Youth Marijuana Prevention Strategies

PREPARED FOR
THRIVE Mat-Su—United Way of Mat-Su

PREPARED BY
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Youth Marijuana Prevention Strategies

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Executive Summary

As the Matanuska-Susitna Borough’s community substance use prevention coalition, THRIVE Mat-Su identified youth marijuana use as a key issue needing its own strategic initiative. THRIVE Mat-Su contracted with McDowell Group to conduct a literature review of marijuana impacts on youth, risk and protective factors for youth marijuana use, and evidenced-based strategies for youth marijuana-use prevention that may be appropriate for the Mat-Su Borough.

Marijuana research is evolving rapidly due to changes in the drug’s legal and social environments. Many of these changes are addressed here; however, research findings on marijuana use and abuse should be regarded as subject to change. Within this context, the report attempts to identify the most meaningful findings and characterize the degree to which those findings are currently supported.

Marijuana Impacts on Youth

Child Health and Development

- Maternal marijuana smoking during pregnancy is associated with lower birth weights.
- In states where marijuana use is legal, an increased risk of overdose injuries and respiratory distress has been documented among children.
- Substantial evidence associates marijuana use with the development of schizophrenia or other psychoses among youth and young adults, particularly among those who use marijuana frequently.
- Marijuana use negatively affects driving skills and driving behavior among youth.
- Adolescents who use marijuana have a higher risk of dependence and substance use problems in adulthood.
- Substantial evidence links youth marijuana use with increased frequency of marijuana use and problem marijuana use in adulthood.

Youth Marijuana Use and Education

- Limited evidence suggests youth who smoke marijuana in high school are more likely to drop out of school and report lower levels of educational achievement.
- School environments and social norms can influence marijuana use. For example, when students feel policies are not strongly enforced, marijuana use is greater.

Marketing, Labeling, Packaging and Retail

Many research studies document the relationship between tobacco industry marketing, labeling, and packaging and youth smoking. Some policy documents indicate similar patterns and behaviors for the marijuana industry. However, little peer-reviewed research has documented this relationship to date. Similarly, retailer density has been widely studied for tobacco and alcohol prevention efforts. However, additional research needs to be completed to understand the impacts of marijuana retailers on communities.
Youth Risk and Protective Factors

The following lists summarize risk and protective factors associated with youth marijuana use organized by individual, relationship, community, and societal levels.

Individual

RISK FACTORS

- Youth exhibiting aggressive behavior, oppositional behavior, conduct problems, and other antisocial traits and behaviors
- Personal traits like impulsivity, or a tendency to act without considering consequences, as well as sensation seeking (a trait of seeking out varied, new, complex, or intense experiences)
- Education-related factors such as attention and concentration problems, poor academic performance, and truancy
- Experience of depression or generalized and social anxiety
- Sleep problems and insomnia in childhood and adolescence
- Prior or current substance use
- Positive attitudes and beliefs towards substance use

PROTECTIVE FACTORS

- Resilience and good behavioral health
- Religiosity, often defined as religious affiliation, and or traditional religious beliefs and practices

Relationship Level

RISK FACTORS

- Experiences of child abuse and childhood sexual abuse
- Family and parental history of substance use and substance use disorders, as well as favorable family attitudes towards drugs
- Limited family management and parental monitoring and communication
- Friends and peers’ substance use, as well as favorable attitudes, perceptions, and intentions towards substance use

PROTECTIVE FACTORS

- Family relationships where youth report closeness to a parent
- Strong family communication
- Frequent family meals
- High parental monitoring

Community Level

RISK FACTORS

- Community violence and crime
• Availability of marijuana and other drugs, as well as community norms that are favorable to marijuana
• Neighborhood poverty
• Residential instability and mobility

PROTECTIVE FACTORS

• Neighborhood economic stability
• Connectedness, neighborhood cohesion, and intergenerational networks

Society Level

RISK FACTORS

• Increased exposure to popular music and culture
• Cultural factors related to immigration status and acculturation
• Widespread economic hardship during a child’s infancy

PROTECTIVE FACTORS

• Traditional religious beliefs and practices
• Community economic stability
• Perception of higher social status

Programs and Interventions

More research is needed to study youth marijuana prevention programs, particularly as the legal status of marijuana and the marijuana industry changes. Most prevention programs reviewed in this report focus on youth drug use prevention strategies. While important, the majority of these programs did not focus explicitly on the complexities of marijuana use in perceptions, risks, harms, etc. This type of research would be helpful to understand the issues affecting use before developing preventive practices.

• Most prevention programs are school-based curriculums focused on drug prevention. School-based prevention programs have shown some success. In schools where students receive messages about abstinence from marijuana at school or counseling on the risks of marijuana use, students report using less marijuana.
• The majority of the programs focus on social emotional learning skills and/or other social skills to know how to deal with the activities in the youth’s lives without using drugs as a coping mechanism.
• Few programs focus on environmental strategies and/or policies around marketing, retail, social norms, and community acceptability.
Introduction, Purpose and Structure

Introduction

THRIVE Mat-Su

As the Matanuska-Susitna Borough’s community substance use prevention coalition, THRIVE Mat-Su’s mission is to “lead a data-driven coordinated community response to prevent and reduce underage substance use” and support a “community where individuals thrive in an environment that supports healthy choices regarding substance use.” The coalition identified youth marijuana use as a key issue needing its own strategic initiative within the coalition. This report is an initial step in THRIVE Mat-Su’s process to review research and assess youth marijuana-prevention strategies.

Marijuana in Alaska

Personal marijuana use has been quasi-legal in Alaska for several decades based on a 1975 Alaska Supreme Court decision that adults could use and possess a small amount of marijuana in the privacy of their homes. In November 2014, Alaskans voted to legalize recreational use of marijuana by persons 21 years of age or older. The Alaska State Legislature responded in May of 2015 with passage of AS 17.38, which created the Marijuana Control Board to develop and adopt regulations to govern the commercial marijuana industry. The first marijuana retail stores began selling marijuana products in Alaska in October 2016.

Nevertheless, the recreational-marijuana industry in Alaska, as well as in other states that have legalized and regulated marijuana use, operates on tenuous legal grounds. This is because marijuana remains illegal under federal law, which lists it as a Schedule 1 drug along with heroin and LSD, among others.

Purpose

THRIVE Mat-Su contracted with McDowell Group to conduct a literature review and a review of evidence-based programs to describe marijuana impacts on youth, risk and protective factors for youth marijuana use, and promising strategies for youth marijuana-use prevention that may be appropriate for the Mat-Su Borough. The report is designed to provide a foundational understanding of the impacts of youth marijuana use and of community-level prevention strategies for further discussion by THRIVE coalition members.

THRIVE Mat-Su will use this report to develop a theory of change and logic model to inform a new strategic plan that addresses youth marijuana use prevention in the community.
Limitations

It is important to acknowledge several limitations inherent in this research:

1. Due to marijuana’s illegal federal status, the U.S. government maintains restrictive policies and regulations with respect to research on the health effects of marijuana. Further, most research that does exist was published prior to the recent wave of legalization legislation at the state level. Partly as a result, the long-term effects and unintended consequences of marijuana use are not well understood or documented.

2. The shifting cultural and legal landscape of marijuana mean that most conclusions about the drug’s long-term impacts, and about programs to address them, must be regarded as tentative.

3. This is not a definitive or exhaustive source of information on youth marijuana use and is intended to encourage discussion and community-based preventive planning.

Considerations

The findings of this literature review are subject to a number of factors specific to the unique status of marijuana in the U.S. at this time. These include:

- The changing state and federal legal context for marijuana use lends a measure of complexity to any effort to summarize and prioritize the literature. In Alaska, marijuana use remains illegal for youth under 21 years of age. However, social attitudes toward marijuana are in flux since recreational use was legalized at the state level for adults in 2014.

- The fledgling, but widespread marijuana industry is contributing to changing social attitudes and has also funded, and therefore may have helped to define, some of the latest research.

- State laws governing marijuana marketing, distribution locations and labeling are too new to support much research on their effectiveness. This has led to parallels being drawn with tobacco, but those similarities are also not well studied.

- A great deal of research on marijuana is not focused exclusively on marijuana but includes questions about marijuana in surveys and other research directed at youth drug use in general. The interrelationships among drug use with respect to marijuana, alcohol, tobacco, heroin, methamphetamine, steroids, and other relatively common controlled substances are not well understood.

- Similarly, many studies have examined social norms and community norms for youth alcohol, tobacco and other drug use, but little research specific to marijuana use exists on this issue, especially at the community level.

- There is little research that differentiates between marijuana obtained through commercial channels and marijuana from the “black market.”
• Public messaging on youth marijuana use is difficult to interpret because, while it is grounded in research, it is also subject to pressure to overstate public health implications in order to err on the side of prevention. For example, there is general agreement that driving after using marijuana increases the risk of motor vehicle crashes, but there is little research documenting what, if any, amount of marijuana is safe to use before driving.

• There is very little research on the effects or use of marijuana in edible form, and the situation is similar for e-cigarettes and marijuana, though there is evidence Alaskan youth are using e-cigarettes to “vape” marijuana oil cartridges.

• Finally, the overwhelming majority of research on youth marijuana use is designed to identify correlation rather than causation. For example, youth marijuana use is associated with childhood sleep problems, but it is not known whether this reflects physical and emotional factors associated with exhaustion, or some other factor related to childhood sleep problems like home environment.

Structure

This report has three main sections:

1. Marijuana Impacts on Youth – This section explores the impacts of youth marijuana use. Except for prenatal exposure and exposure through breastmilk, it does not consider the impacts of parental marijuana use on children. First, this section describes the potential health effects of marijuana during childhood development, then it examines impacts on education outcomes. Next, it considers the legal consequences of marijuana use and possession for youth. Finally, it discusses some ways recreational marijuana industry may affect youth.

2. Risk and Protective Factors for Youth Marijuana Use – This section summarizes risk and protective factors for youth marijuana use at each level of the socio-ecological model (that is, individual, relationship, community, and societal levels).

3. Prevention Strategies – This section presents a selection of youth marijuana-use prevention strategies for further consideration by the THRIVE Mat-Su coalition.

Definitions and Abbreviations

DEFINITIONS

Marijuana, or cannabis, refers to the dried leaves, flowers, stems, and seeds from Cannabis sativa plants. Marijuana contains tetrahydrocannabinol (THC), a psychoactive compound that is the primary chemical responsible for marijuana’s mind-altering effects. Marijuana can be smoked, concentrated as a resin or oil, mixed with food, or brewed as tea.

Youth are the primary population of interest for this report. Within this report, youth refers to all individuals under the age of 21. This age range has been chosen because it remains illegal for youth and young adults under the age of 21 to cultivate, possess, sell, or use marijuana products in Alaska.
Recreational marijuana refers in this report to marijuana use that has no medical or therapeutic objective.

Risk factors are characteristics associated with a higher likelihood of risky behavior. Marijuana use by youths under age 21 is considered a risky behavior. Risk factors described in this report are not causal factors but are rather associated (correlated) with youth marijuana use. For example, having a family history of substance abuse is a risk factor for substance abuse among youth, but it does not always lead to, or directly cause, substance abuse.

Protective factors are characteristics associated with a lower likelihood of risky behavior. A protective factor is not necessarily the inverse (i.e., a strength-based version) of a risk factor, rather it is an independent factor protecting youth from a behavior that is of concern. For example, having an alcoholic parent is a risk-factor for underage drinking, but simply having a parent who is not alcoholic is not, by itself, considered a protective factor.

ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CAPT</td>
<td>Center for the Application of Prevention Technologies</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>CDPHE</td>
<td>Colorado Department of Public Health &amp; Environment</td>
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<tr>
<td>DHSS</td>
<td>Alaska Department of Health and Social Services</td>
</tr>
<tr>
<td>DPH</td>
<td>Division of Public Health</td>
</tr>
<tr>
<td>DSM</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>NIDA</td>
<td>National Institute on Drug Abuse</td>
</tr>
<tr>
<td>NHTSA</td>
<td>National Highway Transportation and Safety Administration</td>
</tr>
<tr>
<td>NREPP</td>
<td>National Registry of Evidence-Based Programs and Practices</td>
</tr>
<tr>
<td>SAMHSA</td>
<td>Substance Abuse and Mental Health Services Administration</td>
</tr>
<tr>
<td>WSDH</td>
<td>Washington State Department of Health</td>
</tr>
<tr>
<td>WSIPP</td>
<td>Washington State Institute for Public Policy</td>
</tr>
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</table>
Methods

Overview

Research methods for the three sections of the report varied and are summarized in the following sections. To be included in any of the sections, however, the literature, program and/or intervention must focus explicitly on youth and marijuana use. This includes parental use of marijuana where the literature demonstrated impacts on the children. Marijuana impacts, risk and protective factors, and interventions were not included if they focused on adults.

Marijuana Impacts on Youth

Peer-reviewed literature as well as state and federal agency reports were used to identify marijuana impacts on youth across childhood development and about the relationship between marijuana and education. National agencies consulted included Centers for Disease Control and Prevention (CDC), National Institute on Drug Abuse (NIDA), National Highway Traffic Safety Administration (NHTSA), and the Substance Abuse and Mental Health Services Administration (SAMHSA). State health agencies included Alaska Department of Health and Social Services (DHSS), Division of Public Health (DPH), Colorado Department of Public Health & Environment (CDPHE), and Washington State Department of Health (WSDH).

The following definitions guided whether youth impacts would appear in this literature review. These were modeled after the Colorado Department of Public Health & Environment’s, Monitoring Health Concerns Related to Marijuana in Colorado: 2016: Changes in Marijuana Use Patterns, Systematic Literature Review, and Possible Marijuana-Related Health Effects:

- Substantial evidence supported scientific findings for the outcome and little to no credible opposing scientific evidence existed.
- Moderate evidence supported scientific findings for the outcome, but the findings were subject to limitations.
- Limited evidence supported scientific findings for the outcome, and the findings were subject to significant limitations.
- Mixed evidence both supported and opposed scientific findings for the outcome, and neither side dominated the literature.
- Insufficient evidence means the outcome was not sufficiently studied.

This literature review includes results that meet the first three definitions: substantial, moderate, and limited evidence for impacts on youth, and they are so labeled in the text. Findings with mixed or insufficient evidence were not included but were acknowledged where public health agencies caution the public about potential health implications.
Risk and Protective Factors

Few peer-reviewed studies of marijuana risk and protective factors were identified. This section is based primarily on white papers by state or federal agencies and scientific organizations. White papers were included only if a committee of scientific experts or an identified scientific process was used to select the evidence presented. The white papers include:

- *Colorado Violence and Injury Prevention – Mental Health Promotion Strategic Plan, 2016-2020*, Colorado Department of Public Health & Environment
- *Preventing Youth Marijuana Use: Factors Associated with Use*, SAMHSA’s Center for the Application of Prevention Technologies (CAPT) Decision-Support Tools
- *Washington State Programs and Practices for Youth Marijuana Use Prevention*, Washington State Department of Social & Health Services

Similar results for risk and protective factors across multiple documents were combined. Risk and protective factors were not included if they applied only to highly dense, urban areas. Factors for adults were not included unless they were linked to impacts on youth. Risk and protective factors for the individual, relationship, and community levels of the socio-ecological model listed in SAMHSA’s CAPT Decisions Support Tools documents were eliminated if only one scientific study was cited as evidence.

This report also summarizes protective factors for youth marijuana use as identified by the State of Alaska Department of Health and Social Services (DHSS) through analysis of Alaska statewide Youth Risk Behavior Survey (YRBS) data.

Prevention Strategies

The study team reviewed tools used by established programs that address youth marijuana use, including the following:

- SAMHSA’s National Registry of Evidence-based Programs and Practices (NREPP)
- SAMHSA’s CAPT – *Preventing Youth Marijuana Use: Program and Strategies*
- Washington State Institute for Public Policy (WSIPP) – *Updated Inventory of Programs for the Prevention and Treatment of Youth Cannabis Use*
• Office of Juvenile Justice and Delinquency Prevention Model Programs Guide
• Athena Forum – An online tool for substance use prevention professionals to share their work
• Blueprints Programs: Resource for Healthy Youth Development Programs
• RAND Corporation – Online Marijuana Query tool
• U.S. Department of Education – What Works Clearinghouse
• Coalition for Evidence-Based Policy – Evidence-Based Reviews

Over 30 programs were identified through these sources. From those interventions, the research team selected only the programs that were evidence-based where evidence-based met the following criteria (modeled after the SAMHSA’s NREPP’s definition):

1. The intervention reduced youth marijuana use or produced other positive effects preventing youth marijuana use and these outcomes were reported in a peer-reviewed journal.

OR

2. The intervention produced documented evidence of effectiveness and had four characteristics. The intervention:
   a. Is based on a documented theory of change.
   b. Is similar in content and structure to interventions that appear in federal registries of evidence-based interventions and/or peer-reviewed journals.
   c. Has been implemented multiple times while adhering to scientific standards of evidence, and the evidence displayed a consistent pattern of the same effects.
   d. Has been reviewed by a panel of informed prevention experts who deemed it appropriate.5

The interventions that met these criteria were reviewed for suitability to be implemented in the Matanuska-Susitna Borough. Strategies limited to specific populations such as interventions by gender or youth in juvenile justice settings were excluded. Treatment initiatives and strategies for implementation in a clinical setting also were eliminated.
Overview

This section describes research on potential health effects of marijuana across childhood development, how marijuana affects secondary education, legal consequences of marijuana use and possession for youth, and how the recreational marijuana industry may affect youth. Throughout the section, the terms conclusive, substantial, moderate, limited, mixed, and insufficient are used to describe the overall quality and quantity of evidence for a relationship between marijuana use and various factors or outcomes.

Note that where researchers have found limited, mixed, or insufficient evidence, it does not mean there is no possible relationship between marijuana use and a health outcome. Rather, the current body of research does not make the relationship clear. Even in these cases, many public health entities take the position that the public nevertheless should be warned that such risks may exist.

Marijuana and Health Across Childhood Development

This review focuses on risk from pre-natal development through young adulthood. It does not assess literature pertaining to potential therapeutic effects of marijuana. Table 1 summarizes the findings related to the health impacts of marijuana across childhood development by the strength of evidence.

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Level of Evidence</th>
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<tbody>
<tr>
<td><strong>Prenatal Exposure</strong></td>
<td></td>
</tr>
<tr>
<td>Lower birth weight</td>
<td>Substantial</td>
</tr>
<tr>
<td>Later in life substance abuse</td>
<td>Insufficient</td>
</tr>
<tr>
<td>Learning difficulties</td>
<td>Insufficient</td>
</tr>
<tr>
<td>Sudden infant death syndrome</td>
<td>Insufficient</td>
</tr>
<tr>
<td><strong>Infancy</strong></td>
<td></td>
</tr>
<tr>
<td>Academic and attention problems</td>
<td>Insufficient</td>
</tr>
<tr>
<td>Lower IQ scores and mental function</td>
<td>Insufficient</td>
</tr>
<tr>
<td>Stunted growth</td>
<td>Insufficient</td>
</tr>
<tr>
<td><strong>Childhood</strong></td>
<td></td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>Moderate</td>
</tr>
<tr>
<td>Overdose injury</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Adolescence and Young Adulthood</strong></td>
<td></td>
</tr>
<tr>
<td>Developing substance use disorders</td>
<td>Substantial</td>
</tr>
<tr>
<td>Increased risk of motor vehicle crashes</td>
<td>Substantial</td>
</tr>
<tr>
<td>Problem marijuana use and increased frequency of marijuana use</td>
<td>Substantial</td>
</tr>
<tr>
<td>Schizophrenia or other psychoses</td>
<td>Substantial</td>
</tr>
<tr>
<td>Impairment in learning, memory, and attention</td>
<td>Moderate</td>
</tr>
<tr>
<td>Anxiety, depression, suicidal thoughts or attempts</td>
<td>Mixed</td>
</tr>
</tbody>
</table>
Prenatal Exposure

CDC and Alaska DHSS DPH both recommend against using marijuana during pregnancy.\textsuperscript{6,7} Marijuana smoke shares chemical similarities with tobacco smoke and may pose similar risks to unborn babies during pregnancy.\textsuperscript{8} Smoking marijuana during pregnancy exposes an unborn child to tetrahydrocannabinol (THC), the primary psychoactive compound in marijuana.\textsuperscript{9} Most research in this area is based on marijuana exposure through smoking, though it is theoretically possible that using edible marijuana products during pregnancy may also pose a risk for a baby's health, but there is insufficient evidence specific to edibles.

More research is needed to understand the relationship between prenatal marijuana exposure and developmental issues or long-term health outcomes. There is a small body of research suggesting marijuana use during pregnancy can increase a child's risk of developmental issues such as attention problems and learning difficulties later in life.\textsuperscript{10}

However, a review conducted by the National Academies of Sciences, Engineering, and Medicine concludes there is insufficient evidence either to support or refute an association between maternal marijuana smoking and cognition and academic achievement.\textsuperscript{11} This same review also finds insufficient evidence to support or refute a relationship between maternal marijuana use and sudden infant death syndrome or a link with substance abuse later in life.

The National Academies of Sciences, Engineering, and Medicine did find substantial evidence documenting an association between maternal marijuana smoking during pregnancy and lower birth weight.\textsuperscript{12}

Infancy

Chemicals from marijuana such as THC can pass to breastfeeding infants and children through breast milk.\textsuperscript{13} THC is stored in body fat and released over time. This means THC can remain in breast milk long after consumption, though it is not known for exactly how long.\textsuperscript{14} The DHSS DPH warns mothers that marijuana exposure through breastfeeding could reduce growth, lower IQ scores, decrease mental function and academic ability, and cause attention problems.\textsuperscript{15} These findings should be considered insufficient. More scientific research is needed to link marijuana exposure through breastfeeding conclusively to these outcomes.\textsuperscript{16}

Childhood

Children are vulnerable to marijuana poisoning. Ingesting marijuana can result in respiratory failure and coma among children.\textsuperscript{17} There is moderate evidence that cannabis use among children is associated with an increased risk of overdose injuries and respiratory distress.

Adolescence and Young Adulthood

Marijuana use typically is initiated during adolescence and young adulthood. Over one third (38 percent) of US high school students report that they have used marijuana at least once in their lifetime.\textsuperscript{18} In Alaska, 42 percent of high school students reported that they have ever used marijuana.\textsuperscript{19}
BRAIN DEVELOPMENT

The human brain does not fully develop until a person reaches their mid-twenties, and marijuana may have a harmful effect on brain development.20 There is moderate evidence of an association between acute marijuana use and impairment in learning, memory, and attention.21

MENTAL HEALTH

There is substantial evidence that marijuana use is associated with the development of schizophrenia or other psychoses, with the risk being greatest for the most frequent marijuana users.22 The Colorado Department of Public Health and Environment found mixed evidence for an association between adolescent marijuana use and anxiety, depression, and suicidal thoughts or suicide attempts.23

SUBSTANCE USE

There is moderate evidence that using drugs and alcohol in youth increases the risk of developing substance use disorders.24, 25 Similarly, using marijuana in adolescence is associated with a high risk of dependence and later problem outcomes in adulthood.26 There is also substantial evidence that youth marijuana use is associated with increased frequency of marijuana use and problem marijuana use.27

Problem marijuana use, such as abuse or dependence, is classified as “cannabis use disorder” in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).28 Cannabis use disorder symptoms include disruptions in functioning due to cannabis use, tolerance, marijuana cravings, and withdrawal symptoms such as the inability to sleep, restlessness, nervousness, anger, or depression within a week of ceasing heavy use. Other indicators include regularly being under the influence of marijuana for more than one or two hours a day, spending substantial time buying, using, or recovering from marijuana use, being unable to stop using marijuana, failing to follow through on commitments, difficulty concentrating or memory loss, and taking unwise risks while under the influence of cannabis.29

IMPAIRED DRIVING

Marijuana use affects skills necessary for driving, such as alertness, concentration, coordination, and reaction time.30 There is substantial evidence that marijuana use is associated with an increased risk of motor vehicle crashes.31 However, according to NHTSA, it is difficult to define the extent of the problem based on the existing data.32

Adolescent and young adult drivers are at greater risk for injury and fatality due to motor vehicle crash than the general population. Motor vehicle crashes are the leading cause of fatality among youth and young adults aged 15-24 in the United States.33 Nationally, motor vehicle crash rates are almost three times higher among youth aged 16-19 years old compared to all adults over the age of 20.34 While this review found limited literature specific to marijuana-impaired driving by youths, the common behavioral effects of marijuana use have potential implications for young drivers. For example, one study conducted with Canadian youth found particularly high frequencies of risky driving behaviors among frequent marijuana users.35 It should be noted that qualities associated with marijuana use such as being young, male, and risk-taking, are risk factors associated with motor vehicle crashes.36
Youth Marijuana Use and Education

There is limited evidence of an association between marijuana use and impaired academic achievement.\textsuperscript{37} There is also limited evidence of an association between marijuana use and dropping out of high school and lower educational achievement. Youth who possess or use marijuana on school property, or are found to be high at school, may also face disciplinary action such as suspension or expulsion based on their school’s policies and procedures which could likewise contribute to lower academic achievement.

Some studies have found that marijuana use is influenced by the broader school environment and social norms.\textsuperscript{38} For example, a review of the effects of school drug policies on student marijuana use in Washington State and Victoria, Australia found that student marijuana use was greater at schools that impose out-of-school suspensions and at schools where students felt tobacco, alcohol, and marijuana use policies were not strongly enforced on campus. Youth marijuana use was less likely where students received marijuana abstinence messages at school and where youth who violated school marijuana policies received counseling on the risks of marijuana use. Other risk and protective factors for youth marijuana use are presented in the Risk and Protective Factors chapter of this document.

Legal Consequences of Youth Marijuana Use

Historically, adolescents and young adults have comprised a majority of national marijuana possession arrests.\textsuperscript{39} The American Academy of Pediatrics reports that in 2009, 52 percent of all marijuana possession arrests in the United States were among adolescents and young adults under 24 years old. The American Academy of Pediatrics reports that it is difficult to determine what percentage of these arrests lead to misdemeanor charges or felony convictions. Even if the number is small, however, marijuana-related charges can significantly affect a young person’s life. In Alaska, it remains illegal for individuals under 21 years of age to cultivate, possess, or use marijuana. Youth who habitually possess or consume drugs or alcohol may be referred to detention facilities and treatment services through the State of Alaska’s Division of Juvenile Justice.

Recreational Marijuana Industry and Youth

In November 2014, Alaskans voted to legalize and regulate the commercial production and sale of marijuana by adults over 21 years of age. The state’s first marijuana retailers began selling the product to the public in October 2016. While it is illegal for youth and young adults under the age of 21 to purchase, possess, and use marijuana, it is important to consider the potential effects the industry may have on youth. The extent to which legalization has affected overall marijuana use among youths is not yet known. However, there are experiences and lessons learned from both the tobacco and alcohol industries about their impacts on youth that may apply to the marijuana industry. One is the established relationship between usage among youth and marketing and retailer density.
Marketing, Labeling, and Packaging

There is a causal link between tobacco advertisements and tobacco use among adolescents and young adults. This relationship persists regardless of whether the advertising is directed at youth or at adults. It is too early to tell whether the same relationship will hold for the marijuana industry.

Alaska Statute 3 AAC 306.360 outlines restrictions on the advertising of marijuana and marijuana products. The statute prohibits ads depicting a person under the age of 21 consuming marijuana or using characters that might appeal to youth and young adults. Additionally, advertisements cannot be placed within 1,000 feet of a school, child care facility, playground, recreation center, public park, library, game arcade, or campus for postsecondary education.

Tobacco packaging is a form of marketing used by tobacco companies to increase sales and attract users. Plain packaging of tobacco products has been found to reduce the attractiveness and appeal of products, increase the effectiveness of health messages, and reduce the use of design characteristics that mislead consumers about the harmfulness of tobacco products. The State of Alaska has adopted regulations restricting packaging design elements that could appeal to children. The State also requires manufacturers to use opaque, child-resistant packaging.

Product labeling has been used to share health information with tobacco users, yet text-only warnings have been found to be ineffective in communicating the health risks associated with smoking. The State currently requires that retail marijuana products feature text about package contents, product source, health effects, and a warning that the product should not be used by those under the age of 21 or by pregnant or breastfeeding women.

Retailer Density

High alcohol-retailer density is an environmental risk factor for excessive drinking. Limiting alcohol-retailer density is an evidence-based intervention for reducing excessive drinking in a community. Similarly, marijuana dispensary presence in a neighborhood could be a risk factor for marijuana abuse or dependence. An analysis of marijuana dispensary density and marijuana abuse and dependence in California found that an additional dispensary per square mile in a zip code was associated with a 6.8 percent increase in marijuana abuse or dependence hospitalizations. This study was conducted with data from 2001-2012, prior to the legalization and regulation of recreational marijuana sales in California.

Marijuana stores may be more likely to locate in disadvantaged neighborhoods. A study conducted in Colorado found that marijuana stores were more likely to be in neighborhoods that had lower household incomes, higher crime rates, and greater density of alcohol establishments.
Overview

This section of the report summarizes risk and protective factors for youth marijuana-use for each level of the socio-ecological model, which considers behavior in the context of a person’s individual traits, relationships, community, and societal influences. A risk factor is a characteristic associated with a higher likelihood of risky behavior, such as youth marijuana use. A protective factor is a characteristic that is associated with a lower likelihood of risky behavior. A protective factor is not necessarily a strength-based version (i.e. the inverse) of a risk factor. Rather it is an independent factor that has been shown to protect a population from an issue of concern.

Individual Level

Risk Factors

Individual-level risk factors for youth marijuana use include factors related to social and emotional development, education, mental health, physical health, spirituality, and substance use.

Social and Emotional Development

Risk factors for youth marijuana use associated with social and emotional development include antagonistic behaviors such as aggression, bullying, and other antisocial traits and behaviors, conduct problems, and oppositional behavior. Impulsivity, or a tendency to act without considering consequences, is also a risk factor, as is sensation seeking, a trait of seeking out diverse, new, complex, or intense experiences.

Education

Difficulty in school, in particular poor academic performance, attention and concentration problems in school, and truancy have been shown to be associated with youth marijuana use. As mentioned earlier, youth marijuana use may sometimes be a cause and other times a result of issues related to academic performance and education.

Mental Health

Research shows a relationship between mental health issues and youth marijuana use including depression and generalized and social anxiety disorders.

Physical Health

Risk factors related to physical health include sleep problems and insomnia.

Substance Use

A multitude of substance-use attitudes and behaviors related to alcohol, tobacco, and other drugs are associated with youth marijuana use, including early initiation of substance use, frequent substance use,
intention to use drugs, and low perception of harm of substance abuse. Positive attitudes, beliefs, and intentions towards drugs and the perception that marijuana is easy to obtain are also risk factors.

**Protective Factors**

Individual-level protective factors for youth marijuana use are related to social and emotional development, physical health, and spirituality. Resilience has been shown to be a protective factor. Good behavioral health is also protective, as are strong religious beliefs. Some research suggests a higher perception of risk contributes to the protective effect of religiosity.

Table 2 summarizes the individual level risk and protective factors identified in the literature review.

<table>
<thead>
<tr>
<th>Individual Level</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social and Emotional Development</td>
<td>Aggression\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Antisocial traits and behaviors\textsuperscript{h, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bullying\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conduct problems and conduct disorder\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impulsivity\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oppositional behaviors\textsuperscript{d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sensation seeking\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resilience\textsuperscript{e}</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Attention and concentration problems\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor academic performance\textsuperscript{a, b, c, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Truancy\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td>Mental Health</td>
<td>Depression\textsuperscript{a, b, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Generalized and social anxiety\textsuperscript{a, b, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good behavioral health\textsuperscript{e}</td>
<td></td>
</tr>
<tr>
<td>Physical Health</td>
<td>Sleep problems and insomnia\textsuperscript{a}</td>
<td></td>
</tr>
<tr>
<td>Spirituality</td>
<td>Religiosity\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td>Substance Use</td>
<td>Current alcohol, tobacco, nicotine, or other substance use\textsuperscript{a, b, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Early initiation of substance use\textsuperscript{a, b, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frequent substance use\textsuperscript{a, b, d}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intention to use drugs\textsuperscript{a, b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Low perception of harm of marijuana and other substance use\textsuperscript{b, c}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perception that marijuana is available and easy to access\textsuperscript{b}</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive beliefs and attitudes towards marijuana and other substance use\textsuperscript{a, b, c}</td>
<td></td>
</tr>
</tbody>
</table>


Relationship Level

Risk Factors

Relationship-level risk factors for youth marijuana use are connected to child abuse, family, friends, and peers.

ABUSE

Children who have experienced child abuse and childhood sexual abuse are at greater risk for using marijuana.

FAMILY

Family factors have a significant influence on youth marijuana use. Factors associated with parental behavior include a family history of substance use disorders, parental substance use, favorable attitudes of parents toward marijuana use, and low parental monitoring. Poor family management and lower family economic status have also been identified as risk factors, with some research suggesting high family economic status may also contribute to youth marijuana use.

FRIENDS AND PEERS

Peer groups influence youth marijuana use in several ways. Youths are more likely to use marijuana when their friends and peers do, as well as when their peers have favorable attitudes toward drug use, have lower perceived risk of drug use and have intention to use drugs. Affiliation with deviant peers is also a risk factor.

Protective Factors

The strongest relationship-level protective factors are all associated with family. They include closeness to parent, family communication, frequent family meals, parental monitoring and youth perception of family monitoring.

Table 3 summarizes the relationship level risk and protective factors identified in the literature review.
## Table 3. Relationship Level, Risk and Protective Factors for Youth Marijuana Use

<table>
<thead>
<tr>
<th>Relationship Level</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abuse</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Childhood sexual abuse&lt;sup&gt;a, d&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Child abuse and victimization&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>Family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Family history of substance use disorders&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Closeness to parent&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Low parental monitoring and communication&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Family communication&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Lower family socioeconomic status&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td>Frequent family meals&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Parental favorable attitudes towards drug use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>Parental monitoring and youth perceptions of parental monitoring&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Parental substance use&lt;sup&gt;a, b, d&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Poor family management&lt;sup&gt;b, c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td><strong>Friends and Peers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Affiliation with deviant peers&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Friends’ substance use&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peer favorable attitudes toward drug use&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peer intention to use drugs&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peer perceived risks for drug use&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Peer substance use&lt;sup&gt;a, b, c&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>


## Community Level

### Risk Factors

Community level risk factors for youth marijuana use relate to crime, drugs, the local economy, and community instability. That factors are similar to some family-level risk factors suggests that trauma, in many forms, may be a root contributor to youth marijuana use. For example, a 2011 study found teens’ experience of a natural disaster in their community was a risk factor for excessive marijuana use. However, the literature review did not find enough research to conclude that trauma in general is an identified risk factor.

**CRIME**

Living in a community with violence and high rates of crime has been identified as a risk factor for youth marijuana use.

**DRUGS**

High availability of marijuana and other drugs and community norms that are favorable to marijuana are well established risk factors for youth marijuana use.
High levels of neighborhood poverty and instability are recognized as risk factors for youth marijuana use. Residential mobility was found to correlate with lifetime marijuana use among a sample of Native American youth.

Protective Factors

Community-level protective factors for youth marijuana use include factors related to economic stability and neighborhood connectedness. The latter includes neighborhood cohesion and intergenerational networks or social interactions across age cohorts.

Table 5 summarizes the community-level risk and protective factors identified in the literature review.

<table>
<thead>
<tr>
<th>Community Level</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime</td>
<td>Community violence&lt;sup&gt;a, e&lt;/sup&gt;</td>
<td>Economic stability&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>High rates of crime&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Drugs</td>
<td>Availability of marijuana and other drugs&lt;sup&gt;a, b, c&lt;/sup&gt;</td>
<td>Community norms favorable to marijuana&lt;sup&gt;a, b, c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Economy</td>
<td>Neighborhood poverty&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Residential instability and mobility&lt;sup&gt;a, b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Connectedness&lt;sup&gt;b, e&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>


Society Level

Risk Factors

Society-level risk factors for youth marijuana use are associated with culture, the economy, generational norms, social status, and gender.

CULTURE

Increased exposure to popular media, especially music, has been identified as a risk factor for youth marijuana use. Other cultural risk factors relate to friction between the culture of the parents and that of the children, for example when there is a discrepancy in adoption of a new culture across these age groups. Similarly, second-generation immigrant status may also be a risk factor for youth marijuana use. Whether this finding may have implications for multi-ethnic communities such as Anchorage is not clear. It is important to note the effects have been documented only among Latinx adolescents, and no research was found that addresses whether similar generational dynamics in indigenous cultures affect marijuana use.

ECONOMY

Research on adolescents living in the United States in 1997 who were born during the recession in the early 1980’s suggests that periods of widespread economic hardship during a child’s infancy may be a risk factor for later marijuana use by those children. Many factors may contribute to this effect, including parental stress, low socioeconomic status, lack of access to childcare when both parents must work, etc., however the nature of those connections is not well understood.

GENERATION

Adolescents who mature in birth cohorts with low disapproval of marijuana have been found to be more likely to use marijuana during their teen years.

GENDER

Males have been found to be at greater risk for marijuana use during their youth compared to females.

Protective Factors

Society-level protective factors include societal religious norms, economic stability, and social status.

ECONOMY

The Colorado Department of Public Health and Environment has found economic stability to be protective for youth marijuana use.

SOCIAL STATUS

Young adults with a higher subjective view of their own social status have been found to use marijuana less.
Table 5 summarizes the society level risk and protective factors identified in the literature review.

### Table 5. Society Level, Risk and Protective Factors for Youth Marijuana Use

<table>
<thead>
<tr>
<th>Societal Level</th>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culture</td>
<td>Increased music exposure (popular media)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>Traditional religious beliefs and practices&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Parent-child discrepancy in acculturation (Hispanic adolescents)&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second-generation immigrant status&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Economy</td>
<td>Macroeconomic environment of high unemployment (higher than regional average) during infancy&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Economic stability&lt;sup&gt;g&lt;/sup&gt;</td>
</tr>
<tr>
<td>Generation</td>
<td>Birth cohort with low disapproval of marijuana use&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Social Status</td>
<td>Higher subjective social status&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male gender&lt;sup&gt;b, d&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>


### Youth Marijuana Use Risk and Protective Factors in Alaska

DHSS analyzed statewide Youth Risk Behavior Survey (YRBS) data and found risk and protective factors associated with current (past 30-day) marijuana use among high school students in Alaska. Risk factors associated with current marijuana use include depression, suicide ideation, and suicide attempt. Positive relationships with parents, teachers, and community members are protective factors for youth marijuana use. Alaskan high school youth who agree that teachers care and encourage them, report that their parents talk with them about what they are doing in school every day, and feel connected to their community are less likely to have used marijuana in the past month. This data has not been published in a peer-reviewed journal. However, statewide marijuana prevention documents present the information and it is the only locally available data analysis on risk and protective factors for Alaskan youth.

### Table 6. Factors Associated with Marijuana Use Among Alaska High School Students

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Protective Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>Supportive teachers</td>
</tr>
<tr>
<td>Suicide ideation</td>
<td>Talking with parents</td>
</tr>
<tr>
<td>Suicide attempt</td>
<td>Community connections</td>
</tr>
<tr>
<td></td>
<td>Participation in after-school programs</td>
</tr>
</tbody>
</table>

Overview

This chapter presents a selection of youth marijuana-use prevention strategies that may be appropriate for the THRIVE Mat-Su coalition. In all, twelve programs were identified as potentially of interest to THRIVE Mat-Su.

Table 7 shows the agencies that have recognized one or more of the selected programs or interventions as effective for the prevention of youth marijuana use.

<table>
<thead>
<tr>
<th>Program/Intervention</th>
<th>SAMHSA a</th>
<th>WSIPP b</th>
<th>OJJDP c</th>
<th>Athena Forum d</th>
<th>Blueprints e</th>
<th>RAND Corp f</th>
<th>U.S. Education g</th>
<th>CEP h</th>
</tr>
</thead>
<tbody>
<tr>
<td>LifeSkills Training</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Positive Action</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Nurse-Family Partnership</td>
<td></td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Project STAR</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
<td></td>
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<tr>
<td>Coping Power</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>PROSPER</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Towards No Drug Abuse</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive Family Support</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lions Quest Skills for Adolescence</td>
<td>✔</td>
<td>✔</td>
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<td></td>
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<tr>
<td>Teen Intervene</td>
<td>✔</td>
<td>✔</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adolescent Decision-Making</td>
<td>✔</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strengthening Families</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Substance Abuse and Mental Health Services Administration (SAMHSA) – Center for the Application of Prevention Technologies – Preventing Youth Marijuana Use: Program and Strategies and SAMHSA’s National Registry of Evidence-based Programs and Practice
b. Washington State Institute for Public Policy (WSIPP) – Updated Inventory of Programs for the Prevention and Treatment of Youth Cannabis Use
c. Office of Juvenile Justice and Delinquency Prevention Model Programs Guide
d. Athena Forum
e. Blueprints
f. RAND Corporation
g. U.S. Department of Education: What Works Clearinghouse
h. Coalition for Evidence-Based Policy – Evidence-Based Reviews
Table 8 summarizes the same programs by areas of program focus. Programs with the broadest applicability are at the top. Check marks were assigned to a program according to the following definitions:

**School Based** – the bulk of the program takes place in a school and/or the program is a school-based curriculum.

**Health Provider** – the program or intervention involves a clinician or other certified health provider but is not necessarily based in a health provider location.

**Social Service Provider** – a social service provider such as a juvenile justice center or social work center participates in the program.

**Parents** – Parents are engaged in the program/intervention.

**Government** - The program/intervention involved government agencies, policies, and/or local representatives.

**Community Based** – The program/intervention is community based and/or actively has a community engagement process.

**Community Media Messaging** – A community media program and messaging to the community is a key part of the program/intervention.

**Social Skill Building** – The program description explicitly focused on skill building including social emotional learning (SEL) skills, social emotional wellbeing (SEW), and skills to explicitly resist substance use when it arises. If the high-level description didn’t explicitly recognize skill building, it is not checked.

<table>
<thead>
<tr>
<th>Program/Intervention</th>
<th>School Based</th>
<th>Health Provider</th>
<th>Social Service Provider</th>
<th>Parents Engaged</th>
<th>Government Engaged</th>
<th>Community Based</th>
<th>Community Media Messaging</th>
<th>Social Skill Building</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengthening Families</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Project STAR</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Teen Intervene</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PROSPER</td>
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Program Description Structure

Each program description that follows addresses the following program attributes:

- **Overview**: a summary of the program and the areas of focus.
- **Setting**: where the program takes place such as schools, home, community or health care provider settings.
- **Population**: the population of focus for the program.
- **Evaluation Design**: the evaluation methods used to understand the program results and the tools used to establish it as an evidence-based program.
- **Evaluation Outcomes**: the specific outcomes related to youth marijuana use identified by the program.
- **Learn More**: a URL link for the program’s website or contact information for program contacts where a website is not available.
- **Additional Notes**: where applicable, additional information that may assist the coalition in planning youth marijuana prevention strategies.
LifeSkills Training

OVERVIEW

LifeSkills Training is designed to prevent adolescent substance use, including marijuana, and violence. The program is classroom based. Students learn personal self-management skills, social skills, and resistance skills related to drug use through the training over the course of three years.

SETTING

LifeSkills Training is a school-based program and is designed for implementation in middle and high schools.

POPULATION

Students in grades 6-9.

EVALUATION

Design

LifeSkills Training for middle school students has been repeatedly evaluated using a prospective, experimental design. In one study, a sub-sample of over 2,000 youth that participated in LifeSkills Training beginning in 1985 completed a long-term follow up assessment in 1998.

Outcomes

Compared to students in control groups, students participating in LifeSkills Training report:

- Lower rates of increase in marijuana initiation in 12th grade.
- Lower rates of frequency of marijuana use in 12th grade.
- Lower rates of marijuana use almost 15 years post-baseline.
- Reduced rates of increase in marijuana use from 9th through 12th grade.

LEARN MORE

https://www.lifeskillstraining.com/

ADDITIONAL NOTES

The Washington State Institute for Public Policy did not find sufficient evidence that LifeSkills Training is an effective intervention for marijuana prevention.
Positive Action

OVERVIEW

Positive Action is a program designed to cultivate a positive school program and teach students a wide array of positive behaviors and skills. There are two versions of the Positive Action program; one is designed for youth in grades K-6 and the other is designed for youth in grades 7-8. The program is carried out by teachers, principals, appointed committees, and school counselors, social workers, and school psychologists. Teachers provide their students two to four 15-minute lessons per week that cover topics such as positive and negative actions, healthy habits, cognitive skills, self-management skills, interpersonal social-emotional skills, honesty, responsibility, and goal-setting. Teachers can use puppets, music, games, and print materials with their lessons.

SETTING

Positive Action is a school-based program and is designed for elementary and middle schools.

POPULATION

Elementary and middle school students.

EVALUATION

Design

Positive Action was evaluated with a prospective, longitudinal, matched-pair clustered randomized control trial study design. A total of 14 schools participated and 1,170 students were assessed in 3rd grade at baseline and annually until 8th grade.

Outcomes

Compared to students in the control schools, 8th grade students were:

- Less likely to report ever using marijuana. A total of 24.4 percent students in the control reported ever using marijuana compared to 15.3 percent of students in the Positive Action group. This finding was statistically significant.48
- Less likely to have used marijuana more than once. A total of 16.0 percent students in the control reported using marijuana more than once compared to 10.8 percent of students in the Positive Action group. This finding was statistically significant.

LEARN MORE

https://www.positiveaction.net/
Nurse-Family Partnership

OVERVIEW

Nurse-Family Partnership (NFP) is a prenatal and infancy nurse home visitation program. The goal of NFP is to improve the health, well-being, and self-sufficiency of parents and their children. Mothers are enrolled into NFP early in their pregnancies. Specially trained public health nurses conduct home visits over a two-and-a-half-year period. The objective of NFP is to reduce substance use, improve maternal economic self-sufficiency, prevent unintended pregnancies, reduce child abuse and neglect, and improve the school readiness of children.

SETTING

Home

POPULATION

Low-income, first-time parents, and their children

EVALUATION

Design

NFP has been evaluated using a prospective, experimental design. A total of 743 pregnant women were randomized to a treatment or control group. Participants were assessed after their child turned 12. The participants were primarily African-American women. The study was based in Memphis, Tennessee.

Outcomes

Compared to mothers assigned to the comparison group, NFP participants reported that their 12-year-old children were:

- Less likely to have recently used marijuana
- More like to have used less marijuana
- More likely to have used marijuana for fewer days

LEARN MORE

https://www.nursefamilypartnership.org/

ADDITIONAL NOTES

Providence Health & Services Alaska as well as Southcentral Foundation offers Nurse-Family Partnership.
**Project STAR**

**OVERVIEW**

Project STAR is a multi-component comprehensive, community-based program. The program is comprised of five components—mass media, school, parent, community, and health policy. Each component is introduced sequentially over a period of five years. In the first years of implementations, students participate in an educational program designed to build skills related to resisting drug use. At the same time, parents participate in a program to foster non-drug-using norms in families and schools. In the program’s later years, community and government leaders convene to implement drug abuse prevention policy.

**SETTING**

Project STAR is designed to be implemented in community and middle school settings.

**POPULATION**

Middle school students, parents, community members, and government leaders are all participants in Project STAR.

**EVALUATION**

**Design**

Project STAR has been evaluated using a quasi-experimental (non-random) design. The evaluation was conducted with 42 middle schools where 24 schools were chosen for the intervention and 18 were selected for a comparison group. A total of 1,601 6th and 7th grade students participated. Participant data was collected at baseline in 1984. Follow up data was collected over 15 intervals through 2003, with 961 participants remaining with the study through 2003.

**Outcomes**

Compared to youth in the comparison group, youth participating in the Project STAR program reported:

- Reduced marijuana use in high school.

**LEARN MORE**

Mary Ann Pentz, University of Southern California

Email: pentz@usc.edu
Coping Power

**OVERVIEW**

Coping Power is a cognitive-based intervention designed to increase competence, study skills, social skills, and self-control among participating children. It also aims to increase parents’ involvement in their children's education. Children and parents participate in separate sessions. The children’s sessions are focused on anger management and study skills and the parent sessions are centered on parenting and stress management skills.

**SETTING**

Elementary and middle schools.

**POPULATION**

Aggressive, at risk children in grades 5-6 and their parents.

**EVALUATION**

**Design**

Coping Power was evaluated using a prospective, experimental design. A total of 61 children between the ages of 8 and 13 who had been diagnosed with a disruptive behavior disorder were included in the evaluation sample. Children were randomly assigned to the Coping Power intervention group or to the care-as-usual group. Marijuana use was assessed five years after the start of the intervention.

**Outcomes**

Compared to youth in the care-as-usual group, Coping Power youth reported:

- Lower lifetime use of marijuana 5 years after baseline percent. Approximately one third (35 percent) of youth in the care-as-usual group reported ever having used marijuana compared to 13 percent of Coping Power youth.49

**LEARN MORE**

https://www.childtrends.org/programs/the-coping-power-program/
PROSPER

OVERVIEW

PROSPER, or Promoting School-Community-University Partnerships to Enhance Resilience, is designed to improve the capacity of school or community prevention organizations working on youth substance-use prevention. It is not an intervention program itself, but an approach that establishes structured partnerships to link state and university-level experts with schools and communities. PROSPER is intended to support needs assessments, intervention implementation activities, and intervention monitoring and evaluation.

SETTING

PROSPER is designed to be adopted by schools and community organizations.

POPULATION

PROSPER is intended to facilitate outcomes among youth age 12-14 years old.

EVALUATION

Design

PROSPER was evaluated using a prospective, experimental design. A total of 28 school districts joined in the evaluation with 14 school districts randomly assigned as the control and 14 school districts assigned to participate in PROSPER. The intervention began when students were in 6th grade and over 6,000 6th grade students participated. Schools assigned to PROSPER implemented a family-focused intervention in the first year of the evaluation and a school-focused intervention in the second year. Both the family-focused and school-focused intervention were chosen from a selection of options presented to the schools. Students were assessed at baseline, twice during intervention, and annually post-intervention over a period of 6 years.

Outcomes

Compared to youth in the control group, youth attending schools participating in PROSPER reported:

- Reduced past-year marijuana use at 11th and 12th grade follow-up assessments.
- Reduced frequency of marijuana use at all post-baseline assessments.

LEARN MORE

http://helpingkidsprosper.org/
Project Towards No Drug Abuse

Overview

Project Towards No Drug Abuse is a school-based curriculum comprised of 12 interactive sessions led by teachers or health educators. The intervention is designed to be implemented over a four-week period. The sessions include instruction in motivation activities to not use drugs and skills in self-control, communication, resource acquisition, and decision-making strategies.

Setting

High school classrooms.

Population

High school youth at risk for drug use and violent behavior.

Evaluation

Design

Project Towards No Drug Abuse has been evaluated using a prospective, experimental design. Over 500 high school students in 65 schools across 14 school districts were randomly assigned to one of three groups. The first group was the intervention led by health educators. The second group was a peer-led version of the intervention, and the third group was the control. Data was collected for all groups at baseline and one year after the conclusion of the intervention.

Outcomes

Compared to youth in the control group, youth who participated in the Project Towards No Drug Abuse curriculum led by health educators reported:

- Reduced intentions and likelihood to use marijuana immediately following the intervention.
- Reduced marijuana use at 1-year follow up.

Learn More

http://tnd.usc.edu/
Positive Family Support/Family Check Up

OVERVIEW

Positive Family Support/Family Check Up is a multi-tier program designed to be administered at middle schools. Children are classified based on their risk profile and receive intervention support accordingly. All children receive prevention programming through their homeroom classroom. Children at risk for substance abuse or problem behavior also receive intervention through a family check-up where youth and their families work with a therapist to select additional appropriate intervention programming. For students that need a higher level of care beyond the classroom programming and family check-up, there are brief treatment options available for substance abuse and related behavioral health problems.

SETTING

Positive Family Support/Family Check Up is designed to be implemented in middle schools (grades 6-8).

POPULATION

Middle school students and their families.

EVALUATION

Design

Positive Family Support/Family Check Up has been evaluated several times using a prospective, experimental design. One evaluation was conducted with 998 6th grade students and their families. Students and their families were randomly assigned to the intervention or control group. Youth were assessed at baseline and went through follow-up assessments at the ages of 12, 13, 14, 16-17, 19, 22, and 23.

A second evaluation randomly assigned 593 6th grade students and their families to either the intervention or control group. In this study, youth were assessed at baseline and annually through the end of eighth grade.

Outcomes

Compared to youth in the control groups, youth participating in the Positive Family Support / Family Check Up intervention reported:

- Lower marijuana use among youth aged 11-17.
- Reduced marijuana use in 8th grade.
- Lower likelihood of being diagnosed with lifetime marijuana abuse by age 18.
- Smaller increase in rates of marijuana use throughout adolescence.
- Lower rate of "problematic marijuana use" at age 23.

LEARN MORE

https://reachinstitute.asu.edu/programs/positivefamilysupport
Lions Quest Skills for Adolescence

OVERVIEW

Lions Quest Skills for Adolescence is a positive youth development program that integrates social and emotional learning, character development, drug and bullying prevention, and service-learning. The program helps middle school students, parents, and teachers cope with the physical, emotional, and social challenges of early adolescence.

SETTING

Lions Quest Skills for Adolescence is designed to be implemented in middle schools.

POPULATION

Middle school students in grades 6-8.

EVALUATION

Lions Quest, a program of Lions Clubs International Foundation, reports that the impacts of their social and emotional learning programs, which now include Skills for Adolescence, have been researched for over 20 years.

Design

One evaluation of Lions Quest Skills for Adolescence used a group-randomized trial to assign schools to the intervention and comparison programs. A total of 34 schools were recruited for participation from 4 metropolitan areas in the United States during the 1997-1998 school year. A baseline survey was administered to sixth grade students in each school. Based on the results of the baseline survey, schools were pair-matched to reduce threats to internal validity and then randomized to the study conditions. Youth received Skills for Adolescence education in 17 schools while the 17 schools assigned to the comparison group implemented the drug education programming of their choice. A posttest survey was conducted one-year after the baseline was administered. Another survey was conducted at one-year post-intervention.

Outcomes

Compared to youth in the control group, youth participating in Skills For Adolescence reported:

- Lower lifetime marijuana use (prevalence rate of 27.4 percent compared to 30.5 percent in the control group)
- Lower past 30-day marijuana use (prevalence rate of 11.32 percent compared to 13.79 percent in the control group)
- Increased self-efficacy about being able to refuse marijuana

LEARN MORE

https://www.lions-quest.org/middle-school-social-and-emotional-learning/
ADDITIONAL NOTES

The Washington State Institute for Public Policy identifies Lions Quest Skills for Adolescence as a research-based strategy that is effective for the prevention of marijuana use.
Strengthening Families: For Parents and Youth

**OVERVIEW**

Strengthening Families is a research-informed, strength-based approach to reducing stress, addressing risk factors, and promoting healthy development within families. The program is focused on building family strengths and a positive family environment through enhancing five protective factors: parental resilience, social connections, concrete support in times of need, knowledge of parenting and child development, and social and emotional competence of children. Strengthening Families is designed to be implemented and incorporated by communities, providers, and families.

**SETTING**

Strengthening Families is designed for implementation in the following four areas:

- Early care and education systems
- Child abuse and neglect prevention systems
- Home visiting systems
- Child welfare systems

**POPULATION**

Children age 3-16 and their families

**EVALUATION DESIGN**

The evaluation was a case-control design where one group of students and families received an intervention and the other students served as a comparison group.

**OUTCOMES**

- Reduced reports of having ever tried marijuana use among the intervention group in one study for youth ages 10-14

**LEARN MORE**

https://www.cssp.org/young-children-their-families/strengtheningfamilies/about

**ADDITIONAL NOTES**

The State of Alaska Office of Children's Services was selected to pilot Strengthening Families through their work in 2005. Strengthening Families is used by many organizations across Alaska.
Adolescent Decision-Making for the Positive Youth Development Collaborative

Overview
The Adolescent Decision-Making for the Positive Youth Development Collaborative is an afterschool substance use prevention intervention delivered across 18 sessions. The program teaches youth prevention skills and health education and offers cultural heritage activities for youth to participate in. The intervention can be adapted to fit different cultural needs.

Setting
Afterschool programs.

Population
Middle school and high school aged youth.

Evaluation

Design
The Adolescent Decision-Making for the Positive Youth Development Collaborative intervention was evaluated with a prospective, quasi-experimental (non-random) design. Approximately 300 youth in nine afterschool programs participated in the evaluation. Assessments were administered prior to program start, at the completion of the intervention, and one year after the conclusion of the program.

Outcomes
Compared to youth in the comparison group, youth participating in the Adolescent Decision-Making for the Positive Youth Development Collaborative reported:

- A smaller increase in current marijuana use one year after completing the program.

Learn More
Jacob Tebes, Yale University School of Medicine
Email: jacob.tebes@yale.edu
Teen Intervene

OVERVIEW

Teen Intervene is designed to prevent and reduce alcohol or substance use among high-risk youth. The program is a brief, early intervention intended to be led by trained professionals. Three, individualized sessions are delivered ten days apart; one of the sessions is conducted with the participant’s parent/caregiver. Each one-hour session examines the effects of substance use and abstinence and addresses ways to develop and achieve behavioral change goals.

SETTING

Teen Intervene is meant to be implemented in schools, at outpatient behavioral health provider locations, and at juvenile justice centers.

POPULATION

The target population for this program is youth ages 12-19 displaying early signs of alcohol or substance use.

EVALUATION

Design

Teen Intervene has been evaluated using a prospective, quasi-experimental study design. A total of 315 youth aged 13-18 years old with mild or worse substance use problems were randomly assigned to two intervention groups. In one of the intervention groups, youth received the full intervention. In the other intervention group, the parent/caregiver session was omitted. Through a separate recruitment process youth were recruited to participate in a comparison group that received no intervention. Assessments were conducted at baseline and six months post-baseline.

Outcomes

Compared to youth in the control group, youth participating in both Teen Intervene interventions reported:

- Higher rates of marijuana abstinence.
- Lower frequency of marijuana use.

LEARN MORE

http://www.hazelden.org/web/public/publishing.page


