

**October 19, 2021**

# **Alcohol, Marijuana & the Teenage Brain**

**Pamela Gould, MPH, CPSII**



**TWELVE TALKS  
TO HAVE WITH TEENS**  
[twelvetalks.com](http://twelvetalks.com)

**JEFFERSON**  
COUNTY COLORADO  
Public Health



Jefferson County  
Communities That Care

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# Changing our narrative about “drugs”

**YOU are bad if  
you use drugs.**

gateway drugs immoral  
this is your brain drug lords  
any questions not nice lawless  
criminal arrested  
just say no only the bad kids  
laws no bad wrong  
jail bad  
other people drug wars  
war on drugs drug dealers druggles  
crazy on drugs bad boys  
miami vice  
inner city inner ciities prison jails  
jail time bad people arrest  
serving time bad kids  
criminal element drug scene

**Drugs really  
aren't  
THAT bad.**

okay if not too much  
very careful just part of being a teen  
won't stop them  
not preventable  
it's fine  
will do it anyway  
kids so common adolescents  
all teens harmless  
fun common normal everyone  
typical teens  
no big deal  
can't stop them  
social  
not a big deal  
very typical  
won't stop  
doesn't hurt them  
parties teenagers  
we did it  
chill i did it  
everyone tries  
can't stop it  
okay  
everyone does it  
we all did it  
inevitable popular smart about it  
cannot stop them

**DRUGS are  
bad for you.**

emotional intelligence lowered opportunities poor social skills mental health  
depressed leads to addiction poor outcomes not good for kids  
addictive substance abuse worry  
brain development  
addiction  
preventable iq  
unhappy depression long term problems  
not good for our kids addicted bad for our kids  
mental health issues intoxication behavior changes substance abuse disorder  
assault black out mood problems long-term problems  
alcohol poisoning  
unsafe overdose sad  
addicts not healthy  
concerning dangers  
depressed mood dangerous situations  
influenced



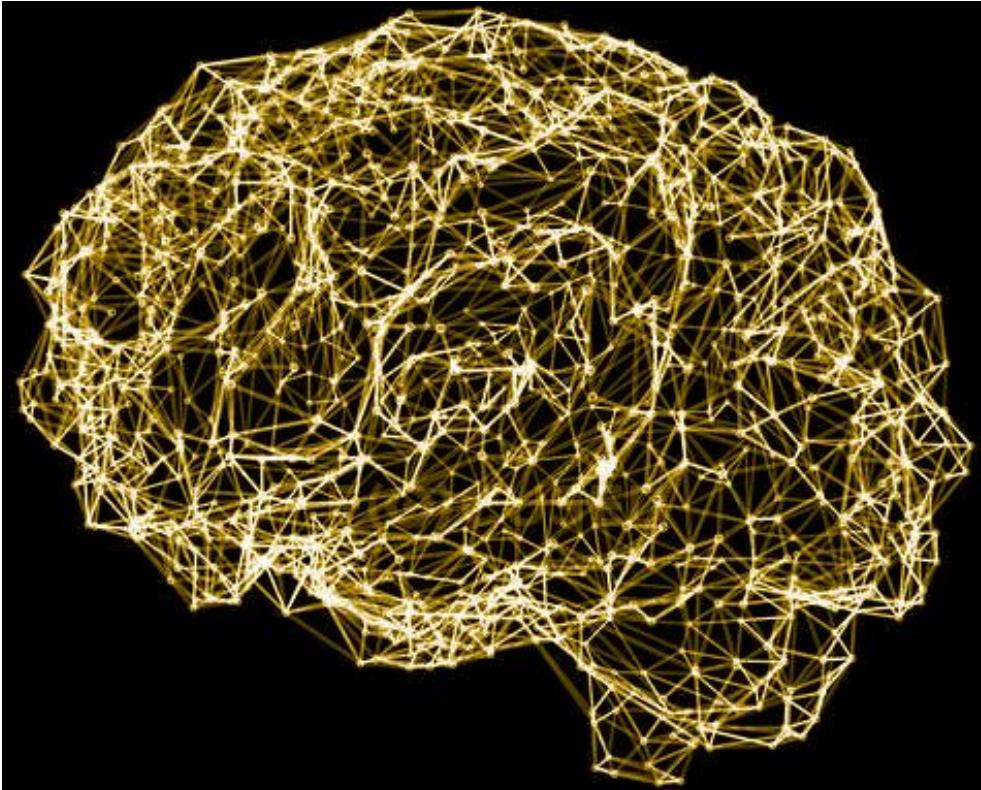


# **Alcohol & Marijuana** **Negatively Impact the** **Adolescent Brain**





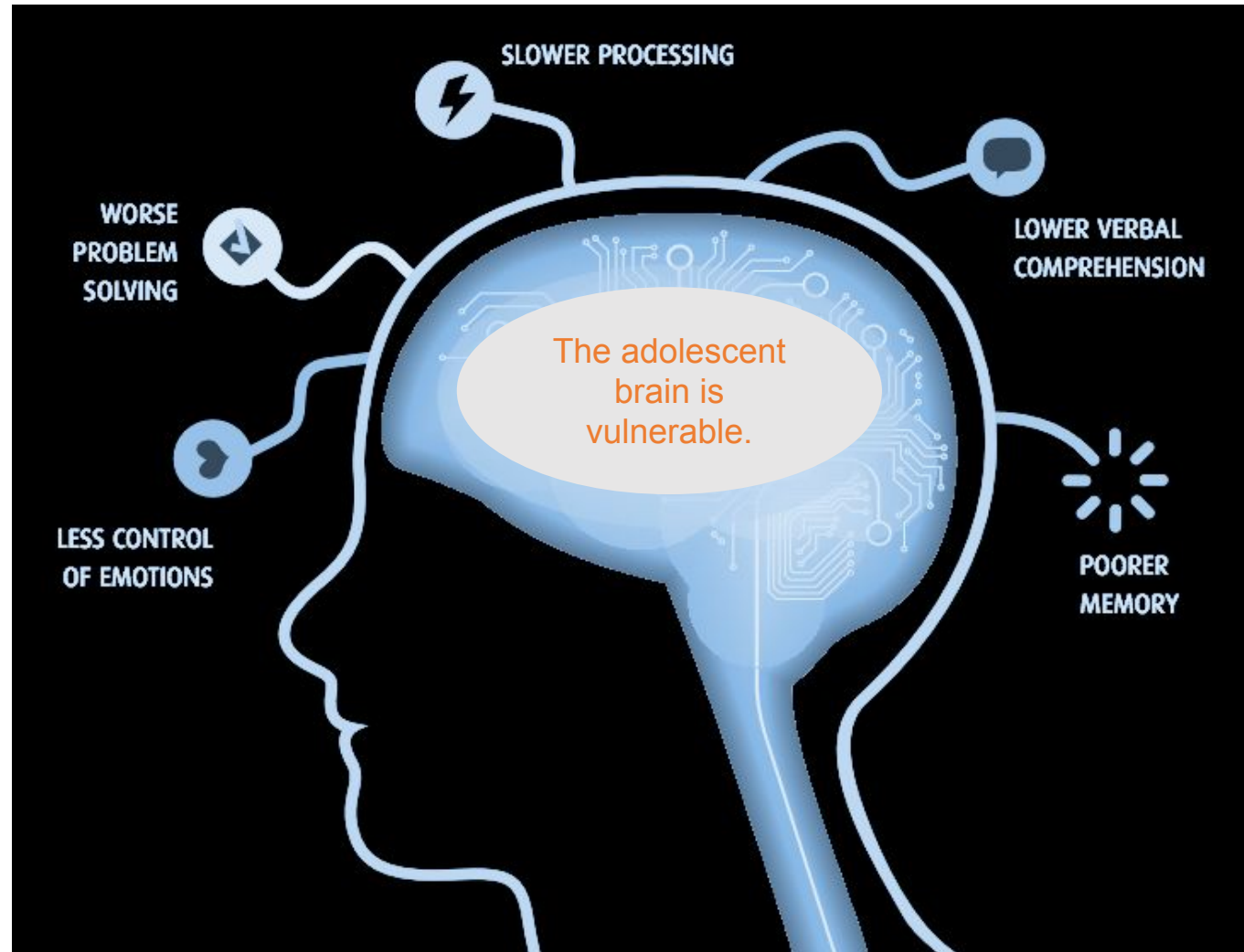
# UNDER CONSTRUCTION




(citation)



# UNDER CONSTRUCTION





# **Adolescent Alcohol Use Causes Long Term Problems**





# ALCOHOL CHANGES BRAIN DEVELOPMENT

Ethyl alcohol, or ethanol, is a central nervous system (CNS) depressant, which means it slows down neurotransmission in the brain.

## Adolescent alcohol use...

- May increase reward responsiveness of the dopamine system to alcohol later in life
- Is associated with long term increases in impulsivity and risk-taking
- The development that should be happening cannot-- and these effects have been shown to last at least a month beyond the drinking
- Disrupts adolescent brain development, potentially through neuroinflammation, with long-lasting neural and behavioral effects into adulthood
- Results in more grey matter (less pruning) & less white matter (myelination).



(citation)



# YOUNG PEOPLE GET DRUNK IN A DIFFERENT WAY

Because their brains are NOT adult brains, **drunk adolescents are different than drunk adults**

- The prefrontal cortex (used for decision making, impulse control) is less developed [\(citation\)](#)
- Adolescents often don't have the same obvious "drunkenness" as adults at the same level of impairment-- sleepiness, loss of balance, wooziness [\(citation\)](#)
- But they are even more impaired in terms of memory formation, judgements, and functioning [\(citation\)](#)





# DRUNK DRIVING IS JUST THE START

**Yes, drunk driving is DANGEROUS. But so is:**

- 1. Damage to long term brain development**
- 2. Alcohol use disorder, alcohol dependance**
- 3. Depression, anxiety & suicide risk**
- 4. Unprotected sex & multiple partners**
- 5. Black outs & alcohol overdose or poisoning**
- 6. Assault & homicide**
- 7. Used as a rape drug**



**Parents who let kids drink IF they don't drive are NOT being safe.**

(citation1);(citation2);(citation3)



# “WE DRINK TO GET DRUNK”



The poison is in the dose...  
and teens in Jeffco:

- Use stronger alcohol & marijuana
- Report that the whole point of consumption is inebriation (data source)
- Binge drink: 1 in 5 Jeffco High School seniors had 4 or more drinks in a couple hours (data sources)

Plus, teens have developing brains, along with less inhibition and smaller bodies.



# WHAT ABOUT?

...letting them  
use with me so  
they don't use  
it without me?

...if I tell  
them it's  
okay to  
use a  
little-- but  
not a lot?

...letting them  
use at home  
so they don't  
use in less  
safe places?

...telling them I  
know they'll do it,  
& I just don't want  
them to lie?

...if I take  
the car  
keys?



# DELAY FIRST USE

Age of First Use of Alcohol	Lifetime Prevalence of Alcohol Dependence
21 years+	10.6%
18 years	18.6%
12 years or younger	40.6%

(citation)

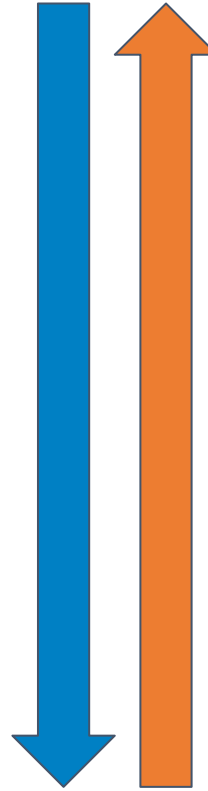




# PARENTS & ALCOHOL

## Decreases likelihood of alcohol problems

- Parents who are stricter about alcohol.(citation)
- Parents who know where their child is and who they are with when they aren't home.(citation)
- Parents discourage alcohol use (in a non-judgemental & factual way).(citation)



## Increases likelihood of alcohol problems

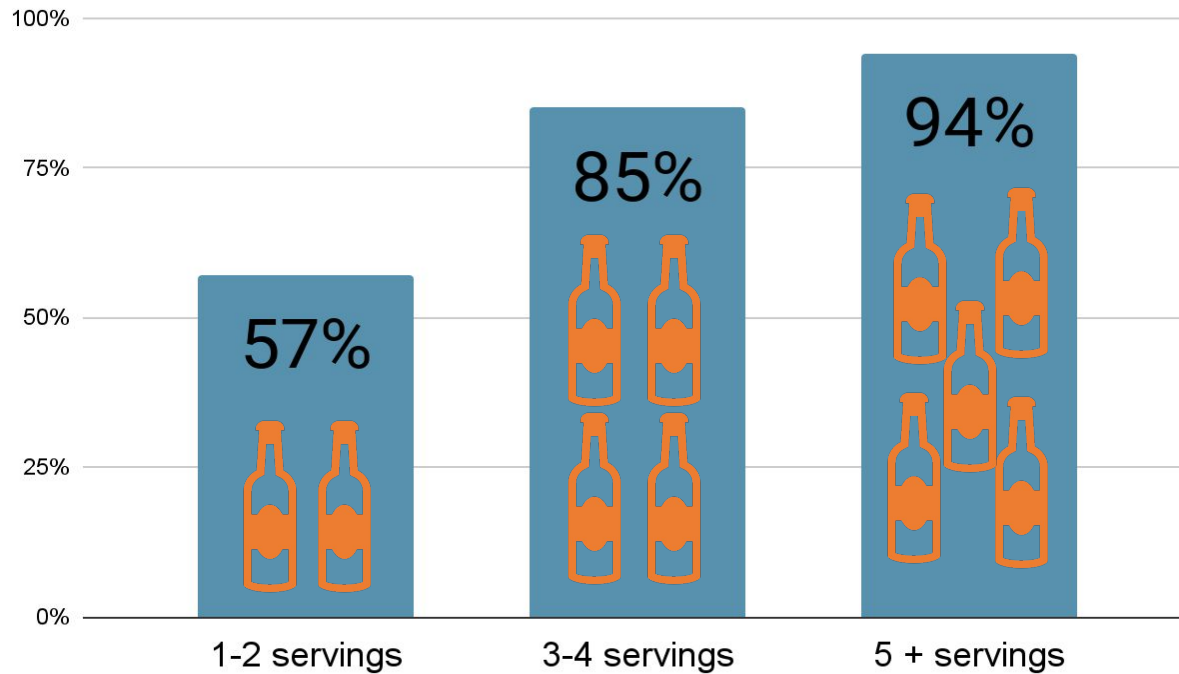
- The more normal parents think it is and the more children see it being used.(citation)
- Parents providing alcohol to children.(citation)
- The earlier a child has their first drink (just one!).(citation)



# A “just don’t drink too much” MESSAGE DOESN’T WORK.

Many Jeffco adults agree that 3+ drinks are unsafe for young people.

Is it harmful for youth to consume \_\_\_\_\_ servings of alcohol on a single occasion



Among Jeffco high school seniors who drank,

**68%** had 3+ drinks  
in a couple of hours. (data sources)



# ALCOHOL IS USED in JEFFCO HOMES

Jeffco CTC 2021 Youth Town Hall ALCOHOL LOCATIONS	%
<b>At someone's house</b> during a party with more than 15 people	85%
<b>At someone's house</b> during a small gathering of 5 to 15 people	85%
<b>At someone's house</b> with a group of 2 to 5 people	85%
<b>At someone's house</b> alone	60%
In a car	40%
In a public indoor place (mall, restaurant, store)	30%
Outside at a public park or open space, or on a trail	25%
Inside the school building	20%
Outside on school grounds	20%

(data sources)



# ALCOHOL IS EASY TO GET

60%

of Jeffco Teens report  
that alcohol is easy or  
very easy to get.

Jeffco CTC 2021 Youth Town Hall ALCOHOL SOURCES	%
Taken WITHOUT permission from adult at home	85%
Provided at a party	80%
Provided by adult at home, WITH their knowledge	65%
Purchased with a fake ID by someone underage	65%
Purchased by a friend/plug who's old enough to buy	65%
Stolen from a store	60%
Ordered and then delivered to home	25%
Sold by a drug dealer to a youth	20%
Don't have any idea where it comes from	20%

(data sources)







**Marijuana  
is No Longer  
“Just Smoking Weed”**



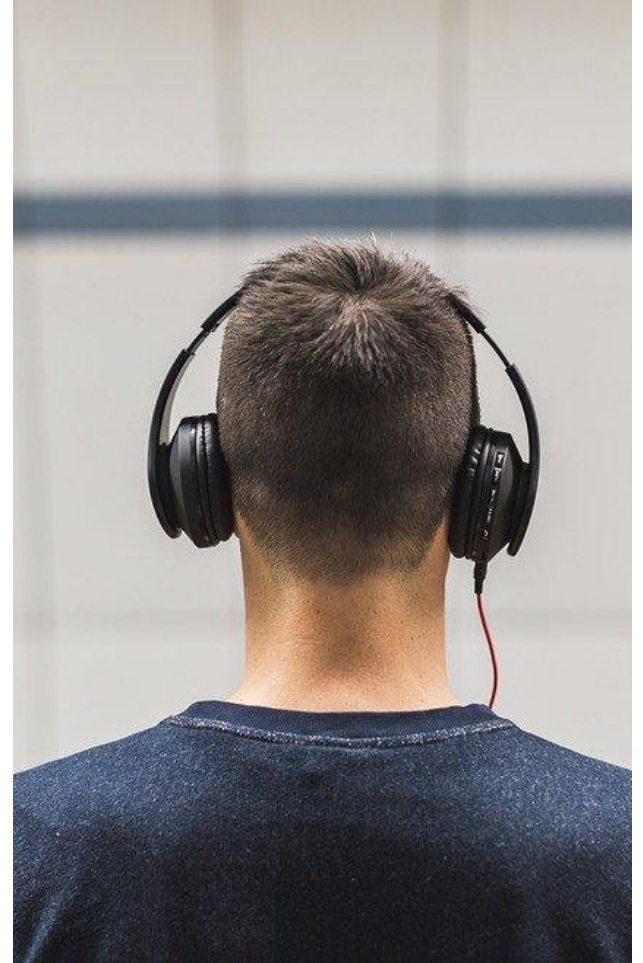
# CBD & THC

## CBD: Cannabidiol

- Does NOT create a high
- No known negative health effects (beside usually mild side effects) or addictive potential [\(citation\)](#)
- Medical applications/ potential applications, but generally very poorly regulated or researched [\(citation\)](#); [\(citation\)](#)

## THC: Tetrahydrocannabinol

- Creates the high by attaching to cannabinoid receptors in the brain [\(citation\)](#)
- The amount of THC in available marijuana products has gone from 2-4% to as much as 95% in the last 30 years [\(citation\)](#)



# MARIJUANA IN THE BRAIN



**Cannabinoid receptors (CB1)**  
**are designed to receive**  
**naturally occurring**  
**neurotransmitters that**  
**regulate stress, fear, anxiety,**  
**mood, appetite & pain.**  
**Replacing these with THC may**  
**also delay brain maturation.**

(citation); (citation)



# MARIJUANA IS ADDICTIVE

1. Difficulty with attention, memory & coordination (citation)
2. Driving while intoxicated (citation)
3. Addiction (citation)
4. Psychosis or schizophrenia in vulnerable individuals (citation); (citation);
5. Loss of IQ (citation)
6. Paranoia, anxiety (citation)
7. Associated with depression & anxiety (citation)
8. Associated with suicidality (citation)

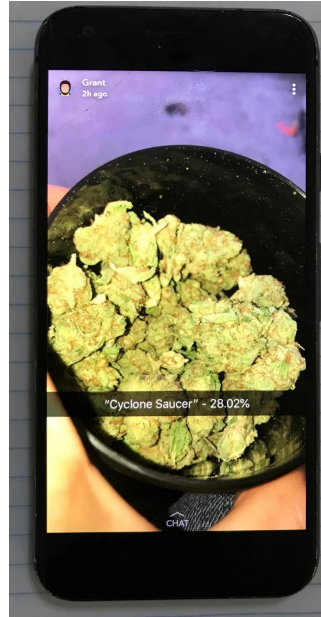
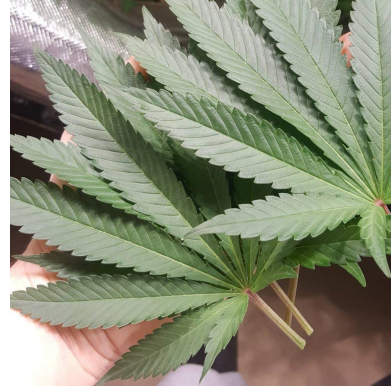
1 in 6

adolescents  
who repeatedly  
use marijuana  
become  
addicted. (citation)





# MARIJUANA 101



Flower or bud: 15-28% THC [\(citation\)](#)

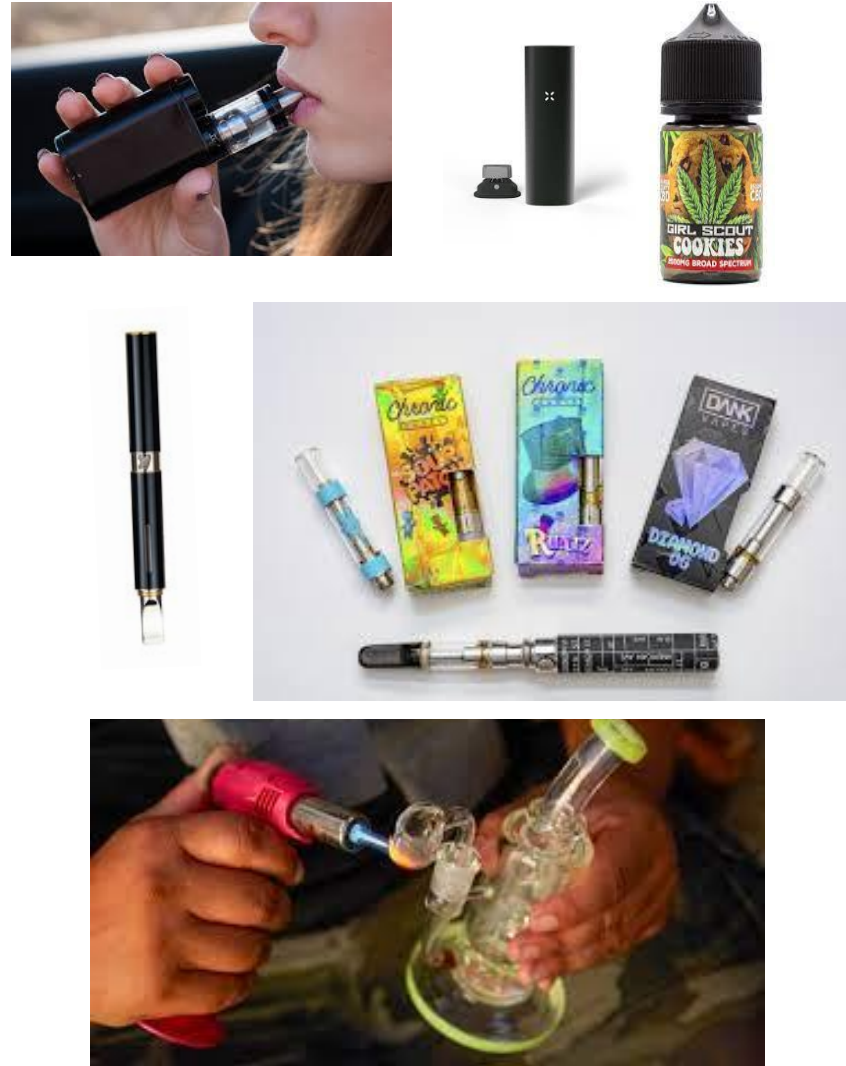
Concentrates: up to 80%+ THC [\(citation\)](#)



# MARIJUANA 101



Smoking



Inhaling



Eating & Drinking

# MARIJUANA IS (also) EASY TO GET

**Our teens get their marijuana from adults who buy it for them.**

**49%**  
**of Jeffco Teens**  
**report that marijuana**  
**is easy or very easy**  
**to get.**

Jeffco CTC 2021 Youth Town Hall MARIJUANA SOURCES	%
Taken WITHOUT permission from adult at home	45%
Sold by a drug dealer to a youth	35%
Purchased by a friend/plug who's old enough or has a prescription to buy	35%
Provided at a party	20%
Stolen from a store	20%

[\(data sources\)](#)





# **Jefferson County Adults** **Need to** **Make Healthy = “Normal”**



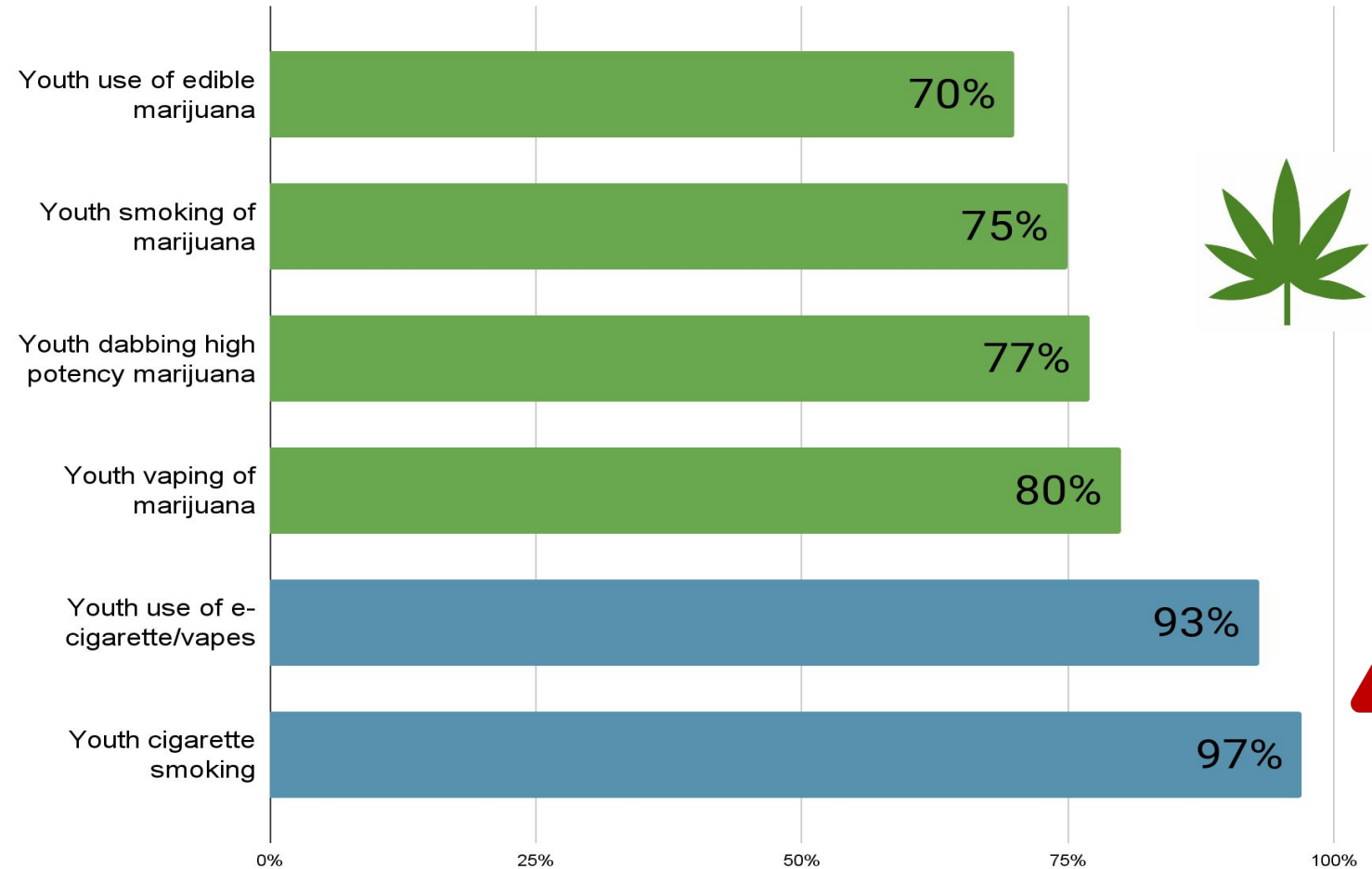


# WE DID IT WITH NICOTINE-- NOW LET'S DO IT WITH THC

51%

Of our Jeffco youth  
think regular use of  
marijuana causes  
little or no harm.

Is this harmful to youth?

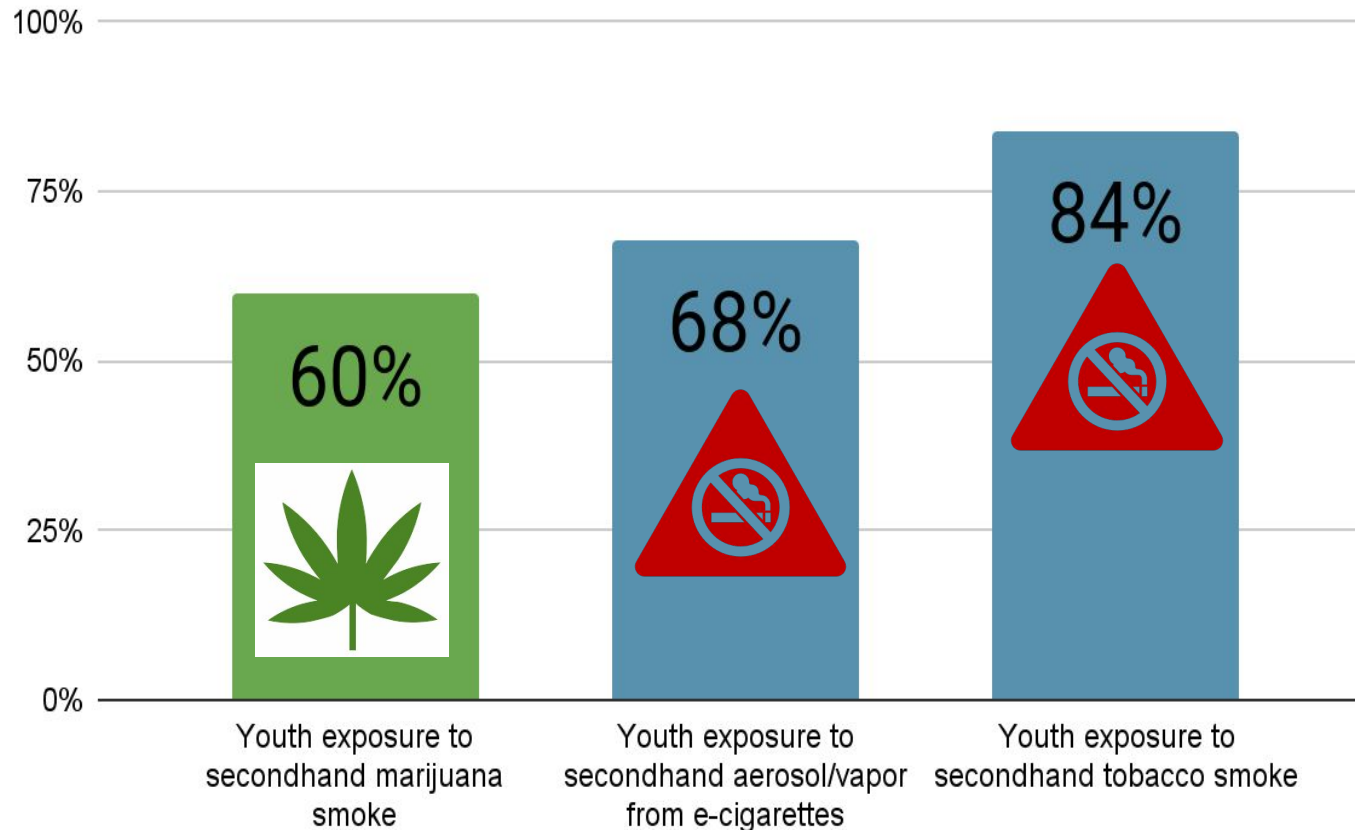


(data sources)



# “SMOKE is SMOKE”

Is this harmful for youth?



**Marijuana smoke contains carcinogenic combustion products which are JUST as unhealthy as tobacco smoke. (citation) And... it's often inhaled deeper & held in the lungs for longer.**

(data sources)





# **How Can We Send Clear Messages?**

***But Without Being too\* Unchill***

**\*Being somewhat unchill is inherent to being a responsible & healthy adult, however.**



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**[www.twelvetales.com](http://www.twelvetales.com)**

# 1. TALK and then TALK some more

HOPEFULNESS &  
COPING

MARIJUANA

VAPE & TOBACCO

SEX & CONSENT

BOUNDARIES

DATING

IDENTITY

ALCOHOL

MENTAL HEALTH

FRIENDS

PRESCRIPTION  
DRUGS

SOURCES OF  
STRENGTH

**twelvetalks.com**

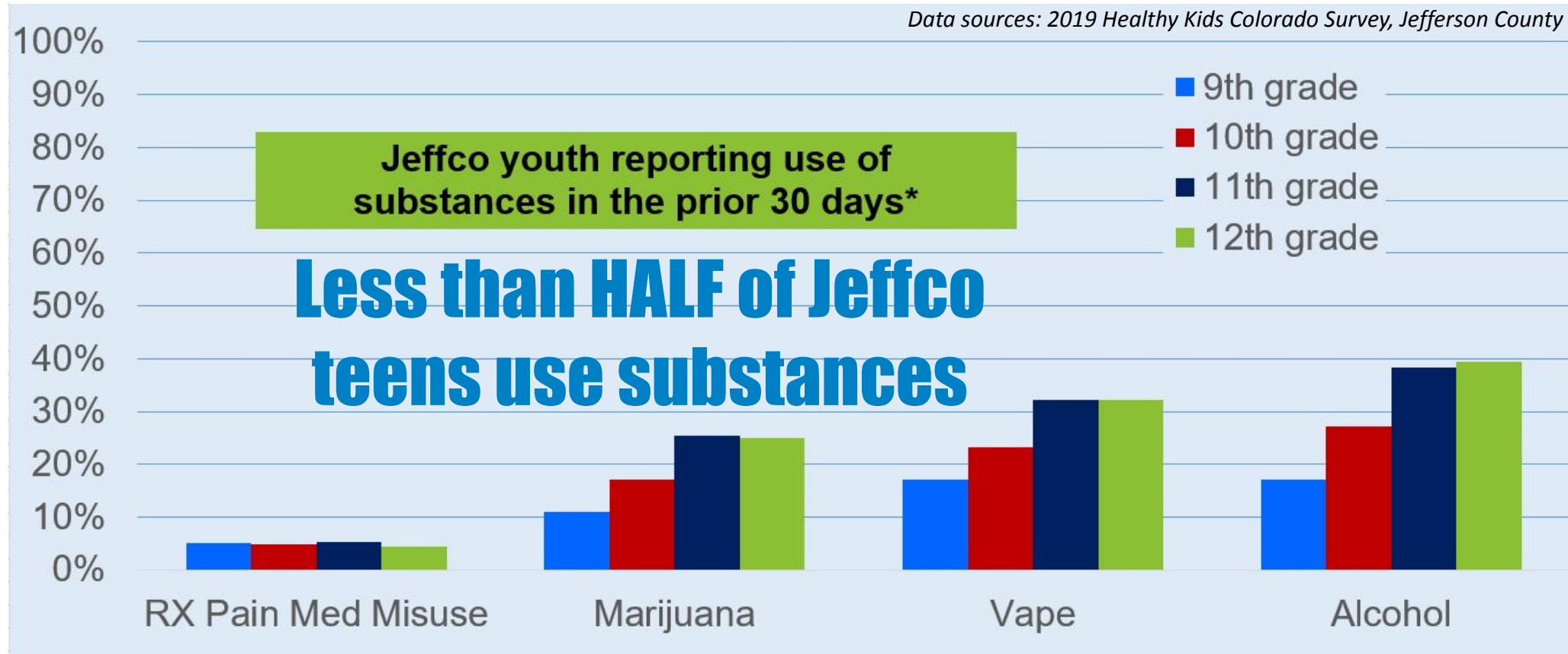
(citation)



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## 2. Make sure they know that it's definitely NOT “everyone”



[\(data sources\)](#)





## 2. Make sure they know that it's definitely NOT “everyone”



70%  
OF JEFFCO  
HIGH  
SCHOOL  
STUDENTS  
DO NOT USE  
ALCOHOL

30.1% of Jefferson County High School students answered “yes” to use of alcohol in the past 30 days, according to statistically valid 2019 Healthy Kids Colorado Survey results.

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80%  
OF JEFFCO HIGH  
SCHOOL  
STUDENTS  
DO NOT USE  
MARIJUANA

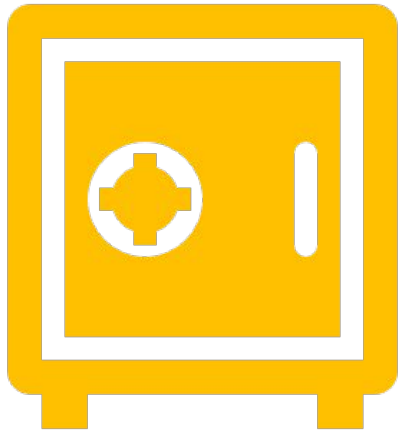
19.5% of Jefferson County High School students answered “yes” to use of marijuana in the past 30 days, according to statistically valid 2019 Healthy Kids Colorado Survey results.

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(citation)

# 3. Reduce Access



If you have alcohol, marijuana or other drugs in your home\*:

1. Lock
2. Monitor
3. Dispose

*\*It might not be YOUR teen that you need to worry about.*



## 4. REDUCE PLACES TO DRINK

House parties are common in Jefferson County & are a high risk setting (citation) where youth are taught to binge drink, vape, dab, etc.



- Know where your kids are and who they are with. Check in with other parents.
- If you go out of town, don't leave your teens alone-- but if you have to, take steps to monitor them.
- Tell other parents that you don't let your teen drink or use marijuana.





# 5. Demand safety for our kids

## Contact city & county officials and request

- Tell your city council you are NOT okay with house parties in our community-- and adults allowing them should be held responsible through social host laws (citation)
- Ask for advertising regulations for alcohol & marijuana (citation); (citation)
- Limit new locations, hours & delivery options for alcohol & marijuana stores-- and keep them away from our schools (citation)



# Sending clear messages

1. Talk and then talk some more.(citation)
2. Make sure teens know it's definitely not "everyone."(citation); (citation)
3. Actively demonstrate that it's not safe. Lock it up. Dispose of it.
4. Prevent house parties.(citation)
5. Demand policy changes to increase safety for our kids.





# Adults Need to Know Alcohol & Marijuana

Alcohol & marijuana interfere with brain development.

Most teens are NOT using marijuana or alcohol.

Younger use increases likelihood of addiction.

Marijuana is addictive for youth.

Youth are rarely *really* using “a little” or “are being safe.”

Supplying to kids is putting them in danger.



# Our Teens Deserve to Know about Alcohol & Marijuana

It doesn't help  
anxiety or  
depression.

Substance use  
won't lead to  
real  
friendships.

Alcohol &  
consent...  
NOT possible.

You can cope  
in other  
ways.

Most teens are  
NOT using  
marijuana or  
alcohol.

Supplying other  
kids--  
introducing  
other kids-- is  
not okay.



# Changing our narrative about “drugs”

**YOU are bad if  
you use drugs.**

**Drugs really  
aren't  
THAT bad.**

**DRUGS are  
bad for  
you.**



# THANK YOU

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# Questions?



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# Links

- Slide 4: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2989000/>
- Slide 7: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7183385/>
- Slide 8: <https://www.brainandlife.org/articles/how-does-alcohol-affect-the-teenage-brain/>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7183385/>;  
<https://pediatrics.aappublications.org/content/144/1/e20191357>;
- Slide 9: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7183385/>; <https://pediatrics.aappublications.org/content/144/1/e20191357>;  
<https://www.cdc.gov/alcohol/fact-sheets/underage-drinking.htm>;
- Slide 10: <https://sites.google.com/view/jefferson-county-ctc/about/2021-jeffco-ctc-youth-data-report>
- Slide 12: <https://pediatrics.aappublications.org/content/144/1/e20191357>
- Slide 13: <https://www.sciencedirect.com/science/article/abs/pii/S0376871617302843>; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2716564/>;  
<https://onlinelibrary.wiley.com/doi/abs/10.1111/acer.13525>
- Slide 14-16: <https://sites.google.com/view/jefferson-county-ctc/about/2021-jeffco-ctc-youth-data-report>
- Slide 18: <https://www.health.harvard.edu/blog/cannabidiol-cbd-what-we-know-and-what-we-dont-2018082414476>;  
<https://www.nature.com/articles/d41586-019-02524-5>;  
<https://www.drugabuse.gov/publications/research-reports/marijuana/how-does-marijuana-produce-its-effects>;  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6312155/>
- Slide 19: <https://www.pnas.org/content/117/1/7>; <https://www.drugabuse.gov/publications/research-reports/marijuana/how-does-marijuana-produce-its-effects>
- Slide 20-21: <https://www.cdc.gov/marijuana/factsheets/teens.htm>;  
<https://www.codot.gov/news/2020/june-2020/colorado-department-of-transportation-releases-key-findings-from-two-year-study-aimed-at-reducing-cannabis-involved-traffic-crashes-and-fatalities>; <https://www.drugabuse.gov/publications/drugfacts/marijuana-concentrates>; <https://www.pnas.org/content/117/1/7>;  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6312155/>;
- Slides 23-30: <https://sites.google.com/view/jefferson-county-ctc/about/2021-jeffco-ctc-youth-data-report>

