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NDLERF

The course and consequences of the  
heroin shortage in Victoria

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An Initiative of the National Drug Strategy

# **The course and consequences of the heroin shortage in Victoria**

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## Executive Summary

Heroin use and related harms increased dramatically in Victoria in the late 1990s (Dietze & Fitzgerald, 2002). Reports from various sources suggested a dramatic decline in the supply of heroin in Victoria in late 2000/early 2001. Commonly termed the heroin 'drought' this change in heroin supply was reflected in media reports of changes in heroin use and associated harms such as heroin overdose. A number of research projects investigated the heroin drought (hereafter heroin shortage) and its consequences in Melbourne and Victoria more widely (Dietze, Fry, Miller et al., 2001; Fitzgerald, Dovey, Dietze, & Rumbold, submitted; Miller, Fry, & Dietze, 2001). The aim of the current research was to investigate the heroin shortage in Melbourne in more detail with a view to examining the longer-term consequences of the heroin shortage in Victoria. The research is part of a broader research program conducted in three Australian states (Victoria, New South Wales and South Australia), coordinated by the National Drug and Alcohol Research Centre and funded by the National Drug Law Enforcement Research Fund.

The objectives of the research were to:

- Document the changes that have taken place in the heroin market during the heroin drought and consider the heroin supply issues that remain in light of recent reports of a return to more consistent, higher-grade supply of the drug in Melbourne and Sydney during November 2001.
- Describe the long-term changes in heroin distribution and consumption patterns that have resulted from changes in the heroin markets in Melbourne.
- Document the long-term changes in drug using behaviours amongst IDU that appear to result of these reported changes in the heroin market.
- Analyse trends in heroin-related harms across the heroin 'hotspots' in Melbourne and examine their relation to the changes in supply observed over the period 2000-2001.

The project relied upon collection and analysis of existing data sources that capture information pertinent to a consideration of the effects of the heroin shortage (eg ambulance attendance at non-fatal heroin overdose) as well as a series of Key Informant interviews conducted specifically for the project. The effects of the heroin shortage have generally been considered in their own right largely independent of the characteristics of the heroin supply evident in Victoria in years immediately prior to the shortage (that have been referred to as a heroin 'glut', see Dietze & Fitzgerald, 2002). The effects of the heroin shortage were considered within the following domains:

- Characterising (documenting) the heroin shortage
- Changes in drug use among Injecting Drug Users
- Changes in the health effects of injecting drug use
- Changes in drug treatment
- Changes in drug-related criminal activity associated with the heroin shortage
- Changes in health and law enforcement agency operations as a result of the heroin shortage
- Key Informant impressions of the heroin shortage

## Key findings

The data collected for this research show that there was a dramatic decrease in the supply of heroin in Victoria. This effect was at its most acute in December 2000 – January 2001 and was reflected in Injecting Drug User (IDU) perceptions of key characteristics of the heroin market and indicators directly and indirectly associated with heroin use. The summary sections of this report detail the major findings across the different domains considered in this study and the intention is not to repeat these findings in detail in this section of the report. Nevertheless, the key findings of the study in terms of the characteristics and immediate effects of the heroin shortage included:

- decreases in the purity of samples of heroin analysed in Victoria (although the decline appeared established prior to the onset of the acute period of the shortage)
- reports of decreased availability (ease of access) and purity, and increased price, of heroin among sampled IDU in Melbourne
- a decrease in the reported use of heroin, and overall injection frequency reported by samples of IDU in Melbourne
- a dramatic decline (85%) in the number of heroin related deaths in Victoria
- a dramatic decline in the number of non-fatal heroin overdoses in Melbourne (52%) that was most acute in the Central Business District of Melbourne (an additional decline of 20%)
- a dramatic decline (61%) in the number of opioid hospitalisations in Victoria
- a decline in the number of courses of treatment for opioids provided by the specialist drug treatment service system in Victoria
- a short-term increase in the number of robbery incidents recorded by Victoria Police

These effects were generally mirrored in the reports of Key Informants. The effects had major implications for the operations of agencies such that the shortage produced an ability to focus on other issues and/or drugs that were unable to be addressed during the heroin epidemic that was evident in Victoria in the late 1990s/early 2000.

One of the most important findings of the research presented in this report relates to the extent of injecting drug use in Melbourne and Victoria more widely. Available indicators and reports from Key Informants suggest that the overall extent of injecting drug use changed little in Victoria as a result of the heroin shortage. This finding suggests that IDU shifted their drug use patterns as a result of the shortage. Findings from this research suggested that amphetamine, benzodiazepine, prescribed opioid and cannabis use increased among sampled IDU that was consistent with treatment service data. Overall the findings suggest the emergence of a market for prescribed pharmaceuticals among IDU that has been sustained in the longer term. These changes had consequences for health agency operations and the following effects were suggested and/or noted for clients presenting at services and the experiences of agencies:

- A decline in the general physical health of IDU
- A decline in the mental health of IDU (primarily associated with the use of stimulant drugs)
- An increase in the rate of presentation of pregnant women with stimulant-related issues and associated increases in problems for neo-nates
- An increase in the prevalence of injection-related problems among IDU
- An increase in injecting practices related to risks for blood-borne virus transmission

- a decrease in the rate of presentation for opioids at specialist drug treatment agencies

However, unlike other jurisdictions, there did not appear to be an increase in the use of other drugs such as cocaine.

The heroin shortage was seen as resulting in a decline in the street-based drug markets that had come to dominate Melbourne's heroin-using scene. However, this decline appeared to commence prior to the onset of the most acute period of the heroin shortage. Nevertheless, there was a substantive decline in heroin related incidents recorded in the areas of Melbourne containing street-based drug markets that could be attributed to the heroin shortage and this was not offset by an increase in reported incidents related to drugs other than heroin.

There were few other quantifiable effects of the heroin shortage on reported rates of crime indirectly linked to the consumption of heroin in Victoria. This meant that Key Informant and IDU reports of increased property, sex related and violent crime were not supported by available crime data. This divergence could be explained by Key Informant reports suggesting that the reported increases in crime attributed to the heroin shortage may have been perpetrated against other heroin market participants who are probably less likely to report their experience of crime than other members of the public. Nevertheless, the absence of clear findings on the patterns of crime in relation to an abrupt change in heroin supply suggests the need for further research in this domain.

The consequences of the shortage in terms of law enforcement operations included:

- less resources being devoted to the policing of heroin
- an increased focus on other crime
- improved linkages between health and law enforcement agencies
- increased job satisfaction

## Conclusions and implications

The implications of the heroin shortage in terms of its short- and long-term effects are many. The decline in heroin related mortality and morbidity noted in this research is an unambiguously positive outcome of the change in supply. However, many of the short-term changes in the patterns of drug use that appear to have been entrenched in the longer term have significant implications for service provision and research.

The changes in patterns of drug use evident among IDU resulted in a change in the presentation of IDU at services that produced pressures in terms of client management and the types of services offered. In this regard it is clear that the options for treatment of IDU for the use of drugs other than heroin is limited (Dietze, Richards et al., 2003). Further work on expanding the skills base in terms of client management and the range of services offered to IDU needs to be undertaken as a matter of priority in Victoria.

Recent data on heroin seizure purity do show an increase in purity from the time when the effects of the heroin shortage were most acute, implying a recent increase in the supply of the drug in Victoria. This finding is consistent with reports from IDU and Key Informants. In the context of the shortage producing little change in the size and extent of injecting drug use in Victoria it is unsurprising that heroin use continued during the period during which the effects of the shortage were most acute and then increased as availability increased. The question therefore remains whether the major impacts of the heroin shortage, decreases in heroin related mortality and morbidity, can be sustained in the longer-term.

# 1 Introduction

An increase in heroin use and harms was widely documented in Victoria throughout the 1990s (Dwyer & Rumbold, 2000; Fitzgerald, Broad, & Dare, 1999; Fry & Miller, 2001; Rumbold & Fry, 1998). This increase led to an unprecedented focus within the Victorian community on problems related to heroin use that saw the establishment of a variety of mechanisms, such as the Premier's Drug Advisory Council (Premier's Drug Advisory Council, 1996) designed to address these problems. However, towards the end of 2000/early 2001 anecdotal reports began to emerge in Victoria of a dramatic change in heroin supply that appeared to be occurring simultaneously in other jurisdictions of Australia. Widely termed the heroin 'drought', this reported change in heroin supply was the subject of intense media focus that generally relied upon quotes from individuals working in the drug and alcohol field or from drug users themselves (eg The Age 19/05/01, 13/05/01, 21/04/01, ABC radio PM program 28/03/01).

The media reports on the changes in heroin supply detailed speculation about the causes (eg failing crops in Asia) and consequences (eg fatal and non-fatal heroin overdose) of the so-called 'drought'. Most reports focused on the positive consequences of the 'drought' such as a reduction in the number of heroin-related deaths, but reports of increased danger for Injecting Drug Users (IDUs) also emerged such as problems associated with the injection of pharmaceuticals designed for oral administration.

In response to the emergence of the reported changes in heroin supply a number of research studies were initiated in Victoria (eg Dietze, Fry, Miller et al., 2001; Miller et al., 2001) and other Australian jurisdictions (eg Weatherburn, Jones, Freeman, & Makkai, 2001). Largely based on the methodology used in the Illicit Drug Reporting System (IDRS, see Hando, Darke, O'Brien, Maher, & Hall, 1998), these studies were able to present a preliminary description and documentation of the heroin 'drought' in Australia. In so doing these studies represented the first widely available research on the effects of a dramatic change in heroin supply as the existence of sophisticated monitoring and surveillance systems in Australia allowed for a comparison of the effects of the heroin 'drought' against a known baseline (Dietze & Fitzgerald, 2002; Dietze, Fry, Miller et al., 2001). Indeed, changes in heroin supply had been reported in some jurisdictions (through, for example, heroin seizure purity in Germany) but had not been systematically examined (Simon, personal communication, 2001). To this effect most of the available literature relevant to changes in supply concerned the effects (potential or realised) of supply-side drug law enforcement.

Rumbold and Fry (1999a) postulated a number of possible effects of supply-side drug law enforcement on existing indicators of heroin use and harm in Melbourne. These included:

- reductions in non-fatal overdose (either due to decreasing purity or reduced injecting drug use)
- reduced blood-borne virus transmission (due to reduced injecting drug use)
- reductions in dealing, trafficking, use and possession arrest and incarceration rates (due to reduced numbers of distribution points and people using, as some dealers and users inevitably feel the impact more)
- increased rates of referral and entry into treatment for heroin dependence (due to inability or unwillingness to pay, or lack of availability)
- increased rates of property crime (due to people needing more money to purchase heroin)



Previous research on supply-side drug law enforcement suggested that large-scale interdiction and interception of heroin shipments have little impact on heroin markets (Weatherburn & Lind, 1997). Rumbold and Fry (1999a) investigated the effect of what was Australia's largest heroin seizure (in Port Macquarie) on Melbourne's heroin market and found no discernible impact of the seizure on price, purity and availability of the drug in Melbourne nor any of the domains listed above – with similar results emerging more recently in similar circumstances in Canada (Wood et al., 2003). Rumbold and Fry explained this absence by considering the relative size of the seizure in relation to the amount of heroin traded on a daily basis in Australia at that time, concluding that the seizure size was too small to produce any discernible effects in the context of a large heroin market operating with conditions of ready availability (Fry & Miller, 2000).

Research on the heroin 'drought' (hereafter referred to as heroin shortage) in Melbourne and Sydney conducted around the time of the onset of the shortage produced a mixed pattern of results. While a heroin shortage was noted in both cities, the effects appeared to differ. For example, in the DAMP study (Miller et al., 2001), there were reports of increases in crime among sampled IDU that were evident in a preliminary examination of police data relating to property crime in the areas of Melbourne known to contain street-based drug markets (Dietze, Fry, Miller et al., 2001). Such a relationship did not appear to exist in Sydney (Weatherburn et al., 2001). In the absence of a clear picture of the effects of the heroin shortage it is clear that there is a need for further systematic examination of the nature and characteristics of the heroin shortage in order to properly understand its longer-term impact on the behaviour of heroin users as well as the public health policy implications of such changes in supply.

## 1.1 The current research

The current research represents the Victorian component of a national project co-ordinated by the National Drug and Alcohol Research Centre that has been funded by the National Drug Law Enforcement Research Fund. Largely based on the IDRS methodology (Hando et al., 1998), the project was intended to build upon existing work in relation to the heroin shortage through an examination of primary and secondary data on the heroin shortage.

### 1.1.1 Objectives

The objectives of the research were to:

- Document the changes that have taken place in the heroin market during the heroin shortage and consider the heroin supply issues that remain in light of recent reports of a return to more consistent, higher-grade supply of the drug in Melbourne and Sydney during November 2001.
- Describe the long-term changes in heroin distribution and consumption patterns that have resulted from changes in the heroin markets in Melbourne.
- Document the long-term changes in drug using behaviours amongst IDU that appear to result of these reported changes in the heroin market.
- Analyse trends in heroin-related harms across the heroin 'hotspots' in Melbourne and examine their relation to the changes in supply observed over the period 2000-2001.

### 1.1.2 Data sources

Primary data to be collected for the project included a survey of current and past IDU in order to examine changes in patterns of drug use as a result of the heroin shortage within IDU. Further primary data collection involved a series of interviews with pharmacotherapy clients who entered

treatment either before or after the onset of the shortage with a view to examining whether period of treatment entry impacted on the long-term patterns of a variety of outcomes (including drug use, drug-related harms, social functioning). The final type of primary data collection involved a series of Key Informant interviews with a variety of professionals (drawn from the health and law enforcement sectors) with a view to obtaining detailed information on the causes, effects and implications of the heroin shortage in Victoria.

Secondary data collected for the project included key indicators of drug use and related harms such as the incidence of fatal and non-fatal heroin overdose and heroin related arrests. In addition, available surveys of convenience samples of IDU conducted by Turning Point Alcohol and Drug Centre in Melbourne over the period 1997-2002 were obtained and analysed for the purposes of this research.

### 1.1.3 Methods

Two of the primary data collections undertaken for the purposes of this research were subject to significant issues in terms of recruitment rate (pharmacotherapy clients) and task (IDU interviews). These issues meant that the IDU survey was abandoned on the agreement of all of the collaborators and the pharmacotherapy client data was combined into one dataset for the three jurisdictions. The detail of the methods used and findings from these two components of the research can be found in other documents produced as part of this research program (Day, Gibson, Collins, Degenhardt, & Dietze, in preparation).

The other primary data source utilised in the current research was a survey of Key Informants from a variety of professionals that deal with illicit drug use in Victoria. Forty-nine Key Informants were interviewed overall, including 22 law enforcement personnel and 27 health workers. Occupations surveyed included: uniform policing, specialist drug police, NSP workers, youth outreach workers, general practitioners, drug treatment workers and specialist drug researchers. Interviews were in the form of in-depth qualitative interviews that were tape-recorded. Interview lengths ranged between 45 and 130 minutes. The major problem identified in the data gathering process was that the length of time elapsed since the change in heroin supply meant that some Key Informants had forgotten details such as when and where they first learnt of the change in heroin supply, or the order in which events may have occurred.

The methods used in the current research are presented in detail in Appendix A of this report. In general, the analysis of existing IDU survey data involved the generation of summary statistics from unit records. Where possible 95% confidence intervals were generated for the prevalence of any particular characteristic in the dataset (usually sample proportions reporting any particular pattern). It is technically incorrect to apply such techniques to convenience (ie non-generalisable) samples. Nevertheless, the samples were recruited from similar sources. This means that the confidence intervals are reasonably applicable to the overall population from which the samples are drawn (eg needle and syringe program attendees willing to take part in research). Importantly, the confidence intervals allow the reader to interpret any statements around evidence of trend. However, it is important to note that these confidence intervals should not be taken to generalise to the overall population of IDU.

Where possible the analysis of indicator data has been undertaken using time series analysis techniques. In so doing, these techniques attempt to model the patterns evident in the indicator data and then model any effects of the heroin shortage evident in a visual inspection of the data. In cases where time series analysis was either impossible or inappropriate (eg where fewer than 50 data points were available for a given series), comparison of 12-month periods prior to and after the onset of the shortage was undertaken using appropriate statistical techniques (eg t-tests

for continuous data). In general, given the large number of statistical tests undertaken for the purposes of this research, a conservative level of statistical significance (0.01) was adopted in an attempt to control for type-1 statistical errors.

## **1.2 The current report**

The remainder of this report is presented in 9 sections in which the results of the analyses undertaken for the purposes of this research are detailed. The remaining sections are:

Section 2: A brief history of Victoria's heroin markets

Section 3: Documenting the heroin shortage

Section 4: Changes in drug use among Injecting Drug Users

Section 5: Changes in the health effects of injecting drug use

Section 6: Changes in drug treatment

Section 7: Changes in drug-related criminal activity associated with the heroin shortage

Section 8: Changes in health and law enforcement agency operations as a result of the heroin shortage

Section 9: Key Informant impressions of the heroin shortage

Section 10: Conclusions

## 2 A brief history of the heroin market in Victoria

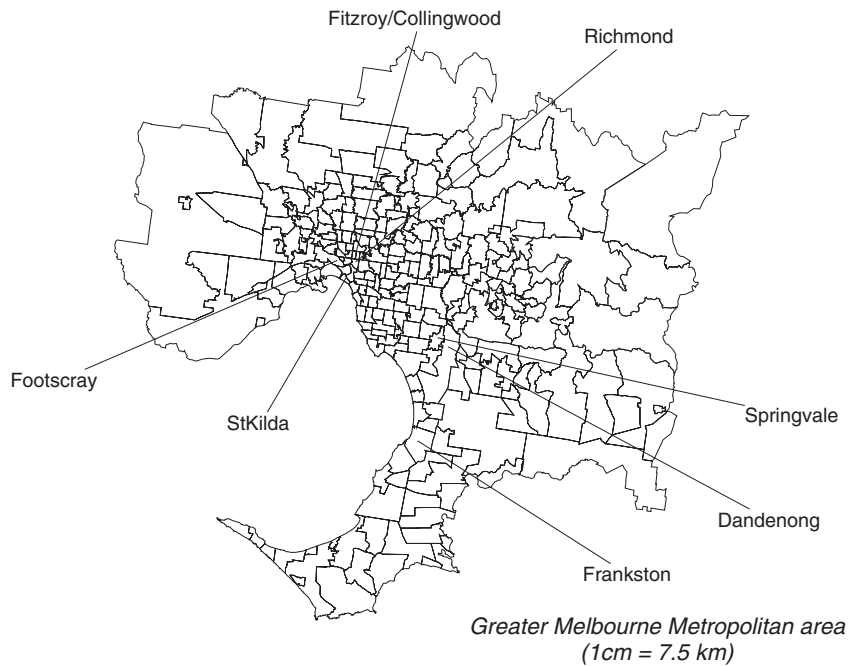
The major parameters of Victoria's heroin market have only been widely documented and understood since the emergence of monitoring and surveillance systems such as the Illicit Drug Reporting System (IDRS) that was first implemented in Melbourne in 1997 (Rumbold & Fry, 1998). This means that little was known about the characteristics of Victoria's heroin market prior to this time apart from that available in specific research studies and reports from a variety of sources such as the media. Nevertheless, implicit in the widely-used description of the heroin shortage as a 'drought' implies that there was some understanding of what the 'normal' characteristics of Victoria's heroin market were prior to the onset of the heroin shortage. In their discussion of the heroin drought in Melbourne, Dietze and Fitzgerald (2002) presented an overview of the history of Melbourne's heroin markets. Their overview has been reproduced here with additional information inserted where available.

Specific heroin markets in Melbourne were not a major point of interest until the emergence of the street-based markets that characterised heroin supply and procurement in Melbourne in the late 1990s (Fitzgerald & Hope, 1999). Up until the mid-1990s heroin supply was often referred to as "residentially-based", or directed from dealer's houses. There is perhaps a more complex and nuanced version of the history of heroin markets in Melbourne, but this is a history that hasn't been fully documented. The brief notes that follow emerge from interview work with injecting drug users and police in Melbourne's inner city conducted during the period 1998-2001. Like most histories of illegal activity these stories are partial as there is little verification of "facts". Any history is interpretative. Indeed, if other drug researchers had undertaken this task, a different history may well have been written. The selectivity and emphases accorded to historical work is an authorial responsibility. This perhaps goes to the heart of the epistemological issue with understanding illegal drug markets. Given these caveats, a number of comments can be made about the history of heroin supply in Melbourne.

As indicated, access to heroin in Melbourne was traditionally described as being "residentially-based". However, rather than heroin supply being normalised as "residentially-based", we would argue that heroin supply and associated access to this supply can perhaps been seen as paralleling the changes in recreational consumer behaviour. One of Melbourne's inner city Local Government Areas, the City of Yarra (covering the suburbs of Abbotsford, Carlton, Fitzroy, Collingwood, and Richmond – see Figure 2.1) is perhaps a good case example. Over the period 1980 to 1995, there were numerous changes in the points of heroin distribution in this area. These ranged from dealer houses, squats, some student houses to public hotels. The patterns of supply did not follow a trend based on volume or broad-based accessibility to the drug. Rather, the pattern of supply followed a cultural trend.

In the early 1980s in Melbourne, inner city suburbs had yet to experience rapid gentrification. The Fitzroy/Collingwood area still housed substantial welfare and working class populations that accompanied the poor in the public high-rise housing estates. Alongside this residential population, were working class hotels like the Builders Arms (on Gertrude street) and the Champion (on Brunswick street). In the early 1980s, local police were reported to be wary of entering some of these hotels on their own for fear of violence. Police knew that these hotels were the best places to look for newly released prisoners, wanted offenders, amphetamine use among the aboriginal community and the organised heroin trade (The Age, 18/10/83). Likewise, covert operations on these public hotels during the 1980s resulted in a documentation of what appeared to be more consumer-accessible location-based drug trade. The only difference was that people would use the confines of the publicly accessible hotel to engage in trade.

**Figure 2.1: Greater Melbourne Metropolitan area and selected suburbs**



Later in the 1980s and early 1990s amusement parlours and pool-rooms became sites for drug markets in Fitzroy/Collingwood. This trend had been apparent for some time in the southern edge of the Melbourne in St Kilda. For a period the “Pool-room” on Smith Street was a thriving site for heroin trade in the 1980s and early 1990s. Likewise the Punters Club Hotel in Fitzroy and the Great Britain hotel in Richmond became well-known as places to score heroin and amphetamine. At the time, there was a cultural shift in the inner city. Inner city hotels were now the site of a burgeoning live and independent music scene. Inner city hotels were increasingly becoming host to a vibrant and eclectic mix of people following this new entertainment. High streets like Smith Street in Fitzroy/Collingwood and Church Street in the Richmond were increasingly becoming entertainment precincts. The increased flow of recreational consumers of many pleasurable commodities provided the opportunity for distribution of illegal drugs. There is a cultural logic that underpins the changing patterns of recreational consumer culture in the inner city (Fitzgerald et al., 1999). This cultural logic created opportunities for changes in heroin supply.

The changes in heroin accessibility that occurred during the 1980s in inner city Melbourne are perhaps precursors to the rapid expansion of the street heroin markets across greater Melbourne that occurred in the mid 1990s. The critical cultural shift that occurred during the 1980s created a linkage between access to heroin and the development of the inner-city recreational consumer commodity market. Licensed hotels, live music venues, amusement parlours, and pool-rooms all distributed pleasurable commodities. Heroin became available through the same sites that distributed these legal pleasurable commodities. There was a cultural shift that increased the visibility of the heroin market to those that attended these venues.

We have few indicators as to the volume of drugs distributed, the number of syringes consumed, the number of non-fatal overdoses or the number of contacts with outreach workers during this time. If there were reliable estimates or stable indicators, then we would have been able to establish the degree of change brought about through what has been the most substantial change in heroin supply in Melbourne’s history, the emergence of the street heroin markets.

## 2.1 The emergence of street-based heroin markets across Melbourne

A most unusual series of cultural shifts in the distribution and use of heroin occurred in Melbourne from mid 1995 to 2001. This period saw the emergence of the street-based drug markets. The emergence and impact of two of these markets has been documented in detail (Fitzgerald et al., 1999; Fitzgerald & Hope, 1999). Melbourne's street-based drug markets had all the characteristics of what have been described as "open" markets (May, Edmunds, Hough, & Harvey, 1999; Rumbold & Dietze, 1999). Access to the market is high, drug dealing is highly visible, the market is mobile and rapidly re-deploys in response to police activity, there is a high level of associated crime and public disorder and drug use occurs in public locations.

Similar changes were noted in other areas of Melbourne, notably the inner suburb of Footscray and the outer suburbs of Springvale, Dandenong and Frankston (see Figure 2.1). This produced areas that have commonly been termed the drug hotspots in Melbourne. It is important to note that the emergence of these hotspots in Victoria appeared to be limited to the Melbourne metropolitan area – emerging street-based drug markets in non-metropolitan areas of the state never achieved a critical mass sufficient to sustain market activity. This meant that street-based scenes in non-metropolitan areas were easily controlled and limited through existing police resources in these areas.

The increased visibility of the street heroin markets resulted in increased service provision. Accompanying the increased level of outreach and needle and syringe program services was enhanced documentation of the size or nature of the heroin marketplace. Drug consumption estimates could be derived from syringe collection statistics. Demographic information about previously invisible drug consuming populations could be derived from needle and syringe program (NSP) outreach datasets – to the extent that these programs were successful over time in: (1) reducing the re-use and sharing of injecting equipment, and (2) reaching previously hidden populations. The increased visibility of the drug markets from 1995 onwards invariably produced a greater volume and more detailed data about what was a previously hidden marketplace. The consequence of having more documentation is an even higher visibility of the drug market through enhanced data collection and publication. For example, Melbourne's daily newspapers periodically produced maps of the drug hotspots over this period. The enhanced visibility of the street drug market produced its own visibility through enhanced documentation practices such as the establishment of the IDRS and other databases (e.g. ambulance attendance at non-fatal heroin overdose). The data that was produced facilitated a perception of heroin supply marketplace that was steadily increasing in magnitude - with little or no consideration given to how this should be interpreted in relation to typical heroin market functioning. Few asked about the extent to which this perception was enhanced through the establishment of these new data collection strategies.



### 3 Documenting the heroin shortage

#### Summary

The onset of the heroin shortage in Victoria was generally reported to be around December 2000- January 2001. The characteristics of this change in heroin supply included:

- A dramatic decline in the number and purity of seizures analysed by the Victorian Forensic Science Centre
- Dramatic declines in the reported availability and purity of heroin by Injecting Drug Users
- Increases in the reported price for the drug

These changes were reported to affect some areas of Melbourne and some groups of injecting drug users more than others.

Apart from amphetamines, there were few changes noted in the market for other drugs as accessed by IDU. For amphetamines there was an:

- Increase in the purity of seizures analysed in Victoria that continued after the onset of the heroin shortage
- Increase in the reported purity of amphetamines accessed by IDU that appeared established before the onset of the heroin shortage
- Increases in the reported availability and price of amphetamines among IDU

The heroin shortage appeared best characterized as a return to heroin supply levels typically observed in Victoria prior to the heroin epidemic that characterised the heroin market in the state in the late 1990s/2000.



### 3.1 Introduction

As indicated, the supply of heroin in Melbourne increased during the 1990s such that the drug became readily available at levels of high purity in an emergent street-based drug-using scene (Fry & Miller, 2001). The onset of the heroin shortage resulted in a large number of media reports in which the causes, effects and implications of the heroin shortage were detailed (eg *The Age* 19/05/01, 13/05/01, 21/04/01, ABC radio PM program 28/03/01). For example, increases in the price of heroin were noted with a number of consequences described including reports of greater involvement by users in violent crime or sex work to raise sufficient funds to purchase heroin (*The Age* 19/05/01, 21/04/01, 18/03/01). These reports were subsequently examined in specific research projects conducted to investigate the parameters of the heroin shortage with documented effects including a decline in fatal and non-fatal heroin overdose, changes in IDU practices and changes in drug related crime (Dietze, Fry, Miller et al., 2001).

In attempting to document the major characteristics of the heroin shortage in Victoria for the purposes of the current research a number of data sources have been used. These include:

- Available surveys of convenience samples of IDU conducted in Melbourne over the period 1997-2002 – analysed for reported drug market characteristics such as the price, purity and availability of heroin
- Key Informant interviews conducted as part of this research
- Results of analyses of seizures of illicit drugs undertaken at the Victorian Forensic Science Centre.

These data sources were analysed in order to establish the major parameters of the shortage. The effects of the shortage on IDU and related consequences are considered in detail in subsequent sections of this report.

### 3.2 Characterising the heroin shortage in Victoria

Three inter-related characteristics of drug markets were used in characterising the heroin shortage in Melbourne. These were price, purity and availability of the drug. The illicit nature of the heroin market means that the nexus between these market characteristics has not been fully specified (eg the extent to which heroin is price-elastic, see Weatherburn et al., 2001) but it undoubtedly the case that availability of the drug will influence prices paid and the purity of the drug available for market participants (and subsequent seizures). Information on the characteristics of the heroin shortage can be obtained from a number of sources including IDU surveys conducted in Melbourne and the purity of heroin seizures analysed by the Victorian Forensic Science Centre. It should be noted that, unlike other jurisdictions of Australia, the purity of all seizures of heroin made in Victoria has been analysed since January 1998.

Participants in the DAMP study (Miller et al., 2001), the Street life Study and the 2001 Illicit Drug Reporting System (IDRS) IDU survey were asked about the reported heroin shortage in Melbourne. Almost all (99%) participants in the DAMP study agreed that there had been a shortage of heroin. Similarly, almost all (99%) of the participants in the Street life Study reported having heard of the heroin shortage and a large percentage (87%) of respondents to the 2001 IDRS IDU survey reported that heroin had been harder to get recently.

### 3.2.1 Timing of the shortage

The majority of Key Informants interviewed for the purposes of this research reported that the change in heroin supply was first noticed in December of 2000. In determining their impressions of the onset of the shortage, the information base of many Key Informants was the data on heroin seizure purity that is considered below.

Participants in the DAMP study (Miller et al., 2001) and the 2001 Illicit Drug Reporting System (IDRS) IDU survey (the two studies conducted most contemporaneously with the heroin shortage) were also asked about their understanding as to the onset of the heroin shortage in Melbourne. Eighty percent of the respondents to the DAMP study believed that the heroin shortage began in December 2000-January 2001, with eight percent believing it began prior to this time and the remainder believing it began some time after this period in 2001. Similarly, 58% of respondents to the 2001 IDRS IDU survey believed that the heroin shortage began in December 2000-January 2001, with 22% believing it began before this time and the remaining 20% believing it began some time later in 2001.

There were differences in Key Informant reports of the timing of the onset of the heroin shortage in different areas of Melbourne. The change in the heroin supply was first observed in the central business district (CBD) of Melbourne. Two Key Informants (1 Law Enforcement Key Informant and 1 Health Key Informant) reported that the first indications of a change in heroin supply were observed in November 2000, up to a month earlier than the other street-based drug markets in Melbourne. In contrast, the St Kilda market was the last to experience the change in heroin supply.

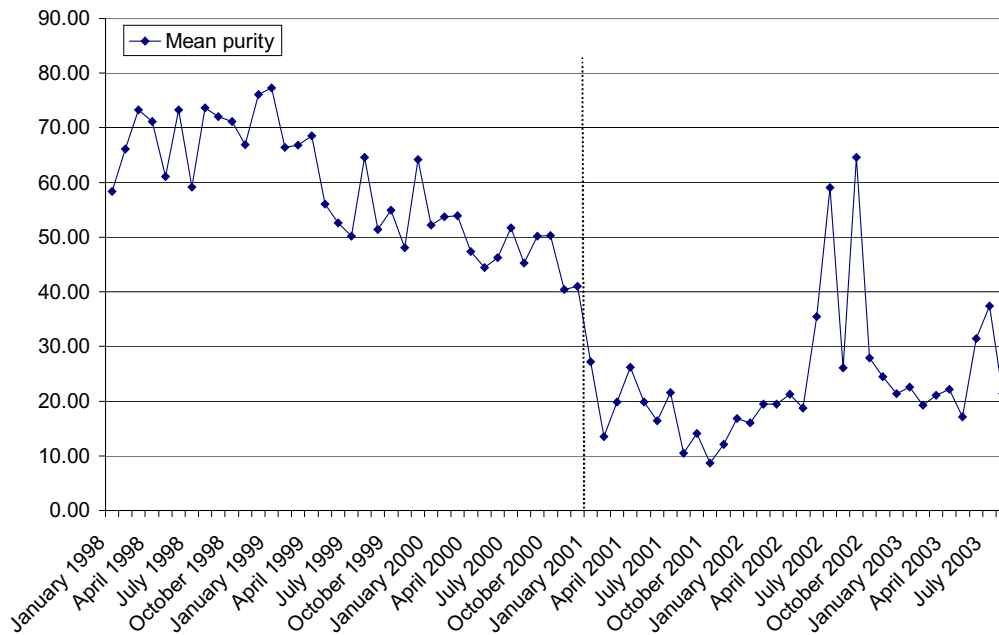
*“for me it was February here in St. Kilda around 2001 and our needle...funnily enough, we had the highest ever needle administrating needles in January 2001...I think the reason for that was that in St. Kilda, and this is only in my own mind, there has been some older markets established and those people still had some sort of source of heroin and other than the other areas in Melbourne and because a lot of people come to score here.” (NSP worker, South East Melbourne)*

These reports suggest that the Melbourne CBD and St Kilda heroin markets constitute different ends of the spectrum of the Melbourne heroin scene. The street market of the CBD appears to have been the most sensitive of the Melbourne markets to the shortage of supply. In contrast, the St Kilda heroin market is Melbourne’s oldest and most enduring heroin market and the nature of supply lines there appear to have been the most resilient in Melbourne in the context of the changes observed in relation to the heroin shortage.

### 3.2.2 Heroin purity and the heroin shortage

As indicated, changes in heroin purity can be indexed through the analyses of heroin seizures undertaken by the Victorian Forensic Science Centre. Figure 3.1 shows the mean purity of heroin seizures (irrespective of seizure mass) by month for the period January 1998 – August 2003.

**Figure 3.1: Mean purity of heroin seizures analysed by the Victorian Forensic Sciences Centre, January 1998-August 2003**



Source: Victorian Forensic Science Centre

In attempting to analyse the time series shown in Figure 3.1 it was not possible to develop appropriate models of the effects of the heroin shortage because of the decline in purity levels evident from early 1999 and the high level of variability in the data that was evident after January 2001. Nevertheless, cursory inspection of the data suggests that there was a large change in heroin seizure purity that appeared to commence around October 2000 with more dramatic changes evident in the first two months of 2001 (largely consistent with the timing of the shortage described above). After this time there was considerable variability in the purity of seizures that remains a characteristic of available data through to August 2003.

The heroin seizure purity data detailed above is largely consistent with reported heroin purity from available IDU surveys conducted in Melbourne over the period 1997-2002. The results of these surveys are detailed in Table 3.1 which shows that, prior to the onset of the heroin shortage, the majority of respondents reported available heroin to be of medium or high purity. After the onset of the shortage, the majority of respondents to surveys conducted in 2001 reported purity to be low with the majority of respondents in surveys conducted in 2002 reporting purity to be low or fluctuating. Interestingly, the proportions of respondents to the surveys conducted in 2002 reporting medium or high levels of heroin purity were higher than the proportions found in surveys conducted in 2001. However, these perceptions of heroin purity need to be considered in light of potential confounding in that during a period of reduced heroin supply and purity, the tolerance levels of the majority users will presumably have reduced, ultimately affecting user perceptions of purity levels.

**Table 3.1: Reported heroin purity in available IDU surveys in Melbourne, 1998-2002**

Reported heroin purity (% sample)	IDRS 1998 n=293	IDRS 1999 n=154	IDRS 2000 n=152	DAMP 2001 n=103	IDRS 2001 n=151	SLS 2002 n=287	IDRS 2002 n=156
Don't know	9	13	9	1	3	4	2
High	22	14	14	0	4	8	10
Medium	52	44	42	3	13	30	34
Low	17	29	34	96	75	44	46
Fluctuates	N/A	N/A	N/A	N/A	N/A	15	8

Source: Turning Point Alcohol and Drug Centre

### 3.2.3 Heroin price and the heroin shortage

One of the defining characteristics of the heroin shortage reported by key Informants was an increase in the price of heroin. Participants in IDU surveys conducted in Melbourne over the period 1997-2002 are routinely asked about their perceptions of the cost of heroin. As a result of changes in the nature of the quantities in which heroin has been distributed over that time (eg a shift from \$25 to \$50 'caps', see Fry & Miller, 2002), the only information on heroin price changes that may be considered reliable is that pertaining to the last gram of heroin purchased reported by participants. The findings from these surveys with respect to the cost of the last gram of heroin purchased by participants are detailed in Table 3.2. This Table shows that there was an decrease in the reported cost of a gram of heroin in the surveys conducted prior to the onset of the shortage with a large increase evident in 2001 and a subsequent decrease in 2002 where the reported price returned to levels reported in 1998.

**Table 3.2: Modal prices of heroin reported in available IDU surveys in Melbourne, 1998-2002**

	IDRS 1998 n=293	IDRS 1999 n=154	IDRS 2000 n=152	IDRS 2001 n=151	IDRS 2002 n=156
\$ 1 gram	400	300	300	500	400

Source: Turning Point Alcohol and Drug Centre

### 3.2.4 Heroin availability and the heroin shortage

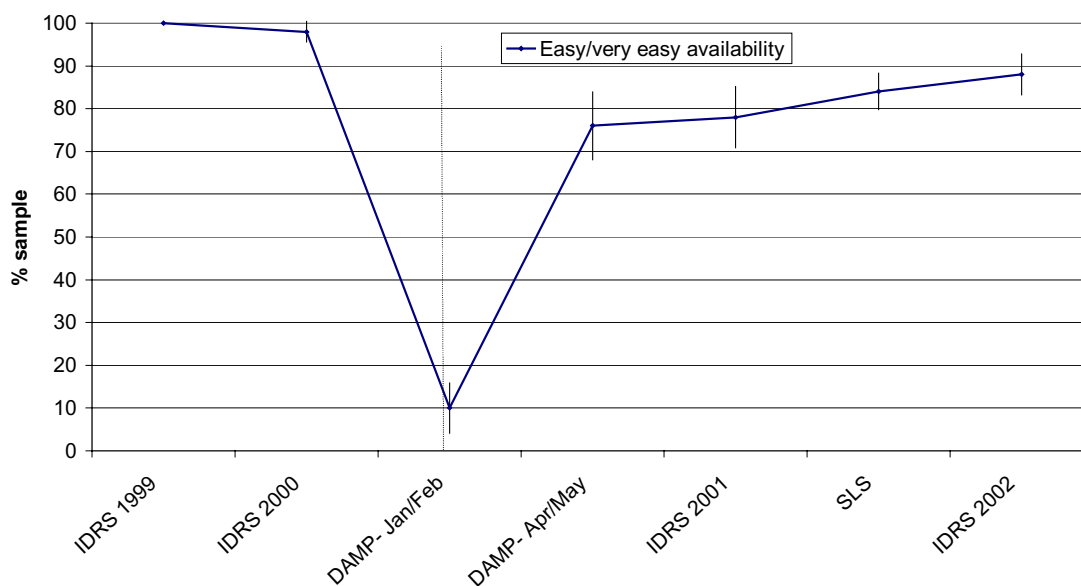
In previous reports on the heroin shortage in Melbourne it was noted that the availability of heroin (an obvious defining characteristic of the shortage) appeared to vary for IDU with some reporting being unable to obtain the drug and others reporting relatively stable supply (Miller et al., 2001). Some Key Informants suggested that this was indeed the case:

*"I know some people that I talk to and they will say 'What drought?'. Some people had contacts where they just weren't affected and there would be a number of people who weren't affected by the drought at all." (Researcher, Melbourne wide)*

As noted above, availability also appeared to vary between Melbourne's heroin markets with the onset of the shortage differing across different areas of the city. Information on the reported availability of heroin reported is available from IDU surveys conducted in Melbourne over the

period 1999-2002. The results of these surveys are detailed in Figure 3.2. This Figure shows that only ten percent of the sample interviewed most contemporaneously to the onset of the heroin shortage reported heroin as being easy/very easy to obtain. Further, the percentages of all samples interviewed after the onset of the shortage reporting easy/very easy availability were lower than in the period prior to the onset of the shortage. Nevertheless, these post-shortage percentages were high (between 70% and 90% of respondents), suggesting that some form of relatively readily available mechanisms of supply had returned following the onset of the heroin shortage. As noted above, this supply was probably of a lower quality than that available prior to the heroin shortage.

**Figure 3.2: Percentages (and 95% CIs) of IDU survey samples reporting easy/very easy availability of heroin in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

One way of documenting the availability of heroin is to consider the time IDU report that it takes to purchase ('score') heroin. Data on self-reported time to purchase is available from the Street life Study and the 2002 IDRS. In both the 2002 IDRS (45%, 95% CI=37-53%) and the Street life Study (50%, 95% CI=44-56%) around 50% of the samples reported being able to purchase heroin in less than 15 minutes. While based on retrospective impressions of IDU, in comparison 75% (95% CI=70-80%) of the Street life study sample reported being able to purchase heroin in less than 15 minutes prior to the onset of the heroin shortage. This finding suggests that the time taken to purchase heroin increased as a result of the heroin shortage.

### 3.3 Changes in the price, purity and availability of other drugs

One consequence of the heroin shortage that is considered in detail in subsequent sections of this report is reports of IDU shifting to the use of the other drugs. In so doing, the heroin shortage may have directly affected the market for other drugs. These effects may have been manifested at different levels of the drug market mechanisms through which drugs are distributed to IDU. If, for example, changes in drugs imported by traditional heroin importers were evident, then it is possible that 'new' drugs may have been distributed through traditional channels. Alternatively, as the heroin market declined, other drugs distributed through different means may have been targeted towards IDU. Irrespective of the causes of a shift in the market for drugs other than heroin it is important to examine any potential changes in the markets for drugs which IDU typically report using.

### 3.3.1 Amphetamines

There are difficulties in documenting changes in the price, purity and availability of amphetamines in Melbourne that relate to the number of forms in which amphetamines are available and the relatively small number of seizures of the drugs (Jenkinson, Fry, & Miller, 2003). Table 3.3 shows the mean purity of all amphetamine seizures analysed in Victoria over the 1997/98 – 2002/03 financial years. The Table shows a general increase in the purity of analysed amphetamine seizures across the period shown. Nevertheless, it should be noted that, unlike the case for heroin where it is reasonable to assume that the vast majority of the drug is consumed by IDU (and hence seizures relate to drugs that would have been consumed by IDU), the amount of amphetamines seized and analysed in Table 3.3 that would have been consumed by IDU is unknown. Therefore, the extent to which the characteristics of the amphetamines analysed in Victoria represent the characteristics of the amphetamine market accessed by IDU is unknown.

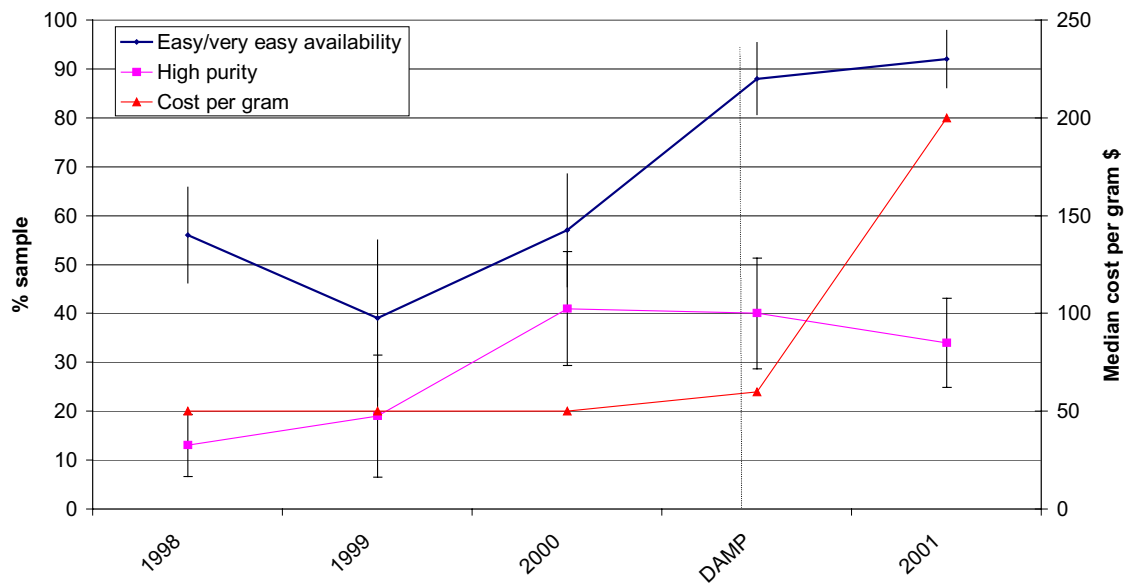
**Table 3.3: Mean purity of amphetamine seizures analysed by the Victorian Forensic Science Centre, 1997/98-2002/03**

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03*
Mean purity	11	11	15	21	20	30

Source: Victorian Forensic Science Centre, \*2002/2003 data not based on unit records

Information on the reported price, purity and availability of amphetamines (in this case ‘speed’ powder) is available from IDU surveys conducted in Melbourne over the period 1998-2002. Reasonable percentages of these samples felt able to comment on the amphetamine market (range = around 24-80% of samples). Figure 3.3 shows that reports of easy/very easy availability among participants increased dramatically in the surveys conducted after the onset of the heroin shortage. Reports of high purity also increased but this increase first appeared in the 2000 IDRS survey and stabilised in subsequent surveys. Further, the median reported costs of amphetamines appeared to increase in the surveys conducted after the onset of the heroin shortage. In all, these findings suggest that the availability of amphetamines of a higher purity than that seen in the late 1990s increased in the drug markets accessed by IDU around the time of the onset of the heroin shortage. Further, there does appear to have been an increase in the price of amphetamines accessed by IDU after the onset of the heroin shortage.

**Figure 3.3: Percentages (and 95% CIs) of IDU survey samples reporting easy/very easy availability and high purity of amphetamines and the median reported cost of 1 gram of amphetamines in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

### 3.3.2 Other drugs

Information on the reported price, purity and availability of drugs other than heroin or amphetamines is available from IDU surveys conducted in Melbourne over the period 1997-2002. These surveys showed little change in the reported price, potency and availability of cannabis over that time (Jenkinson et al., 2003). With respect to changes in the market for other drugs such as ecstasy and cocaine, in most surveys there were either no major changes noted over time or too few respondents to allow for reliable examination of changes in the market for these drugs that could be attributed to the onset of the heroin shortage. Similar considerations apply to seizure data for these drugs which is often based on small numbers and/or showed little variation over time that could be attributed to the onset of the heroin shortage.

### 3.4 End of an epidemic?

In considering the way in which the heroin shortage in Melbourne (and Victoria more widely) should be characterised, it has been suggested that the shortage best represents the end of a heroin 'glut' or a decline from the peak of the most recent epidemic in Melbourne, rather than a 'drought' per se (Dietze & Fitzgerald, 2002). Implicit in this claim is the notion that heroin supply in Melbourne moves through cyclical stages and, while the effects of the heroin shortage experienced in late 2000/early 2001 were acute, they represented a return towards more 'normal' heroin market conditions. Almost one third (28%) of Key Informants reported that they believed that the change in supply of heroin should be reported as the end of an oversupply of heroin (a glut) rather than shortage or drought:

*"I mean I talk about the epidemic because from where I sit it was a lot more obvious. Because it went from being what I would have considered a plateau...where it was to being this huge glut. Then it has dropped down and it has stabilized again on the other side and then it is falling off. Maybe that final falling off is a result of the Fiji seizure and some of those other things"*

*coming together but maybe it had already stabilized back to what it was before it became an epidemic.” (Forensic Scientist, Victoria Wide)*

The return to previous supply levels was described by one Key Informant as such:

*“this just took us back to times, say, six or seven years ago, I would have thought so, because I can’t see any great difference between now and prior to that surge of drug use or drug availability. Now, there have been a couple of sort of mini droughts over Christmas that people prescribe but whether they’re whinging or they have run out of money, I don’t know.” (GP, South Eastern Melbourne)*

To this end some Key Informants reported little effect of the heroin shortage on their operational procedures in that people continued to use heroin right through the shortage and operations continued as before – albeit with more difficulty:

*“I suppose my answer to that is “what shortage?”. I’ve never really seen it to the stage where, when you think of the term “shortage” or you think of the term “drought”, you know, it’s where people are really having difficulty getting what they need and I don’t think it ever got to the stage where people were who wanted heroin couldn’t get it. It probably got to the stage where they had to work harder to get it and had to pay more to get it, and they had to be a bit more resourceful to get it but I don’t think.....you may be able to speak to users that can give you first hand knowledge of “no, there were weeks when I couldn’t”, but I would find that hard to believe. I don’t doubt that if they couldn’t get it here they’d go to Springvale or they’d go to Footscray or Richmond. We never went through a period where we just couldn’t arrest someone for heroin or trafficking. If you worked harder to do it, just like they worked harder to get on, but we always managed to do it.” (Senior NCO, Central Melbourne)*

While the characterisation of the heroin shortage as the end of an epidemic may be an accurate description of the changes in heroin supply observed in Victoria, the acute effects of the shortage warrant examination in direct relation to the characteristics of the heroin market directly preceding their onset (in part because data for the period prior to the heroin ‘epidemic’ are largely unavailable). For this reason the experience of the heroin shortage is considered as a discrete entity in the remainder of this report.

### 3.5 Conclusions

Available data suggests that there was a dramatic decrease in the supply of heroin in Victoria that was generally agreed to be at its most acute in December 2000 – January 2001. The onset of this decrease appeared to vary between areas but it would appear that many (perhaps most) IDU continued to access the drug during this time. However, while IDU were able to access the drug with some greater difficulty, it would appear that the purity of the drug decreased and the cost increased and these effects are undoubtedly responsible for some of the effects detailed in subsequent sections of this report. The majority of the dramatic changes appear to have been relatively short-lived with longer-term trends in increased availability and purity of heroin and subsequent decreases in cost. Overall, the characterisation of Melbourne’s heroin market in the available period suggests a return to pre-epidemic levels seen over the 1998-2000 period.

The changes in the heroin market that characterised the heroin shortage appear to have had little impact on the market for drugs other than amphetamines. In relation to amphetamines, it would appear that the availability and purity of the drug, as accessed by IDU and the purity of the drug more generally, increased as a result of the heroin shortage. The impact of this shift in the amphetamine market for IDUs is considered in detail in subsequent sections of this report.





## 4 Changes in drug use among injecting drug users

### Summary

As a result of the heroin shortage:

- Heroin use among IDU sampled in Melbourne declined
- Self-reported frequency of injection among IDU sampled in Melbourne declined
- Needle and Syringe distribution through the Victorian needle and syringe program declined to 1999 levels (from a peak evident in 2000) and the rate of increase after the shortage was dramatically less

However, available data suggests that the heroin shortage had few effects on the extent of injecting drug use in Melbourne and Victoria more widely. This suggests that IDU shifted towards the use of other drugs as a substitute for heroin. Available data suggested that this was the case with the heroin shortage resulting in reports of increases in:

- Amphetamine use and injection
- Benzodiazepine injection (particularly temazepam gel-capsule preparations)
- Opioid injection (particularly Kapanol and MS-contin)
- Cannabis use
- Ecstasy use

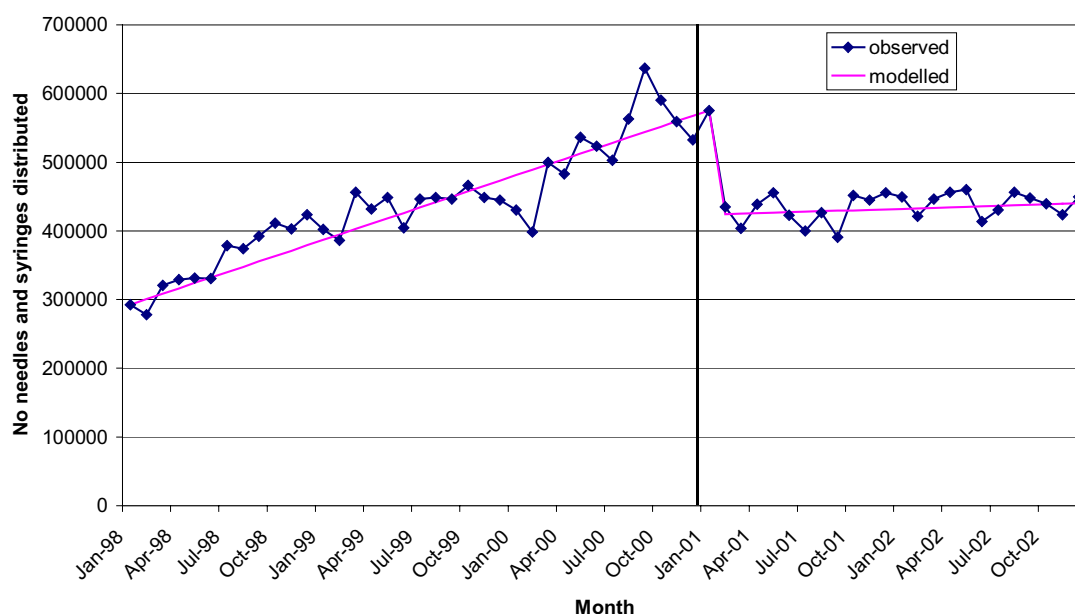
These changes appeared to be sustained in the longer term through the emergence of a market for the injection of pharmaceuticals. This market most recently appears dominated by buprenorphine (following its widespread availability as a treatment option in Victoria) and other opioids (possibly as a response to restrictions on the prescription of benzodiazepines).

There were few consistent reports of any major changes in the use and/or injection of other drugs such as cocaine.

## 4.1 Extent of Injecting Drug Use

The incidence and prevalence of injecting drug use in Victoria remains largely unknown. For example, available estimates drawn from household surveys do not provide reliable or precise estimates of the prevalence of injecting drug use in Victoria, requiring recourse to other data sources in the determination of the prevalence of, and/or trends in, injecting drug use (eg Commonwealth Department of Health and Aged Care, 2002; Hay & Smit, 2003). One secondary data source of that allows for some measure of trends in injecting drug use is data on the distribution of injecting equipment through the Victorian needle and syringe program (NSP). To the extent that NSP distribution data represent a proxy measure of rates of injecting drug use, they represent a useful measure of trends in injecting drug use in Victoria.

**Figure 4.1: Needle and syringe program distribution figures (actual and modelled) in Victoria, January 1998-December 2002**



Source: Victorian Needle and Syringe Program, Department of Human Services

Figure 4.1 shows the observed number of needles and syringes distributed through the Victorian needle and syringe program (through fixed and off-site services) for the period January 1998 – December 2002. The data shown demonstrated a clear upward trend, peaking just before the onset of the shortage after which the numbers of needles and syringes distributed appeared to plateau at 1999 levels. The results of the time series analysis (see appendix A4.1) conducted showed a simple differenced series with a step function best fitted the data and this function is detailed in Figure 4.1. This step represents a 26% decrease in the number of needle/syringes dispensed in the month after the onset of the heroin shortage. A change of slope occurred at the time of the shortage, from a monthly increase of 7,846 needle/syringes per month before the shortage to 731 per month after the shortage ( $r\ t = -2.44$ ,  $p < 0.01$ ). This represents a return to mid-1999 needle/syringe distribution levels with a reduced (by > 90%) rate of increase.

Interpreting these changes in needle and syringe distribution data is difficult. The first point to be made is that there were reports of stockpiling of injecting equipment by needle and syringe program distribution points around the time of the onset of the shortage (as an offset to shortages in injecting equipment reported in 2000, Glenn Zimmer, personal communication). This is unlikely to have had any major impact on the longer-term trend in program distribution figures as

any injecting equipment would need to be distributed in the longer term (unless agencies have unlimited storage capacity). Therefore, the data suggest that there was an overall increasing rate of drug injection in Victoria from January 1998 to the end of 2000 that was followed by a decline in the first months of 2001 after which rates returned to 1999 levels with a smaller increase evident thereafter. A conservative interpretation of this pattern would suggest that the pool of IDU in Victoria peaked in 2000 and declined after the heroin shortage to 1999 levels. However there are a number of possible explanations for this trend (eg a number of IDU ceased injecting) that need to be considered in light of available evidence around patterns of drug injection and drug use more widely among IDU.

Data drawn from convenience samples of IDU do provide some context for interpreting the trends evident in needle and syringe distribution data. While limited by sampling considerations (the extent to which convenience samples are representative of IDU more generally is unknown, see Topp, Degenhardt, Day, & Collins, 2003), there are a number of IDU surveys that have been conducted in Melbourne in which information on self-reported frequency of drug injection is collected. The distribution of the reported frequency of drug injection across a series of IDU surveys across the period 1999-2002 is shown in Table 4.1. Inspection of this Table suggests that the distribution of reported frequency of drug injection shifted towards less frequent injection in early 2001 (indexed first through the DAMP study). This trend appeared largely entrenched in subsequent surveys.

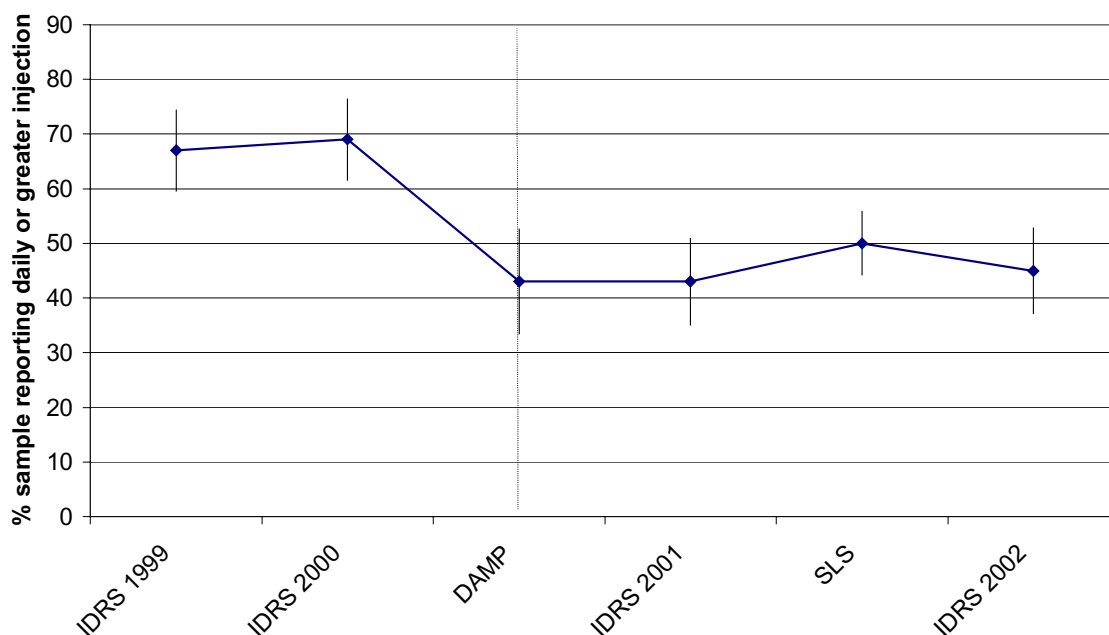
**Table 4.1 Reported past-month injection frequency in available IDU surveys in Melbourne, 1999-2002**

Reported past-month frequency of injection	IDRS 1999 n=154	IDRS 2000 n=152	DAMP 2001 n=103	IDRS 2001 n=151	SLS 2002 n=287	IDRS 2002 n=156
Weekly or less	15	9	28	23	16	23
More than weekly	18	22	30	33	33	32
Once a day	20	22	14	15	20	19
2-3 times per day	36	32	19	23	24	17
>3 times per day	11	14	10	5	6	9

Source: Turning Point Alcohol and Drug Centre

A more parsimonious presentation of the data presented in Table 4.2 is shown in Figure 4.2 in which the proportion of the samples that reported daily or greater frequency of drug injection is shown. This figure clearly shows that the proportion of the respondents reporting daily injection declined dramatically as a result of the shortage and that this rate stabilised at this lower level in subsequent surveys.

**Figure 4.2: Percentages (and 95% CIs) of IDU survey samples reporting daily or greater injection in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

The information in Figure 4.2 suggests that there was a 35% decline in the proportion of the IDRS sample reporting daily or greater frequency of injection in 2002 compared to 2000. A simple extrapolation of this figure to the needle and syringe data detailed above more than accounts for the 24% decline evident in Figure 4.1 that was associated with the heroin shortage. While such extrapolation should be interpreted with caution (eg the figures are drawn from convenience samples in Melbourne alone while needle and syringe data are complete and drawn from the whole of Victoria) it does provide limited evidence to suggest that the size of the total pool of IDU remained largely unchanged as a result of the heroin shortage (ie people did not immediately stop injecting altogether). It may also indicate that the size of the pool remained relatively stable across the post-shortage period for which data are available (ie through to December 2002). Given the decreased availability of heroin associated with the shortage, this suggests that IDU may have turned to using other drugs during, and possibly after, the peak of the shortage. Indeed, such a conclusion is consistent with the reports of Key Informants interviewed for this study who suggested that IDU did not stop using or injecting drugs as a result of the shortage:

*“Well, that when people can’t get their hands on reasonable ....they will not stop injecting They will just inject something else and so that’s one thing that doesn’t change. And wont if it completely disappeared. So that’s one thing that people do need to remember.”*  
(Primary health care worker, Inner Melbourne)

In Australia it is widely accepted that the preferred route of heroin administration is through intravenous injection (Darke & Zador, 1996). Implicit in the discussion of trends in needle and syringe distribution in Victoria prior to the heroin shortage was the assumption that the majority of needles and syringes provided through the program were used for the injection of heroin (see, for example, Kutin, Rumbold, & Dietze, 1997). This assumption is consistent with reports from IDU sampled as part of the IDRS studies conducted in Melbourne throughout the period 1997-2000 (Dwyer & Rumbold, 2000; Fry & Miller, 2001; Rumbold & Fry, 1998, 1999b) in which almost all

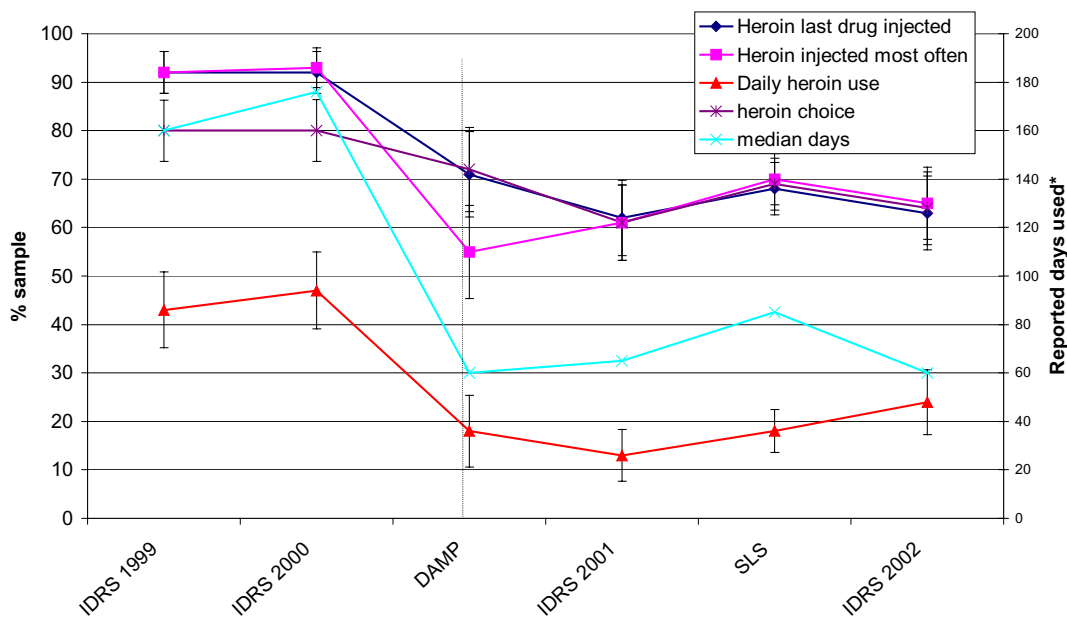
participating IDU reported injecting heroin in the six months prior to being surveyed and with medians of near-daily use of the drug reported by the samples. This contrasts with other drugs such as amphetamines which, while widely reported as having been used by participants (between 40% & 53% of sampled IDU across 1997-2000), were reportedly used far less frequently (ranging from a median of between 4 & 10 days in the six months prior to being surveyed across 1997-2000). This situation changed dramatically as a result of the heroin shortage and is discussed in detail below in relation to reported changes in the use and injection of specific drug classes by IDU.

## 4.2 Heroin use

As would be expected, the change in heroin availability during the heroin shortage appeared to result in substantially reduced heroin use among IDUs across all data sources. All Key Informants reported such changes. However, while these Key Informants reported that many IDU were unable to obtain heroin for a period, one Health Key Informant and one Law Enforcement Key Informant reported that there was always some people who could obtain heroin, even though the heroin would be of poor quality and very expensive. This finding is consistent with the reports on the heroin shortage detailed in section 3 of this report along with those obtained from IDU through the DAMP study (Miller et al., 2001) where IDU participants reported frequent heroin injection even at the height of the shortage (December 2000 – February 2001).

Findings from available IDU surveys conducted in Melbourne over the period 1999-2002, detailed in Figure 4.3, show dramatic decreases in some of the key patterns of reported heroin use after the onset of the heroin shortage. These declines are evident in the proportion of the samples reporting daily use of heroin (a decline of around 50% evident between 2000 & 2002 with a concomitant reduction in median of reported days used of around 65%), heroin as the last drug injected prior to being surveyed and the drug injected most in the month prior to being surveyed (a decline of around 30% for both measures between 2000 & 2002). These changes were evident in spite of much smaller changes in drug preference with the majority of all samples reporting heroin as the main drug of choice (a decline of only around 20% between 2000 & 2002).

**Figure 4.3: Percentages (and 95% CIs) of IDU survey samples reporting daily heroin use, heroin as last drug injected, heroin as drug injected most often and median days of reported heroin use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

\*note DAMP study estimates multiplied by 3 as only 60 days prior to interview canvassed

## 4.3 Substitution of other drugs for heroin

When considered in light of the discussion of injecting drug use above, the findings with respect to heroin use suggest that heroin users (or injecting drug users in general) shifted to the use and/or injection of other drugs as a result of the heroin shortage. Evidence of this shift towards the use of drugs other than heroin is considered below in relation to a number of key drug classes.

### 4.3.1 Methamphetamine

Almost all Key Informants reported an increase in methamphetamine use amongst IDUs with whom they had contact. Many participants identified this as the major response of IDUs to the reduction in heroin supply. One element to this increase that was reported by three Health Key Informants was that methamphetamines were commonly used to help with heroin withdrawal:

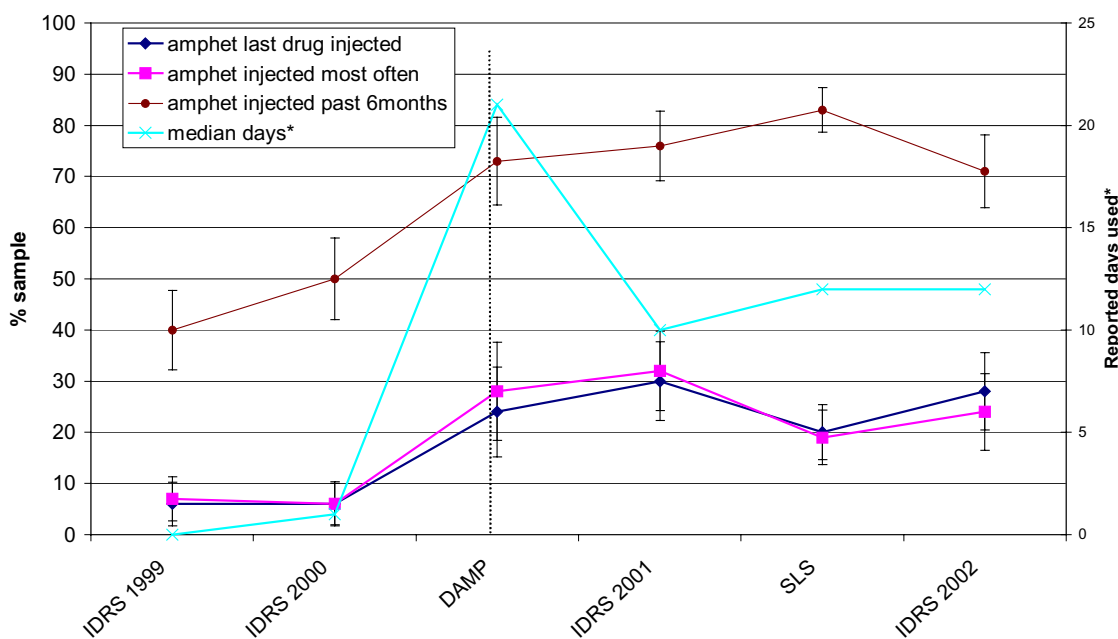
*“But certainly just talking to people on the street, there were people who were injecting speed on a daily basis for a period around that time, who were heroin users before. We had daily reports from quite a few people using amphetamines to...to withdraw from heroin... the principle is that you don’t worry about trying to get to sleep because you’re speeding and then when the speeds wears off, you’re exhausted and so they sort of speed their way through the withdrawal. Yeah.” (NSP worker, Melbourne Central)*

Nevertheless, impressions appeared to differ between some Key Informants with one law enforcement Key Informant (Senior NCO, South Eastern Melbourne) reporting no increases in methamphetamine use in his area. Further, some Key Informants reported that the increase in methamphetamine use was not sustained among all groups of IDU. For example, one Health Key Informant reported an increase in methamphetamine use among young IDU at the time of the shortage that was not sustained:

*“We had a definite period there at that point after the glut where we suddenly saw an increase in the methamphetamine and a whole lot of those stimulant type of drugs and I think we talked at the time about how we thought that was worrying because of the traumatic backgrounds of so many of these kids and hyper-arousal is so much a part of their problem...that we were really wondering where that was going to go. Fortunately that didn’t get to epidemic proportions and it seems that they have gone back to settlers, depressants rather than stimulants which I’m relieved about.” (Youth outreach worker, Victoria Wide)*

The reports of Key Informants were largely consistent with findings from available IDU surveys conducted in Melbourne over the period 1999-2002. For example, 71% of respondents to the DAMP study (Miller et al., 2001) reported an increase in the number of days on which they had used amphetamines in the period January-February 2001. Figure 4.4 shows that this type of increase in reported amphetamine use after the onset of the heroin shortage was demonstrated across all of the key patterns of amphetamine use in the surveys conducted in 2001 and that these patterns appeared entrenched in subsequent survey findings. For example, the median days of amphetamine use reported by participants increased from 1 in 2000 to 21 in early 2001 and stabilised at between 10 and 12 in subsequent surveys. Initial inspection of available data suggested that these increases were consistent across age and sex groupings. Further, in contrast to the reports of some Key Informants, rates of reported amphetamine injection remained high across all age groups in the most recent survey data available for analysis (2002).

**Figure 4.4: Percentages (and 95% CIs) of IDU survey samples reporting amphetamine injection in the six months prior to the survey, amphetamines as last drug injected, amphetamines as drug injected most often and median days of reported amphetamine use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

\*note DAMP study estimates multiplied by 3 as only 60 days prior to interview canvassed

One important issue raised by Key Informants was how the apparent shift from the use of a depressant drug (heroin) towards stimulant (primarily methamphetamine) use reflected on understandings of drug use and dependence:

*“people who made that shift from THE depressant to THE stimulant or ..... They were the*



*lovers of intoxication. They were people who....there use to be a thing where you are a heroin user or a speed user and even within that there were people who were considered they would whack up anything. They are people who just want to get out of it.*

*So, you have your elite heroin and your elite speed users who would possibly never meet and then there is a drifting population who would either move from one to another or be going back and forth from one to the other depending on what was around, on what was available. I think there are people who just want to be intoxicated, its not that they want to be up or down, they just want to be other than themselves.*

*They will take pills and they will smoke cones and they will go up or down or hallucinate. They will move in any direction other than the horror of the space that they have got... They just want to move in another direction from the space that they feel that they are. I think those people will always exist. Poly drug users! Classic Poly drug users!" (Outreach Worker, Central Melbourne)*

*"I never really figured that out, I mean I understand just that profound longing to escape sobriety, you know what I mean, it is like "Anything will do." But, my god, it is such a leap from the effect that they normally get." (Researcher, Victoria Wide)*

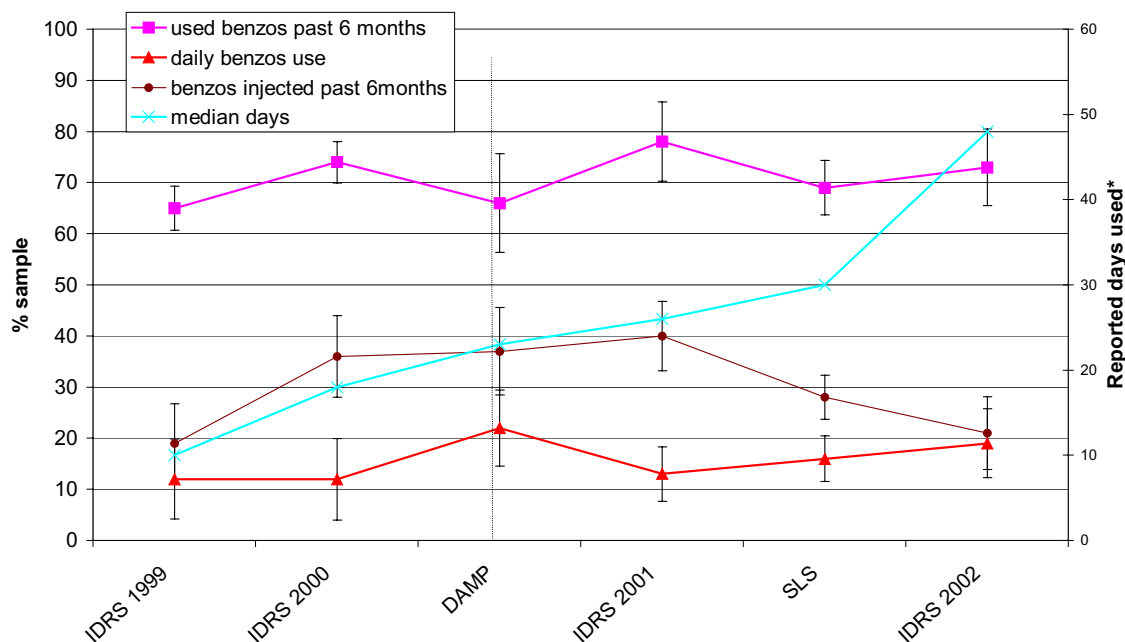
#### **4.3.2 Benzodiazepines**

One other major consequence in terms of drug use related to the heroin shortage identified by the majority of Key Informants was the increase in the injecting of benzodiazepines (in particular temazepam). This change appeared to be a long-term change in the drug-using behaviours of IDU.

*"probably that also brought on line also, in a much bigger way that we ever had, that was the use of temazepam. And it led to and like still now, we've still got a hang-over from that two years later where a lot of young people we know and not so young people, they won't use heroin unless they've got temazepam as well to use with it. Because, you can understand it, I mean, we had a five year thing of heroin...not just getting you stoned, getting you beyond beyond, you know, people trying to walk up three stairs and doing the dance with the dragon half way up the second stair where they were literally stuck, stuck in time for minutes, minutes, ten minutes. ...And the quality of heroin post the disruption to supply wasn't getting you there, so the mixture of heroin and temazepam was giving you that beyond beyond and I think that is what they were after and I think that is what made temazepam so popular...you know, we've lost numerous people from temazepam related illnesses." (Outreach worker, Western Melbourne)*

Findings from available IDU surveys conducted in Melbourne over the period 1999-2002 on key variables related to benzodiazepine use are detailed in Figure 4.5. These survey findings provide only mixed support for the reports of Key Informants interviewed as part of this research. The prevalence of reported benzodiazepine use in these surveys was consistently high across all survey years and showed relatively little variation across surveys. Further, the reported prevalence of benzodiazepine injection appeared to increase prior to the onset of the heroin shortage and decline in surveys conducted after the introduction of restrictions on the prescription of temazepam gel capsules in May 2002 (see section 8.1). Nevertheless, reported daily benzodiazepine use showed a peak in the survey conducted just after the onset of the heroin shortage (the DAMP study, Miller et al., 2001), with prevalence rates similar across all of the remaining surveys. In addition, the median days of reported benzodiazepine use increased in the surveys conducted after the onset of the heroin shortage, but this trend appeared to be established prior to the onset of the shortage.

**Figure 4.5: Percentages (and 95% CIs) of IDU survey samples reporting daily benzodiazepine use, benzodiazepine use and/or injection and median days of reported benzodiazepine use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

\*note DAMP study estimates multiplied by 3 as only 60 days prior to interview canvassed

### 4.3.3 Cannabis

Some Key Informants reported that cannabis use among IDU occurred regularly prior to the onset of the heroin shortage and that the shortage had little effect on the use of this drug. For example:

*“I would say that a very high percentage of clients smoke cannabis everyday and they probably always have and probably always will and I don’t think the heroin shortage had much effect on that.”(NSP worker, Melbourne Central)*

*“cannabis was always in the background and probably now seems the backstop. When you can’t get something else you go and try and get some cannabis.” (Senior NCO, Western Victoria)*

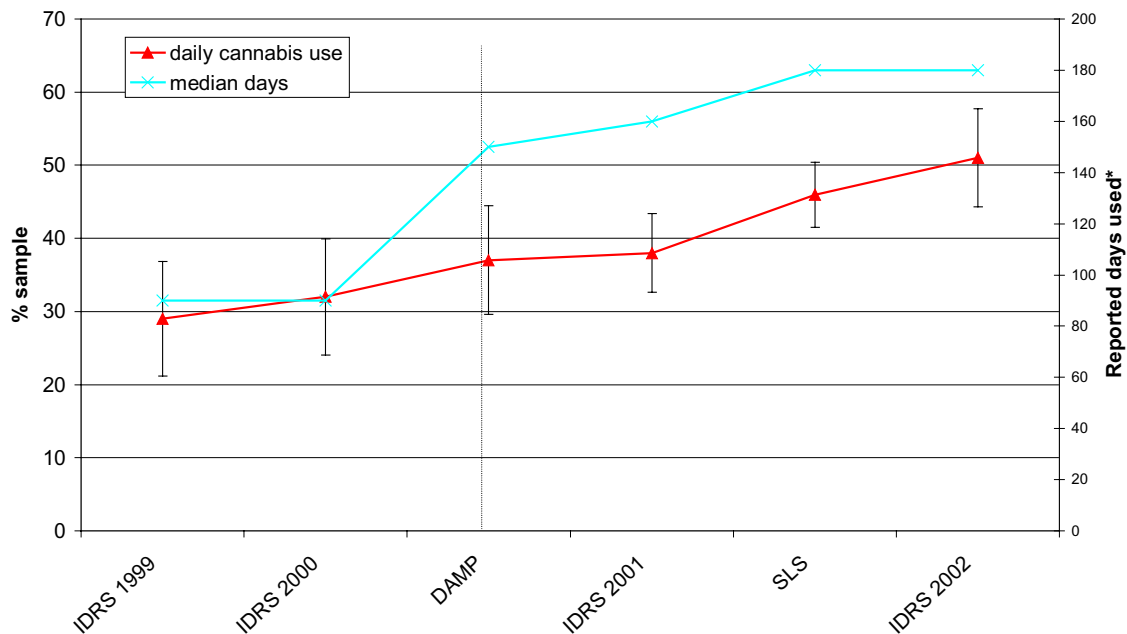
However, alcohol and drug services with a more youth specific focus report that cannabis problems were exacerbated due to the heroin shortage.

*“one of the things that happened just after the glut was suddenly there are seemed to be re-focusing by the A and D. sector on marijuana. The profile of marijuana as a problematic substance is something went through the roof, certainly within {agency}, but I got the impression that it was the same for a lot of services. Now I have to again put on a rider because I think very long waiting lists during the glut and as soon as that finished, the waiting list ceased and so people from regions could suddenly get their clients in and it was around those regions that marijuana was a major issue.” (Youth outreach, Victoria Wide)*

Findings from available IDU surveys conducted in Melbourne over the period 1999-2002 support the contention that cannabis use occurs as a matter of course among IDU. Nevertheless, as shown

in Figure 4.6, the heroin shortage does appear to have some impact on the reported patterns of cannabis use among sampled IDU. In this regard the prevalence of reported daily cannabis use appears to have increased along with the median number of days of use reported by participants. An initial increase in the reported days used seems to have been established around the time of the heroin shortage and continued in subsequent years. The increase in daily cannabis use appears to have only been significant in 2002 in comparison to earlier years.

**Figure 4.6: Percentages (and 95% CIs) of IDU survey samples reporting daily cannabis use and median days of reported cannabis use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

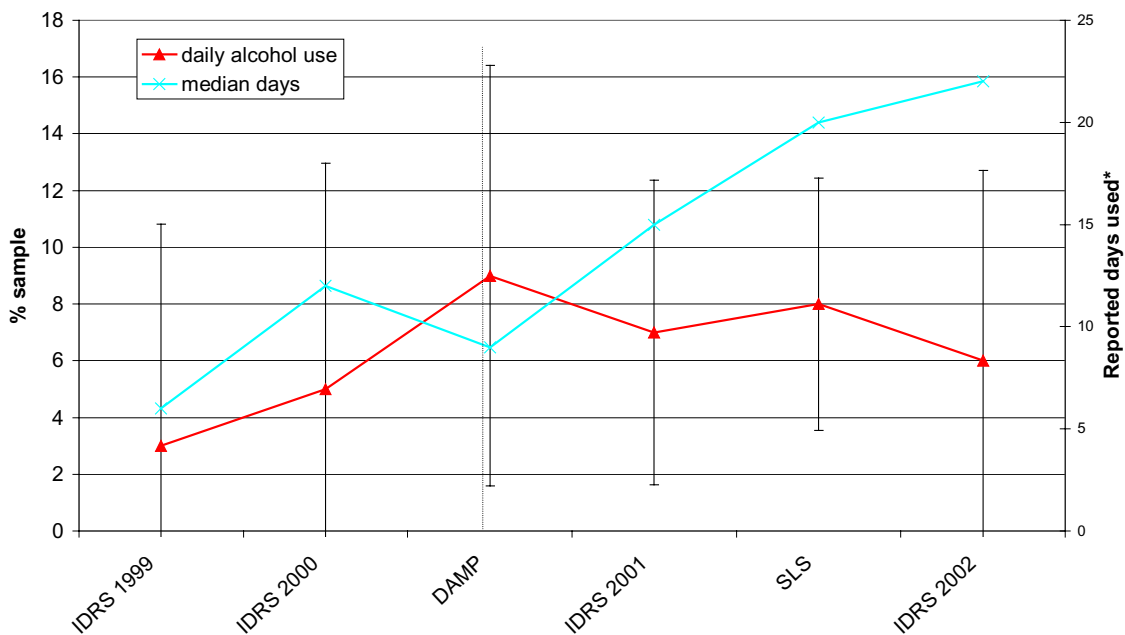
#### 4.3.4 Alcohol

Key Informants reported mixed trends in relation to changes in alcohol use as a consequence of the heroin shortage. It appears that alcohol use within this group is very much an individual preference and only some IDUs would increase their use of alcohol:

*“some of our clients who were already drinkers and they continue to be drinkers, but...I’m also really aware of people changing from heroin to alcohol as a result of the drought. It may have happened, I would be surprised if it didn’t....People that are already poly drug users just branched out into all other things when they couldn’t get heroin. And some people who weren’t terribly poly-drug using picked particular other drugs to use when they couldn’t get heroin.” (NSP worker, Melbourne Central)*

Such reports are consistent with findings of available IDU survey samples conducted in Melbourne over the period 1999-2002, detailed in Figure 4.7, which showed that daily alcohol use was relatively rare among sampled IDU and no discernible pattern that could be attributed to the heroin shortage.

**Figure 4.7: Percentages (and 95% CIs) of IDU survey samples reporting daily alcohol use and median days of reported alcohol use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

### 4.3.5 Pharmaceuticals

In addition to the major increase in benzodiazepine injection noted above, Key Informants reported increases in the use and injection of a number of pharmaceutical drugs. This increase was noted most specifically in relation to morphine and other opioids but the low rate of methadone injection noted in previous research (Lintzeris, Lenné, & Ritter, 1999) does not appear to have increased as a result of the heroin shortage:

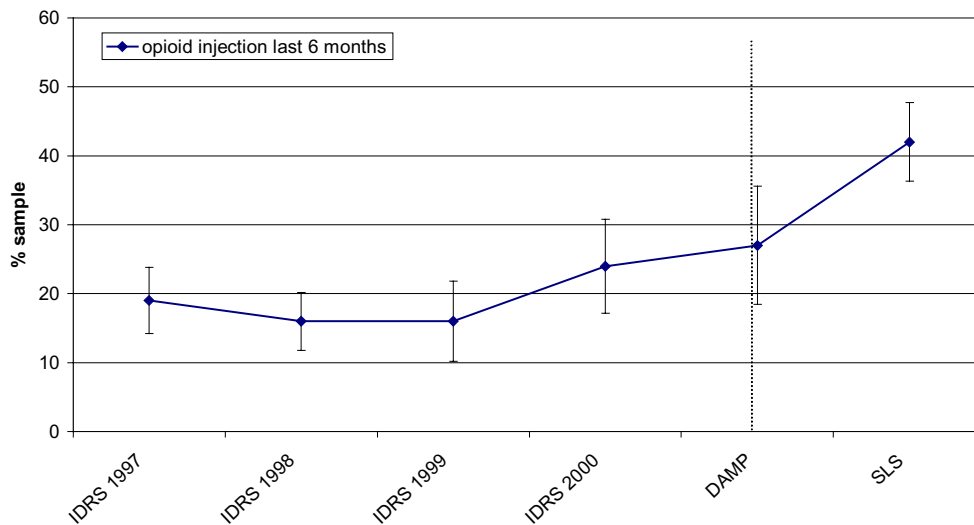
*“Well, the increase in injecting, definitely, MS-contin and Kapanol and I guess buprenorphine too, when people started injecting morphine. I never really saw or heard about any methadone injection.” (Peer Educator, Victoria Wide)*

One law enforcement Key Informant also suspected that the use of anti-depressants may have increased as a result of the heroin shortage.

*“Anti-depressants for sure because they were definitely stolen in the break-ins.” (Police analyst, Victoria Wide)*

Changes in questionnaire design mean that direct comparison of the reported rates of use and injection of opioids across IDRS IDU surveys conducted in Melbourne cannot be undertaken (Jenkinson et al., 2003). Indeed, reports of opioid use by respondents to the IDRS surveys are prior to the onset of the heroin shortage (with little change evident in the DAMP survey conducted around the time of the onset of the heroin shortage) and increase dramatically in the Street life Study survey conducted in 2002. This may reflect the increases in morphine injection reported by Key Informants as the injection of these drugs was noted through detailed questions asked of IDRS respondents in 2001 (32% of the sample reporting morphine injection) with a substantive increase found in the injection of these drugs in the 2002 IDRS (51% of the sample, see Jenkinson et al., 2003).

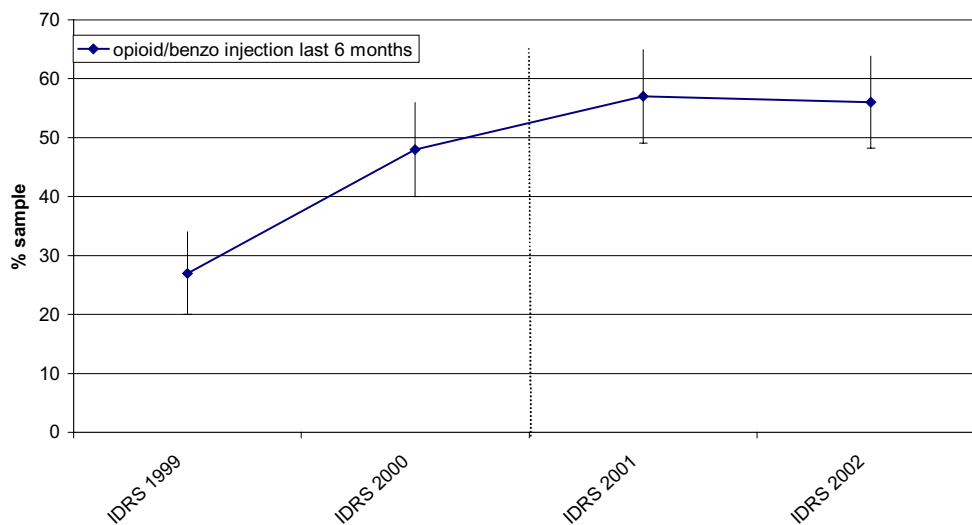
**Figure 4.8: Percentages (and 95% CIs) of IDU survey samples reporting recent opioid injection in Melbourne, 1997-2002**



Source: Turning Point Alcohol and Drug Centre

One potential explanation of the pattern observed in Figure 4.8 is to consider the rates with which the samples surveyed reported injection of opioids and/or benzodiazepines. The increase in reported opioid injection evident in Figure 4.8 appears to have been offset by the decrease in benzodiazepine injection noted in Figure 4.5 above. Figure 4.9 shows the reported rates of recent opioid/benzodiazepine injection in the IDRS studies conducted over the period 1999-2002. This Figure shows that the reported rate of injection of these pharmaceuticals increased from 1999 to 2000 but remained relatively stable in subsequent years. This suggests the possibility that the injection of pharmaceuticals increased prior to the onset of the heroin shortage and changed little as a result of the change in heroin supply. Further, the pattern suggests that with the restrictions on prescription of temazepam gel-capsules IDU turned to inject other pharmaceuticals such as morphine.

**Figure 4.9: Percentages (and 95% CIs) of IDRS IDU survey samples reporting recent opioid/benzodiazepine injection in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

#### 4.3.6 Treatment drugs

Key Informants report that some IDU moved to the use or injection of buprenorphine (designed for oral administration) that appeared initially to be a result of the heroin shortage as well as the wider availability of buprenorphine following its widespread introduction for use as a pharmacotherapy for heroin dependence (see section 6.3):

*“Buprenorphine, shooting up Buprenorphine. That seems to have gone through a hyper stage and I think it still is but I’m not personally seeing it but in a couple of cases.*

*Q: So, did you see that as being related to the drought?*

*A: Yeah, good question, was it related to the drought or was it because bupe was more available. I think it might have been related to the drought in the sense that some people still wanted to shoot something up and so “ok, well we can’t get that opiate based stuff so lets try this opiate based stuff to shoot up because there is now more of it around and the scripts being filled and there’s more this and there’s more that”... I think its influenced by the drought but it’s also influenced by availability as well. And it’s new and people do want to try new things whether it’s bungee jumping or shooting up buprenorphine. The quest for the new experience/the thrill.” (Outreach Worker, Central Melbourne)*

And this practice appears to have continued for some IDU:

*“A lot of people, from observation, older users went onto pharmacotherapies if they could, so, quite a few went onto bupe and didn’t use but are now using again that heroin is back. Perhaps those that swapped always were a poly-drug user anyway and one bloke, that I can think of in particular, swapped and hasn’t been back to heroin, has stuck.” (NSP worker, Western Melbourne)*

These findings are consistent with reported rates of buprenorphine injection that were found in the IDU survey of the 2002 IDRS where 33% of the sample reported recent buprenorphine injection (Jenkinson et al., 2003).

Nevertheless, as noted above, while Key Informants identified an increase in the diversion and injection of buprenorphine and other opioids, very few reported any major changes in the diversion or injection of methadone.

#### 4.3.7 Inhalants

Most Key Informants felt unable to reliably comment on trends in inhalant use. Those that did comment provided mixed responses on how the heroin shortage affected inhalant use. Eight Key Informants reported that they saw an increase in inhalant use related to the heroin shortage:

*“We saw a surge in chroming, we knew people who would normally not be seen as part of the normal chroming population. And I’m talking about people with high levels of drug use, who...and were heroin users in their say, early twenties, using inhalants in much the same way that other people were injecting temazepam, as a way to boost the effect of the heroin and to maintain a level of intoxication that they couldn’t do in way that they were accustomed. And so they were getting into chroming on a more regular basis or taking it up and some of them still are, who are chroming and they say they’re in early to mid twenties, they’re not people you would normally think of, yeah.” (NSP worker, Melbourne Central)*

*“And certainly for some of our kids it seemed after that they did experience it as a drought because they were switching to things like methamphetamine and I said to you that a number of seventeen/eighteen year-olds who had been chromers at thirteen or fourteen had suddenly gone back to chroming.” (Youth outreach, Victoria Wide)*

But others reported that there had been no change:

*“inhalants, not directly associated with other use, I couldn’t say I knew that people who were chromers as well, I couldn’t say that. We were certainly coming across people who were chromers, but not directly in relation to the heroin shortage.” (Senior NCO, Central Melbourne)*

which is consistent with the pattern of reported inhalant use observed in available IDU surveys conducted in Melbourne (Jenkinson et al., 2003).

#### **4.3.8 Other drug use**

No Key Informants reported any substantial move to the use of cocaine or ecstasy by the IDUs they had contact with. Rather, most reported that the use of such drugs was generally undertaken in only an opportunistic fashion. In relation to cocaine, for example, Key Informant reports suggested that the drug was still considered expensive and elitist by IDUs, but they would use it in an opportunistic manner:

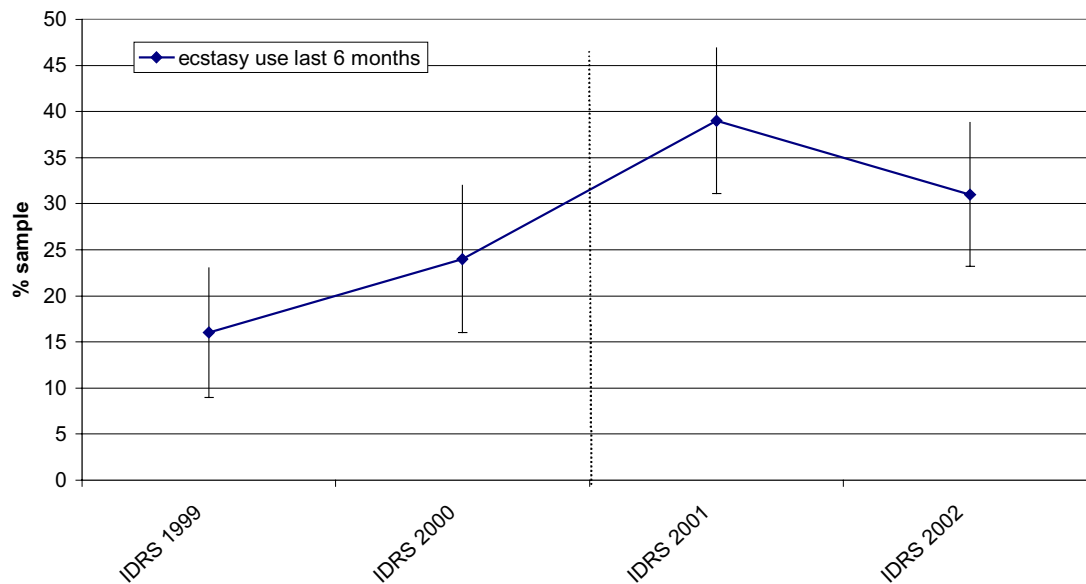
*“There was a period during the drought where I thought maybe we are going to see coke in Melbourne. It seemed to...there seemed to be reports of it when I first made an appearance and I remember hearing a couple of reports of coke being sold on the street and it was like...because I was aware that that had been happening in the Cross for awhile...it was like ‘Wow, maybe...’; but no, it was never really sort of...it never became a consistent story.” (Researcher, Melbourne wide)*

An increase in the use of these drugs was evident in other jurisdictions (especially Sydney). The absence of an increase in the use of these drugs in Victoria was generally attributed to cultural patterns within IDU populations of Melbourne. For example, one Key Informant explained this situation in the context of traditional patterns of illicit drug use in Melbourne:

*“Well, to me this is as much about a cultural situation, as it is about anything else. Cocaine has never really been a drug which is used by, what we might call the main body of drug users in Victoria. It tends to be a drug used by people who you would not normally expect to be drug users. It is, if you like, a party drug or one of those drugs where, say, a business person might once a week on a Friday night might have a snort of cocaine because it is seen to be cool to do it or something like that. Whereas amphetamines, I mean, going back a long way in the mid to late eighties Melbourne was the amphetamines capital of Australia.” (Former Commissioner, Victoria)*

Nevertheless, IDRS IDU surveys (with compatible questions) conducted in Melbourne over the period 1999-2002 suggest an increase in ecstasy use among IDU over time. Figure 4.10 shows that while this increase appeared to occur prior to the onset of the shortage, it peaked in the 2001 survey that canvassed the period directly following the onset of the heroin shortage. This suggests that the heroin shortage may have lead to increased ecstasy use among IDU.

**Figure 4.10: Percentages (and 95% CIs) of IDRS IDU survey samples reporting recent ecstasy use in Melbourne, 1999-2002**



Source: Turning Point Alcohol and Drug Centre

Some Key Informants reported that small numbers of IDU increased use of drugs traditionally associated with other populations of illicit drug users:

*“We had quite...not quite a few, but we had at least five or six people who were very ill and it came down to the fact that they had done this Ketamine.” (NSP worker, South East Melbourne)*

And one Key Informant reported increases in the use of hallucinogens as a result of the heroin shortage:

*“A shit load of trip smoking. I think a lot of people were smoking their way through those initial withdrawals and I think some of them have become more entrenched some of them in that, which has it’s own impacts for mental health.” (Outreach Worker, Central Melbourne)*

However, there was no evidence of any such changes in available IDU surveys conducted in Melbourne (Jenkinson et al., 2003).

#### 4.4 Conclusions

The heroin shortage produced marked changes in patterns of drug use among IDU in Melbourne. The most fundamental shift was a decline in the reported use of heroin by IDU in terms of all of the key variables of heroin use considered. Further, reported injecting frequency among sampled IDU also appears to have declined. However, available data on NSP distribution and reports from Key Informants suggest that there were few changes in the extent of injecting drug use in Victoria. Indeed, combining information from NSP and IDU surveys suggests that the pool of IDU was probably stable or may even have increased even after the onset of the heroin shortage.



The main consequence of the heroin shortage then appears to have been the change in the patterns of drug use reported by IDU. While many of these changes appear to have been established prior to the onset of the heroin shortage, the heroin shortage appears to have exacerbated and entrenched them among IDU. The major changes related primarily to increases in amphetamine and benzodiazepine use and injection by IDU as well as other opioids. Further, there appeared to be a synergistic relationship between benzodiazepine injection and opioid injection such that as benzodiazepine injection declined over time, opioid injection increased (probably as a result of campaigns and restrictions on benzodiazepine prescription). This suggests the emergence of a fluid market in pharmaceutical drugs that has emerged in response to the heroin shortage. There were few consistent reports of increases in the use of other drugs such as cocaine among IDU but there were reports of increased use of ecstasy among this group of drug users.

## 5 Changes in the health effects of drug use

### Summary

As a result of the heroin shortage:

- The number of heroin-related deaths in Victoria declined dramatically (by 85%)
- The number of non-fatal heroin overdoses declined by 52% across Melbourne with the decline another 20% greater in key areas containing street-based heroin markets such as the Central Business District
- The number of hospitalisations for heroin/opiates declined by 61%

There was also a substantial decline in the self-reported experience of heroin overdose among IDU

There were few other quantifiable effects of the heroin shortage on ambulance attendance, blood-borne virus or hospitalisation data. The absence of effects may reflect the inadequacy of existing quantitative data collection systems in capturing information on drug-related harms other than overdose. Nevertheless, some effects were noted including:

- A 16% increase in the number of 'other'-drug related hospitalisations (primarily related to the consequences of IDU)
- Increased rates of self-reports experience of thrombosis among IDU, but this effect appeared some time after the heroin shortage in 2002

Key Informants universally noted the effects of the shortage on acute heroin-related morbidity and mortality. Further, they noted:

- A decline in the general physical health of IDU
- A decline in the mental health of IDU (primarily associated with the use of stimulant drugs)
- An increase in the rate of presentation of pregnant women with stimulant-related issues and associated increases in problems for neo-nates
- An increase in the prevalence of injection-related problems among IDU
- An increase in injecting practices related to risks for blood-borne virus transmission

## 5.1 Introduction

The effects of the heroin shortage upon the health of IDU were indexed through a number of sources. The changes in the health effects of drug use, and injecting drug use more specifically, were cited throughout initial reports of the heroin shortage in Melbourne. These changes generally concerned the acute effects of heroin (indexed through heroin-related fatalities and ambulance attendances) rather than the longer-term outcomes associated with heroin use (eg blood-borne virus infection). The changes in injecting drug use noted in section 4 of this report would be expected to produce changes in the health effects of this drug use.

The key indicator data used in this research to document these health effects of the heroin shortage include those concerning:

- Heroin-related mortality (obtained for the whole of Victoria from the Victorian Institute of Forensic Medicine)
- Drug-related ambulance attendances (obtained for the whole of metropolitan Melbourne from the Melbourne Metropolitan Ambulance Service)
- Drug-related hospitalisations (obtained for the whole of Victoria from the Victorian Admitted Episode Dataset)
- Hepatitis C and HIV notifications (obtained for the whole of Victoria from the Communicable Diseases Section of the Victorian Department of Human Services)

These key indicators of the health effects of drug use are considered in light of reports from Key Informants interviewed as part of this research and available data from surveys of convenience samples of IDU. These surveys included the IDRS IDU surveys and other IDU surveys conducted at Turning Point Alcohol and Drug Centre, and the survey of Needle and Syringe Program attendees conducted by the National Centre in HIV Epidemiology and Clinical Research.

## 5.2 Heroin related mortality and morbidity

The decline in heroin overdose as a result of the shortage was dramatic in Melbourne and Victoria more widely. All Key Informants were aware of the documented changes in the rates of heroin overdose, both fatal and non-fatal. Indeed, this change was universally noted as one of the positive outcomes of the heroin shortage:

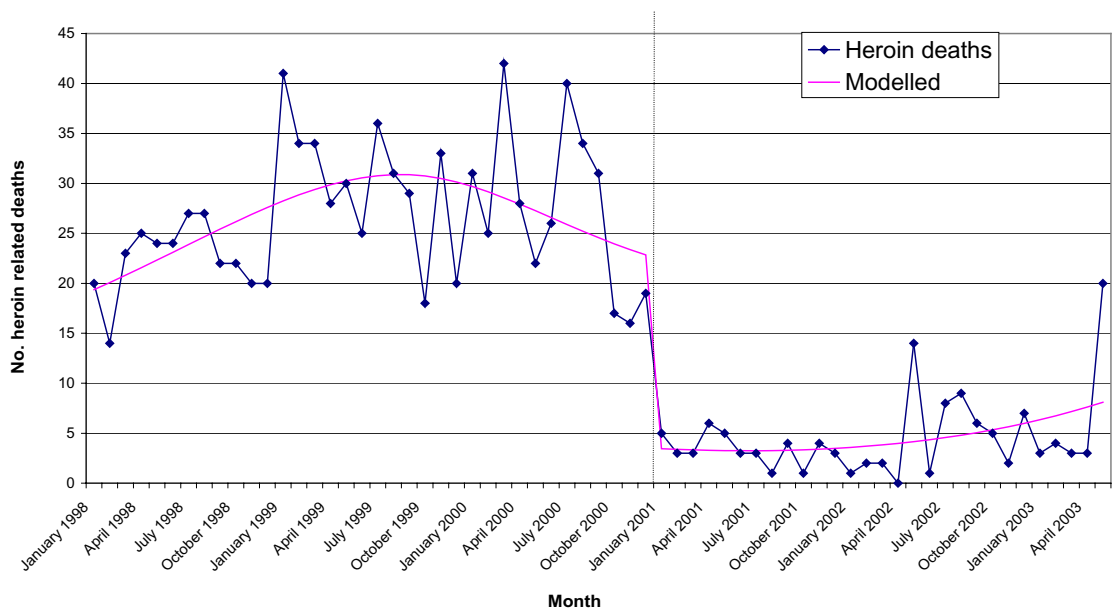
*“the overdoses are way, way down which is one of the...from where I stand, is it one of the few good things that has come out of the drought.” (Researcher, Melbourne wide).*

*“That was the significant...the most significant impact of the disruption to supply was the plummeting of the overdose figures. Which was obviously fantastic. We were having one a day and we went from one a day to, you know, one every four days, which was extraordinary. But that was also in conjunction with an educational thing of, you know, our mantra wasn't “Don't use”, it was “Please don't use alone” because the reality is all those people that passed away, almost all of them were alone and if they had been with someone they wouldn't have passed away.” (Outreach worker, Western Melbourne).*

### 5.2.1 Fatal heroin overdoses (heroin related deaths)

The number of heroin related deaths in Victoria over the period January 1998 – May 2003 is shown in Figure 5.1.

**Figure 5.1: Heroin related deaths (observed and modelled) in Victoria, January 1998-May 2003**



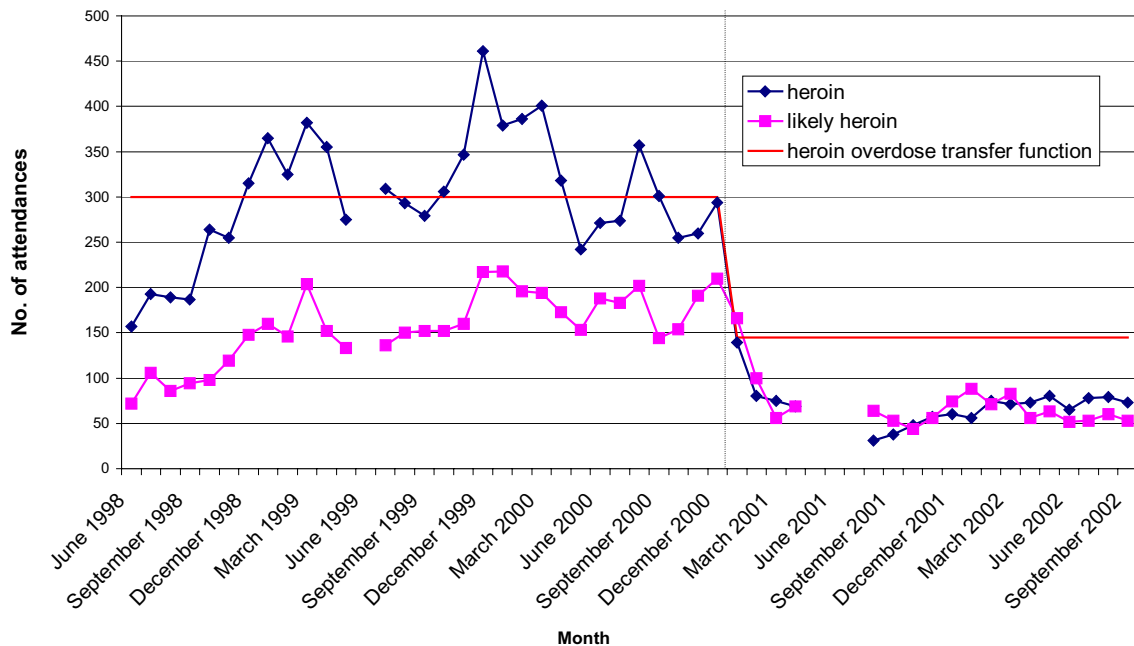
Source: Victorian Institute of Forensic Medicine

The data shown in Figure 5.1 demonstrated a clear upward trend until peaking in 1999 with high levels maintained until the middle of 2000, after which numbers declined. The time series shown in Figure 5.1 was modelled using natural spline smoothers (with 3 knots being sufficient to smooth the data), with a step function tested for the heroin shortage. The results of the time series analysis (see appendix A5.1) showed the resultant function fitted the data well and this function is detailed in Figure 5.1. The step represented a permanent 85% decrease in the number of heroin related deaths that could be attributed to the heroin shortage.

### 5.2.2 Non-fatal heroin overdose

The most reliable indicator of non-fatal heroin overdose available in Victoria is data on ambulance attendances at heroin related events (Dietze, Jolley, & Cvetkovski, 2003). Two types of heroin related event have been derived from available ambulance data in Melbourne; heroin overdoses and likely heroin involved cases (Dietze, Fry, Rumbold, & Gerostamoulos, 2001). Cases of heroin overdose are defined as those ambulance attendances where a positive response to the administration of naloxone has been observed for those people attended by an ambulance and where there is no indication that the overdose resulted from another opiate such as codeine or methadone. Cases of likely heroin involvement are defined as those cases where evidence of heroin use is established through the assessment of the ambulance paramedic or by another person at the scene but naloxone has not been administered. The number of heroin-involved cases attended by ambulance in the Melbourne metropolitan area over the period June 1998 – September 2002 is detailed in Figure 5.2 for both types of heroin involved case.

**Figure 5.2: Heroin overdoses (observed and modelled) and likely heroin involved cases in Melbourne, June 1998-September 2002**



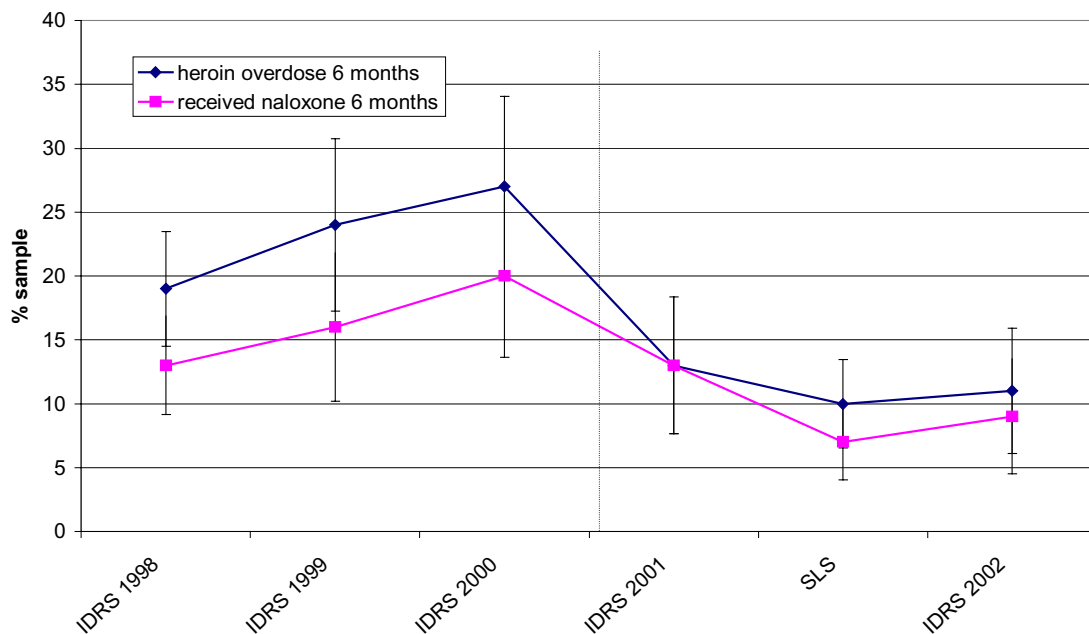
Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

The data shown in Figure 5.2 demonstrated a clear upward trend until peaking in December 1999 with high levels maintained until the onset of the heroin shortage. In analysing this time series only the heroin overdose data were considered as these represent a more reliable indicator of the incidence of heroin overdose (based on a biological marker of response to naloxone administration). The results of the time series analysis (see appendix A5.2) showed a simple step function best fitted the data and this function is detailed in Figure 5.2. This step represented a permanent 52% decrease in the mean number of overdoses per month, occurring at the point of onset of the heroin shortage. The series appeared to become level after the heroin shortage, remaining stable at a mean level of 144 heroin overdoses per month. This number is less than that observed in any pre-shortage month of the time series for the whole of Melbourne (previous lowest figure being 168 for June 1998).

Participants' experience of heroin overdose has been canvassed in a number of IDU surveys conducted in Melbourne. Findings from the available surveys for the time period comparable to that detailed in relation to ambulance data in Figure 5.2 are shown in Figure 5.3. The prevalence of heroin overdose reported by participants as occurring within the six months prior to being surveyed was highest in 1999 and 2000 and declined in subsequent surveys with the pattern almost identical for reported 'heroin overdose' and for the reported receipt of naloxone. In considering the differences between 1998 and subsequent samples it would appear that the prevalence of non-fatal overdose increased by around 50% in 2000, and declined by around 30% in 2002. These figures provide a context for interpreting the ambulance data shown in Figure 5.2 as they suggest that the risk of non-fatal heroin overdose among IDU (indexed by the receipt of naloxone) changed over time (see Topp, Degenhardt et al., 2003, for a consideration of some of these issues). While drawn from convenience samples, the data presented in Figure 5.3 suggest that IDU practices (eg concomitant benzodiazepine use) probably played a role in the increase in non-fatal heroin overdose observed in Melbourne across 1998 – 2000 along with a combination of other factors including market conditions (ie heroin availability and purity) and a probable increase in the overall size of the IDU population (see 4.1 above). Similarly, the data detailed in

4.3 above could potentially explain the decline in the rate of non-fatal heroin overdose after the heroin shortage, where the use of drugs other than heroin by IDU in Melbourne may have contributed to a decline in non-fatal heroin overdose rates even while the size of the overall pool of IDU remained relatively stable (see 4.1 above).

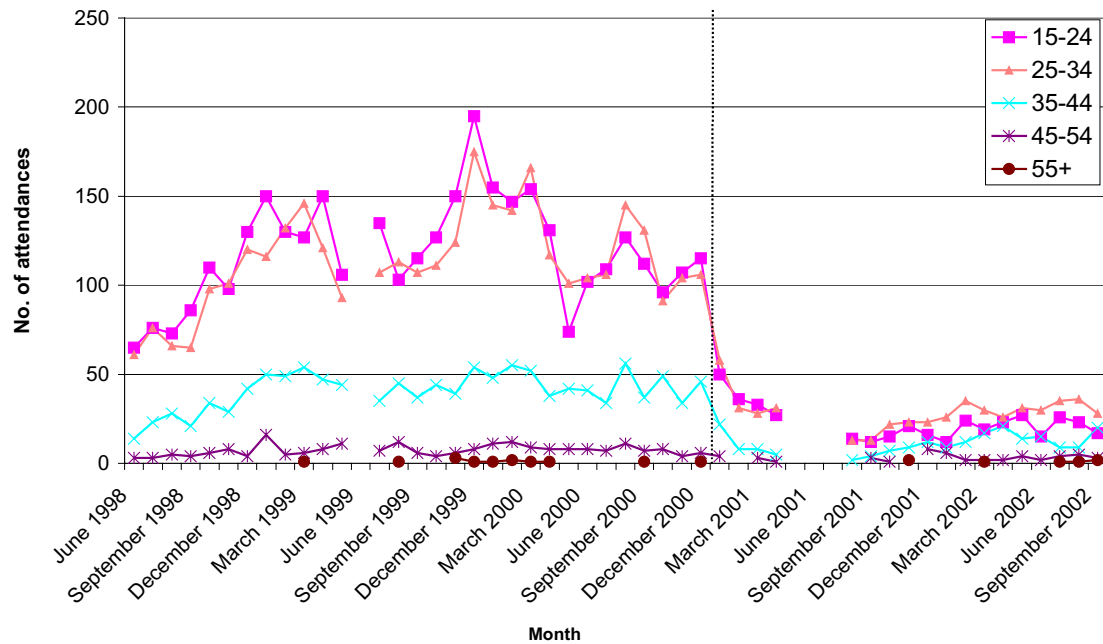
**Figure 5.3: Percentages (and 95% CIs) of IDU survey samples reporting recent heroin overdose and recent receipt of naloxone in Melbourne, 1998-2002**



Source: Turning Point Alcohol and Drug Centre

Figure 5.4 shows the number of heroin overdoses attended by ambulances in Melbourne across different age groups. In order to identify whether the heroin shortage produced changes in the basic demographic characteristics of heroin overdose cases the sex distribution of cases and the mean age of cases for available months in the year prior to the onset of the shortage and the year after the onset of the shortage were compared (excluding months for which data were unavailable for 2001, see Appendix A2 for details). The results of these analyses revealed that while the mean age of cases remained unchanged after the shortage ( $M=27.63$  &  $M=27.31$  for the post- and pre-shortage periods respectively,  $t(3360)<1$ ), the proportion of cases that were male was significantly less in the post-shortage period (69%) compared to the pre-shortage period (77%,  $\chi^2(1)=17.16$ ,  $p<0.001$ ).

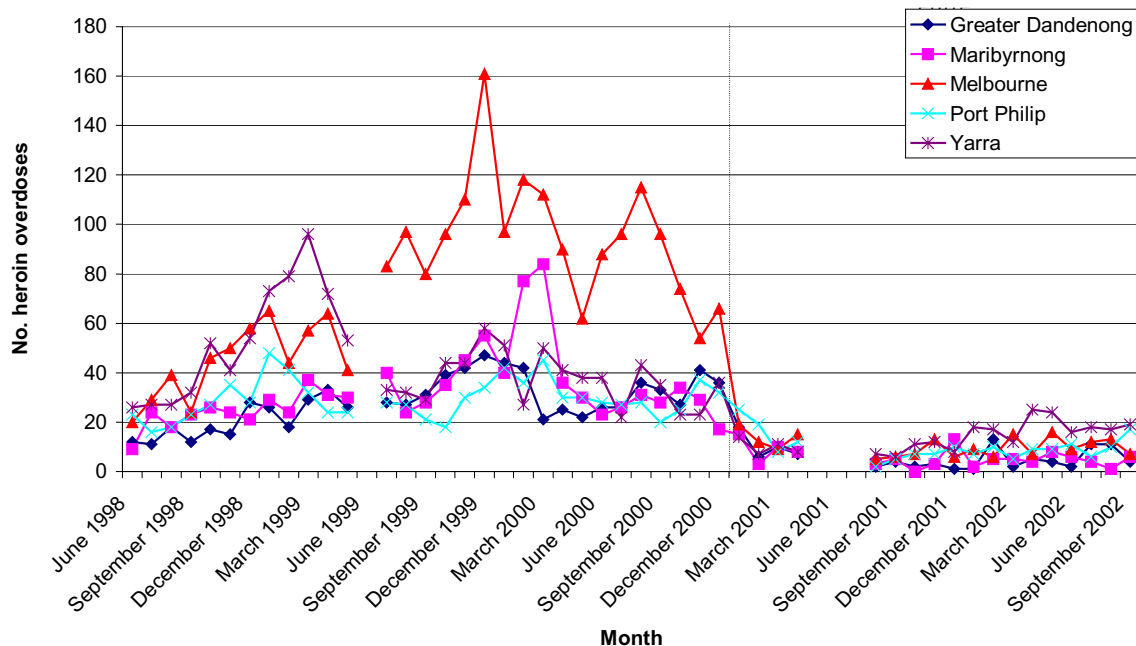
**Figure 5.4: Non-fatal heroin overdoses by age category and % male in Melbourne, June 1998-September 2002**



Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

Data on heroin overdose in Melbourne (both fatal and non-fatal) show significant variation across different areas of the city in which street-based drug markets are known to be located (Dietze, Fry, Rumbold et al., 2001). Non-fatal heroin overdoses occur with sufficient frequency to allow interpretation of patterns and trends at a local area level (Dietze, Jolley et al., 2003). Key Informants reported a decline in the rate of heroin overdose within the areas for which they had extensive knowledge but none reported any differential declines in different areas of Melbourne or the state. Figure 5.5 shows the trends in non-fatal heroin overdose evident for the five Local Government Areas (LGAs) in which the main street-based drug markets in Melbourne were located. This Figure shows not only that the heroin overdose epidemic evident in Melbourne in 1999/2000 was driven largely by the rate of non-fatal heroin overdose in the Melbourne LGA (including the Central Business District), but that the decline associated with the heroin shortage occurred in all of the key LGAs.

**Figure 5.5: Non-fatal heroin overdoses in key Local Government Areas in Melbourne, June 1998-September 2002**



Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

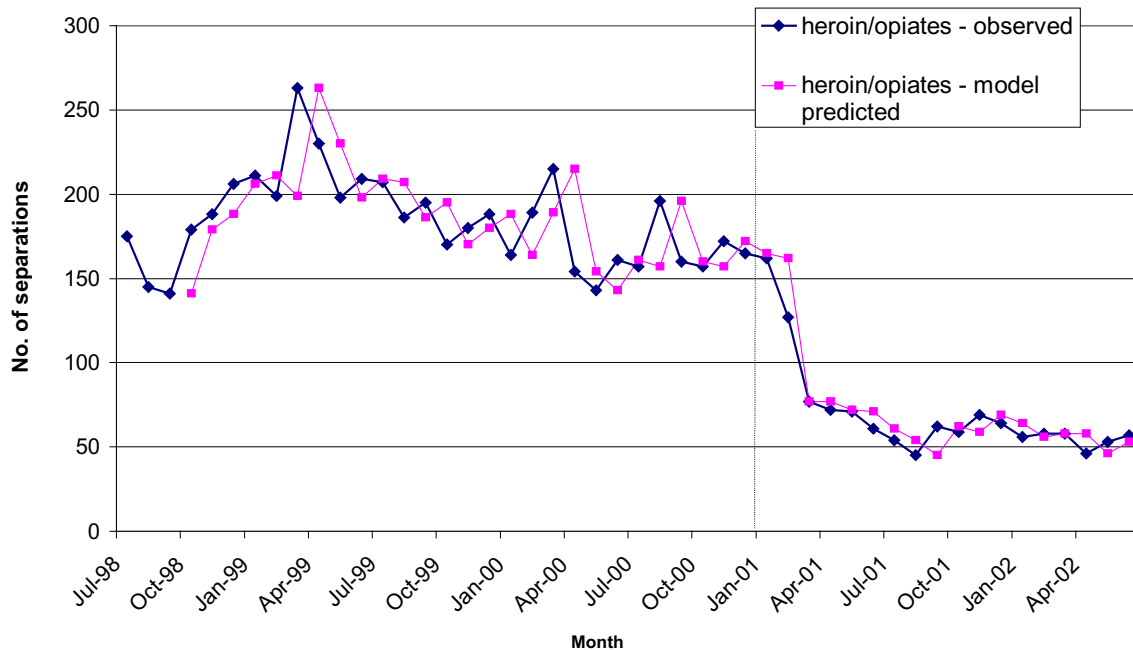
The time series detailed in Figure 5.5 was analysed further to determine whether the rate of decline associated with the heroin shortage varied between areas. The number of overdoses observed allowed only for a comparison of the Melbourne LGA with the remainder of Melbourne (excluding the other four street-based drugs markets). The time series analysis undertaken (see Appendix A5.2) showed that the decline in the remainder of Melbourne was around the 52% level detailed earlier. However, the decline in the Melbourne LGA was one third greater than the decline in the rest of Melbourne (ie there was an interaction between the location of the overdose and the step function) such that the decline in the rate of non-fatal heroin overdose was some 20 percentage points greater in the Melbourne LGA compared to the remainder of the greater Melbourne metropolitan area.

### 5.2.3 Heroin related hospitalisations

The use of heroin can result in a number of health consequences that can ultimately require hospitalisation (Victorian Department of Human Services, in press). While many of these health consequences may result in emergency department hospitalisation alone (Beltz & Dent, 1999), emergency department data available for Victoria is currently unreliable for the coding of heroin related conditions. A substantial minority of hospital presentations for heroin related problems do result in inpatient hospitalisation with data available from the Victorian Admitted Episode Dataset that can be extracted on the basis of International Classification of the Diseases codes (see Appendix A5 for details). The observed number of heroin/opiate related hospitalisations is shown in Figure 5.6.



**Figure 5.6: Observed and model-predicted heroin/opiate related inpatient hospitalisations in Victoria, July 1998-June 2002**



Source: Victorian Admitted Episode Dataset

The results of time series analysis (see appendix A5.3) undertaken using the data shown in Figure 5.6 indicated that a basic step function best fitted the data and this function is detailed in Figure 5.6. This step represented a permanent 61% decrease in the number of pre-shortage heroin/opiate related hospital separations, occurring 2 months after the heroin shortage.

### 5.2.4 Overdose prevention

A final longer-term consequence of the change in heroin supply and the subsequent reduction in overdose rates has been identified as a possible reduction in the perceived importance of overdose prevention messages amongst IDUs. This was identified by twenty one HKIs.

*"...if then people are lucky enough to get on, that sort of overrides the overdose issue."  
(NSP worker, Western Melbourne)*

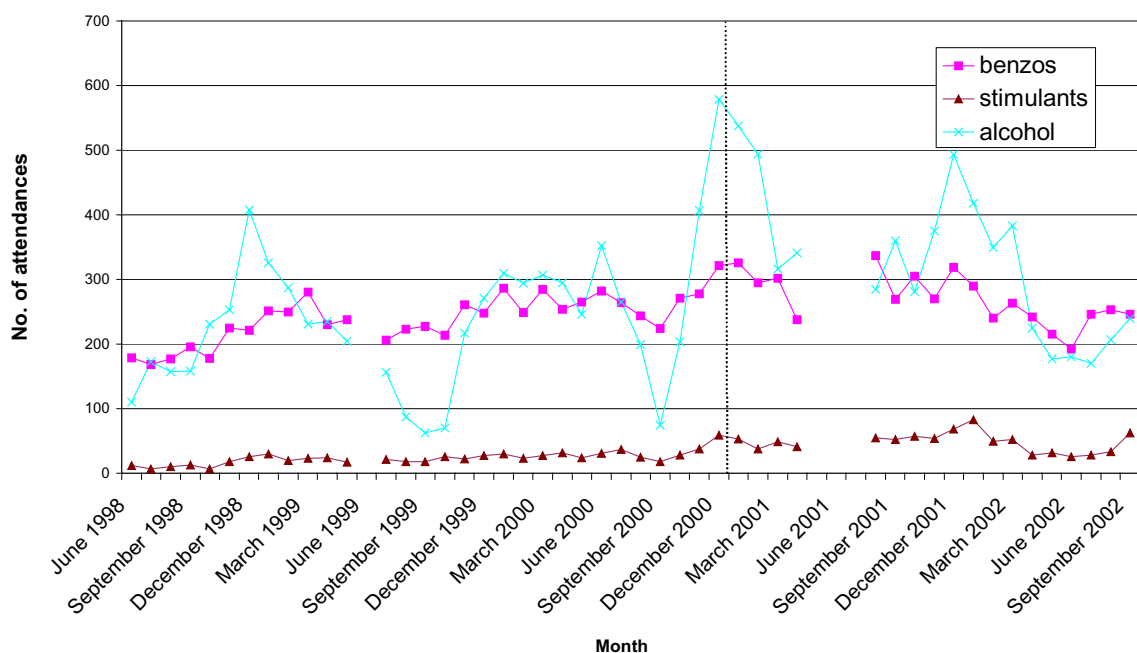
*"I think people are using what they have got now, whereas before when it was easier, people were going "Oh, well, I won't take it all at once." And I think they're forgetting to be as cautious or forgetting that their tolerance has gone down. Or maybe that because they have been subsisting on a diet of temazepam and valium, that it is not such a good thing to use as well. I have not basis for that, it is a gut feeling that, I think, in the very short term when heroin has started to come back, that people are learning to be careful again. We've been to a couple of people who I felt like "You should know better. You've been doing this long enough to not make that silly mistake." But maybe it is...that could just be some kind of selection bias." (Ambulance paramedic, Inner Melbourne)*

### 5.3 Other drug related morbidity

#### 5.3.1 Ambulance attendances involving drugs other than heroin

Ambulance attendance data available for Melbourne is unique in Australia in that it can capture attendances in which drugs other than heroin are involved. Figure 5.7 shows the monthly totals of ambulance attendances in Melbourne over the period July 1998 – September 2002 for cases involving stimulants (including amphetamines, cocaine & ecstasy), benzodiazepines and alcohol. This Figure shows that there appears to have been a small increase in stimulant related cases attended by ambulances after the heroin shortage but few systematic changes in alcohol or benzodiazepine related attendances associated with the shortage (alcohol cases varying markedly on a seasonal basis across all years shown in the Figure).

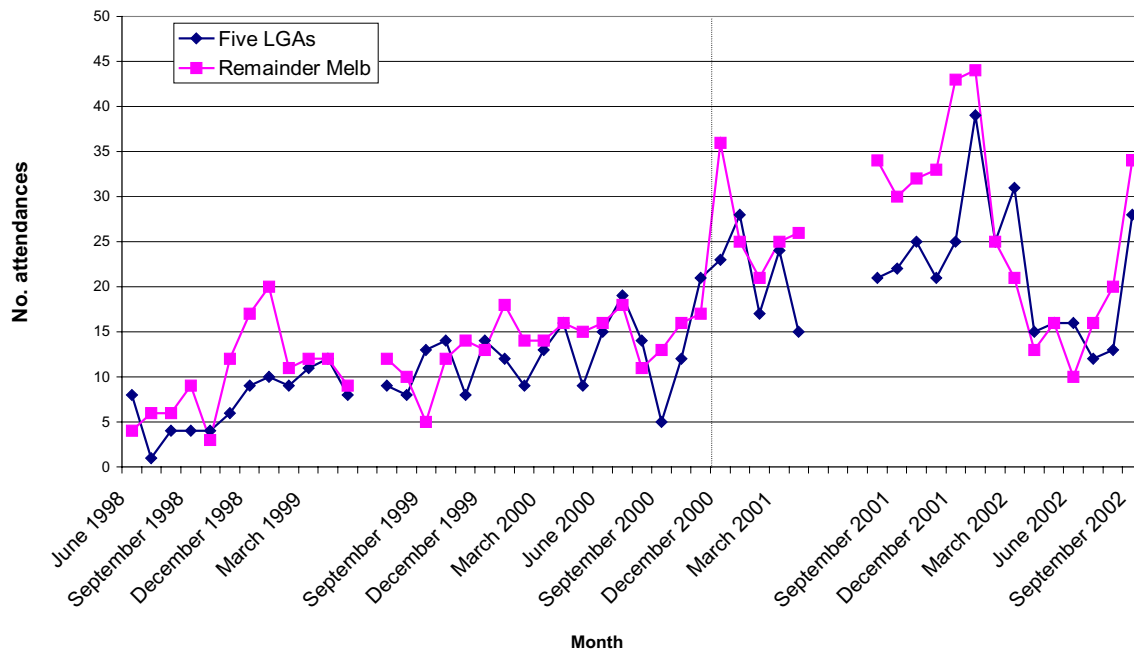
**Figure 5.7: Stimulant, benzodiazepine and alcohol involved cases attended by ambulances in Melbourne, June 1998-Sept 2002**



Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

Further exploration of the stimulant related attendances was undertaken through an examination of the number of stimulant related cases occurring within the five main areas of the city in which street-based drug markets are known to be located (Dietze, Fry, Rumbold et al., 2001). Figure 5.8 shows the total number of stimulant related cases attended in these LGAs along with the remainder of the Greater Melbourne Metropolitan area.

**Figure 5.8: Ambulance attendances involving stimulants in five key Local Government Areas and the remainder of Melbourne, June 1998-September 2002**

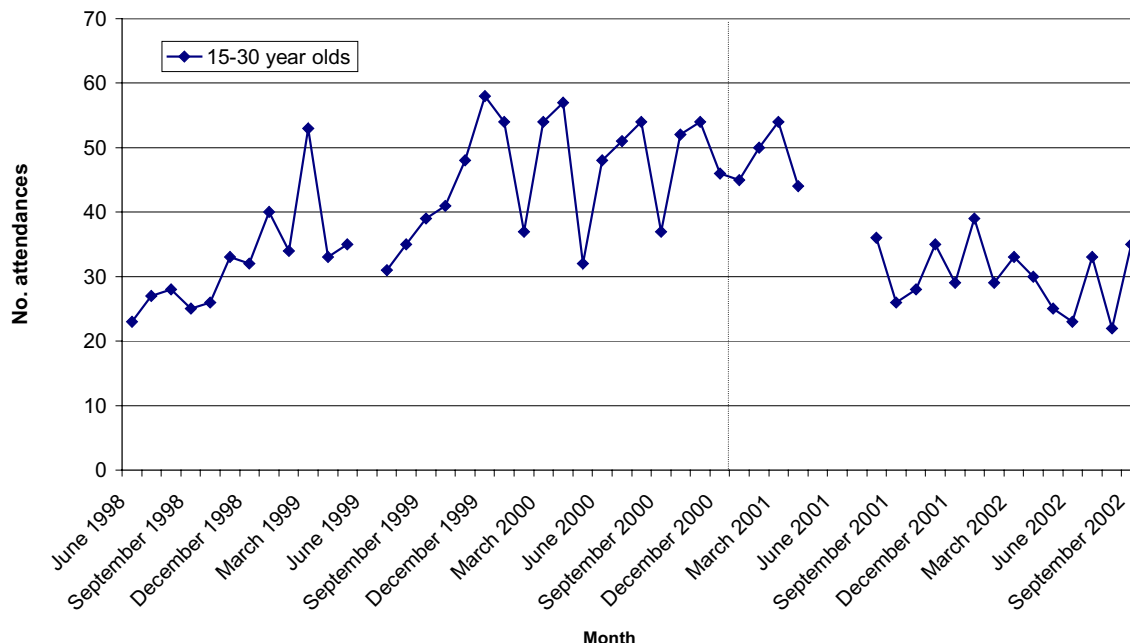


Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

Figure 5.8 shows an overall increase in the number of stimulant related ambulance attendances across the period detailed in the Figure. While the time series was examined to determine whether there was a discernible effect of the heroin shortage, the evidence of an effect due to the shortage occurring at the time of onset of the heroin shortage was ambiguous ( $p=0.05$ ) and has not been reported in detail here.

Previous research has shown that the typical benzodiazepine related ambulance attendance involves age ranges outside of those typically associated with IDU (ie 15-34 year-olds) (Cvetkovski, Dietze, & McElwee, 2003). Further exploration of the benzodiazepine related attendances was undertaken through an examination of the number of cases in which the person attended was aged 15-30 years. Figure 5.9 shows the total number of benzodiazepine related attendances involving people in this age group in the Greater Melbourne Metropolitan area over the period July 1998 – September 2002 with the pattern similar to the pattern observed in relation to the benzodiazepine-related attendances detailed in Figure 5.7. While there appeared to be an increase in the number of benzodiazepine attendances among this age group immediately after the onset of the heroin shortage modelling of this time series showed no effect of the heroin shortage in the data (indeed, inspection of Figure 5.9 shows that any effect of the heroin shortage was no greater than typical variation in the data).

**Figure 5.9 Ambulance attendances involving benzodiazepines among 15-30 year-olds in Melbourne, June 1998-September 2002**

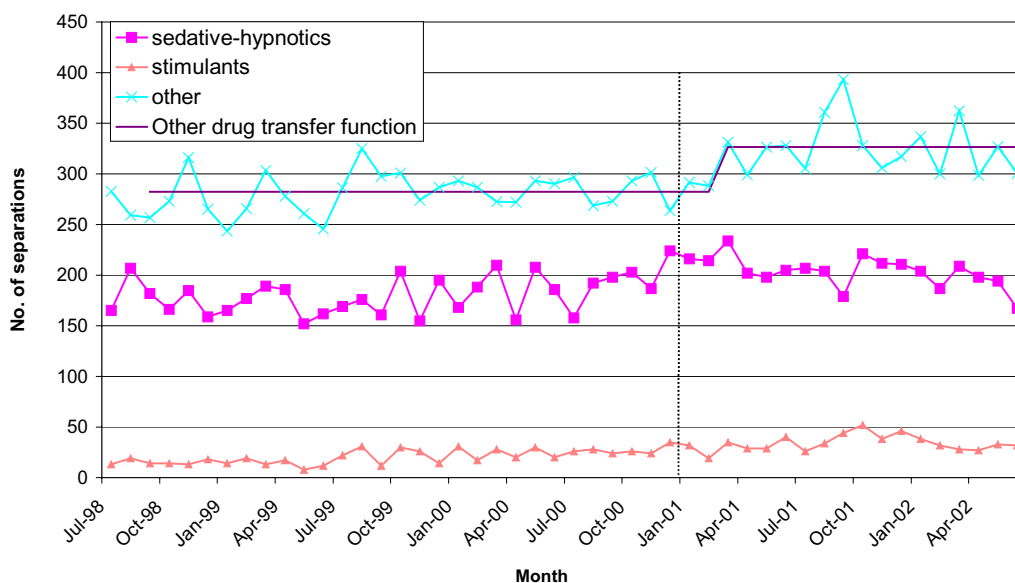


Source: Melbourne Metropolitan Ambulance Service, Turning Point Alcohol and Drug Centre

### 5.3.2 Hospitalisations

While the use of drugs other than heroin can result in emergency department hospitalisation, reliable data is available only for inpatient hospitalisation. Figure 5.10 shows the number of hospitalisations involving sedative/hypnotics, stimulants and other drugs (usually as a result of IDU). Inspection of Figure 5.10 suggests no discernible effects of the heroin shortage on the number of sedative/hypnotic or stimulant hospitalisations but a possible increase in the number of other drug related hospitalisations.

**Figure 5.10: Drug related inpatient hospitalisations by drug category, Victoria, July 1998-June 2002**



Source: Victorian Admitted Episode Dataset

The results of the time series analysis (see appendix A5.3) undertaken showed a simple step function best fitted the data and this function is detailed in Figure 5.10. This step corresponds to a permanent 16% increase in the number of pre-shortage other drug related hospitalisations, occurring 2 months after the heroin shortage. The transfer function for this model is shown alongside the observed values in Figure 5.10.

## 5.4 The health of IDU

While the heroin shortage produced a decrease in the major acute health consequences associated with injecting drug use in Melbourne and Victoria more widely (namely heroin overdose), the increase in other-drug related hospitalisations detailed in Figure 5.11 points to the emergence of other health issues that may have been a consequence of the shortage.

### 5.4.1 General physical health

As detailed above, one of the effects of the heroin shortage was to change the drug using behaviours among IDU. These changes would be expected to produce a change in the general physical health of IDU. There are no quantitative data available in Victoria capable of identifying the extent to which this may be the case as most presentations around general health related issues would be to generalist services (eg GPs, Community Health Centres) or hospital emergency departments – services for which no reliable data are available. Nevertheless, 24 of the Key Informants (21 Health Key Informants and 3 Law Enforcement Key Informants) interviewed for this research identified a deterioration of the general health of the heroin users:

*“Deterioration. The way they were using or what they were using um...two things: 1) I mentioned that people had started in some cases to either, they may have stuck with depressants or were using a different sort that we don't know how to manage very well or we've changed to a different drug that we also don't know how to manage very well and in the case of psycho stimulants, we got a whole range of health issues that just fall apart: diet, nutrition, sleep and stress patterns with that difficulty of no knowledge as they have not lived that kind of life before. So, pill use, a lot of generational and lifestyle areas. Relationships too. A lot of physical health stuff. Not even with it enough to even care about physical health stuff. A lot of people have been using heroin for a long time. Their life isn't great but they have learnt to cope within that framework of fucked-up-ness if you like. It's shitty but they know how to get by and live to the next year.” (Outreach Worker, Central Melbourne).*

One Key Informant discussed how a person's health was often very subjective and this often had a substantial impact on the health seeking behaviours of this group of people:

*“that's a hard one...general health. From that survey a lot of people were saying that they thought their health was good to average. But then they had quite low expectations of their health and so when they say “Average”, it might be something that I would consider to be poor health, for instance. And someone who said their health was “Good”, also had testicular cancer and skin cancer, so I probably wouldn't call that “Good” health myself. But he did, so, it is sort of hard to judge from talking to people. Yeah, it is a hard one, I think that, you know, people who are street drug users do have a lifestyle that is pretty hard on health and I don't think that having a heroin drought particularly helped them for the other reasons that we were saying. I mean, yeah, there's other factors on health too, but they have to do with housing, that's basically a major issue, employment, all those things and the heroin drought didn't really affects people's ability to access housing or employment or other things that might make their life better, so, in some ways it is*

*probably not particularly relevant. Some people, as we've said, for some people it might have been a triggering factor for them to get clean, but for other people no, they just went onto those other drugs and that caused them other harms and... The other thing too is people start to... suffer some negative consequences and it might make them rebound, to try and make it worse, other people it might make them go to give-up or get worse."* (Outreach worker, Central Melbourne)

In contrast, three Key Informants also pointed out that many users actually had better general health following the initial critical period of the heroin shortage:

*"Yeah, that's a really interesting question because I know from even before... and this is from friendships, having friendships with people, ... drug addiction is that they have stopped using for some reason and then they suddenly notice the ulcers on the foot, they've suddenly gone "Oh, these ulcers, you know, are so bad." "You see I've been telling you that for three weeks, you know. You've got to stay out of the water because your ulcers on your feet are bad, you know." So, I've seen heroin do that, like it masks a whole lot of awareness about the person's body and you can understand that that is exactly why they want to take it, to make them feel warm when it is cold, you know, et cetera et cetera." (NSP worker, South-Eastern Melbourne).*

#### **5.4.2 Mental health problems**

The shift towards the use of drugs such as amphetamines by IDU, detailed in 4.3.1 above, may be expected to produce a concomitant increase in mental health problems among IDU in relation to, for example, drug-induced psychoses (Topp, Day, & Degenhardt, 2003). Available data on inpatient hospitalisations in Victoria showed little evidence of a dramatic increase in such mental health problems as a result of the heroin shortage (see 5.2.2 above). Nevertheless, many of the mental health problems associated with drugs such as psychostimulants may not be captured adequately in existing drug monitoring systems in Victoria (Topp, Degenhardt et al., 2003). Indeed Key Informants interviewed for this research suggested that one of the major health consequences of the heroin shortage was on the mental health of heroin users. Twenty-three Health Key Informants expressed concerns regarding the mental health effects of the heroin shortage.

*"So we might see less or there is a less of an impact in the dying and overdosing but um.... what are we now being picked up with which isn't measurable and that's about the brain damage, degrees of capacity to engage in treatment. We actually tested, we thought there was a lot more messier, borderline behaviour. ... we had a large anti-social population and that clients were harder to hold and harder to engage and not as ready to engage." (Rehabilitation manager, Victoria Wide).*

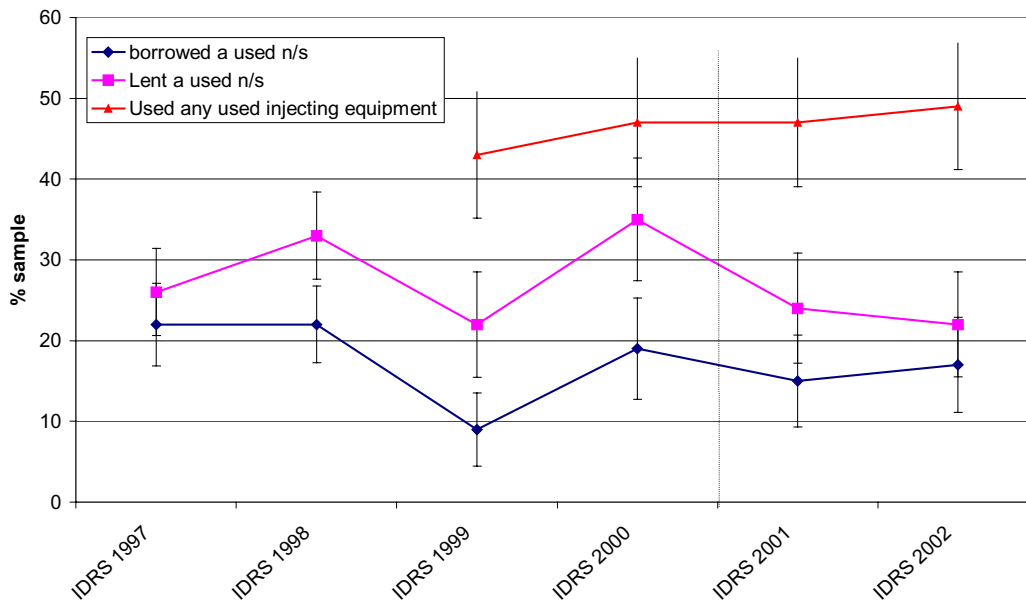
*"But when they start using psycho-stimulants and benzos, it is just... their behaviour is just out of this world. So, yeah, absolutely, a massive deterioration. Something like that was really worrying me because... like if you had a relationship with an individual kid, who you knew had been pretty stable throughout and then suddenly the drought happened and you were faced with them using stimulants, the workers were really freaked out, afraid they were going to lose kids to suicide, trauma." (Youth outreach, Victoria Wide).*

#### **5.4.3 Injecting risk practices and blood-borne viruses**

The sharing of injecting equipment presents a risk for the transmission of blood-borne viruses that is the centre concern of much of Australia's efforts at harm reduction programs for IDU (Crofts, Aitken, & Kaldor, 1999; Crofts, Jolley, Kaldor, van Beek, & Wodak, 1997). Findings from available IDU surveys conducted in Melbourne over the period 1997-2002, detailed in Figure 5.11, show

that none of the variations in key past-month injecting risk practices reported by IDU could be attributed to the heroin shortage.

**Figure 5.11: Percentages (and 95% CIs) of IDU survey samples reporting injection risk practices in Melbourne, 1997-2002**



Source: Turning Point Alcohol and Drug Centre

Nevertheless, while there were no discernible effects of the heroin shortage on key injection risk practices reported by IDU, a number of Key Informants interviewed as part of this research identified the increased use of both benzodiazepines and methamphetamines as presenting problems for increased BBV transmission:

*“Well, I think when people are using amphetamines they inject far more frequently, than they would heroin. And also I was always concerned around when people were quite affected on benzos and whether they actually had the recall to not share needles and to be wary of blood and all those messages that we give when... And just time after time I remember watching young women in these lane-ways in the City, obviously severely affected on benzos and trying to inject more Normison into their bodies and being so drug affected they weren’t even injecting into veins and just thinking ‘Yeah, it would just be so easy for them to share a needle and not even remember sharing a needle.’” (Researcher, Victoria Wide).*

*“One of the things with Normison is that the user’s in Footscray would more often use 2 ml syringes for Normison because of the larger volume and they were groin injectors. More difficulty with injecting, more collapsed veins and when you’ve got that sort of situation you’ve got more blood. It’s a messier, generally a messier process and that in turn increases the risk of blood borne virus. So, perhaps we saw a population decrease on the street but each and every one of them was probably in a far riskier situation. Not so much from overdose. Perhaps people having less control over what they’re doing.” (Researcher, Melbourne wide).*

Further, the diversion and injection of opioids used in pharmacotherapy, particularly buprenorphine, was noted by some of the Key Informants:

*“Buprenorphine, shooting up buprenorphine. That seems to have gone through a hyper stage and I think it still is but I’m not personally seeing it but in a couple of cases.”*  
 (Outreach Worker, Central Melbourne)

Yet, while there were reports of the injection of buprenorphine resulting in an increase in the potential for blood-borne virus transmission in the 2002 IDRS Key Informant Survey (Jenkinson et al., 2003), none of the Key Informants interviewed for the current research reported such an increased potential.

The surveillance of blood-borne viruses in Victoria is managed through the Communicable Diseases Section of the Department of Human Services. Table 5.1 shows the annual number of notifications of HIV diagnoses in which injecting drug use has been identified as the likely exposure factor in Victoria, 1989–2001. This Table shows that there appears to be no effect of the heroin shortage on the number of HIV notifications recorded in Victoria.

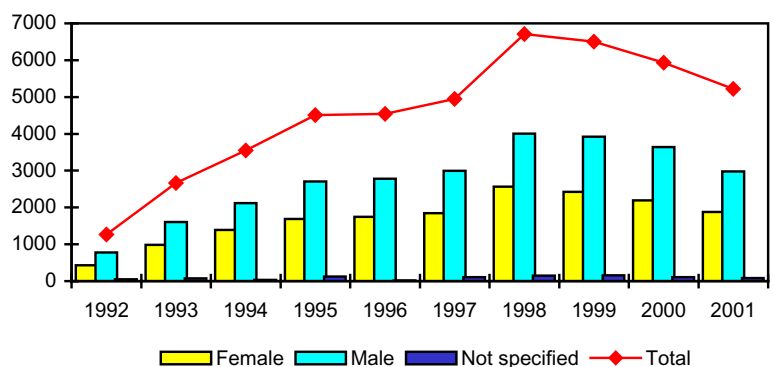
**Table 5.1: Annual number of notifications of HIV diagnoses in which injecting drug use has been identified as the likely exposure factor in Victoria, 1989–2001**

	Year												
	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Number	(24)	(35)	(22)	(20)	(23)	(20)	(15)	(14)	(15)	(13)	(6)	(10)	(11)
% of all HIV diagnoses	7	12	7	8	10	9	8	7	8	9	5	7	5

Source: Communicable Diseases Section, Victorian Department of Human Services; (Hocking & Crofts, 2001), (Department of Human Services, 2002)

Figure 5.12 shows a summary of the notifications received for Hepatitis C (HCV) infection diagnosis over the period 1992–2001. While annual incidence is not accurately measured, meaning that it is inappropriate to draw conclusions regarding trends in new cases of HCV infection based on these data, the data do demonstrate large numbers of diagnoses in Victoria throughout the 1990s. Further, the available evidence suggests that the vast majority of these infections have occurred as a result of injecting drug use. Since 1998 when figures peaked, there has been a steady decline in actual numbers of HCV notifications that appeared to occur independently of the heroin shortage.

**Figure 5.12: Hepatitis C notifications among males & females in Victoria, 1992-2001**

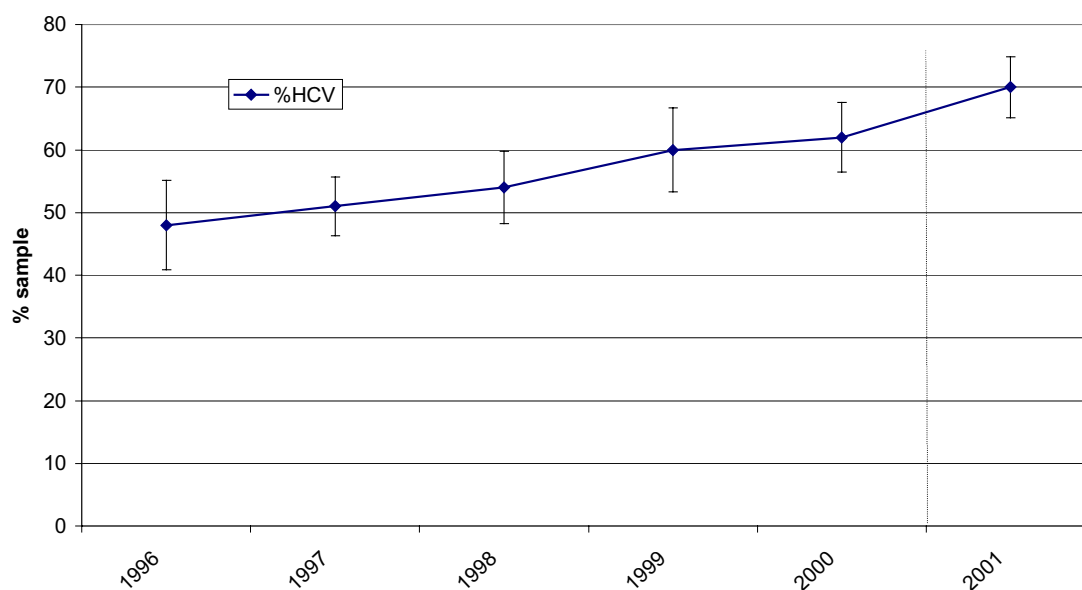


Source: Communicable Diseases Section, Victorian Department of Human Services



Information on the prevalence of HCV infection among IDU survey samples (in this case needle and syringe program attendees) is collected by the National Centre in HIV Epidemiology and Clinical Research. In light of the problems associated with interpreting available HCV notifications data in Victoria, this data presents an important mechanism for documenting the extent of HCV (and HIV) infection among IDU. Figure 5.13 shows the recorded HCV prevalence (HIV prevalence being consistently 2% or lower) among sampled IDU over the period 1996-2001. This Figure shows that there has been an increase in the prevalence of HCV among sampled IDU in Victoria, but, while there appears to be an increase in prevalence between 2000 and 2001, the overall trend upwards commenced prior to the onset of the heroin shortage.

**Figure 5.13: Prevalence of HCV infection among clients attending NSPs in Victoria, 1996–2001**



Source: National Centre in HIV Epidemiology & Clinical Research

#### 5.4.4 Injection related harms

Injecting drug use often results in a number of harms (eg thrombosis) directly related to injection practices (van Beek, Dwyer, & Malcolm, 2001). There is only limited quantitative data available in Victoria capable of identifying the extent to which these may have increased as a result of the heroin shortage as most presentations around injection related harms issues would be to generalist services (eg GPs, Community Health Centres) or hospital emergency departments – services for which no reliable data are available. Nevertheless, some of these injection-related harms appear to have resulted in the increase in ‘other drug’ related inpatient hospitalisation (see 5.2.2 above).

Examination of available IDU surveys conducted across the period 1999-2002 for the IDRS suggested few changes in reported experiences of injecting related problems by participants. There was an increase in the reports of past-month experience of thrombosis in 2002 (21% of the sample, 95% CI = 17-25%) that was higher than all previously recorded prevalence rates. Further, Key Informants interviewed as part of this research identified a number of specific consequences of the heroin shortage in relation to the injection-related harms caused by the injection of specific types of drugs, in particular those designed for oral administration. These are considered below in relation to a number of drug classes.

### *Benzodiazepines*

A substantial number of Key Informants reported major problems related to the injection of benzodiazepines. This was seen as long-term consequence of changes in drug use associated with the heroin shortage. While the injection of benzodiazepines in general was identified as a major health issue, it was the injection of Normison (temazepam) gel capsules that was identified as the biggest problem, ultimately leading to restrictions on the prescription of these drugs (Dobbin, Martyres, Clode, & Champion De Crespigny, 2003):

*“we noticed an increase in people, young women as well as men, injecting into their groins and injecting a lot of Normison into their groin and experiencing a lot of damage as a result. There was always a few young men and particularly the Vietnamese {Indochinese} community that enjoyed injecting into the groin for a number of different reasons, they said the rush was better, it wasn’t as visible, the track marks weren’t as visible. But it just increased after that. And to have women injecting into their groin as well was just extraordinary. And just some of the places in the City that were popular places for people to inject...we used to frequent them and do vein care and safe using information, if we came across them injecting. It was just extraordinary.” (Researcher, Victoria Wide)*

### *Pills*

Pills other than benzodiazepines, such as morphine were also identified as causing injection related problems.

*“...and if they were doing pills then it’s gonna have chalk and all sorts of stuff in it. So people getting blown up hands and arms, sores, collapsed veins and all those sorts of problems and also even the ones that injecting just straight heroin, because the quality had dropped they needed to get more and more of it and so that’s more regular shots so instead of having one hit every few hours, it’s a constant chase...” (NSP worker, Inner Melbourne)*

### *Buprenorphine*

Another injection related problem identified by Key Informants as a problem associated with the heroin shortage was the increase in the injection of buprenorphine which had usually been diverted from treatment. While buprenorphine did not become readily available until August 2001, the climate created by the heroin shortage facilitated the popularity of buprenorphine as a treatment and a substitute for heroin on the street market. Importantly however, in relation to injecting practice around buprenorphine injection, harm reduction responses emerged with respect to the use of filtration:

*“Yeah, and we’ve also picked up on people diverting bupe and really got a lot of filters in for that because it filters well and we’re saving a hell of a lot of vein damage because bupe is pretty full of corn starch and it takes that out and then there is bacteria, so, it can be put through a bacteria filter because if people have had it held in their mouths.” (NSP worker, Western Melbourne)*

and there appeared to be some uptake in the use of such equipment not only in relation to the injection of buprenorphine but also in relation to the injection of other opioids as well:

*“Well, the increase in injecting, definitely, MS-Contin and Kapanol and I guess buprenorphine too, when people started injecting morphine. I never really saw or heard about any methadone injection. A few people made attempts to inject take-away methadone that had been diluted in cordial and that sort of stuff. I got a few calls from*

*people wanting...from people wanting syringe filters to try and filter the cordial out of the methadone, so, they could at least inject something.” (Peer Educator, Victoria Wide)*

#### 5.4.5 Pregnancy

One Key Informant was able to report on the effects of the heroin shortage on pregnant women and their children. This Key Informant identified a number of substantial effects on the wellbeing of pregnant mothers, foetuses and neonates that occurred as a result of the heroin shortage:

*“Even though we deal with a range of different drugs, there was a bigger focus on speed use and benzo use. And the way we treated that was quite different than opiate users. It was quite difficult because with opiate users there is a substitution that you can provide, but with the speed use and benzos, there isn’t.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

The increase in methamphetamine (speed) use noted above that appeared to result from the heroin shortage was seen as presenting substantial effects on the risks for unborn children:

*“Speed use causes foetal abnormalities and so does alcohol, ..., it is quite a dangerous drug in terms of foetal development, so, therefore we refer a lot of them to the detox agencies, because the impact of the speed and alcohol on the foetus is quite dangerous in terms of development, a lot of women tend to get scared and stop using.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

The changes in drug use resulting from the heroin shortage also impacted on the state in which mothers presented to the service:

*“Retention was lower and it was quite typical to work with women who were using speed and benzos because they presented a lot of the time in a state of crisis or withdrawals. And you weren’t only dealing with their issues, their partners or partners were having similar issues and it was very difficult for us.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

Finally, the heroin shortage also had impacts on the health of neonates and the ability of their mothers to cope.

*“Post-nursing neonate care was at a huge risk because the shortage because of the speed use, therefore increase foetal abnormalities. Also, it increases spontaneous abortion, there is a decrease in birth weight, so, there were just general complications with that, particularly with benzo use. A lot of the babies can actually have floppy baby syndrome where they have a lack of muscle tone, so, quite floppy. So, we saw a lot of that and what that meant is that women, after they delivered, have to stay in hospital for a longer period of time because of withdrawal. So, yeah, around the pregnancy, it definitely affected health and also the foetus and the infant. Housing, there was less and less houses and I mean, I think that is still the same now, there isn’t much housing available. But also the fact that because of the heroin shortage there were less people engaging in treatment, therefore they were living with friends or acquaintances, there was more an increase of shared accommodation or even living on the streets.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service).*

## 5.5 Conclusions

The heroin shortage had significant effects on the health of heroin users. A dramatic decline in the rate of fatal and non-fatal heroin overdose appeared to occur as a direct result of the onset of the heroin shortage. Available evidence from ambulance attendance data suggest that the decline was greatest in the key areas of Melbourne that have been associated with street-based heroin markets. Further, the rate of heroin-related hospitalisation (primarily driven by overdose, but also including hospitalisation for dependence and other consequences of the use of the drug) also appeared to decline as a result of the heroin shortage. The population at risk of non-fatal heroin overdose also appeared to change. While the age distribution of non-fatal heroin overdose cases remained relatively stable after the onset of the shortage, there was a larger proportion of females among non-fatal heroin overdose cases in Melbourne after the onset of the heroin shortage compared to the period immediately preceding the shortage.

The shift towards the use of drugs other than heroin by IDU that appeared to result from the heroin shortage (detailed in section 4 of this report) seems to have had few quantifiable consequences. An increase in 'other' drug related hospitalisations appeared to occur at the same time as the decrease in heroin-related hospitalisation noted above. These related to injecting drug use more generally and are consistent with Key Informant reports and the findings of surveys of IDU of injection-related problems associated with the use of drugs such as benzodiazepines and buprenorphine. This finding is also consistent with the notion introduced in section 4 of this report that the pool of IDU remained relatively stable in Melbourne in spite of the changes in heroin supply (ie IDU moved to inject other drugs rather than ceasing injecting altogether). Nevertheless, there were no increases evident in the number of ambulance attendances or hospitalisations related to benzodiazepine or stimulant use that could be directly attributed to the heroin shortage. In relation to the use of stimulants, these may have been expected to produce an increase in the prevalence of drug-related psychosis presentations consistent with Key Informant reports regarding the mental health of IDU following the onset of the shortage across a number of domains (including pregnancy). While there was no evidence to suggest that this was the case, the absence of any increase in these types of presentation may merely reflect the inability of existing surveillance and monitoring systems to document the prevalence of these conditions.

Finally, in relation to other major health-related harms associated with IDU, such as HIV and hepatitis, there appeared to be few quantitative effects that could be directly attributed to the heroin shortage. Nevertheless, Key Informants reported that IDU engaged in drug using practices that could potentially lead to increased blood-borne virus transmission.



## 6 Changes in drug treatment

### Summary

As a result of the heroin shortage:

- Courses of treatment (COTs) for a primary drug of opioids decreased while cannabis and amphetamine COTs increased.

For opioid clients:

- COTs decreased by the same magnitude for both genders (25% decrease).
- Decreases in COTs were most dramatic for 15-24 year olds and 25-34 year olds while other ages remained approximately the same.
- Decreases were observed in the delivery of virtually all treatment types for problematic opioid use. There was an increase in the prescription of buprenorphine for pharmacotherapy maintenance and numbers on the Victorian pharmacotherapy program have continued to increase in the long term.

Patterns of secondary drug use changed subsequent to the heroin shortage. Among primary opioid users, secondary drug use increased by:

- 48% for alcohol,
- 8% for cannabis,
- 35% for benzodiazepines,
- 100% for amphetamines.

Treatment for amphetamines as a primary drug increased by 66% in the year following the heroin shortage, and this increase appeared driven by demographic groups in which the decrease in opioid treatment was noted with:

- A 73% increase in COTs for males and a 59% increase for females.
- Greatest increases observed in 15-24 year olds and 25-34 year olds.

Increases were observed in the provision of the following treatment types for amphetamine use: counselling, withdrawal, outreach, and brokerage services.

There was also an increase in the proportion of courses of treatment provided to clients presenting with either primary amphetamines or alcohol (but not cannabis) problems who had opioids recorded as a secondary drug of concern. This finding, coupled with information on recorded exposure to injecting drug use suggests the possibility that the client group accessing services remained relatively unchanged as a result of the heroin shortage.

## 6.1 Introduction

Changes in the utilisation of drug treatment services have been noted as an effect of the heroin shortage (Miller et al., 2001). Data on specialist drug treatment service utilisation are collected in Victoria through the Alcohol and Drug Information (ADIS) database that is managed by the Victorian Department of Human Services (Dietze, Laslett, & McElwee, 2000; Victorian Department of Human Services, 1999). For the purposes of this research data were obtained for the period covering the financial years 1998/99 to 2001/02, encompassing a period of high heroin availability and approximately 18 months subsequent to the onset of the heroin shortage. Cases on the ADIS database are recorded by courses of treatment (COT), defined as "...the period of contact, with defined dates of commencement and cessation, between a client and a treatment provider or team of providers" (Victorian Department of Human Services, 2002).

Client data is entered into the ADIS dataset at the termination of the COT. Therefore, analysis for the purposes of the current research has been conducted only on completed COTs. Open cases are not represented in the database and most recent data may underestimate the number of courses of treatment. Caution should be used when interpreting data, especially toward the end of the period available for analysis, as many cases are likely to be in progress and therefore not yet recorded in the data. This will be most pronounced for treatment types that are of a longer duration, such as residential rehabilitation. However, these treatment types account for a relatively small percentage of COTs (eg residential rehabilitation contributed less than 1.5% of COTs for opioid users in 2001/02). While bias through the entire dataset is expected to be minimal on the main variables of interest, it is likely that recording error exists in relation to some secondary variables (some of which are considered below).

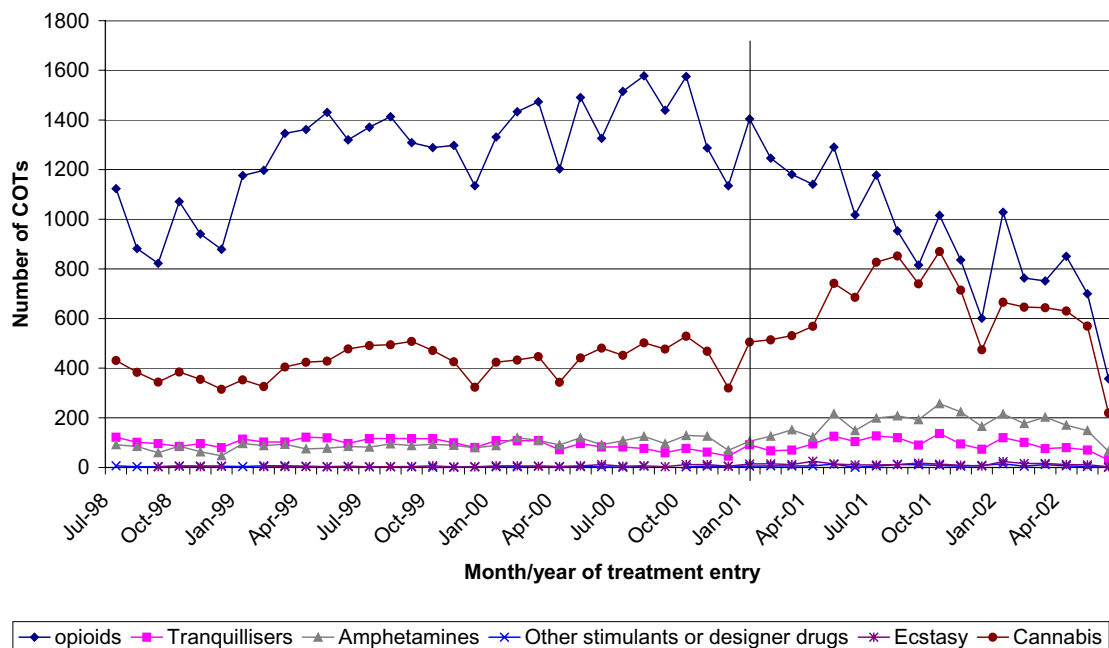
Further information on specialist drug treatment service utilisation pertinent to the use of heroin is available from the census of pharmacies involved in the Victorian pharmacotherapy program. This census, conducted quarterly by the Drugs and Poisons Unit of the Victorian Department of Human Services records the number of clients dosed through the program. This census provides a more accurate picture of client numbers than that which is available through an examination of the pharmacotherapy permit database (also managed by the Drugs and Poisons Unit). This is due to the fact that the permit database contains all active permits, which includes some number of permits where the client has ceased pharmacotherapy. The lack of an effective mechanism to remove permits that are open although the client has ceased treatment overestimates the number of active permits in the database, making it less reliable for such analyses.

## 6.2 Principal drugs of concern in courses of treatment provided by the Victorian specialist drug treatment service system

Figure 6.1 presents the number of Courses of Treatment by the clients' principal drug of concern (DOC) for the period 1998/99 – 2001/02. This Figure shows that there was a decrease in COTs provided for clients presenting with opioids as their principal DOC following the onset of the heroin shortage. Further, there appears to be a corresponding increase in COTs provided for clients presenting with amphetamines as their principal DOC following the onset of the heroin shortage. This finding is consistent with impressions on increases in amphetamine use reported by Key Informants. For example, one Health Key Informant stated:

*"We had a definite period there at that point after the glut where we suddenly saw an increase in the methamphetamine and a whole lot of those stimulant type of drugs..."*  
(Youth Outreach, Victoria Wide)

**Figure 6.1: Courses of treatment by clients' principal drug of concern, Victoria July 1998-June 2002**



Source: Alcohol and Drug Information System, Victorian Department of Human Services

The question as to whether the changes in number of clients by primary drug represents a switch in drug of choice due to the onset of the heroin shortage cannot be determined from ADIS data. This is because the treatment sector operates at capacity meaning that availability and access will affect the numbers of clients that obtain treatment. A decrease in opioid treatment may have increased the capacity of this sector to treat clients with other DOCs. For example, an increase in cannabis treatment was described by one Health Key Informant:

*“One of the things that happened just after the glut was suddenly there are seemed to be re-focusing by the A and D. sector on marijuana. The profile of marijuana as a problematic substance is something went through the roof, certainly within {agency}, but I got the impression that it was the same for a lot of services. Now I have to again put on a rider because I think very long waiting lists during the glut and as soon as that finished, the waiting list ceased and so people from regions could suddenly get their clients in and it was around those regions that marijuana was a major issue” (Youth Outreach, Victoria Wide)*

Nevertheless, the data presented in Figure 6.1 suggest possible changes in treatment service utilisation related to opioid and amphetamine drugs that warrant further analysis.

### 6.3 Opioid treatment

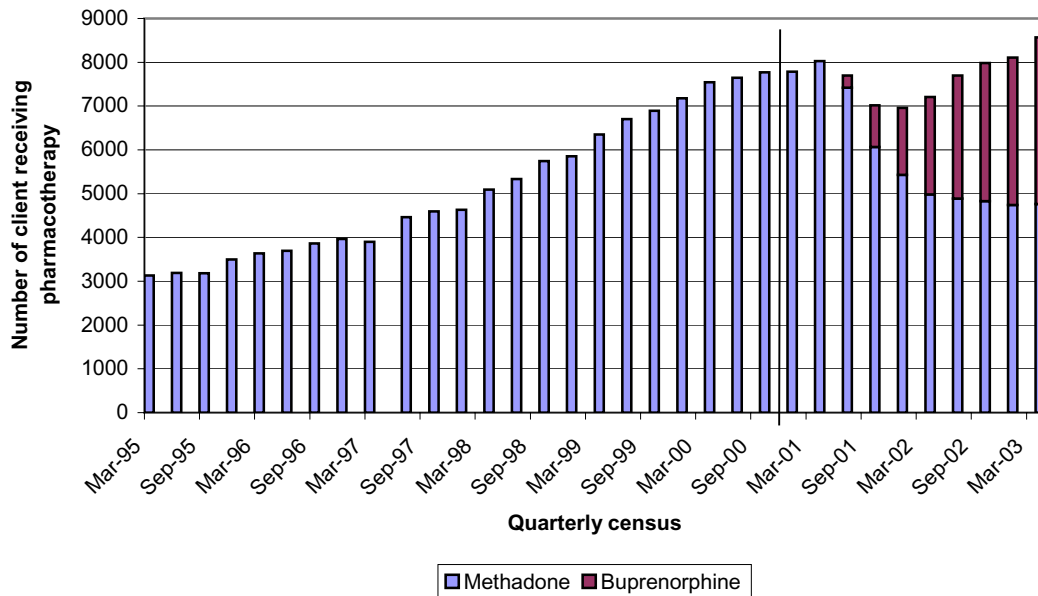
#### 6.3.1 Pharmacotherapies

The main form of treatment undertaken for heroin dependence in Victoria (for which data are available) is pharmacotherapy treatment using treatment drugs such as methadone or buprenorphine (Dietze et al., 2000). As indicated, reliable data on the number of clients on the Victorian pharmacotherapy program are only available through a quarterly pharmacy census



undertaken by the Drugs and Poisons Unit of the Victorian Department of Human Services. The number of clients recorded through the census is presented in Figure 6.2 for the period 3/1995 – 3/2003.

**Figure 6.2: Number of clients receiving pharmacotherapy from the DPU quarterly census, Victoria, March 1995-March 2003**



Source: Drugs and Poisons Unit, Victorian Department of Human Services

Figure 6.2 shows that there was a steady increase in the number of clients on the Victorian pharmacotherapy program prior to the onset of the heroin shortage. Around the time of the heroin shortage the number of clients on the program appeared to stabilise and then decrease towards the end of 2001. This pattern was then followed by an increase in 2002 such that numbers on the program were the highest ever recorded in early 2003. Direct interpretation of these trends is confounded by the introduction of buprenorphine that is shown in Figure 6.2. This introduction may have increased pharmacotherapy uptake among heroin users or alternatively may have resulted in methadone clients shifting to this new drug. Key Informant reports suggest that it is possible that the introduction of buprenorphine may have led to an expansion of the number of clients as people not interested in methadone treatment found buprenorphine an acceptable alternative to methadone as a maintenance pharmacotherapy (Victorian Department of Human Services, unpublished data; Ritter, Kutin, Lintzeris, & Bammer, 1997):

*“By the end of January ... and lots of them had also started going on to Bupe {buprenorphine}. So, a lot of the people I interviewed were actually...had gone on to Bupe. Because it was around that time that it got released and everything” (Researcher, Melbourne wide)*

Indeed, the introduction of buprenorphine appears to have had a widespread impact on the Victorian pharmacotherapy program. In Victoria, buprenorphine prescription for the treatment of heroin dependence initially commenced as part of a series of clinical trials. The drug was registered for this purpose in October 2000 and listed for subsidy on the Pharmaceutical Benefits Scheme in August 2001. As a consequence of the manner in which buprenorphine was introduced in Victoria, the rates of prescription in Victoria were and remain by far the highest of any Australian jurisdiction (Victorian Department of Human Services, unpublished data). Eight Key

Informants identified the availability of buprenorphine as a possible confounding factor in the influence of a heroin shortage on some of the consequences of heroin shortage such that it may have influenced some of the main indicators of the shortage such as overdose rates:

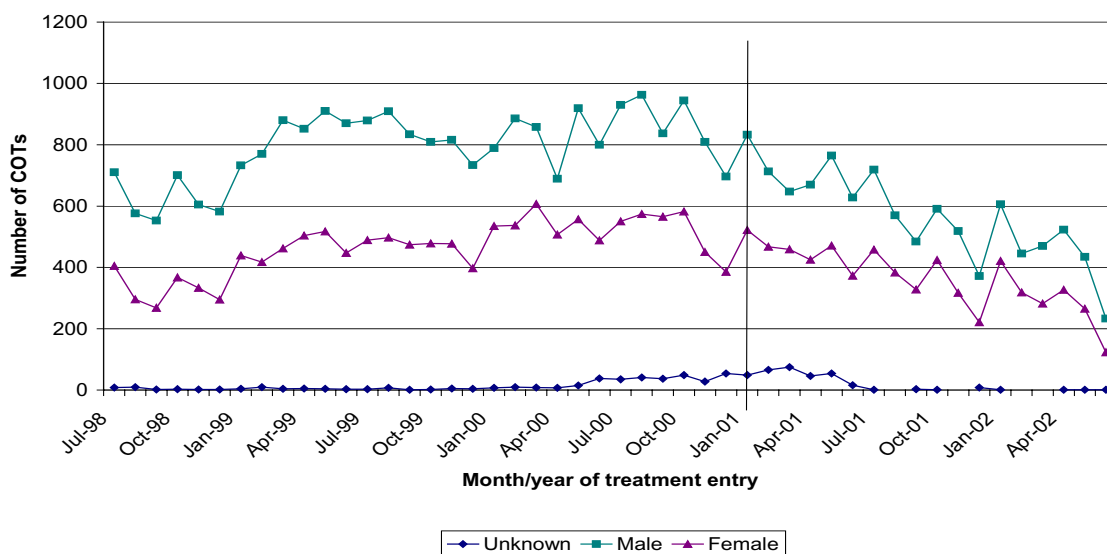
*“we started using a lot of Buprenorphine for heroin withdrawal and that had a really significant impact on...less fear kind of for people entering heroin withdrawal. I think it was May 2000. But I think that was to do with Buprenorphine and its effect on heroin use rather than...well, it is hard to pick out if there was any effects on the clientele being different because of the drought. Whatever affect that was, I think that would have been much more subtle than the effect of people having just a more effective withdrawal drug. So, yeah, that’s different and I guess that is really important just to think about other...there are other big things that change at the time. Because there is that example of France and the big decrease in...heroin deaths in France when Buprenorphine was introduced in the mid 1990s and that’s attributed to Buprenorphine. You can say the same thing here, when we introduced Buprenorphine in Victoria and there was a big drop in heroin deaths, but nobody really makes that connection, they think it is more to do with the drought.” (GP, Melbourne central)*

Furthermore, there were other initiatives undertaken in the wider health sector in Victoria that occurred or were in the process of being established around the time of the onset of the heroin shortage. These confound a direct interpretation of the effects of the heroin shortage on the number of clients on the Victorian pharmacotherapy program. For example, there was a commitment on the part of government to extend the Victorian pharmacotherapy program to address the problem of widespread reports of difficulties in accessing the program (Reid, Crofts, & Hocking, 2000) that occurred around the time immediately preceding the onset of the heroin shortage.

### 6.3.2 Demographics of primary opioid clients of specialist drug treatment service agencies

Figure 6.3 shows the number of Courses of Treatment (COT) provided for clients presenting for treatment with opioids as their primary Drug of Concern by gender.

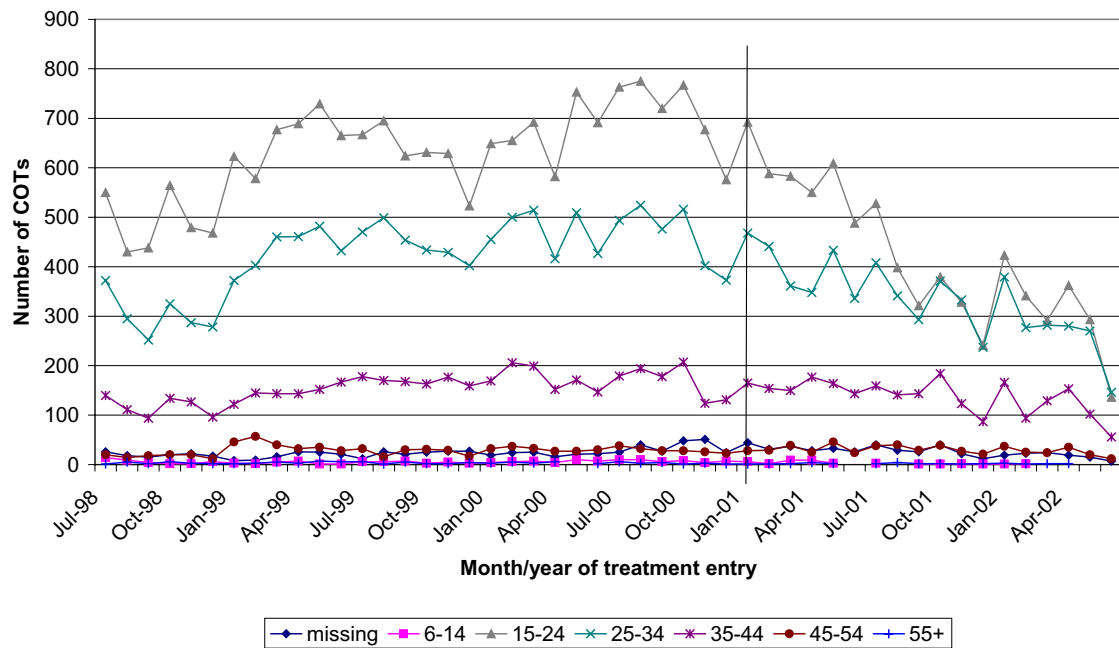
**Figure 6.3: Opioid courses of treatment by gender, Victoria, July 1998-June 2002**



Source: Alcohol and Drug Information System, Victorian Department of Human Services

While the number of COTs provided for opioids declined substantially following the onset of the heroin shortage, the magnitude of the decrease appeared similar for both genders. Indeed, comparison of the data from the year preceding and following the onset of the heroin shortage (1/2000 through 12/2000 compared to 1/2001 through 12/2001) showed a decrease of approximately 25% in the average numbers of clients per month for both males and females (843 to 626 and 528 to 404, respectively).

**Figure 6.4: Opioid courses of treatment by age, Victoria, July 1998-June 2002**



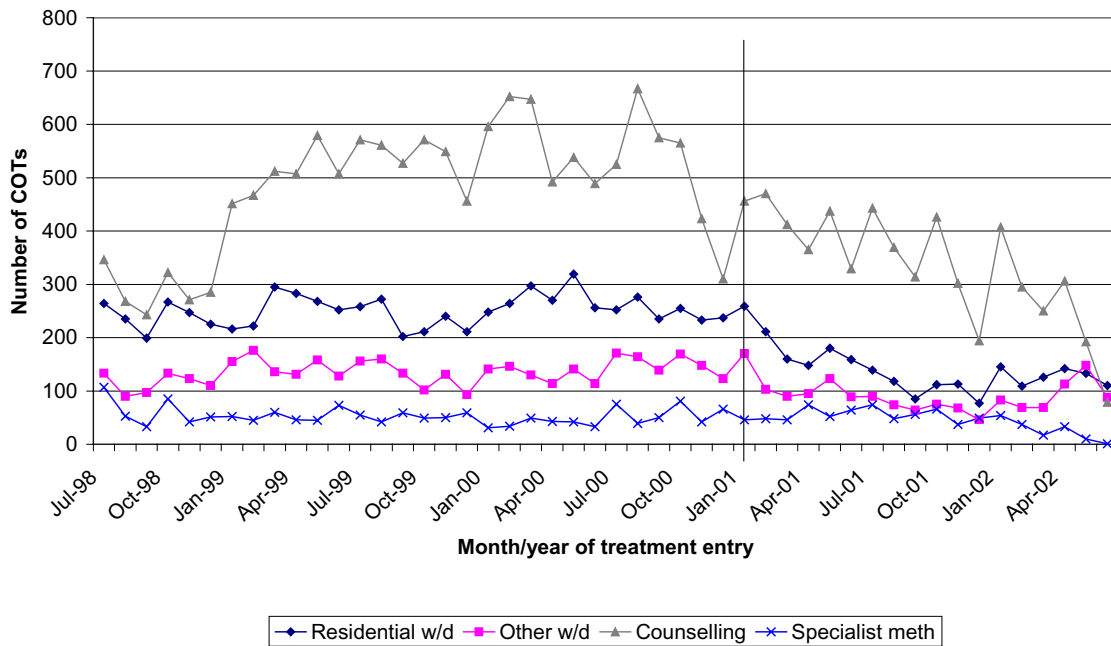
Source: Alcohol and Drug Information System, Victorian Department of Human Services

Figure 6.4 shows the age of clients receiving courses of treatment (COTs) for opioids as their principal Drug of Concern. While the number of COTs provided to 15 to 24 year olds and 25 to 34 year olds decreased substantially following the onset of the heroin shortage, there was little change evident amongst the remaining age groups.

### 6.3.3 Treatment type provided

Figures 6.5 and 6.6 show the number of Courses of Treatment (COTs) provided to clients with opioids as their principal Drug of Concern (DOC) according to different service type categories. The number of counselling and residential withdrawal COTs for opioids declined following the onset of the heroin shortage. Nevertheless, COTs for specialist methadone services remained relatively stable throughout the period available for analysis. A decline in the number of COTs for specialist methadone services evident at the end of the study period is probably an artefact of the practice of recording COTs at termination.

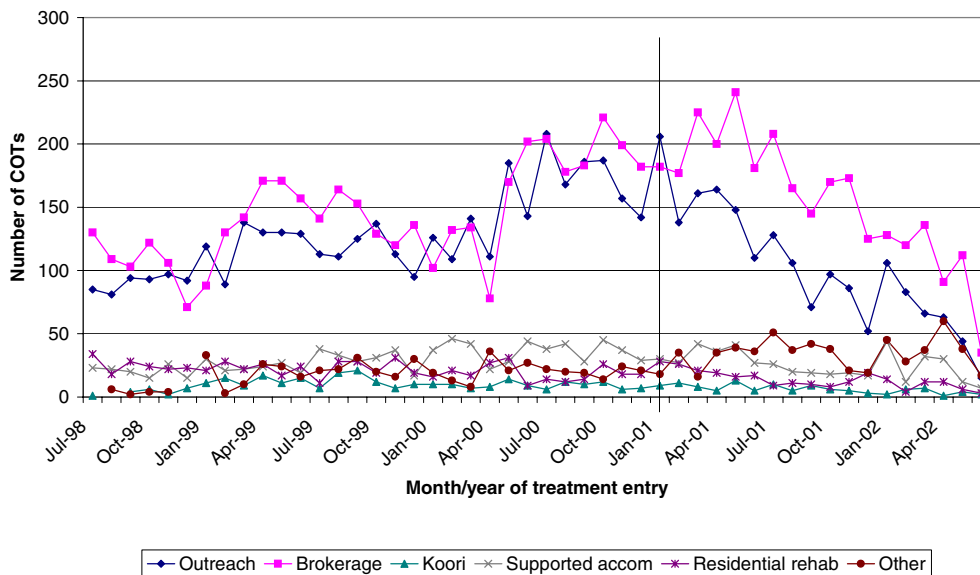
Figure 6.5: Opioid courses of treatment by treatment type, Victoria, July 1998-June 2002



Source: Alcohol and Drug Information System, Victorian Department of Human Services

Figure 6.6 shows that there appeared to be a decline in COTs for brokerage services and outreach services after the onset of the heroin shortage. The numbers of COTs for the remaining service types remained consistent through the study period.

Figure 6.6: Opioid courses of treatment by treatment type, Victoria, July 1998-June 2002



Source: Alcohol and Drug Information System, Victorian Department of Human Services

This absence of any increase in opioid treatment shown in Figures 6.5 and 6.6 was consistent with the experience, and counter to the expectations, of some Health Key Informants.

*“What surprised us was that there wasn’t a really big intake because, as being part of the Southern Health monolith, we had access to direct access to residential withdrawal as well as established home base withdrawal as well with trained carers. There wasn’t a really.. and I’ll have to get the stats for this... there wasn’t a really significant increase in demand for that. People weren’t jumping at the opportunity to clean up” (Service manager, South Eastern Melbourne)*

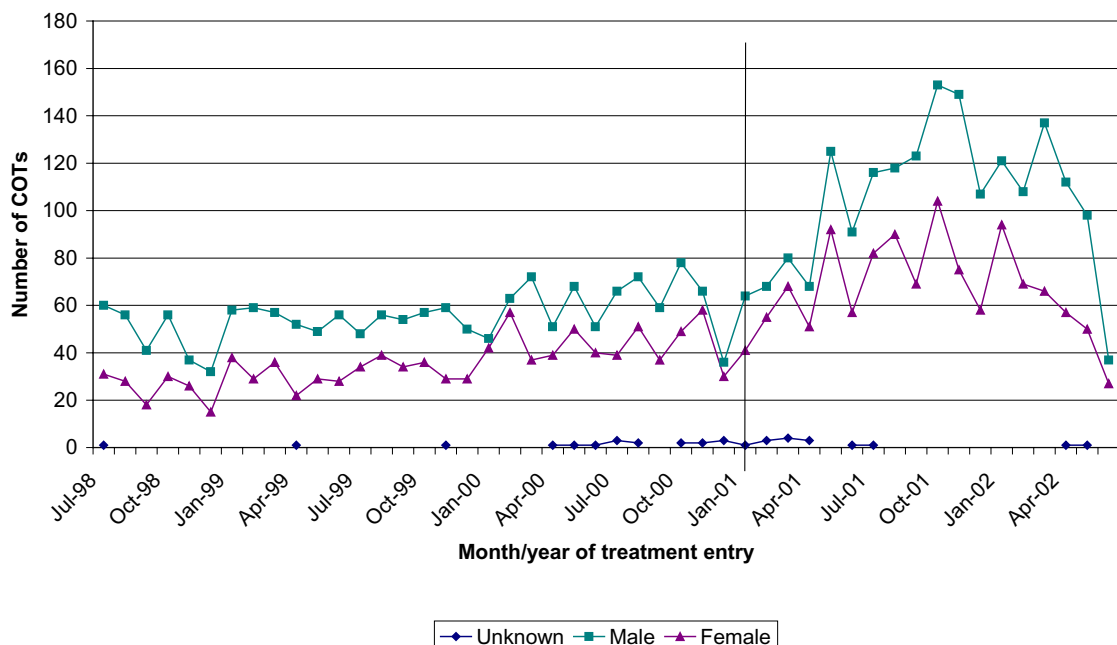
## 6.4 Amphetamine treatment

Figure 6.1 suggests that there was an increase in the number of Courses of Treatment (COTs) provided to clients presenting with amphetamines as their principal Drug of Concern (DOC) that occurred following the onset of the heroin shortage. While amphetamine treatment represents only a small fraction of the total COTs provided by the Victorian specialist drug treatment service system, COTs involving amphetamines as the principal DOC increased by 66% from a mean of 106 per month in the year prior to the onset of the shortage to an average of 176 in the year following the onset of the shortage.

### 6.4.1 Demographics of primary amphetamine clients of specialist drug treatment service agencies

Figure 6.7 contains the number of Courses of Treatment (COT) provided for clients presenting for treatment with amphetamines as their primary Drug of Concern (DOC) by gender.

**Figure 6.7: Amphetamine courses of treatment by gender, Victoria, July 1998-June 2002**



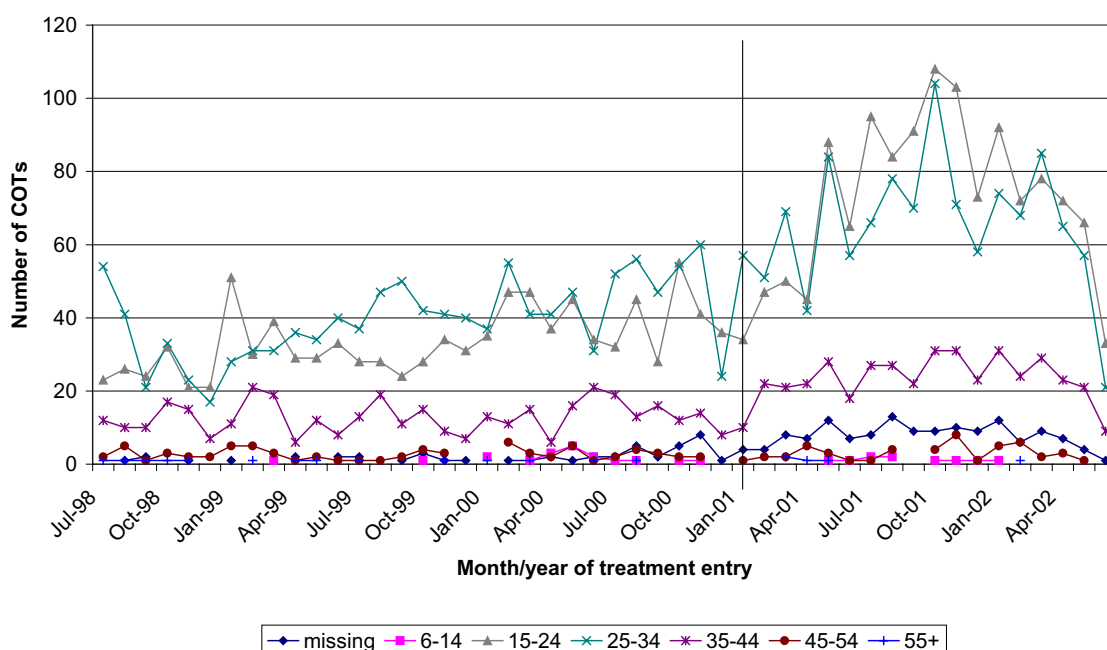
Source: Alcohol and Drug Information System, Victorian Department of Human Services

While the number of COTs provided for amphetamines increased substantially some time after the onset of the heroin shortage, the magnitude of the increase appeared similar for both genders. Nevertheless, comparison of the data from the year preceding and following the onset of the

heroin shortage (1/2000 through 12/2000 compared to 1/2001 through 12/2001) showed an increase of approximately 73% in the mean number of clients per month for males (61 to 105 COTs per month) and an increase of approximately 59% in the mean number of clients per month for females (44 to 70 COTs per month).

Figure 6.8 shows the age of clients receiving courses of treatment (COTs) for amphetamines as their principal Drug of Concern (DOC). The number of COTs provided to 15 to 24 year olds and 25 to 34 year olds increased substantially following the onset of the heroin shortage and there was little change evident amongst the remaining age groups. However, there was some evidence of an increase in COTs among 35 to 44 year olds. Nevertheless, the general pattern appears to be an exact inverse of the pattern observed in the COTs for opioids described above (6.3.2).

**Figure 6.8: Amphetamine courses of treatment by age, Victoria, July 1998-June 2002**

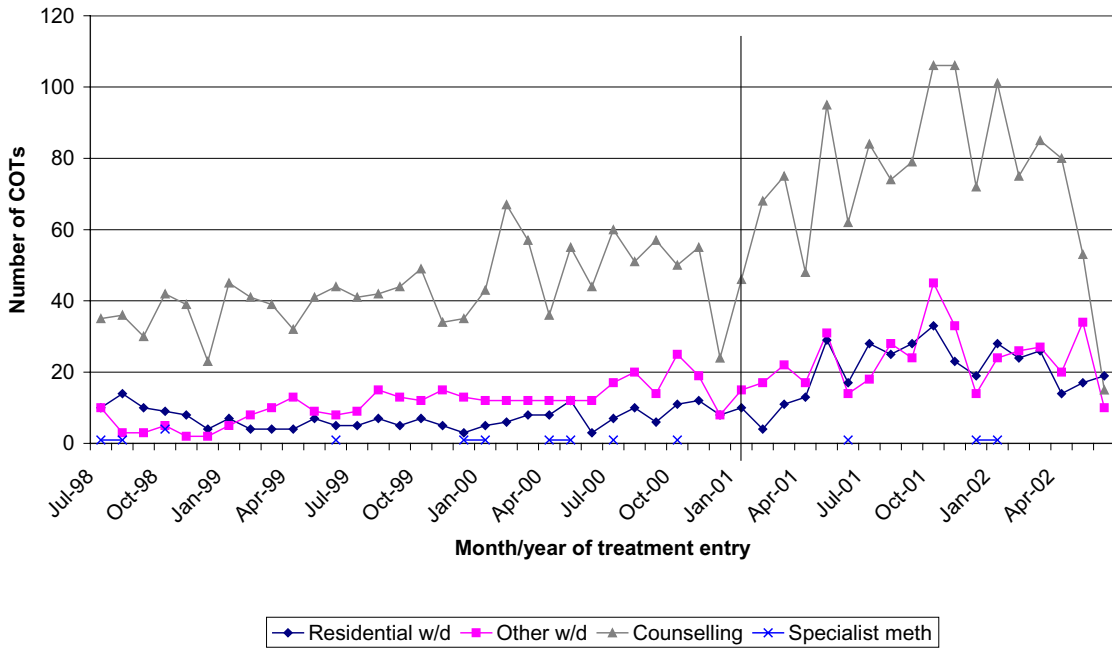


Source: Alcohol and Drug Information System, Victorian Department of Human Services

### 6.4.2 Treatment type

With the exception of pharmacotherapies, clients presenting at Victorian specialist drug treatment service providers with amphetamines as their principal Drug of Concern (DOC) have access to the same major treatment types as clients presenting with opioids as their principal DOC. Figures 6.9 and 6.10 show the number of Courses of Treatment (COTs) provided to clients with amphetamines as their principal Drug of Concern (DOC) according to different service type categories. The number of counselling and residential withdrawal COTs for amphetamines increased following the onset of the heroin shortage. The decline in the number of COTs for these service types evident in Figure 6.10 is probably an artefact of the practice of recording COTs at termination.

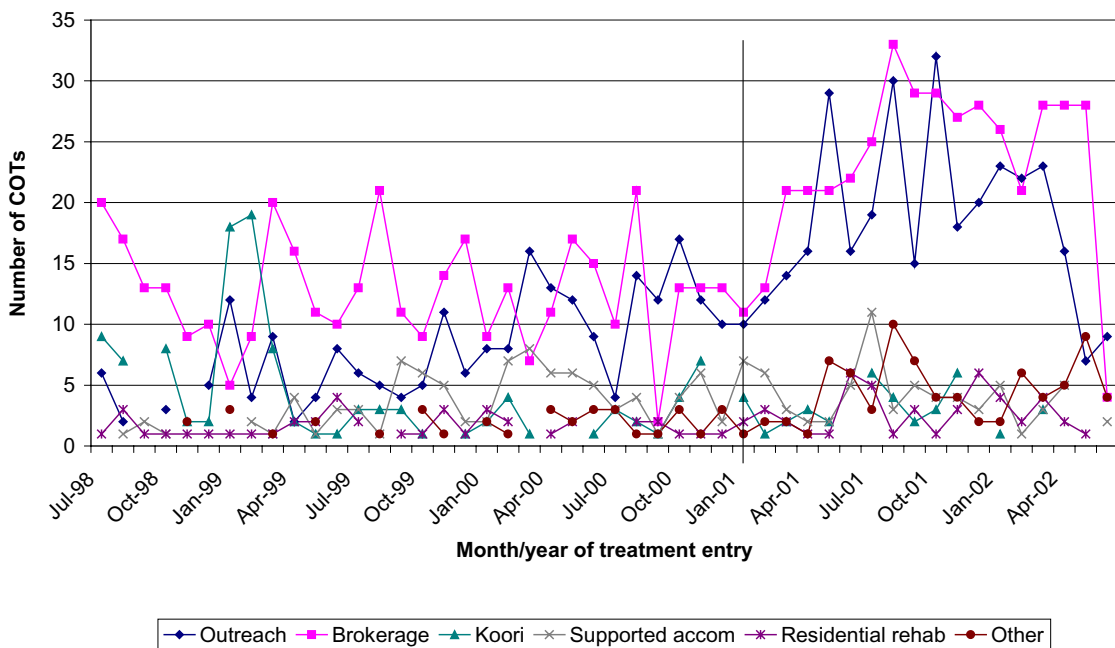
Figure 6.9: Amphetamine courses of treatment by treatment type, Victoria, July 1998-June 2002



Source: Alcohol and Drug Information System, Victorian Department of Human Services

While only small numbers of clients presenting with amphetamines as their principal Drug of Concern (DOC) received other service types, there does appear to be an increase in the number of brokerage and outreach COTs provided to clients presenting with amphetamines as their principal DOC over time that may have been a result of the heroin shortage.

Figure 6.10: Amphetamine courses of treatment by treatment type, Victoria, July 1998-June 2002



Source: Alcohol and Drug Information System, Victorian Department of Human Services

## 6.5 Secondary drugs of concern

Section 4 of this report suggests that heroin users changed their patterns of drug use as a result of the heroin shortage. Some Key Informants referred to a switch in primary drug type, with the potential for this change being represented in changes in amphetamine treatment data analysed in section 6.4. Other Key Informants referred to the use of other drugs to augment the effects of opioids or minimise withdrawal effects. These scenarios could lead to shifts in treatment presentations in secondary drugs of concern among opiate users. Conversely, the uptake of another drug, which heroin users cannot self-manage as effectively, may lead to treatment episodes for that new drug. As one Key Informant explained:

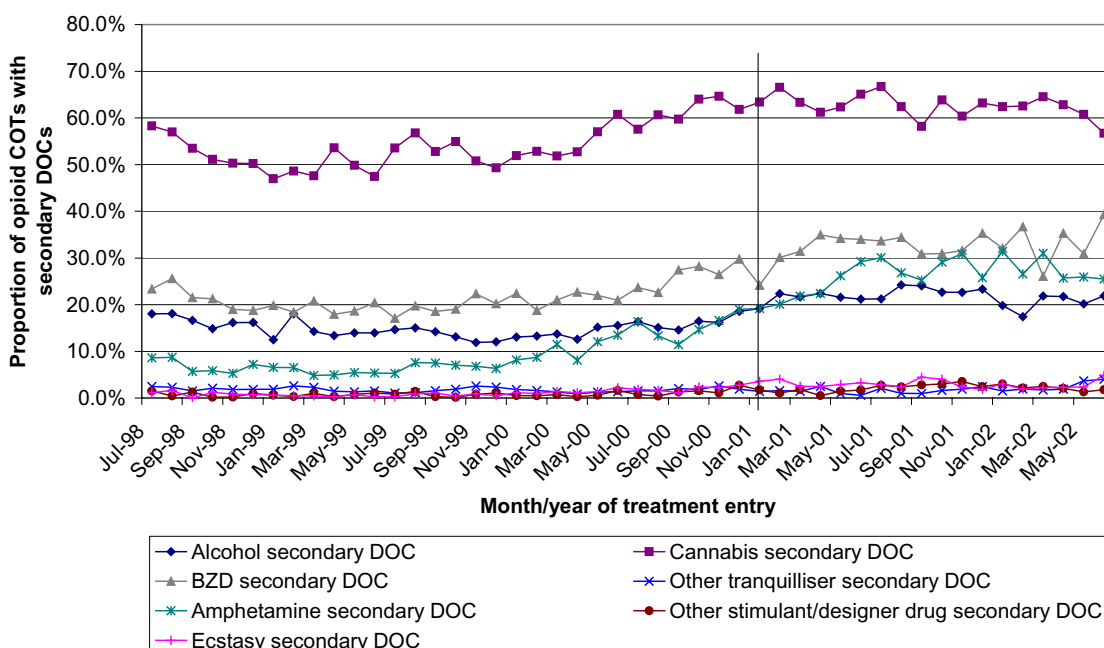
*“A lot of people have been using heroin for a long time. Their life isn’t great but they have learnt to cope within that framework of fucked up ness if you like. It’s shitty but they know how to get by and live to the next year” (Outreach Worker, Central Melbourne)*

Such an effect may be evidenced by courses of treatment for a range of primary drugs with opioids indicated as a secondary drug.

### 6.5.1 Courses of treatment for opioid users

To examine the extent to which shifts were evident in the way in which clients presented for treatment, analysis was conducted on the secondary drugs of concern. First, courses of treatment with a primary DOC of opioids that also recorded secondary DOCs were analysed. This includes approximately 53% of the total COTs (range 42% to 63% per month) provided for opioids during the study period. The proportions of recorded secondary DOCs for COTs provided for opioids as the primary DOC are presented in Figure 6.11. Results are not presented for hallucinogens, tobacco, caffeine, steroids, volatile substances and other drugs as secondary DOCs as the numbers presenting were too small.

**Figure 6.11: Percentages of secondary drugs of concern among opioid users by month, Victoria, July 1998-June 2002**



Source: Alcohol and Drug Information System, Victorian Department of Human Services

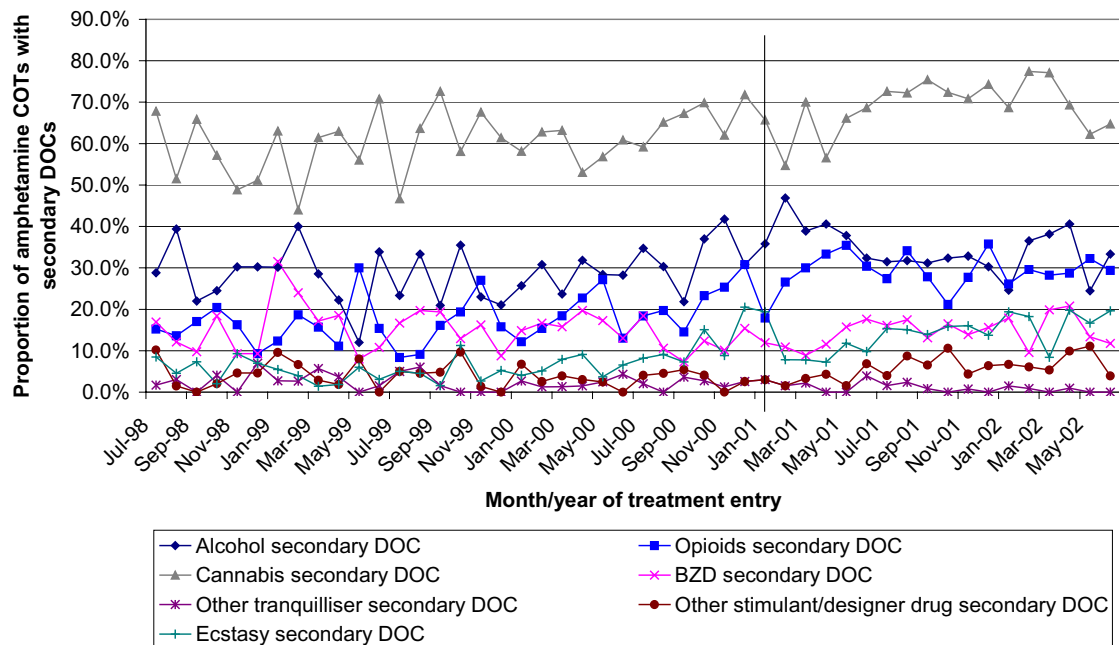


In the year following the onset of the heroin shortage there appeared to be an increase in recorded secondary for benzodiazepines, amphetamines and alcohol among opioid users, providing secondary confirmation of the shift towards the use of other drugs by IDU noted in section 4. This finding also provides supporting evidence for the reports from Key Informants. Analysis of the average percentage of COTs per month with a secondary DOC was conducted for the year preceding and the year following the onset of the heroin shortage. The prevalence of secondary DOCs increased following the onset of the heroin shortage. Alcohol as a secondary DOC among opioid COTs increased by 48% (from 15 to 22% of COTs per month), cannabis increased by 8% (from 58 to 63%) and benzodiazepines increased by 35% (from 24 to 32% of COTs per month). The greatest change in secondary DOCs was observed for amphetamines, with an increase from 13% to 26% COTs per month with a secondary DOC, representing an increase of 100% in the year following the onset of the heroin shortage. Interpretation of these trends needs to be undertaken with some caution as the increases evident followed a general increase evident from figures available in 1999. This may reflect a general trend that was established prior to the onset of the heroin shortage. Alternatively, the pattern may reflect a recording bias among agencies using the system with more complete data collection being undertaken over time.

### 6.5.2 Courses of treatment for opioids as a secondary drug

Next, the view that treatment episodes may be characterised by clients with a secondary drug of opioids and primary drugs of amphetamines, alcohol and cannabis was tested. The proportions of recorded secondary DOCs for COTs provided for amphetamines as the primary DOC are presented in Figure 6.12.

**Figure 6.12: Percentages of secondary drugs of concern among amphetamine users by month, Victoria, July 1998-June 2002**

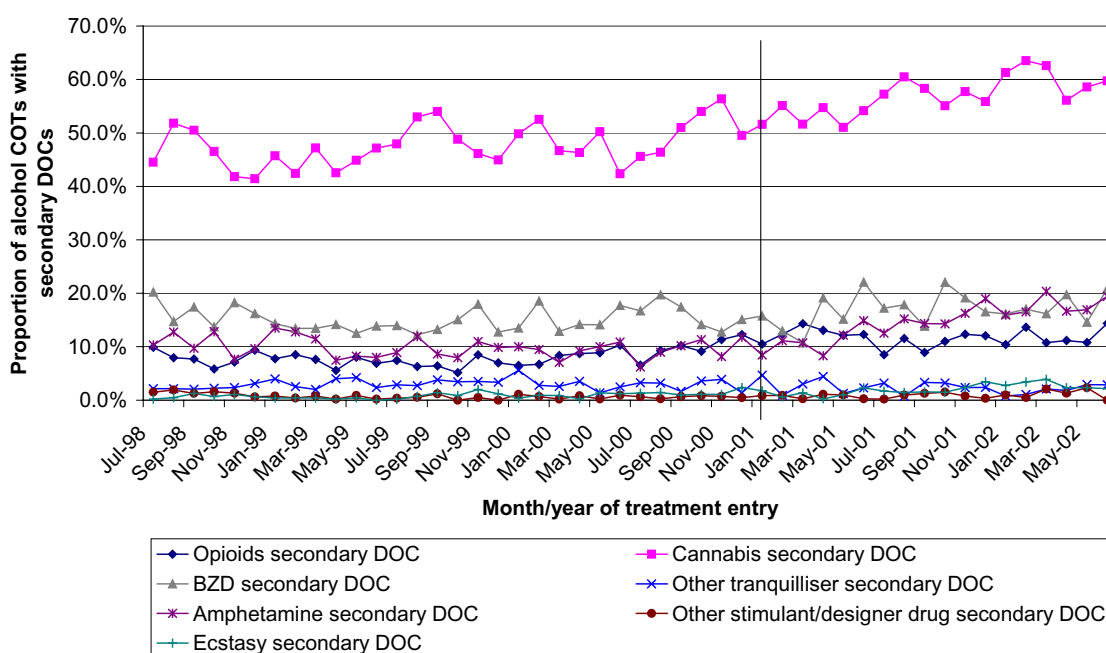


Source: Alcohol and Drug Information System, Victorian Department of Human Services

In the year preceding the shortage compared to the year following the shortage, the proportion of opioids as a secondary DOC amongst COTs for amphetamines increased by 44% from 20% to 29% of COTs per month that included a secondary DOC. This lends some support for the view that previous primary opioid users may have shifted their drug use such that they present for treatment with a primary drug problem of amphetamines. However, as primary amphetamine users represent a small proportion of COTs delivered, these amphetamine/opioid users do not account for the large decrease in opioid COTs delivered. Further, the low number of primary amphetamine users with opioids as a secondary DOC indicates that majority of the COTs were provided to clients who represent a group of drug users distinct from users of opioids.

The proportions of recorded secondary DOCs for COTs provided for alcohol as the primary DOC are presented in Figure 6.13.

**Figure 6.13: Percentages of secondary drugs of concern among alcohol users by month, Victoria, July 1998-June 2002**

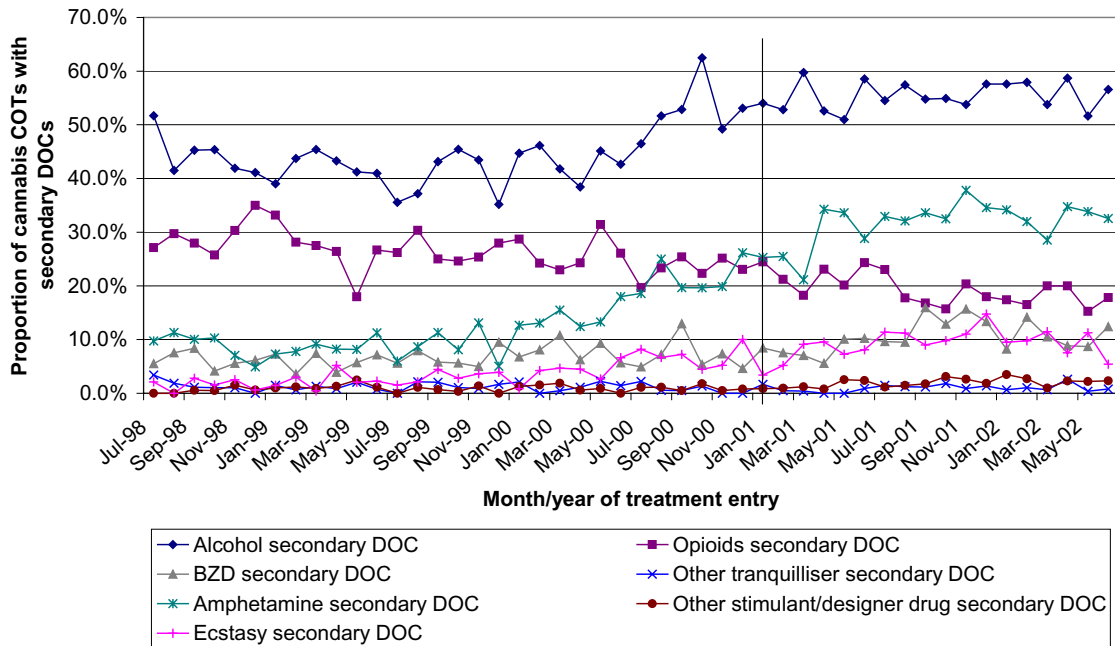


Source: Alcohol and Drug Information System, Victorian Department of Human Services

In the year preceding the shortage compared to the year following the shortage, the proportion of opioids as a secondary DOC amongst COTs for alcohol increased by 29% from 9% to 12% of COTs per month that included a secondary DOC. Further, amphetamines a secondary DOC among primary alcohol users increased by 39% (from 10 to 13% of COTs per month).

The proportions of recorded secondary DOCs for COTs provided for cannabis as the primary DOC are presented in Figure 6.14.

**Figure 6.14: Percentages of secondary drugs of concern among cannabis users by month, Victoria, July 1998-June 2002**



Source: Alcohol and Drug Information System, Victorian Department of Human Services

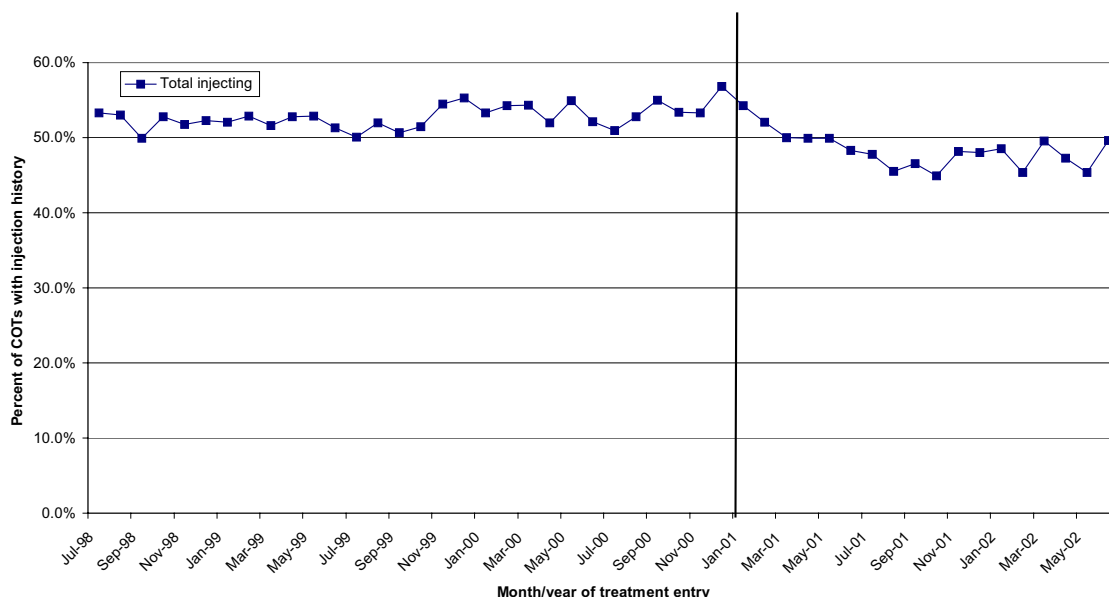
In the year preceding the shortage compared to the year following the shortage, the proportion of opioids as a secondary DOC amongst COTs for cannabis decreased by 18% from 25 to 20% of COTs per month that included a secondary DOC. However, amphetamines as a secondary DOC among cannabis users increased by 74% (18 to 31%, for the year prior to and the year following the onset of the shortage respectively).

In summary, available evidence from recorded secondary drugs of concern does provide some support for a shift in drug use among clients presenting at specialist alcohol and drug treatment agencies in Victoria. To this end there was some evidence to suggest that clients' presenting primarily for problems related to either amphetamines or alcohol may have formerly been primary opioid users. Nevertheless, the size of these shifts was insufficient to account for the large changes in the recorded rate of presentation for opioid treatment detailed in section 6.1. Further, these data on secondary drugs of concern should be viewed with some caution as changes in recording practices may at least partially explain the observed changes.

## 6.6 Injecting drug use

Injecting drug use is measured as an exposure on all Courses of Treatment (COTs) recorded on the ADIS database. The data presented above suggest that COTs for opioids declined, and some of this decline may have been due to shifts in the patterns of drug use of clients who may formerly have presented with opioids as their primary drug problem. One way of examining this issue is through a consideration of changes in injecting drug use as an exposure over time. However, the manner in which this information is recorded on ADIS has changed over time. This means that the only consistent measure of the exposure of injecting drug use available is 'ever' having injected a drug – a crude measure of the exposure. Data from the ADIS database shown in Figure 6.15 shows the percentage of COTs provided where a history of injecting drug use was recorded for the client for the period July 1998 – June 2002.

**Figure 6.15: Percentages of Courses of Treatment with injecting drug use recorded as an exposure, Victoria, July 1998-June 2002**



Source: Alcohol and Drug Information System, Victorian Department of Human Services

Figure 6.15 shows that the percentage of COTs with an exposure history of injecting drug use declined by 6% in the year after the onset of the heroin shortage compared to the year preceding the shortage. This decline is only small and, in the context of the decline in COTs provided to clients with opioids as their primary drug problem, provides further evidence of the shift to the use of different drugs among IDU who were formerly primary opioid users as described in section 4 of this report.

## 6.7 Conclusions

The onset of the heroin shortage had significant effects on the specialist alcohol and drug treatment service system in Victoria. The number of courses of treatment provided to clients with opioids as their primary drug problem declined around the time of the onset of the shortage with these changes most pronounced in non-pharmacotherapy treatments such as withdrawal and counselling. Indeed, there appeared to be few changes in the provision of specialist methadone service that could be attributed to the heroin shortage. This finding was also observed in the pattern of the census undertaken of the Victorian community methadone program that showed a relatively small decrease in numbers of clients on the program towards the end of 2001 that was subsequently followed by an increase in numbers from the end of 2002. This increase needs to be interpreted within the context of the widespread availability of buprenorphine that may have been responsible for the increase in numbers of clients on the program in the longer term.

The decrease in the number of courses of treatment provided through the Victorian specialist service system was most pronounced among younger age groups but appeared to be of a similar magnitude for males and females. Further, there was a concomitant increase in the number of courses of treatment provided for drugs other than opioids. While this change would be expected (as the treatment service system runs at capacity), this finding has significant implications for the operations of treatment agencies that are considered in detail in section 8 of this report. There was some evidence from a consideration of presenting clients' secondary drugs of concern and the recorded exposure of lifetime injecting drug use, to suggest the possibility that some of the clients

presenting with either amphetamines or alcohol as their primary drug problem may have been former primary opioid users (this was not found for courses of treatment provided to cannabis clients). Nevertheless, the magnitude of this increase in secondary drugs of concern did not appear sufficient to account for the decrease in the number of courses of treatment provided to opioid clients which would that different client groups began accessing the specialist alcohol and drug service system as a result of the heroin shortage. However, the small changes evident in the recorded rate of injecting drug use exposure may suggest that, overall, courses of treatment provided to injecting drug users changed only a small amount as a result of the heroin shortage.

## 7 Changes in drug-related criminal activity associated with the heroin shortage

### Summary

The number of heroin related incidents recorded by Victoria Police has been declining since a peak in 1998. The heroin shortage did not alter this decline significantly.

The decline in heroin related incidents does not appear to have been offset by any major increases in the recorded number of incidents related to other drugs.

However, as a result of the heroin shortage:

- The rate of heroin-related incidents declined in the street-based drug markets in Melbourne
- Robbery incidents showed a substantial increase around the time of the onset of the shortage. This increase was not sustained in the longer term.

There were few other quantifiable effects of the heroin shortage on reported rates of crime indirectly linked to the consumption of heroin in Victoria. This meant that Key Informant and IDU reports of increased property, sex related and violent crime were not supported by available crime data. This divergence could be explained by Key Informant reports suggesting that the reported increases in crime attributed to the heroin shortage may have been perpetrated against other heroin market participants who are probably less likely to report their experience of crime than other members of the public

Key Informants reported that in Victoria some producers/importers shifted towards the production and distribution of drugs other than heroin (notably cannabis and forms of methamphetamine).

## 7.1 Introduction

The relationship of illicit drug consumption to harms in the social and legal domains has been described in a number of studies. Makkai's (2001) study of Australian detainees showed that the prevalence of illicit drug use among detainees was much higher than that of the general population, suggesting a link between drug use and rates of arrest and detention. The findings that detainees arrested for drug related offences demonstrated a higher rate of illicit drug use than the general population is not surprising, however certain types of illicit drug use are associated with categories of crime other than those related to the possession, consumption and/or the manufacture and distribution of illicit drugs. For example, the likelihood of being detained for a property-related offence in Makkai's (2001) study was higher for those detainees who tested positive to opiates (primarily heroin) than for other drugs. Nevertheless, the relationship between property crime and the use of drugs such as heroin has yet to be fully explicated. Makkai raised three possible explanations as to the cause of the association between property crime and heroin use;

- (1) people who use heroin may engage in criminal activity to support their drug use,
- (2) they may engage in criminal activity as part of an overall criminal lifestyle, or
- (3) they may need to engage in property crime after engaging in heroin use because they need money to support their drug use after it had been initiated.

If the link between property crime is best described by explanation 1 or 3, then one may expect an increase in property crime as a result of the heroin shortage in order to maintain drug use. If the link is best described by explanation 2 then the effects of a shortage of heroin on property crime may be minimal.

The relationship between property crime and heroin use does not appear to hold for illicit drugs other than heroin. Makkai (2001) found that only benzodiazepine use (presumably misuse) was also positively associated with increased rates of property offences. The relationship between benzodiazepine use and crime is not well understood and is currently being investigated at Turning Point Alcohol and Drug Centre. Other drugs used in Melbourne (Fry & Miller, 2002) such as cannabis and amphetamines do not appear to be associated with increased rates of criminal involvement (other than drug offences), as measured in Makkai's study. However, it is possible that with the changes in drug use associated with the heroin shortage this situation may have changed as heroin users shifted to the use of other drugs such as amphetamines (Miller et al., 2001).

In their recent update of the estimated social costs of drug abuse in Australia, Collins and Lapsley (2002), derived a series of drug-attributable fractions for a variety of crime categories on the basis of data drawn from studies of detainees and prisoners (eg Makkai, 2000). These drug-attributable fractions represent a law enforcement equivalent of the aetiological fractions widely used in the study of the health effects of drug use (eg English et al., 1995; Jonas et al., 1999). Nevertheless, they are derived from studies conducted in Australian states other than Victoria and may not be applicable to Victorian data. Further, the extent of attribution for criminal offences that are not wholly attributable to drugs (ie offences other than drug related offences) is likely to change as a result of drug market dynamics and the associated drug using behaviours that are the subject of this research. In this way it is inappropriate to use such fractions in studying the effects of the heroin shortage in Victoria.

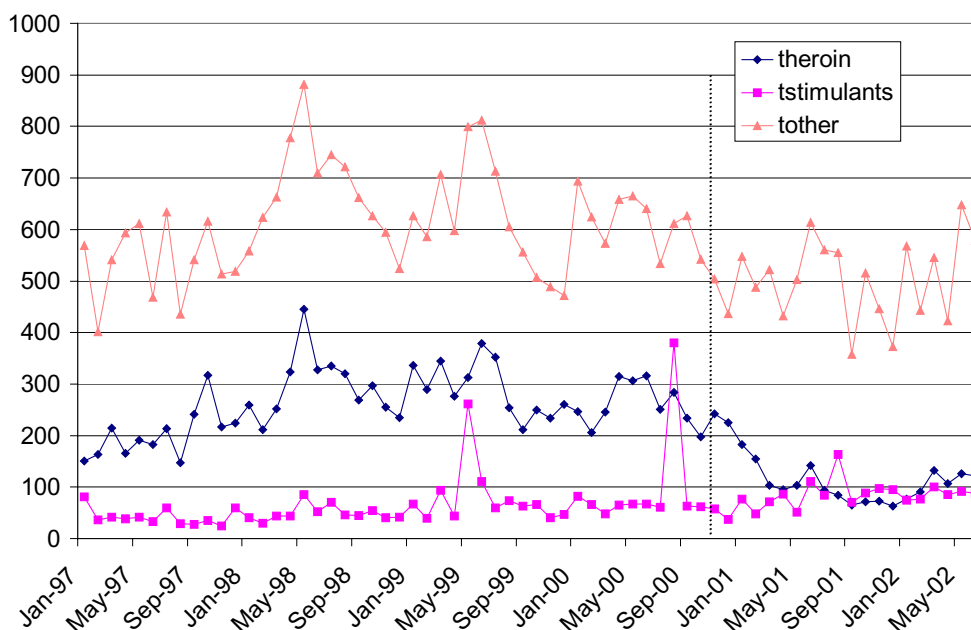
In examining drug related criminal activity in this report changes in offences wholly attributable to drugs (eg heroin possession) were examined. For drug related criminal activity partially related

to drugs at an ecological level such as property crime, raw counts of offences were examined with the assumption that any changes in the rates of these offences associated with the heroin shortage would be represented as an additive or subtractive factor. Information on all of these types of criminal activity was obtained through analyses of reported incidents of crime recorded by Victoria Police the Law Enforcement Assistance Program (LEAP) database and self-reports of engagement in criminal activity by IDU as found in available surveys of convenience samples of IDU conducted in Melbourne.

## 7.2 Drug related incidents

One of the ways in which the heroin shortage has been indexed has been through the changes in arrest rates for drug related offences. Initial inspection of available data on drug related incidents in Victoria, showed almost identical patterns for drug-related use/possession incidents and drug-related traffic/cultivate/manufacture incidents. For this reason all drug-related offences were combined for analysis. Figure 7.1 shows the total (t) number of drug-related incidents for three categories of drug (heroin/stimulants/other) recorded over the period January 1997 – June 2002 for the whole of Victoria.

**Figure 7.1: Number of drug-related incidents by drug type recorded in Victoria, January 1997- June 2002**



Source: Statistical Services Division, Victoria Police

Inspection of Figure 7.1 suggests that the only major changes evident in the number of drug related incidents that could be associated with the heroin shortage were a decrease in heroin related incidents and a possible increase in stimulant related incidents. However, time series analysis conducted on the heroin related incidents showed no significant effects of the heroin shortage, suggesting that the decline seen in the Figure started prior to the onset of the shortage and that the magnitude of the decline occurring around the time of the shortage was not significantly greater than the decline observed in other periods in the series. Similarly, there was no evidence of any effect of the heroin shortage noted in the time series of amphetamine incidents detailed in Figure 7.1.



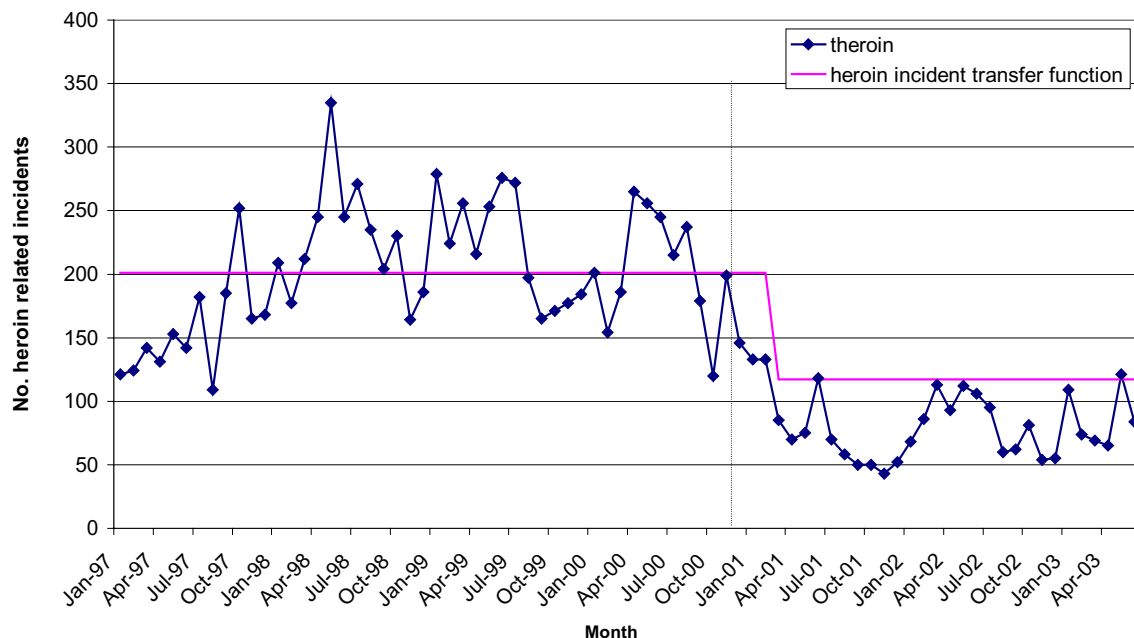
One of the major impacts of the heroin shortage noted by Key Informants interviewed for this research was upon the street-based heroin markets that had come to dominate the public face of heroin distribution and consumption in Melbourne (Dietze & Fitzgerald, 2002):

*“We have always had people dealing from premises. It would have been more frequent during the epidemic {ie before the onset of the heroin shortage} because you get a lot of complaints from the neighbours. You know, the usual people coming through and then go out and that sort of thing and we would go up and execute one or two warrants but that has dropped right away ever since the epidemic. I’d just say that the numbers actually dealing on the street has declined and we actually no longer got a concentrated area. I believe that is because of people...and the dealers....um....it’s interesting where they concentrate and I think it’s the ability or perception by them how they think they can meld in to the general foot traffic there.” (Senior NCO, South Eastern Melbourne)*

In order to examine any effects of the heroin shortage upon heroin related incidents in the areas containing the main street-based heroin markets, further analysis was conducted on the heroin related incidents that were recorded in the key postal areas for the LGAs in which the street-based markets are known to operate. This analysis allowed for the use of a longer time series as data were available for the period January 1997 – June 2003.

The results of the time series analysis (see appendix A7.1) showed a simple step function best fitted the data, providing reasonable evidence ( $p < 0.02$ ) of an effect of the heroin shortage, and this function is detailed in Figure 7.2. This represented a permanent 40% decrease in the mean number of heroin related incidents per month, occurring two months after the onset of the heroin shortage.

**Figure 7.2: Number of heroin related incidents recorded in postal areas in five key Victorian LGAs, January 1997-June 2003**



Source: Statistical Services Division, Victoria Police

### 7.3 Criminal incidents linked to IDU

The changes noted in Figure 7.2 would be an expected consequence of the heroin shortage. The availability of heroin would be expected to be directly related to the likelihood of recording heroin related incidents (notwithstanding the effects of police practices on drug related incident data). It is in relation to other forms of crime that the effects of the heroin shortage are more controversial (Dietze, Fry, Miller et al., 2001; Weatherburn et al., 2001).

While the majority (42) of Key Informants interviewed for this study reported on crime trends related to the heroin shortage, their perceptions of the effects of the shortage varied. Fifteen Key Informants (10 Health Key Informants and 5 Law Enforcement Key Informants) reported that there had been an increase in crime due to the heroin shortage. For example:

*“Um.....more street crime Um.....and violent and non violent crime and a lot more prostitution. St Kilda just sort of became very, very busy and desperate.” (NSP worker, Inner Melbourne)*

In contrast three Key Informants (1 Health Key Informant and 2 Law Enforcement Key Informants) reported a decrease in crime as a result of the heroin shortage. Overall, the impressions of Key Informants suggested a fluctuating situation with an initial increase in crime followed by a return to pre-shortage levels or a gradual decline:

*“When the shortage kicked in our crime rate skyrocketed, absolutely skyrocketed. Then... general what’s known as drug related crime slowly reduced.” (Senior NCO, South Eastern Melbourne)*

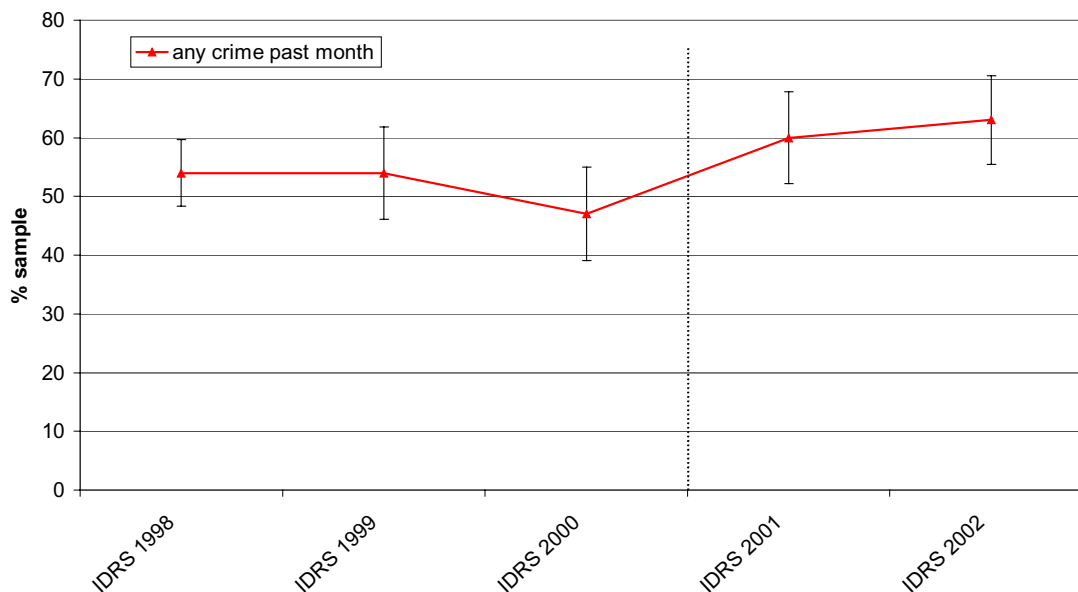
Key Informants suggested that an absence of sustained changes in crime as a result of the heroin shortage was related to the fact that criminal activity was already part of the lifestyle of the drug users they were in contact with:

*“you’ll find that there would have been a slight reduction and yes, that’s because some {crimes} are drugs, so, therefore that is obviously the reason. And obviously because a lot of offences are committed to acquire funds to purchase drugs and that would have happened...it would probably have flat-lined for a while and then it would have gone back to...well, gone to a figure that has probably been fluctuating since because that is what I’m getting back to. The locals were here and things were still occurring in the town, I suppose. So, changes in crimes stats wouldn’t be...wouldn’t have been greatly affected by the heroin drought, other than the drug crimes, really. I know that sounds silly because most people say “Well, most crimes are connected to the drugs” but we still have people that want to buy drugs, so, they still have to do crime. The fact that they’re not doing it in Collingwood, as in purchasing it, doesn’t mean they’re not doing the crime. So, that is probably the best way to put it.” (Senior NCO, Inner Melbourne)*

Participants’ self-reports of involvement in criminal activity have been consistently obtained in the IDRS IDU surveys conducted in Melbourne over the period 1998-2002. Findings from the IDRS surveys as detailed in Figure 7.3 show a pattern of increased criminal activity largely consistent with Key Informant reports.

A comparison of findings from the DAMP study (Miller et al., 2001) and the 2000 IDRS was used as the basis of initial claims of an increase in reported engagement in criminal activity (notably property and violent crime) by IDU. However, the period covered in the DAMP study was 2-3 months, rather than the one month used in the IDRS – a difference that could account for the higher rates of criminal involvement reported in the DAMP study.

**Figure 7.3: Percentages (and 95% CIs) of IDU survey samples reporting recent engagement in criminal activity in Melbourne, 1998-2002**



Source: Turning Point Alcohol and Drug Centre

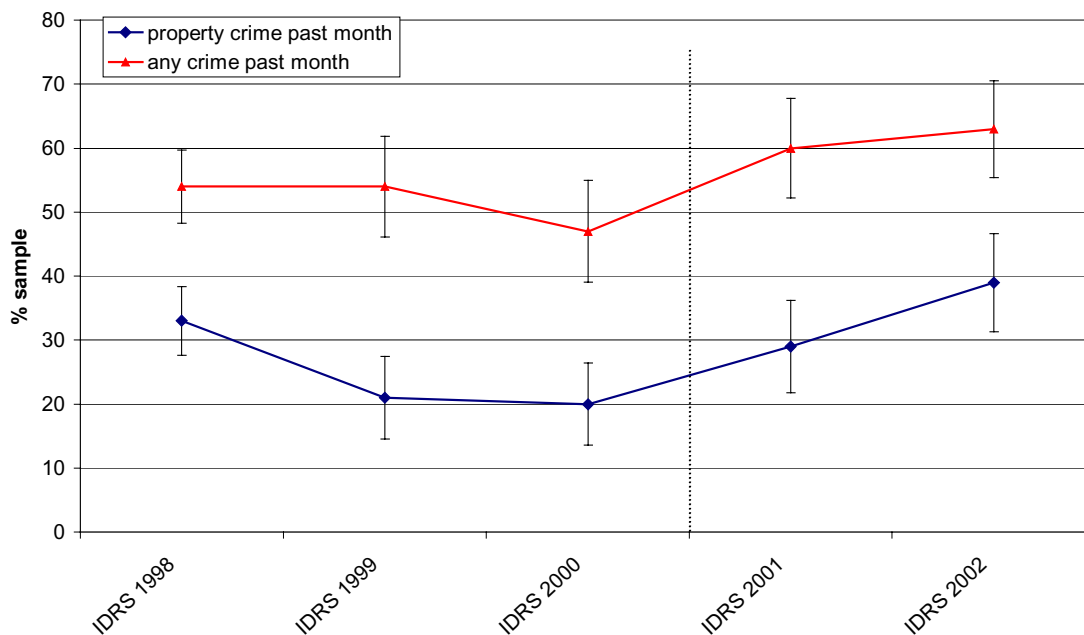
### 7.3.1 Incidents of property crime linked to IDU

As discussed previously, much of the criminal activity related to IDU involves property offences (Makkai, 2001):

*“I know that clients of mine got picked up {during the heroin shortage} for shop lifting, the stupidest kind of shoplifting, the most ridiculous idiotic kind of stuff that even they look back on and go “pills man, pills what you do on pills”. At the moment {interview time} I would say, yeah, I personally am dealing with less clients who are probably into seriously heavy duty crime, like armed rob, you know, guys who are just career criminals that have got a habit, got to have it, got to feed it, just constantly day in, day out.” (Outreach Worker, Central Melbourne)*

Participants’ self-reports of engagement in property crime are also obtained in the IDRS surveys. Findings regarding self-reported engagement in property crime from these surveys are shown in Figure 7.4.

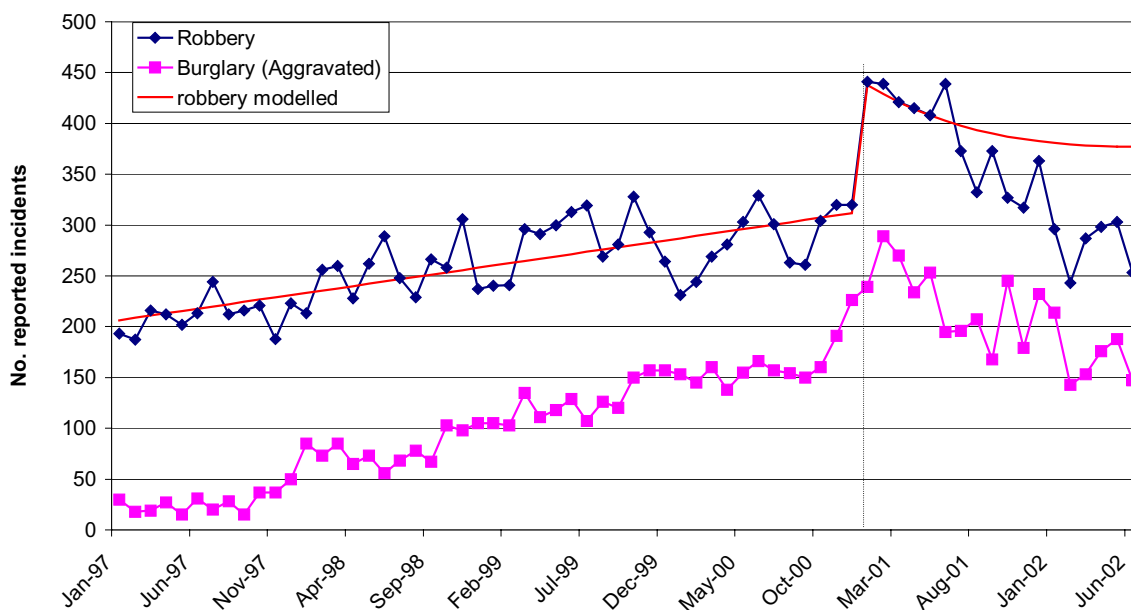
**Figure 7.4: Percentages (and 95% CIs) of IDU survey samples reporting recent engagement in property crime in Melbourne, 1998-2002**



Source: Turning Point Alcohol and Drug Centre

When the data presented in Figure 7.4 are viewed across all survey years, it would appear that the prevalence of reported engagement in property crime remained relatively stable, with data from 2002 only showing an increase over 1998/1999 levels – an increase that could not be attributed to the heroin shortage. These findings are consistent with available data on criminal incidents reported to police for which initial visual inspection suggested that no effects of the heroin shortage were evident upon property-related incident rates across a number of different incident types. Importantly, these categories included residential and other burglaries, theft (of/ from motor vehicles, bicycles, ‘shopsteals’ and other) and handle stolen goods – categories that would not only be expected to be related to IDU but also constitute the bulk (98%) of property incidents reported to police in Victoria over the period for which data are available (January 1997 – June 2002). The only exceptions to this were reported incidents of aggravated burglary and robbery (which constitute the remaining 2% of property incidents reported to Victoria police for the period January 1997 – June 2002). The numbers of these incidents are detailed in Figure 7.5.

**Figure 7.5: Number of robbery (actual and modelled) and aggravated burglary incidents reported to Victoria police, January 1997-June 2002**



Source: Statistical Services Division, Victoria Police

Time series analysis was undertaken on the reported incidents of aggravated burglary and robbery shown in Figure 7.5. A significant effect of the heroin shortage was evident in the robbery data with a decaying pulse occurring at the time of the heroin shortage best fitting the data (see Appendix A7.2), and this pulse function is detailed in Figure 7.5. However, attempts to fit a similar model to the aggravated burglary data proved unsuccessful, necessitating regressing the aggravated burglary data against month as a quadratic term – providing a model that fitted the data well but showed no significant effect of the heroin shortage on aggravated burglary rates.

The effect of the heroin shortage on the robbery incidents represented an increase of 39% in the number of robbery incidents as a result of the heroin shortage. The increase decayed slowly to pre-shortage levels. The behaviour of the series after the shortage may have changed (to a level rather than an increasing series) but there is not enough data to determine whether or not this was the case. In conclusion, in spite of the initial increase in reported robbery incidents associated with the heroin shortage there appeared to be no long-term increase in robbery incidents as a result of the shortage.

It is important to note that the data on property-related incidents reported to police in the areas containing the main street-based heroin markets in Melbourne were also examined and, in spite of a longer time series being available for analysis, no significant effects of the heroin shortage were noted on any of the incident categories considered.

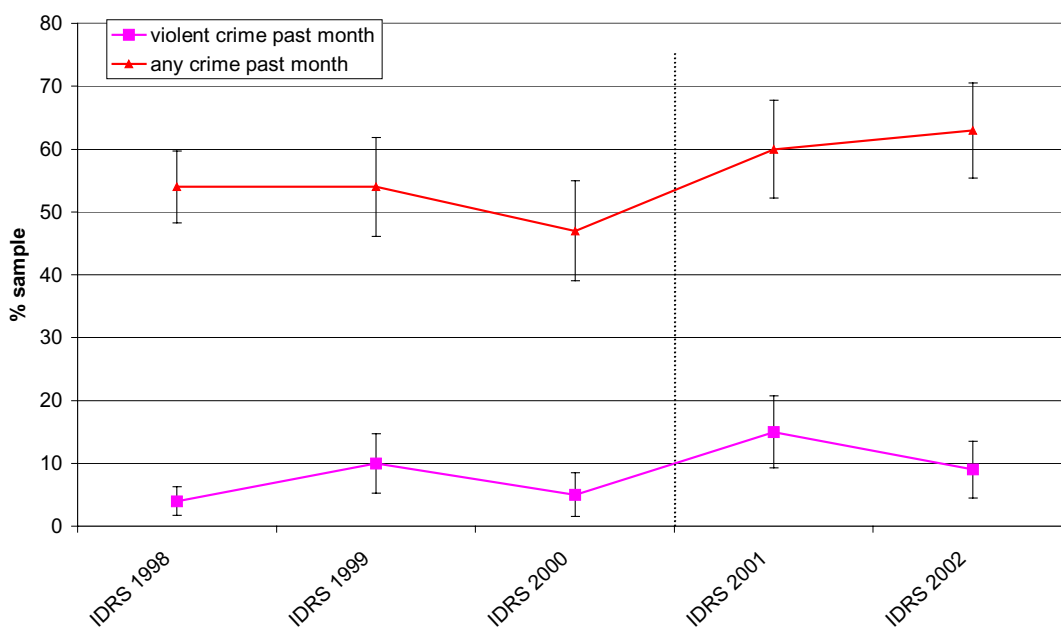
### 7.3.2 Violent crime linked to IDU

An increase in violent crime by and among IDU was a feature of early reports on the effects of the heroin shortage in Melbourne (Miller et al., 2001). Twelve Key Informants (6 Health Key Informants and 6 Law Enforcement Key Informants) interviewed as part of the current research reported an increase in violent crime related to the heroin shortage:

“During the peak they would rob their own mother as we know. They would rob, steal, lie from their own family and we had more violent crimes, armed robberies and what have you and using syringes and what have you, knives and not so much guns but you know with violent weapons.” (Senior NCO, South Eastern Melbourne)

Participants’ self-reports of engagement in violent crime are also obtained in the IDRS surveys. Findings regarding self-reported engagement in violent crime from these surveys are shown in Figure 7.6.

**Figure 7.6: Percentages (and 95% CIs) of IDU survey samples reporting recent engagement in violent crime in Melbourne, 1998-2002**

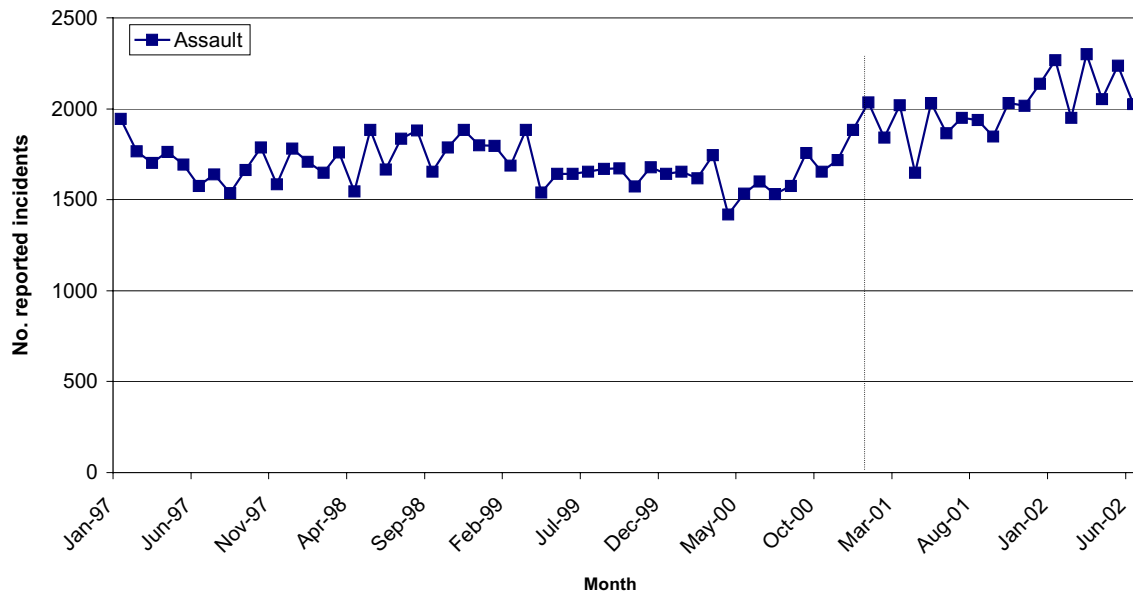


Source: Turning Point Alcohol and Drug Centre

Comparison of 2001 and 2000 IDRS data suggests that the prevalence of involvement in violent crime in the month prior to being surveyed increased after the heroin shortage. However, the proportion of the samples reporting criminal involvement was only small and the changes should be viewed with some caution. Nevertheless, the increase observed in the 2001 survey may be expected to be observed in incidents of violent crime reported to police around the time of the heroin shortage.

As with the property-related incidents considered above, initial visual inspection of data on violence-related incidents reported to police suggested that there were no effects of the heroin shortage on these incident types (including murder and assault). For example, Figure 7.7 shows the number of reported incidents of assault in Victoria for the period January 1997 – June 2002. While there was some evidence of a simple step occurring after the onset of the heroin shortage, modelling of this time series showed no significant effect of the heroin shortage on rates of reported incidents of assault.

Figure 7.7: Number of assault incidents reported to Victoria police, January 1997-June 2002



Source: Turning Point Alcohol and Drug Centre

It is widely acknowledged that police data on violent crimes such as assault represent an underestimate of the extent of such crimes within the community (eg Matthews, Donath, Chikritzhs, Catalano, & Stockwell, forthcoming). This may be especially true for marginalised and stigmatised groups in the community such as IDU. Such underreporting may account for the absence of major effects of the heroin shortage in police incident data in spite of Key Informant and, to a lesser extent, IDU reports of a substantial increase in violent crime associated with the heroin shortage. Indeed, Key Informants noted that most of the increase in crime was perpetrated against other IDU during the shortage:

*“people were turning on...to other users. IDU turned on other IDU during the heroin shortage.” (Outreach worker, Melbourne Central)*

Key Informants commonly reported an increase in the number of ‘run throughs’ where rival drug users/traffickers, will raid a person’s premises when it is occupied and quickly move through the house taking cash drugs and lighter consumer goods. It would not be surprising to see such crimes go unreported by IDU:

*“There was a lot of what we called run through of houses, aggravated burglaries, payback for searching for heroin to steal or paybacks. There was a lot of street fights and that’s what upsets the community a lot.” (Senior NCO, South Eastern Melbourne)*

It is important to note that the data on violence-related incidents reported to police in the areas containing the main street-based heroin markets in Melbourne were also examined and, in spite of a longer time series being available for analysis, no significant effects of the heroin shortage were noted on any of the incident categories considered.

### 7.3.3 Sex work linked to IDU

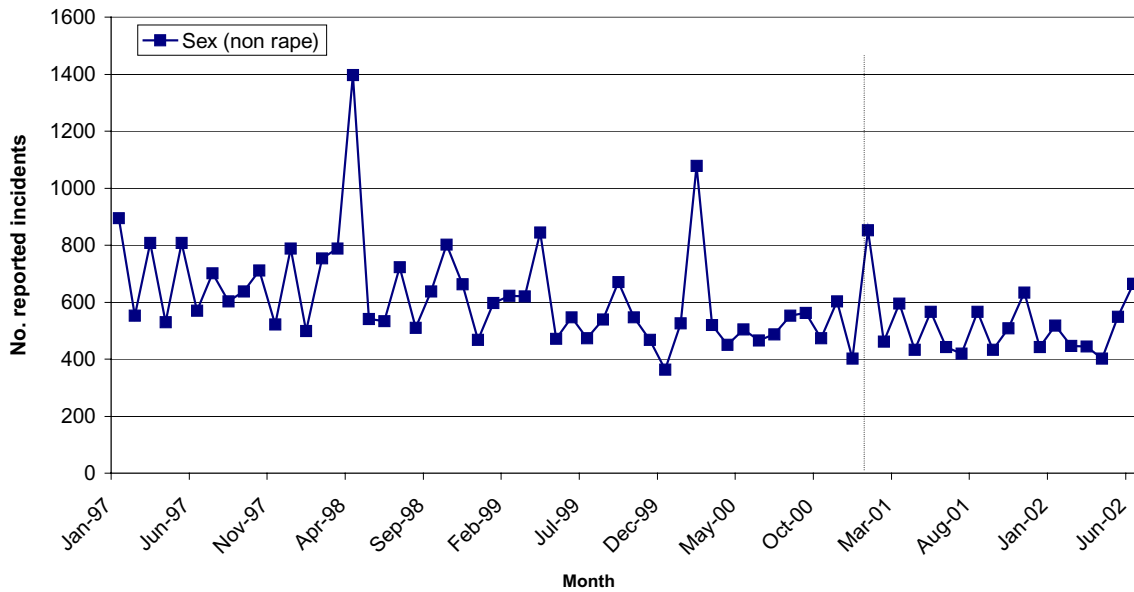
Twenty Key Informants (18 Health Key Informants and 2 Law Enforcement Key Informants) reported more sex work, particularly in the St Kilda area and that there was a new, younger group of sex workers related to the heroin shortage:

“we were certainly perhaps seeing more girls moving into opportunistic sex work because of the price of drugs. So, where before they perhaps could have been able to manage, they weren’t managing because of the price {of heroin}, so, taking opportunistic sex work.” (NSP worker, Western Melbourne)

“a different shift of girls working, you know, there was...I mean, since the heroin drought there has been a huge...a much more itinerant sex industry than there was before. You got a lot of young people...young girls working. A lot of people would not work so much, so, they would be here for a binge and they would work, you know, for a week or ten days and then they would sort of go away and they would come back again. So, it really made the whole scene a lot less stable, from the point of view, you know and there was a lot of young people who were introduced to the scene. The girls would talk about...there was no longer a feeling of camaraderie between them.” (NSP worker, South East Melbourne)

As with the recorded incident data considered above, initial visual inspection of sex-related incidents reported to police suggested that there were no effects of the heroin shortage on these incident types. Figure 7.8 shows the number of reported non-rape sex incidents in Victoria for the period January 1997 – June 2002. While there was some evidence of an increase occurring after the onset of the heroin shortage, this increase was in fact smaller than observed in other months in the time series. Again, the absence of any effects of the heroin shortage in the police data may reflect the hidden nature of sex work connected to IDU in Victoria.

Figure 7.8: Number of sex-related (non-rape) incidents reported to Victoria police, January 1997- June 2002



Source: Statistical Services Division, Victoria Police

Data on sex-related incidents reported to police in the areas containing the main street-based heroin markets in Melbourne were also examined and, in spite of a longer time series being available for analysis, no significant effects of the heroin shortage were noted.



## 7.4 Drug distribution and production/importation

### 7.4.1 Heroin markets

The major changes noted by Key Informants in relation to the heroin shortage had been a very substantial reduction in the number and size of street heroin markets. Key Informants reported that with the advent of the heroin shortage, street markets became the very last resort for obtaining heroin. Nevertheless, other reports of changes in drug distribution suggested a move away from street-based dealing to other methods of drug distribution:

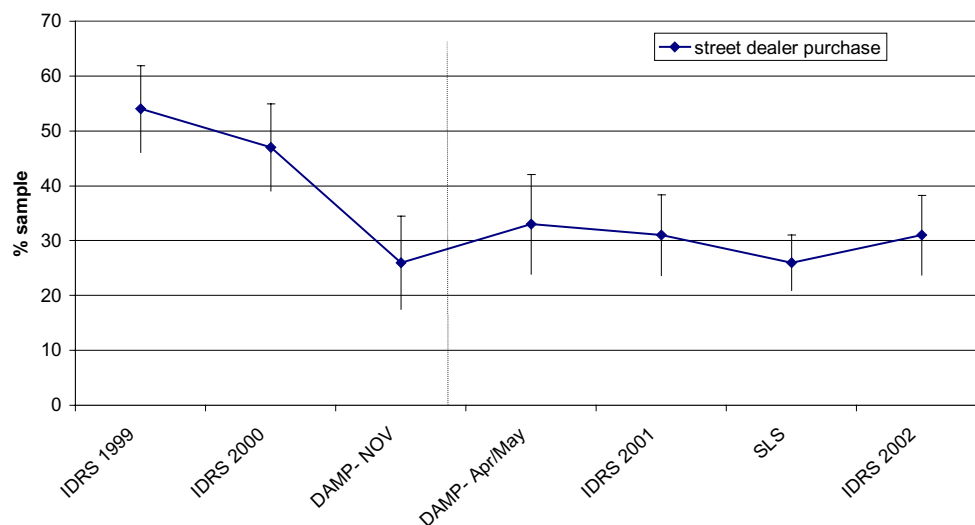
*“We have always had people dealing from premises. It would have been more frequent during the epidemic {the period before the heroin shortage} because you get a lot of complaints from the neighbours. You know, the usual people coming through and then go out and that sort of thing and we would go up and execute one or two warrants but that has dropped right away ever since the epidemic. I’d just say that the numbers actually dealing on the street has declined and we actually no longer got a concentrated area. I believe that is because of people...and the dealers....um....it’s interesting where they concentrate and I think it’s the ability or perception by them how they think they can meld in to the general foot traffic there.” (Senior NCO, South Eastern Melbourne)*

However, these effects were not so much considered an effect of the heroin shortage but an effect of the intensive local policing of Melbourne’s street-based drug markets:

*“The first change that I think is really important ...was the means by which it was accessed. Because what I hear is that they now make calls on mobile phones...and meet people on street corners. So, there was a huge shift in the way it is accessed, away from just walking down Smith Street and it being offered on a plate...it also seemed to have something to do with police pressure within the CBD and the fact that the police were actually focusing a lot more then and so dealers had decided to change their places.” (Youth outreach, Victoria Wide)*

Indeed, this shift away from street-based distribution was noted in the findings of IDU surveys conducted in Melbourne. Figure 7.9 shows the usual location for heroin purchase reported by participants over the period 1999-2002.

**Figure 7.9: Percentages (and 95% CIs) of IDU survey samples reporting street-dealer as usual mechanism of heroin purchase in Melbourne, 1998-2002**



Source: Turning Point Alcohol and Drug Centre

However, the findings of the DAMP study in particular suggest that the shift away from street-based purchasing of heroin occurred before the onset of the heroin shortage (Miller et al., 2001). Coupled with the reports of the Key Informants interviewed for the current research, this suggests that the shift was one of the consequences of the intensive local policing of the street-based drug markets in Melbourne (cf Aitken, Moore, Higgs, Kelsall, & Kerger, 2002). The consequences of this policing in terms of public perceptions of safety (related primarily to issues around the visibility of the street-based heroin trade) were generally regarded as positive by Key Informants:

*“from a public perception...that’s fantastic, if they see that police are doing something about it for them, you would be surprised, especially if you live in the area.” (Senior NCO, Central Melbourne)*

*“The older people especially, they are terrified and they’d stop coming into our shopping centre and the traders would complain. So, from that point of view the pressure was really there.” (Senior NCO, Western Melbourne)*

*“Oh, they’re rapt. I mean, if you look at it from the point of view from the residents, as distinct from business people, residents are rapt because there is less activity around their area. There is less, what they believe to be, “druggies” walking around their streets. In an area where you have a lot of activity of people such as a high-rise building, in their view there is less people literally using in their stair-wells and things like that. So, they think it is fantastic. Business wise, it enabled them to make Smith Street more of a café place. If it still had a bad name, you couldn’t run a business there.” (Senior NCO, Inner Melbourne)*

There were, however, some negative consequences of this shift noted for drug users and associated emergency services. These consequences seemed to relate primarily to the location of heroin use rather than the location of heroin purchase:

*“I suppose, the change we noticed and I think it has something to do with the heroin shortage, was the cleaning up or so called “cleaning up” of the drug streets, forcing it into the housing commission flats, basically making them into ghettos, now that was the same time as the heroin shortage but for us, that has been a huge change because on the streets, we’re safe, there are other people around. In housing commission flats it is dark, it’s dangerous, it’s...well, there’s nobody there, there is very little access and egress and it had added a certain danger and another kind of...some kind of negative stereotype.” (Ambulance paramedic, Inner Melbourne)*

#### **7.4.2 Drug importation and production in Victoria**

Six Law Enforcement Key Informants were able to report on changes in the supply and/or production of illicit drugs resulting from the heroin shortage. One Key Informant described the general structure of the heroin market in Melbourne:

*“my view is that the Heroin trade in Melbourne is that you don’t have, in the Vietnamese {Indochinese} community, a figure head in charge of the distribution of Heroin. You have a number of separate syndicates who all have their separate sources of Heroin. Some are importing direct, some are getting it from Sydney. Most are getting it from Sydney but you don’t have one figurehead coordinating everything in Melbourne. Um...you may have up to 15 - 20 major syndicates of Vietnamese {Indochinese} in Melbourne distributing Heroin. Um...did we see new players? I don’t think anyone stepped up to then move into Heroin. I think some dropped off to go into other enterprises.” (Senior NCO, Victoria Wide)*

It was also reported that most of the markets in Melbourne are localised:

*“From what I’ve seen from working in town and out at Springvale we are pretty much a localised market. A lot of our suppliers come from the other side of town or in town via runners and any reasonable supply would get to Springvale that way. We did come across one particular gang who were supplying directly from Sydney and they have been an ongoing problem for a number of years. That’s the only one and they were only bringing in ounces.” (Senior NCO, South Eastern Melbourne)*

Three Law Enforcement Key Informants reported that some of the traditional heroin suppliers moved to cannabis production as a result of the heroin shortage:

*“Well since that time like the late 2000, um....my crew has continued to investigate heroin and....we arrested some people with commercial cannabis grow houses with a total of 780 mature cannabis plants. A number of those people talked to us informally. They had been in the heroin trade but got out of that and got into the cannabis trade in 2001 because it was less risk. Still a lot of profit to be made and it was too pricey to purchase heroin at the price it was going for on a wholesale basis. They still make a profit but less risk.” (Senior NCO, Victoria Wide)*

It was also reported that traditional heroin suppliers were not generally involved in domestic methamphetamine production, but with the shortage of heroin, some moved from importing heroin to importing purer forms of methamphetamines such as ‘ice’.

*“We have seen a shift.....from what we can tell they’re not heavily involved in the amphetamine side of it but there is certainly strong indications through a number of sources that they’re involved in the Ice trade, but that’s on an importation basis and not manufactured here. Being imported using the same lines of supply from overseas. Um....yeah the importation of Ice. It’s not being manufactured here but they are distributing. We’ve certainly seen a substantial shift related to the shortage of Heroin.....there’s still a number of Vietnamese {Indochinese} syndicates out there trafficking Heroin but a number of those syndicates have broken off to do cannabis and it would appear that some are also have broken off. Whether they are still dabbling in Heroin or not I don’t know but there has been a marked increase in Vietnamese {Indochinese} trafficking in Ice. ... I’d say they’ve just been Entrepreneurial and moved from a drug that is not as readily available to one that is, being Ice. They’ve seen a market there, they’ve got a supply of it so they’ve just moved to another drug.” (Senior NCO, Victoria Wide)*

## 7.5 Conclusions

The heroin shortage appeared to have a number of effects on reports of crime directly linked to the consumption of the drug. These effects were evident in the areas of Melbourne known to contain the major street-based drug markets. This finding is consistent with a decrease in overall activity noted in Melbourne’s street-based drug markets by Key Informants and IDU (as indexed by their reports of street-based drug purchase). There is some evidence to suggest that this shift away from street-based purchase was underway prior to the onset of the shortage. Indeed, when heroin related incident data were considered for the whole of Victoria, the number of heroin related incidents has fallen substantially since peaking in 1998. The continuation of this decline could not be directly attributed to the onset of the heroin shortage. Importantly, the decline in heroin related incident data does not appear to have been offset by any substantive increase in

reported incidents related to the consumption of other drugs such as amphetamines, either in the street-based drug markets of Melbourne or Victoria more widely.

Reports from Key Informants suggested that the heroin shortage was associated with an increase in crime related to IDU and reports from IDU themselves suggested an increase in their engagement in certain types of crime that could be linked to the heroin shortage. Such an increase may have been expected in rates of crime thought to be associated with the generation of funds for the procurement of drugs (property crime, sex work) as a result of the increased price and/or decreased quality of heroin noted in section 3 of this report. Nevertheless, with the exception of robbery offences, rates of recorded property crime and sex related incidents in Victoria showed little change that could be attributed to the heroin shortage. Robbery offences (which constitute only a small proportion of the total number of property offences in Victoria) did increase more rapidly as a result of the heroin shortage but this increase was not sustained in the longer-term. Similarly, rates of recorded violent crime (eg assault) showed no effects of the heroin shortage. One plausible way of reconciling the patterns evident in Key Informant and IDU reports of the effect of the heroin shortage with rates of recorded crime is to consider the people against whom much of an increase in crime may have been perpetrated. In this regard it should be noted that many crimes remain unreported to police. Further, reports from Key Informants suggest that the reported increase in crime was often perpetrated against other participants in the market who would possibly be less likely to report their experience of crime to police than other sectors of the general community.

One further effect of the heroin shortage, noted by some Key Informants and IDU, was changes in the drug importation and distribution practices of some market participants. This included the shift away from street-based drug trade in Melbourne. Further, some Key Informants suggested that, over and beyond the shift away from street-based drugs markets, some producers/importers shifted towards the production and distribution of drugs other than heroin (notably cannabis and forms of methamphetamine) in Victoria.



## 8 Changes in health and law enforcement agency operations as a result of the heroin shortage

### Summary

There were reports of significant changes within health agencies involved in the provision of heroin-related services including:

- A decline in the number of people presenting for heroin withdrawal
- A decline in the number of people presenting at needle and syringe programs
- An increase in the rate of presentation for people presenting for amphetamine and benzodiazepine related problems

Nevertheless, there were no changes reported in the number of people presenting for other types of services such as pharmacotherapies.

Changes in patterns of drug use resulted in:

- System-level health promotion and advocacy campaigns designed to reduce heroin overdose risk and the harms associated with the injection of benzodiazepines in particular Temazepam gel capsules
- Changes in types of treatment required by presenting clients (including the management of mental health issues)
- Increases in aggression and violence among clients (especially as a result of amphetamine use)

It would appear that these changes were largely managed within services themselves, through staff development and training, rather than through enhanced linkages with other services.

In the law enforcement domain Key Informants suggested that the heroin shortage resulted in:

- Less resources being devoted to the policing of heroin
- An increased focus on other crime
- Improved linkages between health and law enforcement agencies
- Increased job satisfaction

## 8.1 Introduction

The Victorian Department of Human Services is the primary source of funding for specialist drug treatment services in Victoria. This Department also administers the permit system for the prescription of pharmacotherapies for heroin dependence in Victoria. The Department engaged in a number of pro-active campaigns in response to the effects of the heroin shortage.

As the likely length of the heroin shortage was unknown the Department initiated a campaign around one of the major risk factors for heroin overdose, namely changes in tolerance to the drug (Darke & Zador, 1996). This campaign implored heroin users to be aware of any changes in their tolerance to heroin should the supply of heroin return to pre-shortage levels. The campaign involved the dissemination of information on a possible return to normal supply through a series of posters and flyers that were distributed through funded specialist drug treatment service providers, needle and syringe program outlets, pharmacies and General Practitioners (GPs).

The Department also responded to reports on the changes in drug using practices among IDU that were associated with the heroin shortage (see Section 5). In response to widespread reports of increased benzodiazepine injection, the Department initiated a campaign in late 2001 targeting this practice in which the physical harms associated with the injection of Temazepam gel capsules in particular were featured. Again, this information was distributed through the agencies detailed above. The Department also actively worked to limit the prescription of Temazepam gel capsules by targeting GPs and pharmacies, culminating in the re-scheduling of these preparations in May 2002.

In addition to these system-level responses, the heroin shortage had a number of other effects on the day-to-day operations of the drug treatment service system operating in Victoria. These changes were noted in relation to the mix of primary drug problems among those presenting at treatment services (see section 6) as well as their physical and mental condition. The ability of services to respond to these changes in presenting clients was tested. The remainder of this section considers some of these effects as noted by Key Informants interviewed for the purposes of this research.

In the law enforcement domain the heroin shortage had significant implications for operations undertaken in the domain of the street-based drug trade. Recognition of the problems associated with the street-based market in drugs (primarily heroin) resulted in the targeting of the areas in which these markets operated (eg operations “Leader”, “Clean Heart” and “Belgrade” undertaken in central Melbourne, Footscray and Springvale respectively). These operations had some success in targeting heroin use in these areas and impacted substantially upon recorded arrest rates. Further, as indicated in section 7 of this report these operations appeared to succeed in displacing the street-based markets (along with producing other consequences, see Aitken et al., 2002). The necessity for such saturation police activities was obviated by the onset of the heroin shortage.

## 8.2 Changes in operations and the demand for health services

Most, but not all, health agencies reported substantial changes in their operations due the change in heroin supply. The nature of this effect varied between services. Typically needle and syringe program (NSP) workers and overdose prevention teams saw substantial reductions in their client numbers, where for others, such as drug safety or outreach workers, their jobs became far more complex. A typical NSP response was:

*“I guess what we saw from our point of view, our contacts, the number of people at the NSP were saying that it started to drop away fairly rapidly from the end of 2000 to a point.*

*I think it flattened out about February or March 2001 to about half of what we were seeing before. Then we saw a bit of peak in contacts and then it dropped back down and it has been pretty steady about since then...since about May 2001, until now and about half of what we were seeing in 2000.” (NSP worker, Central Melbourne)*

The effect of the change in heroin supply on health agencies was also dependent on the services that they supply. Some services reported that the heroin supply had only minor effects on their service. One rehabilitation manager in Melbourne proposed that:

*“I think what it impacted... the change happened at a street level and the services that were developed in response to that all of a sudden weren’t required, do you know? The safety workers and the overdose response workers.... all of that so we respond in a way and that’s what is needed, but there was not a lot of change for us because we are not out there on that platform.... I think what it did was it allowed people to look for other alternatives that complicate complex situations even more so. When you are taking a whole lot of pills and you are becoming psychotic, I would feel more distressed in a lot of ways around the mental health, the brain, capacity and the brain damage that we’re doing to young people.” (Rehabilitation manager, State Wide)*

Nevertheless, as indicated in section 6 of this report, specialist treatment agencies continued to operate at capacity. In this way the demand for these services changed little in spite of changes in the way in which clients may have presented:

*“Now, whether heroin is around or not around our client base hasn’t changed. Our demand for beds hasn’t changed.” (Rehabilitation manager, Melbourne)*

### **8.3 Changes in drugs used by presenting clients of health agencies**

Almost all Key Informants reported that heroin users had moved to other drug use, either other illicit drugs or pharmacotherapies. One Health Key Informant summed the changes in drug use as:

*“by the end of January that’s when I started getting lots of reports about people using Speed. Suddenly Speed just took off. And Morphine suddenly became more prevalent. And you know Benzos, Normison as well. Maybe it became more wide spread because so I think it had always been fairly highly used in Footscray but not to other areas. And lots of them had also started going on to Bupe {buprenorphine}. So, a lot of the people I interviewed were actually...had gone on to Bupe. Because it was around that time that it got released and everything. So initially I think the most dramatic change for me was this switch from smack to speed.” (Researcher, Melbourne wide)*

As noted in Section 4 of this report, almost all Key Informants reported an increase in amphetamine use amongst IDUs that they were in contact with. Many participants identified this as the major response of IDUs to the reduction in heroin supply and three health Key Informants suggested that amphetamines were commonly used in self-medicating to help with heroin withdrawal:

*“But certainly just talking to people on the street, there were people who were injecting speed on a daily basis for a period around that time, who were heroin users before. We had daily reports from quite a few people using amphetamines to...to withdraw from heroin... the principle is that you don’t worry about trying to get to sleep because you’re speeding and then when the speeds wears off, you’re exhausted and so they sort of speed their way through the withdrawal. Yeah.*



Q: Did they say that it worked?

A: They said that it worked, yeah. I don't know whether...I mean, I think it got them through the withdrawal, whether it worked as a long term change of patterns in heroin use, probably not, more than anything else or any part of the pharmacotherapy really... I think that's why we just saw a bit of a burst of people doing it for a while and then, it might be availability or it might just have been the nature of the drug or it might have been heroin coming back and then...people not really talking about it as much." (NSP worker, Melbourne Central)

The changes in client presentation were not restricted to amphetamines and benzodiazepines. Some services noted changes in the drugs used by presenting clients that probably reflected changes in the groups of clients accessing services, largely consistent with the data presented in section 6 of this report, rather than changes in the drugs used by 'typical' heroin-using clients:

*"There was more requests from people for alcohol withdrawal and cannabis withdrawal."*  
(Withdrawal Nurse, Melbourne wide)

### 8.3.1 Staff knowledge and adaptability

Another consequence of the changes of the heroin shortage was that many organisations had to retrain staff and develop new bodies of knowledge around drugs other than heroin. Typical responses included:

*"All the staff went through some training. Not just about what was happening but different ways of articulating to different groups within the population."* (NSP manager, Eastern Melbourne)

*"I think in some ways there was a real coming to terms with the limits of what you can do as a counsellor with someone.... because we are getting more people so ....crisis in terms of mental health and not sleeping, not eating, I think there was a little bit of fear factor in terms of people....initially there was a fear response like "what the hell do we do?, How do we cope with this?, I don't know about this?"* (Outreach Worker, Central Melbourne)

### 8.3.2 Resource implications

The heroin shortage also had implications in terms of some services being under utilised or others being over utilised.

*"There are less people using heroin, less people wanting home based withdrawal, more people using different kinds of drugs. So, you know, there were people presenting with cannabis withdrawal which tends to be bit longer and so it was may be multiple episodes of the same people. Alcohol tended to get people may be more severe withdrawal that weren't wanting to go into in patient services. A lot of failed withdrawal, I suppose you would say."* (Withdrawal Nurse, Melbourne Central)

## 8.4 Drug treatment

As noted above, specialist treatment agencies were challenged by these changes and Key Informants reported that there were inadequate treatment options for people engaging in the poly-drug use typically seen after the onset of the heroin shortage. A major consequence for health services was that there was no adequate treatment available for the new types of drug use and the complications of that use:

*“Another one was like ok people were ringing up for advice on methamphetamine issues, “what the hell services are there specifically?” And this has been one that I have known has been in other states as well. Where do we put people? Because a lot of psycho stimulant users feel very alienated by services which, traditionally been very opiate based. We had no alternative pharmacotherapy and people ringing up Direct Line “Have you got methadone for heroin, you got buprenorphine...is there anything?”, you know. Um...and I think there was a quick and in some ways ad hoc catch up process amongst services trying to get more information and attend ‘how to manage psycho stimulant user’ workshops and looking at web sites. The other thing is that there was a lot of uncertainty about how to manage withdrawal from psycho stimulants. I don’t think there is confusion within the detox units but certainly in terms of community based services um...how do you manage it? what are the signs? what are the symptoms?” (Outreach Worker, Central Melbourne)*

#### **8.4.1 Withdrawal services**

One effect of the heroin shortage noted in most treatment agencies was a decrease in presentations for heroin withdrawal – a major component of the Victorian treatment service system prior to the onset of the shortage – and an increase in presentations related to the use of other drugs (with people often presenting with more complex needs). This applied not only to people who had shifted towards amphetamine use but also to those who had shifted towards the use of other depressant drugs such as benzodiazepines:

*“A lot of amphetamines and also a lot of queries from people looking for withdrawal from amphetamines. ...well there isn’t a maintenance program like there is methadone. Some clients if they’ve got ADD {attention deficit disorder} or an actual condition they can get Ritalin or something like that but for the general user there is no maintenance program and the detox facilities generally aren’t geared towards amphetamine use. Um.....sometimes they will take them in but only to do a cold turkey detox and that’s about it.” (Primary health care worker, Melbourne Central)*

*“So, less heroin withdrawals, more...probably, yeah, especially benzos, that’s something everybody sort of freaks out about. And I’ve been talking just as in resources, we’ve got two youth...we’ve got two youth ‘resi’ detoxes on our database withdrawal in various areas and ... we accessed a bit more resources from people like TRANX...the home-based withdrawers had to try and find a GP who is willing to help with the benzo withdrawal...” (NSP worker, Melbourne Central)*

#### **8.4.2 Pharmacotherapies**

One possible explanation for the drop in requests for withdrawal services is that heroin users may have sought pharmacotherapies rather than abstinence-based services, and this then allowed for an increased capacity to provide services to clients presenting for problems related to the use of drugs other than heroin:

*“We were having a lot of request for service to do with home based withdrawal. It dropped off and I’m not sure if that’s because they were trying other alternatives or whether they were not needing to do withdrawal because they weren’t using as much. The list requests for home based withdrawal from heroin users. There was more requests from people for alcohol withdrawal and cannabis withdrawal. There seemed to be a slight increase in amphetamine users requesting. Yeah, generally I think a drop in numbers. It seemed that instead of seeing home based withdrawals as an option I think that more people, particularly the heroin users were particularly looking at options like methadone and buprenorphine.” (Withdrawal Nurse, Melbourne wide)*

There were also changes in both the way pharmacotherapies were provided in Victoria as well as the types of pharmacotherapies on offer. As indicated in section 6 of this report, many of these changes were underway prior to the onset of the heroin shortage. The availability of buprenorphine, for example, was restricted to clinical trials prior to August 2001 after which time it became widely available as a treatment option for heroin dependent people in Victoria. The availability and illicit use of buprenorphine appeared to affect the practices of IDU and these resulted in changes in the operations of some agencies (the provision of filters by NSP workers detailed in 5.3.4 above).

One Key Informant suggested that different ways of accessing the methadone program assisted some IDUs in managing their heroin use during the shortage:

*“a lot of people were heavy heroin users would be on say twenty or thirty milligrams of methadone a day, they’re already on the program, ... They’re on a little bit of methadone and they use {heroin} twice a day, every day, you know, .... a lot of them have dose ranges too, you know, a ten mill sort of dose range. So, if they can’t score one night before they have to go to work and they have started work anyway, they can just take ten milligrams extra methadone and off they go ...” (Peer educator, Victoria Wide)*

## 8.5 Medical complications

### 8.5.1 Mental Health

One of the major health consequences of the change in heroin supply identified by Key Informants was on the mental health of heroin users. Twenty-three Health Key Informants expressed concerns regarding the mental health effects of the heroin shortage:

*“So we might see less or there is a less of an impact in the dying and overdosing but um... what are we now being picked up with which isn’t measurable and that’s about the brain damage, degrees of capacity to engage in treatment. We actually tested, we thought there was a lot more messier, borderline behaviour. ... we had a large anti-social population and that clients were harder to hold and harder to engage and not as ready to engage.” (Rehabilitation manager, Victoria Wide)*

The most commonly reported mental health complication associated with other drug use by Key Informants was drug-induced psychosis, particularly amphetamine-induced psychosis. This was seen as being closely linked with client aggression and violence in health services:

*“As soon as that {heroin} was gone the major focus was the re-emergence of a whole lot of anxiety issues The wholesale switch from depressants to methamphetamines, a lot of very strange behaviours. We had a lot more violence out the front of {the service}, really acting out, especially on the solvents. So, we saw a lot of the consequences of a switch from the concern about overdose to a concern about impulse disorders , the lack of control and kids spinning out...*

*I think generally what it made...it made everybody’s lives chaotic. Chaotic because they were using ups and downs instead of...I mean, the thing you can tell about heroin, despite most of the difficulties, is that it is pretty much a flat-liner which just makes people...like that, they’ll just sit somewhere and be quiet and sit there for 6 hours. Now when you’ve got someone taking stimulants and panadol, they’re taking benzos feeling really brave and now they’re going to come and punch your lights out about the thing they’re paranoid about. It’s like, they’re all over the place and it is really difficult to get them to find the centre of themselves that you can talk.” (Drug service educator, Victoria Wide)*

### 8.5.2 Pregnant women and drug use, drug dependant neo-nates

One Key Informant was able to report on the effects of the heroin shortage on pregnant women and their children. It was identified by this Key Informant that the heroin shortage had a number of substantial effects on the well-being of pregnant mothers, foetuses and neo-nates:

*“And the way we treated that was quite different than opiate users. It was quite difficult because with opiate users there is a substitution that you can provide, but with the speed use and benzos, there isn’t.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

The increase in amphetamine (speed) use noted previously had substantial effects on the risks for unborn children that also impacted on the state in which mothers presented to the service and retention in treatment:

*“Retention was lower and it was quite typical to work with women who were using speed and benzos because they presented a lot of the time in a state of crisis or withdrawals. And you weren’t only dealing with their issues, their partners or partners were having similar issues and it was very difficult for us.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

### 8.5.3 Overdose

As noted in section 5.1.4 above, one other major effect reported by Key Informants in relation to the heroin shortage and the subsequent reduction in overdose rates was as a reduction in the perceived importance of overdose prevention messages amongst IDUs and health professionals.

## 8.6 Aggression and violence

A major issue related to the heroin shortage that was raised by Key Informants was a substantial increase in violent behaviour amongst IDUs (associated primarily with amphetamine use) that was noted within the all of the different service domains. Outreach workers observed increased violence on the streets among IDU and this increase in aggression appeared to impact directly on the way in which clients presented at services:

*“Yeah, we really felt it quite severely. We felt very burdened by the impacts and the sort of wide-spread use of amphetamines. We had a lot of...just nasty stuff happening in our office because people used it as a drop-in centre and just...even though it officially wasn’t, it was just a safe place to come and somewhere to get off the street for half an hour or five minutes and we were always keen to talk with people about, you know, what they were doing, what was going on out there. And it became quite nightmarish at different times having an office full of mad people, literally mad people.” (Researcher, Melbourne Wide)*

However, the reported increase in violent behaviour was not limited to the street. Two Key Informants indicated how the increase in methamphetamine use associated with the heroin shortage impacted on the domestic situation of some service clients:

*“more domestic violence within a relationship with two people using speed. It really unleashes a lot of shit in your relationship.” (Outreach Worker, Central Melbourne)*

This impacted on some of the operations of services, with Key Informants reporting increased awareness of the issue and incorporation of this in interview techniques:

*“We’re finding that there is an increase more and more in domestic violence. So, I don’t know whether it is a societal issue that we’re becoming more and more aware of it and women are disclosing it a bit more because we’re asking more questions and there are more services out there to assist women. But, yeah, we’re finding that more and more, they’re becoming quite more evident, women are disclosing domestic violence.” (Drug and alcohol clinician, neo-natal Alcohol and Drug Service)*

### 8.6.1 Staff response

Fifteen Key Informants reported that interactions with clients had become more problematic as a result of the heroin shortage. These problems related not only to the increased levels of desperation associated with not obtaining heroin, but also the concomitant increase in methamphetamine use and associated aggression and violence. It was reported by most agencies that staff had become more aware of the possibility of violence in their workplace. It was also reported that staff spent increased time and resources placating aggressive and violent clients:

*“But when they start using psycho-stimulants and benzos, it is just...their behaviour is just out of this world. So, yeah, absolutely, a massive deterioration. Something like that was really worrying me because...like if you had a relationship with an individual kid, who you knew had been pretty stable throughout and then suddenly the drought happened and you were faced with them using stimulants, the workers were really freaked out, afraid they were going to lose kids to suicide, trauma.” (Youth outreach, Victoria Wide)*

and that many organisations had to retrain staff around issues of personal safety and managing violence:

*“... more awareness around safety. Dealing with aggression, verbal and then some really basic stuff about what are you gonna do if you’re talking to a crew and someone pulls a knife. What do you do. Do you do “hey, don’t do that” and walk forward, or do you freeze or do you back off or what do you do. And if you do see something, what happens if the police are involved?” (NSP manager, Eastern Melbourne)*

## 8.7 Interagency links

It is clear that the heroin shortage had a major impact on the day-to-day operations of services in the health sector. One expected response to these effects may be the way in which services interface with other services available involved in responding to client needs.

### 8.7.1 Links between treatment and mental health services

While many Health Key Informants reported substantial increases in mental health problems in their client groups, none reported strengthening their links to mental health services. In contrast it was reported that some agencies preferred to deal with the increase in mental health issues by increasing the skills of their workforce:

*“there was an expectation at {agency} that each case-worker had a case of twelve to fifteen young people, now, if you’ve got a person with some significant mental health issues or what have you, they can be a caseload of five just on their own. So, it is about skilling people up...the model, it depends on the model that your service works with. ... But is about skilling staff up and that the resources match the type of work that they’re required to do.” (Youth worker, Central Melbourne)*

### 8.7.2 Links between treatment and law enforcement agencies

It was widely reported by Key Informants that there had been an improvement in linkages between the law enforcement and health sectors both prior to and arising from the change in heroin supply:

*“I think the drought was actually...from my perspective was really good for communication because we all started to share a lot more and I was a lot more...ringing around contacts because people were just as interested to see what was happening as well. So, I think it actually improved, although at the start we were a bit late in getting on the bus because we just didn’t know what was going on until a bit down the track. And it probably helped to say “Oh, hang-on. How did that effect because this?” (Police analyst, Victoria Wide)*

### 8.7.3 Intra-sectoral links between drug and alcohol agencies

There were few reported changes in the linkages between different drug and alcohol agencies as a result of the heroin shortage. Few Key Informants discussed linkages between agencies:

*“I see more of it happening and a push for it to happen and funding to back up that push. But, its inadequate funding and it doesn’t take in the reality of the different cultures of organisation’s and different ... It’s a basis but it’s not enough. So, I’m seeing a philosophy that isn’t being back{ed} up down the chain through the worker. I know in this case the workers have been disadvantaged because they have been left holding the bag.” (Outreach worker, Central Melbourne)*

Another Key Informant reported that links between agencies were mostly unrelated to the heroin shortage.

*“We’ve always been a port of call for referral since that is a major part of our business being in that continuity of care. We now have that primary health service, which is good and we’re working fairly closely with treatment services in the region around that. But, I guess, the changes were that we had to become more aware of poly-drug use, amphetamines and that kind of thing.” (Primary health care manager, Central Melbourne)*

## 8.8 Effect on staff members

### 8.8.1 Health sector

The most common effect reported by Key Informants in the health sector on staff was increased levels of anxiety related to the higher levels of aggression in their client population. Another major issue raised related to the need for staff to deal with many issues they were not trained to deal with or even more fundamental changes in the nature of their job.

*“The other impact {of the shortage} we saw at the residential unit was...it was difficult to ascertain exactly what we were attempting to do with kids. Like when you’re confronted with heroin it is quite clear that you’re running a withdrawal regime and you’re trying to make that withdrawal as comfortable as possible and you’re trying to put some support for the exit. But when kids are coming in using benzos and meth amphetamine and then solvents and alcohol and a bit heroin when they can get it, what you’re actually confronted with is somebody that doesn’t have a withdrawal regime. What you’re confronted with is somebody who is chaotic in their use of substances and that is a much bigger problem for detox, but you don’t know what you’re actually trying to target here.”*

*You're trying to target their chaos really and you can't do that in a fortnight in detox, it is really about their life and trying to deal with all the things in their life. So, it means detox workers are much more confused about their roles, they're quite clear on their role."*  
(Educator, Victoria Wide)

### 8.8.2 Law enforcement sector

A number of Key Informants from the law enforcement sector reported that the heroin shortage had improved the way in which they related to their job. It was suggested that this improvement led to an overall improvement in job satisfaction. For example, one Key Informant spoke of the effects of day-to-day operations in drug law enforcement prior to the shortage on job satisfaction and how this improved as a consequence of the shortage:

*"Oh, absolutely no doubt that it {drug law enforcement} has a debilitating effect because it is a constant and the work of police in dealing with symptoms of drug abuse is a very risky, dirty, difficult, thankless task. And it is important that they keep very firmly in their minds, the very positive thought that what they're doing, they're doing on behalf of the broader community. So, you can imagine what would go through someone's minds, three times in a week having locked up the same dealer, to only find them back on the street in such a short period of time and so it is the constant day after day, where you can't see any light at the end of the tunnel. So, that does have a debilitating effect. In relation to other things you've...you're dealing with other sorts of crime, or other instances where you can actually do some work and you can see that you have fixed the problem or you have actually moved it forward, I think is a great deal of personal satisfaction. But there are very few people, I think, who spend a long time in the whirlwind of drug law enforcement area who don't feel that there was some futility about what they're doing because in the big picture each small arrest doesn't seem to have any great impact, someone else could take their place.*

Q: *And do you think the heroin drought affected that?*

A: *...when the heroin drought appeared, what would have happened is that the police would have been able to pick up on some of {the} other things that would have been pushed aside and unfortunately somewhat neglected not by choice. So, it would have had a positive impact on the individuals because the diversification of the work would have changed and they would have seen people in different scenarios, ... perhaps to make some more significant long term differences and feel more valued for the work they were doing. And I think the other thing is that there is ample evidence over the years that police officers shouldn't stay in drug law enforcement for extended periods of time. It can have a deep seeded psychological impact. Particularly those working at a street level."*  
(Former Commissioner, Victoria)

## 8.9 Changes in the operation of Law Enforcement agencies

As indicated in section 7 of this report, the onset of the heroin shortage produced a decrease in the number of incidents related to the use of heroin. This change was noted in reports from Key Informants from squads or stations that were heavily focused on heroin. These Key Informants suggested that the change in heroin supply coupled with a change in law enforcement focus and increase in resources, meant that they were able to focus on other crime.

*"Um...with the new chief commissioner we've had new um.. which has been publicised, focus on particular crimes and now we've probably got more time to actually focus on*

*burglary's, theft and motor cars and those types of crimes and just general thefts. Where as when you are inundated with the spectre of the drug epidemic or the heroin epidemic, our main focus was on trying to suppress that and so now we've got the opportunity and plus we've got an increase in numbers over the last two years of over 800 extra police which I think has contributed to the reduction of crime rate. The last financial year was a 4% reduction on reported crime. And, I think the increase in numbers has contributed to that. So, now we have more police, we are able to target burglary and thefts and theft of motorcars. That is good."* (Senior NCO, East Melbourne)

Importantly, key Informants noted that this did not been a reduction in workload per se, rather it meant that some tasks were able to be addressed more adequately then they were when heroin was the major focus. These tasks extended beyond a focus on crime to include measures focused more on crime prevention. For example:

*"Look, we got resources from elsewhere to help during what I would refer to as the bad old days because we just don't have enough... So, did it {the heroin shortage} change the way we operate? Well, yes, because rightly so, the resources weren't available to us anymore because we didn't have the problem. So, they're resources you use when you have got a problem. Did it change the way the local police were targeted, well, yes, because all of our targeting is based upon what we see...we see to our current ... community or crime problem. But the fact is that everyday we target them, so, the answer is yes, because we didn't get the outside help. ...I suppose, the easiest way of answering it is if there is no crime anywhere in {suburb}, I still have eighteen people a day working. Now, what are police doing when there is no crime? Well, I suppose my argument is there, they're preventing it by being there or they're doing other things like talking to the community, being able to do foot patrols because we don't have to be tied up doing the paper work from the crime. So, it is a misnomer again that because we have no specific problem, our role changes, it doesn't. It is, like, the simple one is house burglaries...So, the focus changes rather than the actual role, yeah, that is probably the best way to put it."* (Senior NCO, Inner Melbourne)

However, drug law enforcement continues in the post-shortage operational environment. For many law-enforcement officials, the change in heroin supply had a relatively small impact.

*"Like our investigation method was still the same. Um...yeah our investigation methods were exactly the same, except it was harder because there wasn't as much out there. In 2000 there was that much out there, it was ...investigation was probably a little bit easier. I wouldn't like to say that we were falling over it but there was a lot out there. When it became scarce we just had to become more um...you know...clever in our investigations to track it down. Just use more contemporary investigation methods."* (Senior NCO, Victoria Wide)

## 8.10 Conclusions

The heroin shortage had a significant impact on the operations of health agencies involved in the provision of services to IDU. These changes were reflected at a broad policy level through statewide responses/campaigns about the impact of the heroin shortage in the short- and long-term as well as in the day-to-day operations of services with direct client contact. Most Key Informants reported a decline in the types of health services offered to heroin users (eg withdrawal, NSP) but this decline was not universal with no reports of a decline for pharmacotherapy treatment. However, in specialist drug treatment agencies, this decline in the amount of services provided to heroin users did not necessarily affect the overall activity of agencies as treatment places



became available for people presenting with other drug problems (eg alcohol, cannabis). These changes experienced by specialist drug treatment services necessitated a change in the types of services provided along with the ways in which clients are managed (specifically related to the experience of increased violence and aggression). Other services such as NSP and outreach were also required to manage more difficult client presentation that was thought to be primarily related to the change in the types of drugs used by IDU.

The shift towards the use of other drugs such as amphetamines by clients of services appeared to have consequences beyond the management of violence and aggression. For example, the skills base from which many workers operated appeared to be geared largely towards the provision of opioid-related treatment. The shift away from opiates meant that agencies were required to provide services for which they were ill-equipped or for which there were few treatment options. However, in response to these changes it would appear that, apart from those between health and law enforcement, inter- and intra-sectoral links were not enhanced with agencies apparently preferring to manage change through staff development and training rather than exploiting the skills base of other services.

In the law enforcement domain the heroin shortage had the effect of freeing up resources in a way that allowed for a shift in focus towards other crime and crime prevention initiatives. This shift appeared to result in greater job satisfaction for law enforcement personnel.

## 9 Key Informant overall impressions of the heroin shortage

### Summary

The majority of Key Informants believed that the results of the heroin shortage were mixed with positive outcomes in relation to:

- The decrease in heroin related mortality and some forms of heroin related morbidity
- Positive environmental changes (eg a decrease in activity in Melbourne's street-based drug markets, decrease in the presentation of IDU at services)

and negative outcomes noted in relation to:

- Shifts in drug use and related harms
- Increased violence

and many of these negative consequences were seen as impacting on drug users in the longer-term in the context of a generally agreed-upon view of a return to improved heroin supply.

Some Key Informants suggested that the heroin shortage highlighted the efficacy of drug law enforcement. Nevertheless, most suggested that one of the implications of the shortage was a reduced community awareness of the wider drug problem that emerged as a consequence of the heroin shortage.

## 9.1 Introduction

Key Informants interviewed for the purposes of this research were asked for their overall impressions of the heroin shortage. It is important to consider these impressions in light of the delay between the conduct of the research and the onset of the heroin shortage. The ways in which the heroin shortage was characterised by Key Informants was discussed in section 3 of this report and subsequent sections have described further aspects of the Key Informant responses. Further, when asked about their understandings of the attributions of the heroin shortage, Key Informants believed the shortage to have been the result of one or more of the potential causes considered in the National Report on the current research program. The main considerations in this section relate to the understandings of Key Informants in relation to the long-term implications of the heroin shortage.

## 9.2 Characterising the results of the heroin shortage

Key Informants were asked how they perceived the heroin shortage overall. The most common response was that the change in heroin supply had produced mixed results. The next most common response was that the heroin shortage had produced predominantly positive results. Some Key Informants reported that they believed that the heroin shortage had produced predominantly negative results. Importantly, there was universal agreement that the decline in heroin-related mortality and some heroin-related morbidity (particularly non-fatal heroin overdose) was a positive outcome associated with the heroin shortage. For example:

*“I think it is a great thing that we haven’t got these young people rocking up, who were fifteen, sixteen, seventeen and they often had big tracks and they were dropping out of school and we’re not seeing the deaths by overdose and as I say I can remember eight people dying in a period of a couple of months, who were patients of this clinic, who were all travelling “well”, so, from that point of view I think it has been great.” (GP, South East Melbourne)*

### 9.2.1 Mixed impressions overall

Almost half of the Key Informants (1 Law Enforcement Key Informant and 10 Health Key Informants) reported both substantial positive and negative effects of the heroin shortage that have been manifested in the longer-term. These effects were generally cast in terms of shifts in the patterns of drug use, but also covered the domain of operational strategies:

*“I think had gel caps not been on the market full stop, you know, like I said, the shortage of heroin would have been fantastic, because they had nothing else to resort to, so they were maybe forced to go into withdrawal or forced to change their lifestyle. However, the temazepam maybe was a springboard to something else, so, you know, there is obviously an increase...injecting became more problematic from the use of temazepam. So, you can look at it from various points of view. Of course, any reduction in the supply of heroin is positive. But there were greater harms caused by the injection of temazepam. So, the change from a policing point of view was great, our role, you know, whilst we embrace all tiers of harm minimization a supply reduction really is seen as a law enforcement focus and we were doing as much as we could with the resources we had, in which we say it was good thing from our point of view.” (Senior NCO, Central Melbourne)*

The decrease in street-based drug distribution was regarded as generally positive (with Key Informants believing this decrease resulted from the heroin shortage). However, again from a

health perspective the shifts in patterns of drug use were seen as presenting problems for drug users:

*“...So, we’ve had an overdose potential with those open street markets that seemed uncontrollable really, like no-one really had a formula for what we were going to do about this, except education and education takes a while and you can only do it with people that you’re connected to that are using and you can’t do universal education because injecting drug users don’t listen to that because we lie to them constantly.*

*At the same time I can’t say that the changes were good either because I do see that these kids...I think if I had a choice I would rather see them on central nervous system depressants than central nervous system stimulants. I think stimulants do a lot of harm and entrench those anxieties and increase their arousal and I see them act in ways...like I’ll give you an example. You’ve got a kid who in the middle of the glut is using heroin three or four times a day and is very, very out of it a lot, doesn’t know much about the purity and is in constant risk of overdose. Post-glut, you’ve got a kid who is self-harming, extremely anxious, suicidal a lot of the time, taking large amounts of amphetamines and getting over-aroused and taking heaps of benzos and having an overdose risk from that and their lives fell apart in a way that they didn’t when they were using heroin. It seems possible that for a lot of these kids to use heroin on a daily basis it and partly maintain function but when that happened their lives were totally chaotic, so you had to rebuild everything in their life, everyday because they will fuck up their appointments, they’ll fuck up their housing, everything will fall apart. So, the answer to your question is I don’t know, both of them have pretty bad outcomes.” (Youth Outreach, Victoria Wide)*

### 9.2.2 Positive impressions overall

The majority of Law Enforcement Key Informants reported positive outcomes associated with the heroin shortage. While these reports of outcomes related primarily to heroin related mortality, they also related to criminal activity and the direct presentation of IDU:

*“Oh, definitely good. There has been a lot less crime and it’s less workload for my people. Like, ah, in 98, 99 the Springvale complex which is the uniform branch and the CIB, we had over just short of five and a half thousand <5500 suspects processed through the station and the CIB office and that’s you know, like, a very heavy workload and quite a dangerous situation when you consider the Hep C infection rates for IV drug users. I’ve seen stats where the Asian users have got as high as 79% infection rates. And the general user population is 65% so, I’ve got 5500 people, all obviously drug users but probably 80% of our crime is drug related and so a fair percentage of 80% are Hep C positive and they are coming in and out of your police station and obviously some of them are bleeding and vomiting and from that point of view the drought has been a positive thing. For us, because of needle stick injuries and things like that. We haven’t had a needle stick injury for two years. So, those sorts of things are quite positive.” (Senior NCO, South Eastern Melbourne)*

### 9.2.3 Negative impressions overall

As indicated, a smaller number of Key Informants believed the heroin shortage was a predominantly negative occurrence. The main reasons for these impressions, discussed in detail in previous sections of this report included: transitions to the injecting of benzodiazepines and other pharmaceuticals, increases in vascular problems, the entrenching of polydrug use patterns particularly methamphetamines, substantial increases in mental health problems, increased violence and possible increases in blood-borne virus transmissions. One Key Informant suggested

that the heroin shortage needs to be considered in the context of the heroin epidemic in Melbourne in the late 1990s and its links to drug law practices in Australia:

*“A really bad thing...I don’t think we would have had the ice problem that we had during 2001, in the middle. I think...Yeah, I think it sort of...I’m not exactly sure how...why but I think it is a whole sort of combination of factors but just...the degree of kind of hardship and suffering that seems to have increased so much and I think that’s...you know, that’s a financial thing, the prices have gone up so much.*

*Q: When I asked that question of some people, they say, “Of course it is a good thing because we don’t have a thousand people dying a year.” What’s your perspective in terms of that?*

*A: Well, obviously it is good that people aren’t...you know, haven’t...I mean, it is great that the overdose rate has dropped. I mean that’s...a bonus, you can’t help people if they’re dead. But I mean, that’s a whole other issue, I mean, what sort of help do people want. Do they want drugs, do they want to be left alone, whatever. But yeah, I mean, that’s definitely good. I still think in relation to that you need to kind of look big picture. Like look at countries like the Netherlands where they have very different drug laws. They have massive availability, really high purity, incredibly low overdoses. I think what caused the big problem when we had that availability is that we don’t have that support, that’s not normal. We went from like...almost like now, well not quite, sort of to all of a sudden really high purity and you know...that just hadn’t happened to that generation of users before, so, of course there was going to be a lot of overdoses.” (Peer Educator, Victoria Wide)*

### 9.3 Sustainability of the effects of the heroin shortage

Previous sections of this report have suggested that the effects of the heroin shortage in, for example, changing drug use patterns appear to have been sustained in the longer-term. In this regard most Key Informants did not believe people stopped using drugs as a result of the shortage, merely that they had changed the mix of drugs that they used. Moreover, most Key Informants reported that the supply of heroin had increased in Melbourne from the most acute phase of the heroin shortage (generally agreed as being the first half of 2001). The consequences of this return of supply in the context of the changes induced by the shortage were regarded as mixed. Two Key Informants reported that many of the people who commenced pharmacotherapies during the time of the heroin shortage had for the most part remained in treatment. However, three Key Informants reported that most of the people who became abstinent had returned to heroin use with the return of supply. Further, many Key Informants regarded the willingness of IDU to engage in polydrug use had become more entrenched:

*“Ok, so the changes haven’t necessarily been sustained although I have spoken to people who’s now primary drug now is amphetamines or they alternate between the two. They are much less primary heroin users {than previously}.” (Researcher, Melbourne wide)*

Another enduring issue associated with the heroin shortage that was identified by Key Informants was the vascular problems associated with the injection of benzodiazepines and other pharmaceutical preparations. In particular, many of the vein care issues were acknowledged as irreversible. However, three Key Informants reported some of the antecedent practices to developing vascular problems, such as the injecting of benzodiazepines have decreased among IDU in the context of a return of heroin supply. A major issue raised by Key Informants was the prevalence of violence within the heroin-using scene that appeared to be a consequence of the

heroin shortage (see section 7). Two Key Informants reported that whilst violence was often a part of the drug-using scene, there was a reduction in the level of violence with the return of heroin supply.

#### 9.4 Wider implications of the heroin shortage for the Victorian community

Key Informants reported a number of major effects of the heroin shortage on the general community. Many Key Informants reported that the general community had benefited from the reduction in heroin street markets (that was often seen as a consequence of the shortage):

*“Oh, they’re rapt. I mean, if you look at it from the point of view from the residents, as distinct from business people, residents are rapped because there is less activity around their area. There is less, what they believe to be, “druggies” walking around their streets. In area where you have a lot of activity of people such as a high-rise building, in their view there is less people literally using in their stair-wells and things like that. So, they think it is fantastic. Business wise, it enabled them to make Smith Street more of a café place. If it still had a bad name, you couldn’t run a business there. So, I mean, that’s an easy answer that I had but that gets back to good and bad, doesn’t it? You find me someone in the community who says it is a bad thing and I’ll be shocked!” (Senior NCO, Inner Melbourne)*

However, a number of Key Informants reported that the heroin shortage had reduced awareness and understanding of drug related issues within the general community that was generally regarded as negative:

*“I think there is perhaps complacency that the war is won with a real ignorance with speed. We are starting to see more articles and on Tele and stuff like that about speed now. People are twigging to the idea that..... because for years they had it forced down their throat that heroin is the demon drug and heroin is .....and if we just get rid of heroin...you know, and if we just take it away then the problems associated with drug use will disappear because heroin is it. Yeah, so I feel like there is complacency about people thinking that the war is won with an emerging awareness that it is not as black and white as that.” (Outreach Worker, Central Melbourne)*

and part of this reduction appeared driven by the media:

*“Obviously if you have got four hundred odd deaths in one year, it is very much the high level of focus for the media. When those deaths dropped dramatically as they did last year and they are still down quite low this year, the media and the community focus moves onto something else. So, I think there is a significant need to...a pressing need to...for a much more proactive strategy of keeping the community informed and involved because complacency is really, I think, not a good state for the community to be in relation to drugs.” (Former Commissioner, Victoria)*

Some Key Informants also pointed out that there were also negative consequences of the heroin shortage for the general community in terms of perceptions of community safety linked to the impressions of violent crime detailed in section 7 of this report:

*“Well if what I think is ....in fact crime did go up, more violent crime. That obviously affects the community. The perception of safety. They lose their perception of safety and that’s not good for anyone.” (Senior NCO, Eastern Melbourne)*

## 9.5 Shifting focus

As indicated the heroin shortage produced major changes in the patterns of drug use by IDU. The lessons learnt from this change seen by some Key Informants included focusing on the broader context in which drug use takes place:

*“I think what we can learn is that really removing...I guess what we’re seeing as a drug problem, is actually a much bigger social issue, it is not simply about the drug being taken, it is more complicated and that any sort of approach to manage these kinds of issues, has to take into account something broader than simply the drugs use, it is actually much broader than that. I think that’s the most important part that we need to learn from that.”*  
(NSP worker, Central Melbourne)

and the need to continue to act proactively as well as exploiting opportunities to the fullest when they are presented:

*“back then the way that that people were thinking, that agencies were thinking, that punters were thinking, that, yeah, this is an era...it is going to go on forever, it is just very important to be reminded...it could be in two months that we could have a flood of heroin and the price goes back down again and the availability goes up, we see a lot of deaths. And that’s...I don’t know, in my mind, the deaths are the most important lesson from the era of the 1990s, you know, it was four thousand people that died and I think the response was still far too slow and maybe nothing ever would have been worked out of...that would been...the sort of impact that the changes that have gone on did...but, no, most heroin users, if they don’t die, they get their shit together, you know, death is a very preventable thing and I don’t think we’ve really exhausted really critical things that we know will work, like, making treatment very easy to get, very affordable and very available.”* (GP, Central Melbourne)

An obvious consequence of the shift in patterns of drug use was that Key Informants suggested the importance of not focusing solely on one drug in the treatment, law enforcement and research domains. For example, one Key Informant highlighted the need for systematic monitoring systems in relation to drug use:

*“It is absolutely primarily important to have comprehensive monitoring because we’re talking about the shortage but there were so many other things happening. I feel the other answer is that if the database would have been on earlier, it would be more evident that we should be talking about an epidemic as opposed to a shortage. So, I think you need to have your databases, you need to have current factual data about what is going on and that’s the only place you get it is through consistent monitoring, it gives you a good basic cap onto all those other things that are happening, particularly what other drugs might be gaining popularity.”* (Forensic Scientist, Victoria Wide)

and others highlighted the need for flexibility in treatment service delivery in order to allow for responses to changes in drug use patterns and preferences.

## 9.6 Implications for supply reduction

Most law enforcement Key Informants attributed the heroin shortage to the success of supply-side law enforcement activity. To this effect, they regarded supply reduction as an appropriate and achievable aim:

*“... it’s just a shame to see there are so many people that were probably begging for help and weren’t getting it. I think that there should be better penalties and I know that I read in the paper today that it costs so much to keep a prisoner in gaol but that’s not the real cost. That’s the cost of everybody within the system. What ever has been spent on trying to stop the stuff coming into the country is money well spent. (Senior NCO, Western Melbourne)*

*“Well, I think what I’ve learnt is when you are faced with a problem which is extraordinary or challenging or um...testing, or even horrendous don’t give up. Set a standard and stick to it. That is what John Howard has done. Just because you have a horrendous problem don’t give in....*

*He has set a standard. I probably don’t agree with it but there is the standard. John Howard says “Right, we don’t want drugs. I’m going to fund prevention programs but I’m also going to fund law enforcement so they can go out and stop the drugs coming into Australia”. I say at this stage on the evidence I’ve seen, he has succeeded and we have stopped the problem and we have saved kids lives. So when you are faced with a problem, do you give into it, do you accept that a remedy includes giving places to them to inject in or do you put money into trying to prevent the problem? That is what I have learnt personally out of it. That you don’t give in.” (Senior NCO, South East Melbourne)*

Nevertheless, the issue of shifts in the patterns of drug use were acknowledged by many law enforcement Key Informants. This effect was seen by some as highlighting the limitations of law enforcement in dealing with drug problems:

*“Well, the big picture, I think even bigger than the drought is, what could we learn from an environment where heroin is readily available and an environment where it’s not and um....I don’t perceive that that environment is that much different. I perceive that the people around Bourke and Russell street still have issues with the trafficking, whether it was frequent or there wasn’t much around. We still had issues as a community with this group of people coming in and some of them committing offences in and around the CBD whether there was a drought or not. So, from my point of view I don’t see a huge difference from when it was on and when it was freely available. If we took the heroin away from that environment and put it somewhere else, well, possibly things may be a lot different. There may be a lot less crime and a lot less issues with people congregating in areas that aren’t designed for heroin congregation. So, if we had areas designed for that possibly things would be different. But, that’s getting into a personal opinion and unrelated to what I do.” (Senior NCO, Central Melbourne)*

## 9.7 Conclusions

Previous sections of this report have shown that the perceptions of the Key Informants interviewed for this study were generally in accord with the findings of analyses of other available data. When asked about their overall impressions of the heroin shortage the majority of Key Informants suggested that the heroin shortage had produced mixed outcomes in accord with the overall findings of this research (eg positive effects in the domain of heroin related mortality and negative effects in the domain of some drug related morbidity). Nevertheless, Key Informants believed that lessons had been learnt from the heroin shortage such as the importance of flexible service delivery. Further, Key Informants from the law enforcement sector reported that the heroin shortage had shown the efficacy of the effects of supply-side drug law enforcement.



One important implication of the shortage that was noted by Key Informants was a reported reduction in community awareness and focus upon drug related issues. Reportedly driven by a lack of media attention, this finding is important with regards to future initiatives in the area of service provision that is likely to impact upon both the health and law enforcement domains.

## 10 Conclusions

### 10.1 The heroin shortage in Victoria

The data collected for this research show that there was a dramatic decrease in the supply of heroin in Victoria. This effect was at its most acute in December 2000 – January 2001 and was reflected in IDU perceptions of key characteristics of the heroin market and indicators directly and indirectly associated with heroin use. The summary sections of this report detail the major findings across the different domains considered in this study and the intention is not to repeat these findings in detail in this section of the report. Nevertheless, the key findings of the study in terms of the characteristics and immediate effects of the heroin shortage included:

- decreases in the purity of samples of heroin analysed in Victoria (although the decline appeared established prior to the onset of the acute period of the shortage)
- reports of decreased availability (ease of access) and purity, and increased price, of heroin among sampled IDU in Melbourne
- a decrease in the reported use of heroin, and overall injection frequency reported by samples of IDU in Melbourne
- a dramatic decline (85%) in the number of heroin related deaths in Victoria
- a dramatic decline in the number of non-fatal heroin overdoses in Melbourne (52%) that was most acute in the Central Business District of Melbourne (an additional decline of 20%)
- a dramatic decline (61%) in the number of opioid hospitalisations in Victoria
- a decline in the number of courses of treatment for opioids provided by the specialist drug treatment service system in Victoria
- a short-term increase in the number of robbery incidents recorded by Victoria Police

These effects were generally mirrored in the reports of Key Informants. The effects had major implications for the operations of agencies such that the shortage produced an ability to focus on other issues and/or drugs that were unable to be addressed during the heroin epidemic that was evident in Victoria in the late 1990s/early 2000.

### 10.2 Extent of injecting drug use

The characteristics of the heroin shortage described above specify some of the changes in the heroin market that appeared to result from the shortage that were largely consistent with previous research on the heroin shortage in Australia (Dietze & Fitzgerald, 2002; Dietze, Fry, Miller et al., 2001; Miller et al., 2001; Topp, Day et al., 2003; Weatherburn et al., 2001). However, one of the most important findings of the research presented in this report relates to the extent of injecting drug use in Melbourne and Victoria more widely. In this regard available indicators and reports from Key Informants suggest that the overall extent of injecting drug use changed little in Victoria as a result of the heroin shortage. This finding suggests that IDU shifted their drug use patterns as a result of the shortage that will be discussed further below. Further, the finding provides no

evidence of an effect of the heroin shortage on the uptake of injecting drug use in Victoria meaning that the risks for blood-borne virus transmission among IDU in Victoria remain high.

### 10.3 Changes in patterns of drug use

Consistent with previous research on the heroin shortage (eg Fry & Miller, 2002; Miller et al., 2001; Weatherburn et al., 2001), the findings from the current research show major changes in the patterns of drug use reported by samples of IDU. The major changes included increased reports of amphetamine, benzodiazepine and other prescribed pharmaceutical use and/or injection that appeared as either a direct consequence of the shortage or a consequence of the establishment of patterns of non-heroin injecting drug use. This was not reflected in changes in the indicators of the consequences of the use of these drugs (eg ambulance attendance) apart from treatment service data that may in part reflect the inability of existing monitoring systems to capture information on the harms associated with the use of these drugs (Topp, Degenhardt et al., 2003).

In general it would appear that a market has developed in Victoria for prescribed pharmaceuticals for injection among IDU that appears dominated by benzodiazepines and opioids other than methadone. The effects of injection of drugs designed for oral administration appeared to result in increased reports of some injection related harms that were consistent with hospitalisation data. These increases present significant challenges for agencies involved in the provision of health care to IDU. The onset of the heroin shortage does not appear to have produced an increase in reports of methadone injecting among sampled IDU. This finding provides further evidence that methadone injecting is not a preferred practice among Victorian IDU (Lintzeris et al., 1999). However, the absence of an increase in methadone injecting in Victoria compared to other Australian jurisdictions may merely reflect the more widespread availability of buprenorphine in Victoria and the current research has shown reports of the injecting of this drug have increased among sampled IDU.

### 10.4 Interpreting the effects of the heroin shortage

Many of the effects of the heroin shortage noted above are consistent with the postulated effects of supply-side drug law enforcement (designed to produce decreased availability of the heroin) considered by Rumbold and Fry (1999a) and other researchers (Weatherburn et al., 2001). Nevertheless, some of the findings of the current research were inconsistent with these hypotheses.

One of the most important findings of the current research is the absence of an effect of the heroin shortage on the overwhelming majority of crime indicators. A decline in heroin supply may be expected to increase rates of property crime as people engage in increased crime in order to support heroin purchase at increased prices. Indicator data suggest that this was not the case in Victoria. Based on Makkai's (2001) description of the drugs/crime nexus, one possible interpretation of the absence of an effect could be that the primary heroin users prior to the shortage engaged in crime as part of an overall criminal lifestyle rather than to support their heroin use per se. If this criminal lifestyle can be taken to include IDU in general, then such an interpretation is consistent with the changes in patterns of drug use evident in this study and the apparent stability of the size of the pool of IDU in Victoria that would then be expected to have little influence on reported crime rates. However, the findings are also consistent with Makkai's other descriptions of the nexus as IDU may have engaged in similar amounts of crime to support their use of drugs irrespective of the types of drugs available. It is clear that further research is required in order to better understand the drugs/crime nexus. In this regard reports from Key

Informants suggested that it may be that much of the crime that could be linked to the heroin shortage (both property and violent) may have gone unreported as IDU turned on other IDU during this time.

Rumbold and Fry (1999a) hypothesised that a change in heroin supply may be expected to produce an increase in the rate of presentation at treatment services for heroin users. There was no evidence of a major acute increase in figures obtained from the Victorian specialist drug treatment service system or the Victorian pharmacotherapy program that could be attributed to the heroin shortage. This may be in part due to the fact that services were generally operating at capacity prior to the onset of the heroin shortage meaning that drugs users had to manage the effects of the shortage through other means (Miller et al., 2001). In the absence of reliable generalist data (eg GPs), the extent of presentation at other types of services is unknown. In the longer-term a decrease in opioid presentations within the specialist drug treatment service system was noted that was also found through 2001 in the Victorian pharmacotherapy program. Importantly, figures from the Victorian pharmacotherapy program have shown an increase from the middle of 2002. Interpreting this subsequent increase is difficult in the context of increased availability of buprenorphine as a treatment option for heroin dependence.

## 10.5 Implications

The implications of the heroin shortage in terms of its short- and long-term effects are many. The decline in heroin related mortality and morbidity noted in this research is an unambiguously positive outcome of the change in supply. However, many of the short-term changes in the patterns of drug use that appear to have been entrenched in the longer-term have significant implications for service provision and research.

The changes in patterns of drug use evident among sampled IDU resulted in a change in the presentation of IDU at services that produced pressures in terms of client management and the types of services offered. In this regard it is clear that the options for treatment of IDU for the use of drugs other than heroin is limited (Dietze, Richards et al., 2003). Further work on expanding the skills base in terms of client management and the range of services offered to IDU needs to be undertaken as a matter of priority in Victoria.

The decline in the street-based heroin markets in Melbourne was seen by many Key Informants to be a result of the heroin shortage. There was some evidence to suggest that street-based purchase of the drug declined prior to the onset of the shortage. This shift in setting probably accounts for at least some of the effects of the heroin shortage on mortality and morbidity noted above (Fitzgerald et al., submitted). Nevertheless, the implications of the decline in street-based heroin markets (that was probably exacerbated by the shortage) were generally regarded as positive from the standpoint of community amenity and safety.

One negative consequence of the heroin shortage noted by many Key Informants was a decline in community awareness of drug issues. In the context of injecting drug use continuing at similar levels in spite of the heroin shortage, the perception that drugs were no longer an issue, driven in part by media reports but also by the decline in street drug market activity, is of concern. While heroin related mortality and morbidity rates remain relatively low, people continue to overdose as a result of heroin use. Further, other complications of IDU (such as blood borne viruses) continue at rates that will present major longer-term problems for the community. In addition, reports of increased mental health problems for IDU as a result of the use of stimulant drugs require further research and response.

## 10.6 Sustainability of the effects of the shortage

In their discussion of the heroin shortage in Sydney, Weatherburn et al. (2001) suggest that the heroin shortage allows for an understanding of the effects of supply-side drug law enforcement irrespective of the causes of the shortage. This is because such law enforcement is presumably designed to produce effects like the shortage that was experienced in Victoria (Dietze & Fitzgerald, 2002). The obvious limitation of Weatherburn et al.'s argument is that any effects of the shortage are of little policy relevance in the domain of drug law enforcement in the absence of knowing whether the effects can be attributed to the success or otherwise of law enforcement (Dietze & Fitzgerald, 2002). The likely causes of the shortage have been considered in other parts of this research program and the reader is directed to other reports to consider these. In the current research it was suggested in Key Informant reports that traffickers traditionally involved in the importation of heroin shifted towards the import of other drugs such as potent forms of methamphetamine. If this were the case, then the effects of the shortage observed in Victoria could not necessarily be attributed to the effects of drug law enforcement per se.

Some important findings from the current research concern the longer-term characteristics of the heroin market in Victoria. Data on heroin seizure purity do show an increase in purity from the time when the effects of the heroin shortage were most acute, implying an increased supply of the drug in Victoria. In the context of the shortage producing little change in the size and extent of injecting drug use in Victoria it is unsurprising that heroin use continued during the period during which the effects of the shortage were most acute and then increased as availability increased. Indeed the characteristics of the current heroin market in Victoria were described by some Key Informants as being similar to pre-epidemic levels (eg 1993-1994). If this is the case, then the reasons behind the low numbers of heroin related fatality (lower than figures available for these time periods, see Dietze & Fitzgerald, 2002) in the context of a large pool of IDU need to be examined further. One possible explanation may be the increase in the number of heroin users on (and availability of) maintenance pharmacotherapy in Victoria. The increase in the uptake of these types of treatment options, which are known to prevent opioid related fatality (Ritter et al., 1997), could be the basis of the low rate of heroin related mortality and morbidity observed in Victoria currently. Another possibility may be that the relatively low levels of heroin related fatality may derive from the overall decline in street-based heroin markets in Melbourne in particular, probably resulting from the effects of local-area policing in-and-around these street-based markets. In this regard street-based drug markets are thought to increase the risks of harm resulting from heroin use (Dietze & Fitzgerald, 2002). These possibilities require further examination.

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## Appendix A: Methods and data sources used in this report

### Appendix A1: Primary data collection and analysis undertaken for this project

In order to examine the effects of the heroin shortage in Victoria, three types of primary data collection were undertaken as part of the overall project:

1. A survey of current injecting drug users
2. A survey of pharmacotherapy clients
3. In-depth interviews with Key Informants from the health and law enforcement sectors

The current report relied only upon information obtained from the interviews with Key Informants. For the findings from the other two components of primary data collection for the overall project the reader is referred to the report by Day, Gibson, Collins, Degenhardt and Dietze (in preparation). The details of the methods used in the conduct and analysis of the Key Informant data are described below.

#### A1.1 Introduction

The methodology used for the Key Informant consisted of in-depth qualitative interviews with individuals who have specific, unique and valuable knowledge surrounding the heroin shortage without receiving data that was irrelevant or repetitive. To achieve this aim a number of existing information sources were used to direct researchers to people who held key information regarding the change in heroin supply. These information sources included existing IDRS Key Informant data from 2001 and 2002 and Victoria Police survey data.

The use of the current and previous rounds of IDRS Key Informant interviews to identify those people with comprehensive knowledge, as well as unique perspectives that are indicative of their field, allowed a targeting of resources into the richest sources of information. The use of survey data from the Victoria Police survey (which contained questions specific to the change in heroin supply) also allowed for those individuals with knowledge surrounding the heroin shortage to be identified, but also supplied a picture of more general perspectives of the heroin shortage within Victoria Police as well as general levels of knowledge.

The aim of in-depth qualitative Key Informant interviews was to gain insight rather than achieve a number that suggests generalisability. Indeed, the people to be interviewed were targeted because of their unique status as 'experts' on the phenomenon under investigation. However, it was also important to ensure that an adequate number of Key Informants from each geographical region and professional background were interviewed to provide an accurate picture of the issue.

#### A1.2 Sampling

Forty-nine Key Informants were interviewed overall, including 22 law enforcement personnel and 27 health workers. The Key Informants were sampled from a broad geographical region covering Melbourne and Ballarat including areas covering each of the major street drug markets in

Melbourne. This feature was regarded as particularly important because each of these markets can be substantially different to others (Dietze, Jolley et al., 2003). These markets include: Melbourne CBD, Footscray, Fitzroy/Collingwood, Richmond, Springvale/Dandenong, Box Hill and Frankston. A number of Key Informants were also interviewed that worked across the Melbourne metropolitan area and across Victoria. The study interviewed health Key Informants from similar health services in each area, including: NSP workers, treatment workers, outreach workers, researchers, nurses and some general practitioners. Similarly, officers from each of the policing regions that cover Melbourne were interviewed. In addition to police from each of the regions, Victoria Police Key Informants were drawn from the Major Drug Investigation Unit. Individual Key Informants were not identified in the report. Table A1.1 identifies the roles of Key Informants along with the geographical areas in which they work.

**Table A1.1: Key Informant occupation and location**

<u>Title</u>	<u>Suburb</u>
Rehabilitation Manager	Victoria
NSP worker	Eastern Melbourne
Government department manager	Victoria
NSP worker	Central Melbourne
GP Central	Melbourne
Researcher	Central Melbourne
NSP worker	South East Melbourne
NSP worker	Western Melbourne
NSP worker	Central Melbourne
Researcher	Central Melbourne
Researcher	Western Melbourne
Researcher	Western Melbourne
Withdrawal Nurse	Central Melbourne
Peer educator	Victoria
Primary health worker	Western Melbourne
Treatment worker	Central Melbourne
Treatment worker	Central Melbourne
Pharmacist	Central Melbourne
Outreach worker	Victoria
Researcher	Central Melbourne
NSP worker	South East Melbourne
Drug Safety Worker	Central Melbourne
NSP worker	South East Melbourne

NSP worker	Eastern Melbourne
Youth Counsellor	Victoria
Paramedic	Victoria
Dual diagnosis worker	Ballarat
GP	South East Melbourne
Outreach worker	Western Melbourne
Drug and alcohol clinician, neo-natal Alcohol and Drug Service	Victoria
Forensic Scientist	Victoria
Senior NCO	Central Melbourne
Senior NCO	South East Melbourne
Commissioned Officer	Victoria
Commissioned Officer	Victoria
Analyst	Victoria
Analyst	Victoria
Senior NCO	Western Melbourne
Detention nurses	Victoria
Senior NCO	Eastern Melbourne
Senior NCO	Western Melbourne
Senior NCO	Eastern Melbourne
Senior NCO	South East Melbourne
Senior NCO	Victoria
former Commissioner	Victoria
NCO	Western Melbourne
Senior NCO	Western Melbourne
Senior NCO	Western Melbourne
Commissioned Officer	Victoria
Senior NCO	Central Melbourne

### A1.3 Procedure

Interviews were conducted face to face in a private setting approved by the interviewee. Only one person was interviewed at a time. Interview lengths ranged between 45 and 130 minutes. All Key Informant interviews were tape recorded. Interviews were transcribed and transcripts were then returned to the interviewee for review if requested. Interviewees were able to remove any sections they did not wish reported. In addition, they were able to add or expand on any points they wish to. In following an in-depth qualitative methodology, Key Informants were asked questions based on a

series of prompts, rather than a strict set of questions. This design allowed the researcher and the participant to follow any points which arose and to modify questions accordingly.

#### **A1.4 Data analysis**

Transcripts were read and re-read to identify major themes. Qualitative analysis also utilised Nvivo (Qualitative Solutions and Research International Inc, 1999) to assist in data management. Many of the narratives in this paper were subject to thematic categorisation. Thematic analysis (which is also known as 'grounded theory' or 'narrative analysis') reflects a more inductive design where, rather than approach a problem with a theory already in place, the researcher identifies and explores themes which arise during analysis of the data (Kellehear, 1993). In this analysis, once a theme or category became evident, all transcripts were re-analysed for appearances of the theme. Categorisation was not exclusive and some narratives appeared in many themes.

#### **A1.5 Limitations**

The major problem identified in the data gathering process was that the length of time elapsed since the onset of heroin shortage meant that some Key Informants had forgotten details such as when and where they first learnt of the shortage, or the order in which events may have occurred.

## Appendix A2: Other data sources and methods used in this report

In addition to the primary data collection undertaken for the purposes of this research, a wide variety of other data sources were examined in a review of available data sources that capture information on drug use and harms pertinent to a consideration of the effects of the heroin shortage. The results of this review along with the analyses undertaken are described below.

### A2.1 Surveys of convenience samples of IDU

A number of surveys of convenience samples of IDU have been undertaken in Victoria since the mid 1990s. For the purposes of this research IDU surveys from the Illicit Drug Reporting System (IDRS), conducted annually in Victoria by Turning Point since 1997, have been accessed. In addition, two other surveys conducted by Turning Point have been accessed. These were the survey conducted for the Drug Availability Monitoring Project (DAMP, see Miller et al., 2001) and the IDU survey component of the Street Life Study (SLS). The methods used in these two surveys in terms of survey conduct and design were identical to that used in the IDRS surveys but the DAMP survey was conducted most contemporaneously (March/April 2001) with the onset of the heroin shortage and the Street Life Study survey was conducted in early 2002. Both of these surveys included specific questions around the heroin shortage. For full details of the IDRS and DAMP surveys the reader is referred to the reports from these studies (Dwyer & Rumbold, 2000; Fry & Miller, 2000, 2001, 2002; Miller et al., 2001; Rumbold & Fry, 1998, 1999b).

In general, the analysis of existing IDU survey data involved the generation of summary statistics from unit records. Where possible 95% confidence intervals were generated for the prevalence of any particular characteristic in the dataset (usually sample proportions reporting any particular pattern). It is technically incorrect to apply such techniques to convenience (ie non-generalisable) samples. Nevertheless, the samples were recruited from similar sources. This means that the confidence intervals are reasonably applicable to the overall population from which the samples are drawn (eg needle and syringe program attendees willing to take part in research). Importantly, the confidence intervals allow the reader to interpret any statements around evidence of trend. However, it is important to note that these confidence intervals should not be taken to generalise to the overall population of IDU.

### A2.2 Indicator data

A wide variety of data are routinely collected in Victoria that capture some information on alcohol and drug related harms such as overdose (Rumbold & Dietze, 1999). In their review of available data in Victoria, Rumbold and Dietze describe available data sources along with their limitations. For the purposes of this appendix only data sources used in the current research within the criminal and health domains have been presented. This presentation includes a discussion of the methods used in analysis. For a full consideration of the limitations of these data sources the reader is referred to Rumbold and Dietze's (1999) report.

#### A2.2.1 Criminal data - Victoria Police LEAP data

The Victoria Police Law Enforcement Assistance Program (LEAP) system captures information on crime reported to Victoria Police. As such, information is available across a number of different crime categories including reported property offences, assault and other crimes of violence and

drug-specific crime such as drug related incidents. Data has been collected through the LEAP system since the 1993/94 financial year. However, due to privacy protocols operating at Victoria Police, unit record data are not released to external agencies. This means that only tabulated data are available from this system. There are two main types of data available on LEAP that are relevant to the purposes of the current research: drug-specific incidents and incidents of drug associated crime.

## Methods

Section 6.1 of this report presents a consideration of some of the issues in interpreting the relationship between drug consumption and available indicator on crime. For the purposes of the current research LEAP data were obtained for the following incident categories: Homicide, Rape, Sex (non rape), Robbery, Assault, Abduction / Kidnap, Arson, Property Damage, Burglary (Aggravated, Residential & Other), Deception, Handle Stolen Goods, Theft (of/From Motor Vehicle, Shopsteal, Of Bicycle & Other), Drug (Cultivate, Manufacture, Traffic, Possess & Use for heroin, cocaine, cannabis, ecstasy, amphetamines & other), Going Equipped To Steal, Justice Procedures, Regulated Public Order, Weapons / Explosives, Harassment, Behaviour in Public and Other.

LEAP data on these incident categories was obtained for the period January 1997 – June 2002 for the whole of Victoria. Additional data were available for incidents occurring in the postcodes that approximately correspond with the Local Government Area (LGA) boundaries of the areas of Melbourne known to contain Melbourne's most active street-based drug markets (see section 3 of this report) for the period through until June 2003. Monthly counts of recorded incidents were analysed using Time Series Analysis techniques – the results of which are detailed in section 7 of this report with the technical details of the findings presented in Appendix A7.

### A2.2.2 Health data

#### *Mortality*

Information regarding drug related deaths in Victoria is available through two sources; (1) the Australian Bureau of Statistics Mortality data file, and (2) coronial data collated by the Victorian Institute of Forensic medicine (VIFM). Coronial data available from the VIFM represent a more sensitive and timely measure of the extent of heroin related death in Victoria (Dietze & Fitzgerald, 2002) that is widely reported in the public domain (eg the Herald-Sun). While VIFM data are only useful for deaths referred to coronial services, the majority of heroin related deaths in Victoria are referred to these services where a full toxicological test is undertaken. The initial judgement of the pathologist (generally based on the presence of heroin metabolites in specimens) has been taken as indicating that a case was heroin-related.

#### Methods

Monthly counts of heroin-related deaths were obtained for the period January 1998 – May 2003 for the whole of Victoria. These data were analysed using Time Series Analysis techniques – the results of which are detailed in section 5 of this report with the technical details of the findings presented in Appendix A5.1.

#### *Morbidity*

The Victorian Admitted Episode Data set (VAED), managed by the Victorian Department of Human Services, details the number and type of all Victorian public and private hospitalisations. The VAED is a computerised database of inpatient hospitalisations with diagnoses categorised according to the International Classification of Diseases coding systems (ICD9CM & ICD10AM).

It is updated on a quarterly basis and can provide an indication of the number of inpatient hospitalisations that may be attributed to various types of drugs on the basis of ICD codes. There are however, a number of limitations to this data source. First, there is evidence that coding of diagnoses is only reliable for primary diagnosis (MacIntyre, Ackland, & Chandraraj, 1997; MacIntyre, Ackland, Chandraraj, & Pilla, 1997), which means that the true extent of drug involvement in hospitalisations may be underestimated as identification of drug involvement may only be present at secondary diagnosis and beyond. Further, there are relatively few illicit drug related inpatient hospitalisations - illicit drug related morbidity usually results in treatment in hospital Emergency Departments alone (data for which in Victoria are regarded as unreliable).. Nevertheless, the hospitalisation data such as that available from the VAED represent an important source of information on the extent of alcohol and drug related morbidity in the community (Chikritzhs et al., 1999) and were accessed for the purposes of the current project.

## Methods

Hospitalisations related to drug consumption recorded on the VAED generally relate to conditions resulting from the chronic long-term, or the acute effects, of drug consumption. In order to analyse the VAED for the purposes of this report, specific ICD codes related to drug consumption were extracted from the data file available for the 1998/99 – 2001/02 financial years on the basis of English et al.'s (1995) meta-analysis. The counts of these hospitalisations were then calculated according to three drug classes; opioids (heroin and other), stimulants (amphetamines and others such as cocaine) and 'other drugs' (generally involving complications related to IDU). The number of hospitalisations for a given age and sex category for each drug class was then multiplied by the aetiological fraction (a fraction representing the proportion of cases in the population that are caused by illicit drug consumption), obtained from English et al., specific to that age and sex category. The monthly total of these hospitalisations was then calculated for Victoria as a whole (irrespective of place of residence meaning that a small number of people who do not normally reside in Victoria have been included). This provides an estimate of the number of hospitalisations that can be attributed to the consumption of particular drugs. These data were analysed using Time Series Analysis techniques – the results of which are detailed in section 5 of this report with the technical details of the findings presented in Appendix A5.3.2.

### *Ambulance attendances*

Excessive drug consumption can result in the utilisation of emergency health services such as ambulances. Overdose, for example, is a common and serious consequence of illicit drug use, particularly in relation to heroin. Ambulance attendances at drug related events are a key indicator of these acute presentations related to drugs in Melbourne. A database of alcohol and drug related attendances by the Melbourne Metropolitan Ambulance Service has been established in Melbourne. This computerised database is managed by Turning Point and contains information obtained from the Patient Care Records (PCRs) that are completed by the attending ambulance officers. Data is available from June 1998. Although the database includes calls for all types of drug involvement, the data set is most suited to the monitoring of non-fatal heroin overdose. This is because the administration of naloxone and subsequent response provides unambiguous evidence for the involvement of the drug. Such evidence is not available for other types of illicit drugs – the documentation of which is reliant upon the assessment of ambulance paramedics (as detailed on PCRs).

## Methods

Data on ambulance attendance at drug related events were obtained for the period June 1998 – September 2002 (excluding the months of June 1999 and May-July 2001 where paramedic industrial action mean that available data are of unknown completeness). There is a large number



of ambulance attendances related to alcohol and drug consumption that are recorded on the Turning Point database. Attendances were extracted from the database according to the type of drug recorded as being involved: heroin (including heroin overdoses and those attendances likely to be heroin related), cases where the person or persons attended were recorded as being alcohol affected, cases where the person or persons attended were recorded as being affected by benzodiazepines and cases where the person or persons attended were recorded as being affected by stimulants. Postcode identifiers given for cases were used to approximate Local Government Area (LGA) boundaries of the areas of Melbourne known to contain Melbourne's most active street-based drug markets (see section 3 of this report). The monthly counts of the number of cases were analysed using Time Series Analysis techniques – the results of which are detailed in section 5 of this report with the technical details of the findings presented in Appendix A5.3.1.

The numbers of heroin overdose attendances were also analysed according to the age and sex of cases. In this analysis the age and sex characteristics of the heroin overdose cases in the year prior to the onset of the heroin shortage were compared with the year after the onset of the heroin shortage.

#### *Treatment Service Utilisation - The Alcohol and Drug Information System (ADIS)*

Apart from the 1997 Mental Health and Well being Profile of Adults, the only other sources of information regarding the prevalence of drug dependence in the community are the records of treatment services. These records provide an indication of the utilisation of treatment services by individuals within the community.

At present there is no source of information concerning alcohol and other drug users who attend generalist health services in Victoria, and in particular general practitioners for counselling or other treatment services. The absence of data in this area means that much of the counselling around alcohol and other drugs that occurs in the community is not captured on any existing or planned data collection system.

The Victorian Department of Human Services funds community-based agencies to provide alcohol and drug treatment services across Victoria (including Community Health Centres). The collection of client information is a mandatory requirement and this information is collated on a computerised database called the Alcohol and Drug Information System (ADIS).

#### Method

Data on courses of treatment provided by specialist drug and alcohol agencies and Community Health Centres recorded in Victoria during the 1998/99 to 2001/02 financial years were extracted from the ADIS database for the purposes of the current research. Courses of treatment have been defined as "a completed course of treatment undertaken by a client under the care of an alcohol and drug worker, which achieves significant agreed treatment goals" (Carrol Reidell, personal communication). Main and secondary presenting drug problem, type of service provided, client age and sex, and history of injecting drug use recorded for courses of treatment were examined on a monthly basis and the results of these analyses are detailed in section 6 of this report.

#### *Needle and syringe distribution*

The Victorian Needle and Syringe program was established in 1987. The Victorian program records the number of needles distributed and returned, the number of clients and some client demographics. A computerised database is managed by the Department of Human Services and is collated on a quarterly basis. This database also includes syringes purchased by pharmacies for distribution. This data source has been used previously to derive estimates of the number of heroin users in Victoria (Kutin et al., 1997) and would appear to have some utility for monitoring

injecting drug use within the Victorian community.

### Methods

Monthly counts of needles and syringes distributed through the program were obtained for the period January 1998- December 2002 for the purposes of the current research. These data were analysed using Time Series Analysis techniques – the results of which are detailed in section 4 of this report with the technical details of the findings presented in Appendix A4.1.

## Appendix A4: Time series analysis of changes in drug use among Injecting Drug Users

### A4.1 Needle and syringe program data

Figure 4.1 shows the observed number of needles and syringes distributed through the Victorian needle and syringe program (through fixed and off-site services) for the period January 1998 – December 2002. The data shown demonstrated a clear upward trend, peaking just before the onset of the shortage after which the numbers of needles and syringes distributed appeared to plateau at 1999 levels. In analysing this time series the data were first differenced (as a result of the upward trend) to ensure stationarity of the series and a transfer function fitted to the data as a simple step for the month of January 2001 with a change of slope. The results of the time series analysis showed that the step and slope were significant, and was delayed by 1 month from the onset of the heroin shortage. Table A4.1 shows the parameter estimates for this model and the transfer function is depicted schematically in Figure 4.1.

**Table A4.1: Parameter estimates for the model of NSP data**

Parameter	Estimate	t-statistic	Pvalue
Constant	7846	4.44	<0.0001
Step	-151818	-6.44	<0.0001
Change in slope	-7116	-2.44	0.01
MA(1)	0.67	6.39	<0.0001

This step represents a 26% decrease in the number of needle/syringes dispensed in the month after the onset of the heroin shortage. A change of slope occurred at the time of the shortage, from a monthly increase of 7,846 needle/syringes per month before the shortage to 731 per month after the shortage. This represents a return to mid-1999 needle/syringe distribution levels with a reduced (by > 90%) rate of increase.

## Appendix A5: Time series analysis of changes in the health effects of Injecting Drug Use

### A5.1 Heroin-related deaths

Figure 5.1 shows the number of heroin related deaths in Victoria over the period January 1998 – May 2003. The data shown in Figure 5.1 demonstrated a clear upward trend until peaking in 1999 with high levels maintained until the middle of 2000, after which numbers declined. The time series shown in Figure 5.1 was modelled using natural spline smoothers that included a term for a serially correlated latent process and was estimated as an observation-driven model. There was no evidence of a serially-correlated latent process and natural splines with 3 knot points were sufficient to smooth the data. Table A5.1 shows the parameter estimates of the final model.

**Table A5.1: Parameter estimates for the final model of heroin overdose deaths in Victoria**

Parameter	Estimate	T-statistic	P value
Intercept	2.96	31.63	<0.0001
Spline1	-0.53	-2.53	0.007
Spline2	1.21	4.38	<0.0001
Spline3	0.56	1.79	0.04
Step	-1.87	8.62	<0.0001

The step represented a permanent 85% decrease in the number of heroin related deaths that could be attributed to the heroin shortage.

### A5.2 Non-fatal heroin overdose

Figure 5.2 shows the number of non-fatal heroin overdoses attended by ambulance over the period June 1998 – September 2002. In analysing this time series the data were first differenced (as a result of the upward trend) to ensure stationarity of the series and a transfer function was fitted to the data as a simple step for the month of January 2001. The results of the modelling showed that this step was highly significant but there was no evidence of a lag from the onset of the heroin shortage. Table A5.2 shows the parameter estimates for this model with the transfer function depicted schematically in Figure 5.2.

**Table A5.2: Parameter estimates for the model of non-fatal heroin overdose data**

Parameter	Estimate	t-statistic	P value
Step	-155.00	-3.85	<0.0001

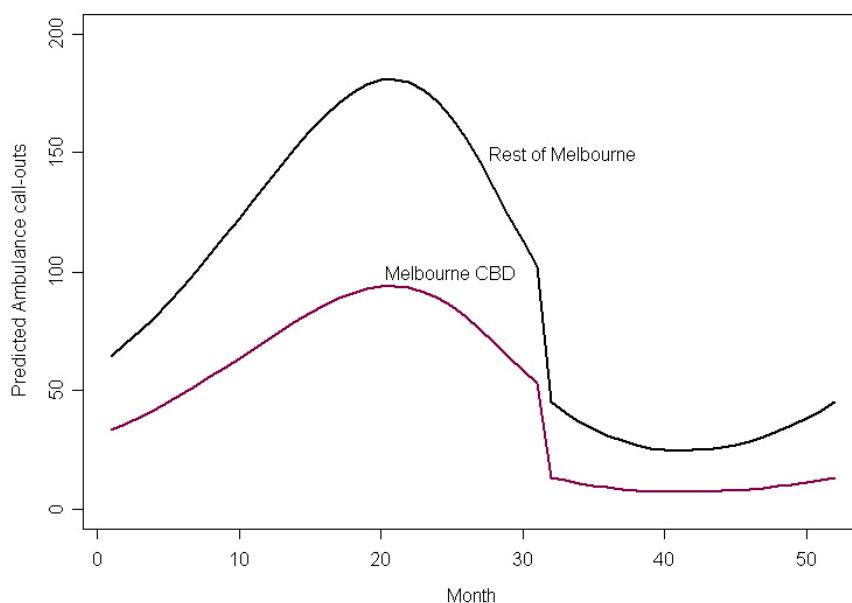
This step represented a permanent 52% decrease in the mean number of overdoses per month, occurring at the point of onset of the heroin shortage. The series appeared to become level after the heroin shortage, remaining stable at a mean level of 144 heroin overdoses per month. This number is less than that observed in any pre-shortage month of the time series for the whole of Melbourne (previous lowest figure being 168 for June 1998).

The time series detailed in Figure 5.5 of this report was analysed further to determine whether the rate of decline associated with the heroin shortage varied between areas of Melbourne. The number of overdoses observed allowed only for a comparison of the Melbourne LGA with the remainder of the Melbourne (excluding the other four street-based drugs markets). In analysing this time series data variability was controlled for by taking logs of the totals prior to modelling. A natural cubic spline (with four 'knots') was shown to have the best fit of the data when modelled in combination with the step function detailed above. The predicted values of the model are shown in Figure A5.1 and they show that the decline in the remainder of Melbourne was around the 52% level detailed earlier. However, the decline in the Melbourne LGA was one third greater than the decline in the rest of Melbourne (ie there was an interaction between the location of the overdose and the step function) such that the decline in the rate of non-fatal heroin overdose was some 20 percentage points greater in the Melbourne LGA compared to the remainder of the greater Melbourne metropolitan area. Table A5.3 shows the parameter estimates for this model with the transfer functions depicted schematically in Figure A5.1.

**Table A5.3: Parameter estimates for the final model of non-fatal heroin overdose data in the Central Business District and the Remainder of Melbourne**

Parameter	Estimate	T-statistic	P value
Intercept	3.8393	36.7054	<0.0001
Spline1	1.2138	8.4914	<0.0001
Spline2	-0.9779	-3.2732	<0.01
Spline3	0.8191	2.3686	<0.02
Spline 4	-0.1894	-0.9466	0.3462
Step	-0.9857	-5.2364	<0.0001
as.factor(city)	0.3273	9.1331	<0.0001
as.factor(city):step	0.2739	4.8563	<0.0001

**Figure A5.1: Transfer functions of the rates of non-fatal heroin overdose in the Melbourne Central Business District and the Remainder of Melbourne, June 1998 – September 2002**



### A5.3 Heroin related inpatient hospitalisations

Figure 5.7 shows the number of heroin related hospitalisations in Victoria over the period July 1998 – June 2002. In analysing this time series the data were first differenced (as a result of the downward trend) to ensure stationarity of the series and logs were taken to control for variability in the data. The data displayed evidence of a decaying step function with no lag from the onset of the heroin shortage. While a basic step and a decaying step were modelled, the basic step was found to be the best model when shifted 2 months from the onset of the shortage. The parameter estimates for this model are shown in Table A5.4 and there was no evidence of autocorrelation. This step represents a permanent 61% decrease in the number of pre- shortage heroin/opiate related hospital separations, occurring 2 months after the heroin shortage.

**Table A5.4: Parameter estimates for the model of heroin-related hospital separations**

Parameter	Estimate	t-statistic	P value
Step	-0.50	-3.52	0.0004

### A5.4 Other drug related inpatient hospitalisations

Figure 5.10 shows the number of other drug related hospitalisations in Victoria over the period July 1998 – June 2002. This time series appeared stationary and showed minimal variability, thereby obviating the need for differencing or variance stabilisation. A number of models were tested (basic step, decaying step, step and pulse). The basic step was found to best fit the data with a lag of two months from the onset of the shortage. The parameter estimates for this model are shown in Table A5.5 and there was no evidence of autocorrelation.

**Table A5.5: Parameter estimates for the model of heroin-related hospital separations**

Parameter	Estimate	t-statistic	P value
Constant	282.18	69.75	<0.0001
Step	44.10	6.43	<0.0001

Figure 5.10 shows the transfer function for this model. This step corresponds to a permanent 16% increase in the number of pre-shortage other drug related hospitalisations, occurring 2 months after the heroin shortage.

## Appendix A6: Time series analysis of changes in drug-related criminal activity associated with the heroin shortage

### A6.1 Heroin related incidents

In attempting to analyse the time series for the heroin related incidents shown in Figure 6.1 a decaying pulse and a simple step function were examined (after differencing and variance stabilisation) but no significant effects were found. Similarly, there was no evidence of any effect of the heroin shortage (modelled as a decaying step) noted in the time series of amphetamine incidents detailed in Figure 6.1. To determine whether the rate of decline varied between areas of Melbourne the time series detailed in Figure 6.2 of this report was analysed further.

In analysing this time series the heroin related incident data were first differenced and logs were taken to ensure variance stability and a transfer function was fitted to the data as a simple step for the month of January 2001 as well as a decaying pulse and there was reasonable evidence of a significant effect of the heroin shortage with a lag of two months from the onset. Table A6.1 shows the parameter estimates for this model with the transfer function depicted schematically in Figure 6.2.

**Table A6.1: Parameter estimates for the model of heroin incident data in five key LGAs**

Parameter	Estimate	t-statistic	P value
Step	-0.54	-2.40	0.02
MA(1)	0.44	4.13	<0.0001

This step represents a permanent 40% decrease in the mean number of heroin related incidents per month in the five key LGAs of Melbourne known to contain street-based drug markets, occurring two months after the onset of the heroin shortage.

### A6.2: Other crime - Robbery and aggravated burglary

Figure 6.5 shows the number of robbery and aggravated burglary incidents reported to Victoria Police over the period January 1998 – June 2002. In analysing this time series the data were first differenced to ensure stationarity. A decaying pulse that was fitted to the aggravated burglary data proved inadequate and therefore a second model was fitted regressing the burglary data against month as a quadratic term. This model fitted the data well but there was no significant effect of the heroin shortage on aggravated burglary rates. First and second-order decaying pulse functions were fitted to the robbery data with a significant decaying pulse occurring at the time of the heroin shortage. Table A6.2 shows the parameter estimates for this model with the transfer function depicted schematically in Figure 6.5.

**Table A6.2: Parameter estimates for the model of reported robbery incident data in Victoria**

Parameter	Estimate	t-statistic	P value
Pulse	123.97	3.93	<0.0001
Decay	0.91	5.99	<0.0001

This pulse represents an increase of 39% on the number of robbery incidents occurring immediately before the onset of the heroin shortage. The increase decayed slowly to pre-shortage levels. The behaviour of the series after the shortage may have changed (to a level rather than an increasing series) but there is not enough data to determine whether or not this was the case. In conclusion, in spite of the initial increase in reported robbery incidents associated with the heroin shortage there appeared to be no long-term increase in robbery incidents as a result of the shortage.



