

Effect of adolescent marijuana use on health and other outcomes (1)—APPROVED STATEMENTS

	Evidence Reviews				APPROVED STATEMENTS
	Colorado Report Review Article, 2014 (pg. 94-102)	RAND report Evidence review, 2015 (pg. 31-47)	Hall Review, 2014	Oregon: Washington county report, 2014 (pg. 29-32)	Oregon Public Health Division Approved Statements
Cognition	<p>MODERATE evidence that regular users more likely than non-users to show cognitive impairment for at least 28 days after last use.^{1,2,3,4}</p>	<p>Marijuana can acutely impair short-term memory, attention, reaction time, and psychomotor performance.⁵</p> <p>Meta-analyses suggest that the associations between marijuana use and long-term cognitive functioning are fairly weak and inconsistent.^{6 7}</p>	<p>Reviews consistently find deficits in verbal learning, memory and attention in regular marijuana users. Usually related to duration and frequency of use, age of initiation, cumulative THC dose.^{8,9,10}</p> <p>Unclear whether cognitive function recovers after abstinence. One study found impairment 28 days after last use² and another found full recovery after 28 days.¹¹</p>	<p>Marijuana initiation before ages 15-17 is associated with poor executive function (deficits in visual attention, short-term memory recall, impulsivity, inhibition, etc.) compared to those who initiate later.^{12,13}</p>	<p>Regular marijuana use by adolescents and young adults is associated with impaired learning, memory, math and reading achievement, even 28 days after last use.</p> <p>These impairments increase with more frequent marijuana use.</p>
IQ	<p>LIMITED evidence that regular users are more likely than non-users to</p>	<p>One longitudinal study (Dunedin cohort) found significant declines in IQ among</p>	<p>Also cites Dunedin cohort study.</p>		

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	score lower on an IQ test 12 hours or more after last use. ^{14,15,16}	persistent and daily/near daily users who began using in adolescence and persisted in 20s and 30s. No effects among those who initiate later or quit during young adulthood. ¹⁷			
Education	<p>MODERATE evidence that regular users are less likely than non-users to graduate from high school. ^{18,19,20}</p> <p>LIMITED evidence that regular users are less likely than non-users to attain a college degree.^{21,22,23}</p>	<p>Regular marijuana users have lower educational attainment than non-using peers, but association may be amplified by school policies that exclude students who are caught using marijuana.²⁴</p> <p>U.S. longitudinal study found effect of marijuana use on dropping out disappeared once they controlled for cigarette use.²⁵</p>	<p>Meta-analysis showed the earlier the age of onset of marijuana, the lower the chances of completing school, after controlling for parental social class and other measures.²⁶</p> <p>Twin studies found no difference between risk of leaving school between twins who used marijuana and those that didn't. Point to shared environmental/genetic risk factors.^{27,28,29}</p>	<p>More likely to initiate and use marijuana if in-school friends binge drink, they no longer attend school, or have high rates of absenteeism.³⁰</p> <p>High levels of marijuana use in late adolescence and early adulthood is related to poorer educational outcomes, lower income, greater welfare dependence, unemployment.³¹</p>	Regular marijuana use by adolescents is associated with low academic achievement, such as not graduating from high school.
Adult marijuana dependence	MODERATE evidence that adolescent and young adult users	1 in 10 marijuana users will meet dependence criteria. Likelihood is higher			Starting marijuana use during adolescence or young adulthood is

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	are more likely than non-users to increase their use and become addicted to marijuana in adulthood. ^{32,33,34}	among those who initiated in adolescents at 1 in 6. ^{35,36}			associated with cannabis use disorder as an adult.
Other drug use	<p>MODERATE evidence that adolescent users are more likely to use and be addicted to alcohol or tobacco in adulthood.^{37,38,39}</p> <p>SUBSTANTIAL evidence that users are more likely to use and be addicted to illicit drugs in adulthood.^{40,41,42,43,44,45,46,47}</p>		<p>Most consistent epidemiological findings show increased likelihood of using other illicit drugs. Could be based on increased opportunities; shared risk factors; or pharmacological impacts of marijuana increasing propensity for other drugs.^{48,49}</p> <p>Several studies found marijuana users are more likely to become tobacco smokers.^{50,51}</p>		Marijuana use by adolescents and young adults - even occasional use - is associated with adult high-risk use of alcohol, tobacco, and other drugs like cocaine, ecstasy, opioids and methamphetamine.
Psychosis	<p>SUBSTANTIAL evidence that users are more likely to develop psychotic symptoms or psychotic disorders like schizophrenia in adulthood.^{52,53,54,55,56,57}</p>	<p>There is an association between marijuana and psychotic symptoms that has been replicated many times, in many populations.^{58,59}</p> <p>Studies that adjusted more comprehensively</p>	<p>Meta-analysis of longitudinal studies found that psychotic symptoms were more common among those who ever used marijuana, adjusting for pre-existing symptoms.⁶²</p>	<p>Of adolescents who report psychotic symptoms at baseline, those who initiated cannabis use were more likely to experience psychotic symptoms at the follow up.⁶⁴</p>	<p>Regular marijuana use by adolescents and young adults is associated with an increased rate of psychotic symptoms and disorders such as schizophrenia in adulthood.</p> <p>This risk is increased among those who start using marijuana at a younger age.</p>

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		for confounding also found associations were reduced. ^{60,61}	Young people with psychoses who use marijuana have an earlier than average age of first-episode psychosis. ⁶³	Cannabis use predicts psychosis vulnerability in adolescents and vice versa, which suggest there is a bidirectional causal association between the two. ⁶⁵	This risk is increased with more frequent marijuana use.
Mental health (e.g. depression, suicide)	<p>MIXED evidence for whether or not users are more likely to have symptoms or be diagnosed with anxiety in adulthood.^{66,67}</p> <p>MIXED evidence for whether or not users are more likely to have symptoms or a diagnosis of depression in adulthood.^{68,69,70,71,72,73}</p> <p>MIXED evidence for whether or not users are more likely to have suicidal thoughts or attempt suicide.^{74,75,76,77}</p>		Relationship between marijuana and depression is weak. Most associations disappeared once confounding were adjusted for. The same review found associations between marijuana and suicide to be mixed and confounding not adequately controlled for. ⁷⁸		There is conflicting research for whether or not marijuana use by adolescents and young adults is associated with depression, anxiety or suicidal thoughts.

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Crime		Heavy adolescent marijuana use is correlated with drug and property crime, but not with violent crime. ⁷⁹			
Effects of quitting	MODERATE evidence that users who quit have lower risks of cognitive and mental health outcomes than those who continue to use.		Youth with a first-episode psychosis who quit have fewer psychotic symptoms and better social functioning. ⁸⁰		
Other messages					

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