
Marijuana use in New Zealand, 1990 and 1998

Adrian Field, *Health Research Council Training Fellow*; Sally Casswell, *Professor and Director, Alcohol & Public Health Research Unit, Runanga, Wananga, Hauora me te Paekaka, University of Auckland, Auckland.*

Abstract

Aims. To examine changes in marijuana use in a metropolitan region and a provincial/rural region in New Zealand between 1990 and 1998.

Methods. Two random sample surveys of people aged 15 - 45 years were carried out in Auckland and Bay of Plenty regions in 1990 and 1998, using a computer-assisted telephone interviewing system.

Results. Use of marijuana in the last twelve months increased in the metropolitan sample from 18% to 22%, but not in the provincial area. Those who had ever tried marijuana increased from 43% of the total sample in 1990 to 52% in 1998. Use was higher among men than women,

but had increased among women. There was a trend towards more frequent users of marijuana (ten or more occasions in the previous 30 days), from 2.4% to 3.2%.

Conclusions. Experience of marijuana was slightly more common in 1998 than in 1990, but increases in recent use were small and were found only in the metropolitan area. The increase in use was relatively limited: only one in five of each sample had used marijuana in the past year, and opportunity to use marijuana by non-users had not increased. Use was predominantly casual and social, and most who had tried marijuana no longer used the drug. However, the age at which first use occurred appeared to have declined.

NZ Med J 2001; 114: 356-8

A 1990 survey of a metropolitan area (greater Auckland) and a provincial/rural area (Bay of Plenty) provided a baseline of marijuana use in New Zealand.¹ Marijuana was, in 1990, the most popular illegal drug in New Zealand. In the 1990 regional survey, 43% of the sample aged 15-45 years reported trying marijuana, and 18% reported use in the last twelve months. A follow-up regional survey of the same areas, carried out in 1998 and the focus of this report, provides a picture of changes in marijuana use.

In the news media, suggestions of increasing cannabis use in New Zealand are common. This has included reports of an increase in cannabis use in schools and among young people, signalled by an increase in drug suspensions from previous years,² and suggestions of an 'epidemic'³ in cannabis use, particularly among young people. There have also been many reports of extensive cultivation of cannabis in areas

such as Northland, Eastern Bay of Plenty and Coromandel.⁴ Local cannabis crops are also put forward as important contributors to some regional economies, helping to sustain regional economic activity.⁵ The government has signalled its intention to review the legal status of cannabis through a select committee inquiry.⁶

This paper looks at changes in adult use of marijuana between the 1990 and 1998 surveys and examines the different age and gender patterns of marijuana use; the context of marijuana use; and supply of marijuana. It also compares the results with other New Zealand survey data.

Methods

Research design. Two surveys on drug use by people aged 15-45 years were carried out in a metropolitan sample (the greater Auckland region) and a provincial/rural sample (Bay of Plenty) in 1990 (N=5125) and 1998

(N=5037). All questions asked in the 1990 survey were repeated in the 1998 survey.⁷

Sampling methods. Telephone numbers were selected from the Auckland local calling area, and four Bay of Plenty calling areas. Sampling was stratified so that the sample size achieved in each region was proportional to its population aged 15-45 years in the previous Statistics New Zealand Census. This balance between metropolitan and provincial/rural sample sizes is likely to provide a reasonable indication of drug use across New Zealand, and the results from the 1998 regional survey are similar to those found in a national survey of drug use conducted at the same time.⁸ Within each stratum, a two-stage random scheme was employed: random digit dialling was used so that each household within the two regions would have an equal chance of being called; and one person was randomly selected from each household for an interview.

Interviewing methods. The 1990 and 1998 surveys used the Alcohol & Public Health Research Unit's in-house computer assisted telephone interviewing (CATI) system. All interviews were conducted from a central interviewing facility. A supervisor was present at all times to monitor telephone lines and computer screens to ensure a high degree of quality control. The response rate for the 1990 survey was 68% overall, and 77% in the 1998 survey, both of which were high for telephone surveys.

Statistical analyses. Since only one person was interviewed per household, survey analysis was weighted for household size, and statistical tests were adjusted with a design effect of 1.22, to account for increased statistical error after weighting, compared to a simple random sample of the same size. The survey results were analysed for the Auckland and Bay of Plenty regions combined, but differences between the two samples were also investigated and reported on where significant.

Unless otherwise stated, all differences reported are significant at the $p < 0.01$, using parametric or non-parametric methods. Appropriate transformations were applied to continuous or nearly continuous variables prior to significance testing.

Results

Prevalence. Table 1 shows the changes in ever trying, use in the past year, and current use for the metropolitan and provincial/rural samples. In 1998, 52% reported having tried marijuana, an increase from 43% in 1990. The increase in prevalence of ever trying marijuana was greater in the provincial/rural sample than the metropolitan sample. Use of marijuana in the last twelve months ('last year marijuana users') was reported by 18% of the total sample in 1990, and 21% in 1998. However, this reflected a significant increase in use in the last twelve months in the metropolitan sample, but not the provincial/rural sample. Use in the last twelve months among metropolitan females increased between 1990 and 1998, but there was no significant change in use by men. A 'current marijuana user' was defined in the surveys as one who used marijuana in the last twelve months, and had not stopped using the drug. As with last year use, there was an increase in the metropolitan sample but not the provincial/rural sample. Current use among metropolitan women increased, but did not change significantly among men.

Table 1. Percentage reporting ever trying, in the last year and current marijuana use, by gender, metropolitan and provincial samples, 1990 and 1998.

		Metropolitan Sample			Provincial Sample		
		Males	Females	Total	Males	Females	Total
Ever tried	1990	52.8	35.2	43.9	50.2	32.9	41.4
	1998	56.0	45.6*	51.0*	58.7†	49.7*	54.5*
Last year use	1990	24.6	11.2	17.8	22.1	13.6	17.8
	1998	26.3	16.5*	21.6*	23.2	14.6	19.2
Current use	1990	18.7	7.1	12.8	15.7	8.4	12.0
	1998	21.4	12.4*	17.1*	18.0	8.6	13.6

*difference between 1990 and 1998 significant at $p < 0.01$. † difference between 1990 and 1998 significant at $p < 0.05$

Other results suggest that the age at which people first tried marijuana fell between the two surveys. In 1990, 40% of those who had tried marijuana had done so by sixteen years

of age. In 1998, 52% of those who had tried marijuana had done so by age sixteen years.

Marijuana use was most commonly an occasional activity. Among those who had used marijuana in the last year, 53% of men in 1990 and 1998, and a clear majority of women (73% in 1990 and 64% in 1998, $p < 0.05$) had done so on fewer than ten occasions.

More frequent marijuana use was defined as using the drug on ten or more occasions in the last month. There was a trend towards an increase in this level of use, from 2.4% to 3.2% of the total sample ($p < 0.05$). In each survey, men were more likely to be more frequent users than women (3.9% versus 0.9% in 1990, and 4.6% versus 1.7% in 1998). The average number of joints smoked on a typical occasion by last year marijuana users was about two-thirds of a joint per person and did not change between 1990 and 1998. The largest amount, getting closer to a whole joint per person, was reported by 15-17 year olds.

Context of marijuana use. Participants were asked about the extent of their use of marijuana in a variety of situations: in private homes, in public places, at work, and driving. There was no significant change in responses in each survey. For most last year marijuana users in each survey, use of the drug was predominantly in private homes, and most never drove under the influence of marijuana. The responses to these questions are detailed in Table 2.

Table 2. Percentage of marijuana use in different situations by respondents who had used marijuana in the past 12 months, 1990 and 1998.

		All	Most	Some	Hardly any	None
Private home	1990	32.3	32.2	14.4	8.8	12.2
	1998	29.7	31.1	13.9	11.8	13.5
Public place	1990	4.9	13.6	25.0	13.8	42.7
	1998	7.0	14.0	25.7	14.5	38.8
Workplace	1990	0.3	0.9	3.1	5.1	90.6
	1998	0.1	0.4	2.5	5.1	91.9
Driving	1990	0.5	2.5	11.3	24.6	61.2
	1998	1.2	1.2	13.7	21.4	62.5

In each survey, 97% of last year marijuana users typically smoked in groups of two or more. There was a shift towards smoking in groups of two, from 8% in 1990 to 16% in 1998, and away from groups of four or five.

Marijuana supply, availability and price. In each survey, marijuana users were asked how often they try to keep a supply of marijuana on hand for when they want it, with possible responses ranging from 'never' to 'always'. There was a trend between 1990 and 1998 towards maintaining at least an occasional supply of marijuana on hand. Current marijuana users who said they 'always', 'mostly' or 'often' kept a supply on hand increased from 15% to 20%. Those who said they 'never' kept a supply fell from 48% to 41% ($p < 0.05$).

Among current marijuana users there was no change in sources of marijuana supply, with 64% of current users in 1990 and 63% in 1998 obtaining all or most of their supply for free. However, among more frequent marijuana users, there was a trend towards an increase in obtaining all or most of their supply of marijuana for free, from 25% in 1990 to 39% in 1998 ($p < 0.05$). There was also no change in the percentage of current users growing any of their marijuana supply (9% in 1990 and 8% in 1998). More frequent users were more likely to grow part of their supply, and while once again there was a decrease, this was not significant (28% in 1990 and 26% in 1998).

Current users were asked if getting marijuana is easier, harder or the same as a year ago. Fewer in 1998 than in 1990 said access to marijuana was getting harder, declining from 24% to 11%. Current users (who purchased at least some of their marijuana supply) were asked about the price they would expect to pay for an average bag of marijuana. These responses show a substantial change in the pattern of prices between the two surveys, with two clusters of bag pricing emerging. In 1990, 60% of respondents suggested prices in the \$150-\$350 range. In 1998, only 25% suggested prices in the \$150-\$350 range, and a further 46% suggested \$50. Responses of this group of current users suggest that prices were stable in the 1997-98 period. In 1990, 50% said prices were higher than a year earlier, compared to 18% in 1998. 45% in 1990 said prices were the same, while 76% gave this response in 1998.

Opportunity to try marijuana by non-users. People who had never tried marijuana were asked if they had had the opportunity to use the drug in the last twelve months. There were no significant changes over the two surveys: 27% of this group in 1990 had the opportunity to use marijuana, falling slightly to 25% in 1998.

Discussion

The 1998 survey found a significant increase in the proportion of respondents who had ever tried marijuana. At least in part, this was a cohort effect. In 1990, respondents aged 35-45 years were among those least likely to have tried marijuana. By 1998, most of those who were in this age group in 1990 were outside the age range of the survey. The 1990 prevalence levels among respondents aged 25-34 years were not significantly different to the levels among those aged 35-45 years in the 1998 survey. This occurred in both the metropolitan and provincial/rural samples.

Both the 1990 and 1998 surveys point towards marijuana use as a casual and social activity. Most people who had tried marijuana had since stopped using the drug, and a majority of those using the drug did so less than once per month on average.

In the combined samples, there were only small increases in prevalence of last year and current use, and a significant increase was found only in the metropolitan area surveyed. In both the metropolitan and the provincial/rural samples, marijuana use was a minority activity, and the findings do not support suggestions of a sizeable increase in marijuana use, of the 'epidemic' proportions indicated in some media reports. However, trends in marijuana use do point to increased use. This was indicated not only by the small increases in last year and current use in the metropolitan samples, but also more people trying the drug at a younger age. The average number of joints smoked by younger respondents remained relatively high, although this did not change significantly between the two surveys. Despite controls on supply, fewer frequent users found access harder in 1998 than in 1990, suggesting greater availability. However, there was no increase among non-users in reported opportunities to try marijuana, so increased access may have been confined to those already in social networks that use the drug.

Two price brackets for marijuana had emerged by 1998: the higher price bracket of \$150-\$300 is in line with media reports of the approximate cost of an ounce bag,⁹ while the \$50 bag price indicates a market responding to those wishing to buy smaller quantities.

The patterns of marijuana supply indicate differences between current marijuana users, and more frequent users. From these results, it is likely that the marijuana market was dominated by the small percentage who were regular users, with casual users obtaining the drug through others'

generosity rather than their own purchase. However, even among more frequent marijuana users, obtaining marijuana for free had become more common, and suggests a high level of sharing between users.

A longitudinal study of Dunedin-born people suggested higher prevalence of marijuana use than found in the 1990 regional survey. It reported that cannabis use in the previous twelve months was 52% among 21 year olds, surveyed in 1993/94.¹⁰ This compared with 29% of 21 year olds in the 1990 regional survey, and 32% of 21 year olds in the 1998 survey. The variation is likely to be due to the differences in the studies: the 1993/94 data were based on a longitudinal study, and the long-term involvement of the participants in the study may have encouraged greater honesty. A more important difference may have been the different response rates. Although high for telephone surveying, the response rate of the 1998 regional survey was 77%. This was lower than the response rate of the longitudinal survey, at over 95% of the original cohort. Because illegal drug users are particularly hard to reach for research purposes, the actual prevalence of use could therefore be higher than shown by the 1990 and 1998 regional survey results. However, by using the same methodology in 1990 and 1998, and achieving similar response rates, the monitored trends in the telephone surveys are likely to reflect the actual trends.

Another longitudinal study, this time of 990 Christchurch-born children (representing 75% of the original cohort), examined respondent's experiences between ages fifteen and 21 years. The study found that 69% of the cohort had tried marijuana by age 21.¹¹ In the 1998 regional survey, 49% of 21 year olds had tried marijuana. One in four participants (24%) in the Christchurch study had used marijuana on fewer than ten occasions; this compares with 34% of 21 year olds in the 1998 regional samples (difference of $p < 0.05$ between the two studies). As with the Dunedin survey, long-term involvement of participants may be an important factor in these differences.

In conclusion, the results of the 1990 and 1998 regional New Zealand surveys point to marijuana use remaining a minority, albeit common, activity. Although by 1998, more than half the sample had tried marijuana, in each survey only one in five respondents had used the drug in the previous year. Trends in use showed only limited changes, with only a 3% increase in the total sample in last year use, a smaller increase in more frequent use, and no increase in opportunity to use the drug by non-users. However, this sample did not include respondents below fifteen years, and the results suggest that the period between 1990 and 1998 saw marijuana 'bedding in', with people starting use at a younger age and more past experience among older respondents. These survey results suggest New Zealand policy makers face a significant challenge to reconcile current levels of marijuana use with the need to address the potential harm associated with use of the drug.

Acknowledgments. This comparison survey was a project of the Alcohol & Public Health Research Unit (APHRU), funded as a core programme of the Health Research Council and the Alcohol Advisory Council. The Health Research Council provided the funds for data collection of this sample as an investigator initiated grant to Professor Sally Casswell. The quality of the data collected depended on the dedication of the team of CATI interviewers, and of their supervisors. Brendon Dacey and Francesca Holibar coordinated the CATI team and the data collection process. Jia-fang Zhang, Michael Ford and Dr Krishna Bhatta carried out data management and statistical analysis. We acknowledge the time and willingness of participants to respond to the survey, without which the project could not have taken place.

Correspondence. Professor Sally Casswell, Alcohol & Public Health Research Unit, University of Auckland, Private Bag 92019, Auckland. Fax: (09) 373 7057; email: aphru@auckland.ac.nz

-
1. Black S, Casswell S. Drugs in New Zealand: A Survey 1990. Auckland: Alcohol & Public Health Research Unit, University of Auckland; 1993.
 2. One Network News. Schools ponder drug alternative. 1999 June 24. Internet: <http://tvone.co.nz/news/1999/06/24/00006690.html>
 3. New Zealand Press Association. Call to review Government cannabis policies. The Press. 1999 June 11.
 4. MacBrayne R. Worry at dope pot of gold. New Zealand Herald. 1999 April 24.
 5. Walker L, Cocklin C, Blunden G. Cannabis highs and lows: sustaining and dislocating rural communities in Northland. Auckland: Department of Geography, University of Auckland; 1998.
 6. Health Select Committee. Press Release 2000 13 September.
 7. Field A, Casswell S. Drug use in New Zealand: comparison surveys 1990 and 1998. Auckland: Alcohol & Public Health Research Unit, University of Auckland; 1999.
 8. Field A, Casswell S. Drugs in New Zealand: a national survey, 1998. Auckland: Alcohol & Public Health Research Unit, University of Auckland; 1999.
 9. Pearson L. Every woman and her dog is doing it: lighten up. Grace, 2000 June: 52-57.
 10. Poulton RG, Brooke M, Moffitt TE et al. Prevalence and correlates of cannabis use and dependence in young New Zealanders. NZ Med J 1997; 110: 68-70.
 11. Fergusson DM, Horwood LJ. Cannabis use and dependence in a New Zealand birth cohort. NZ Med J 2000; 113: 156-8.
-