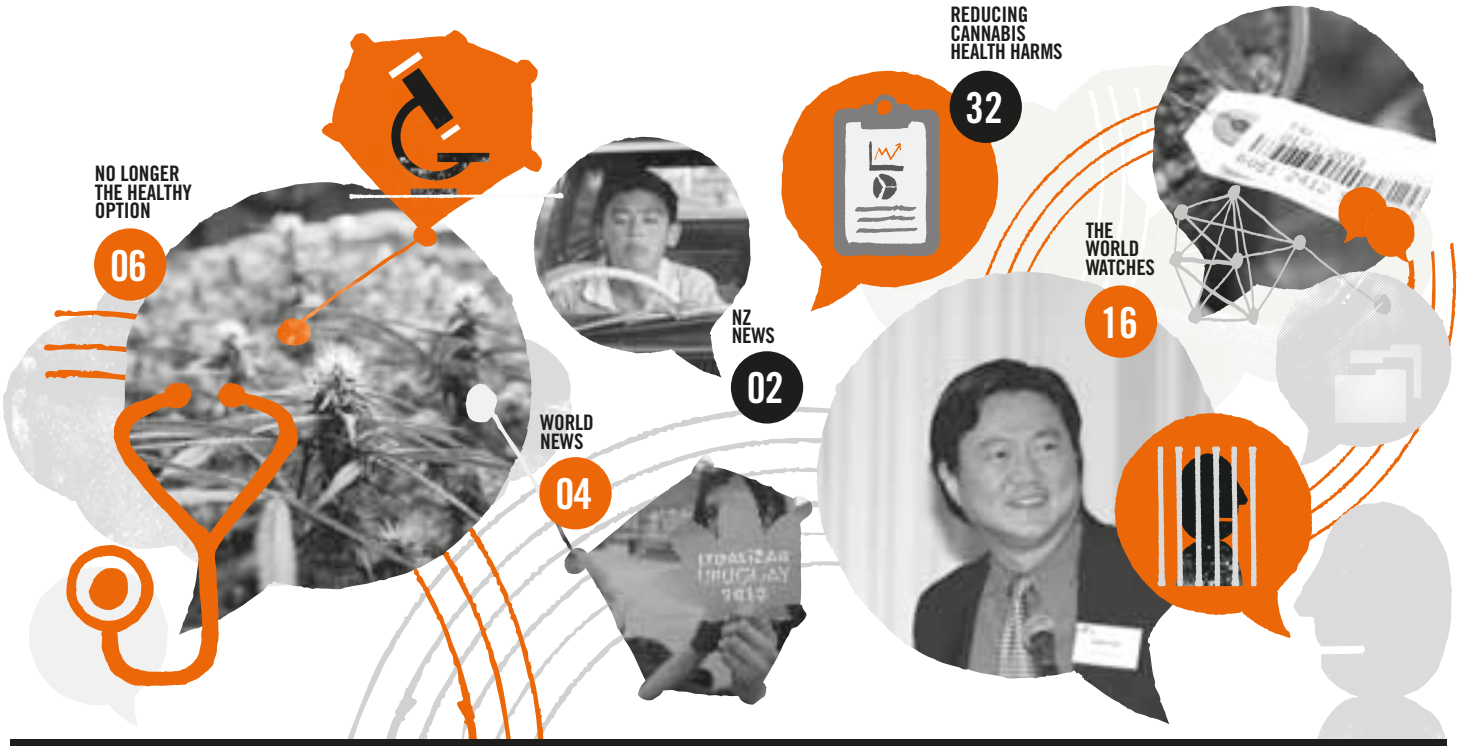
Matters of Substance.
NOVEMBER 2013 | Volume 24 Issue No.4 | www.drugfoundation.org.nz

AT THE HEART OF THE MATTER, NZ DRUG FOUNDATION.
Te Tūāpapa Tarukino o Aotearoa

Through the maze: cannabis and health

It has been 20 years since the New Zealand Drug Foundation's first cannabis and health symposium. This special edition of *Matters of Substance* focuses on the 2013 International Drug Policy Symposium Through the Maze: Cannabis and Health. What is the current state of evidence about all things cannabis and health? What do we know now that we didn't in 1993, what has changed and what has stayed the same?

CONTENTS



CANNABIS AND HEALTH

CANNABIS AND HEALTH

Become a member

The New Zealand Drug Foundation has been at the heart of major alcohol and other drug policy debates for over 20 years. During that time, we have demonstrated a strong commitment to advocating policies and practices based on the best evidence available.

You can help us. A key strength of the Drug Foundation lies in its diverse membership base. As a member of the Drug Foundation, you will receive information about major alcohol and other drug policy challenges. You can also get involved in our work to find solutions to those challenges.

Our membership includes health promoters, primary health and community organisations, researchers, students, schools and boards of trustees, policy makers, and addiction treatment agencies and workers.

Membership and subscription enquiries
membership@drugfoundation.org.nz
or visit our website.

www.drugfoundation.org.nz

MATTERS OF SUBSTANCE
November 2013
Vol 24 No 4
ISSN 1177-200X

MATTERS OF SUBSTANCE invites feedback and contributions. If you're interested in contributing a guest editorial or article, please contact us:
editor@drugfoundation.org.nz
p +64 4 801 6303

Brand development/ graphic design
Insight +64 4 801 6644
talktous@designedbyinsight.com
www.designedbyinsight.com

New Zealand Drug Foundation
3rd Floor, 111 Dixon Street
PO Box 3082, Wellington,
New Zealand
p +64 4 801 6303

THE DIRECTOR'S CUT

ROSS BELL
Executive Director

SOMETHING amazing happened in Wellington in August. A group of 100 people representing more than 60 diverse organisations came together to discuss drug policy, and at the end, everyone agreed on a way forward for New Zealand's national drug policy. This proves New Zealand's response to drugs does not have to be a divisive issue.

Our ambitious plan brought together some of the people most affected by drugs and drug policy but who had never had a chance to talk about it: families, communities, schools.

We had representatives from the addiction treatment sector, teachers and principals, and the lovely people from Grandparents Raising Grandchildren sitting next to NORML, the Police Association and the Needle Exchange Programme.

This community-led approach culminated in a 10,000 word declaration that will shape New Zealand's future drug policy.

It's not just a list of demands to government but a commitment to work together to address our nation's drug issues.

Our collective wisdom allowed the group to find common ground on some important issues.

Early intervention in schools was one such issue. We know, if students are engaged at school and they stay involved in education, they are less likely to experiment with drugs and more likely to have fewer problems in later life. Schools play an important role in this respect, and they should be supported to help students in trouble.

Another area of agreement is the need to invest in more treatment services. Making treatment accessible means alerting people to the fact it is available. Also, barriers such as criminal sanctions should be removed so people aren't fearful of seeking help. By decreasing the stigma associated with drug use and lowering the barriers to get into treatment, we will see less harm in our communities and more families getting help.

The group also expressed overwhelming support for a substantial overhaul of the laws that govern New Zealand's response to drugs.

The declaration was created with a spirit of good will and a desire for better cooperation and collaboration between everyone affected by drugs and drug policy. We trust the government, and any other organisation with an interest in an Aotearoa New Zealand free from drug harm, will accept it in the spirit it was created and that we all can make it a reality.

You can read and sign up to the Wellington Declaration on our website – **nzdrug.org/wellingtondec** ■

SOCIAL

@JGREENBROOKHELD Things I'm addicted to: jetplanes, Cheds, Mountain Dew. What do you think my life expectancy is? 10 OCTOBER

@SIMONBRADWELLNZ Lowering the drink-drive limit will save lives. Any other argument is irrelevant. 2 OCTOBER

@THEWRITERTYPE21 I approve the medical use of marijuana, but not when it makes the doctor laugh during my prostate exam. 21 SEPTEMBER

@RUSTYROCKETS read this about rat junkies and how they get clean if you're nice to them. nzdrug.org/ratticts 20 SEPTEMBER

@JAMESDUNNENZ An Acte to Provide for Free Publicke Wine at Crossroades to Improve the Common Weal. 29 AUGUST

KEY EVENTS & DATES

1-28 FEBRUARY 2014

febfast
New Zealand
Push pause on booze for February and raise funds for young people with alcohol and other drug problems.
www.febfast.org.nz

13-14 MARCH 2014

57th session of the Commission on Narcotic Drugs: High-level review
Vienna, Austria
High-level discussion by the Commission on Narcotic Drugs on resolution 56/12.
www.nzdrug.org/19Dr3YX

4-6 JUNE 2014

National Indigenous Drug & Alcohol Conference 2014
Melbourne, Australia
Based on the theme What Works: Doing it our way, NIDAC 2014 aims to highlight approaches that are working to reduce the harmful effects of alcohol and other drugs and its associated harms among indigenous Australians.
nidaconference.com.au

20-25 JULY 2014

20th International AIDS Conference
Melbourne, Australia
Work together to strengthen efforts across all regions and around the world and build on the momentum of recent scientific advances.
www.aids2014.org

SEPTEMBER 2014

Cutting Edge 2014
Dunedin, New Zealand
The next DAPAANZ Cutting Edge conference is going to be held in Dunedin. Dates haven't been announced yet, but look out for more details.
www.cuttingedge.org.nz

Follow us
Join us online
drugfoundation.org.nz/connect

NZ.

01

SUMMIT SUCCESS

History was made in Wellington in September with the successful completion of a declaration to reshape New Zealand's drug policy.

The New Zealand Drug Foundation convened almost 100 people from over 50 organisations to develop a consensus agreement on the best way forward in areas such as prevention, early intervention, education, treatment and legislative responses.

"The declaration was created with a spirit of goodwill and a desire for better cooperation and collaboration between everyone affected by drugs and drug policy," Drug Foundation Executive Director Ross Bell said.

"We hope that people will use the declaration as a resource to promote positive change at an organisational, community and national level."

RESOURCES

To read the Wellington Declaration, visit **nzdrug.org/wellingtondec**
To sign up to the Wellington Declaration, visit **nzdrug.org/signupdec**

03 AA in reverse

THE NEW ZEALAND Automobile Association (AA) has reversed its position and now supports a lower BAC for adult drivers of 0.05.

In 2010, AA General Manager for Motoring Affairs Mike Noon said lowering the limit was not a "silver bullet" and that the problem lies with serious drink drivers.

Mr Noon has changed his tune after a survey that showed two-thirds of AA members supported a lowered limit.

"Lowering the limit will reinforce the risks of drinking and driving to the public. The AA hopes it will have a similar effect to the zero BAC level for drivers under 20, which has seen the number of young drink drivers fall 22 percent," Mr Noon said.

22%

04 Drug driving campaign

THE NEW ZEALAND Transport Agency has kicked off a new campaign to get people to think about whether drug driving is safe.

NZTA Road Safety Director Ernst Zollner said the ads talk to people who believe that using cannabis has little impact on their driving.

"Many believe that they are safer drivers because they think they're more focused, drive slower and are therefore more careful on the roads. They don't consider what they're doing to be dangerous – but we're asking them to reconsider that notion, because the facts tell a very different story," Zollner said

RESOURCES

To watch the ads, visit **nzdrug.org/drugdrivingad**

05 Preventable poison deaths

A NEW REPORT shows over 70 young people died between 2002–2008 due to unintentional poisoning.

The *Special Report: Unintentional deaths from poisoning in young people* conducted by Dr Nick Baker for the Child and Youth Mortality Review Committee found volatile substance use was the biggest cause of death for 15–24 year-olds.

Dr Baker said that many young people who died were not well connected to support systems and that lethal agents, such as butane, are too easy to buy.

"Greater collaboration and information sharing between families, communities and with and between service providers is important," Dr Baker said.

The report calls for safer prescribing, dispensing and disposal of medicines and law changes to tighten access to harmful substances. Retailers can also do simple things to reduce access, such as removing volatile substances from in-store displays.

RESOURCES

To read the special report, visit **nzdrug.org/poisoningreport**

02 SURVEY

The results of the Youth '12 survey show a decreasing trend in use of tobacco, alcohol, and cannabis by secondary school students in New Zealand since 2001.

11% OF STUDENTS SMOKE OCCASIONALLY

8% OF STUDENTS' DRINK ALCOHOL WEEKLY

13% OF STUDENTS CURRENTLY USE CANNABIS

45% OF STUDENTS CURRENTLY USE ALCOHOL

23% OF STUDENTS HAVE EVER USED CANNABIS

RESOURCES

To read the rest of the report, visit **nzdrug.org/youth12**

06 Increase in alcohol-related cancers

NEW FIGURES show alcohol use is a growing cause of cancer in New Zealand.

A Ministry of Health report on cancer shows a 14 percent decrease in death rates over the past 10 years but an increase in cancers related to alcohol consumption and obesity.

Rates of smoking-related cancer had fallen but are being replaced by oesophageal and kidney cancer.

07 Hepatitis C and Victrelis™

50,000

The estimated number of New Zealanders who have contracted hepatitis. As of 1 September a new medication, Victrelis™, will be available to treat people with chronic viral hepatitis C. The drug reduces treatment times and increases the chances of being cured.

RESOURCES

To find out more about hepatitis C, visit **nzdrug.org/hepcfoundation**

08 Smokey pokies

THE AUCKLAND High Court has ruled the Ministry of Health's calculation to determine whether a room is "substantially enclosed" is contrary to the Smoke-free Environments Act.

The Cancer Society, Problem Gambling Foundation and Salvation Army applied for a judicial review of a Ministry of Health decision to allow SkyCity's Diamond Lounge to be a designated smoking area despite it only having a wall of louvres for ventilation.

Justice Rodney Hansen found that relying on a calculation to assess airflow through a space replaced a factual question about whether or not a space was enclosed.

"That is contrary to the clear scheme and purpose of the statute," he said.

The Ministry of Health said it would be reviewing the decision and the way it considers applications.

Earlier in the year, it was revealed that SkyCity secretly lobbied the government to change smoke-free laws to allow gamblers to smoke inside the casino.

09

18%

The drop in youth crime from June 2011 to March 2013

Justice Minister Judith Collins credited new justice sector initiatives that steer young people away from a life of crime and away from the justice system. "If we can stop young people coming before the courts in the first place, then we have a better chance of keeping them out of the system altogether," Ms Collins said.

10

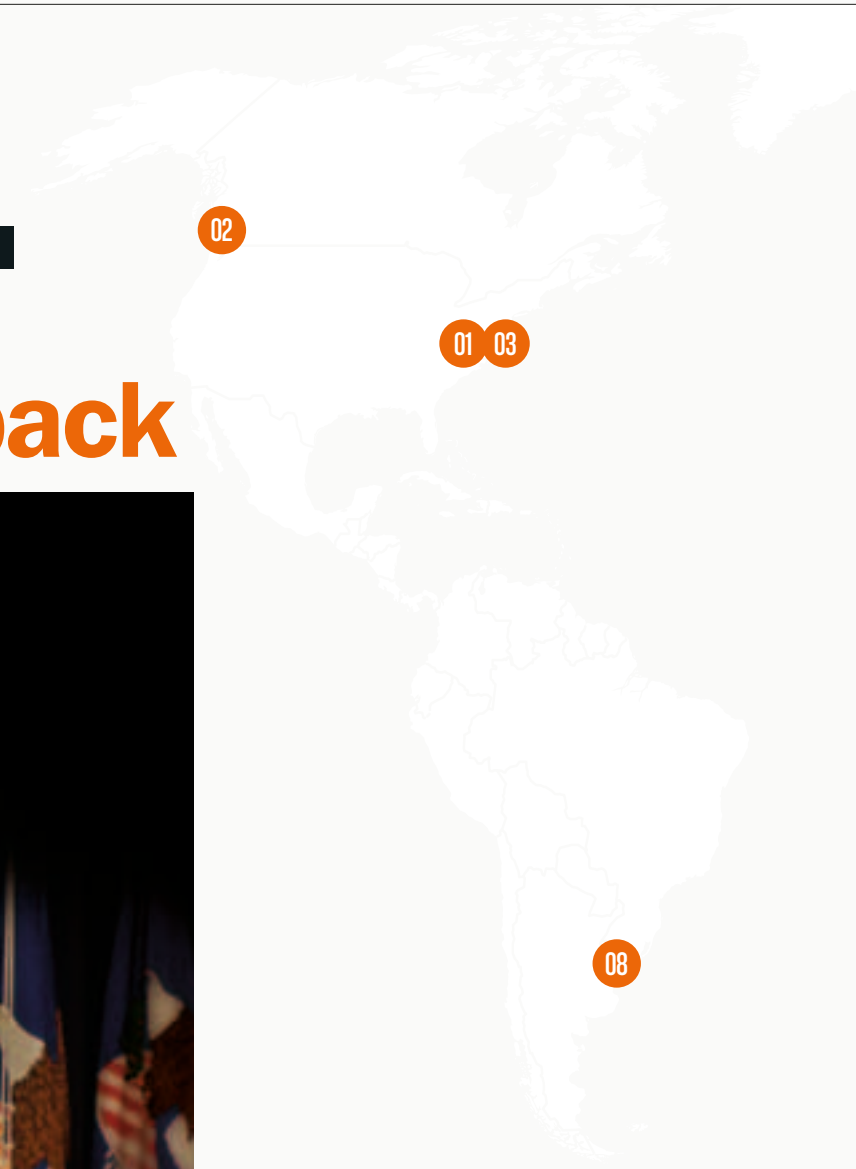
The Government has announced it will lower the allowable blood alcohol limit from 0.08g to 0.05g of alcohol per 100ml for those over 20.

The move comes after years of campaigning by public health groups and the recent drawing of a members bill of Palmerston North Labour MP Iain Lees-Galloway which also sought to lower the limit.

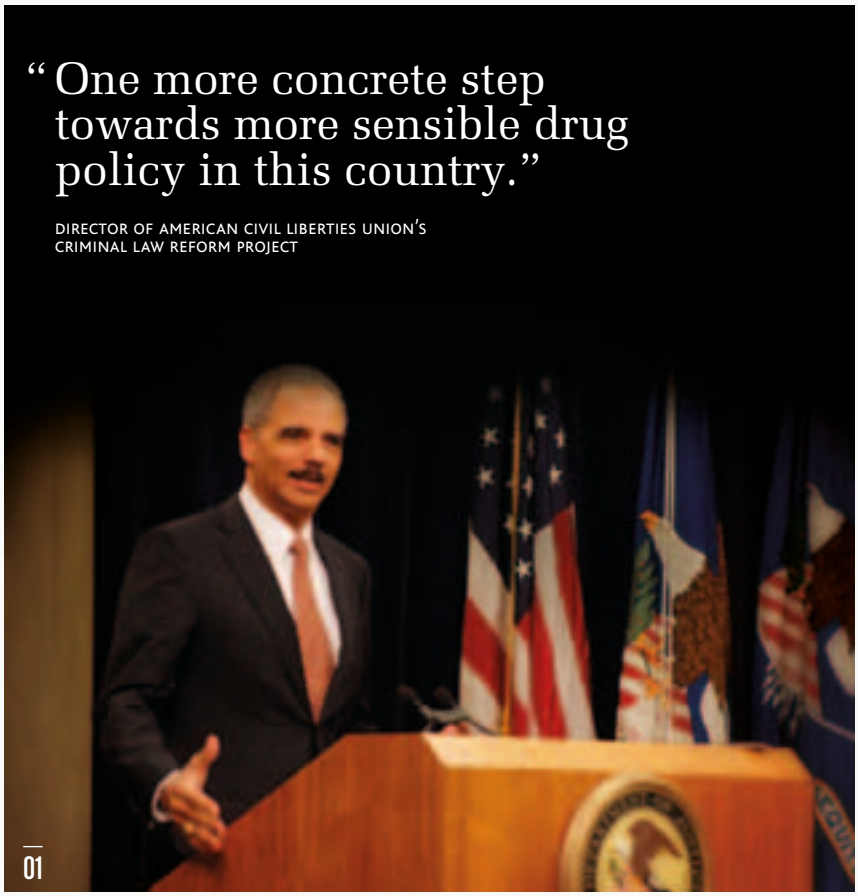
The law means people caught with levels higher than 0.05g will get a fine and demerit points.

At the time of printing no bill had been tabled in Parliament but the first reading is expected before Christmas

World.



Holder holds back



ATTORNEY-GENERAL Eric Holder has informed the governors of Colorado and Washington that the Department of Justice (DOJ) will allow the states to carry through with their plans to legalise cannabis.

In a phone call to the governors, Holder said that, while the DOJ will trust the states to ensure a robust regulatory framework, it would reserve the right to file lawsuits at later dates.

At the same time, Deputy Attorney-General James Cole issued a memo to attorneys across the USA that outlined eight priorities federal prosecutors will be pursuing regarding cannabis.

These focus on distribution to minors, revenues going to organised crime, trafficking, drugged driving and other criminal-related elements.

The Director of American Civil Liberties Union’s Criminal Law Reform Project called the guidance “one more concrete step towards more sensible drug policy in this country”.

RESOURCES

For the full report, visit **nzdrug.org/TLzWq7**

To read the memo from James Cole, visit **nzdrug.org/colememo**

To read more about what’s happening in the USA, turn to **page 16**

02 Supervised injection at InSite

10 (2003–2013)
NUMBER OF YEARS INSITE HAS BEEN OPERATING

2,000,000
NUMBER OF VISITS SINCE OPENING IN 2003

529
AVERAGE NUMBER OF INJECTION ROOM VISITS PER DAY

4,564
REFERRALS TO OTHER SOCIAL AND HEALTH SERVICES IN 2012

2000+
OVERDOSES AT INSITE SINCE 2003

0 †
DEATHS AT INSITE SINCE IT OPENED

RESOURCES

To find out more about InSite, visit **nzdrug.org/insite10years**

06

05

07 No logo

AUSTRALIAN cricketer Fawad Ahmed has been allowed to wear a uniform without the logo of beer brand VB, a team sponsor.

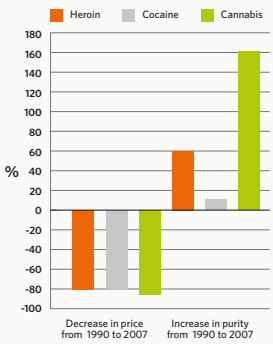
Cricket Australia allowed the request after the spinner approached them expressing discomfort with the conflict it created for him due to his religious beliefs.

Ahmed took three wickets for 25 runs in his first T20 match wearing the unbranded shirt.

04

03 Price down, purity up: War on Drugs fail

A NEW study published in the *British Medical Journal* shows the price of illegal drugs has gone down while the purity of drugs has gone up. The paper concludes that "expanding efforts at controlling the global illegal drug market through law enforcement are failing".



RESOURCES

To read the full paper, visit **nzdrug.org/BMJpriceofdrugs**

04 Fiji decree on volatile substance use

FIJI'S National Substance Abuse Advisory Council (NSAAC) is set to draft a decree to deal with volatile substance use in the Pacific country.

Director of NSAAC Misaele Driubalavu said that there have been around 200 cases of inhalant use recorded at schools around Fiji every year.

"We are proposing the formulation of this decree because currently there's no law to protect young people and control the sale of these substances by shopkeepers," Driubalavu said.

The decree will likely make it illegal to sell glue and other inhalants to minors.

05 Cannabis makes prisons calm

RESEARCH in Switzerland has shown that up to 80 percent of prisoners and 50 percent of staff in a Swiss male prison use cannabis and that it keeps prisons calm.

Prisoners said they used cannabis for a variety of reasons including pain relief, as a social pacifier and to relieve stress.

The study concluded that, while illegal, it was a part of daily prison life. The authors suggested that strategies that don't depend on cannabis or other substances be implemented.

RESOURCES

To read the paper, visit **nzdrug.org/swissprison**

07

06 Coffee shops and compromise

A REPORT published by the Open Society Global Drug Policy Platform shows the Netherlands' policy towards cannabis has been a success.

Coffee Shops and Compromise: Separated Illicit Drug Markets in the Netherlands shows there are fewer arrests, fewer people using cannabis, fewer people using "harder drugs" and is generating an estimated €400 million.

RESOURCES

To read the full report, visit **nzdrug.org/coffeecompromise**

08 Uruguay to legalise pot

THE small South American nation of Uruguay is set to become the first country to fully legalise and regulate the production, sale and consumption of cannabis.

A Bill was passed earlier in the year by Uruguay's lower house despite only 25 percent of the public supporting the law.

RESOURCES

To read more about what's happening in Uruguay, visit the Regulación Responsible page **nzdrug.org/uruguaylaw**

No longer the healthy option

20 years on from the New Zealand Drug Foundation's first cannabis and health conference, **Keri Welham** takes a look at Aotearoa's most widely used illegal drug to see what has changed since 1993.

Professor Wayne Hall at Queensland University

KERI WELHAM

IT IS 20 years since Professor Wayne Hall gave his first public lecture on cannabis and health. The platform was the 1993 New Zealand Drug Foundation symposium.

He had been asked to review research on cannabis and health by the Australian government earlier that year, and his presentation focused on mental health. That first lecture, at a concurrent session late on the second day of the symposium, led Hall down a research tangent he's been following ever since.

This year, the Drug Foundation and leading international researchers will again turn their attention to issues of cannabis and health. And Hall, now a member of the International Narcotics Control Board and a Queensland University professor, will give the keynote address. These days, his expertise extends to various aspects of mental health, cannabis dependence and medicinal cannabis use.

Reflecting on those two decades, Hall says there have been significant shifts.

"The big change is acknowledging people can experience problems with cannabis use. Back then, no one got into trouble with cannabis."

It was believed cannabis users mostly had jobs, homes, relationships. They were functioning at a higher level than heavy users of alcohol or opiates. However, the view of cannabis as a harmless drug has faded.

"It is quite clear that there are some groups in the community who do experience difficulties," Hall says.

What else have the decades between these symposia revealed? What do we now know that wasn't known 20 years ago?

Homegrown breakthrough

Let's go back to 1993. Bill Clinton moves into the White House, Czechoslovakia ceases to exist and the European Union is formally established, actress Audrey Hepburn dies and One Direction singer Niall Horan is born. People wear dreadlocks, waistcoats, berets. Meatloaf wails, "I would do anything for love", fuel injection becomes a standard feature in the top-selling Ford Escort and, on *Coronation Street*, brassy Bet Lynch bawls her eyes out when she realises her miserable ex-husband Alec Gilroy has a new love interest.

In some ways, 1993 seems a world away, but many of the issues that were front of mind in drug prevention live on. In 1993, the Drug Foundation symposium featured sessions on cannabis use among Māori and youth, the psychology and educational philosophies of counselling users of cannabis, the drug's impact on sporting performance, and mental health.

But there were also sessions on music as a healer, motivational interviewing, and

> **“The big change is acknowledging people can experience problems with cannabis use. Back then, no one got into trouble with cannabis.”**
>
> PROFESSOR WAYNE HALL

> **“What we do know is that the dangers of cannabis use are strongest for young users and heavy users.”**

the Rastafarian movement and cannabis use in Jamaica.

Agitation for legislative reform cut a backdrop to the 1993 symposium, and it is an even more visible and heated factor of the political landscape today. The same can be said of concern at the impacts of youth cannabis use and high levels of use among Māori. But fear over rising cannabis use, which was a key feature of the landscape 20 years ago, has fallen away as newer, more alarming drugs such as methamphetamine take hold and cannabis use among young New Zealanders drops.

> **“Cannabis remains something of a societal oddity. It is both illegal and commonplace.”**

In 1993, a drugs survey from three years earlier was used to gauge cannabis use. It canvassed more than 5,000 New Zealanders, aged 15 to 45, and found 43 percent had tried cannabis, 12 percent had used it within the past year and had not stopped using and 3 percent had used it at least 10 times in the previous 30 days.

Today, a 2010 report is used. It found 14.6 percent of adults, aged 16 to 64, used cannabis in the 12 months leading up to the 2007/8 survey on which the report was based. Meanwhile, the *Health and Wellbeing of New Zealand Secondary School Students in 2012* report reveals 38.2 percent of teenagers had tried cannabis in 2001, but this had fallen to 23 percent by 2012.

The Christchurch Health and Development Study found 75 percent of New Zealanders try cannabis by the age of 25. The study tracks 1,265 children born in Christchurch in the winter of 1977. It has been the source of some 400 reports and academic papers, including some focused on cannabis and mental health.

Hall says, thanks to the development study, we now know a lot more about the impacts of regular cannabis use on young adults than we did in 1993 (when the participants were 16). The groundbreaking work of Professor David Fergusson and his team at the University of Otago, Christchurch, has established a link between cannabis use and psychosis symptoms such as paranoia, delusion and perhaps hallucination. The linkage is strongest among users who are both young and report heavy use.

This research has offered one of the most pronounced advancements in the understanding of the impacts of cannabis and is supported by the findings of Australian and European research.

Young people and cannabis

Cannabis remains something of a societal oddity. It is both illegal and commonplace.

Otago University Associate Professor Joseph Boden works on the Christchurch Health and Development Study (CHDS). He finds the drug’s status intriguing: “It’s normal, even in an environment where it’s not legal.”

He says the Otago study shows most Kiwis try cannabis once or twice but never return to the drug. “It doesn’t fit in that well with people’s lifestyles.”

There is no known fatal dose for humans. There is a listed LD50 (lethal dose) for rats, mice and dogs, but it is very large; so large that an analogous dose for humans would be pretty much impossible to consume. Cannabis has been used by humans much longer than the 50-odd years it’s had a profile in the western world.

“Humankind has a very long history with the drug; has had an awareness for a very long time,” Boden says.

That’s perhaps evidenced by the fact humans have THC receptors in the brain. Boden says these ‘set points’ mature or harden in adulthood (sometime around 18–21years). Before the set points mature, heavy cannabis use can cause changes to the brain that make a person more susceptible to some of the adverse effects of cannabis use.

“What we do know is that the dangers of cannabis use are strongest for young users and heavy users.” Heavy use is defined as somewhere between daily and weekly use.

“Young brains are really susceptible to the … effects of the drug.”

Paora Joseph says some Māori have adopted cannabis as part of their culture.

> **"When it becomes habitual, a part of the culture, a part of daily life, that's when it's a problem."**
>
> PAORA JOSEPH

Adopting cannabis culture

Boden says Māori have much higher levels of cannabis consumption and dependence than non-Māori. In the CHDS, Māori at age 25 had nearly twice the rate of cannabis dependence (20.2 percent, against 11.9 percent for non-Māori). The risk of dependency is particularly high for Māori males.

This is why psychologist and film maker Paora Joseph says Māori appear to have a particular fondness for cannabis and the culture around it. Although it is not a traditional element of Māoritanga, the drug has been given something of a cultural status in some Māori communities.

"What I see is it's kind of built into the culture," Joseph says. "It's been adopted as the norm."

In his work and in the making of his acclaimed documentary *Hiding Behind the Green Screen*, Joseph has met many Māori who have adopted aspects of the Rastafarian culture associated with cannabis as their own – from music to dress to drug use.

"When it becomes habitual, a part of the culture, a part of daily life, that's when it's a problem."

The habit is not only problematic for the health of the user but also the health of the user's whānau. People talk past each other in a family where cannabis use is prevalent, Joseph says, and their interactions lack the depth necessary to adequately communicate.

Joseph says use of cannabis among Māori is increasingly intergenerational; he believes the drug becomes more embedded among Māori as each new generation is introduced to it.

Cannabis and mental health

Hall says many researchers *believed* cannabis was a drug of dependence back in 1993, but they had no proof to offer those who said it was an easy drug to stop using. Since then, Hall says dependence has been proven, and this has been bolstered by evidence of large numbers of young adults presenting to treatment services requesting help to get off cannabis.

Today, researchers are largely agreed on the adverse effects of dependence. Young people using cannabis are more like to leave school early, fail to develop satisfying personal relationships and be dependent on welfare.

In 1993, researchers suspected a modest association between cannabis use and major depression. Boden says, in the intervening years, the Christchurch cohort has provided evidence of an association, although it is relatively weak and difficult to detect. There is a stronger association between cannabis use (in particular, cannabis dependence) and anxiety disorder.

Research has also established a link between cannabis and suicidal ideation, particularly in males. Boden says, by the age of 30, the vast majority of heavy users are male.

Hall says the link between cannabis and psychotic symptoms is strong, but the

> **“The longer you use, and the more heavily, the more likely you are to be impaired.”**
>
> NADIA SOLOWIJ

association with depression is harder to understand. Did users turn to cannabis because they were depressed, or did cannabis use drive their depression?

> **“I don’t associate cannabis use as being particularly healthy at all. We know that there are a lot of harms associated with cannabis.”**
>
> NADIA SOLOWIJ

Brainpower

Nadia Solowij is an Associate Professor at the University of Wollongong. For more than 20 years, she has focused her research on cannabis use. Her team works with key laboratories across the globe on projects utilising the latest neuro-imaging technology.

In 1993, as Solowij was just completing her PhD, she also presented at the Drug Foundation symposium. She discussed novel evidence showing the long-term effects of cannabis on cognition.

Cognition concerns brain function. Cannabis use seems to have the most impact on memory. Other aspects of cognition that are often impaired by cannabis use tend to be higher-functioning skills such as information processing, planning and executive abilities.

Impairment in these areas is most evident when the pressure is on, in cognitively demanding tasks. In 1993, this was not understood.

“Most people suspected there weren’t any long-term effects,” Solowij says.

It is still not certain whether cognitive recovery is possible after the damage has been done. Solowij suspects it is possible, but it could take a long time for the brain to normalise – particularly after long-term heavy use.

“The longer you use, and the more heavily, the more likely you are to be impaired.”

Solowij says the majority of the effects on cognition are relatively subtle. The effects may combine to make a person function less well, but they will still function in the community.

“So maybe, in the scheme of things, it is not *so* bad, but they do not function as well as they would if they hadn’t used cannabis.”

Solowij says IQ is another area impacted by cannabis use. Studies have shown that, over time, cannabis use will reduce a person’s IQ.

The most definitive study was a Dunedin cohort assessed during adolescence and again at age 38. Those who persisted with cannabis were shown to have lost eight IQ points over those 20-odd years.

In recent years, Solowij’s focus has turned to the complex area of

> **“It is fairly widely acknowledged now that there is a link [to schizophrenia]. It’s almost, I would say, undeniable.”**
>
> NADIA SOLOWIJ

schizophrenia and the key question: why do some people develop psychosis when they use cannabis and others don’t?

Predisposition to schizophrenia can’t be explained by a single gene. There are a range of individual differences, including genetic make-up.

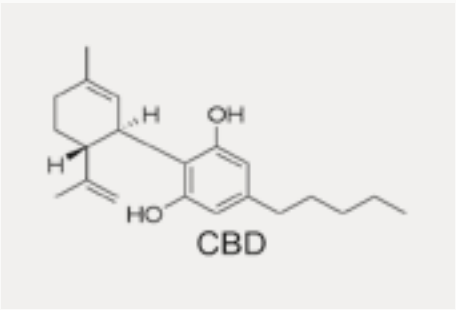
Within the general population, about 1 percent of people develop psychosis. Researchers now know that, of these, 13 percent would not have developed psychosis if cannabis hadn’t triggered their vulnerability to the condition.

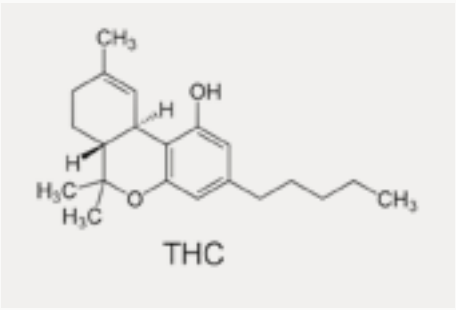
Back in 1989, a groundbreaking study revealed a link between cannabis and schizophrenia.

“Most of us didn’t believe it,” Solowij says.

Scientists stood alongside the general population in a belief that cannabis was “not that harmful”.

She says, “It took quite a long time before new studies started to emerge – a wide range of studies, large studies … It is fairly widely acknowledged now that there is a link [to schizophrenia]. It’s almost, I would say, undeniable.”





Like Hall, Solowij says recognition of the harmful effects of cannabis is a major change in the 20 years since 1993. It's no longer considered the "healthy option" in terms of drug use.

"I don't associate cannabis use as being particularly healthy at all. We know that there are a lot of harms associated with cannabis.

"I do think most people would recognise and acknowledge that it is harmful."

Cannabis and the human body

There is emerging evidence cannabis has a harmful effect on cardiovascular function. Regular users may also suffer from poor respiratory function and a higher risk of chronic bronchitis.

However, Hall says the cancer link you might expect to see with a product that is predominantly smoked hasn't yet been conclusively proven or adequately quantified. The research is muddied because most people who smoke cannabis also smoke tobacco. Hall insists, due to the difficulties involved in isolating cannabis's impact, the absence of evidence does not equate to exoneration.

But cannabis also offers health benefits.

Solowij says there is some evidence that cannabis use lowers intra-ocular pressure in glaucoma sufferers. Of all the medicinal claims associated with cannabis, this one is perhaps the most substantiated.

> **"A number of countries are making some substantial changes, there is an opportunity to watch and learn from that experience."**
>
> STEVE ALLSOP

However, because the drug's impact is short-lived, the positive impacts would subside after about three hours.

There is some research suggesting cannabis retards the growth of some forms of cancer. Studies showed breast cancer cells in Petri dishes stopped in their tracks when faced with cannabis, while a Spanish study found the chemicals in cannabis promoted the death of brain cancer cells.

(However, other research revealed testicular cancer was 70 percent more likely to develop in men who use cannabis.)

One of the major developments in cannabis research in recent years has been the identification of potential health benefits associated with cannabidiol (CBD).

Tetrahydrocannabinol (THC) is the compound responsible for the most infamous impacts of cannabis use – the stoned feeling, memory loss and, in an unfortunate minority, psychotic episodes.

CBD is another compound of cannabis. Over the decades, breeders have sought to increase the THC in their product, and Solowij says the CBD content has subsequently diminished or even been eliminated. This is of particular interest to researchers because early studies have shown CBD may have anti-psychotic and anti-anxiety properties. It's believed CBD could provide neuro-protective and anti-inflammatory benefits in multiple sclerosis sufferers, control chemotherapy-induced nausea, prevent the formation of deposits in the brain associated with Alzheimer's disease and help reduce HIV-related neuropathic pain. It is early days in terms of definitive results, but Solowij says CBD is now a major area of research for teams like hers.

Other new avenues for research

Canadian researcher Amy Porath-Waller regularly reviews Police reports. She says it's now common for people to be using multiple drugs at once.

Porath-Waller says, 20 to 30 years ago, the levels of THC present in cannabis were much lower. Police hauls tested in Canada in 1985 showed 3.5 percent THC – in 2008, the average had risen to 12.5 percent. In the United States, THC levels averaged 9.8 percent in 2009, while in Australia, they were around 15 percent.

This increasing potency, combined with what is now known about the impact cannabis can have on the developing

adolescent brain, provides an alarming backdrop to prevention efforts.

Steve Allsop, Director of Australia's National Drug Research Institute, says 2013 is a fascinating moment in time for those interested in the criminal status of cannabis and the impact that status may have on the health of a population.

He values the opportunity to watch and learn from the experiences of Colorado and Washington, as they legalise cannabis use, production and sale, and other jurisdictions around the world that are decriminalising cannabis possession and use.

"A number of countries are making some substantial changes," Allsop says. "There is an opportunity to watch and learn from that experience."

Boden, who is American, is also intrigued by the changes under way as Colorado and Washington transition to a fully legalised cannabis trade.

"This could be the beginning of the end for prohibition in the States."

With the legalisation of cannabis, he expects research into the impacts of the drug will expand and develop greater sophistication, and the next 20 years will reveal even greater knowledge of the impacts of cannabis use on human health. ■

Keri Welham is a Tauranga-based writer.

Sean Plunket: not a poster boy, just another New Zealander

Sean Plunket last smoked cannabis with doctors and surgeons at a New Year's Eve party near Auckland.

THE RadioLIVE presenter sees nothing extraordinary in that fact – or in the fact he's talking about it.

Earlier this year, during a talkback segment on cannabis law reform, Plunket outed himself as an occasional cannabis smoker.

Health Ministry figures from 2010 suggest 14.6 percent of adults used the drug in the past year, and the Christchurch Health and Development Study reveals 75 percent of people have tried the drug by the time they are 25. While discussing cannabis, Plunket revealed he was among those who had used the drug in the past year.

The revelation was met with little response from the mainstream media, his audience or his bosses. "I didn't consult anyone, and I don't think it was regarded as a big deal."

But he wouldn't have been so complacent in 1993. He says, back then, he probably wouldn't have had the confidence to speak openly about his drug use.

"It's become less of an issue over the last 20 years."

Plunket first tried cannabis in Standard 2, aged about eight, at parties he went to with his mother. This demystified the drug for him, and although starting young, he has never been a regular cannabis user.

"It was never a big deal."

He purchased what he thought was cannabis at age 17 and was caught and suspended from boarding school. In retrospect, he believes he actually purchased herbal tea.

These days, there's no chance he'll be duped into buying a tinny of tea. Plunket doesn't buy cannabis and doesn't keep any in his house. He draws the line at purchasing cannabis because he doesn't want his discretionary dollar going into the pockets of criminal enterprise.

But when he's offered some at a party, he sometimes says yes. He says he smokes cannabis about five or six times a year.

"I don't buy illicit or illegal drugs. If I'm offered marijuana in a social setting and I feel comfortable ... about my privacy, and I think it would be a social lubricant, like having a drink, I'll have some."

His preference for cannabis control would be a system where the drug is treated similarly to home-brewed beer: you could grow a small amount for yourself and have some mates over, but you couldn't legally sell your crop.

Plunket, 49, says he will not be mirroring his childhood and exposing his son to marijuana to demystify the drug.

"I do not advocate minors using any form of drugs [including] cannabis or alcohol."

Rather, his strategy is to raise a child equipped to make sound judgements regarding his safety and informed decisions about risk. It's a plan that clearly acknowledges marijuana's prevalence in New Zealand society.

"I'm keen for us to say as a country that, let's be honest, marijuana permeates much of society. It's not an uncommon recreational drug."

Plunket says he has no intention to become a poster child for cannabis law reform; his motivation was simply about honesty. He felt he couldn't host a thorough debate about cannabis on his show without admitting that he was among the half a million New Zealanders who use cannabis.

"I'm a very, very average New Zealander, actually. I wouldn't die in a ditch for alcohol law reform, and I wouldn't die in a ditch for drug law reform. But how on earth are we going to have an honest discussion if grown adults won't [admit] the place it has in New Zealand life?

"I'm keen for us to say as a country that, let's be honest, marijuana permeates much of society. It's not an uncommon recreational drug."

Harms: the known, the probable and the unclear

In 2009, Professors Wayne Hall and Louisa Degenhardt wrote a review for leading journal *The Lancet* titled 'Adverse health effects of non-medical cannabis use'. Below are excerpts of their findings:

What is known or probable

- Acute adverse effects of cannabis use include anxiety and panic in naïve users and a probable increased risk of accidents if users drive while intoxicated.
- Use during pregnancy could reduce birthweight but does not seem to cause birth defects.
- Chronic cannabis use can produce a dependence syndrome in as many as one in 10 users.
- Regular users have a higher risk of chronic bronchitis and impaired respiratory function and psychotic symptoms and disorders (most probably if they have a history of psychotic symptoms or a family history of these disorders).
- The most probable adverse psychosocial effect in adolescents who become regular users is impaired educational attainment.
- Regular cannabis use in adolescence might also adversely affect mental health in young adults, with the strongest evidence for an increased risk of psychotic symptoms and disorders.
- The public health burden of cannabis use is probably modest compared with that of alcohol, tobacco and other illicit drugs.

What is unclear

- In the case of depressive disorders and suicide, the association with cannabis is uncertain.
- For cognitive performance, the size and reversibility of the impairment remain unclear.
- Whether cannabis contributes to behavioural disorders in the offspring of women who smoked cannabis during pregnancy is uncertain.
- Adolescent regular cannabis users are more likely to use other illicit drugs, although the explanation for this association remains contested.

The 'gateway' drug

Canadian researcher Amy Porath-Waller has analysed various studies into the role of cannabis as a gateway drug. Does cannabis use lead to the use of synthetic drugs capable of causing more harm? The debate was raging 20 years ago, and there's still no definitive answer.

Dr Porath-Waller, a senior research and policy analyst at the renowned Canadian Centre on Substance Abuse (CCSA), says, unfortunately, there is no definitive answer to this recurring question. The findings are mixed. There is quality research to prove it and equally sound and compelling research to disprove it.

However, researchers in her network say young people report that they do see cannabis as a gateway drug.

She and her colleagues hear that young people go to their drug dealer to pick up cannabis and are offered ecstasy.

"Just by using cannabis, they are getting exposed to other drugs."

The world watches

To legalise, or not to legalise: that is the question. Colorado, Washington and Uruguay have decided to go ahead with allowing the recreational use and sale of cannabis, and the world is watching. But there are still many questions around how these systems will work. **Russell Brown** investigates the devil in the detail of legalising cannabis.

RUSSELL BROWN

YOU'RE going to legalise and regulate the trade in cannabis. It's the thought experiment at the centre of any argument for drug law reform, but this time it's for real. What do you need to know?

"How much cannabis is currently sold, by the tonne and by the dollar?" asks Mark Kleiman. "How much should you expect to sell legally? How many square feet of production capacity is that? If you're going to allocate retail outlets to counties based on consumption, what would that map look like? For what impurities and adulterants should cannabis be tested, and what's the available testing technology? What's the environmental impact?"

These are a few of the questions Kleiman, the new "pot czar" (he doesn't much like the term) of the US State of Washington, has been proposing and trying to answer since voters last year, via Initiative 502, instructed their state to legalise the production, sale and use of cannabis.

The former Department of Justice analyst has been preparing for this day for a long time – it's nearly a quarter of a century since he wrote *Marijuana: Costs of Abuse, Costs of Control*. The jump from theory to practice must have been a thrill.

"Oh yeah," agrees Kleiman. "It was completely irresistible when this came along."

The real work began in March when the Washington State Liquor Control Board selected a team from the Massachusetts-based think tank BOTEC Analysis as its technical vendor. Kleiman, as CEO of BOTEC, leads the project team, which includes Beau Kilmer, Co-director of the RAND Drug Policy Research Centre and Kleiman's co-author on last year's book *Marijuana Legalization: What Everyone Needs to Know*.

Kleiman is now one of the key figures in a cluster of experiments that will be watched all over the world. Colorado, like Washington, passed an initiative to legalise the production, sale and use of cannabis, and the government of Uruguay has passed laws introducing direct state control of a cannabis market.

"Everyone in drug policy will be inevitably looking at these experiments closely – they are hugely important," affirms Steve Rolles of the British drug policy foundation Transform.

"Lessons will need to be learnt from both successes and failures, and the fact that there are different models in the two states – and in Uruguay – is also useful from a comparative perspective. It's much easier to study a legal market than an illegal one, so whether the outcomes are good or bad, there will certainly be a lot of quality data to inform future debate."

The fact that Kleiman is helping Washington regulate its new market doesn't mean what's happening there is necessarily what he would do.

"My ideal world would not have commercial sales. But given their voters wrote their laws for them, I think both Colorado and Washington are doing a perfectly reasonable job of setting up regulation.

"They're operating under the alcohol model. As the liquor board, they are held responsible if their licensed sellers are reselling to minors. They're held responsible if there are unlicensed sellers, if bars are operating past the allowed times or serving people who are obviously drunk or allowing a lot of noise that bothers the neighbours. And they're held responsible if there's tax evasion. That's the complete list.

"They're not held responsible when somebody gets drunk and commits suicide or wrecks his car or beats up his girlfriend or commits a rape. And I think it's wrong. If I were setting up a liquor control system, I would say to local authorities, you're accountable for minimising the public damage from heavy drinking, and figure out how to do that.

"I think, in the case of cannabis, there in fact is a political matter. They're going to be held accountable for a much wider range

Sanho Tree thinks there might be backlash against ganjapreneurs.

of outcomes. But it's not easy for them to think in those terms."

"Mass advertising, promotion, using items that are attractive to kids – like medical marijuana lollipops, 'Ring Pots', 'Pot-Tarts' – are all characteristics of current policy."

"'Legalisation' is just a word, it's not a policy or a strategy," observes Kasia Malinowska-Sempruch, Director of the Open Society Global Drug Policy Program.

"To understand the policy or strategy, you need to look at what it's intended to do. The Dutch have some smart regulations and some great public health strategies. They just never resolved the supply problem. I think what they are doing in Washington and Colorado will resolve some of those issues, but they will likely encounter their own challenges."

She's impressed by the attention to process in both US states ("all those studies and hearings!"), but it's hard to debate that the most important formal move has come from the US Federal Government. US Attorney General Eric Holder advised recently that the government, while emphasising that cannabis remains illegal under the federal Controlled Substances Act, should not meddle with the state initiatives, subject to eight enforcement criteria being met. These include keeping the trade away from minors and criminal groups and preventing the "diversion" of cannabis to other states.

Given that the Obama Administration has, with the help of a cluster of US attorneys, been actively hostile towards some state medical cannabis operations, this was big news.

"It was the best we could have hoped for under our system of checks and balances," says Sanho Tree, Director of the Drug Policy Project at the Institute for Policy Studies.

"Holder could not change the laws – only Congress can, unless the Supreme Court declares a law unconstitutional. So he urged the US attorneys to exercise discretion and focus on the points that interest the Feds. His suggestion is not enforceable, but it is a huge political victory in that the executive branch has thrown in the towel in terms of responsible adult cannabis use."

The hardline US attorneys at the sharp end of the Federal Government's hostile approach towards some medical cannabis suppliers were quick to insist that Holder's statement would make little difference to their approach. But it seems likely that Colorado, which has been running a much tighter medical pot regime than California, is well placed to introduce a system that will keep the Feds out of its hair.

"The medical scene has been very tightly regulated in Colorado – unlike California," says New Zealand reform advocate Chris Fowlie, who recently visited the state.

"From the seeds all the way through to actually smoking it. All the plants have barcodes on them, and they see that as one of the reasons legalisation happened – it disproved all the 'sky will fall' claims. It was de facto legalisation, and it disproved all the lies that prohibitionists feed us. Everyone over there told me that was crucial to public support growing and growing."

Kevin Sabet, Director of the Drug Policy Institute at the University of Florida, takes a very different view of Colorado's med-pot experience, noting the drug-testing company Conspire's report this year that THC concentrations in the blood of state high school students had risen sharply – suggesting more frequent use.

"Anyone who has been to Colorado – or California, for that matter – since 2009 can get a sense of what full legalisation looks like already," says Sabet.

"Mass advertising, promotion, using items that are attractive to kids – like medical marijuana lollipops, 'Ring Pots', 'Pot-Tarts' – are all characteristics of current policy."

Each cannabis plant in Colorado is tracked from seed to sale.

“In Colorado, though traffic fatalities fell 16 percent between 2006 and 2011 – consistent with national trends – fatalities involving drivers testing positive for marijuana rose 112 percent.”

But by any lights, legalisation has obliged everyone to confront questions that had been put to one side under medical cannabis. A key issue for regulators is standardisation, and it turns out that the science of testing cannabis product just may not be there. Rolles doesn’t see it as a problem.

“The medical cannabis industry has established ways of reliably producing standardised products. Testing is not a perfect science, but error margins can also be tested and factored into regulation models, and we would expect testing science to become increasingly sophisticated as time goes on.”

Kleiman isn’t so sure.

“I think it’s going to be a huge problem,” he says.

“There’s a question about simply measuring THC content, which is solvable up to the tolerance you need a solution to. The real issue is that, for alcohol, there’s one active agent. If I know it’s 6 percent alcohol, I know everything I need to know. Cannabis has at least three and maybe 40 chemicals that matter.

“I assumed when we started this we’d just look at the literature, figure out some key ratios of, say, THC to cannabidiol and require special labels for anything over some ratio. And then we look at the papers, and it’s not there. We simply do not have the science to put together a decent warning label. Can I show you a paper that shows that a 200:1 ratio of THC to CBD is riskier than 6:1? I’d bet my eye teeth on it, but I don’t have the paper for it.”

And then there’s the unanswerable question: what to do about cannabis and driving?

“We already know marijuana and driving is a growing problem in states with loose marijuana laws,” says Sabet.

“In Colorado, though traffic fatalities fell 16 percent between 2006 and 2011 – consistent with national trends – fatalities involving drivers testing positive for marijuana rose 112 percent.”

“Nobody wants to say it out loud, but I think it probably needs a good leaving alone,” says Kleiman.

“Here’s the problem: it’s clear that being stoned decreases your executive function and multi-tasking ability. It renders many people inattentive.

“It’s also clear that knowing you’re stoned leads people to be cautious – the opposite of alcohol. The stereotypical stoned driver is driving 15 miles an hour in a 40 zone. He’s paranoid about how he’s driving.

“So that sounds like good news. The other thing that sounds like good news is, when you let an experienced pot smoker get as stoned as they want and put them on a simulator, their degradation is at about the level of .08 THC. That’s just about the threshold of what’s considered impaired driving for alcohol.

“So all of that doesn’t sound like it adds up to extremely dangerous driving. Now the bad news – people are empirically impaired for several hours after they’re subjectively back to baseline. So the people who don’t think they’re stoned are the potentially dangerous drivers.

“THC is fat soluble, and unless you do very fancy stuff with metabolite ratios, you can’t tell whether somebody smoked two hours ago or three days ago. And so if you have a strict nanogram per millilitre rule,

which is what's in the Washington statutes, anybody who's a regular pot smoker can never drive. That's not workable.

"And the other bad news is that people don't just use pot. So here's a rule I would have. If you have cannabis on board, then your blood alcohol content limit is zero. You may not drive with both cannabis and alcohol in your system. And that's an easy rule to observe. Your BAC will be zero n hours after your nth drink. So if you are going to be a smoker, you may not drive for as many hours as you've had drinks. Zero's a good number."

The lack of a non-invasive roadside test is a significant factor, he says.

"Unless there's an accident and someone's injured, I just don't think anyone's going to be caught for driving under the influence of cannabis."

Here's something everyone can agree on: if cannabis is to become one of the legal drugs, it's important to avoid the kind of damaging commercial practices that have grown around tobacco and alcohol.

"If any millionaire 'ganjapreneurs' attempt to create the Starbucks of pot, it could trigger a federal backlash and set us all back," says Tree.

"Personally, I would ban commercial branding because it would create the drive to increase market share, but there are many libertarians in the reform movement who view business interests as sacrosanct. Our First Amendment could also complicate advertising restrictions."

"Unlike with tobacco in the past, we must always courageously look at the evidence of what policies are doing well and what needs to be changed," says Malinowska-Sempruch.

"Unlike street drug dealers, any business that gets into the market has to play by the rules. And I don't know a single drug policy reformer who will let the mistakes of Big Tobacco be repeated."

"In the US, it will be very difficult to stem the tide of commercialisation," counters Sabet.

"We have lived through 100 years of misery with Big Tobacco. Why on earth would we want to repeat another 100 or more years with Big Marijuana?"

"Big Tobacco isn't the right way to look at it," says Kleiman.

"If you're selling a product that creates a subgroup of users who are heavy, out of control, problem users, they account for such a large fraction of the total volume sold, they're your primary market even though they're a minority of users," he says.

"So it's not that there are evil people who decide to go into these industries. These industries create natural economic interests, provider interests, that are flatly contrary to the interests of consumers and the public. That's the case for not having a commercial market – for having either grow your own plus co-ops or a state monopoly."

"If any millionaire 'ganjapreneurs' attempt to create the Starbucks of pot, it could trigger a federal backlash and set us all back."

The potential for enterprise isn't limited to supplying the product. Colorado's reform created space this year for the first Cannabis World Cup (a kind of A&P show with prizes for buds rather than pumpkins) to be held on American soil. An associated events company quickly sold out a pot holiday, with visits to growing and supply facilities by day and parties by night. Fowlie was the only non-American to get a place on the tour – making him the world's first fully legal international cannabis tourist.

The promoters, he says, were not anyone's archetypal weed dudes.

"They looked like they'd run an IT company. They were very savvy with the media and had a lot of media following them."

There are many other angles. Tree believes the politics of legalisation will tear apart the conservative and libertarian wings of the Republican Party. No one seems quite sure how legalisation will affect general policing when the smell of cannabis is no longer an all-purpose source of probable cause for stop-and-search actions.

For Fowlie, the key impression was of the similarities and differences between the American reforms and New Zealand's new Psychoactive Substances Act.

"What we're doing with that Act in New Zealand is almost exactly what they're doing with real, natural cannabis in the United States. We're licensing producers here, they're licensing producers in Colorado and Washington. The irony here is that, if natural cannabis was available in New Zealand, there would be very little demand for the synthetic stuff.

"Don't get me wrong – I think the Psychoactive Substances Act is a really good approach to controlling drugs, probably the best approach that's ever been done anywhere in the world, and it's something we should really be proud of. It might well come with some problems and some teething issues that we won't be aware of yet, but that hypocrisy of not allowing the real cannabis is really jarring. People I talked to about it in Colorado thought it was astounding."

No one thinks Washington and Colorado will be the end of the story. More US states and perhaps Central and South American countries will follow. And in New Zealand, it may not be a big leap for natural cannabis to come under our Psychoactive Substances Act.

For Sabet, there is no good rationale for any of it.

"It would mean more addiction, health costs, social problems and safety risks than we will be able to handle. That doesn't mean our current laws can't be reformed – but legalisation is a risky way to do that."

The experts differ sharply on whether the pot legalisation experience would have implications for the status of other illicit drugs. Kleiman and Malinowska-Sempruch regard cannabis as a distinctly separate case, but Rolles believes "the rationale is no different, and we are wary of what you could call 'cannabis exceptionalism'. Some people argue we should regulate cannabis because it's safe – we think it should be regulated because it's dangerous, and the same goes for most other drugs. No drug is made safer when produced and sold by unregulated criminals."

Kleiman notes the state propositions were strongly marketed on "taking pot out of the hands of criminals" to free up law enforcement for more important tasks.

"But there's a different, somewhat more obscure argument that may actually be the winner, which is that cannabis may turn out to be a substitute for alcohol and possibly for other drugs of abuse. Because it's pretty clearly the least harmful of the bunch, if cannabis substitutes for alcohol, it wouldn't have to substitute very much for the gains from reduced heavy drinking to overwhelm any increase in the cost from heavy dope smoking.

"Yet the uncertainty about the effect of cannabis on alcohol consumption is large enough to swamp any rational calculation. We don't think there's enough science in the world to give us the answer to the question.

"It's just … here be tygers. That's the way the map reads." ■

Russel Brown blogs at publicaddress.net.

Not what your mum and dad smoked?

Anecdotes abound comparing the mellow weed of the old days with the edgier dope of today. Has cannabis become more potent since the 70s? **Rob Zorn** ask whether this is so and what implications potent pot might have.

ROB ZORN

IN 2007, Britain's *The Independent* published a retraction of its previous pro-decriminalisation stance because it had found out cannabis had become 25 times stronger over the last 10 years.

These claims were based on a statement by the UK's Forensic Science Service (FSS). The FSS said that, in the early 1990s, cannabis typically contained around 1 percent tetrahydrocannabidinol (THC) but can "now" have up to 25 percent.

In reaction to these "melodramatic" reports, *The Guardian's* Ben Goldacre examined the FSS's data and compared it with data from the Laboratory of the Government Chemist (LGC), the United Nations Drug Control Program and the European Union's Monitoring Centre for Drugs and Drug Addiction. He found there was indeed a rising trend in cannabis potency but described it as "gradual" and fairly "unspectacular".

"The Laboratory of the Government Chemist data goes from 1975 to 1989. Resin pootles around between 6 percent and 10 percent THC, herbal between 4 percent and 6 percent, with no clear trend," he wrote.

Goldacre pointed out varying and higher THC levels were hardly anything new. LGC data shows 50 seized herbal cannabis samples in 1975 had an average THC content of 7.8 percent, with the highest at 17 percent. Samples of cannabis resin seized ranged form 4 percent to 16 percent.

So potency varies, and it's not difficult to come up with scary figures if you compare the lowest percentages one year with the higher percentages of a few years later. For example, in the mid 1980s, during Ronald Reagan's War on Drugs, it was claimed cannabis was 14 times stronger than in 1970. If it's now 25 times stronger than it was in 1990, that would make cannabis 350 times stronger than it was in 1970!

"That's impossible," Goldacre wrote. "That would require more THC to be present in the plant than the total volume of space taken up by the plant itself."

And, come to think of it, it would be just as easy to compare the higher vintage figures with a selection of lower modern ones to 'prove' THC levels are falling. You can prove anything with statistics.

The truth is, despite Goldacre's reasonable cynicism at the time, cannabis THC levels do seem to be rising to a point that is scientifically or statistically significant, and a good number of studies have attested to this.

A 2012 Italian meta-analysis of 21 case studies containing 75 total mean THC observations from 1979 to 2009 found a significant correlation between year and mean THC in herbal cannabis, "revealing a temporal trend of increasing potency worldwide".

A study by Eric Sevigny, also published in 2012, looked at data from the US government-sponsored Potency Monitoring Program, which performs ongoing forensic analysis of seized cannabis samples. He found there had been a six- to seven-fold increase in THC percentages in seized cannabis between 1970 and 2010 and suggests there are a number of reasons why this may be so.

It could be cannabis is now fresher due to the change from foreign to domestic supply – and apparently fresher is better. There have also been continuing advances in sophisticated cultivation techniques, though there is no real evidence that cannabis grown indoors under lights is necessarily stronger; it just varies a lot less in quality.

Sevigny also argues that, if the distribution of seized cannabis products reflects the composition of the actual market, then market-related factors have been a more influential driver of potency. This is especially so since the 1980s when cannabis quality improved considerably and people moved from smoking the whole plant to smoking only the high-potency buds.

He writes, "From this 1980s baseline, one can reliably conclude that average marijuana potency more than doubled over the last three decades, with most of this increase occurring since 2000 as high-potency sinsemilla came to dominate the market."

Does stronger pot matter?

That cannabis is more potent on average probably does matter because all drugs come with harms, and the stronger the drug, the greater those harms might be for those who experience them. For example, a 2009 *British Journal of Psychiatry* study found people with a first episode of psychosis had smoked higher-potency cannabis for longer and with greater frequency than a healthy control group. The researchers attribute the psychosis to THC, which seems reasonable according to what we currently know. THC is the most powerful psychoactive

> **“The new stuff is a bit more potent than it was 20 years ago when I started smoking. The end result for me is that I smoke a lot less of it.”**

cannabinoid in the cannabis plant and the one that gets you high.

What’s worrying, though, is that, while THC levels are increasing, levels of cannabidiol (CBD), the other important cannabinoid, are not. Cannabidiol is almost the polar opposite of THC in its effects. It has anti-psychotic properties and is thought to calm the impulses towards anxiety and panic that can come with a cannabis high. It seems important you get a good dose of CBD with THC, and for those predisposed towards mental illness, cannabis with a low ratio of CBD to THC may be more dangerous.

It’s interesting to note the composition of Sativex – the cannabis-based medicine – is 50/50 THC/CBD, a composition arrived at because it worked well and had the least unpleasant side effects.

The other side of the coin, of course, is that stronger cannabis means less smoke is needed to get high. That’s a good thing when you consider one of the undeniable harms from cannabis smoking is its effects on the respiratory system.

“The new stuff is a bit more potent than it was 20 years ago when I started smoking,” *High Times* editor Chris Simunek told CNN in August this year. “The end result for me is that I smoke a lot less of it.”

The same article describes experiments that show users tend to smoke less when the quality is good. It also quotes US government statistics that show patients entering US emergency rooms with cannabis in their system have increased 19 percent in the last two years.

Closer to home, an analysis by the National Drug and Alcohol Research Centre (NDARC) at the University of New South Wales, published in July this year, found that that, on average, cannabis smoked by Australians is of similar high potency to that found in studies overseas and that levels of CBD, “which may ameliorate some of the harmful effects of THC”, are extremely low.

“These results suggest the profile of cannabis currently used in Australia may make some users vulnerable to mental health problems,” says study leader and NDARC lecturer Dr Wendy Swift, and it would be reasonable to assume the same applies in New Zealand.

She continues, “The high THC/low CBD profile of Australian cannabis has been linked to increased risks for cannabis dependence, increases in treatment seeking and increased vulnerability to psychosis.

“There is still little research on the impact of potency on these issues, and we need to know more about the factors which affect how people respond to the drug. It is important that we have a national routine monitoring system to assess trends in the profile of cannabis and to better understand its relationship with health outcomes.”

Recent major policy responses in several countries have reflected the high-potency health concerns. For example, when reclassifying cannabis as a category Class B in 2008, the UK Home Office said, “The significant increase in both the market share of higher than average potency cannabis and its actual potency in the last few years in the UK are compelling factors.”

In Holland in 2011, the Garretsen Commission recommended that cannabis with a THC level of greater than 15 percent be classified as a “hard drug”. The commission said this was due to the high THC levels in contemporary Dutch cannabis, which “increased the risks for public health”.

Cracking down on a problem in the hopes of legislating it away is certainly one approach, but when people are already doing something illegal because they enjoy it, making it even more illegal doesn’t seem all that effective as a deterrent. And as long as a largely uneducated market equates high THC levels with quality, that’s exactly what growers will work to produce in an unregulated environment.

That has policy implications for a country like ours whose most recent drug legislation reflects the understanding that drug use is inevitable and that minimising harm should be a priority. New Zealand may be world leaders in one regard, but there may be some things we could still learn in another.

In overseas jurisdictions where cannabis is legal for either recreational or medical use, various cannabis products come with content description labels that say what sorts of cannabinoids they contain, how much of each is present and what their effects are likely to be. This could be an effective way of reducing consumption (and therefore production) of high THC strains because the market would become much more aware that THC potency is not the be all and end all of enjoying cannabis.

This strain helps with insomnia. This one produces a mellow high and is good if you tend to get paranoid. This one works well if you eat it.

Food for thought. ■

Rob Zorn is a Wellington-based writer.

Clearing the smoke

Cannabis is now widely accepted as a medical treatment, but does it have the evidential backing of other medicines? From herbal remedies to clinical therapies, **Max Daly** investigates the big business of medical cannabis.

MAX DALY

AFTER losing his right leg in a road traffic accident as a young man, New Zealander Billy McKee discovered that, for him, smoking cannabis eased the pain more effectively and with fewer side effects than conventional painkillers. He became an activist for the medical use of cannabis, grew some plants to keep him in medication and set up a website, GreenCross, to push for a change in the law.

To Police eager for an easy drug bust, he was the proverbial low-hanging fruit. Aware that a site that promoted medical cannabis could well lead them to the drug itself, Police decided that targeting McKee using an undercover officer could well get them a result. Donnie Brasco it was not.

In 2010, a constable going by the name of Lee Michaels called Billy, via the number advertised on GreenCross, and said he needed some help dealing with acute migraines. McKee recommended legal hemp oil and told him he should see a doctor in case the migraines were something more serious. But Lee Michaels was persistent.

In a string of emails, 'Lee' repeatedly asked the 58-year-old amputee for 'raw medicine', referring to cannabis. McKee advised him to become a member of GreenCross and to apply, as McKee had successfully done, to obtain an exemption from prosecution, under Section 8 of the Misuse of Drugs Act, via the support of his local GP. After four months of hassling, McKee relented, and over the next year, sold him four small bags of cannabis totalling around $300.

McKee's home was subsequently raided and 66 cannabis plants were found. Despite a defence that he was growing the cannabis for purely medical use, he was convicted last year of supply and cultivation and sentenced to 12 months home detention.

Picking up the morning papers to read about the case, evidently the result of a fairly spiteful act of low-level entrapment by the Police, New Zealanders may be forgiven for asking why, in their country, medical cannabis sellers were being hunted down by the Police, while in America and Canada, the authorities were helping them fill out their tax forms.

Medical cannabis will soon be allowed in some shape or form across half of America. The medical cannabis juggernaut is on a roll, and the therapeutic powers of cannabis are now a global concern. When Sanjay Gupta, CNN's chief medical correspondent, completed an abrupt U-turn in August by giving his full backing to medical cannabis, the story went viral. Infused with political agenda, half-baked claims and prejudice, it's an issue that has left many countries, states and jurisdictions somewhat perplexed.

The dilemma was explained succinctly in a paper by Peter J Cohen, a professor specialising in drugs and law at Georgetown University in Washington, DC, who wrote in 2009: "Whether medical marijuana should be accorded the status of a legitimate pharmaceutical agent has long been a contentious issue. Is it a truly effective drug that is arbitrarily stigmatised by many and criminalised by the Federal Government? Or is it without any medical utility, its advocates hiding behind a screen of misplaced (or deliberately misleading) compassion for the ill?"

Indeed, it is fair to ask whether America's trailblazing medical cannabis industry is merely a thinly veiled stepping stone to full, unadulterated legalisation. Or whether public health is being sacrificed on the altar of entrepreneurialism – and an instant state-sponsored tax bonanza for hard times.

Whatever is claimed about the medical properties of cannabis, it's a plant with a

long history of therapeutic use. Based on Chinese oral traditions going back to 2700 BC, Pen-ts'ao ching ('Big Herbal') is the world's oldest pharmacopoeia. It listed cannabis as being useful for treating rheumatic pain, intestinal constipation, disorders of the female reproductive system and malaria.

Records of its medicinal qualities pop up in Indian, Assyrian and Arabic medical literature. In 1464, for example, the scribe Ibn al-Badri reported that the epileptic son of the caliph's chamberlain was successfully treated with cannabis resin.

During the mid to late 19th century, the world's biggest laboratories, such as Merck in Germany, Burroughs-Wellcome in England and Parke-Davis in the US, were marketing a myriad of weird and wonderful cannabis extracts and tinctures, available in the high street store, to treat anything from gonorrhea to gout. Even Queen Victoria was prescribed cannabis for period pains. Her personal doctor declared the plant to be "one of the most valuable medicines we possess".

At the start of the 20th century, cannabis's quaint appeal was superseded by other medical advances and the fact toxicological testing through clinical trials became mandatory, before being ground into the dust by prohibition. Now, however, cannabis is back. And this time, with a complete makeover.

Research that began in the 1950s and snowballed since the 1980s has, without doubt, established cannabis as a plant with therapeutic potential. The fact that 18 states in America and countries such as Canada, Israel, the Czech Republic and Spain have decriminalised raw cannabis for medical purposes is testimony to that. In many countries, courts go easy on people caught with the drug who can prove they take it on medical grounds.

Studies have shown smoking cannabis and taking pharmaceutical drugs containing synthetic versions of chemicals found in cannabis, such as Marinol and Nabilone, can alleviate pain and combat nausea and loss of appetite among cancer and AIDS patients.

Cannabis-based drugs have been used as anti-inflammatories and to treat hypertension and memory loss, while new research is looking into how it can be used for diabetes, epilepsy, post-traumatic stress disorder (PTSD) and sickle cell disease.

Despite all this, the only thing cannabis is clinically proven to do, in terms of meeting the gold standards of a licensed medicine, is to treat pain and spasticity associated with multiple sclerosis (MS). The medicine that is proven to do this, Sativex, is a mouth spray whose chemical compound is derived from natural extracts of the cannabis plant.

GW Pharmaceuticals, the makers of Sativex, began growing its own crop of cannabis plants in the late 1990s. They obtained a licence from Home Office officials who were, according to GW, "quick to help us because they were eager to put clear blue water between the recreational and medical uses of cannabis".

To start off their cannabis grow, which now yields 20 tonnes a year from a secret location in the affluent southern English county of Kent, GW imported an entire cannabis seed bank from the Dutch firm Hortapharm. Sativex is now being trialled as an analgesic treatment in adult patients with advanced cancer and for its capacity to treat epilepsy and, ironically, cannabis withdrawal.

There are many claims made about cannabis, says Dr Ben Whalley, who has spent the last 13 years leading research at the University of Reading in England into how components of cannabis (cannabinoids) can help reduce and control seizures in epilepsy. He says the harsh reality is this: "If a drug has not gone through randomised clinical trials, then all you have are anecdotes."

“Records of its medicinal qualities pop up in Indian, Assyrian and Arabic medical literature. In 1464, for example, the scribe Ibn al-Badri reported that the epileptic son of the caliph’s chamberlain was successfully treated with cannabis resin.”

For Dr Whalley, not enough of the medical cannabis discourse is grounded in real medicine. He recites the well worn Tim Minchin joke: “You know what they call *alternative medicine* that’s been proved to work? Medicine.”

It may not amount to much within the confines of medical science, but the huge pool of knowledge we now possess on the therapeutic uses of cannabis – insight that has eased the suffering of millions of people around the world – has been hard won. After all, working with a substance viewed by many as the thin end of the narcotic wedge and the symbol of society’s moral decline was never going to be easy.

In 1992, Dr Donald Abrams, a clinical pharmacologist and professor of medicine at the University of California, San Francisco, proposed a study into whether smoking cannabis could ease the symptoms of AIDS wasting and produce gains in body weight. He had heard that hundreds of people infected with HIV in the Bay area were using the drug for this reason.

But Dr Abrams quickly discovered, as many scientists have since, that science and public health are frequently trumped by political agenda. As with many other countries, the US Government classifies cannabis as a substance of no medical value. Therefore, the overwhelming majority of studies into cannabis focus on the plant’s harms, rather than its benefits.

Accordingly, Dr Abrams’s research was delayed for six years, which, in terms of the wasting effects of AIDS, is a long time. The National Institute of Health (NIH), the only domestic source of the drug for scientists, refused to play ball. It said it could not provide cannabis for projects it was not funding. In 1998, after a delay Dr Adams described as “disturbing” and “offensive”, the NIH finally approved his request. Abrams then initiated the first federally funded effort to study the effects of cannabis on patients with AIDS.

“In Colorado, the state’s 100,000 registered cannabis receiving patients spent $220 million on cannabis and cannabis-laced products between 2011 and 2012, generating $6 million in taxes for the state.”

As luck would have it, the following year, a $3m budget deficit prompted the state of California to set up the Center for Medicinal Cannabis Research (CMCR). Based at the University of California and headed by Dr Abrams, it completed 14 trials over 11 years. Some of the studies found cannabis to be effective in treating pain in patients with MS and HIV, but the funding dried up. Nevertheless, the findings from CMCR played a big part in the legitimisation of medical cannabis throughout the United States.

Now it is big business. It is a stand-alone economy with its own lobby groups and energetic start-ups. There are even medical cannabis guided tours in Seattle and in the conveniently nicknamed ‘Mile High City’ of Denver. The industry’s fresh and fertile pastures are being eyed by the men in suits: the accountants, the investors and the bankers.

In Colorado, the state’s 100,000 registered cannabis-receiving patients spent $220 million on cannabis and cannabis-laced products between 2011 and 2012, generating $6 million in taxes for the state. This was immediately earmarked to spruce up the area’s rundown schools. In the first nine months of the 2012/13 financial year, medical cannabis sales had already reached a colossal $225 million.

California’s Board of Equalization estimates that, last year, “total sales of medical marijuana ranged between $700 million and $1.3 billion”. That

A medical cannabis shop in San Francisco

translates to between $58 million to $105 million in tax revenue for the Sunshine State.

But Kevin Sabet, a former drug-policy adviser within the Obama Administration, is not happy with the way medical cannabis is regulated in the US. He thinks the system is a sham, merely a way of backdoor legalisation. He points to the fact that Colorado and Washington, two of the 18 states that have permitted the use of medical cannabis, will be legalising the drug for recreational users in 2014.

"What, of course, is never talked about is how medical marijuana programmes in states that have gone full steam ahead actually work," says Sabet. He sees a big disconnect between the people voters thought the new laws would be helping and those who, in reality, are buying most of America's medically sanctioned cannabis.

"In 1996, when Californians passed Proposition 215 allowing for marijuana to be used for 'medical' purposes, voters decided that, if a cancer or AIDS patient should find relief from marijuana, they should not be arrested. Voters also believed that, if the patient was too ill and unable to grow marijuana on his or her own, the patient could buy it from a non-profit group of people growing small amounts for specific users.

"Fast forward 16 years, and most Californians know that "medical" marijuana has become a sad joke. Scantily clad "caregivers" and a few unscrupulous "on-call" doctors line beaches and boulevards promoting marijuana use for everything from back pain to headaches. Today's dispensaries – really pot shops selling the drug under the guise of medicine – bear little resemblance to voters' intent."

Sabet has a point. A study of 1,655 people seeking a physician's recommendation for medical cannabis in California found very few of those who sought a recommendation had cancer, HIV/AIDS, glaucoma or multiple sclerosis. Meanwhile, another study of 3,000 active medical cannabis users in the same state found that nearly nine in 10 had tried cannabis before the age of 19 and that the average user was a 32-year-old white male. Hardly any had life-threatening illnesses.

"It's time to get the legalisation lobby out of the business of medical marijuana and instead focus our attention on scientists developing non-smoked marijuana-based medications for the truly ill," he says. "That would make this issue no longer the sick joke that it is today."

"Fast forward 16 years, and most Californians know that "medical" marijuana has become a sad joke. Scantily clad "caregivers" and a few unscrupulous "on-call" doctors line beaches and boulevards promoting marijuana use for everything from back pain to headaches. Today's dispensaries – really pot shops selling the drug under the guise of medicine – bear little resemblance to voters' intent."

“New Zealanders may be forgiven for asking why, in their country, medical cannabis sellers were being hunted down by the police, while in America and Canada the authorities were helping them fill out their tax forms.”

Medical cannabis sold by the bud.

While the system in these American states may well be open to abuse by people who just want to get stoned, at least those citizens who are in desperate need of medical cannabis can access it without fear of arrest and jail.

When Victoria Davis, an environmental campaigner from Nelson on New Zealand’s South Island, discovered that cannabis was the only cure for the horrific phantom limb pain endured by her double-leg amputee husband John, she did what most other people would do and started growing some cannabis plants.

“We both hated the side effects of prescription painkillers – they just turned us into constipated zombies – and Sativex was too expensive,” she says.

“Luckily, while John was smoking one of his occasional cannabis joints, we found out that it did the trick. I had some old cannabis seeds a friend gave me and planted them. It was amazing how much smoking cannabis improved the quality of John’s life.”

However, the plants were discovered, and Ms Davis was charged with possession and cultivation of cannabis. Last year, after what she described as a “stressful” few months, she was discharged without conviction by Judge Tony Zohrab at the Nelson District Court and instead ordered to pay $300 to a Nelson alcohol and drug clinic.

“Being described as a serious criminal offender by the Police was a shock to me. It was a bad time for us,” says 62-year-old Davis, whose husband died last year.

“But I was overwhelmed with offers of help and the fact that so many people wanted to tell me their stories.

“One suburban housewife from Nelson offered me most of her crop. A man who grew cannabis for his father’s arthritic pain told me he had to make a huge round trip each month to hand deliver it in small batches because his dad was so scared of getting sent to jail if he was caught with a big batch. I had lots of middle-aged and elderly people describing how they secretly grew and smoked pure cannabis joints to help with hip pain as they awaited replacement operations, insomnia, nausea caused by chemotherapy, menstrual pain and depression.”

Ms Davis looks across at what is happening in America and other countries, and it makes her angry.

“Our politicians are gutless, they are all too afraid to reform the law on medical cannabis. It’s criminal that people suffering from cancer should not get the help they need. Why is New Zealand so behind the times?”

The government has so far refused to adopt the Law Commission’s 2011 recommendation to conduct clinical trials into the medical use of leaf cannabis. There is little sign the country will head down the market-led US route, although the courts and the public appear to have some sympathy for those caught using and growing cannabis for health reasons. Meanwhile, because of its remote geographical position, New Zealand has for decades been, by necessity, a cannabis-growing country, and the DIY cannabis culture is far more socially acceptable than it is in Europe.

On other areas of drug policy, New Zealand is not so behind the times. The country’s groundbreaking Psychoactive Substances Act, which puts the onus on drug makers to prove their products are safe before putting them on the market, has catapulted the drug conversation into the mainstream and thus created conditions for change. Whether medical cannabis, particularly the synthetic versions, will somehow be dragged into this legislation, remains to be seen.

Dr David Allsop, of the National Cannabis Prevention and Information Centre based at the University of New South Wales, says developments in the US have divided the international medical community.

“Normally, a medicine has to jump through strict regulatory procedures, governed by the Therapeutic Goods Administration in Australia and the Food and Drug Administration in the US. Those

Sativex is changing the way we will use cannabis as a medicine.

procedures include extensive tests of safety and extensive tests of effectiveness for treating the medical problem that the drug is intended for. The process is laborious and extensive and, given the requirement for tightly controlled randomised controlled trials, usually costs a lot of money as well.

"Raw cannabis has not really been through any of those tests. This means that there are no formal guidelines for dosages for particular medical conditions. Can you really call something a medicine if you don't know what dose you need to make the ailment better? And the fact that it is usually administered by smoking makes it a real difficult issue for the medical profession to accept it as a medicine."

Dr Allsop, who is currently trialling Sativex for the treatment of cannabis withdrawal, says the future, outside of the US, is more likely to involve Petri dishes than rolling papers.

"Australia and many other jurisdictions are opting to go down the 'individual cannabinoids' route – such as with the synthetic cannabinoids like dronabinol and nabilone, and Sativex, for which we have extensive safety data, and the ability to deliver known doses in a safe manner rather than via smoking."

Dr Allsop admits that this may not be great news for some medical cannabis activists.

"There is some kickback against Sativex from the hardliners and anti-capitalists in the dope-smoking community, who think that the government and big pharma are out to get them – the 'one rule for you another for me' sort of thing.

"But at the same time, it seems selfish to put obstacles in the way of delivering useful medical treatments to those who need them. Most people wouldn't want to smoke, and most people with medical needs probably want a good handle on the dosage they need."

From a purely scientific point of view, the medical cannabis revolution in North America is pure anarchy. Millions of people taking a potentially toxic substance in the hope that it will cure them of an often undiagnosed illness is not science.

For Dr Whalley, the main barrier to the development of medical cannabis is the fact that so much discussion is based on the psychoactive component of cannabis, THC.

"Hopefully, in 20 years, medical marijuana will be completely separated from recreational use or legalisation. THC is only 1 percent of the discussion. There are 99 percent more cannabinoids in this plant."

Dr Whalley says that the plant's notoriety is a double-edged sword in terms of its medical use. The stigma that surrounds cannabis has undoubtedly slowed progress and limited funding, but its consistent presence in the media has, in turn, stimulated interest from academics and investors.

If there was a straight race into medical cannabis's future, there can only be one winner in terms of legitimacy and effectiveness.

"Smoking raw marijuana to treat illnesses and pain is about as scientific as chewing on a piece of willow bark if you have a headache," says Dr Whalley.

"Just because something is historically useful shouldn't mean you are wedded to it. Why not just take an aspirin if you have a headache? That something is natural does not make it safe: go swim with sharks or roll around in poison ivy."

But in reality, will it be a straight race between spliffs and science? The reason drugs are so intriguing is that it's not just about the science, it's about culture. Drugs have an effect on the human brain, but they are also imbued with deep and varied meanings by individuals and communities. So while scientists and politicians prefer to steer people towards the regulated option, in reality, if someone feels that, by smoking some cannabis, their lives will be improved, then that's what they will do.

The future, it seems, lies within that much maligned and much worshipped annual herbaceous plant *Cannabis sativa* itself.

"The cannabis plant has 60–80 cannabinoids and we've only looked deeply into 12–14 of them," says Mark Rogerson of GW Pharmaceuticals.

"Our research shows that the individual differences in cannabinoids have separate roles to play in treating different conditions. There is considerable scope for future treatment. But it's not just 'let's make a better aspirin', it will be serious conditions we'll be looking at, such as epilepsy, diabetes and actually treating some forms of cancer. The cannabis plant is a huge, unexplored area."

And as Dr Allsop says, as long as the naturally occurring benefits of this plant can be used for the good of mankind, then we are doing the right thing.

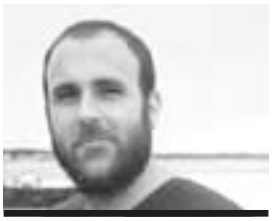
"All I know for sure is that cannabinoids have medical properties. And where there is an unmet medical need, they should be made available to people." ■

Dr David Allsop's views are his own and do not reflect those of the Australian Government.

Max Daly is a journalist specialising in illegal drugs and author of *Narcomania: How Britain Got Hooked on Drugs* (Windmill, 2013).

Fake it till you make it

It looks like cannabis, it has cannabis in the name, but is synthetic cannabis really cannabis? **James Robinson** investigates the health effects of and policy responses to fake pot.



JAMES ROBINSON

IT WAS 2009. Adam Winstock, a London-based addiction psychiatrist and author of the Global Drugs Survey and Drugs Meter, walked into a coffee shop. Next to the fruit juices were little shiny silvery packs of something called Spice, a synthetic cannabis product. This was new to him.

Winstock was a bit startled. He kept seeing synthetic cannabis after that. The packets claimed a high that was natural and harmless, but considering the effects it was claiming, the ingredients didn't check out. Something didn't feel right. As the old adage goes, if it sounds too good to be true, it probably is.

"It was not something I saw being used by my patients or smelled on the way to work but I saw it everywhere, and it was cheap," Winstock said.

Even as an international drug addiction expert, his first reaction – confusion with a dash of intrigue – mirrors that of most people.

It looks like cannabis, is smoked like cannabis, acts on the brain in the same way as cannabis … but somehow isn't technically cannabis, allowing for it to be bought over the counter without the risk of so much as a sideways glance from an officer of the law.

In short: pot is illegal, this isn't. What gives?

In science, as in life, to synthesise is to imitate. In the world of synthetic cannabis, cropping up in various guises and blends across the world since 2004, things both are and aren't what they seem.

The short history of synthetic cannabis has shown us that, in a new era of drugs – defined by the quest for the legal, consequence-free high – complications are forever myriad.

Okay, we get it. It's a whole other thing to cannabis. But what is it then?

When someone smokes cannabis, the sensation of being high comes from compounds in the cannabis plant, the primary one being THC (considered a 'cannabinoid'), reacting against two known 'cannabinoid' receptors in the brain. These receptors are part of an entire section of our wiring that regulates appetite, pain, mood and memory.

Cannabinoids occur naturally in the cannabis plant. Our body produces them. And, eventually, certain entrepreneurial chemists figured how to manufacture them.

As Dave Allsop, a lecturer at the National Cannabis Prevention and Information Centre at the University of New South Wales, describes, the receptors in the brain that cannabinoids interact with were only discovered in the 1980s. An explosion in research followed, examining how this part of the brain worked and the possibilities for new chemicals.

> **"It looks like cannabis, is smoked like cannabis, acts on the brain in the same way as cannabis … but somehow isn't technically cannabis."**

In 2013, there are thousands of synthetic cannabinoids, structurally similar to THC and affecting the same parts of the brain, sprayed over a benign mix of herbs and sold legally as synthetic cannabis, which is then rolled up and smoked in exactly the same manner as the old fashioned illegal stuff.

The first riddle with synthetic cannabis comes in its definition. Natural cannabis is a single defined thing with risks and effects that can be mapped and expected. Synthetic cannabis is a jumbled, mixed bag of chemicals that vary in impact and potency.

I think I get it. But for how long have people been doing this?

Humans have been smoking cannabis since the discovery of Mother Nature and a sense of their own imagination.

Synthetic cannabis is a newborn baby in comparison.

According to Ross Bell, Executive Director of the New Zealand Drug Foundation, the first synthetic cannabis product, Spice, hit New Zealand in 2006. Our own Matt Bowden, considered the godfather of legal highs thanks to BZP, jumped into the market with Aroma.

In New Zealand, Bell said, Spice and Aroma slipped in under the radar. Concern lay more with BZP, legal 'party pills' that mimicked the effect of ecstasy.

"All attention was on BZP, and Spice wasn't causing any problems. Control in the market has largely been driven by community concern," Bell said.

The first visible signs of synthetic cannabis internationally were spied in Europe in 2004, according to Stephen Bright, who teaches addiction studies at Curtin University in Australia. Spice arrived on the market and became a popular subject on internet forums. It made the bold claim to get someone high solely through natural ingredients. The psychoactive ingredient was later revealed to be a synthetic cannabinoid named JWH018, a substance so nearly identical to THC in chemical structure and effect that it was outlawed in many countries, including New Zealand.

How much harm could synthetic cannabis cause?

The history and prevalence of cannabis use over decades gives it little mystery. But in synthetic cannabis's short history, there has been little time to study its impacts, and what we do know already isn't great.

In the intervening years since discovering the drug, Winstock has helped to publish several pieces of research on the use and risk of synthetic cannabis. One part of this work, run in the journal *Human Psychopharmacology*, was a 12-month study on the adverse effects of synthetic cannabis. Winstock was shocked that one in 40 people surveyed who had used the drug had sought emergency medical attention because of it.

"That's an insane hit rate."

University of New South Wales's David Allsop stresses we're still getting to know what impact synthetic cannabis has, but certain assumptions can be made.

"I don't think you get many people presenting to an emergency department with cannabis complications, but synthetic cannabis is bringing them in," he said.

Allsop said part of the issue as he sees it is that the cannabinoids in synthetic cannabis completely activate the receptors in the brain that these drugs work against, whereas THC only partially activates them, making for more potent and incapacitating highs.

For Bright, it is distressing that synthetic cannabis is producing health risks that are not associated with cannabis use itself. He said early case reports have shown people reporting to emergency rooms experiencing psychosis or seizures, whereas cannabis contains a natural anti-psychotic, and THC works as an anti-convulsive.

"I don't think you get many people presenting to an emergency department with cannabis complications, but synthetic cannabis is bringing them in."

DAVID ALLSOP

Just some of the types of synthetic cannabis available in New Zealand.

"Cannabis has been used for thousands of years. We know the effects. With the synthetic version, thousands of people have unwittingly become lab rats in this global mind experiment. To be sold like this, other drugs would have to have gone through thousands of hours of clinical trials."

"Put simply, if tomorrow a government regulated cannabis, MDMA and magic mushrooms, there would be very little demand for products outside of that."

STEPHEN BRIGHT

What attracts people towards these legal highs? Isn't this just a market created by prohibition?

Synthetic cannabis is used by disparate sectors of the market.

Winstock said that, after synthetic cannabis jumped onto his radar in the UK, he started asking shopkeepers about who was purchasing it. Prisoners on weekend release would buy it, he was told, because it would not be detected in drug tests.

Synthetic cannabis sales were said anecdotally to spike when the cannabis supply dried up in town. Winstock saw synthetic cannabis had the potential to be attractive in rural and remote areas without organised crime and drug trade.

"When you ask people what are the reasons for smoking synthetic cannabis, the top four reasons are that there's no other drugs, drugs are of poor quality, you can get them online or they're better value for money. No one said they are buying these because they think they're safer," Winstock said.

Bright saw workplace drug testing as a huge driver of synthetic cannabis use. He remembered one of the first stories on synthetic cannabis in Australian media on Triple J FM, where people were calling in to discuss the drug. A number of callers talked about workers on mining sites smoking something similar to dope.

"People want drugs. They want legal drugs," Bright said.

"Put simply, if tomorrow a government regulated cannabis, MDMA and magic mushrooms, there would be very little demand for products outside of that."

Bell said a regulated synthetic drug market is always likely to exist, in line with the varied demands for drugs that don't seem to be abating.

"There's this smorgasbord of highs that people want," he said.

The snag in this developing market is that people don't really seem to enjoy smoking synthetic cannabis. Bell said he'd seen this talked about anecdotally on message boards where drug users share their experiences. Winstock said that, in a survey of 850 people who had smoked both real cannabis and the synthetic version, 93 percent said they preferred the real thing.

Use of synthetic cannabis also falls well behind the real thing. In Winstock's research, he said, amongst people responding, the average amount of cannabis use was 16 days, where it was a day or two with synthetic cannabis.

"It's easy to buy cannabis. It's high potency. You kind of think, well, why would people want to smoke this other stuff?"

How have policy makers responded to all of this?

Internationally, response to synthetic cannabis has worked how drug policy has for a century. "We identify bad drugs and then we move to ban the drug," Bright said.

But in 2013, chemists can make new derivatives of synthetic cannabis and bring them to market faster than they can be made illegal, creating what Bright labelled

Associate Minister of Health Todd McClay gives the flick to synthetic cannabis after passing legislation to regulate the products.

Photo credit: Christine McKay, *Dannevirke News*

“But the consequence of everything that has happened so far is that research on these drugs has decreased because of the stigma around them.”

STEPHEN BRIGHT

a “whack-a-mole effect”. You ban one and others pop up immediately, with the replacement versions often more potent and harmful than the ones before.

In 2009, European drug monitors identified 24 drugs. In 2012, that number was 72. “It is increasing rapidly,” he said.

It is against this backdrop that the 2013 Psychoactive Substances Act in New Zealand represents a new step in drug legislation. It seeks to regulate the market for synthetic cannabis and other new drugs that hit the market by forcing manufacturers to go through testing to prove the product is “low risk”. If that product was on the market 28 days before the law went into place, it is granted an interim licence while it undergoes the tests.

Bell said this Act is not the result of a progressive government, rather that New Zealand ran out of patience faster.

“We, like everyone else, went through a cycle of banning these. But the chemists will always be a step ahead of the legislators,” he said.

For Bell, defining harm is the big unknown. The law doesn’t determine the criteria. It creates a group of experts to do that who will set benchmarks to examine the risks of harm and addiction, a process that will likely involve a mix of lab tests, chemical analysis and animal and human trials.

“In theory, it is a good piece of law, but we haven’t had it under operation long enough yet to know.”

Successful implementation will be key to its success, Bell said. The Act needs to be enforced well, and local councils need to be on their game to utilise provisions in the Act giving them the power to take specific actions like banning sales near schools.

Why don’t we just move to shut all synthetic cannabis products down?

People first started experimenting with synthetic cannabinoids to explore the health benefits, UNSW’s David Allsop said. Research is still in its infancy, he said, but it is believed synthetic cannabis could one day have applications in treating cancer, multiple sclerosis, inflammation, post-traumatic stress disorder and anxiety.

Bright said that early evidence had shown that synthetic cannabinoids could help reduce the brain plaque that causes Alzheimer’s disease.

“But the consequence of everything that has happened so far is that research on these drugs has decreased because of the stigma around them,” he said.

Most importantly, though, in New Zealand, we’ve been afforded a chance through drugs like synthetic cannabis to re-examine how we think about the wider drug issue as a whole.

“If most New Zealanders are given the opportunity to get high, they’re going to take it. That’s the benefit of a regulated market. The industry comes clean about the chemicals, and groups like us, the New Zealand Drug Foundation, can get good prevention messages out,” said Bell.

“If we’d taken an approach more like this 40 years ago – looking at it through a health rather than a criminal mindset – things would have been different. Instead, up until now, we’ve been left with a smorgasbord of laws for a smorgasbord of drugs.” ■

James Robinson is a San Francisco-based journalist.

Reducing cannabis health harms

There is a wide spectrum of views on how much (or, in some cases, even whether) cannabis causes harm. The divergence of views is backed up by widely varying research, and it's not hard for either cannabis proponents or opponents to find a good selection of studies supporting their view. **Rob Zorn** examines how harmful cannabis can really be and what can be done to reduce those harms.

ROB ZORN

NORML's Phil Saxby and Chris Fowlie.

CANNABIS has a very low acute toxicity. In other words, you'd have to ingest massive amounts of the stuff to overdose. Because of this, it's very hard to find any evidence of anyone dying as a direct result of taking it. Nevertheless, there is enough research to indicate that, when used in certain ways or by certain people, cannabis is associated with a variety of health and other harms, especially amongst regular long-term users.

There can be short-term negative psychological effects such as anxiety and paranoia, but these will usually pass; temporary psychomotor impairment that may get you (or someone else) killed if you get behind the wheel; disruption to your cognitive functions such as short-term memory loss and disruption to temporal processing and learning.

However, those with sustained use (daily or near daily over several years) expose themselves to much greater, long-term health risks.

There is solid evidence, for example, linking heavy use with respiratory disease. A succession of clinical studies show increased risk of chronic bronchitis, sore throat, inflammation, impaired immune function and pre-cancerous cell changes. There is also evidence linking prolonged cannabis use with increased risk of mental illnesses such as schizophrenia, at least for those who may be predisposed.

Most people seem able to quit cannabis, even after years of use, with very little withdrawal, but others will become more chronically dependent. The commonly accepted ratio is one in 10 cannabis users who are predisposed towards this, and that's a lot of people considering the popularity of the drug.

There are a number of strategies and approaches aimed at reducing the harms associated with these adverse health outcomes, and they can involve a variety of media. The first challenge is getting the cannabis user to listen to harm-reduction messages, and of course, there's little research available so far about what works best.

NORML spokesperson Chris Fowlie suggests the best people to talk to cannabis users about reducing harm are cannabis users themselves. He would like to see harm-reduction education disseminated by trusted 'peers' in a similar way to needle exchanges. This could be information about the risks associated with excessive use or how to reduce respiratory harms through safer smoking techniques.

"The logical way to do this would be through head shops, but the current legal environment here makes this virtually impossible. Any information the shops start handing out about drug use puts their business at risk because it associates their 'ornaments' and 'vases' with cannabis smoking."

NORML used to provide harm reduction material in every issue of its former publication *NORML News*. But other than word of mouth, there is not much in the public domain, unless you want to start engaging with treatment.

But even if we could find the perfect medium, what would our messages be?

The most obvious advice to avoid cannabis harm is not to smoke cannabis. This is especially important if you're predisposed to psychosis or you have experienced negative psychotic effects when due to cannabis. But most people who smoke cannabis are not, and many just want to minimise the risks. And we should also not underestimate the benefits of cannabis, such as relaxation, which are powerful motivators for continued use. Some see their cannabis use as a form of harm reduction in itself because it creates fewer problems for them than other drugs like alcohol.

Knowledge is about the best weapon we have in the arsenal. It doesn't ensure behaviour change, but it does mean people are better able to make informed decisions about whether their use is becoming a problem and how they can use more safely. Not combining it with alcohol or tobacco, not driving high, the possibility of dependence and where to get help might form the core messages.

"The logical way to do this would be through head shops, but the current legal environment here makes this virtually impossible. Any information the shops start handing out about drug use puts their business at risk…"

These are all important but will affect only some users. Something that's relevant to just about all cannabis users is respiratory harm. This is interesting and significant because myths abound about what constitutes safe smoking, and a number of new technologies are emerging that may reduce respiratory harm.

Most people would think (and it would seem to make sense) that smoking a filtered joint or a water bong would be easier on the lungs than smoking an unfiltered joint, but actually quite the opposite is true, and it all has to do with tar to THC ratios. The problem is THC molecules are 'sticky' and tend to adhere to other molecules such as those of the tar and particulates you're filtering out. The end result of this is that you have to smoke more to get as high, and you actually ingest more tar per amount of THC.

Bongs can also harbour infectious germs if they're not cleaned regularly (bacteria love a warm, moist environment), and bongs home-made out of plastic bottles are especially disastrous because of the extra toxins you can inhale from the heated plastic. If you are going to use a bong, make sure it's a good one, preferably made of glass.

Cannabidiol-based chew lollies.

Meanwhile, vaporisers look like a promising alternative. A 'vape' heats the cannabis to a temperature high enough to release psychoactive cannabinoids but not high enough for combustion to occur, which is when most of the tar and other nasties are released.

A 2001 study led by Dale Gieringer of NORML California compared all four smoking methods (bongs, vaporisers and filtered/unfiltered joints and found only vaporisers improved the ratio of tars to cannabinoids. The filtered joints performed worse than the unfiltered joints (30 percent more tar per cannabinoids), and the bongs performed worst of all (up to 180 percent more tar).

Vaporisers have improved since 2001 and are now less bulky, but they can be difficult to find in New Zealand.

"Customs doesn't tend to like them, and it can be very difficult to get them into the country, making them rare and expensive," Fowlie says.

Many cannabis smokers here would probably use them if they were more cheaply and readily available. An *Addiction Research and Theory* study published in 2010 found using a vaporiser reduced the respiratory symptoms of all four participants in the study. Participants were asked to return to normal smoking for a month after 30 days of using only a vaporiser but were informed this was not a requirement of the research. All four participants refused and preferred to continue with the vaporiser. So though the high from a vaporiser takes longer (several minutes to peak as opposed to two minutes for smoked cannabis), it seems the effects are acceptably close to those of a combustible high.

"Participants were asked to return to normal smoking for a month after 30 days of using only a vaporiser but were informed this was not a requirement of the research. All four participants refused…"

Of course, another alternative is not to smoke the cannabis at all but to eat or drink it instead. Drinking cannabis in tea or eating it in cookies and cupcakes has been around for a long time but has not been all that widespread because the effects take longer with oral ingestion (up to an hour or more) and can be less predictable. But that may be about to change.

Fowlie recently attended the first World Cannabis Week (like a cannabis-themed trade show) in Colorado and says he was amazed at the amount of edible cannabis products available. These range from confectionery to THC-infused drinks to some sort of gaseous concoction that was "pretty amazing but hard to describe".

"All the products had accurate content descriptions based on clinical research. There was a chocolate bar, for example, and the label told you how many and what sort of cannabinoids each square of chocolate contained. This is what can be achieved under a legally regulated system. You know exactly what you're getting, and it's much easier to titrate [regulate your own dose] in that situation."

In Colorado, he says, there are up to 200 companies making edible products. And while these were originally mostly for medical cannabis users, they are becoming more popular with recreational users as there's a growing demand for non-smoked alternatives.

There were also e-cigarettes available that deliver a standardised dose in terms of strain and potency. These might be ideal for those not yet ready to forsake smoking cannabis. E-cigarettes that deliver cannabinoids can still be passed around as part of sharing the ritual with your 'fellow outlaw' and mimic the pleasures of smoking cannabis in the same way they mimic the pleasures of tobacco smoking.

All well and good – but what do we do about chronic users who want to stop because cannabis is causing them harm but for whom withdrawal is now an issue?

Symptoms can include craving, irritability, insomnia, headaches and shakiness, and we should definitely see

A range of THC- and CBD-based beverages mean you can drink your high.

withdrawal as a harm, says David Allsop of the National Cannabis Prevention and Information Centre at the University of New South Wales.

"It increases demand on treatment providers and drives users back to a drug they don't want to take any more."

New Zealand treatment relies mainly on hybrids of motivational interviewing and cognitive behavioural therapy to manage withdrawal and help cannabis users who want to stop.

"It's about getting them through those first couple of weeks of sleeplessness, craving and irritability," says Ben Birks Ang of Odyssey House New Zealand.

"Helping with sleep is a big one, especially for teenagers who don't tend to get a lot of sleep anyway and who used to rely on cannabis to nod off. While motivation is important, a lot of young people haven't had the years of use to notice a build-up of harm. So with some young people, we work on building motivation and other protective factors, like their relationship with their family or school, so when they are ready to change, the foundations are set."

Other countries are beginning to explore supplementing counselling with more pharmacologically based cannabinoid replacement therapies that would work similarly to methadone for opioid users. Sativex, a cannabis-based drug originally developed in the UK to treat the pain and symptoms of multiple sclerosis (MS), seems especially worth a look.

A recent University of New South Wales study found Sativex significantly reduced the overall severity of cannabis withdrawal symptoms and – always a good sign – that participants given the drug remained in treatment longer.

"What might give Sativex the edge," Allsop explains, "is that it's cannabis-based and much closer to what people were actually using. It's administered as an oral spray, so it's more akin to smoke, and has a more rapid impact because it doesn't have to be digested."

The 'good' cannabis harm-reduction arsenal of New Zealand's future will surely include cannabinoid replacement therapy, but right now, withdrawal sufferers should not be holding their breath. Sativex is a Class B drug in New Zealand and currently only approved for MS sufferers who have not responded to other treatments. It is not funded by PHARMAC, and ministerial approval must be gained before it can be prescribed at all.

But perhaps the first thing we should do is consider treating cannabis use as a health issue instead of a legal one so we can have more open dialogue with cannabis users who don't fear being treated like criminals. What's happening overseas seems to indicate this isn't anywhere near as scary as we once might have thought. ■

Rob Zorn is a Wellington-based writer.

"Other countries are beginning to explore supplementing counselling with more pharmacologically based cannabinoid replacement therapies that would work similarly to methadone for opioid users."

Reducing respiratory harms from smoking cannabis

From the Drugs Meter developed by Dr Adam R Winstock, Consultant Addiction Psychiatrist and Addiction Medicine Specialist, South London, and Maudsley NHS Foundation Trust

1. Don't mix cannabis with tobacco.
2. Don't inhale too deeply or hold smoke in the lungs. This doesn't get you more stoned but increases tar and carcinogen contact.
3. Remove stalks, leaves etc.
4. Don't use a cigarette filter. Filters just reduce the cannabis/tar ratio.
5. Don't use too many papers.
6. Clean bongs/pipes thoroughly.
7. Don't use plastic bottles/pipes as these can increase toxic fumes.
8. Use a vaporiser.

REFERENCES

Access the Drugs Meter and assess your personal drug use at **www.drugsmeter.com**

See also **nzdrug.org/normladvice**

Driving high

Cannabis and cars don't mix. We know pot causes impairment, but just how much, and is it even that dangerous? **Damian Christie** looks at one of the emerging issues around cannabis harm.

"**DRIVE** better when I've been drinking" is not something you hear these days. Whether it's down to personal experience, years of watching the horrific results of drunk driving on the news or the millions spent on a variety of advertising campaigns, the message – for most of us – has sunk in. Drink, Drive, Bloody Idiot, Ghost Chips etc.

Despite the obvious logic – things that make our brain go funny don't improve our driving – there seems to be something stopping people who regularly use cannabis from reaching the same conclusion. It'd be easy to attribute the disconnect straight back to their drug of choice, but the reality is more complex, as is how best to detect and deal with those who continue to drive under the influence. The answer to those questions is a source of debate not just in New Zealand but around the world, where even the experts disagree on some fundamentals.

> **"It'd be easy to attribute the disconnect straight back to their drug of choice, but the reality is more complex."**

Not surprisingly, in New Zealand, more people drive under the influence of cannabis than any other illegal drug. What *is* surprising, though, is that more people report driving while impaired by cannabis than over the limit for alcohol. The data isn't perfect but would suggest at least one in five New Zealand drivers has driven under the influence of cannabis – within three hours of smoking – in the past year. Two-thirds of cannabis users report drug driving in the past year, and most rate it as far less dangerous than driving under the influence of alcohol.

Among younger people, the problem is even greater – a Canadian study found 40 percent of people aged 15–24 had driven stoned – double the rate who said they'd driven under the influence of alcohol. More worryingly, they'd done it not just once, but on average *10 times in the past year* – far higher than the same figure for alcohol.

The rhetoric around driving stoned will be familiar to many: "It makes me a safer driver." "I drive slower when I'm stoned." "I'm more careful." Is it true? In a word: no. But exactly how dangerous is it? And if we were to set some sort of limit in the same way as we do with drink driving, how stoned is too stoned to drive?

There is no doubt cannabis impairs driving ability, says Dr Barry K Logan, "within limits". Based at Philadelphia's NMS Labs, Dr Logan is one of the world's foremost experts in drug-impaired driving,

> **"…there's a certain level of cannabis use in periodic users where it's not really fun any more, it's almost self-regulating."**
>
> DR BARRY K LOGAN

"You know I can't eat your ghost chips."

although he says most cannabis users' chosen level of impairment is not particularly high.

"A user-preferred dose produces a level of impairment equivalent to a moderate level of alcohol consumption, 0.04 percent to 0.05 percent [blood alcohol concentration or BAC] for about 2–4 hours. And then after that, the evidence is people pretty much return to the baseline."

It's worth noting New Zealand's blood alcohol concentration for drink driving is – rather controversially – set even higher, at 0.08 percent. The upshot is most moderate cannabis users don't get higher than the level we already deem acceptable for alcohol.

"People don't enjoy it," says Dr Logan, "there's a certain level of cannabis use in periodic users where it's not really fun any more, it's almost self-regulating."

Which is not to say it's 'safe' – blood taken from Canadian drivers involved in fatal accidents shows drivers who test positive for cannabis are five times more likely to die than sober drivers. This is slightly lower than those found with alcohol in their system. But – and it's a big but – when cannabis is combined with alcohol, the risk of a fatal accident jumps to 40 times more likely than a sober driver. And that risk is present even just with moderate levels of cannabis and blood alcohol under the drink-driving limit.

For regular smokers, the news is worse. A new study shows that chronic, heavy users of cannabis are not, as one might think, less impaired due to higher tolerance but in fact may be constantly impaired – even for some weeks after ceasing altogether.

So if driving under the influence of cannabis, with or without alcohol, always presents *some* level of danger and sometimes a very high one, the question is, how best to police it? Current enforcement differs from country to country, state to state.

In states where cannabis possession is illegal, it's easy to impose a zero-tolerance approach. Having cannabis in your system might not necessarily mean you're a danger on the roads, but it does show you were up to no good.

But for some experts working in this field, mixing drug enforcement with traffic safety is not the way to go, confusing two distinct purposes and creating a law people don't respect. And in states where cannabis is legal for medical or recreational use – which is a growing number – another approach must be found. The options include requiring proof of impairment or setting a 'per se' limit. Like the system for drink driving, this establishes a defined limit of THC in the blood, over which a driver is considered legally impaired, regardless of whether they can stand on one leg or not.

Despite cannabis remaining illegal in New Zealand, rather than a zero-tolerance approach, our law does require proof of impairment – once alcohol is ruled out through roadside screening, drivers suspected of being impaired by drugs are subjected to a standardised field sobriety test (SFST).

To the untrained observer, the SFST might seem something like guesswork, but when performed by a trained officer, it's surprisingly effective. Developed in the 1970s, before the advent of alcohol breathalyser technology, the SFST was originally used to detect drunk drivers but is now routinely used to test for drugs. Amy Porath-Waller from the Canadian Centre on Substance Abuse has been studying the test and whether it's fit for this new-found purpose. By comparing thousands of roadside SFST evaluations with the subsequent blood samples given, Porath-Waller says the answer is an unequivocal 'yes'.

"What our results are showing is that you are able to predict, from these four different classes of drugs we studied, the officer is able to detect if they're impaired and the type of drug responsible for that impairment."

In general, each of the common classes of drugs leaves its own 'fingerprint' under the SFST. So, for instance, cannabis-impaired drivers will have more difficulty with the 'standing on one leg' test than the 'walk and turn' test, where an alcohol-impaired driver would struggle with both. Similarly, the test for nystagmus (involuntary twitching of the eye) will pick up those affected by depressants but not cannabis.

If there's an issue with the SFST, it's the degree of training required and the time it takes to administer each test. For those enforcing the law, it doesn't provide the 'anywhere, any time' sort of disincentive that people now associate with random roadside testing for alcohol.

Taika Waititi's new drug driving ads have gone viral.

"I call it the sausages argument. You get five drivers who've crashed, and they've got sausages in the boot of the car. It doesn't mean the sausages have caused the crash."

SUPERINTENDENT CAREY GRIFFITHS

New Zealand's head of road policing, Superintendent Carey Griffiths, says, while drink driving remains the priority, next year will see further attention given to drug-impaired driver testing, including the best approach to take.

"My preference based on what I've seen and know so far is a saliva-based testing regime similar to what's conducted in many of the Australian jurisdictions, because there is an element of general deterrence to that."

Saliva testing might be quicker than a full SFST test but can still take up to eight minutes to administer, meaning it's impractical to use the driftnet approach of alcohol checkpoints. The single-use disposable test kits aren't cheap either, and overseas experience has shown widespread random testing isn't particularly effective.

In 2009, Victorian Police randomly tested nearly 28,000 motorists and found just 300 tested positive for drugs – around 1 percent. Canadian research also shows that, despite having a high rate of drug-impaired driving, in 2011, just 1.4 percent of total impaired convictions were for drugs. On those numbers, an average driver could drive under the influence of drugs 16,500 times – or every day for 45 years – before being charged.

In Australian states such as Victoria and Queensland, they've moved away from random testing towards an intelligence-based approach, pinpointing neighbourhoods and locations where drug use is more likely. Queensland's zero-tolerance legislation only requires the presence of cannabis – there's no need for impairment. If New Zealand were to head in this direction, we'd need to legislate to remove impairment from the offence.

The other option, says Superintendent Griffiths, is to consider a per se limit.

"It would be possible to get a panel together to determine an impairment level under which you're at a legal zero, so you're not dealing with residual effects. And you can set impairment levels for different drugs and their analogues, so that's a way around it."

Much time and effort has gone in to studying the level of impairment caused by ingesting different quantities of illegal and legal drugs and trying to establish an equivalent to the 0.05 percent BAC level. On paper, it seems a sensible approach, and it's been adopted in Washington and Colorado, where cannabis has recently been legalised.

"A per se limit for cannabis is particularly problematic," says Dr Logan, who points out there's a big difference between testing in a lab and real-world enforcement. The time between someone being stopped by Police and giving a blood sample can easily be two hours. The active element of THC in cannabis metabolises, at least initially, much faster than alcohol and other drugs. This means a driver who was over the limit when they were caught may be well under by the time they give blood.

The method Dr Logan prefers – regardless of whether cannabis is illegal –

New Zealand's head of road policing, Superintendent Carey Griffiths

is very close to what we currently have in New Zealand: proof of impairment followed by proof of cannabis in the driver's system, whatever the level.

"It's really going to have to come back to good investigative Police work, and if you get some objective evidence that the person is under the influence of the drug then you base the prosecution on that. You say on the one hand the observations show the person was impaired, and you have a chemical test saying cannabis was in their system, and the court can decide if one is related to the other."

Rather than blood tests, Dr Logan prefers an evidential oral fluid sample, as it can be collected roadside, usually within 15 minutes of driving.

One further advantage the impairment approach has over setting per se limits is the complexity around people using more than one drug at a time, known as poly-drug use. As mentioned, alcohol and cannabis combine with a potentially lethal effect, even at levels where individually they would be acceptable under a per se regime. Add other drugs to the mix, in endless possible combinations, and it could become a legislative and judicial mess, whereas impairment is impairment, regardless of the cause.

This approach might not offer much in the way of a general deterrent, however, and Superintendent Griffiths says, while New Zealand's drink-drive policy has an impact on the whole range of drinkers, the current drug policy is only dealing with people "at the top end of the curve".

"I think until we deal with behaviours across the board – and that's where a lot of the advertising is targeted at the moment – until we get into that space in an enforcement sense, I think we'll just keep chipping away at the problem long term without making massive gains."

Research currently being done by the Ministry of Transport with ESR looking at blood taken from drivers in fatal crashes should shed some light on New Zealand's particular problem. At present, if a driver tests positive for alcohol, no further tests are required, making it difficult to get a firm grasp on the prevalence of poly-drug use. The research should give a clearer idea of the risks, although Superintendent Griffiths says, even then, we should approach with caution.

"I call it the sausages argument. You get five drivers who've crashed, and they've got sausages in the boot of the car. It doesn't mean the sausages have caused the crash. People who consume large amounts of cannabis may also exhibit other incivilities, which can include [unsafe] driving behaviours; it might be that the type of person who crashes is the type of person who has cannabis in their system. I'm very careful not to mix correlation with causation." ■

Damian Christie is an Auckland-based journalist.

QUOTES OF SUBSTANCE

Matters of Substance asked people if they supported cannabis law reform. Here's what they said.

"While there are good laws at the moment, the focus on criminalisation as opposed to social support for those who are using substances can often be a barrier to accessing support."

Ben Birks Ang,

"Yes, but reform is not legalisation in my book; it means more prevention, intervention, and treatment."

Dr Kevin Sabet

"Harm reduction policy needs to facilitate less risky/more healthy drug use and might have to acknowledge pleasure as the driver of use not deviance or avoidance."

Dr Adam Winstock

"Cannabis law reform is long overdue and increasingly inevitable. It's not a question of whether it will happen in New Zealand, but when and how."

Chris Fowlie

Cracking good prevention

Fences at the top of cliffs are preferable to ambulances at the bottom. We know cannabis can cause harm, so how do we prevent people from using cannabis or at least delay the time they start? **Keri Welham** tackles the issue of cannabis prevention.

KERI WELHAM

DR KEVIN Sabet is looking for fundamental change.

Sabet has worked in drug policy for 18 years. He's Director of the Drug Policy Institute at the University of Florida and an assistant professor of psychiatry. Previously, he was an appointee to the Obama and Bush II administrations.

Not so long ago, schools offered occasional classroom lessons about the evils of drugs, delivered at random. Sabet says, while these attempts were commendable and naturally very well meaning, a haphazard collection of high school life skills or PE classes devoted to drug harm just won't cut it in 2013.

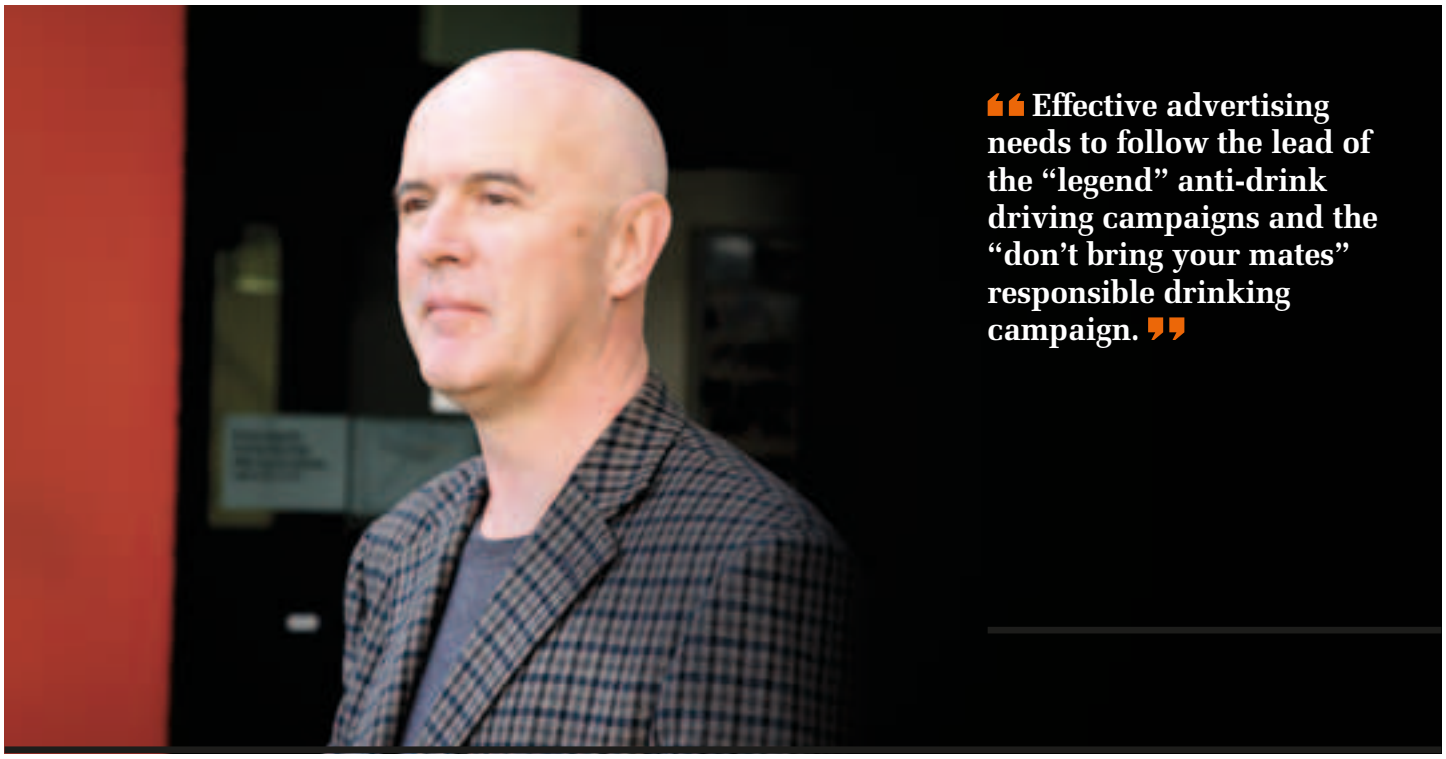
The stakes are too high for such a casual approach when, as Sabet points out, New Zealand research links the early onset of heavy cannabis use to poorer life outcomes.

"Public health experts talk about real consequences on the adolescent brain."

Sabet wants cannabis prevention efforts to be visible in homes, churches, businesses, sports clubs and, most importantly to his mind, in policy. He wants to see programmes that are able

A popular misconception of how children come to use drugs.

Dr Steve Allsop



> **“Effective advertising needs to follow the lead of the “legend” anti-drink driving campaigns and the “don’t bring your mates” responsible drinking campaign.”**

to be tailored to each community’s specific needs. Out with a light sprinkling of classroom lectures; in with community-wide, community-specific, community-led programmes to build resilience and keep young people busy and engaged.

It’s a popular call to arms, echoed by leading researchers and those tasked with rolling out drug prevention strategies.

So how is drug prevention changing in New Zealand and overseas? Why is change necessary? And is any of it working?

Where do we start?

Dr Steve Allsop, Director of Australia’s National Drug Research Institute, says early-onset use must be at the forefront of prevention efforts, alongside heavy use, workplace use, stoned driving and strategies to support mental health.

Early onset of smoking and drinking are risk factors for early cannabis use. As smoking becomes less popular, this flow-on effect may lessen. However, recent evidence has shown that the practice of mixing cannabis with tobacco is introducing some young people to smoking. Those who mix cannabis with tobacco risk developing an addiction to tobacco alongside a dependence on cannabis.

Sabet says the starting point for improved prevention should be a “much more honest” discussion about the harms of cannabis.

“There are multiple negative consequences,” he says.

“Cannabis undoubtedly reduces IQ, affects driving, learning outcomes. Tobacco kills more people, but we shouldn’t downplay [cannabis].”

He says one in six young people develop an addiction to cannabis, and for those people, the drug causes a world of trouble.

“Do you want to take that gamble? It’s not cocaine or heroin. However, it’s still a gamble.”

Why has the anti-smoking campaign been so successful?

Allsop says good prevention engages the whole community and happens in multiple places at once using various avenues to reinforce the core message.

In the case of tobacco, this has translated to regulations around packaging, public health campaigns, price mechanisms, limited availability, school education, good treatment, non-smoking environments, advertising and bans on sports sponsorship.

The anti-tobacco message has been well resourced and visible over several decades.

Ben Birks Ang is a team leader at Auckland residential treatment facility Odyssey House where he runs the facility’s Stand up! and Amplify! programmes. He says some young people have adopted anti-tobacco messaging with such gusto that it has become part of their justification for using other substances. He has heard teenagers make comments such as: “I don’t smoke because it’s so bad for you, so I just do pot instead.”

There is much that cannabis prevention can learn from anti-smoking and anti-drink driving campaigns, as well as from the strategies of alcohol companies. Those trying to dissuade people from smoking cigarettes and drink driving have shown a keen eye for the impact of social pressure, while the alcohol industry is particularly adept at using social media to get its branding and advertising alongside online content popular with young people.

Birks Ang says his clients can name the attributes of the brand image of most alcohol labels, from the big-boozer of one RTD to the feminine soda-pop drinker of another.

To counter this influence, the health and support communities need to be just as agile in the online space.

He says effective advertising needs to follow the lead of the “legend” anti-drink driving campaigns and the “don’t bring your mates” responsible drinking campaign.

Both these campaigns created shorthand for discussing behaviour with friends, which is hard to do at any age – let alone in your teens. The legend ads, in particular, had a positive focus around behaviour to increase social standing.

Sabet says it took 80 years of use, and harm, for tobacco's adverse effects to finally be understood. He fears that, if cannabis were legalised, there could be a similar 80 years of pain before its harms were fully realised and a backlash took hold.

Allsop says the cannabis prevention effort must get organised and build a plan.

"Let's get a 20-year plan. That's what we've done with tobacco. A broad range of strategies [and] we endured in our efforts."

What does good prevention look like?

Senior researcher at the Canadian Centre for Substance Abuse Dr Amy Porath-Waller has devoted her career to research around cannabis use and prevention. She is part of a team that published an analysis of the effectiveness of school-based cannabis prevention programmes in *Health Education & Behaviour* in October 2010. The evidence revealed school-based programmes did have some impact.

However, the level of success varied with the approach. Programmes consisting of more than 15 sessions or modules, facilitated by someone outside the teaching staff and conducted using an interactive approach yielded strong results.

"He has heard teenagers make comments such as: "I don't smoke because it's so bad for you, so I just do pot instead."

What worked was age-appropriate skill development, such as older teenagers role-playing how to deal with offers of drugs, and group discussion. For maximum impact, a series of sessions must be implemented as designed, not changed ad hoc or condensed. And the best person to offer school-based education is a health professional trained in drug prevention.

Allsop says a lot of young people understand the risks of cannabis use, but don't necessarily care. Some campaigners make the mistake of thinking knowledge is enough – they fail because they don't understand the motivations of their target audience.

He says a campaign aimed at young people would need to appeal to things that matter to them. That might be reputation and status, sporting prowess, sexual success. A Health Canada survey backs this up. What resonated for young people there was the impact on grades, sporting success, mental health and the ability to use their new, hard-earned driver's licence. Porath-Waller says it's hard for a 17-year-old to be truly motivated by the thought of a death by lung cancer in 30 or 40 years.

"Drug education should equip young people to live in a drug-taking world and offer skills and strategies so they can protect themselves from other people's drug use.

"Children have a right to information. They live in a world where, even if they don't use drugs, lots of other people might."

Part of the education process is to make young people aware that the majority of people don't use drugs. Often, in an environment where drugs are not discussed at all, young people can end up overestimating their peers' drug use, Allsop says.

Some research has shown that parental influence plays a significant role in drug use in early adolescence. Parents should not underestimate their influence: the Health Canada survey found 87 percent of young people thought their parents would be a credible source of information about illegal drugs.

Allsop says parents should offer a safe and loving home, clear expectations, an interest in the risk profile of their child's friends and open dialogue on topics such as how to care for your friends if drugs are around and what to do if drugs are brought out at a party.

Another key plank of prevention is effective treatment.

"It reduces the overall number of people in the community who use," Allsop says. "This reduces the visibility of cannabis use and potentially access to the drug."

He also believes there is an argument for a more inclusive approach to dealing with broken rules in school. He respects a principal's right to implement a consequence for a student who brings drugs to school, but he would like to see "responses that don't simply disengage those most in need of connection to an education system and the community".

Sabet says great prevention means offering young people alternatives. In the States, this might be midnight basketball;

"…responses that don't simply disengage those most in need of connection to an education system and the community."

DR STEVE ALLSOP

in New Zealand, it might be a regular touch rugby tournament.

While strategies might differ between demographics and addiction is generally a more ingrained problem in poorer communities, Sabet says bored young people with access to disposable income can quickly turn to drug use.

What works in New Zealand?

Birks Ang says young people who dabble in cannabis and other drugs are doing exactly what teenagers are designed to do – test boundaries and define themselves. They need to feel they're developing social skills and are coping with difficult social situations.

Drug taking lets them believe they are making progress in some of these areas, but it usually means they are not developing the necessary skills at all. Good prevention means putting the safety nets in place to support young people if they stumble.

A young person using cannabis is less likely to develop a problematic habit if they have the stability of a strong network of trusted adults, a safe community and alternative opportunities for socialising, such as sport.

Birks Ang's job takes him across wider Auckland to deliver programmes into secondary schools. In some schools, where there is a culture of asking for help, his teams work at a visible level and are able to achieve early intervention with young people before habits have taken hold.

In other schools, the service keeps a low profile and works with those whose drug use is now causing them grief.

"What we've noticed is there are a lot of young people that are using."

Birks Ang says Māngere is one community in which he's noted marked change in recent years. Local schools have become a model of the "wrap-around" strategy, where various groups complement each other's work to produce a swift and effective response.

He believes New Zealand is closer than ever to cracking good prevention.

One effective strategy in preventing early-onset drug use is to consider the peer

Students at New Plymouth's Spotswood College engaged in learning.

group above that which you're concerned about, he says. Young people are deeply swayed by the behaviour and attitudes of those a year above them.

They also need to know they don't need to have the most dysfunctional life, or the heaviest cannabis habit, to benefit from cutting back. Effective campaigns consider young people at various points on the drug-use continuum.

What doesn't work? Scare tactics.

Birks Ang points to the American movement Scared Straight!, where inmates took emerging juvenile offenders behind bars and frightened the bejeezus out of them.

He says research shows the programme was ineffective; a claim backed by recent Canadian research suggesting young people do not respond to shock tactics.

Now for the good news: cannabis use is dropping.

The *Health and Wellbeing of New Zealand Secondary School Students in 2012* report, known as *Youth'12*, surveyed 8,500 teenage New Zealanders. It found that, between 2001 and 2012, the percentage of teenagers who had tried cannabis fell from 38.2 percent to 23 percent.

Something has changed over the past 11 years. The move away from total reliance on those early classroom lessons may be reaping rewards. Birks Ang says there's logic in coordination of effort – pulling together various public health campaigns, movements, services and policies to develop a "healthy young people" strategy. This could address a host of risk factors for poor life outcomes, and the figures for early-onset cannabis use could continue to fall alongside those for other risky behaviours such as smoking and drink driving.

"What doesn't work? Scare tactics."

BEN BIRKS ANG

Australia's *National Drug Strategy Household Survey* has also shown a substantial drop in cannabis use. Between 1998 and 2010, there was a reduction of more than 30 percent in the number of people who reported using cannabis in the past year.

Allsop believes young people are now better informed, there has been increased investment in education, there have been improvements in treatment, targeted campaigns against driving on drugs have been particularly effective and he wonders if media commentary regarding some of the risks of cannabis use has also had an impact.

Sabet says building on these recent developments in drug prevention is essential. Parents, educators, health workers and policy makers need to understand that modern best practice involves a consistent message reinforced in multiple environments. This change is evidently under way – he is keen for it to gain even greater momentum.

"We have to change the paradigm about prevention."

Porath-Waller says it's gratifying to see cannabis use rates quickly decreasing in Canada. In 2008, 11.4 percent of people reported using cannabis in the past year. By 2011, that figure had fallen to 9.1 percent. In young people (those aged 15–24), those figures were 32.7 percent for 2008 and 21.6 percent for 2011.

But this is no time to ease off, she says.

"Just because we've seen some declines, it doesn't mean we can be complacent. We need to be in for the long haul." ■

Keri Welham is a Tauranga-based writer.

Which cannabis prevention measures do young people think would work?

In mid-September, the Canadian Centre on Substance Abuse (CCSA) released the findings of in-depth interviews with 76 people aged 15–24.

Dr Amy Porath-Waller says the participants in *What Canadian Youth Think about Cannabis* believed "everyone smokes weed". Not using cannabis was abnormal.

Most did not consider cannabis a drug, arguing that it was naturally grown, safe and non-addictive. They said it reduced violent tendencies and did not change the user's perception of reality. They believed cannabis was "much safer" than alcohol and tobacco.

The youth surveyed believed cannabis was capable of helping people focus, relax, sleep and be less violent. Some believed it purified the body and cured cancer.

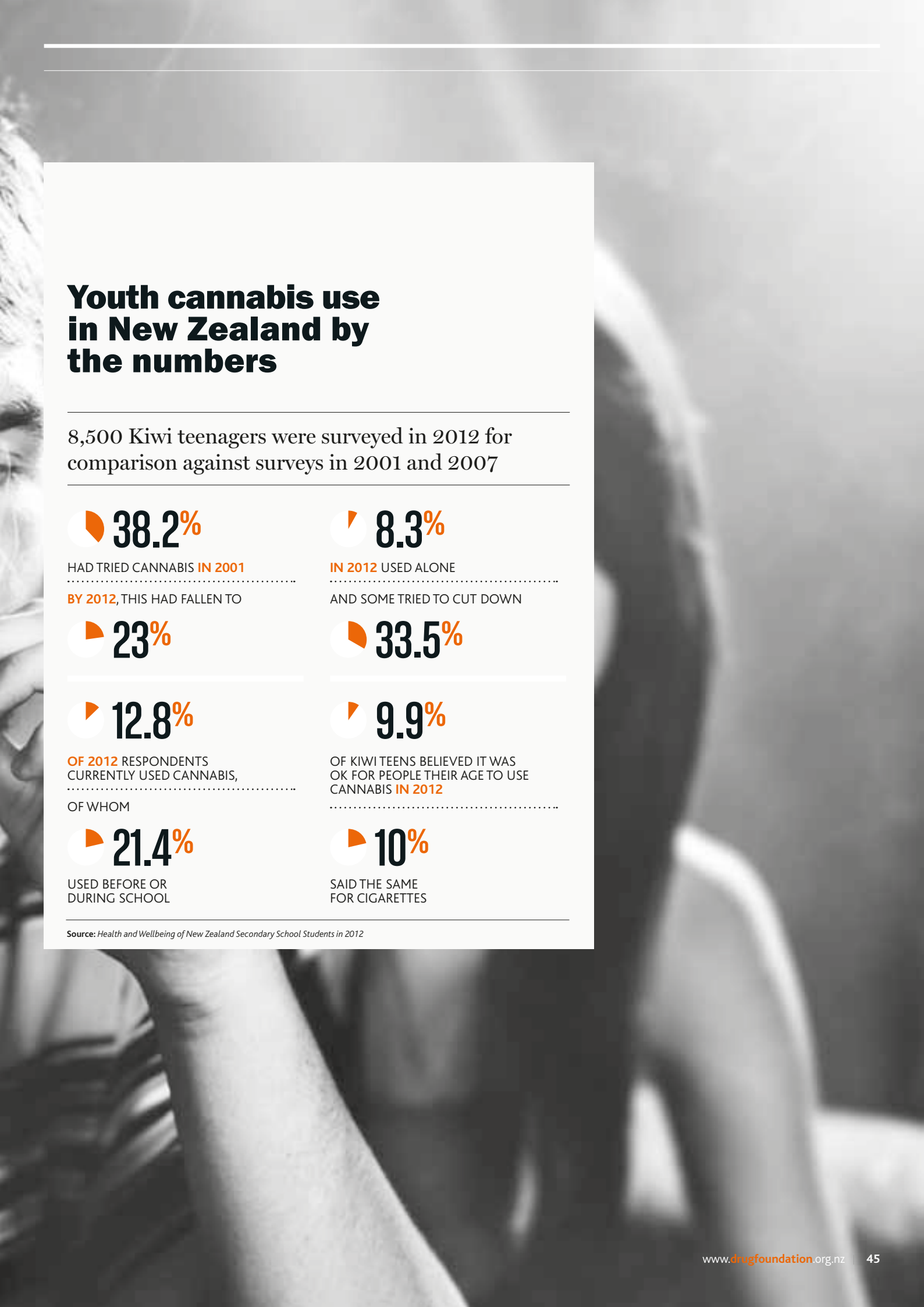
Participants believed driving stoned was not as dangerous as driving drunk, largely because cannabis focused the mind on the task of driving.

They suggested providing more fact-based information at an earlier age, providing more content relating specifically to cannabis (and not all drugs) and using approaches that were aimed at reducing the harms of using cannabis rather than focusing on abstinence.

They thought their peers might be persuaded away from cannabis by health risks, poor academic performance and negative impacts on family relationships.

Participants also suggested those who delivered prevention messages should have an ability to connect with youth as well as first-hand experience with the drug. ■

"They thought their peers might be persuaded away from cannabis by health risks, poor academic performance and negative impacts on family relationships."



Youth cannabis use in New Zealand by the numbers

8,500 Kiwi teenagers were surveyed in 2012 for comparison against surveys in 2001 and 2007

38.2%

HAD TRIED CANNABIS **IN 2001**

BY 2012, THIS HAD FALLEN TO

23%

12.8%

OF 2012 RESPONDENTS CURRENTLY USED CANNABIS,

OF WHOM

21.4%

USED BEFORE OR DURING SCHOOL

8.3%

IN 2012 USED ALONE

AND SOME TRIED TO CUT DOWN

33.5%

9.9%

OF KIWI TEENS BELIEVED IT WAS OK FOR PEOPLE THEIR AGE TO USE CANNABIS **IN 2012**

10%

SAID THE SAME FOR CIGARETTES

Source: *Health and Wellbeing of New Zealand Secondary School Students in 2012*

PotHelp

If getting stoned is no longer working for you, and you want help to cut back or quit, visit PotHelp to hear from people who have been there.






PotHelp is a new website that will support New Zealanders to make positive changes in their lives. Visit PotHelp today for the inspiration and tools to make change happen.

www.pothelp.org.nz

MINISTRY OF HEALTH
MANATU HAUORA

New Zealand Government

AT THE HEART OF THE MATTER. NZ DRUG FOUNDATION.

For more experience, insight and hope visit:

DRUGHELP drughelp.org.nz

METHHELP methhelp.org.nz