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**Abstract** | Police diversion is widely utilised as an intervention for minor cannabis offending in Australia. This study compared the cost-effectiveness and outcomes of three kinds of diversions—cautions, expiation and warnings—with the traditional criminal justice system response of charging the offender. A sample of 998 people who had recently had contact with police for cannabis use or possession completed an online survey, with those who were diverted reporting reduced drug use and offending compared with those who were charged. The study supports previous findings that diversion for minor cannabis offences can save money and lead to better social consequences.

## Police diversion for cannabis offences: Assessing outcomes and cost-effectiveness

Marian Shanahan, Caitlin Hughes and Tim McSweeney

Drug diversion programs are among the most utilised police interventions for responding to drug and drug-related offenders in Australia (Hughes & Ritter 2008). In the Australian context, drug diversion is defined as the broad array of programs provided by police and courts that refer detected drug offenders either away from the criminal justice system and/or into drug education and treatment. Although such programs have operated for more than 15 years in all states and territories, are increasingly popular and have been evaluated multiple times, many important questions have yet to be resolved.

Although evidence suggests drug diversion programs can reduce drug use and/or harmful use (Crime Research Centre 2007), reduce reoffending (Bright & Martire 2012; KPMG 2014) and increase time to reoffending (Payne, Kwiatkowski & Wundersitz. 2008), there remains a large gap in our knowledge of the most common drug diversion program, police diversion for cannabis offences. Fewer studies have examined police diversion as opposed to court diversion, and methodological weaknesses have also contributed to this knowledge gap (Wundersitz 2007; Hughes & Ritter 2008; Bright & Martire 2012). For example, even the most rigorous studies of the impact of police drug diversion



on recidivism (Payne, Kwiatkowski & Wundersitz 2008) have examined change among diverted groups only, rather than comparing these groups with groups of offenders who were not diverted. Equally, many studies have focused on changes in offending and neglected important issues such as impacts on employment prospects and costs; studies in other contexts have shown that avoiding a criminal record can have many positive employment impacts (Polk et al. 2005). In some studies, a reliance on administrative data has resulted in a failure to capture multiple outcomes, domains and resource utilisation. Further, the lack of data linkage has precluded comparisons between diverted and non-diverted groups. Pertinent questions, therefore, remain unanswered.

Of particular importance are such questions as:

- What is the full impact of police diversion for cannabis offences across offending, health and social domains?
- Do alternative forms of diversion have different costs and outcomes?
- Is diversion cost-effective relative to traditional criminal justice system (CJS) responses?

## Aims

This study addressed some of these questions by comparing outcomes, including in recidivism and reported change in cannabis use, for cannabis use and possession offenders who have received:

- a cannabis caution (intended to divert offenders from the CJS through a verbal caution, assessment, education and/or treatment programs);
- an expiation (intended to divert offenders away from the CJS by allowing them to pay an expiation notice);
- an informal warning; or
- a criminal charge.

The study also compared the cost-effectiveness of the three alternatives for police cannabis diversion with the traditional CJS response.

## Methods

The study's innovative approach was designed to overcome some limitations of previous research. Specifically, a purpose-built online national survey was used to recruit a self-selected sample of people aged 17 years or older, who had recently (within 3 to 9 months) been detected by police for a cannabis use or possession offence and who received one of the four police responses (interventions).

The survey sought details of the type of police intervention; other questions addressed basic demographics, severity of dependence, health status, frequency of cannabis use, frequency of other drug use, and incidence and nature of other criminal behaviours (eg dealing or violence) pre- and post-intervention. Other questions assessed only post-intervention issues including the prevalence of relationship problems with family, partners and/or friends, disruption to employment, and perceptions of police legitimacy.

Participants were recruited online through social media (on Twitter, Facebook, forums and websites). Many peak alcohol and other drug groups and youth agencies also promoted the survey. Participants were recruited for four months from mid-July 2015.

To assess the costs and cost-effectiveness of each intervention, the study determined what resources were used in each and any subsequent related activities. Resource utilisation and costs were assessed in a number of ways, from micro-costing to top-down allocation. A range of sources were used and are more completely described elsewhere (Shanahan, Hughes & McSweeney 2016). Key sources include a survey of 100 police officers (Shanahan et al. 2014) which ascertained how long certain activities took; the Report of Government Services (Australian Productivity Commission 2014); call-centre information (Keys-Young 2002); and treatment and assessment data (Hughes et al. 2014). Unit costs (in Australian dollars at 2014), including overheads, were applied to the activities and consequences reported by respondents. Court proceedings, police time, assessment, treatment, education sessions, sentences and other consequences were costed.

Regression analyses were performed to account for differences at baseline (pre-intervention in the groups) before the incremental cost effectiveness ratio (ICER) was calculated. The ICER was calculated using the formula (Cost A minus Cost B) divided by (Outcome A minus Outcome B), where B was the charge group. Each diversion group was compared to the charge group.

## Results

A total of 4,634 people consented to participate in the study. After exclusions due to not meeting inclusion criteria (44.3%), failure to complete the survey (33%), and nonsensical responses (<1%), analyses were conducted on a final sample of 998 people. This final sample of minor cannabis offenders was demographically similar to those of previous studies examining diverted drug users and regular drug users (Crime Research Centre 2007; Baker & Goh 2004; Sindicich & Burns 2014). For example, 86.2 percent of the sample was male. Most of the sample were also relatively young, at 20.3 years of age on average (with a range of 17 to 75 years); and, reflecting this youthfulness, 80 percent were single and 27 percent still at secondary school. Of the whole sample, 48 percent were employed (23.0% full time and 20.7% part time; 4% were self-employed). Eleven percent were either unemployed (2.7%) or looking for work (8.4%). A third of the sample were studying (32.9%).

No differences were found across the groups by gender, but there were significant statistical differences in the average age, with the expiation group the oldest at 22.1 years of age on average; the charge group was slightly younger at an average of 21.8 years of age, and those warned or cautioned were younger again.

The charge group was more likely (62.1%) to be employed full time or part time (62.1%). Thirty-eight percent and 35 percent of the caution and warning groups, respectively, were students—likely a reflection of their younger ages; 32.7 percent and 28.6 percent of these two groups reported they were still at secondary school. Only 10.8 percent of those in the charge group reported being at school.

**Table 1: Selected characteristics by police intervention**

	Charge	Caution	Expiation	Warning
Age	21.8	19.7	22.1	19.9
Single (%)	79.5	82.2	76.8	75.8
Weekly income (\$)	559	424	497	608
Urban (%)	58.5	67.4	66.7	70.8
Rural/remote (%)	41.5	32.6	33.3	29.2

Source: Cannabis diversion survey

## Drug use: Pre to post police intervention

Not surprisingly, 100 percent of respondents reported consuming cannabis in the month prior to being detected by police for cannabis use. There was no difference across the groups in age of first use of cannabis, but due to the differences in average age between the groups, the charge and expiation groups had been using cannabis for longer, for a mean of 6.6 years and 6.8 years respectively. The caution group had been using cannabis for a mean of 4.4 years and the warning group for 4.6 years.

The severity of dependence score (SDS) was used to assess dependence on cannabis (Gossop et al. 1995; Dawe et al. 2002). The scores were grouped from nil/negligible to severe dependence (Copeland et al. 2009). There was no statistically significant differences between the groups in cannabis dependence, with the majority (72.6%) of respondents classified as having nil or negligible dependence. Overall, 16.9 percent were categorised as mildly dependent and 10.8 percent as moderately to severely dependent.

The number of days cannabis was used at baseline was measured, with at least 50 percent of each group stating they consumed cannabis at least once a day. There was no statistical difference between groups. A greater proportion of the charge group and expiation group consumed cannabis more than three times a day in the month prior to police intervention.

**Table 2: Frequency of cannabis use pre intervention (% of group)**

	Charge	Caution	Expiation	Warning
>3 times a day	30	17	25	19
2–3 times a day	15	19	12	17
once a day	12	13	16	14
4–5 times a week	7	13	14	9
2–3 times a week	17	16	17	19
once a week	6	8	10	8
2–3 times a month	7	10	1	8
Once a month	6	4	4	6

Source: Cannabis diversion survey

On average, participants reported using 0.83 (SD 1.37) other illicit drugs in the past month. This ranged between groups from 1.02 other illicit drugs for the charge group, to 0.67 (SD1.21) for the expiation group.

<b>Table 3: Change in drug use pre to post intervention</b>				
	Charge	Caution	Expiation	Warning
Cannabis use (days per week)				
Pre-intervention use (NS)	4.85	4.56	4.86	4.54
Post-intervention use (**)	4.5	4.27	4.91	3.99
Change	-0.35	-0.29	0.05	-0.54
Significance	**	***	NS	**
Other illicit drugs used in past month (N)				
Pre-intervention (*)	1.02	0.77	0.67	0.93
Post-intervention (NS)	0.59	0.78	0.57	0.80
Change	-0.43	0.01	-0.10	-0.13
Significance	***	NS	NS	NS

\*p<0.01 \*\*; p<0.05; \*\*\*p<0.000; NS=not significant  
Source: Cannabis diversion survey

Regarding post-intervention drug use, there was a small overall reduction in the number of days cannabis was used and in the number of other illicit drugs used the previous month. However, there was no statistically significant difference across groups. There were, however, differences in the change between pre- and post-intervention periods within each group; the decrease in the charge group's reported number of days of cannabis use and in the number of other illicit drugs they used was statistically significant. There was a statistically significant decrease in the number of days of cannabis use for the caution and warning groups, but no change in the use of other illicit drugs. There were no significant changes for the expiation group.

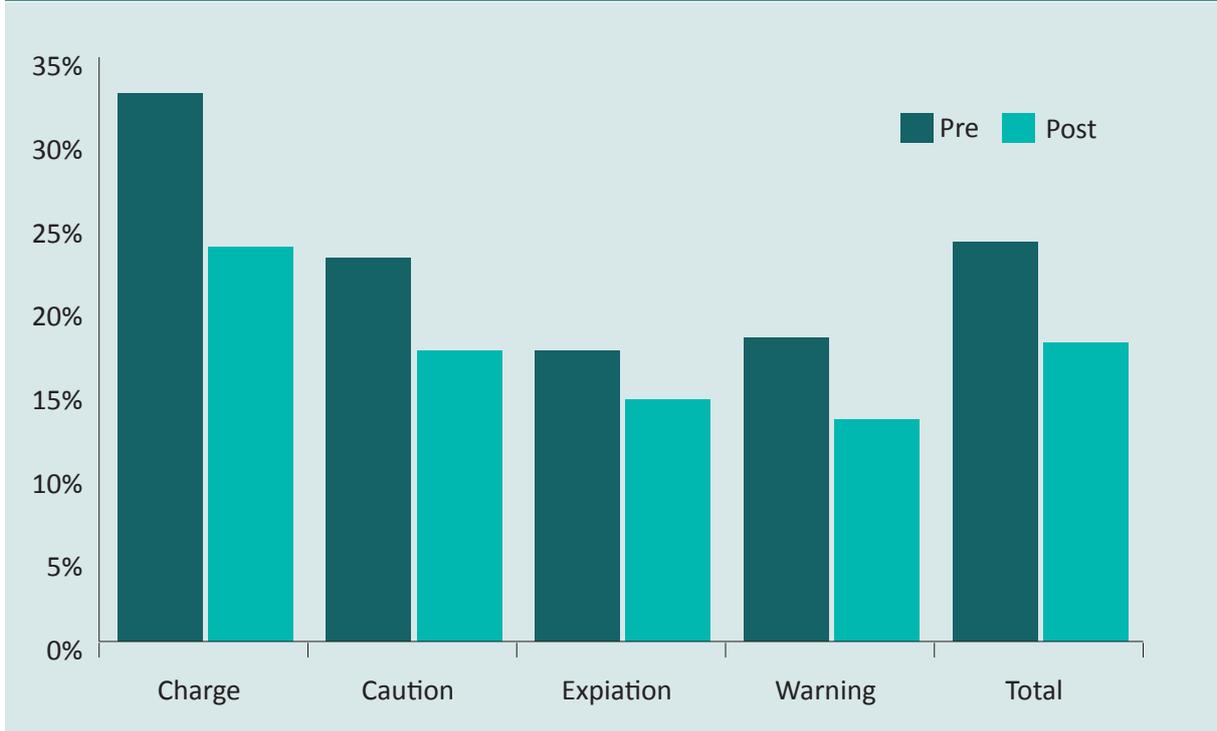
In summary, from pre to post intervention, the number of days cannabis was used decreased in three of the four groups; there was no change in the expiation group. Those in the charge group used less other drugs.

### **Criminal behaviour, pre to post intervention**

Only 12.1 percent of the sample reported having a prior criminal conviction. However, pre-existing criminal behaviours differed between groups. For example, 29.7 percent of the charge group reported a prior conviction compared with five to 14.5 percent of the diverted groups. These differences were statistically significant.

While few respondents reported a prior criminal conviction, self-reported criminal activity in the month prior (excluding cannabis use) was also assessed pre and post intervention. Criminal activity was defined as: engaging in violent crime, fraud, property crime and/or for-profit dealing. Overall, 23.9 percent of respondents reported committing an offence in the month prior to their police intervention, decreasing to 17.9 percent post intervention. There were significant differences between the groups pre intervention and, although the rates decreased pre to post intervention in all groups, there was no significant difference across groups.

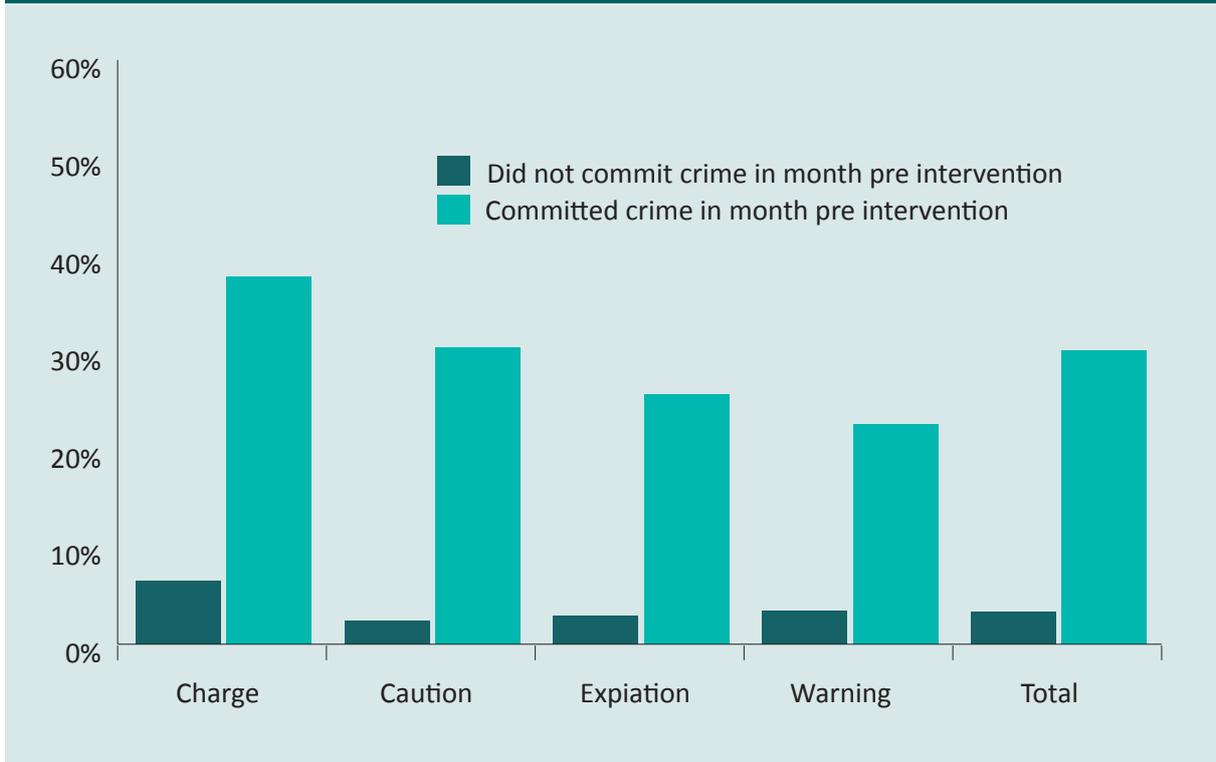
Figure 1: Incidence of self-reported criminal behaviours pre and post intervention



Source: Cannabis diversion survey

There was a stark difference in criminal behaviour post intervention depending on whether respondents reported previous offending. Those who had not previously offended had post-intervention offending rates ranging from 2.4 percent in the caution group to 6.5 percent in the charge group, while those who reported offending in the month prior to their intervention reoffended at the rate of 22.6 percent in the warning group, and 34.7 percent in the charge group.

**Figure 2: Crime post police encounter by behaviour prior to intervention**



Source: Cannabis diversion survey

Those who continued to offend after their encounter with police were more likely to:

- use cannabis daily (both pre and post intervention);
- be dependent on cannabis;
- use multiple other illicit drugs post intervention;
- be educated to a year 10 level;
- be unemployed; and
- have multiple health diagnoses.

This suggests the small group of offenders who continue to reoffend may have more complex needs.

## Social behaviours

The next section examines three social domains: relationships with significant others, changes in employment status and perceptions of police legitimacy. These social domains were examined post intervention only.

### *Relationship problems*

Of the sample, 9.6 percent reported having experienced any relationship problems since their police encounter. Relationship problems are defined as disputes, break-ups or falling-outs. However, both the incidence and nature of the problems were statistically significantly different across the

groups. Those who were charged were 1.7 to 4.9 times more likely to report they had experienced relationship problems since their police encounter: 49.7 percent, compared with 10 percent and about 28.3 percent in the diversion groups. Two-thirds of those who reported relationship problems stated these were related to the cannabis-related police encounter; however, this cannot be established as a causal effect with these data.

Most commonly there were relationship problems with family (21.7%), followed by problems with partners (12.8%) and problems with friends (10.7%). Again, the charge group reported proportionally more problems with family at 40.5 percent, compared with 4.2 percent and 20.2 percent in the diversion groups.

### *Employment status*

Of the whole sample, 10.9 percent reported their employment status had changed pre to post intervention. Those in the charge group were significantly more likely to report a change in employment status (21.5%, compared with 8.7% to 10% for all diversion groups), with almost half (47.6%) stating the change in their employment status was directly related to their police encounter. Some of those charged said their employment change was positive. However, the majority who had been charged reported adverse employment impacts including job termination.

Of the sample:

- 43 percent reported applying for one or more jobs since their police intervention;
- 39.7 percent reported being asked if they had a criminal record;
- 12.5 percent reported having been denied a job due to a cannabis offence, and 9.9 percent reported having lost a job due to their cannabis offence.

Those in the charge group were 2.2 to 9.8 times more likely to report they had ever been denied a job and 2.1 to 3.7 times more likely to report they had lost a job.

### *Perceptions of police legitimacy*

Only 21.3 percent of the sample felt the police had legitimacy. (This in part reflects their opposition to cannabis use being a criminal offence). However, there were significant differences between the four groups in terms of perceived police legitimacy of the police. In particular, those who had been charged had the least favourable perceptions of police legitimacy (14.9%), followed by the warning group (17.5%). The expiation and caution group, in contrast, were more likely to perceive the police as legitimate (21.7% and 23.9%, respectively).

### **Costs and cost-effectiveness analysis (CEA)**

Once costs were assigned to the identified activities they were summed, and 95 percent confidence intervals estimated using non-parametric bootstrapping methods. The charge group's mean cost was the highest (\$1,918 or 95% CI \$942–\$2,912), reflecting additional police and court activities, with the next most expensive being the caution group, followed by the expiation and the warning groups.

**Table 5: Mean costs by intervention**

	Mean (\$)	95% Confidence Interval (\$)	
Charge	1,918.1	941.3	2,894.90
Caution	318.0	289.4	346.7
Expiation	263.5	220.6	306.3
Warning	122.6	121.5	123.6
Total	603.7	467.7	1,949.8

Sources: Shanahan et al. 2014; Australian Productivity Commission 2014; Keys-Young 2002; Hughes et al. 2014; survey responses

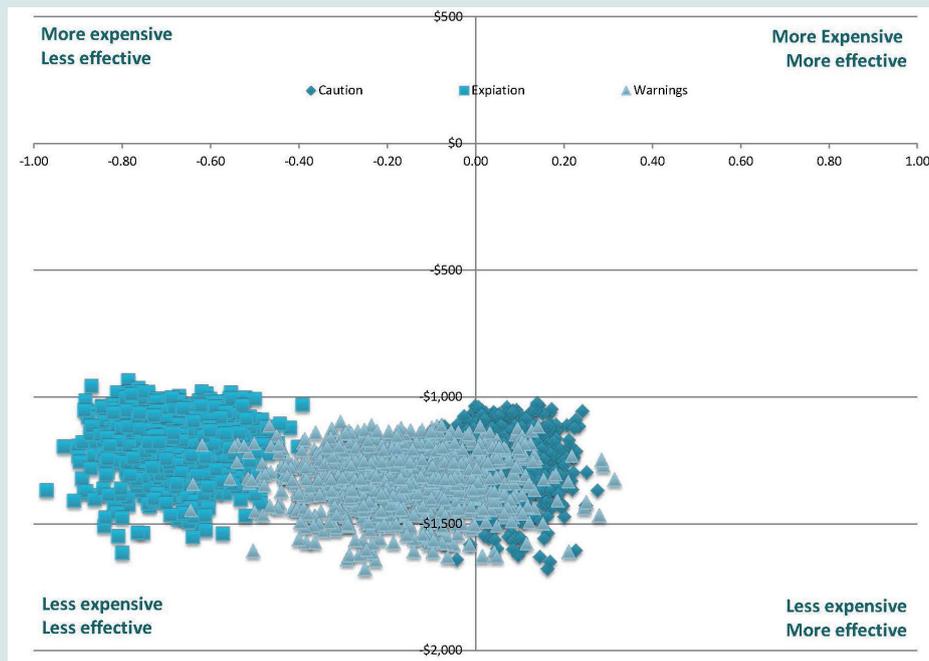
The difference in costs between the four intervention groups was then evaluated using a generalised linear model with an identity link and a Gaussian distribution (Wooldridge 2009). Several demographic variables and behavioural characteristics hypothesised to impact on costs, such as a history of prior convictions, self-reported criminal activity in the month prior to detection, age, being a juvenile, location (urban/rural) of offence, sex and marital status, were included in earlier models. None of these variables approached significance.

Similarly, regression analyses were used to explore the impact of individual characteristics on the outcomes used in the CEA (change in drug use days and number of illicit drugs). It was hypothesised that, in addition to the type of police intervention, the respondent's age, prior criminal history, number of medical diagnoses and severity of dependence (SDS) score could explain differences in costs.

Although there were changes in days of cannabis use pre to post intervention for the individual interventions, there was no difference across the intervention groups. After exploring variables hypothesised to have an impact on cannabis use (age, sex, education, employment, prior criminal record, current criminal behaviours and age of onset of use), the only significant predictor of change across the sample in the linear regression analysis was the SDS score. The higher the score, the less likely there was to be a change in the number of days of cannabis use. ICER was calculated for each diversion program relative to being charged.

Once the difference in costs and outcomes between the charge group and each of the diversion groups were calculated for each group, they were plotted on a cost-effectiveness (CE) plane. The scatter plots can be interpreted as follows: where the scatter points are all in the south-west quadrant, as with expiation, the group was less expensive than the charge group but also less effective in reducing the number of illicit drugs used in the previous month. Where the scatter plot crosses the Y axis as in the caution and warning groups, there was no difference in the number of illicit drugs used relative to the charge group but they were both less expensive than the charge group. In summary, this shows that the average cost for the charge group is more expensive than each of the diversion groups for little or no gain in improved outcomes. The CE plane for change in days of cannabis use where the scatter plot crosses the Y axis is not shown here, as there was no difference in change in cannabis use while the cost of being charged remains higher (see Shanahan et al. 2016).

**Figure 3: Cost-effectiveness plane: Change in number of illicit drugs used**



Sources: Shanahan et al. 2014; Australian Productivity Commission 2014; Keys-Young 2002; Hughes et al. 2014; survey responses and analysis

## Discussion and policy implications

This study sought to address a number of important questions about police cannabis diversion programs including:

- What is the true extent of the impact of diversion across the offending, health and social domains?
- Are there any differences between alternative forms of diversion in terms of costs and outcomes?
- Is diversion cost-effective relative to a traditional criminal justice system (CJS) response?

Through an online convenience sample of those aged 17 and older who reported being detected by police for a cannabis possession or use offence in Australia, this study sought to compare the resource use and outcomes associated with a traditional criminal justice response and three forms of diversion (caution, warning and expiation).

The study was limited in a number of ways. First, it used a convenience sample which might not have been representative of all detected minor cannabis offenders although the resulting sample of respondents was demographically similar to those used in other research in this area (Crime Research Centre 2007; Baker & Goh 2004), particularly in that participants were predominantly young and male. Second, self-reported data was used. The data and method used were deliberately chosen to move away from administrative data and provide insight into multiple outcomes across both diverted and undiverted groups. Third, while pre and post intervention data on drug use and offending were collected, data on social outcomes were collected post-intervention only. Finally, it is not known why

some people were charged while others were diverted, nor to what extent observed differences were directly attributable to the police response versus other unexplored characteristics. Nevertheless, the study provides a number of new insights.

First and foremost, this research indicates that those who were diverted reduced their drug use and offending. Compared with a traditional criminal justice response, diversion did not further reduce drug use or offending but, equally importantly, neither did it lead to higher levels of drug use or offending. In addition, police diversion may be associated with a range of positive social outcomes across multiple domains including less disruptive relationships, fewer employment problems and more positive perceptions of police legitimacy. However, the biggest difference was cost: cannabis diversion cost six to 15 times less than a criminal charge.

A second key finding was that those respondents most frequently detected for cannabis use or possession were also very high-frequency cannabis users, with considerable dependence and other health problems. For example, their rate of daily use (50%) were higher than the 12.8 percent of recent users in the 2013 NDSHS (AIHW 2014) . And while not directly comparable, dependency rates were not dissimilar to those found by the 2007 National Survey of Mental Health and Wellbeing: 19.3 percent of recent cannabis users had a cannabis use disorder in the previous 12 months (Teesson et al. 2012) It may therefore be unrealistic to expect dramatic change in the cannabis use of a non-naïve cannabis-using population. On the other hand, police responses that prevent loss of employment and/or the disruption of family relationships may be particularly advantageous.

This research further adds to the work of Payne et al. (2008) by demonstrating that diverted offenders with no prior criminal engagement tend not to offend post police encounter, and those with a prior offence also tend not to reoffend. In addition, the findings demonstrate that the subset of users who do reoffend have significantly more complex needs (ie they are more likely to be dependent, unemployed, less educated and have more health problems). It appears that frequency of cannabis use and levels of dependence are important in shaping the likelihood of ongoing cannabis use and other offending. This suggests there may be an opportunity to increase the intensity of the therapeutic response for this subset of hard-core diverted offenders.

Most importantly, these results provide additional evidence for continuing and expanding police drug-diversion programs in Australia and abroad. This is good news for one of Australia's longstanding drug policy interventions.

## Acknowledgments

This research received ethical approval from UNSW Human Research Ethics Committee (HC14020). Respondents who completed the survey were offered the option of entering their contact details into a prize draw for a music voucher.

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