Michigan Medical Marihuana Law Legislative Concerns

April 21, 2015

PUBLIC HEALTH INTEREST REGARDING THE MICHIGAN MEDICAL MARIHUANA LAW AND A REVIEW OF CURRENT MEDICAL MARIHUANA RELATED BILLS

In the absence of credible data, this debate is being dominated by bad science and misinformation from people interested in using medical marijuana as a step to legalization for recreational use. Bypassing the FDA's well-established approval process has created a mess that especially affects children and adolescents. Young people, who are clearly being targeted with medical marijuana advertising and diversion, are most vulnerable to developing marijuana addiction and suffering from its lasting effects.

Dr. Christian Thurstone, Psychiatrist, Board-Certified in general, child and adolescent and addictions psychiatry, Associate Professor of Psychiatry at the University of Colorado, and Medical Director of one of Colorado's largest adolescent substance-abuse-treatment programs.

Edited by:
John Kroneck, MA, LPC, CPC-R
Health Promotion Coordinator – Montcalm County
Cherry Health Services
PO Box 836, 129 E. Main, Stanton, MI 48888
989-831-4591
JohnKroneck@CherryHealth.com

TABLE OF CONTENTS

They (studies) have shown that exposure to cannabinoids during adolescent development can cause long-lasting changes in the brain's reward system as well as the hippocampus, a brain area critical for learning and memory. ... Beyond potentially lowering IQ, teen marijuana use is linked to school dropout, other drug use, mental health problems, etc.

Nora D. Volkow, M.D. Director, National Institute on Drug Abuse

Dr. Ed Gogek, an addictions psychiatrist in Arizona wrote in the *New York Times*:

Indeed, marijuana activists use phony science, ... For years they claimed pot was good for glaucoma and never apologized when research found it could actually make glaucoma worse. They still insist weed isn't addictive, despite every addiction medicine society saying it is. They've even produced their own flawed scientific studies supposedly proving that medical marijuana laws don't increase use among teenagers, when almost all the evidence says just the opposite.

RESOURCES LIST

Raised numbers within this document, such as [7], refer back to the number on this resources list. In this case the raised '7' would refer the reader to the 7th resource below – Reefer Sanity. Also, the color of the paper the respective resource is printed on is in ( ), i.e. (*Blue*).

1) Ben Cort, Director of Business Development/CeDAR at the University of Colorado Hospital and runs the Center for Dependency, Addiction and Rehabilitation. Keynote speaker at the March 13, 2015 conference Marijuana – Our Kids and Communities, held at the Macomb Intermediate School District.

2) Dr. Jeffrey Berger, M.D., FASC, Addictionologist and Medical Director at Guest House. Excerpts from a talk at the March 13, 2015 conference Marijuana – Our Kids and Communities, held at the Macomb Intermediate School District. (*Goldenrod*)

3) Marijuana's Lasting Effects on the Brain, Nora D. Volkow, M.D., Director National Institute on Drug Abuse – NIDA, Message From the Director, March 2013. http://www.drugabuse.gov/about-nida/directors-page (*Blue*)

4) Not Just IQ: Marijuana Changes the Brain, Michigan Department of Community Health (*Salmon*)

5) Primary Drug Trend Among Adolescents, Montcalm County, Marijuana. YOUTHINK Montcalm, Cherry Health Promotion Services, and Riverhaven Sub-Regional Entity of the Mid-State Health Network. (*Green*)

6) Public Health Organizations' Positions on Medical Marijuana, A compilation of position statements by medical organizations from the SAM website. (*Lavender*)

7) Reefer Sanity, Kevin Sabet, Ph.D., Beaufort Books, 2013

8) Smart Approaches to Marijuana (SAM); **http://learnaboutsam.org/** Our commonsense, third-way approach to marijuana policy is based on reputable science and sound principles of public health and safety.
   a. Colorado's Experience with de facto Legalization of Retail Sales after "Medical" Marijuana Expansion post-2009, SAM infographic. (*Yellow*)
   b. Lessons After Two Years of Marijuana Legalization – Short Report, January 5, 2015 on Colorado and Washington Since Legalization. SAM Infograph (*White*)

9) The Dangers & Consequences Of Marijuana Abuse, U.S. Department of Justice, Drug Enforcement Administration, Demand Reduction Section, May 2014, 45 pg.

10) The Legalization of Marijuana in Colorado: The Impact; Volume 2/August 2014, Rocky Mountain High Intensity Drug Trafficking Area, 166 pg. Executive Summary http://www.in.gov/ipac/files/August_2014_Legalization_of_MJ_in_Colorado_the_Impact(1).pdf (*Cherry*)

11) The Teen Brain & Marijuana, Scholastic, National Institute of Drug Abuse, National Institute of Health, U.S. Department of Health & Human Services (*Salmon*)

12) Website: Daily Menu – thefarmco.com, 3/10/2015 (*Red*)

13) And various media reports.

MICHIGAN MEDICAL MARIHUANA LAW LEGISLATIVE CONCERNS
Cherry Health Promotion Services – Montcalm County
YOUTHINK Montcalm Community Coalition

The first thing you need to do is abandon what you think you know about marijuana. Today's marijuana is more powerful and nothing like it was ten years ago, or even five years ago.

Opening statement from Ben Cort at the
Marijuana – Our Kids and Communities conference.[1]

INTRODUCTION

In 2008 Michigan passed the Michigan Medical Marihuana Law (MMML) to provide access to cannabis for use by individuals who may experience health related benefits. Although promoted as being a product to be helpful to people experiencing severe health conditions, observations of the medical marihuana business practices indicate additional motives in play other than medical care and concern. That is to say, to truly assist people with medical care and provide appropriate protections for youth and public safety, actions would be seen to;

1) Develop a product with a $\leq$ 1:1 ratio of THC to CBD, thereby providing MORE health benefits WITHOUT the altered consciousness[1,2];
2) Take into consideration the full costs of expanding the marihuana industry to better assure public safety; protecting communities, families and individuals. In the States of Colorado and Washington, we are witnessing marihuana industry business practices emulating the alcohol and tobacco industry practices that saddle tax payers with $10 in social costs for every $1 collected in taxes; [7] (Reefer Sanity, p.106)
3) Place tight controls on marketing targeting teens and children[8b]; (Infograph p.5)
4) Give weight to the fact that youth are at a higher risk for addiction and other problems related to cannabis use than adults. For example, in 2014, 85% of youth from Montcalm County presenting themselves for substance use disorder treatment, have presented primarily for marihuana problems and/or addiction[5];
5) Recognize that youth behaviors will reflect the decisions adults make regarding the availability and acceptance of marihuana in our cities, villages and townships throughout Michigan[8b]; (Infograph p.1)
6) Follow the science as a new generation of safe healing products based on the beneficial properties of cannabis with low THC levels and higher CBD levels is close at hand[5]. (Reefer Sanity p.82-83)

The current MMML is likened to the story of the Trojan Horse. With compassionate intentions, we have allowed the medical marihuana industry to establish within Michigan. Now we are struggling to minimize unintended consequences as a result of our compassion. Additionally, we are exposed to repeated attempts at embellishing the law to move us closer to legalization. Colorado's concerns began to show before legalization, with the establishment distribution centers similar to "provisioning centers" and allowing "edibles".[8a] Without placing a check on THC levels, in favor of healthier CBD levels, expanding the reach of the MMML is NOT in the best interest of our communities, businesses, and families.

Marijuana has gotten a free ride of sorts among the general public, who view it as non-addictive and less impairing than other drugs. However, medical science tells a different story.

John Knight, Director, Center for Adolescent Substance Abuse Research at Children's Hospital Boston[6]

OVERVIEW OF CURRENT BILLS

The following is a list of bills in the legislative process as of April 19, 2015. With each bill is a very short summation regarding basic focus of the bill. In addition to these bills, it has been reported in the media that in 2016, there will be a ballot proposal to the Michigan voters asking to approve the decriminalization of marihuana possession and use.

House Bill 4210 and **Senate Bill 140**: These bills would legalize marihuana-infused products, meaning "*... a topical formulation, tincture, beverage, edible substance, or similar product containing any usable marihuana that is intended for human consumption in a manner other than smoke inhalation. Marihuana-infused product shall not be considered a food for the purposes of the food law ...*"
There are public health concerns with these bills. Creating a product so that marihuana does not have to be smoked to be used sounds like a good idea. The problem lays with the levels of THC (40% to 50%+) and the research associating high levels of THC in products to psychotic episodes[2,3,4] and increases in emergency department visits[2,8b,10]. Add to this the application of THC oil on everyday products, such as Gummy Bears[5], as seen in the marketing practices utilized in the States of Colorado and Washington, and it is easy to see how marihuana-infused products can be introduced to youth and children. Clear rules need to be in place before the availability of medical marihuana is opened to additional products [1,8b]. The most important aspect is to control the THC content, even eliminating it in favor of other, more effective[2] healing properties in marihuana that do not alter consciousness.

House Bill 4209 and **Senate Bill 142**: These bills would license and regulate marihuana provisioning centers and safety compliance facilities. "*... 'Medical marihuana provisioning center' or 'provisioning center' means a commercial entity ... that acquires, possesses, manufactures, delivers, transfers, or transports medical marihuana and sells, supplies, or provides medical marihuana to registered qualifying patients, directly or through the patients' registered primary caregivers...*"
There are public health concerns with these bills. Although these bills seem to provide protection to the public by having "safety compliance facilities" that test marihuana products for contaminants, this is where the public protection measures end. Licensing and regulating provisioning centers creates a formal distribution system, with free-flowing products and commerce. These bills, in fact, provide a legal umbrella for the provisioning centers to operate. A look at marketing practices in the States of Colorado and Washington should bring a caution to moving in this direction.

With all the "protections" noted in the law, not once is the level of THC mentioned. A level of THC limitations are not even in the section addressing labeling of the products. This is a critical point. That is, the medical marihuana industry could be improving service to patients in a

manner that did not put the general public at risk, if the CBD were higher and the THC lower, so there was no altered consciousness from the use of marihuana. With THC levels allowed to go unchecked, it does not matter how many other rules, etc., are in place. As such, with THC levels unchecked, any action directed at expanding the availability of medical marihuana, is a detriment to the health and safety of our communities, businesses and youth.

Senate Bill 0080: This bill provides for the violation involving 1 ounce of marihuana or less as a State Civil infraction subject to fines as follows: no prior conviction = not more than $25; 1 prior conviction = not less than $25 or more than $50; more than 1 prior conviction = not less than $50 or more than $100.
There are public health concerns with this bill. Estimates vary, but one ounce of marihuana is enough to have 25 to 60 marihuana joints. This, of course, essentially legitimizes the free flow of marihuana in our communities, and as our experiences with alcohol show us, on our roads[8a,10]. As youth see adults more accepting of a substance, the youths' perception of harmfulness of this substance drops and the use of the substance by youth increases[5,8b]. (Infograph p.1) With the high levels of THC in today's marihuana and the research based facts we know about brain development, the public health concerns cannot be overstated.

House Bill 4356: This bill amends 1927 PA 175, entitled "The code of criminal Procedure," by amending section 48 of chapter XVII (MCL 777.48), as amended by 2013 PA 24. "… Operating a vehicle, vessel, ORV, snowmobile, aircraft, or locomotive while the offender was under the influence of alcoholic or intoxicating liquor, a controlled substance …" or a combination thereof, " *… Other than less than 5 nanograms of Tetrahydrocannabinol per 1 milliliter of blood if the offender was a qualifying patient …* "
There are public health concerns with this bill. A level of 5 nanograms is an arbitrary level injected into the State of Washington's law. There is not a research-based reason for selecting 5 nanograms. With THC accumulating in the fat cells of the body – the brain having one of the highest concentrations of fat cells in the body, we have seen people in treatment who comment after 30 days without using marihuana, "I am starting to think clearer". In Colorado, they have seen total traffic crashes go down but marihuana related crashes go up, at the same time[8a]. In the MMML it states one should not drive under the influence of medical marihuana. Unlike alcohol that leaves the body in a matter of hours, marihuana is stored in the body for days. As fat cells release energy they are also releasing THC to the brain and other body parts during this time. Different than alcohol where one can basically predict how intoxicated a specific amount of use will lead to, marihuana being stored in the body system creates an unknown dynamic in predicting how 'under the influence' one may be at any given time – while using or days afterwards.

Senate Bill 0072: This bill would,

1) Prohibit smoking medical marihuana on private property in violation of a prohibition established by the property owner, and
2) Specify that the Act could not be construed to require a private property owner to lease residential property to a person who smoked or cultivated marihuana on the premises, if a written lease prohibited smoking or cultivating marihuana.

This bill has features promoting public health.

All the research done to-date, has been with THC levels at 12% or less. We have just tested a sample that registered at 36.8% THC.

Ben Cort[1]

CONCERNS RELATED TO THE HEALTH & WELL-BEING OF THE GENERAL PUBLIC

1) Delta-9-tetrahydrocannabinol, commonly referred to as THC, is the psycho-active ingredient in the marihuana plant that causes an alteration in consciousness of the user. A publication from the Michigan Department of Community Health identifies areas of the brain where structural and functional changes occur[4]. The younger the user, because of brain development processes, and the higher the THC content, the greater the influence THC exerts.
   a. **Mental blocks**: learning new information and memory can be impaired by THC. Teenagers found to be dependent on marihuana before age 18 and continued use into adulthood had an average IQ 8 points lower than non-users by their late thirties.
   b. **Impaired critical thinking**: Complex thinking, judgment, and sensations can be negatively affected by THC. Decision-making and motivation areas of the brain can be adversely affected, with more pronounced effects in those who started at a young age.
   c. **Off-balance**: Marihuana users show decreased activation of the cerebellum, an area of the brain associated with motor control and coordination, compared to non-users.
   d. **Hijacked reward center**: Marihuana, like many other addictive drugs, can alter the reward pathway circuitry of the brain, and users may be more prone to depression, anxiety, irritability, and increased sensitivity to stress.
   e. **Panic attack**: THC can increase feelings of panic, paranoia, and psychosis.

   Another ingredient, cannabidiol – known as CBD, is naturally found in marihuana and counter-acts the effects of THC in the body. In fact, if the THC to CBD ratio was 1:1, the user would not experience an altering of consciousness[1,2]. Initial studies also show CBD having more healing properties than THC and without the euphoria effect[2]. As such, **if we were to truly value the medicinal properties of marihuana, we would be seeing products with high CBD and low THC levels**.

   In actuality however, a product list from a Colorado venue dated March 10, 2015, indicates that out of 22 strains of marihuana being sold at this particular venue, THC levels range from 14.00% to 24.22% and CBD levels all less than 1.00% - with 16 strains having 0.00%, 4 strains from 0.01% to 0.03%, 1 strain at 0.05% and 1 strain at 0.08%. Additionally, oil products advertise 66% to 84% levels of THC.[12] As noted by Ben Cort[1], we have also had recent reports of THC levels in marihuana plants testing at 36.8%.

   On the positive side, research in Europe has produced a new line of marihuana based products with higher CBD and lower THC levels, to allow patients to realize the medicinal benefits without creating the effects on the brain noted above[7]. (Reefer Sanity, p.82-83)

2) Expanding the MMML to include "Provisioning Centers" and "Marihuana-Infused" products would create a significant burden on society, including our local business owners. Harm caused by alcohol and tobacco use costs tax payers and local businesses $10 for every $1 collected in taxes[7]. (Reefer Sanity, p.106) As marihuana is addictive, more so with higher levels of THC, we can expect similar results should we attempt to tax the products. Additionally, the "black market" has not been affected by legalization in Colorado, as projected would happen[8b]. (Infograph, p.3) In some ways it is easier to operate a "black market", as indicated by neighboring states suing Colorado for the increased expenses they have incurred due to marihuana being smuggled across state lines. In short, even if we tax the marihuana industry, and limit considerations to only economic factors, it is still an economically losing proposition for tax payers.

3) Simple observations of marketing marihuana products, including inhalation products, marihuana-infused products and oils show us that the marihuana industry is following the same business model as the alcohol and tobacco industries have been attempting for years. That is, they need current users to use more and they need to find new users. New users tend to be sought out among our children, targeted as the next generation of regular users. Products advertised with Cookie Monster, Fred Flintstone, etc. along with products such as Pot-Tarts, and Gummy Bears are examples of blatant youth-targeted advertising being utilized in the States of Colorado and Washington.

4) As modeled by the alcohol and tobacco industry, the health of a given industry lays in a small group of heavy users. The casual users will not keep an industry in business. Each industry basically exists on the hardships of the abusers. Already 85% of Montcalm County youth going to treatment for problems with substances are there primarily due to marihuana[5]. Research indicates that 1 in 6 adolescents who try marihuana will become addicted to it[2]. A study just printed in the journal *Hippocampus* states that *"Teens who were heavy marijuana users – smoking daily for about three years – had an abnormally shaped hippocampus and performed poorly on long-term memory task.* ... (This is related to) *the ability to remember ... life events."*

5) A highly significant predictor of youth use is their perception of risk of using the substance. As we open our communities to and legitimize an industry promoting chemicals that are clearly addictive and related to increased unemployment, increased welfare participation, lower mean income, lower college degrees, higher levels of cannabis-associated psychosis, possibly permanent drop in IQ, higher drugged driving episodes and traffic fatalities, etc.[2,3,4,8a,9,10], we are setting our youth up to be victims.

6) There is a new generation of marihuana products with higher levels of CBD and low levels of THC.[7] (Reefer Sanity, p.82-83) According to research, THC and CBD provide about the same anti-inflammatory effects and ability to suppress nausea and vomiting. THC side effects, however, include, producing psychosis, distorts time perception, causes anxiety, raises blood pressure and heart rate, and can cause diabetes. On the other hand, CBD does not cause the altered consciousness, reduces anxiety, has anti-psychotic effects, lowers blood pressure and heart rate, has greater anti-seizure effect than THC, and has more neuro-protective effect than THC.[2]

In the interest of following through on our compassion that led us to pass the MMML and to support public safety and individual well-being of those who opt to use medical marihuana, as well as protect our children, placing a hold on the medical marihuana experiment and looking forward to the next generation of safe and effective marihuana based medicines should guide our choices. Although many anecdotal stories may be told, it is the science that will truly bring the best medicine to the forefront to help those in need of what marihuana may offer.

> *Unfortunately, the proportion of American teens who believe marijuana use is harmful has been declining for the past several years, which has corresponded to a steady rise in their use of the drug, as shown by NIDA's annual Monitoring the Future survey of 8th, 10th, and 12th graders. Since it decreases IQ, regular marijuana use stands to jeopardize a young person's chances of success in school.*
>
> Nora D. Volkow, M.D., Director NIDA[3]

It is common to hear messages such as, "the medical marihuana law is helping people manage their health concerns". Yet, we see escalating levels of THC in the MM products being sold in Michigan, with Colorado and Washington showing us what is to come if we don't change the course. And, if we truly value the health and well-being of people receiving treatment, our children and communities, changing course is imperative. The disguise of medical marihuana is betrayed by the higher and higher levels of THC when, in actuality, it is the CBD component that offers more effective treatment. With CBD we also avoid the side effects research has identified with THC. Additionally, drugged driving is not an issue with CBD. If the medical marihuana industry were serious about health care, we would already be seeing low or no levels of THC and much higher levels of CBD.

Another common message we hear is "marijuana legalization is inevitable". It is only inevitable if we disregard the science and close our eyes to experiences taking place in the States of Colorado and Washington. There are enough "red flags" being seen in these states to cause pause. Michigan does not need to go head long into the same circumstances being played out in these other states. In fact from a public health view, with the new generation of marijuana based medicines we will soon see more effective medications, better inventory controls, higher quality dose control and safer community environments, including our roadways. To realize better care for those in need who choose to use marijuana based medications as well as the community overall, all we need to do is pause, trust the science and not expand the current medical marihuana system.

Marijuana – Our Kids and Communities Conference
March 13, 2015 at Macomb Intermediate School District

Excerpts from a talk by Jeffrey P. Berger, M.D., FASC

Dr. Berger is the current Medical Director at Guest House. He has served as the Medical Director of Brighton Center for Recovery. He is an Addictionologist and practiced Addiction Medicine since 1998. Dr. Berger is a leader in his field of addiction and has presented to many community, staff, and patient groups on the topics of Internal Medicine and Addiction Medicine. ...

The following information was pulled from a handout distributed by Dr. Berger at the March 13, 2015 conference on Marijuana – Our Kids and Communities Conference. Italicized words added by the editor of this document, based on the verbal presentation of Dr. Berger.

iv. THC and CBD
1. THC and CBD are just about equal in their:
    a. Anti-inflammatory effects
    b. Immunomodulatory and
    c. Anti-emetic effects. (*suppressing nausea and vomiting*)
2. THC is better than Cannabidiol (*CBD*) in:
    a. Reducing gastrointestinal motility (*medications are more effective and safer*)
    b. Decreasing intra-ocular pressure (*medications are more effective and safer*)
    c. Relaxing skeletal muscle (*medications are more effective and safer*)
    d. Stimulating appetite (CBD has minimal effect)
3. THC also:
    a. Produces Euphoria (*altered consciousness*)
    b. Can produce psychosis
    c. Distorts time perception
    d. Causes anxiety
    e. Causes sedation
    f. Raises Blood Pressure and Heart Rate
    g. Can cause diabetes
4. Cannabidiol (*CBD*):
    a. Does not cause euphoria (*altered consciousness*)
    b. Reduces anxiety
    c. Has anti-psychotic effects
    d. Lowers Blood Pressure and Heart Rate
    e. Has greater anti-seizure effect than THC
    f. Has more Neuro-protective effect than THC
    g. Has been shown to have anti-cancer effect in lung cancer (*only cultures to date*)

Marijuana – Our Kids and Communities Conference
March 13, 2015 at Macomb Intermediate School District

Excerpts from a talk by Jeffrey P. Berger, M.D., FASC
The following information was pulled from a handout distributed by Dr. Berger.

III. What do we know about the adolescent brain and marijuana?

a. Is marijuana harmless?
   i. In 2011, 901,550 people age 18-25 used marijuana for the first time.
   ii. In 2011, 154,874 Emergency Room visits involved marijuana (18.3% of total visits involving drugs – no other drug higher, not even heroin).
   iii. In 2011 872,000 Americans 12 years or older reported receiving treatment for marijuana use.

b. College Students reporting nonmedical use of prescription stimulants were more likely to:
   i. Be skipping classes
   ii. Have declining Grade Point Averages
   iii. Have an alcohol disorder
   iv. Have a cannabis disorder

c. Marijuana causes addiction
   i. About 9% of those who experiment with marijuana will become addicted.
   ii. Over 16% of those who start using marijuana as teenagers will become addicted.
   iii. 25-50% of daily marijuana users will become addicted to marijuana.

d. Other adverse effects of long-term use of marijuana begun in adolescence:
   i. Altered brain development –
      1. Impaired neural connectivity in areas responsible for;
      2. Alertness and self-conscious awareness
      3. Learning and memory formation and decreased volume in these areas.
      4. Controlling behavior and decreased neuronal activity in these areas.
      5. Processing habits and routines.
   ii. Poor educational outcomes with increased risk of dropping out of school.
   iii. Lower IQ – up to 10 points!
   iv. Diminished life satisfaction and achievement.

e. "It needs to be emphasized that regular cannabis use, defined here as once a week, is not safe and may result in addiction and neurocognitive damage, especially in youth." (Considering Cannabis: The Effects of Regular Cannabis Use on Neurocognition in Adolescents and Young Adults; Lisdahl et al, Current Addiction Reports (2014) 1:144-156)

National Institute on Drug Abuse (NIDA) website; http://www.drugabuse.gov/about-nida/directors-page/messages-director/2012/09/marijuanas-lasting-effects-brain

Message From the Director

Marijuana's Lasting Effects on the Brain

March 2013

UPDATE - March 21,2013 – A study was published in January 2013 contesting the interpretation of the large-scale marijuana study I discuss below—that heavy cannabis use begun in the teen years and continued into adulthood brings about declines in IQ scores. The contesting author used simulation models to suggest that other factors, such as socioeconomic status, may account for the downward IQ trend the original authors reported. In a rebuttal letter published in the March 4, 2013 issue of PNAS, the authors of the first study note that SES could not account for the findings they observed, because adolescent cannabis use was not more prevalent in populations with lower SES. (The complete PNAS letter can be read here; an extract can be read here.)

Observational studies in humans cannot account for all potentially confounding variables when addressing change in a complex trait like IQ, and future studies will be needed to further clarify exactly how much intelligence may be lost as a result of adolescent marijuana use. That such a loss does occur, however, is consistent with what we know from animal studies. Though limited in their application to the complex human brain, such studies can more definitively assess the relationship between drug exposure and various outcomes. They have shown that exposure to cannabinoids during adolescent development can cause long-lasting changes in the brain's reward system as well as the hippocampus, a brain area critical for learning and memory.

The message inherent in these and in multiple supporting studies is clear. Regular marijuana use in adolescence is part of a cluster of behaviors that can produce enduring detrimental effects and alter the trajectory of a young person's life—thwarting his or her potential. Beyond potentially lowering IQ, teen marijuana use is linked to school dropout, other drug use, mental health problems, etc. Given the current number of regular marijuana users (about 1 in 15 high school seniors) and the possibility of this number increasing with marijuana legalization, we cannot afford to divert our focus from the central point: Regular marijuana use stands to jeopardize a young person's chances of success—in school and in life.

September 10, 2012 - We repeatedly hear the myth that marijuana is a benign drug—that it is not addictive (which it is) or that it does not pose a threat to the user's health or brain (which it does). A major new study published last week in *Proceedings of the National Academy of Sciences* (and funded partly by NIDA and other NIH institutes)

provides objective evidence that, at least for adolescents, marijuana is harmful to the brain.

The new research is part of a large-scale study of health and development conducted in New Zealand. Researchers administered IQ tests to over 1,000 individuals at age 13 (born in 1972 and 1973) and assessed their patterns of cannabis use at several points as they aged. Participants were again tested for IQ at age 38, and their two scores were compared as a function of their marijuana use. The results were striking: Participants who used cannabis heavily in their teens and continued through adulthood showed a significant drop in IQ between the ages of 13 and 38—an average of 8 points for those who met criteria for cannabis dependence. (For context, a loss of 8 IQ points could drop a person of average intelligence into the lowest third of the intelligence range.) Those who started using marijuana regularly or heavily after age 18 showed minor declines. By comparison, those who never used marijuana showed no declines in IQ.

Other studies have shown a link between prolonged marijuana use and cognitive or neural impairment. A recent report in *Brain*, for example, reveals neural-connectivity impairment in some brain regions following prolonged cannabis use initiated in adolescence or young adulthood. But the New Zealand study is the first prospective study to test young people *before* their first use of marijuana and again *after* long-term use (as much as 20+ years later). Indeed, the ruling out of a pre-existing difference in IQ makes the study particularly valuable. Also, and strikingly, those who used marijuana heavily before age 18 showed mental decline even after they quit taking the drug. This finding is consistent with the notion that drug use during adolescence—when the brain is still rewiring, pruning, and organizing itself—can have negative and long-lasting effects on the brain.

While this study cannot exclude *all* potential contributory factors (e.g., child abuse, subclinical mental illness, mild learning disabilities), the neuropsychological declines following marijuana use were present even after researchers controlled for factors like years of education, mental illness, and use of other substances. Mental impairment was evident not just in test scores but in users' daily functioning. People who knew the study participants (e.g., friends and relatives) filled out questionnaires and reported that persistent cannabis users had significantly more memory and attention problems: easily getting distracted, misplacing things, forgetting to keep appointments or return calls, and so on.

Unfortunately, the proportion of American teens who believe marijuana use is harmful has been declining for the past several years, which has corresponded to a steady rise in their use of the drug, as shown by NIDA's annual Monitoring the Future survey of 8th, 10th, and 12th graders. Since it decreases IQ, regular marijuana use stands to jeopardize a young person's chances of success in school. So as another school year begins, we all must step up our efforts to educate teens about the harms of marijuana so that we can realign their perceptions of this drug with the scientific evidence.

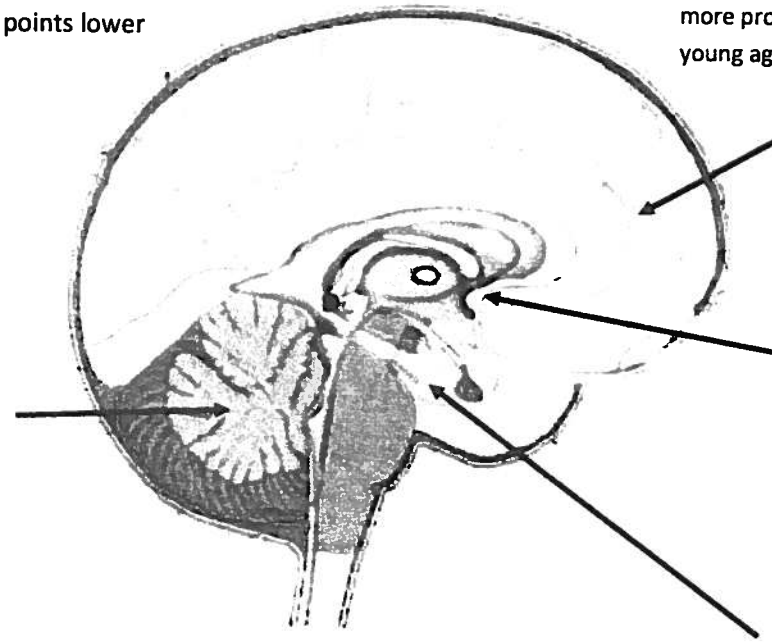
Not Just IQ: Marijuana Changes the Brain

Michigan Department of Community Health
MDCH
Rick Snyder, Governor
Nick Lyon, Director

Marijuana is the most commonly used illicit drug in the U.S. with approximately 15.2 million users[1]. Marijuana's active ingredient, delta-9-tetracannabinol or **THC**, affects many areas of the user's brain due to the high numbers of cannabinoid (CB) receptors. THC content is considerably higher in marijuana today compared to the marijuana of the 1990s[1]. Areas of the brain where structural and functional changes have occurred due to marijuana use are highlighted in the figure below.

Mental blocks: Learning new information and memory can be impaired by THC . Teenagers found to be dependent on marijuana before age 18 and continued use into adulthood had an average IQ 8 points lower than non-users by their late thirties[2].

Impaired critical thinking: Complex thinking, judgment, and sensations can be negatively affected by THC. Decision-making and motivation areas of the brain can be adversely affected, with more pronounced effects in those who started at a young age[3].



Off-balance: Marijuana users show decreased activation of the cerebellum, an area of the brain associated with motor control and coordination, compared to non-users[4].

Hijacked reward center: Marijuana, like many other addictive drugs, can alter the reward pathway circuitry of the brain, and users may be more prone to depression, anxiety, irritability, and increased sensitivity to stress[1].

Panic attack: THC can increase feelings of panic, paranoia, and psychosis[3].

References:

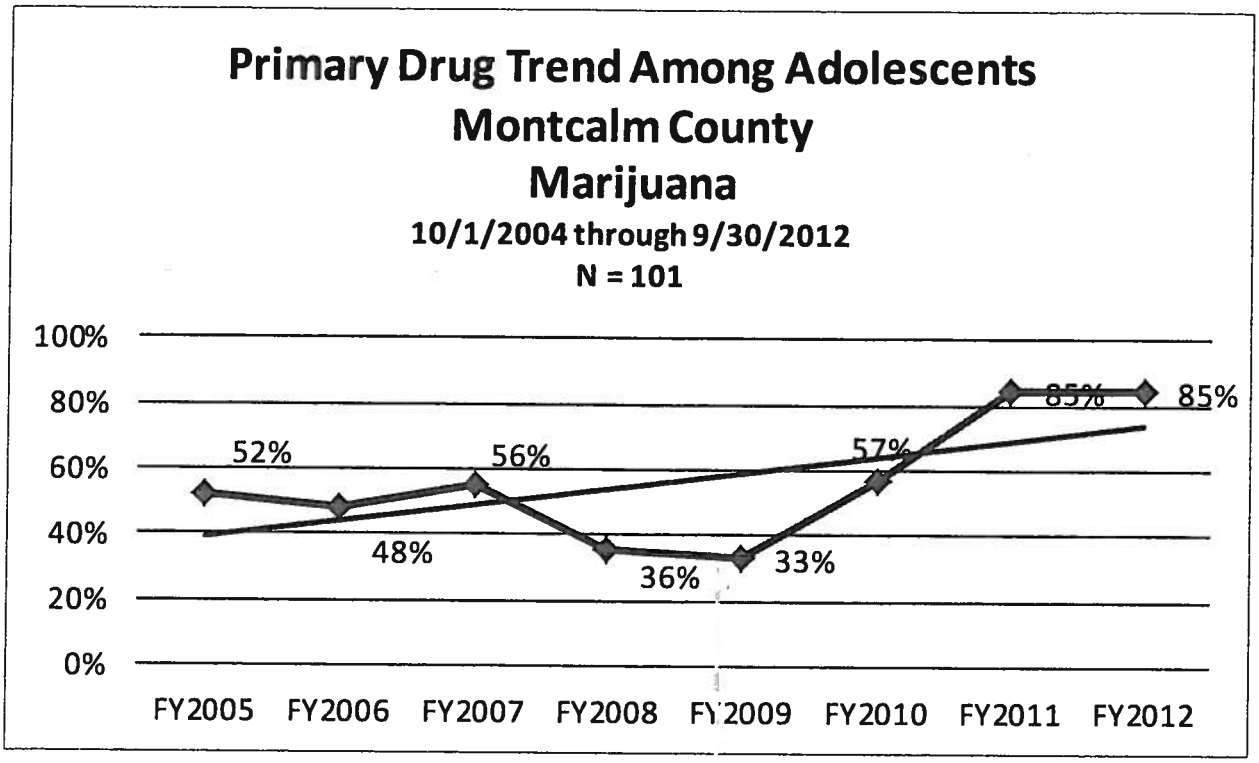
1. Gilman JM, Kuster JK, Lee S, Lee MJ, Kim BW, Makris N, van der Kouwe A, Blood AJ, Breiter HC. Cannabis use is quantitatively associated with nucleus accumbens and amygdala abnormalities in young adult recreational users. J Neurosci. 2014 Apr 16;34(16):5529-38.
2. Meier MH, Caspi A, Ambler A, Harrington H, Houts R, Keefe RS, McDonald K, Ward A, Poulton R, Moffitt TE. Persistent cannabis users show neuropsychological decline from childhood to midlife. Proc Natl Acad Sci U S A. 2012 Oct 2;109(40):E2657-64.
3. Volkow ND, Baler RD, Compton WM, Weiss SR. Adverse health effects of marijuana use. N Engl J Med. 2014 Jun 5;370(23):2219-27.
4. Squeglia LM, Jacobus J, Tapert SF. The influence of substance use on adolescent brain development. Clin EEG Neurosci. 2009 Jan;40(1):31-8. Review

The Teen Brain & Marijuana

Brain Structure	Regulates	THC Effect on User
Amygdala	emotions, fear, anxiety	panic/paranoia
Basal Ganglia	planning/starting a movement	slowed reaction time
Brain Stem	information between brain and spinal column	antinausea effects
Cerebellum	motor coordination, balance	impaired coordination
Hippocampus	learning new information	impaired memory
Hypothalamus	eating, sexual behavior	increased appetite
Neocortex	complex thinking, feeling, and movement	altered thinking, judgment, and sensation
Nucleus Accumbens	motivation and reward	euphoria (feeling good)
Spinal Cord	transmission of information between body and brain	altered pain sensitivity

The brain structures illustrated above all contain high numbers of CB receptors

SCHOLASTIC, NIDA, NIH, U.S. DEPARTMENT OF HHS

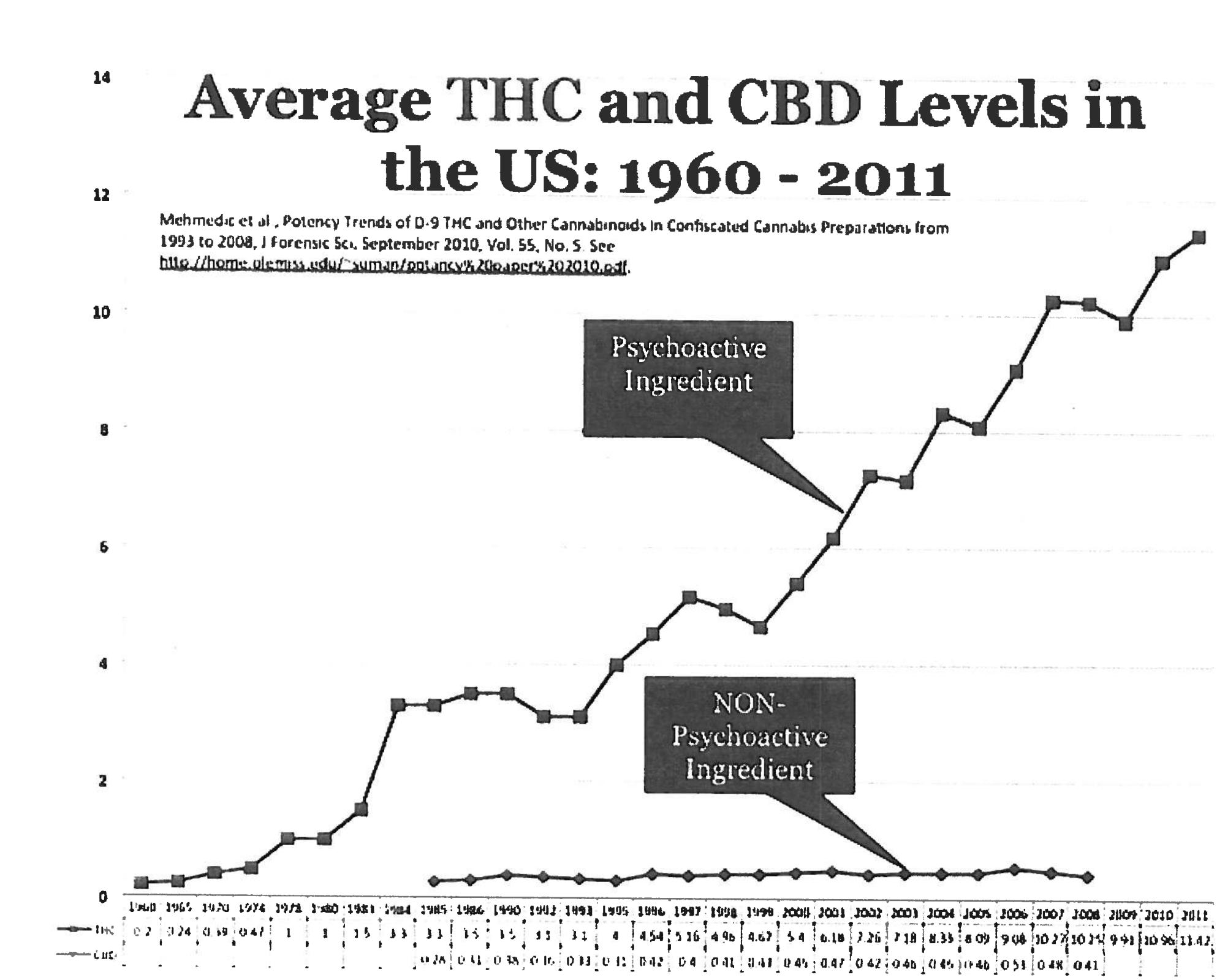


In November of 2008, Michigan citizens passed the Michigan Medical Marijuana Law. It became enacted in the Spring of 2009.

Provided by YOUTHINK Montcalm, a volunteer community coalition, Cherry Health Promotion Services, and Riverhaven Sub-Regional Entity of the Mid-State Health Network.

Average THC and CBD Levels in the US: 1960 - 2011

Mehmedic et al , Potency Trends of D-9 THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008, J Forensic Sci. September 2010, Vol. 55, No. 5. See http://home.olemiss.edu/~suman/potancy%20paper%202010.pdf.



SAM – Smart Approaches to Marijuana Website, as of April 13, 2015
http://learnaboutsam.org/the-issues/public-health-organizations-positions-on-medical-marijuana/

Public Health Organizations' Positions on Medical Marijuana

American Society of Addiction Medicine: "ASAM asserts that cannabis, cannabis-based products and cannabis delivery devices should be subject to the same standards that are applicable to other prescription medications and medical devices, and that these products should not be distributed or otherwise provided to patients unless and until such products or devices have received marketing approval from the Food and Drug Administration. ASAM rejects smoking as a means of drug delivery since it is not safe. ASAM rejects a process whereby State and local ballot initiatives approve medicines because these initiatives are being decided by individuals not qualified to make such decisions."

American Cancer Society: "The ACS is supportive of more research into the benefits of cannabinoids. Better and more effective treatments are needed to overcome the side effects of cancer and its treatment. The ACS does not advocate the use of inhaled marijuana or the legalization of marijuana."

American Glaucoma Foundation: "Marijuana, or its components administered systemically, cannot be recommended without a long term trial which evaluates the health of the optic nerve. Although marijuana can lower IOP, its side effects and short duration of action, coupled with a lack of evidence that its use alters the course of glaucoma, preclude recommending this drug in any form for the treatment of glaucoma at the present time."

National Multiple Sclerosis Society: "Although it is clear that cannabinoids have potential both for the management of MS symptoms, such as pain and spasticity, as well as for neuroprotection, the Society cannot at this time recommend that medical marijuana be made widely available to people with MS for symptom management. This decision was not only based on existing legal barriers to its use but, even more importantly, because studies to date do not demonstrate a clear benefit compared to existing symptomatic therapies and because issues of side effects, systemic effects, and long-term effects are not yet clear." — Recommendations Regarding the Use of Cannabis in Multiple Sclerosis: Executive Summary. National Clinical Advisory Board of the National Multiple Sclerosis Society, Expert Opinion Paper, Treatment Recommendations for Physicians, April 2, 2008.http://www.nationalmssociety.org.

The American Academy of Pediatrics (AAP) believes that "[a]ny change in the legal status of marijuana, even if limited to adults, could affect the prevalence of use among adolescents." While it supports scientific research on the possible medical use of cannabinoids as opposed to smoked marijuana, it opposes the legalization of marijuana. — Committee on Substance Abuse and Committee on Adolescence. "Legalization of Marijuana: Potential Impact on Youth." Pediatrics Vol. 113. No. 6 (June 6, 2004): 1825-1826. See also, Joffe, Alain, MD, MPH, and Yancy, Samuel, MD. "Legalization of Marijuana: Potential Impact on Youth." Pediatrics Vol. 113, No. 6 (June 6, 2004): e632-e638h.

The American Medical Association (AMA) has called for more research on the subject, with the caveat that this "should not be viewed as an endorsement of state-based medical cannabis programs, the legalization of marijuana, or that scientific evidence on the therapeutic use of cannabis meets the current standards for a prescription drug product."

John Knight, director of the Center for Adolescent Substance Abuse Research at Children's Hospital Boston, recently wrote: *"Marijuana has gotten a free ride of sorts among the general public, who view it as non-addictive and less impairing than other drugs. However, medical science tells a different story."*

Similarly, **Dr. Christian Thurstone, a psychiatrist board-certified in general, child and adolescent and addictions psychiatry, who serves as an associate professor of psychiatry at the University of Colorado and as medical director of one of Colorado's largest adolescent substance-abuse-treatment programs**, said: *"In the absence of credible data, this debate is being dominated by bad science and misinformation from people interested in using medical marijuana as a step to legalization for recreational use. Bypassing the FDA's well-established approval process has created a mess that especially affects children and adolescents. Young people, who are clearly being targeted with medical marijuana advertising and diversion, are most vulnerable to developing marijuana addiction and suffering from its lasting effects."*

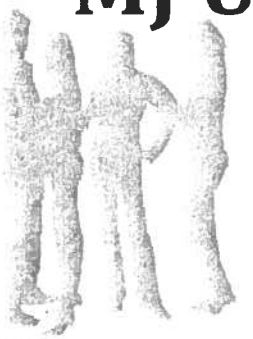
Dr. Ed Gogek, an addictions psychiatrist in Arizona wrote in the *New York Times*: "Indeed, marijuana activists use phony science, just as global warming deniers do. For years they claimed pot was good for glaucoma and never apologized when research found it could actually make glaucoma worse. They still insist weed isn't addictive, despite every addiction medicine society saying it is. They've even produced their own flawed scientific studies supposedly proving that medical marijuana laws don't increase use among teenagers, when almost all the evidence says just the opposite."

Colorado's Experience with *de facto* Legalization of Retail Sales after "Medical" Marijuana Expansion post-2009

» 2006-2012: Medical MJ cardholders rose from **1,000** to over **108,000**

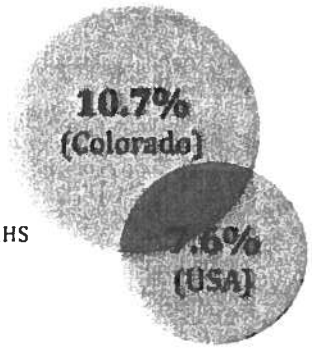
» Licensed dispensaries rose from **zero** to **532**

MJ Use Among Colorado Teens...

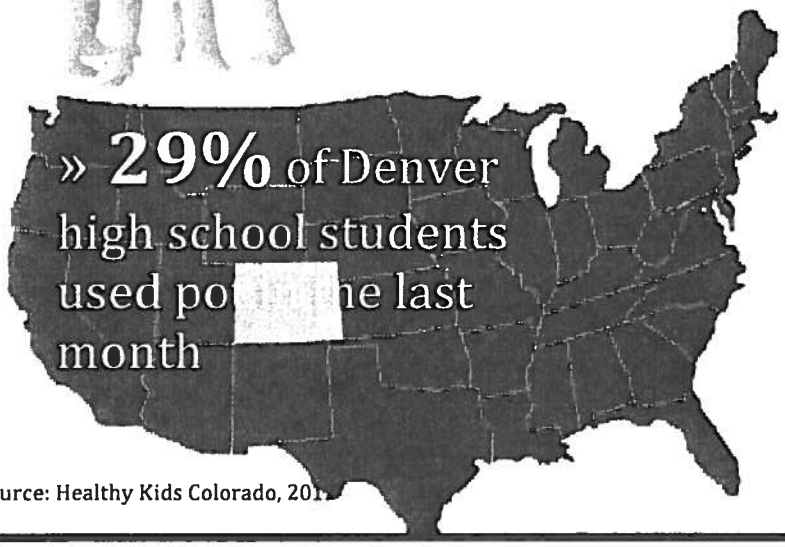


» **Fifth** highest in the nation

» **50%** above the national average

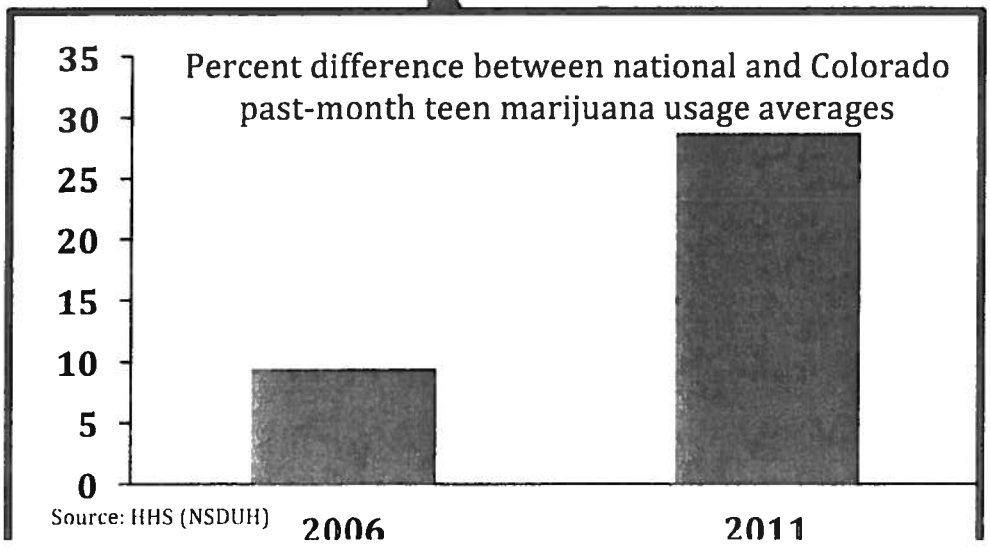


Source: HHS (NSDUH)



Source: Healthy Kids Colorado, 201

» **If Denver were a state, it would have the highest public high school past-month use rates in the country**

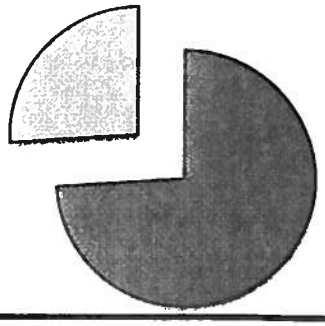


Source: HHS (NSDUH)

» **29% above national average in 2011**

» **9% above national average in 2006**

74% of Denver-area teens in **treatment** said they used **somebody else's** medical marijuana an average of **50 times**



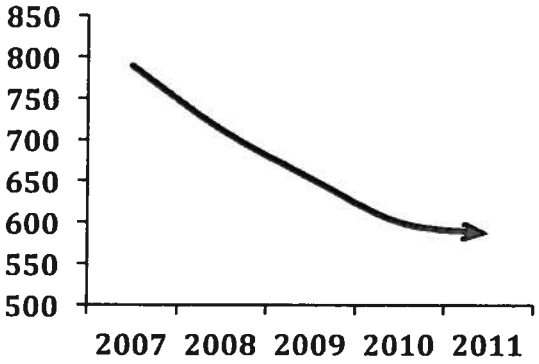
Source: Salomonsen-Sautel et al., 2012

MJ-related ER visits for **children under five** rose by **200%** between 2006 and 2012

Source: Thurstone, 2013

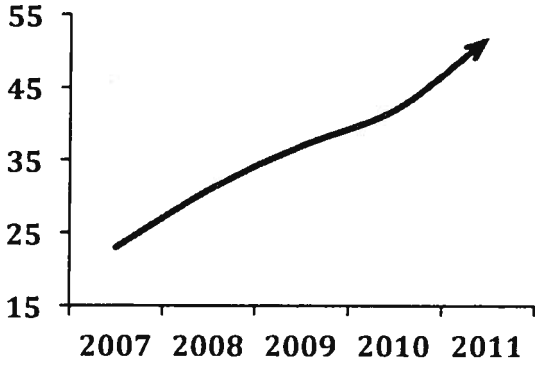
Traffic fatalities involving drugged drivers rose from **7.1%** in 2008 to **13%** in 2011

While the **total** number of car crashes **declined** between 2007 and 2011....



...the number of fatal car crashers with **drivers testing positive for MJ** rose sharply during those same years.

Source: CO Dept of Transportation



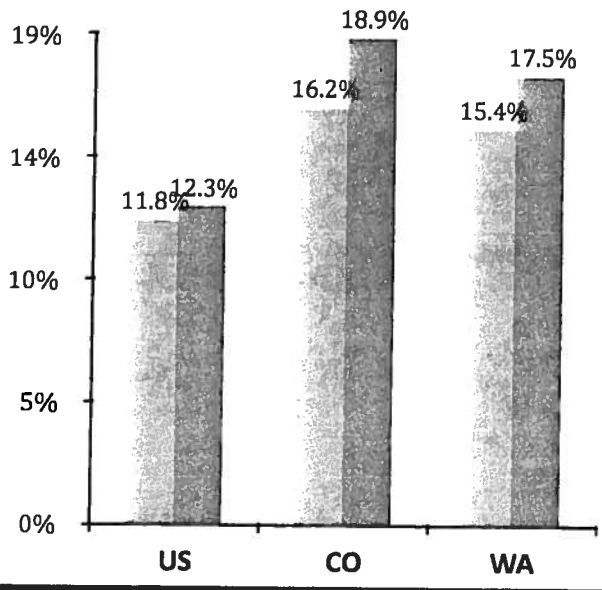
SAM Smart Approaches to Marijuana
a project of the policy solutions lab

www.learnaboutsam.org

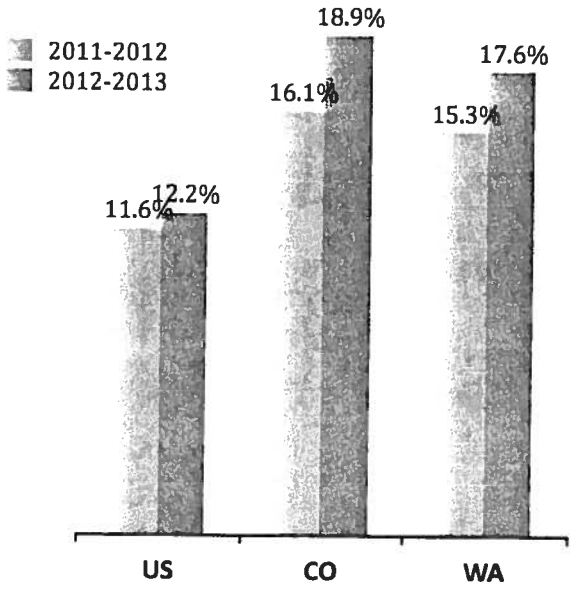
COLORADO & WASHINGTON SINCE LEGALIZATION

After multimillion-dollar political campaigns, funded with out of state money, Colorado and Washington voted to legalize marijuana in November of 2012. Though it would take more than a year to set up retail stores, personal use (in Colorado and Washington) and home cultivation and giving away of up to 6 plants (in Colorado) were almost immediately legalized following the vote. Public marijuana use, though illegal, remains a common way to celebrate the law, and a brand new industry selling candies, waxes, sodas, and other marijuana items has exploded. The federal government announced they would initially take a hands-off approach, promising to track nine consequences of legalization (from youth marijuana use to use on public lands) and determine action later. So far, however, no robust public tracking system by federal or state authorities has been implemented. Earlier this year, Smart Approaches to Marijuana (SAM) began tracking developments on www.legalizationviolations.com, and this report is meant to be a working paper to track legalization developments.

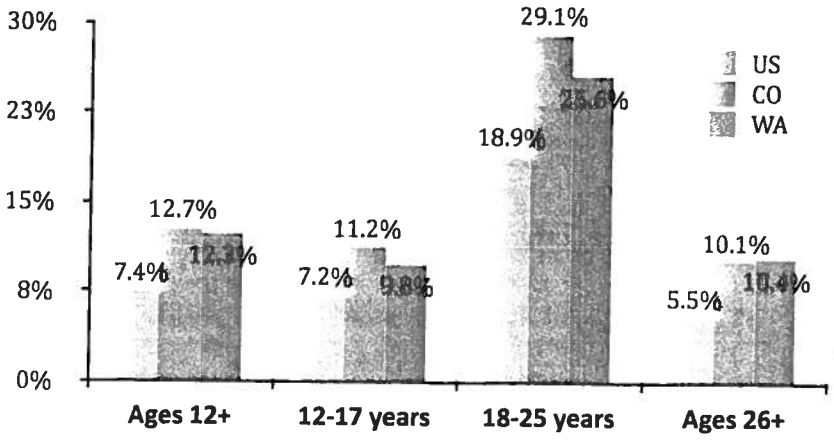
PAST-YEAR MARIJUANA USE (AGES 12+)



PAST-YEAR MARIJUANA USE (AGES 18+)



PAST-MONTH MARIJUANA USE (2012-2013)



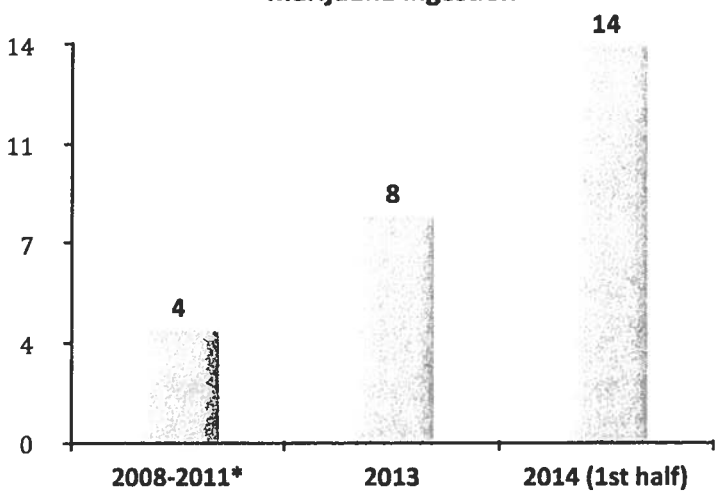
Past-year and past-month marijuana use by all ages exceeds the national average in both Washington State and Colorado. Marijuana use in both these states has risen significantly* between 2011-2012 and 2012-2013.

*Significant at the 0.05 levels.

Source: NSDUH, 2014

ACCIDENTAL INGESTIONS BY CHILDREN

Nº of children ages 3-7 sent to ER for accidential marijuana ingestion



*On average each year

Between 2008 and 2011, an average of 4 children (between the ages of 3 and 7) were sent to the ER for unintentional marijuana ingestion.

In 2013, 8 children went to the CO children's hospital.

As of the first half of 2014, at least 14 children had already been sent to the ER for accidentally ingesting marijuana products.

More than doubling from the year before.

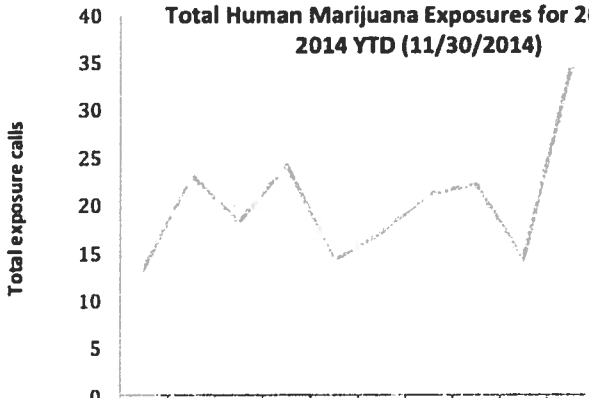
Source: Children's Hospital of Colorado Emergency Department

MARIJUANA-RELATED POISONINGS

According to the Washington Poison Center, "the selling of cannabis for recreational purposes became legalized in the state of Washington on July 7th, 2014. As a direct result, the Washington Poison Center (WAPC) has encountered an increase in the number of human exposures related to accidental or excessive consumption/inhalation of marijuana and marijuana edibles, particularly among pediatrics."

Source: Washington Poison Center

Total Human Marijuana Exposures for 2013 and 2014 YTD (11/30/2014)



	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
2014	13	23	18	24	14	17	21	22	14	34		
2013	12	14	25	14	14	8	13	14	11	11	10	12

TEEN ARRESTS

Arrests for marijuana use in Denver public schools increased by 6% between 2013 and 2014.

Source: Denver Police Department Versadex and OSI database

TEEN ADMISSIONS TO TREATMENT

Teen admissions to treatment for marijuana use at the Arapahoe House treatment network in CO increased by 66% between 2011 and 2014.

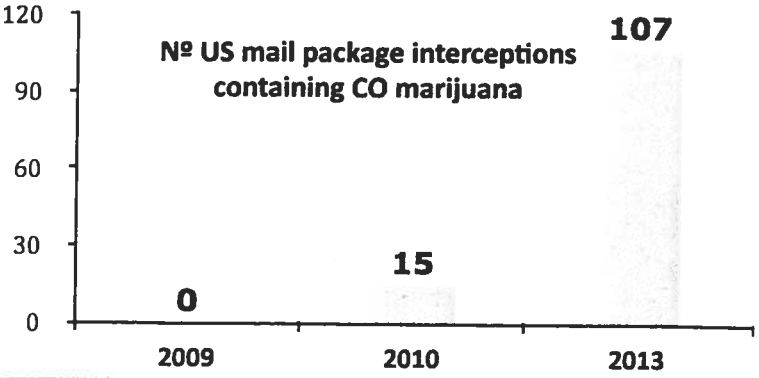
Source: Arapahoe House Treatment Network

COLORADO MARIJUANA IS REGULARLY DIVERTED TO OTHER STATES

288

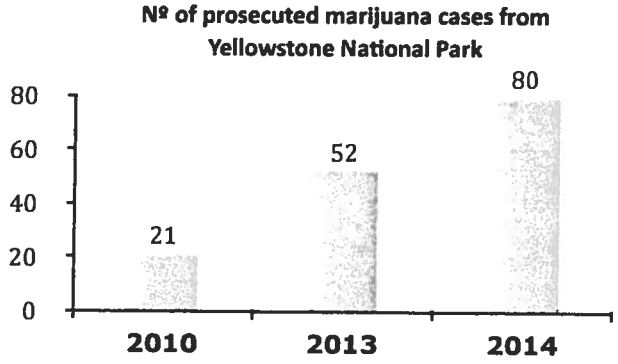
In 2013, there were 288 highway interdictions resulting in seizures of Colorado marijuana destined to over 40 states.

This increased by 397% from 2008.



Source: El Paso Intelligence Center National Seizure System

MARIJUANA USE IN NEARBY PUBLIC LANDS



"An increasing number of visitors to Yellowstone National Park are being prosecuted for possessing small amounts of medical and recreational pot, which remains illegal on federal land."

A THRIVING BLACK MARKET

According to the Associated Press "in Washington, the black market has exploded since voters legalized marijuana in 2012, with scores of legally dubious medical dispensaries opening and some pot delivery services brazenly advertising that they sell outside the legal system."

In Colorado, "[Legalization] has done nothing more than enhance the opportunity for the black market", Lt. Mark Comte of the Colorado Springs Police Vice and Narcotics Unit, told the AP.

Source: Associated Press

DENVER CITY AND COUNTY CRIME IS UP

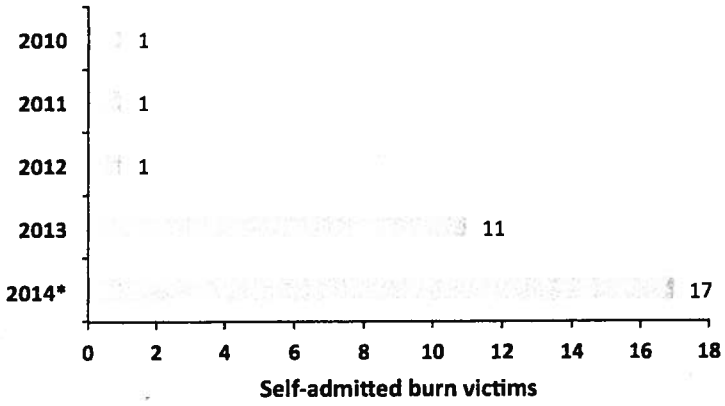
In the city and county of Denver, overall crime is slightly higher through November 2014 than it was during that same time period in 2013. Most crime categories are up, like simple assault and criminal mischief; but some categories show reductions, like sex offenses, kidnapping, and motor vehicle theft. Some trends possibly related to marijuana include:

- Disorderly conduct is up 51%
- Drug violations are up 12%
- Public drunkenness is up 53%

It's possible that crime statistics have little to do with marijuana law changes, but rampant media reports of "legalization linked with a crime drop" are unsubstantiated.

Source: Denver Police Department

The University of Colorado's Burn Center observed an increase in the number of marijuana-related burns since legalization in 2012.



Some cases involve more than **70%** of body surface area.

21 cases required skin grafting.

The majority of cases were flash burns that occurred during THC extraction from marijuana plants using butane as a solvent.

*As of Dec 17, 2014

Source: University Hospital Burn Unit – University of Colorado Hospital

In 2013, Denver police issued 184 citations for public display of marijuana.

In just the first 9 months of 2014, there have been 668 such citations.

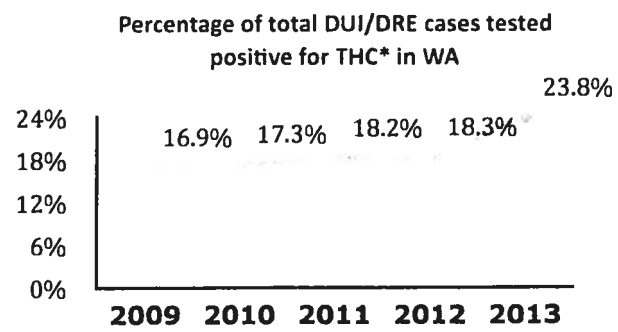
The 668 do not include another 221 citations for using marijuana in city parks.

Source: Denver Police Department

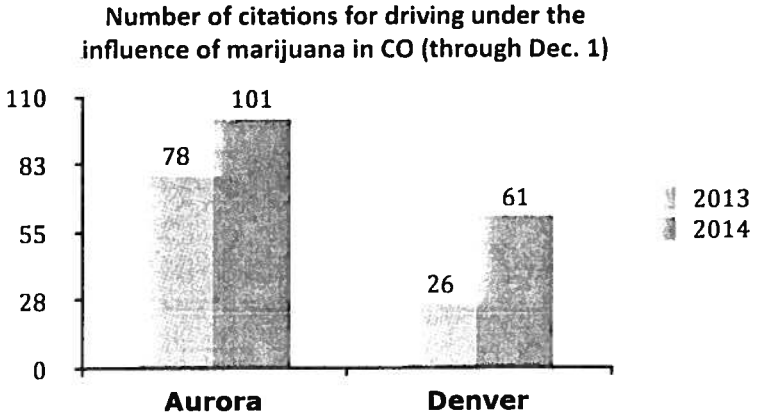
In Aurora, marijuana citations for underage or public use are up.

As of December 1, 2014 Aurora police have issued 154 summons, compared with 118 citations issued in 2013.

Source: Denver Post



*According to toxicology data that have been normalized by the State of Washington to allow for a multi-year comparison despite the fact that a "marijuana positive" is now triggered at the 2 ng/ml level versus the 1 ng/ml level prior to 2013. 2014 data will be provided once available.

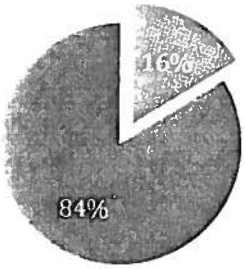


Source: Denver Police Department

CITIES ACROSS COLORADO ARE BANNING THE RECREATIONAL SALES OF MARIJUANA

Of the 31 cities in Colorado that voted in November to allow the recreational sales of marijuana, 26* voted to ban it.

*Breckenridge voted to ban stores in the downtown core, but other stores remain in the outskirts of town.



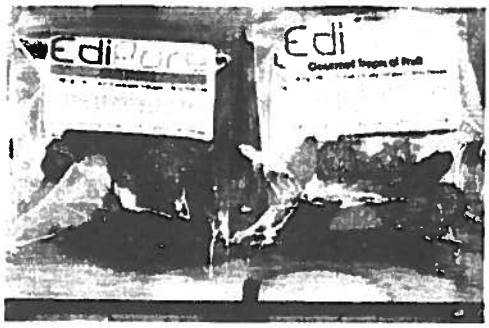
Source: Colorado Municipalities League

Approved recreation sales Banned recreational sales*

MARIJUANA EDIBLES POSE A PUBLIC HEALTH RISK

Edibles often contain 3-20 times the THC concentration recommended for intoxication.

There have been at least 2 deaths related to marijuana edibles in 2014.



REGULATION: CONTAMINANTS

Contaminant testing in Washington finds that 13% of marijuana and THC-infused products contain mold, salmonella, and E. coli.

Colorado has not begun such testing yet.

While Colorado is looking at how to control this industry, the marijuana industry marches on - defending gummy bears, cupcakes, sugary cereals and sodas - **similar to how Big Tobacco defended their practices for a century.**

BIG MARIJUANA ASCENDANT: MARLEY NATURAL BRAND DEBUTS

The marijuana-focused private equity firm, Privateer Holdings, in partnership with the descendants of Bob Marley have created a multinational cannabis brand called Marley Natural.

Investors have already raised $50 million to launch Marley Natural.

There is no mention of these branded marijuana products, candies, or advertising practices in the course of the political campaigns to legalize marijuana.

NO DATA, NO COST ACCOUNTING, NO PROBLEM?

More sophisticated data are sorely lacking with respect to marijuana in Colorado and Washington. Real time data are needed on both the consequences of legalization and the economic costs of such a policy to track:

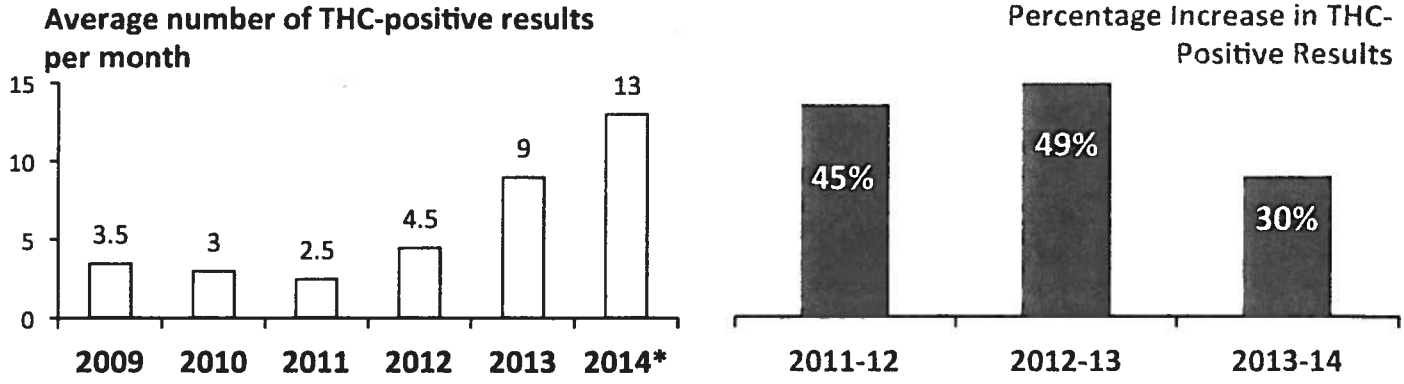
- Emergency room and hospital admissions related to marijuana
- Marijuana potency and price trends in the legal and illegal markets
- School incidents related to marijuana, including representative data sets
- Extent of marijuana advertising toward youth and its impact
- Marijuana-related car crashes, including THC levels even when BAC is over 0.08
- Mental health effects of marijuana
- Marijuana brief intervention and treatment admissions
- Cost of implementing legalization from law enforcement to regulators
- Cost of mental health and addiction treatment related to more marijuana use
- Cost of needing but not receiving treatment
- Cost to workplace and productivity
- The effect on the alcohol and other drug markets

ABOUT SMART APPROACHES TO MARIJUANA

Comprising the top scientists and thinkers in the marijuana research and practice space, SAM works to bridge the gap between the public's understanding of marijuana and science's understanding of marijuana. At the local, state, Tribal, and federal levels, SAM seeks to align marijuana policy and attitudes about the drug with 21st-century science, which continues to show how marijuana use harms the mind and body. SAM argues against extremes in marijuana policy, and opposes both incarceration for low level use and blanket legalization, favoring instead a health-based marijuana policy. Come visit us at www.learnaboutsam.org.

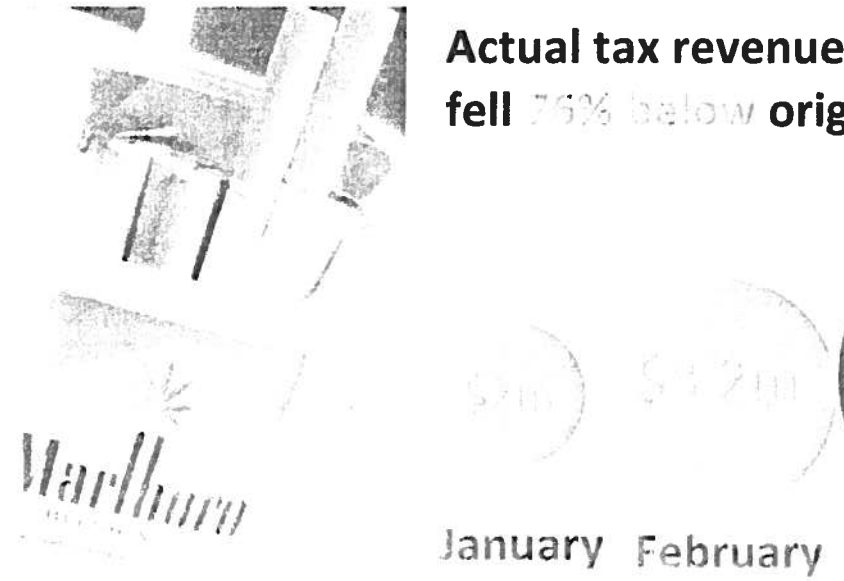
SAM Smart Approaches to Marijuana
preventing another big tobacco

THC-positive workplace drug test results in Colorado Springs rose by 30% since 2013



2014 Marijuana Developments

- **A study from Northwestern University finds that casual marijuana use creates physical abnormalities in the brain.**
- **Associated Press: "Two Denver Deaths Linked to Recreational Marijuana Use". One includes the under-aged college student who jumped to his death after ingesting a marijuana cookie.**
- **The number of parents calling the poison-control hotline to report their kids had consumed marijuana has risen significantly in Colorado.**
- **Marijuana edibles and marijuana vaporizers have been found in middle and high schools.**

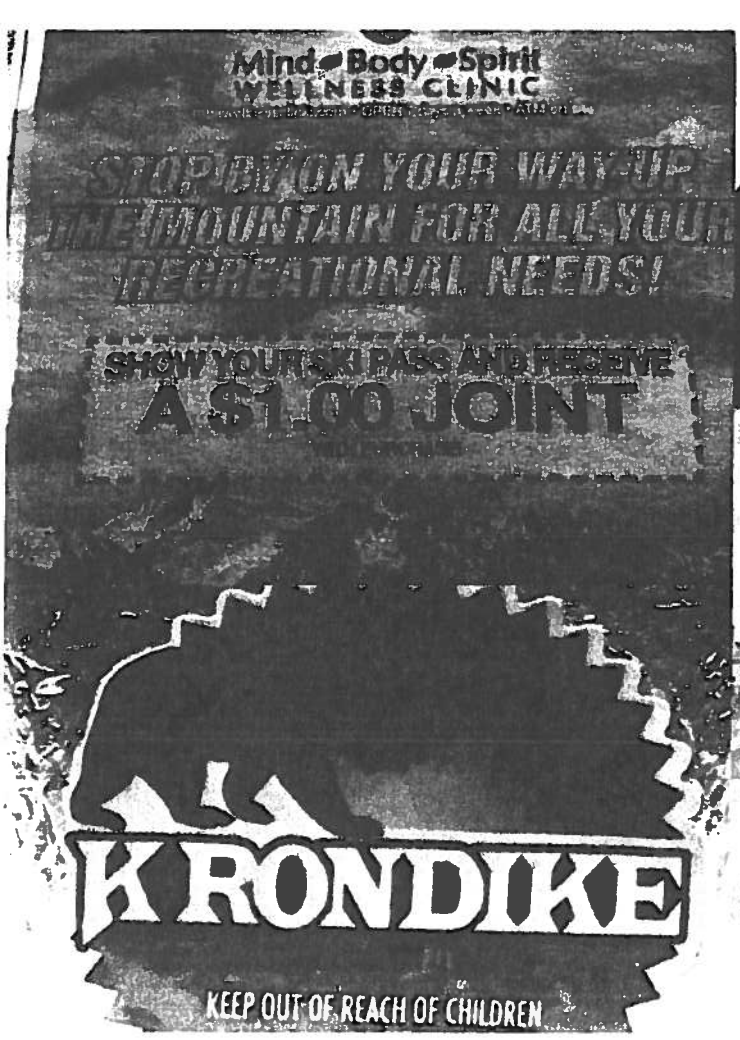


Actual tax revenues in January and February fell 76% below original projections

$11m

Monthly revenue originally projected by Colorado Governor

Marijuana advertisements and edibles permeate Colorado



Executive Summary

Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) will attempt to track the impact of marijuana legalization in the state of Colorado. This report will utilize, whenever possible, a comparison of three different eras in Colorado's legalization history:

- **2006 – 2008:** Early medical marijuana era
- **2009 – Present:** Medical marijuana commercialization and expansion era
- **2013 – Present:** Recreational marijuana era

Rocky Mountain HIDTA will collect and report comparative data in a variety of areas, including but not limited to:

- Impaired driving
- Youth marijuana use
- Adult marijuana use
- Emergency room admissions
- Marijuana-related exposure cases
- Diversion of Colorado marijuana outside the state

This is the second annual report on the impact of Colorado legalizing marijuana. It is divided into ten sections with each providing data on the impact of legalization prior to and during the creation of the marijuana industry in Colorado. The sections are as follows:

Section 1 – Impaired Driving:

- Traffic fatalities involving operators testing positive for marijuana have increased 100 percent from 2007 to 2012.
- The majority of driving-under-the-influence-of-drugs arrests involve marijuana and 25 to 40 percent were marijuana alone.
- Toxicology reports with positive marijuana results for driving under the influence have increased 16 percent from 2011 to 2013.

Section 2 – Youth Marijuana Use:

- In 2012, 10.47 percent of youth ages 12 to 17 were considered current marijuana users compared to 7.55 percent nationally. Colorado, ranked 4th in the nation, was 39 percent higher than the national average.
- Drug-related suspensions/expulsions increased 32 percent from school years 2008/2009 through 2012/2013. The vast majority were for marijuana violations.

Section 3 – Adult Marijuana Use:

- In 2012, 26.81 percent of college age students (ages 18 – 25 years) were considered current marijuana users compared to 18.89 percent nationally. Colorado, ranked 3rd in the nation, was 42 percent higher than the national average.
- In 2012, 7.63 percent of adults ages 26 and over were considered current marijuana users compared to 5.05 percent nationally. Colorado, ranked 7th in the nation, was 51 percent higher than the national average.
- In 2013, 48.4 percent of Denver adult arrestees tested positive for marijuana which is a 16 percent increase from 2008.

Section 4 – Emergency Room Marijuana Admissions:

- From 2011 through 2013, there was a 57 percent increase in marijuana-related emergency room visits.
- Hospitalizations related to marijuana have increased 82 percent from 2008 to 2013.
- In 2012, the City of Denver rate for marijuana-related emergency visits was 45 percent higher than the rate in Colorado.

Section 5 – Marijuana-Related Exposure:

- Marijuana-related exposures for children ages 0 to 5 on average have increased 268 percent from 2006–2009 to 2010-2013.
- Colorado's rate of marijuana-related exposures is triple the national average.

Section 6 – Treatment:

- Over the last nine years, the top three drugs involved in treatment admissions have been alcohol, marijuana and amphetamines.

Section 7 – Diversion of Colorado Marijuana:

- Highway interdiction seizures of Colorado marijuana destined to 40 other states increased 397 percent from 2008 to 2013.
- The average pounds of Colorado marijuana seized, destined for other states, increased 33.5 percent from 2005 to 2008 compared to 2009 to 2013.

Section 8 – Diversion by Parcel:

- U.S. Mail parcel interceptions, with Colorado marijuana destined for 33 other states, increased 1,280 percent from 2010 to 2013.
- U.S. Mail pounds of Colorado marijuana seized, destined for 33 other states, increased 762 percent from 2010 to 2013.

Section 9 – THC Extraction Labs:

- In 2013, there were 12 THC extraction lab explosions and in the first half of 2014 the amount more than doubled.
- In 2013, there were 18 injuries from THC extraction labs and in the first half of 2014 there were 27 injuries.

Section 10 – Related Data:

- Overall, crime in Denver increased 6.7 percent from the first six months of 2013 to the first six months of 2014.
- The number of pets poisoned from ingesting marijuana has increased four-fold in the past six years.
- Colorado estimates for annual revenue from the sale of recreational marijuana varies from $65 million (.6 percent of all expected general fund revenue) to $118 million (1.2 percent of all expected general fund revenue)
- The majority of counties and cities in Colorado have banned recreational marijuana businesses
- THC potency has risen from an average of 3.96 percent in 1995 to an average of 12.33 percent in 2013

There is much more data in each of the ten sections, which can be used as a standalone document. All of the sections are on the Rocky Mountain HIDTA website and can be printed individually; go to www.rmhidta.org/reports.

Daily Menu

Tuesday, March 10, 2015

	STRAIN	CBD	THC	CBN	$18 gram	$50 1/8	$95 1/4
SATIVA	ALPHA BLUE	0.01%	19.00%	0.00%	●	●	●
	DURBVA DIESEL	0.00%	26.13%	0.00%	●	●	●
Hybrid	BLUE SKY (S)	0.03%	20.00%	0.00%	--	●	●
	STRAIN	CBD	THC	CBN	$16 gram	$45 1/8	$85 1/4
Sativa	BLUE DREAM	0.00%	20.30%	0.00%	●	●	●
	DURBAN POISON	0.00%	18.01%	0.00%	●	●	●
	TANGERINE HAZE	0.00%	19.87%	0.00%	--	--	●
hybrid	DJ SHORT FLO (s)	0.08%	14.27%	0.00%	●	●	●
	LIGHT OF JAH (s)	0.00%	16.03%	0.00%	●	●	●
Indica	AFGHANI	0.05%	15.41%	0.00%	●	●	●
	BUDDHA'S SISTER	0.00%	15.83%	0.00%	●	●	●
	STRAIN	CBD	THC	CBN	$14 gram	$40 1/8	$75 1/4
Sativa	ALPHA COW	0.00%	20.00%	0.00%	●	●	●
	MADCOW	0.00%	14.00%	0.00%	●	●	●
	MOONSHINE HAZE	0.00%	20.98%	0.00%	●	●	●
	PURPLE HAWAIIAN	0.02%	19.00%	0.00%	●	●	●
Hybrid	DAIRY QUEEN (s)	0.00%	15.99%	0.00%	●	●	●
	DOOX (s)	0.00%	24.22%	0.00%	●	--	--
	DURBAN BERRY (s)	0.02%	18.00%	0.00%	--	●	●
	PURPLE COW (s)	0.00%	15.68%	0.00%	●	●	●
	SILVER CROWN (s)	0.00%	17.21%	0.00%	●	--	--
Indica	KATSU BUBBA KUSH	0.00%	14.13%	0.00%	●	●	●
	STRAIN	CBD	THC	CBN	$12 gram	$35 1/8	$65 1/4
Indica	FARMERS KUSH	0.00%	15.12%	0.00%	●	--	--
	PURPS #3	0.00%	14.64%	0.00%	●	●	●

Phenotype Sale

Life Saver x Sour Diesel $8/Gram

$100 Half Ounce Special

Alpha Cow

HUMMINGBIRD BUBBLE HASH

STRAIN	1 Gram ($70)
DURBAN POISON	$70
Chem Dawg	$55-70
SATIVA	$70
HYBRID	$70

20% Off Strain Of The Week

Afghani

HUMMINGBIRD CO^2 OIL

STRAIN	1 Gram ($70)
ALPHA BLUE	84% THC
DURBAN POISON	67% THC
SATIVA	69% THC
HYBRID	66% THC

SUNSET HAZE	$55-$70
INDICA	$70
POKIE	$70

GUMBI	84% CBD, 3.2% THC

HUMMINGBIRD DAB OIL

STRAIN	1 Gram ($60)
ALPHA BLUE	78% THC
ALPHA COW	77% THC
GHOST TRAINWRECK	62% THC
PURPLE COW	71% THC
SOUR DIESEL	73% THC