

National Institute on Drug Abuse
National Institutes of Health



Marijuana Facts for Teens

Letter to Teens

Did you know...

- When asked, only about 1 in 14 teens say they used marijuana in the past month.¹ So, if you were thinking everyone uses marijuana, they don't.
- Some think marijuana is okay to use because it's "natural." But not all natural plants are good for you — take tobacco, for example.
- Some teens believe marijuana can't be that harmful if states are legalizing it. Legal or not, one real risk is *addiction*.
- In 2016, around 4 million people ages 12 and older had a marijuana use disorder. The most severe form also is known as an addiction.¹
- Research also shows that marijuana can harm the developing teen brain.

Our goal is to give you the straight facts so you can make smart choices and be your best self. We hope you will continue the conversation and share this information with your friends, parents, teachers, and others.

Nora D. Volkow, M.D.

Director

National Institute on Drug Abuse

**This booklet gives brief summaries of what marijuana research is telling us. These topics represent the most popular questions and comments we get every day on our teen website and blog.*

¹ Behavioral Health Statistics and Quality. Results from the 2016 National Survey on Drug Use and Health: Detailed Tables. Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2016/NSDUH-DetTabs-2016.htm#tab1-2B>. Published September 7, 2017. Accessed November 6, 2017.



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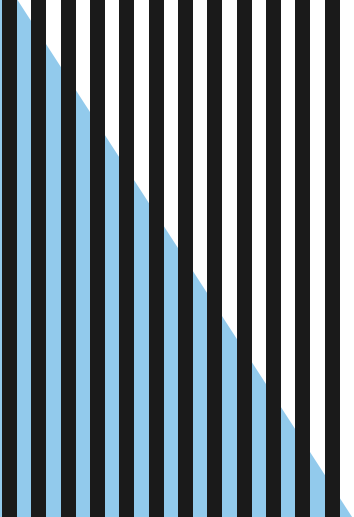
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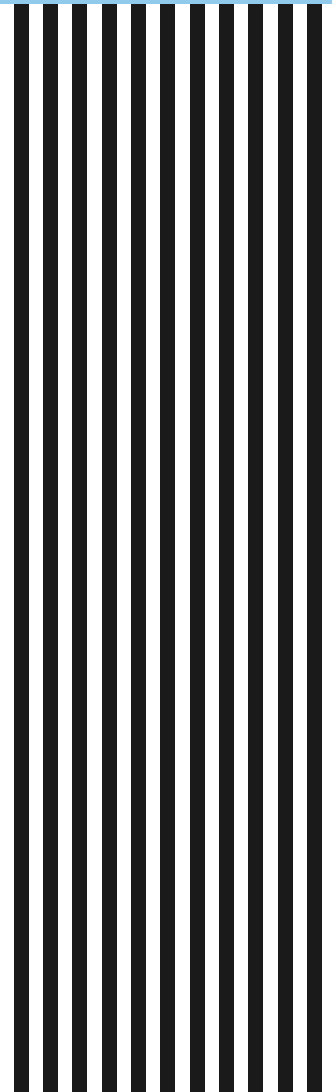
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People smoke marijuana for a lot of different reasons: to feel good, to feel better, to feel different, or to fit in. Whatever the reason, drug use has consequences.



To help you make an informed choice, the following are some brief summaries of what marijuana research is telling us. These topics represent the most popular questions and comments we get every day on our teen website and blog. Share them with your friends to help them separate fact from myth.



I. Some Things to Think About

Addiction

Marijuana can be addictive.

Not everyone who uses marijuana will become addicted. Becoming addicted to drugs depends on a lot of factors, including the genes you were born with, the age you start using, how easily you can access the drug, your home and family life, your peers, and so on. Repeated marijuana use can lead to a marijuana use disorder.

The most severe form is known as addiction. Addiction means that you have trouble controlling your drug use even if it's causing bad things to happen. About 11 percent of people who use marijuana in a given year may have a drug problem.² Those who begin using marijuana before age 18 are four to seven times more likely than adults to develop a drug problem.³

² Hasin DS, Saha TD, Kerridge BT, et al. Prevalence of Marijuana Use Disorders in the United States Between 2001-2002 and 2012-2013. *JAMA Psychiatry*. 2015;72(12):1235-1242. doi:10.1001/jamapsychiatry.2015.1858.

³ Winters KC, Lee C-Y. Likelihood of developing an alcohol and cannabis use disorder during youth: Association with recent use and age. *Drug Alcohol Depend*. 2008; 92(1-3):239-247. doi:10.1016/j.drugalcdep.2007.08.005

Driving

Marijuana is unsafe if you are behind the wheel.⁴

In general, teen drivers are less experienced and more likely to react poorly in risky situations than older drivers. They are more likely to drive recklessly, speeding and allowing less distance between vehicles. When you pair that inexperience with marijuana use, the results can be dangerous. Research shows that marijuana affects safe-driving skills, like judgment, coordination, and reaction time. Marijuana makes it hard to judge distances and react to signals and sounds on the road. As with any psychoactive drug, impaired driving can cause deadly vehicle crashes.

⁴ Compton RP, Berning A. *Drug and Alcohol Crash Risk*. Washington, DC: National Highway Traffic Safety Administration; 2015. DOT HA 812 117.



Drugged Driving Research



To learn more about the research behind drugged driving, visit <https://www.drugabuse.gov/related-topics/drugged-driving>.

School

Marijuana is linked to problems in school. Marijuana dulls your attention, memory, and learning skills. These effects can last for days and sometimes weeks, depending on how often you use marijuana. Compared with teens who don't use, students who use marijuana are more likely not to finish high school or get a college degree.⁵ Marijuana also affects timing, movement, and coordination, which can harm athletic performance.

Mental Illness

Marijuana use has been linked to an increased chance for mental illness. In addition to addiction, marijuana use is linked with a higher risk for schizophrenia, depression, and anxiety. It's not clear if marijuana use actually causes these conditions, but research shows a connection. The amount of drug used, the age at first use, and a person's genes influence this relationship.

⁵ McCaffrey DF, Pacula RL, Han B, Ellickson P. Marijuana Use and High School Dropout: The Influence of Unobservables. *Health Econ.* 2010;19(11):1281-1299. doi:10.1002/hec.1561.

Most teens don't
use marijuana.

II. Want to
Know More?
**Some FAQs
About Marijuana**




What is marijuana?

Marijuana is a mixture of dried, shredded flowers of the cannabis plant, *Cannabis sativa*. It goes by many different names, such as *weed*, *pot*, *herb*, and *grass*. Marijuana can be smoked, used to brew tea, and mixed in foods (*edibles*). Stronger forms include *sinsemilla* (sin-seh-me-yah), *hashish* (*hash* for short), and *hash oil*.

The main mind-altering chemical in marijuana is *THC*. Marijuana contains more than 500 chemicals, including more than 100 compounds that are similar to THC. The amount of THC in marijuana determines its potency, or strength, and how it can affect the body. Marijuana growers have been increasing the THC content of marijuana over the past few decades.

How does marijuana work?


Marijuana is *psychoactive*. In other words, it changes how the brain works. Marijuana affects specific sites in the brain called *cannabinoid receptors*. These receptors send messages to different nerve cells throughout the nervous system. They affect brain areas that impact learning and memory, appetite, coordination, and pleasure so interfering with these receptors can have significant effects on your body.



"I used to smoke pot until I had an anxiety attack and thought I couldn't breathe . . . I was wheezing, and I got really paranoid."

"There are a million things to do that are more fun than smoking some unknown grass. Go to the beach, go to the movies, go to the gym — you're not missing anything."

—Comments submitted to NIDA's blog for teens



What happens if you use marijuana?

Marijuana affects each person differently depending on their biology, the plant's potency, previous experience with drugs, the way a person uses the drug, and the use of alcohol or other drugs at the same time. Some people feel nothing at all when they use marijuana. Some feel relaxed or high. Others suddenly get anxious and paranoid; this happens especially when a person uses stronger marijuana, takes too much, or isn't used to taking it.

We're still learning about how marijuana affects the brain and how long the effects will last — especially after someone stops using the drug.

⁶ Gruber AJ, Pope HG, Hudson JI, Yurgelun-Todd D. Attributes of long-term heavy cannabis users: a case-control study. *Psychol Med.* 2003;33(8):1415-1422.

Regular marijuana use has also been linked to memory and relationship problems, poorer mental and physical health, lower salaries, and less career success.⁶





What are common effects of marijuana on the body, brain, and behavior?

Short-term effects (while using or right after using)

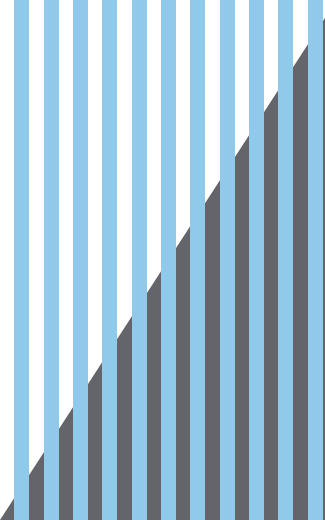
- learning, attention, and memory problems
- distorted perception (sights, sounds, time, touch)
- poor coordination
- increased heart rate
- anxiety, paranoia
- psychosis (not common)

Effects that last longer than the short term (a few days) but may not be permanent

- learning and memory problems
- sleep problems

Long-term effects (effects of repeated use)

- risk of marijuana addiction
- long-term learning and memory problems if heavy use begins during youth
- risk for chronic cough, bronchitis
- risk of schizophrenia in some people with higher genetic risk
- in rare cases, risk of recurrent episodes of severe nausea and vomiting



“I was lazy a lot. I didn’t want to do things. . . I was depressed. I felt like I was always in a rut. I was always feeling bad about myself, where I was standing in life.”

– from Alby's story, on smoking marijuana daily

How does smoking marijuana affect the lungs?

Someone who smokes marijuana regularly may have many of the same breathing and lung problems as people who smoke tobacco. For example, marijuana smokers can develop a daily cough or have a higher chance of getting a lung infection. Like tobacco smoke, marijuana smoke has a toxic mix of gases and tiny particles that can harm the lungs. Although we're still learning if marijuana causes lung cancer, many people who smoke marijuana also smoke cigarettes, which do cause cancer. Also, smoking marijuana can make it harder to quit smoking cigarettes.

What are the effects of inhaling secondhand marijuana smoke?

Here's what we know about secondhand marijuana smoke:

- If you inhale secondhand marijuana smoke, it's unlikely you would fail a drug test, but it is possible.
- Secondhand marijuana smoke is more likely to give someone a high if they're in an enclosed space with others smoking marijuana with high THC levels.
- A recent animal study showed that secondhand marijuana smoke can affect heart and blood vessels as much as secondhand tobacco smoke. More research is needed, but we do know that marijuana smoke can especially affect children and people with asthma.

Is vaping marijuana safer than smoking it?

Some people think that vaping is a safer way to use marijuana because you're not inhaling smoke. But you're still inhaling various chemicals when using a vaporizer. A study of some vaporizer products found the vapor contains toxic chemicals and possibly toxic metal particles from the device itself.⁷ Scientists continue to study the risks of vaping.

Can marijuana use lead to psychosis?

People who have taken large doses or used marijuana with high THC content may experience brief *psychosis*. Psychosis can affect the mind and make it hard for a person to understand what's real and what isn't. A psychotic reaction usually goes away as the drug's effects wear off, but disturbing memories can remain. Some people have a gene that may increase the chance of long-lasting psychotic disorders, such as *schizophrenia* (a severe mental disorder that affects thoughts, feelings, and behavior), when they repeatedly use marijuana.

Can you overdose on marijuana?

While there are no reports of someone dying directly from marijuana use, it can still cause serious health problems. Some people have psychotic reactions that can lead to dangerous behaviors. Others may have uncomfortable side effects from marijuana, such as shaking, leading them to seek care in an emergency room.

⁷ Hess CA, Olmedo P, Navas-Acien A, Goessler W, Cohen JE, Rule AM. E-cigarettes as a source of toxic and potentially carcinogenic metals. *Environ Res.* 2017;152:221-225. doi:10.1016/j.envres.2016.09.026.

Marijuana affects the brain — altering memory, judgment, and coordination.



How long after use can marijuana show up on a drug test?

The effects of marijuana usually last from 1 to 3 hours, but marijuana can stay in the body for days or even weeks after use. Organs in the body have fatty tissues that absorb the THC in marijuana. In general, standard urine tests can detect THC several days after use. In people who use heavily, however, urine tests can sometimes detect THC for several weeks.

Does marijuana use lead to other drugs?

Research suggests that teens usually try alcohol, tobacco, and marijuana before most other drugs. But most people who use marijuana don't go on to use other drugs.

Here are a few theories about why some do:

- Someone who is more likely to use other drugs may use marijuana first because it's easier to get.
- Someone who is using marijuana is likely to be in contact with users and sellers of other drugs, increasing the chances of trying them.

What is K2 or Spice and how does it affect the brain?

K2 or Spice refers to plant materials that have been coated with chemicals similar to the chemicals found in marijuana. Some people mistakenly think K2/Spice and marijuana are the same thing, but they're not.

Sellers advertise K2/Spice as both a "safe" and "legal" substitute for marijuana. Neither is true. Although labels on K2/Spice products often say that they contain "natural" material from plants, their active ingredients are made in labs. These chemicals act on the same brain areas as THC. However, some chemicals in K2/Spice may produce much more powerful, unpleasant, and unpredictable effects, such as extreme anxiety, paranoia, and hallucinations.

The chemicals in many products sold as K2/Spice are unknown. Some varieties could cause dramatically different effects than the person might expect.



Is it safe to smoke marijuana if you are pregnant or breastfeeding?

Doctors advise pregnant women not to use marijuana because it could harm the fetus. Studies suggest that children of mothers who used marijuana while pregnant may be more likely to have trouble with problem-solving skills, memory, and attention. Mothers are also advised not to use marijuana while breastfeeding. Research suggests that moderate amounts of THC are excreted into breast milk. We're still learning how this affects a baby's developing brain.

Can marijuana produce withdrawal symptoms when someone quits using it?

Yes, it can. The symptoms can include irritability, problems sleeping, anxiety, and marijuana cravings, and peak a few days after regular marijuana use has stopped. Withdrawal symptoms can make it hard for someone to stay off marijuana.

What if a person wants to quit using marijuana but it's too hard?

If people find it hard to stop using, they might have a marijuana use disorder. The severe form of a marijuana use disorder is also known as addiction. Marijuana use disorder is complex but treatable. No single treatment is right for everyone. Addiction treatment can help a person stop using drugs, rebuild relationships with family and friends, and restore their productivity at work, at school, and in society. Current treatment programs for marijuana focus on counseling and support groups. There are also programs specially designed to help teenagers. Researchers are testing different ways to help people stay off the drug, including some medications.

TJONES1 — JUNCTION CITY HIGH SCHOOL, OREGON:

If you're dating someone who uses marijuana, does that increase your chance of using it?

NIDA: Great question! Research shows that people who have friends who use drugs are more likely to use drugs themselves. But we don't really know why this is the case. It could be that by hanging out with people who use drugs, you have more chances to try them. Certainly, you can choose not to try drugs if offered, but this can be a challenge. Another approach would be to see if your friend will stop using marijuana — for your benefit and theirs.

—from NIDA's Chat Day



Is marijuana legal?

Federal law says marijuana in any form (e.g., smoked or edible) is not legal for medical or recreational use. However, some states have made marijuana use legal for medical use, and a few have even legalized it for recreational use (for adults only). Check your state website to learn if your state has medical or recreational laws.

What's the latest on medical marijuana?

Research has shown that some chemicals in marijuana including THC and cannabidiol (CBD) could have medical uses. Clinical trials are ongoing to develop and test medications that contain THC and/or CBD for pain relief or seizure disorders. The Food and Drug Administration (FDA) will evaluate the results to determine if these medications are safe and effective for treating these conditions. There are currently three FDA-approved medicines containing THC or THC-like chemicals that treat nausea from chemotherapy and increase appetite in patients with AIDS. These include two forms of a medicine called *dronabinol*, available as a capsule or an oral liquid, as well as a medicine named *nabilone* sold as capsules.

Scientists continue to investigate safe ways that patients can use THC and other marijuana ingredients as medicine.

Many researchers, including those funded by the National Institutes of Health, are continuing to explore the possible uses of THC and other cannabinoids to treat symptoms of illness and other conditions such as:

- cancer
- HIV/AIDS
- multiple sclerosis (MS)
- inflammation
- pain
- seizures
- addiction
- mental health, including disorders such as post-traumatic stress disorder (PTSD)

Sativex[®], a mouth spray containing THC and CBD (another chemical found in the marijuana plant) is available in several countries outside the United States. It's used to treat muscle spasms and nerve pain caused by multiple sclerosis. Epidiolex[®], a CBD-based liquid drug to treat certain forms of childhood epilepsy, is being tested in clinical trials.



III. Other Useful Resources

Here are some helpful places to go for more information:

The National Institute on Drug Abuse (NIDA)

The NIDA website drugabuse.gov has information on a variety of drugs and related topics. NIDA's teen site teens.drugabuse.gov has free downloads, entertaining and informative videos and games, and a blog for teens, where you can leave us a comment or two. Get the scoop on how different drugs affect the brain and body, and read real stories from teens who have struggled with drug use and addiction.

The National Institute on Alcohol Abuse and Alcoholism (NIAAA)

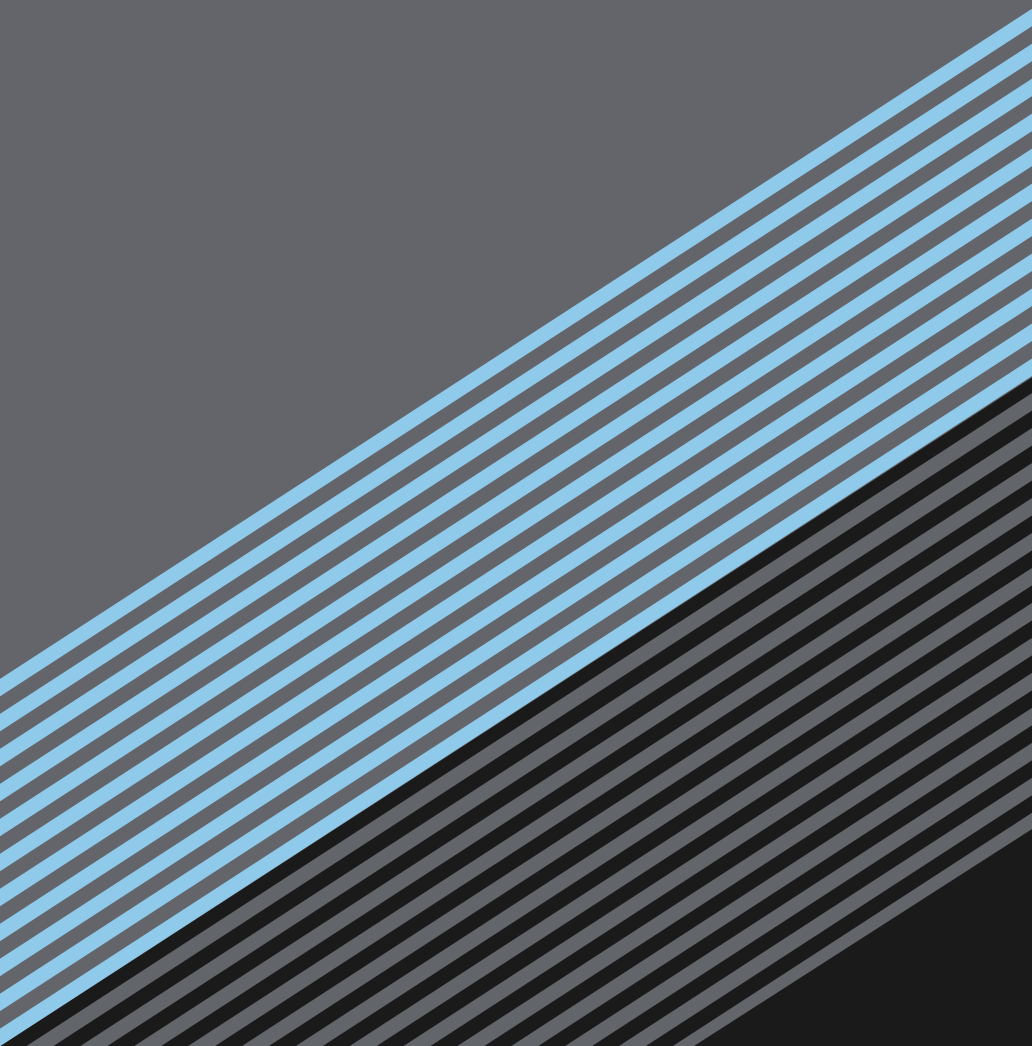
The NIAAA website www.niaaa.nih.gov contains the latest research, news, and other resources related to alcohol. NIAAA even has a site especially for young teens called "the cool spot," www.thecoolspot.gov, with quizzes and other interactive resources that give you information on alcohol and resisting peer pressure.

The National Institute of Mental Health (NIMH)

To learn more about mental health disorders like depression or schizophrenia, visit the NIMH website at www.nimh.nih.gov and read the Director's Blog on various topics that include suicide prevention, bipolar and borderline personality disorders, coping with traumatic events, and more.

Need Treatment?

You can find treatment programs through the website www.findtreatment.samhsa.gov provided by the Substance Abuse and Mental Health Services Administration (SAMHSA). You can also call the SAMHSA Treatment Referral hotline at 1-800-662-HELP. Treatment can help you, a friend, or someone you love get back to the person you or they once were.



WHAT IS
K2/SPICE?
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