Centennial Institute

POLICY BRIEF

The Big Deal

How Marijuana Endangers Young People and What Policymakers Should Do

Centennial Institute Policy Brief No. 2014-3

By Christian Thurstone, MD

OVERVIEW: EXPERIMENTING AT CHILDREN'S EXPENSE

Coloradans in 2012 approved Amendment 64, a constitutional provision legalizing marijuana for optional use by people 21 and older.

Implementation on January 1, 2014, moved the state into uncharted waters for medical and social impacts from this high-potency chemical.

The experiment set in motion new and very serious challenges to the protection of public health and safety – specifically that of children and youth.

Here are the cold facts, medically documented, about those dangers, along with a six-point damage control agenda for policymakers.

It all starts with the oft-invoked but in this case blithely ignored axiom:

Put Children First

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Table of Contents

RATES OF ADOLESCENT MARIJUANA USE AND ADDICTION

There is no debate among reputable scientists: marijuana is addictive and more potent than ever. Its use is the No. 1 reason young people in the United States are admitted for substance abuse treatment. For adults it's the No. 2 reason, behind alcohol.

We're no longer talking the weed of Woodstock, either. That's when the content of marijuana's active and intoxicating ingredient, THC, hovered around 3 percent – and plenty of people got plenty stoned.

Today, Colorado's hundreds of dispensaries commonly sell strains of marijuana with THC levels exceeding 15 percent.

Concentrates – called "hash oil" and typically infused into foods called "edibles" – often exceed 80 percent THC. Many Colorado teens refer to concentrates as "the crack cocaine of marijuana."

While marijuana-industry representatives urge everyone to use the highly sanitized phrase "adult-use marijuana," we must recognize that the drug is used chiefly by youth.

Marijuana use in the United States peaks at age 20, followed by ages 19 and age 18, according to National Survey on Drug Use and Health.

According to the same survey, of the 2.4 million people in the United States who try marijuana for the first time

DAMAGE CONTROL

- ***Curb retail sales***
- ***Improve data collection***
- ***Watch out for edibles***
- ***Raise minimum age***
- ***Step up intervention***
- ***Learn from Sweden***

- See Page 6

each year, 58 percent are under the age of 18. And of those who try the drug before age 18, one in six will become addicted to it (Hall and Degenhard, 2009, *Lancet* 374:1383-1391).

That's an addiction rate reputable scientists still accept – although it's time for more research because it was calculated decades ago, when marijuana was far less potent than it is today.

Adolescent marijuana use has increased as our country has loosened marijuana laws to accommodate the drug for medical and optional use.

Today, 6.5 percent of high school seniors nationwide – that's not including younger students with the same problem – report smoking marijuana daily.

So reports the University of Michigan's *Monitoring the Future* survey, one of our country's largest and longest-ranging studies of students' drug use and attitudes about drugs.

That daily usage rate for high school seniors is up from 6 percent in 2003. And in 2013, past-month marijuana use by the nation's 8th, 10th and 12th graders jumped 1.2 percent, 4.2 percent and 3.3 percent, respectively, over the previous year.

Colorado's past-month marijuana use rate of 10.7% percent among youth ages 12 to 17 is the fifth highest in the country and significantly higher than national average of 7.6% percent (source: National Survey on Drug Use and Health).

If Denver Public Schools were a U.S. state, it would have the *highest marijuana use rate in the country*, according to analyses of Centers for Disease Control and Prevention's Youth Risk Behavior Survey.

While these rates show that most people who try, or occasionally use, marijuana do not become addicts, let's also not kid ourselves. As we've learned from the example of alcohol, a small percentage of users – including those who are not alcoholics – cause massive amounts of irreparable damage.

Denver Public Schools has a higher marijuana use rate than any US state

In the case of marijuana, roughly 232,000 adolescents in the U.S. become addicted to the drug every year.

All of this means that older generations are making big bucks from an ugly truth: the vast majority of lifelong, heavily using customers from whom the marijuana industry derives most of its profits ***start their drug habits as kids***.

WHY MARIJUANA IS ESPECIALLY HARMFUL TO THE DEVELOPING BRAIN

The brain isn't fully developed until about the age of 25, making young people especially vulnerable to addiction – and also the targets of drug sellers, who know that to create the heavy, lifelong users who are their best customers, they must hook 'em while they're young.

In adolescence, the brain works hard to become more efficient. It prunes unnecessary synapses, or connections, and it myelinates, or grows little fat cells, to make nervous impulses travel more effectively.

The brain matures from the bottom up and from the front back. That's a pattern of development important to understand. Why? Because it means the parts of our brain that drive up our desire to seek pleasure, rewards, thrills and adventure outpace development of the areas that help us stop what we're doing long enough to think through the potential consequences of our actions.

In other words, the adolescent brain craves pleasure and doesn't know how to weigh risks or say enough is enough as well as an adult brain. It has a great gas pedal and poor brakes.

ADVERSE HEALTH IMPACTS FROM CHILD MARIJUANA EXPOSURE AND USE

If we're really concerned about marijuana's impact on child health, we must be concerned from the moment of conception. By age group, here are some of the prominent research findings about marijuana's impact on child health.

Marijuana and Pregnancy

Women who are pregnant or trying to become pregnant should not use marijuana.

Marijuana exposure during the first trimester of pregnancy has been found to be especially dangerous to the developing fetus. It's also important to note that the first three months of pregnancy are when women are least likely to know they're pregnant.

The relaxed attitude about marijuana in women who are of childbearing age is troubling. Many are receiving misleading information. In 2012, 137 adults in Denver were asked if marijuana was safe to use during pregnancy.

Pregnant women or those trying to get pregnant should <u>not</u> use marijuana

Nearly one-third — 27.9 percent — said yes or that they were unsure (Source: Shuman et al., 2012, *Journal of Global Drug Policy and Practice* 6:1-12).

In utero marijuana exposure is associated with:

Born with two strikes against her, because mom used pot while expecting

- IQ loss of up to 5 points by age 6 (Source: Goldschmidt et al. (2008), *Journal American Academy of Child and Adolescent Psychiatry* 47:254-263)

- Increased depression at age 10. (Source: Grey et al. (2005) *Neurotoxicol Teratol* 27:439-448*)*

- **Increased hyperactivity, impulsivity, inattention at age 10.** (Goldschmidt et al. (2000) *Neurotoxicol Teratol* 22:325-336)

- Increased odds of marijuana use by age 14, heavier marijuana use. (Day et al. (2006) *Addiction* 101:1313-1322

- Lower achievement at age 14. (Goldschmidt et al. (2012) *Neurotoxicol Teratol* 34:161-167)

Marijuana and Latency

It is imperative to keep marijuana away from children.

Latency is the phase of life up to about age 11. Here's what we know:

- Colorado Children's Hospital studied exposures since 2010 of 14 children younger than age 12. Eight children were admitted – and two were admitted to the Intensive Care Unit (Wang et. al (2013) *Journal of the American Medical Association* 167:630-633)

- There is a case report of a 13-month-old exposed to secondhand marijuana smoke who was rushed to an emergency department with lethargy – meaning unresponsiveness – and decreased appetite. (See Zarfin et. al (2012) *Child Abuse Neglect* 36:81-83)

Marijuana and Adolescence

Teen users risk a lower IQ and a higher rate of psychosis and aggression.

- Permanent IQ loss. Heavy use starting in adolescence predicts up to an 8-point irreversible IQ drop from age 13 to 38. (Meier et. al (2012) *Proc Natl Acad Sci USA* 109:E2657-E2664). See graph on page 10 of this policy brief.

- A two-fold increase in risk of psychosis in adulthood. Psychosis is defined as seeing or hearing things that aren't real, and maintaining fixed, false beliefs not shared by a

larger community – in adulthood. (Moore et al., 2007, *Lancet* 370:319-328).

- Daily adolescent use or cannabis dependence predicts a doubling in odds of having anxiety disorder at age 29 (Degenhardt et al., 2013, *Addiction* 108:124-133).

- **Poor school performance.** Adolescents who use marijuana by age 15 are 3.6 times *less* likely to graduate from high school, 2.3 times *less* likely to enroll in college and 3.7 times *less* likely to get a college degree (Horwood et al., 2010, *Drug Alcohol Depend* 110:247-253).

- Teenagers who use marijuana before having sex are half as likely to use a condom (Hendershot et al., 2010, *Psychol Addicti Behav* 24:404-414).

- Adolescent marijuana use is associated with aggression (Smith et al., 2013, *Drug Alcohol Depend* 132:63-68).

- Adolescent marijuana use predicts 2 times the risk of using other drugs (Hall and Lynskey, 2005, *Drug Alcohol Rev* 24:39-48).

IQ down, psychosis and aggression up, because he smoked weed as a kid

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DAMAGE CONTROL: SIX POLICY RECOMMENDATIONS

When establishing drug policy, it is important to understand the main drivers of drug use, and, by extension, drug addiction, in any community. They are:

- accessibility to a drug,
- social acceptance of that drug,
- perception of the risk of harm from using that drug.

When accessibility and social acceptance of a drug's use rise, and the perception of risk of harm falls, use rates increase. And when use rates increase, so do rates of drug abuse and addiction.

Thus drug legalization – and all of the commercialization that comes with it – are especially damaging because they move *all three drivers* in the wrong direction.

Legalization and commercialization worsen all three drivers of rising drug use and addiction

Legalization is also firmly underpinned in the United States by free-speech rights, making it even tougher for communities – and responsible, loving parents – to restrict the media and marketing that fuel drug markets and create new users.

To combat the harms of marijuana legalization, Colorado communities – and elected leaders – should consider an array of strategies. Here are six urgent ones:

One: Opt out of retail sales of marijuana

Amendment 64 permits municipal and county governments to opt out. This is crucial because we know that the commercialization of substances leads to increased use (2012 Surgeon General's Report – P*reventing Tobacco Use among Youth and Young Adults*).

Two: Demand adequate data collection

Colorado has to be honest about how marijuana legalization affects its citizens – and the rest of the nation. Anyone who sincerely wishes to mitigate and/or correct problems associated with the drug's use must know the scope and scale of those problems. But so far, the State of Colorado's data collection and public reporting related to marijuana use and abuse have been poor.

For example, several school districts throughout the state – including two of Colorado's largest – failed to provide adequate data for a key national analysis of adolescent drug use produced by the Centers for Disease Control and released in June 2014.

Three: Further restrict marijuana packaging and serving sizes

Highly potent edibles already have proven to be more than problematic.

Two deaths are attributed to their use. One was a college student who traveled from his Wyoming campus to Denver specifically to try marijuana for the first time. He hurled himself over a balcony outside his Denver hotel room shortly after ingesting an edible packed with six average servings of THC.

We've learned edibles can kill

Colorado Children's Hospital also has reported the admission of several children who have ingested edibles, at least eight of whom became critically ill.

In May 2014, Gov. John Hickenlooper signed into law two bills aimed at tightening control of marijuana edibles. The first established a task force to devise packaging for THC-infused foods. But if there are any changes – which is a big if, given how hard marijuana-industry interests fight restrictions of their products – they aren't likely to be implemented before 2016.

The second new law regulates the amount of marijuana concentrate, or hash oil, that can be sold to an individual – but its language is so vague that it's not clear what the

legislature actually accomplished. Even *Westword*, the pro-marijuana weekly, noted the confusion under this headline: "Marijuana concentrates and edibles bills now law – but what the hell will they actually do?"

Four: Raise the minimum age for use of marijuana and other legal, addictive drugs

In the world of adolescent brain health, the legal ages of 18 and 21 still mean the brain isn't fully mature and is especially vulnerable to addiction.

Colorado law permits teens as young as 18 to have medical marijuana with a parent's permission. Diversion from those marijuana users to other teens – including those who are much younger – is common (Salomonsen-Sautel et al., 2012, *J Am Acad Child Adolesc Psychiatry* 51:694-702).

In addition, wouldn't now would be a smart time for Colorado to also raise the minimum tobacco-smoking age to 21 – if not higher?

Five: Adequately fund and monitor drug-abuse prevention and early intervention programs

(And craft them without "help" from marijuana-industry representatives)

Although prevention and education are important, the horse is already out of the barn for thousands of Colorado teens.

Since over half of Colorado's high school seniors have used marijuana at least once in their life, we also need early intervention and access to treatment.

Six: Learn from Sweden and put children first

We have a lot to learn from other countries. For example, take Sweden, which once had one of the world's most permissive approaches to drug use – complete with government-funded "clean rooms," where heroin addicts could shoot up — and one of the world's highest rates of drug addiction.

Swedish officials eventually determined that if they wanted different results, they needed a radically different approach to drug use and drug policy-making. Today, Swedish drug policy is well established, offering, in the words of the World Federation Against Drugs, " an alternative to either harsh punishment or legalization [which] holds real promise

Why sell to age 18 when brain effects run to age 25?

as a model for many other nations in the world as they cope with the menacing and divisive, modern-epidemic problem of nonmedical drug use."

What did Sweden do to set itself on this healthier, brighter course? Many things — including the development of zero-tolerance laws and robust care for people struggling with addiction.

But most critical was the decision of Swedish leaders to put children's interests first when tackling any aspect of drug policy. They had formerly tended to start all discussions from this point:

> *What is in the best interests of adults — adults who often wish to push boundaries as far as they can to make money and amass power?*

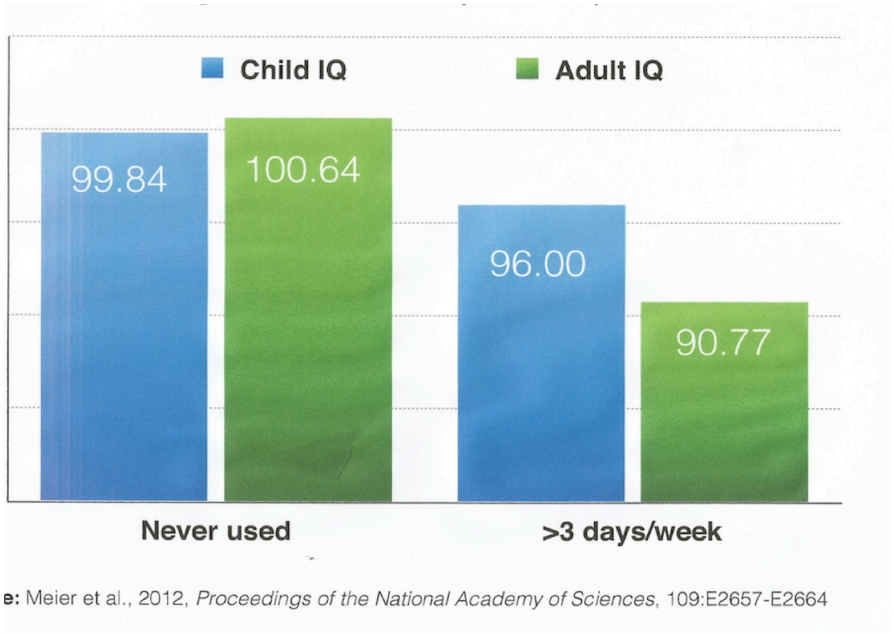
Now, instead, Sweden's elected, national officials have shifted the paradigm of their drug policymaking to this very different starting point:

> *What is in the best interests of children — young people who are especially vulnerable to addiction because of their developing brains and who will, eventually, grow up to lead our nation?*

"Put childen first:" the cliché American policymakers so often cite but ignore, made real for once – in a Scandinavian setting.

What an obvious shift – yet what a bold and brave shift –in thinking about how to combat drug abuse and addiction. Remarkable.

So if Sweden can do it, why can't Colorado?



e: Meier et al., 2012, *Proceedings of the National Academy of Sciences*, 109:E2657-E2664

AND FINALLY,
THINK ABOUT THIS

Graph shows the change in IQ with persistent, heavy marijuana use.

This means that someone uses more than three days per week starting in adolescence and continuing until one's 30's.

Our most precious resource is the brains of our youth. Lowering their IQ could have devastating consequences for them and for our country as a whole.

We can do better. We must!

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