

Exploration of patterns of drug use, methamphetamine dependence and associated harms, and barriers to treatment among people who inject drugs in north and south

Tasmania

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Statement of Sources

I declare that this research report is my own work and that, to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.

Signed Catherine Bishop Date: 29/11/2016

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Abstract

The current study examined patterns of drug use, associated harms, and access to drug treatment among individuals who inject drugs in northern and southern Tasmania. One hundred individuals in the south and 41 in the north were interviewed using the Illicit Drug Reporting System paradigm. Given recent community concern regarding methamphetamine, harms were examined as a function of likely dependence on methamphetamine by classifying respondents into groups based on Stimulant Severity of Dependence scores: no methamphetamine use; methamphetamine use, not likely dependent; and methamphetamine use, likely dependent. Differences were found in patterns of use and harms across the state, suggesting that generalisation of research conducted in the capital city is not appropriate. Even among a sample engaging in high levels of poly-drug use, certain harms were found to be associated specifically with methamphetamine use and dependence. Access to appropriate treatment for methamphetamine use was low among those displaying dependence, with the majority of the sample engaging only in treatment for opioid use disorders. Individuals often perceived that they did not need treatment, despite negative perceptions of methamphetamine use, and viewed treatment options as not efficacious. Lack of perceived need was also noted as a reason for not accessing mental health services despite self-perceived mental health problems. This suggests the importance of education and integrated service delivery to ensure that when clients present to mental health or alcohol and drug services both substance use and mental health needs are met, especially as co-morbid difficulties are common.

Understanding patterns of drug use, supply, and associated risks and health outcomes has important implications for policy development (Topp & McKetin, 2003). Specifically, knowing the types of drugs that are available and accessible can inform the development of relevant drug education resources. Secondly, knowing the risks associated with drug use can inform risk reduction strategies and identify ways to improve current service provision. For example, previous research on patterns of drug use indicated that the types of drugs injected in Tasmania differ substantially from the rest of Australia, due to Tasmania's isolation from mainland drug markets. This information has been used to inform policy around the types of injecting equipment made accessible to people who inject drugs in Tasmania (Topp & McKetin, 2003). Lastly, examination of physical and mental health outcomes associated with drug use can assist in identification of needed services to reduce the impact of such issues. Overall, research examining trends in the drug market is important to ensure that policy is well informed and that resources can be appropriately allocated to areas of need.

Methamphetamine as a Drug of Concern

One potential area of need that has been the focus of Australian media, policy, and research in the past 12 months is the reduction of risks and harms associated with methamphetamine use to individuals and communities. There are several different forms of methamphetamine available to consumers in the illicit drug market in Australia, including powder, base, and crystalline forms (Degenhardt, Sara, et al., 2016; Topp, Degenhardt, Kaye, & Darke, 2002). Powder methamphetamine, often denoted "speed" is a low to medium purity form of methamphetamine that may appear as a white, yellow, orange, pink or brown powder (Topp et al., 2002). Base methamphetamine is often of high purity and appears as a

yellow or brown sticky or oily powder, paste or crystal (Topp et al., 2002). Base methamphetamine is formed when the oil obtained from the pseudoephedrine to methamphetamine conversion is unsuccessfully purified into methamphetamine hydrochloride, with the final product containing many organic impurities (Topp et al., 2002). Crystalline methamphetamine, commonly known as “ice,” is a high to extremely high purity preparation of methamphetamine hydrochloride salt which appears in the form of large translucent or white crystals or coarse powder (Degenhardt, Sara, et al., 2016; Topp et al., 2002). Crystalline methamphetamine provides a stronger dose, more intense effects, and is associated with a higher risk of dependence and harms than the powdered form (Degenhardt, Sara, et al., 2016).

During 2015 there was growing concern that use of methamphetamine, in particular the crystalline form, has reached “epidemic” levels (Degenhardt, Larney, et al., 2016). Media reports have been focused on increased ease of access to and low cost of the crystalline form of methamphetamine, along with apparent associated increases in violence and motor vehicle accidents (Usher, Clough, Woods, & Robertson, 2015). Examination of data from drug-monitoring systems (e.g., Degenhardt, Sara, et al., 2016; Lim, Cogger, Quinn, Hellard, & Dietze, 2015; Stafford & Burns, 2015) and national household surveys (Australian Institute of Health and Welfare, 2014) suggest prevalence of methamphetamine use in Australia has not increased in the general community, rather shifts from use of the lower potency powder form to the crystalline form among those already using methamphetamine may account for increased methamphetamine-related harms observed. Additional support of this trend is the observed increased purity of methamphetamine seized by police in recent years (Degenhardt, Sara, et al., 2016). This pattern differs across different groups of individuals using methamphetamine,

with decreased use of methamphetamine generally observed in the past two years, and relatively stable low proportions of use of the crystalline form, among people who frequently use ecstasy and other related psychostimulants (Sindicich, Stafford, & Breen, 2016). This is in contrast to increases in use of crystalline form observed among people who inject drugs (Stafford & Burns, 2015). This shift toward use of the crystalline form of methamphetamine is not a new trend and appears to have started between the late 1990s and early 2000s (Degenhardt, Sara, et al., 2016).

Degenhardt, Larney, et al. (2016) argue that while there have been disagreements between researchers and media and members of law enforcement agencies as to whether methamphetamine use has increased or remained stable, it is more important to consider those that are regular and dependent users of methamphetamine, as it is these individuals who are most likely to experience harms associated with use and thereby impact on society. The Australian Institute of Health and Welfare (2014) reported increased frequency of methamphetamine use among those using methamphetamine in 2013 in the National Drug Strategy Household Survey, particularly among those using predominately the crystalline form. While small proportions of people who use illicit drugs responding to this survey may call into question the validity of these findings they are supported by research conducted with such samples. For example, Stafford and Burns (2015) reported increased frequency of injection of crystal methamphetamine among Illicit Drug Reporting System (IDRS) respondents across Australia in recent years. Within this sample the proportion of individuals reporting use weekly or more frequent has increased (Degenhardt, Sara, et al., 2016). Degenhardt, Larney, et al. (2016) estimated the proportion of regular and dependent methamphetamine users in the Australian population between the years of 2002-2014 by multiplying data on the

number of individuals receiving treatment for methamphetamine use or being hospitalised as a result of use by the proportion of individuals within a samples of regular and dependent users who reported receiving treatment for their use and then determining what proportion of the Australian population this represented. They estimated that the rates of regular and dependent use had increased in the previous five years from 0.74% of the population in 2009/10 to 2.09% in 2013/14 for regular use; and 0.47% to 1.24% for dependent use. This may account for increased methamphetamine related harms noted in the Australian community.

Harms Associated with Methamphetamine

A number of negative physical and mental health outcomes and other harms have been found to be associated with methamphetamine use and dependence. Harms related to methamphetamine use in Australia appear to have increased over the past five years, with increases in hospital admissions, including for methamphetamine induced psychosis or other mental health issues (Roxburgh & Breen, 2016); phone calls to helplines (Degenhardt, Sara, et al., 2016); arrest (Australian Criminal Intelligence Commission, 2016); and drug treatment episodes related to methamphetamines (Stafford & Burns, 2015).

Repeated use of stimulants such as methamphetamine has been found to increase the risk of precursors to heart disease such as thickening and hardening of ventricles (ventricular hypertrophy) and arteries and increased fatty deposits in the arteries (coronary artery atherosclerosis) (Darke, Kaye, McKetin, & Duflou, 2008). Additionally, with repeated use of methamphetamine, especially as the individual ages, risk of myocardial infarction (heart attack) also increases (Darke et al., 2008). Poly-drug use is also common among individuals using methamphetamine and combination with other drugs, including alcohol and opioids such as morphine, can

increase the toxicity of methamphetamine and thereby the physical harms associated with use (Darke et al., 2008).

Methamphetamine use is associated with cognitive deficits, especially in the domains of sustained attention, verbal memory, and executive functioning (Darke et al., 2008). In a meta-analysis of the neuropsychological effects of history of methamphetamine use disorders, Scott et al. (2007) found moderate magnitude effects on learning; executive functioning, especially response inhibition and problem solving; episodic memory, information processing speed, and motor skills compared to those without a history of methamphetamine use. Additionally, small magnitude effects on attention and working memory, language, and visuospatial skills were noted (Scott et al., 2007). These cognitive effects likely make engaging in activities that enlist an individual's executive functions, motor skills, and processing speed, such as driving a motor vehicle more risky, especially among those dependent on methamphetamine.

Co-morbid disorders are commonly reported in individuals with methamphetamine dependence, with researchers reporting around one-third being diagnosed with an additional psychiatric disorder (e.g., Akindipe, Wilson, & Stein, 2014). Particularly common are psychotic, mood, and anxiety disorders (Akindipe et al., 2014; Glasner-Edwards et al., 2010b; Salo et al., 2011). Salo et al. (2011) argues that this suggests the need to assess for psychiatric comorbidity in individuals with methamphetamine use disorders, and to consider the need to include intervention for associated symptoms in addition to treating difficulties with methamphetamine use. It seems likely that treatment for methamphetamine use alone will not alleviate mood and anxiety symptoms fully especially if they are not substance induced and would likely impact functional outcomes for individuals seeking treatment for

methamphetamine use. Researchers have found that comorbid disorders are associated with poorer outcomes for individuals who have sought treatment for methamphetamine dependence. For example, Glasner-Edwards et al. (2010a) found that those with anxiety disorders had poorer adherence to treatment than those without anxiety disorders, and also reported higher levels of methamphetamine use three years following treatment for methamphetamine dependence. They were also more likely to have had a hospital admission, medical problems, family problems, and suicide attempt. Likewise, severity of depressive symptoms have been found related to treatment adherence and use of methamphetamine at treatment completion and poorer psychosocial outcomes (Glasner-Edwards et al., 2009). Similar findings have been found in Australia, with depressive episodes found to be associated with increased disability, greater severity of dependence on methamphetamine and higher levels of poly-drug use (McKetin, Lubman, Lee, Ross, & Slade, 2011).

Researchers (e.g., Brecht & Herbeck, 2013; McKetin et al., 2014) have identified engaging in violent behaviours as one of the key harms related to using methamphetamine. Brecht and Herbeck (2013) found that methamphetamine use was related to engagement in violent criminal behaviours, especially among those with more severe dependence and associated problems such as paranoia and hallucinations. Similarly, McKetin et al. (2014) also found self-reported violent behaviours such as assaults and damaging property to be associated with methamphetamine use, especially among those using the substance more often. Victimization also appears to be associated with methamphetamine use. For example, Darke, Torok, Kaye, Ross, and McKetin (2010) found that risk of being a victim of violent crime was greater among those using methamphetamine than the general Australian population.

McKetin et al. (2014) argue the importance of not generalising research findings of harms within one group of people who use methamphetamine to another, because different patterns of use may be associated with differing levels of risks and related harms. For example, those who use methamphetamine recreationally and are not dependent on the substance are a lower risk group for methamphetamine related harms and as such may be less in need of intervention (Darke et al., 2010; McKetin et al., 2014). In support of such arguments, Quinn, Stoové, Papanastasiou, and Dietze (2013) found that despite similar sociodemographic characteristics between those dependent, compared to those not dependent, on methamphetamine in a sample of regular methamphetamine users in Melbourne, dependence was associated with higher levels of psychological distress in the past month and current use of medication for mental health problems. Individuals dependent on methamphetamine were also more likely to report a history of incarceration and arrest in past 12 months, as well as to have experienced social, financial, work, study, and legal problems in the past six months as a result of use (Quinn et al., 2013).

It is suggested that higher potency forms of methamphetamine are associated with an increased risk for dependence and therefore associated harms such as co-morbid psychological disorders, poor physical health, increased aggression and violence, and neuropsychological deficits (Topp et al., 2002). McKetin, Kelly, and McLaren (2006) found that among regular methamphetamine users in Sydney, those using the crystalline form in the past 12 months were nearly twice as likely to be dependent on methamphetamine than those using only other forms of methamphetamine even when other patterns of use has been adjusted for, such as frequency, length of use, and route of administration. Route of administration of methamphetamine also appears to effect the likelihood of developing substance

dependence and associated harms. For example, Quinn et al. (2013) in a Melbourne sample of people using methamphetamine found that injecting methamphetamine over other routes of administration was associated with dependence. Injecting methamphetamine has also been found associated with increased rates of mental and physical health problems and unemployment (Novak & Kral, 2011). These findings of increased risk of dependence and associated harms as a function of methamphetamine form and route of administration are likely due to the pharmacokinetic properties of the drug. The likelihood of dependence on substances is influenced by the amount of drug that reaches the brain, how quickly it reaches the brain, and how often the drug reaches the brain (Allain, Minogianis, Roberts, & Samaha, 2015). Routes of administration such as intravenous injection and smoking of substances result in the drug reaching the brain more rapidly than other methods such as swallowing or snorting the substance and thereby increase dependence risk (Allain et al., 2015). In regard to dose, because the crystalline form of methamphetamine is more potent than other forms this likely results in an increased dose of the drug entering the brain and therefore increased risk of dependence.

Overall, prior research into methamphetamine use suggests a number of harms associated with this. However, these harms appear to be more prevalent in individuals who use methamphetamine frequently and are dependent on the substance and may not apply to those using less frequently and recreationally. This suggests the importance of recognising the need to examine groups of people who are dependent and non-dependent on methamphetamine independently, rather than assuming a common pattern across all individuals who use methamphetamine.

The Illicit Drug Reporting System: Overview and Limitations

The Illicit Drug Reporting System (IDRS) was established to monitor the Australian illicit drug market and associated risks and health outcomes (Stafford & Burns, 2014). It is conducted annually in the capital cities of each state and territory in Australia to provide information on emerging drug market trends at both a local and national level that may require further examination and identify need for action (Stafford & Burns, 2014). The IDRS comprises interviews with people who regularly inject drugs; interviews with key experts in the drug field; and examination of indicator data related to drug use such as police drug seizures and treatment episodes (Stafford & Burns, 2014). The IDRS is designed as a sentinel study, with the assumption that any major new trends in drug markets are likely to first emerge in major population centres and amongst those who are heavily engaged in drug markets (Stafford & Burns, 2014).

However, this sentinel approach means that the IDRS is not able to provide information on drug markets outside of capital cities, and as this is sometimes the sole compilation of substance use data in a jurisdiction, it has been used by policy makers to generalise to entire states or territories. This is problematic because evidence from multiple sources indicate that patterns of drug use differ as a function of geographical area and thus data obtained in capital cities is unlikely to be representative of the entire state. For example, the National Drug Strategy Household Survey (Australian Institute of Health and Welfare, 2014) found that those who lived in remote and very remote locations were twice as likely to have used methamphetamine in the past year than those not living in remote locations. Thus, methamphetamine use and related problems may differ in these geographic

areas compared to the capital cities surveyed in the IDRS (Degenhardt, Sara, et al., 2016).

In Tasmania specifically, there are reasons to expect the drug market would differ between the north and south of the state. For example, de Graaff, Peacock, and Bruno (2014) highlight that in the north, access to both sea and airports may influence availability of certain types of drugs in the drug market. Further, the establishment of organised motorcycle groups in Launceston may have implications for the drug market (de Graaff et al., 2014) as motorcycle groups have been found to be involved in the drug market on a national level (Australian Crime Commission, 2015). While a number of groups have well established positions in the South (e.g., the Rebels); others are primarily based in the north of the state (the Black Uhlands, Satan's Riders, Devil's Henchman); and others (e.g., the Outlaws) are state-wide (ABC News, 2015). Thus, with these distinct groups contributing to sources, data on the drug market obtained in Hobart through the IDRS are not likely to be applicable to people who inject drugs in Launceston. This has been found to be the case in initial IDRS extensions into north and north-west of Tasmania in 2003 and 2006, with differences in the patterns of drug use, associated risks and health outcomes found across the state (Bruno, 2004; de Graaff & Bruno, 2007). More recently, the Department of Health and Human Services (2014) reported data on the number of treatment episodes per month for the period of July 2013 to September 2014 for methamphetamine, with a greater number of treatment episodes present in the north than the south. This finding is surprising given the smaller population base in the north of the state, and suggests that there are some differences between regions in terms of problematic methamphetamine use and associated need for treatment. Similarly, police drug seizure data indicates differences between regions. For

example, the weight of amphetamine seizures increased in both the north and the south from 2013 to 2014. Amount seized was greater in the south than the north in 2013, however, in 2014 the north had three times the amount seized in the south. Overall, these differences found between regions support the importance of examining each area independently, as trends in the north cannot necessarily be inferred from data obtained in the south.

Treatment Access and Barriers

It is important to explore whether those who are in need of treatment as indicated by dependence on substances are able to access treatment. Previous research has indicated low rates of methamphetamine treatment access among those likely requiring treatment. For example, in a Melbourne sample of methamphetamine users, less than a third of those classed as dependent on methamphetamine were accessing treatment services in relation to their use (Quinn et al., 2013). Wallace, Galloway, McKetin, Kelly, and Leary (2009) likewise found only one quarter of dependent methamphetamine users in a sample from rural New South Wales received treatment for methamphetamine use in the past 12 months and less than half had ever received such treatment in their life time. Kenny, Harney, Lee, and Pennay (2011) found that while 65% of their sample perceived the need for methamphetamine treatment, only 34% had sought treatment, including counselling, inpatient withdrawal, and attending Narcotics Anonymous. In Victoria, it has been estimated that only around 6-11% of those requiring treatment for problematic methamphetamine use receive appropriate treatment (Ritter et al., 2003).

Findings in relation to low levels of treatment access suggests barriers to accessing these services that need to be addressed. One of the primary reasons for not seeking methamphetamine treatment in the Kenney et al. sample was not feeling

the need for formal treatment, often because they did not believe their drug use was serious enough, formal treatment was viewed as unnecessary, or their drug use was not considered a problem, despite their presentation sufficient to meet criteria for a DSM-IV diagnosis of methamphetamine dependence. Those who reported treatment need but did not access it often reported they wanted to withdraw on their own, did not know how to go about accessing treatment, were unaware of treatment options, or wanted to keep using methamphetamine.

Lack of perceived treatment need has been found a major barrier for accessing treatment for methamphetamine use despite dependence and experience of mental health problems (Wallace et al., 2009). Cumming, Troeung, Young, Kelty, and Preen (2016) conducted a systematic review and meta-analysis of barriers to accessing treatment for methamphetamine use and found one of the most commonly cited barriers to accessing treatment as lack of perceived need, often due to not viewing use as problematic or enjoying use and lacking desire to cease using. This suggests the importance of exploring the perceptions of methamphetamine and associated positive and negative experiences among people using the drug. Australia was well represented in the study conducted by Cumming et al. (2016), with five of the eleven studies included being conducted in Australia. Additional commonly cited barriers included desire to withdraw from methamphetamine alone, stigma and embarrassment, privacy and confidentiality concerns (Cumming et al., 2016). Practical barriers such as insufficient places, waiting lists, affordability, and lack of awareness of how to access treatment were also commonly reported (Cumming et al., 2016). Cumming et al. (2016) also noted that services were often viewed as unsuitable or ineffective for methamphetamine, especially given strong focus of

treatment services on treatment for opioids, and staff attitudes toward individuals using methamphetamine were viewed as problematic.

Similar barriers were noted by alcohol and other drug treatment workers from agencies across all States and Territories in Australia surveyed about the barriers they perceive for clients seeking withdrawal treatment for methamphetamine use in a study by Pennay and Lee (2009). Many workers noted staff perceptions of methamphetamine use and appropriate treatment as a barrier to treatment, especially when this resulted in attempts to steer clients toward abstinence goals when the client may prefer an alternate outcome such as reduced use. Despite staff perceptions being noted as a barriers, workers interviewed also often cited characteristics of methamphetamine users as one of the major barriers to treatment, suggesting the presence of some negative perceptions of this population (Pennay & Lee, 2009). Many workers also noted lack of available services for people who use methamphetamine and limited spaces and waiting lists in those that are available. Also of concern was lack of pharmacological interventions for methamphetamine users, with more focus on opiates and alcohol (Pennay & Lee, 2009).

Issues of treatment access are particularly relevant in Tasmania, where access to drug related services vary greatly across the state. For example, medically supervised detoxification services are only available in the South, despite detoxification typically being a requirement for entry to residential rehabilitation services (e.g., Missiondale; City Mission, 2015). Thus, those in the rest of the state would either need to travel to the South for detoxification, or go through this without medical supervision. As a result, it is possible that barriers to accessing treatment may differ across regions of Tasmania and understanding these patterns may assist in informing interventions to reduce barriers, increase access to treatment, and thereby

reduce harms experienced by individuals and the communities within which they live.

The Current Study

Given previous research, the aims of the current study are to: 1) examine the trends in injecting drug use in the north of the state and to compare this to data obtained in the south; and 2) explore potential barriers in accessing drug-related services and treatments among people who inject drugs in Tasmania and examine if these differ across regions. In particular, the current study will focus on trends in relation to methamphetamine use and related harms, given increasing media, community, policy, and research attention in this substance in recent years. Given findings that patterns of harm differ as a function of dependence on methamphetamine the current study will explore drug related patterns and harms among those not using methamphetamine, those using methamphetamine but who are not likely dependent on the drug, and those likely dependent on methamphetamine in both regions.

Method

Design

The present study was exploratory in nature and involved face to face structured interviews with people in the north, north-west and south of Tasmania who frequently inject drugs. The sample was deliberately non-representative, and was supplemented regional based analyses of existing indicator data sources. This included needle and syringe program utilisation; information on police drug seizures and arrest; and data from the Illicit Drug Diversion Initiative (IDDI). The nature of these indicator data sources will be described in further detail below.

Participants

One hundred and forty-four people who injected drugs (PWID) on a monthly or more frequent basis, who had resided in the south ($n = 100$), north ($n = 41$), or north-west ($n = 3$) regions of Tasmania for the preceding 12 months participated in the interview component of the present study. Participants were recruited through advertising (see Appendix A for example of flyers) at primary and secondary (i.e. pharmacies) needle and syringe program outlets, and snowball methods. Participants in southern regions were recruited within the existing IDRS survey. While this forms a convenience rather than a representative sample, this group of individuals have high levels of exposure to the illicit drug market and thus may be able to report on emerging trends (de Graaff, Peacock, & Bruno, 2014). All participants were over 18 years of age and provided informed consent to participate (see Appendix B for information sheet provided and Appendix C for copy of consent form used). Respondents were reimbursed \$40 for their time.

Instrumentation/Materials

A streamlined version of the standardised Illicit Drug Reporting System (IDRS) survey including sections on demographics, drug use, price, purity, and availability of substances, crime, risk taking and physical and mental health was administered (see Appendix D). Additional questions regarding treatment and treatment barriers; and perceptions of and experiences related to crystal methamphetamine use were included in the Tasmanian version of the survey (see Appendix E). The IDRS includes a number of standardised measures. In the current study, the Severity of Dependence Scale (SDS) for stimulant use; and the Kessler Psychological Distress Scale (K-10) were utilised.

The SDS is a measure of substance dependence and is able to screen for likely cases of diagnosable substance dependence with good sensitivity and specificity (Gossop et al., 1995). It comprises five items pertaining to psychological components of dependence (e.g., did you ever think your use was out of control) measured on a four-point likert scale ranging from zero (never or almost never) to three (always or nearly always; Gossop et al., 1995). Higher scores are indicative of higher severity of substance dependence. A cut-off score of four has been found to have good sensitivity and specificity in determining a DSM-III-R diagnosis of severe amphetamine dependence (Topp & Mattick, 1997). The PWID samples were classed into three groups based on their methamphetamine use, using SDS responses: no use in the past six months; methamphetamine use, not likely dependent; and methamphetamine use, likely dependent (4 or more on SDS).

The K-10 is used to screen for psychological disorders and has strong psychometric characteristics for identification of those diagnosable with affective disorders (Kessler et al., 2002). This measure comprises ten items, which ask about frequency of anxiety and depressive type symptoms over the past four weeks. Items are measured on a 5 point likert scale; scores of 10-15 indicate low distress; scores of 16-21 moderate distress, scores of 22-29 high distress, and scores of 30-50 very high distress (Australian Bureau of Statistics [ABS], 2012). Scores in the low range indicate the individual is likely not experiencing any psychological problems; in the moderate to high range they are likely experiencing mild to moderate problems that impact on their function; and in the very high range they are likely experiencing severe mental health problems (ABS, 2012). Using the very high range (i.e. a cut-off score of 30) has been found to have a sensitivity of .24 and specificity of .99 in classifying those with a DSM-IV anxiety or affective disorder (Andrews & Slade,

2001). The K10 has been found a reliable and valid tool in detecting affective disorders among individuals who inject substances, especially when higher cut-off scores (e.g., 27+) are used (Hides et al., 2007). The present study will focus on scores in the very high range of distress.

Procedure

Respondents were asked to use a fake name when signing the consent form in order to ensure confidentiality was maintained, given the sensitive nature of information gathered. Standardised interview processes for the IDRS survey were followed; with computer-assisted interviewing using Questionnaire Development System software. Interviews took place in private areas of primary needle and syringe program outlets. Respondents were informed that they could opt out of answering any questions or sections of questions that they did not feel comfortable answering. Risk assessments were conducted where necessary, and contact details of appropriate services provided as needed.

Analysis

IDRS Interviews with PWID

Descriptive statistics (percentages) were applied to describe participant demographics, patterns of drug use, health and treatment barriers. Regional comparisons and comparisons among dependence groups were made using Chi-Square Analysis, using Yates correction for continuity due to small sample sizes. When discussing days of use, medians are reported in preference to the mean due to extreme outliers inflating other measures of central tendency. To determine if groups differed on variables described with medians Mann Whitney tests were used. When comparing scores within a group, Wilcoxon tests were utilised.

Indicator Data

Indicator data was obtained for three locations in Tasmania: north; north-west; and south. Data pertaining to the north-west will not be explained below, as this was not included in the current study due to only three IDRS interviews being conducted in this area resulting in insufficient sample size in this region to make meaningful comparisons with other regions in Tasmania.

Non-pharmacy Needle and Syringe Program utilisation. Non-pharmacy (primary) Needle and Syringe Program outlets are services in the community which provide PWID with free clean injecting equipment to prevent reuse and sharing of equipment. Individuals may also dispose of used equipment in these centres. They also offer information on how to inject substances safely to reduce the likelihood of harm and may make referrals to other needed services such as accommodation, legal, health, mental health, and alcohol and drug services. Monthly data was obtained from non-pharmacy needle and syringe program outlets: Anglicare (previously TASCHARD) Glenorchy and Hobart; Eastern Shore Community Health Centre (Clarence); and the Link Youth Health Service in the south; and the Salvation Army Launceston in the north for the financial years of 2008/09 through to 2014/15. These sites collect information about the age, sex, drug usually or about to be injected, injecting equipment used, needle sharing, brief interventions and referrals of the individuals attending these sites. There are some inconsistencies in how this data is collected across sites, making it difficult to make comparisons. Due to some missing monthly data, some data was imputed. Where possible, data was imputed from the average of the months in the same quarter. If an entire quarter was missing the data was imputed from the preceding quarter, unless the preceding quarter was required to be imputed, in which case the subsequent quarter was used. The 2008/09 data was

not included due to missing six months with no preceding data. Data was imputed for the 2009/10 Salvation Army (5 months); 2011/12 Glenorchy (3 months); 2012/13 Link (1 month), Glenorchy (5 months), and Hobart (5 months) datasets; and the 2013/14 Link dataset (6 months). All remaining monthly data was available, with the exception of 2013/14 Anglicare Glenorchy and Hobart dataset which is based on six-monthly figures. In the 2014/15 dataset for Glenorchy and Hobart, the number of females for June 2015 was imputed due to apparent misreporting of data, whereby the number of females was noted to be exactly the same as the number of males, which was much larger than in any previous months. Data for the southern sites was summed to obtain a south total. Due to inconsistencies in recording of data the total number of people across age, sex, and drug type is not equivalent even where data was not imputed. As a result, in order to obtain proportions, the highest number of these three categories was used as the denominator. The age data from Link is missing in the final set due to use of a different age category system to the other sites. Information on drug types was collapsed into three categories: methamphetamine type drugs; opioid type drugs; and other drugs.

Tasmania Police seizure and arrest data. Seizure and arrest data was provided by Tasmania Police for the financial years 2010/11-2014/15. This provided information on the type and amount of drugs seized by police in each instance and consumer (charges related to use of illicit substances e.g., possession of substances) and provider (charges related to supply and manufacture of substances) drug-related arrests. In order to use this data to make regional comparisons, postcodes were used to code each entry into north, north-west and southern regions of Tasmania. This was done using the ABS Statistical Area Level 4 (SA4) A4 coding system (ABS, 2011). Where a postcode was located in two regions, it was coded as the one for

which a larger proportion of the coded area was located. Postcodes that did not adhere to the ABS coding system were also excluded from summary statistics. Tasmania Police data was summed for each financial year in each location.

Illicit Drug Diversion Initiative (IDDI). IDDI is a scheme whereby individuals who are found using or in the possession of small amount of substances can be referred by police to drug and alcohol services for education and counselling. This initiative is mainly for first time drug offenders and diverts the individual away from attending court and possibly incurring criminal charges. It is designed in an attempt to reduce problematic drug use and associated harms by encouraging treatment. Information about the type of drugs leading to referral is obtained and this was utilised in the current study. Postcodes were coded into regions in the same way as that noted above for the Tasmania Police data. Amphetamine type drugs (amphetamines not further defined, amphetamine, dexamphetamine, and methamphetamine) were collapsed into one category and this number was divided by the total number of diversions for each financial year to establish the proportion of methamphetamine related diversions.

Results

Demographics

Overview of the PWID sample. One hundred individuals from the southern (Hobart and surrounds) and 41 from the northern (Launceston and surrounds) regions of Tasmania were interviewed. Three individuals were interviewed from north-west (Burnie) Tasmania and were excluded from analysis. The demographic characteristics of the northern and southern samples are presented in Table 1 below. The mean age of respondents in the north was 38.5 years ($SD = 7.8$, range 18-55)

and 40.6 years ($SD = 8.5$, range 27-62) in the south. Nearly two-thirds of both samples were male.

In both samples more than two-thirds reported being unemployed, 84% in the south and 71% in the north. Mean level of schooling completed in both samples was approximately 10 years. Over two-thirds of the northern sample and over half of the southern sample went on to complete additional courses, particularly trade or technical qualifications. Very few respondents in either sample had completed a university course.

Approximately 15% ($n = 15$ south; $n = 6$ north) of both samples identified as Aboriginal and none identified as Torres Strait Islander. The majority of both samples were born in Australia (97%, $n = 97$ south and 98%, $n = 40$ north). The majority of both samples identified as heterosexual (96% in the south; 90% in the north). Slightly less than half of both samples reported being in a relationship (either married/defacto or regular partner), with 55% ($n = 23$) of the northern sample and 60% ($n = 60$) of the southern sample being single, separated or divorced

The majority of respondents in both samples reported their main source of income in the past month as a government pension, allowance, or benefit (91%, $n = 91$ in the south; 83%, $n = 34$ in the north). A small proportion in the northern (12%, $n = 5$) and southern (2%, $n = 2$) samples reported their main source of income as criminal activity. At time of interview, 10% ($n = 10$) of the southern sample and 14% ($n = 6$) of the northern sample had unstable accommodation, including living in temporary accommodation (e.g., boarding house, hostel, shelter, hotel) or were homeless.

Table 1.

Demographic Characteristics of the PWID Samples

Characteristic	North <i>n</i> = 41	South <i>n</i> = 100
Age (mean years, range)	38.5 (range 18-55)	40.6 (range 27-62)
Sex (% male)	63 (26)	63 (63)
Employment (%):		
Not employed	71 (29)	84 (84)
Full time	2 (1)	2 (2)
Part time/casual	5 (2)	8 (8)
Student	5 (2)	1 (1)
Home duties	17 (7)	4 (4)
Received income from* (%):		
Wage/salary	5 (2)	9 (9)
Government	98 (40)	97 (97)
Criminal activity	20 (8)	10 (10)
Child support	7 (3)	5 (5)
Aboriginal (%)	15 (6)	15 (15)
Education (mean no. years, range)	9.6 (range 4-12)	10.1 (range 5-12)
Tertiary education (%):		
None	29 (12)	45 (45)
Trade/technical	66 (27)	52 (52)
University/college	5 (2)	3 (3)

Notes. Figures in parentheses represent number of respondents. Only included responses where *n* > 1. * Sources of income in the past month. Multiple responses were allowed.

Overview of clients accessing Needle and Syringe Program outlets in

Tasmania. In both regions of Tasmania individuals accessing the non-pharmacy Needle and Syringe program outlets are predominately aged 30 or over, with smaller proportions of clients falling into younger age groups (with the exception of the Link which is a youth based service). This pattern has been relatively consistent across the past six years in the north, as seen in Figure 1, although in the south it appears as

though the proportion of clients in the younger age ranges has been declining. The mean ages of the current PWID samples of 39 years in the north and 41 years in the south appears relatively consistent with this pattern. Similarly, clients accessing Needle and Syringe Program services, like those in the PWID sample, are predominately male in both the north and south of the state, as seen in Figure 2.

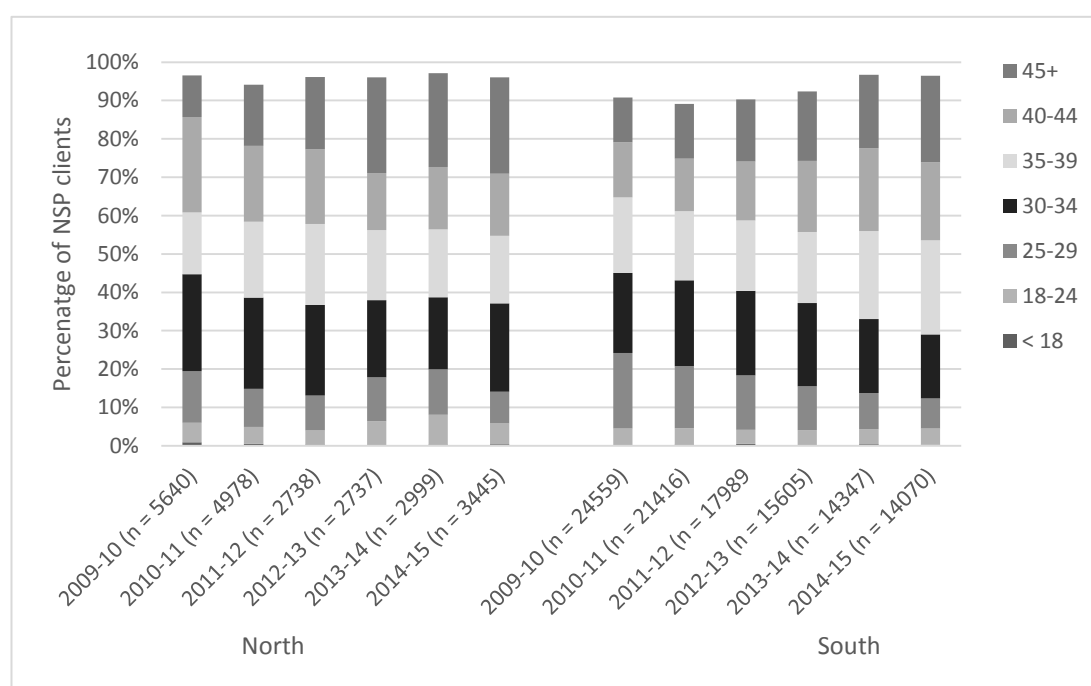


Figure 1. Proportion of individuals in different age groups accessing non-pharmacy Needle and Syringe Program outlets in Tasmania by region, 2009/10-2014/15. *Notes.* Those accessing the Link are missing as age ranges are categorised differently at this service. May not total 100% due to inconsistencies in data collection across sites.

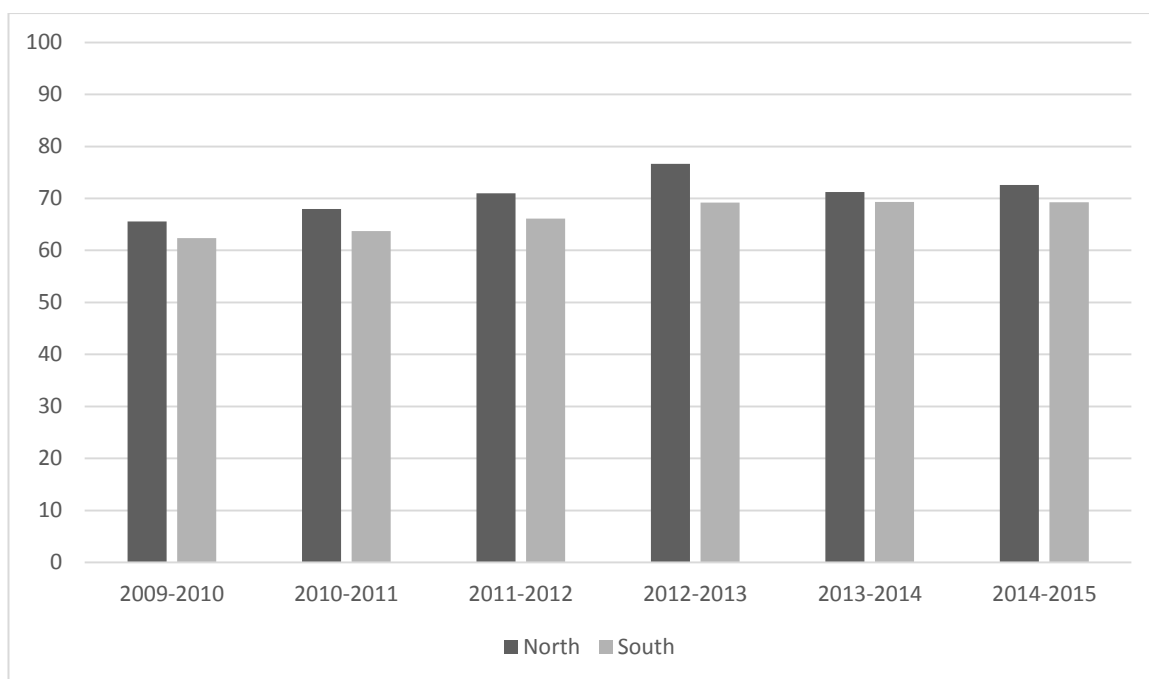


Figure 2. Percentage of male clients of non-pharmacy Needle and Syringe Program outlets in Tasmania by region, 2009/10-2014/15. Note. These rates have been imputed where necessary (see analysis section) due to missing data and inconsistencies in recording across sites.

Drug Use History and Current Drug Use

Table 2 reports on respondents' history of injecting drug use, drug preferences and current patterns of use. Methamphetamine was the most common type of drug first injected by participants in both samples. Among northern respondents, methamphetamine, morphine (liquid or tablets), and morphine powder were preferred, with approximately one quarter of the sample noting each of these as their drug of choice. In the south, morphine and methamphetamine were also commonly reported as drug of choice, along with opioid substitution medications. These same drugs are those which the majority of respondents reported that they injected most often in the past month. Chi-Square analysis revealed that a greater proportion of the northern than the southern sample reported injecting drugs daily or

more in the last month, $\chi^2_{\text{Yates}}(1) = 8.70, p = .003$. This was a small to moderate magnitude effect, Cramer's $V = .27$. Tables F1 and F2 in Appendix F provide detailed information about drugs used by respondents in both samples over the past six months.

As can be seen in Figure 3, clients attending non-pharmacy NSP outlets have reported high proportions of amphetamine and opioid use in both regions over the years. Data obtained from the PWID sample of high rates of amphetamine and opioid type drugs appears consistent with this. It appears in the south, and to a lesser extent in the north, that there is a trend toward decreasing opioid use and increasing use of amphetamines.

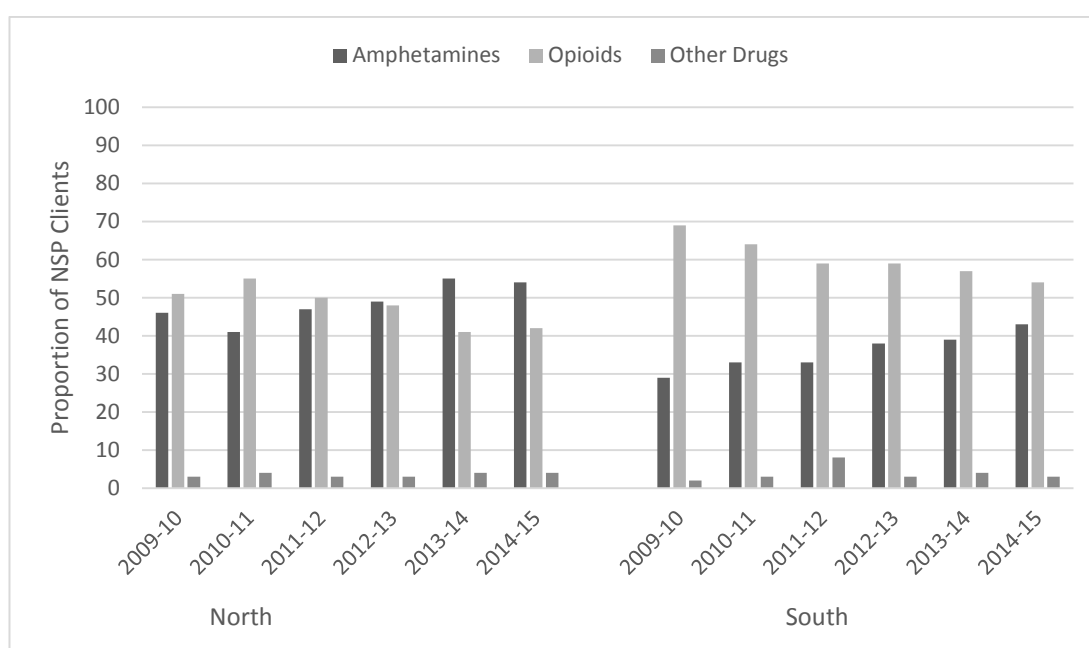


Figure 3. Drugs respondents reported they were about to use or last used when attending non-pharmacy NSP outlets. Notes. Opioids include morphine, methadone, buprenorphine, oxycodone, heroin, and suboxone. Other drugs include steroids, cocaine, benzodiazepines, and any other drugs. Some data missing due to inconsistencies in recording across sites – see analysis section for a description of how this data was imputed.

Table 2.
Injecting Drug Use History, Drug Preferences, and Current Drug Use Patterns

Variable	North <i>n</i> = 41	South <i>n</i> = 100
Mean age at first injection (years)	19.5 (<i>SD</i> = 6.5) (range 13-39)	21.2 (<i>SD</i> = 7.6) (range 10-55)
First drug injected (%)		
Heroin	12 (5)	6 (6)
Methamphetamine (any form)	71 (29)	59 (59)
<i>Speed</i>	66 (27)	57 (57)
<i>Crystal</i>	5 (2)	2 (2)
Morphine	7 (3)	22 (22)
Methadone	2 (1)	3 (3)
Oxycodone	2 (1)	4 (4)
Drug of choice (%)		
Cannabis	10 (4)	-
Heroin	10 (4)	16 (16)
Methamphetamine (any form)	24 (10)	32 (32)
<i>Speed</i>	7 (3)	23 (23)
<i>Crystal</i>	17 (7)	9 (9)
Morphine	27 (11)	26 (26)
Methadone	2 (1)	19 (19)
Morphine Powder	24 (10)	-
Drug injected most often in last month (%)		
Methamphetamine (any form)	32 (13)	39 (39)
<i>Speed</i>	5 (2)	16 (16)
<i>Crystal</i>	27 (11)	23 (23)
Morphine	20 (8)	29 (29)
Methadone	2 (1)	21 (21)
Suboxone	7 (3)	3 (3)
Subutex/Buprenorphine	2 (1)	4 (4)
Morphine Powder	34 (14)	-
Pharmaceutical Stimulants	-	3 (3)
Most recent drug injected (%)		
Methamphetamine (any form)	26 (11)	39 (39)
<i>Speed</i>	2 (1)	17 (17)
<i>Crystal</i>	24 (10)	22 (22)
Morphine	20 (8)	27 (27)
Methadone	5 (2)	21 (21)
Suboxone	7 (3)	3 (3)
Subutex/Buprenorphine	2 (1)	7 (7)
Morphine Powder	32 (13)	-
Frequency of injecting in last month (%)		
Not in the last month	0	1 (1)
Weekly or less	24 (10)	24 (24)
More than weekly, not daily	24 (10)	51 (51)
Once a day	12 (5)	15 (15)
2 to 3 times a day	39 (16)	9 (9)

Note. Figures in parentheses represent number of respondents endorsing the item

Methamphetamine use. Ninety-eight percent of both samples reported using at least one form of methamphetamine in the past ($n = 98$ south; $n = 40$ north), all of which had also injected methamphetamine in their lifetime. Over two-thirds of both the northern (68%, $n = 28$) and southern (72%, $n = 72$) samples reported using methamphetamine in the past six months, all of which had also injected methamphetamine in the past six months. Among those using methamphetamine, 93% ($n = 26$) in the north reported the form they used most as crystalline, with the remainder citing powdered forms ($n = 2$). In the south 58% ($n = 42$) reported crystalline as the form most commonly used, with the remaining 42% ($n = 30$) reporting they mostly used the powdered form. Figure 4 displays proportion of respondents using various forms of methamphetamine and median days of use of these drugs in the past six month period. As can be seen in Figure 4 this equates to nearly weekly use in both samples.

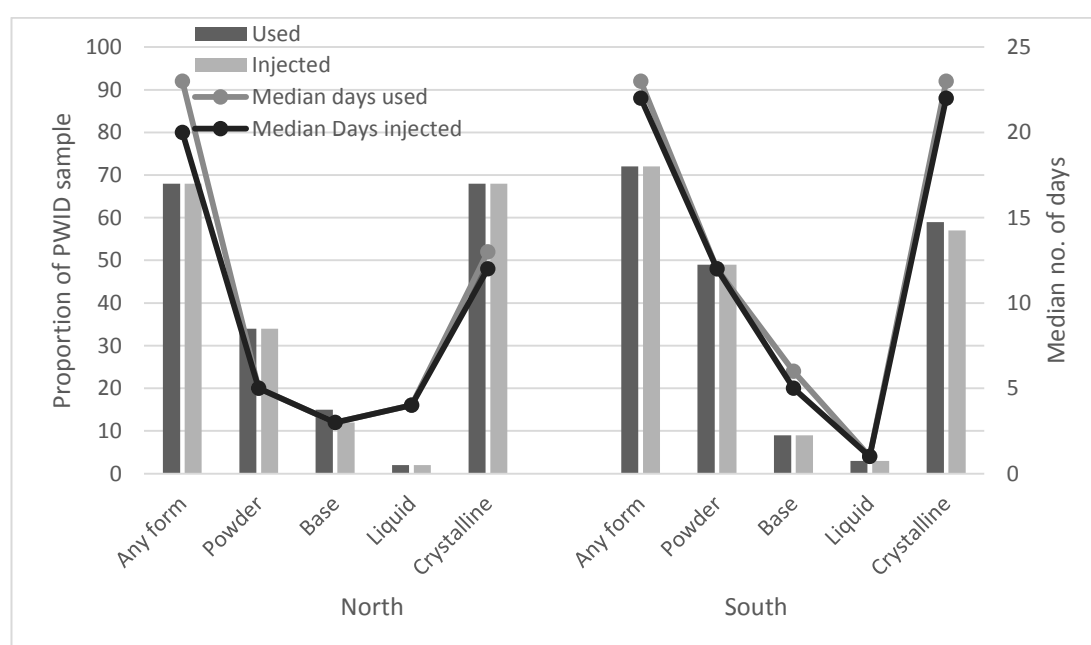


Figure 4. Forms of methamphetamine used among PWID samples and median days of use

Table 3 displays the amount of methamphetamine used by respondents at any one time and on a typical day. Respondents typically use less than a gram of methamphetamine at any one time or over the course of a day.

Change in use of crystal methamphetamine over past 12 months.

Respondents were asked whether they had made any changes in their use of crystal methamphetamine in the past 12 months. Of those responding in the south ($n = 60$), the majority (47%, $n = 28$) reported using less often. Approximately one-fifth reported using about the same (22%, $n = 13$) and a further one-fifth reported using more often (20%, $n = 12$). Small proportions reported never using crystal methamphetamine (7%, $n = 4$); using for the first time in the past 12 months (3%, $n = 2$); and stopping use (2%, $n = 1$). Of those responding in the north ($n = 40$), over one-third reported using less often (38%, $n = 15$), and a further fifth reported ceasing use (22%, $n = 9$). Fifteen percent ($n = 6$) of the sample reported never using crystal methamphetamine; 13% ($n = 5$) reported no change in use; 10% ($n = 4$) reported increased use in the past 12 months; and a very small proportion reported using for the first time (3%, $n = 1$).

Respondents who reported change in their use of crystal methamphetamine were asked the reasons for this. As can be seen in Table 4, the most common reason for increased use was availability. For those decreasing use, the effects of the drug while intoxicated, and effects on physical and mental health, and social relationships were commonly cited reasons. Many respondents also reported there were other reasons for changes in their use. Other reasons for increased use included: life stress/circumstances, and using instead of opiates. For decreased use other reasons included: preference toward powder methamphetamine, effects of the substance, wanting to control use, and perceptions of crystal methamphetamine.

Table 3.

Median Amount of Methamphetamine Used in an Average Session, Most Used in a Session, and Median Amount Used on an Average day in the Past Six Months

Methamphetamine Form	North^			South		
	Average session	Most session	Average day	Average session	Most session	Average day
Powder						
Grams	0.25 (n = 5) (range 0.25-0.5)	0.5 (n = 6) (range 0.5-1.0)	0.5 (n = 7) (range 0.25-1.0)	0.5 (n = 8) (range 0.5-1.0)	1.0 (n = 12) (range 0.25-1.5)	.9 (n = 10) (range 0.25-2.0)
Points*	1.0 (n = 7) (range 1.0-2.0)	1.25 (n = 6) (range 1.0-6.0)	1.0 (n = 5) (range 1.0-3.0)	1.0 (n = 39) (range 0.5-5.0)	2.0 (n = 34) (range 0.5-5.0)	1.0 (n = 37) (range 0.5-170.0)
Crystalline (Points)	1.0 (n = 25) (range 0.25-3.0)	2.0 (n = 22) (range 0.75-4.0)	2.0 (n = 24) (range 0.25-12.0)	1.0 (n = 57) (range 0.5-3.0)	2.0 (n = 55) (range 0.5-5.0)	1.0 (n = 57) (range 0.5-5.0)

^Some respondents reported use in other measures e.g. dollars and these are not included. Base methamphetamine not included due to small number of respondents.

Only recorded crystalline in points due to low number of respondents for grams. * 1 point = .1 gram

Table 4.

Reasons for Change in Crystal Methamphetamine Use in the Past 12 Months among Those Reporting Increased or Decreased Use.

	North		South	
	Increased use (<i>n</i> = 4)	Decreased use (<i>n</i> = 23)	Increased use (<i>n</i> = 12)	Decreased use (<i>n</i> = 28)
Curiosity	-	-	-	-
Availability	50% (2)	-	50% (6)	4% (1)
Price	-	4% (1)	17% (2)	25% (7)
Purity	-	-	17% (2)	4% (1)
Physical health	-	22% (5)	8% (1)	43% (12)
Mental health	25% (1)	22% (5)	8% (1)	25% (7)
Social reasons	-	9% (2)	25% (3)	25% (7)
Don't like effects	-	26% (6)	-	39% (11)
Other reasons	50% (2)	57% (13)	17% (2)	14% (4)

Notes. Decreased use includes both those reporting reduced use and cessation of use. Multiple responses allowed. Figures in parentheses represent number of respondents

Among those reporting use of crystal methamphetamine use and answering this section (*n* = 53 south; *n* = 31 north), 13% (*n* = 7) in the south and 39% (*n* = 12) in the north reported reducing the amount they used at any one time in the past 12 months. Reductions in the number of days in a row that respondents used was also common, with 21% (*n* = 11) in the north and 58% (*n* = 18) in the south reporting this occurrence. Reductions of how often crystal methamphetamine was used overall was also common, with 49% (*n* = 26) in the south and 58% (*n* = 18) in the north reporting this.

Tasmania Police Seizures of Methamphetamine

Tasmania Police Seizures of drugs suspected to be methamphetamine are noted in Figure 5 below. In the south, the number and weight of seizures has been fairly consistent over the past five years, with the exception of 2013/14 where there was a lower number of seizures at a greater weight. In the north, the number of seizures has been increasing, with a notable rise in the number of seizures in the last financial year. Weight of seizures in the north has fluctuated over the years.

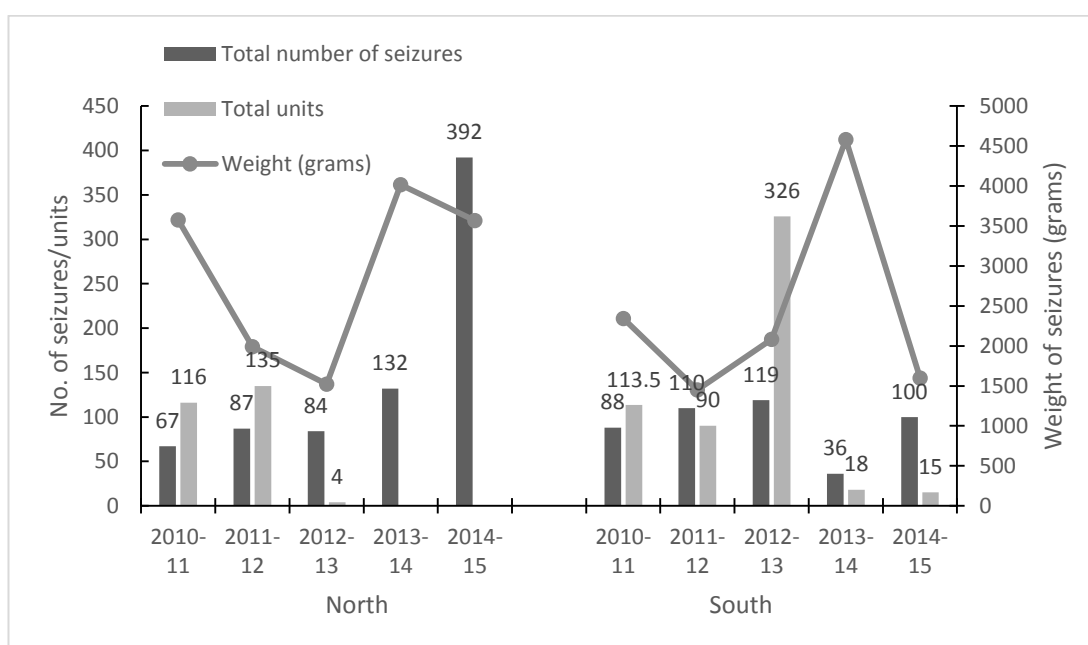


Figure 5. Seizures of methamphetamine by Tasmania Police, 2011/12-2014/15 in northern and southern Tasmania. Note. Units refers to seizure of methamphetamine tablets/capsules.

Correlates of Health/Methamphetamine Related Harms

Methamphetamine dependence. The PWID samples were classed into three groups based on their methamphetamine use and stimulant SDS scores: no use in the past six months; methamphetamine use, not likely dependent; and methamphetamine use, likely dependent. As can be seen in Table 5 the proportions of respondents falling into each category in the northern and southern samples were approximately equivalent.

Table 5.

Proportions of Respondents Classed as Dependent on Methamphetamine and Engagement in Use of Stimulants for 48 Hours or More without Sleep (Binge Use)

Dependence category	North <i>n</i> = 41	South <i>n</i> = 94 [^]
<i>No methamphetamine use</i>	27% (11)	28% (26)
<i>Methamphetamine use, not likely dependent</i>	42% (17)	39% (37)
Binge use (%)	69% (11)	35% (12)
<i>Methamphetamine use, likely dependent</i>	32% (13)	33% (31)
Binge use (%)	52% (7)	52% (15)

[^] Note the smaller sample size in the south due to missing data, proportions based on available data. Figures in parentheses represent the number of respondents in each category

In the southern sample, the median days of use of any form of methamphetamine in the past six months was significantly greater among those classed as likely dependent (*Mdn* = 55, range 2-180, *n* = 31) than those using methamphetamine but not likely dependent (*Mdn* = 15, range 1-180, *n* = 35), Mann-Whitney *U* = 823.00, *p* < .001. This was a moderate magnitude difference, *r* = .44.

In the northern sample, median days of use was not found to be significantly greater among those likely dependent on methamphetamine ($Mdn = 26$, range 2-180, $n = 13$) than those not likely dependent ($Mdn = 16$, range 5-60, $n = 15$), Mann-Whitney $U = 134.50$, $p = .088$. However, given that this was a moderate magnitude effect, $r = .32$, it may be that the sample size was not large enough to detect this difference.

Extended periods of use. Respondents commented on whether they had used stimulants or related drugs for 48 hours or more continuously without sleep. Of those answering this section ($n = 95$ south; $n = 40$ north), 31% ($n = 29$) in the south, and 50% ($n = 20$) in the north reported engaging in this behaviour. Table 5 notes the proportion of respondents engaging in this behaviour among those classed as likely and not likely dependent. In the northern sample, 18% of those with no amphetamine use reported engaging in this behaviour, suggesting use of other stimulant type drugs. Median number of times respondents engaged in this behaviour in the past six months was four in both samples (range 1-48 in both cases). These behaviours did not occur significantly more frequently among those likely dependent on methamphetamine ($Mdn = 5$, range 2-48 north; $Mdn = 10$, range 1-48 south) than those not likely dependent ($Mdn = 3$, range 1-24 north; $Mdn = 4$, range 2-12 south) in the northern, Mann-Whitney $U = 51.50$, $p = .246$, $r = .28$; or southern sample, Mann-Whitney $U = 117.50$, $p = .183$, $r = .26$.

Mental health problems. PWID participants were asked if they had experienced a mental health problem in the six months preceding the interview (Table 6). Of the 80 participants who commented in the south, 53% ($n = 42$) self-reported experiencing a mental health problem in the past six months. In the north, of the 37 participants who commented, 43% ($n = 16$) self-reported mental health issues. Table 6 reports the specific mental health problems noted by respondents.

The most commonly reported mental health problems in both the north and south were depression and anxiety. Nearly two-thirds of those likely methamphetamine dependent in the north reported mental health problems compared to one-third among those not using methamphetamine and those using but not likely dependent. Follow-up analyses indicated that mental health problems were not significantly more likely among those likely dependent compared to those not likely dependent, $\chi^2_{\text{Yates}}(1) = 1.17, p = .280$, Cramer's $V = .28$; and those not using methamphetamine, $\chi^2_{\text{Yates}}(1) = .81, p = .369$, Cramer's $V = .30$. However, moderate magnitude effect sizes may suggest that while not significant, this difference may be meaningful.

Psychological distress. Experience of psychological distress, as indicated by scores on the Kessler Psychological Distress Scale (K-10), was common in both the northern and southern samples, with one-fifth of the northern sample and one-quarter of the southern sample scoring in the very high range. Figure 6 displays proportion of respondents falling within each range of distress.

In order to determine if respondents self-reported mental health problems matched a more objective indicator of psychological distress, the proportion of respondents who scored very high on the K-10 were compared to the proportion self-reporting a mental health problem in both the northern and southern samples. However, chi-square analysis revealed no significant association between self-reported mental health problems and scoring in the very high range of the K-10 in the northern, $\chi^2_{\text{Yates}}(1) = .70, p = .402$, Cramer's $V = .20$; or southern sample, , $\chi^2_{\text{Yates}}(1) = 1.76, p = .185$, Cramer's $V = .18$.

Table 6.

Self-Reported Experience of Mental Health Issues and Access to Treatment over the Preceding Six Months

	North				South			
	Overall (<i>n</i> = 37)	No meth. use (<i>n</i> = 9)	Meth. use (<i>n</i> = 17)	Meth. dependent (<i>n</i> = 11)	Overall (<i>n</i> = 80)	No meth. use (<i>n</i> = 22)	Meth. use (<i>n</i> = 30)	Meth. dependent (<i>n</i> = 22)
% self-reporting mental health problem last 6 months	43% (16)	33% (3)	35% (6)	64% (7)	53% (42)	59% (13)	47% (14)	46% (10)
% with K-10 score in very high range	21% (8)	0%	35% (6)	17% (2)	25% (21)	26% (6)	28% (9)	14% (3)
% attending a health prof. for a mental health problem in past six months (among those reporting a problem)	50% (8)	-	50% (3)	71% (5)	76% (32)	85% (11)	71% (10)	80% (8)
Specific type of mental health problem experienced								
<i>Depression</i>	38% (6)	67% (2)	17% (1)	43% (3)	69% (29)	62% (8)	71% (10)	60% (6)
<i>Bipolar Disorder</i>	6% (1)	-	17% (1)	-	7% (3)	-	7% (1)	20% (2)
<i>Anxiety</i>	44% (7)	33% (1)	33% (2)	57% (4)	71% (30)	54% (7)	79% (11)	70% (7)
<i>Panic</i>	-	-	-	-	21% (9)	31% (4)	21% (3)	20% (2)
<i>Obsessive-Compulsive Disorder</i>	-	-	-	-	2% (1)	-	-	-
<i>Paranoia</i>	-	-	-	-	5% (2)	15% (2)	-	-
<i>Schizophrenia</i>	19% (3)	-	33% (2)	14% (1)	10% (4)	15% (2)	7% (1)	10% (1)
<i>Drug-induced psychosis</i>	6% (1)	-	-	14% (1)	5% (2)	-	14% (2)	-
<i>Post-Traumatic Stress Disorder</i>	19% (3)	-	50% (3)	-	21% (9)	23% (3)	29% (4)	10% (1)
<i>Other</i>	19% (3)	-	-	43% (3)	2% (1)	-	-	-

Note. Figures in parentheses represent number of respondents

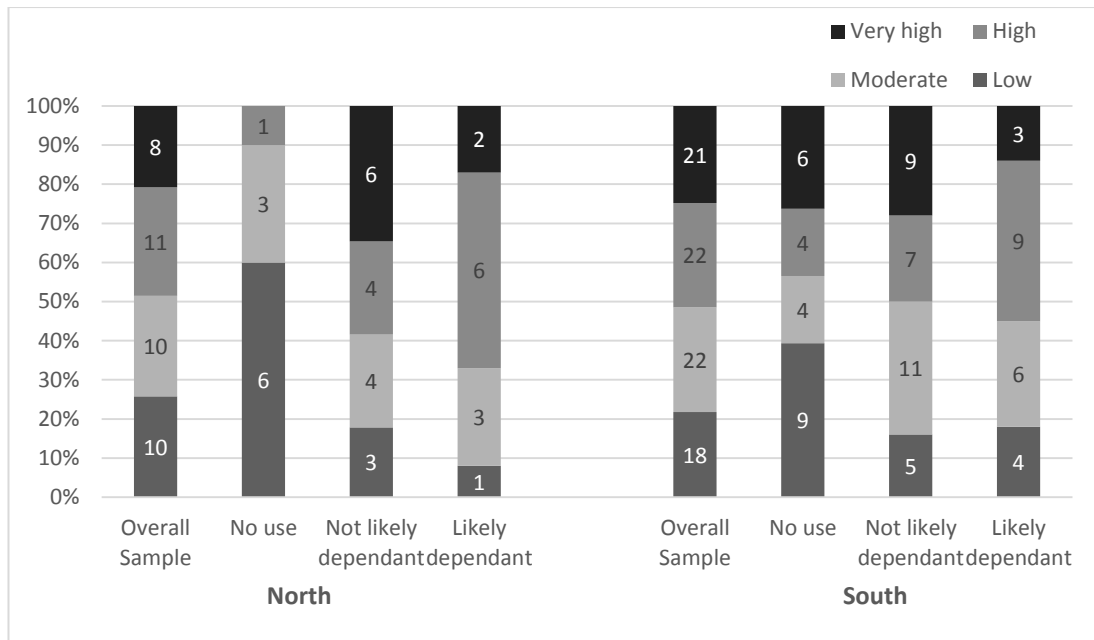


Figure 6. Proportion of respondents experiencing distress as indicated by scores on the Kessler Psychological Distress Scale. *Note.* Figures are based on those answering this section, as such, sample sizes may be lower. Figures noted on the graph represent the number of respondents in each category.

Treatment seeking behaviours for mental health problems. Among those reporting recent experience of a mental health problem, 76% in the south ($n = 32$) and 50% in the north ($n = 8$) had recently attended a health professional in relation to mental health issues. Participants had predominantly seen a general medical practitioner (81%, $n = 26$ south; 63%, $n = 5$ north), psychologist (41%, $n = 13$ south; 13%, $n = 1$ north), psychiatrist (25%, $n = 8$ south; 50%, $n = 4$ north) counsellor (20%, $n = 6$ south; 13%, $n = 1$ north), or a social worker (13%, $n = 4$; 13%, $n = 1$).

Participants who self-reported a mental health problem but did not attend a health professional reported on the reasons for this. Reasons for not attending included themes of: lack of perceived need, self-treatment, practical issues, and lack of understanding of treatment options. Half of the northern participants (50%, $n = 8$)

and nearly two-thirds of the southern participants (60%, $n = 25$) self-reporting a mental health problem reported they had been prescribed medication for this in the preceding six months, including: antidepressants, benzodiazepines, and antipsychotics.

Physical health. Nearly two-thirds of both the southern (57%) and northern (64%) samples described their health in general as either good or better (see Figure 7). Those likely dependent on methamphetamine (67%) in the northern sample reported significantly higher proportions of poor or fair health than those who were using but not likely dependent on methamphetamines (18%), $\chi^2_{\text{Yates}}(1) = 5.25, p = .022$, Cramer's $V = .50$. This was a large magnitude effect. Those likely dependent did not report significantly higher proportions of poor or fair health than those not using methamphetamines (36%), $\chi^2_{\text{Yates}}(1) = 1.07, p = .300$, Cramer's $V = .30$, although this was a moderate magnitude effect. In the southern sample, those not using methamphetamines (52%) had the highest proportion of self-reported poor or fair health, although this was not significantly greater than that seen in those using but not likely dependent (42%), $\chi^2_{\text{Yates}}(1) = .22, p = .638$, Cramer's $V = .10$ and those likely dependent on methamphetamines (32%), $\chi^2_{\text{Yates}}(1) = 1.27, p = .261$, Cramer's $V = .20$.

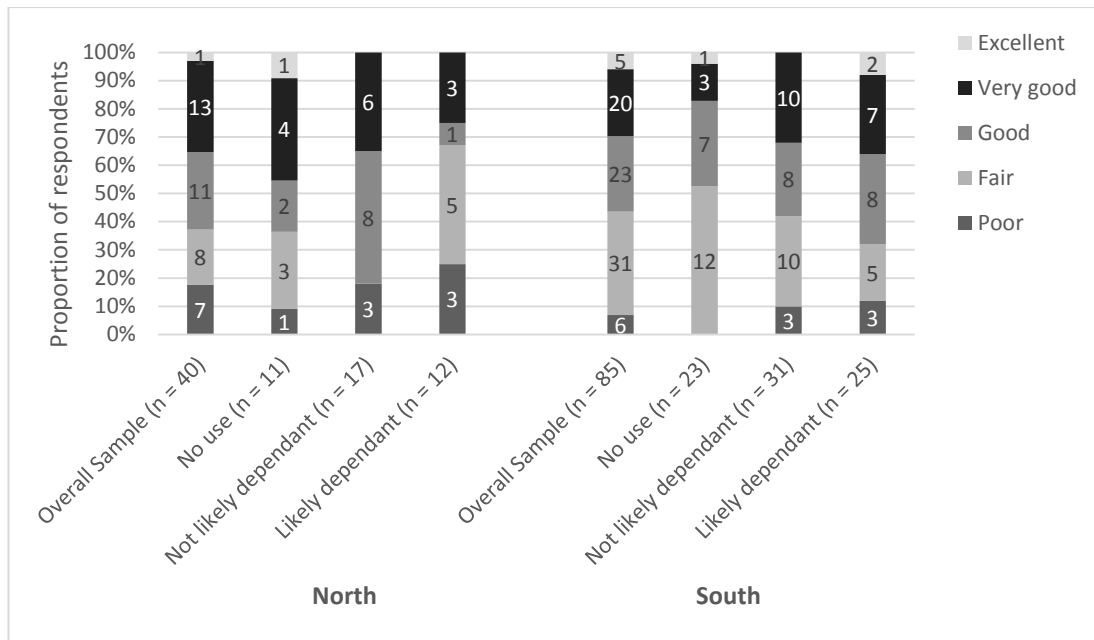


Figure 7. Respondents perceptions of their physical health in general. *Note.* As some respondents answered some sections and not others there is some missing data within groups.

Risk behaviours.

Driving risk behaviours. Among respondents who reported driving in the past six months, 79% ($n = 38$) in the south and 73% ($n = 19$) in the north reported driving while they believed they were still under the influence of illicit substances. Among these, 20% ($n = 7$) of the southern sample reported doing so daily, compared to 47% ($n = 9$) in the northern sample. In the south, respondents reported driving while under the influence of illicit substances a median of 24 days (range 1-180 days) in the past six months. In the north, respondents did so a median of 120 days (range 1-180 days) in the past six months. This difference was not significant, Mann-Whitney $U = 428.00$, $p = .123$, $r = .21$. Table 7 displays reported illicit drugs taken prior to driving in the last six months and all illicit drugs taken the last time this behaviour occurred. Crystal methamphetamine, morphine, and cannabis were commonly used by respondents prior to driving.

Table 7.

Types of Drugs PWID Respondents were under the Influence of while Driving in the Past Six Months among those Driving and Using Drugs

	North		South	
Drug	Last 6 months (<i>n</i> = 19)	Most recent (<i>n</i> = 18)*	Last 6 months (<i>n</i> = 37)*	Most recent (<i>n</i> = 38)
Methadone [^]	-	-	14% (5)	13% (5)
Suboxone [^]	16% (3)	6% (1)	-	-
Morphine [^]	47% (9)	17% (3)	32% (12)	32% (12)
Oxycodone [^]	5% (1)	-	11% (4)	8% (3)
Powder methamphetamine	16% (3)	6% (1)	20% (7)	8% (3)
Base methamphetamine	5% (1)	-	5% (2)	-
Crystal methamphetamine	42% (8)	33% (6)	38% (14)	29% (11)
Cannabis	74% (14)	61% (11)	30% (11)	24% (9)
Benzos [^]	5% (1)	-	16% (6)	8% (3)
Other	47% (9)	33% (6)	8% (3)	5% (2)

[^]Non-prescribed. * *n* = 1 responded don't know to drugs used and not included. Multiple response allowed. Unable to specify what other drugs were as this was not recorded. Only drugs where *n* > 1 are noted in the table. Figures in parentheses represent number of respondents

In the southern sample of drivers, all those dependent on methamphetamine (100%, *n* = 12) reported driving while under the influence of some form of illicit substance. This behaviour was reported by slightly over two-thirds of those not

using methamphetamines (67%, $n = 8$) and those not dependent (76%, $n = 16$). In the northern sample, 67% ($n = 4$) of those not using; 79% ($n = 11$) among those using but not likely dependent; and 67% ($n = 4$) of those likely dependent reported engaging in this behaviour.

Activities undertaken while under the influence of methamphetamine.

Respondents who had used crystal methamphetamine in the last 12 months were asked about their engagement in potentially dangerous and aggressive activities while under the influence of any methamphetamine. Among those responding, 79% of individuals in the northern sample ($n = 23$) and 61% in the southern sample ($n = 32$) reported engaging in at least one of these behaviours. Table 8 reports proportions of individuals engaging in each specific activity in each sample. In the north, engagement in these behaviours/activities was equally common among those dependent (85%, $n = 11$) and not dependent (79%, $n = 11$) on methamphetamine, $\chi^2_{\text{Yates}}(1) < .001$, $p = 1.000$, Cramer's $V = .08$; whereas in the south they were more common among those likely dependent (77%, $n = 20$) than those likely not dependent (43%, $n = 10$), $\chi^2_{\text{Yates}}(1) = 4.43$, $p = .035$, Cramer's $V = .34$.

Table 8.

Proportion of Respondents Engaging in Dangerous Activities and Aggressive Behaviours while under the Influence of any Methamphetamine in the Last 12 Months (only asked of those reporting crystal methamphetamine use in the last 12 months)

	North			South		
	Overall <i>n</i> = 29	Methamphetamine use <i>n</i> = 14	Methamphetamine dependent <i>n</i> = 13	Overall <i>n</i> = 52	Methamphetamine use <i>n</i> = 23	Methamphetamine dependent <i>n</i> = 26
Worked	24 (7)	21 (3)	31 (4)	14 (7)	9 (2)	12 (3)
Swam	21 (6)	21 (3)	23 (3)	15 (8)	13 (3)	15 (4)
Drove	52 (15)	57 (8)	54 (7)	46 (24)	39 (9)	54 (14)
Operated machinery	10 (3)	7 (1)	15 (2)	4 (2)	4 (1)	4 (1)
Public disturbance	17 (5)	29 (4)	8 (1)	8 (4)	4 (1)	12 (3)
Property damage	10 (3)	21 (3)	-	12 (6)	4 (1)	19 (5)
Stole	35 (10)	50 (7)	15 (2)	21 (11)	9 (2)	31 (8)
Verbal abuse	41 (12)	50 (7)	31 (4)	25 (13)	17 (4)	31 (8)
Physical abuse	14 (4)	14 (2)	15 (2)	10 (5)	9 (2)	12 (3)
None of the above	21 (6)	21 (3)	15 (2)	39 (20)	57 (13)	23 (6)

Note. Figures in parentheses represent number of respondents

Risk situations. Respondents were asked about whether they had been verbally or physically assaulted or put in fear by someone under the influence of any form of methamphetamine in the past 12 months. Of those responding in the south ($n = 87$) 46% ($n = 40$) reported at least one of these experiences, with 39% ($n = 34$) being verbally assaulted, 22% ($n = 19$) being physically assaulted, and 28% ($n = 24$) being put in fear. Proportions were similar among those responding in the north ($n = 40$) with 42% ($n = 17$) reporting at least one of these experiences; 43% ($n = 17$) reporting verbal assault, 20% ($n = 8$) physical assault, and 20% ($n = 8$) being put in fear. Figure 8 displays the proportion of respondents reporting these experiences by their methamphetamine dependence status.

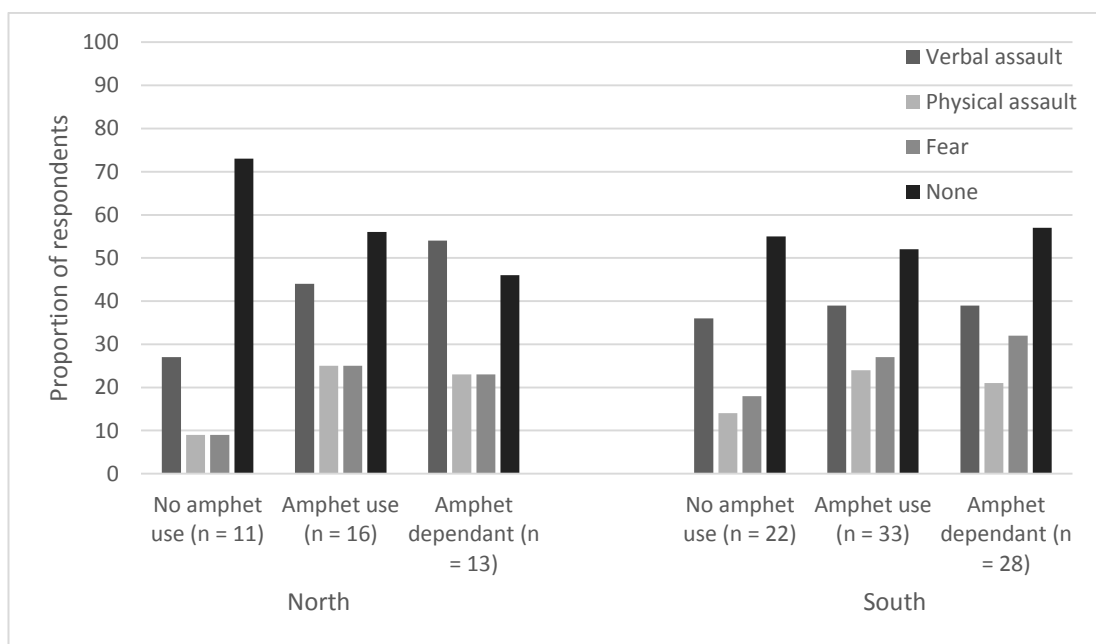


Figure 8. Proportion of respondents reporting methamphetamine related risk experiences.

Criminal Activity and Law Enforcement

Criminal activity in PWID sample. Ninety-two respondents in the south and 38 in the north commented on criminal activity. Forty-eight percent ($n = 44$) of those in the south and 58% ($n = 38$) of those in the north reported ever been in jail. In the south, 33% ($n = 8$) of those not using methamphetamine; 49% ($n = 16$) of those using but not likely dependent on methamphetamine; and 52% ($n = 15$) of those likely dependent on methamphetamine reported prison history. In the north, these proportions were 50% ($n = 5$); 69% ($n = 11$); and 50% ($n = 6$), respectively. In the 12 months prior to interview, 34% of both samples ($n = 31$ south; $n = 13$ north) reported being arrested. In the south 13% ($n = 3$) of those not using methamphetamine, 30% ($n = 10$) of those using and 55% ($n = 16$) of those likely dependent reported arrest. In the north the proportions were 20% ($n = 2$); 63% ($n = 10$); and 8% ($n = 1$), respectively. As can be seen in Table 9 the most common reasons for arrest in the past 12 months in both samples was property crime and driving offences. Respondents were also asked to comment on frequency of four different types of criminal activity in the past month. Due to small sample sizes, variables were collapsed to represent no crime in the past month or any crime in the past month for each crime type. As can be seen in Table 10, property crime and dealing were common among both samples, whereas fraud and violent crimes were reported less frequently. A higher proportion of respondents in the north reported engaging in criminal activity in the past month than those in the south, $\chi^2_{\text{Yates}}(1) = 6.45$, $p = .011$, Cramer's $V = .24$

Table 9.

Reasons for Arrest in the Past 12 Months among those Arrested in the PWID

Samples

Reason for arrest	North (n = 13)	South (n =31)
Use/possession of drugs	23% (3)	7% (2)
Use/possession of weapons	8% (1)	-
Dealing/trafficking	15% (2)	3% (1)
Property crime	39% (5)	36% (11)
Fraud	15% (2)	-
Violent crime	8% (1)	19% (6)
Driving offence	31% (4)	23% (7)
Alcohol and driving	-	16% (5)
Drugs and driving	15% (2)	13% (4)
Breach AVO	-	3% (1)
Other offence	8% (1)	13% (4)

Note. Figures in parentheses represent number of respondents

Table 10.

Crimes PWID Samples Reported Engaging in over the Past Month.

	North				South			
	Overall	No use	Use	Dependent	Overall	No use	Use	Dependent
	(<i>n</i> = 38)	(<i>n</i> = 10)	(<i>n</i> = 16)	(<i>n</i> = 12)	(<i>n</i> = 92)	(<i>n</i> = 24)	(<i>n</i> = 33)	(<i>n</i> = 29)
Property crime	40% (15)	30% (3)	50% (8)	33% (4)	21% (19)	8% (2)	21% (7)	28% (8)
Dealing	53% (20)	50% (5)	63% (10)	42% (5)	21% (19)	13% (3)	21% (7)	28% (8)
Fraud	-	-	-	-	4% (4)	-	3% (1)	7% (2)
Violent crime	8% (3)	10% (1)	13% (2)	-	3% (3)	4% (1)	-	7% (2)

Note. Figures in parentheses represent number of respondents

Law enforcement. Table 11 reports on the proportion of drug-related arrests made by Tasmania police in the past five years that were methamphetamine related. Proportion of both consumer and provider offences that are methamphetamine related appear to have increased substantially in the past year across the state. A similar pattern can be seen in the proportion of Illicit Drug Diversion Initiative (IDDI) diversions that are amphetamine related (see Figure 9). Although, the proportion in the past year are still not as high as that seen in 2006/2007 in the south.

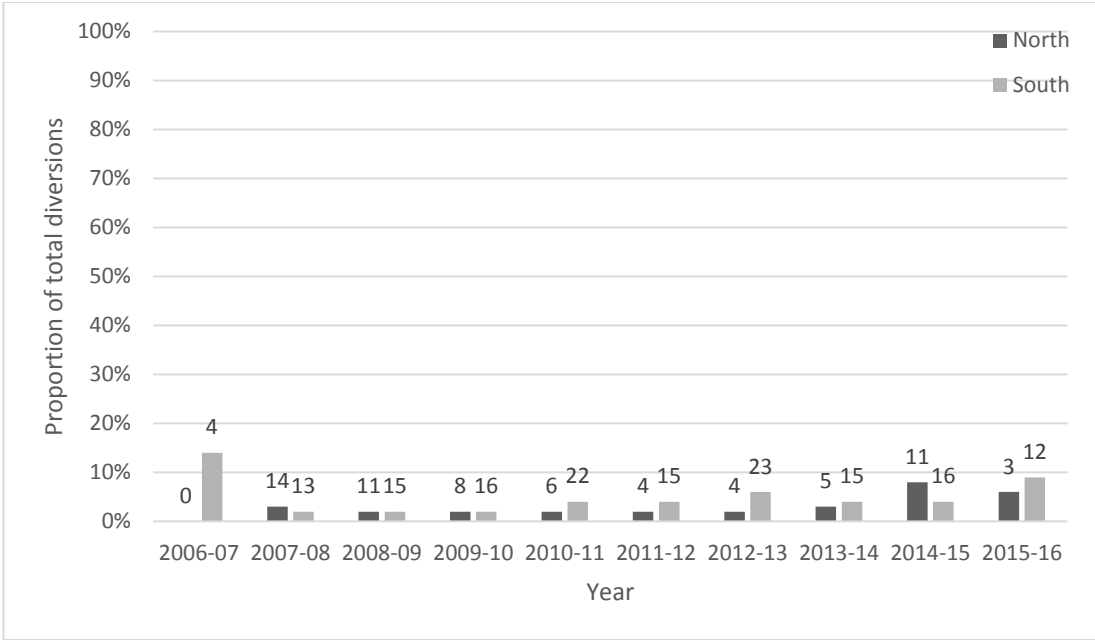


Figure 9. Proportion of IDDI diversions that were amphetamine related 2006/07-2015/16. *Note.* Numbers noted on the Figure represent the number of amphetamine related diversions

Table 11.

Proportion of Methamphetamine Related Offences among Drug-Related Arrests in Tasmania, 2010/11-2014/15

Year	North			South		
	Consumer	Provider	Total Arrests^	Consumer	Provider	Total Arrests^
2010-11	3% (15)	6% (11)	4% (27)	3% (27)	17% (27)	5% (56)
2011-12	5% (25)	16% (23)	7% (48)	5% (43)	17% (19)	6% (62)
2012-13	5% (24)	12% (13)	6% (37)	6% (38)	17% (19)	8% (57)
2013-14	4% (15)	25% (28)	8% (43)	2% (9)	7% (8)	2% (17)
2014-15	20% (115)	40% (58)	24% (173)	11% (89)	27% (42)	13% (131)

Note. Figures in parentheses represent number of arrests. Percentages are rounded to the nearest whole number and represent the proportion of all drug-related arrests in that area for that financial year that were methamphetamine-related. ^ This number may be greater than the sum of consumer and provider arrests due to the nature of some arrests not being specified

Perceptions of Methamphetamine among PWID

The majority of respondents from both samples cited methamphetamine as the drug of most concern for their community (south: 72%, $n = 68$; north: 98%, $n = 39$). It was noted that in the northern sample all those citing methamphetamine as the drug of most concern specifically mentioned the crystal form. A small proportion of the southern sample indicated excess use of alcohol as most problematic (17%, $n = 16$).

Respondents who has used crystal methamphetamine in the past 12 months were asked to rate positive and negative experiences related to the use of crystal methamphetamine on a 10 point likert scale, where 0 = not at all and definitely = 10. There were six positive items and six negative items. Scores were summed to give a total of positive and negative experiences score (range 0-60). Median positive and negative scores are displayed in Figure 10. Wilcoxon tests revealed that median negative and positive scores did not differ significantly among those using methamphetamine but not likely dependent in the south, $T = 94.50$, $p = .465$, $r = -.16$ or the north, $T = 34.00$, $p = .245$, $r = -.31$. The same was true of those likely dependent in the south, $T = 95.00$, $p = .116$, $r = -.32$, and in the north, $T = 18$, $p = .099$, $r = -.46$. However, effect sizes were of moderate magnitude across both groups in the north, and the likely dependent group in the south, possibly suggesting a meaningful effect, with insufficient power to detect a significant difference. Table 12 displays dichotomised proportions of respondents endorsing particular items across dependence groups in each sample. Substantial proportions of respondents across samples and dependence groups endorsed each of these items.

Table 12.

Dichotomised Positive and Negative Experiences Related to Methamphetamine Use among those Using Crystal Methamphetamine in the Past 12 Months

	North			South		
Responses ≥ 5 where 0= not at all; 10 = definitely	Overall (n = 29)	Meth use (n = 14)	Meth dep. (n = 14)	Overall (n = 49)	Meth use (n = 22)	Meth dep. (n = 24)
Increases my mood (makes me happy, confident)	69% (20)	71% (10)	69% (9)	80% (39)	82% (18)	79% (19)
Increases pleasure from being with others	69% (20)	79% (11)	69% (9)	74% (36)	77% (17)	71% (17)
Increases enjoyment from sex or physical activity	63% (17)^	64% (9)	73% (8)^	78% (38)	86% (19)	75% (18)
Provides relief from unwanted thoughts, feelings, or moods	66% (19)	64% (9)	77% (10)	71% (30)	64% (14)	58% (14)
Helps me work or perform	66% (19)	71% (10)	69% (9)	75% (36)*	81% (17)*	71% (17)
Helps me cope with life	59% (17)	57% (8)	69% (9)	57% (27)^	50% (10)^	63% (15)
Has unpleasant physical effects when intoxicated	31% (9)	36% (5)	23% (3)	33% (16)	46% (10)	21% (5)
Has unpleasant psychological effects when intoxicated	48% (14)	57% (8)	39% (5)	45% (22)	55% (12)	42% (10)
Makes me feel lousy in days after use	52% (15)	43% (6)	62% (8)	60% (29)*	68% (15)	57% (13)*
Has unwanted effects on physical health	59% (17)	57% (8)	62% (8)	60% (29)*	64% (14)	61% (14)*
Has unwanted effects on mental health	62% (18)	79% (11)	46% (6)	69% (33)*	68% (15)	70% (16)*
Has negative effects on close personal relationships	69% (20)	71% (10)	69% (9)	73% (35)*	73% (16)	74% (17)*

* n one lower than stated ^ n two lower than stated due to missing data (i.e. due to not being applicable or refusal to answer). Figures in parentheses represent number of respondents

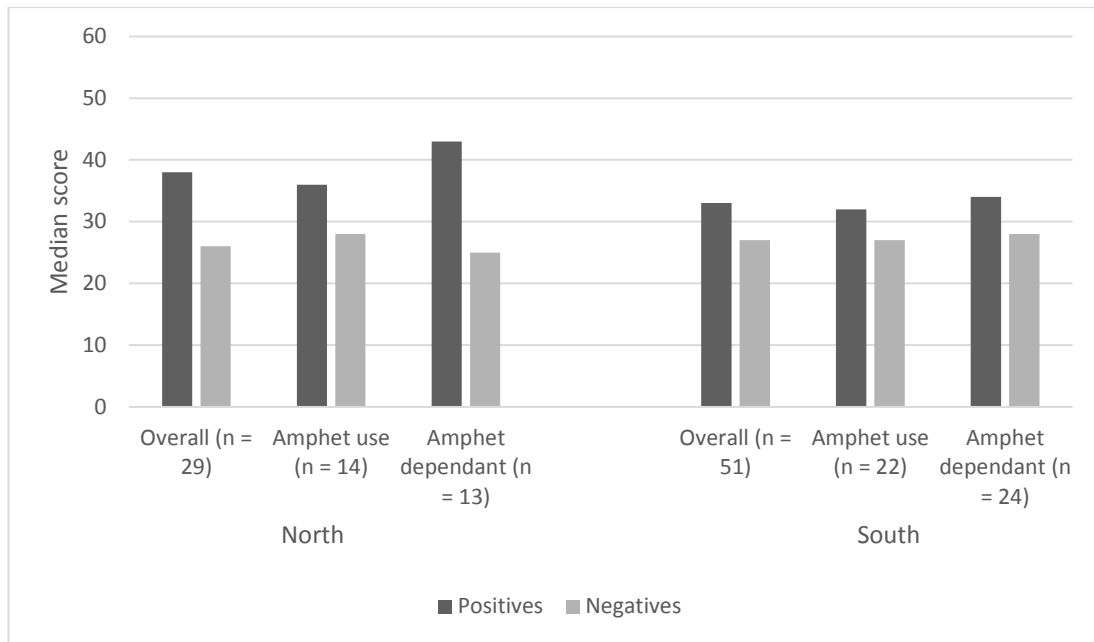


Figure 10. Median positives and negative of crystal methamphetamine use by region across dependence groups.

Respondents were asked what their overall opinion of crystal methamphetamine was, rating it on a scale from -5 to +5 where -5 indicated it was a really terrible drug, 0 indicated a neutral opinion, and +5 indicated it was a really excellent drug. Irrespective of methamphetamine dependence status none of the participants who answered this question in the northern sample ($n = 40$) indicated a positive opinion of crystal methamphetamine. In fact, the majority of the respondents in the northern sample reported it was a really terrible drug (-5: 82% in the no methamphetamine use group; 75% in the methamphetamine use but not likely dependent group; and 69% in the likely methamphetamine dependent group). Only two respondents in the north reported a neutral opinion of the drug. In the southern sample ($n = 89$), the majority of respondents (70%) reported a negative opinion of crystal methamphetamine, with 51% indicating it is a really terrible drug (-5).

Nearly a third of the southern sample reported a neutral (11%) or positive (19%) opinion of crystal methamphetamine.

Opinions of crystal methamphetamine differed in the southern sample depending on their methamphetamine dependence status. Those not using methamphetamine displayed a lower proportion of neutral or positive ratings than either those using but not likely dependent on methamphetamine, $\chi^2_{\text{Yates}}(1) = 8.61, p = .003$, Cramer's $V = .43$; and those likely dependent on methamphetamine, $\chi^2_{\text{Yates}}(1) = 8.36, p = .004$, Cramer's $V = .45$. Specifically, all but one (who reported a neutral opinion) of the participants who had not used methamphetamines in the last six months reported a negative opinion. Of those using but not likely dependent 21% reported a neutral opinion and a further 21% a positive opinion, including 3% stating it as a really excellent drug. Of those likely dependent 7% reported a neutral opinion, and 37% a positive opinion, with 18% considering crystal methamphetamine a really excellent drug.

The majority of participants in both samples reported not approving of regular use (i.e. weekly) of crystal methamphetamine by an adult as shown in Table 13. In the northern sample, over two-thirds of those who did not use methamphetamines (73%) and those not likely dependent on methamphetamines (81%) reporting disapproving or strongly disapproving of this behaviour. In the methamphetamine dependent group half endorsed such a view (54%), with the remainder reporting they neither approved nor disapproved of this behaviour. In the southern sample similar disapproval was seen in the no methamphetamine use group (84%). In the methamphetamine use, not likely dependent group over half (57%) disapproved or strongly disapproved, with 33% having a neutral opinion. Over half the dependence group (53%), reported disapproval, although one fifth (22%)

reported approving or strongly approving of regular use of crystal methamphetamine. Across all groups, very few respondents thought that their close friends would approve of them using crystal methamphetamine regularly if they were to do so (see Table 13).

Access to Drug Treatment

Current treatment. At time of interview, 55% ($n = 55$) of the southern sample and 34% of the northern ($n = 14$) sample were currently in treatment for substance use. The main form of treatment accessed in both samples was opioid substitution, including methadone, buprenorphine, and suboxone. A small proportion in both samples were accessing drug counselling. Figure 11 displays main form of treatment currently engaged in.

In the southern sample none of the individuals who used methamphetamines were involved in drug counselling as their main form of current treatment. Of those not using methamphetamines 12% ($n = 3$) reported drug counselling as their main form of current treatment. In the north, only two participants noted drug counselling as their main form of treatment, one who had not used methamphetamines in the past six months, and one who used methamphetamines but was not likely dependent on them. All of those likely dependent on methamphetamine, reported opioid substitution as their main form of current treatment.

Table 13.

Proportions of Respondents Indicating Self and Other Approval of Regular Use (at least weekly) of Crystal Methamphetamine by an Adult

	North				South			
Opinion	Overall	No methamphetamines	Not likely dependent	Likely dependent	Overall	No methamphetamines	Not likely dependent	Likely dependent
<i>Self</i>	<i>n = 40</i>	<i>n = 11</i>	<i>n = 16</i>	<i>n = 13</i>	<i>n = 89</i>	<i>n = 24</i>	<i>n = 33</i>	<i>n = 28</i>
Strongly approve	-	-	-	-	3%	-	-	11%
Approve	3%	-	6%	-	6%	-	6%	11%
Neither	28%	27%	13%	46%	26%	17%	33%	21%
Disapprove	15%	9%	25%	8%	20%	21%	27%	14%
Strongly disapprove	55%	64%	56%	46%	43%	63%	30%	39%
<i>Others[^]</i>	<i>n = 40</i>	<i>n = 11</i>	<i>n = 16</i>	<i>n = 13</i>	<i>n = 88</i>	<i>n = 24</i>	<i>n = 32</i>	<i>n = 28</i>
Strongly approve	3%	-	6%	-	2%	-	-	7%
Approve	-	-	-	-	2%	-	3%	4%
Neither	20%	9%	31%	15%	17%	8%	22%	21%
Disapprove	5%	-	6%	8%	34%	29%	47%	25%
Strongly disapprove	70%	82%	56%	77%	41%	63%	28%	36%

Note. May not total 100% in all groups as some respondents indicated they did not know enough to say. [^]refers to what respondent thought close friends' perceptions

would be of respondent using

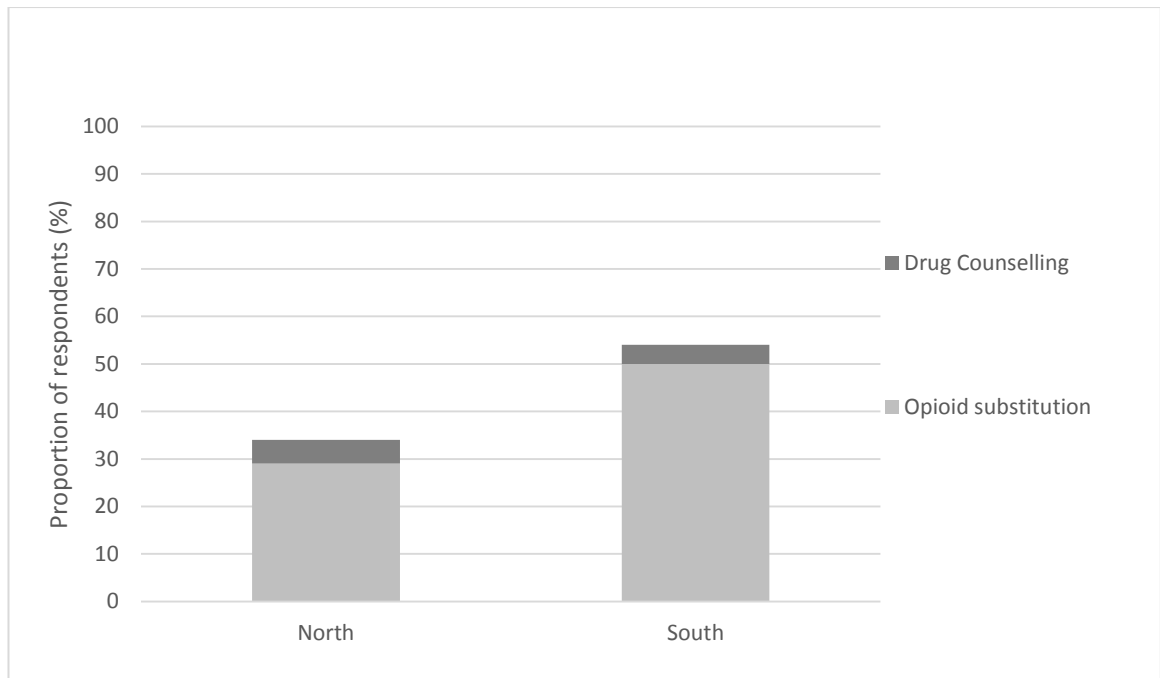


Figure 11. Proportion of the PWID samples accessing a form of drug treatment at the time of interview. Note. Refers to main form of drug treatment (multiple responses were not allowed). Opioid substitution includes methadone/biodone syrup, subutex/buprenorphine, suboxone

Among those accessing treatment in the south, the majority reported finding out about their treatment from a GP referral (48%, $n = 21$) or from a friend/family member (34%, $n = 15$). The remainder of those accessing treatment in the south found out from another service provider (15%, $n = 6$; including detox, drug and alcohol survives, hospital, and pain specialist), or were mandated to attend (5%, $n = 2$). In the north the majority reported other ways of finding out (54%, $n = 7$) including that they already knew about, had previously accessed, or could not remember. Small proportions (15%, $n = 2$ in both cases) reported GP referral and friends/family.

Satisfaction with and perceptions of current treatment. Respondents who were currently in treatment were asked how satisfied they were with their current treatment. The majority of both samples were either satisfied or very satisfied with their current treatment, as displayed in Table 14. However, one-fifth of those receiving treatment in northern Tasmania were dissatisfied or very dissatisfied with their treatment compared to only 2% in the south. The majority of both samples accessing treatment indicated that they would recommend their treatment service to a friend (64% in the south and 77% in the north). Although 11% in the south and 23% in the north reported they probably or definitely would not recommended the treatment.

Table 14.

Respondents Satisfaction with Current Treatment among those Currently in Treatment

	North (n =13)	South (n = 45)
Very satisfied	46%	44%
Satisfied	31%	47%
Neutral	-	7%
Dissatisfied	15%	-
Very dissatisfied	8%	2%

Respondents currently in treatment were asked qualitatively what was good and bad in regards to their current treatment. Comments in both samples were made about how it is good being involved with professionals (e.g., doctor, pharmacist, psychologist) who care, are understanding and non-judgmental. They also noted

increases in stability and functioning as a result of decreased drug use and crime, along with saving money. In the south problems with treatment included: stigma, difficulty in picking up daily dose for those on opioid substitution programs (e.g., due to transport limitations, opening hours of chemist, waiting times), restrictions on their life (e.g., inability to go on holidays/visit family) due to need to be close to chemist and associating with people they do not want to at the chemist. Those in the north also commented on difficulties of the opioid substitution program in regard to difficulty accessing and restrictions on life. Difficulties with finances and payment processes were also noted.

Treatment in the past six months. In the southern sample, 56% ($n = 56$) reported accessing treatment for substance use in the past six months (including current treatment). In the northern sample 46% ($n = 19$) reported accessing treatment in the past six months. Table 15 reports proportions of engagement in treatment services over the six months prior to interview. Opioid substitution was the most common form of treatment in both samples, although small proportions in both samples reported accessing drug counselling in the past six months. No participants in either sample reported accessing naltrexone treatment, detoxification, a therapeutic community or Narcotics Anonymous in the previous six months.

As can be seen in Table 15, engagement in either no treatment or opioid substitution programs were the predominant patterns of access to treatment across dependence categories. Very few respondents were engaged in drug counselling in the previous six months, irrespective of dependence status.

Table 15.

Proportion of Respondents Accessing Drug Treatment in Past Six Months

Type of Treatment	North				South			
	Overall	No methamphet.	Not likely dependent	Likely dependent	Overall	No methamphet.	Not likely dependent	Likely dependent
None	54% (22)	64% (7)	35% (6)	69% (9)	44% (44)	42% (11)	46% (17)	48% (15)
Opioid substitution	39% (16)	27% (3)	59% (10)	23% (3)	53% (53)	54% (14)	51% (19)	52% (16)
Drug counselling	17% (7)	9% (1)	24% (4)	15% (2)	10% (10)	15% (4)	3% (1)	13% (4)
Other	-	-	-	-	2% (2)	4% (1)	3% (1)	-

Note. Multiple responses could be selected. Includes current treatment. Figures in parentheses represent number of respondents. Methamphet = methamphetamine.

Attempts to access treatment. A small proportion of the southern sample (9%, $n = 9$) and nearly one-fifth of the northern sample (17%, $n = 7$) reported attempts to access treatment in the six months prior to interview without success. Table 16 summarises the types of services respondents had tried to access. One of the most commonly reported problems was the waiting list, particularly in the north where all but one reported this as the reason for their unsuccessful attempt to access. Additional problems included financial constraints and other practical issues (e.g., staff availability). The majority of both samples indicated that they were not currently waiting for treatment (96%, $n = 96$ south; 90%, $n = 37$ north), with nearly a quarter of the northern sample reporting they had given up on seeking treatment (24%, $n = 10$) compared to only 1% in the south.

Half of the southern sample (49%, $n = 46$ of 96 answering the question) reported they had not tried to access treatment in the last six months because they were already in treatment, and 45% ($n = 42$) because they were not interested in treatment. In the north one-fifth (20%, $n = 8$ of 40 answering the question) reported not trying to access treatment due to current engagement and two-thirds (68%, $n = 27$) reported they were not interested in treatment. Respondents were asked what the main reasons were for not being interested in treatment. As seen in Table 17, while a relatively low proportion of northern respondents reported that they did not need treatment, this may be accounted for by many citing other reasons for not being interested in treatment such as they would be able to cease themselves without treatment. As other reasons were the most commonly reported reasons for not being interested in treatment in the north and a quarter of those in the south, these are described below.

Table 16.

Proportion of Respondents Attempting to Access Treatment Services in the Past Six Months without Success

Treatment service tried to access	North	South
General Practitioner	0	3
Alcohol, Tobacco, and Other Drugs Worker	2	0
Counsellor	2	0
Psychologist	0	0
Psychiatrist	0	0
Opioid substitution	10	4
Therapeutic community	0	2
Detoxification	7	2
Other	0	1

Note. Multiple responses were allowed.

Other reasons noted for lack of interest in treatment included: belief can/desire to do it themselves, this was particularly commonly noted in the north; restrictions associated with treatment; use not problematic; lack of/belief in available treatment options (e.g., for stimulant dependence); and practical issues (e.g, waiting list, other commitments).

Table 17.

Reasons given by Respondents for not being Interested in Treatment.

	North ($n = 27$)	South ($n = 40^*$)
Don't need treatment	19%	63%
Don't know of any services	-	3%
Stigma or embarrassment	-	3%
No places available	4%	-
Can't afford treatment	4%	5%
Services too far away	4%	3%
Other reasons	70%	25%

* $n = 2$ of those not interested in treatment did not answer this question

Ease of access to drug treatment. Participants were asked to report on the ease of access to drug treatment if they wanted it. Approximately two-thirds of both samples indicated it would be difficult or very difficult (67% south, 63% north). In the north nearly one third indicated it would be easy or very easy (29%) and 12% in the south thought it would be easy, with none indicating it would be very easy. The remaining participants reported they did not know how easy it would be to access treatment. Perceptions of difficulty in accessing treatment (excluding those responding “don’t know”) differed among the dependence groups in the north. A significantly lower proportion of those likely dependent on methamphetamines (27%, $n = 3$) reported it would be difficult or very difficult to access drug treatment than those using methamphetamines but not likely dependent (77%, $n = 13$), $\chi^2_{\text{Yates}}(1) = 4.75$, $p = .029$, Cramer’s $V = .49$; and those not using methamphetamines (100%, $n = 10$), $\chi^2_{\text{Yates}}(1) =$

8.87, $p = .003$, Cramer's $V = .75$. Those not using methamphetamines were not found to differ significantly from those not likely dependent on methamphetamines, although this was a moderate magnitude effect, $\chi^2_{\text{Yates}}(1) = 1.21$, $p = .271$, Cramer's $V = .32$. In the south, those dependent on methamphetamines (78%, $n = 18$) were not significantly less likely to report it would be difficult or very difficult to access treatment than those using methamphetamines but not likely dependent (86%, $n = 24$), $\chi^2_{\text{Yates}}(1) = .11$, $p = .745$, Cramer's $V = .10$ and those not using methamphetamines (91%, $n = 20$), $\chi^2_{\text{Yates}}(1) = .58$, $p = .448$, Cramer's $V = .18$. Nor was there any difference found regarding perceptions of ease of access to drug treatment between those not using methamphetamines and those using but not likely dependent, $\chi^2_{\text{Yates}}(1) = .02$, $p = .902$, Cramer's $V = .08$.

Discussion

The results of the present study are consistent with previous IDRS extension studies (Bruno, 2004; de Graaff & Bruno, 2007) across Tasmania where different patterns of drug use and associated risks and health outcomes were found in different areas of the state. Specifically, the current study found that a higher proportion of those in the north reported injecting drugs daily or more often in the past month than those in the south. A high proportion of northern respondents also reported commonly using morphine powder, a finding that was not noted in the south. Additionally, higher proportions of those in the north reported engaging in criminal activity over the past month than those in the south.

Patterns among dependence groups also appeared to differ in the different geographical areas under study. These differences are outlined in further detail below. Overall, differences found support the arguments of de Graaff et al. (2014) and Degenhardt, Sara, et al. (2016) of the importance of investigating patterns of use,

associated harms, and treatment access across geographical areas rather than generalising findings across regions. If policy makers and treatment providers are making decisions based on the data obtained within one geographical area this may prevent needs being appropriately met due to lack of consideration of specific nuances among different populations of people who inject drugs in Tasmania.

Methamphetamine Use and Related Trends

In the current study, methamphetamine use was commonly reported among respondents in both samples, particularly the crystalline and powdered forms. Use of methamphetamine was estimated to be approximately weekly within both samples. Needle and Syringe Program data suggested a trend toward decreasing opioid use and increasing methamphetamine use, particularly in the south of the state, although methamphetamine use has remained consistently higher in the north than in the south across years. In the north, Tasmania Police seizures of substances suspected to be methamphetamine have increased in recent years in the north, with a more stable pattern seen in the south. In the past year methamphetamine related arrests have increased across the state, as well as methamphetamine related diversions under the Illicit Drug Diversion Initiative. However, of note is the fact that these rates are not as high as those seen in 2006/07 in the south of the state. Additionally, it is important not to assume that these shifts in indicator data represent an epidemic of methamphetamine use as claimed by the media (Usher et al., 2015). This is because many of these patterns could also reflect a shift in focus of law enforcement agencies toward methamphetamine, particularly given community concern (Degenhardt, Sara, et al., 2016).

Within the samples interviewed it was evident that methamphetamine use was not a new phenomenon, as the majority of both samples reported methamphetamine as

the first drug they injected. The results of the current study are consistent with national data that suggests that shifts toward crystalline over powdered forms of methamphetamine is not a new phenomenon (Degenhardt, Sara, et al., 2016; Stafford & Burns, 2015). Specifically, very small proportions of respondents indicated using the crystalline form for the first time in the past 12 months. In fact, within the samples interviewed the majority reported mostly reducing or ceasing use of the crystalline form in the past 12 months, suggesting shifts away from use of this form of methamphetamine across the state of Tasmania among people who inject drugs. However, these findings may not apply to other populations of people who use drugs in Tasmania, such as those not injecting, and younger individuals. For example, Degenhardt, Larney, et al. (2016) noted that patterns of methamphetamine use differed across age groups, with younger age groups displaying higher rates of dependent use, with this increasing over the years. They suggested that this may be due to older individuals have more likely developed a more negative opinion of methamphetamine, than younger individuals who have had less exposure to the negative effects of and harms associated with problematic use.

Differences between Dependence Groups in Use and Related Harms

As would be expected, those classed as likely dependent in the southern sample reported more frequent use of methamphetamine than those using but not likely dependent. In the north, this finding was not significant, although the effect size was of moderate magnitude. This may suggest that results were consistent with expectations but the current study was underpowered to detect this difference. Engaging in extended periods of use of stimulant and related drugs was commonly reported across both methamphetamine groups in both the northern and southern samples. This behaviour did not occur more frequently among those likely than those not likely dependent in

either sample. This suggests that binge use and associated risks may not always be limited to those likely meeting criteria for a methamphetamine use disorder. This pattern of binge use is problematic as it is associated with physical and psychological harms, even if the same amount of methamphetamine is consumed overall. For example, Cheng et al. (2010) and Semple, Patterson, and Grant (2003) found binge use to be associated with increased self-reported physical health and mental health problems; higher levels of depressive symptoms; weight loss; sleep difficulties; and hallucinations and paranoia compared to those using the same amount of methamphetamine within 30 days but not engaging in binge use. Additionally, animal studies have found binge use to increase cardiovascular stress and to be associated with heart problems (Varner, Ogden, Delcarpio, & Meleg-Smith, 2002).

Mental health problems, particularly anxiety and depression were commonly reported in both samples, across dependence groups. While not a significant finding, moderate magnitude effect sizes may suggest that self-reported mental health problems are more common among those likely dependent on methamphetamine than those not likely dependent on methamphetamine and those not using methamphetamine in the north. This would be consistent with previous research that has found co-morbid disorders to be common among those using methamphetamine, and particularly among those dependent on this drug (e.g., Akindipe et al., 2014; Glasner-Edwards et al., 2010b; Salo et al., 2011). High rates of self-reported mental health problems across dependence categories suggests that this is a common occurrence among individuals engaged in poly-injecting drug use in Tasmania. Common experience of psychological distress and self-reported mental health conditions among people who inject drugs, and those likely dependent on methamphetamine found in the current and previous studies suggests the

need for drug and alcohol services to provide integrated care (Akindipe et al., 2014). Additionally, when clients present to mental health settings with co-morbid substance use issues it is important that clinicians assess for such issues and intervene where necessary. This is particularly relevant given the association of co-morbid disorders and symptoms with poorer treatment substance use and mental health outcomes among those seeking treatment for methamphetamine dependence found in previous research (e.g., Glasner-Edwards et al., 2009; Glasner-Edwards et al., 2010a). Thus, without considering and addressing mental health concerns when engaging individuals in drug treatment, treatments are unlikely to be effective.

If clinicians in both mental health and drug and alcohol settings do not assess for and intervene in both domains, clients may not receive needed treatment. Kay-Lambkin, Baker, and Lewin (2004) describe how clients with co-morbid mental health and substance use issues often find themselves “stuck on the roundabout” due to lack of service integration and being passed from one service to the other with possibly conflicting advice. Miller and Brown (1997) argue that psychologists are well placed to intervene both in the area of mental health and substance use, particularly because theoretical maintaining factors in substance use disorders are similar to those in mental health problems and respond to the same type of treatment approaches with which psychologists are already familiar. For example, in regard to methamphetamine use disorders, psychosocial interventions and in particular cognitive behaviour therapy and motivational interviewing have been found efficacious in reducing use and associated problems (Baker, Kay-Lambkin, Lee, Claire, & Jenner, 2003; Baker et al., 2004; Ciketic, Hayatbakhsh, Doran, Najman, & McKetin, 2012; Karila et al., 2009; Lee & Rawson, 2008). In a randomised control trial, Baker et al. (2006) found ten sessions of

combined motivational interviewing and cognitive behaviour therapy to improve depressive symptoms at 6 month follow-up and amphetamine use at 12 month follow-up compared to treatment as usual. Despite evidence that psychologists can be effective working with clients with substance use problems using the same therapeutic modalities as used with other common disorders, there may be some barriers that need to be overcome in this regard that may prevent professionals from providing needed integrated care. For example, Mundon, Anderson, and Najavits (2015) found that clinical psychology graduate level doctoral students in America endorsed more negative emotional reactions, such as feeling overwhelmed and frustrated, when responding to vignettes about a client with alcohol or cocaine use disorder than to a client with major depressive disorder. They argue the importance of providing education about and exposure to clients substance use during psychology training, as increased experience was associated with less negative emotional reactions. Studies in America (e.g., Harwood, Kowalski, & Ameen, 2004) have found that less than half of mental health professionals receive training in substance use disorders through coursework or practical placements. It is important that such training occur, as there is evidence (e.g., Hughes et al., 2008), that training in dual diagnosis of substance use and interventions and associated supervision can improve practitioners knowledge and self-efficacy to work in this area.

The lack of significant association between self-reported mental health problems and psychological distress scores in the very high range may suggest lack of insight regarding the nature of symptoms. Conversely, as there was typically a lower proportion reporting very high distress than those reporting a mental health problem it may be that among people who inject drugs their perceived mental health status is lower

than their objective mental health status. Additionally, the fact that many individuals self-reporting mental health problems attended a health professional in this regard may suggest that they have already received treatment that has reduced the severity of their symptoms, thereby resulting in a lower psychological distress score than if the problem was left untreated. The majority of respondents self-reporting a mental health problem in the south attended a health professional in this regard. In the north only half of those self-reporting a mental health issue sought professional support. Common reasons cited for not seeking treatment included lack of perceived need, engaging in self-treatment via substance use, practical issues and lack of knowledge/understanding of available treatment options. In the Netherlands, Vanheusden et al. (2008) similarly found that perceived lack of seriousness of mental health problems, lack of knowledge about treatment options, and lack of belief in the efficacy of professional treatment were major barriers to accessing services for mental health issues. Bohon, Cotter, Kravitz, Cello, and Garcia (2016) found similar results in a sample of college students in America and argued that this implies the importance of educating individuals about the nature of mental health problems and associated treatment options to shift attitudes in this regard. The fact that individuals in the present study reported self-medicating for their perceived mental health problems suggests that these issues are distressing enough for them to consider intervening. It would be important to educate individuals about the impact of substance use on mental health to promote understanding that this may not be the most effective solution to their difficulties.

For those in the south education around mental health, the impact of substance use on mental health, and treatment options may be largely facilitated by general practitioners as the majority of individuals self-reporting mental health problems did

attend their general practitioner in this regard. In the north, this may be slightly more complex as many individuals did not attend a health professional when subjectively experiencing a mental health problem. This suggests the importance of other professionals who have contact with PWIDs in the north in providing this education. For example, Needle and Syringe Program staff may be able to facilitate this as they already provide education, brief intervention and referral for problems related to substance use and mental health. It may be possible to train such staff to briefly screen for problematic substance use and mental health problems when clients present to these services. Evidence suggests that non-specialist staff can learn to assess and offer brief intervention for problematic substance use (e.g., Amanda Baker & Velleman, 2009) and that staff in drug and alcohol settings can be trained to screen for mental health problems (e.g., Lee et al., 2011). Additionally, staff may be able to use motivational interviewing strategies to promote engagement with treatment services for substance and mental health issues. There is evidence that such a strategy (using motivational interviewing) is effective for promoting engagement in opioid substitution treatment among those with opioid use problems (Roberts, Annett, & Hickman, 2010), and this may be applied to promoting engagement with other needed treatment services. Additionally, promoting community awareness of mental health issues, substance use issues, and treatment options more generally (e.g., through psychoeducational brochures and advertising) may also assist in shifting the attitudes of the community more generally.

Additionally, self-medication among the PWIDs samples suggests that focus on development of more adaptive problem focused coping styles may be an integral part of therapeutic intervention, as self-medication suggests a reliance on an avoidant/emotion-focused style of coping. Using substances to self-medicate mental health symptoms

such as anxiety and depression may provide temporary relief, and thereby results in the substance use becoming negatively reinforced and increasing the likelihood of this strategy being repeated when symptoms re-occur (Kronenberg, Goossens, van Busschbach, van Achterberg, & van den Brink, 2015). Researchers (e.g., A'zami, Doostian, Mo'tamedi, Massah, & Heydari, 2015; Kronenberg et al., 2015) have found a greater tendency toward avoidant/emotion-focused styles of coping among those with substance use disorders than individuals without, who tend to use a more problem focused coping style. An avoidant coping orientation when experiencing cravings and high risk situations had been associated with increased alcohol use and dependence five years after treatment, although this association is lower in individuals with a greater sense of self-efficacy to remain abstinent (Levin, Ilgen, & Moos, 2007). It is likely that similar patterns apply to other substances and suggests the importance of equipping individuals with skills to cope with cravings and manage high risk situations in an active way to promote their sense of efficacy to maintain therapeutic goals.

Consistent with results of the systematic review conducted by Darke et al. (2008), respondents in the north who were classed as likely dependent on methamphetamine reported poorer physical health than those using but not likely dependent. This is likely because those likely dependent engage in higher frequency of use, which is associated with poorer physical health outcomes (Darke et al., 2008). Additionally, those dependent on methamphetamine may be more likely to spend more of their income on drugs rather than on other necessities such as food and health care. In the south this pattern was not found, with no difference in self-reported physical health across dependence categories, although slightly over half of the southern sample in general reported poor or fair physical health. It is not clear why physical health did not

differ as a function of dependence in the southern sample. However, as respondents were not asked about engagement with health services for physical health, it may be that those in the south are more likely to seek treatment for physical health problems. There is some evidence that those in the south may engage with general practitioners more often than those in the north, given that in the south respondents usually found out about substance use treatment from their general practitioner, whereas this occurred rarely in the north. Further research would be needed to clarify this finding.

Among both samples, driving under the influence of substances was common, in particular methamphetamine, morphine, and cannabis. Given the effects of substances on cognitive function (e.g., Darke et al., 2008; Scott et al., 2007) this behaviour has the potential to put the individuals and others at risk. Engagement in other risky behaviours and/or aggressive behaviours whilst under the influence of crystal methamphetamine was equally common among those likely dependent and not likely dependent in the north but was more common among those likely dependent in the south. This suggests that for those in the north risk is associated with use of crystal methamphetamine generally.

Positive and negative effects of crystal methamphetamine

High proportions of respondents endorsed that crystal methamphetamine has negative mental and physical effects and impacted negatively on relationships. Respondents also reported several positive effects of crystal methamphetamine and in the north, particularly among those who were likely dependent there was a trend toward positives outweighing negatives. Regardless of this imbalance, the high levels of reported negative effects has important implications for treatment. Specifically, further exploring the negative effects of crystal methamphetamine noted may promote ambivalence and

change talk within a motivational interviewing framework (Miller & Rollnick, 2013). Being aware of the positive aspects of using crystal methamphetamine is also important for clinicians, as these may represent barriers to treatment and making behavioural changes (Miller & Rollnick, 2013). Understanding that clients hold both positive and negative views of crystal methamphetamine use may assist the clinician in facilitating the exploration of pros and cons when using a decisional balance sheet with clients, a technique which has been found to be strongly related to alcohol and drug outcomes among clients receiving motivational interviewing (Apodaca & Longabaugh, 2009).

Perceptions of methamphetamine

Perceptions of methamphetamine among respondents in the current study were largely negative. The majority of respondents in both samples noted methamphetamine as the drug of most concern for their community despite high levels of recent methamphetamine use within the samples. Within the general population of Australia 2013 National Household Survey data found methamphetamine to be the drug ranked third highest in regard to community concern, following alcohol and tobacco (Australian Institute of Health and Welfare, 2014).

No respondents in the north reported a positive opinion of crystal methamphetamine when asked to rate the drug, with most reporting it as a really terrible drug regardless of dependence status. In the south opinions were also largely negative, however, unsurprisingly those using methamphetamine regardless of dependence status had a higher proportion of neutral or positive opinions than those not using methamphetamine. The majority of both samples regardless of dependence status also reported disapproving of regular use (weekly) of crystal methamphetamine by an adult. This is consistent with findings of the National Household survey in Australia, where

even amongst those using methamphetamine recently, less than 20% approved of this behaviour (Australian Institute of Health and Welfare, 2014). In general, respondents in the current study also believed that their friends would disapprove of them using methamphetamine regularly (regardless of whether or not they were engaged in this behaviour).

Previous studies have similarly found a negative opinion/attitude toward methamphetamine among people who inject drugs. For example, Darke and Torok (2013) asked individuals who injected drugs regularly (weekly or more) to rate how harmful they thought each of the major drug classes were and whether they should be decriminalised with minor penalties (e.g., monetary fines) or legalised (i.e. no legal penalties). Among this sample, over two-thirds had used methamphetamine in the past six months, however, only 9% supported legalisation and 27% supported decriminalisation, with nearly two-thirds stating methamphetamine should continue to be prohibited. Methamphetamine was also perceived to be the most harmful of the illicit substances, rated as significantly more harmful than cocaine, MDMA, heroin, and cannabis (Darke & Torok, 2013). Likewise, Lancaster, Sutherland, and Ritter (2014) found that over half of the 2011 IDRS cohort from across Australia opposed or strongly opposed the legalisation of methamphetamine, despite this being the drug of choice cited by many respondents. Additionally, over one-third of this cohort supported increased penalties for sale or supply of methamphetamine, regardless of whether methamphetamine had been used recently (Lancaster, Ritter, & Stafford, 2013)

Overall, among varied samples of individuals who inject drugs in the current and previous studies, attitudes toward methamphetamine are overwhelmingly negative. Despite high levels of negative opinions about methamphetamine, and in particular the

crystalline form in the present study it can be assumed that very few respondents in the likely dependent group are accessing treatment for their methamphetamine use, as most were in opioid substitution programs only. Given negative opinions by self and others regarding methamphetamine use it might seem surprising that individuals within these samples continue to use these substances (although there was some evidence of decreased use of the crystalline form within these samples). The Theory of Planned Behaviour (Ajzen, 1991) may be able to explain this occurrence. This model posits that two of the key influences on behavioural intention, which in turn predicts actual behaviour, are the individual's attitude toward the behaviour and their perceptions of others' attitudes toward the behaviour (subjective norm). These factors were evident in the current study. However, an additional influence on behavioural intention and also on actual behaviour is the individual's belief that they can engage in the desired behaviour (perceived behavioural control). Thus, it may be that individuals within the current study continue to use methamphetamine despite negative attitudes towards the behaviour and perceived negative attitudes of peers because they do not believe they are able to make changes to their use. However, this explanation does not account for all results noted, given that one of the major barriers to accessing treatment in the current study was perceptions that one would be able to cease taking substances without professional support. It may be that perceptions of the efficacy of formal treatment and attitudes and subjective norms toward treatment are also at play. Some respondents did appear to lack awareness of available treatment options for stimulant dependence, and some did not believe that treatment would work for them. Additionally, perceived behavioural control over ability to access treatment if needed may be low in the current samples, as the majority thought it would be difficult or very difficult to access drug treatment if they

wanted it. Thus, increasing awareness of available services, how to access them, and the effectiveness of this may be an important step to enhancing perceived behavioural control.

Access to treatment and treatment barriers

Engagement with drug treatment services was relatively common in the present study with slightly over half in the south and slightly under half in the north reporting accessing treatment in the past six months. The majority of respondents accessing treatment across dependence categories were accessing only opioid substitution programs, with very few accessing drug counselling, irrespective of likely methamphetamine dependence. This is problematic, because at present evidence-based treatment for methamphetamine use disorder is primarily psychological, with very little evidence available for the efficacy of pharmacological treatments (Ciketic et al., 2012; Karila et al., 2009; Lee & Rawson, 2008). This suggests that among certain groups of people who inject multiple drugs across Tasmania individuals who likely require psychological support are not accessing these services when needed.

Findings of engagement mainly in opioid substitution programs is consistent with previous research in other areas of Australia. For example, in Melbourne, Kenny et al. (2011) found engagement in opioid substitution programs common among individuals dependent on methamphetamine. Similarly, in rural New South Wales, Wallace et al. (2009) likewise found that opioid pharmacotherapy was the predominant form of drug treatment engaged in by dependent and regular methamphetamine users. Only one quarter of those classed as methamphetamine dependent in their sample has received treatment for methamphetamine use in the past 12 months. Wallace et al. (2009) noted that this was often due to low perceived need for treatment and lack of

motivation to engage in treatment. They theorised that this may be due to being engaged in pharmacotherapy for opioid use, as individuals may fear disclosing other drug use due to possible restrictions on their dose. Wallace et al. (2009) also argue that individuals may be less likely to consider their methamphetamine use problematic, as the withdrawal from these substances is less acute than from opioids. Degenhardt, Sara, et al. (2016) discuss how current harm reduction policies are largely focused on opioid injectors and there is need to consider services for individuals using methamphetamine separately. This problem of focus on opioid substitution has also been noted by drug and alcohol workers across Australia as one of the barriers to accessing appropriate treatment for methamphetamine use (Pennay & Lee, 2009).

Many respondents in both samples reported that they were not interested in accessing treatment. This appeared to be largely due to respondents believing that they did not need treatment, often in the north because they believed if they wanted to cease using substances they could do so on their own without professional support. It is important to note that these findings may not refer specifically to methamphetamine use, as respondents were asked about access to treatment more generally given the exploratory nature of this study. However, among previous studies (e.g., Kenny et al., 2011; Wallace et al., 2009) of individuals with methamphetamine dependence, a lack of perceived need for formal treatment due to perceived lack of seriousness of their drug use; perceived lack of problems associated with use; or belief that formal treatment is unnecessary has been reported. Likewise, in a meta-analysis, belief that treatment was not necessary and desire to withdraw from methamphetamine without treatment were among the most commonly cited barriers for accessing treatment for methamphetamine use (Cumming et al., 2016). Kenny et al. (2011) found that respondents would often

attempt to withdraw without professional support and often with the aid of other illicit drugs or prescription medications. Cumming et al. (2016) argue that this suggests the importance of professionals involved with individuals who use methamphetamine offering information about methamphetamine dependence, treatment options available and the benefits of this to ensure individuals understand that self-withdrawal from the substance alone is not likely to promote longstanding change.

Limitations of the current study

There are several limitations that should be noted for the current study. Firstly, the small sample size in the north and across dependence groups may have resulted in the study being underpowered to detect differences across groups. This may be seen at times by moderate effect sizes that may indicate meaningful differences across groups, but lack of statistical significance of these findings. If possible, future research in Tasmania should employ a larger sample size to follow-up findings of the current study.

Secondly, as the nature of the current study was exploratory and followed the IDRS protocol, questions were targeted to patterns of drug use more generally rather than being specific to methamphetamine use. This means that often it may be difficult to determine whether associated harms are specifically related to patterns of methamphetamine use or to other patterns of drug use, particularly given high level of polydrug use within the samples. However, prior research (e.g., Kenny et al., 2011; Wallace et al., 2009) that has focused specifically on regular and dependent levels of methamphetamine use also used samples that engaged in high levels of polydrug use. It appears that engagement in polydrug use is more common than engaging in use of a single drug alone, and that research into treatment barriers and outcomes for methamphetamine should also consider the impact of polydrug use. In the current study,

it is not possible to determine whether the barriers noted for treatment access are methamphetamine specific and further research could consider asking questions in relation to methamphetamine treatment. However, it seems likely that there is some relevance of these barriers noted to access to methamphetamine treatment, especially as the same barriers have been noted in previous research (e.g., Cumming et al., 2016; Kenny et al., 2011; Pennay & Lee, 2009; Wallace et al., 2009).

Thirdly, the findings of the current study cannot be generalised to all individuals who use substances across Tasmania. For example, only two geographic regions were explored, findings may not apply to individuals who use other routes of administration of drugs (i.e. do not inject drugs), and younger samples of people who use drugs. Degenhardt, Sara, et al. (2016) note that one of the limitations of the IDRS protocol is that it does tend to recruit only older individuals who have used substances for a long period of time and may miss the emergence of newer drug trends among younger populations. While the IDRS is deliberately not representative and aims to examine trends in the drug market and associated risks and harms within a group with high level exposure to the illicit drug market (de Graaff et al., 2014), it is important to be cautious in generalising the findings of such research.

Finally, it is possible given that the majority of the data in the present study is based on the self-report PWIDs that there may be some biases in the conclusions drawn. For example, respondents may have difficulty recalling accurately information about their drug use that occurred many years ago and may also be reluctant to respond honestly to questions which they may perceive as having impact (e.g., about crime) if they were truthful and about behaviours that may not be socially desirable. This concern was partially offset in the current study by allowing respondents to skip sections or

specific questions that they did not feel comfortable to answer honestly. Furthermore, Darke (1998) reviewed the literature of the psychometric properties of the self-report of PWIDs and found self-reported current and past drug use, engagement in injecting risk behaviours, and criminal activity to display good reliability even up to 10 years and displayed good concurrent validity with objective measures of these variables.

Conclusions

In conclusion, the present study demonstrated differences in patterns of drug use, associated harms, and access to treatment services between northern and southern regions of Tasmania. This suggests that policy and service provision decisions across Tasmania should be informed by research in that particular geographic area and not confined to data collected in the south as part of the IDRS. High levels of mental health problems, poor physical health, criminal activity, exposure to violence, and engagement in risk taking behaviours were noted in the current study. Some of these harms were more pronounced among those likely dependent on methamphetamine, suggesting the need to consider whether an individual's drug use is at a problematic level rather than generalising finding to all individuals using methamphetamine.

Despite a high proportion of individuals being classed as likely dependent on methamphetamine in both samples and negative perceptions about this substance, very few were accessing forms of treatment found efficacious for this substance. Generally, respondents were engaged in treatment for opioid use only. One of the major barriers to accessing treatment in the current study was lack of perceived treatment need often due to belief in capacity to cease using without formal treatment or perceived lack/efficacy of formal treatment. While it is not clear in the current study if these barriers pertain specifically to methamphetamine use it does suggest the importance of educating

individuals who inject drugs about available treatment options should self-withdrawal prove ineffective. Similar barriers were noted for seeking treatment for mental health problems, suggesting again the need for service providers to provide information to clients. For example, often in needle and syringe program outlets clients are provided with brief intervention, in this setting it may be possible to provide brief psychoeducation around impacts of substance use on mental and physical health; available treatment options and how these work. Further research is needed around specific barriers to accessing drug treatment in Tasmania and what factors may assist in overcoming these, as it is evident that many individuals who likely require formal treatment are not accessing needed services. Additionally, when clients present to psychologists for mental health problems it is important that they assess and treat substance use problems given that clients often have co-morbid difficulties and may be using substances to self-medicate. Clients are likely to achieve poorer mental health and substance use outcomes if integrated treatment service provision does not occur.

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Appendices

Appendix A: Example of Flyers used to Advertise Study to PWIDs

W A N T E D



Researchers would like to talk
to people who inject drugs
such as morphine, speed,
benzos or methadone.

**Participants will be reimbursed \$40
for their time.**

Interviews will be held at:
Salvation Army Launceston NSP

Appendix B: Information Sheet



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Illicit Drug Reporting System (Tasmania)

Information Sheet

This study will monitor trends in drug use in Hobart and Launceston. It is part of a national study in all capital cities, funded by the Commonwealth Department of Health and Ageing. The method involves a survey of people who inject drugs, another survey of people who work in the drug field (such as health workers and outreach workers) and an examination of existing information on drug usage such as telephone advisory data and drug purity data. The findings will be used to provide an early warning of emerging problems with illicit drugs. They will indicate directions for further drug research and contribute to other policy decisions such as health interventions for problems associated with drug use. The chief investigator is Raimondo Bruno at the School of Psychology, University of Tasmania.

As a person that injects drugs, you are invited to participate in a face-to-face interview. You will be asked about:

- changes in drug use patterns,
- drug availability, price and purity
- crime
- health and wellbeing issues.

The study will focus on the use of opiates, amphetamines, cocaine and cannabis. The interview will take place at a location convenient to you (such as a health service agency) and will take about 1 hour. You will be reimbursed for your time and any out-of-pocket expenses with an honorarium of \$40.

The interview will be anonymous and neither your name nor any personally-identifying characteristics will be recorded. It is important that you know that you are absolutely free to decline to answer any questions you so wish. There is no risk of legal problems arising from your participation. The project has been approved by the Human Research Ethics Committee (Tasmania) Network. If you have concerns of an ethical nature, or complaints about how the project is conducted, you may contact the Executive Officer of the Ethics Committee on (03) 6226 2763.

So we can get information about changing patterns in drug use and health over time we would also like your permission to link this current survey with any future surveys you complete. This will be done by creating an anonymous, unique identifier for you, which we can then match across the years if you participate in other IDRS surveys and give us consent to do this. **You are still able to complete the survey if you decide you don't want to have an identifier and don't want to have your surveys matched across years.**

This research project comprises one of a number of sources of information about drug use in Australia. While the data have been used in the past by drug users and other groups advocating for drug users (such as TASCAHRD and the Link in Hobart), the results have also been used by other groups and government agencies to inform policy decisions on a range of issues including treatment and law enforcement. We make every effort to collect the data, report on and disseminate the findings of the

research in a way which is respectful of the interests of drug users. Yet, like any research, once the data are publicly available they can be used by others to support a variety of positions, some of which may be in agreement with, and others may be contrary to the views of the researchers or the research participants. Overall we believe that services and policies regarding drug users are improved when informed by research such as this which draws on the knowledge and expertise of drug users themselves.

You will be given copies of this information sheet and the consent form for you to keep. All previous and future reports from the study are available at the following web address: <http://ndarc.med.unsw.edu.au>.

Raimondo Bruno
Chief Investigator

.....
Researcher

Appendix C: Consent Form



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PROJECT: Illicit Drug Reporting System (Tasmania)

Consent form

1. I have read and understood the 'Information Sheet' for this study.
2. The nature and possible effects of the study have been explained to me.
3. I understand that the study involves the following procedures:
People who inject drugs such as amphetamines, morphine or cocaine will be interviewed. The interview session will take approximately 1 hour. The interviewer will ask me questions about drug use, price, purity and availability of drugs, trends in drug use, involvement in illegal activities, overdose, HIV risk-taking behaviour and my health status.
4. I understand that all research data will be securely stored on the University of Tasmania premises for a period of at least 5 years. When it is no longer required, it will be destroyed.
6. Any questions that I have asked have been answered to my satisfaction.
8. I understand that my identity will be kept confidential and that any information I supply to the researcher(s) will be used only for the purposes of the research.
9. I agree to participate in this investigation and understand that I may withdraw at any time, or to decline to answer any particular questions without any negative effect.

Name of participant _____

Signature of participant _____ Date _____

10. I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

Name of investigator _____

Signature of investigator _____ Date _____

11. So we can get information about changing patterns in drug use and health over time we would also like your permission to link this current survey with any future surveys you complete. This will be done by creating an anonymous, unique identifier for you, which we can then match across the years if you participate in other IDRS surveys and give us consent to do this.

I hereby give my permission for my survey to be linked to any future EDRS/IDRS surveys using an anonymous, unique identifier.
(circle response)

Yes / No

Signature of participant _____

Appendix D: IDRS Interview

Please refer to data USB or electronic submission for this document.

Note highlighted questions were not asked in the northern branch of the current study.

Appendix E: Additional IDRS Questions Tasmania

Please refer to data USB or electronic submission for this document.

Appendix F: Polydrug use history tables (Tables F1-F2)

Table F1. Polydrug use history of the PWID sample North (N = 41)

Drug Class	Ever used % (n)	Ever injected % (n)	Used last 6 months % (n)	Injected last 6 months % (n)	Smoked last 6 months % (n)	Snorted last 6 months % (n)	Swallowed last 6 months % (n)	Days used last 6 months	Days injected last 6 months
Heroin	76 (31)	73 (30)	15 (6)	15 (6)	0	0	0	9	9
Homebake heroin	29 (12)	27 (11)	5 (2)	5 (2)	0	0	0	2	2
<i>Any heroin (inc. homebake)</i>	76 (31)	73 (30)	15 (6)	17 (7)	0	0	0	6	6
Methadone (prescribed)	63 (26)	42 (17)	20 (8)	12 (5)			20 (8)	168	48
Methadone (not prescribed)	61 (25)	59 (24)	22 (9)	22 (9)			7 (3)	6	4
Physeptone (prescribed)	20 (8)	15 (6)	5 (2)	5 (2)	0	0	5 (2)	14	12
Physeptone (not prescribed)	46 (19)	37 (15)	5 (2)	5 (2)	0	0	2 (1)	8	5
<i>Any methadone (inc. physeptone)</i>	81 (33)	76 (31)	37 (15)	32 (13)	0	0	24 (10)	62	24
Buprenorphine (prescribed)	24 (10)	15 (6)	2 (1)	2 (1)	0	0	2 (1)	46	1
Buprenorphine (not prescribed)	56 (23)	42 (17)	15 (6)	12 (5)	2 (1)	0	5 (2)	13	6
<i>Any buprenorphine (exc. Buprenorphine-naloxone)</i>	63 (26)	46 (19)	15 (6)	12 (5)	2 (1)	0	7 (3)	22	7
Buprenorphine-naloxone tablet (prescribed)	17 (7)	7 (3)	0	-	-	-	-	-	-
Buprenorphine-naloxone tablet (not prescribed)	24 (10)	17 (7)	0	-	-	-	-	-	-
Buprenorphine-naloxone film (prescribed)	32 (13)	12 (5)	20 (8)	7 (3)	0	0	17 (7)	90	90
Buprenorphine-naloxone film (not prescribed)	37 (15)	27 (11)	20 (8)	17 (7)	2 (1)	0	0	22	23
<i>Any buprenorphine-naloxone</i>	63 (26)	34 (14)	32 (13)	20 (8)	2 (1)	0	17 (7)	95	72

Table F1. Polydrug use history of the PWID sample North (N = 41) (continued)

Drug Class	Ever used (%)	Ever injected (%)	Used last 6 months (%)	Injected last 6 months (%)	Smoked last 6 months (%)	Snorted last 6 months (%)	Swallowed last 6 months (%)	Days used last 6 months	Days injected last 6 months
Fentanyl	20 (8)	17 (7)	2 (1)	2 (1)	0	0	0	1	1
Oxycodone (prescribed)	24 (10)	12 (5)	15 (6)	10 (4)	0	0	10 (4)	30	25
Oxycodone (not prescribed)	81 (33)	73 (30)	37 (15)	34 (14)	0	0	7 (3)	5	6
<i>Any oxycodone</i>	85 (35)	76 (31)	44 (18)	37 (15)	0	0	15 (6)	11	10
Morphine (prescribed)	34 (14)	20 (8)	0	-	-	-	-	-	-
Morphine (not prescribed)	83 (34)	81 (33)	54 (22)	51 (21)	0	0	5 (2)	39	48
<i>Any morphine (exc. powder)</i>	88 (36)	81 (33)	54 (22)	51 (21)	0	0	5 (2)	39	48
Over the counter codeine	85 (35)	2 (1)	37 (15)	0	0	0	37 (15)	12	-
Other opioids (not elsewhere classified)	88 (36)	2 (1)	29 (12)	0	0	0	29 (12)	6	-
Speed powder	95 (39)	95 (39)	34 (14)	34 (14)	2 (1)	0	0	5	5
Base/point/wax	42 (17)	39 (16)	15 (6)	12 (5)	2 (1)	0	0	3	3
Ice/shabu/crystal	88 (36)	85 (35)	68 (28)	68 (28)	27 (11)	0	0	13	12
Amphetamine liquid	42 (17)	39 (16)	2 (1)	2 (1)			0	4	4
<i>Any form methamphetamine</i>	98 (40)	98 (40)	68 (28)	68 (28)	29 (12)	0	0	23	20
Pharmaceutical stimulants (prescribed)	7 (3)	7 (3)	2 (1)	2 (1)	0	0	0	48	48
Pharmaceutical stimulants (not prescribed)	71 (29)	59 (24)	29 (12)	24 (10)	0	0	5 (2)	4	6
<i>Any form pharmaceutical stimulants</i>	71 (29)	59 (24)	29 (12)	24 (10)	0	0	5 (2)	4	6
Cocaine	61 (25)	29 (12)	12 (5)	2 (1)	0	10 (4)	0	1	1
Hallucinogens	59 (24)	10 (4)	5 (2)	0	0	0	5 (2)	4	-
Ecstasy	66 (27)	32 (13)	10 (4)	2 (1)	0	0	7 (3)	4	2

Table F1. Polydrug use history of the PWID sample North (N = 41) (continued)

Drug Class	Ever used (%)	Ever injected (%)	Used last 6 months (%)	Injected last 6 months (%)	Smoked last 6 months (%)	Snorted last 6 months (%)	Swallowed last 6 months (%)	Days used last 6 months	Days injected last 6 months
Alprazolam (prescribed)	22 (9)	12 (5)	7 (3)	2 (1)	0	0	7 (3)	40	56
Alprazolam (not prescribed)	61 (25)	42 (17)	37 (15)	20 (8)	0	0	20 (8)	4	2
Other benzodiazepines (prescribed)	54 (22)	2 (1)	29 (12)	0	5 (2)	0	27 (11)	90	-
Other benzodiazepines (not prescribed)	59 (24)	12 (5)	39 (16)	2 (1)	0	0	39 (16)	8	1
<i>Any benzodiazepines</i>	88 (36)	56 (23)	66 (27)	22 (9)	5 (2)	0	63 (26)	34	4
Seroquel (prescribed)	24 (10)	2 (1)	7 (3)	0	0	0	7 (3)	163	-
Seroquel (not prescribed)	44 (18)	7 (3)	15 (6)	0	0	0	15 (6)	2	-
<i>Any Seroquel</i>	61 (25)	7 (3)	22 (9)	0	0	0	22 (9)	3	-
Alcohol	100 (41)	15 (6)	63 (26)	0			63 (26)	6	-
Cannabis	100 (41)		90 (37)		90 (37)		0	180	
Inhalants	17 (7)		0					-	
Tobacco	100 (41)		98 (40)					180	
E-cigarette	42 (17)		32 (13)					2	
Steroids	17 (7)	12 (5)	7 (3)	5 (2)	0	0	2 (1)	10	6
Other drugs	88 (36)	88 (36)	71 (29)	71 (29)	0	0	0	24	24
<i>Morphine powder</i>	85 (35)	85 (35)	71 (29)	71 (29)	0	0	0	24	24
Drugs mimicking effects of amphetamines or cocaine	10 (4)	10 (4)	5 (2)	5 (2)	0	0	0	2	2
Drugs mimicking effects of cannabis	17 (7)	0	7 (3)	0	7 (3)	0	0	1	-

Note. Figures in parentheses represent number of respondents. Days used = median and are rounded to the nearest whole number.

Table F2. Polydrug use history of the PWID sample South (N = 100)

Drug Class	Ever used %	Ever injected %	Used last 6 months %	Injected last 6 months %	Smoked last 6 months %	Snorted last 6 months %	Swallowed last 6 months %	Days used last 6 months	Days injected last 6 months
Heroin	56	55	5	5	0	0	0	3	3
Homebake heroin	14	14	1	1	0	0	0	5	5
<i>Any heroin (inc. homebake)</i>	57	56	6	6	0	0	0	4	4
Methadone (prescribed)	52	45	33	25			29	180	60
Methadone (not prescribed)	66	65	20	20			0	11	11
Physeptone (prescribed)	14	12	1	1	0	0	1	1	1
Physeptone (not prescribed)	64	63	29	29	0	0	3	5	5
<i>Any methadone (inc. physeptone)</i>	85	82	48	43	0	0	30	178	41
Buprenorphine (prescribed)	22	9	6	3	0	0	4	180	180
Buprenorphine (not prescribed)	31	28	13	12	0	0	2	3	3
<i>Any buprenorphine (exc. Buprenorphine-naloxone)</i>	47	34	18	15	0	0	5	34	3
Buprenorphine-naloxone tablet (prescribed)	10	4	0	-	-	-	-	-	-
Buprenorphine-naloxone tablet (not prescribed)	13	8	3	2	0	0	1	24	14
Buprenorphine-naloxone film (prescribed)	16	3	10	1	0	0	10	180	180
Buprenorphine-naloxone film (not prescribed)	19	16	12	11	0	0	2	9	6
<i>Any buprenorphine-naloxone</i>	41	22	21	13	0	0	12	120	14

Table F2. Polydrug use history of the PWID sample South (N = 100) (continued)

Drug Class	Ever used (%)	Ever injected (%)	Used last 6 months (%)	Injected last 6 months (%)	Smoked last 6 months (%)	Snorted last 6 months (%)	Swallowed last 6 months (%)	Days used last 6 months	Days injected last 6 months
Fentanyl	6	3	1	1	0	0	1	10	8
Oxycodone (prescribed)	22	18	1	1	0	0	1	32	2
Oxycodone (not prescribed)	76	75	27	25	0	0	3	5	6
<i>Any oxycodone</i>	80	78	28	26	0	0	4	6	6
Morphine (prescribed)	29	24	5	5	0	0	2	180	180
Morphine (not prescribed)	93	92	47	47	0	0	5	48	48
<i>Any morphine (exc. powder)</i>	96	94	48	48	0	0	6	48	48
Over the counter codeine	63	4	24	1	0	0	24	12	6
Other opioids (not elsewhere classified)	55	6	17	2	0	0	15	13	6
Speed powder	95	93	49	49	1	1	0	12	12
Base/point/wax	34	32	9	9	1	0	0	6	5
Ice/shabu/crystal	79	75	59	57	12	1	3	18	20
Amphetamine liquid	32	31	3	3			0	1	1
<i>Any form methamphetamine</i>	98	98	72	72	12	2	3	23	22
Pharmaceutical stimulants (prescribed)	7	4	2	2	0	0	0	13	13
Pharmaceutical stimulants (not prescribed)	65	62	25	25	0	0	3	12	12
<i>Any form pharmaceutical stimulants</i>	67	64	26	26	0	0	3	12	11
Cocaine	48	34	2	2	0	1	1	8	4
Hallucinogens	69	17	8	4	0	0	5	1	1
Ecstasy	71	24	7	4	0	1	4	2	1

Table F2. Polydrug use history of the PWID sample South (N = 100) (continued)

Drug Class	Ever used (%)	Ever injected (%)	Used last 6 months (%)	Injected last 6 months (%)	Smoked last 6 months (%)	Snorted last 6 months (%)	Swallowed last 6 months (%)	Days used last 6 months	Days injected last 6 months
Alprazolam (prescribed)	28	9	3	0	0	0	3	180	-
Alprazolam (not prescribed)	61	37	21	9	0	0	16	5	7
Other benzodiazepines (prescribed)	64	7	38	1	0	0	38	180	96
Other benzodiazepines (not prescribed)	65	17	45	7	0	0	41	24	35
<i>Any benzodiazepines</i>	87	49	66	14	0	0	62	140	24
Seroquel (prescribed)	25	2	7	0	0	0	7	180	-
Seroquel (not prescribed)	32	1	9	2	0	0	7	5	4
<i>Any Seroquel</i>	51	3	14	2	0	0	12	7	4
Alcohol	95	3	46	0			46	10	-
Cannabis	95		73		73		3	170	
Inhalants	26		2					3	
Tobacco	99		97					180	
E-cigarette	40		26					5	
Steroids	4	3	0	-	-	-	-	-	-
Other drugs	4	3	0	-	-	-	-	-	-
Drugs mimicking effects of amphetamines or cocaine	33	31	15	14	0	1	0	10	13
Drugs mimicking effects of cannabis	13	0	2	0	1	0	1	4	-

Note. Number of respondents are the same as percentages noted in the table. Days used = median and are rounded to the nearest whole number.