

Arrests and convictions for cannabis related offences in a New Zealand birth cohort

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Abstract

Aims: To examine the associations between the use of cannabis and arrest/conviction for cannabis related offences. **Methods:** Data on cannabis use and arrests/convictions for cannabis related offences were gathered during the course of a 21-year longitudinal study of a birth cohort of Christchurch (New Zealand) born children ($N = 983$). Information on cannabis use, arrests and convictions was gathered over the period from 16 to 21 years. **Results:** By the age of 21, over two thirds of the cohort had used cannabis on at least one occasion with 5% using cannabis on more than 400 occasions. Amongst cannabis users, 5.1% had been arrested for a cannabis related offence and 3.6% had been convicted of an offence. There was a strong association between the extent of cannabis use and risks of arrest/conviction: over a quarter of those using cannabis on more than 400 occasions had been arrested or convicted for a cannabis related offence compared with less than 1% of those using cannabis on fewer than ten occasions. Māori, those with a previous arrest record for non cannabis related offences and those reporting involvement in violent/property offending were more likely to be arrested or convicted than other cohort members having the same level of cannabis use; in addition, males were more likely to be convicted than females with the same level of cannabis use. Arrest/conviction for a cannabis related offence did not reduce the use of cannabis: of those arrested/convicted, 95% either increased their use or continued with the same level of cannabis use subsequent to their arrest. **Conclusions:** The results of this study reinforce concerns about laws relating to the use and possession of cannabis. The findings show that the law was administered in an inefficient way, the application of the law was biased, and the law was ineffective in reducing cannabis use.

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1. Introduction

Over the last 30 years there has been a rapid increase in the use of cannabis by young people in many developed societies. This has led to a situation in which at least the occasional use of cannabis is a common experience for young people in many societies. For example, data from two large longitudinal studies conducted in New Zealand suggested that by the age of 21 over two thirds of young people had used cannabis on at least one occasion with 10% having a heavy pattern of cannabis use consistent with a diagnosis of

cannabis dependence (Fergusson and Horwood, 2000a; Poulton et al., 1997).

In turn, the increasing use of cannabis has raised a series of complex issues about the health effects of cannabis use and the appropriate societal response to cannabis (Hall and Solowij, 1997; Wodak et al., 2002). In particular, recent research has suggested that the use of cannabis, and particularly the heavy use of cannabis, may have a range of adverse effects that include: increased risks of other forms of illicit drug use (e.g. Fergusson and Horwood, 2000b; Johns, 2001; Kandel et al., 1992); impaired driving performance (e.g. Chesher, 1995; Hall, 2001; Moskowitz, 1985; Robbe, 1994); increased rates of mental health problems (e.g. Andreasson et al., 1987; Degenhardt and Hall, 2001; Hall and Solowij, 1997; Johns, 2001; McGee et al., 2000); increased participation in crime (e.g. Brook et al.,

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1999; Fergusson et al., 2002b; Kandel et al., 1986; McGee et al., 2000); impaired respiratory function in heavy users (e.g. Ashton, 2001; Tashkin, 1999; Taylor et al., 2002) and reproductive risks to mother and baby (e.g. Ashton, 2001; Fergusson et al., 2002a). Although cannabis has been found to be associated with adverse outcomes in all of these areas, the extent to which these associations reflect cause and effect linkages remains controversial (MacCoun and Reuter, 2001; Zimmer and Morgan, 1997).

Although an increasing amount of research has focussed on the adverse health effects of cannabis use, advocates for the liberalization of cannabis laws and others have suggested that an important issue concerns the extent to which legislation relating to cannabis use has harmful effects. In particular, in many societies the supply and possession of cannabis is illegal and may attract a range of legal penalties including imprisonment. For example, in New Zealand cannabis is a Class C drug, and the law provides penalties of up to 3 months imprisonment and/or a fine of up to \$500 for the possession of cannabis, and up to 8 years imprisonment for the supply or cultivation of cannabis. It has been argued by many advocates of cannabis law reform that the legal consequences of cannabis use in societies that prohibit cannabis use pose a serious personal risk to those who elect to use cannabis (Hall and Solowij, 1997; Lenton, 2001; MacCoun and Reuter, 2001; Swift et al., 2000; Wodak et al., 2002). For example, Wodak et al. (2002) suggest:

“Around the world each year the lives, education and careers of hundreds of thousands of people are damaged by the stigmatizing experience of arrest. Families face lost incomes and emotional stress. Many cannabis users are already socially disadvantaged so for them criminal penalties for possession of cannabis often entail additional costs including disruption of relationships, and loss of housing, and employment” (p. 105).

Despite concerns about the effects of cannabis laws on cannabis users, there has been relatively little research into the effects of cannabis laws on users. However, in a review of the evidence of this issue, Lenton (2000) finds that a conviction for cannabis use ‘can have a real and detrimental impact on people’s lives, reinforces disrespect for the cannabis laws but appears not to deter cannabis use amongst those so convicted’ (p. 95).

In this study, we use data gathered over the course of a 21-year longitudinal study of a birth cohort of over 1000 New Zealand born young people to examine a series of issues relating to the arrests and convictions for cannabis related offences. These issues include.

- 1) The risk of arrest/conviction for cannabis use. The first issue examined is the extent to which those using cannabis were arrested and convicted for cannabis related offences.
- 2) Extent of cannabis use and risks of arrest/conviction. The second issue examined is the extent to which risks of arrest/conviction varied with the extent of cannabis use.
- 3) Equity and bias in arrest/conviction processes. The third issue concerns the extent to which risks of arrest/conviction for cannabis related offences were influenced by factors other than the use of cannabis. Such factors may include ethnicity, gender, extent of contact with the police, and other factors that may influence the likelihood that a cannabis user will be arrested for a cannabis related offence.
- 4) The impact of arrest/conviction on the use of cannabis. The final issue examined concerns the extent that the experience of arrest or conviction modified the use of cannabis. Is it the case that those who are arrested or convicted for cannabis use reduced or ceased their use of cannabis following arrest or conviction?

More generally, the aims of this study were to examine the extent to which cannabis users faced arrest and conviction for cannabis related offences, to examine the extent to which cannabis laws were applied in an equitable and unbiased way, and to examine the extent to which these laws deterred those convicted or arrested from the further use of cannabis.

2. Methods

2.1. Participants

The data described in this report were gathered during the course of the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal study of an unselected birth cohort of 1265 children (635 males, 630 females) born in the Christchurch (New Zealand) urban region in mid-1977. This cohort has now been studied at birth, 4 months, 1 year and annual intervals to age 16 years, and again at ages 18 and 21 years. An overview of the study design and methodology has been given previously (Fergusson and Horwood, 2001b; Fergusson et al., 1989). The following measures were used in the analysis.

2.2. Measures

2.2.1. Arrest/conviction for cannabis related offences

Data were gathered on both arrests and convictions for cannabis related offences. Information on arrests was gathered using self-report data obtained at ages 18

and 21. At these times, cohort members were asked if they had been arrested by the Police at any time since the previous assessment and the reasons for the arrest. Inspection of these data showed that 39 cohort members reported being arrested for a cannabis related offence, with these individuals reporting a total of 60 arrests.

Data on arrests were supplemented by records of convictions obtained from records held by the New Zealand Police. These records documented the results of all convictions in the New Zealand District and High Courts. In all cases conviction record data was obtained on the basis of signed and informed consent from the young person. Inspection of the official conviction data showed that 25 cohort members had been convicted of cannabis related offence. In cases where consent to obtain conviction data was not available (34 subjects), information on cannabis related convictions was obtained from self-report. This resulted in two further subjects being classified as having cannabis convictions: in one case the subject had refused permission to access Police records but reported multiple cannabis convictions; in the other, the subject reported cannabis related offences outside of New Zealand. Thus, overall 27 cohort members were classified as having a cannabis related conviction, with these subjects receiving a total of 48 convictions. For all cannabis related convictions, details of the offence and sentence outcome were obtained.

2.2.2. Cannabis use

At ages 18 and 21 years cohort members were questioned about their use of cannabis since the previous assessment. The 18-year assessment included questioning on frequency of cannabis use over the periods 16–17 years and 17–18 years, whereas, the 21 year assessment included questioning on cannabis use over the intervals 18–19, 19–20 and 20–21 years. In this way the data collected provided an account of the individual's reported frequency of use each year from age 16–17 to 20–21. This information was used in two ways:

- a) to construct an index of the individual's accumulative use of cannabis by age 21 (see Table 1);
- b) to provide an estimate of the frequency of cannabis use for each year over the period from age 16 to 21 years.

2.2.3. Ethnicity

At age 21 years respondents were asked about their ethnic identification using a question from the 1996 New Zealand Census. This question asked individuals to indicate which ethnic group or groups they belonged to or identified with. On the basis of this questioning, sample members were classified as either New Zealand

Māori or non-Māori: 11.3% of respondents considered themselves to be Māori.

2.2.4. Previous arrests for offences other than cannabis (16–21 years)

As noted above, respondents were questioned on their history of arrests over the period from 16 to 21 years. This information was used to construct an accumulative measure of the individual's history of arrest for offences other than cannabis related offences. This information showed that by the age of 21, 15.4% of cohort members had been arrested for non-cannabis related offences.

2.2.5. Property/violent offending (16–21 years)

At age 18, 21 years participants were also questioned about their involvement in criminal offending since the previous assessment using the Self Report Delinquency Inventory (Elliott and Huizinga, 1989). Information on the number of violent or property offences reported by the young person in each year was used to construct a measure of the extent of involvement in non drug related offending over the period from 16 to 21 years.

2.2.6. Other illicit drug use (16–21 years)

Parallel to questioning on cannabis use, at ages 18 and 21 years participants were questioned concerning their use of other illicit substances including: solvents, sedatives, stimulants and other prescription drugs, opiates, cocaine, hallucinogens and other substances. This information was used to derive a binary measure of any illicit drug use (other than cannabis) for the period 16–21 years (Fergusson and Horwood, 2000b).

2.2.7. Alcohol abuse/dependence (16–21 years)

At ages 18 and 21 years cohort members were questioned concerning their use of alcohol and experience of problems associated with alcohol use since the previous assessment. Questioning concerning alcohol-related problems was based on items from the Composite International Diagnostic Interview (CIDI: World Health Organization, 1993) relating to alcohol abuse and dependence. On the basis of this information, sample members were assessed on standardized diagnostic criteria for alcohol abuse and/or alcohol dependence using DSM-IV criteria (American Psychiatric Association, 1994).

2.2.8. Leaving school without qualifications

At age 18, sample members were questioned regarding their educational history. In particular, information was obtained on the age of school leaving, the number of School Certificate subjects attempted and grades achieved. School Certificate is a national series of examinations that New Zealand children may attempt at the end of their third year of high school (Year 11). Typically, students attempt examinations in between

four to six subjects. Subjects are graded into five grades from A to E, with a C grade or better indicating a pass in any subject. For the purposes of this analysis, sample members were classified as leaving school without qualifications if they had left school by age 18 without achieving at least one pass grade in School Certificate. A total of 20.4% of the sample met this criterion.

2.2.9. Conduct disorder (16–21 years)

At 18 and 21 years, items from the Self Report Delinquency Instrument (SRDI; Elliott and Huizinga, 1989) were used to assess DSM-IV symptom criteria for conduct disorder. Respondents were classified as having conduct disorder if they reported having three or more of the 13 age appropriate DSM-IV criteria. The criteria relating to 'staying out at night despite parental prohibition' and 'often truants' were not included on the grounds that they were not appropriate for the assessment of conduct disorder on 18 year olds. In total 4.8% of the sample were classified as having a conduct disorder.

2.3. Sample size and sample bias

The analysis is based on a sample of 983 cohort members for whom complete data on cannabis use and arrest/conviction for cannabis related offences were available at ages 18 and 21 years. This sample represented 77.7% of the initial birth cohort of 1265 children. In addition, analysis of the factors associated with the risk of cannabis related arrest/conviction is limited to the sub-sample of 662 cohort members who reported ever using cannabis during the interval from 16 to 21 years.

Comparison of the available sample of 983 respondents with the remaining 282 cohort members who were not included in the analysis, on a range of socio-demographic characteristics assessed at the point of birth, revealed slight but statistically significant ($P < 0.05$) tendencies for the obtained sample to under-represent individuals from socially disadvantaged backgrounds characterized by low socioeconomic status, low

parental education and single parenthood. While these findings suggest some evidence of sample selection bias, it is unlikely that this bias will materially influence the results reported here. Previous research on this cohort using a variety of techniques to control for the effects of non random sample loss has consistently shown these effects to be negligible (Fergusson and Horwood, 2001a; Fergusson et al., 1997; Fergusson et al., in press).

3. Results

3.1. The prevalence of cannabis use, arrest and conviction for cannabis related offences (16–21 years)

By the age of 21 years, nearly 70% of the cohort had used cannabis on at least one occasion with 5.0% using cannabis on more than 400 occasions (see Table 1). Also by the age of 21 years, a total of 39 young people reported being arrested for cannabis related offences and 27 had received a conviction for cannabis related offences. The 39 young people arrested for cannabis related offences reported a total of 60 arrests. The offences for which cohort members reported arrests were: possession of cannabis (81.7%), possession of utensils for cannabis use (13.3%), cultivating cannabis (11.7%), and supplying cannabis (3.3%). Of the 60 arrests for cannabis related offences, 45 (75%) resulted in a conviction in the adult court, in 12 cases the young people were diverted and did not receive a criminal conviction and in three cases the case was dismissed. Cannabis related convictions resulted in a range of penalties including: fines (51.1%); imprisonment (8.5%); periodic detention (19.1%); community service (2.1%); probation/supervision (10.6%); corrective training (2.1%); suspended sentence (2.1%); and conviction with no other penalty (4.3%). In all cases those who had received a prison sentence had been convicted of other offences in addition to the conviction for a cannabis related offence. Of those convicted of a cannabis related offence by the age of 21 years, the majority were also convicted of other offences and only

Table 1

Associations between cumulative reports of cannabis use (16–21 years) and arrests and convictions for cannabis related offences ($N = 983$)

Cumulative cannabis use (16–21 years)	Total sample (%)	Arrested (%)	Convicted (%)
Never used	32.7	0.0	0.0
1–9 times	23.9	0.4	0.0
10–99 times	20.8	2.5	1.5
100–199 times	7.0	2.9	1.5
200–299 times	5.7	8.9	3.8
300–399 times	5.0	12.2	10.2
400+times	5.0	30.6	25.5
		$P^a < 0.0001$	$P^a < 0.0001$

^a χ^2 test for linear trend.

seven individuals in this cohort received a criminal record solely as a result of their possession of cannabis.

Unfortunately, no direct comparison was possible between arrest/conviction rates in this cohort and corresponding national statistics for cannabis related offences amongst 16–21 year olds. However, it was possible to interpolate from official statistics on rates of prosecutions/convictions amongst 17–24 year olds (Spier, 2001) to provide an estimate of the comparative rate of convictions that would have been expected on the basis of New Zealand wide data. This comparison suggested that the observed rates of conviction within the cohort (45.8 per 1000 aged 16–21) were very similar to the estimated rates for the general New Zealand population (42.4 per 1000 aged 17–21).

Table 1 shows the association between arrest/conviction for cannabis related offences and estimated cumulative frequencies of cannabis use between 16 and 21 years. This table is based on a sample of 983 individuals who had complete data on both cannabis use and arrests/convictions. The Table shows:

- i) There was a clear and significant ($P < 0.0001$) trend for the increasing use of cannabis to be associated with increasing rates of arrest: of those using cannabis on more than 400 occasions, nearly one third were arrested. Of those using cannabis on fewer than ten occasions less than 1% were arrested.
- ii) Similarly, there was a clear and significant ($P < 0.0001$) trend for rates of conviction for cannabis related offences to increase with increasing use of cannabis: of those using cannabis on more than 400 occasions, over one quarter were convicted of cannabis related offences. Of those who used cannabis on fewer than 10 occasions, none were convicted.
- iii) Overall, of those using cannabis 5.1% were arrested for cannabis related offences and 3.6% were convicted for cannabis related offences.

3.2. Factors related to arrest/conviction for cannabis related offences (amongst cannabis users)

The findings in Table 1 show that a great majority of cannabis users were not arrested or convicted for cannabis related offences. Even among very heavy cannabis users those arrested or convicted were in a substantial minority. This raises the issue of the factors that differentiated those cannabis users who were arrested/convicted from those users who were not. This issue is examined in Table 2 which shows the associations between arrest/conviction for cannabis related offences amongst the 662 sample members who reported using cannabis between 16 and 21 years, and a series of factors that include gender; ethnicity; previous arrests for other offences; self-reported history of

violent/property offending; other illicit drug use; alcohol abuse/dependence; school failure; and conduct disorder. For each factor the Table shows the rate of arrest/conviction for each level of the factor and the estimated risk ratio (and 95% CI) of arrest/conviction for each level relative to the rate for the level of lowest risk. The associations between each factor and risks of arrest/conviction have been tested using the χ^2 test of independence. The Table shows that risks of arrest/conviction for cannabis related offences were associated with a wide range of individual characteristics and behaviors. Specifically, risks of both arrest and conviction were significantly higher amongst males ($P < 0.001$), Māori ($P < 0.0001$), those arrested for other offences ($P < 0.0001$), those with a history of violent/property offending ($P < 0.0001$), those with history of alcohol abuse/dependence ($P < 0.05$), or other illicit drug use ($P < 0.0001$), those leaving school without qualifications ($P < 0.0001$), and those exhibiting conduct disordered behaviors ($P < 0.0001$). These findings raise the possibility that arrest/conviction for cannabis related offences was related to characteristics of the individual in addition to their use of cannabis.

3.3. Modeling arrest and conviction processes

The results in Tables 1 and 2 show that rates of arrest/conviction for cannabis related offences varied with a range of factors that included the use of cannabis, gender, ethnicity, patterns of other substance use, police contact, school failure, and conduct problems. The associations between these factors and rates of arrest/conviction may be explained in one of two ways.

First, it may be suggested that if cannabis laws were being administered in an equitable way, the only factor that should determine whether the individual was arrested or convicted for a cannabis related offence should be the extent of the individual's cannabis use. If this condition was satisfied then the association between arrest/conviction for cannabis related offences and other factors could be explained by the fact that these factors were associated with cannabis use. This argument implies that when variations in cannabis use are taken into account, arrest/conviction for cannabis related offences should be unrelated to other factors.

Alternatively, it may be suggested that cannabis laws were enforced in an inequitable way so that certain groups of individuals were more likely to face arrest/conviction than other groups having the same pattern of usage of cannabis. This view implies that even when patterns of cannabis use are taken into account, factors other than cannabis use predict the risk that an individual will be arrested/convicted for a cannabis related crime.

To test these arguments a proportional hazards model was fitted to the data on age at first arrest and

Table 2
Factors associated with arrest/conviction for cannabis related offences amongst cannabis users ($N = 662$)

Factor	Arrest			Conviction		
	% Arrested	Risk ratio (95% CI)	P^a	% Convicted	Risk ratio (95% CI)	P^a
<i>Gender</i>						
Female	1.9	1		0.3	1	
Male	8.1	4.2 (1.8–10.0)	< 0.001	6.5	19.7 (2.7–144.9)	< 0.0001
<i>Ethnicity</i>						
Non Māori	3.3	1		2.2	1	
Māori	17.1	5.2 (2.7–9.8)	< 0.0001	13.1	6.1 (2.8–13.3)	< 0.0001
<i>Arrests for other crime (16–21 years)</i>						
0	0.9	1		0.8	1	
1	20.3	22.2 (8.2–60.2)		9.7	12.9 (3.7–44.2)	
2	19.1	20.9 (6.0–71.9)		15.0	20.0 (4.8–83.3)	
3+	41.4	45.5 (17.1–120.5)	< 0.0001	35.7	47.4 (15.8–140.1)	< 0.0001
<i>Violent/property offences (16–21 years)</i>						
No offences	1.7	1		1.1	1	
1–9 offences	4.1	2.5 (0.9–7.0)		2.2	1.9 (0.5–7.5)	
10 or more offences	18.5	11.1 (4.6–27.0)	< 0.0001	14.4	12.7 (4.3–37.3)	< 0.0001
<i>Alcohol abuse/dependence (16–21 years)</i>						
No	2.6	1		1.8	1	
Yes	7.8	3.0 (1.4–6.3)	< 0.01	5.5	3.1 (1.2–7.7)	< 0.05
<i>Other illicit drug use (16–21 years)</i>						
No	1.7	1		1.0	1	
Yes	11.1	6.7 (2.9–15.0)	< 0.0001	8.1	8.1 (2.8–23.8)	< 0.0001
<i>Left school without qualifications</i>						
No	3.4	1		2.2	1	
Yes	11.9	3.5 (1.8–6.6)	< 0.0001	9.3	4.3 (2.0–9.6)	< 0.0001
<i>Conduct disorder (16–21 years)</i>						
No	1.9	1		1.1	1	
Yes	23.7	12.2 (6.1–24.4)	< 0.0001	18.5	16.9 (6.8–41.7)	< 0.0001

^a P value based on chi squared test of independence.

convictions for cannabis related offences. For each outcome the same model was fitted:

$$H_i(t) = H_0(t) \exp\left(\sum B_j X_{ij} + \sum B_k Z_{ikt}\right)$$

where, $H_i(t)$ is the hazard or the simultaneous rate of arrest/conviction at time t for an individual i ; X_{ij} represents fixed attributes of the individual that do not vary with time (e.g. gender; ethnicity); the variables Z_{ikt} represent factors that may vary with time (e.g. cannabis use; arrest for other crime; extent of non drug related offending) and B_j and B_k are sets of regression coefficients relating the fixed (X_{ij}) and the time dynamic (Z_{ikt}) factors to the hazard of arrest/conviction. The term $H_0(t)$ denotes the hazard for a defined reference group and \exp represents e , the base of natural logarithms. The models were fitted only to the subsample of cannabis users since, as Table 1 confirms, non-users of cannabis were not at risk of arrest/conviction for cannabis related offences.

The results of fitting this model to data on arrests and convictions are given in Table 3, which shows the regression coefficients for each factor included in the

final fitted models and the corresponding standard errors and tests of significance. The Table shows that five factors predicted either arrest or conviction. These factors were:

- Fixed factors: Both gender ($P < 0.05$) and ethnicity ($P < 0.005$) were significant predictors of conviction. In addition, ethnicity was also a significant predictor of arrest ($P < 0.001$). The interpretation of these results is that rates of arrest/conviction were elevated amongst Maori and rates of conviction elevated for males even when their use of cannabis, offending history and previous contacts with the police were taken into account.
- Time dynamic factors: Three time dynamic factors predicted hazards of arrest/conviction. First, the individual's annual usage of cannabis, reflecting the fact that increasing cannabis use was associated with increasing arrest risk. Second, the individual's previous history of arrest for crimes other than cannabis related crime. This finding shows that even when due allowance was made for gender, ethnicity and cannabis use, the individual's previous arrest

Table 3

Summary of proportional hazards regression coefficients for significant characteristics predicting arrest or conviction for cannabis related offences between 16 and 21 years amongst cannabis users

Measure	Arrest			Conviction		
	B	S.E.	P	B	S.E.	P
Cannabis use	1.09	0.26	< 0.0001	1.51	0.42	< 0.001
Gender	–	–	–	2.20	1.03	< 0.05
Ethnicity	1.18	0.36	< 0.001	1.33	0.43	< 0.005
Previous arrests	0.47	0.15	< 0.005	0.33	0.18	< 0.10
Violent/property offences	0.81	0.23	< 0.001	0.63	0.28	< 0.05

history for other crimes influenced his/her risk of being arrested for a cannabis related offence. Third, the individual's reported history of involvement in violent/property crime. This suggests that independently of all other factors, the extent of the individual's involvement in non drug related crime influenced their likelihood of arrest/conviction for cannabis use.

In general, the fitted model implies that cannabis laws were applied to this cohort in an inequitable way in which cannabis users who were male, Māori, who had previous contact with the police and were involved in other offending were more likely to be arrested or convicted than cannabis users who were female, non-Māori, without a history of police contact, and not involved in other offending. It is possible to use the model coefficients to express these conclusions more exactly by computing the evaluated proportional hazards coefficients for each of the factors in the fitted model. In particular, by raising e , the base of natural logarithms, to the power of the coefficients (B_j , B_k) for these factors it is possible to devise a risk ratio estimate that shows the estimated rate of arrest/conviction for cannabis related offences for males, Māori and those with previous arrest for or involvement in other offences relative to the estimated rate for females, non-Māori and those with no arrest or offending history. These estimates are shown in Table 4. This Table shows that:

- i) Rates of arrest/conviction increased steadily with increasing frequency of cannabis use: those using cannabis at least once a week had rates of arrest that were over eight times higher and rates of conviction that were over 20 times higher than those of occasional users who used cannabis less than monthly.
- ii) Rates of conviction were elevated amongst males, with males having rates of conviction that were nearly ten times higher than females (even when gender differences in cannabis use and other factors were taken into account).
- iii) Rates of arrest/conviction were elevated for Māori, with Māori having rates of arrest and conviction

Table 4

Proportional hazard risk ratio estimates (95% confidence intervals) for risk factors associated with arrest and conviction for cannabis related offences among cannabis users

Risk factor	Arrest		Conviction	
	Risk ratio	95% CI	Risk ratio	95% CI
<i>Cannabis use</i>				
Less than monthly	1		1	
Between monthly and weekly	3.0	1.8–5.0	4.5	2.0–10.4
More than weekly	8.8	3.1–24.8	20.5	3.9–107.8
<i>Gender^a</i>				
Female	–		1	
Male	–		9.1	1.2–67.7
<i>Ethnicity</i>				
Non Māori	1		1	
Māori	3.3	1.6–6.6	3.8	1.6–8.8
<i>Previous arrests</i>				
0	1		1	
1	1.6	1.2–2.2	1.4	1.0–2.0
2	2.5	1.4–4.7	1.9	0.9–3.9
≥ 3	4.1	1.6–10.1	2.6	0.9–7.8
<i>Property/violent offences</i>				
0	1		1	
1–9	2.3	1.5–3.5	1.9	1.1–3.3
10+	5.1	2.1–12.3	3.5	1.2–10.6

^a No risk ratio estimates are given for gender on arrest since gender was not a significant predictor in the final model for arrest data.

- iv) Rates of arrest/conviction for cannabis use were elevated amongst those with a history of previous arrest for non-cannabis related offences. Those who had been arrested on three or more occasions previously had rates of arrest for cannabis related offences that were over four times higher and rates of conviction that were 2.6 times higher than the rates for those without a previous arrest history.
- v) Rates of arrest/conviction were elevated amongst those engaging in non drug related offending. Those

that were over three times higher than those of non-Māori (even when ethnic differences in cannabis use and other factors were taken into account).

who reported ten or more violent/property offences in the preceding year had rates of arrest/conviction that were over three times higher than the rates for non-offenders.

In general, the results in [Tables 3 and 4](#) suggest that the administration of the laws relating to cannabis was inequitable and biased against males, Māori and those with a previous history of arrest for or involvement in non-cannabis related offences.

3.4. *The effects of arrest/conviction on cannabis use*

An intent of cannabis laws is to deter the use of cannabis by young people. It is, therefore, sensible to examine whether the experience of arrest or conviction for cannabis related offences changes a person's cannabis use. This issue was examined by comparing the cannabis use frequency of those arrested for cannabis related offences before and after their arrest and possible conviction. This analysis found:

- i) In the majority of cases (90%) the frequency of cannabis use did not change after first arrest for a cannabis related offence. Those arrested for cannabis use were usually (75%) more than weekly cannabis users and remained more than weekly cannabis users after first arrest for a cannabis related offence.
- ii) In a small minority of cases, cannabis use either increased following arrest (5%) or decreased following arrest (5%).

These findings clearly suggest that arrest/conviction for cannabis related offences did not have a deterrent effect, in 95% of cases the frequency of cannabis use remained the same or increased after arrest/conviction. Only 5% of cases showed a decline in cannabis use after the experience of arrest.

4. Discussion

In this study we have used data gathered over the course of a 21-year longitudinal study to examine the extent to which young (16–21 years) cannabis users were subject to arrest and criminal prosecution for cannabis related offences. The study has a number of advantages. These include being based on a representative and well studied cohort of young people and the use of self-report and official record data to assess arrests and convictions. The major findings of this study and their implications for policies relating to cannabis are discussed below.

4.1. *Cannabis use and risks of arrest/conviction for cannabis related offences*

The use of cannabis was common in this cohort with over two thirds of young people using cannabis, and 5% using cannabis on over 400 occasions by the age of 21. Given the widespread use of cannabis, arrests and convictions for cannabis use proved to be quite uncommon with only 5.1% of cannabis users being arrested and only 3.6% being convicted of a cannabis related offence. As might be expected, risks of arrest and conviction were related to the frequency of cannabis use with nearly one third of those using on more than 400 occasions being arrested and a quarter being convicted. However, even amongst those using cannabis frequently, the majority (over two thirds) avoided arrest and conviction.

Of the 60 arrests for cannabis related offences, one in five were dealt with by diversion. In New Zealand the Police Diversion Scheme aims to give first offenders a second chance. If offenders acknowledge their guilt, show remorse, complete an agreed program, pay reparation where appropriate, and receive police agreement, their case can be dismissed.

Of the remaining cases coming to the attention of the Courts the majority were dealt with by a non-custodial sentence (and principally fines). In just under 10% of prosecutions the individual received a custodial sentence. In all cases, those receiving a custodial sentence had been convicted of other crimes in addition to a cannabis related offence and, in no case, was a cohort member imprisoned on the basis of a cannabis related offence alone.

These results suggest that, for the most part, the penalties for cannabis related offences by this cohort were relatively mild unless other types of offending accompanied the cannabis offences. For most of those convicted the major consequence of conviction was likely to have been a recorded conviction for illicit drug use rather than the penalty imposed by the Court.

4.2. *Bias in arrests and convictions*

Analysis of the factors associated with cannabis conviction or arrest suggested the presence of biases in these processes in which the risk of arrest/conviction depended not only on the use of cannabis but also on other characteristics of the user. Independently of the use of cannabis, those most likely to be arrested or convicted were: Māori, with a history of previous arrests for non-cannabis related crime and with high rates of self reported crime. In addition, males were more likely to be convicted of cannabis related crimes than females with the same level of cannabis use.

These findings clearly suggest the presence of discriminatory processes, in which those who were con-

spicuous by virtue of their ethnicity, gender, or past criminal involvement were more likely to be arrested or convicted for cannabis use. It is likely that these biases in the arrest process arise largely because many arrests for cannabis related offences occurred in the context of police investigations for other crimes. This placed those who were at risk of police contact, at increased risks of being arrested or convicted for cannabis related offences. Similar results have also been reported for Australia where it has been found that those who make court appearances for cannabis related offences are disproportionately unemployed, socially disadvantaged and male (Hall, 2001).

The bias in arrest/conviction processes for Māori is of particular concern since it suggests that independently of cannabis use, previous police record and involvement in crime, Māori were more likely to be arrested and convicted for cannabis use than non-Māori. This result is consistent with a labeling theory perspective in which the probability of being arrested and convicted depends not only on the extent of offending but also upon the irrelevant attribute of ethnicity (Rutter et al., 1998). Furthermore, this finding is consistent with previous research on this cohort which has shown that young Māori were more likely to come into contact with the police for offending than young non-Māori with exactly the same record of self reported offending (Fergusson et al., 1993). Both sets of results suggest a bias in police arrest processes in which Māori are more likely to be arrested than non-Māori for committing the same crimes.

4.3. *Effects of arrest/conviction on cannabis use*

The availability of longitudinal data made it possible to examine whether those who had been arrested/convicted for cannabis related offences changed their use of cannabis after the experience of arrest or conviction. This analysis suggested that New Zealand cannabis laws were ineffective in changing cannabis use amongst those arrested/convicted: 95% of those arrested or convicted either continued with the same level of cannabis use (90%) or increased their use (5%) after arrest or conviction. These findings are consistent with other research that has suggested that arrest or conviction is ineffective in changing cannabis use behaviors (Lenton, 2000).

4.4. *Risks of cannabis use*

A number of commentators, in discussing the risks of cannabis use, have argued that the risks of the legal consequences of cannabis use are the most marked risk that cannabis users face (Hall and Solowij, 1997; Lenton, 2001; MacCoun and Reuter, 2001; Swift et al., 2000; Wodak et al., 2002). The data gathered on this

cohort make it possible to evaluate such claims. In particular, in previous studies we have examined the extent to which the use of cannabis was associated with a range of adverse outcomes including: the use of other illicit drugs; criminal behaviors; mental health problems and suicidality (Fergusson and Horwood, 1997, 2000a; Fergusson et al., 2002b, 1996). In general, these studies have shown that even after extensive control for confounding factors, young people who used cannabis heavily and frequently were at increased risks of a wide range of psychosocial problems. We would hesitate to argue that the increased risks of psychosocial problems that we have found associated with cannabis use are, in total, of lesser importance than the small risks of arrest and conviction we found in this study. In particular, because of the biases in arrest/conviction noted above it was uncommon for a young person to acquire a criminal record solely on the basis of cannabis use and in this cohort only seven individuals (0.7%) acquired a criminal record in this way. Our results do not support claims (e.g. Wodak et al., 2002) that large numbers of individuals are being criminalized on the basis of cannabis use alone. Rather, they suggest that cannabis related offences add to the criminal records of those who are already in contact with the legal system.

4.5. *The social regulation of cannabis use*

The preceding findings provide a relatively strong case against the continuance of the current cannabis laws in New Zealand. The findings of this study suggest that such laws are: (a) administered in a highly inefficient way which results in only a small minority of users being arrested or convicted; (b) administered in a biased way in which males, Māori, and those with a previous arrest record are more likely to be arrested/convicted for a cannabis related offence; (c) ineffective in deterring cannabis use, since 95% of those convicted or arrested continue with cannabis use at the same or greater frequency than prior to arrest or conviction. In addition, the widespread use of cannabis, in which over two thirds of young people have used cannabis, further suggests the lack of efficacy of current laws to deter the use of cannabis amongst young people in general.

For these and similar reasons, there have been growing pressures throughout the world to liberalize cannabis laws to avoid the adverse consequences of these laws. One approach that has attracted considerable interest is 'depenalisation'. Under this approach the use and supply of cannabis would remain illegal but penalties for use would be eliminated or reduced. This approach has been applied in various ways in a number of societies including Holland, South Australia, some states of the USA, and has been proposed for Great Britain. In reviewing evidence on depenalisation and

decriminalization, MacCoun and Reuter (2001) conclude that:

“The available evidence suggests that the removal of the prohibition against possession itself (decriminalization) does not increase cannabis use” (p. 127).

It is also evident from this study that New Zealand is beginning to move towards some form of depenalisation through the use of diversion schemes by which offenders do not receive convictions—the results of this study suggest one in five cannabis arrests (12/60) were dealt with in this way. Given this, it could be proposed that one approach to addressing the clearly unsatisfactory state of New Zealand’s cannabis laws is through a process of progressive depenalisation. The first step in such a process might be to provide diversion for all cases of simple possession of cannabis. This would ensure that users of cannabis who were not engaged in dealing cannabis would avoid acquiring a criminal conviction. This approach has the advantage that it requires no change to existing laws but merely requires a change in their administration so that the ways in which simple possession is addressed moves from the Court to less formal processes of diversion. The approach is likely to be a less costly alternative to legal prosecution and is unlikely to be any less effective than current laws in deterring the use of cannabis. Such changes to the administration of cannabis laws could form the basis of an empirical evaluation of the extent to which changes in cannabis laws lead to changes in the use of cannabis.

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