

In 2014, the state of Alaska legalized non-medical marijuana by voter initiative Measure 2 went into effect in February 2015, allowing adults ages 21 and over to possess and use limited amounts of marijuana or cannabis products. Alaska's first retail marijuana store opened in October 2016.



Marijuana Use and Public Health in Alaska



2020



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Alaska Department of Health and Social Services

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A report of the Office of Substance Misuse and Addiction Prevention, Alaska Department of Health and Social Services

Michael J Dunleavy, Governor

Adam Crum, MSPH, Commissioner, Department of Health and Social Services

Anne Zink, MD, Chief Medical Officer, Department of Health and Social Services

Heidi Hedberg, Director, Division of Public Health

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Major contributors to the development of this report include:

Alaska Department of Health and Social Services

Eliza Muse, MSc, Public Health Specialist

Jessica Filley, MPH, Epidemiologist

Kathy Perham-Hester, MS, MPH, Epidemiologist

Tazlina Mannix, MPH, Epidemiologist

Program Design and Evaluation Services, Multnomah County and Oregon Public Health Division

Julia Dilley, PhD, Senior Research Scientist/Epidemiologist

Susan Richardson, MPH, Senior Research Analyst

Kathryn Pickle, MPH, Senior Research Analyst

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Table of Contents

Executive Summary	1
Purpose.....	4
Key terms or concepts.....	4
Background.....	6
Methods.....	9
Data Sources.....	9
Analytic Approaches.....	10
Notes on Presentation of Data.....	12
Marijuana Use in Alaska.....	13
Youth.....	13
Adults	23
Pregnant/parenting women.....	33
Marijuana-related Prevention Measures	40
Knowledge and attitudes	40
Peer and parent norms	43
Risk and protective factors	46
Public Health Outcomes	49
Driving under the influence.....	49
Marijuana dependence.....	51
Marijuana use and other drugs	53
Juvenile Justice referrals	54
Poison Center calls	55
Cannabis-related hospital discharges	57
Medical Marijuana in Alaska.....	59
Marijuana Businesses in Alaska	61
Local policies to regulate marijuana.....	67
Data gaps and challenges	68
Appendix.....	70
Data Sources.....	70
Key Definitions	83

Executive Summary

In 2014, the state of Alaska legalized non-medical marijuana by voter initiative. Measure 2 went into effect in February 2015, allowing adults ages 21 and older to possess and use limited amounts of marijuana or cannabis products. Alaska's first retail marijuana store opened in October 2016.

The Alaska Department of Health and Social Services (DHSS), Office of Substance Misuse and Addiction Prevention is providing this report to summarize information about marijuana use among youth, adults, and pregnant women; related attitudes; potential health and social consequences of use; and the marijuana-related context of the state and communities. Findings may be useful to Alaska stakeholders who are working to prevent youth from starting to use marijuana, as well as preventing risky use by adults and vulnerable people such as pregnant women.

The most recently available data were obtained from multiple Alaska and U.S. data systems, including public health surveys, vital statistics, and administrative data.

Prevalence of marijuana use.

- *Alaska youth.* 22% of traditional high school students (9-12th graders) in Alaska have used marijuana at least once during the past 30 days (characterized as “current use”) in 2017. This translates to about 9,000 youth who may be at risk for a variety of health, social and legal consequences. More Alaska students use marijuana than smoke cigarettes. Groups of students with consistently higher marijuana use prevalence patterns include older (11th and 12th grade) students, and students in alternative and correctional schools. The prevalence of marijuana use among Alaska youth was similar to prevalence among youth nationwide.
- *Alaska adults.* 10% of adults in Alaska used marijuana on 20 or more of the past 30 days (characterized as “heavy use”) in 2017. This translates to about 54,000 adults who are using at levels that may be considered risky. Adult heavy use increased significantly between 2015 and 2017. The prevalence of marijuana use among Alaska adults was higher than the national average.
- *Pregnant and breastfeeding women.* 9% of women who delivered a baby in Alaska in 2017 said they used marijuana at least once while they were pregnant. This translates to about 900 births in the year. Marijuana use was lower among breastfeeding mothers than non-breastfeeding mothers; however, one in ten (11%) of breastfeeding mothers reported using marijuana at least once since delivery. About 6% of mothers of 3-year-old children said they had used marijuana in the past month.

Prevention measures

- *Knowledge and attitudes.* Perceptions of harm from marijuana use have been declining in Alaska and the U.S. among all age groups, and young people in Alaska were less likely to perceive marijuana as harmful compared to the national average. According to the most

recent survey of Alaska high school youth, one in five (19%) believed there is “great risk” from using marijuana once or twice a month; very few (3%) of the youth who use marijuana thought it was risky.

- *Parent and peer norms.* Most high school youth (73%) believed their parents would think it is wrong for them to use marijuana. Fewer (42%) believed their friends would think it is wrong for them to use marijuana. Older youth (i.e., 11th-12th grade) and youth in alternative and correctional schools were less likely to think there would be disapproval from either parents or peers.
- *Risk and protective factors.* Marijuana use is associated with multiple risk factors and protective factors. These associations do not prove cause and effect. There may be other important factors related to marijuana use that are not identified here. However, understanding how they are related may be helpful for planning prevention strategies.

Public health and social outcomes

A variety of marijuana-related outcomes may be important to monitor if patterns of marijuana use change over time.

- One in ten (11%) high school students who drive had done so after using marijuana in the past month.
- Despite increases in adult use, fewer people received public-funded treatment for marijuana dependence during the most recent years where data are available.
- Marijuana use remains illegal for youth; the number of youth who have been referred to juvenile justice systems for marijuana offenses has increased since 2016.
- Although small in number, the number of marijuana-related calls to Alaska’s Poison Center increased in 2017 after the state’s retail marijuana market opened.
- The number of hospital outpatient visits with marijuana-related diagnosis codes increased during 2017. There were a total of more than 6,000 outpatient visits in 2017, and more than 3,000 inpatient visits.

Environmental factors

Community and statewide environmental factors may play a role in patterns of use, including among youth.

- The number of medical marijuana registry patient cardholders has dropped dramatically, from more than 1,700 in 2014 and 2015 to 404 in 2019.
- The number of marijuana businesses has grown steadily. In October 2019 there were 102 retail stores licensed to sell marijuana in the state. Businesses are located throughout the state. State marijuana regulators have not set limits on the number of licenses by person or entity.

- Total amounts of marijuana products sold and tax revenues have also risen steadily. From January-October 2019 more than 17 tons of taxed marijuana products were sold, generating more than \$17 million in state tax revenue.
- Some Alaska communities have acted to put additional local regulations on marijuana. A few passed temporary or permanent bans, although fewer communities have banned marijuana than have banned alcohol. A few communities have also applied local-level sales taxes on marijuana sales.

Data gaps

Currently, there is limited information available about several measures of interest, including about traffic crashes from impaired driving and exposure to marijuana advertising. Marijuana sales and market data may be a valuable source of information for understanding consumption patterns in the future.

Purpose

The Alaska Department of Health and Social Services (DHSS), Office of Substance Misuse and Addiction Prevention is providing this report to help Alaskans better understand marijuana use among adults, pregnant women, and youth; perceptions linked with marijuana use; potential health and social consequences of use; and the marijuana-related context of the state and communities.

In addition to providing information for the public about the current status of marijuana use and related factors in Alaska, information in this report is intended to be useful to inform planning or identification of need for actions that protect health and safety of Alaskans. Those who might use the report include:

- Public health and substance abuse treatment systems
- Schools funded for marijuana prevention activities and programs
- Policymakers

Key terms or concepts

Products. Different marijuana products that can be used, bought and sold are described below. Hemp and synthetic marijuana are defined below to explicitly distinguish them from marijuana, but data on these substances is not otherwise included in this report.

Marijuana. Marijuana or cannabis is derived from the plant *Cannabis sativa*. It is also sometimes called weed or pot. Unless otherwise specified in this report, the term marijuana refers to any marijuana products, and whether intended for either medical or recreational purposes. This report uses the term “marijuana” because that is the term used in Alaska law and regulations.

Marijuana plant buds and flowers (sometimes called “usable marijuana”) are typically dried for consumption. Usable marijuana can be smoked or vaped directly or processed into other types of products. Dried leaves, trimmings and “shake” (from the bottoms of jars or bags of bud/flower) can also be used to make products.

Common methods for consumption of different marijuana product types include:

- *Smoking*: inhaling smoke usable marijuana in a rolled joint, pipe, blunt or bong;
- *Eating*: consuming “edibles” or foods with marijuana ingredients (e.g., brownies);
- *Drinking*: consuming marijuana-infused beverages (e.g., teas or sodas);
- *Vaping*: inhaling vapor from an electronic cigarette-like vaporizer or electronic device;
- *Dabbing*: heating a high-potency concentrate (e.g., wax, dabs, shatter) on a hot surface and inhaling the smoke from a vessel;
- *Tinctures*: marijuana extracts infused in an alcohol base, applied as drops under the tongue;
- *Topical*: infused lotions or oils applied to the skin.

Medical marijuana. This term refers to marijuana that is specifically being used for treatment of a condition or symptoms. In Alaska, the state maintains a confidential registry of medical marijuana patients who have an authorization from a provider for medical marijuana treatment of defined “debilitating medical conditions” (for example, cancer, HIV/AIDS, severe nausea or chronic pain). Medical marijuana products are not different from non-medical marijuana products in Alaska.

Hemp. Hemp is a term for the cannabis plant, separate from marijuana consumed for medicinal or psychoactive purposes. It is defined as cannabis plants containing less than 0.3% THC. Conventionally, it was processed into fibers for paper, textiles and other industrial products. However, since hemp was removed from the Controlled Substances Act by the U.S. Congress as part of a December 2018 Farm Bill, and states were giving leeway to regulate it, there has been an increase in products infused with CBD that is derived from hemp. Unless restricted by a state, hemp-derived CBD products may be sold in any market outlet, including grocery stores or online. Alaska’s Industrial Hemp Pilot Program will be regulated by the Department of Natural Resources and rulemaking is currently underway in accordance with AS 03.05 and AS 11.71.900. These products could be confused with marijuana-infused products, but they should not contain psychoactive THC. Hemp is not discussed specifically in this report.

Synthetic marijuana. These are man-made chemicals that are sometimes sold or used as an alternative to plant-based marijuana, but they are not from the same origins and do not act the same. Common names include “K2” and “Spice.” Synthetic marijuana is not addressed in Alaska’s marijuana laws and is not discussed in this report. For more information see the CDC website <https://www.cdc.gov/nceh/hsb/chemicals/sc/default.html>

Potency. Marijuana product “dose” or “concentration” is frequently considered in terms of the number of milligrams of THC and CBD.

THC (delta 9-tetrahydrocannabinol). THC is the main psychoactive compound in marijuana. It is responsible for mind-altering effects.

CBD (cannabidiol). CBD is one of more than many cannabinoid chemicals in cannabis plants. It is often the principal active ingredient in medical marijuana products, and may also be found in other retail products (see “hemp”). It is not known to have psychoactive properties (in other words, it does not make the user “high” when THC is not present).

Legal terms. The following are terms often discussed in the context of laws about allowing marijuana.

Legalization. This term can refer to either medical marijuana or non-medical marijuana. Legalization means removing prohibitions for marijuana possession and use. persons. In Alaska this included allowing a marijuana market, but not all states have done so. In Alaska non-medical marijuana was legalized for people age 21 and older; it is also legal for people with medical authorizations for specific conditions or who are enrolled in a medical marijuana registry.

“Adult use” marijuana or “retail marijuana”. These terms have become more commonly used (in place of “recreational marijuana”) to indicate the legalization of adult use for non-medical purposes and establishment of a market for non-medical marijuana sales.

Decriminalization. This term is used to indicate that although the action is still legally a crime, the criminal penalties and prosecution for the crime have been reduced or suspended. When marijuana possession is decriminalized, for example, people caught in possession of smaller amounts of marijuana might have to pay a fine, similar to a traffic ticket.

Background

History of marijuana laws in Alaska.

The State of Alaska has a long history of legal actions to address marijuana, some liberalizing and some penalizing. In 1975 Alaska was one of the first states to decriminalize marijuana, reducing the penalty for possession to a \$100 fine by legislative action. Following legal challenge, the state’s Supreme Court ruled that home use was protected by the Alaska Constitution’s right to privacy. The state recriminalized by voter initiative in 1990, but this was struck down by the Supreme Court in 2003 based on their prior ruling. The legislature acted to recriminalize non-medical possession and use by law in 2006. Separately, Alaska voters legalized medical possession and use of marijuana for medical purposes in 1998 (Measure 8, passed by 58%); however, a medical sales market was never created.

The first U.S. states to fully legalize marijuana sales and use were Washington State and Colorado in 2012. Alaska and Oregon voters passed legalization initiatives in 2014, making them the third and fourth states to do so. Multiple other states have followed, and as of early 2019 a total of 11 states, the District of Columbia, and U.S. territories of Guam and the Northern Mariana Islands had all legalized. However, not all of these entities have allowed retail sales markets.

Non-Medical Marijuana Legalization.

The recent process of “full legalization” of marijuana in Alaska included multiple steps. Key timepoints for implementation were:

- **Voter initiative passed November 2014.** Alaska passed voter initiative Measure 2 with 53% approval. This initiative legalized the production, sale and use of marijuana.
- **Possession for adults became legal February 24, 2015.** Adults ages 21 years or older can use and possess up to 1 ounce of dried marijuana. Individuals can also grow up to 6 marijuana plants.
- **Retail sales begin statewide October 2016.** Alaska’s first retail cannabis store opened in Valdez.

The laws around marijuana continue to evolve. For example, in early 2019 Alaska was the first state to create an “onsite use” license. The law allows for free standing retail outlets to apply for an endorsement to authorize on-site consumption of any cannabis product (with the exception of concentrates) purchased at the store, in a separate, ventilated, adjacent area. On-site consumption is also permitted outside the retail store, if obscured from view and away from neighboring vents/air intake.

Alaska regulatory oversight.

Multiple government agencies provide oversight of the state’s legalized marijuana market. Examples of regulatory elements that may be specifically related to public health include:

- **Licensing:** Any business involved in growing, processing or selling marijuana in Alaska must have a license and follow related rules. Local communities in Alaska can also act to regulate licensing in their jurisdiction (including “opting out” or banning specific business activities). Further, there may be restrictions about where businesses can be located.
- **Laboratory Testing:** Laboratory testing is another important function related to public health. Across all legal states, lab tests addressed in regulations have included tests for contaminants such as pesticides, molds, and residual solvents. These can pose health risks to those using the products. Lab tests also determine cannabinoid levels for the products to assure labels are accurate and, for infused products, within the legal limits for serving size and package content.
- **Prices:** The State of Alaska marijuana tax is currently set at \$50 per ounce on marijuana bud/flower, \$25 per ounce for immature or abnormal bud/flower and \$15 per ounce on leaf/trim. Local entities can also apply an additional tax.
- **Products:** Specific types of products and their content are restricted. For example, edibles can have no more than 5 mg THC per serving and units with multiple servings must not exceed more than 10 single serve units.
- **Promotion:** Advertising rules and restrictions are applied to assure that promotion of marijuana products does not appeal to youth.

With regard to public health and marijuana in Alaska, three state agencies play especially important roles.

- **The State of Alaska DHSS Marijuana Education Program** was created to diminish adverse health consequences due to the use of marijuana in Alaska. The principal goals of the program are to prevent youth initiation and use, prevent impaired driving, eliminate accidental ingestion, reduce secondhand marijuana smoke exposure in public workspaces, support treatment, inform ongoing policymaking, and educate the public. For more information please visit <http://dhss.alaska.gov/osmap/Pages/marijuana.aspx>
- **The State of Alaska Alcohol and Marijuana Control Office (AMCO) Marijuana Control Board** is a regulatory and quasi-judicial agency for the control of cultivation, manufacture and sale of marijuana in the state. This agency leads implementation and oversight of Alaska’s cannabis regulations and related activities. For more information about AMCO please visit <https://www.commerce.alaska.gov/web/amco/Home.aspx>

- **The State of Alaska Department of Environmental Conservation Division of Environmental Health** works alongside AMCO as well as the marijuana industry in the areas of food safety, wastewater and solid waste disposal guidance, pesticides, and air quality. For more information please visit <https://dec.alaska.gov/commish/cannabis/>

Federal prohibition and implications for Alaska

Although multiple states have legalized adult-use marijuana, it is still illegal at the federal level in the U.S. and remains classified as a Schedule 1 substance under the Controlled Substances Act. Schedule I drugs are those with a high potential for abuse, no currently accepted medical use, and no accepted safe usage under medical supervision. Without federal standards or coordination, individual states have been tasked with developing, implementing, and enforcing regulations on the new marijuana market. States that have acted to legalize have coordinated their policy development as much as possible, but different processes have led to variance in regulatory frameworks. Some of these inconsistencies in regulation from state to state could lead to insufficient control of marketing, production, and packaging practices resulting in, for example, variability in the measurement of THC values in products or marketing of edibles in ways that unintentionally appeal to children.

Methods

The following is a summary of the data sources, how they are analyzed and approaches for presenting data used in this report.

Data Sources

This report includes information from multiple Alaska data sources. These sources are summarized in Table 1, and more information is included in the Appendix.

Table 1. Data sources for report (in order of appearance in report)

Data Source (Abbreviation for report)	Description
Youth Risk Behavior Survey (YRBS), Alaska and United States (U.S.), 1995-2017	YRBS high school data are collected from students in grades 9-12 using anonymous school-based questionnaires in the spring of odd-numbered years. The YRBS includes questions about marijuana use and related factors. State samples of traditional schools were used to report general estimates by age, gender and race; alternative and correctional school estimates were from separate datasets; and data from all participating schools were used to report regional estimates.
Alaska Department of Labor and Workforce Development (AK DOL WD), 2017	Population estimates by gender, age and borough were used to estimate total numbers of people based on population prevalence (e.g., translating the percent of adults who use cannabis into a total number of people), and population-based hospitalization rates included in this report.
Alaska Behavioral Risk Factor Surveillance System (BRFSS), 2015-2017	The BRFSS is an anonymous telephone survey of adults ages 18 and older, sponsored by the Centers for Disease Control and Prevention (CDC) and implemented in all states. It is a primary source of information about adult health and related behaviors. States can add some questions to the CDC "core" BRFSS; Alaska added questions about marijuana use to the state BRFSS in 2015.
National Survey on Drug Use and Health (NSDUH), 2008-09 to 2016-17	The NSDUH is a primary source of information on use of drugs, alcohol and tobacco in the United States. A household-based national sample of people ages 12 and older is collected, with state-level oversampling, to allow state and national comparisons. State-level data are only available for 2 years combined.
Alaska BRFSS call-back survey (2016 Alaska BRFSS call-back)	This telephone survey was conducted in June 2016 among people who participated in the 2015 Alaska BRFSS who said they had used marijuana in the past 30 days and who agreed to be called back for future surveys. A total of 250 adults ages 21 and older completed the short survey, which included questions about marijuana use patterns, knowledge and attitudes. Data were weighted to be representative of the state's population of adult marijuana users.
Alaska Pregnancy Risk Assessment Monitoring System (PRAMS), 2009-2017	PRAMS is a population-based survey of resident women who delivered a live-born infant in Alaska. A sample of Alaska mothers participate by mail or telephone. It is the state's principal source of information on maternal health and behaviors. Some additional questions about marijuana were added to PRAMS in 2017.

Data Source (Abbreviation for report)	Description
Alaska Childhood Understanding Behaviors Survey (CUBS), 2015-2017	CUBS is a follow-up survey of PRAMS respondents, conducted when the child is 3 years old. It asks about maternal health and early childhood experiences of young children in Alaska.
Treatment Episode Data Set (TEDS), 2014-2018	TEDS is maintained by the federal Substance Abuse and Mental Health Services Administration (SAMHSA). Information is reported by states for substance abuse treatment facilities that receive state or federal alcohol/ drug agency funds to provide treatment (treatment paid in other ways may not be reported).
Alaska Division of Juvenile Justice (DJJ), 2012-2018	Alaska DJJ provides annual data on the number of juvenile referrals to law enforcement for illegal activity by type. Data for marijuana-related referrals are included in this report.
Alaska Poison Center , 2003-2017	Alaska’s Poison Center provides 24-hour informant and treatment advice from providers trained in toxicology to both healthcare systems (e.g., hospitals) and individuals experiencing a poisoning or toxic exposure, including from marijuana. Calls are assigned nationally standardized codes for symptoms and causes.
Alaska Health Analytics and Vital Records, Alaska Health Facilities Data Reporting Program (HFDR), 2015-2017	Information about hospital treatment is provided separately for inpatient care (patient admitted to the hospital) and outpatient care (treatment in the emergency department or “day surgery”). Marijuana-related cases were identified using relevant discharge diagnosis codes.
Alaska Medical Marijuana Registry (MMR), 2014-2019	The MMR registers physician-authorized patients who meet qualifying conditions as “medical patients.” Information is available on patient characteristics including age, although not about their health condition.
Alcohol & Marijuana Control Office (AMCO), 2016-2019	A summary of community-level policies or regulations passed to regulate marijuana was available for April 2017. Information on marijuana licensees by type was compiled from lists on AMCO’s Marijuana Control Board meeting documents posted online or provided to DHSS by AMCO at intermittent time periods. Licensee data are included in this report for retailers from October 2016, and summaries of all licensees are provided for October 2019.
Alaska Department of Revenue (DOR), 2016-2019	Alaska’s marijuana tax is applied the cultivation (grower) level, when transferred directly to a retailer or to a manufacturer (processor). Tax is applied based on product type (e.g., bud/flower, trim). Tax Division Marijuana monthly reports on product weight totals and taxes were provided by DOR.

Analytic Approaches

- Confidence intervals.* Our report uses 95% confidence intervals, especially when describing results from survey data. Surveys sample populations; they usually do not include every member of a population. Using these confidence intervals means we can be 95% sure (95 out of 100 times) that the range of the interval contains the “true value” for a population. Typically, the larger the sample, the smaller (or more precise) the interval will be. Confidence intervals also help to compare whether results from one group are significantly different from another group: when confidence intervals for two estimates in the same data

system do not overlap, those two estimates are “significantly” different from one another – meaning we can be reasonably sure there is a true difference.

- *Suppression of small numbers.* Estimates or counts based on small numbers were suppressed based on guidelines from the State of Alaska. Typically, a minimum of five case counts is required for reporting; when there are fewer than five that number is indicated as “<5” in the report. Sometimes this affects how much data can be reported for Alaska regions. When estimates are suppressed for this reason, this is indicated in the figure. For BRFSS and YRBS, a minimum denominator of 50 unweighted respondents was required for reporting.

Notes on Presentation of Data

Throughout this report, visual cues are used to help the reader understand what types of data are being presented.

Chart types were selected to reflect the data presented:

- Trendline charts show Alaska statewide data, and include U.S. data when available, for a single measure over time.
- Vertical column charts include Alaska statewide data for multiple points in time when there are 5 or fewer years of data available (because there are too few data points to reliably describe a trend).
- Horizontal bar charts are used to contrast differences between sub-groups within Alaska.
- Most regional data are presented both in tables or figures and with a map to provide geospatial context; map colors were assigned by region to provide visual cues about relative rates, but different shades should not be interpreted as statistically significant differences.
- For many trendline charts and column charts, key marijuana legalization dates in Alaska are indicated visually to help readers consider differences associated with changes in law.
- Data from the 2016 Alaska BRFSS call-back survey are included only in tables, because this was a point-in-time survey with a relatively small number of people included (N=250). Similarly, data from a set of questions that were added to PRAMS in 2017 only are displayed in tables.

Precision of the estimates:

- Most survey or rate data included in this report are reported to the tenth place for statewide or national estimates (e.g., “10.X%” or “10.X per 100,000”). For survey data, results are rounded to whole numbers when reported for subpopulations (e.g., “10%”). This reflects that survey estimates for smaller numbers of people in subgroups may be less precise.

Narrative descriptions of data are provided for each figure or chart. If any data are described in text that are not visible in the chart this is indicated as “data not shown” in the description.

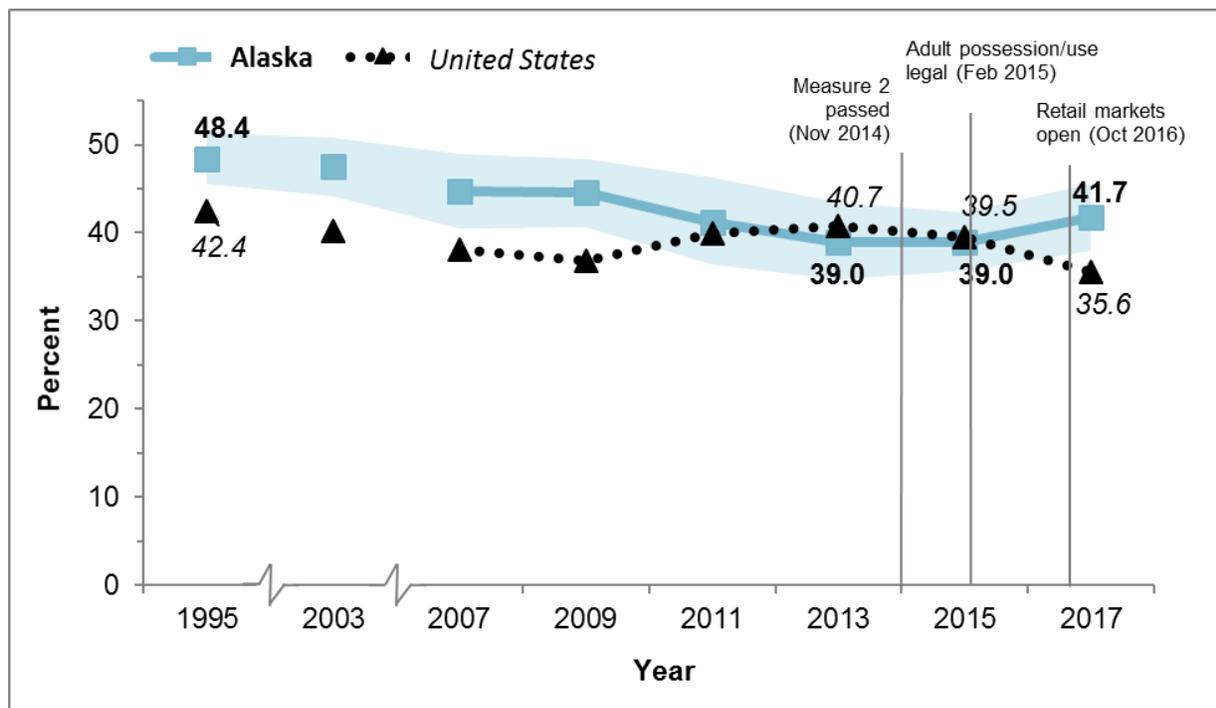
Confidence intervals are shown visually in figures as shaded bands around trendlines, or as lines around the ends of vertical or horizontal bars. These indicate the “ \pm ” values for estimates shown. Data that are based on counts rather than surveys do not have confidence intervals because they represent complete information rather than a sample.

Differences between groups are mentioned in text only when formal statistical tests found significant differences at the 95% level for statistical confidence. Non-significant differences are typically not described in text as being “different” (e.g., higher or lower than other groups), even if they appear to be different in a chart. Differences that appear large may not be statistically significant due to relatively small numbers of people (and therefore large margins of error) in some subgroups.

Marijuana Use in Alaska

Youth

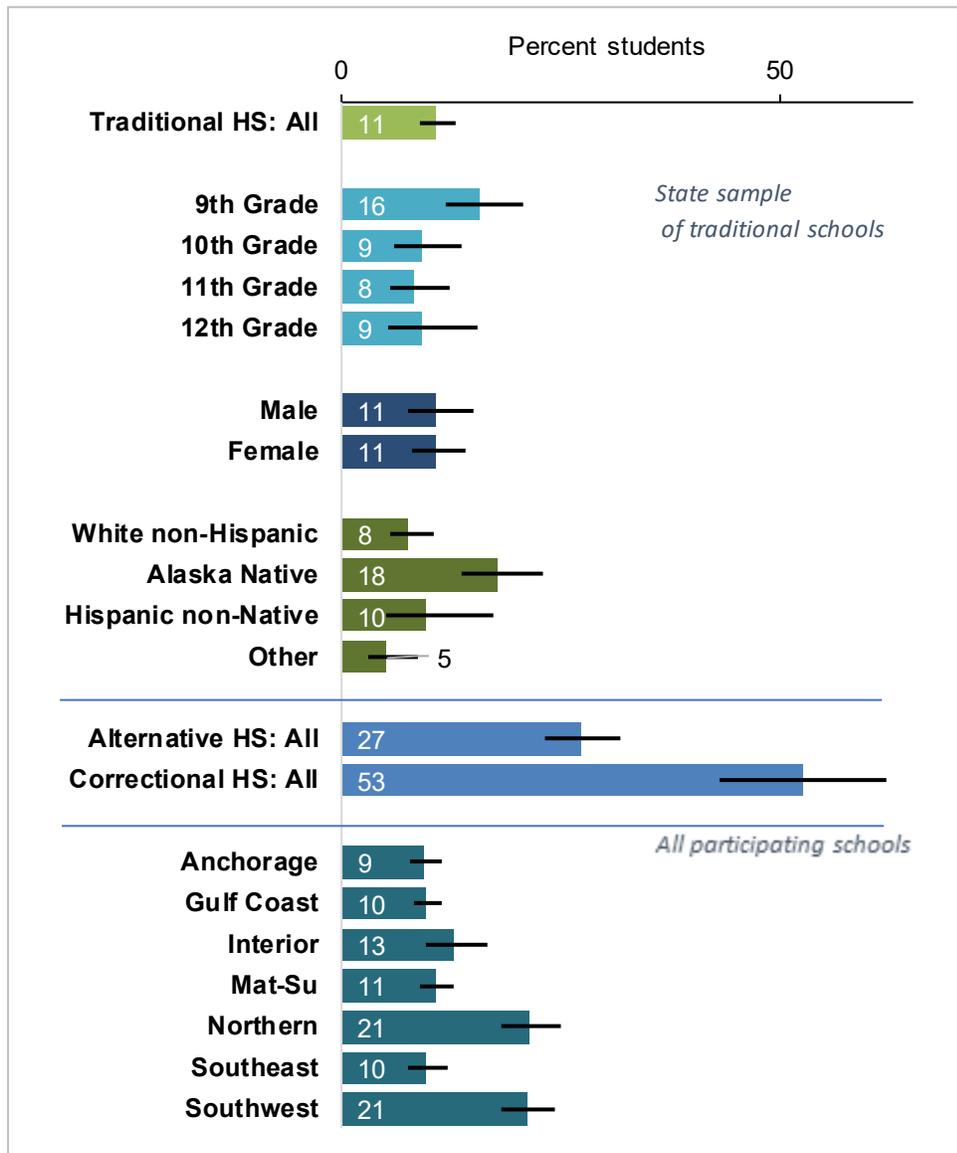
Figure 1: Lifetime marijuana use among youth in traditional high schools, Alaska and U.S., 1995-2017



Source: Alaska and U.S. YRBS, grades 9-12 combined. "Lifetime marijuana use" is defined as ever trying marijuana. Shaded area around Alaska trend estimates is the 95% confidence interval. Data were not collected between 1995-2003 and between 2003-2007; data points are not connected, and a break is shown in the axis between these years.

- An estimated 41.7% of Alaska students in traditional high schools said they had tried using marijuana at least once in 2017.
- The percentage of Alaska youth who said they had ever tried marijuana was declining beginning in 1995 and was relatively stable during the last 10 years. The U.S. trend has also been relatively stable.
- Although between 2011-2015 the prevalence of lifetime marijuana use was similar to the U.S. prevalence, in 2017 the prevalence of lifetime marijuana use in Alaska increased and was significantly greater than the U.S. prevalence (41.7% vs. 35.6%). This increase in lifetime use followed implementation of non-medical adult use marijuana legalization in the state.

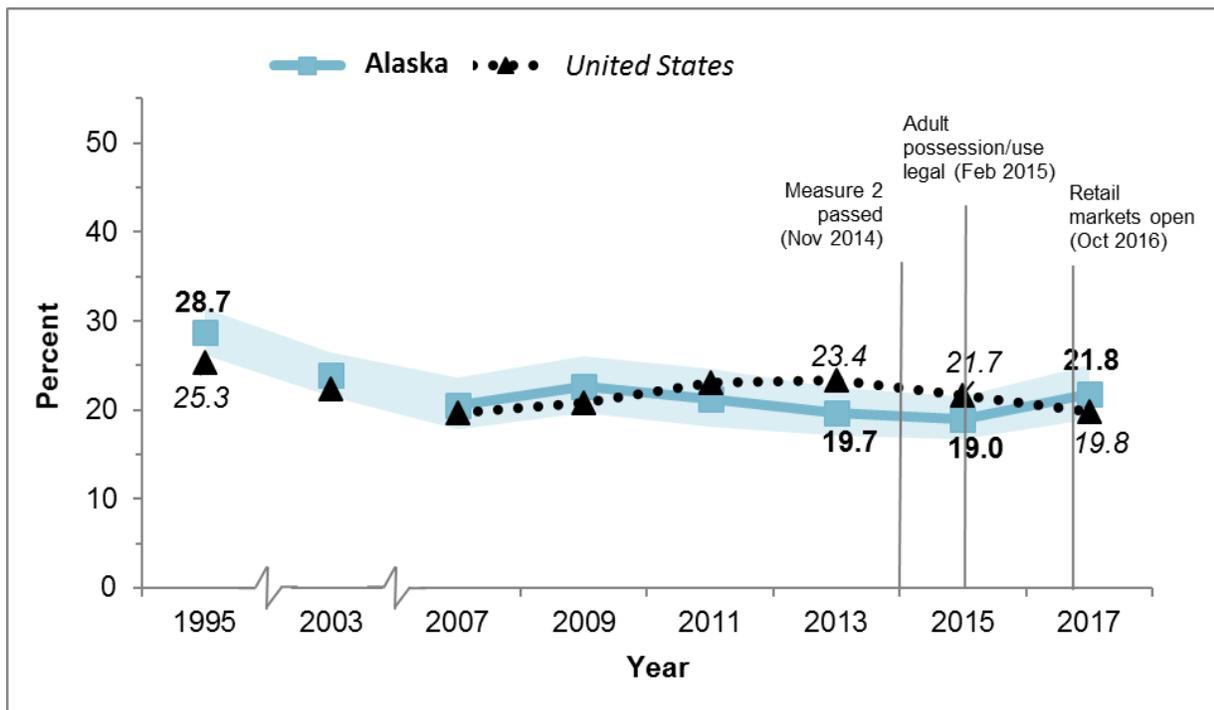
Figure 2: Lifetime marijuana use before age 13 among youth in grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools.

- Among all Alaska youth, about one in ten (11%) said they had tried using marijuana at least once *before they were age 13*.
- The prevalence of early initiation of marijuana use was significantly greater among 9th graders (16%) compared to 10th-12th graders, Alaska Native youth (18%) compared to other races, youth in alternative schools (27%) and correctional schools (53%) compared to traditional schools, and youth in the Northern and Southwest regions (21% in each region) compared to other regions of the state.

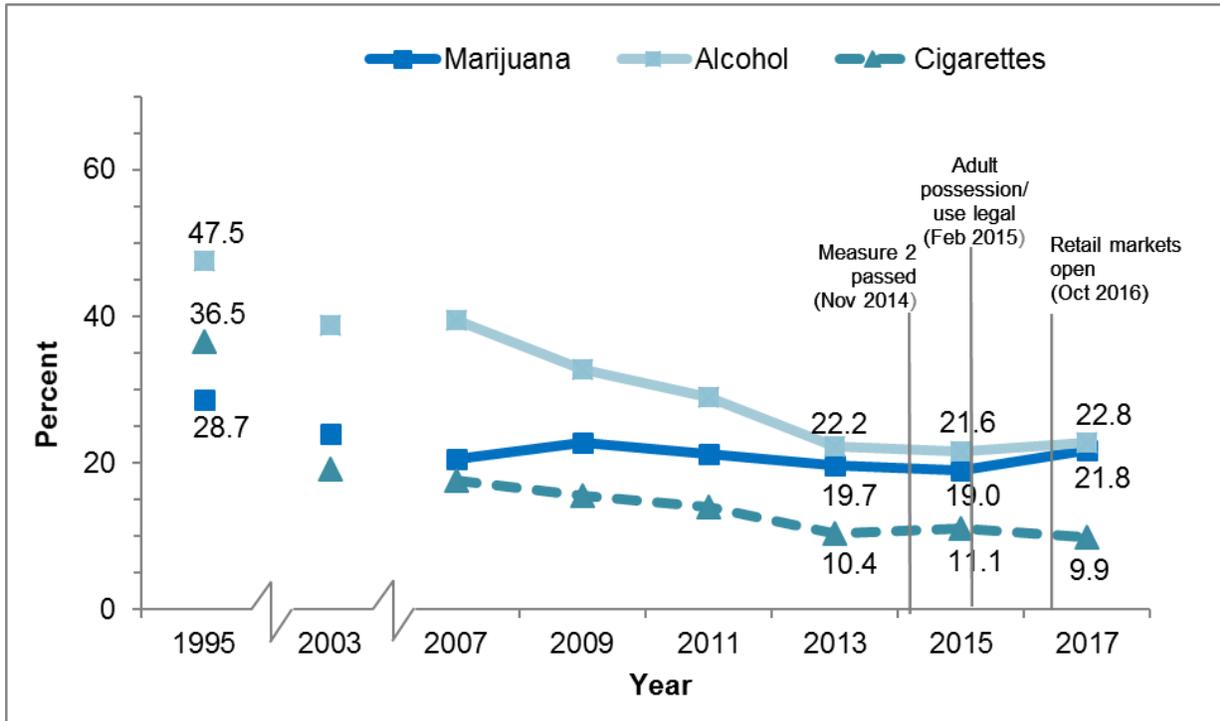
Figure 3: Current marijuana use among youth in traditional high schools, Alaska and U.S., 1995-2017



Source: Alaska and U.S. YRBS, grades 9-12 combined. “Current marijuana use” is defined as using on one or more of the past 30 days. Shaded area around Alaska trend estimates is the 95% confidence interval. Data were not collected between 1995-2003 and between 2003-2007; data points are not connected, and a break is shown in the axis between these years.

- About one in five Alaska youth (21.8%) said they currently used marijuana in 2017. This translates to about 9,000 youth who may be at risk for a variety of health, social and legal consequences.
- The prevalence of youth marijuana use in Alaska has not been significantly different than the U.S. during any recent years.
- The prevalence of youth marijuana use in both Alaska and the U.S. has not changed during the past 10 years.
- There were no significant changes in the prevalence of current marijuana use among youth in Alaska following early implementation of marijuana legalization and opening of the state’s retail marijuana markets. More years of data are needed to determine whether the implementation of legal marijuana use among adults and opening of retail markets has affected youth use patterns.

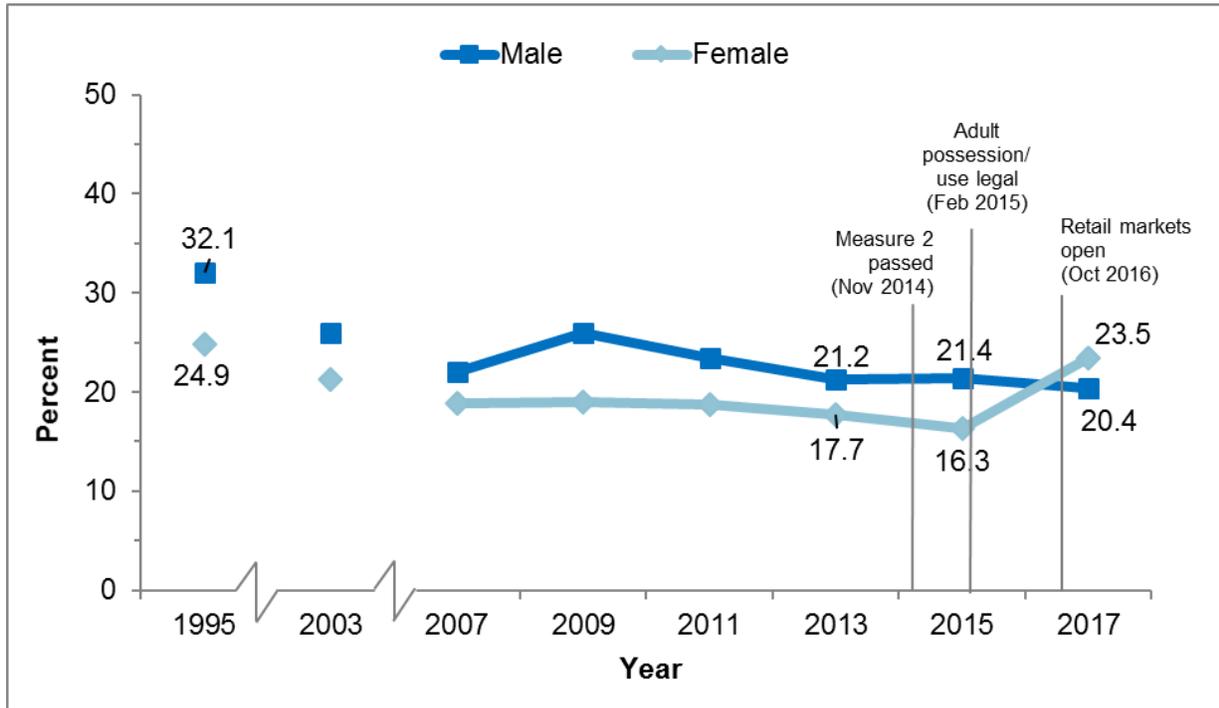
Figure 4: Current marijuana, alcohol and cigarette use among youth in traditional high schools, Alaska, 1995-2017



Source: Alaska YRBS, grades 9-12 combined. “Current use” is defined as using on one or more of the past 30 days. Data were not collected between 1995-2003 and between 2003-2007; data points are not connected, and a break is shown in the axis between these years.

- Current use of alcohol, tobacco and marijuana among youth in Alaska have all declined significantly since 1995. Prevalence for all three substances has remained stable since 2013.
- In 2017, the prevalence of alcohol use and marijuana use are very similar among high school youth (22.8% and 21.8%, respectively).
- In 2017, more high school students used marijuana than smoked cigarettes (21.8% and 9.9%, respectively).

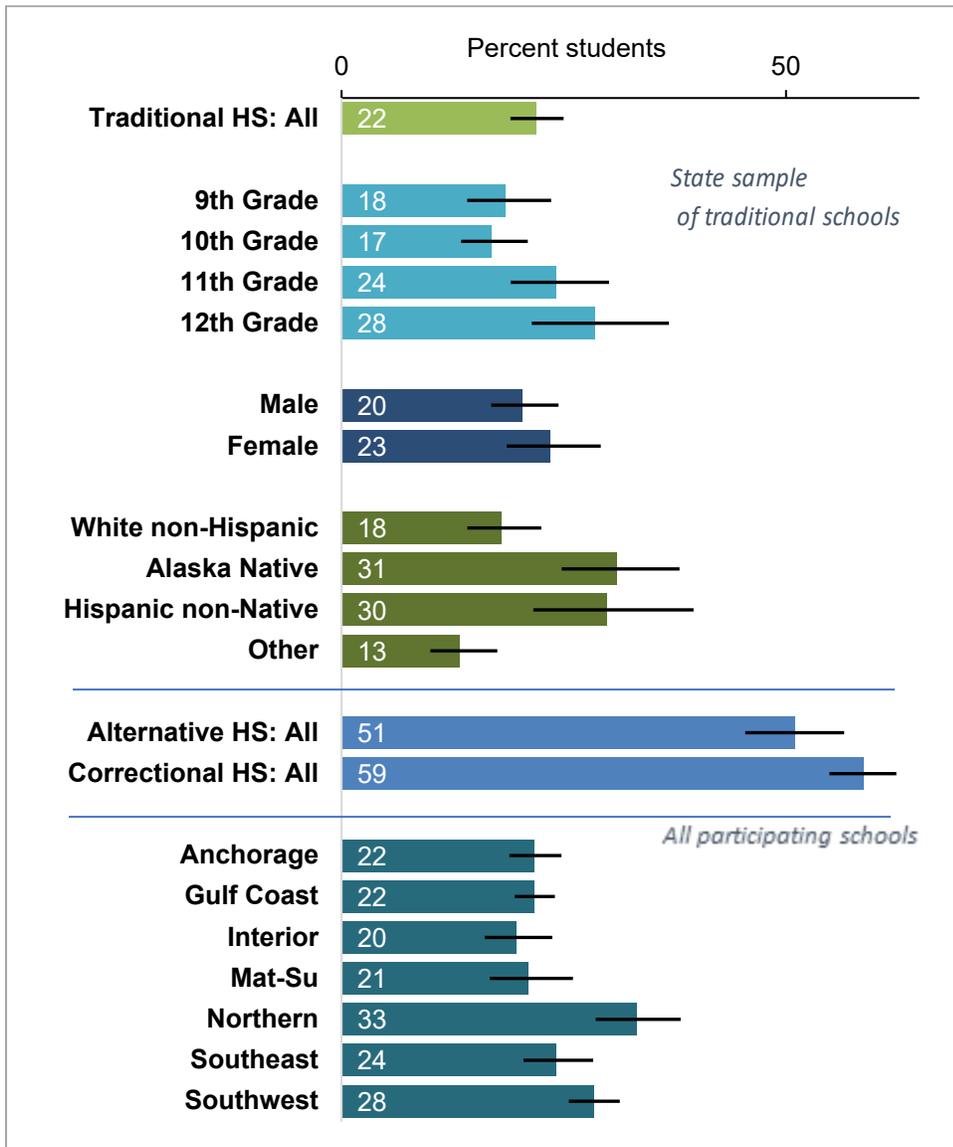
Figure 5: Current marijuana use among youth in traditional high schools by gender, Alaska, 1995-2017



Source: Alaska YRBS, grades 9-12 combined. “Current marijuana use” is defined as using on one or more of the past 30 days. Data were not collected between 1995-2003 and between 2003-2007; data points are not connected, and a break is shown in the axis between these years.

- Trends in current marijuana use have been similar for male and female high school students over time, with both genders showing long-term declines in use between 1995 and 2017, and stable levels of use between 2007 and 2017.
- Male students have consistently been more likely to report current marijuana use than female students, although differences were mostly non-significant.
- Between 2015 and 2017, marijuana use among females increased significantly while use among males remained stable.
- In 2017, 23.5% of female students and 20.4% of male students reported current marijuana use.

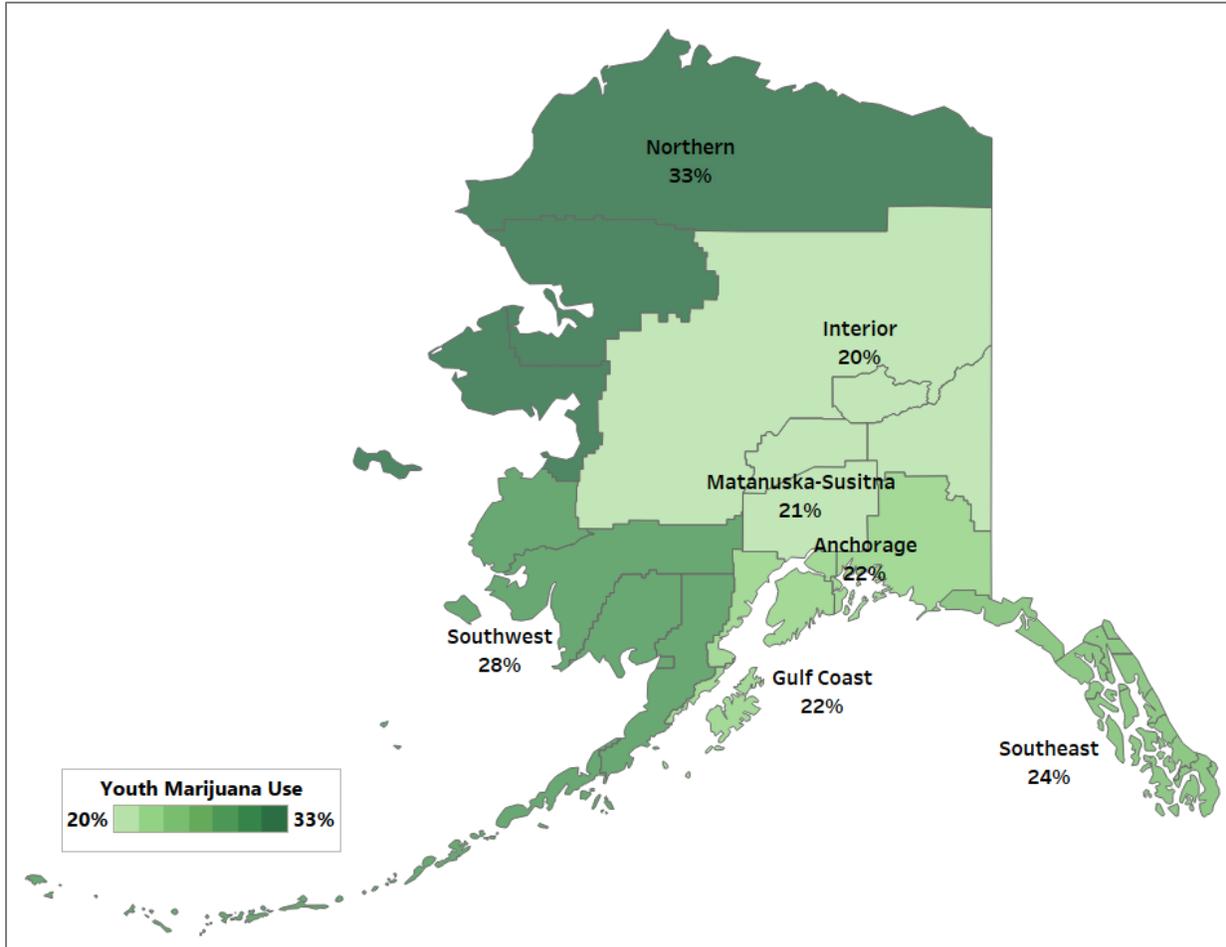
Figure 6: Current marijuana use among youth in grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools. “Current marijuana use” is defined as using on one or more of the past 30 days.

- Among all Alaska high school students, about one in five (22%) said they currently used marijuana.
- The prevalence of current marijuana use was significantly greater among 11th and 12th grade students in comparison to younger students, Alaska Native (31%) and Hispanic (30%) students, and youth in alternative (51%) or correctional (59%) vs. traditional (22%) schools.
- There are similar patterns for current use and early initiation; groups with higher prevalence of current marijuana use were for the most part the same as those with higher prevalence of early lifetime use.

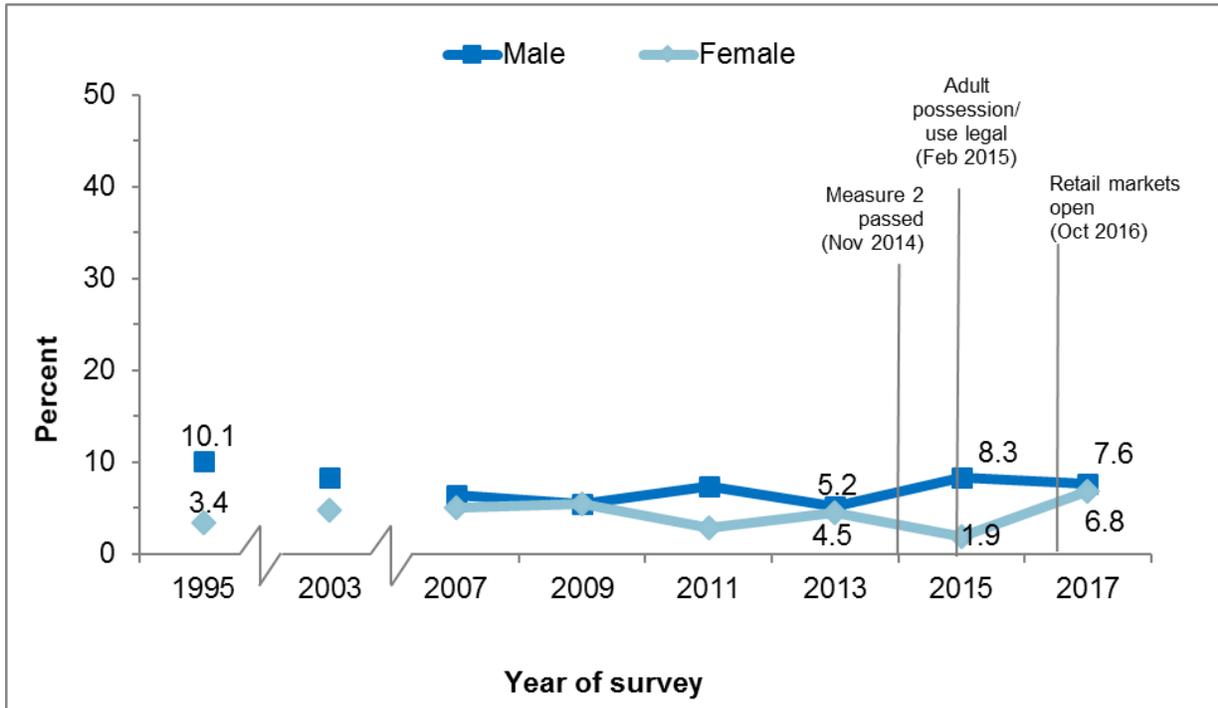
Figure 7: Current marijuana use among youth in grades 9-12 by region, Alaska, 2017



Source: Alaska YRBS. Regional data are from all participating schools (traditional, alternative, vocational and correctional schools). "Current marijuana use" is defined as using on one or more of the past 30 days.

- Current use of marijuana among high school students varied by region, although the prevalence was not significantly different for most regions.
- Relative regional patterns of marijuana use among youth were similar to regional patterns of heavy use among adults (see Figure 16).

Figure 8: Heavy marijuana use among youth in traditional high schools by gender, Alaska, 1995-2017

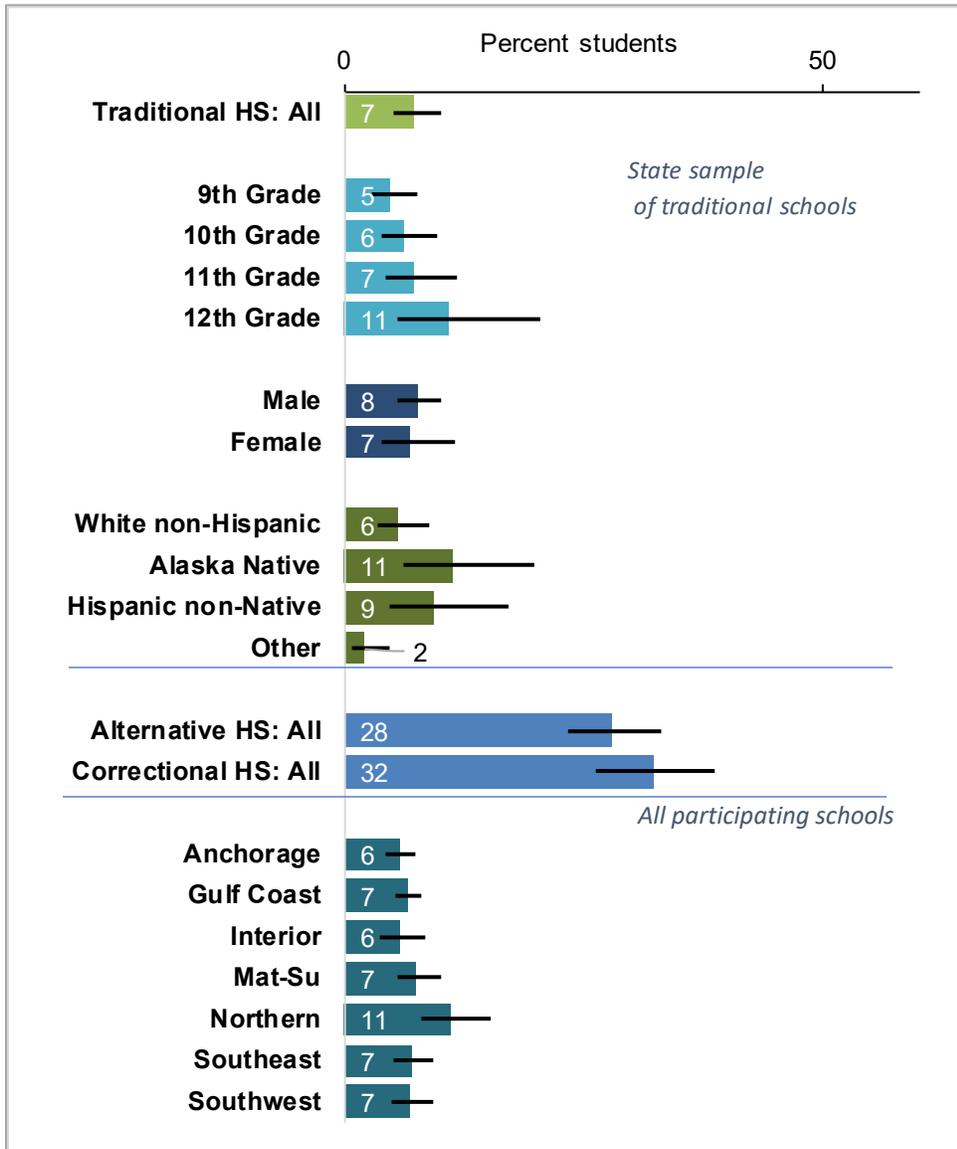


Source: Alaska YRBS, grades 9-12 combined. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days. Data were not collected between 1995-2003 and between 2003-2007; data points are not connected, and a break is shown in the axis between these years.

“Heavy” marijuana use (use on 20 or more of the past 30 days) may be of particular concern among youth.

- Trends in heavy marijuana use have been similar for male and female high school students over time, with both genders showing generally stable levels of use during recent years.
- Male students have consistently been more likely to report heavy marijuana use than female students, although differences were mostly non-significant. In 2017, heavy use among females increased while heavy use among males remained stable, although differences remained non-significant.
- In 2017, 7.6% of male students and 6.8% of female students said they used marijuana on 20 or more of the past 30 days.
- More years of data are needed to determine whether the implementation of legal marijuana use among adults and opening of retail markets has affected youth use patterns.

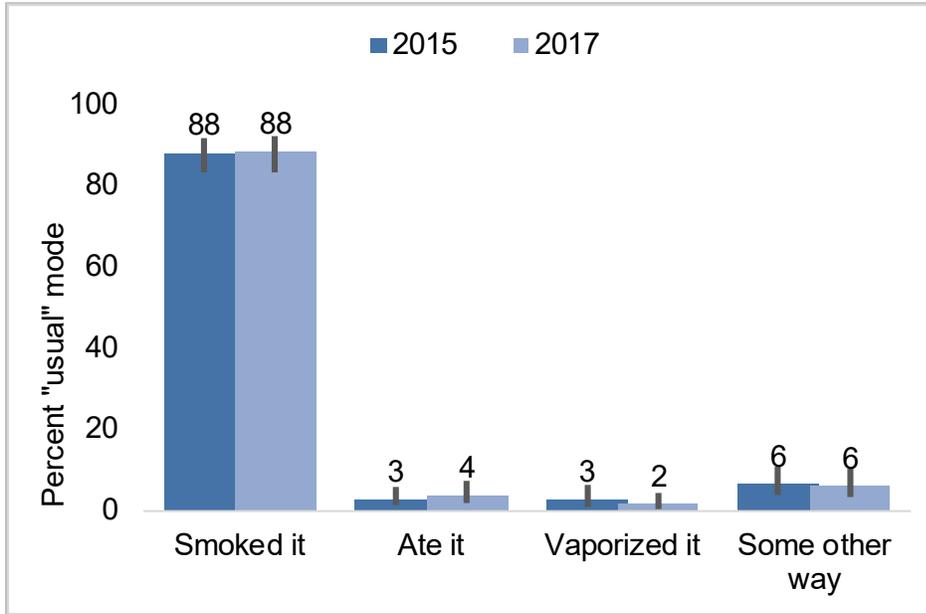
Figure 9: Heavy marijuana use among youth in grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days.

- Among all Alaska high school students, about one in ten (7%) said they used marijuana on at least 20 of the past 30 days (“heavy use”).
- The prevalence of heavy marijuana use was significantly greater among 12th grade students (11%) in comparison to younger (9th grade) students, and among students in alternative (22%) and correctional schools (32%) in comparison to traditional school students.

Figure 10: Usual mode of use among youth who currently use marijuana, grades 9-12 in traditional high schools, Alaska, 2015 and 2017

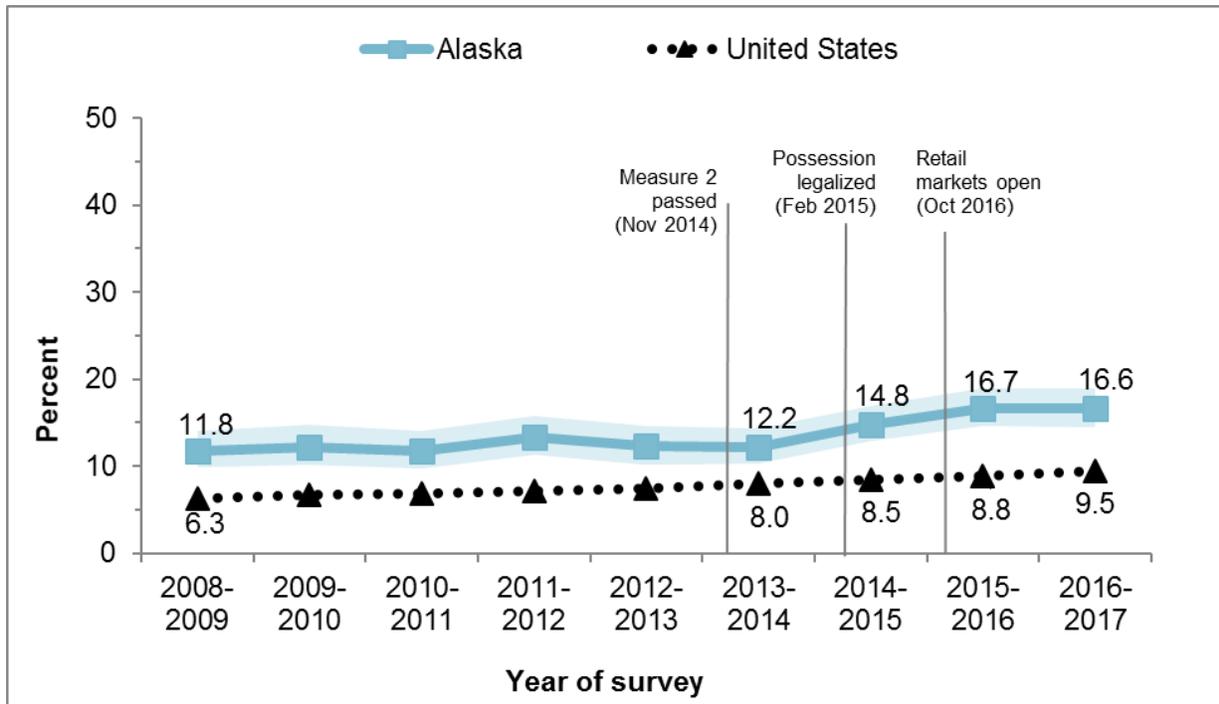


Source: Alaska YRBS state sample. State sample data are from traditional high schools only. Survey participants select one “usual” mode based on their use in the past 30 days; they may have used more than one way.

Students who used marijuana during the past 30 days were asked to select the “usual” way that they used it.

- Patterns of usual mode of use were similar between 2015 and 2017.
- Smoking marijuana was the most common mode of “usual” use among students. 88% of students who use marijuana said that they usually smoked it in 2017.
- Relatively few students who use marijuana said that they used edibles (4% in 2017) or “vaped” it (2% in 2017).
- About 6% of students who used marijuana reported they usually used it “some other way” in 2017. This could include “dabbing” or use of tinctures or topicals.

Figure 11: Current marijuana use among adults (ages 18+), Alaska and U.S., 2008-2017

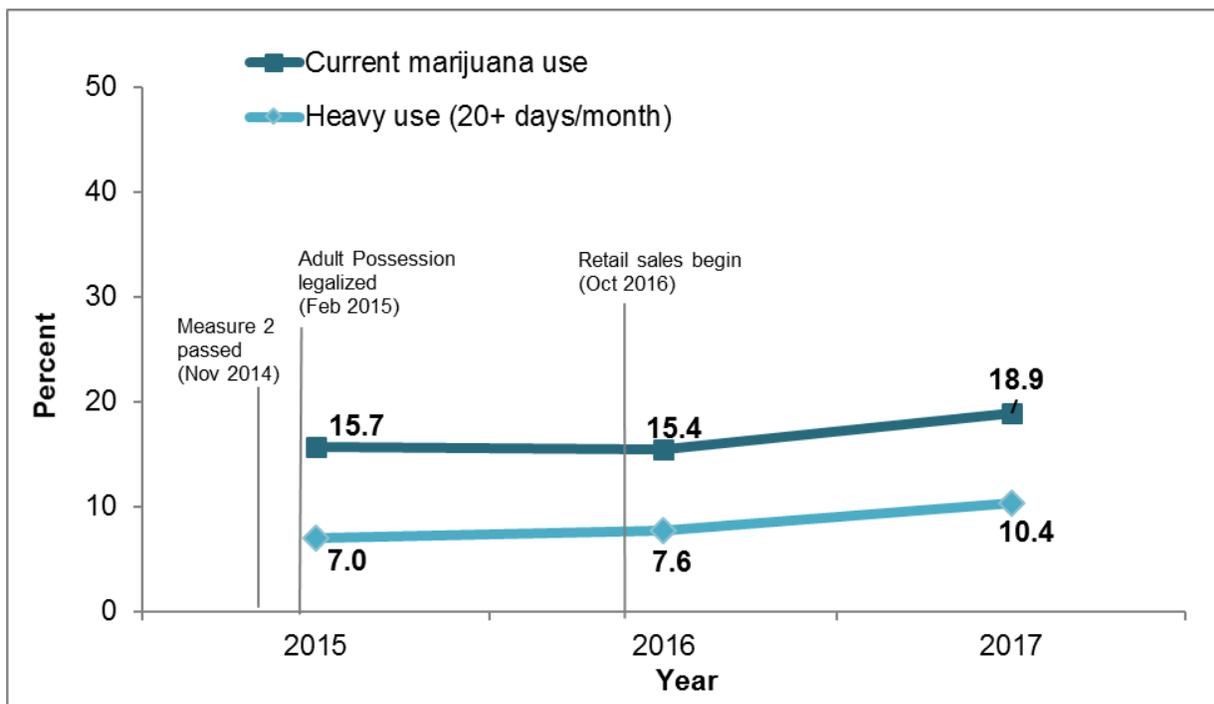


Source: National Survey on Drug Use and Health (NSDUH). “Current marijuana use” is defined as using on one or more of the past 30 days. Shaded area around Alaska trend estimates is the 95% confidence interval.

The National Survey on Drug Use and Health (NSDUH) has a smaller sample and therefore less stable estimates than the Alaska BRFSS; however, questions about marijuana use have been asked on this survey for a longer period of time and because NSDUH is a national survey it is possible to compare Alaska results to the U.S.

- About 16.6% of Alaska adults said they currently used marijuana in 2016-2017 combined, compared to 9.5% of adults in the U.S.
- The prevalence of current marijuana use among adults in Alaska has been significantly greater than the U.S. since 2008-09.
- The prevalence of current marijuana use among adults has increased modestly during this time period. However, more years of data are needed to determine to what extent the implementation of legal marijuana use among adults and opening of retail markets has affected adult use patterns.

Figure 12: Marijuana use among adults, Alaska, 2015-2017



Source: Alaska BRFSS. “Current marijuana use” is defined as using on one or more of the past 30 days; “heavy marijuana use” as using on 20 or more of the past 30 days.

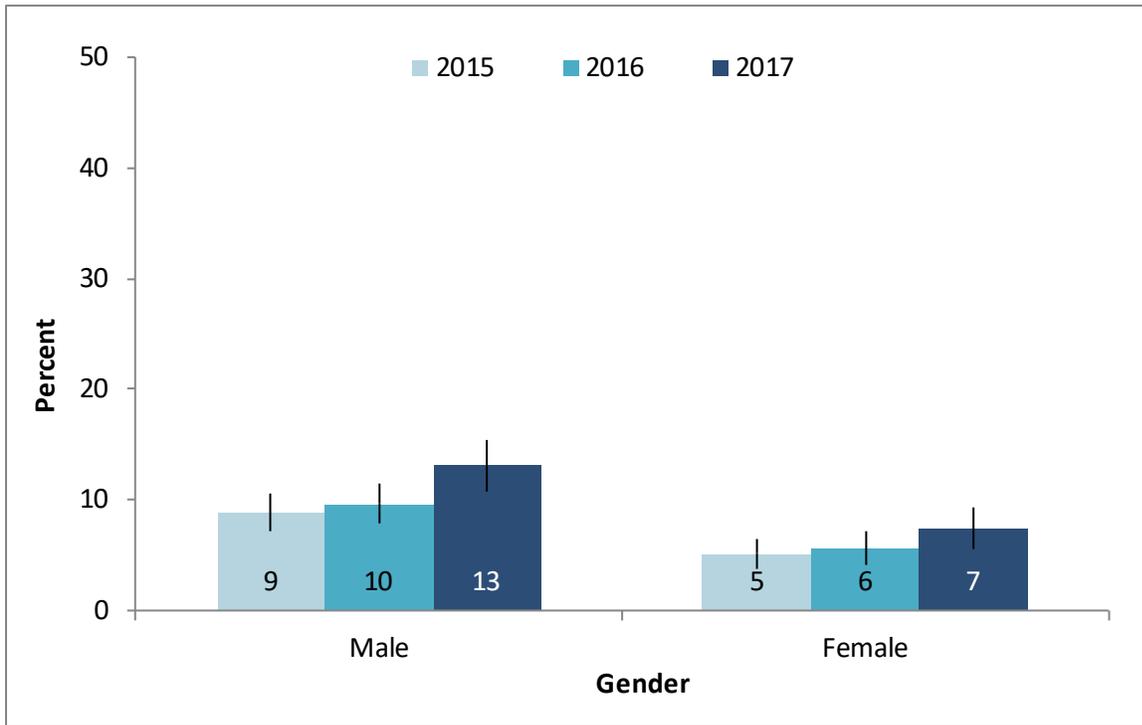
Marijuana use questions were added to Alaska’s Behavioral Risk Factor Survey in 2015. This survey is the primary source of information about adult health behaviors in the state.

- About one in five (18.9%) Alaska adults ages 18 and older said they currently used marijuana in 2017.
- About one in ten (10.4%) of Alaska adults ages 18 and older said they had used marijuana on 20 or more of the past 30 days, characterized as “heavy use” which may be of greater concern than occasional use. This translates to about 54,000 adults who are using at levels that may be risky.¹
- The prevalence of current and heavy marijuana use among adults increased significantly in Alaska from 2015 to 2017, following early implementation of marijuana legalization and opening of the state’s retail marijuana markets. More years of data are needed to determine how the implementation of legal marijuana use among adults and opening of retail markets affects adult use patterns in the long-term.

Descriptions of adult marijuana use in the remainder of this section will focus on “heavy marijuana use.”

¹ Estimated by applying prevalence to the 2017 state population ages 18 and older (source: Alaska DOL WD).

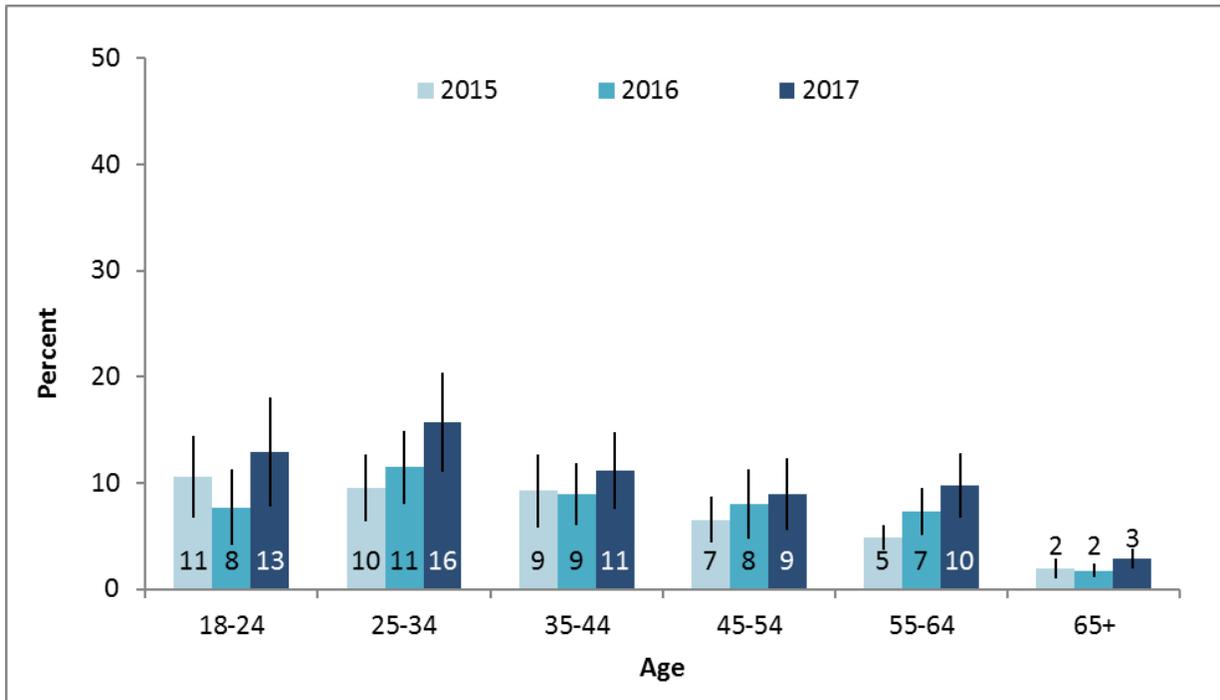
Figure 13: Heavy marijuana use among adults, Alaska, 2015-2017



Source: Alaska BRFSS. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days.

- Heavy marijuana use among adults ages 18 and older increased significantly between 2015 and 2017 for the total population (from 7% to 10%).
- Heavy marijuana use also increased significantly among adult males alone (from 9% to 13%).
- The trend in heavy marijuana use appeared to increase among adult females but was not statistically significant (from 5% in 2015 to 7% in 2017).

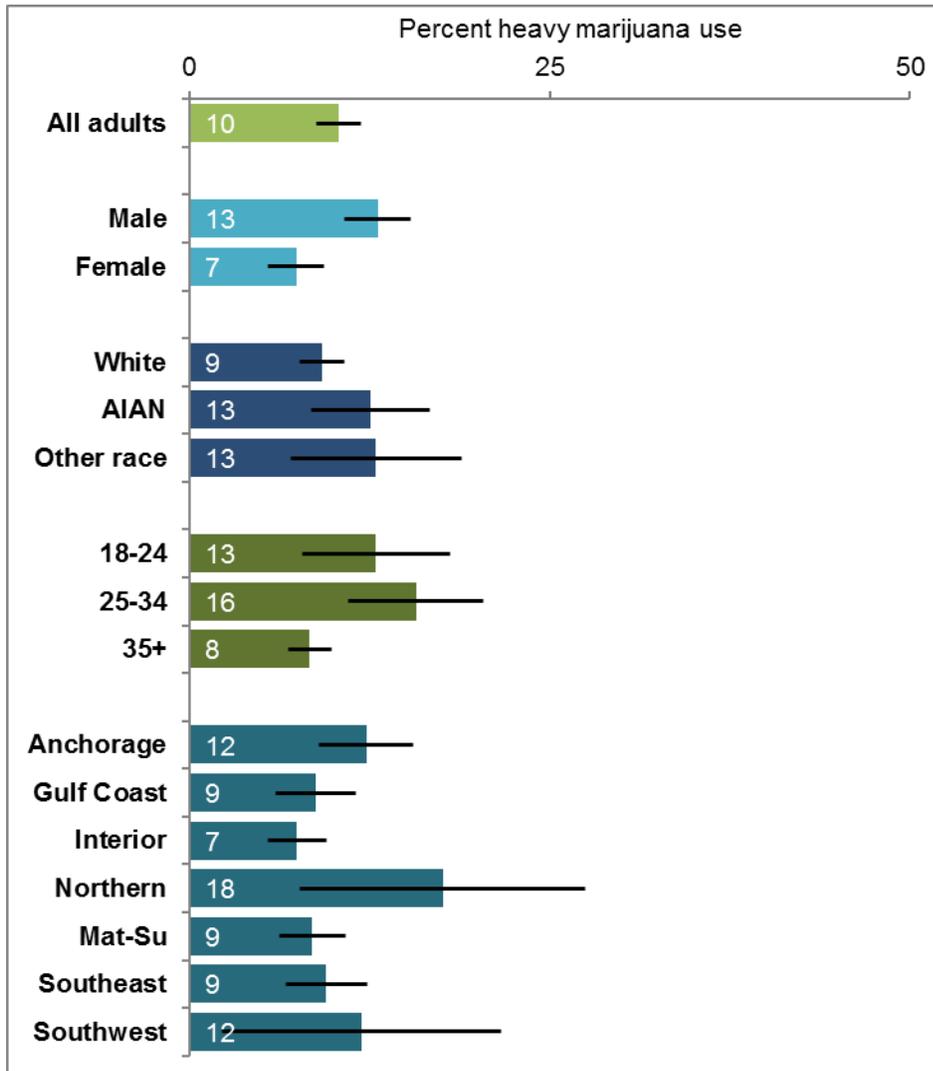
Figure 14: Heavy marijuana use among adults, Alaska, 2015-2017



Source: Alaska BRFSS. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days.

- Increases in heavy marijuana use were statistically significant for the 25-34 year old age group and the 55-64 year old age group. Although heavy marijuana use appeared to increase among other age groups as well, those increases were not significant.

Figure 15: Heavy marijuana use among adults by demographic groups, Alaska, 2017

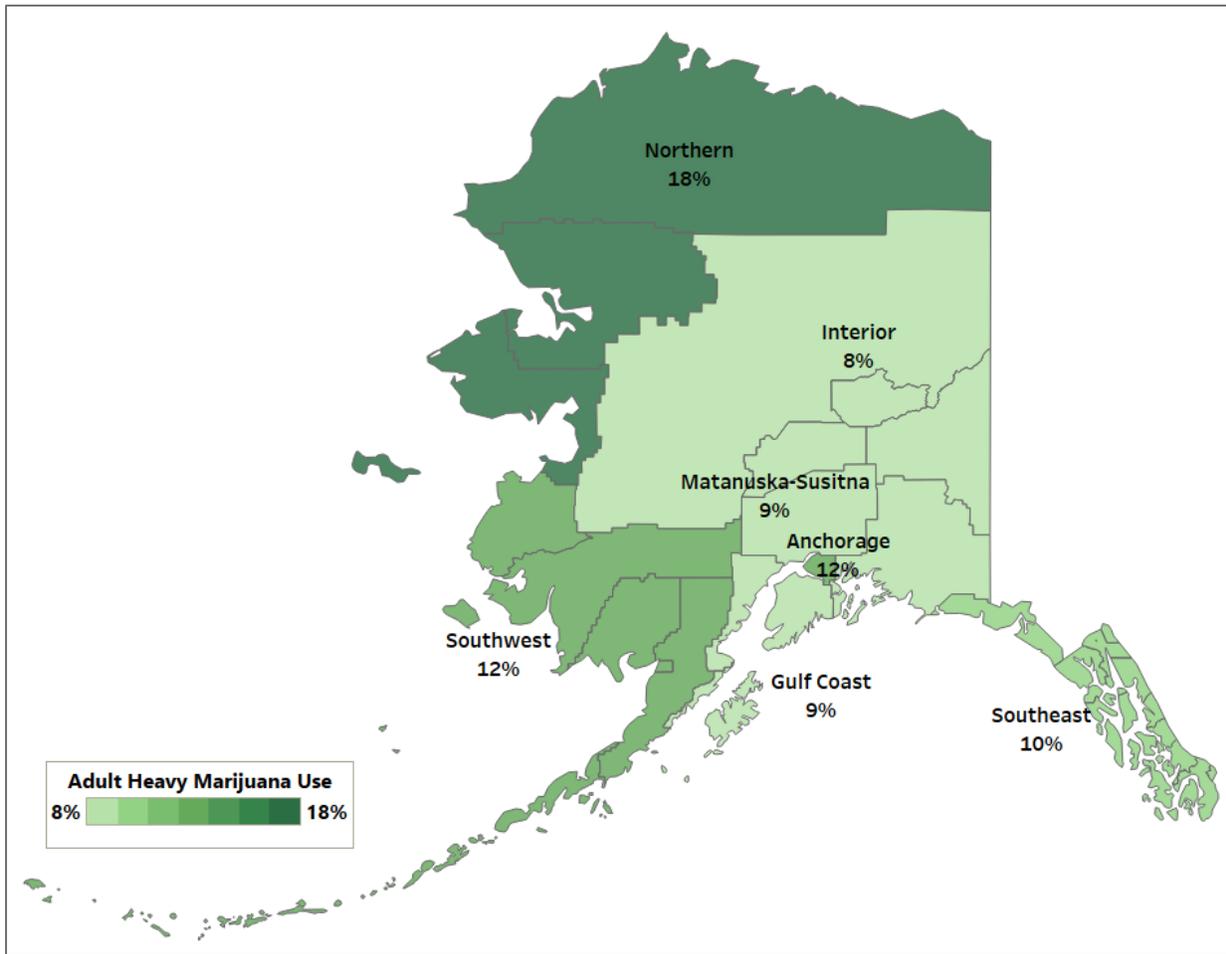


Source: Alaska BRFSS. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days.
AIAN: American Indian/Alaska Native.

About one in ten (10%) Alaska adults reported heavy use of marijuana in 2017.

- The prevalence of heavy marijuana use was greater among males than females (13% among men in comparison to 7% among women).
- The prevalence of heavy marijuana use was greater among younger adult age groups than among older adult age groups (16% among ages 25-34 in comparison to 8% among ages 35 and older).
- The prevalence of heavy marijuana use varied by geographic region, but differences were not statistically significant.

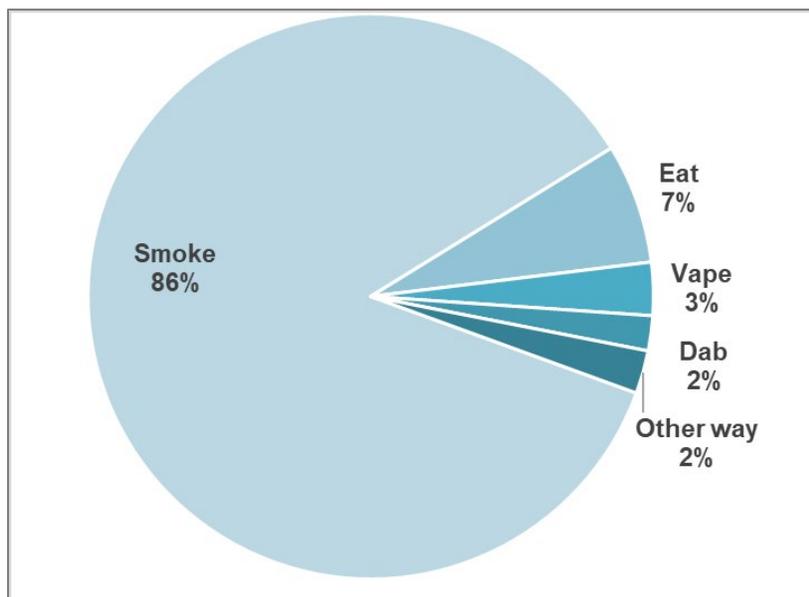
Figure 16: Heavy marijuana use among adults by region, Alaska, 2015-2017



Source: Alaska BRFSS. “Heavy marijuana use” is defined as using on 20 or more of the past 30 days.

- The prevalence of heavy marijuana use varied by geographic region, from 18% of adults in the Northern region to 8% of adults in the Interior region, but differences between regions were not statistically significant.
- Relative regional patterns of heavy marijuana use among adults were similar to regional patterns among youth (see Figure 7).

Figure 17: Usual mode of marijuana use among adult users, Alaska, 2017



Source: Alaska BRFSS. Survey participants select one “usual” mode based on their use in the past 30 days.

In 2017, adults who used marijuana during the past 30 days were asked to select a single “usual” way that they used it.

- Smoking marijuana was the most common mode of “usual” use among adults: 86% of those who use marijuana said that they usually smoked it in 2017.
- About one in ten (7%) adults who use marijuana said they usually consume edibles.
- Relatively few adults who use marijuana said that they usually vaped (3%) or “dabbed” (2%).
- About 2% of adults who used marijuana reported they usually used it “some other way”; this could include products such as infused drinks, tinctures, pills or topicals.

In 2015-16, adults who used marijuana were asked about all the different ways they had used within the past 30 days, rather than only their usual way (data not shown).

- About one in three marijuana users had use more than one type of product in the past 30 days (27% in 2015 and 34% in 2016).
- Most adults who used marijuana had smoked it at least once (91% in 2015 and 96% in 2016).
- More than one in five had used edibles at least once (21% in 2015 and 26% in 2016).
- About 3% of adult marijuana users in 2015 and 2016 had consumed infused drinks.
- About one in seven (15% in 2015 and 17% in 2016) adult marijuana users had vaped marijuana.
- There was a significant increase in the percentage of adult marijuana users who said they had dabbed marijuana: from 9% in 2015 to 14% in 2016.
- About 3% of adult marijuana users in 2015 and 2016 said they had used some other way.

Table 2: Self-reported use of marijuana products, any use in past 30 days, Alaska adult marijuana users, June 2016

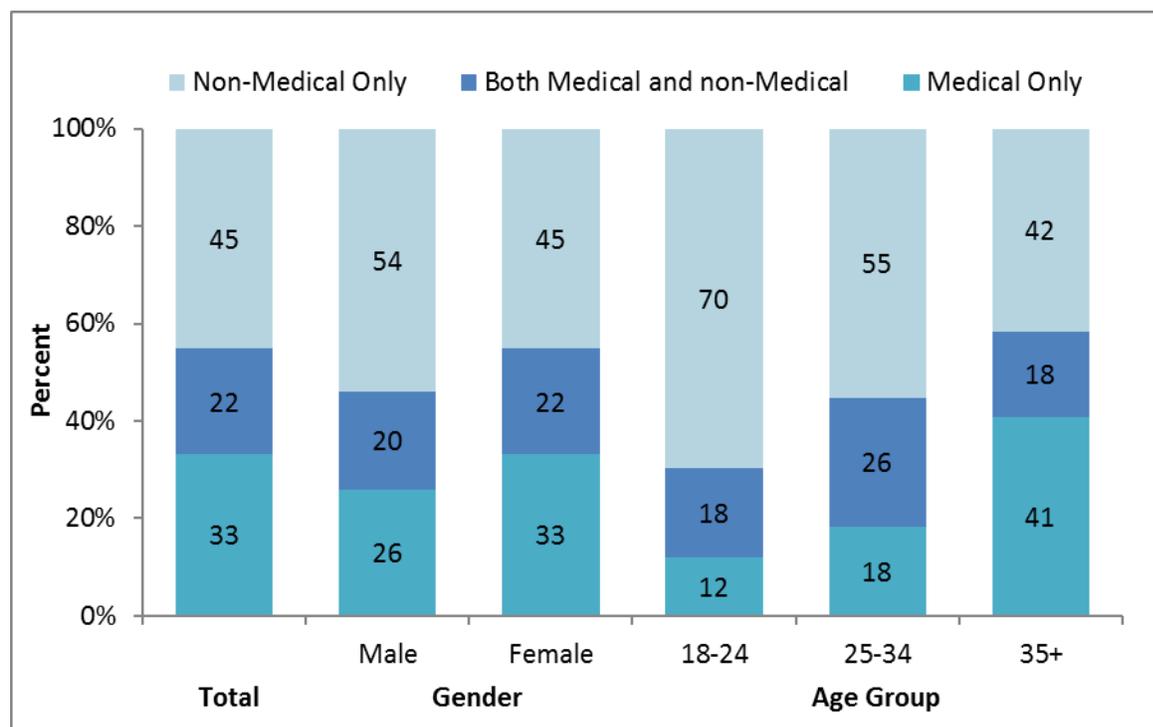
Product type	% any use in past month, among marijuana users	Average days used in past month
Smoking	98%	18.5
Edibles	22%	3.0
Vaping or dabbing	21%	
Vaping specifically		12.0
Dabbing specifically		1.9

Source: Alaska 2016 BRFSS call-back survey

Adult marijuana users were asked in a 2016 call-back survey about all types of marijuana they had used in the past month, and how many days in the past month they had used each of them.

- The percentage of adult marijuana users who said they had used each specific type of product was similar to the results from BRFSS 2015-16: 98% had smoked, 22% had used edibles, and 21% had used vapes or dabs.
- People who used marijuana reported smoking and using vapes relatively more often on average (18.5 days and 12.0 days in the past 30 days, respectively), compared to using edibles (3.0 days on average) and dabs (1.9 days on average).

Figure 18: Reason for marijuana use among adult current marijuana users, Alaska, 2017



Source: Alaska BRFSS. Questions asked among adults who had used marijuana at least once in the past 30 days.

Adults who currently use marijuana were asked about their reason for using, whether for medical purposes, non-medical purposes, or both.

- In 2017, about one-third (33%) of all adult marijuana users in Alaska said they were using marijuana only for medical reasons. Nearly half (45%) said they were using only for non-medical reasons. About one in five (22%) said they were using for both medical and non-medical reasons.
- Reasons for use were not significantly different between men and women.
- Younger adults (ages 18-24 and 25-34) were less likely than adults ages 35 and older to report using marijuana only for medical reasons (12% and 18% among younger groups vs. 41% among the 35 and older age group). Similarly, both younger age groups were more likely than older adults to say they were using marijuana only for non-medical reasons.

Usual marijuana products used varied significantly by reasons for use.

- Adults who said they used marijuana only for medical purposes were more likely to use edibles (11% of medical users, 5% of non-medical users), dabs (2% of medical users, 0.3% of non-medical users) and “other” products (7% of medical users, 1% of non-medical users).
- Adults who said they used marijuana only for non-medical purposes were more likely to smoke it than those who used only for medical reasons: 92% of non-medical users compared to 76% of medical users.
- Vaping product use was not significantly different by purpose of use: 4% of people using only for medical reasons and 2% of people using only for non-medical reasons said they usually vaped.

Table 3: Self-reported reasons for use of marijuana, Alaska adult marijuana users, June 2016

	% indicating reason
Relax/relieve tension	90%
Feel good/get high	71%
Help sleep	58%
Treat a medical condition	53%
Deal with life events	32%
Help socialize with others	21%
To experiment	15%
Bad mood/irritable without it	11%
Peer pressure	6%

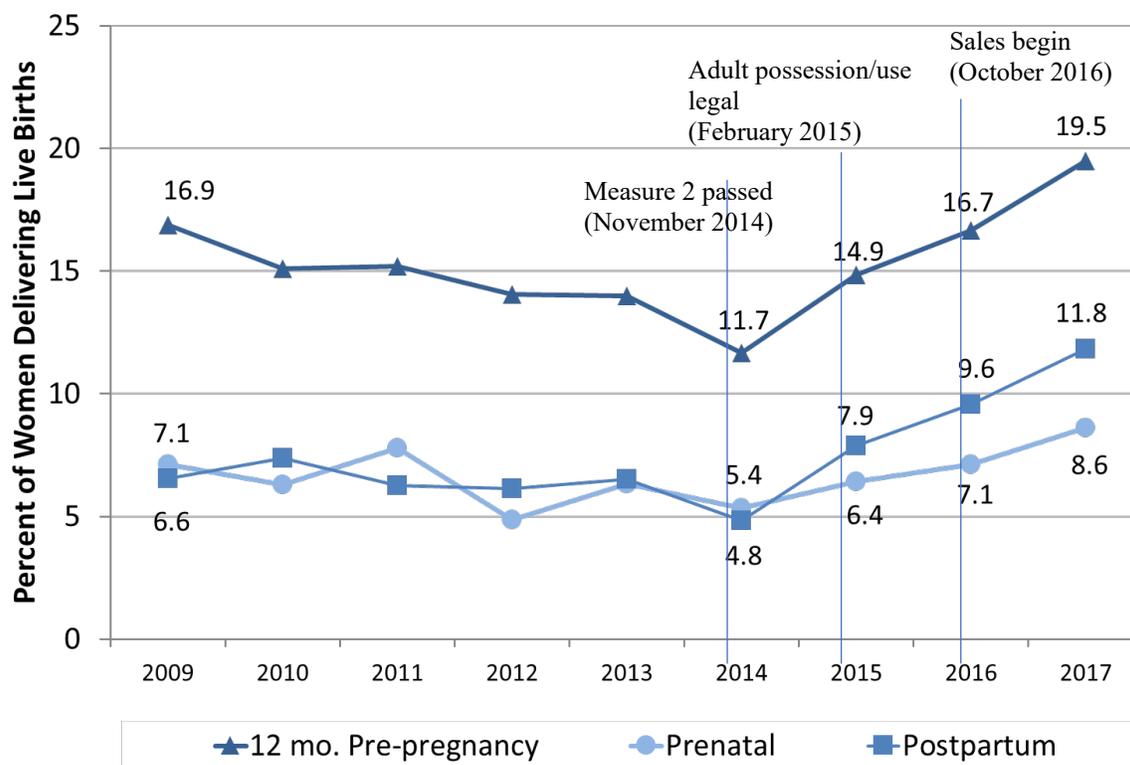
Source: Alaska 2016 BRFSS call-back survey

Adult marijuana users were asked in a 2016 call-back survey about all of their reasons for using marijuana. They could indicate multiple reasons.

- The majority said that they used to relax or relieve tension, followed by feeling good or getting high.
- Slightly more than half said they used marijuana to help with sleep, and about half said they were using marijuana to treat a medical condition. This is similar to the percentage of adults who said they were using marijuana for medical reasons alone or in part in the 2017 Alaska BRFSS (see Figure 18).
- Less than half said they were using for other social or emotional reasons.

Pregnant/parenting women

Figure 19: Marijuana use by pregnancy status, Alaska, 2009-2017



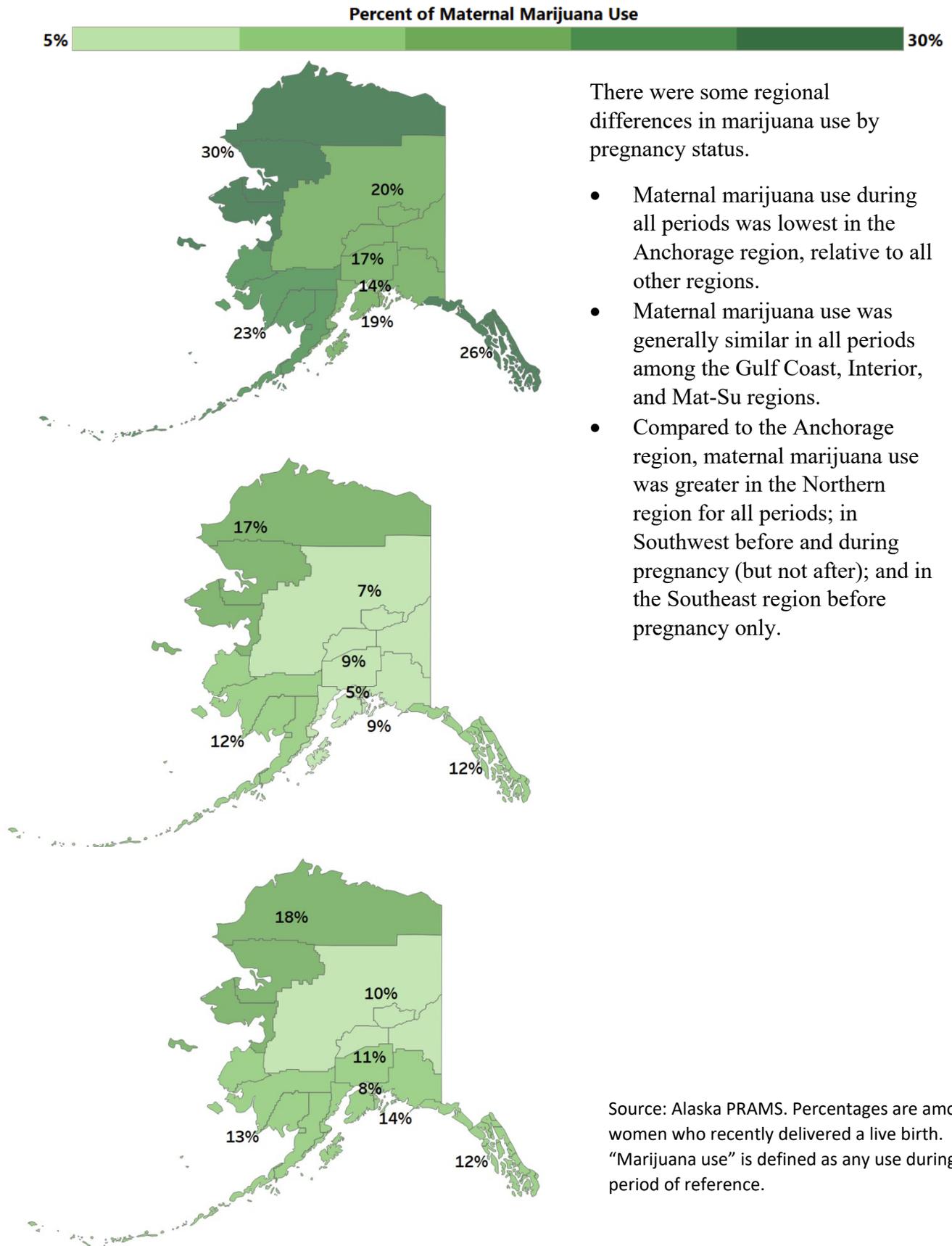
Source: Alaska PRAMS. Percentages are among women who recently delivered a live birth.

- During 2017, 8.6% of the 10,447 live births in Alaska² – translating to about 900 births – were to women who reported using marijuana during pregnancy.
- The percent of women who used marijuana before, during and after pregnancy has increased in Alaska between 2009 and 2017. Use before pregnancy increased from 16.9% in 2009 to 19.5% in 2017; use during pregnancy increased from 7.1% to 8.6%; and use after delivery increased from 6.6% to 11.8%.
- Use had been stable or modestly declining prior to legalization. Use increased following passage of the initiative, legalization of adult use, and the start of retail sales.
- In all years, the percentage of women who used marijuana during pregnancy was about half of the percentage who used prior to pregnancy. Since 2015, the percentage of women who used marijuana after pregnancy has been greater than during pregnancy; however, the percentage has always remained lower than prior to pregnancy.

² 2017 Vital Statistics Annual Report

http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/VitalStatistics_AnnualReport_2017.pdf

Figure 20: Marijuana use by pregnancy status and region, Alaska, 2016-2017

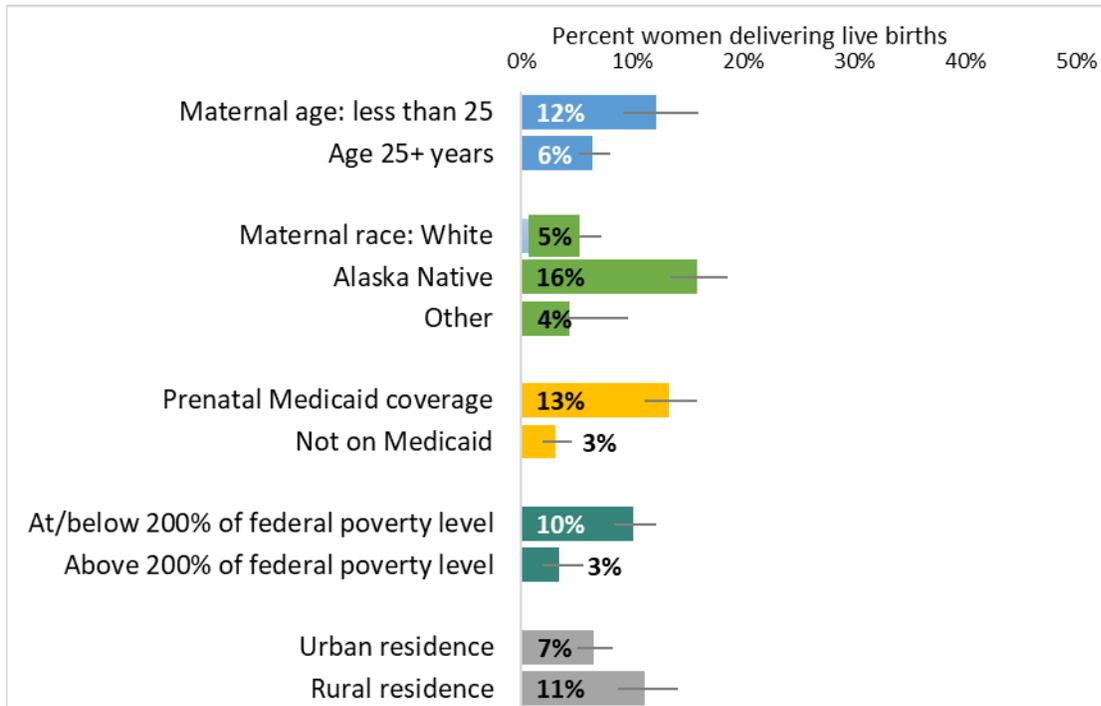


There were some regional differences in marijuana use by pregnancy status.

- Maternal marijuana use during all periods was lowest in the Anchorage region, relative to all other regions.
- Maternal marijuana use was generally similar in all periods among the Gulf Coast, Interior, and Mat-Su regions.
- Compared to the Anchorage region, maternal marijuana use was greater in the Northern region for all periods; in Southwest before and during pregnancy (but not after); and in the Southeast region before pregnancy only.

Source: Alaska PRAMS. Percentages are among women who recently delivered a live birth. "Marijuana use" is defined as any use during the period of reference.

Figure 21: Marijuana use during pregnancy by maternal characteristics, Alaska, 2016-2017



Source: Alaska PRAMS. Percentages are among women who recently delivered a live birth. “Marijuana use” is defined as any use during pregnancy.

Marijuana use during pregnancy varied significantly by maternal characteristics.

- Mothers younger than 25 years old were twice as likely to report using marijuana during pregnancy than those 25 and older: 12% vs. 6%, respectively.
- Alaska Native mothers were more likely to report using marijuana during pregnancy than mothers of other race: 16% in comparison to 5% for White and 4% for mothers of other races groups combined.
- Mothers with Medicaid coverage for prenatal care were more likely to report using marijuana during pregnancy than mothers who did not have Medicaid prenatal healthcare coverage: 13% vs. 3%, respectively.
- Mothers living at or below 200% of the federal poverty level were more likely to report using marijuana during pregnancy than those with a higher household income: 10% in comparison to 3%.
- Mothers living in rural communities were more likely to report using marijuana during pregnancy than mothers living in rural communities: 11% in comparison to 7%.

Table 4: Marijuana use, reasons for use, related prenatal care advice, and opinions about marijuana risk for breastfeeding, Alaska, 2017

Frequency of marijuana use, among women who used either 3 months before pregnancy or during pregnancy	% 3 months pre-pregnancy	% during pregnancy
Daily	33%	8%
At least once per week, but not daily	29%	25%
One to three days a month or less	31%	23%
Did not use marijuana	6%	44%
Mode of marijuana consumption, among those who used during pregnancy (multiple selections allowed)		
Smoked it		82%
Ate it		23%
Dabbed it		15%
Vaporized it		11%
Drank it		0%
Other way		0%
Reasons for marijuana use, among women who used during pregnancy (multiple selections allowed)		
Relieve nausea		81%
Relieve stress or anxiety		70%
Relieve vomiting		64%
Relieve pain		63%
For fun or to relax		54%
Relieve symptoms of a chronic condition		13%
Some other reason		49%
Prenatal healthcare provider interactions about marijuana use, among women who had prenatal care		
Provider asked about marijuana use		81%
Provider advised NOT to use marijuana		57%
Provider advised TO use marijuana		3%
Provider advised NOT to breastfeed if using marijuana		37%
Opinions on time to wait to breastfeed after marijuana use, among all women		
It is not safe to use marijuana at all if breastfeeding		80%
It is best to breastfeed at least 2-3 hours after being high		10%
It is best to breastfeed when no longer high		4%
There is no need to wait to breastfeed if using marijuana		6%

Source: PRAMS 2017 supplemental questions, answered by 536 women.

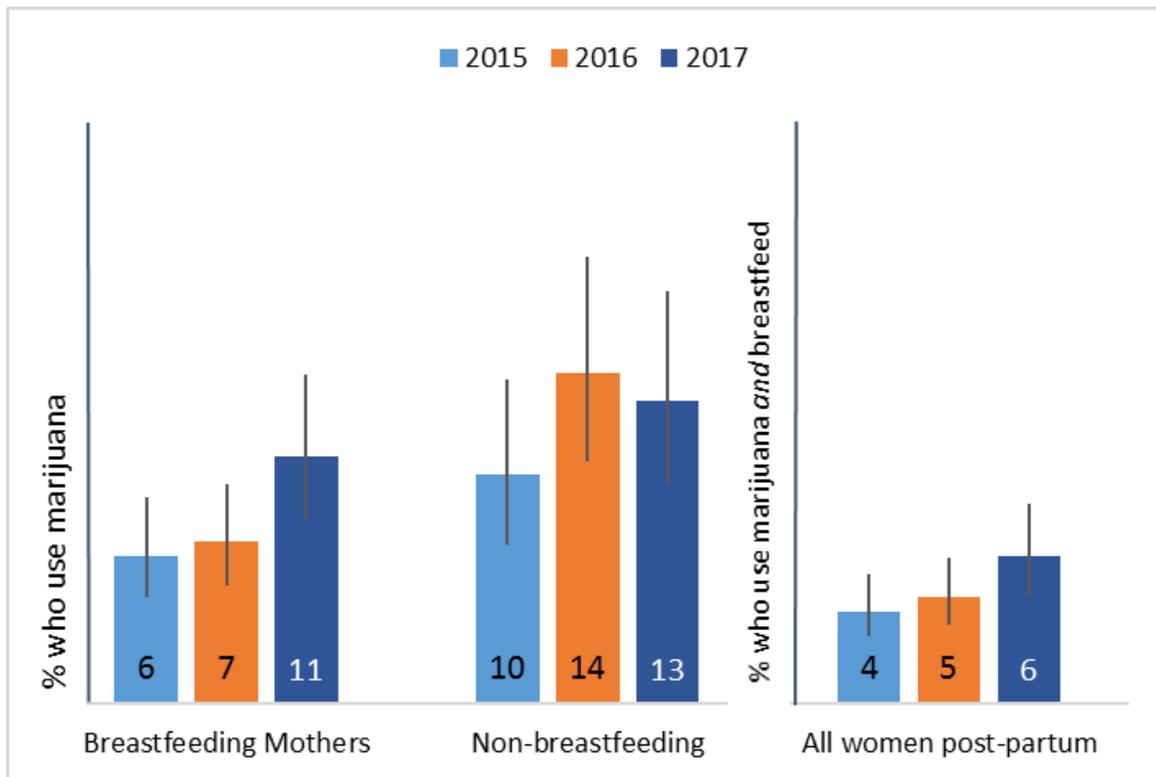
Additional questions about marijuana use were added to PRAMS during part of the 2017 survey year.

- Of the women who reported marijuana use either 3 months before pregnancy or during pregnancy, fewer women reported daily use during pregnancy: 33% used daily 3 months prior to pregnancy, but only 8% used daily during pregnancy. Conversely, more women said

they did not use at all during pregnancy: 6% said they did not use 3 months prior to pregnancy, and 44% did not use during pregnancy.

- Women who said they used marijuana during pregnancy were asked about how they had consumed it. Most (82%) had smoked it, 23% consumed edibles, 15% dabbled, and 11% vaped. No women consumed infused drinks or "other" types.
- Women who used marijuana during pregnancy were asked about all the reasons why they used it. More than half of women said they used to relieve nausea (81%), stress or anxiety (70%), vomiting (64%), pain (63%), or for fun or to relax (54%). Nearly half (49%) mentioned some other reason, which included comments of help eating or sleeping. Only 13% mentioned using to help relieve symptoms of a chronic condition.
- All women who received prenatal care were asked if their doctor, nurse or other health care worker had talked with them about marijuana use or asked them on a form. 81% said they had been asked about use; 57% said their provider advised them not to use marijuana, and 3% said their provider recommended *using* marijuana. 37% of women said their provider advised them not to breastfeed if they were using marijuana.
- Finally, all women were asked how long they thought it was necessary for a woman to wait after using marijuana to breastfeed her baby. 80% said that it is not safe for breastfeeding women to use marijuana at all, 10% said it was best to wait 2-3 hours after being high, 4% said women should wait until they were no longer high, and 6% said there was no need to wait.

Figure 22: Marijuana use after pregnancy by breastfeeding status, Alaska, 2015-2017

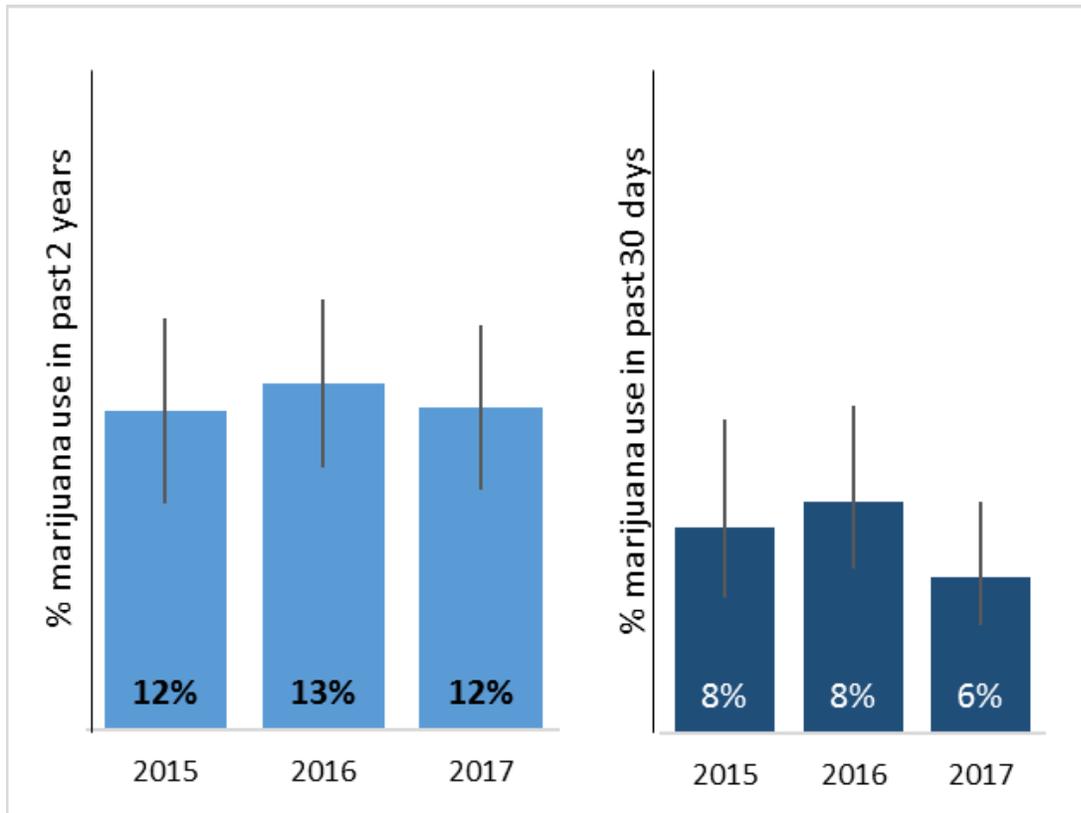


Source: Alaska PRAMS. Percentages are among women who recently delivered a live birth. “Marijuana use” is defined as any use since the child’s birth at the time of the survey (between 2-9 months).

Between 2015-2017 about 71% of women reported they were breastfeeding at the time of the PRAMS survey (2-9 months after their baby was born, data not shown).

- For 2015-17 combined, women who were breastfeeding were less likely to be using marijuana than women who were not breastfeeding. In 2017, 11% of breastfeeding mothers reported using marijuana compared to 13% of non-breastfeeding mothers.
- The percentages of both breastfeeding and non-breastfeeding mothers who reported using marijuana after pregnancy grew between 2015-2017, but increases were not statistically significant.
- In 2017, 6% of all mothers post-partum reported both breastfeeding *and* using marijuana. This was a non-significant increase from 4% of post-partum women in 2015.

Figure 23: Marijuana use among mothers of 3-year-old children, Alaska, 2015-2017



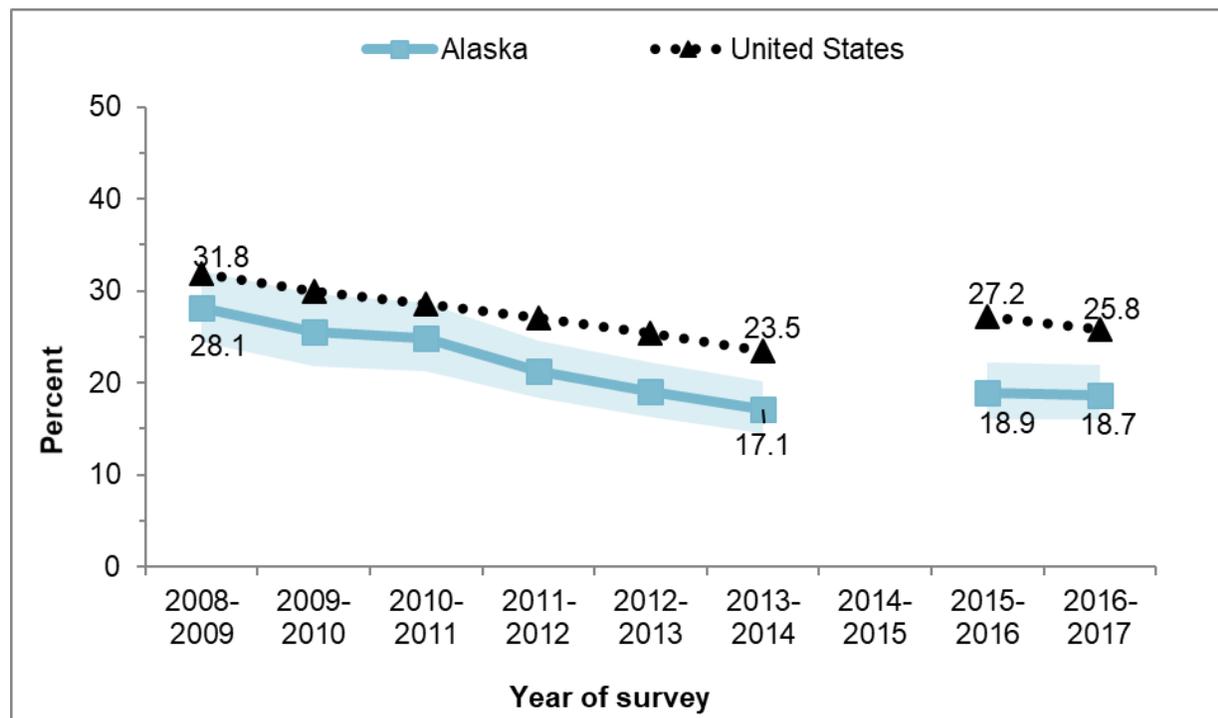
Source: Alaska CUBS. “Marijuana use” means any use during the period (i.e., in the past 2 years, or in the past 30 days).

- In 2017, 12% of mothers of 3-year-old children reported using marijuana in the past 2 years. This percentage has not changed meaningfully during recent years.
- In 2017, 6% of mothers of 3-year-old children reported using marijuana in the past 30 days – about half of those who had used in the past 2 years. This percentage has also not changed significantly during recent years.
- In 2017, the 6% of mothers who had used marijuana in the past 30 days was comprised of 2% who said they were now using marijuana 5-7 days per week on average, 3% who said they were using 1-4 days per week, and 1% who said they were using less than one day per week (data not shown).

Marijuana-related Prevention Measures

Knowledge and attitudes

Figure 24: Perception of great risk from using marijuana once a month among youth ages 12-17, Alaska and U.S., 2008-2017

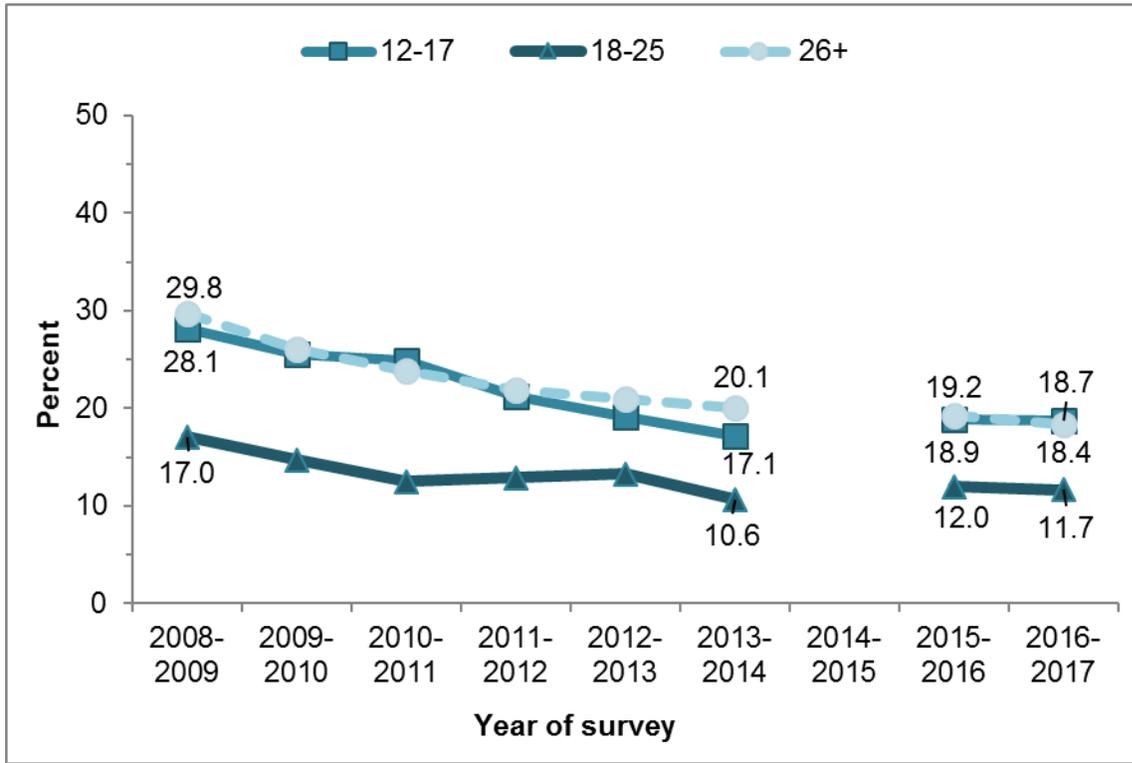


Source: National Survey on Drug Use and Health (NSDUH). Shaded areas around the Alaska estimate represent the 95% confidence interval. NSDUH asks *How much do people risk harming themselves physically and in other ways when they use marijuana once a month?* Question changed from “smoke” to “use” marijuana during 2015.

Perceived harm from marijuana use has been declining both in Alaska and the U.S. during recent years.

- The percentage of Alaska youth who perceived harm from marijuana use once per month has declined from 28.1% in 2008-09 to 18.7% in 2016-17. This rate of decline was similar to that among U.S. youth.
- Alaska youth were less likely than youth nationwide to perceive harm from monthly marijuana use. About one in four U.S. youth (25.8%) but only one in five Alaska youth (18.7%) perceived great harm from using marijuana monthly in 2016-17.

Figure 25: Perception of great risk from using marijuana monthly by age group, Alaska, 2008-2017

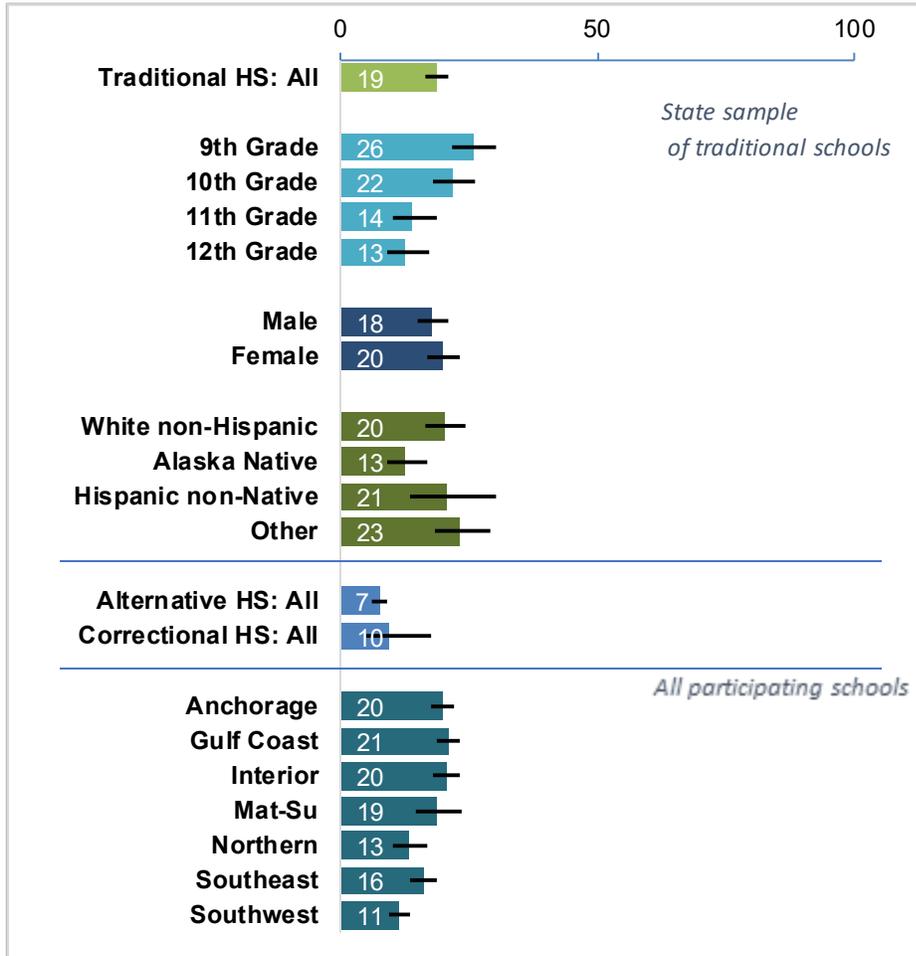


Source: National Survey on Drug Use and Health (NSDUH). NSDUH asks *How much do people risk harming themselves physically and in other ways when they use marijuana once a month?* Question changed from “smoke” to “use” marijuana during 2015.

Perceived harm from marijuana use has been declining in Alaska among all age groups.

- The percentage of youth ages 12-17 who perceive harm from using marijuana monthly has declined from 28.1% in 2008-09 to 18.4% in 2016-17.
- The percentage of young adults ages 18-25 who perceive harm from using marijuana monthly has declined from 17.0% in 2008-09 to 11.7% in 2016-17.
- The percentage of adults ages 26 and older who perceive harm from using marijuana monthly has declined from 29.8% in 2008-09 to 18.7% in 2016-17.
- Perceived harm from marijuana use has been consistently lower among young adults ages 18-25 in comparison to both older adults and younger youth.

Figure 26: Percent youth who believe there is “great risk” from using marijuana once or twice per week, grades 9-12 by demographic groups, Alaska, 2017

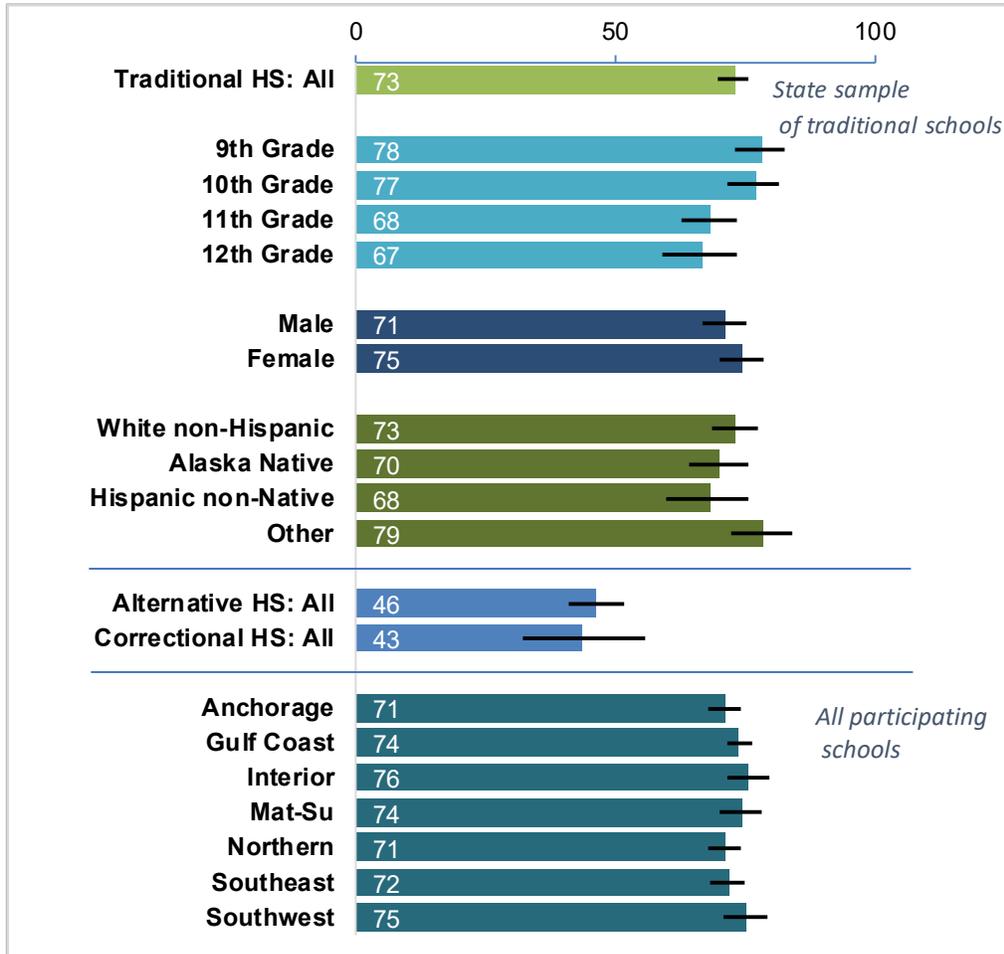


Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools..

- About one in five (19%) students said they think there is great risk in using marijuana 1-2 times per month. Differences by gender were not significant.
- Alaska Native students were less likely to believe in “great risk” from monthly marijuana use compared to White students (13% compared to 20%).
- Older students were less likely to believe there is “great risk” in monthly marijuana use (14% and 13% among 11th and 12th graders, vs. 26% and 22% among 9th and 10th graders).
- Students in alternative and correctional schools were less likely than those in traditional high schools (7% and 10% vs 19%, respectively), and students in the Northern and Southwest regions were less likely than those in Anchorage, Gulf Coast, and Interior regions to believe in “great risk” from monthly marijuana use.
- Very few students who currently use marijuana believed that there is “great risk” in monthly use: 3% of both students who used in the past month and of those who used 20 or more days during the past month believed monthly use is risky (data not shown).

Peer and parent norms

Figure 27: Percent youth who believe their PARENTS think it would be wrong for them to use marijuana, grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools. Results are for “wrong” and “very wrong” combined. Students who said “I’m not sure” were included in denominator.

- Most students (73%) believed their parents would think it was wrong for them to use marijuana. Differences by gender and race were not significant.
- Older students (11th and 12th grade) were less likely to believe their parents would think it was wrong to use marijuana.
- Students in alternative and correctional schools were less likely than those in traditional schools to believe their parents would think it was wrong to use marijuana (46% and 43% vs. 74%, respectively).
- Students who reported current marijuana use were less likely to believe their parents would think it was wrong: 42% among students who used in the past month; 21% among those who used 20 or more days during the past month (data not shown).

Table 5: Self-reported marijuana-related family norms, Alaska adult marijuana users, June 2016

<i>Among all adults</i>	
Use has caused family problems	5%
Ever used in presence of young children or adolescents	9%
<i>Among parents/guardians of child under 21 (38% of total, N=95)</i>	
Children know about parent marijuana use	48%
Plan to discuss marijuana use consequences with a child	94%
Marijuana is stored in a secure location out of reach of children	94%

Source: Alaska 2016 BRFSS call-back survey

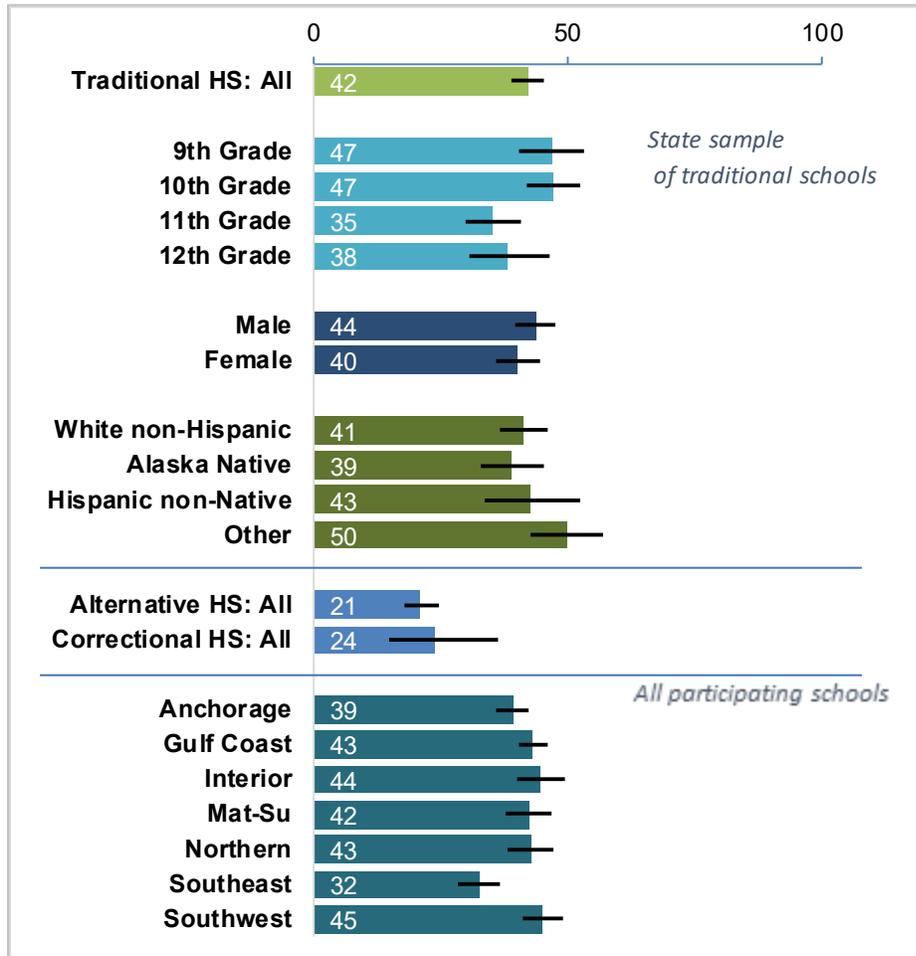
Adult Alaskans who use marijuana were asked some specific questions about family- or child-related factors.

- Among Alaska adults who used marijuana, few (5%) said that marijuana use had caused problems in their family.
- About one in ten (9%) said they had ever used marijuana in the presence of a child or adolescent.

Adults who are parents or guardians of children or young adults (under age 21) were asked about factors that are related to youth use. Information was not available to examine how these factors varied by age of child.

- 48% said their children knew that they (the adult) used marijuana.
- 94% said they plan to discuss marijuana use consequences with their child.
- 94% said their marijuana was stored in a secure location from the child.

Figure 28: Percent youth who believe their FRIENDS think it would be wrong for them to use marijuana, grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative and correctional school estimates are from separate datasets for those school types. Regional data are from all participating schools of all types, both sampled and volunteer schools. Percent of youth said friends would think it was “very wrong” or “wrong” combined. Students who said “I’m not sure” were included in denominator.

- About four in ten (42%) of Alaska high school students believe their friends would think it was wrong for them to use marijuana. Differences by gender and race were not significant.
- Older students were less likely to believe their friends would think it was wrong to use marijuana (35% among 11th grade and 38% among 12th grade, compared to 47% among 9th and 10th graders).
- Students in alternative and correctional schools were less likely than those in traditional high schools (21% and 24% vs 41%), and students in the Southeast region were less likely than those in other regions to believe their friends would think it was wrong to use marijuana.
- Fewer students who were currently using marijuana believed their friends think it’s wrong: 8% among students who used in the past month; 9% among those who used 20 or more days during the past month (data not shown).

Risk and protective factors

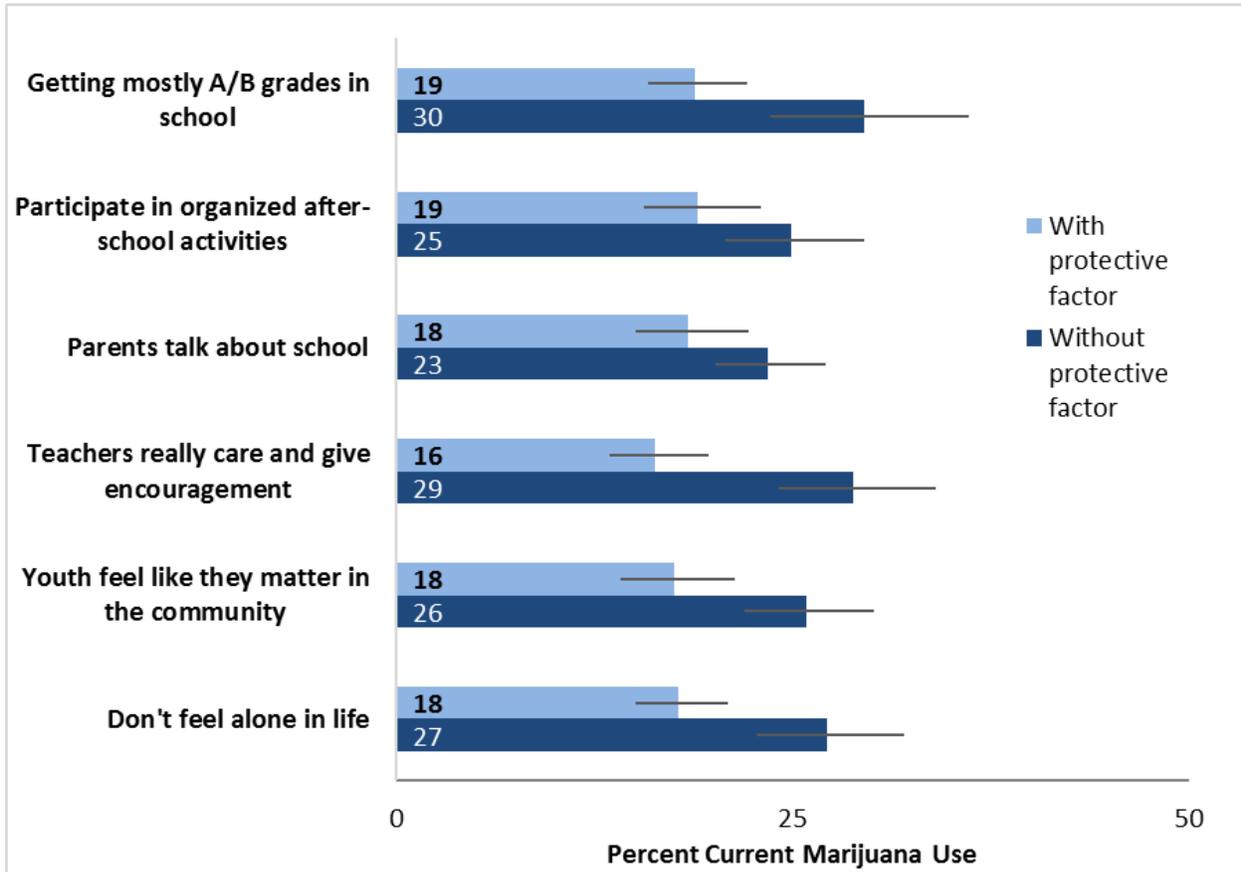
Individual, relationship, community and society-level protective factors play an important role in preventing youth from using marijuana, as well as multiple other substance abuse and mental health challenges.³ For example, resiliency has been shown to be an individual-level protective factor, whereas family factors such as connectedness are strong relationship-level protective factors for youth marijuana use prevention. Community and societal level protective factors include factors related to economic stability, social status, and community connectedness. Alaska YRBS data can be used to show relationships between marijuana use and risk behaviors and protective factors.

These associations do not prove cause and effect; there can be common causes for both. However, understanding associations may be helpful for planning prevention strategies. These strategies may include increasing protective factors through community, school and family interventions.

The measures presented here are examples. Other important measures that are not available on the Alaska YRBS may be similarly associated.

³ For more background on risk and protective factors see SAMHSA fact sheet at <https://www.samhsa.gov/sites/default/files/20190718-samhsa-risk-protective-factors.pdf>

Figure 29: Current marijuana use among youth in traditional high schools by PROTECTIVE factors, Alaska, 2017



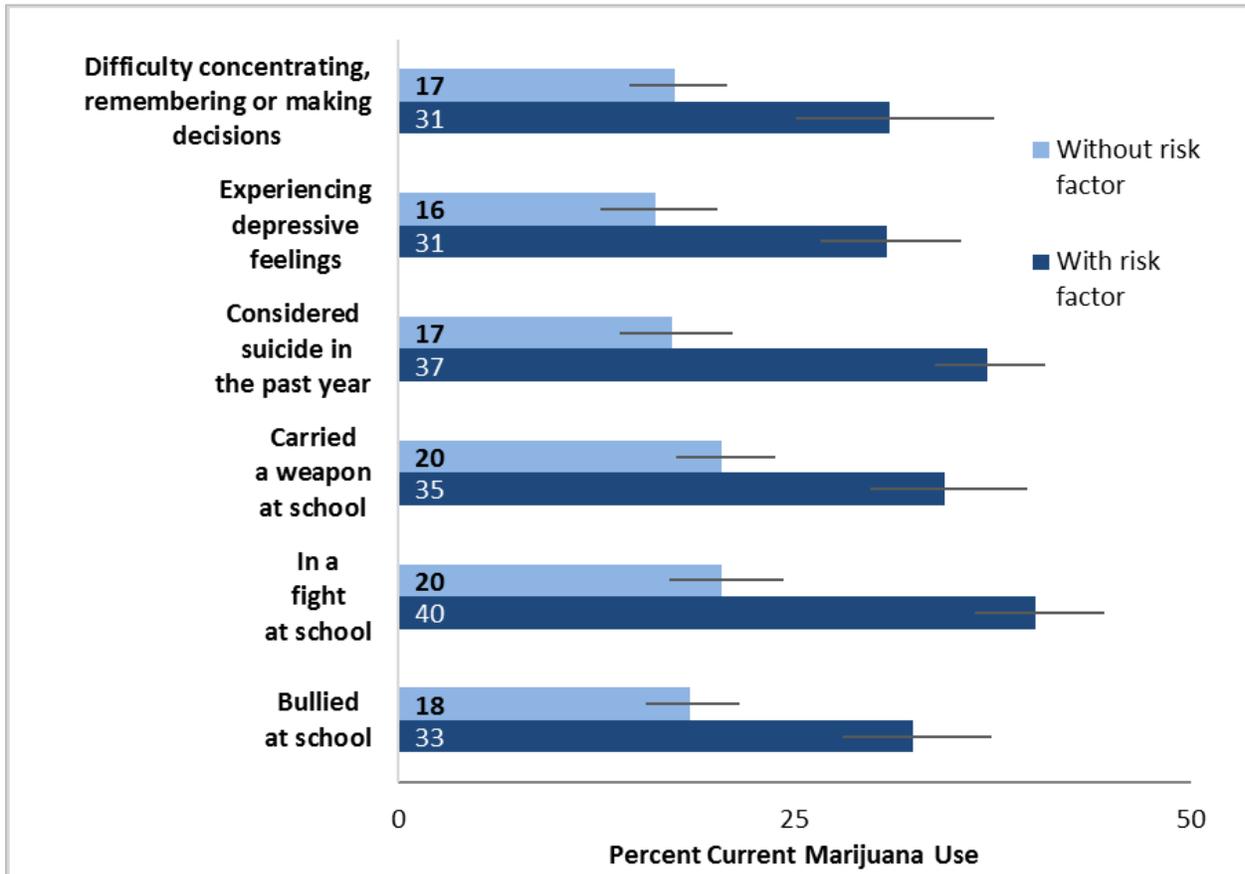
Source: Alaska YRBS, grades 9-12 combined. State sample data are from traditional high schools only. “Current marijuana use” is defined as use on one or more of the past 30 days.

Youth who have protective factors are less likely to report using marijuana than youth without protective factors. For example, 19% of youth who get mostly As or Bs in school reported using marijuana, in comparison to 30% of youth who get mostly Cs, Ds or Fs.

Significant associations are shown between youth marijuana use and the following protective factors:

- Students get mostly As or Bs in school
- Youth participate in organized after-school activities
- Parents talk about how youth are doing in school
- Teachers really care and give encouragement
- Youth feel like they matter to their community
- Youth say they don't feel alone in life

Figure 30: Current marijuana use among youth in traditional high schools by presence of youth RISK factors, Alaska, 2017.



Source: Alaska YRBS, grades 9-12 combined. State sample data are from traditional high schools only. “Current marijuana use” is defined as use on one or more of the past 30 days.

Conversely, youth who have risk factors were more likely to report using marijuana than youth without risk factors. For example, 31% of youth who have experienced depressive feeling in the past year reported marijuana use, in comparison to 16% among youth who did not have depressive feelings.

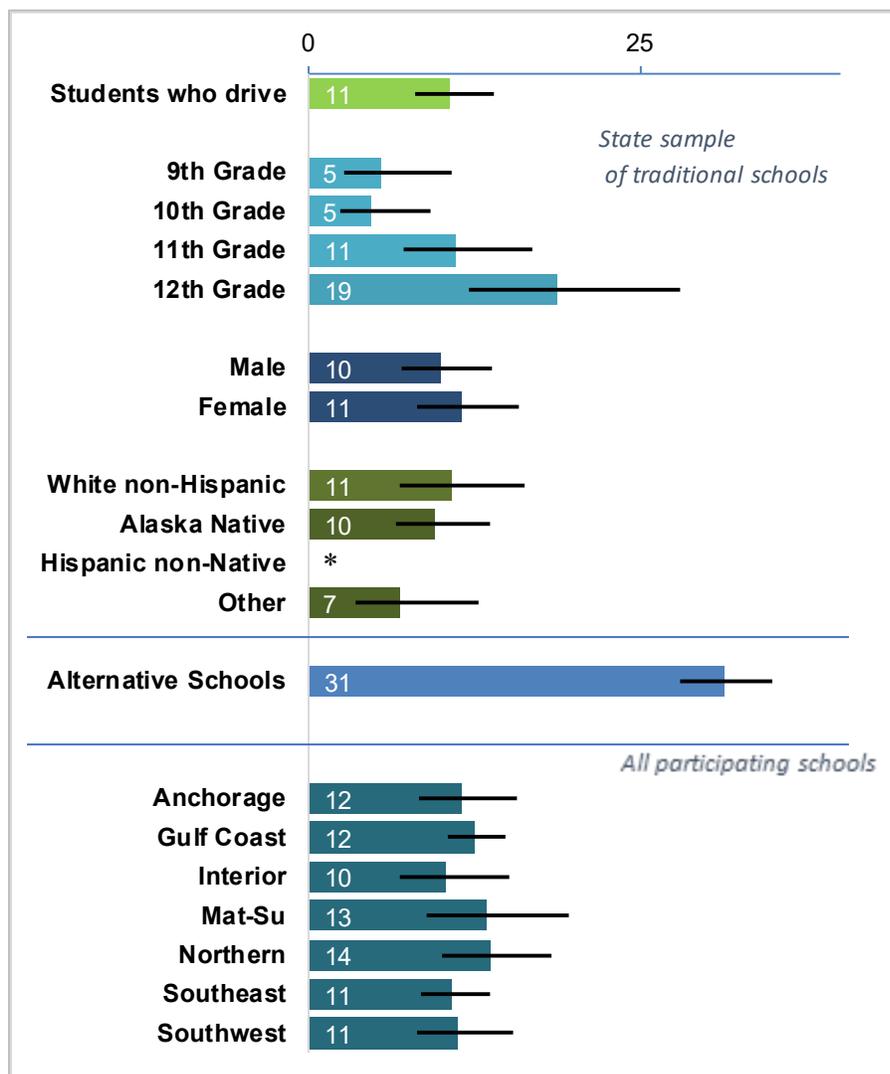
Significant associations are shown between youth marijuana use and the following risk factors:

- Difficulty concentrating, remembering or making decisions
- Experiencing depressive feelings
- Considering suicide in the past year
- Carrying a weapon at school
- Being in a fight at school in the past year
- Being bullied at school

Public Health Outcomes

Driving under the influence

Figure 31: Percent youth who drove a vehicle in the past 30 days after using marijuana, among those who drove in the past 30 days, grades 9-12 by demographic groups, Alaska, 2017



Source: Alaska YRBS. State sample data are from traditional high schools only. Alternative school estimates are from a separate dataset. Regional data are from all participating schools of all types, both sampled and volunteer schools. * too few survey participants to report. Data cannot be reported for correctional schools.

- About one in ten (11%) of students who drive reported that they had driven a vehicle after using marijuana at some point in the past month. This was among the two-thirds of all high school students who had driven a vehicle in the past 30 days.
- The prevalence of marijuana-impaired driving was similar to the nation: 13.0% of student drivers in the 2017 US YRBS reported driving after using marijuana.⁴

⁴ <https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/ss6708.pdf>

Table 6: Self-reported marijuana-impaired driving, Alaska adult marijuana users, June 2016

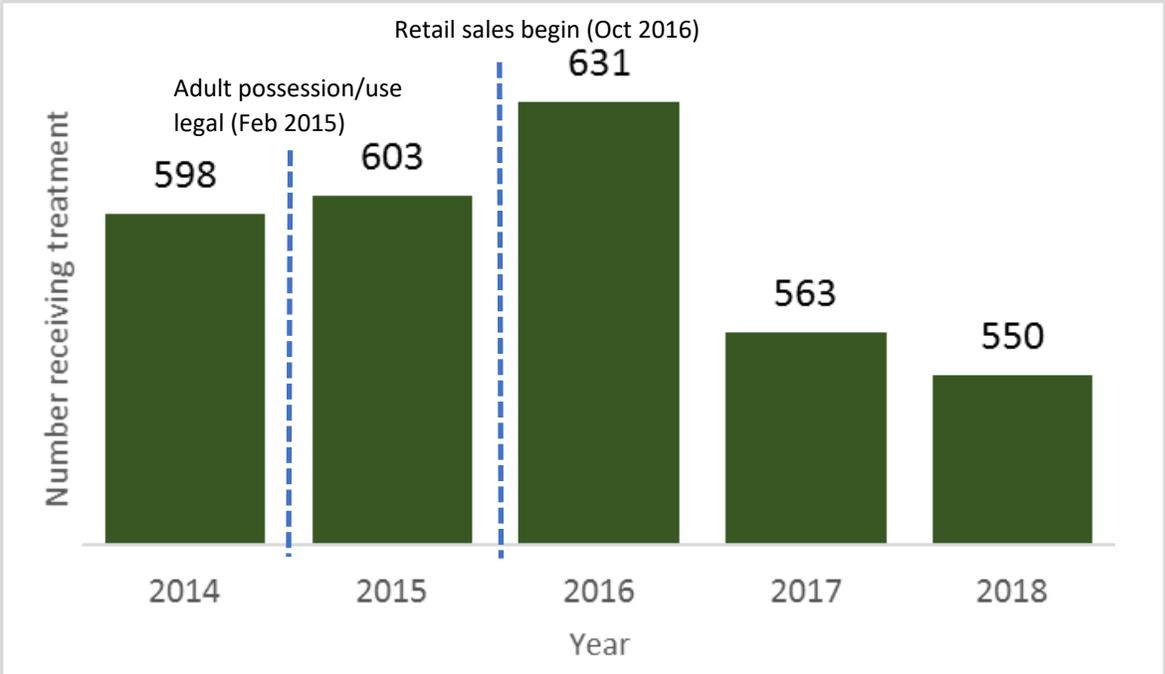
Driving while high in past 30 days	23%
Average number of days in past month driving impaired, among those who had done so	2.9

Source: Alaska 2016 BRFSS call-back survey

- About one in four (23%) adult marijuana users in Alaska said they had driven a vehicle “while high on marijuana” in the past month.
- Among those that had done so, the majority had driven impaired more than once – nearly 3 days in the month prior to the survey, on average.

Marijuana dependence

Figure 32: Annual number receiving public-funded marijuana dependence treatment, ages 12 and older, Alaska, 2014-2018



Source: TEDS

- Among the approximately 6,800 total people who received public-paid substance dependence treatment in 2018, about 8% (550) received treatment for marijuana dependence as their primary substance. This was similar to the proportion from prior years.
- The number of people receiving treatment for marijuana dependence as their primary substance rose slightly in 2016 but has declined in 2017 and 2018.
- Among those receiving marijuana dependence treatment in 2018, 65% were male. About 40% of those receiving treatment were under age 21 (30% were ages 12-17 and 9% were ages 18-20). About 7% were ages 50 or older, and the remaining 54% were ages 21-49.
- About 38% of those receiving treatment were American Indian or Alaska Native, 32% were white; 22% did not have information about their race included.

Table 7: Self-reported marijuana dependence risk, Alaska adult marijuana users, June 2016

<i>Average age of initiation</i>	
Age first use	15.3
Age started monthly use	17.8
<i>Legalization effect on use/consumption</i>	
Use more often	6%
Use less often	9%
Use about the same	86%
<i>Quitting</i>	
Ever attempted to quit marijuana use	55%
Currently want to quit use	6%

Source: Alaska 2016 BRFSS call-back survey

One concern about marijuana use is that it can lead to dependence or addiction.

- Starting to use marijuana early in life, especially starting regular use early in life, is a risk factor for becoming addicted during adulthood. Among Alaska adult marijuana users surveyed in 2016, who were on average 42 years old, the average age of first use was 15 and the average age when people started using monthly was nearly 18.
- Most of the adult marijuana users surveyed in 2016 said that legalization of marijuana had not changed how much they use. About nine out of ten (86%) said their use was about the same since legalization.
- About half of adult marijuana users (55%) said they had ever tried to quit. Fewer than one in ten (6%) said they wanted to quit at that time.

Marijuana use and other drugs

Table 8: Self-reported marijuana and other drug use patterns, Alaska adult marijuana users, June 2016

<i>Substitution</i>	
In place of prescription opioids	26%
<i>Combined use</i>	
Used in combination with alcohol	53%
Used in combination with tobacco	49%

Source: Alaska 2016 BRFSS call-back survey

Marijuana use may affect the use of other substances, which could potentially reduce *or* increase risks.

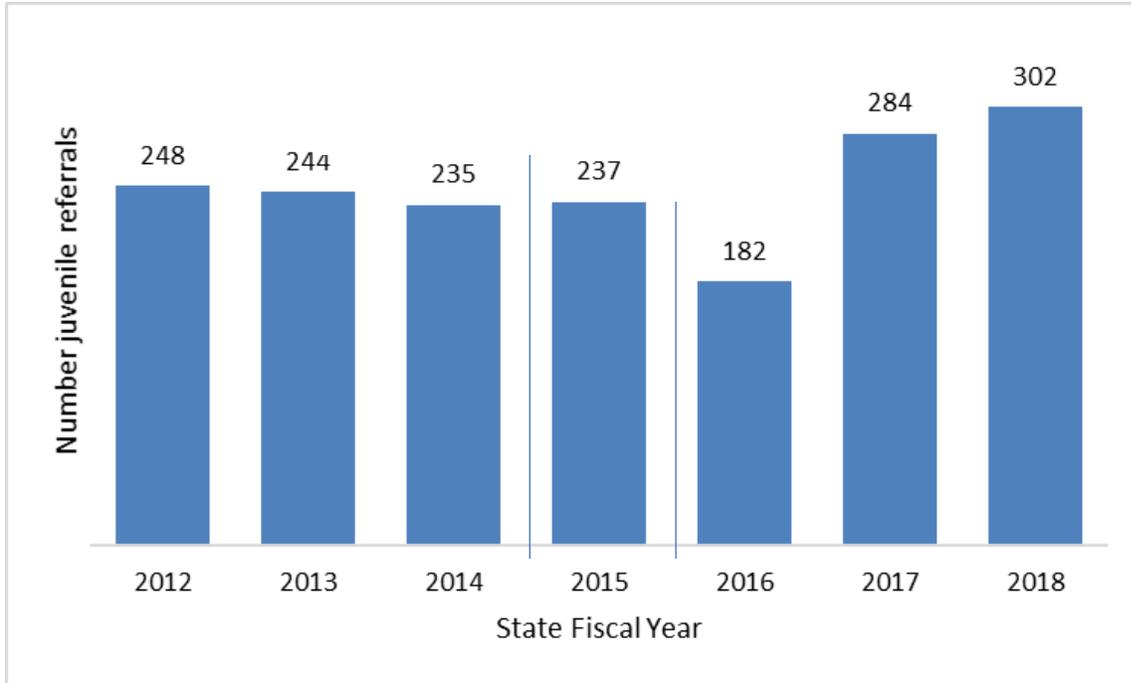
- About one in four (26%) Alaska adults who were using marijuana in 2016 said that they were using it in place of prescription opioids. This could be intended to reduce risks associated with opioids, such as risk for addiction or uncomfortable side effects.

Combining marijuana with other substances can change the effect that either substance alone may be expected to have.

- About half (53%) of Alaska adults who were using marijuana in 2016 said that they had used it together with alcohol. This is sometimes called “crossfading”.
- About half (49%) of Alaska adults who were using marijuana in 2016 said that they had used it together with tobacco. This “combined use” would include using both substances at the same time, but in separate products (for example, smoking cigarettes and joints), as well as directly combining them (for example, putting marijuana in a cigar wrapping – a “blunt”, or adding marijuana to a cigarette – a “spliff”).

Juvenile Justice referrals

Figure 33: Marijuana-related juvenile justice referrals, annual counts, Alaska state fiscal years (FY) 2012-2018



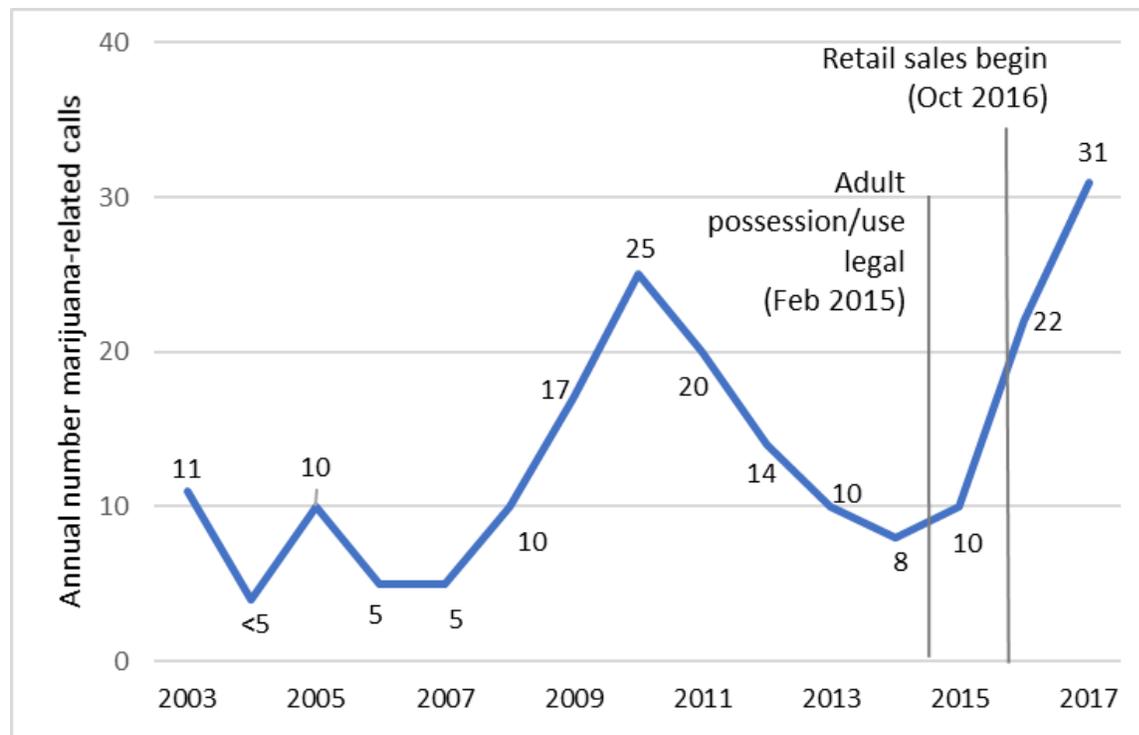
Source: Alaska DJJ. State fiscal years are July-June (e.g., 2018 data represent July 2017-June 2018).

The number of Alaska youth who have received juvenile justice referrals for marijuana-related crimes declined modestly between 2012-2016, but increased slightly in 2017 and 2018, the two years following the start of retail marijuana sales in Alaska.

- During the year just prior to marijuana legalization passage by voter initiative, (November 2014, FY2015) there were 235 total youth referred for marijuana-related crimes. In FY 2018, there were 302 youth referred for marijuana-related crimes.

Poison Center calls

Figure 34: Marijuana-related poison center calls, annual counts, Alaska Poison Center, 2003-2017



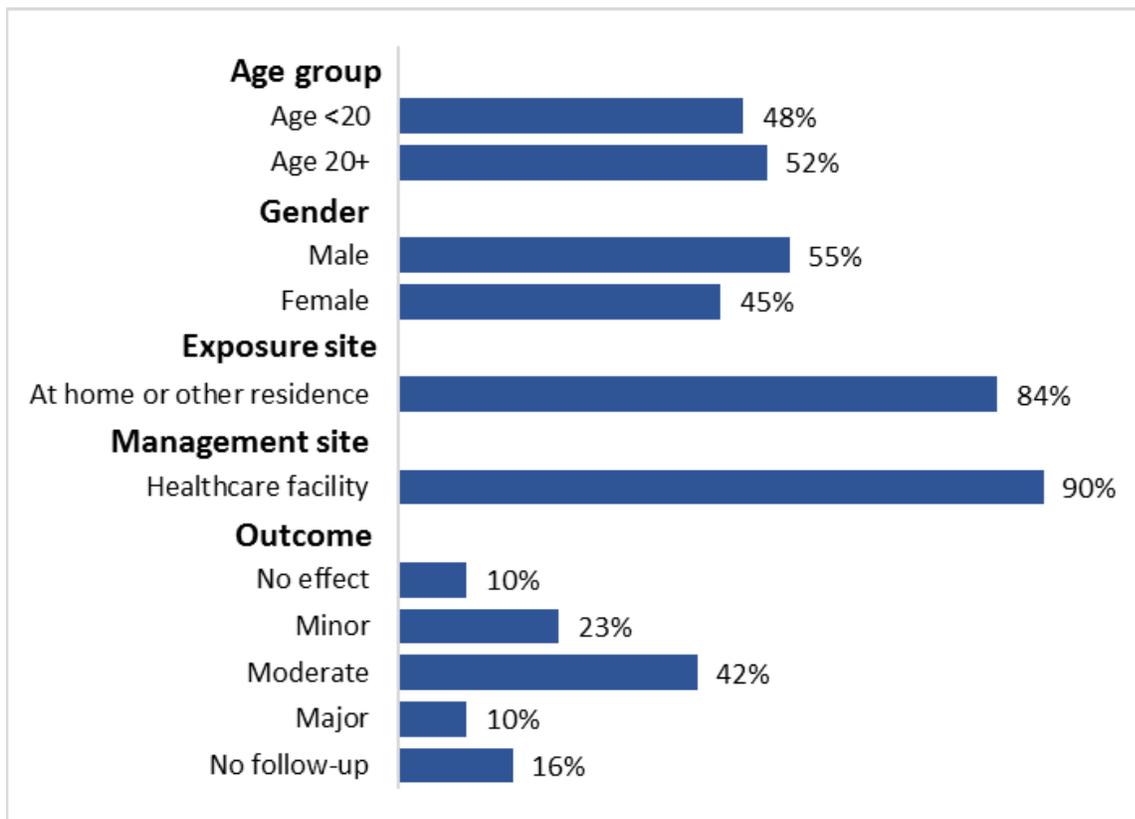
Source: Alaska Poison Center.

Services for Alaska’s Poison Center are provided through an agreement with the Oregon Poison Center. Marijuana-related calls to the poison center may include physical symptoms like heart or breathing problems, vomiting, or psychological symptoms like anxiety.⁵ Although only a small number of calls are received each year for marijuana-related symptoms, the number of calls has increased since marijuana legalization.

- There were 8 total calls in 2014 (the year the ballot initiative was passed, November 2014), 10 calls in 2015 (when adult possession and use became legal), and 31 in 2017 (the first full year of Alaska’s marijuana retail sales).

⁵ For example, Alaska and Oregon Poison Center data on marijuana-related calls were reported by Noble, Hedberg and Hendrickson (2019) in *Clinical Toxicology* <https://ohsu.pure.elsevier.com/en/publications/acute-cannabis-toxicity>

Figure 35: Marijuana-related poison center calls, percent of calls by demographic group and case characteristics, Alaska Poison Center, 2017



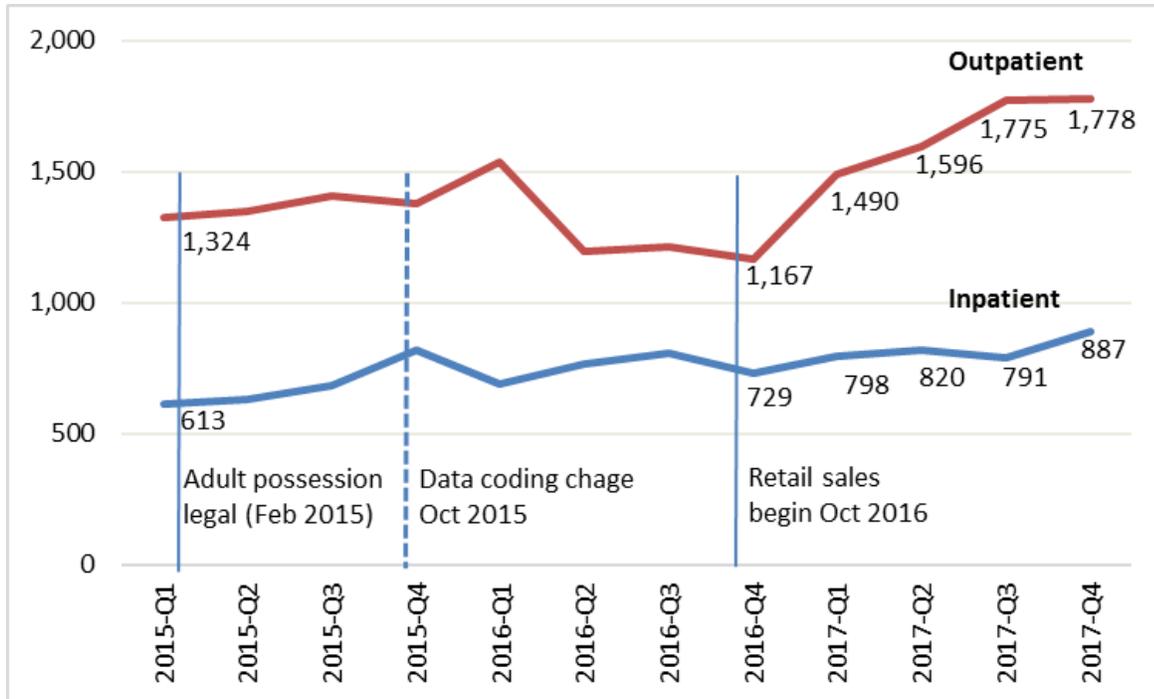
Source: Alaska Poison Center 2017, 31 total calls

- About half of marijuana-related poison center calls in 2017 were for people who were under the legal age of marijuana use (less than age 20). The majority of these minor-involved calls (more than 3 out of 4) were for teens ages 13-19 (data not shown).
- Most of Alaska’s Poison Center calls (84%) were for people who were exposed in their home or someone else’s home, and most (90%) were currently receiving treatment at a healthcare facility.
- Most of the people treated with support from the Alaska Poison Center for marijuana-related adverse events had only moderate (42%), minor (23%) or no effects (10%). A smaller percentage of people had major (10%) effects; these are defined as cases where the patient exhibits symptoms that are “life-threatening or resulted in significant residual disability” that requires follow-up.⁶

⁶ National Poison Data System (NPDS) Coding manual, 2019. American Association of Poison Control Centers.

Cannabis-related hospital discharges

Figure 36: Marijuana-related inpatient and outpatient hospital discharges, count per quarter, Alaska 2015-2017



Source: Alaska HFDR. Cannabis-related discharges are defined by diagnosis codes: ICD-9-CM 305.2, 304.3; ICD-10-CM F12.1, F12.2, F12.9, T407.

Among all hospital visits in Alaska, 5.1% of inpatient and 0.5% of outpatient discharges included marijuana-related diagnosis codes in 2017.

- In 2017 there were a total of 3,296 inpatient discharges and 6,639 outpatient discharges, respectively, in Alaska that included marijuana-related codes.
- The number of marijuana-related hospital discharges (both inpatient and outpatient) has increased since the start of Alaska's retail marijuana sales; however, this may have been in part related to reporting changes (see Appendix for discussion).

Rates of marijuana-related hospital discharges vary by patient characteristics (see Table 9).

- Rates of both inpatient and outpatient discharges were highest among people ages 21-44. This age group makes up half of marijuana-related inpatient and more than half of marijuana-related outpatient discharges.
- Marijuana-related discharge rates were higher among American Indian/Alaska Native (AIAN) populations than among other race groups, and AIAN patients make up 40% of marijuana-related inpatient discharges and 46% of outpatient discharges.
- The Northern and Southwest regions have relatively higher rates of inpatient and outpatient marijuana-related hospital discharges compared to the Anchorage region. The Gulf Coast and Interior regions have higher rates of marijuana-related outpatient discharges in comparison to Anchorage.

Table 9: Marijuana-related inpatient and outpatient hospital discharges by demographic group, Alaska, 2017

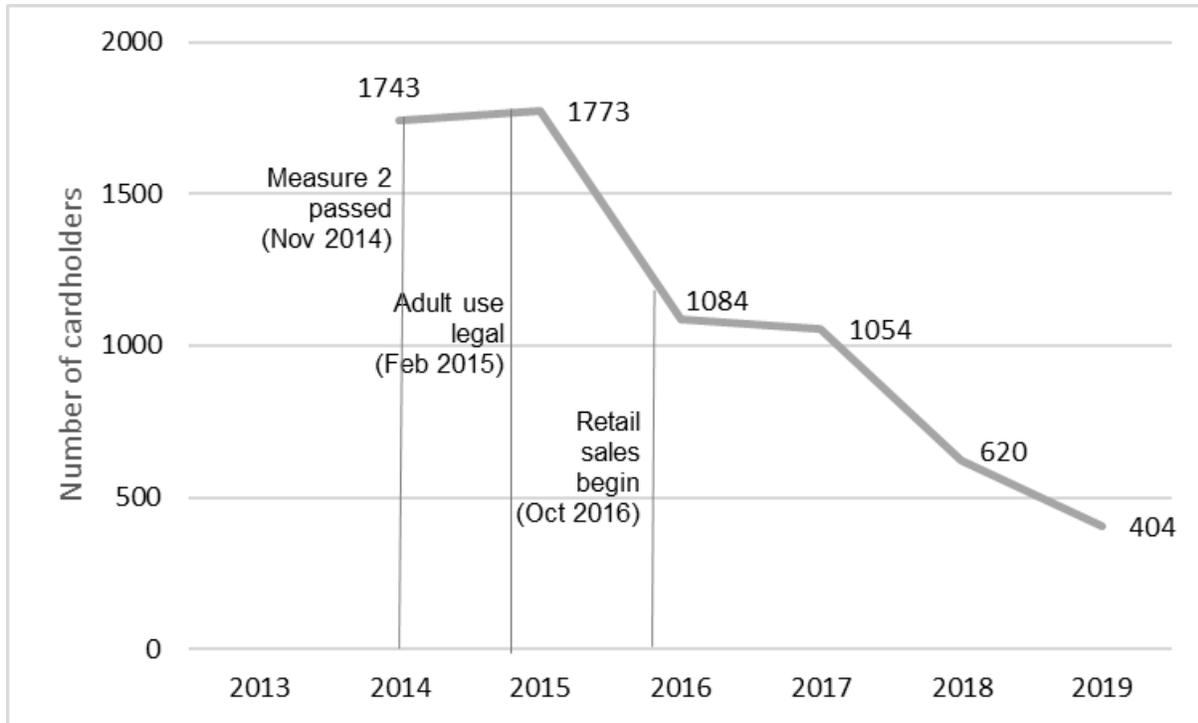
	INPATIENT			OUTPATIENT		
	Number	Rate per 10,000 total population	% of total Marijuana discharges	Number	Rate per 10,000 total population	% of total Marijuana discharges
STATE TOTAL	3,296	44.7	100%	6,639	90.0	100%
GENDER						
Male	1,739	45.8	53%	3,230	85.0	49%
Female	1,557	43.5	47%	3,409	95.2	51%
AGE GROUP						
Age 12 or younger	20	1.4	1%	6	0.4	0%
Age 13-20	587	76.0	18%	894	115.8	13%
Age 21-44	1,651	66.6	50%	3,800	153.2	57%
Age 45-64	841	44.0	26%	1,624	84.9	24%
Age 65+	197	23.8	6%	314	37.9	5%
RACE						
White	1,551	32.0	47%	2,488	51.3	37%
Black	151	54.9	5%	149	54.2	2%
AIAN	1,331	117.5	40%	3,075	271.5	46%
Asian/Pacific Islander	75	12.9	2%	55	9.5	1%
Other	128	-	4%	174	-	3%
Unknown	60	-	2%	698	-	11%
ETHNICITY						
Hispanic	101	19.3	3%	144	27.5	2%
Non-Hispanic	3,170	46.2	96%	6,131	89.5	92%
Unknown	25	-	1%	364	-	5%
REGION OF PATIENT RESIDENCE						
Anchorage	1,341	45.0	41%	1,489	50.0	22%
Northern	227	81.9	7%	1,283	462.9	19%
Matanuska-Susitna	550	52.7	17%	642	61.5	10%
Gulf Coast	288	35.7	9%	963	119.2	15%
Southeast	229	31.4	7%	533	73.1	8%
Interior	289	25.8	9%	1,062	94.8	16%
Southwest	331	78.4	10%	556	131.6	8%
Out of State	37	-	1%	77	-	1%
Unknown	<5	-	0%	34	-	1%

Source: Alaska HFDR. Cannabis-related discharges are defined by discharge diagnosis codes.

- Indicates rates cannot be calculated because the denominator is unknown

Medical Marijuana in Alaska

Figure 37: Medical Marijuana Registry cardholders by year, Alaska 2014-2019

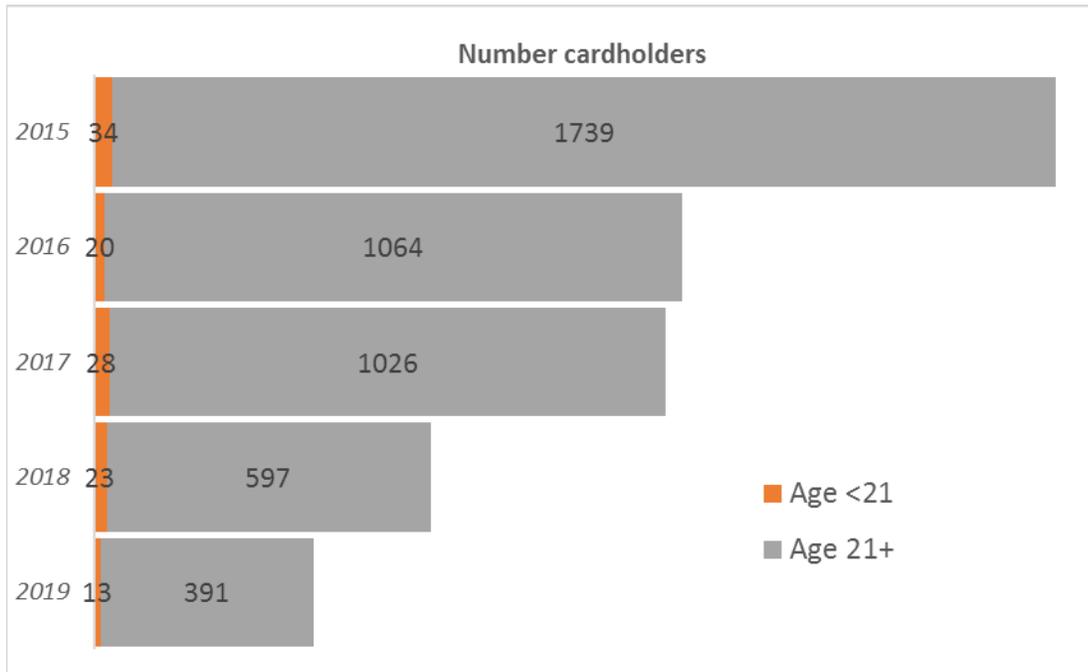


Source: Alaska MMR. Annual counts per year are based on active card expiration year. Cards are issued for a one-year period (e.g., cards issued in 2013 are shown for year 2014, their expiration year).

Alaska's Medical Marijuana Registry was established in 2013. Registering as a medical marijuana patient requires an application with physician certification of support for treatment of a "debilitating medical condition" (unspecified). This statement must also indicate the date when the physician personally examined the patient, and that the examination took place in the context of a bona fide physician-patient relationship.

- In the first year of the Alaska Medical Registry, 1,743 Alaskans registered for medical marijuana cards.
- There were 404 active medical marijuana registry cardholders in 2019.
- The number of active cardholders in 2019 is only one-quarter the number as in the Registry's first year (which was prior to legalization of non-medical marijuana).

Figure 38: Medical Marijuana Registry cardholders by year and age group, Alaska 2015-2019

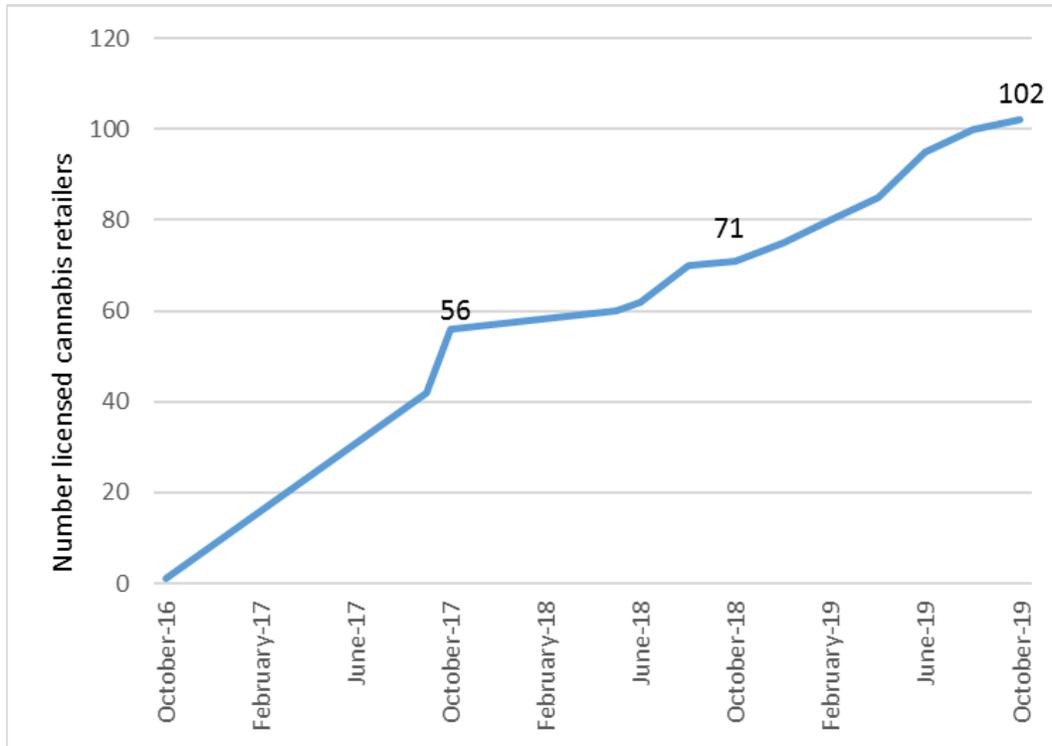


Source: Alaska MMP. Annual counts per year are based on active card expiration year. Cards are issued for a one-year period (e.g., cards issued in 2014 are shown for year 2015, their expiration year).

- Most Alaska Medical Marijuana Registry cardholders are adults. A small percentage of cardholders each year (between 2-4%) were under age 21; between 6 and 13 total cardholders each year were under age 18 (data not shown).

Marijuana Businesses in Alaska

Figure 39: Number of licensed retail marijuana stores, Alaska 2016-2019



Source: AMCO.

The number of retail stores licensed to sell marijuana has increased steadily since the start of retail sales in October 2016.

- One year after the market opened (October 2017) there were 56 stores. By October 2018 there were 71 retail stores, and in October 2019 there were 102 licensed retail stores.

As of October 2019, a total of 341 marijuana businesses were licensed to operate in Alaska (see Table 10):

- 112 standard marijuana cultivation facilities
- 86 limited marijuana cultivation facilities
- 7 marijuana concentrate manufacturing facilities
- 30 marijuana product manufacturing facilities
- 4 marijuana testing facilities
- 102 retail marijuana stores

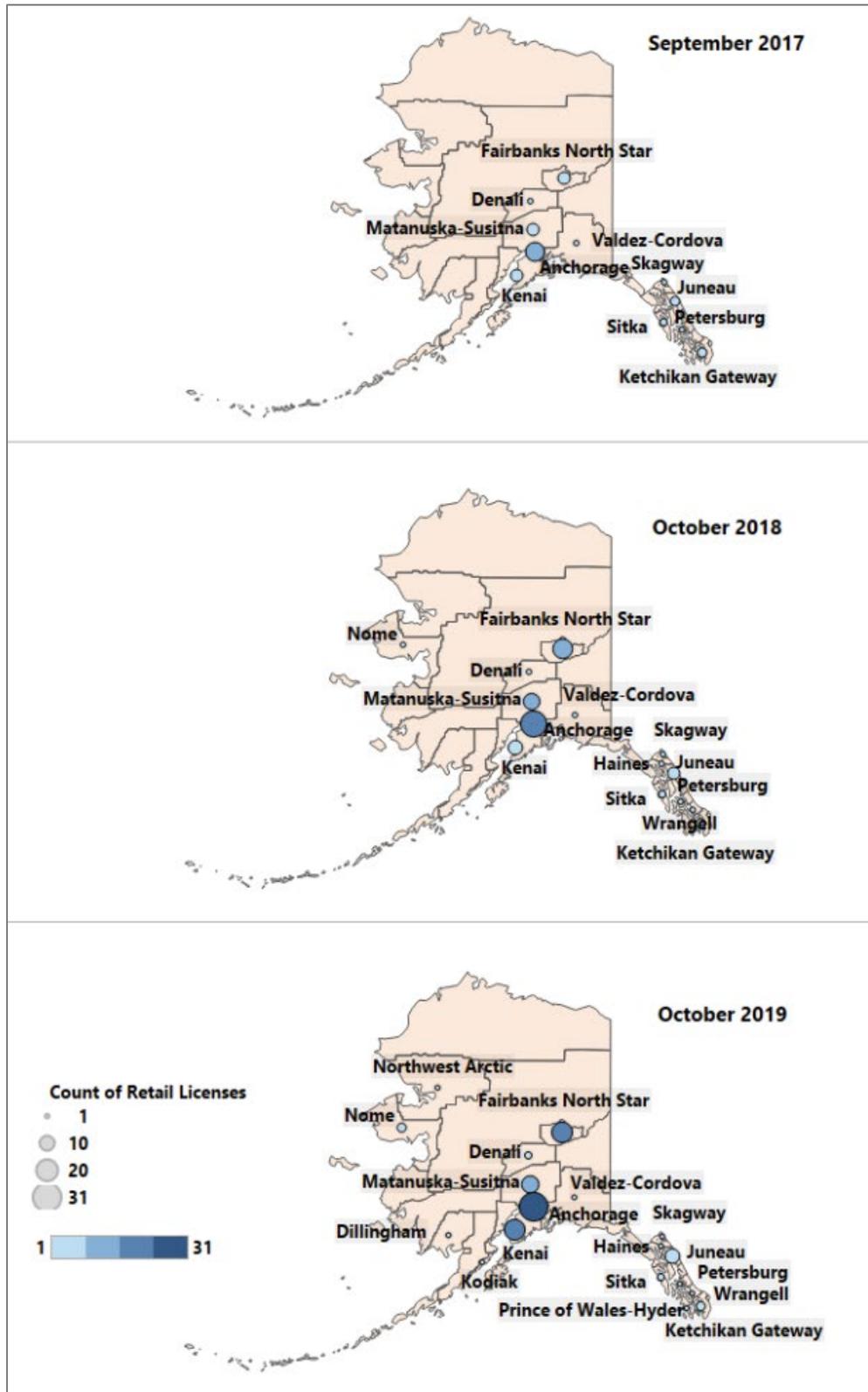
Active licensees were distributed throughout Alaska, although not in all borough and census areas (see Table 10 and Figure 40).

Table 10: Number of active marijuana business licenses by type and geographic area, Alaska, October 2019

Borough/ Census area	Cultivation		Manufacturing		Testing lab	Retail store	Total
	Limited	Standard	Concen- trates	Other Products			
State Total	86	112	7	30	4	102	341
Aleutians East	--	--	--	--	--	--	0
Aleutians West	--	--	--	--	--	--	0
Anchorage	6	23	2	11	1	31	74
Bethel	--	--	--	--	--	--	0
Bristol Bay	--	--	--	--	--	--	0
Denali						2	2
Dillingham	1					1	2
Fairbanks North Star	6	31		6	1	17	61
Haines		1				1	2
Hoonah-Angoon	--	--	--	--	--	--	0
Juneau	1	9		2		8	20
Kenai	23	18		5		16	62
Ketchikan Gateway	1	4	1	2	1	3	12
Kodiak	1					1	2
Kusilvak	--	--	--	--	--	--	0
Lake & Peninsula	--	--	--	--	--	--	0
Matanuska-Susitna	43	17	3	4	1	11	79
Nome	1					3	4
North Slope	--	--	--	--	--	--	0
Northwest Arctic						1	1
Petersburg		1				1	2
Prince of Wales-Hyder		1				1	2
Sitka		5	1			2	8
Skagway	1					1	2
Southeast Fairbanks	--	--	--	--	--	--	0
Valdez-Cordova	2	1				1	4
Wrangell		1				1	2
Yakutat	--	--	--	--	--	--	0
Yukon-Koyukuk	--	--	--	--	--	--	0

Source: AMCO. -- indicates no licenses of any type.

Figure 40: Marijuana Retail Stores by City, Alaska, 2017, 2018, and 2019



Source: AMCO.

Table 11: Marijuana tax rates and production total by cannabis product type, Alaska, 2016-2019

Product type	Tax rate	Total sold (ounces)			
		2016	2017	2018	2019†
Bud/Flower	\$50/ounce	4,420	99,939	255,157	247,168
Immature/Seedy/Failed*	\$25/ounce	--	--	--	85,569
Trim	\$15/ounce	781	71,932	195,909	225,547
Clones*	\$1/each	--	--	--	[9,720]
Total weight of products (ounces)		5,201	171,871	451,066	558,284

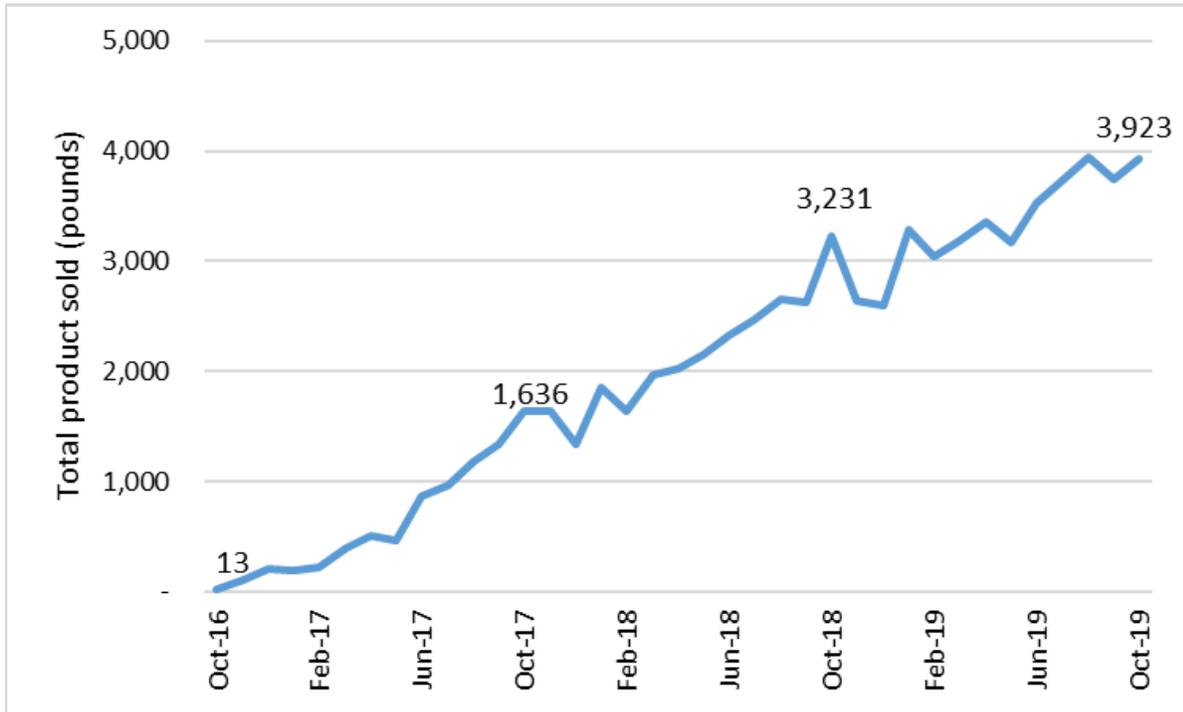
Source: Alaska DOR.

*taxes were not applied to these categories of product until January 1, 2019. Clones not included in weight total. †reported through October 2019.

Among states that have legalized non-medical marijuana markets, Alaska is the first that has taxed by weight rather than by a percent of sales value. “Clones” are plant clippings that can be planted and grown, and these are taxed per unit. Prior to January 1, 2019, they were taxed by weight and included as trim.

- Total production has increased over time from 5,201 ounces (about 325 pounds) in 2016, the first year of market activity, to 171,871 ounces (10,742 pounds) in 2017, 451,066 ounces (28,192 pounds) in 2018, and 558,283 ounces (34,893 pounds) in 2019.
- The share of total production weight that is taxed at the highest rate (bud/flower) has decreased over time. Bud/flower made up 85% of the total weight of product sold in 2016, decreasing to 58% in 2017, 57% in 2018 and 52% of the combined bud/flower and trim product weight in 2019 to date.

Figure 41: Monthly total marijuana product taxed sales (in pounds), Alaska, October 2016-October 2019.

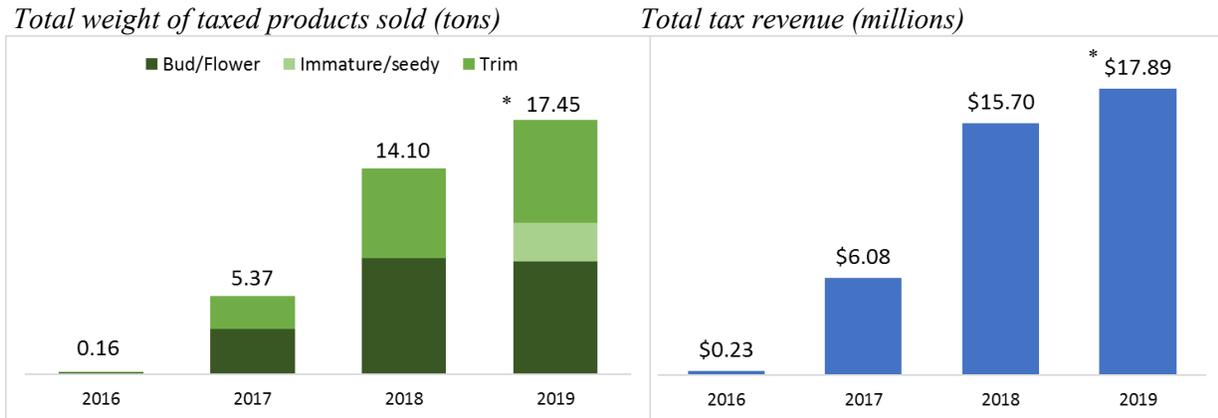


Source: Alaska DOR. Pounds of total product (bud/flower, immature/seedy, and trim) are shown for October in each year. Number of clones sold is not included.

Since the opening of Alaska’s retail marijuana sales market, sales have increased steadily.

- The total pounds of taxed marijuana product sold in Alaska during the month of October of each year increased from 13 in 2016 to 3,923 in 2019.

Figure 42: Annual total weight of taxed products and marijuana tax revenues, Alaska, 2017-2019



Source: Alaska DOR. Clones are not included in total weight.

*2019 data are for January-October (2 months remaining in calendar year).

- The combined total weight of marijuana produced in Alaska increased substantially from 0.16 tons in October-December 2016, the first year the market opened, 5.37 tons, 14.10 tons and 17.45 tons (to date) in subsequent years.
- In a similar pattern as sales, revenue to the state from taxes on marijuana production increased substantially from \$0.23 million in October-December 2016, to \$6.08 million in 2017, \$15.70 million in 2018, and \$17.89 million to date (January-October) in 2019.

Local policies to regulate marijuana

Alaska's local governments may prohibit the sale or importation for sale of marijuana and any marijuana product and the operation of any marijuana establishment through the enactment of an ordinance or by a voter initiative. The local option laws are found in Title 17.38 of the Alaska Statutes and Title 3 of the Alaska Administrative Code (AAC).

The Alaska Alcohol and Marijuana Control Office (AMCO) had limited information about Alaska communities that have acted to restrict or otherwise regulate marijuana businesses.

The most current summary information available had been updated on April 2017. Findings included:

- 26 Alaska communities had passed some form of restriction. Two of these were unincorporated communities with Tribal rule.
- 11 of the communities with any restriction had restrictions specifically on marijuana sales or stores. These included:
 - Delta Junction, City of Kodiak (set to expire 1/1/17), Mat-Su Borough (set to expire 10/2016), Metlakatla Indian Community (explicitly following federal law), Palmer, Soldotna (set to expire 1/1/2018), Togiak, Unalaska, Valdez, Wasilla.
- One community restricted growing and manufacturing, but not sales.
- Four communities had passed local taxes. Three of these were 5% sales taxes; one was a 50% tax.

We note that some communities may have changed their policies since 2017 (e.g., some of the policies were temporary; other specific policies could have been added or modified).

So far, fewer communities have acted to restrict marijuana sales than alcohol sales. At the time this summary information was available, 97 communities restricted alcohol sales in comparison to the 11 restricting marijuana sales.

Data gaps and challenges

This report described available data that is relevant to stakeholders who are working to prevent marijuana use among youth and risky use among adults, especially vulnerable populations such as pregnant women. Although there were multiple data sources to include, a few data gaps are noteworthy. These may be topics that stakeholders explore through local assessments, or data sources could be identified from other states or the U.S.

There was insufficient data available at the time of this report to describe some important factors:

- *Advertising exposure.* Although Alaska limits the contents and types of cannabis promotions that are allowed, exposure to advertising may still be an important factor that encourages young people to use marijuana. Advertising could be delivered through TV, radio, online (including through social media), storefronts, posters, apparel (hats, t-shirts), sponsorships, or promotional items. Some states have asked questions on school-based youth surveys about whether and how often young people remember seeing marijuana ads. Local assessments may also help to determine how many ads are present in a community environment.
- *Use of specific types of marijuana products.* This report includes information about “usual products” that are used by adults and youth. However, emerging high-potency products like “dabs” may be used less frequently than smoking. Thus, information on “usual” product use may not reveal increases in use of relatively riskier products. One option would be to include separate questions first asking about all products used by the consumer, and then which of those is the “usual” mode of use. Monitoring trends in marijuana sales data by product type is another alternative; however, this information is not yet available for Alaska.
- *Marijuana-related vehicle crashes.* Currently there are not good tests for measuring marijuana impairment, like breathalyzer tests that measure alcohol impairment. Although we can obtain data on total crashes, there is no good way at this time to determine which are caused by marijuana use. Arrests and citations for impaired driving can underestimate marijuana-impaired driving specifically, because alcohol and marijuana may be used together, and typically once alcohol-impairment has been measured there is no need to further document whether a person is impaired by marijuana as well. Research is underway to develop better field tests for marijuana-impaired driving, so this information may be available in the future. In the meantime, asking survey questions about driving after marijuana use – as included in this report – provide some information to understand the potential for risk to public safety.
- *Prices of marijuana products (including by type).* As the market expands and becomes more efficient, prices could fall. A great deal of evidence from alcohol and tobacco markets indicates that people will buy less when prices are more expensive, and more when prices are lower (“price-sensitivity”). Youth, in particular, are known to be price-sensitive. Therefore, monitoring total price in the evolving market may be an important indicator for public health and prevention, including prices of higher-potency products that may have unique health risks. Market data tracking systems are in place and may

potentially be able to provide such information. DHSS has established a data use agreement with AMCO for the purposes of analyzing market sales data through the state’s Marijuana Enforcement Tracking Reporting & Compliance (METRC) inventory tracking system, so that data can be used in the future. Alternatively, websites that promote marijuana stores and “price menus” can be monitored to provide some information.

Finally, the evolution of marijuana markets and regulations may create a need for new data sources, or concerns about the quality of data sources, that had not previously existed. For example:

- *On-site consumption.* As of April 2019, Alaska has begun to allow on-site use of marijuana in retail settings that meet endorsement requirements. At the time of this report, two on-site consumption endorsements have been approved by the Marijuana Control Board. Data to describe events of concern associated with these sites, such as marijuana-related impaired driving or injury, may be important for understanding whether they can operate without impacting public safety.
- *CBD product sales.* In 2018, the U.S. Congress passed a “Farm Bill” that allowed production of hemp (cannabis plants that have only trace levels of THC). In 2019, a rapidly growing market of hemp-derived CBD products emerged. These products have included infused food and drinks (although the FDA has not authorized hemp as a food additive), products that imply therapeutic value for people (as well as pets) including pain and inflammation, and beauty products. These products can be purchased in any store and online; they are not restricted to being sold in retail marijuana stores. Hemp-derived CBD products are unregulated – there is currently no oversight for their quality control, nor oversight to assure that labels accurately reflect the content of products. Further, CBD products are not well-studied to assure they are safe for all people. Currently we do not have information about the prevalence or frequency of use of these products. Further, we do not know whether people may report using “marijuana” or “cannabis” on surveys or in other ways (for example, appearing in hospital records), when they are using hemp-derived CBD products. Therefore, future reports that include 2019 data should assess whether emergence of these products could have affected reports of marijuana-related measures.

Appendix

Data Sources

Data sources below are listed by order in which they appear within the report. For each data source that included marijuana-specific measures, considerations are offered for interpretation of those data in surveillance.

Youth Risk Behavior Survey (YRBS), Alaska and United States (U.S.)

YRBS collects information on youth health and social behaviors, including unintentional injuries and violence, tobacco use, alcohol and other drug use, sexual behaviors, physical activity, and nutrition. The survey is conducted in the spring of odd-numbered years in Alaska public high schools. Students complete a printed (hard copy) questionnaire in classrooms. Participation is voluntary and anonymous and requires written parental consent. The YRBS was developed by the U.S. Centers for Disease Control and Prevention (CDC) and is administered by the Alaska DHSS with support from the Alaska Department of Education and Early Development.

General statewide and demographic group (grade, gender and race) estimates used data from the Alaska state sample of “traditional” high schools. Schools are selected for this sample using a two-stage, cluster sample design. In the first stage, schools are selected with a probability proportional to school enrollment size. In the second stage, classes within each school are randomly selected. The statewide traditional high school results are weighted by grade, sex, and race/ethnicity.

Alaska also conducts the YRBS in alternative schools and correctional schools, which are sampled and weighted separately to reflect total students in those settings. The statewide alternative high school dataset includes students in public alternative high schools with enrollments of at least 10 students (excluding traditional, boarding, correspondence, home study, and correctional schools). Alternative schools are identified by the Alaska Department of Education and Early Development as serving at-risk students who benefit from nontraditional school settings and programs.

For reporting estimates by region, data come from the local YRBS dataset, which includes students in public traditional, alternative, and correctional high schools (excluding correspondence and home study schools). In addition to schools sampled for participation, the local dataset includes “volunteer” schools that elected to participate in order to get local data. Because more schools, and different types of schools, are included in the data for the second set of estimates their results are not directly comparable to the state traditional school sample.

Alaska YRBS data from 1995-2017 were analyzed for this report.

Considerations for use in marijuana surveillance

Questions about marijuana use have been included on the U.S. YRBS, including Alaska’s version, since 1995. The question about current marijuana use on the YRBS asks: *Marijuana is also called pot, weed, or cannabis. During the past 30 days, how many times did you use*

marijuana? Answer options are *0 times, 1-2 times, 3-9 times, 10-19 times, 20-39 times* or *40 or more times*. A “current user” is any youth who reports using one or more times in the past 30 days (any answer other than “0 times”). This means that “current use” is a sensitive definition that incorporates all levels of youth use, from young people who used only once in the past month to those who used daily.

Youth who said they had used “20-39 times” or “40 or more times” were characterized as “heavy users” for this report. We selected this threshold in part to be consistent with the threshold selected for adult “heavy use”; however, at this time commonly accepted and evidence-based thresholds for “heavy use” have not been determined. Insufficient research is currently available to fully understand the effects of different levels of marijuana use among youth, and any marijuana use is cause for concern.

Alaska added a question about the type of marijuana used to the state’s YRBS beginning in 2015: *During the past 30 days, how did you usually use marijuana? (Select only one response)*. Answer options included: *I did not use marijuana during the past 30 days; I smoked it in a joint, bong, pipe, or blunt; I ate it in a food such as brownies, cakes, cookies, or candy; I drank it in tea, cola, alcohol, or other drinks; I vaporized it; I dabbled it using waxes or concentrates; I used it some other way*. “Dabbing” was included as an answer option beginning in 2017. YRBS questions about marijuana use do not distinguish between medical and non-medical purposes; however, very few youths are registered as medical marijuana patients in the state (see MMP data section).

Notably, some changes in trends of reported marijuana use could be related to youth being more comfortable reporting their use now that it has been legalized in the state, rather than actual changes in use within the population.

Additional detail

For more information about the Alaska YRBS see <http://www.dhss.alaska.gov/dph/Chronic/Pages/yrbs/default.aspx>

Alaska Department of Labor and Workforce Development (AK DOL WD)

Population data were used in this report for denominators to calculate hospitalization rates and also to estimate population sizes (e.g., number of cannabis users).

Data were accessed from the Alaska Department of Labor and Workforce Development, Research and Analysis. Population Estimates by demographic group for July 2017. <http://live.laborstats.alaska.gov/pop/index.cfm>

Alaska Behavioral Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is a telephone survey of adults ages 18 years or older, sponsored by the Centers for Disease Control and Prevention (CDC) and implemented in Alaska by the Alaska Department of Health and Social Services (DHSS), Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. It is the

state's primary source of adult health-related risk behaviors, chronic health conditions, and safety practices.

Alaska BRFSS data from 2015-2017 were analyzed for this report.

Considerations for use in marijuana surveillance

The national BRFSS does not include questions about marijuana use. Alaska added two questions to the state's BRFSS beginning in 2015.

- *During the past 30 days, on how many days did you use marijuana or hashish? (number of days, including "0" are reported)*
- *During the past 30 days, how did you use marijuana? Responses include: It was vaporized (e-cigarette like vaporizer); it was smoked (in a joint, bong, pipe, blunt); it was eaten in food (in brownies, cakes, cookies, candies); it was consumed in a beverage (tea, cola, alcohol); it was dabbed; it was used in some other way (followed by typed text describing this mode of use).*

In 2015-2016, multiple responses were allowed to the second question (so that people could report both smoking and using edibles, for example). However, in 2017 only one response was allowed.

A third question was asked in 2017, among people who said they had used marijuana in the past 30 days: *When you used marijuana or hashish during the past 30 days, was it for medical reasons to treat or decrease symptoms of a health condition, or was it for non-medical reasons to get pleasure or satisfaction (such as: excitement, to "fit in" with a group, increased awareness, to forget worries, for fun at a social gathering).* Responses were: *Only for medical reasons to treat or decrease symptoms of a health condition; Only for non-medical purposes to get pleasure or satisfaction; Both medical and non-medical reasons.*

In this report, "current marijuana use" includes people who have used marijuana on any of the past 30 days. However, among adults this report focuses mainly on describing "heavy use", which is characterized as use on 20 or more of the past 30 days. A national standard for levels of marijuana use among adults that are of concern has not yet been defined (analogous to "heavy drinking" or "binge drinking" definitions for alcohol). We chose 20 or more days per month based on consensus among other partners working on marijuana surveillance in legal states, as a somewhat arbitrary starting point for understanding use patterns beyond occasional or weekend use.

All BRFSS data in this report were collected after Alaska legalized marijuana in 2014. Notably, some changes in trends of reported marijuana use over time could be related to adults being more comfortable reporting their use now that it has been legalized and become more accepted in the state, rather than actual changes in use within the population.

Additional detail

For more information about the Alaska BRFSS see

<http://www.dhss.alaska.gov/dph/Chronic/Pages/brfss/default.aspx>

National Survey on Drug Use and Health (NSDUH)

The National Survey on Drug Use and Health is a primary source of statistical information on the use of illegal drugs, alcohol, and tobacco by the U.S. civilian, noninstitutionalized populations ages 12 and older. It is sponsored by the federal Substance Abuse and Mental Health Services Administration (SAMHSA). The survey also collects data on mental disorders, co-occurring substance use and mental disorders, and treatment for substance use and mental health problems. The data can be used to identify correlates of these substance use and mental illness measures and provides estimates at the national, state, and sub-state level. The data can also be used to determine the prevalence of substance use or mental illness among demographic or geographic subgroups, as well as to estimate the trends in these measures over time, and to determine the need for substance abuse or mental health treatment services.

NSDUH publishes state level result for two years combined, rather than for single years. State-level reports published online for 2008-2009 through 2016-2017 were used for this report.

Considerations for use in marijuana surveillance

NSDUH data provide a way to compare marijuana use among adults in Alaska to the U.S.; however, NSDUH state-level estimates are based on relatively small sample sizes and utilize “modeled” statistical analysis. To minimize conflict in reported numbers, NSDUH estimates are reported for 2-year intervals in comparison to BRFSS single-year estimates.

NSDUH state-level estimates may vary from BRFSS state-level estimates because of important differences in survey design. First, NSDUH is collected using a household-based sample, and interviews are conducted in person, while BRFSS uses a random telephone survey. There could be differences in findings due to variation in sampling and administration (for example, if people are more willing to disclose marijuana use during an anonymous phone survey in comparison to a survey conducted in their home). People who do not have phones or who do not answer phone calls unless they know the caller may have different marijuana use patterns than people who are included in a household-based sample. We do not know how these differences affect specific estimates; however, because consistent practices are used for surveys trends over time and variation among subgroups are meaningful.

NSDUH collects data from people ages 12 and older, while BRFSS collects data from people ages 18 and older. For this report, NSDUH data included in the “adult” section of the report were restricted to persons 18 and older. NSDUH data do allow for directly reporting differences between adult and youth age groups within Alaska, as included in the “knowledge and attitudes” section of this report for perceived risk of marijuana use.

We did not use NSDUH data to report on youth marijuana use in Alaska, because a national comparison was already available from the U.S. YRBS. NSDUH and the Alaska YRBS included similar questions on perceived risk of marijuana use: NSDUH asks about perceived risk from monthly use, and YRBS asks about perceived risk from using once or twice a week. We included both estimates on perceived risk among youth: NSDUH data for persons ages 12-17 provided a long-term trend with a U.S. comparison, while YRBS data from 2017 enabled examination of differences among demographic groups within Alaska.

Additional detail

For more information on NSDUH see: <http://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health>

Information about state reporting from NSDUH using model-based estimates is available at <http://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHsaeMethodology2017/NSDUHsaeMethodology2017.pdf>

Alaska BRFSS call-back survey (2016 Alaska BRFSS call-back)

This telephone survey was conducted in June 2016 among people who participated in the 2015 Alaska BRFSS who said they had used marijuana in the past 30 days and who agreed to be called back for future surveys. A total of 250 adults ages 21 and older completed the short survey, which included questions about marijuana use patterns, knowledge and attitudes. Data were weighted to be representative of the state's population of marijuana users.

Considerations for use in marijuana surveillance

Generally, data used for "surveillance" are collected routinely and systematically over time, to inform understanding of data trends and differences between populations. The 2016 BRFSS call-back survey was fielded to provide initial understanding of marijuana-related factors in Alaska. However, in 2019 Alaska transitioned to using an online survey of marijuana users to gather such information. Future reports will include information from this online survey. Results from future online surveys may not be comparable to the 2016 telephone survey-based results.

Alaska Pregnancy Risk Assessment Monitoring System (PRAMS)

PRAMS is a population-based survey (mail with telephone follow-up) of women who recently delivered a live-born infant. It was developed by the CDC and is administered by Alaska's DHSS. It is the primary source on maternal and infant health issues for Alaska, and allows CDC and states to monitor changes in maternal and child health indicators, such as unintended pregnancy, prenatal care, maternal substance use, breastfeeding, and other infant health issues. About one in six resident women delivering a child in Alaska is sampled for the survey. The survey is implemented 2-6 months after birth of a child (results are allowed up to 9 months after the birth of a child). Survey results are weighted to represent the total population.

Alaska's PRAMS team provided analysis of 2009-2017 data for this report. We additionally accessed some data through Alaska's online IBIS data system at:

http://ibis.dhss.alaska.gov/topic/databases/AK_PRAMS.html

Considerations for use in marijuana surveillance

The U.S. PRAMS survey does not ask questions about marijuana use. Alaska was the first state to add questions about marijuana use to PRAMS starting from the survey's inception in 1990. We included the most recent ten years of data (from 2009) in this report for simplicity. Historically, the prevalence of marijuana use during pregnancy in Alaska has been relatively stable: 6.6% in 1990, 5.4% in 1999, and 7.1% in 2009.

For 2009 - 2015, the Alaska PRAMS asked

- *During the 12 months before you got pregnant, did you smoke marijuana or hash?*

- *During your most recent pregnancy, did you smoke marijuana or hash?*
- *Since your new baby was born, did you smoke marijuana or hash?*

Questions were modified slightly starting in 2016 to include reported use non-smoked types of marijuana products:

- *During the 12 months before you got pregnant, did you use marijuana or hash in any form?*
- *During your most recent pregnancy, did you use marijuana or hash in any form?*
- *Since your new baby was born, did you use marijuana or hash in any form?*

PRAMS does not currently ask about frequency of use (e.g., how many days per month), or about types of products used. Women who report “any use” during the pre-pregnancy, prenatal and post-natal periods are classified as “current users” within those periods. Thus, this is a very sensitive definition that groups women who may have used only once (for example, before they knew they were pregnant) with women who could have used daily.

For six months in 2017, PRAMS asked additional questions about marijuana use as part of a Council of State and Territorial Epidemiologists (CSTE)-sponsored multistate supplement, in partnership with CDC. There were 536 respondents during this timeframe. Questions included:

- *At any time during the 3 months before you got pregnant or during your most recent pregnancy, did you use marijuana or hash in any form? (yes, no)*
- [asked of women who answered yes to the first bullet; 18% of respondents] *During the 3 months before you got pregnant, about how often did you use marijuana products in an average month? (daily, 2-6 days per week, 1 day a week, 2-3 days a month, 1 day a month or less, I did not use marijuana then)*
- [asked of women who answered yes to the first bullet] *During your most recent pregnancy, about how often did you use marijuana products in an average month? (daily, 2-6 days per week, 1 day a week, 2-3 days a month, 1 day a month or less, I did not use marijuana then)*
- [asked of women who used during pregnancy] *During your most recent pregnancy, how did you use marijuana? Check all that apply. (smoked it, ate it, drank it, vaporized it, dabbed it, other, specify).*
- [asked of women who used during pregnancy] *Why did you use marijuana products during pregnancy? For each item, check No if it is not a reason for you, or Yes if it was. To relieve nausea; to relieve vomiting; to relieve stress or anxiety; to relieve symptoms of a chronic condition; to relieve pain; for fun or to relax; some other reason (space to write in answer).*
- [asked of women who received prenatal care] *During any of your prenatal visits, did a doctor, nurse, or other health care worker do any of the following things? Please include if they asked you on a written form or in a conversation. For each item, check No if they did not do this, or Yes if they did. Ask me if I was using marijuana; recommend that I use marijuana for any reason; advise me not to use marijuana; advise me not to breastfeed my baby if I was using marijuana.*
- *How long do you think it is necessary for a woman to wait after using marijuana to breastfeed her baby? Check one answer. (I don't think she needs to wait at all; I think it is best to wait until she is no longer high; I think it is best to wait at least 2-3 hours after*

she is no longer high; I don't think it is safe for breastfeeding women to use marijuana at all.)

Because of perceived social disapproval for use of any drugs during pregnancy, there may be more under-reporting of marijuana use during pregnancy than among the general population of adults. It is unknown whether perceptions of social disapproval for use during pregnancy will change as marijuana becomes more normalized in society following legalization: some changes in marijuana use trends over time could be related to women being more comfortable reporting their use, rather than actual changes in use within the population.

Additional detail

For more information about the Alaska PRAMS see <http://dhss.alaska.gov/dph/wcfh/Pages/mcheipi/prams/default.aspx>

Alaska Childhood Understanding Behaviors Survey (CUBS)

CUBS is implemented by the Alaska Department of Health and Social Services, Section of Chronic Disease Prevention and Health Promotion, Division of Public Health. CUBS is a population-based survey of women with 3-year olds, following up with women who participated in PRAMS who still live in-state. The survey discusses maternal and child experiences since delivery. Survey results are weighted to represent the total population.

This report included data from CUBS 2015-2017, accessed using Alaska's online IBIS data portal at <http://ibis.dhss.alaska.gov/query/selection/cubs23/CUBSSelection>

Considerations for use in marijuana surveillance

The 2015-2017 Alaska CUBS survey asked two questions about marijuana use:

- All women were asked *Have you used marijuana or hash in any form during the past 2 years?* Responses were *yes* or *no*.
- Women who reported “yes” to the prior question were asked *During the past 30 days, how many days per week on average did you use marijuana or hash? Circle the average number of days per week.* Responses were *none*, *<1*, or *1-7*.

In this report, women who said they has used on any (even less than one) day per week in the past 30 days were characterized as “using” in the past 30 days. We do not know if this may underestimate the percentage of use, for example if women who use 1 or 2 days per month may report using “none” on average per week. Further, changes in reported marijuana use trends over time could be the result of women being more comfortable reporting their use as it becomes more normalized in society, rather than actual changes in use within the population.

Additional detail

For more information about the Alaska CUBS see <http://dhss.alaska.gov/dph/wcfh/Pages/mcheipi/cubs/default.aspx>

Treatment Episode Data Set (TEDS)

The Treatment Episode Data Set (TEDS) describes characteristics and outcomes of treatment for alcohol and/or drug use among clients aged 12 years and older admitted to treatment at facilities throughout the 50 states, the District of Columbia, U.S. territories, and other jurisdictions. Data are collected by the federal Substance Abuse and Mental Health Services Administration (SAMHSA). TEDS includes treatment admissions at facilities that are licensed or certified by a state substance abuse agency to provide care for people with a substance use disorder (or facilities that are administratively tracked for other reasons). In general, facilities reporting TEDS data are those that receive state alcohol and/or drug agency funds (including federal block grant funds) for the provision of alcohol and/or drug treatment services.

TEDS data from 2014-2018 were included in this report. Data were accessed through the SAMHSA data portal at <https://wwwdasis.samhsa.gov/webt/newmapv1.htm#>

Considerations for use in marijuana surveillance

“Marijuana dependence treatment” in this report includes admissions where individuals are being treated for dependence to marijuana/hashish, including THC and any other cannabis sativa preparation. Marijuana dependence could be treated in combination with other substances.

Notably, referral to marijuana dependence treatment may be directed as part of a criminal justice process (e.g., as one consequence of an arrest). Use and possession of marijuana is no longer a crime in Alaska for persons ages 21 and older. Therefore, declines in marijuana dependence treatment immediately following legalization may be due to elimination of many marijuana-related arrests among adults, although it remains illegal for people ages 20 and younger (and some communities may increase enforcement activities in response to legalization). Long-term monitoring will likely be necessary to understand patterns in dependence treatment as the result of need in the population.

Additional detail

For more information see: <https://wwwdasis.samhsa.gov/webt/newmapv1.htm#>

Alaska Division of Juvenile Justice (DJJ)

Alaska Department of Health and Social Services, Division of Juvenile Justice (DJJ) routinely reports the number of offenses and related characteristics for crimes involving juveniles (persons under 18).

Data for fiscal years 2012-2018 were included in this report. Data were provided by the Division of Juvenile Justice. “State fiscal year” is labeled as the calendar year in which the period ends (for example, State Fiscal Year 2018 includes data from July 2017-June 2018).

Considerations for use in marijuana surveillance

Marijuana-related referrals are included in this report. Referrals are requests from law enforcement agencies for a DJJ response following the arrest of a juvenile or as a result of the submission of a police investigation report alleging the commission of a crime or violation of a court order. A referral is counted as a single episode or event and may be related to multiple

charges. Individuals can be included for multiple referrals during the reporting period. Youth who receive a referral may not be charged with a crime.

Numbers of referrals can be related to multiple factors, including law enforcement capacity and priorities of communities for enforcement actions. Some communities may increase enforcement activities in response to legalization (e.g., to prevent youth initiation), while others may decrease enforcement now that adult use is legal. Changes in these factors over time could affect observed trends in marijuana-related juvenile referrals.

Additional detail

For more information about the Alaska DJJ see <http://dhss.alaska.gov/djj/Pages/Default.aspx>

Alaska Poison Center

The Alaska Poison Control System (APCS) contracts with the Oregon Poison Center (OPC) to manage calls from Alaska. This 24-hour emergency hotline and health information service is available to the public and health care providers. The phone lines are managed by Registered Nurses with advance training and certification in toxicology, along with physicians and other toxicology specialists. APCS is managed through the state's Injury Prevention Program.

The OPC uses Toxicall®, a data software program for documentation of each poison center case. Poison center staff collect extensive demographic, clinical and substance information from each caller. Calls are assigned nationally standardized codes for symptoms and causes as defined by the National Poison Data System (NPDS).

Poison Center data from 2003-2017 were provided by the APCS for this report.

Considerations for use in marijuana surveillance

Marijuana-related poison center calls were defined as human exposure calls with the following NPDS sub generic codes: 0083000, 0310124, 0310121, 0310122, 0310126, 0310125, and 0310123.

Particularly in Alaska, where overall numbers are small, changes can appear dramatic as a result of only a few more calls. Caution should be used when interpreting meaning from short-term changes in calls, as these could be caused by different factors. First, if there are campaigns to promote calling the poison center about health concerns, potentially related to unexpected effects after consuming marijuana, this could increase calls because of increased awareness about the service. As new or naïve users experiment with new legal products, some of which could be relatively more potent relative to products that were previously available to “returning users” (e.g., people in their 50s or 60s who used marijuana during early adulthood), they may accidentally over-consume marijuana and call the poison center to obtain help. As users become more experienced, such calls might decline. Similarly, healthcare providers may initially be more likely to call the APCS for consultation in treating adverse effects of marijuana use in their patients, if they have not observed such cases before or if patients have not disclosed their use before. On the other hand, as the general public relies increasingly on internet searches to seek help for unexpected symptoms, rather than making a phone call, calls could decrease independent from the number of actual adverse events.

Additional detail

For more information about Alaska's Poison Control System see

<http://dhss.alaska.gov/dph/Chronic/Pages/InjuryPrevention/Poison/default.aspx>

Alaska Health Facilities Data Reporting Program (HFDR)

Inpatient and outpatient data were provided by the Alaska Health Facilities Data Reporting (HFDR) program, within the DHSS Health Analytics and Vital Records (HAVRS) section.

These facilities include private, municipal, state and some federal hospitals, including hospitals operated by Alaska Native organizations; Alaska's two military hospitals are not included.

Reporting of data by Alaska health facilities was mandated effective in December 2014 with reporting beginning in 2015; prior to that year this reporting was voluntary.

Rates for 2017 are reported per 10,000 population, which is the reporting standard suggested by the HFDR program. These rates are presented without adjustment for factors such as age or gender. Population estimates for 2017 obtained from the Alaska DOL WD were used as denominators (see prior data source description).

Data are reported separately by type of encounter, based on the facility where treatment was given:

- Inpatient: acute medical/surgical unit, psychiatric unit, medical rehabilitation, alternate level of care (e.g., long-term care, hospice), alcohol or drug rehabilitation. This does not include stand-alone rehabilitation facilities or skilled nursing facilities.
- Outpatient: emergency room, outpatient surgery, observation only, and other outpatient.

Hospital data from 2015-2017 were provided by the HAVRS section as monthly aggregate counts per subgroup.

Considerations for use in marijuana surveillance

There was a significant change in the hospital data coding system during fall 2015 which affected reporting: the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) was used for discharge coding prior to October 2015, and after this date the 10th revision (ICD-10-CM) was used. Changes in coding systems could create increases or decreases in estimates that are not related to actual changes in patient presentation or treatment. We consulted with colleagues in other states that are monitoring marijuana-related hospitalizations, and the general consensus was that there has not been an observed dramatic change in outcomes associated with the transition. However, caution when interpreting data, and any changes observed, during the final calendar quarter of 2015.

Marijuana-related discharges are defined by the following discharge codes in any position:

- ICD-9-CM for January – September 2015: 305.2 (cannabis abuse), 304.3 (cannabis dependence)
- ICD-10-CM for October 2015-December 2017: F12.1 (cannabis abuse), F12.2 (cannabis dependence), F12.9 (cannabis use, unspecified), T407 (cannabis poisoning).

A poisoning code available in ICD-9-CM was not included, because it captured a broader range of psychodysleptics (not specific to cannabis), and inclusion would have resulted in an overestimate prior to the transition.

Changes in marijuana-related hospital visits could be attributed to factors other than changes in the prevalence of marijuana-related adverse events. For example, more providers could be asking about or documenting cannabis use during medical visits, or more patients could be disclosing their cannabis use. These changes could affect how marijuana-related visits are captured in the discharge diagnoses and result in apparent increases potentially not related to true changes in population health.

Additional detail

For more information about the Alaska Health Facilities Data Reporting Program, visit <http://dhss.alaska.gov/dph/VitalStats/Pages/HFDR/default.aspx>

Alaska Medical Marijuana Registry (MMR)

Alaska's Medical Marijuana Registry (MMR) is supported by the Alaska Department of Health and Social Services (DHSS), Division of Public Health, Health Analytics and Vital Records Section (HAVRS). The program provides medical authorizations to patients with a signed physician's statement that indicates need for medical treatment for approved conditions.

MMR data from 2013-2019 were obtained from aggregate cardholder reports provided by HAVRS.

Considerations for use in marijuana surveillance

Changes in the numbers of people using marijuana for medical purposes should be interpreted considering the changing legal context of marijuana. Prior to legalization of adult possession and use, having a formal medical authorization may have provided legal protection for people who used medical marijuana (as well as those using marijuana for non-medical purposes). Following legalization, this may no longer be an incentive (medical marijuana is still illegal federally, so a state-level medical authorization may not provide protection in the context of federal law). At the time of this report, the fee for a medical marijuana authorization was \$25 for an original request, and \$20 for a renewal. In addition to this fee, there may be costs associated with a visit to a physician to obtain a medical authorization. There is no specific medical marijuana product sales system in Alaska, and there is currently no financial incentive (e.g., reduction in sales taxes) for authorized patients who purchase marijuana products in retail marijuana stores. Therefore declines in medical marijuana cards may be the result of personal economic decisions, rather than any changes in actual use of marijuana for medical purposes.

Additional detail

Information about the MMR is available at

<http://dhss.alaska.gov/dph/VitalStats/Pages/marijuana.aspx>

A detailed MMP report is available at

<http://dhss.alaska.gov/dph/VitalStats/Documents/PDFs/Medical%20Marijuana%20Registry%202014-2018.pdf>

Alcohol & Marijuana Control Office (AMCO)

Alaska’s Department of Commerce, Community, and Economic Development Alcohol & Marijuana Control Office (AMCO) provided two important sources of data for this report: information about marijuana businesses, and community policies to regulate them.

Data for this report were obtained from the AMCO website and confirmed by personal communication with AMCO staff as follows.

Considerations for use in marijuana surveillance

Information about which communities has implemented local policies to regulate marijuana was available at: <https://www.commerce.alaska.gov/web/amco/MarijuanaLocalOption.aspx>. The information was current as of 4/28/17. Given more than two years have passed, a number of the temporary community policies that were enacted have expired, and information was not readily available about whether these or other policies had been maintained, or new ones added. Similar information on “alcohol local option” community policies to regulate alcohol sales is also available at the AMCO website.

Information about licensed marijuana businesses was also available using a “marijuana license search” at <https://www.commerce.alaska.gov/abc/marijuana/Home/licensesearch>. We extracted all available licenses in the state using this interface to provide a summary of current retailers as of October 2019. We constructed a historical record of numbers of marijuana retailers using datasets that had previously been extracted from the interface, as well as lists of approved retailers posted as part of the minutes in the Marijuana Control Board meeting minutes. DHSS has established a data use agreement with AMCO for the purposes of analyzing market sales data through the state’s Marijuana Enforcement Tracking Reporting & Compliance (METRC) inventory tracking system.

Additional detail

More information about AMCO is available at <https://www.commerce.alaska.gov/web/amco/>

Alaska Department of Revenue (DOR)

The Alaska Department of Revenue provides monthly reports of taxes collected on marijuana businesses. Taxes are applied when marijuana is sold or transferred from a cultivation (growing) facility to a retail marijuana store or marijuana product manufacturing facility. The initial tax as described in Ballot Measure 2 was \$50 per ounce of marijuana; effective January 1, 2019, tax rates were changed to be more specific to plant type, as described in this report.

Data from October 2016 – October 2019 were provided by the DOR for this report.

Data are based on monthly reports available at

<http://tax.alaska.gov/programs/programs/reports/index.aspx?60000>

Considerations for use in marijuana surveillance

Monitoring total taxes can be a proxy measure for total product sales in the state, and further used as an indicator for total consumption. However, this tax information does not provide information about how products are being developed and sold; examination of the total weight of

marijuana plants grown for the licensed market does not allow for monitoring changes in product types (e.g., if more high-potency products like dabs are being produced and sold, relative to flower).

Among states that have legalized non-medical marijuana markets, Alaska is the first that has taxed by weight rather than as a percentage of retail sales value.

Some communities have applied local taxes on retail sales, but this information is not included within the DOR tax reports.

Additional detail

More information about Alaska's marijuana tax, including annual reports, is available at <http://tax.alaska.gov/programs/programs/index.aspx?60000>

Key Definitions

Race and ethnicity

Identification of race and ethnicity varied by data source.

- In BRFSS, American Indian/Alaska Native (AIAN) people includes all individuals who reported AIAN as their only race *or preferred* race if they identify with multiple race groups, regardless of ethnicity. White includes only people who said they are not Hispanic. “Other” includes Hispanic and all other (non-AIAN or white) race groups.
- In YRBS, American Indian/Alaska Native (AIAN) students includes all individuals who reported AIAN (alone or in combination with other race groups), regardless of ethnicity. White includes students who reported this as their only race and who are non-Hispanic. Hispanic includes all who identified Hispanic ethnicity, for all race groups, including unknown race, except AIAN. “Other” includes non-Hispanic students of all other (non-AIAN or white) race groups, including those who reported multiple races (but not AIAN).
- In PRAMS, the mother’s race is reported as listed on the birth certificate. “Alaska Native” refers to women who identify as AIAN alone or in combination with other race groups. White refers to women who identify as white alone. “Other” refers to women who identify as any other race than Alaska Native (alone or in combination) or white (alone).
- In the hospitalization data, race is assigned as noted in the medical record (in a single field). Hispanic ethnicity was reported separately from race.

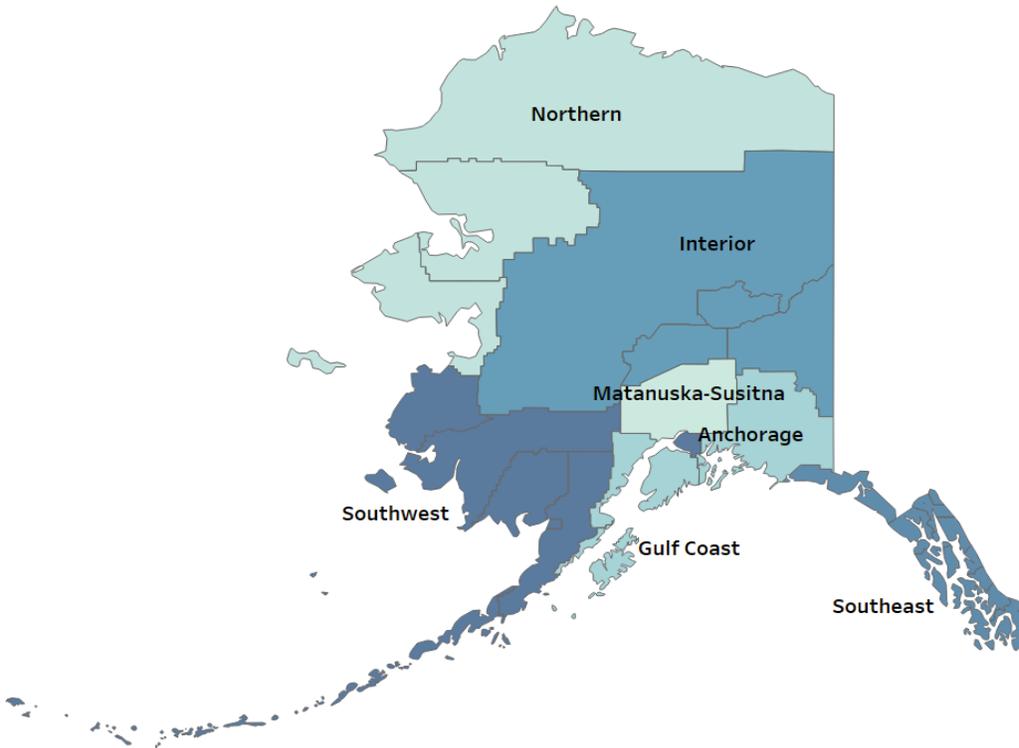
Region

Regional estimates from BRFSS, YRBS, PRAMS and hospital data included in this report are provided based on Alaska’s Public Health regions (see Figure 43). Alaska Public Health Regions were defined using borough and census area designation of the person’s residence or school. Survey data do not provide enough representation for reporting by most of the individual boroughs.

For Youth Risk Behavior Survey (YRBS) data, the official state estimates are based on a scientifically selected statewide sample of schools and students, but the regional data include a combination of the scientific statewide sample and schools that volunteered to participate as part of a local sample to obtain local area data. For this reason, regional estimates may not be generalizable to all students in the region.

For hospital data, people who do not live in Alaska, but who received treatment in Alaska’s hospital system, are identified as “out of state.”

Figure 43: Alaska Public Health Regions



Regions are defined by the following borough and census areas:

- 1) **Anchorage.** Municipality of Anchorage
- 2) **Matanuska-Susitna (or Mat-Su).** Matanuska-Susitna Borough, excluding Anchorage
- 3) **Gulf Coast.** Kenai Peninsula Borough, Kodiak Island Borough, and Valdez-Cordova Census Area
- 4) **Interior.** Denali Borough, Fairbanks North Star Borough, Southeast Fairbanks Census Area, and Yukon-Koyukuk Census Area
- 5) **Northern.** Nome Census Area, North Slope Borough, and Northwest Arctic Borough
- 6) **Southeast.** Haines Borough, Hoonah-Angoon Census Area, Juneau City and Borough, Ketchikan Gateway Borough, Petersburg Census Area, Prince of Wales-Hyder Census Area, Sitka City and Borough, Skagway Municipality, Wrangell City and Borough, and Yakutat City and Borough
- 7) **Southwest.** Aleutians East Borough, Aleutians West Census Area, Bethel Census Area, Bristol Bay Borough, Dillingham Census Area, Lake and Peninsula Borough, and Kusilvak Census Area (formerly Wade Hampton Census Area)