## "Up In Smoke! Weed, THC, Delta 8, and Legalization"

Geoff Wilson, LCSW, LCADC

The Offices of Paul Dalton/ Lexington Counseling & Psychiatry

### A Case

As a teenager, Kevin Bright suffered from depression and anxiety. He started smoking pot at around 15 years old to self-medicate. As his tolerance built up, he started using THC concentrates—the stuff made from those high-potency waxes and oils—which was legal and easily available in the Bay Area suburb where he grew up. His personality began to unravel, his father, Bart, told me. He was constantly irate. He attempted suicide several times—once by ingesting pills, once by trying to hang himself, and another time by driving his car into the Bay. Then he began developing full-blown delusions, imagining that the FBI was after him. When he called his parents, he would scream at them in gibberish. Eventually, at 29 years old, he put a plastic bag over his head and breathed nitrous oxide through a tube until he suffocated to death. How Weed Became the New OxyContin, LEIGHTON WOODHOUSE.

## Agenda

- Will provide an update on the prevalence of Marijuana/THC use in the United States and changes in potency.
- Will discuss the impact of marijuana/THC products on brain development.
- Will review status of legalization in Kentucky and the impact seen on other states.

## "How Weed Became the New OxyContin"

Big Pharma and Big Tobacco are helping market high-potency, psychosis-inducing THC products as your mother's 'medical marijuana'



## "How Weed Became the New OxyContin"

- In 2012, Colorado legalized marijuana. In the decade since, 18 other states have followed suit. As billions of dollars have flowed into the new above-ground industry of smokable, edible, and drinkable cannabis-based products, the drug has been transformed into something unrecognizable to anyone who grew up around marijuana pre-legalization.
- Addiction medicine doctors and relatives of addicts say it has become a hardcore drug, like cocaine or methamphetamines. Chronic use leads to the same outcomes commonly associated with those harder substances: overdose, psychosis, suicidality. And yet it's been marketed as a kind of elixir and sold like candy for grown-ups.

## Times They are a Changing!

- "From Big Tobacco to Big Pharma to Big Marijuana—it's the same people, and the same pattern."
- In the 1960s, the stuff the hippies were smoking was less than 2% THC. By the '90s, it was closer to 5%. By 2015, it was over 20%. "It's a freak plant that resembles nothing of what has existed in nature," said Laura Stack, a public speaker who has advocated against the industry since her son, Johnny, killed himself three years ago at 19 years old after years of cannabis abuse drove him into psychosis.
- If you're over 30 years old and you used to smoke weed when you were a teenager, the strongest you were smoking was probably 20% THC. Today, teenagers are "dabbing" a product that's three, four, or five times stronger, and are often doing so multiple times a day.

## Marijuana and Youth

- Marijuana is by far the most widely used illicit drug. Almost two out of five 12th graders (39%), more than one out of five 10th graders (22%), and about one in ten 8th graders (10%) reported some marijuana use in their lifetime.
- Among 12th graders, 31% reported some use in the past year, and 20% reported some use in the past month. Among 10th graders, the corresponding percentages were 17% and 10%, respectively, and among 8th grade students, 7% and 4%.

## Covid Impact on Availability of Substances

- To assess the impact of the pandemic, the investigators issued a survey between mid-July and mid-August 2020, which 12th graders could complete outside of school.
- Analysis of the responses revealed that students perceived a sharp decrease in availability of marijuana and alcohol in the months after the onset of the pandemic. For marijuana, the fraction of students who reported "fairly" or "very" easy access dropped by 17 percentage points, from 76% in the spring before the pandemic to 59% during the pandemic, and for alcohol it dropped by 24 percentage points, from 86% to 62%.
- These were the largest year-to-year decreases in perceived availability of marijuana and alcohol ever recorded since the survey began in 1975.

## 2020 Supplemental Survey

- "Last year brought dramatic changes to adolescents' lives, as many teens remained home with parents and other family members full time," said NIDA Director Nora D. Volkow, M.D.
- "It is striking that despite this monumental shift and teens' perceived decreases in availability of marijuana and alcohol, usage rates held steady for these substances. This indicates that teens were able to obtain them despite barriers caused by the pandemic and despite not being of age to legally purchase them."

#### U.S. Students Reporting Any Past-Year Illicit Drug Use\*

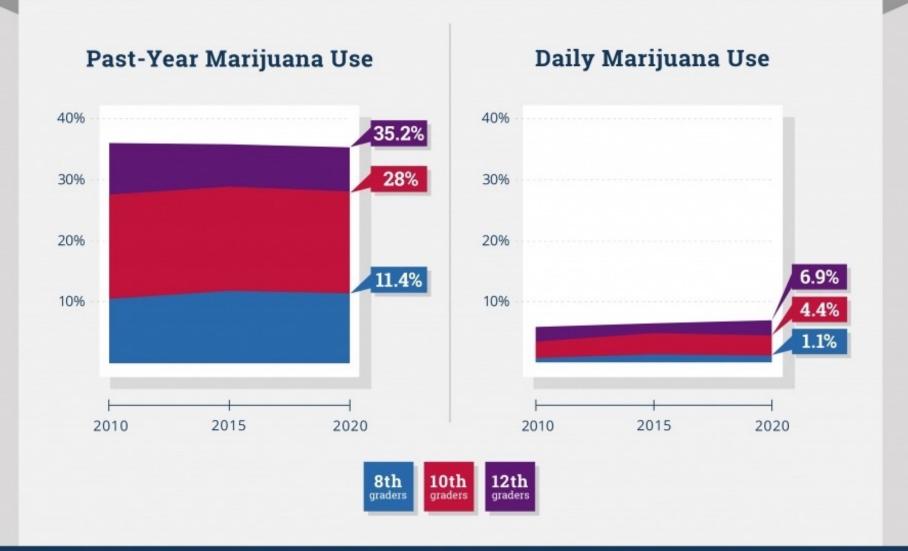


\*Illicit drug use in this survey was defined as use of marijuana, LSD, other hallucinogens, crack, other cocaine, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders.

Source: 2021 Monitoring the Future Survey



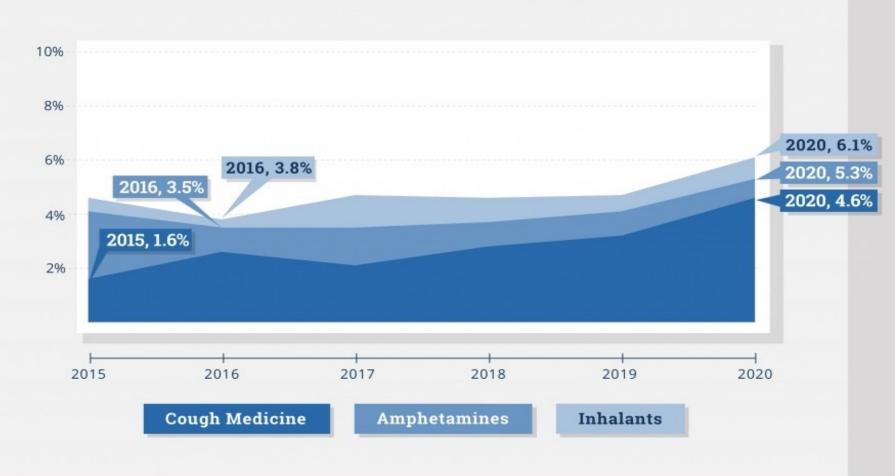
#### Marijuana Use Remains Steady





#### Amphetamine, Inhalant & Cough Medicine Misuse Trending Upward Among Eighth Graders

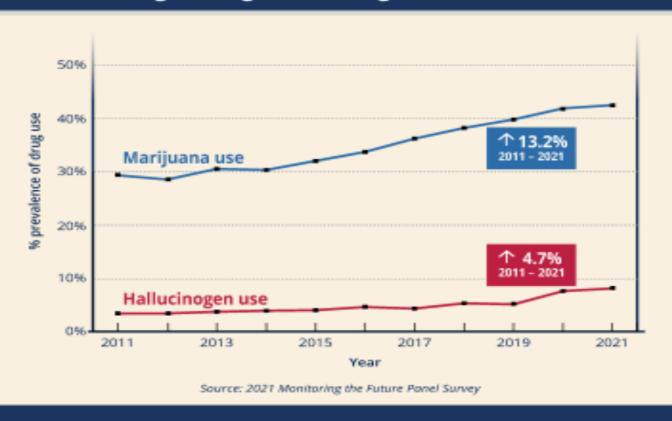
#### Past-Year Substance Misuse Among Eighth Graders





# Marijuana and Hallucinogen use among young adults reached all time-high in 2021

Historic Highs in Past-Year Marijuana and Hallucinogen Use Among Young Adults (Ages 19-30) in 2021





## Survey Results

- Past-month marijuana vaping, which had significantly decreased in 2020, rebounded to pre-pandemic levels in 2021.
- Past-year, past-month, and daily marijuana use (use on 20 or more occasions in the past 30 days) reached the highest levels ever recorded since these trends were first monitored in 1988. The proportion of young adults who reported past-year marijuana use reached 43% in 2021, a significant increase from 34% five years ago (2016) and 29% 10 years ago (2011).

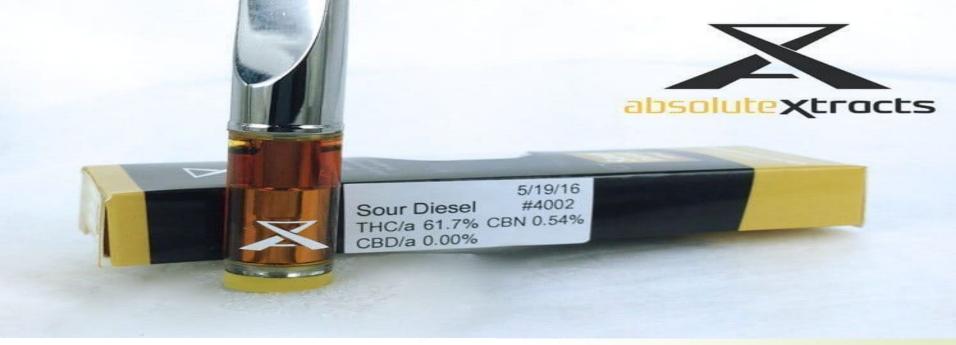
## Survey Results

- Binge drinking (five or more drinks in a row in the past two weeks) rebounded in 2021 from a historic low in 2020, during the early stages of COVID-19 pandemic. On the other hand, high-intensity drinking (having 10 or more drinks in a row in the past two weeks) has been steadily increasing over the past decade and in 2021 reached its highest level ever recorded since first measured in 2005.
- Past-year hallucinogen use had been relatively stable over the past few decades until 2020, when reports of use started to increase dramatically. In 2021, 8% of young adults reported past-year hallucinogen use, representing an all-time high since the category was first surveyed in 1988.
- Types of hallucinogens reported by participants included LSD, MDMA, mescaline, peyote, "shrooms" or psilocybin, and PCP.

## Vaping THC











# Smoking Cannabis in an E-Cig

- One in every 11 teens has used marijuana in electronic cigarettes, according to a research published Monday in <u>JAMA Pediatrics</u>, the pediatrics-focused peer-reviewed journal of the American Medical Association.
- Of the slightly more than 20,000 teens surveyed in the school-based study, 9% self-reported that they had vaped marijuana. That extrapolates to 2.1 million middle and high school students using e-cigarettes to get high on cannabis products.

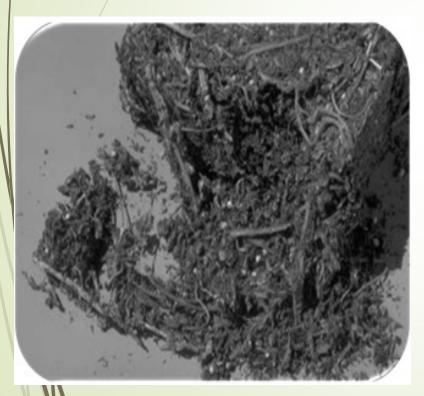
## Prevalence of Adolescent Cannabis Vaping:

## A Systematic Review and Meta-analysis of US and Canadian Studies

This systematic review and meta-analysis reviewed 17 unique studies from the US and Canada, with a total of 198 845 adolescents, and found that the lifetime prevalence of cannabis vaping doubled from 2013 to 2020 (6.1% to 13.6%), past 12-month use doubled from 2017 to 2020 (7.2% to 13.2%), and the 30-day prevalence of cannabis vaping increased 7-fold from 2013 to 2020 (1.6% to 8.4%). Preference for cannabis products may be shifting from dried herb to cannabis oil.

### Natural vs. Man Made

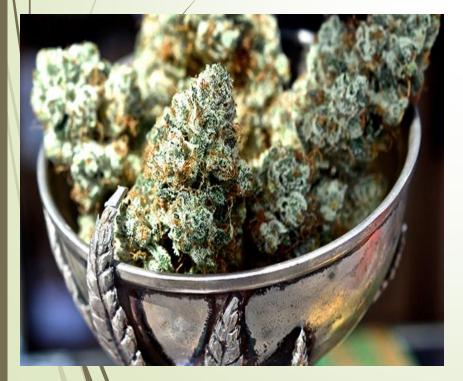
1%THC vs. 37.2%THC



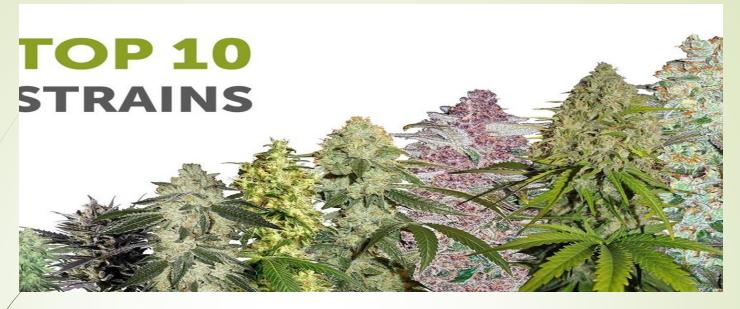


## HIGH TIMES US Cannabis Cup Denver: Highest THC Strains

- Colorado Indica Flower:Chem D.O.G. by NextHarvest 32.13%
- Sativa Concentrate: Platinum Sour Diesel Isolate by Native Roots Extracts - 82.22%







- #1 Godfather OG
- Strain: Indica-dominant strain (60%/ 40%) with over 34% THC
- Genetics: The strain's heritage is the proprietary secret of California Herbal Remedies.
- Reputation: This award-winning strain has been around for a while, but some users warn it will leave you couch-locked while others seek that immobility to relieve medical problems.
- User highlights: Godfather OG will hit your head quickly. It explodes and spreads as a full-body euphoria, leaving you calm and deeply relaxed. Regular cannabis users appreciate the sedation, but it can interfere with work and studies.

## Edible Marijuana Products











# Which one is the real Reese's Cup??



## Marijuana Candy/Edible Products

In Oakland and Emeryville, California four individuals pleaded guilty for their role to manufacture and distribute marijuana plants and marijuana products that mimicked well known candy and soft-drink products. Some of the products include "Munchy Ways," "Pot Tarts," "Twixed" and "Allmy Joy,"



## Issues with Edible Marijuana

- Dr. Dan Hehir from the Telluride Medical Center found high potency edible marijuana products may also be related to the higher rate or ER visits. Smoking the drug gives users a more consistent and fastacting dose of THC roughly 5 milligrams whereas the THC in edible marijuana products takes longer to go into effect, leading many users to overeat and ingest too much of the chemical.
- "Eating just one 100mg edible would be like smoking 20 hits of marijuana," Hehir wrote.
   "This may be possible for a heavy user, but for many it's enough to create problems."

### Serious Issues with Edibles!!

- Dr. Richard Zane, head of the Department of Emergency Medicine at the University of Colorado Hospital, says the increase coincides with the legalization of recreational marijuana.
- Dr. Zane says young, otherwise healthy adults are showing up at his emergency room agitated and anxious. He says some are hallucinating.
- "They will say they see things or hear things that aren't there," Zane says. "They see things on the wall or smell things."

# Dabs-Butane Honey Oil (BHO)



# Dabs-Butane Honey Oil (BHO)





### Wax, Dabs, BHO

Dabs are concentrated doses of cannabis that are made by extracting THC and other cannabinoids using a solvent like butane or carbon dioxide, resulting in sticky oils also commonly referred to as wax, shatter, budder, and butane hash oil (BHO).

### Wax, Dabs, BHO, Shatter

- One of the most unsettling facts about dabs is that thanks to the super-concentrated power of BHO, for the first time it seems possible to "overdose" on cannabis. While still not lethal, taking more than your personal limit of dabs can lead to uncomfortable highs and, in some cases, passing out.
- After all of the chanting that "you can't overdose on marijuana," concentrates could be undermining advocates' message of safety. There have also been reports of more intense withdrawal symptoms for dabbers, but again, the information is limited. (Leafly, Rachel Chambers, 10/28/13)

## Wax, Dabs, BHO, Shatter





## Wax, Dabs, BHO, Shatter



# How to Make Weed Dabs at Home With a Hair Straightener

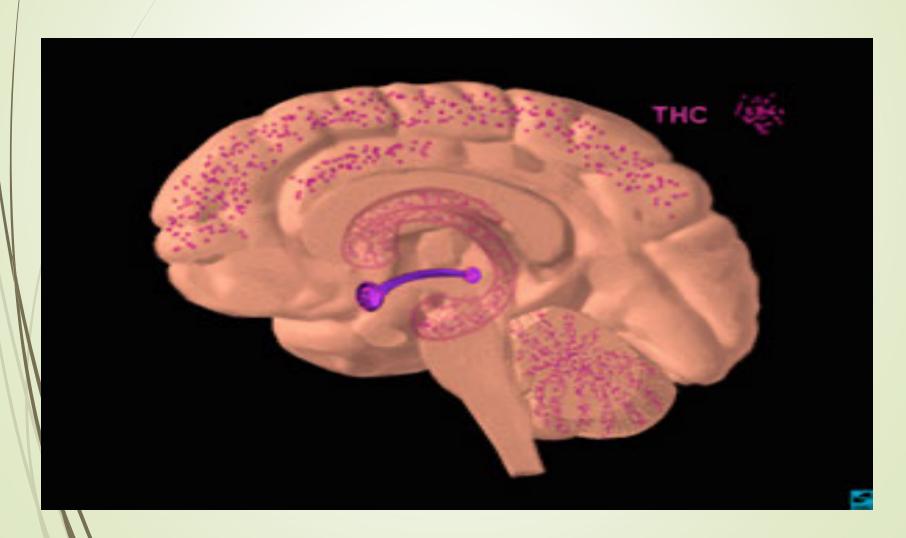
The latest cannabis craze is a technique for making highly concentrated marijuana extracts, also known as "dabs" by applying measured heat and pressure to a marijuana bud using a common hair straightener.



## Where does THC like to go??

- Some drugs love water in our bodies and hate fat: Cocaine, Alcohol, Opiates...... How long will Cocaine stay in the body?
- Some drugs hate water and love fat: Marijuana!! How long can you pick up Marijuana in a urine screen? And it hates water....think about how long it stays in the fat in our body!!
- Where is the highest concentration of fat in the human body??

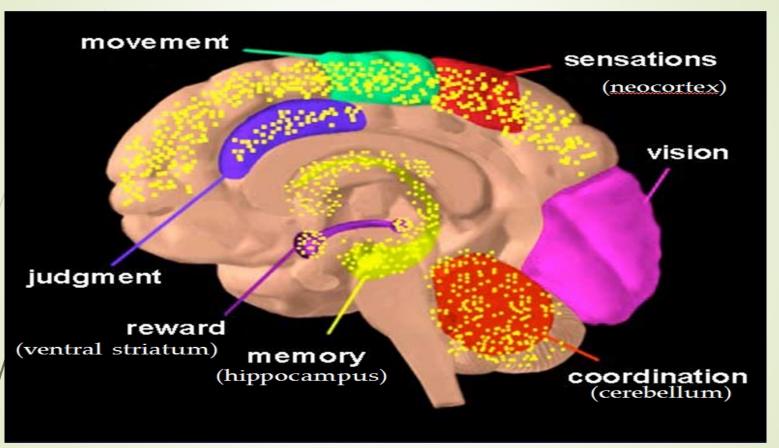
# Where Does THC Like To Go??



### **Short Term Effects**

- Marijuana over-activates parts of the brain that contain the highest number of these receptors. This causes the "high" that users feel. Other effects include:
- Altered senses (for example, seeing brighter colors)
- Altered sense of time
- Changes in mood
- Impaired body movement
- Difficulty with thinking and problem-solving
- Impaired memory
- (NIDA, 2014)

#### Effects of THC on the Brain



https://www.drugabuse.gov/publications/drugfacts/marijuana

### **Short Term Effects**

- When a person smokes marijuana, THC quickly passes from the lungs into the bloodstream. The blood carries the chemical to the brain and other organs throughout the body
- THC acts on specific brain cell receptors that ordinarily react to natural THC-like chemicals in the brain. These natural chemicals play a role in normal brain development and function.
- Marijuana also affects brain development. When marijuana users begin using as teenagers, the drug may reduce thinking, memory, and learning functions and affect how the brain builds connections between the areas necessary for these functions.

### Four Areas to Focus On:

### 1) Mid-Brain or "Old Brain":

The way-station for incoming sensory information on the way to the cortex.

Mid-Brain is the SURVIVAL Brain

What handles the next thirty seconds.

Plays major role in how brain reacts to STRESS!!!

Drugs and Alcohol can become SURVIVAL.

### 2) Pre-Frontal Cortex:

Seat of the self and personality

Center for love, morality, decency, responsibility, spirituality

Our Conscience

If it is immature, it's the neurobiological explanation for why people show poor judgment and act before thinking.

Average age of maturity?\_\_\_\_\_

### 3) Nucleus Accumbens:

It directs motor behavior.

Is responsible for how much effort we will expand in order to seek rewards, "Pay Offs".

If it is immature, adolescents will lean toward activities that require little effort, yet produce high "Pay Off", like video games, drugs, etc.

### 4) Amygdala:

It integrates our emotional reactions to pleasurable and aversive experiences.

Lights up for food, sex, survival.

Lights up for cues to using and for using drugs.

As it develops, two distinct behavioral effects tend to occur:

-Adolescents react explosively to situations rather than calm.

-Adolescents have a propensity to misread neutral facial expressions as being angry/disappointed.

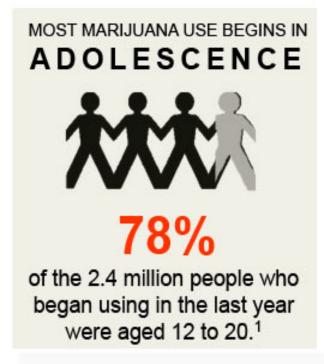
# Long Term Effects of Cannabis Use

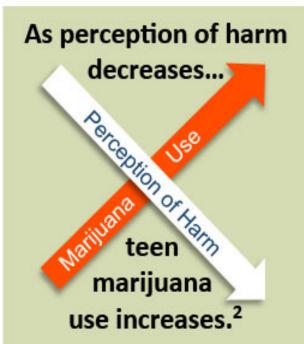
A study showed that people who started smoking marijuana heavily in their teens and had an ongoing cannabis use disorder lost an average of eight IQ points between ages 13 and 38. The lost mental abilities did not fully return in those who quit marijuaná as adults. Those who started smoking marijuana as adults did not show notable IQ declines (Meier, 2012).

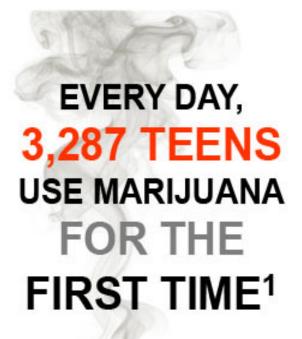


# MARIJUANA USE & EDUCATIONAL OUTCOMES

Studies show that marijuana interferes with attention, motivation, memory, and learning. Students who use marijuana regularly tend to get lower grades and are more likely to drop out of high school than those who don't use. Those who use it regularly may be functioning at a reduced intellectual level most or all of the time.

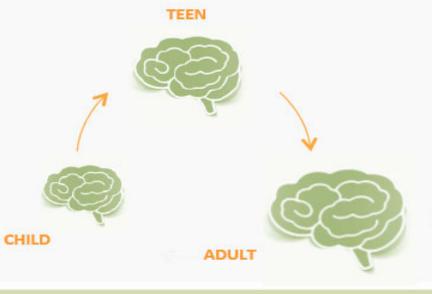






#### MARIJUANA MAY HURT THE DEVELOPING TEEN BRAIN

The teen brain is **still developing**and it is especially vulnerable to drug use.





Regular heavy marijuana use by teens can lead to an IQ drop of up to **8** points<sup>3</sup>

#### HEAVY MARIJUANA USE BY TEENS IS LINKED TO4:

#### **Educational Outcomes**



#### lower grades and exam scores





to graduate from HS or college

#### **Life Outcomes**



lower satisfaction with life





more likely to be unemployed



# Is Marijuana Addictive???

- What percentage of the population develops Marijuana Addiction, Abuse, Dependence, etc..??
- "approximately 8% of marijuana users develop a pattern of abuse and dependence problems".

(NORML, recorded testimony to Congress 1999 Cannabis Dependence: Its Nature, Consequences and Treatment, Marlatt, 2006)

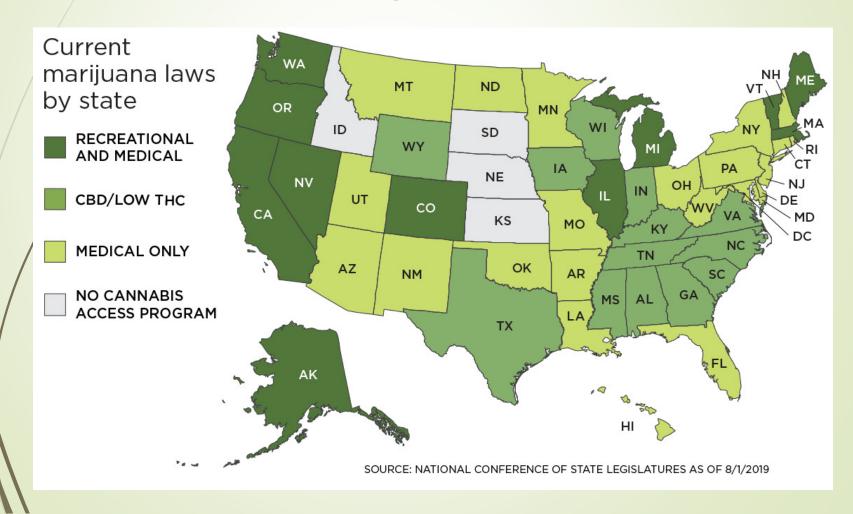
## Withdrawal Syndrome

But quitting THC products of the potency today is "almost impossible," Stuyt said, comparing its addictive power to tobacco. The days of marijuana addiction being merely "psychological" are over. "There is a definite withdrawal syndrome that includes irritability, anger, anxiety, massive cravings, can't sleep, can't eat," said Stuyt.

# Cannabinoid Hyperemesis Syndrome

- Cannabinoid hyperemesis syndrome (CHS) is a condition that leads to repeated and severe bouts of vomiting. It is rare and only occurs in daily long-term users of marijuana.
- In the brain, marijuana often has the opposite effect of CHS. But in the digestive tract, marijuana seems to have the opposite effect. It actually makes you more likely to have nausea and vomiting.
- Prodromal phase-Early morning nausea, belly pain
- Hyperemetic phase-Nausea, vomiting, less food intake, belly pain.
- Recovery phase-Symptoms go away, normal eating: Hey Guys......I'm going green!!"

# Medical Cannabis States 2/2020



### **DEA Schedule 1-5 Drugs**

- Examples of substances listed in ScheduleI:Marijuana (cannabis)
  - Heroin
  - LSD
  - Peyote (mescaline)
  - Methaqualone (Quaalude)
  - 3,4methylenedioxymeth amphetamine ("ecstasy")
  - "bath salts"

- Schedule 2: Vicodin, Cocaine, Meth, OxyContin, Adderall
- Schedule 3: Tylenol with Codeine, Steroids, Ketamine, Testosterone
- Schedule 4: Xanax, Valium, Ativan, Ambien, Tramadol
- Schedule 5: Robitussin AC, Lomotil, Lyrica

## Hemp vs Marijuana

- Both are considered Cannabis sativa but there is a distinction between hemp and marijuana.
- Marijuana contains significant amounts of the psychoactive phytocannabinoid known as THC.
- Industrial Hemp is cultivated very differently and has very little if any THC after extraction.
- Cannabidiol (CBD) the non-psychoactive component of marijuana.
- Hemp CBD products can technically come from either cannabis plant – it just really boils down to being below that magic number of 0.3% of THC in the product.

# Phytocannabinoids Marijuana vs Hemp

- Tetrahydrocannabinol (THC)
  - Psychoactive
  - Has medicinal value

- Centration
  - www.DrJeffreyTucker.com

- Cannabidiol (CBD)
  - Not Psychoactive
  - Has anxiety relieving properties
  - Antagonizes effects of THC
  - Has medicinal value



# Cannabidiol (CBD) modulates many of the effects of THC in cannabis

THC and CBD =

IIIIabis

THC only =



Depending on where you live, you may be able to obtain a medical cannabis card for conditions like:

- Alzheimer's interference with amyloid plaque formation
- Glaucoma lowers intraocular pressure
- Multiple sclerosis may relieve painful muscle contractions
- Crohn's Disease/IBD enhanced gut permeability
- Adverse effects of chemo/Anorexia appetitestimulating effects
- PTSD improvement in symptoms, undergoing further research
- Arthritis e.g. RA & OA; pain reduction & improvement in mobility
- ► Epilepsy e.g. Darvet's Syndrome
- Chronic pain

HelloMD with Brightfield Group. Usage study. 2017.

www.DWeffreyTucker.com

# Labeling

- Hemp extract is code word for CBD (ex. 28 mg per 1 ml serving)
- Hemp seed is made from the seed and virtually no CBD; they contain omega 3 & 6
- Hemp oil is a carrier or base that they are using does not have CBD
- Hemp stalk is a source of many beneficial phytocannabinoids
- Phytocannabinoid may contain some CBD
- CBDA cannabinoid; you won't know how much is CBD unless you test it.

www.DrJeffreyTucker.com

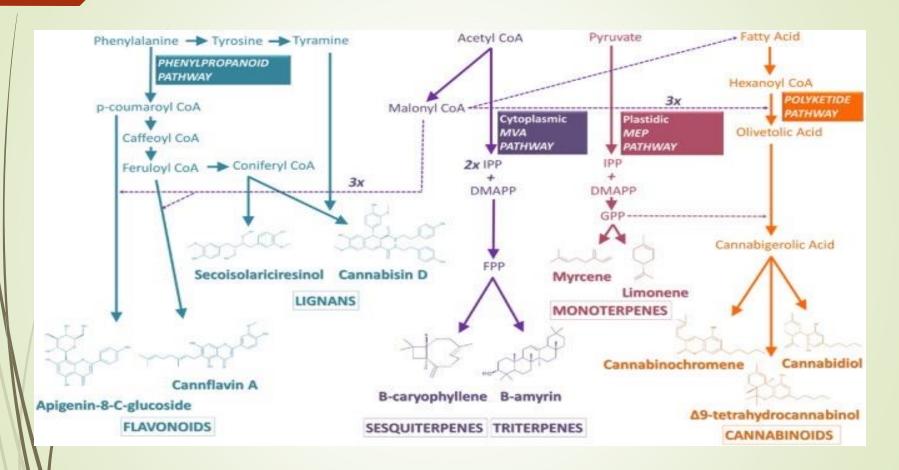


### **BUYER BEWARE!!!!!!**

BTW a 2OZ bottle of pure CBD oil will cost more than the \$24.95.

It is an expensive extraction process!!!!

### **CBD Extraction.....its complicated!**



Source: Andre, C. M., Hausman, J. F., & Guerriero, G. (2016). Cannabis sativa: The Plant of the Thousand and One Molecules. Frontiers in plant science, 7, 19, doi:10.3389/fpls.2016.00019

# Hemp CBD Scorecard by Center for Cannabis Safety



Only 4 companies out of 40 companies made an "A"



nearly half of the companies companies made a D or F.



17 companies were not usda certified and could not provide verification that their products were truly organic.



www.centerforfoodsafety.org

# The FDA Safety Warnings

- CBD has the potential to harm you, and harm can happen even before you become aware of it.
  - CBD can cause liver injury.
  - CBD can affect the metabolism of other drugs, causing serious side effects.
  - Use of CBD with alcohol or other Central Nervous System depressants increases the risk of sedation and drowsiness, which can lead to injuries.
- CBD can cause side effects that you might notice. These side effects should improve when CBD is stopped or when the amount ingested is reduced.
  - Changes in alertness, most commonly experienced as somnolence (drowsiness or sleepiness).
  - Gastrointestinal distress, most commonly experienced as diarrhea and/or decreased appetite.
  - Changes in mood, most commonly experienced as irritability and agitation.
- There are many important aspects about CBD that we just don't know, such as:
  - What happens if you take CBD daily for sustained periods of time?
  - What is the effect of CBD on the developing brain (such as children who take CBD)?
  - What are the effects of CBD on the developing fetus or breastfed newborn?
  - How does CBD interact with herbs and botanicals?
  - Does CBD cause male reproductive toxicity in humans, as has been reported in studies of animals?
- It will take time to discover these answers and others that will arise-so buyer be aware!!!
- https://www.fda.gov/news-events/public-health-focus/fda-regulation-cannabis-and-cannabis-derived-products-including-cannabidiol-cbd

# What About Drug Testing for This?

- SAMHSA (Substance Abuse and Mental Health Services Administration) guidelines.
- Drug tested through urine for THC.
- THC is responsible for marijuana's psychoactivity and euphoria.
- A consumer who uses a high-quality, scientifically vetted hemp-based product at the standard serving size is highly unlikely to test positive for THC.
- Extremely high doses may result in a positive urine screen.
- Consumers need to be fully informed of the specific regulations posed by their employers.

### What's This Delta 8???













### Delta 8: What About It?

- The Agriculture Improvement Act of 2018, also known as the 2018 Farm Bill, legalized hemp and its derived products federally in the US. At the same time, it gave all states the power to legalize hemp and its derived products like delta 8 on a state level.
- Delta 8 THC is a compound that is produced in the hemp plant, however, its produced in small quantities, and this makes extracting it naturally in large quantities almost impossible. Fortunately, delta 9 THC and CBD from the industrial hemp plant can be converted to delta 8 using a chemical process called oxidation.

# Delta 8 in Kentucky

- The Kentucky DOA, in April 2021, released a letter (guidance) to Kentucky hemp license holders claiming that "delta 8 THC is a schedule I controlled substance under federal law and Kentucky laws and that distributing products containing delta 8 is illegal and could lead to expulsion from the hemp licensing program and potential exposure to criminal prosecution".
- In this letter, the Kentucky DOA also claimed that the approved legal limit for delta 9 THC was 0.03%, and since there was no such limit made specifically for delta 8 in the federal hemp laws, it was an illegal substance, and it was therefore prohibited by both federal law and state laws.

# Delta 8 History in Kentucky

- The Kentucky Kemp Association filed a lawsuit against the Kentucky Department of Agriculture and Kentucky State Police after the KYDA failed to rescind its newly released guidance on delta 8 THC. The lawsuit argued that delta 8 was, in fact, federally legal, and the police raids were unwarranted hence the court should stop the Kentucky state police from acting on the KYDA's letter.
- A Boone Circuit Court Judge, Rick Brueggemann, ruled in favor of the Kentucky hemp association and supported delta 8 THC being a legally derived hemp product. A permanent injunction was placed against local law enforcement to protect retailers from being charged with criminal offenses. This was indeed a huge win for delta 8 THC manufacturers and retailers.

### **Delta 8 Concerns**

Since the FDA doesn't regulate the delta 8 THC market, there is a high chance for fake products to be released on the market, and that is why you need to be careful when buying delta 8 products. Research the brand to see if they are federally compliant before you make a purchasing decision.

### Delta 8 Recap.....

- Delta 9 THC; High
- Delta 8: Taking CBD and converting it over to Delta 8 Its an oil that looks a lot like a CBD or THC oil
- Has to have less than .3% Delta 9 THC
- Shocker! You will fail a drug test! It's considered a controlled drug by the DEA
- Let's be clear, its THC! Looks and smells like weed!
- We don't really now yet the impact on the body
- CBD Not Psychoactive
- Delta 8 Definitely Psychoactive Not FDA approved Not Medically vetted
- May be good for , seizures, PTSD, or as one of my clients said last week, "It gets me high Geoff!"

# Legalization of Marijuana in Kentucky

- House Bill 136, a medical cannabis act, was introduced in January 2022, the bill made it past the committee, but it died in the Senate. This bill would have created a medical cannabis program for Kentuckians to access marijuana for medical purposes.
- After the Bill died, Governor Andy Beshear, through an executive order, appointed a 17-member Kentucky Medical Cannabis Committee that will help advise him on providing access to medical cannabis for Kentuckians suffering from chronic pain and other medical conditions.
- Nearly 99 percent of Kentuckians want medical marijuana legalized in the state, according to a report from the Team Kentucky Medical Cannabis Advisory Committee. Of 3,539 responses to an online feedback form conducted by the advisory committee, 3,491 voiced support for medical marijuana, and 48 voiced opposition. The feedback opportunity concluded on Aug. 12.

### References

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- To CBD or Not to CBD? That is the Question: The Neuroscience of CBD Oils; Dr. Merrill Norton Pharm.D.,D.Ph, ICCDP-D, Clinical Associate Professor University of Georgia College of Pharmacy Athens, Georgia mernort@gmail.com
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- (Reynolds, 1988).
- Reuters
- HelloMD with Brightfield Group. Usage study. 2017.
- Center for Disease Control

Questions, comments, concerns??

Geoff Wilson, LCSW, LCADC The Offices of Paul Dalton/Lexington Counseling & Psychiatry 501 Darby Creek Rd., Suite 11 Lexington, KY 40509 859.229.5722 geoffwilson914@gmail.com **GWtrainingconsulting.com**