria for an alcohol use disorder (3% with harmful use and 3.5% with dependence).

English et al (1995) have analysed age and sex differences in alcohol-related mortality and morbidity. Alcohol-related premature deaths, life years lost, and hospital morbidity were all much higher for males than females in all age groups, reflecting higher rates of hazardous and harmful alcohol use by males. Deaths attributed to alcohol in men and women begin to occur in the 40s, increase throughout the 50s, and peak in the 60s. Life years lost showed a similar pattern, but with higher contribution to life years lost in the 70s because of the number of persons affected by alcohol-related diseases in this age group. Bed days showed a more varied picture across the age groups. The higher contribution in younger age groups reflected the role that alcohol plays in accidental injury. In the older age groups hospital bed days reflect the high burden of hospital treatment required for chronic alcohol-related conditions, like liver disease, pancreatitis and alcohol dependence (English et al, 1995).

Men and women differ in the contribution that specific causes of death make to alcohol-related deaths (Table 13). In males the largest contributions to alcohol-related deaths were made by injury (particularly motor vehicle accidents, falls and drowning), gastrointestinal diseases (particularly, liver cirrhosis), cardiovascular disease (particularly stroke), and violence (suicide and assaults). In women, the largest contribution was made by stroke and injury.

Among males injury, violence and cirrhosis accounted for 46%, 20% and 16% respectively of all life years lost because of alcohol. This reflected the young average age of males dying from alcohol-related accidents, suicide and assault. For women, the contribution of these specific causes was less marked, although, as for men, injury and violence predominated.

Table 13: Causes of alcohol-related deaths in Australian men and women in 1992 (%)

	Men	Women
% Cancer	7	8
% Alcoholism	9	4
% Cardiovascular	19	38
% Gastrointestinal	24	15
% Injury	29	28
% Violence	12	5

N male deaths 2530; N female deaths 1132

The alcohol-related conditions that resulted in hospital treatment varied across the age groups. The highest number of alcohol-related bed days in younger age groups were attributed to accidental injury. In the older age groups they reflected the burden of chronic alcohol-related conditions. Among older men hospital treatment for alcohol dependence and alcoholic psychoses ("alcoholism" for short) dominated all other causes, followed by injury. For women, injury was still the major cause of hospital morbidity, followed by alcoholism. This reflected the much higher prevalence of alcohol dependence among men than women in most cultures (Helzer and Canino, 1992), including Australia (Hall, 1995; Hall et al, 1999a).

1.2.2 Harms Associated with Tobacco Use

Despite the reductions in tobacco use over recent decades, tobacco smoking remains a major preventable cause of premature death in all advanced industrial societies (Makkai & McAllister, 1998). In Australia tobacco contributes to four in every five drug-related deaths and almost three in every five drug-related hospital episodes (AIHW, 1999). The Australian Institute of Health and Welfare estimates that tobacco contributed to over 18,000 deaths in 1997 and almost 150,000 hospitalisations. The most frequently occurring tobacco-related conditions were cancers (e.g. lung, oesophageal), ischaemic heart disease and chronic obstructive pulmonary disease (AIHW, 1999). Males were more than twice as likely as females to be hospitalised, and to die from, tobacco-related causes.

English et al's 1995 analysis of tobacco-related mortality and morbidity showed higher mortality, greater life years lost and more hospital morbidity for males than females at all ages. This reflects the higher rates of cigarette smoking among males until recently. Deaths attributed to cigarette smoking in men and women began much later than those attributed to alcohol. They first become apparent in the 50s, and increase through the 60s and 70s. Even though the average age at death for tobacco-related causes was high, the number of persons affected by tobacco-related diseases is large so that overall tobacco smoking accounts for a much large number of lost life years than alcohol or illicit drugs.

The impact of tobacco smoking on hospital morbidity as assessed by bed days occurs at a much earlier age than premature deaths. This reflects the deterioration in the health of smokers who begin to develop the chronic health problems from smoking (such as respiratory and heart disease) a decade or more before they kill the smoker.

There are fewer sex differences in the diseases that contribute to tobacco-related deaths (Table 14). In males the largest contributions is made by deaths attributed to heart disease (particularly ischaemic heart disease), cancers (particularly, lung cancer), and respiratory diseases (particularly chronic obstructive lung disease). The picture is very similar among women.

Table 14: Causes of tobacco-related deaths in Australian men and women in 1992

	Men	Women
Cancer	37	30
Cardiovascular	38	41
Respiratory	24	26
Other causes	1	3

Total N of deaths 13,859 for men and 5,063 for women

In terms of life years lost, heart disease and cancer make a larger contribution than respiratory disease which strikes later in life and produces more chronic illness. In the case of hospital morbidity heart disease dominates tobacco-related morbidity in males and females, followed by respiratory disease, and then cancers. Effects of maternal smoking during pregnancy on the health of mothers and infants affects hospital morbidity in ways that are not reflected in deaths or life years lost (English et al, 1995).

1.2.3 Harms Associated with Illicit Drug Use

1.2.3.1 Illicit Drug-Related Morbidity and Mortality

In 1997, 832 deaths in Australia were attributable to illicit drug use. This comprised 42% of all drug-related-deaths among 15-34 year olds (Higgins et al, 2000). The main causes of these death were opiate dependence (66%) and followed by suicide (16%). The former of these causes are primarily due to opioid overdose deaths (Hall et al, 1999b).

The quantity and quality of evidence on causal relationships between illicit drug use and health is not as good as that for tobacco and alcohol. Most of the deaths attributed to illicit drugs are relatively direct, acute drug effects such as drug overdose. It is likely that the available data underestimate the contribution that illicit drug use make to chronic conditions because of the absence of research on the long-term effects of most forms of illicit drug use, including the most common form, cannabis use (Hall, Solowij and Lemon, 1994).

The poverty of data on the causes of mortality among illicit drug users is revealed in Table 15, which uses a crude classification of cause by drug type and route of administration (English et al, 1995). It shows a male excess in all age groups, reflecting the higher rates of illicit drug use and dependence among males than females (Hall, 1995; Hall et al, 1999a). Deaths were also concentrated among the younger age groups, especially in the twenties and thirties.

Table 15: Causes of illicit-drug-related deaths in Australian men and women in 1992 (%)

	Men	Women
Opiates	92	89
Injecting drug use	6	8
Other	2	3

Total N of deaths 384 for men and 104 for women

Illicit drug use accounted for fewer life years lost than alcohol or tobacco but the number of life years per death was much greater than for tobacco or alcohol. This reflects the much younger age at which illicit drug users die (average of 30 years). Hospital morbidity attributed to illicit drugs is concentrated in the same young age groups, with the addition of morbidity attributed to the effects of maternal drug use on babies and infants.

The major causes of death attributable to illicit drug use were those due to opiate "overdoses". Although injecting drug use is a major vector for the transmission of infectious diseases, such as, HIV and hepatitis B and C, this has not been reflected in Australian mortality data to date. In the case of HIV this reflects Australia's success in averting an epidemic of HIV infection among injecting drug users (Feacham, 1995). This situation is likely to change in the future in the case of hepatitis C because of the high proportion of injecting drug users who have been infected with this virus (National Centre in HIV Epidemiology and Clinical Research, 1999). Other forms of illicit drug use accounted for a minority of the deaths attributable to illicit drug use.

Illicit opiate use makes a major contribution to life years lost because of illicit drug use. Illicit opiate use also dominates morbidity caused by illicit drug use but drug induced psychosis, which is probably largely due to stimulant use, makes a contribution to hospital morbidity. It is followed by stimulant-related hospital admissions which reflect the high rates of psychological and other morbidity reported by illicit amphetamine injectors (Hall & Hando, 1993; Hando & Hall, 1993). Cannabis use also makes a detectable contribution to hospital morbidity whereas it makes little or no contribution to deaths and life years lost.

1.2.3.2 Harms Associated with Cannabis Use

The most common acute adverse effects of cannabis are likely to be anxiety, dysphoria, panic and paranoia, particularly among naive users (Hall & Solowij, 1998; Kalant et al, 1998). Of greater public health concern is the psychomotor impairment that results from cannabis use. While it does not appear that cannabis alone contributes to motor vehicle accidents (Gieringer, 1988, cited in Hall, 1995; Smiley, 1998), it is likely that it may intensify the adverse effects of alcohol on driving performance when used in combination with alcohol (Hall et al, 1994). Other acute adverse effects include the exacerbation of symptoms of schizophrenia (Hall, 1998a), and an increased risk of low birthweight babies, if cannabis is smoked during pregnancy (Hall et al, 1994).

The major chronic effects of cannabis use are respiratory diseases associated with smoking as a method of administration (Hall et al, 1994), and the development of cannabis dependence (Hall & Solowij, 1998; Swift et al, 1997, 1998a, 1998c). The results of the National Survey of Mental Health and Well-Being (Hall et al, 1999a) indicate that the ICD-10 criteria for a

diagnosis of cannabis dependence were met by 1.7% of the adult population in the preceding 12 months, with cannabis accounting for more drug use disorders than any other drug after alcohol and tobacco.

1.2.3.3 Harms Associated with Amphetamine Use

Amphetamine users who inject the drug are at risk of contracting blood borne infections through needle and equipment sharing. Amphetamine users are as likely as opioid users to share injection equipment (Darke et al, 1995a; 1999b; Hall et al, 1993a; Hando & Hall, 1994; Kaye & Darke, 2000; Loxley & Marsh, 1991). The social nature of amphetamine use also means that users may be more frequently placed in high risk situations (Darke et al, 1995a). The risk of infection among amphetamine users is higher than in past epidemics of amphetamine use in Australia, when the drug was typically used by non-parenteral routes (Hall & Hando, 1993).

In addition, the youth of amphetamine users places them at risk of sexual transmission of diseases such as HIV and HBV (although not HCV). Primary amphetamine injectors are a sexually active group, and a small proportion engages in paid sex to support drug use (Darke et al, 1995a; Hando & Hall, 1994).

High dose amphetamine use, especially by injection, can result in a schizophreniform paranoid psychosis, associated with loosening of associations, delusions and hallucinations (Gawan et al, 1988; Jaffe, 1995). High proportions of regular amphetamine users report anxiety, panic attacks, paranoia and depression (Hall et al, 1996; McKetin & Mattick, 1997, 1998). These symptoms are associated with injecting the drugs, greater frequency of use and dependence upon amphetamines (Hall et al, 1996; McKetin & Mattick, 1997, 1998).

In sufficiently high doses, amphetamines can be lethal (Derlet et al, 1989). However the risk of fatal overdose is low compared to the risks of opioid overdose. Typically amphetamine-related deaths are caused by abnormalities in the cardiovascular system, e.g. cardiac failure and cerebral vascular accidents (Mattick & Darke, 1995). Deficits in performance on neuropsychological tests have been demonstrated among Australian amphetamine users, suggesting that amphetamines are also neurotoxic (McKetin & Mattick, 1997, 1998).

1.2.3.4 Harms Associated with LSD Use

As very little research has been conducted on LSD use, there is a dearth of information on its harms. Research in the United States indicates an association between LSD use and panic reactions, schizoaffective psychoses, and post-hallucinogen perceptual disorder (Abraham & Aldridge, 1993).

1.2.3.5 Harms Associated with MDMA Use

MDMA has been implicated in a small but growing number of deaths in Australia and overseas (Henry et al, 1992; Solowij, 1993; White et al, 1997). These deaths have most often been attributed to hyperthermia or over-heating. It is a cause for concern, therefore, that recent research indicates an apparent lack of knowledge among MDMA users about appropriate fluid consumption and the need to cool off when using MDMA (Hando et al, 1998b).

Recent surveys of MDMA users have found evidence of an increase in the frequency of use (Topp et al, 1998). This has been accompanied by an increase in physical MDMA-related harms (eg. energy loss, blurred vision, teeth problems) and psychological harms (eg. anxiety,

insomnia, depression) (Topp et al, 1998). These problems appear to be more persistent than those reported by users in earlier surveys (Solowij et al, 1992). Notable proportions of MDMA users have also reported occupational, relationship and financial problems that they attribute to their MDMA use (Topp et al, 1998).

There is now emerging evidence that MDMA is neurotoxic in animals, i.e. it produces enduring changes in levels of the neurotransmitter serotonin in the brain (Boot, McGregor & Hall, 2000). There is also strongly suggestive evidence that some recreational MDMA users are using the drug in ways that puts them at substantial risk of developing enduring changes in brain chemistry (Boot et al, 2000). These are the users who use multiple doses of the drug on a single occasion, use the drug continuously for 24 or 48 hours and inject the drug (Boot et al, 2000).

1.2.3.6 Harms Associated with Cocaine Use

In the United States, cocaine injecting, either alone or in combination with heroin (`speedballs'), is strongly associated with more frequent injections, more frequent needle sharing, increased sexual risk-taking, more frequent use of shooting galleries, and a higher rate of HIV infection (Chaisson et al, 1989; Schoembaum et al, 1989). The association between cocaine use and HIV risk-taking has also been reported in Europe (Torrens et al, 1991) and Australia (Darke et al, 1992a). Currently there is no evidence of widespread crack use in Australia, with cocaine powder being almost exclusively used by injection and intranasal use.

In the United States regular cocaine use has been strongly associated with high rates of anxiety and affective disorders (cf. Platt, 1997). As is the case with amphetamines, the repeated administration of cocaine is also associated with the development of a schizophreniform psychosis (Majewska, 1996; Manschreek et al, 1988; Platt, 1997; Satel & Edell, 1991).

While not as toxic as opioids, cocaine can be fatal in large doses (Platt, 1997). Cocaine is cardiotoxic, so it places a strain on the cardiovascular system and overdose can cause cardiac arrest and cerebral vascular accidents (Majewska, 1996; Platt, 1997). As is the case with amphetamines, cocaine use also appears to be neurotoxic (Majewska, 1996; Platt, 1997).

1.2.3.7 Harms Associated with Heroin Use

The adverse health consequences of heroin use include: heroin dependence; contracting blood borne infectious diseases through sharing injecting equipment; and premature mortality from overdose, violence and other causes (Hall et al, 1999b). The major harm associated with the use of heroin in Australia is the risk of fatal and non-fatal overdose (Bammer & Sengoz, 1994; Darke et al, 1996c; Darke & Ross, 1999a, 1999b; Hall & Darke, 1998; Hando et al, 1998a; McGregor et al, 1998; Loxley et al, 1995; Lynskey & Hall, 1998b; Zador et al, 1996). The number of fatal opioid overdoses in Australia rose from 6 in 1964 to 600 in 1997, a 55 fold increase in rate when adjusted for growth in population (Hall et al, 1999b). The number increased again in 1998 to 738 deaths (McKetin & Darke, 2000).

The highest rate of overdose deaths occurs in New South Wales, which accounts for 48% of all opioid overdose deaths in Australia, followed by Victoria which accounts for 27% of overdose deaths (Hall et al, in press). Non-fatal heroin overdose is common among regular heroin users, with recent studies finding that between a half (McGregor et al, 1998) and two-thirds of dependent heroin users report a non-fatal overdose at some time in their 10 year histories of use (Darke et al, 1996c; Darke & Ross, 1997a).

The typical fatal overdose victim is a single, unemployed male of approximately 30 years, who is a long-term dependent heroin user and was not in treatment at the time of death (Darke & Ross, 1999b; Darke & Zador, 1996; Zador et al, 1996). There is a strong association between both fatal and non-fatal overdose and the concomitant use of alcohol and benzodiazepines (Darke & Ross, 1999a, 1999b; Darke & Ross, 1997a; Darke et al, 1997; Darke & Zador, 1996; Zador et al, 1996). Contrary to popular conception, fluctuations in heroin purity do not wholly explain the number of overdose fatalities (Darke et al, 1999a). Variations in the user's opiate tolerance appear to be more important (Tagliaro et al, 1998; Darke et al, 2000).

Blood borne viruses (primarily HIV and hepatitis B and C) are a major harm to health caused by the injection of heroin and other drugs. To date, Australia has averted an epidemic of HIV infection among IDU (Feachem, 1995). The 1997 Needle and Syringe Program survey reported that 1.6% of injecting drug users were infected with HIV and most of these were homosexual men who injected drugs (MacDonald et al, 1997).

The prevalence of HCV was 50%, with rates of infection higher among injectors over the age of 25 years, and in persons who have injected for more than two years, and been imprisoned in the previous year. The rate of new HCV infections is estimated at around 15% per year for injecting drug users. Studies report between 30% and 60% of IDU having antibodies to HBV. As with HCV, older users have a higher prevalence of HBV, with rates over 80% among those seeking treatment. The sharing of used injecting equipment appears to have decreased over the preceding decade (Crofts et al, 1996b), with the level of sharing remaining at around 15% of users per month.

Studies have repeatedly shown that dependent heroin users have high rates of psychological disorders, with the most common being depression, anxiety disorders and antisocial personality disorder (e.g. Darke & Ross, 1997b; Dinwiddie et al, 1996; Kiddorf, et al, 1996).

1.2.3.8 Harms Associated with Pharmaceutical Misuse

The main harm associated with benzodiazepine (tranquilliser) use is dependence (Curran, 1991; Woods, Katz & Winger, 1992). It was once thought that benzodiazepine dependence and withdrawal did not occur; it is now recognised that dependence can occur after using therapeutic doses for as little as six weeks (Murphy, Owen & Tyrer, 1984). The probability of dependence increases with dosage and duration of treatment (Williams, 1988).

Other harms associated with benzodiazepine use include, memory impairment, an increased risk of falls in the elderly, and drowsiness (Curran, 1991; Woods, Katz & Winger, 1992; Hale, Stewart & Marks, 1985; Dawson, Jue & Broden, 1984). In some cases benzodiazepines can cause paradoxical effects such as rage attacks or outbursts of bizarre uninhibited behaviour. These have collectively been referred to as disinhibition, dyscontrol or paradoxical reactions, as they tend to occur in isolated cases when benzodiazepines are used at high doses (Bond & Lader, 1979; Goodman Gilman et al, 1985).

In addition to these harms there are problems caused by the abuse of benzodiazepines by injecting drug users. Benzodiazepine use among IDUs is associated with greater injection-related risk-taking behaviour (Darke et al., 1992b, 1993; Donoghoe et al., 1992; Klee et al., 1990; Metzger et al, 1991), greater polydrug use (Darke et al, 1992b; Darke et al, 1993, Ross et al, 1996), poorer health (Ross et al, 1997), poorer psychological and social functioning (Klee et al, 1990; Darke et al, 1992b; 1993; Ross et al, 1997) and an increased risk of overdose among heroin users (Darke, Zador & Sunjic, 1997; Ross et al, 1997). While

benzodiazepines are far safer than their predecessors, the barbiturates, when taken in overdose, when used in conjunction with other central nervous system depressants (e.g. heroin) they may increase the risk of overdose. The injection of benzodiazepine tablets intended for oral consumption, poses the additional risks of vascular damage (which, in severe cases, may result in amputation of a limb), organ damage, stroke and even death.

Opioid-based analgesics (e.g Panadeine Forte, Mersyndol Forte) are another type of pharmaceutical with abuse liability. Prolonged use of these drugs at high doses can lead to dependence. Because of their depressive effect on the central nervous system (CNS), their use is not advisable in conjunction with other CNS depressants drugs (MIMS Australia, 1999). It is cause for concern that approximately one third of IDUs interviewed for the 1999 IDRS survey (the vast majority of whom were heroin users) reported the use of opiates other than heroin (or prescribed methadone) in the six months prior to interview (McKetin et al, 2000).

Unlike benzodiazepines and analgesics, antidepressants do not appear to have much abuse liability (Darke & Ross, 2000). However, the use of antidepressants in combination with CNS depressants such as alcohol, heroin, and benzodiazepines may increase the risk of an opiate overdose (Warrington, Padgham & Lader, 1989). The degree of harm associated with antidepressants depends upon the type that is used. The older tricyclic antidepressants have a higher degree of toxicity than the newer selective serotonin reuptake inhibitors (SSRIs); the monoamine oxidase inhibitors (MAOIs) are of intermediate toxicity (Battersby et al, 1996; Farmer & Pinder, 1989; Henry, 1989; Rickels & Schweizer, 1990). Major toxic effects of tricyclic drugs when taken in overdose include coma, convulsions, respiratory depression and cardiac arrest (Pinder, 1988; Rickels & Schweizer, 1990; Dziukas & Vohra, 1991).

As indicated above, antidepressant use is common among IDUs. A recent survey of antidepressant use among Sydney IDUs found that 45% of the antidepressant users had used tricyclics in the preceding six months. Nearly a fifth of subjects who had been prescribed antidepressants reported that they had exceeded the prescribed dosage on the last occasion of use. Excessive dosages (particularly of tricyclic drugs) may well increase the chances of antidepressant overdose, or an overdose in combination with opiates and other drugs. A recent study of all heroin-related fatalities that occurred in New South Wales between 1992 and 1996 found that in 7% of cases antidepressants were present (Darke, & Ross, 1999b).

1.3 SOCIAL AND ECONOMIC COSTS

1.3.1 Social and Economic Costs of Drug Use in Australia

Drug use cost Australia a minimum of $18.8 billion in 1992 (Collins & Lapsley, 1996). The costs associated with tobacco use accounted for $12.3 billion (67.3% of the total cost), followed by alcohol which accounted for $4.5 billion (23.8% of the total) and illicit drug abuse which accounted for $1.7 billion (or 8.9% of the total) (Table 16; Collins & Lapsley, 1996).

The tangible costs of drug abuse include the costs of drug production, law enforcement costs and the direct costs of treating the health consequences of drug abuse. The intangible costs include the economic costs of premature loss of life (Collins and Lapsley, 1996).

Table 16: The economic costs of licit and illicit drug abuse in 1992 in $ millions (source: Collins and Lapsely, 1996).

	Alcohol	Tobacco	Illicit	All drugs
Tangible	3,537	6,538	1,248	11,289
Intangible	958	6,199	435	7,556
Total	4,495	12,376	1,684	18,845
%	23.8%	67.3%	8.9%	100%

1.3.2 Illicit Drug Use and Crime

The tangible costs of illicit drug use (in constant prices) rose from $908 million in 1988 to $1,197 million in 1992, representing a 23.3% increase. Using data provided by Marks (1994), Collins and Lapsley estimate that law enforcement costs (up 40.8 percent from $320 million in 1988 to $450.6 million in 1992) accounted for more than one third of total costs in both years. This represents an increase of 23.3 percent in real terms.

These estimates do not include the costs of crime associated with illicit drug abuse, nor do they include other unquantified costs such as ambulance services, welfare, absenteeism and turnover of other drugs (Collins & Lapsley, 1996:24). Few studies have attempted to quantify the costs of crime associated with illicit drug abuse. Using estimates based on the Cleeland Report (1989), Marks (1992) has calculated that property crime losses as a result of illicit drug use cost Australia $466 million in 1988. Property crime accounted for 32% of total costs of law enforcement.

Despite these high aggregate costs, little is known about how illicit drug users actually generate their income and the relative costs associated with different strategies for income generation and particular patterns of drug use. We know very little about the type or amounts of income (legitimate, criminal or in-kind) generated and expended by heroin users. Many heroin users, and most dependent heroin users, commit property crimes to generate income (Johnson et al, 1985; Parker et al, 1988; Hammersley et al, 1989).

While both crime and heroin use have common causes, the frequency of criminal acts increases with the frequency of heroin use (Hall et al, 1999b). This has important implications for law enforcement policies, namely, reducing heroin use among heroin dependent persons may significantly reduce criminal activity. The range of treatment options for persons dependent upon heroin include: detoxification and abstinence-based therapies, and drug substitution treatments, the most effective and widely used of which is methadone maintenance treatment. There is considerable evidence that drug substitution treatment results in significant reductions in the negative health consequences of dependent heroin use and the adverse effects that it has on public order.

Only a small proportion of adults ever become dependent on heroin, but the frequency with which they engage in crime and the range of their criminal activity has a disproportionate impact on the communities within which they live (Hall et al, 1999b). Detailed studies of criminal behaviour and heroin use in New York City indicate that the major criminal activity in which heroin users engage is low level drug dealing, either by direct drug selling, or more often by serving as an intermediary between dealers and buyers by "steering, touting and copping" (Johnson et al, 1985). The average heroin user in this study committed an average of 665 crimes related to drug distribution in a year. This financed a substantial part of their heroin use because they were paid in drugs for their labour (Johnson et al, 1985). It also provided them with an incentive to initiate friends and acquaintances into heroin use, thereby encouraging the spread of heroin use among their social networks and the communities in which they live.

Johnson et al (1985) found that property crimes of robbery, burglary, shop-lifting and other forms of theft were less frequently engaged in than drug dealing, but they still provided a substantial part of the cash income used for drug purchases. The frequency with which these offences were committed by a sizeable minority of dependent heroin users produced very large numbers of property crimes. Johnson et al, for example, estimated that 100 daily heroin users in New York City in 1980 committed 20,900 non-drug offences in a year. Each of these 100 users imposed an estimated economic cost of $22,840 per annum on victims of non-drug property crimes, such as householders who were robbed, or the owners of stores from which goods were shoplifted for resale. Apart from the drug users, the principal beneficiaries of this crime were the persons who purchased the stolen goods at substantial discount.

The scale of the property crime committed by dependent heroin users affects not only those whose homes are robbed, but also those whose household insurance premiums are increased to meet the claims of others who have been robbed. It also affects those who have to pay higher prices for goods purchased in stores with high rates of shop-lifting. High rates of property crimes also reduce the quality of community life more generally by increasing fear of crime, by increasing the costs of home security, and by reducing the amenity of community living.

The relationship between heroin use and crime has recently been explored by Maher et al (1998) in a long-term study of income generation among young heroin users in Southwest Sydney. Results of a survey of 202 heroin users indicated that many, although not all, respondents were actively engaged in some form of criminal activity. This was primarily acquisitive property crime (70%) and the sale and distribution of illicit drugs (70%). Illegally obtained or criminal income accounted for 82% of the sample’s total income in the week before interview. While these data do not imply that all heroin users commit crime, or that all crime is committed by heroin users, they show, as the authors concluded, that dependent heroin users make a significant contribution to acquisitive property crime in Australia.

A study conducted by the Australian Institute of Criminology (AIC), called Drug Use Monitoring Australia (DUMA), involved a survey of people detained at police stations, and the collection of urine samples from detainees. The results of DUMA confirm that there is a strong association between opiate use and property crimes, with 43% of detainees whose most serious charge was a property offence testing positive for opiates. The survey also found very high levels of illicit drug use among people who are detained by police for driving offences, crimes of violence and disorder offences (Makkai et al, 2000).

1.4 INTERNATIONAL COMPARISONS OF THE PREVALENCE OF LICIT AND ILLICIT DRUG USE AND DRUG – RELATED HARM

The following sections must be read with a number of cautions in mind because of the difficulties in comparing drug use and drug-related harm in different countries. The first difficulty is the absence of survey data on rates of alcohol and illicit drug use in many countries. A second set of problems arise when countries do collect such data: survey data is not always collected in ways that make it easy to compare rates of drug use. Surveys may differ in the way in which people are sampled (e.g. nationally representative samples or representative samples of cities and smaller areas, general population v school age) and in the questions that respondents are asked about their drug use.

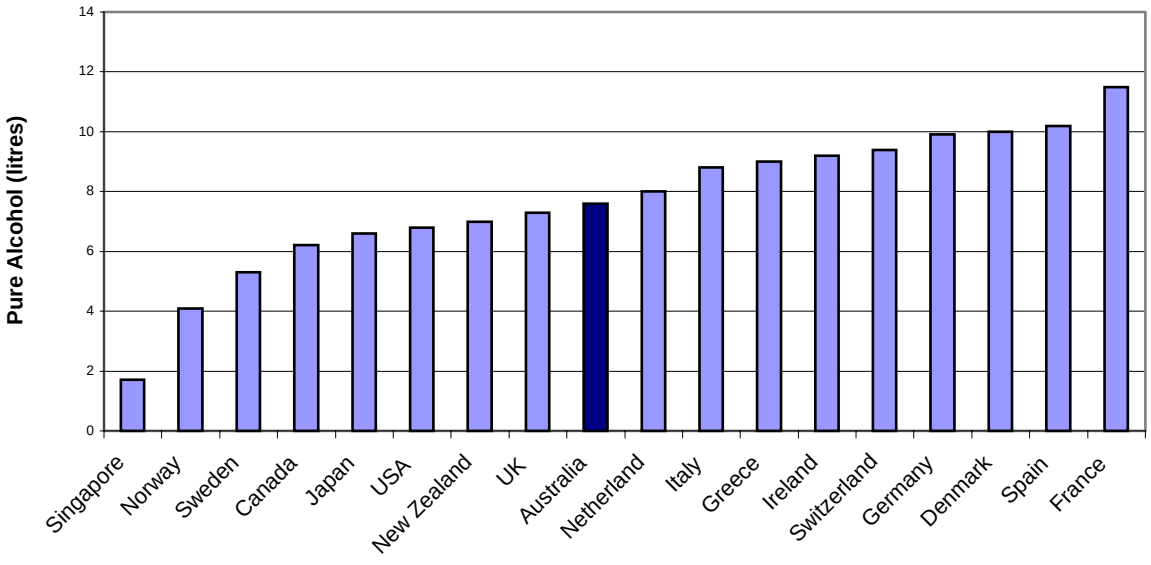
Data on harms that may be caused by drug use are collected by most developed countries as part of the health data systems on causes of death and hospitalisation. Most countries use the World Health Organisation's International Classification of Disease. Comparisons of harms between countries nonetheless suffer from a number of problems. Countries differ in their investment in health data collection systems and in the use of toxicological and forensic data to produce diagnoses of causes of death, especially in deaths that involve illicit drug use. They also differ in the way in which causes of death are coded and reported.

For these reasons, readers should be cautious in interpreting differences between Australia and other developed countries in rates of drug use and drug-related harm. We need to first consider and exclude the possibility that any differences that are observed reflect differences in measurement and definition before we draw more substantive conclusions that they reflect real differences in prevalence of drug use and drug-related harm.

1.4.1 Alcohol

Most developed countries report annual data on alcohol sales from which estimates of per capita consumption can be obtained. Figure 29 shows the per capita consumption of pure alcohol in 1995. Australia ranks ninth out of 19 developed countries.

Figure 29: Estimated per capita consumption of pure alcohol (litre), 1995



3Source: Adapted from AIHW 1998.

It is more difficult to compare Australian data on hazardous and harmful drinking patterns with overseas data because different countries use different data collection and analysis methods. However the 1998 Australian National Drug Strategy Household Survey (NDS) found that 11.9% (M 15.1%; F 8.4%) of all recent (past 12 months) drinkers consumed 5-6 Australian standard drinks (10 g ethanol) on occasion. USA data from the 1998 National Household Survey on Drug Abuse shows that 15.6% reported binge drinking (more than five US standard drinks (12 g ethanol on the same occasion) in the past month. Comparisons of hazardous levels of daily alcohol consumption can be made with France (Table 17), the highest alcohol consuming OECD country, although different methods of data collection mean that data are not directly comparable.

Table 17: Comparison between Australia [(a)] and France [(b)] on prevalence of hazardous levels of daily alcohol consumption

	Males	Females	Total
Australia			
3-4 Standard drinks*	5.3	1.8	3.6
5-6 Standard drinks♣	2.7	0.8	1.8
France			
3-4 Standard drinks	20.2	4.1	--
5-8 Standard drinks	12.7	0.9	--

[(a)] Source: NDS 1998 [(b)] 1991-1992 rates. Source: Harkin et al 1997

*NHMRC hazardous level for women ♣ NHMRC hazardous level for men, harmful for women

Somewhat more comparable data are available on the prevalence of alcohol use disorders (abuse or dependence) in Australia (using the NSMHWB) and the US (using the National Comorbidity Survey). Both of these surveys assessed representative samples of the population for alcohol use disorders, and produced estimates of alcohol abuse and dependence disorders in the past 12 months. In the US, approximately 2.5% of persons were estimated to meet criteria for alcohol abuse within the past year (Kessler et al., 1997), compared to 1.9% of Australian adults (Teesson et al., in preparation). Around 4.4% of US adults met criteria for alcohol dependence within the past 12 months, compared to 4.1% of Australian adults.

Based on the United States National Household Survey on Drug Abuse for 1998, 81.3% of the USA population aged 12 years and over reported using alcohol at some time in their lives. The comparable figure in Australia was 89.6% of the Australia population aged 14 years and over. The proportion of European and Australian teenagers who use alcohol at least once a week is provided in Table 18. Whilst Australia compares favourably with some of the European countries, the rate of weekly drinking among teenagers is high given that they are all under the legal drinking age.

Table 18: Proportion of selected European [(a)] and Australian [(b)] teenagers who use alcohol at least once a week

	Males (%)	Females (%)
Wales	52	45
Northern Ireland	45	31
Scotland	41	32
France	40	18
Australia	**33**	**27**
Germany	25	18
Sweden	19	11
Switzerland	4	3

[(a)] 15 year olds only; Estimates based on Harkin et al., 1997 graph
[(b)] 14-17 year olds Source: Australia data: National Drug Strategy Household Survey

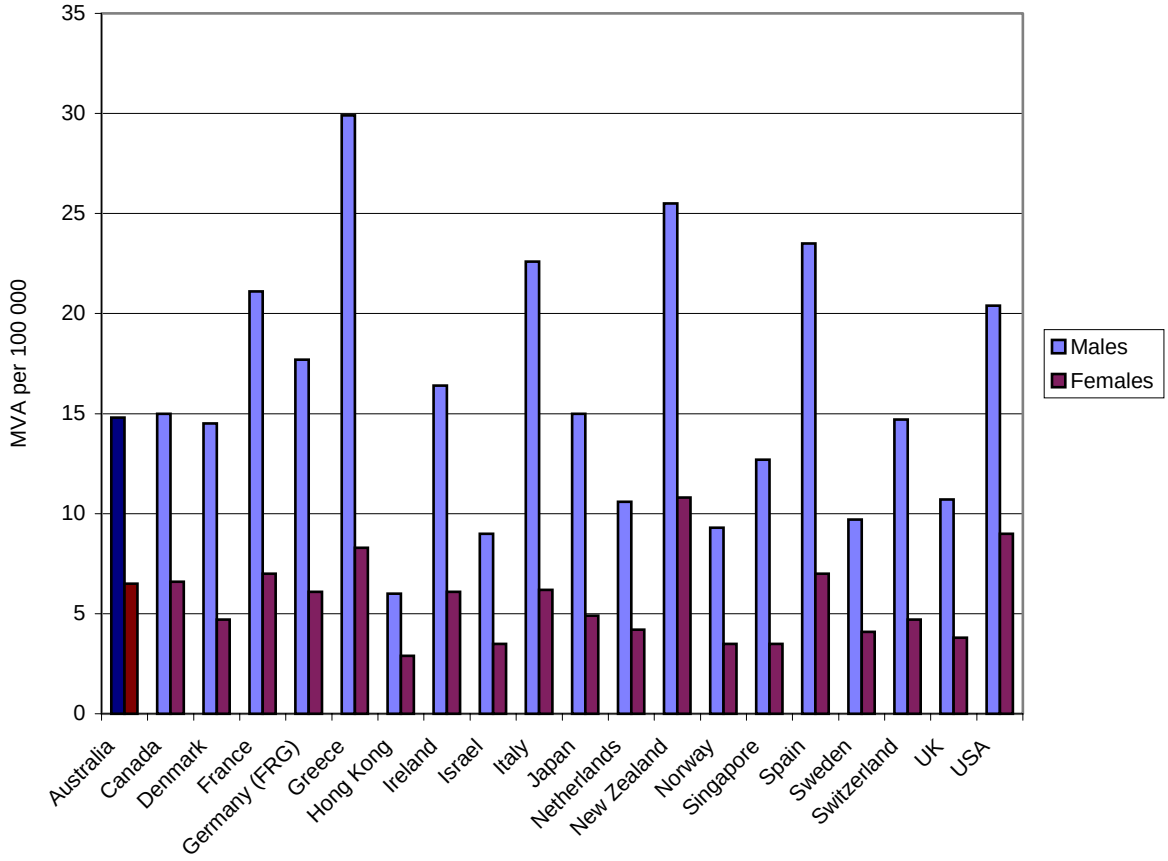
Data from the USA 1998 National Household Survey on Drug Abuse found that 2.9% of 12 to 17 year olds reported heavy use (drinking 5 or more drinks on the same occasion on 5 or more day in the past 30 days) of alcohol in the past month. However, it is difficult to make comparisons with this data as definitions, populations and methodologies varied markedly.

1.4.1.1 Harms

A substantial amount of mortality and morbidity is associated with the use of alcohol in Australia. The AIHW (1999) estimate that 4.9% of the total injury/disease burden in Australia is attributable to alcohol. However the protection aspect of alcohol is only estimated to avert 2.8% of the disease burden in Australia. Road and traffic accidents and cirrhosis of the liver are the main contributors to alcohol related mortality.

It is difficult to make direct comparisons between countries for all alcohol-related deaths. Some comparisons can be made for specific causes of death to which alcohol makes a substantial contribution. For example, the standardised death rates for motor vehicle accidents (MVA) are presented in Figure 30 but a variable proportion of MVA deaths are attributable to alcohol in different countries. The Australia rate of MVA deaths is high but much lower than comparable nations such as New Zealand and the USA, probably due in part to the success of measures such as random breath testing (Homel, 1990).

Figure 30: Male and female age standardised[(a)] death rates for motor vehicle accidents for 1992

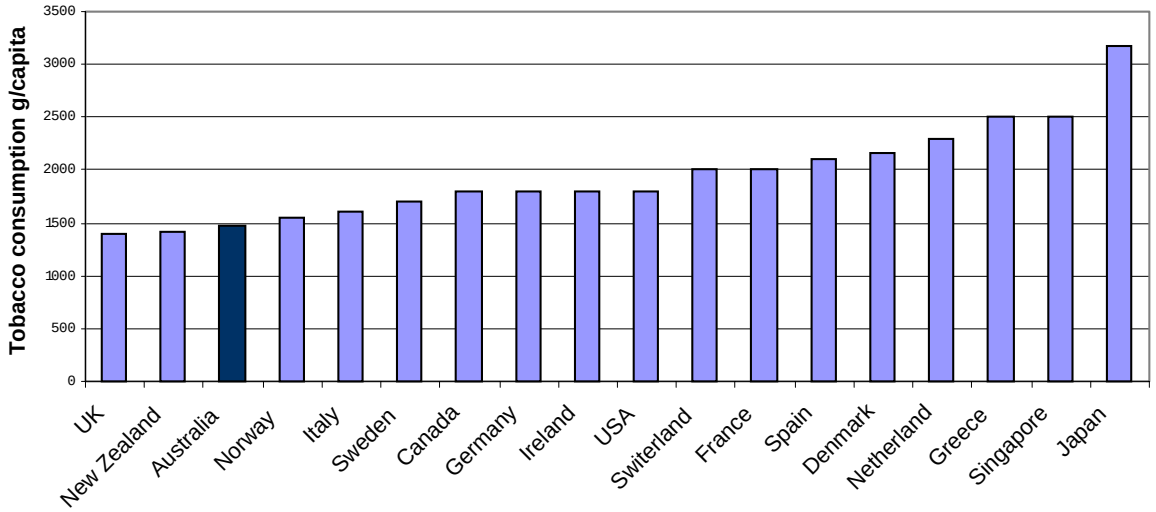


[(a)] Standardised to the world standard population
Source: AIHW 1998

1.4.2 Tobacco

Tobacco smoking is the leading cause of drug-related death in Australia (AIHW 1998) but per capita consumption of tobacco and rates of smoking in Australia compare favourably with other developed countries. Figure 31 shows the amount of tobacco consumption per capita among persons aged 15 years and older in developed countries.

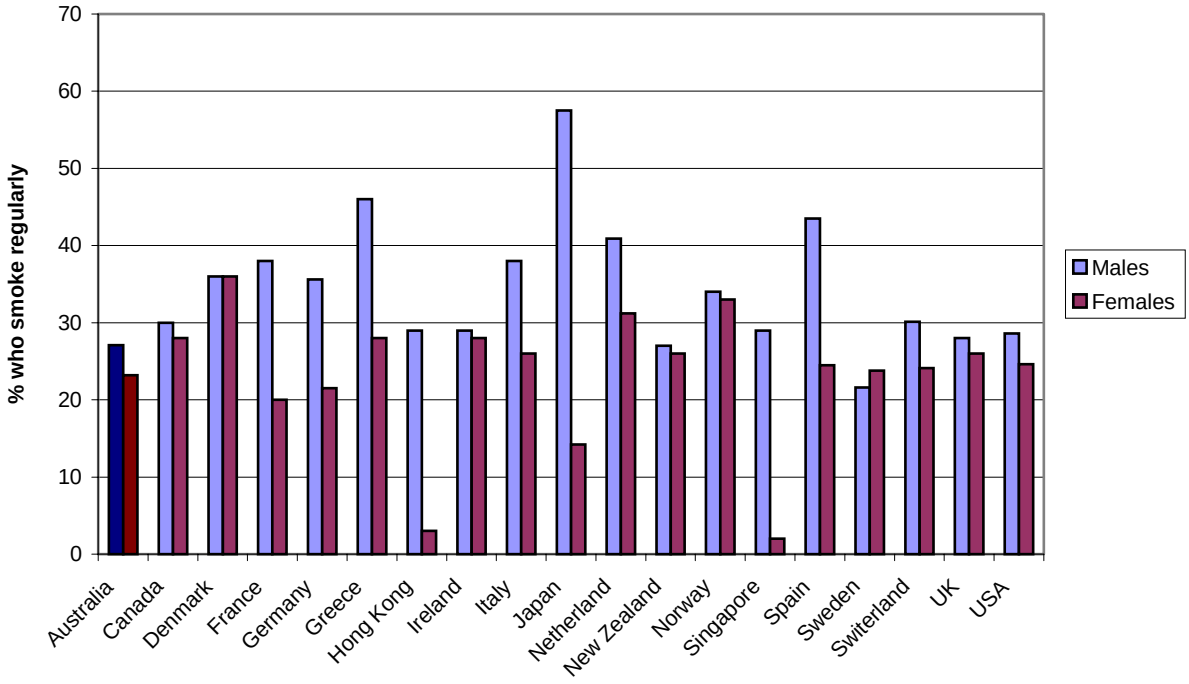
Figure 31: Consumption of tobacco g/capita (15 years+)



Note: Data collected in different years, 1995-1997
Source: adapted from AIHW, 1998

Figure 32 shows the rates of regular smokers for both men and women in various countries. Men smoke more than women in all countries except Sweden, where women smoke more than men, and Denmark where the rates are the same. The rates between men and women are similar across most countries except for Spain, Greece, France and Germany, and the Asian counties, where substantially more males then females smoke. Figure 32 should be interpreted with caution as definitions and concepts may vary between countries, as with data collection and analysis techniques.

Figure 32: Proportion of regular smokers by gender



Note: Self-reported rates 15 years+ except Australia, Sweden and the UK (16 years+), USA (18 years+) and Japan (20 years+). Data collected during various years between 1990 – 1996). Source: adapted from AIHW 1998

Table 19 gives the proportion of teenagers who are regular smokers. Equal numbers of Australian male and females are regular smokers. In the USA slightly more male teenagers reported smoking in the past month than female teenagers. In all European countries more 15-year-old females reported smoking at least once a week than 15-year-old males. However the figures proved in Table 19 need to interpreted with caution. The Australian and USA data represent larger age ranges (14-19 years and 12-17 years, respectively) compared to the European data, which includes only 15 year olds. This age variation may explain the gender differences between Australia and the USA as compared to Europe. Furthermore different definitions of a regular smoker are used in different countries.

Table 19: Proportion of male and female teenagers [(a)] who are regular [(b)] smokers

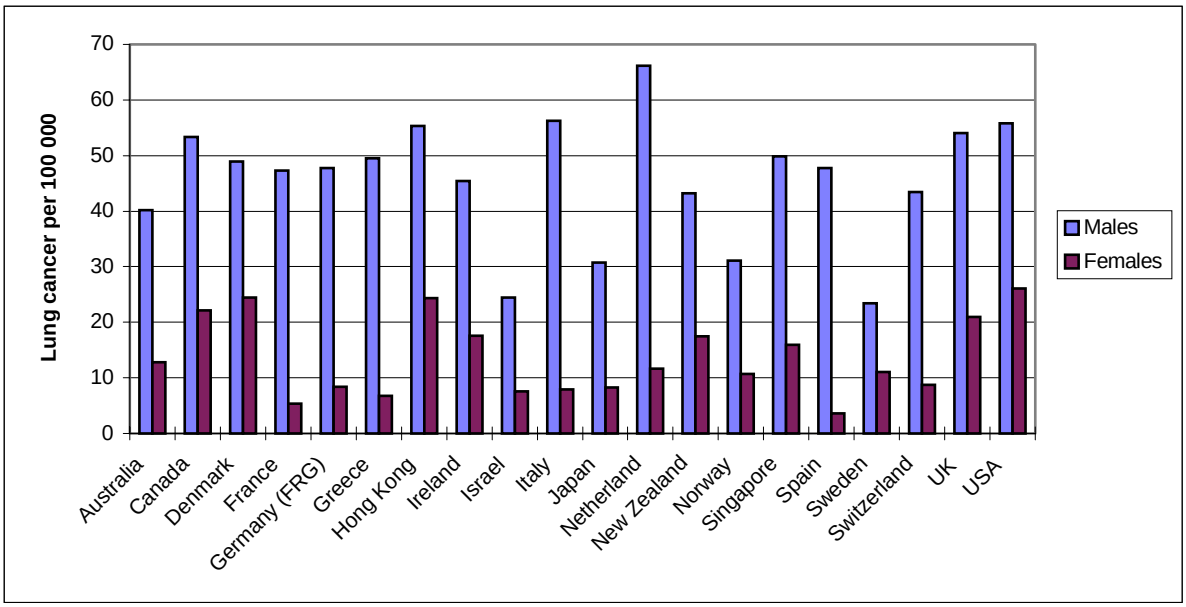
	Males	Females
Australia	15.8	16.2
USA	29.7	25.7
Scotland	20.5	25.9
Wales	18.2	26.5
Northern Ireland	23.4	24.9
France	23.0	25.0
Denmark	14.4	23.6
Germany	20.9	28.8
Spain	20.3	26.9
Sweden	15.1	19.3

[(a)] Teenager refers to 14-19 year olds in Australia, 15 year olds in European countries and 12-17 year olds in the USA.
[(b)] Regular is defined as smoking daily or most days for Australians, at least once a week for European Countries, and smoked in the past month for USA.
Note: Data represents 1998 for Australia and USA and 1993/1994 for European Countries (Harkin et al, 1997; AIHW, 1999; Substance Abuse and Mental Health Services Administration, 1999)

1.4.2.1 Harms

There are a number of harms causally associated with tobacco, including lung cancer and coronary heart disease. Typically there is a long latency period between tobacco use and disease manifestation. In Australia lung cancer accounts for the largest number of cancer deaths among men and the second largest number of cancer deaths in women (AIHW 1998). Figure 33 shows the international variation in lung cancer rates. Despite Australia's comparatively lower rates of lung cancer it remains a significant cause of mortality in Australia.

Figure 33: Male and female age standardised [(a)] death rates for lung cancer for 1992



[(a)] Standardised to the world standard population
Source: AIHW 1998

1.4.3 Illicit Drugs

The use of any illicit drug is common among Australian adults, although much of this is explained by our high rates of cannabis use. The NDSHS found that just under half (46.0%) of the population reported using illicit drugs at some time, with 22% having used an illicit substance in the past 12 months. This compares to 35.8% and 10.6% respectively of the population in the USA.

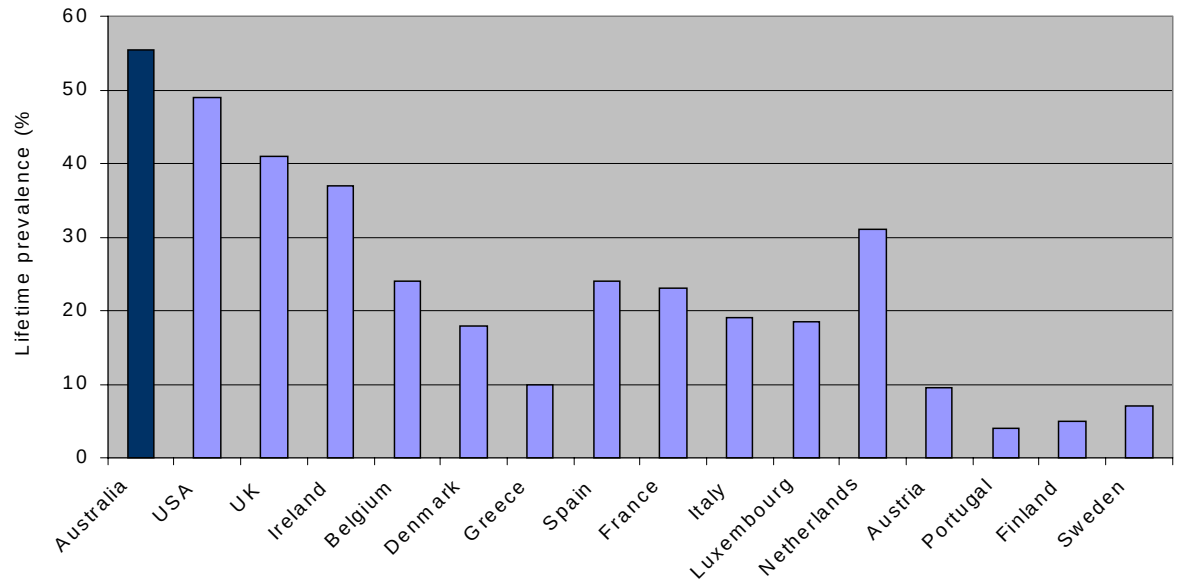
Cannabis is the most commonly used illicit drug in Australia. Table 20 shows Australia has the highest lifetime use of cannabis rate, followed by the USA and the UK (England and Wales only). Australia also has a much higher rate of recent use (past 12 months) of cannabis then the USA and selected European countries. This pattern is similar for school aged children with Australia having the highest rate of lifetime use of cannabis compared to the USA and selected European countries, as seen in Figure 34. Data on recent use (past 12 months) of cannabis was only available for the USA and Australia. The 1998 NDSHS reported that 35.0% of 14-19 year olds reported recent use of cannabis. In the USA 1998 National Household Survey on Drug Abuse only 14.1% of the 12-17 year old population reported recent use of cannabis.

Table 20: Lifetime and recent use of cannabis for Australia [(a)], USA [(b)] and selected European[(c)] countries (%)

	Lifetime Prevalence	Past 12 months
Australia	39.3	17.9
USA	33.0	8.6
UK (England & Wales)	22	9
Belgium (Flemish C.)	5.5	1.5
Denmark	30.1	3.5
Germany (Former East)	4.0	2.5
Germany (Former West)	14	4.5
Greece	13.5	4.5
Spain	22	7.5
France	15.5	5
Netherlands	18	5
Finland	10	3
Sweden	18	1

[(a)] 14 years and over; [(b)] 12 years and over ; [(c)] Adult population; estimated from graph.
Source: 1998 NDSHS (AIHW, 1999), 1998 National Household Survey on Drug Abuse (Substance Abuse & Mental Health Services Administration, 1999), EMCDDA 1999

Figure 34: Lifetime use of cannabis among school children for Australia [(a)] the USA [(b)] and selected European[(c)] countries.



[(a)] 17 year olds ; [(b)] 12th grade students ; [(c)] 15-16 year olds; estimated from graph.
Source: 1996 Australian School Students Alcohol and Drug Survey (Lynskey et al, 1999); Monitoring the Future Project (Johnston et al, 1997); EMCDDA 1999.

Lifetime prevalence rates for amphetamines, cocaine and ecstasy in Australia, the USA and selected European countries are given in Table 21. Australia and the UK have the highest rate of lifetime experience of amphetamines, with the USA and other European countries reporting rates lower than 5%. The USA has by far the highest rate of cocaine use with over 10% of the population reporting lifetime use. Lifetime experience of cocaine is low in Australia at 3%, as with the UK, although higher than the other selected European countries, where rates were generally low. Lifetime use of ecstasy was overall low, with Australia reporting the highest rate of lifetime prevalence at 5%. It should be noted that data were not collected in strictly comparable ways in all countries so the observed differences have to be interpreted with caution.

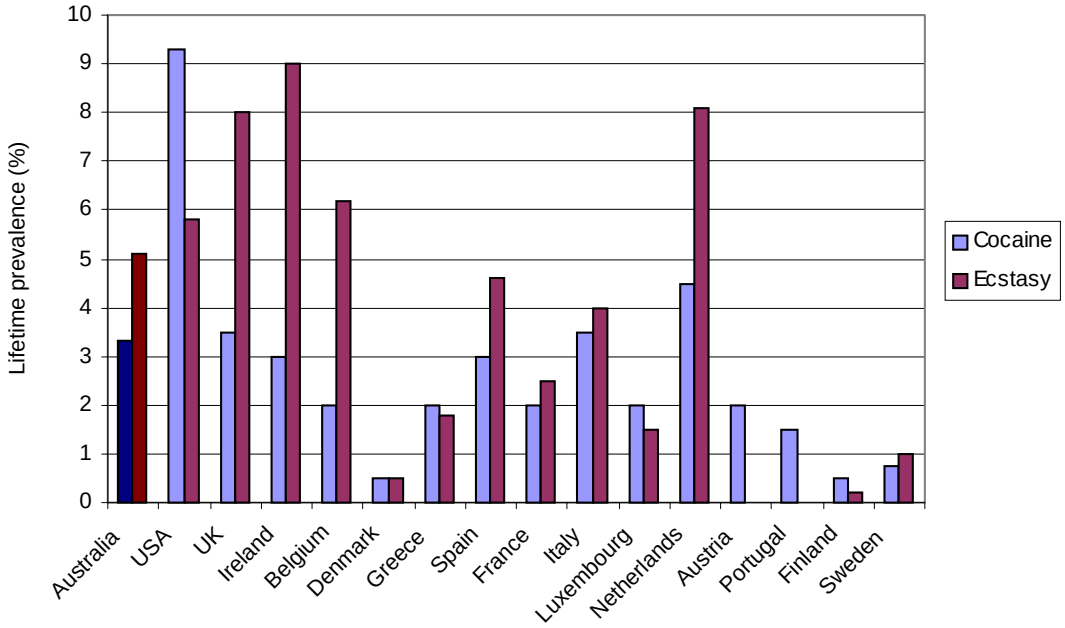
Table 21: Lifetime use of amphetamines [a], cocaine and ecstasy in Australia [b], the USA[c] and selected European [d] countries

	Lifetime Prevalence		
	Amphetamines	Cocaine	Ecstasy
Australia [e]	9	3	5
USA	4.4	10.6	--
UK (England & Wales)	9	3	3.0
Belgium (Flemish C.)	0.9	0.5	0.5
Denmark	4	2	--
Germany (Former East)	0.5	0.2	0.7
Germany (Former West)	2.8	2.2	1.6
Greece	0.6	1.3	0.3
Spain [e]	2.5	3.7	2.5
France [f]	0.7	1.2	--
Netherlands	2.4	2.4	2.2
Finland	1	0.6	0.5
Sweden	2	1	0.0

[a] Recorded as stimulant use in USA data; [b] 14 years and over;[c] 12 years and over
[d] Adult population; [e] Ecstasy and other designer drugs; [f] Amphetamines and ecstasy
Source: 1998 NDSHS (AIHW, 1999), 1998 National Household Survey on Drug Abuse (Substance Abuse and Mental Health Services Administration, 1999), EMCDDA 1999

Figure 35 gives the lifetime prevalence of cocaine and ecstasy use among school aged children in Australia, the USA and selected European countries. The USA has the highest rate of cocaine use for school-aged children. Prevalence of cocaine use among school-aged children is similar for Australia and the European countries shown. Whilst Australia has a high rate of lifetime use of ecstasy it is lower than Ireland, USA, the Netherlands and the UK. Ireland has the highest lifetime prevalence rate of ecstasy for school aged children.

Figure 35: Lifetime prevalence use of cocaine and ecstasy for school children in Australia [a], USA [b] and selected European[c] countries



Source: Australian School Students' Alcohol and Drugs Survey, 1996 (Lynskey et al, 1999); Monitoring the Future Project (Johnston et al, 1997); EMCDDA, 1999

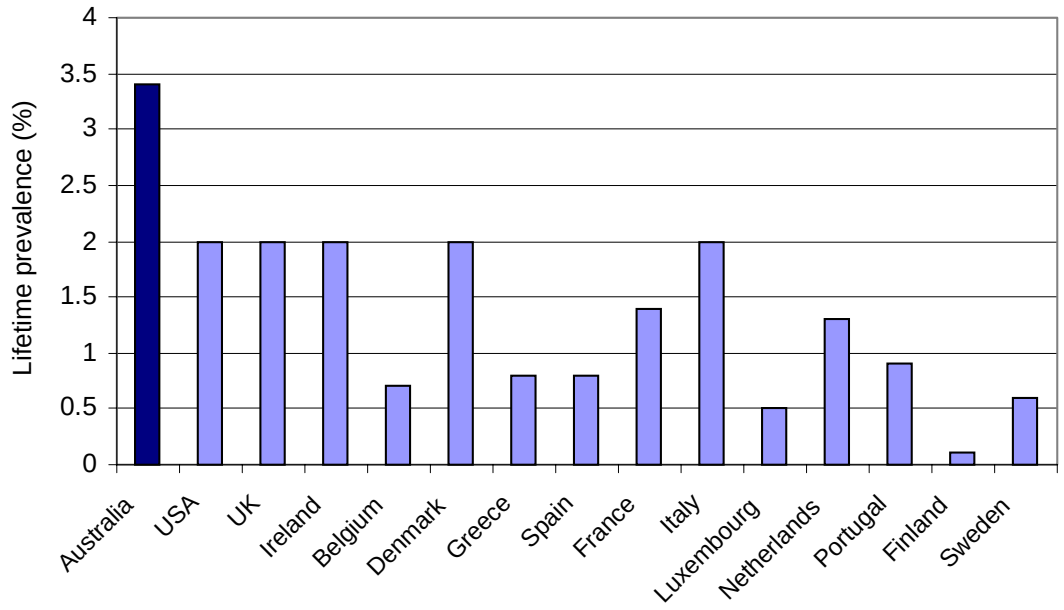
Data on rates of heroin use in the population are only available for Australia and the USA. Table 22 shows that Australia has a slightly higher rate of both past and lifetime use of heroin then the USA. Australia has the highest lifetime prevalence rate for heroin use among school children compared to the USA and selected European countries. However, as with all international comparisons the data should be interpreted with caution because of differences in sampling and the ways in which questions are asked about drug use (Figure 36).

Table 22: Lifetime and recent use[a] prevalence of heroin for Australia and the USA

	Lifetime Prevalence (%)	Recent Use (%)
Australia	2.2	0.7
USA	1.1	0.1

[a] Used in the past 12 months
Source: Australian School Students' Alcohol and Drugs Survey, 1996 (Lynskey et al, 1999); Monitoring the Future Project (Johnston et al, 1997)

Figure 36: Lifetime prevalence of heroin use among schoolchildren in Australia, the USA and selected European Countries



Source: Australian School Students' Alcohol and Drugs Survey, 1996 (Lynskey et al, 1999); Monitoring the Future Project (Johnston et al, 1997); EMCDDA, 1999

Prevalence rates of injecting drug use for the USA and Australia is given in Table 23. As with heroin use Australia has a higher rate of injecting drug use then the USA, for both lifetime prevalence and recent use.

Table 23: Lifetime prevalence of injecting drug use in the USA and Australia for teenagers [(a)] and the total population.

	Australia	USA
Total Population (%)	2.1	1.3
Teenagers (%)	1.6	0.3

[(a)] 14-19 years in Australia, 12-17 years in USA
Source: 1998 NDSHS (AIHW, 1999); National Household Survey on Drug Abuse (Substance Abuse and Mental Health Services Administration, 1999).

1.4.3.1 Harms

Heroin Dependence

A recent estimate of the population prevalence of heroin dependence in Australian adults aged between 15 and 54 years was 6.9 per 1000 adults aged 15 to 54 years, with a range of 4.6 to 8.2 per 1000 (Hall et al, in press). This can be compared with recent estimates produced for countries in the European Union using similar methods (EMCDDA, 1999). The Australian rate was within the range of the European estimates of "problem drug use" in the 15 to 54 year age group (Table 24), namely 3 to 8 per 1000 (EMCDDA, 1999). The majority of these European "problem drug users" are opioid dependent polydrug users (EMCDDA, 1999). The Australian data are not significantly different from the estimated rate of heroin dependence in the United Kingdom of 7 per 1000 (with a range of 3 to 11 per 1000). The Australian rate is only marginally higher than the estimated prevalence of *opioid dependence* in the USA, namely, 5 per 1000, with a range between 4 (Kessler et al, 1994) and 7 per 1000 (Anthony and Helzer, 1991).

Table 24: National prevalence estimates of problem drug use in some EU countries

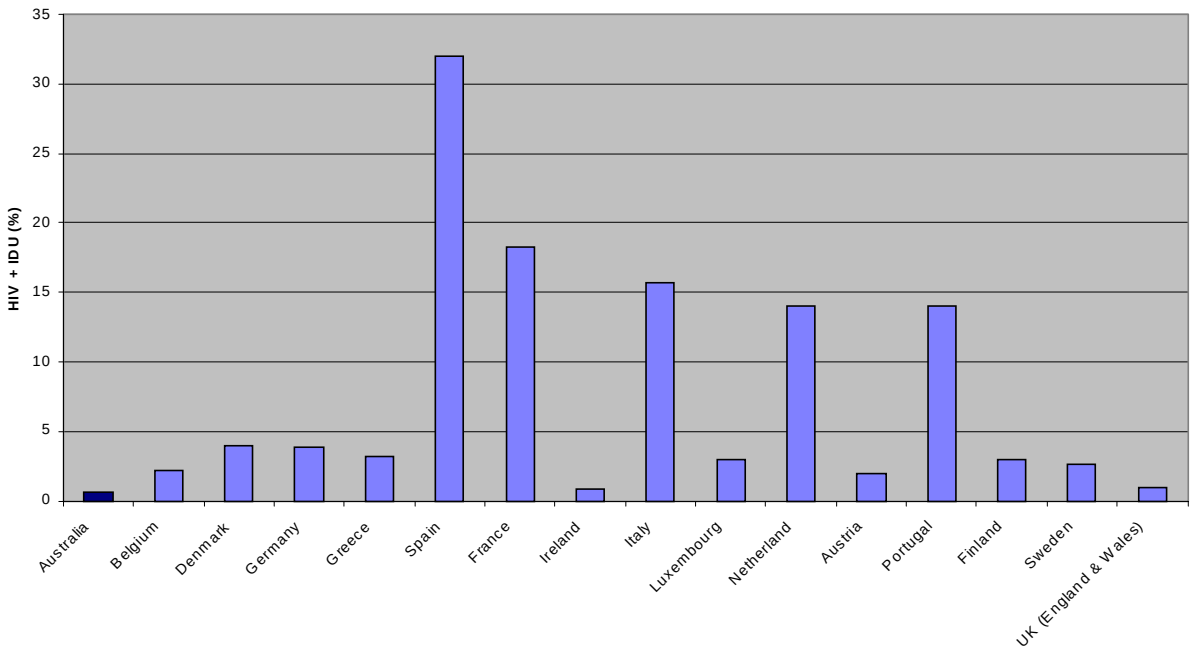
Country	Rate per 1,000 for persons aged 15-54
Belgium	3.6
Denmark	3.8
Germany	3.7
France	4.6
Ireland	4.5
Italy	7.7
Luxembourg	8.4
Netherlands	3.0
Austria	2.8
Finland	2.8
Sweden	2.8
United Kingdom	6.6

NB: These figures represent the midpoint of the range of estimates derived within each country

Blood-borne Viruses

There are a number of harms associated with illicit drug use and in particular injecting drug use. These include direct harms such as overdose and blood borne infectious diseases such as HIV and hepatitis B and C. Proportions of injecting drug users (IDU) infected with HIV for Australia and selected European countries are provided in Figure 37. It should be noted that the data represents diverse IDU populations and divergent methodologies have been used to collect the data.

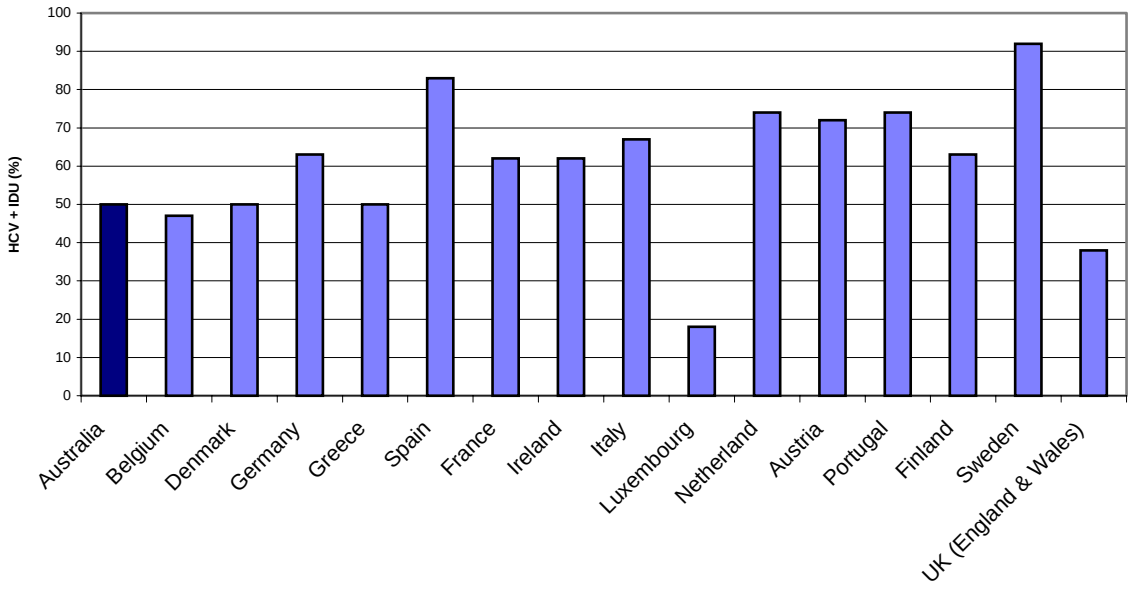
Figure 37: Rates of HIV among Australian and selected European injecting drug users (%)



Source: National Centre in HIV Epidemiology and Clinical Research, 1999; EMCDDA 1999

Infection with hepatitis C virus is common among Australian IDU. As with HIV, prevalence among IDU is difficult to ascertain due to the illicit nature of the drug use. Nevertheless, Figure 38 shows similar rates of hepatitis C infection among IDU for Australia and selected European countries. The large variations in Figure 38 may reflect differences in sampling and testing rather significant differences in disease prevalence.

Figure 38: Prevalence of hepatitis C among Australian and selected European IDUs



Source: National Centre in HIV Epidemiology and Clinical Research, 1999; EMCDDA 1999

Overdose is the most common direct cause of death for illicit drug use. Use of opiates are the leading cause of death from poisoning (overdose). Less than 0.5% of all illicit drug dependence, abuse or poisoning was associated with opiate use from 1986 to 1996 (AIHW 1999). Australia compares poorly to the UK for opiate related overdose, with opiate related

overdose accounting for 0.053% of all deaths in the UK compared to 0.276% in Australia but these may be explained by differences in data collection on causes of death and differences between Australia and the UK in rates of injecting heroin use (Hall et al., in press).