



# Research in Practice

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## Findings from the DUMA program: Methamphetamine drug market trends

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### Prevalence and frequency of use of methamphetamine

Methamphetamine is a drug of national concern, with the Australian Crime Commission (ACC; 2015a) assessing it to be the illicit drug posing the greatest risk to the Australian community. The Australian Institute of Health and Welfare's (AIHW) 2013 National Drug Strategy Household Survey (NDSHS) reported that approximately 400,000 Australians had used meth/amphetamines in the previous 12 months (AIHW 2014). The NDSHS reported a stable rate of meth/amphetamine use in the general community from 2010 to 2013 of 2.1 percent. However, there was a shift in the type of meth/amphetamine used, from powder to purer forms like ice or crystal methamphetamine (AIHW 2014). Specifically, powder meth/amphetamine use among recent users decreased from 51 percent to 29 percent, while ice use more than doubled from 22 percent to 50 percent (AIHW 2014). In line with this, the frequency of methamphetamine use among injecting drug users in Melbourne remained consistent from 2008 to 2014, but users reported transitioning from powder to crystal forms of methamphetamine (Scott et al. 2015).

Frequency of use of methamphetamine has also changed across the 2010 to 2013 period. In 2013, 15.5 percent of recent meth/amphetamine users reported daily or weekly use, compared with 9.3 percent in the 2010 survey (AIHW 2014). When examining use by form, approximately a quarter of users who mainly used ice reported using it at least weekly, compared with 2.2 percent of powder users who reported weekly use (AIHW 2014). Scott et al.'s (2015) study of injecting drug users in Melbourne found that those already using methamphetamine were starting to purchase the drug more frequently in 2013 compared with 2011.

### Effects of methamphetamine on the user

Frequent use of methamphetamine has a profound impact on the user's central nervous system. Stimulants like methamphetamine hasten messages from the brain to the body and can result in the user feeling more awake, alert, confident or energetic (ADF 2014a). The intoxicant effect experienced with methamphetamine is greater than that associated with amphetamine, of which methamphetamine is a synthetic derivative. The chemical structure of methamphetamine allows it to be rapidly transported across the blood-brain barrier (Barr et al. 2006). When injected or smoked its effects can be felt in three to seven seconds (ADF 2014b). The elimination half-life of methamphetamine—eight to 13 hours—is also substantially longer than that of other stimulants such as cocaine, which has an elimination half-life of one to three hours (Barr et al. 2006). This has been suggested as a possible explanation for the quick progression from first use to addiction observed in some methamphetamine users (Gonzalez Castro et al. 2000).

## Availability and purity of methamphetamine

Availability and purity of methamphetamine in Australia has also increased in recent years (ACC 2015b; LRDCPC 2014). The increased availability of methamphetamine is likely due in some part to its supply being supported by high levels of both importation and domestic production. In 2013–14, the number of amphetamine-type stimulant (ATS; excluding MDMA) detections at the Australian border increased to the highest on record, while the weight of detected ATS (excluding MDMA) was the second highest on record (ACC 2015b). In the same period, 744 clandestine laboratories were detected nationally. The majority of these clandestine labs, 78.9 percent (n=608), were identified as manufacturing ATS (excluding MDMA). Of those clandestine laboratories able to be classified, 51.6 percent were addict-based, using basic equipment and simple procedures to manufacture less than 50 grams per production cycle (ACC 2015b).

## Illicit drug market forces

The behaviour of illicit drug markets is regularly analysed in terms of the economic model of supply and demand. According to this model, restricting supply through actions such as tougher law enforcement would lead to an increase in the market price and a reduction in the quantity sold. On the other hand, a decrease in demand due to interventions such as treatment would lead to a decrease in the market price and a reduction in the quantity sold (Caulkins & Reuter 2006; Dwyer & Moore 2010; Galenianos, Pacula & Persico 2012; Moore et al. 2005; Narayanan & Vicknasingam 2010; Prunckun 2008; Reuter & Kleiman 1986; Storti & Grauwe 2009a; Storti & Grauwe 2009b). However, the supply and demand model may not offer as accurate an explanation of the behaviour of illicit drug markets as it does the behaviour of legal goods markets. For example, characteristics such as the risk of arrest and imprisonment faced by sellers, the many layers of the illicit drug market, the level of dependence among users and the sale of illicit drugs by users were identified as important factors that may impact the United States heroin and cocaine markets (Caulkins & Reuter 2006). It has also been proposed that the basic supply and demand model fails to adequately consider the social processes and relationships that exist in the illicit drug market and approaches to drug supply that include sharing (Dwyer & Moore 2010).

It is also important to consider the relationship between price and purity when looking at the illicit drug market. Given the lack of information the buyer has about the purity of the drug they are purchasing, it has been proposed that price is a signal to the buyer of the purity they could expect to receive (Caulkins & Reuter 1998). Although there can be a positive price-purity relationship when there is excess supply, such that prices are higher when purity is high, the relationship can also be negative when there is diminished supply (Prunckun 2008). Similarly, it is possible that when demand increases but supply does not, the price of an illicit drug may stay the same while purity declines, as dealers may cut the active substance with inert materials to artificially extend supply.

There is evidence that the Australian methamphetamine market is predominantly a closed market in which most users buy the drug from a friend, either at a friend's place or by phoning their friend and arranging to meet at another place (AIHW 2014; McKetin et al. 2009; Nicholas 2008; Scott et al. 2015). Competition in a closed market may come from a variety of sources. Most users report purchasing methamphetamine from different dealers, and methamphetamine dealers often sell a range of methamphetamine forms and other drugs (McKetin et al. 2009). This may allow users to obtain information about the relative availability, quality and price of methamphetamine from a variety of dealers, thereby increasing competition in the market. The social interconnectedness of the methamphetamine market, along with the presence of mobile dealers and the small market scene, would also facilitate increased knowledge among users about the availability, quality and price of methamphetamine.

Since 1999, the Australian Institute of Criminology (AIC) has monitored drug use and crime trends across Australia through the Drug Use Monitoring in Australia (DUMA) program. Each quarter, detainees held in watch houses at various sites across Australia are asked to

complete an interviewer-assisted self-report questionnaire. Twice a year, detainees are also asked to provide a voluntary urine sample, which is analysed for the presence of illicit drugs. These data allow the availability of illicit substances, including methamphetamine, to be monitored, and crime and drug usage behaviours to be examined. The current study aims to examine recent trends in the use, availability, purity and price of methamphetamine based on Australian police detainee reports obtained via the DUMA program in 2014.

## Police detainee use of methamphetamine

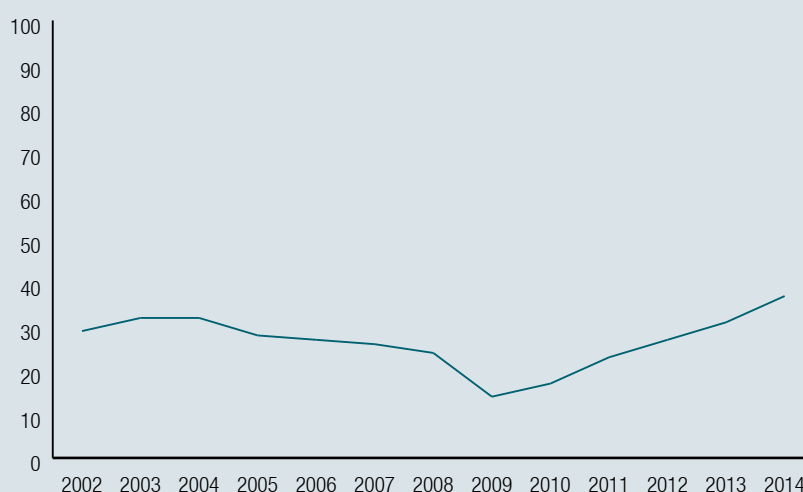
In 2014, 2,310 adult detainees were interviewed at six sites: Adelaide, Brisbane, East Perth and Sydney (Bankstown, Kings Cross and Surry Hills). In the first and third quarters, 790 urine samples were collected at five sites: Adelaide, Brisbane, East Perth and Sydney (Kings Cross and Surry Hills). The majority of detainees were male (81%); the over-representation of males in the sample was consistent with the gender ratio of the detainee population. Detainees were, on average, 32 years of age.

A substantial percentage of detainees (48%;  $n=1,115$ ) reported using methamphetamine in the last 12 months, while 18 percent ( $n=418$ ) reported using methamphetamine in the 48 hours prior to their arrest. Thirty-seven percent ( $n=290$ ) of detainees who provided a urine sample tested positive to methamphetamine and 67 percent ( $n=195$ ) of those who tested positive to methamphetamine were polydrug users—that is, they tested positive to more than one drug type.

A substantial percentage of methamphetamine-using detainees (45%) reported using ice the last time they used methamphetamine, followed by white rock (31%). Of the detainees who reported using other forms of methamphetamine, 10 percent reported using crystal, one percent shards and one percent base. Of the 1,115 methamphetamine-using detainees, 38 percent reported feeling dependent on the drug in the last 12 months, while 20 percent reported having 'burnt out', 'over-amped' or overdosed on the drug in the last 12 months. Fifty-five percent ( $n=475$ ) of detainees who used methamphetamine in the 30 days prior to their arrest reported having sold, shared or given away some of the methamphetamine they had acquired in the past 30 days.

Since 2009, there has been an upward trend in methamphetamine use among police detainees across the five long-term DUMA sites of Adelaide, Bankstown, Brisbane, East Perth and Kings Cross (see Figure 1).

**Figure 1 Adult detainees who tested positive to methamphetamine, five long-term sites, by year (%)**



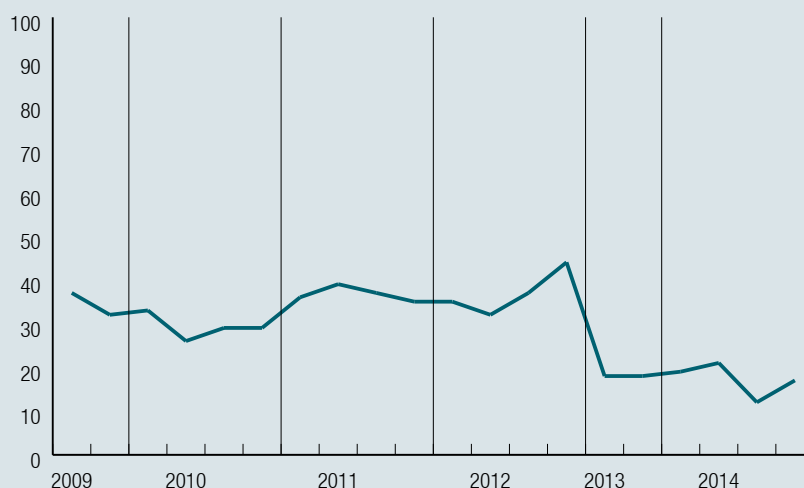
## Methamphetamine market indicators

### Availability of methamphetamine

Detainees were asked to rate the availability of methamphetamine on a scale from one (extremely hard to get) to 10 (readily available or overabundant). In 2014, detainees across Australia rated methamphetamine availability, on average, at eight. There was some variation in availability ratings between sites, from 7.6 at Kings Cross to 9.1 at Surry Hills.

Between 2009 and 2012, there was a significant rise in the percentage of detainees reporting that methamphetamine had become easier to purchase in the three months prior to their arrest. This rise was followed by a decline between 2012 and 2013. Between 2013 and 2014 the percentage of detainees reporting that methamphetamine had become easier to purchase plateaued somewhat at between 17 and 21 percent, with a dip to 12 percent in the third quarter of 2014 (see Figure 2). This may indicate that the market had stabilised or that market saturation had been reached.

**Figure 2 Adult detainees reporting methamphetamine has become easier to get compared with three months ago (%)**

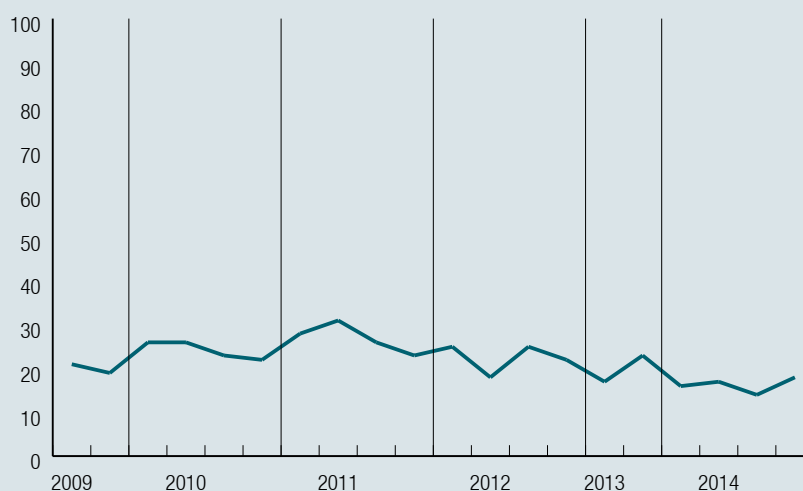


### Quality of methamphetamine

Detainees were asked to rate the quality of methamphetamine on a scale from one (extremely poor/impure quality) to 10 (excellent purity). In 2014, detainees across Australia rated methamphetamine quality, on average, at seven. There was some variation in quality ratings between sites, from 5.4 at Kings Cross to 7.2 at Brisbane and Adelaide.

Between 2009 and 2014, the percentage of detainees who reported that methamphetamine quality improved in the three months prior to their arrest ranged from 14 to 26 percent, with a steady decline in reports of improved quality since 2011 (see Figure 3).

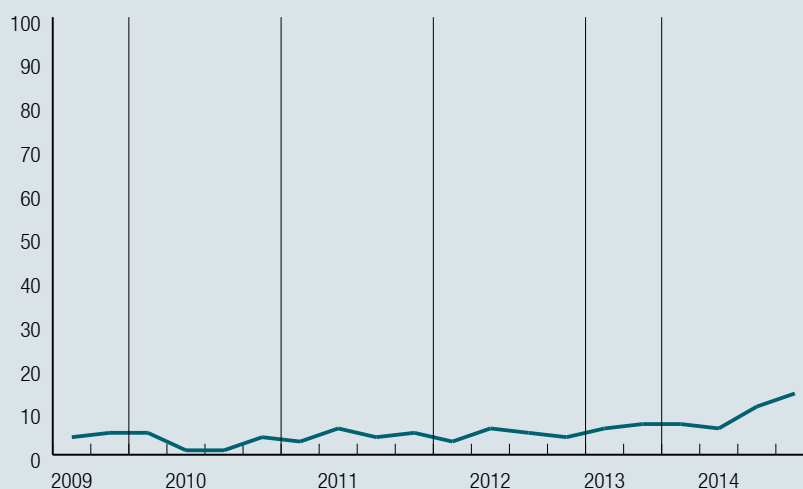
**Figure 3 Adult detainees reporting an increase in the quality of methamphetamine in the past three months (%)**



### Price of methamphetamine

Detainees were asked whether they thought the price of methamphetamine had changed recently—that is, whether it had become more expensive, had stayed the same, was less expensive or had fluctuated. From 2009 to mid-2013, the percentage of detainees who reported that the price of methamphetamine had decreased in the three months prior to interview remained fairly stable at around four percent (see Figure 4). Since mid-2013 there has been a significant increase in the proportion of detainees reporting a price decrease. In the fourth quarter of 2014, 14 percent of detainees reported that the price of methamphetamine had decreased in the three months prior to interview.

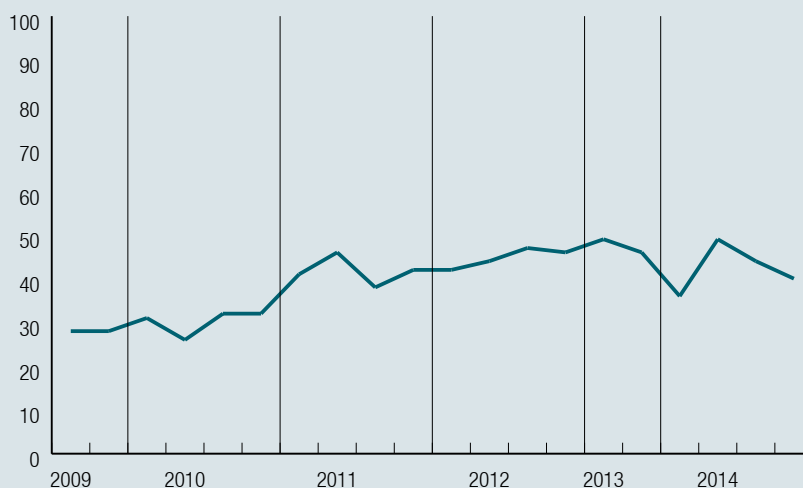
**Figure 4 Adult detainees reporting a decrease in the price of methamphetamine in the past three months (%)**



## Number of people selling methamphetamine

Detainees were asked whether they thought the number of people selling methamphetamine had changed in the three months prior to interview—that is, had it increased, stayed the same or decreased. From 2009 to 2014 there was a steady rise in the proportion of detainees reporting an increased number of methamphetamine sellers in the market in the three months prior to interview (see Figure 5). In the fourth quarter of 2014, 40 percent of detainees reported an increased number of sellers.

**Figure 5 Adult detainees reporting an increase in the number of people selling methamphetamine in the past three months (%)**




## Conclusion

It is important to continue to monitor the methamphetamine market in Australia given the concern expressed about the drug at a national level. An increasing number of police detainees have tested positive via urinalysis to methamphetamine since 2009. In 2014, 37 percent of police detainees tested positive. The upward trend in methamphetamine use among police detainees evidenced in the DUMA data is contrary to the reported prevalence of use in the general population, which has remained relatively stable (AIHW 2014). The rise in use among police detainees could be an early warning of a potential rise in use among the general population that may be revealed in the next AIHW NDSHS; DUMA data are collected quarterly and AIHW data triennially. Alternatively, the rise in use may be restricted to a population of regular drug users, including police detainees. Police detainees are likely to be engaged in the illicit drug market to a greater extent than the general population (Bennett 1998).

It has been claimed that the scale of dependent methamphetamine use in Australia exceeds that associated with regular heroin use, and is in the same league as dependent heroin use during the peak of the heroin problem in the late 1990s (McKetin, Kelly & McLaren 2006). Data in this study are consistent with other studies that have reported a substantial percentage of methamphetamine users are dependent on the drug (McKetin, Kelly & McLaren 2006).

The availability and quality of methamphetamine in Australia is high, and the findings of the DUMA program indicate that availability and quality levels have been relatively stable recently. In 2014, an increased percentage of detainees reported a decrease in the price of methamphetamine. Under a basic economic model of supply and demand, where demand is high and supply is stable—as the DUMA data suggests is the current situation—it would be expected that the price of methamphetamine would remain stable or increase. However,





DUMA data indicates there may have been a decrease in price. There are several possible explanations for a decrease in price under conditions of high demand. Storti & Grauwe (2009a; 2009b) proposed that globalisation, and its associated decreased transportation and labour costs, has played a role in the decreasing price of heroin and cocaine. Globalisation may have also impacted on costs for importers of methamphetamine, thereby allowing them to reduce their prices. Its impacts on the domestic production of methamphetamine may include domestic price competition and reductions in the cost of imported precursor materials. Other researchers have proposed that decreases in price can result from industry-wide economies of scale achieved through ‘enforcement swamping’ whereby the risk of arrest—which is factored into the cost of a drug—is reduced when there are a large number of people selling drugs, as police have more targets to pursue (Caulkins & Reuter 2006; Moore et al 2005). Although some view this theory as controversial (Caulkins & Reuter 2006), it is partially supported by the DUMA data, insofar as police detainees have reported an increased number of sellers in the Australian methamphetamine market.

Alternatively, the price decrease could indicate an increase in competition in the market. The entry of new sellers into the market can force down the retail mark-up applied to the wholesale price, eliminating the excess profits experienced by sellers prior to new sellers’ entry (Prunckun 2008; Storti & Grouwe 2009b). It has been proposed that low barriers to entry into the illicit drug market allow more sellers to join the market (Storti & Grouwe 2009b). The percentage of detainees reporting an increase in the number of people selling methamphetamine has grown steadily since 2009, indicating an ever-increasing number of sellers entering the methamphetamine market. These reports may reflect existing dealers who are now selling methamphetamine in addition to other drugs; new dealers selling methamphetamine; or a greater proportion of methamphetamine users involved in the distribution of methamphetamine, as seen in the cocaine and heroin markets in the United States (Caulkins & Reuter 2008). The latter possibility is reflected in the DUMA finding that 54 percent of methamphetamine users reported having sold, shared or given away some of the methamphetamine they had acquired in the past 30 days—a percentage that is higher than, but consistent with, the findings of Scott et al. (2015), who reported that 40 percent of purchases were shared. In addition, ACC data showed that the largest proportion of clandestine laboratories detected in Australia in 2013–14 were addict-based, again demonstrating user participation in supply and distribution.

There are a number of limitations to this study that should be acknowledged. As outlined earlier, the police detainee population is more likely than the general population to have contact with the illicit drug market and so the findings may not be able to be generalised. Methamphetamine users in contact with the criminal justice system are likely to differ from those in the general population in terms of frequency of use and quantity used each time. They are also more likely to be polydrug users; 67 percent of methamphetamine users in this sample were identified via urinalysis as polydrug users. Reliance on retrospective self-reports of drug market indicators such as the price of methamphetamine is another limitation. Although this is a valid data collection method, the impact of detainees’ drug use on their cognitive function and memory may result in decreased reliability of retrospective self-reports.

There is also some debate about whether there can be one market price for an illicit drug across a number of locations. Although economists assume that prices are linked between separate submarkets to an extent sufficient to enable them to be thought of in terms of a single price (Moore et al. 2005), it is possible that the findings of the DUMA program, coming from five sites around Australia, may not be completely applicable nationwide. As outlined earlier, there is some variability between the DUMA sites themselves, so it is possible there is also some variability across and within other locations in Australia.

The findings of this study indicate the price of methamphetamine is decreasing, perhaps due to an increased level of competition in the market. Methamphetamine market trends will require ongoing monitoring. If the reported reduction in the price of methamphetamine is nationwide and sustained this may result in a change in usage habits for dependent users, who made up almost 40 percent of users in this study. A change in usage habits—whether an increase in the frequency or quantity of use, or the use of purer forms of methamphetamine—may lead to an increase in the risk of harm. If the price reduction is

indicative of market competition or expansion, law enforcement and government may need to consider appropriate supply-side strategies.

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