Reefer Sanity in the Marijuana Debate

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www.learnaboutsam.org
www.kevinsabet.com
"Reefer Sanity": Exploding myths about marijuana

- As seen on Amazon.com and Barnes & Noble
The false dichotomy: “Legalization OR incarceration?”
What is SAM?

- A 501(c)(3) non-profit, educational organization funded by volunteers & private organizations

- Our mission:
  - Educate citizens on the science of marijuana
  - Promote health-first, smart policies and attitudes that decrease marijuana use and its consequences

- We envision a society where marijuana policies align with science, and commercialization and normalization of marijuana are no more
SAM’s board members and supporters

- American Society of Addiction Medicine
- American Academy of Pediatrics
- American Academy of Child and Adolescent Psychiatry
- Other leading public health authorities
- Over 30 state affiliates, including:
  - Treatment centers
  - Recovery groups
  - Prevention organizations
  - Law enforcement
  - Leading medical authorities
  - Volunteer citizens
Legalization = Big Marijuana

Legalization measures will inevitably lead to mass commercialization.
Important truths about marijuana use today

- Number of people who use 21+ days has increased by a factor of 7 since 1992
- Since 2007, the use of marijuana measured by days of use has increased 57%
- One arrest for every 5,800 days of use
  - That means someone who smokes marijuana 2x week for their whole life has a chance of being arrested once every 50 years
- Potency has grown 10-20 fold
- Marijuana is now the second leading cause of impaired driving
- Most young people now use marijuana more than tobacco
Americans now spend more money on marijuana, and less on other drugs such as cocaine.

Spending by Americans (in billions of dollars)

- Cocaine:
  - 1990: $30B
  - 2013: $15B
  - Decrease of 50%

- Cannabis:
  - 1990: $10B
  - 2013: $40B
  - Increase of 300%

Source: Caulkins, RAND
Daily marijuana use has risen to historic highs

Percentage of people in the United State using marijuana daily

Source: “Heavy Marijuana Use in the United States: A Growing Policy Concern” Jonathan Caulkins and Maria Cuellar
JAMA Psychiatry journal: Marijuana use and addiction has skyrocketed since 2001

![Graph showing past year use and addiction (use disorder) from 2001-2002 and 2012-2013](image)

Source: JAMA Psychiatry, Oct 2015, Prevalence of Marijuana Use Disorders in the United States, Between 2001-2002 and 2012-2013, Deborah S. Hasin, PhD; Tulshi D. Saha, PhD; Bradley T. Kerridge, PhD; Ris. B. Goldstein, PhD, MPH; S. Patricia Chou, PhD; Haitao Zhang, PhD; Jeesun Jung, PhD; Roger P. Pickering, MS; W. June Ruan, MA; Sharon M. Smith, PhD; Boji Huang, MD, PhD; Bridget F. Grant, PhD, PhD
Why should we care about marijuana?
Seven myths about marijuana that legalizers want you to believe

1. Marijuana Is Harmless and Non-addictive
2. Smoked Marijuana is Medicine
3. Countless People Are Behind Bars for Smoking Marijuana
4. The Legality of Alcohol and Tobacco Strengthen the Case for Marijuana Legalization
5. Legal Marijuana Will Solve the Government’s Budgetary Problems
6. Portugal and Holland Provide Successful Examples of Legalization
7. Prevention, Intervention, and Treatment are Doomed to Fail – So Why Try?
Myth 1: Marijuana is Harmless and Non-addictive

1. Marijuana Is Harmless and Non-addictive
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Brain development, Ages 0-20

Gogtay et al., 2004
Cannabinoid Receptors Are Located Throughout the Brain and Regulate a Host of Brain Activity

- Brain Development
- Memory & Cognition
- Motivational Systems & Reward
- Appetite
- Immunological Function
- Reproduction
- Movement Coordination
- Pain Regulation & Analgesia

Source: NIDA
1 in 6 teens become addicted to marijuana

- 1 in 11 adults and 1 in 6 adolescents who try marijuana will become addicted to it
- The adolescent brain is especially susceptible to marijuana use
- When kids use, they have a greater chance of addiction since their brains are being primed

Icon: Connor Shea
Marijuana has become significantly more potent since the 1960s

Average THC and CBD levels in the United States

<table>
<thead>
<tr>
<th>Year</th>
<th>CBD</th>
<th>THC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>1965</td>
<td>0.3</td>
<td>0.2</td>
</tr>
<tr>
<td>1970</td>
<td>0.4</td>
<td>0.3</td>
</tr>
<tr>
<td>1975</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>1980</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>1985</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>1990</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>1995</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>2000</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>2005</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>2010</td>
<td>0.5</td>
<td>0.4</td>
</tr>
</tbody>
</table>

Source: Mehmedic et al., 2010

THC: Psychoactive Ingredient

CBD: NON-Psychoactive Ingredient
Marijuana is not “just a plant” anymore – derivatives contain up to 98% THC
“Dabs”: the new frontier of marijuana

“With dabs your local action news team gets to do a marijuana story that shows crack pipe torches used on sticky heroin-looking goo made from a process that blows up like meth labs.”

- *High Times* magazine
  7 May 2014
Marijuana-related emergency room visits have risen sharply, both in relative and absolute terms.

### Number of Emergency Department Visits Involving Marijuana, Cocaine, or Heroin

<table>
<thead>
<tr>
<th>Year</th>
<th>Marijuana (in thousands)</th>
<th>Cocaine (in thousands)</th>
<th>Heroin (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>208</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>2005</td>
<td>327</td>
<td>456</td>
<td>498</td>
</tr>
<tr>
<td>2006</td>
<td>456</td>
<td>327</td>
<td>129</td>
</tr>
<tr>
<td>2007</td>
<td>327</td>
<td>129</td>
<td>182</td>
</tr>
<tr>
<td>2008</td>
<td>129</td>
<td>182</td>
<td>323</td>
</tr>
<tr>
<td>2009</td>
<td>182</td>
<td>323</td>
<td>498</td>
</tr>
<tr>
<td>2010</td>
<td>323</td>
<td>498</td>
<td>258</td>
</tr>
<tr>
<td>2011</td>
<td>498</td>
<td>258</td>
<td>135</td>
</tr>
</tbody>
</table>

Source: Volkow ND et al., NEJM 370(23), June 5, 2014.
Early marijuana use and intensity of use are associated with lower educational attainment.

High School Completion
Marijuana users show much higher high school dropout rates than non-users.

-12%** < 14 years old
-28%* > 14 years old

University Entrance Score
Marijuana users that complete high school still do poorly on university entrance tests.

-12%* < 14 years old
-28%* > 14 years old

* p<0.01, ** p<0.05

Marijuana use is also associated with lower IQ among adolescents.

Dunedin prospective study of 1037 subjects born in 1972-72

Subjects were tested for IQ at age 13 and 38 years of age. They were also tested for THC use ages 18, 21, 26, 32 and 38 years of age.

Change in full-scale IQ (standard deviation units)

1 Diagnosis

2 Diagnoses

3 Diagnoses

- Not cannabis dependent before age 18
- Cannabis dependent before age 18

p = .44

p = .09

p = .02

Source: Meier MH et al., PNAS Early Edition 2012
Cannabis use also corresponds with undesirable social outcomes such as unemployment.

New Zealand study showing relationship between cannabis use and social outcomes

- **% gained university degree (by age 25)**
  - Never: 9%
  - 1 to 99: 11%
  - 100 to 199: 19%
  - 200 to 299: 27%
  - 300 to 399: 36%
  - 400+: 2%

- **% unemployed (ages 21-25)**
  - Never: 23%
  - 1 to 99: 25%
  - 100 to 199: 21%
  - 200 to 299: 42%
  - 300 to 399: 41%
  - 400+: 52%

- **% welfare dependent (ages 21-25)**
  - Never: 25%
  - 1 to 99: 23%
  - 100 to 199: 25%
  - 200 to 299: 42%
  - 300 to 399: 41%
  - 400+: 57%

Source: Fergusson and Boden. Addiction, 103, pp. 969-976, 2008 [New Zealand study]
Frequent cannabis use by youth correlates with a host of undesirable effects

Source: Silins E. et al., *The Lancet*, September 2014
Can the United States afford the risk of further increases in cannabis use?

The U.S. is 30th out of 32 countries in cannabis use w/ 15 &16-year-old students
Past Month Use, Percentages, 2007 and 2011

The U.S. has fallen behind in educational achievement
(out of 65 jurisdictions, 2012)

Math: 36th
Science: 28th
Reading: 24th

Source: European School Survey Project on Alcohol and Other Drugs (2007 & 2011); Program for International Student Assessment (2012)
Icons: Egon Lastad, Zlatko Najdenovski, Vicons Design
Marijuana use is associated with psychosis

**More marijuana use correlates with higher rates of schizophrenia**

Cases of schizophrenia per 1,000 people

<table>
<thead>
<tr>
<th>Number of times cannabis used (lifetime)</th>
<th>Study of Swedish Conscripts (n=45570)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>&lt; 50</td>
<td>15</td>
</tr>
<tr>
<td>&gt; 50</td>
<td>28</td>
</tr>
</tbody>
</table>

**Earlier age of use correlates with increased schizophrenia risk**

Risk multiple for schizophrenia-like psychosis at age 26

- By 15 years: 4.5
- By 18 years: 1.6

Source: Andréasson et al Lancet, 1987 (left graphic); Arseneault et al BMJ 2002 (right graphic)
Higher Potency = Greater Risk of Mental Illness

Risk of Psychosis vs non-users

Increased use can lead to increased drugged driving

“Drivers who test positive for marijuana or self-report using marijuana are more than \textbf{twice as likely} as other drivers to be involved in motor vehicle crashes.”

- Mu-Chen Li, J.E., et al., 2011
False opinions about marijuana are common—“being stoned makes me a better driver”

Poll of >1,700 high school juniors and seniors on driving while high:

Being stoned...

- Makes me a better driver
- Has no effect on my driving
- Makes me a worse driver/other

Three of every four kids believed that being stoned does not negatively affect driving

Source: Liberty Mutual & SADD, 2013
The gulf has never been greater between the scientific understanding of marijuana’s harms and the public’s misunderstanding.
How did we get here?
Myth 2: Smoked Marijuana is Medicine

1. Marijuana Is Harmless and Non-addictive
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The old stereotype
The new image
Legalization advocates have admitted that “medical” marijuana is a pretext for legalization

“We will use [medical marijuana] as a red-herring to give marijuana a good name.”

—Keith Stroup, head of NORML, to the Emory Wheel, 1979

Advocates have pushed their agenda through “medicine by popular vote” rather than the rigorous scientific testing system devised by the FDA.
Is marijuana medicine? It depends on how you look at the question

<table>
<thead>
<tr>
<th>NO</th>
<th>YES</th>
<th>MAYBE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoked or ingested raw marijuana is <strong>not medicine</strong></td>
<td>There are marijuana-based pills available to treat illness, and other such medications coming soon</td>
<td>Additional research is ongoing into the medical properties of marijuana-derived compounds</td>
</tr>
</tbody>
</table>
Is the true goal of “medical” marijuana compassionate care or increased access to pot?

The “average” user isn’t sick

The average “medical” marijuana user is not whom you’d imagine:

- White male
- 32 years old
- No history of life-threatening disease
- History of drug and alcohol abuse

Ilnesses used to justify “medical” marijuana are rare

Fewer than 5% of “medical” marijuana card holders are cancer, HIV/AIDS, or glaucoma patients

The bottom line: smoking/ingesting marijuana is not “medicine”

• We don’t smoke opium to get the effects of morphine...

• So why would we smoke marijuana to obtain any potential medical effects?
Safe, approved cannabis-based medicines already exist

- Research on the efficacy of cannabinoids is **not focused on raw/crude marijuana, but on individual components** that may have medical use.

- **Sativex** is in the process of being studied (phase III trials)

- Approved by regulators in Canada and across Europe

- Administered via an **oral spray**
Epidolex™ is one such medication

- 98% pure cannabidiol (CBD)
- Some effectiveness for treating seizures
- Many versions exist on the market that are not purified or standardized
A long-term solution to expand authorized medical cannabis research is needed

**CURRENT SITUATION**

- Many groups are trying to sell or give away CBD in different states without going through any FDA or NIH process. However, these products have no such safety assurances.

**SOLUTION**

- To address this problem in the long-term, the United States should expand and accelerate current research so that every patient who might benefit from CBD can obtain it.
There is **no evidence** that THC is needed for young patients, and it may harm them

- **No scientific evidence** that THC is necessary to synergize the effects of CBD.
  - Preclinical research that THC may be **pro-convulsant in sensitive brains**
  - Physicians are beginning to report instances of **THC toxicity in children taking “high CBD” preparations**, e.g., high anxiety, increased seizures, insomnia, etc.
Only sophisticated manufacturers can produce CBD in a medically appropriate manner

- “High CBD” plant material usually also contains THC, sometimes significant amounts.
- Most simple extraction processes cannot reliably extract CBD:
  - Complex and expensive equipment is required to remove THC
  - Research demonstrates that, in many cases, large doses of CBD are needed to achieve a specific therapeutic effect
  - Accordingly, a child taking a therapeutic dose of CBD (100-1000 milligrams per day) would potentially also be exposed to a large amount of THC
    - For example, using a 10:1 preparation, a child who ingests 300 mg of CBD/day would also ingest 30mg of THC
    - That is the equivalent of three of the highest dose (10mg) Marinol capsules, which would make most adult patients intoxicated
    - A 2:1 or 1:1 plant ratio product would contain even higher levels of THC
Medical marijuana laws appear to correlate with increased marijuana use

Residents of states with medical marijuana laws have abuse/dependence rates almost twice as high as states with no such laws.

Among youths age 12 to 17, marijuana usage rates were higher in states with medical marijuana laws (8.6%) compared with those without such laws (6.9%).

Although debate continues concerning this correlation, significant evidence exists in its favor.

**SOME RESEARCH POINTS TO CONNECTION BETWEEN DISPENSARIES AND USE...**

- Pacula (RAND) and Sevigny: Home cultivation and dispensaries are positively associated with marijuana use and “have important implications for states considering legalization of marijuana.”

**...WHILE OTHER STUDIES DID NOT NECESSARILY DETECT A CORRELATION**

- Rees/Anderson: Detected no increase in medical marijuana states, stimulating a vigorous debate (JPAM)

- *Lancet* study of 24 states using Monitoring the Future found:
  - Medical marijuana states had higher 8th, 10th, and 12th grade use...but those states did not show an overall increase in use
  - In Colorado, however, increase in use was seen among 10th and 12th graders

Source: Pacula et al 2013
Medical and recreational marijuana laws do not effectively prevent use by minors

- Restriction of legalized medical or recreational marijuana within state/district borders and to those ≥21 years old does not sufficiently safeguard against widespread adverse effects on youth

- Youth access to legalized marijuana obtained by adults, via diversion (Salomonsen-Sautel et al., 2012) and accidental ingestion (Wang et al., 2013)

- Policy changes and marketing efforts have effects across ages and across state lines, with particular impact on youth (Berg et al., 2015; Richter & Levy, 2014)
Myth 3: Countless People Are Behind Bars for Smoking Marijuana

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6. Portugal and Holland Provide Successful Examples of Legalization
7. Prevention, Intervention, and Treatment are Doomed to Fail – So Why Try?
In reality, very few people are behind bars for marijuana possession

Only **0.4% of state prisoners** are in jail for marijuana possession alone

99.8% of Federal prisoners sentenced for drug offenses were incarcerated for **drug trafficking**

The risk of arrest for each joint smoked is **1 for every 12,000 joints**
Very few people are incarcerated only for marijuana possession

% of state prison population (2004)

- Drug possession: 6.0%
- Crimes involving only MJ: 1.4%
- MJ-only drug offenders; no prior sentences: 0.4%

Just 0.4% of state prisoners incarcerated only for marijuana

Source: Office of National Drug Control Policy, citing data from U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, 2004
Only 0.02% of all federal prisoners in jail for drug offenses are there exclusively for drug possession

Only a tiny percentage of prisoners serve time just for drug possession.

Source: ONDCP, citing data from U.S. Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, 2009 (data shows prison population on September 30, 2009)
Myth 4: The Legality of Alcohol and Tobacco Strengthen the Case for Marijuana Legalization

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Alcohol and tobacco are not models for a marijuana industry

- Use levels for alcohol and tobacco are **much higher than that of marijuana**

- Both industries **promote addiction and target kids**


Teens have greater access to alcohol and tobacco than to pot, perhaps due to the latter’s illegality

50% and 44% of youth report that they can obtain alcohol and cigarettes, respectively, within a day.

Youth are least likely to report that they can get marijuana within a day (31%); 45% report that they would be unable to get marijuana at all.

Source: The National Center on Addiction and Substance Abuse at Columbia University (CASA), 2012
Icon: Edward Boatman (The Noun Project)
Alcohol companies depend on heavy drinkers to make money

The top 10% of the population make up 75% of the alcohol industry’s U.S. sales

% of total U.S. alcohol consumed

- Average of 73.85 drinks/week – or over 10 drinks per day

- Belies the slogan “Enjoy Responsibly”

- Would the marijuana industry be any different?

Excise taxes on alcohol have plummeted, falling by up to 80% since the Korean War.
Legalization is unlikely to diminish the power of drug cartels and the black market (1/2)

<table>
<thead>
<tr>
<th>CARTELS ARE, IN REALITY, DIVERSIFIED BUSINESSES</th>
<th>A HUGE BLACK MARKET EXISTS FOR TOBACCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>• “Drug cartels” are diversified enterprises that include mining and pirated goods</td>
<td>• Cigarettes are the world’s most widely smuggled legal product</td>
</tr>
<tr>
<td>• Marijuana accounts for only 15-25% of revenues of drug trafficking groups</td>
<td>• A $657 billion/year business in 2009</td>
</tr>
<tr>
<td>• More money is found in other businesses, including legal ones, than in selling marijuana</td>
<td>• Provides funding for organized criminal syndicates and terrorist groups worldwide</td>
</tr>
<tr>
<td>• Estimates indicate the Zetas earn up to 50% of revenues from cigarette smuggling</td>
<td>• In Canada alone, ~105 organized crime groups are engaged in cigarette smuggling</td>
</tr>
<tr>
<td>• In 2014, iron mining was the #1 source of revenue for the Knights Templar cartel</td>
<td>• Generates revenue for groups like the Taliban and Hezbollah</td>
</tr>
</tbody>
</table>

Source: Kilmer, B., et al., 2010; USA Today (Mar. 17, 2014; Zinsmeister, J., 2015; Center for Public Integrity, 2009
Legalization is unlikely to diminish the power of drug cartels and the black market (2/2)

In a legal market, where drugs are taxed and regulated (for instance to keep THC potency below a certain level or to prevent sale to minors), the black market has every incentive to remain.

Legalizing marijuana would likely not deter traffickers from continuing to operate.

In countries with a weak rule of law, legalization will likely only result in capture of large portions of the legal market by traffickers, similar to tobacco.

Source: Kilmer, B., et al., 2010; Zinsmeister, J. 2014
Icon: Edward Boatman (The Noun Project)
“Big Marijuana”

- Can we trust companies and Big Corporations not to target youth and the vulnerable?
Privateer Holdings

• The first private equity company dedicated to the marijuana industry
THE LEGALIZATION OF MARIJUANA means ushering in an entirely new group of corporations whose primary source of revenue is a highly habit-forming product. Sounds a lot like another industry we just put in its place. Many facts are being ignored by this and other news organizations. Go to GrassIsNotGreener.com to see why so many major medical associations oppose marijuana legalization.
The early days of big tobacco
“Big Marijuana”: a $10 billion/year dream for the tobacco industry since the 1970s

“The use of marijuana ... has important implications for the tobacco industry in terms of an alternative product line. [We] have the land to grow it, the machines to roll it and package it, the distribution to market it. In fact, some firms have registered trademarks, which are taken directly from marijuana street jargon. These trade names are used currently on little-known legal products, but could be switched if and when marijuana is legalized. Estimates indicate that the market in legalized marijuana might be as high as $10 billion annually.”

- 1970s report commissioned by cigarette manufacturer Brown and Williamson (now merged with R.J. Reynolds)
Within five years, younger adults (18-24) will drop from 18% to 15% of the total adult population (18+). They will continue to decline in numbers until at least 1995, as the crest of the Baby Bubble pushes farther past age 25.

This shift in the population will cause smokers aged 18-24 to fall from 16% to 14% of all smokers by 1988. Even 13% would not be surprising, since smoking incidence has been declining more rapidly among younger adults than any other age group in recent years (see Appendix A).

Why, then, are younger adult smokers important to RJR?

1. VOLUME

Younger adults are the only source of replacement smokers. Repeated government studies (Appendix B) have shown that:

• Less than one-third of smokers (31%) start after age 18.
• Only 5% of smokers start after age 24.

Introduction, with no cannibalization and no development/introductory costs.

As a company, Philip Morris held more than 60% of these 18-year-olds in 1983 versus RJR's 15-20%, yielding PM a .5 point in-going SOM advantage due only to "new" smokers.

* This assumes 18-year-olds are 10% of the 18-24 group rather than a "fair share" of 14% because of population decline and the fact that some smokers start after age 18.
Of course, children aren’t the only targets of the tobacco industry. Once, when I asked an R.J. Reynolds executive why he and his colleagues didn’t smoke, he responded point-blank that “We don’t smoke the sh--e, we just sell it . . . We reserve that ‘right’ for the young, the poor, the black and the stupid.”
APPLE FLAVOR

Apples connote goodness and freshness and we see many possibilities for our youth-oriented cigarette with this flavor. Apple cider is also a possibility.

SWEET FLAVOR CIGARETTE

We believe that there are pipe tobaccos that have a sweet aromatic taste. It's a well known fact that teenagers like sweet products. Honey might be considered.
Pot is now funding presidential politics

Rand Paul Brings in Six Figures at MJ Industry Fundraiser

Republican presidential candidate Rand Paul made a splash in Denver on Tuesday, raising an estimated minimum of $120,000 in a closed-door private fundraising event at the National Cannabis Industry Association’s Cannabis Business Summit.

The total amount raised puts him firmly in the top tier of public officials who have raised campaign funds from the cannabis industry.

There was no immediate word from the Paul campaign on how much was actually raised at the event, and the total could easily top Marijuana Business Daily’s estimate. Attendees reported about 40 individuals took part in the event, paying a minimum of $2,700 apiece. In addition, the Marijuana Policy Project provided a $15,000 donation.
Myth 5: Legal Marijuana Will Solve the Government’s Budgetary Problems

1. Marijuana Is Harmless and Non-addictive
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Will legalization solve budgetary problems?

• Few people are currently in jail for smoking marijuana
• What are the costs from regulation and arrests?
“If only we treated it like alcohol...”

2.7 million
Arrests for alcohol-related crimes in 2008, including violations of liquor laws and DUI – but does NOT include arrests for alcohol-related violence

vs.

847,000
Marijuana-related arrests in 2008
Revenue streams already disappoint

Marijuana Taxes Won’t Save State Budgets

AUGUST 9, 2015

Colorado’s marijuana tax collections are not as high as expected.

In February 2014, Gov. John Hickenlooper’s office projected Colorado would take in $118 million in taxes on recreational marijuana in its first full year after legalization. With seven months of revenue data in, his office has cut that projection and believes it will collect just $69 million through the end of the fiscal year in June, a miss of 42 percent.

That figure is consequential in two ways. First, it’s a wide miss. Second, compared with Colorado’s all-funds budget of $27 billion, neither $69 million nor $118 million is a large number.
Alcohol and tobacco are money-drainers, not money-makers

Billions of U.S. dollars (indexed to 2012 values)

Source: CDC, American Lung Association, Tax Policy Center
Note: Total revenues are state and federal combined from 2012. They are compared with costs that were adjusted for inflation and are stated in 2012 values.
Myth 6: Portugal and Holland Provide Successful Examples of Legalization

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Reality: Neither Holland nor Portugal have legalized ANY drug
Moreover, the track record of modern drug policy in Europe is mixed at best

The Dutch experienced a **three-fold increase in marijuana use among young adults** after pot commercialization expanded.

Use rates in the Netherlands, Portugal, and Italy in the last 10 years are **lower for some drugs and higher for others**.
Portuguese policy: similar to drug courts

• In 2001, Portugal changed policy to send users with small amounts of drugs to “dissuasion panels” – social worker panels who refer individuals to treatment, administer fine, etc.

• Portugal also implemented robust treatment plan
Portuguese results are mixed

- Youth drug use has increased since 2001
- Deaths from drug use have gone down
- The impact of the policy unclear, despite extreme rhetoric
Opposition to legalization among Portuguese youth has grown significantly since 2011

% of Portuguese youth (15-24 years old) opposed to marijuana legalization

Source: Serviço de Intervenção nos Comportamentos Aditivos e nas Dependências (SICAD); Jornal de Noticias, 26 Aug. 2014 (http://www.jn.pt/PaginaInicial/Nacional/Interior.aspx?content_id=4093641)
Dutch policy: non-enforcement

• The Dutch established the Non-enforcement Policy in 1976 and saw the birth of “Coffee Shops”
Dutch results are also mixed

- Experienced a **three-fold increase in marijuana use** among young adults
- Before non-enforcement, the Dutch had lower rates of drug use than the U.S.
  - Now, it is the #1 country in Europe with need for marijuana treatment
- Now **scaling back policy**
  - Coffee shops closing
  - Cannot sell to non-residents
What about decriminalization?

• Too broad a term - it could mean anything from a simple fine to a more rigorous policy.

• It is important to understand that removing all sanctions for drug use and any accountability is not in the spirit of a pro-health drug policy.

• Indeed, drug treatment courts show that employing sanctions is an important element to motivate users to enter and complete treatment.

• How law is structured makes a difference.

Source: Colorado Municipal League (https://www.cml.org/Issues/Elections/Election-Results/Election-Results-Retail-Marijuana/)
Evidence on decriminalization

Countries with decriminalization lie midway between countries where it remains illegal and those with *defacto* legalization (The Netherlands, Czechoslovakia, Italy and Spain - note that of those countries, only The Netherlands allows storefront sales).

But even the nuances of how decriminalization laws are structured appear to have an impact on youth use.

US has varied laws
Countries that legalized marijuana have very high median rates of youth use, among the highest in Europe (significant, $p = 0.002$ in 2007; trend, $p = 0.075$ in 2011)

**Consumption data from:** The 2007 and 2011 ESPAD Report

Substance Use Among Students in 36 European Countries; not all countries available for both years

*These countries have either legalized for possession, legalized growth for personal use/consumption in the home or have defacto-legalization (e.g. Netherlands) where police and prosecutors are instructed not to apprehend/prosecute in certain venues. (EMCDDA-http://www.emcdda.europa.eu)*
How Decriminalization is Structured Makes a Difference

States with lenient decriminalization laws have higher rates of youth use* than states where decriminalization is structured to discourage use (p=0.004)

\[
\begin{array}{c}
\text{Lenient} \\
\text{Strict}
\end{array}
\]

<table>
<thead>
<tr>
<th>Year</th>
<th>Lenient decrim laws</th>
<th>Strict decrim laws</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>AK, CO, ME</td>
<td>NC, OH, NE</td>
</tr>
<tr>
<td>2009</td>
<td>AK, CO, ME, MA</td>
<td>NC, OH, NE</td>
</tr>
<tr>
<td>2011</td>
<td>AK, CO, ME, MA</td>
<td>NC, OH, NE</td>
</tr>
</tbody>
</table>

Lenient = no graduated penalties for repeat offenders, no drug education requirement, no community service.

Strict = no jail time for 1st offense but may be a misdemeanor that can be removed from record; or graduated penalties for repeat offenders that may eventually involve jail time and criminal charges; or may have a clause that makes 1st offense more serious: in public view (NY) or in auto passenger compartment (MS).

*Data on youth use derived from:
Massachusetts decriminalization code: 1 oz (~30 g) or less is a civil fine of $100. No increase in penalty for repeat offenses, no requirement for drug education or treatment, no stipulation about carrying in passenger compartment of auto.
Myth 7: Prevention, Intervention, and Treatment are Doomed to Fail – So Why Try?

1. Marijuana Is Harmless and Non-addictive
2. Smoked Marijuana is Medicine
3. Countless People Are Behind Bars for Smoking Marijuana
4. The Legality of Alcohol and Tobacco Strengthen the Case for Marijuana Legalization
5. Legal Marijuana Will Solve the Government’s Budgetary Problems
6. Portugal and Holland Provide Successful Examples of Legalization
7. Prevention, Intervention, and Treatment are Doomed to Fail – So Why Try?
Colorado and Washington
Colorado didn’t legalize pot overnight

- 2001: Medical marijuana permitted
- 2005: Denver legalizes possession
- 2007-8: 1st marijuana stores
- 2009: 700 stores, 3.5% adults have MMJ license
- 2012: Legalized
- 2014: Recreational stores open

Source: Nussbaum et al., Am J Psychiatry 168:778-781
Marijuana edible displays
Edibles: a clear and present danger to Colorado’s children

Doctors at the UCH and Children’s Hospital Colorado emergency departments identified edible marijuana as the culprit behind the most troubling cases there, including severe burns and cycling vomiting syndrome.

Vaporizing industries: Nicotine and Marijuana

Pax by Ploom:

- Japan Tobacco International (JTI) is the third largest international tobacco company, behind Philip Morris International.

- In 2011, JTI bought a portion of Ploom – a Silicon Valley-based startup that produces a loose-leaf vaporizer that can be used to inhale heated vapor from marijuana as well as tobacco, called the Pax.
Medical marijuana programs expand minor’s access to the drug

Source of Marijuana* among 12th Graders in 2012 and 2013, by State Policy

*Sources are not mutually exclusive

![Chart showing source of marijuana among 12th graders in 2012 and 2013 by state policy.](chart)

- **Given friend:** 61.9%, 62.2%
- **Bought friend:** 52.7%, 49.3%
- **Bought dealer/stranger:** 25.5%, 30.1%
- **Given relative:** 14.8%, 9.3%
- **Other method:** 14.2%, 14.0%
- **Bought relative:** 8.1%, 5.3%
- **Took relative:** 4.5%, 2.5%
- **Took friend:** 2.7%, 3.5%

**Source:** University of Michigan, 2013 Monitoring the Future Study
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with any cannabis purchase. Expires 3/18/15.

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(EQUAL OR LESSER VALUE) EXP 10/8/14
LIMIT 1 PER CUSTOMER

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- Accessories

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December 23rd, 2014
FIRST 50 PEOPLE THRU THE DOOR
RECEIVE $10-18TH PURCHASE

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EDIBLES, GLASS AND FLOWER GIFT BASKETS
STARTING AT $20
ALL STOCKING STUFFERS, 10% OFF
(Glass, Accessories, Edibles, Hash)

1 GRAM $20
2 FOR 1 BLUE KUDU $40
15% OFF CBD 
4 GRAM $15 1/8TH
WAX $20

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1/8
$25
FOR NON MEMBERS • EXPIRES 12/18
LIMIT 2 COUPONS PER CUSTOMER PER DAY

WAX WEDNESDAY
$5 OFF EVERY GRAM ALL DAY ON WAX BUTTER, GO2 OIL AND SHAFFER.
303.861.4252
852 N. BROADWAY
(ON BROADWAY, NEXT TO THE FAINTING GOAT)
2011 1ST PLACE
CANNABIS CUP WINNER
The original slide has the word “Edibles” written above the image. Not sure you need it – sort of breaks the flow here.
Marijuana’s negative impact on Colorado children continued in 2015

Associated Press: “Two Denver Deaths Linked to Recreational Marijuana Use.” One includes the under-aged college student who jumped to his death after eating 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.
WA and CO show statistically significant increases in marijuana use

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
Use in CO and WA are both (A) higher than and (B) rising faster than the national average

Percentage of population ages 12 and up who used marijuana in the past year

Source: NSDUH, 2014
Accidental ingestion by children has risen sharply

- 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, eight children went to the CO children’s hospital for accidental ingestion.

- In 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 are up in Washington

- Since the state legalized recreational use, the Washington Poison Center has seen an increase in the number of human exposures related to accidental or excessive consumption/inhalation of marijuana and marijuana edibles, particularly among pediatrics.
Emergency marijuana-related calls to the WA Poison Center have skyrocketed post-legalization

Exposure calls related to marijuana

Source: Washington Poison Center
Teen marijuana arrests are up in Denver

• 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 drug treatment are also up

- 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 since its legalization referendum passed

# of packages from CO containing marijuana intercepted by the U.S Postal Service

<table>
<thead>
<tr>
<th>Year</th>
<th>Packages Intercepted</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0</td>
</tr>
<tr>
<td>2010</td>
<td>15</td>
</tr>
<tr>
<td>2013</td>
<td>107</td>
</tr>
</tbody>
</table>

+613%

Highway interdictions resulting in seizures of CO marijuana

<table>
<thead>
<tr>
<th>Year</th>
<th>Seizures of CO Marijuana</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>58</td>
</tr>
<tr>
<td>2013</td>
<td>288</td>
</tr>
</tbody>
</table>

+397%
Burns: An unexpected consequence of increased marijuana use

Number of cases with self-admitted burn victims related to marijuana in Colorado, 2010-14

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1</td>
</tr>
<tr>
<td>2011</td>
<td>1</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
</tr>
<tr>
<td>2013</td>
<td>11</td>
</tr>
<tr>
<td>2014</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: University Hospital Burn Unit – University of Colorado Hospital; Al-Jazeera America
Pot has had an increasing impact on DWIs in WA post-legalization—1/3 of cases now test positive.

Percentage of total DUI/DRE cases testing positive for THC* in Washington state

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>18.2%</td>
</tr>
<tr>
<td>2010</td>
<td>19.4%</td>
</tr>
<tr>
<td>2011</td>
<td>20.2%</td>
</tr>
<tr>
<td>2012</td>
<td>18.6%</td>
</tr>
<tr>
<td>2013</td>
<td>24.9%</td>
</tr>
<tr>
<td>2014</td>
<td>28.0%</td>
</tr>
<tr>
<td>2015</td>
<td>33.0%</td>
</tr>
</tbody>
</table>

*Delta-9-THC
Source: NPR, from data provided by the WA State Toxicology Laboratory
Recent marijuana users now account for 85% of all fatal accidents in Washington state

% of drivers involved in fatal crashes whose blood tests indicated recent marijuana use

Note: Recent marijuana use indicated by presence of active THC in blood tests
WA and CO also show increases in on-the-job marijuana use well above the U.S. average.

Source: Quest Diagnostics (http://www.questdiagnostics.com/home/physicians/health-trends/drug-testing)
Drug use is forcing CO employers to hire out-of-state employees instead of CO citizens

• “Jim Johnson [construction company GE Johnson’s CEO]...said his company has encountered so many job candidates who have failed pre-employment drug tests because of their THC use that it is actively recruiting construction workers from other states.”

Colorado job applicants show alarming rates of marijuana use, and attempt to cheat drug tests

• “Leona Wellener, owner of Front Range Staffing in Colorado Springs, said marijuana use has compromised the state’s workforce. In February, Wellener said, more than half the applicants who came to her company looking for work failed the required drug tests because of THC use.”
Employers can fire employees for off the job marijuana use, even within the context of a state medical marijuana program.

Marijuana industry has vowed to fight this and make employee drug use a top priority…
Legalization may even have helped CO’s black market in marijuana

• A Colorado drug dealer says that if anything, legalization has helped his business because “it’s over priced, it’s being taxed way too high.”

CO police already see expanded black markets as inevitable

• A Colorado Springs police lieutenant stated that “[Legalization] has done nothing more than enhance the opportunity for the black market. If you can get it tax-free on the corner, you’re going to get it on the corner.”

Why did marijuana initiatives succeed in Alaska, Oregon, and DC in 2014? Follow the money.

Money Talks: the pro-marijuana lobby was responsible for ~96% of campaign spending.

Campaign spending on 2014 marijuana initiatives (AK, OR).

Source: SAM
People are already having second thoughts in Colorado

- In November 2014, 31 Colorado cities voted on the issue of selling marijuana for recreational use.
- Of those 31 cities, 26 – or 84% – voted to ban such sales.

Source: Colorado Municipal League (https://www.cml.org/Issues/Elections/Election-Results/Election-Results-Retail-Marijuana/)
Well over half of Colorado municipalities have banned marijuana sales since legalization.

Legal status of retail marijuana sales in CO municipalities:
- Unknown: 10
- Sales permitted but subject to local taxation: 27
- Sales permitted: 53
- No sales allowed (prohibition or moratorium): 181

67% of municipalities have banned sales.
Bath Salts, Spice, K2, “Synthetic Marijuana”
Synthetic marijuana

Red X Dawn

Genie

Yucatan Fire

Blaze
Spice Products
Synthetic marijuana

Structurally related to THC, the active compound in marijuana

Basically, five types:
  • JWH-018
  • JWH-073
  • JWH-200
  • CP-47,497
  • Cannabicyclohexanol

Two synthesized at Clemson in the 1980s for research purposes

Most made in China, India and Asia then routed through Europe
DEPARTMENT OF JUSTICE
Drug Enforcement Administration

21 CFR Part 1308
[Docket No. DEA–345N]

Schedules of Controlled Substances:
Temporary Placement of Five
Synthetic Cannabinoids Into
Schedule I

AGENCY: Drug Enforcement Administration (DEA), U.S. Department of Justice.

ACTION: Notice of Intent.

SUMMARY: The Deputy Administrator of the Drug Enforcement Administration (DEA) is issuing this notice of intent to temporarily place five synthetic cannabinoids into the Controlled Substances Act (CSA) pursuant to the temporary scheduling provisions under 21 U.S.C. 811(h) of the CSA. The substances are 1-pentyl-3-(1-naphthoyl)indole (JWH–018), 1-butyl-3-(1-naphthoyl)indole (JWH–073), 1-[2-[4-morpholinyl]ethyl]-3-(1-naphthoyl)indole (JWH–200), 5-(1,1-dimethylheptyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (CP–47,497), and 5-(1,1-dimethyloctyl)-2-[(1R,3S)-3-hydroxycyclohexyl]-phenol (cannabicyclohexanol; CP–47,497 C8 homologue). This intended action is

01 March 2011: 5 Substances Temporarily Scheduled for One Year

Included in the DEA Notice:
JWH-018
JWH-073
JWH-200
CP-47,497
CP-47,497 C8 homologue

HU-210 previously scheduled

Only 6 compounds on the DEA list:
There are 100+ of these synthetic compounds- “A Moving Target”
Synthetic marijuana isn’t marijuana

Plant matter dried
Chemical is dissolved in a liquid then sprayed on plant matter
Mixture is then smoked or ingested
Synthetic Marijuana
Sold as herbal incense
- Substances have no odor
- Sold as plant food (Bonsai - 18)
- Not for human consumption
What it does to you

HIGH heart rate (120-150)
Convulsions
Anxiety attacks
HIGH blood pressure
Disorientation
Hallucinations and paranoia
  • Monsters demons aliens
  • Suicidal thoughts and actions
It looks like marijuana but it feels like LSD
Legal action

The DEA has made synthetic marijuana a Schedule 1 substance of the Controlled Substance Act

- Like LSD, heroin and cocaine
- Illegal to manufacture, distribute possess, import and export synthetic cannabinoids

Done to avoid an imminent hazard to public safety
Bath Salts

They are not your grandma’s bath salts!
Bath Salts / Plant Food Products
### Alternate Names For Bath Salts

<table>
<thead>
<tr>
<th>Arctic Blast</th>
<th>Cotton Cloud</th>
<th>Mystic</th>
<th>White Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bayou Ivory Flower</td>
<td>Dynamite Dynamite Plus</td>
<td>Ocean Snow</td>
<td>White Horse</td>
</tr>
<tr>
<td>Bloom</td>
<td>Energizing Aromatherapy Powder</td>
<td>Pure White</td>
<td>White Knight</td>
</tr>
<tr>
<td>Blue Magic</td>
<td>Euphoria</td>
<td>Red Dove</td>
<td>White Lightning</td>
</tr>
<tr>
<td>Blue Magic</td>
<td>Gold Rush</td>
<td>Route 69</td>
<td>White Rush</td>
</tr>
<tr>
<td>Blue Silk</td>
<td>Hurricane Charlie</td>
<td>Scarface</td>
<td>Wicked X</td>
</tr>
<tr>
<td>Bolivian Bath</td>
<td>Ivory Fresh</td>
<td>Snow Day</td>
<td>Wicked XX</td>
</tr>
<tr>
<td>Bonsai Winter Boost</td>
<td>Ivory Wave</td>
<td>Snow Leopard</td>
<td>Zoom</td>
</tr>
<tr>
<td>C Original</td>
<td>Ivory Wave Ultra</td>
<td>Tranquility</td>
<td></td>
</tr>
<tr>
<td>Cloud 10</td>
<td>Lady Bubbles</td>
<td>Vanilla Sky</td>
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<tr>
<td>Cloud 10 Ultra</td>
<td>Lunar Wave</td>
<td>White China</td>
<td></td>
</tr>
<tr>
<td>Cloud 9</td>
<td>Mr. Nice Guy</td>
<td>White Dove</td>
<td></td>
</tr>
</tbody>
</table>
Bath salts

A Kentucky woman became convinced that her 2 year old was a demon. She picked the child up and dropped him on his head.

A Mississippi man cut his face and stomach with a hunting knife.

A Mentor man tried to hang himself with a belt after snorting bath salts.
Bath salts

No legitimate use for bath water—marketed “for novelty use only”

Mimics cocaine, LSD and methamphetamine

Snort, inject and ingest
What it does to you

Cause paranoia, hallucinations, suicidal
Can’t sleep
Bizarre behavior
Rapid heart rate
Difficulty breathing
Much longer duration than synthetic marijuana
Past Year Drug Use by 12th Grade Students: MTF, 2012

- Marijuana: 36%
- Synthetic Cannabis: 11.3%
- Synthetic Cathinones: 1.3%
- MDMA: 3.8%
- Hallucinogens: 5.0%
- LSD: 2.10%

Percentage of U.S. Students (Grades 9 to 12) Reporting Past Year Alcohol and Other Drug Use, 2012 (N=3,884)

- Alcohol: 57%
- Marijuana: 39%
- Synthetic Marijuana: 12%
- Rx Pain Relievers: 10%
- Rx Stimulants: 9%
- Ecstasy: 8%
- Cocaine: 7%
- Inhalants: 7%
- OTC Cough Medicine: 7%
- Crack: 4%
- Methamphetemine: 4%
- Salvia: 4%
- Bath Salts: 3%

Concluding thoughts
BBQ Questions:

• Are your relationships better off when people use more marijuana?

Legal marijuana and marginalized communities

- How has alcohol legalization (or gambling or tobacco) affected marginalized communities?
"We're at a tipping point where it's starting to feel like marijuana legalization is no longer a question of if -- but when. But what about the other drugs?... Many of the reasons why marijuana legalization makes sense can be applied to drugs more generally."

-HuffPost, Drug Policy Alliance
• Bipartisan Co-Chairs (Kennedy + Frum)
  • Launched in 2013
  • Over 250,000 press mentions
• Public Health Scientific Advisory Board
• 30 state-wide affiliates, 1 int’l. affiliate
What is SAM, and what does it do?

1. To inform public policy with the science of today’s marijuana.

2. To have honest conversations about reducing the unintended consequences of current marijuana policies, such as lifelong stigma due to arrest.

3. To prevent the establishment of Big Marijuana that would market marijuana to children — and to prevent Big Tobacco from taking over Big Marijuana. Those are the very likely results of legalization.

4. To promote research of marijuana’s medical properties and produce pharmacy-attainable medications.
Thank you!

Kevin@learnaboutsam.org
www.learnaboutsam.org