

What Courts Need to Know About Cannabis Use

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Learning Objectives

- Understand the physiological and psychological effects of cannabis use on the brain that can lead to or impact justice-involvement
- Explain the unique affect of cannabis use that can precipitate justice-involvement or present challenges to court supervision for adolescents
- Recognize the impact on treatment court participation for individuals who use cannabis or who present with a diagnosis of cannabis use disorder

Why is cannabis problematic?

- Impaired driving/parenting/work functioning
- Increase in work-related accidents
- Vehicle crashes
- Emergency department visits
- Brain development
- Psychiatric symptoms
- Addiction/SUD

The Normalization of Marijuana Use





THIS PROPERTY IS 100% NO SMOKING



If smoking occurs during your stay,
a \$250.00 cleaning fee will be billed
to your account.

2022 National Survey on Drug Use and Health

22% of people aged 12 or older (61.9m) used marijuana in the past year

Up from 19% according to the 2021 survey

In 2022 daily, or
near daily
cannabis use
exceeded daily
or near daily
alcohol use



What is the age group experiencing the greatest increase in cannabis use?



Increase in Past Month Marijuana Use By Age Group

• 12-17	-10%
• 18-25	+13%
• 26-34	+65%
• 35-44	+43%
• 45-54	+48%
• 55-64	+455%
• ≥65	+333%



U.S. adult-use markets represent approximately 56% of total global cannabis sales

Worldwide legal industry forecasted to reach \$58b in sales in 2028, fueled by U.S. adult-use market (estimated to be \$46b in U.S. alone by 2028)

Following Legalization in Colorado

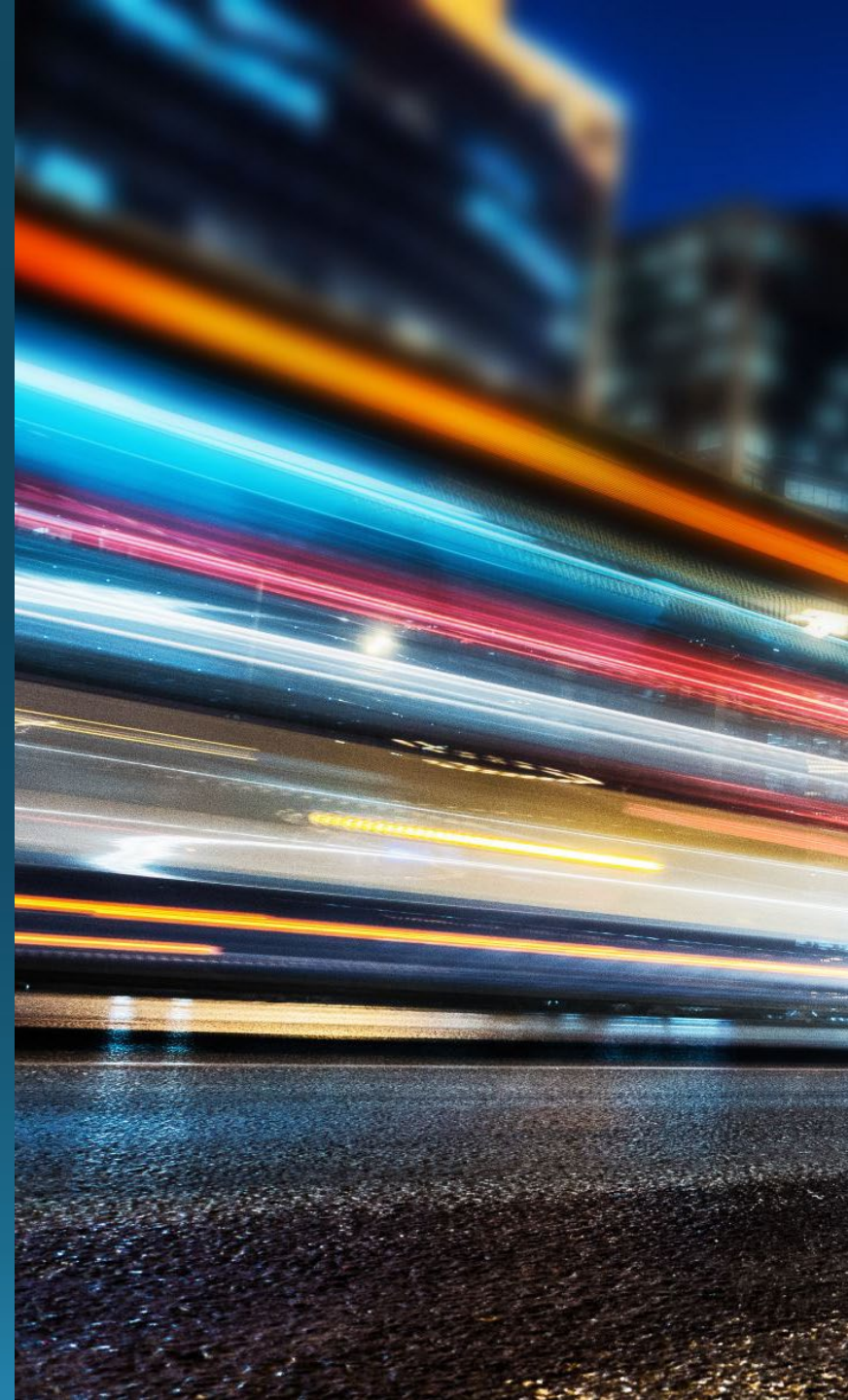
- Marijuana use increased 45% when comparing three years prior to legalization and three years post-legalization
- Marijuana-related traffic deaths increased 151%, all traffic deaths increased 35%

Simultaneous Use

- 42% of drivers with past-year alcohol and cannabis use report any past-year DUI
- Simultaneous cannabis and alcohol use associated with a 2.88x higher odds of cannabis-related DUI

A bad combination

- Alcohol use alone consistently associated with elevated motor vehicle collision risk, but cannabis use alone (at all levels) not *consistently* associated with elevated motor vehicle collision risk
- Combining marijuana with alcohol results in impairment even at doses which would be insignificant were either drug used alone
- Alcohol and cannabis in combination consistently associated with elevated motor vehicle collision risk



Cannabis

Cannabis plant contains dozens of different cannabinoids

Cannabinoids represent a group of substances in the cannabis plant - at least 144 known cannabinoids

Cannabidiol (CBD) and tetrahydrocannabinol (THC) - two of the most common cannabinoids, but act differently in the body

Strains of Cannabis



- Main subspecies of the genus - cannabis indica, cannabis sativa and cannabis ruderalis
- Look different, grown in different climates
- Cannabis indica - higher levels of CBD
- Cannabis sativa - higher levels of THC
- Cannabis ruderalis - naturally high in CBD and low in THC levels

Strains of Cannabis

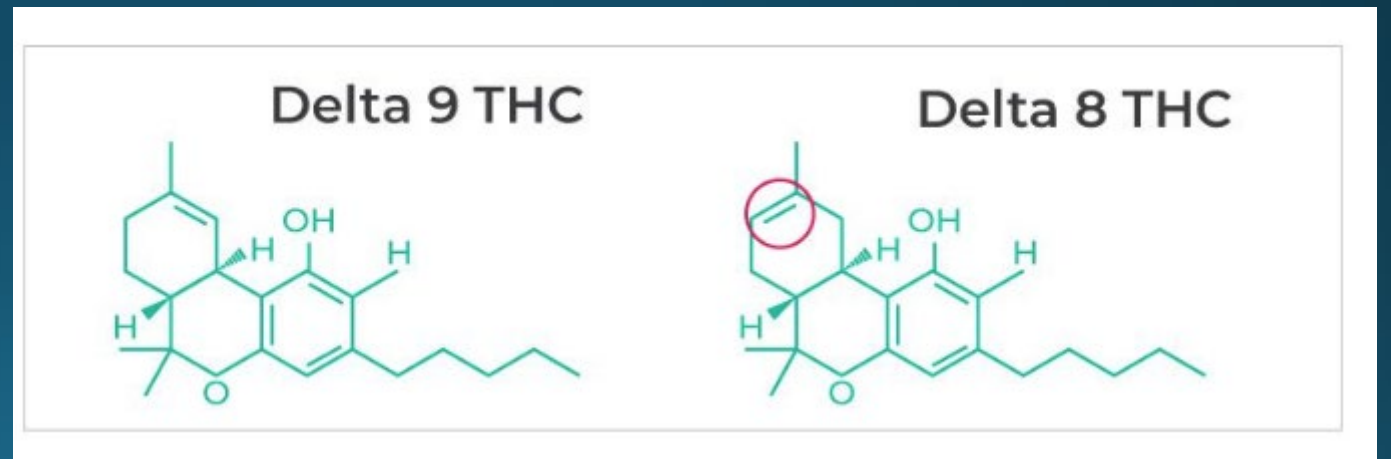
- Each strain has a different concentration of the cannabinoids THC and CBD, as well as other compounds
- All THC is biologically and psychologically active
- CBD is biologically active
- Cultivators and farmers breed different varieties or crossbreeds with characteristics that create hybrids and specific strains (a variety of tastes and effects on the user)

Delta Differences

- Delta 8, delta 9, delta 10
- Unique effects on the human body
- THC found in cannabis plants typically delta 9 - the psychoactive chemical responsible for intoxicating effects
- Delta 8 and 10 found in trace amounts in the cannabis plant and less potent in psychoactive effect than delta 9

Delta 8 and the 2018 Farm Bill

- Sale of delta 8 extracted from hemp legal under Farm Bill
- Delta 8 legally extracted from hemp easily converted to Delta 9



Means of Ingestion

- Marijuana - the dried leaves and flowers (buds) of the cannabis plant; generally smoked
- Hashish - the dried plant resin that is usually mixed with tobacco and smoked or added to foods and baked goods
- Hash oil - liquid that is used sparingly (due to high potency) and added to the tip of a joint or cigarette and smoked
- Concentrates - extracts (dabs, wax or shatter), often vaporized in small quantities due to high THC content



THC and the Brain

- THC structure similar to the brain chemical anandamide
- Because of the similarity, THC attaches to and activates cannabinoid receptors
- The similar structure allows the drug to be recognized by and activate cannabinoid receptors and to alter normal brain communication

THC and the Brain

- Cannabinoid receptors abundant in the parts of the brain that regulate movement, coordination, learning and memory, higher cognitive functions, such as judgment, and pleasure regions
- Activates the brain's reward system - which releases dopamine at levels higher than typically found,
- Teaches the brain to repeat the rewarding behavior

Immediate Effects of Cannabis Use

- Euphoria
- Sense of relaxation
- Heightened sensory perception
- Altered perception of time
- Increased appetite

Common Physical and Psychological Reactions



- Dry mouth
- Dry/red eyes
- Dizziness
- Anxiety
- Paranoia
- Rapid heart rate
- Decreased blood pressure

HYPOTHALAMUS

Controls appetite, hormonal levels and sexual behavior

BASAL GANGLIA

Involved in motor control and planning, as well as the initiation and termination of action

VENTRAL STRIATUM

Involved in the prediction and feeling of reward

AMYGDALA

Responsible for anxiety, emotion and fear

BRAIN STEM AND SPINAL CORD

Important in the vomiting reflex and the sensation of pain

NEOCORTEX

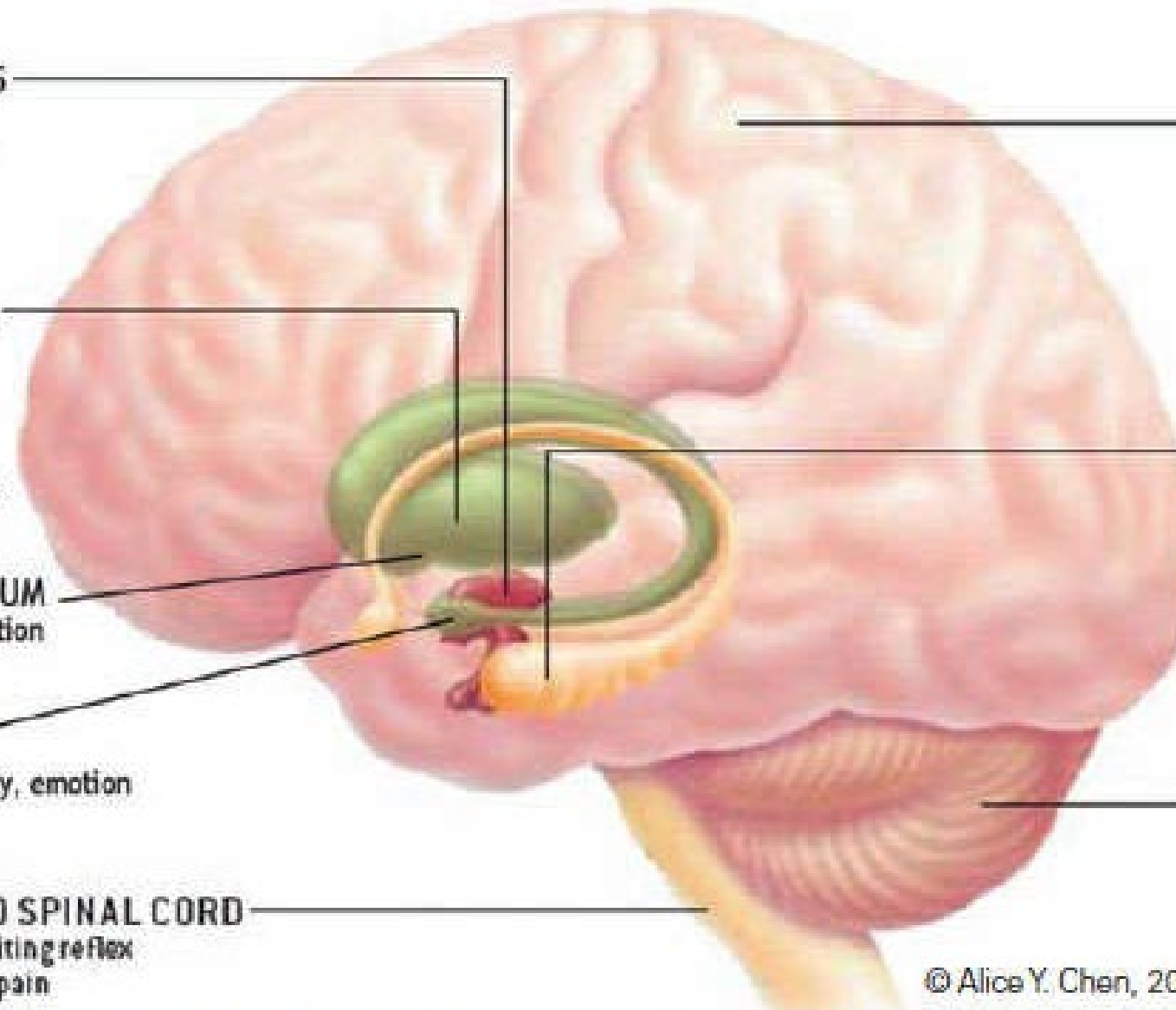
Responsible for higher cognitive functions and the integration of sensory information

HIPPOCAMPUS

Important for memory and the learning of facts, sequences and places

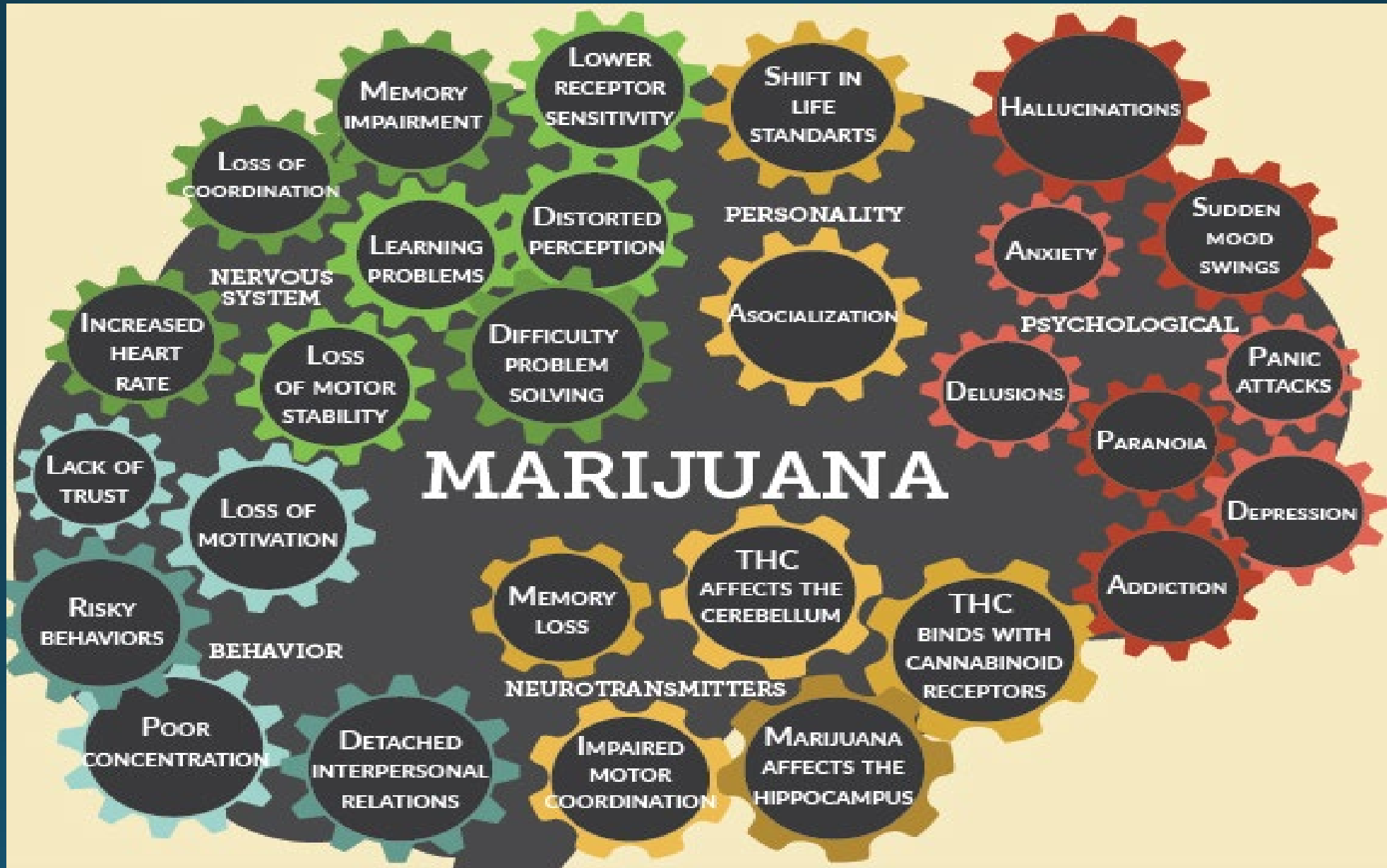
CEREBELLUM

Center for motor control and coordination



© Alice Y. Chen, 2004. Adapted from *Scientific American*.

When marijuana is smoked, its active ingredient, THC, travels throughout the body, including the brain, to produce its many effects. THC attaches to sites called cannabinoid receptors on nerve cells in the brain, affecting the way those cells work. Cannabinoid receptors are abundant in parts of the brain that regulate movement, coordination, learning and memory, higher cognitive functions such as judgment, and pleasure.



Long-Term Effects on the Brain

- Possibly permanent adverse changes in the brain affecting learning, memory, cognitive impairment, reward system
- Significant decline in verbal ability
- Hastens age-related loss of hippocampus neurons - decreased ability to learn new information, including learning from treatment
- Increased risk of head, neck and respiratory cancers

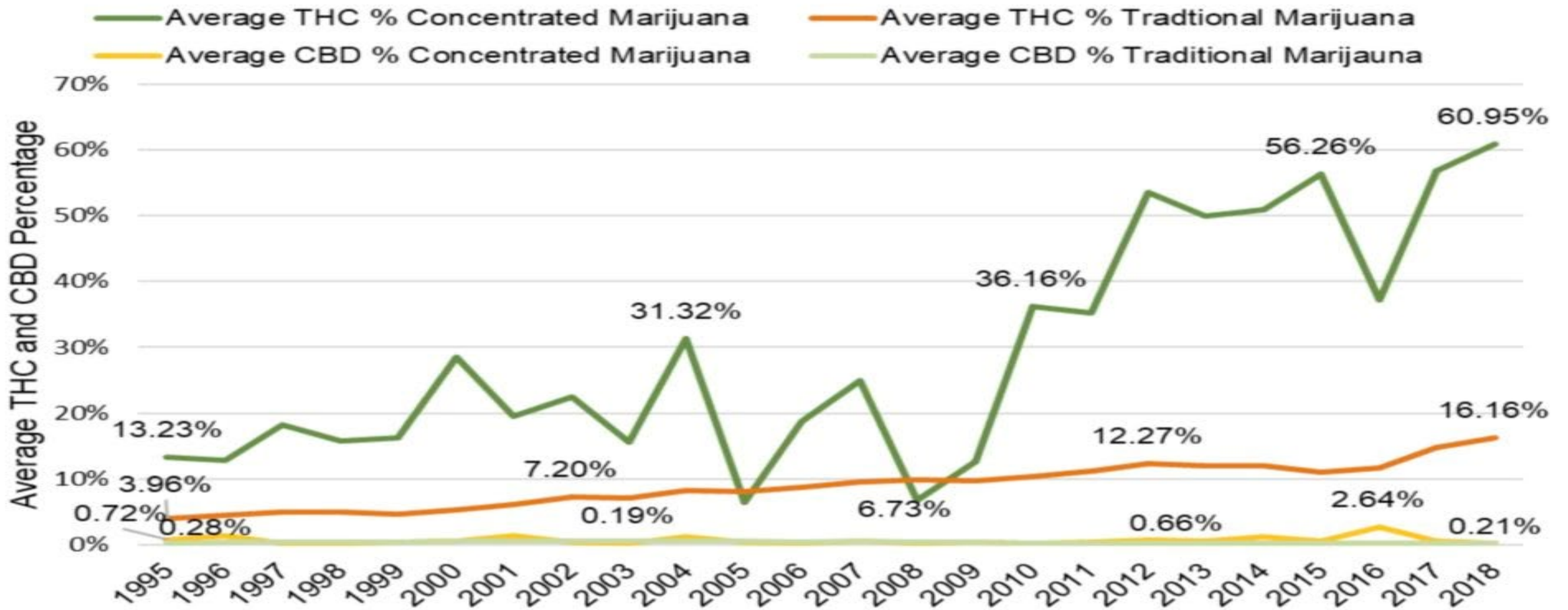


Fetal Health

- Women use cannabis more frequently during pregnancy than any other federally regulated drug
- Prevalence of CUD among pregnant females as high as 26.1%
- Prenatal exposure related to adverse birth consequences including small size for gestational age, neonatal intensive care unit admissions
- Preterm birth
- Childhood outcomes such as autism spectrum disorder, attention-deficit/hyperactivity disorder, symptoms of psychopathology

It's Not Your Grandpa's Weed

Figure 71. Average THC and Cannabidiol Potency of Traditional and Concentrated Marijuana, 1995 – 2018



Source: University of Mississippi

Large Doses or High Potency

- Acute psychosis (usually temporary)
- Hallucinations
- Delusions
- Distrust
- Panic
- Loss of the sense of personal safety
- Hallucinations
- Vomiting
- Tremors
- Anxiety
- Confusion
- Loss of consciousness

Co-occurring Mental Health Disorders

- Cannabis-induced mental health diagnoses include anxiety disorders, depression, psychotic and nonpsychotic bipolar disorder, schizophrenia, amotivational syndrome, disruptive cognitive function, neuropsychological decline and psychotic disorders
- 12% of persons treated for or diagnosed with major depressive disorder also experience CUD
- 24% of those with bipolar disorder use cannabis and 20% experience CUD
- Among patients with schizophrenia, 26.6% exhibit current CUD or meet the criteria for life-time CUD



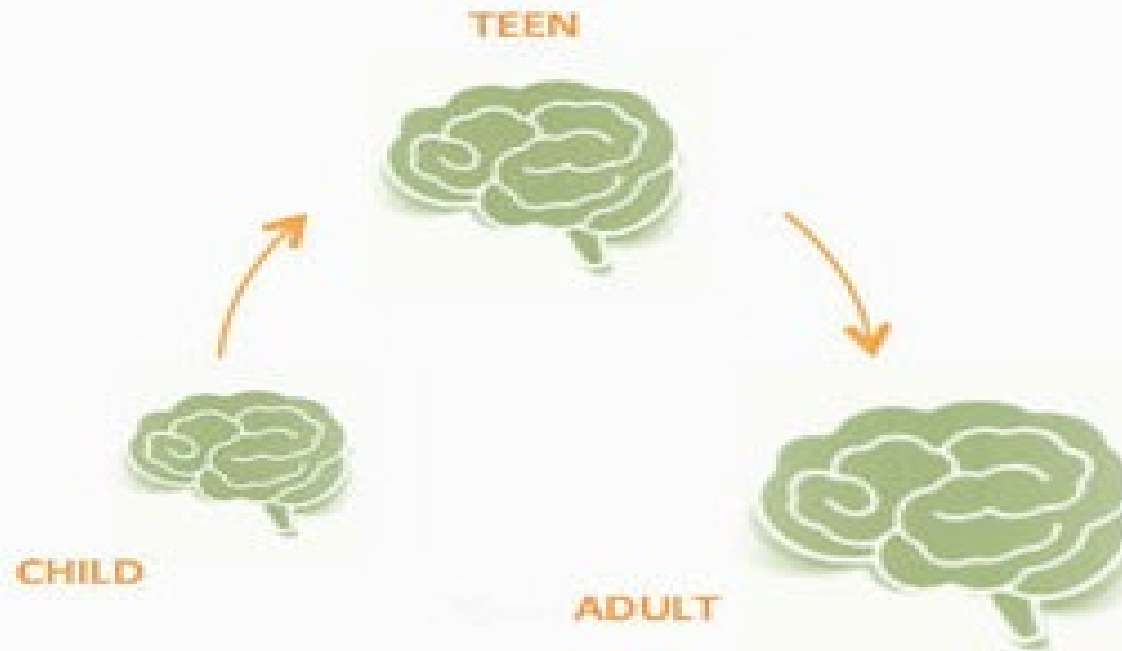
Adolescence

- A time of major biological, neurobiological, social and personal transitions - the “fine-tuning” and reorganization of the brain
- Changes in capacity to reason, regulate emotions, negotiation of major social transitions, opportunities for independent decision making, preparation for entering the adult world of work
- And... a high risk time period

The Adolescent Brain

- Because the endocannabinoid system performs a key regulatory and homeostatic role that undergoes developmental changes during adolescence, brain development critically susceptible to the effects of exposure to cannabis
- Adolescent use found to impair cognition across a number of domains, including executive functioning, processing speed, attention and memory
- Impaired functioning greater than in adult use
- Linked with suicidality among teens and young adults

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



↓ IQ

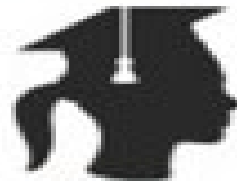
Regular heavy marijuana use by teens can lead to an IQ drop of up to **8 points**³

HEAVY MARIJUANA USE BY TEENS IS LINKED TO⁴:

Educational Outcomes



lower
grades and exam scores



less likely
to graduate
from HS or college



less likely
to enroll in
college

Life Outcomes



lower
satisfaction
with life



more likely to
earn a **lower**
income



more
likely to be
unemployed

What's the difference?

Onset of use in *adulthood*
post-brain maturity does not
result in changes in brain
development

Medical Marijuana Basics

- Physician *recommendation*
- Age restriction
- Specific conditions
- Cultivated and sold by licensed dispensary
- Must be stored in dispensary packaging
- May purchase up to a 45 day supply
- Limited THC content
- Limited means of ingestion



CBD



CBD

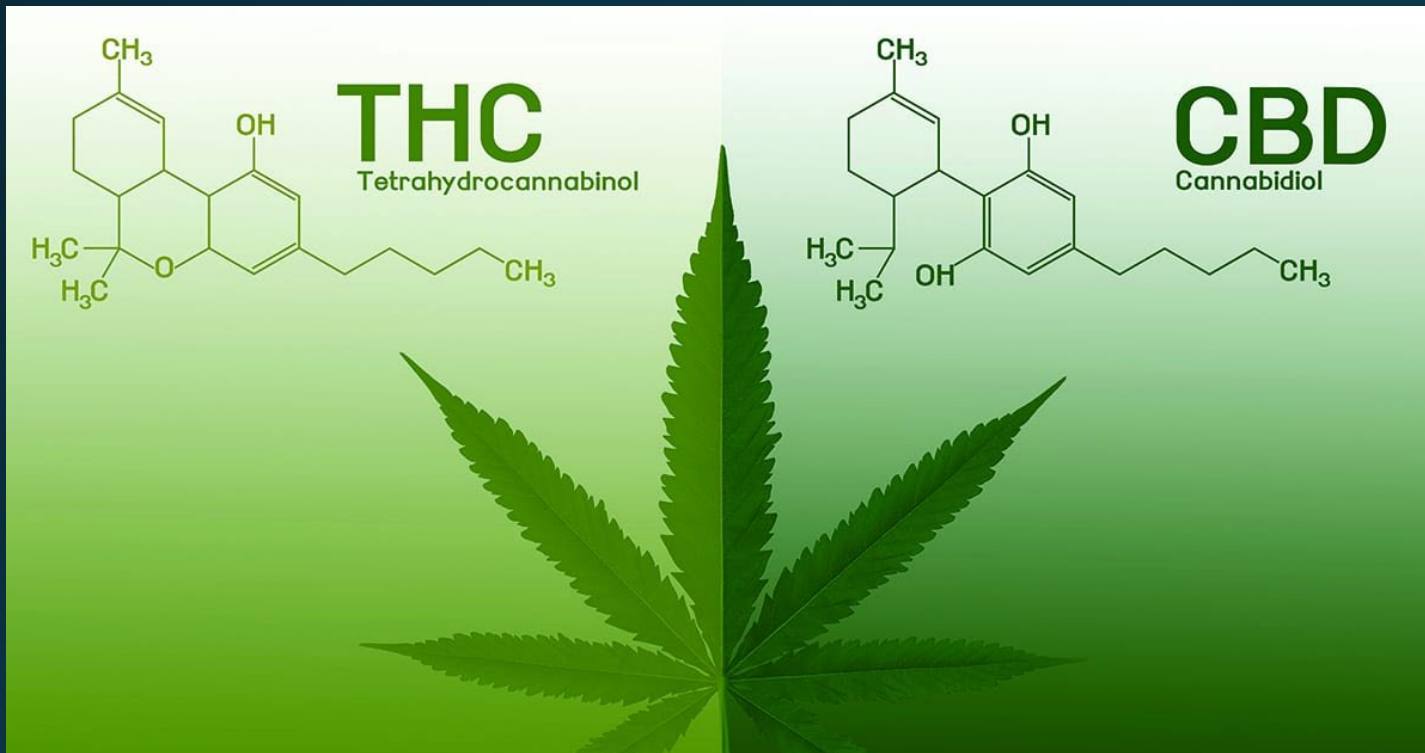
A non-intoxicating compound

May affect mood; mild physiological effects

Advertised to provide relief for anxiety, depression and PTSD, promote sleep

Approved by FDA to treat a rare seizure disorder in children

Real effect uncertain



CBD

- THC level in CBD limited to .03% by federal law
- Use of CBD products *will not* result in +THC test

Cannabis Use Disorder

20-30% of users experience CUD according to a recent study

Men 1.5 times more likely to be diagnosed with a lifetime CUD

81.8% of individuals diagnosed with CUD eventually achieve recovery

19.1% of individuals diagnosed with lifetime CUD

Larger amounts/
longer duration

Unable to cut down
or stop

Spending a lot of
time

Cravings

Role impairment at
work, home, or
school

Continuing despite
problems in
relationships.

Giving up
important
activities

Use in hazardous
situations

Continuing despite
physical or
psychological
problem

Tolerance

Withdrawal

Cannabis Use Disorder and Medical Marijuana



States authorizing the use of medical marijuana experience a significant increase in illicit marijuana use as well as increased *DSM-5* diagnosed cannabis use disorder (CUD)

CUD Health-Related Concerns

- Cognitive decline
- Respiratory and cardiovascular disease
- Psychiatric symptoms
- Increased risk of psychotic and nonpsychotic bipolar disorder and unipolar depression

National Association of Treatment Court Professionals (now AllRise)

2012 position paper

Supports reasonable prohibitions in drug courts against the use of any form of cannabis by participants and the imposition of suitable consequences, consistent with evidence-based practices

Treatment Modalities

Cognitive-behavioral
therapy

Contingency management

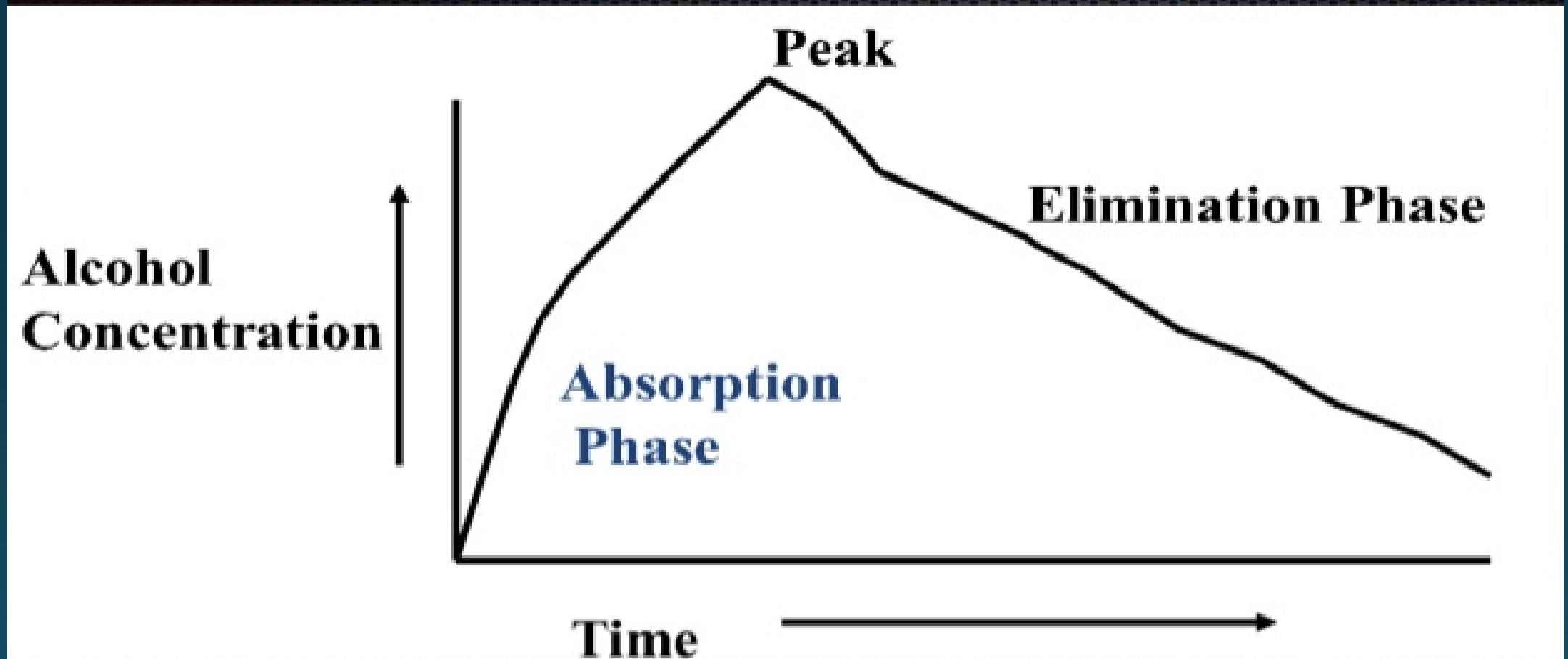
Motivational enhancement
therapy






No current FDA-approved
pharmacological treatments

Treatment Implications

- Adverse interactions/complications when used with commonly prescribed psychotropic medications
- Use highly correlated with medication non-compliance
- Interferes with learning and the use of active coping skills when cannabis used as a coping mechanism

Alcohol - A Simple Drug



BLOOD ALCOHOL CONCENTRATION	NUMBER OF DRINKS	EFFECTS ON DRIVING
0.02% BAC		<ul style="list-style-type: none"> • Decline in visual functions • Inability to perform two tasks at the same time • Loss of judgment • Altered mood
0.05% BAC		<ul style="list-style-type: none"> • Reduced coordination • Reduced ability to track moving objects • Difficulty steering • Slower response to emergency driving situations
0.08% BAC		<ul style="list-style-type: none"> • Reduced ability to concentrate • Short-term memory loss • Lack of speed control • Impaired perception and self-control
0.10% BAC		<ul style="list-style-type: none"> • Clear deterioration of reaction time • Reduced ability to maintain lane position • Reduced ability to brake appropriately • Slurred speech
0.15% BAC		<ul style="list-style-type: none"> • Substantial impairment in vehicle control • Loss of auditory information processing • Major loss of balance • Vomiting may occur

Source: Centers for Disease Control and Prevention

What makes cannabis and alcohol use different?

- Alcohol eliminated at a fairly constant rate of 0.01%-0.03% per hour
- Peak effects of alcohol use occur at peak blood concentration
- THC concentration cannot be correlated to specific impairment
- THC dissolves in fatty tissue, which acts like a sponge to reduce measurable amounts in blood, saliva or breath
- THC moves rapidly from the blood stream to fatty tissue, including the brain, yet has a long half-life to metabolize
- Peak effects of THC use occur after peak blood concentration



A bad combination

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Method of Consumption Matters

Marijuana Detection Times

Blood & Saliva	 	A few hours
Urine		
One-time use		Up to 13 days
Regular use		Up to 45 days
Heavy use		Up to 90 days
Hair		Up to 90 days



No BAC for THC

Can you overdose on THC?

Gateway or Attitude?

Court Responses to Cannabis Use

1. Abstinence-based approach - corrective/responsive action implemented
2. Tolerance-based approach - use not encouraged but punitive actions not taken
3. Adaptive approach - tailor response to individual participant's needs



Supervision Compliance and Treatment

- Remember, substance use is a risk factor for recidivism
- Adverse interactions/complications when used with commonly prescribed psychotropic medications
- Use highly correlated with medication non-compliance
- Use disrupts life domains that might otherwise serve as protective factors
- Interferes with learning and retaining information, including from treatment, and the use of active coping skills when cannabis used as a coping mechanism
- Effect on motivation influences many aspects of supervision, including employment-seeking and retention, appearing for appointments and court hearings

Effect of State Legalization

The legalization of marijuana, either medical or recreational, and the lack of federal enforcement of some laws does not impact federal enforcement of other laws, including the tax code.

Standing Akimbo, LLC v. United States, 594 U.S. ____ (2021)



Questions?

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