2025 Maryland Cannabis Use Biannual Study

Statutory Authority and Requirements: Maryland's Health-General Article, Title 13, Subtitle 44 requires the Maryland Cannabis Administration to conduct a comprehensive biannual study of cannabis use in the state that includes a survey of patterns of use, perceptions, public health and safety, and cannabis-related healthcare utilization, and report findings to the Maryland Governor and the General Assembly. The appendices to this report provide detailed data for the required indicators.

March 1, 2025

Acknowledgements

Maryland's Health-General Article, Title 13, Subtitle 44 named multiple state agencies and organizations for the Maryland Cannabis Administration (MCA, or the Administration) to consult with in developing this study. MCA, the successor agency to the Maryland Medical Cannabis Commission, would like to extend its appreciation to these agencies and organizations:

- Maryland Department of Health's Behavioral Health Administration
- Maryland Department of Health's Prevention and Health Promotion Administration
- Governor's Office of Crime Prevention and Policy
- Maryland Poison Center
- Maryland Hospital Association
- State's Designated Health Information Exchange (CRISP: Chesapeake Regional Information System for our Patients)

We also thank the following additional partners who were consulted for this study:

- National Capital Poison Center
- Maryland State Police
- Maryland Department of Transportation, Maryland Highway Safety Office
- University of Maryland School of Pharmacy, Behavioral Health Research and Technical Assistance Center
- Maryland Cannabis Public Health Advisory Council (Data and Surveillance Workgroup)

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Executive Summary

Purpose

The Maryland Cannabis Administration ("MCA" or "the Administration") is statutorily required to conduct a biannual study of cannabis use in the State, compiling data from public health surveys, state programs, and hospital billing codes to describe patterns of cannabis use, perceptions, and health and safety effects among Marylanders. The first study was published on March 1, 2023, and served as the baseline study, providing a "first look" at cannabis use in Maryland prior to expanded adult-use legalization. This report contains the second study, which was prepared approximately a year and a half after adult-use legalization took effect on July 1, 2023. It provides updated data and includes some data collected after expanded cannabis legalization. However, due to data collection and reporting schedules -- which often contain significant lag time to accurately weigh, clean, and analyze data -- not all measures in this report have pre/post comparisons available. Findings from this report can help identify where gaps may exist and where there have been variations in behavior since the baseline study has occurred, calling for action to protect public health, and to monitor the progress of those actions.

Tip

Throughout this report, data from the 2023 baseline study is displayed in figures and charts in "red," while new data collected since the baseline study is displayed in "grey" and "gold". Additionally, a date line corresponding to the start of adult-use sales, July 1, 2023, appears on figures where data is available before and after this policy change.

Adult-Use Cannabis Legalization in Maryland

Medical cannabis has been legally sold to certified medical cannabis patients since December 2017. In the 2022 General Election, voters approved a ballot referendum to expand cannabis legalization to adults 21 and older. On May 3, 2023, the Cannabis Reform Act was signed into law, creating a framework for adult-use cannabis sales in Maryland. The Maryland Cannabis Administration, the successor agency to the Maryland Medical Cannabis Commission (MMCC), was also established on this date to regulate the cultivation, manufacture, testing and distribution of medical and adult-use cannabis in the State.[1]

MCA's major responsibilities include licensing and registration of cannabis businesses, agents, patients and caregivers; conducting routine announced and unannounced inspections of licensed and registered businesses to ensure compliance with safety and security requirements; development of educational resources to help inform applicants, licensees, patients, consumers, policymakers, and partners across the state on cannabis laws and regulations and responsible cannabis use practices; and policy implementation including the adoption of regulations that govern all industry activities including health, safety, and security standards for cannabis cultivation, manufacturing/processing, testing, and distribution.

Adult-use sales began on July 1, 2023, with Maryland's existing medical dispensaries paying a conversion fee if they intended to remain in the licensed market to sell both medical and adult-use cannabis. This ensured a legal marketplace on the first day of adult-use sales with approximately 98 dispensaries operational. Sales of adult-use cannabis totaled more than $700 million in its first year, almost twice that of medical cannabis sales, which were just under $400 million.[2]

[1] Maryland's Alcohol, Tobacco, and Cannabis Commission (ATCC) oversees unregulated and illegal cannabis product sales.

[2] For current sales data as well as registration and compliance data, see MCA's Medical and Adult-Use Cannabis Data Dashboard.

In March 2024, the Administration conducted a first-in-the-nation exclusive social equity licensing round lottery, awarding more than 170 licenses across micro and standard grower, processor and dispensary categories. These licenses, which include more than 75 dispensary licenses, have 18 months from being awarded conditional licensing status to become operational, the first of which are expected to open their doors in 2025. Also in March 2024, the Administration launched the first reference laboratory in the country dedicated exclusively to cannabis oversight and managed by a state cannabis regulatory agency. The laboratory supports public health and safety efforts through audits for independent testing laboratories to ensure accuracy related to THC potency as well as prohibited additives and contaminants, assisting with illicit product investigations, and determining standardized testing methods for the cannabis industry.

In April 2024, in collaboration with the Maryland Department of Health, the Administration launched a comprehensive public health and safety campaign, "BeCannabisSmart," which promotes responsible adult cannabis use and educates the public on important topics such as the dangers of drugged driving, smoke-free public spaces, and protecting youth from accidental exposures through safe storage of cannabis products.

What Has Changed with Adult-Use Legalization?

Due to the cadence of data collection and the aforementioned lag time while data is weighted, cleaned, and analyzed prior to publication, at the time this report was prepared, only a few data sources had complete or final results for fiscal year 2024 (July 1, 2023 to June 30, 2024) or for calendar year 2024, the first full year after the policy change. Since most statistics from calendar year 2023 include a mix of pre/post data collection, the data from this time period is being shown as "pre-legalization" in this report. Pre/post findings are summarized below.

Patterns of Use

Data showing changes in cannabis use statewide among Maryland youth, adults, and pregnant or breastfeeding individuals are not yet available; however, certified medical patients age 18 and older surveyed in the fall of 2022, 2023, and 2024 reported no changes in frequency of use or THC dose since expanded legalization.[3]

December 1, 2017
Legal medical cannabis sales begin

November 8, 2022
Voters approve a ballot referendum to expand cannabis legalization to adults 21 and older

May 3, 2023
Cannabis Reform Act signed into law; MCA established as the state's cannabis regulatory agency

July 1, 2023
Adult-use cannabis sales begin

March 13, 2024
The first reference laboratory in the country launched

March 14, 2024
The first-in-nation exclusive social equity licensing round lottery conducted

April 18, 2024
"BeCannabisSmart" public education campaign launched

[3] MMCC/MCA conducted the Maryland Medical Cannabis Patient Survey (MMCPS) in 2022, 2023, and 2024 with approximately 13,000 certified medical cannabis patients in each survey wave.

Beginning in 2023, edibles became the most frequent method of medical cannabis consumption, surpassing vaping and smoking, and remained so in 2024 with 73 percent of medical cannabis patients consuming edibles in the past month. Since legalization, the number of certified medical patients has decreased by a third, which is a finding consistent with other states following the expansion of adult-use legalization.

Youth Perceptions

An online survey of youth ages 14 to 19 conducted approximately six months after legalization showed many Maryland teens think their peers are using more cannabis since adult-use legalization.[4] About 40 percent said they think use has increased, while 32 think there has been no change, or they are unsure (13 percent).

Impaired Driving

Cannabis-related driving behaviors continue to be difficult to measure, as population-level survey data on driving behaviors has not previously been collected (data collection is underway and will be included in the next biannual report). The Administration's Maryland Medical Cannabis Patient Survey (MMCPS) showed an initial doubling of the rate of driving under the influence of cannabis or within three hours of consuming cannabis (DUIC) after adult-use legalization, from 18 to 39 percent between 2022 to 2023, then a slight drop the following year with 34 percent reporting DUIC in 2024.

Hospitalizations and ED Visits

Hospitalizations related to cannabis use have not increased since adult-use legalization.[5] Data from emergency department (ED) visits creates a more nuanced picture.[6] ED visits that included any cannabis-related coding increased very slightly (about one percent) from 2022 to 2023, then decreased 17 percent between 2023 to 2024. However, when looking at ED data where cannabis was listed as the primary code (complaint), therefore, a much smaller number of encounters,[7] ED visits increased 17 percent from 2022 to 2023, then dropped 5 percent from 2023 to 2024.

Calls to Poison Control

Cannabis-related calls to Maryland Poison Centers moved in a more favorable direction after several years of steep increases in call volume. Both overall calls and calls due to edible product ingestions dropped about 10 percent from 2023 to 2024. However, calls for youth exposures continued to increase, particularly among children aged five and under, where calls went up about 35 percent between 2023 to 2024. Beginning in 2024, MCA partnered with the Maryland Department of Health (MDH) and the Maryland Poison Center on statewide media and point-of-sale education about safe cannabis storage practices (i.e., "keep cannabis up, away, and out of sight"). Continued educational efforts are needed to reduce accidental exposures for youth under age 5.

[4]The 2023 Youth Pandemic Behaviors Survey was conducted in late fall 2023/winter 2024, approximately six months after adult-use legalization, and included several cannabis-related questions, collecting responses from over 900 Marylanders ages 14 to 19.

[5]Cannabis-related hospital data was obtained from the Health Services Cost Review Commission (HSCRC) "case mix" data, which includes patient-level administration data on all inpatient and outpatient hospital visits in the State. Data from 2024 was annualized as a complete dataset was not available at the time this report was prepared. Annualized data has accurately predicted final counts in previous years.

[6] Cannabis-related ED data was also obtained from HSCRC case mix data. ED data for 2024 was annualized as noted.

[7] In 2023, there were just 2,635 primary cannabis ED visits compared to 25,354 cannabis-related ED visits. Over the period 2018 to 2024, the primary cannabis ED dataset was about 10% of the size of the cannabis-related ED dataset.

Cannabis Use Disorder (CUD)

Since 2021, there has been an increase in individuals receiving treatment services for a cannabis-related disorder through the state's public behavioral health system (PBHS).[8] However, this upward trend started prior to adult-use legalization, so increases may be attributed to problem use among PBHS service recipients who are medical cannabis patients or who obtained cannabis from unregulated sources. Concentrated cannabis products became available for adult-use sales on July 1, 2024. As researchers don't know the full extent of the consequences when the body and brain are exposed to high concentrations of THC or how recent increases in concentrated products affect the risk of developing CUD, it is important to monitor the potential effects of these products and explore providing additional information to consumers who purchase these products.

In sum, it's too soon to fully assess the public health impacts of adult-use legalization. While cannabis-related calls to poison control and cannabis-related hospitalizations have not increased overall, poison control calls related to very young children began to increase prior to legalization. Data on ED visits are also less clear, with longer-term monitoring needed. Rates of cannabis-impaired driving are not yet available at the population level. Similarly, pre/post rates of cannabis use among youth or adults as well as pregnant and breastfeeding individuals are not yet available; however, with decreasing risk perceptions about cannabis use, and a belief among Maryland teens that more peers are using cannabis since legalization, strengthening youth prevention efforts is needed. Future reports will build on these preliminary data findings. They may also shed light on the influence of intoxicating hemp products on rates of use and public health and safety outcomes. Trends to watch include (1) rates of youth use, including use of intoxicating hemp products; (2) perceptions of cannabis among youth as well as adults; and (3) DUIC and driving behaviors.

What is THC? Marijuana? Hemp? Delta-8? And why does this matter?

It's all cannabis! The cannabis plant produces more than one hundred different compounds, known as cannabinoids, that can affect the mind and body. The most common are tetrahydrocannabinol, known as "THC," which causes the feeling of being high, and cannabidiol, known as "CBD," which is not intoxicating.

Whether a plant is considered "hemp" or "marijuana" has to do with how much THC is present, and specifically a form called delta-9 THC, the type traditionally found in licensed dispensaries. As defined by the 2018 Agriculture and Nutrition Improvement Act ("2018 Farm Act"), hemp refers to a cannabis plant that contains 0.3 percent or less delta-9 THC, while marijuana is a cannabis plant that contains more than 0.3 percent delta-9 THC. Historically, cannabis that contained 0.3 percent or less delta-9 THC was not/was minimally psychoactive, while cannabis that contained more than 0.3 percent delta-9 THC had psychoactive effects.

When the 2018 Farm Act removed "hemp" from the definition of "marijuana" in the federal Controlled Substances Act, it led to ways to monetize hemp other than for industrial reasons, including the manufacture of new psychoactive THC products known as delta-8 and delta-10-THC. In recent years, these products have been sold in edibles and vape cartridges in growing numbers in gas stations, convenience stores, smoke and vape shops, and online in Maryland and across the U.S.

[8] Cannabis-related disorder service data was obtained from the Maryland Department of Health Behavioral Health Administration's Public Behavioral Health Services Reporting System. This dataset includes authorizations and claims for behavioral health services for more than 300,000 individuals who are Medicaid participants, uninsured, and/or supported with state services. PHBS data is reported on the fiscal year with complete FY2024 data provided in this report.

Unlike delta-9 THC products, unlicensed producers and retailers of intoxicating hemp-derived THC products are not subject to Maryland's safety precautions or testing requirements.[9] When tested, THC levels in these unregulated products have been found to be inconsistent -- both higher and lower than stated package labeling.[10] Packaging for unregulated products is not required to be child-proof and can mimic popular candy, drinks, or snack foods that may appeal to youth and teens.

Few data sources differentiate cannabis obtained from a regulated versus unregulated source and the difference is not necessarily understood by consumers. Even if consumers (as well as healthcare providers, coding staff, etc.) are asked about products in public health surveys, hospital/ED visits, poison control calls, and other data sources, they may not know the differences to accurately report use of unregulated intoxicating hemp versus regulated cannabis. As a result, the proportion of cannabis use among Maryland youth and adults that can be attributed to unregulated intoxicating hemp, as well as its role in cannabis-related public health and safety outcomes, is unknown.

What Are Other Key Findings Since the Baseline Study?

Although the findings below do not reflect changes since adult-use legalization, they identify important risk groups and/or trends to monitor, as noted below:

- **Youth use has continued to decrease.** Current use (past 30 day) fell among middle school students from 4 to 3 percent and in high school students from 15 to 14 percent between the 2021-2022 and 2022-2023 school years. However, among youth who currently use cannabis, slightly more females than males reported use, there was an increase in high school students who vape cannabis, and an increase in those who use cannabis at the highest frequency (40 or more times per month).[11] This finding raises concern given the intoxicating effect as well as potential harms to the developing brain and risk for problematic use or addiction, which is most likely with regular or heavy use in adolescence.[12]
- **Current cannabis use continues to be higher in youth who identify as lesbian, gay, or bisexual (LGB) compared to heterosexual youth, and the gap widened from the 2021-2022 to 2022-2023 school years.** In 2021-2022, the rate of current use among heterosexual youth and LGB was 13.3 and 24.6 percent respectively, and it widened slightly in 2022-2023 to 12.3 percent and 24.7 percent respectively. Current use also remained higher in transgender youth compared to cisgender youth (21.1 versus 14.3 percent respectively).[13]

[9]Cannabis licensees in Maryland are permitted to sell intoxicating hemp products if they comply with regulatory and testing standards.

[10]MMCC. December 2022. Hemp-Derived Non-Delta-9-Tetrahydrocannabinol Products Accessed 12/18/24, Hemp-derived SB788Ch512HB1078Ch511(2)(2022).pdf

[11]Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS) 2021-2022 and 2022-2023 available at https://health.maryland.gov/phpa/ccdpc/Reports/Pages/YRBS-Main.aspx

[12] Ibid

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

- **Current cannabis use continues to be higher in both youth and adults who report having one or more days each month that their mental health was not good.**[14] Current cannabis use was nearly four times greater in adults with ten or more poor mental health days compared to those with zero poor mental health days in the past month (29 versus 8 percent, respectively).[15]
- **Risk perceptions related to cannabis use have continued to fall among youth and adults.** Over the period from 2015 to 2022, the perception of "great risk" from smoking cannabis once a month has trended down among both adolescents (ages 12 to 17) and adults (26 years and older) and was lowest among young adults (18 to 25 years).[16]
- **Cannabis use among adults has increased since the baseline study.** Current (past 30 day) cannabis use increased from 9.0 to 11.7 to 13.0 percent from 2021 to 2022 and 2023, respectively.[17]
- **Edible consumption is on the rise.** Adults who currently use cannabis reported an increase in edible consumption from 36.5 to 46.3 percent between 2022 to 2023; edibles were also the most frequently used method among medical cannabis patients (surpassing smoking flower) starting in 2023 (and continuing in 2024).[18]

Actions Taken Since the Baseline Study

Below are key actions taken by the Administration and partners since publication of the baseline study.

- Provided responsible cannabis consumer education materials to all 98 Maryland dispensaries prior to the first day of legal adult-use sales. Materials included a poster to be permanently displayed at dispensaries, as well as a 'pocket guide' takeaway resource covering topics like delayed onset of effects, THC dose, and safe cannabis storage to prevent accidental exposure by children and pets. Materials were offered for replenishment and were made available digitally for dispensaries to display on monitors and TV screens.
- Launched and vetted a responsible vendor training program (RVT) to support licensee compliance with regulations that help increase adult-use customer, patient, and dispensary agent safety.[19] All business agents employed by a dispensary are required to complete the training by January 1, 2025, and annually thereafter. Topics include ID checks to ensure adult-use customers are 21+, refusing underage sales, and purchase limits.
- Partnered with the Maryland Department of Health on public education campaigns under the umbrella "BeCannabisSmart," including a campaign focused on the hazards of consuming cannabis while or before driving, a campaign promoting smoke-free spaces, and a campaign to educate parents and caregivers on the importance of keeping cannabis safely locked – up, away, and out of sight. This campaign was also co-branded with Maryland Poison Center.

[14] Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS) 2021-2022 and 2022-2023 available at https://health.maryland.gov/phpa/ccdpc/Reports/Pages/YRBS-Main.aspx

[15] Maryland Behavioral Risk Factor Surveillance System (RRFSS) survey 2021, 2022, 2023. Information available at https://health.maryland.gov/phpa/ccdpc/Reports/Pages/brfss.aspx

[16] National Survey on Drug Use and Health (NSDUH) Maryland State Data 2015-2022, available at State Data Tables and Reports From the 2021-2022 NSDUH. The NSDUH survey only assesses the perceived risk of smoking cannabis once a month; other frequencies are not measured.

[17] Maryland Behavioral Risk Factor Surveillance System (RRFSS) survey 2022 and 2023.

[18]Maryland Behavioral Risk Factor Surveillance System (RRFSS) survey 2022 to 2023, details available at https://health.maryland.gov/phpa/ccdpc/Reports/Pages/brfss.aspx, and Maryland Medical Cannabis Patient Survey 2023 and 2024, available at https://cannabis.maryland.gov/Pages/Reports.aspx

[19] For more information on Maryland's Responsible Vendor Training (RVT) visit, Responsible Vendor Training (RVT)

- Conducted staff training and initiated an enhanced data surveillance project with the Maryland Poison Center and National Capital Poison Center to improve data collection and coding related to cannabis-related calls. When possible, calls are now coded by source (regulated, unregulated) and access point (locked, unlocked, with details on the location – the fridge, shelf, counter, purse, etc.).
- Engaged the new Cannabis Public Health Advisory Council for guidance on closing data collection gaps. New questions were added to the 2025 Maryland Behavioral Risk Factor Surveillance Survey (BRFSS). Additionally, the Administration contracted with the University of Waterloo to participate in the International Cannabis Policy Study (ICPS), which examines in detail patterns of use, purchasing, adverse outcomes, as well as attitudes and beliefs towards cannabis. It will allow for comparative insights of Maryland's data to other states, national, and international rates. Results from both BRFSS and ICPS surveys will be available in the next biannual cannabis use report.
- Provided funding to local health departments (LHDs) to increase their capacity to implement new programs and strategies that address the public health impacts related to adult-use cannabis legalization. MDH has developed this program and plans to continue funding and overseeing these efforts.

Where Action is Needed

Findings in this report suggest the following actions may be warranted to enhance public health and safety.

- Identify and implement new surveillance tools to fill data gaps, set programmatic goals, and monitor progress with respect to protecting youth, promoting responsible adult use, and preventing public health harms.
- Improve surveillance to close remaining gaps, especially (1) patterns of cannabis use during pregnancy and breastfeeding at the population level and (2) use of hemp-derived and alternative/emerging cannabinoids.
- Support efforts that advance research and data collection in the following topics areas: (1) cannabis and mental health; (2) risks associated with high potency THC products; (3) THC "dose" to provide Marylanders who choose to use cannabis with a mechanism by which to better understand and monitor their use; and (4) the contribution of unregulated intoxicating hemp products on rates of youth and adult use and public health and safety measures (i.e., adverse events, poisonings, ED visits).
- Continue to improve public knowledge and awareness by funding mass reach media campaigns aimed at (1) delaying the age of initiation and frequency of use among Maryland youth and young adults; (2) addressing misperceptions about cannabis use, especially among youth and young adults (i.e., it could benefit mental health, it's harmless); (3) reducing public safety risks, especially risks associated with cannabis-impaired driving and accidental (unintentional) exposures in children aged 5 and under, particularly with edible cannabis products; (4) reducing use and/or frequency of use among high-risk populations, including youth and adults reporting poor mental health, pregnant and breastfeeding individuals, and LGBT youth; and (5) educating adults who choose to consume cannabis about regulated versus other sources of cannabis.
- Support training programs for dispensaries to comply with sales laws to reduce youth access. Implement a "secret shopper" program to monitor retailer compliance with minimum sales age laws.
- Provide resources to support Marylanders who would like help reducing or stopping cannabis use, including pregnant or breastfeeding persons and those who are experiencing problem cannabis use or addiction.

- Continue to strengthen public health and public safety collaborations to align education efforts, including training programs (i.e., driver's education, drug recognition expert training).
- Expand grant awards to all 24 Maryland Local Health Departments (LHDs) to strengthen the capacity of local public health education and outreach efforts.
- Support health care provider training efforts, especially related to screening and referrals for problem cannabis use.
- Develop new point-of-sale educational materials for all dispensary licensees on risks associated with high potency products.
- Ensure new social equity dispensary licensees receive training on responsible adult use and have educational materials on display for their first day of sales.
- Continue to partner with the Cannabis Public Health Advisory Council to guide implementation of recommendations identified in this report as well as new or emerging needs.

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About This Report

Maryland's Health-General Article, Title 13, Subtitle 44 requires the Maryland Cannabis Administration (previously the Maryland Medical Cannabis Commission) to conduct a comprehensive biannual study of cannabis use in the state that includes a survey of patterns of use, perceptions, public health and safety, and cannabis-related healthcare utilization, and report findings to the Maryland Governor and the General Assembly. The appendices to this report provide detailed data for the required indicators, which include: patterns of use, including frequency of use and dosing, methods of consumption, and general perceptions of cannabis among individuals in specified age groups, pregnant and breastfeeding persons; incidents of impaired driving including arrests, accidents, and fatalities related to cannabis use; hospitalizations related to cannabis use; calls to the Maryland Poison Center related to cannabis use, including calls related to individuals younger than age 21; and diagnoses of cannabis use disorder and problem cannabis use.

The Administration consulted the agency partners named in the statute as well as additional partners who provided data in the baseline study to obtain updated biannual study data. They include:

- Maryland Department of Health's Behavioral Health Administration
- Maryland Department of Health's Prevention and Health Promotion Administration
- Governor's Office of Crime Prevention and Policy
- Maryland Poison Center
- National Capital Poison Center
- Maryland Hospital Association
- State's Designated Health Information Exchange Chesapeake Regional Information System for our Patients (CRISP)[20]
- Maryland State Police
- Maryland Department of Transportation, Maryland Highway Safety Office
- University of Maryland School of Pharmacy, Behavioral Health Research and Technical Assistance Center

New Data Sources Included in this Report

To fill data gaps and continue to understand the public health impacts of expanded legalization, the following datasets and enhancements have been made to this report:

- Cannabis-related call data from the Maryland Poison Center (MPC) has been enhanced with the addition of data reported by the National Capital Poison Center (NCPC), which responds to calls from Montgomery and Prince George's Counties. Poison center data from all Maryland counties are now represented in this report.
- New data on the proportion of cannabis-related calls due to unregulated products is included, as part of an enhanced surveillance project between the Administration and both Poison Centers (MPC and NCPC). This helps fill a knowledge gap about the public health impacts of unregulated cannabis products.

[20]Maryland's designated Health Information Exchange is known as Chesapeake Regional Information Systems for our Patients (CRISP). Data governance restrictions that previously prevented data sharing from CRISP to MCA were lifted just prior to the submission of this report. MCA will examine data available through CRISP in future studies.

- Data on cannabis use, access, and motivations among youth is included from the 2023/2024 Youth Pandemic Behavior Survey (YPBS). This online survey was initiated by the Maryland Department of Health during the COVID-19 pandemic when school-based administration of the biannual Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS) was suspended. These YPBS questions are expected to be adapted into future YRBS/YTS cycles, which have since resumed, however YPBS data won't be directly comparable to YRBS/YTS due to different survey methodologies. Note, in this report, the data from YPBS replaces youth access data from the Monitoring the Future (MTF) study utilized in the baseline report. MTF has limited value for this report as it reports only national, not state-level indicators.
- The Administration also conducted a second and third wave of surveys in 2023 and 2024 of its medical cannabis patients to inform measures (e.g., THC dose) that are not available elsewhere.

Note

Many data sources utilized for this report use the term, "marijuana." However, to align with statutory language, the term, "cannabis" is used in this report. For the purposes of this report, unless otherwise stated, both words mean the same thing.

Summary of Data Sources Used in This Report

Note: Tests of statistical significance were not performed for data analyzed in this report. Results are reported as descriptive statistics without confidence intervals.

National Survey of Drug Use and Health (NSDUH)

The National Survey on Drug Use and Health (NSDUH) is an annual nationwide survey of approximately 70,000 people aged 12 and older that assesses use of tobacco, alcohol, cannabis, and other substances. The Substance Abuse and Mental Health Services Administration (SAMHSA), an agency in the U.S. Department of and Human Services sponsors the NSDUH. State-level data tables data are published online approximately two years following each annual data collection cycle; the Maryland-specific data tables were used for this report.

Behavioral Health Risk Factor Surveillance System (BRFSS)

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing telephone survey of adults aged 18 and older sponsored by the U.S. Centers for Disease Control and Prevention (CDC) and managed and administered in the State by the Maryland Department of Health. This population-based survey collects data from U.S. residents regarding key health-related behaviors, chronic health conditions, and safety practices. Since 2018, the Maryland BRFSS has included questions on current cannabis use and method of use; however, the primary method of use and reason for use (reported on in the baseline study) were removed from the 2023 survey instrument. As such, these figures from the 2023 baseline study are not updated in this report. Several new questions are planned for future BRFSS surveys, including cannabis use and driving behaviors, perceived risks, and problem use indicators, which will be included in the next biannual study.

Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS)

The Maryland YRBS/YTS is a combination of CDC's Youth Risk Behavior Survey (YRBS) and Youth Tobacco Survey (YTS) and is administered every two years by the Maryland Department of Health in partnership with the Maryland State Department of Education. The Maryland YRBS/YTS is an on-site survey of students in Maryland public middle and high schools, focusing on behaviors that contribute to the leading causes of death and disability, including but not limited to, alcohol and other drug use, tobacco use, sexual behaviors, unintentional injuries and violence, and poor physical activity and dietary behaviors. Cannabis-related questions include current use, frequency of use, and methods of administration.

Youth Pandemic Behavioral Survey (YPBS)

The Youth Pandemic Behavior Survey (YPBS) is an online survey for Maryland high school students (ages 14-19) sponsored by the Maryland Department of Health. It was first implemented in 2021 ("YPBS-21") to fill a data gap on youth risk behaviors following suspension of the 2020-2021 YRBS/YTS due to remote learning and safety precautions associated with the COVID-19 pandemic. In late Fall 2023/Winter 2024, a second YPBS survey was implemented ("YPBS-23"), which included multiple cannabis-related questions following adult-use legalization. The YPBS-23 provides initial insights into youth perceptions of cannabis during this timeframe. Over 900 students completed the YPBS-23.

Pregnancy Risk Assessment Monitoring System (PRAMS)

The Pregnancy Risk Assessment Monitoring System (PRAMS) is a survey conducted by mail, phone, and web module (as of 2022) to individuals who recently gave birth. PRAMS is sponsored by the CDC and administered in the State by the Maryland Department of Health. PRAMS collects population-based data on experiences and behaviors among individuals shortly after pregnancy. The survey includes a core set of standardized questions that allow for multi-state analyses, as well as optional modules and state-added questions. For the first time, in 2019, the Maryland PRAMS collected data on cannabis use in pregnancy. However, cannabis-related data collection was limited and did not include the "marijuana" supplement, which includes more detailed questions related to cannabis use (i.e., method of use, reason for use) as well as questions about cannabis use while breastfeeding. As a result, population-level data on methods of use and reasons for use as well as use while breastfeeding is not available for this report.

Maryland Medical Cannabis Patient Survey (MMCPS)

The Administration has conducted annual surveys of its medical cannabis patients (the Maryland Medical Cannabis Patient Survey, or MMCPS 2022, 2023, and 2024) to measure patterns of use and perceptions of cannabis among certified medical cannabis patients before and after expanded adult-use legalization. The survey, which has been administered each fall since 2022, is anonymous and collects data on demographics, product use, methods of use, perceptions of medical use, driving behaviors, problem cannabis use, priorities related to adult use in the State, and cannabis education gaps and needs. With over 13,000 responses collected in each survey wave, it is believed to be the largest existing medical cannabis patient survey and dataset.

Maryland Young Adult Survey on Alcohol (MYSA)

The Maryland Young Adult Survey on Alcohol (MYSA) is an online, biannual survey that collects information about alcohol and other substance use in young adults across the State. MYSA is supported by the Maryland Department of Health and conducted by the University of Maryland School of Pharmacy, Behavioral Health Research and Technical Assistance Center (BHRT). Maryland residents ages 18 to 25 are eligible to participate

via a publicly accessible survey link (on the school's website). Due to this "open" recruitment process, it is possible that some ineligible respondents (i.e., those under age 18 or over age 25), intentionally or unintentionally, may complete the survey. First launched in 2016, the MYSA added a cannabis section for the first time in 2020, collecting responses from more than 6,500 young adults that cycle. Over 5,200 responses were collected in 2022 and included in this report. Findings from the 2024 MYSA survey were not available at the time this report was prepared.

Maryland Poison Center (MPC) and National Capital Poison Center (NCPC)

The Maryland Poison Center (MPC) serves as the State's poison center and is used by the general public as well as medical professionals seeking advice on exposures or to report adverse events. MPC produces a cannabis exposure report that documents the number of cannabis exposures by product type (e.g., dried flower, edible, pill/capsule) outcome (major effect, moderate effect, minor, or no effect), age, reason (e.g., intentional abuse, unintentional), caller site, management site, and jurisdiction. New for this study, data from The National Capital Poison Center (NCPC) was added to provide a comprehensive count of cannabis-related calls in the State. NCPC covers two large Maryland counties, Prince George's and Montgomery. Through an enhanced surveillance project launched by the Administration with both MPC and NCPC, calls beginning in February 2024 are now coded with product source (regulated, unregulated, unknown) and access point (locked, unlocked location). Note: this new data is not comprehensive of all calls. As the intent of poison centers is to provide a clinical service of an urgent nature, interventions do not always follow a specific script.

Fatality Analysis Reporting System (FARS)

The Maryland Department of Transportation (MDOT) recommended use of the Fatality Analysis Reporting System (FARS) to study substance-involved traffic fatalities. The FARS is a nationwide census that provides yearly data regarding fatal injuries suffered in motor vehicle traffic crashes. The FARS analyst located in the Maryland State Police provided a dataset of drug and alcohol-impaired fatalities for this report. The most current data available from FARS at the time this report was prepared was from calendar year 2022. Note: FARS does not include non-fatal traffic crashes.

District Court of Maryland Arrest Report: Traffic Arrests for Drug/Controlled Substances

The Administration obtained traffic-related drugged driving arrest data from the District Court of Maryland via public information request. The Administration also obtained the discretionary/race-based traffic arrest dataset from the Governor's Office of Crime Prevention and Policy. However, since this dataset excludes traffic arrests resulting from the use of radar, during roadblocks, during the scene of an accident, or use of license plate readers, and to retain the same methodology as the baseline study, only the District Court traffic arrest data is presented in this report. Neither data source differentiates cannabis from other drugs or controlled substances due to limitations in verifying whether impairment was due to cannabis.

Drug Recognition Expert (DRE) Evaluations

The Administration obtained data on DRE evaluations from the Maryland State Police. When a driver investigated for impaired driving shows a breathalyzer result with blood alcohol concentration (BAC) that is less than .08 (the legal limit for alcohol-impaired driving), and the officer believes that the driver is impaired to a degree that is inconsistent with their measured BAC, a trained drug recognition expert (DRE) may conduct a formal evaluation of impairment. Evaluations are based on both questioning and physical tests (such as pupil dilation in the presence of changing light), and the DRE delivers a formal opinion on whether the driver is impaired, and by what type of drug category. Data is reported annually. New in this report

demographic data for cannabis-positive DRE evaluations have been included for calendar years 2022 and 2023.

Health Services Cost Review Commission (HSCRC) Case Mix Data

For both the baseline study and this report, the Maryland Hospital Association (MHA) recommended using HSCRC data for measuring cannabis-related hospitalizations and ED visits. The Maryland Health Services Cost Review Commission (HSCRC) collects various data sets from acute care hospitals and licensed specialty hospitals in the State. This data includes financial and confidential patient-level administrative data (referred to as 'case mix data') on all inpatient and outpatient hospital visits. Upon request, HSCRC provides aggregate, statistical datasets for public use. For the baseline and biannual studies, HSCRC provided a statistical dataset with the number of cannabis-related inpatient and outpatient hospital visits, using International Classification of Diseases codes (ICD-10 codes), which are assigned based on the documentation by the patient's provider.[21] Data are provided through 2024, which was annualized since just the first two quarters were available at the time this report was prepared. Annualized HSCRC case mix data has historically been a good predictor of final counts.

Public Behavioral Health Services (PBHS) Reporting System

The Maryland Department of Health's Behavioral Health Administration (BHA) provided Public Behavioral Health Services (PBHS) data on cannabis-related disorder service recipients to help assess problem use and/or cannabis use disorder (CUD). Maryland's PBHS dataset includes authorizations and claims for behavioral health services for more than 300,000 individuals who are Medicaid participants, uninsured, and/or supported with state services. Maryland's PBHS data is collected and managed by an Administrative Services Organization (ASO).

[21] Centers for Medicare and Medicaid Services (CMS). ICD-10-CM Official Guidelines for Coding and Reporting. Retrieved January 14, 2025 from https://www.cms.gov/files/document/fy-2025-icd-10-cm-coding-guidelines.pdf.

Data Matrix

Section 1 Subtitle 44 of Chapter 26 of the Acts of 2022 requires the Administration to repeat the cannabis use survey biannually, using the same methodology as the baseline study. A matrix of the baseline data sources and measures is provided below.

Data Set	Years	Data Pre/Post Legalization*	Patterns of Use	Attitudes and Perceptions	Public Health and Safety	Health Care Services	Measures
BRFSS	2018-2023	Pre	X				Frequency of current (past 30 day) cannabis use; methods of consumption; current use of other various substances; mental health and general health status.
FARS	2018-2022	Pre			X		Number of alcohol and drug-impaired fatal traffic crashes; drug test results from drug-impaired fatal traffic crashes.
HSCRC Case Mix	2018-2024^	Pre/post				X	Rate of "primary cannabis" and "cannabis-related" hospitalizations and ED visits by demographics.
MD Court Traffic Arrests	2018-2023	Pre			X		Number of drug or controlled substance-related traffic arrests.

Data Set	Years	Data Pre/Post Legalization*	Patterns of Use	Attitudes and Perceptions	Public Health and Safety	Health Care Services	Measures
DREs	2017-2023	Pre			X		Number and percent of cannabis-impaired drug assessments among drivers evaluated by DREs.
MMCPS	2022-2024	Pre/post	X	X	X	X	Qualifying conditions; frequency of cannabis use; method and dose of consumption; education priorities; frequency of driving after cannabis use; safe storage and cannabis use in the home; adverse reactions to cannabis consumption.
MPC and NCPC	2018-2024	Pre/post			X		Number of cannabis-related calls by age, product, whether exposure was intentional or unintentional, and whether cannabis products were regulated or unregulated.
MYSA	2020, 2022	Pre	X	X			Reason for consumption and source of cannabis; perception of risk of drinking alcohol in combination with cannabis; driving behaviors after cannabis use.

Data Set	Years	Data Pre/Post Legalization*	Patterns of Use	Attitudes and Perceptions	Public Health and Safety	Health Care Services	Measures
NSDUH	2012-2022	Pre		X			Perceptions of risk from cannabis and various substances.
PRAMS	2019-2022	Pre	X				Percent of pregnant persons who used cannabis during their pregnancy.
PBHS	2018-2024^	Pre/post				X	Rate of individuals receiving cannabis use disorder treatment services.
YRBS/YTS	2005-2023	Pre	X				Youth current (past 30-day) and ever use of cannabis and other various substances; consumption before age 13; frequency of youth cannabis use, percent of students who felt sad or hopeless in the past 12 months; method of cannabis use (HS only).
YPBS	2023	Post	X	X			Youth usual source, reason for use, perceived changes in peer use since adult-use legalization.

Acronyms

Acronym	Definition
BHA/PBHS	Behavioral Health Administration/Public Behavioral Health System
BRFSS	Behavioral Risk Factor Surveillance System
CBD	Cannabidiol, a non-intoxicating compound in the cannabis plant
CDC	Centers for Disease Control and Prevention
CRISP	Chesapeake Regional Information Systems for our Patients
CUDIT	Cannabis Use Disorder Identification Test
DRE	Drug Recognition Expert
DSM	Diagnostic and Statistical Manual
DUIC	Driving under the influence of cannabis and/or within three hours of consuming cannabis
ED	Emergency Department
FARS	Fatality Analysis Reporting System
HSCRC	Health Services Cost Review Commission
ICD	International Classification of Diseases
LHD	Local Health Department
MCA	Maryland Cannabis Administration
MHA	Maryland Healthcare Association
MMCC	Maryland Medical Cannabis Commission
MMCPS	Maryland Medical Cannabis Patient Survey
MPC	Maryland Poison Center
MYSA	Maryland Young Adult Survey on Alcohol
NCPC	National Capital Poison Center
NSDUH	National Survey on Drug Use and Health
PRAMS	Pregnancy Risk Assessment Monitoring System
RVT	Responsible Vendor Training
SAMHSA	Substance Abuse and Mental Health Services Administration
THC	Tetrahydrocannabinol, the main intoxicating compound in the cannabis plant
YPBS	Youth Pandemic Behaviors Survey
YRBS/YTS	Youth Risk Behavior Survey/Youth Tobacco Survey

Chapter I: Patterns of Use

Introduction

This chapter addresses patterns of use, including frequency of use and methods of consumption among youth (under 18 years), young adults (18 to 20 years), adults (21 to 55 years), and adults (over 55 years), as well as pregnant individuals. Dose has been estimated for medical cannabis patients. Population-level data on patterns of cannabis use among breastfeeding individuals is not available.

Youth Use

Youth are at greater risk for harms from cannabis use than adults. The adolescent brain continues to actively develop until the mid-20s, so cannabis use during this period, especially regular or heavy use, can impact memory, learning, and attention, and effects may be long-lasting.[22,23,24] Youth use has also been linked with depression, social anxiety, and mental health disorders including psychosis.[25,26] Increases in the overall THC potencies of cannabis products over the past several decades add to the potential risks these products pose to youth. One study showed a threefold increase in cannabis flower potency from 1995 to 2014, from four to 12 percent THC.[27] In recent years, typical THC potency is 20 percent or higher in cannabis flower products. Intoxicating hemp products also pose a risk to teens due to their potentially high THC levels and the availability of unregulated products found in stores frequented by youth, such as gas stations and convenience stores.

Impact of Legalization

A potential consequence of expanded legalization is its effect on youth. Specifically, a major concern is that youth cannabis use may increase due to greater access and social acceptability (i.e., more cannabis in the home, normalization of use among adults).[28] This is particularly concerning given the overall decline observed in youth cannabis use over the past decade. Studies in other states have shown that adult-use (also referred to as recreational) legalization is associated with increases in youth use, particularly among older adolescents and young adults;[29,30] while others do not show clear increases.[31] Close monitoring is needed to assess the influence of expanded legalization on youth use in Maryland, including changes in use among subgroups such as females, LGBT youth, and youth who report poor mental health, as well as attention to changes in patterns of consumption (e.g., frequency, product type, potency).

[22] National Academies of Sciences, Engineering, and Medicine, et al. 2017. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. National Academies Press.). https://doi.org/10.17226/24625.

[23] A. Batalla et al. Structural and functional imaging studies in chronic cannabis users: a systematic review of adolescent and adult findings. PLoS One. 2013;8(2): e55821. https://doi.org/10.1371/journal.pone.0055821.

[24] R.M. Schuster et al. Early onset marijuana use is associated with learning inefficiencies. Neuropsychology. 2016. 30(4): 405–415. https://doi.org/10.1037/neu0000281.

[25] National Academies of Sciences, Engineering, and Medicine, et al. 2017. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. National Academies Press. https://doi.org/10.17226/24625.

[26] ND Volkow et al. Effects of cannabis use on human behavior, including cognition, motivation, and psychosis: A review. JAMA Psychiatry. 2016;73(3):292-297. doi: 10.1001/jamapsychiatry.2015.3278

[27] MA ElSohly et al. Changes in cannabis potency over the last 2 decades (1995-2014): analysis of current data in the United States. Biol Psychiatry. 2016;79(7):613-9. doi: 10.1016/j.biopsych.2016.01.004

[28] J. Yang et al. Trends in marijuana use among adolescents in the United States. Pediatr. Rep. 2024;16:872-879. https://doi.org/10.3390/pediatric16040074

[29] AKS Pawar et al. Systematic review and meta-analysis: medical and recreational cannabis legalization and cannabis use among youth in the United States. J Am Acad Child Adolesc Psychiatry. 2024;63(11):1084-1113. doi: 10.1016/j.jaac.2024.02.016

[30] JD Hinckley et al.Marijuana legalization in Colorado: Increasing potency, changing risk perceptions, and emerging public health concerns for youth. Adolesc Psychiatry . 2021;11(2):95-116. doi: 10.2174/2210676611666210616163340.

[31] JA Dilley et al. Prevalence of cannabis use in youths after legalization in Washington State. JAMA Pediatr. 2019;173(2):192-193. doi: 10.1001/jamapediatrics.2018.4458.

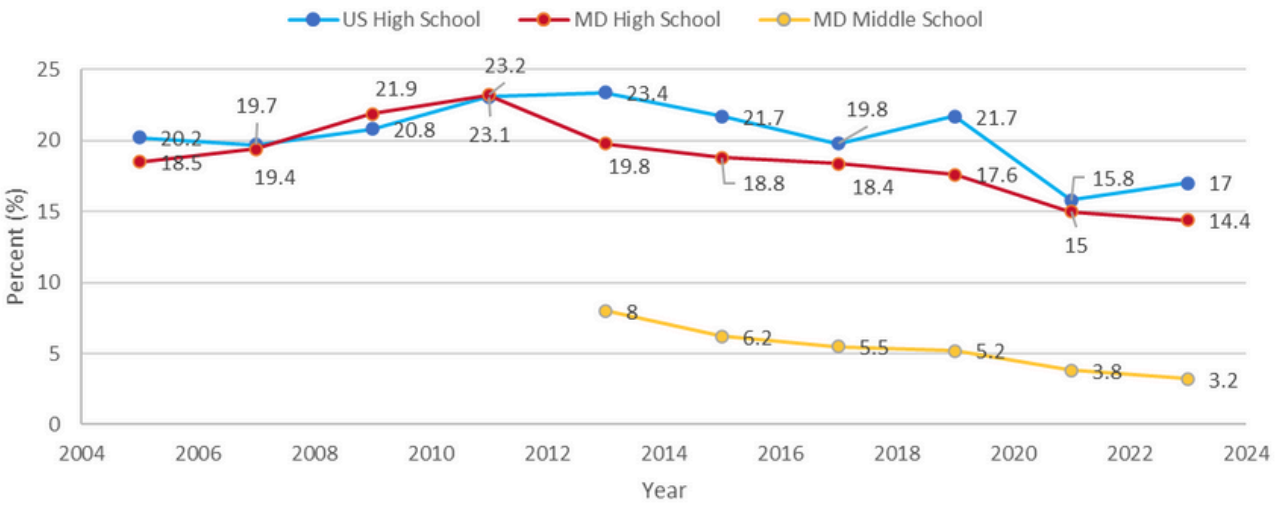
Frequency of Use

Data Note

The Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS) is a combination of CDC's Youth Risk Behavior Survey (YRBS) and Youth Tobacco Survey (YTS) and is administered every two years by the Maryland Department of Health in partnership with the Maryland State Department of Education. Data collection is anonymous and takes place onsite (in schools) with participation by both middle and high school students. The middle school survey is shorter in length and does not include questions such as "usual method" of cannabis use. Due to remote learning and safety practices during the COVID-19 pandemic, administration of the Maryland YRBS/YTS was not possible during the in 2020-2021 school year. It resumed in the 2021-2022 school year and was conducted again in 2022-2023. The most recent 2022-2023 YRBS/YTS data collection period ended prior to adult-use legalization and reflects only pre-legalization youth behaviors.

Limitation: Maryland YRBS/YTS data does not differentiate regulated cannabis products from intoxicating hemp products (e.g., delta-8) sold online or at gas stations or convenience stores.

Figure 1: Current (Past 30 Day) Cannabis Use in Maryland and U.S. High School Students (2005-2023)



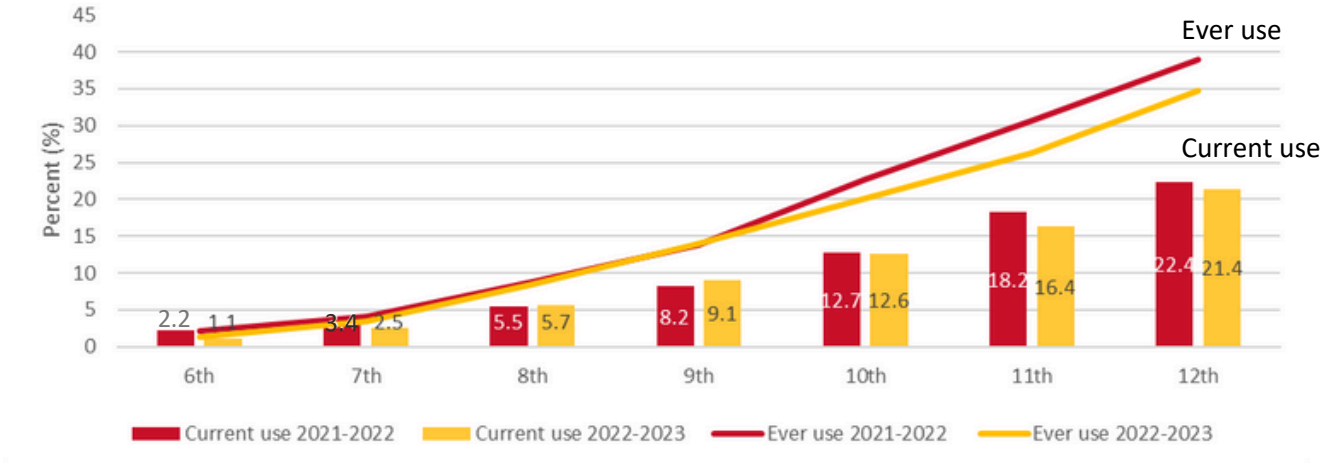
Source: National HS and Maryland HS, MS YRBS/YTS 2005-2023
Current cannabis use refers to any cannabis use in the past 30 days and is a cross-sectional representation of cannabis use at a given point in time. Data is presented as single year in the figure but represents a school year (i.e., 2022 corresponds to the 2022-2023 school year).

- In 2022 (i.e, the 2022-2023 school year), 14.4 percent of high school and 3.2 percent of middle school students in Maryland reported using cannabis in the past 30 days ("current cannabis use"). (Note: the 2022-2023 survey data was collected prior to adult-use legalization.)
- Current use among Maryland high school and middle school students has trended down and has been lower than national levels since 2013.

Tip

Data from the baseline study is presented in red. New data is displayed in grey and/or gold. Several figures present data on "current use," which refers to any cannabis use in the past 30 days.

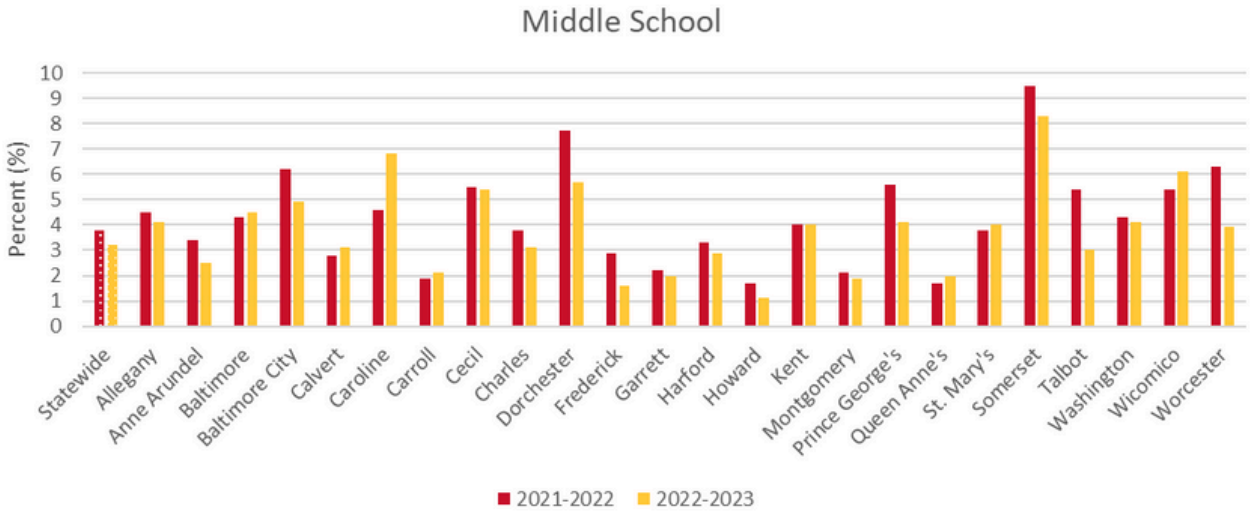
Figure 2: Current (Past 30 Days) and Ever Use Among Maryland Students by Grade (2021-2022 and 2022-2023)



Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
Ever use means that cannabis has been used at least one time and suggests (1) youth have access to cannabis and (2) have a willingness to try cannabis. It is indicated by the line graph.

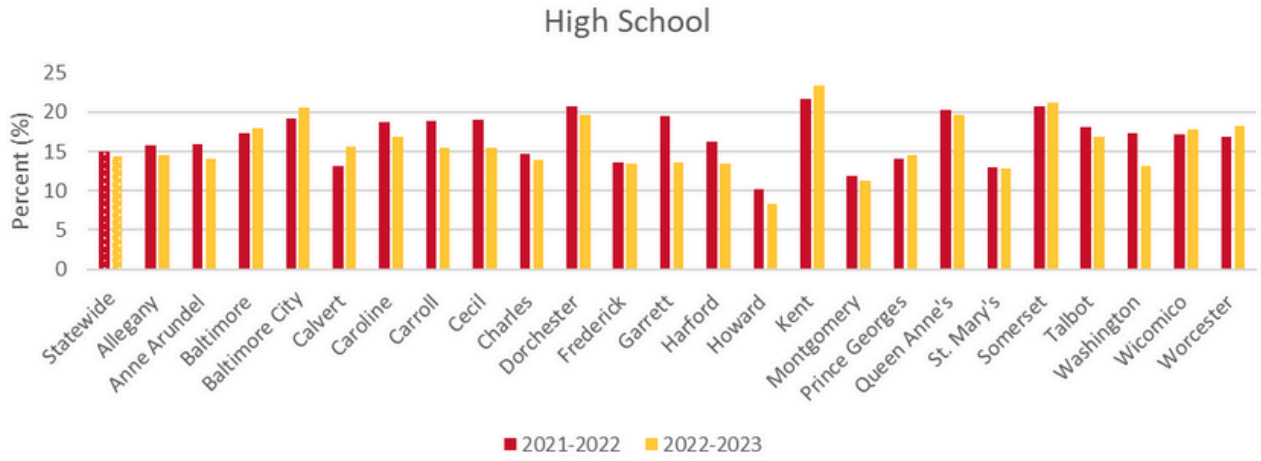
- In both the 2021-2022 and the 2022-2023 school years, ever use and current use of cannabis increased with each grade level. Ever use was higher than current use at each grade level.
- The percentage of students who reported having ever used cannabis more than doubled from 9th to 12th grade; in 2022-2023, about 14 percent of 9th graders and 35 percent of 12th graders reported having ever used cannabis (i.e., tried at least one time).
- Between 2021-2022 to 2022-2023, current and ever use decreased, except for 9th grade students where current use increased slightly from about eight to nine percent.
- Overall, 23 percent of high school students reported ever use in the 2022-2023 school year. See Figure 7.

Figure 3: Current Cannabis Use (Past 30 Days) in Maryland Middle and High School Students by Jurisdiction (2021-2022 and 2022-2023)



Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
See Appendix A to view data values.

- In the 2022-2023 school year, middle school students in Somerset and Caroline Counties reported the most current use; students in Caroline County reported the largest increase in past-month use.
- In 2022-2023, middle school students in Howard County reported the lowest rate of current use, and current use decreased between 2021-2022 and 202-2023.
- Middle school students in Worcester and Talbot Counties reported the largest decreases in past-month use between 2021-2022 and 2022-2023.

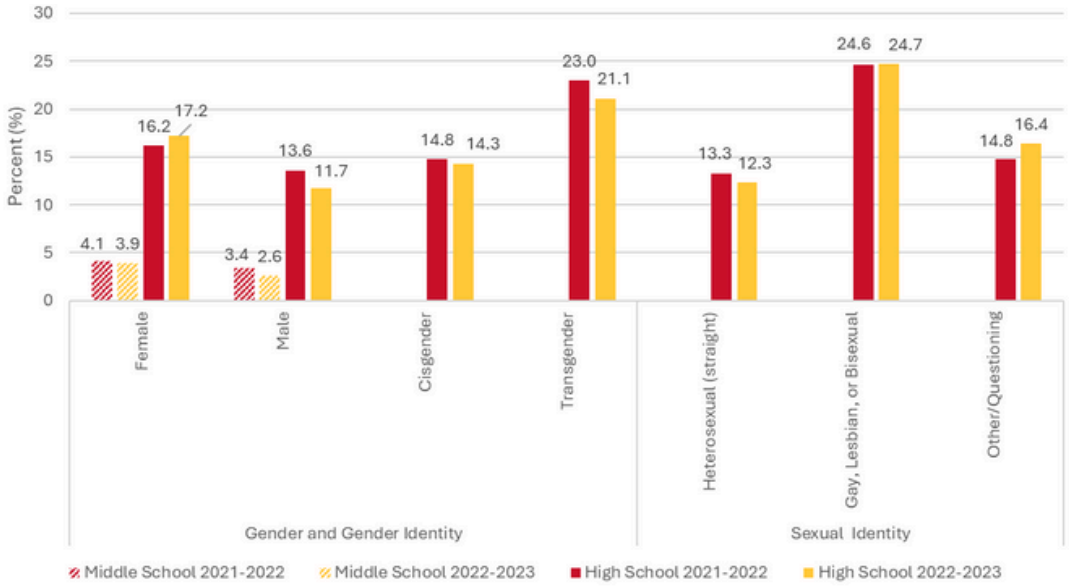


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
See Appendix A to view data values.

- In the 2022-2023 school year, high school students in Kent and Somerset Counties reported the highest percent of current cannabis use, and current use increased in both jurisdictions from 2021-2022 to 2022-2023 school years.
- In the 2022-2023 school year, high school students in Howard County reported the lowest percent of current cannabis use, with current use falling between 2021-2022 and 2022-2023.

- In 2022-2023, high school students in Kent, Somerset, and Baltimore City reported current cannabis use rates above 20 percent; students in eight Maryland jurisdictions reported current use above the national average (17 percent).
- High school students in Garrett and Washington Counties reported the largest decreases in current cannabis use while those in Calvert, Kent, and Worcester reported the largest increases between 2021-2022 and 2022-2023.

Figure 4: Current Cannabis Use (Past 30 Days) Among Maryland Middle and High School Students by Gender and Sexual Identity (2021-2022 and 2022-2023)

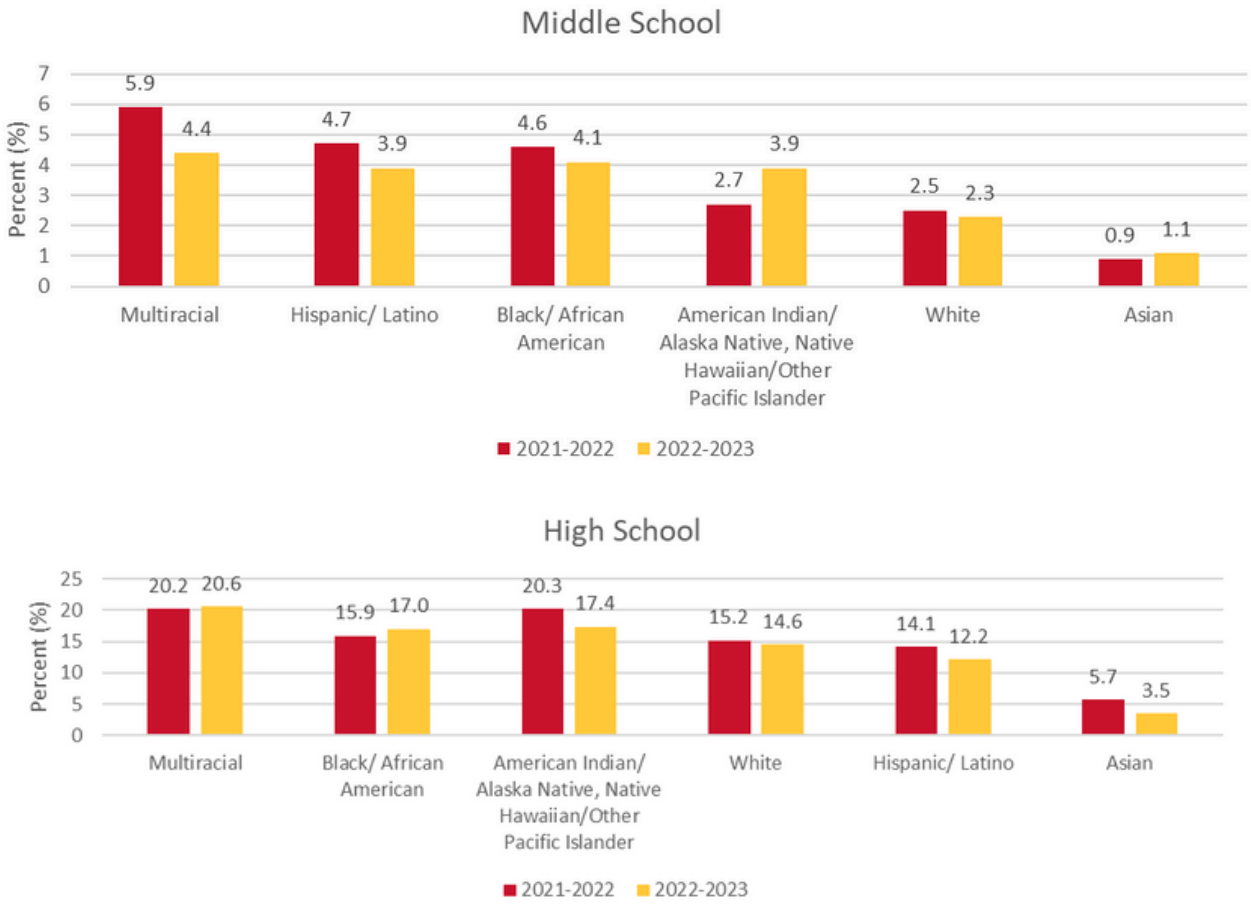


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
Sexual identity was not asked for middle school students. Other/questioning includes student responses "I describe my sexual identity some other way" or "I am not sure about my sexual identity (questioning)."

- In the 2021-2022 and the 2022-2023 school years, slightly more females than males reported past month cannabis use in middle and high school. (Of note, this changes in adults, with slightly more males than females reporting current use.)
- In the 2021-2022 and the 2022-2023 school years, more students who identify as gay, lesbian, or bisexual reported current cannabis use than those who identify as other/questioning and about twice as much as those who identify as heterosexual. Students identifying as transgender reported about 50% more use in the past month than cisgender students. Given that higher substance use has been previously reported in adolescents who identify as LGBT, these findings among Maryland students warrant close monitoring.[32]

[32] T.L. Caputi et al. Substance use among lesbian, gay, bisexual, and questioning adolescents in the United States, Am J Public Health 2015; 108(8):1031-1034. https://doi.org/10.2105/AJPH.2018.304446

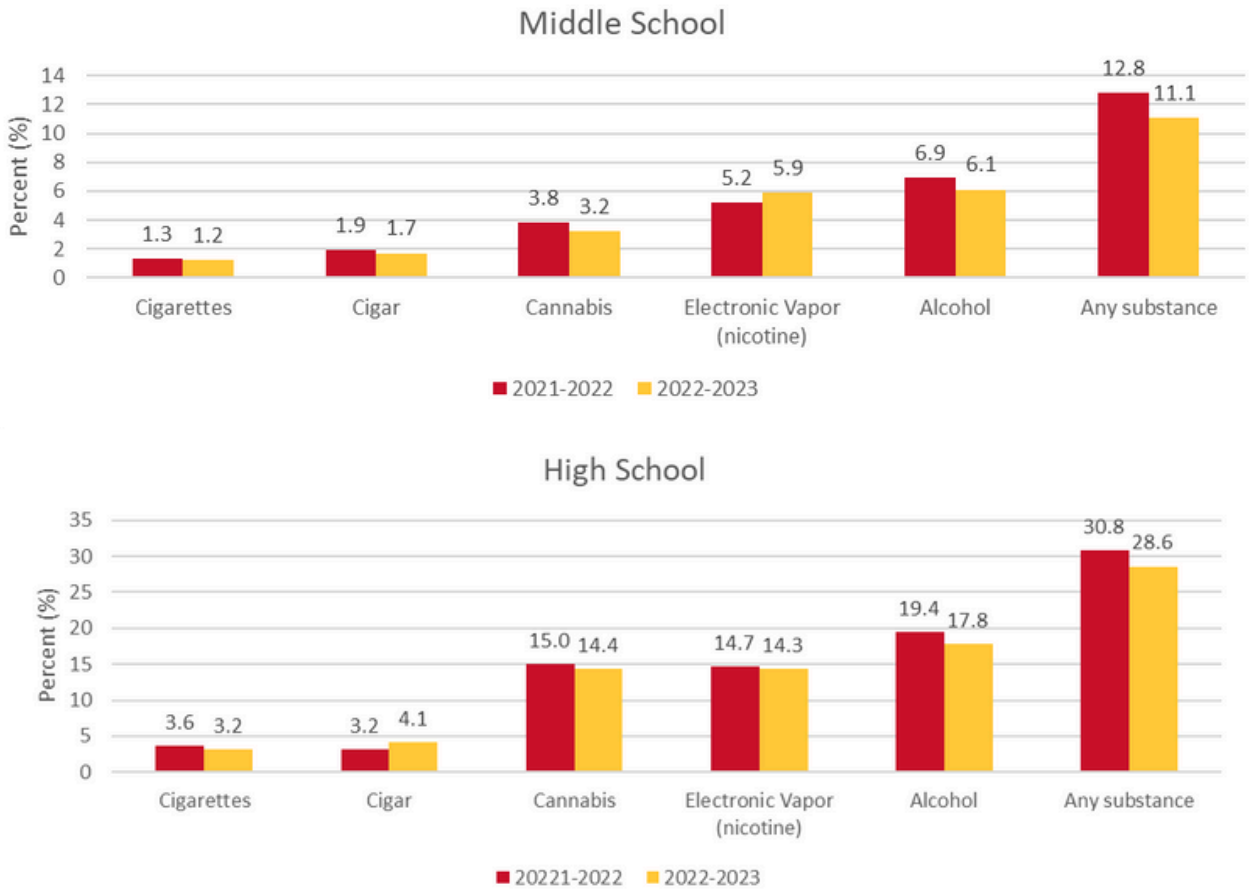
Figure 5: Current Cannabis Use (Past 30 Days) in Maryland by Race and Ethnicity (2021-2022 and 2022-2023)



Source: Maryland YRBS/YTS 2021-2022 and 2022-2023

- Similar to the 2021-2022 school year, in 2022-2023, Multiracial students in both middle and high school reported the most current use, while Asian students reported the lowest current use, although this increased slightly in 2022-2023 among Asian middle school students.
- Between 2021-2022 and 2022-2023, Black/African American high school students reported a slight increase in current cannabis use, from about 16 to 17 percent respectively, while reported use in all other high school categories, aside from Multiracial, declined slightly.

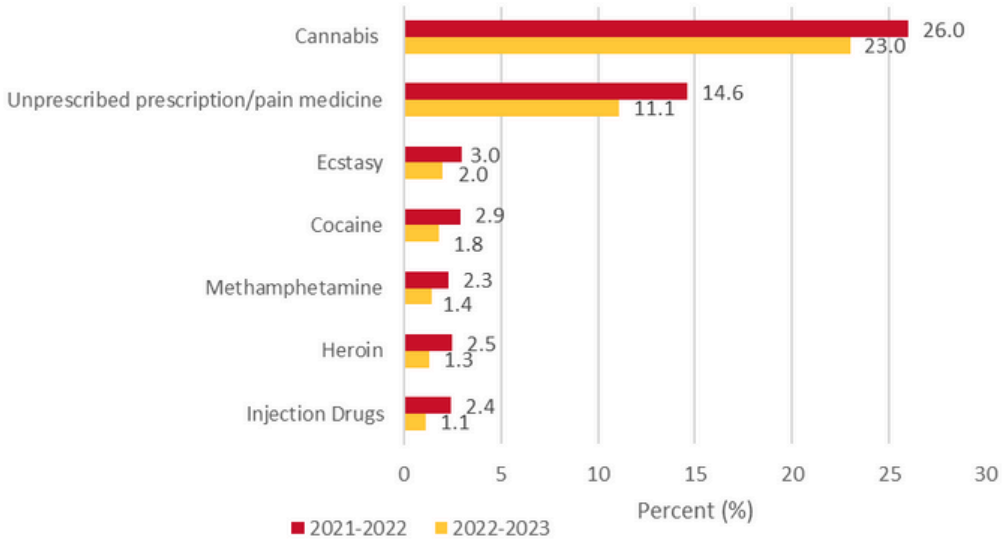
Figure 6: Current (Past 30 Days) Substance Use Among Maryland Middle School and High School Students (2021-2022 and 2022-2023)



Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
Any substance refers to use of use of any substances listed.

- In both the 2021-2022 and 2022-2023 school years, high school students reported use of any substance at a rate nearly three times greater than middle school students.
- In 2021-2022 and 2022-2023, middle and high school students both reported alcohol as the most commonly used substance in the past month, whereas cigarettes and cigars were the least often used.
- In 2021-2022 and 2022-2023, high school students reported a similar prevalence of electronic vapor use (nicotine) and any method of cannabis use (about 14 percent).

Figure 7: Percent of Maryland High School Students That Have Used Different Substances At Least Once (2021-2022 and 2022-2023)

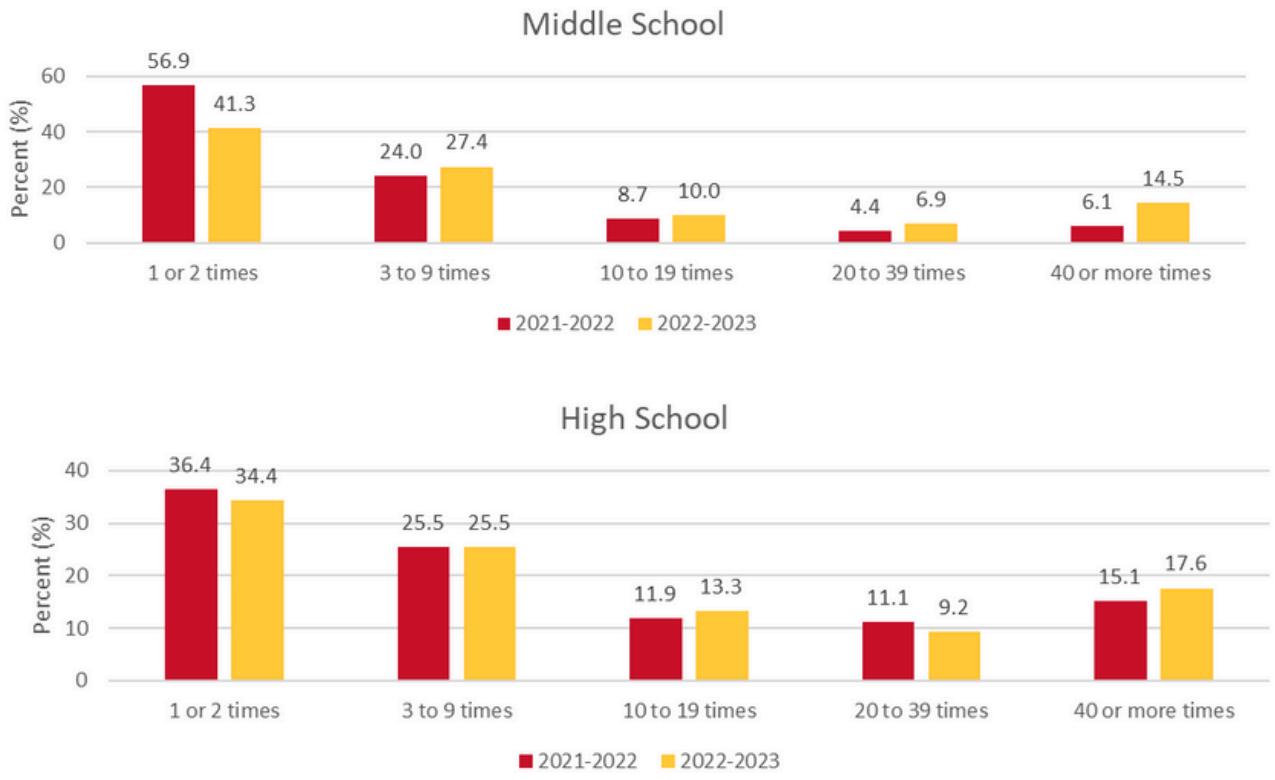


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023

Findings were very similar between the 2021-2022 and 2022-2023 school years:

- High school students have used cannabis more than any other illicit substance.
- High school students were about twice as likely to use cannabis than the next closest substance, "unprescribed prescription pain medicine."
- High school students were about 10 times more likely to use cannabis than ecstasy, cocaine, injection drugs, heroin, or methamphetamine.

Figure 8: Frequency of Cannabis Use Among Maryland Middle School and High School Students Who Report Current Use (Past 30 Days), (2021-2022 and 2022-2023)

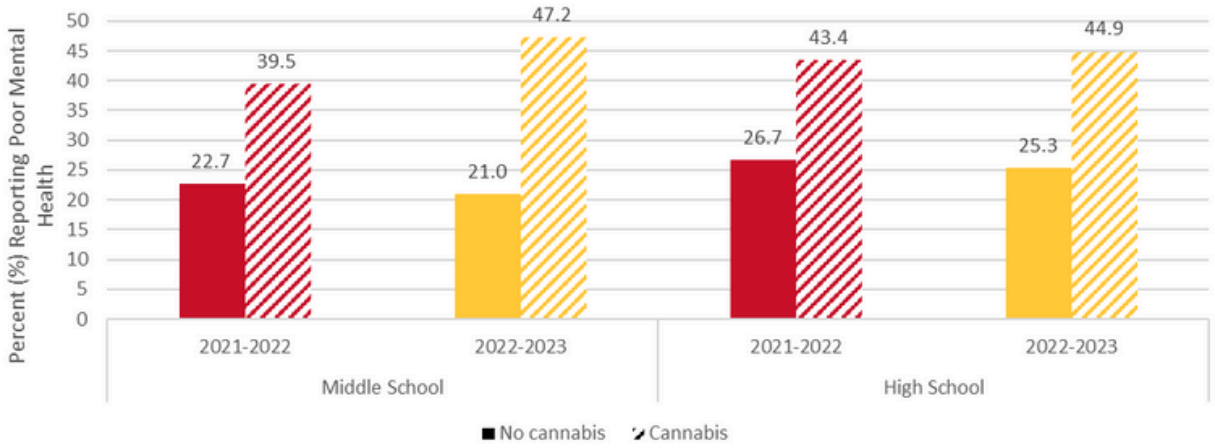


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023

Overall trends were similar between the 2021-2022 and the 2022-2023 school years:

- The most common frequency of cannabis use was 1-2 times per month among middle and high school students who currently used cannabis.
- About 40 percent of high school students who currently used cannabis did so at a high frequency (i.e., 10 or more times a month).
- The highest frequency of cannabis use (40 or more times) increased in both middle and high school students between 2021-2022 and 2022-2023. This is a concerning finding given the intoxicating effect, as well as potential harms of frequent cannabis use among youth on the developing brain and the risk for current or future problem use or addiction.

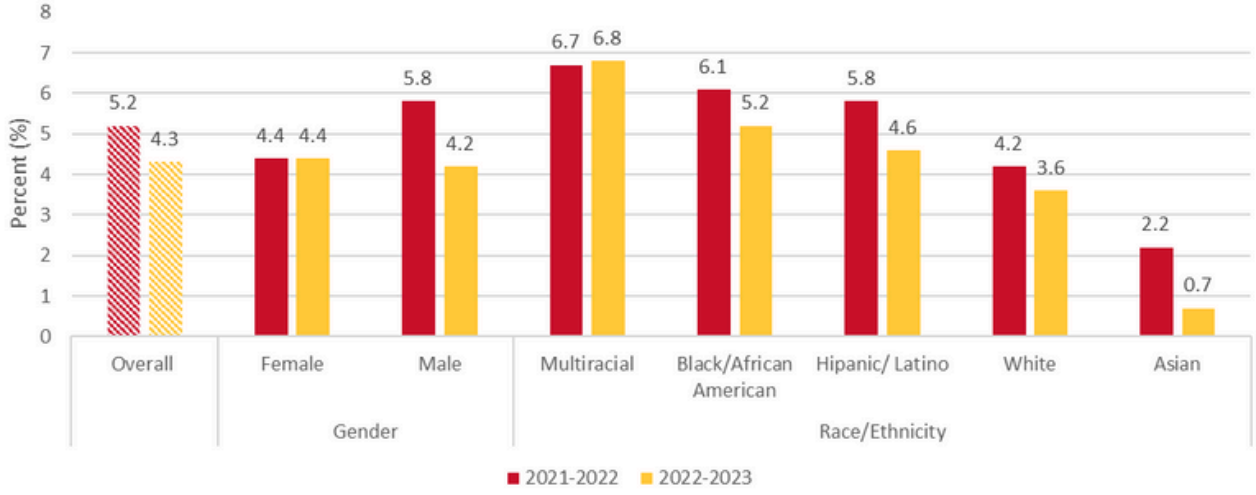
Figure 9: Current Cannabis Use (Past 30 Days) Among Middle and High School Students Who Report Poor Mental Health (2021-2022 and 2022-2023)



Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
Question: During the past 30 days, how often was your mental health not good?
Results are tabulated as students with any poor mental health days versus zero poor mental health days.

- In both the 2021-2022 and 2022-2023 school years, students who used any amount of cannabis in the past month were about 50 percent more likely to report poor mental health compared to students who did not consume any cannabis in the past month. This finding held consistent for both middle and high school.
- Continued monitoring of youth mental health and cannabis use is warranted. Students who report poor mental health may be a high-risk group in need of intervention.

Figure 10: Percent of Maryland High School Students Who Tried Cannabis for the First Time Before Age 13 by Sex and Race/Ethnicity (2021-2022 and 2022-2023)



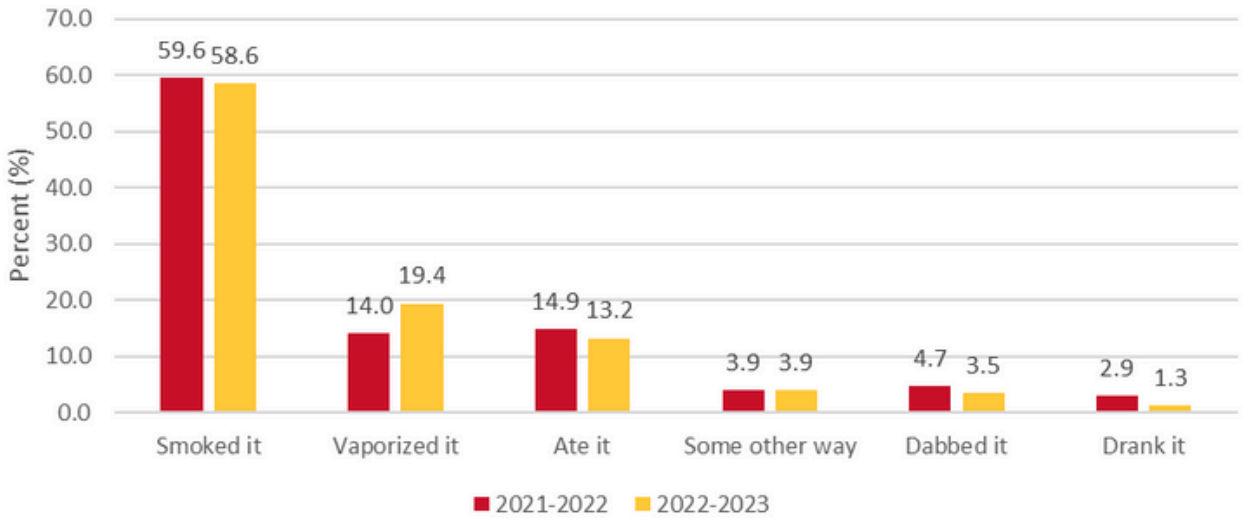
Source: Maryland YRBS/YTS 2021-2022 and 2022-2023

- Between the 2021-2022 to the 2022-2023 school years, the percent of high school students who tried cannabis before age 13 dropped from five to four percent.
- In 2022-2023, slightly more females than males tried cannabis for the first time before age 13. This is a change from 2021-2022, where more males had tried cannabis before age 13.

- In both 2021-2022 and 2022-2023, students who are Multiracial had the highest percentage of early cannabis use.
- Asian students were least likely to have tried cannabis before age 13, and the percentage dropped further from 2021-2022 to 2022-2023.
- Careful monitoring of female and Multiracial students may be warranted since early use of cannabis is associated with adverse outcomes, including the development of problem cannabis use and addiction, as well as misuse of other substances such as tobacco and alcohol.[33]

Method of Use

Figure 11: Primary Method of Cannabis Consumption Among High School Students Who Currently Use Cannabis (Past 30 Days) (2021-2022 and 2022-2023)

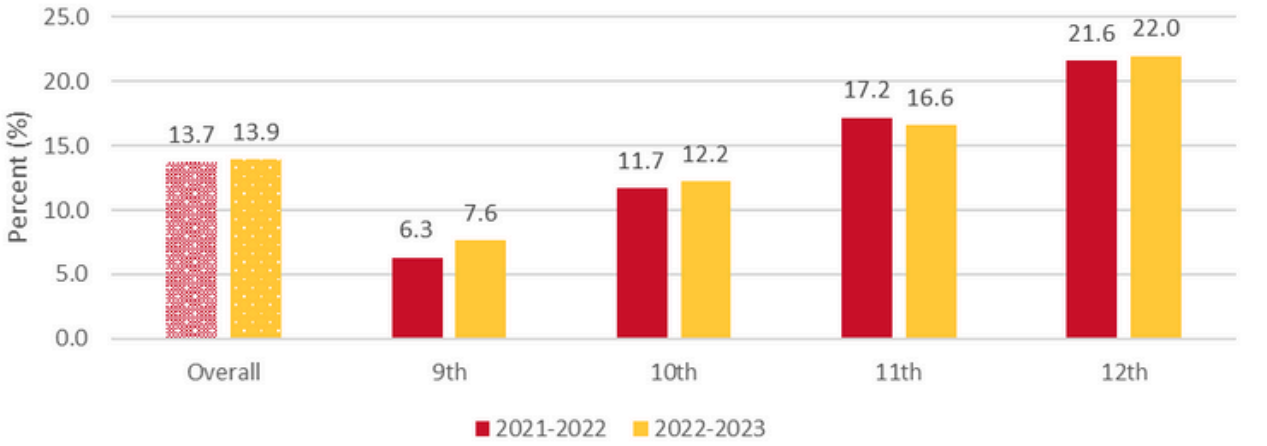


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023
Question: During the past 30 days, how did you usually use marijuana? Select only one response.

- In the 2021-2022 and the 2022-2023 school years, smoking remained the most common method of cannabis use among high school students who used cannabis in the past month, followed by vaping and edibles.
- Vaping increased about 40 percent from 14 to 19 percent between the 2021-2022 to the 2022-2023 school years. This warrants closer monitoring given the potential for vapor products to be very high in THC (as high as 90% THC), which can have severe negative long-lasting effects to the developing brain.

[33] LD Hawke et al. Early cannabis initiation: Substance use and mental health profiles of service-seeking youth. J Adolescent 2020;83:112-121, https://doi.org/10.1016/j.adolescence.2020.06.004.

Figure 12: Percent of High School Students Who Have Ever Used an Electronic Vapor Product to Smoke Cannabis by Grade (2021-2022 and 2022-2023)

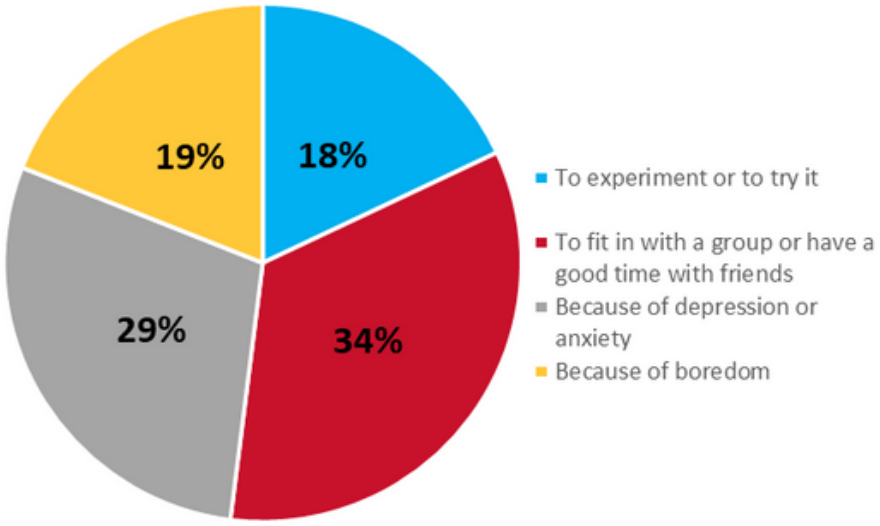


Source: Maryland YRBS/YTS 2021-2022 and 2022-2023

- The overall percentage of students who reported having ever used an electronic vapor product to vape cannabis increased slightly from the 2021-2022 to the 2022-2023 school years, with the biggest jump in 9th grade.
- In both 2021-2022 and 2022-2023, more than one in five 12th graders had used an electronic vapor product to vape cannabis.
- In both 2021-2022 and 2022-2023, the percent of students who have ever used an electronic vapor product to consume cannabis increased about threefold from 9th to 12th grade.
- Continued school-based education on risks associated with the use of vape products may be warranted, particularly with 9th and 10th grade students, where greater increases were observed.

Reason for Use and Usual Source

Figure 13: Main Reason for Trying Cannabis Among Maryland Teens Aged 14-19 (2023)



Source: YPBS-23

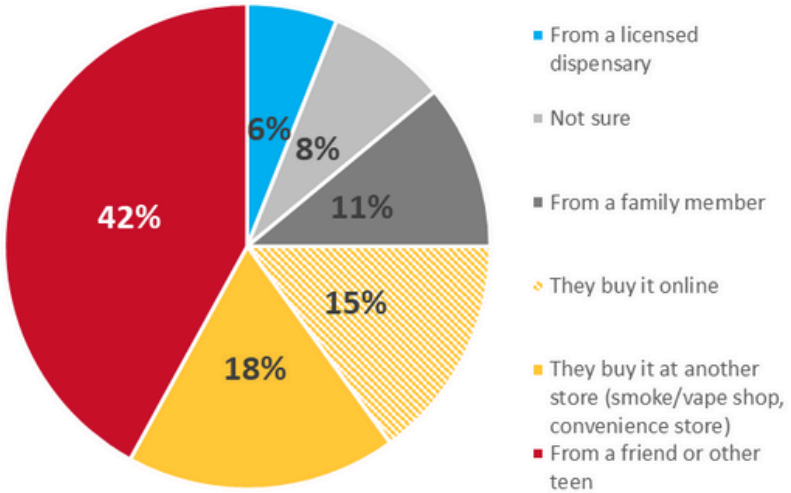
This is the first time students have reported a reason for use (students were asked: If you have tried marijuana, what was the main reason you tried it?). This question is expected to be included in future cycles of the YRBS/YTS. However, due to different methodologies between YPBS and YRBS/YTS, these data will not be comparable in the future. This initial finding will help inform youth prevention efforts including media campaigns.

Table 1: Main Reason for Trying Cannabis Among Maryland Teens Aged 14-19 by Demographics (2023)

	To experiment or to try it	To fit in with a group or have a good time with friends	Because of depression or anxiety	Because of boredom
Asian	20%	67%	12%	*
Black	15%	52%	18%	15%
White	23%	33%	24%	21%
Hispanic/Latino	6%	21%	55%	18%
Other/Multiracial	12%	33%	40%	15%
Overall	18%	34%	29%	19%

- Overall, the most common reason students surveyed tried cannabis was to fit in with a group or have a good time with friends. Further, this was the leading reason selected among Asian, Black, and White students.
- The second most common reason selected for trying cannabis was because of depression, which was also the leading reason among Hispanic/Latino and Other/Multiracial students.

Figure 14: Usual Source of Cannabis Among Teens Aged 14-19 (2023)



Source: YPBS-23 Notes (1) it is unknown whether students who obtained cannabis from a licensed dispensary purchased it themselves or obtained it from a friend/family member of legal age who purchased it (2) it is unknown whether the cannabis obtained by students from a family member, friend, or other teen was cannabis from a licensed dispensary or from another source (e.g., smoke/vape shop, convenience store, etc.)
Question: Where do most teens who use marijuana usually get it?

- Most teens reported friends or other teens as the main source of obtaining cannabis.
- Over a third of teens reported obtaining cannabis directly from unregulated sources ("another store" or "online") or they were not sure where cannabis was obtained. Unregulated cannabis may pose even greater risks to youth as products are not subject to the same (or possibly any) product safety testing. Contents may be higher or lower in THC than labeled and/or contain harmful contaminants.
- Six percent said they obtained cannabis from a licensed dispensary; however, the survey did not distinguish whether youth purchased cannabis themselves from a licensed dispensary, or if respondents were referring to cannabis from a licensed dispensary but purchased by an adult of legal age.
- Maryland law requires a 21+ ID check for medical and adult-use cannabis as well as for intoxicating hemp products. These findings highlight a potential opportunity to reduce sales to minors through secret shopper programs. Such programs could be implemented for both regulated and unregulated retail cannabis environments (i.e., from a smoke/vape shop, convenience store, etc.).

Adult-Use

Legal sales of adult-use cannabis began statewide on July 1, 2023. Dispensaries licensed by the MCA are the only place to legally buy regulated cannabis in Maryland.[34] Adult-use consumers are required to show valid government issued ID to verify their age is 21 or above, and they may only purchase up to the personal use amount, which is up to 1.5 ounces of flower (pre-packaged flower and pre-rolls), 12 grams of concentrates (vapes, and/or wax, shatter, budder, resin), or 750 mg of THC (edible gummies, chocolates, beverages, capsules, tinctures).

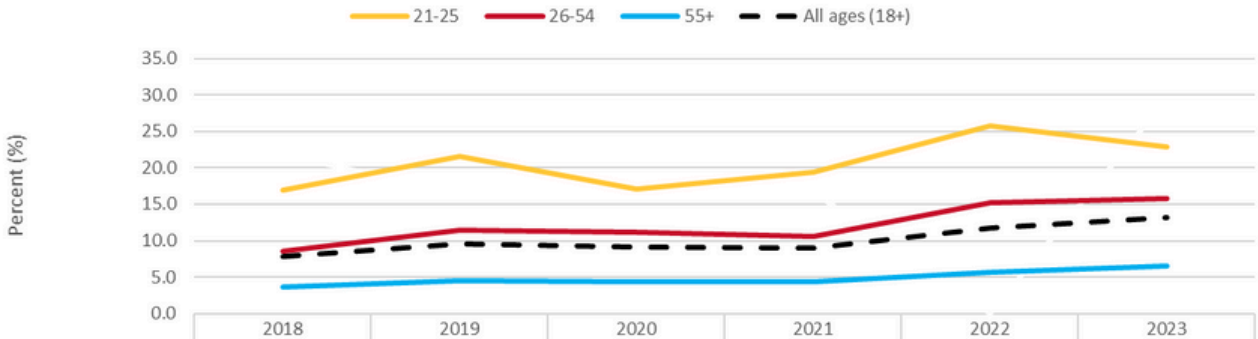
[34] MCA Medical and Adult Use Dashboard, https://cannabis.maryland.gov/Pages/Data-Dashboard.aspx. See Licensee tab.

Frequency of Use

Data Note

The Maryland Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing telephone survey of health behaviors among Maryland adults. Cannabis-related questions were first included in the 2018 Maryland BRFSS. As BRFSS data are collected throughout the calendar year, some Maryland BRFSS 2023 data were collected after the start of adult-use sales. Future survey cycles are needed to fully assess changes in use following adult-use legalization. Due to space limitations, data from 2021 to 2023 are presented in most figures. Additional years can be found in Appendix A.

Figure 15: Current Cannabis Use (Past 30 Days) in Maryland Adults (2018-2023)

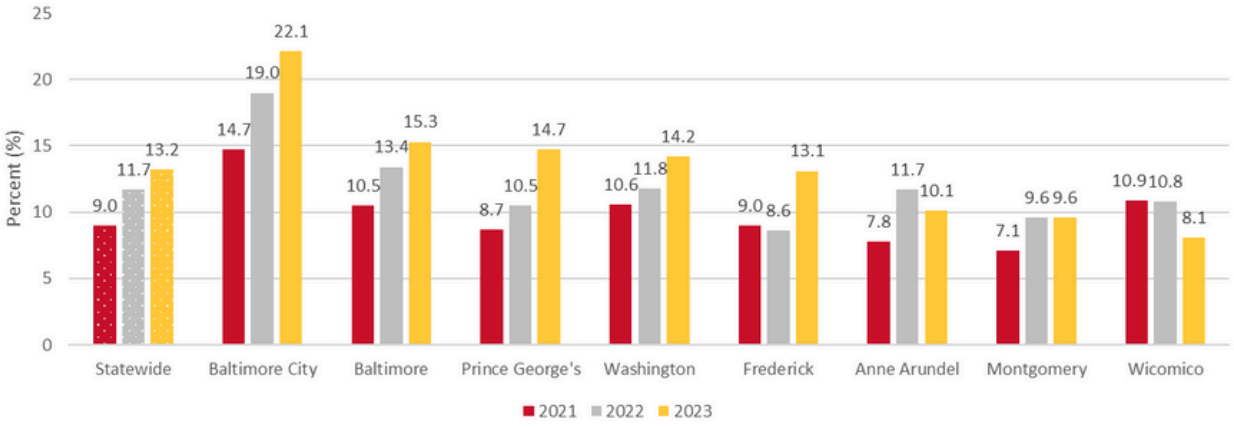


	2018	2019	2020	2021	2022	2023
18-20	21.8	16.3	17.4	16.7	0.0	29.5
21-25	16.9	21.5	17.1	19.4	25.8	22.8
26-54	8.5	11.4	11.1	10.6	15.2	15.8
55+	3.7	4.5	4.4	4.4	5.6	6.6
All ages (18+)	7.9	9.6	9.2	9.0	11.7	13.2

Source: Maryland BRFSS 2018-2023
"Current use" is defined as past month or past 30-day.
National BRFSS prevalence estimates for current cannabis use are not available for comparison since cannabis is an optional module and not part of the core survey. In this report, the age categories have been updated to separate 21-25 and 26-54 age groupings. Due to small counts and suppression rules, the 18-20 age grouping is not reported for all years and is not presented in the graph.

- Over the period 2018 to 2023, rates of current cannabis use have increased in every age group. Younger adults, 18-20 and 21-25, consistently had the highest rates of current cannabis use.
- Since 2021, overall current cannabis use increased from 9 to 13 percent.
- Data from 2023 reflects a mixture of responses collected before and after adult-use legalization. Longer term data collection is needed to assess changes in past-month cannabis use following expanded legalization for adult-use.

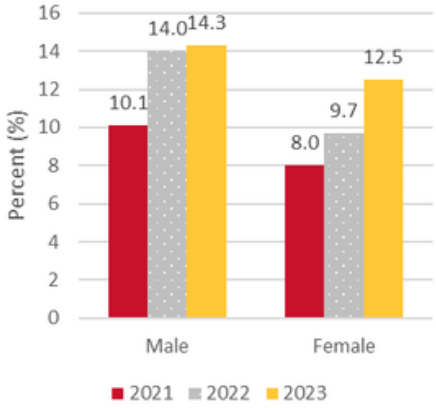
Figure 16: Current Cannabis Use (Past 30 Days) in Maryland Adults by Jurisdiction (2021-2023)

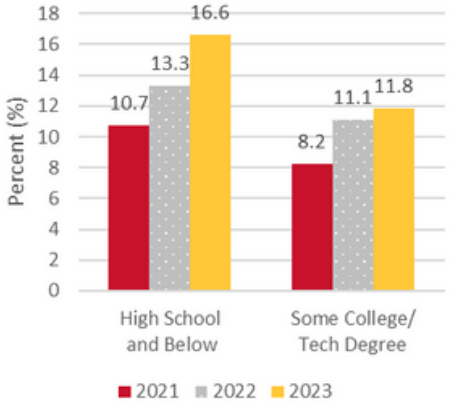


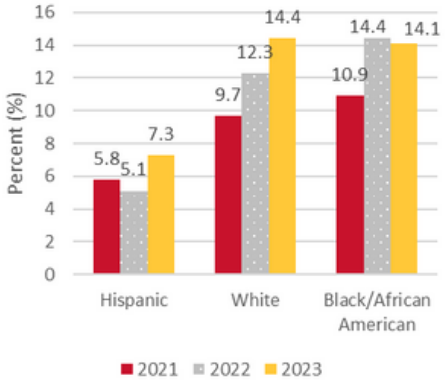
Source: Maryland BRFSS 2021-2023
Only jurisdictions with three years of data are presented in the figure. Due to small counts, data from many jurisdictions was suppressed. See Appendix A for a complete listing of data by jurisdiction.

- In 2023, Baltimore City had the highest prevalence of current cannabis use at 22 percent, and use trended upward from 2021 to 2023.
- Between 2022 to 2023, Anne Arundel and Wicomico Counties had decreases in prevalence of current use, while Prince George's and Frederick Counties had the steepest increases during the same time period.

Figure 17: Current Cannabis Use (Past 30 Days) Among Maryland Adults by Gender, Education, and Race/Ethnicity (2021-2023)



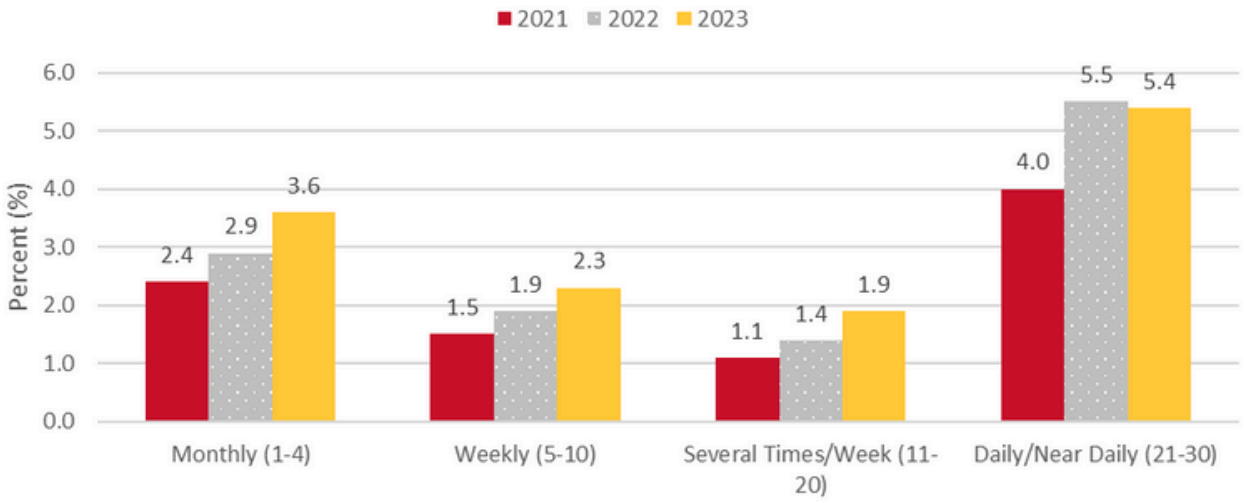




Source: Maryland BRFSS 2021-2023
See Appendix A for additional demographics

- Males continue to report higher rates of current cannabis use than females, however rates of current cannabis use among females increased about 56 percent (from 8.0 to 12.5 percent) from 2021 to 2023, while rates of use among male increased about 41 percent (from 10.1 to 14.3) during the same time period, thus narrowing the gap in use.
- Rates of current cannabis use was highest among adults with a high school education or below, reaching 16.6 percent in 2023, up from 13.3 percent in 2022 and 10.7 percent in 2021. Meanwhile, those with some college or a technical degree showed a slight increase to 11.8 percent in 2023.
- Rates of current use among Hispanic adults was about half that of White and Black/African American adults, however it increased modestly from 2021 to 2023.
- In 2023, rates of current use was highest among White adults, having increased from 12.3 to 14.4 percent between 2022 and 2023. Over that same period, rate of current use decreased slightly among Black/African American adults.

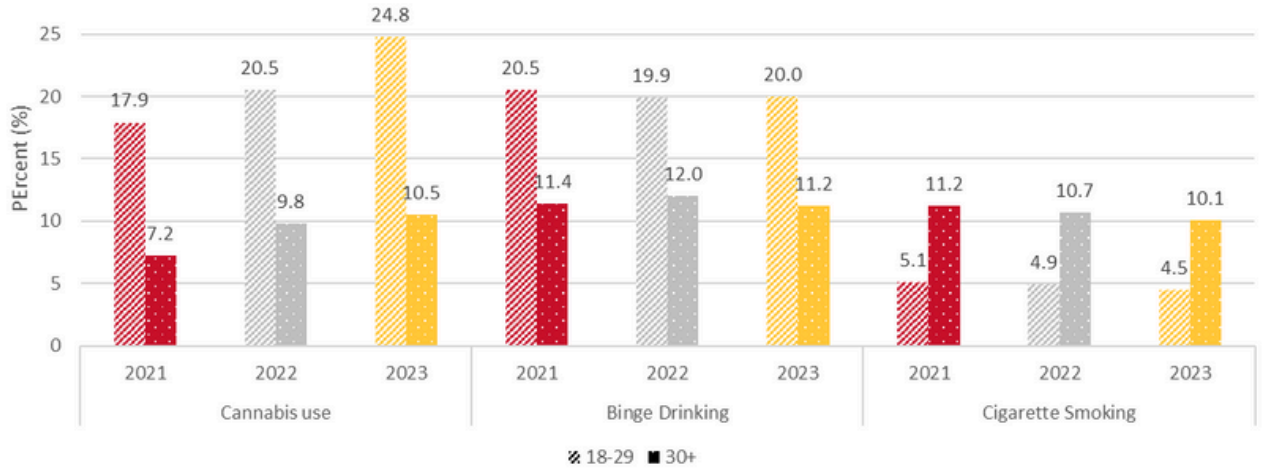
Figure 18: Frequency of Current Cannabis Use (Past 30 Days) Among Maryland Adults (2021-2023)



Source: Maryland BRFSS 2021-2023
Question: During the past 30 days, on how many days did you use marijuana or cannabis?

- In 2023, about 5 percent of adults reported daily or near-daily cannabis use (21-30 days per month), which was also the most common frequency of use reported each year.
- From 2021 to 2023, the frequency of cannabis use increased in each of the other groupings: monthly, weekly, and use several times per week.

Figure 19: Current Substance Use (Past 30 Days) Among Maryland Adults (2021-2023)

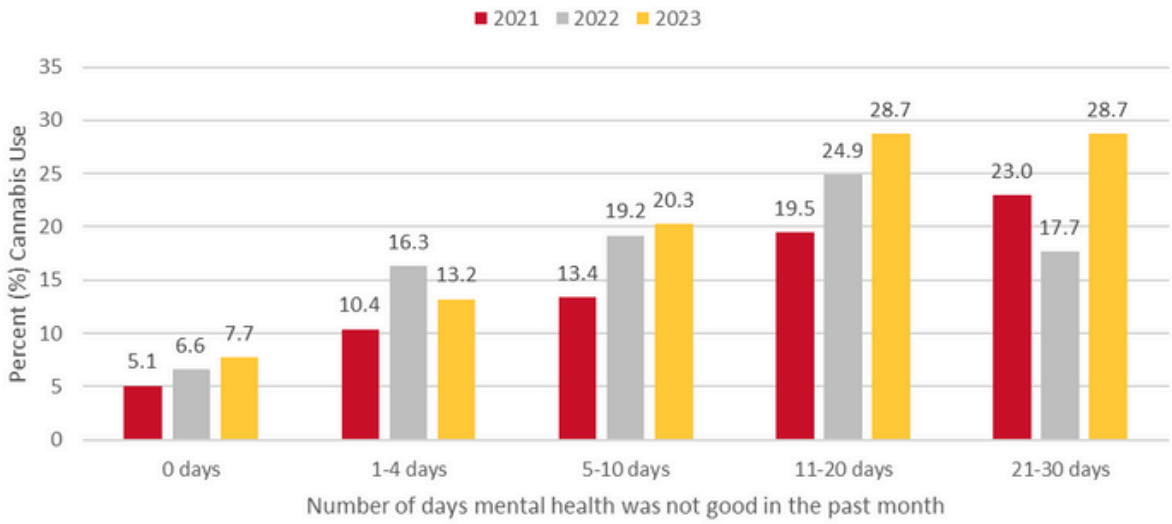


Source: Maryland BRFSS 2021-2023

Questions: During the past 30 days, on how many days did you use marijuana or cannabis? Considering all types of alcoholic beverages, how many times during the past 30 days did you have 5 or more drinks for men or 4 or more drinks for women on an occasion? Have you smoked at least 100 cigarettes in your entire life? Note: data for each category (cannabis use, binge drinking, cigarette smoking) are reported as "any use" in the past month (i.e., prevalence).

- From 2021 to 2023, rates of current cannabis use among younger adults (18 to 29 years) has steadily increased, from about 18 to 25 percent, while binge drinking has remained steady at around 20 percent, along with cigarette smoking, which is the lowest rates of current substance use (approximately 5 percent).
- In 2023, rates of current cannabis use among older adults (30+) increased slightly to about 11 percent, which is similar to the rates of binge drinking and cigarette smoking in this age group.
- Overall, younger adults show greater variation in rates of current substance use with notably higher rates of cannabis use and lower cigarette use, while older adults show less variation across substance use types.

Figure 20: Percent of Current Cannabis Use (Past 30 Days) Among Maryland Adults by Mental Health Status (2021-2023)



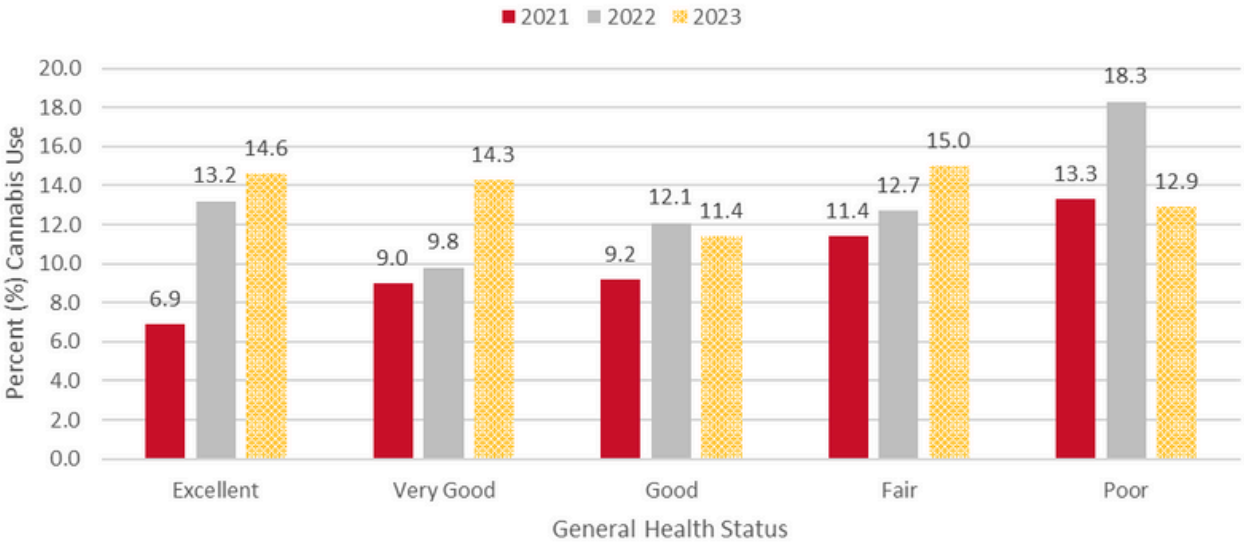
Source: Maryland BRFSS 2021-2023

Questions: During the past 30 days, on how many days did you use marijuana or cannabis? Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good? Note: cannabis use refers to "any use" in the past month (i.e., prevalence).

Note: these data do not indicate whether cannabis improved or worsened mental health. Poor mental health and diagnosed conditions should be evaluated and treated by a healthcare professional.

- From 2021 to 2023, there was a clear trend with rates of current cannabis use increasing as the number of days of poor mental health increased.
- From 2021 to 2023, current cannabis use rose from 23 to about 29 percent in those reporting 21 to 30 days of poor mental health in past month, which was nearly four times the rate of current use compared to those who reported zero days of poor mental health.
- Given the association between poor mental health days and cannabis use, which was also observed in youth, and documentation in the literature on the harms of cannabis to mental health, public education efforts on mental health effects may be warranted.
- Additionally, these findings may be valuable for healthcare providers, who may consider additional assessments of mental health symptoms in patients who report current cannabis use and vice versa.

Figure 21: Percent of Current Cannabis Use (Past 30 Day) Among Maryland Adults by General Health Status (2021-2023)

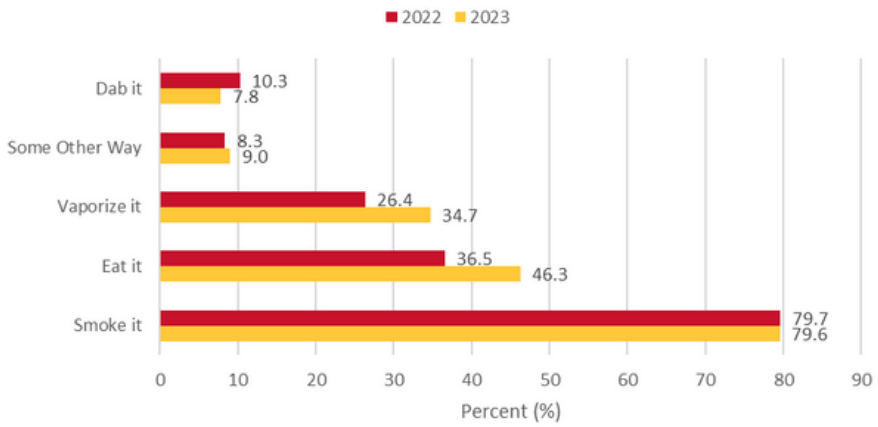


Source: Maryland BRFSS 2021-2023

- In 2022 and 2023, there was no clear trend between perceived general health status and current cannabis use. This is notable because, in 2021, it appeared that current cannabis use increased as perceived health status worsened; however, this observed change may have resulted from overall increases in current cannabis use among Maryland adults from 9 to 13 percent from 2021 to 2023 (see Figure 15).

Methods of Use

Figure 22: Methods of Consumption Among Maryland Adults Who Currently Use Cannabis (Past 30 Days) (2022-2023)



Source: Maryland BRFSS 2022-2023

Question: During the past 30 days, did you smoke it, eat or drink it, vaporize it, dab it, use it in some other way? Dab refers to a cannabis concentrate typically high in THC that is heated and then inhaled.

Multiple options could be selected, so totals may exceed 100 percent.
Findings are not comparable to prior years of Maryland BRFSS due to changes in the response options

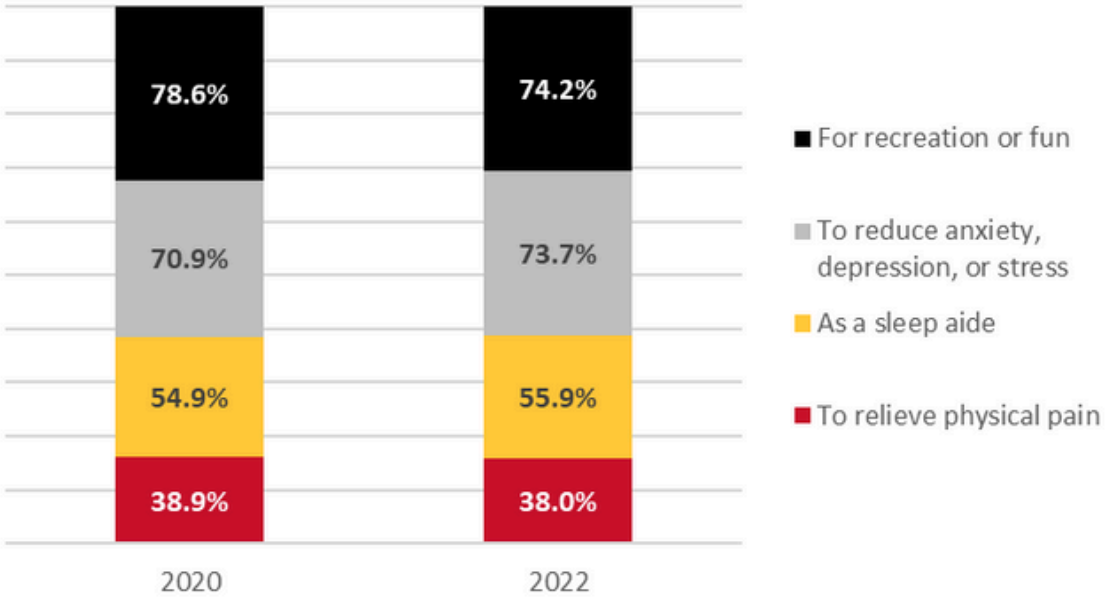
- About 80 percent of current consumers reported smoking cannabis, making it the most frequently used method in 2022 and 2023.
- Edible and vaping as methods of use increased from 2022 to 2023 and were the second and third most common methods of use, respectively. Particularly with edibles, these findings have implications for consumer education, including delayed onset and potentially stronger effects with consumption of edible products, as well as adults with children or pets in the home should ensure that cannabis is kept securely locked and up, away, and out of sight to prevent accidental or intentional youth exposure.
- In 2022 and 2023, the totals exceeded 100, indicating Maryland adults who consume cannabis do so using more than one method (i.e., smoke and vape). The number of adults who reported using multiple methods increased from 2022 to 2023.

Reason for Use and Usual Source

Data Note

The Maryland Young Adult Survey on Alcohol (MYSA) is conducted online biannually and examines patterns of alcohol and other drug use among young adults in Maryland ages 18 to 25. Cannabis use was first assessed in 2020. Results from the most recently completed data collection period in 2022 are reported here; however, they reflect the pre-legalization period.

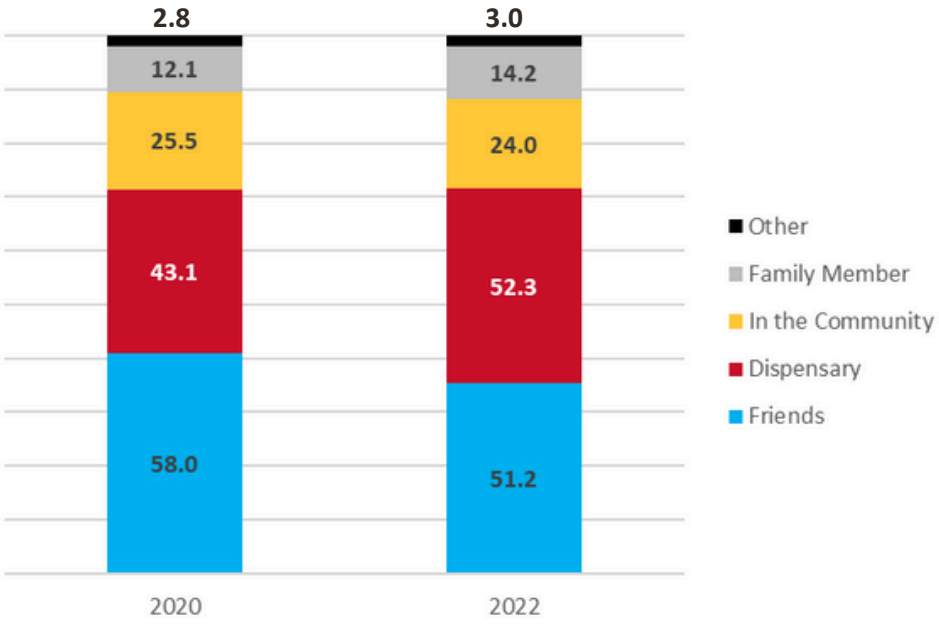
Figure 23: Reasons for Cannabis Consumption Among Young Adults (18-25) in Maryland (2020-2022)



Source: MYSA 2020-2022
Question: Why did you use cannabis?
Responses do not add to 100 percent due to multiple response options

- The reasons for cannabis use among young adults who reported consuming cannabis were similar between the survey years 2020 and 2022; top reasons were (1) recreation or fun and (2) mental health reasons or stress.

Figure 24: Usual Source of Cannabis Among Young Adults (18-25) in Maryland (2020-2022)



Source: MYSA 2020-2022
Note: Totals exceed 100 percent because respondents could select all applicable answers.
Question: Where did you get your marijuana from? Select all.

- Most young adults (18-25) who consumed cannabis reported getting it from dispensaries in 2022. This is a shift from 2020, where the most common source was friends. Since only medical cannabis was sold in licensed dispensaries in 2022, respondents who reported obtaining cannabis from dispensaries were either certified medical patients, obtained cannabis from a medical patient, or they may have obtained cannabis out of state, since the question does not specify, 'in Maryland." Another possibility is that respondents may have confused unlicensed retailers (i.e., smoke/vape shops) with licensed dispensaries.
- Other sources were generally consistent across survey years 2020 to 2022.

Cannabis Use in Pregnancy

There is no amount of cannabis use that's known to be safe in pregnancy or while breastfeeding. Cannabis crosses the placenta, as well as passes into breast milk, resulting in fetal and neonatal exposure.[35] The American College of Obstetrics and Gynecologists and the American Academy of Pediatrics recommend against using any type of cannabis (including CBD) while pregnant or breastfeeding.[36,37]

[35] TD Metz et al. Marijuana use in pregnancy and while breastfeeding. Obstet Gynecol. 2018;132(5):1198-1210. https://doi.org/10.1097/AOG.0000000000002878.
[36] American College of Obstetricians and Gynecologists Committee on Obstetric Practice. Committee opinion no. 722: Marijuana use during pregnancy and lactation. Obstet Gynecol 2017;130: e205–9. https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2017/10/marijuana-use-during-pregnancy-and-lactation
[37] SA Ryan et al., Committee on Substance Use and Prevention; Section on Breastfeeding. Marijuana use during pregnancy and breastfeeding: implications for neonatal and childhood outcomes. Pediatrics 2018;142): e20181889A https://doi.org/10.1542/peds.2018-1889.

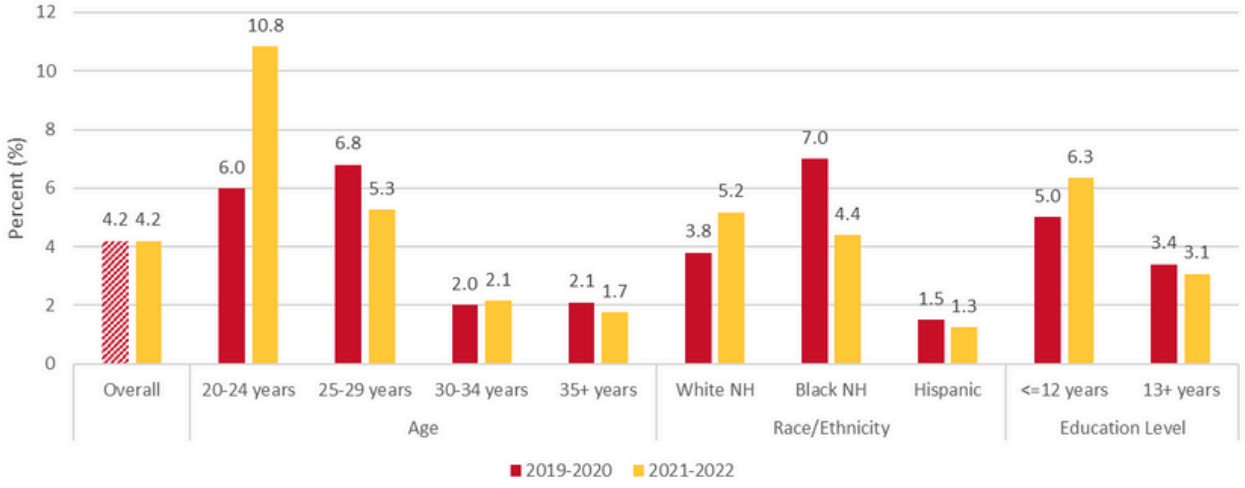
Frequency of Use

Data Note

The Maryland Pregnancy Risk Assessment Monitoring System (PRAMS) survey collects population-based data on experiences and behaviors among birthing individuals before, during, and shortly after pregnancy. Cannabis use during pregnancy was collected for the first time in the 2019 Maryland PRAMS. The most recent Maryland PRAMS data is from 2021 and 2022, prior to adult-use legalization. Data have been aggregated in two-year blocks to increase the sample size of subpopulations within the dataset (i.e., Maryland PRAMS 2019-2020 and Maryland PRAMS 2021-2022).

Data limitations: CDC defines the minimum overall response rate threshold to publish data externally as 50 percent. In 2021 and 2022, Maryland PRAMS had a weighted response rate of 44.1 and 43 percent, respectively, and thus did not meet the threshold. Therefore, Maryland PRAMS 2021 and 2022 data should be interpreted with caution. Findings have been omitted for subpopulations where counts are very small and unstable (i.e., those under age 20, those reporting race as "Other Non-Hispanic."). Finally, although the survey is anonymous, self-reported data may underestimate the true prevalence of cannabis use among pregnant individuals, due to stigma and/or fear of legal consequences.

Figure 25: Cannabis Use During Pregnancy in Maryland by Demographic Variables (2019-2020 and 2021-2022)



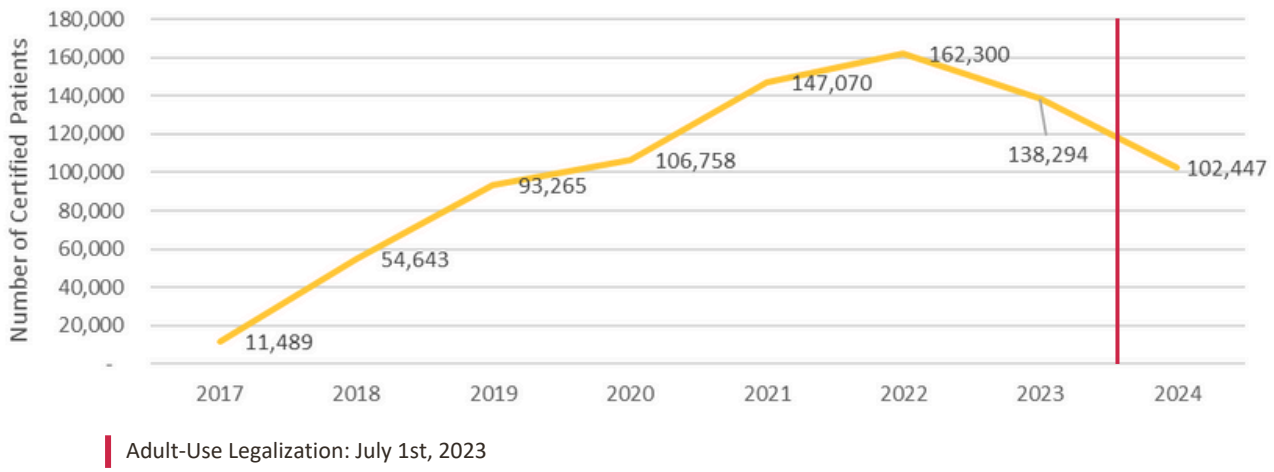
Source: Maryland Pregnancy Risk Assessment Monitoring System (PRAMS) 2019-2020 and 2021-2022
NH refers to non-Hispanic. As noted above, Maryland PRAMS 2021 and 2022 data should be interpreted with caution.

- In both 2019-2020 and 2021-2022, about four percent of individuals reported using cannabis during their most recent pregnancy. Use was highest in those under age 30 and people with 12 years of education or less (i.e., high school graduation or fewer years of schooling).
- In 2021-2022, White non-Hispanic (NH) individuals had higher rate of use, which was a change from 2019-2020 when Black non-Hispanic (MH) individuals had higher rates of use.

Medical Patient Use

The Maryland Medical Cannabis Program became operational on December 1, 2017. From 2017 to 2022, the program grew substantially, serving a population of about 162,000 patients in December 2022. When the adult-use market opened in July 2023, the patient count began to decline, decreasing by an average of 3,700 patients per month between July 2023 and October 2024. This declining trend in medical patients mirrors that of other states' medical cannabis programs following expanded legalization. Reasons for the decline include availability of products on the adult-use market, the anonymity of the adult-use market, and paperwork associated with program registration and annual medical re-certification. Despite the decline, the Administration remains committed to supporting Maryland's medical program and its patients, including through a novel annual, detailed survey that assesses their experiences in the program.

Figure 26: Annual Number of Certified Maryland Medical Patients (2017-2024)



Source: Maryland Cannabis Administration
"Certified patients" refer to those patients who have registered with MCA, have completed a visit with a certifying provider, and have a qualifying medical condition.[38]

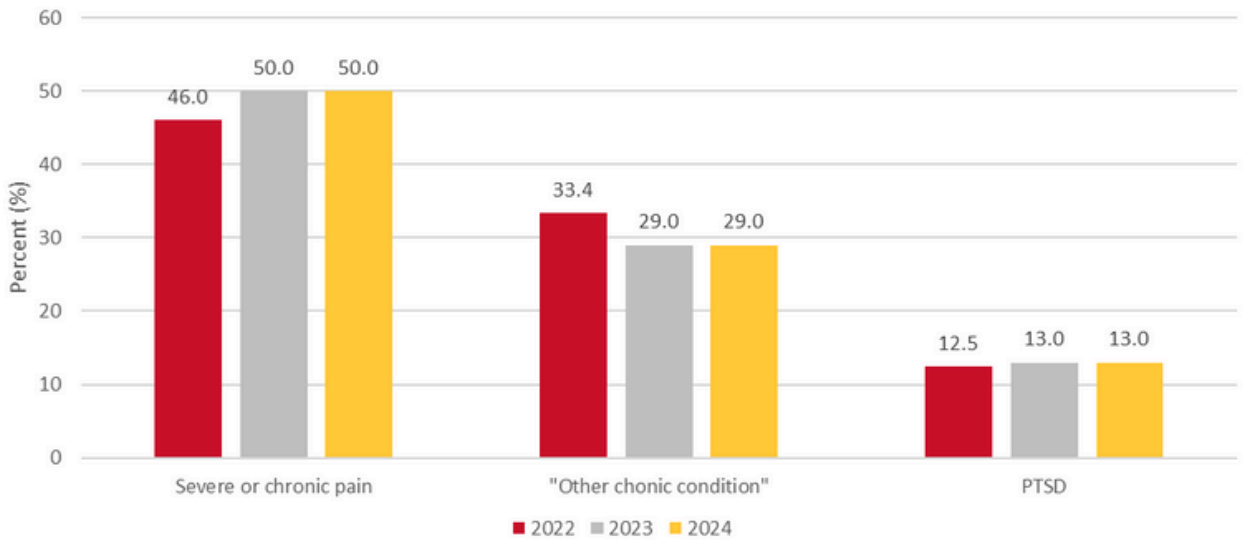
- The number of certified medical cannabis patients peaked in 2022, prior to adult-use legalization, with patient counts declining throughout 2023 and 2024.
- Between 2022 and 2024, approximately 35 percent of patients left the medical program or chose not to re-certify as a patient, thus letting their patient status expire. Similar declines have been observed in other states following expanded legalization. See more detail in the MMCPS-24 report accessible in Appendix F.

Data Note

The Maryland Medical Cannabis Patient Survey has been conducted annually in the fall of 2022, 2023, and 2024 to assess patterns of use, including dose, cannabis-related perceptions, risk behaviors, and medical program interactions. Approximately 13,000 patients have participated in each survey wave, including patients from all 24 jurisdictions. Each year the survey population has been a strong match to the demographics of the actual medical patient population, increasing confidence in the survey results.

[38] Qualifying medical conditions include cachexia, anorexia, wasting syndrome, severe or chronic pain, severe nausea, seizures, severe or persistent muscle spasms, glaucoma, post-traumatic stress disorder (PTSD), or another chronic medical condition which is severe and for which other treatments were ineffective.

Figure 27: Most Frequently Reported Qualifying Conditions for Medical Cannabis Patients (2022-2024)

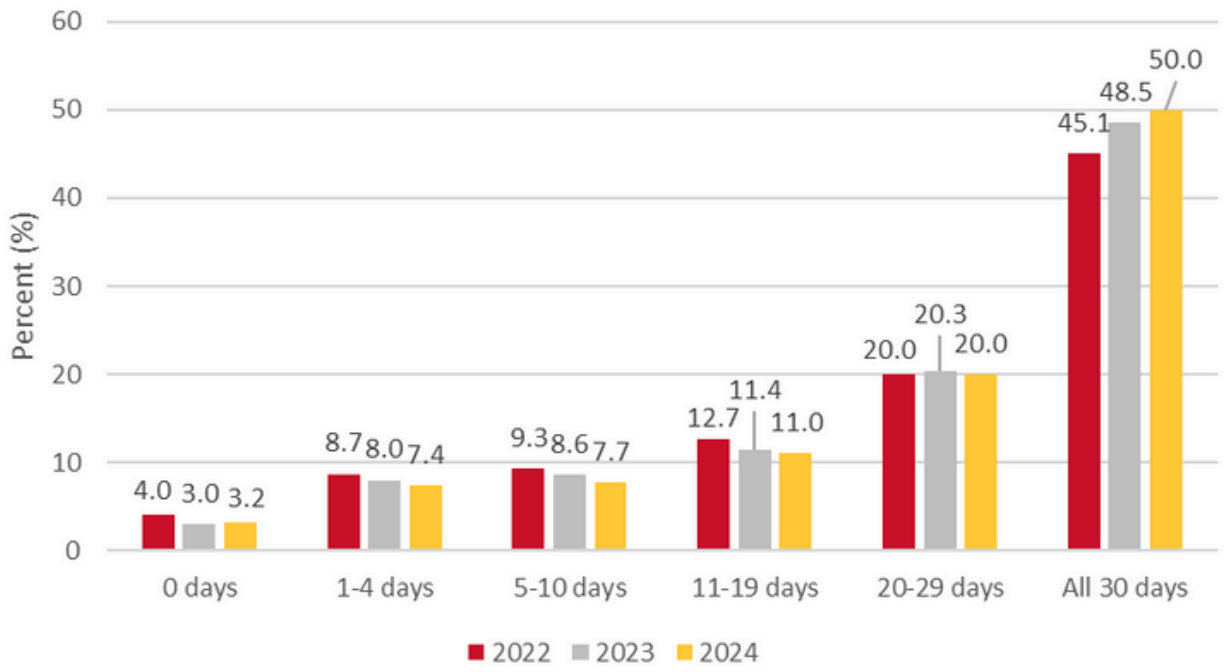


Source: MMCPS 2022-2024
Due to space limitations, only the top three qualifying conditions are displayed. For complete details on qualifying conditions, see MMCPS reports accessible in Appendix F
Question: What medical condition or symptom do you most commonly use cannabis to treat? Select one..

- In each survey year, about half of medical patients reported severe or chronic pain as their main qualifying condition and one-third of medical patients reported "other chronic condition which is severe and for which other treatment have been ineffective" (an allowed category in Maryland's medical program). The most reported conditions within the "other chronic condition" category were anxiety, depression, and insomnia. PTSD was the third most common qualifying condition.

Frequency of Use

Figure 28: Frequency of Current Cannabis Use (Past 30 Days) in Medical Cannabis Patients (2022 to 2024)

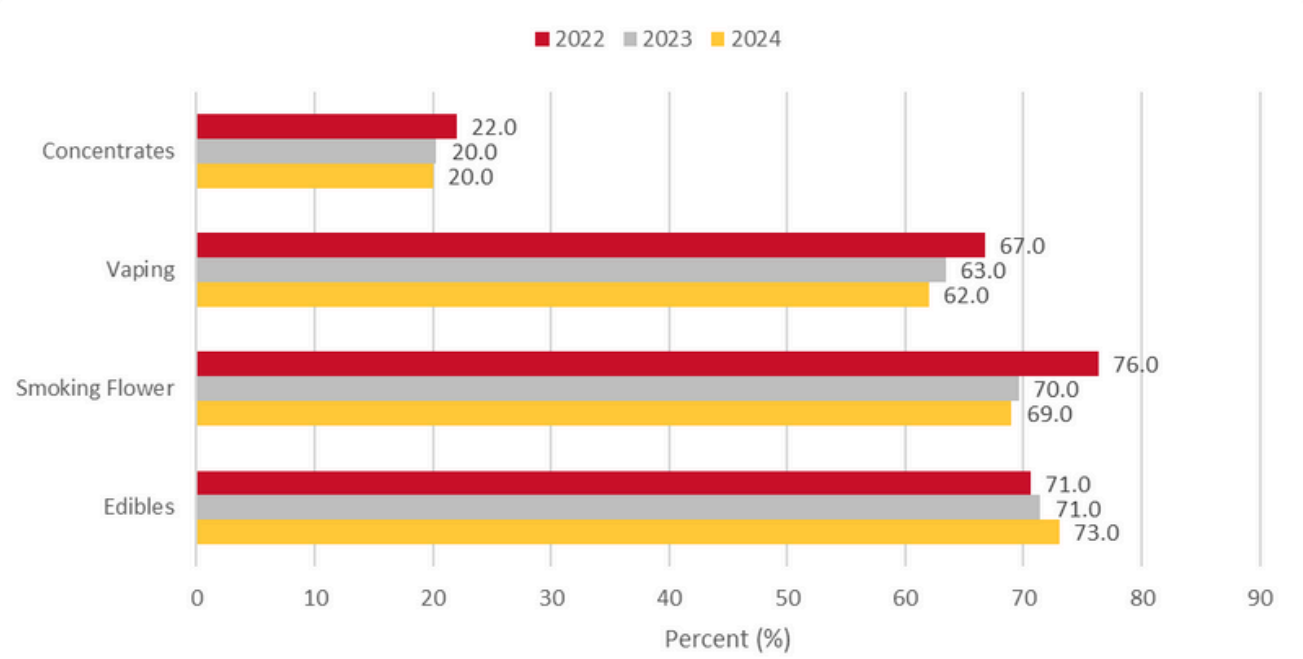


Source: MMCPS 2022, 2023, 2024

- Consistently in each survey year, most medical cannabis patients (about 96 percent) reported using cannabis in the past month, with about two-thirds reporting daily or near daily use (20+ days per month). This high frequency of use underscores the need to ensure responsible use materials are available and on display at the point of sale (i.e., in dispensaries).

Methods of Use

Figure 29: Methods of Consumption Among Medical Cannabis Patients (2022 to 2024)



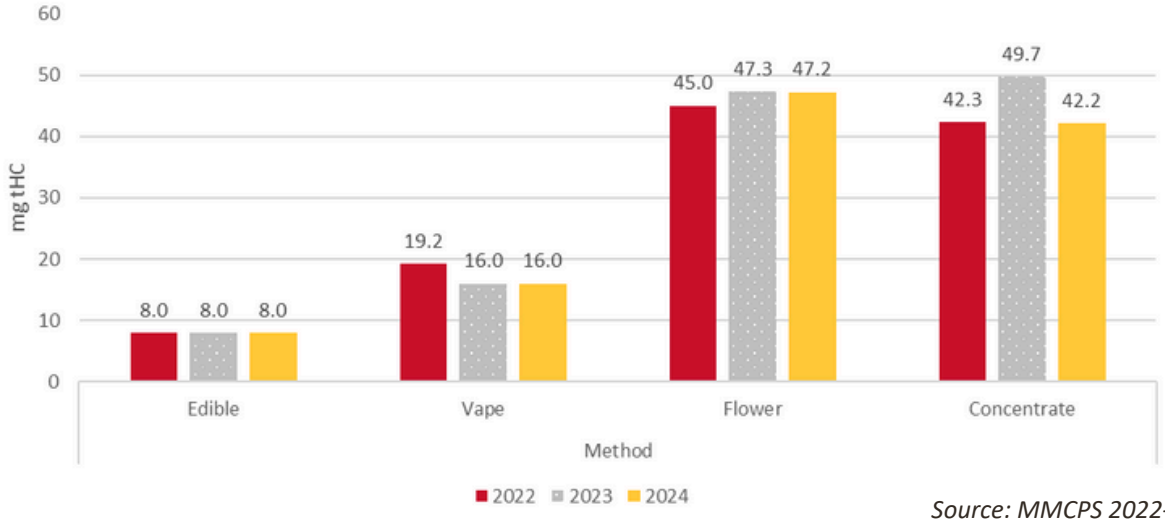
Source: MMCPS 2022, 2023, 2024
Note: the top four methods are displayed here. Full details on methods are available in MMCPS in Appendix F
Question: How many days in the past month did you smoke flower… vape… consume edibles… dab/use concentrates? Select all.

- Many medical patients report using multiple methods. Approximately two-thirds report consumption of edibles, vapes, and smoking in the past month.
- Between 2022 to 2024, smoking and vaping decreased slightly, while consumption of edibles increased.
- Edibles were the most frequent method in 2024, consumed by 73 percent of medical patients.
- Rates of dabbing have been consistent at about 20 percent among medical patients from 2022 to 2024.

Dose

There is not yet a best practice for measuring cannabis "dose," despite growing recognition of the importance of a standard dose or serving size of THC to help consumers monitor their use. The MMCPS has measured dose per use (or sitting) in each survey wave, deriving dose from a combination of the potency and quantity of a consumed cannabis product. Survey respondents were asked to (1) think about past month cannabis consumption from their primary method (i.e., flower) and (2) report the THC potency and the quantity of cannabis that they typically consumed per sitting. These two data points were then used to compute the typical dose of THC (mg/THC) per sitting, accounting for variables such as THC loss from side-stream smoke. Estimated dose was reported by product type for four most used methods by patients: flower, edibles, vape, and concentrate.

Figure 30: Estimated "Dose" Milligrams of THC per Sitting by Product Type (2022-2024)

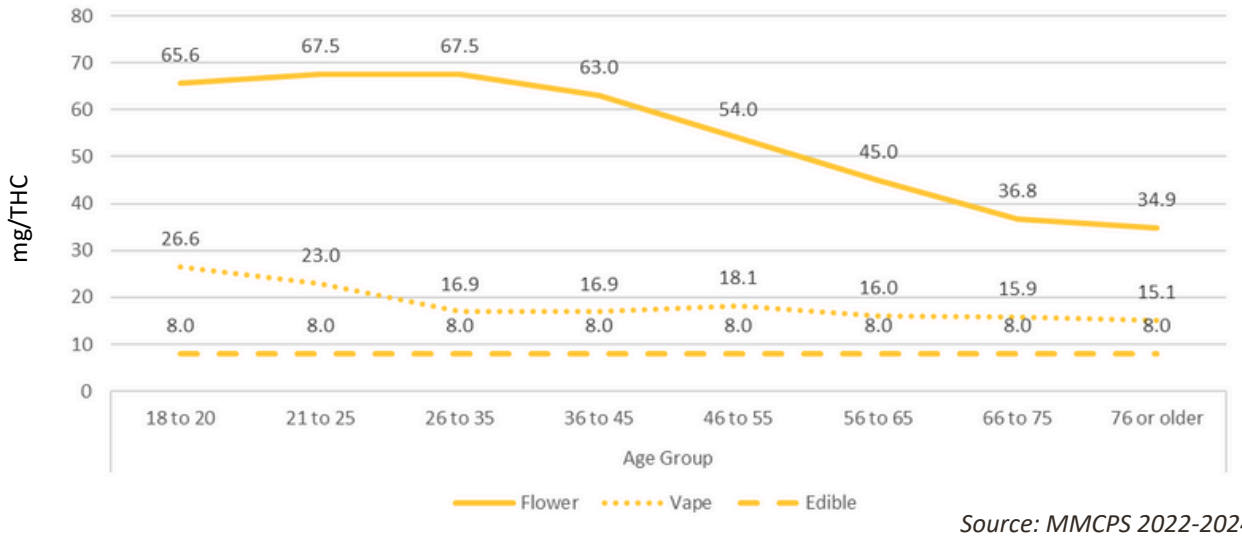


Source: MMCPS 2022-2024

Note: The 2022 dose estimates for vape, flower, and concentrate have been updated from the baseline study to account for THC loss due to method of administration (i.e., side-stream smoke that is emitted into the surrounding air but not inhaled by the consumer or the use of filters).

- The estimated THC dose by product type was relatively stable across the period 2022 to 2024.
- Estimated dose was highest with concentrate and flower. This finding may be explained by different patterns of consumption with flower compared to concentrate. For example, consumers may smoke more flower product (e.g., joint, pre-roll) per sitting than concentrate, even though concentrates typically have a higher THC percentage.
- Dose is easiest to measure with edibles because they are packaged in mg/THC units. It's more challenging to calculate with inhaled products (e.g., flower, vape, concentrate) due to the separation of quantity and potency on product labels, therefore, caution should be exercised with the accuracy of the reported dose estimate for inhaled products. Furthermore, the amounts listed as consumed in this report are not standardized dose recommendations, as they do not exist. Standardized dosage (analogous to 12 ounces of beer/5 ounces of wine/1.5 ounces of liquor) has not been established for cannabis.

Figure 31: Pooled Median Dose (mg/THC) Per Sitting by Age Among Medical Patients (2022-2024)



Source: MMCPS 2022-2024

Due to the consistency in dose each year 2022 to 2024, median dose data was pooled (combined) to generate a larger survey sample for analyzing dose by demographics including age.

- Median dose of flower and vape products drop with advancing age.
- Median dose of flower and vape is about 50 percent less in the older age group (76+) compared to the youngest age groups (18-20 and 21-25).
- Edible dose was consistent across all age groups.
- Certifying providers and other healthcare professionals may want to discuss flower and vape dose/amount consumed with patients to ensure their typical dose is appropriate for their qualifying condition, especially for younger patients. Frequent use of high THC products increases the risk for adverse (unwanted) effects and addiction.

Chapter Summary

Cannabis use among youth has continued to decrease, although this trend does not yet reflect changes post adult-use legalization.

- In the 2022-2023 school year, approximately 3 percent of middle school and 14 percent of high school students in Maryland used cannabis in the past month ("current use").[39] This is a slight decrease observed from 4 percent in middle school and 15 percent in high school during the 2021-2022 school year.[40]
- Consistent with the baseline study, current use is higher in females, students who identify as lesbian, gay, bisexual, or questioning/other, high school students who are transgender, and students who report poor mental health.[41]
- Smoking remained the most common method of use among high school youth (method was not assessed in middle school).[42]
- The most common frequency of use among students who reported current use was 1-2 times per month; however, there was an increase in students who reported use at the highest frequencies (40 or more times per month) between the 2021-2022 and the 2022-2023 school years.[43] This is concerning given the intoxicating effects as well as potential harms of frequent use on the developing brain and risk for current or future problem use and addiction.

Cannabis use among adults has increased, although this trend is not indicative of changes post adult-use legalization.

- In 2023, approximately 13 percent of Maryland adults used cannabis in the past month ("current use"), up from nine percent in 2021.
- In 2023, consistent with the baseline study, current use was highest in younger adults under 25, males (which is different from youth use, where more females report current use), those with less than a high school diploma, and those more poor mental health days.[44]
- In 2022 and 2023, the most frequent method of use was smoking, with about 80 percent of adults who used cannabis in the past month reporting having smoked it.[45] However, many adult consumers reported use of multiple methods and use of edibles, in particular, increased from 2022 to 2023.

Data is limited on cannabis use in pregnancy and while breastfeeding.

- In 2021-2022, about four percent of women reported using cannabis during their last pregnancy.[46] This data is consistent with rates reported in the baseline study.
- Population-level data on cannabis use while breastfeeding has not been collected and is a gap area.

The number of certified medical cannabis patients has declined since adult-use legalization.

- The number of certified Maryland medical cannabis patients decreased by approximately 35 percent from its peak of 162,000 in December 2022 to 102,447 in December 2024. This is consistent with decreases seen in other state medical cannabis programs after adult-use legalization.

[39]Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (YRBS/YTS) 2021-2022 and 2022-2023 available at https://health.maryland.gov/phpa/ccdpc/Reports/Pages/YRBS-Main.aspx
[40] Ibid
[41] Ibid
[42] Ibid
[43] Ibid
[44] Ibid
[45] Ibid
[46] Maryland Pregnancy Monitoring System (PRAMS) 2019-2020 and 2021-2022.

- Most patients (96 percent) reported use of cannabis in the past month, with two-thirds reporting use daily or most days. This was consistent from 2022 to 2024.[47]
- Between 2022 to 2024, rates of smoking and vaping decreased slightly, while consumption of edibles increased. Edibles were the most frequent method of use in 2024, consumed by 73 percent of medical patients.[48]
- Estimated dose per sitting by product type has been consistent from 2022 to 2024. Younger patients (under age 25) and male patients report using higher THC doses.[49]

[47] Maryland Medical Cannabis Patient Survey (MMCPS) 2022, 2023, 2024 available at https://cannabis.maryland.gov/Pages/Reports.aspx
[48] Ibid
[49] Ibid

Chapter II: Perceptions and Attitudes

Introduction

This chapter addresses perceptions related to cannabis use among youth, young adults, and medical cannabis patients. In addition, this chapter examines educational needs and priorities related to adult-use cannabis legalization.

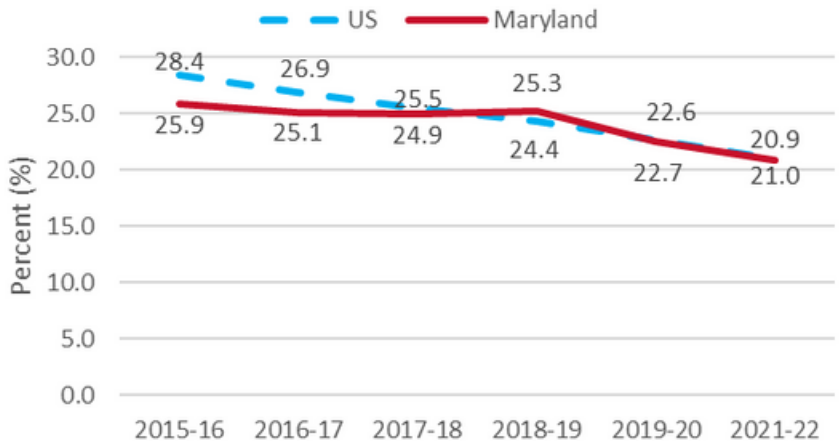
Perceptions of Risk

Risk perception strongly influences an individual's decision to use drugs, as well as to seek help.[50] Research has shown that the level of perceived risk can help predict future consumption of cannabis.[51]

Data Note

The National Survey of Drug Use and Health (NSDUH) publishes state-level data tables on perceptions related to cannabis, tobacco, alcohol, and other substances. Due to data collection and reporting timelines, the most recent NSDUH data (2021-2022) does not reflect changes since adult-use legalization. NSDUH, like many other surveys, uses the term "marijuana" to be consistent and comparable across previous survey cycles and because the term may be more familiar to survey respondents. The term, "cannabis" is used in this report to align with statutory language. For the purposes of this report, unless otherwise stated, both the words cannabis and marijuana mean the same thing.

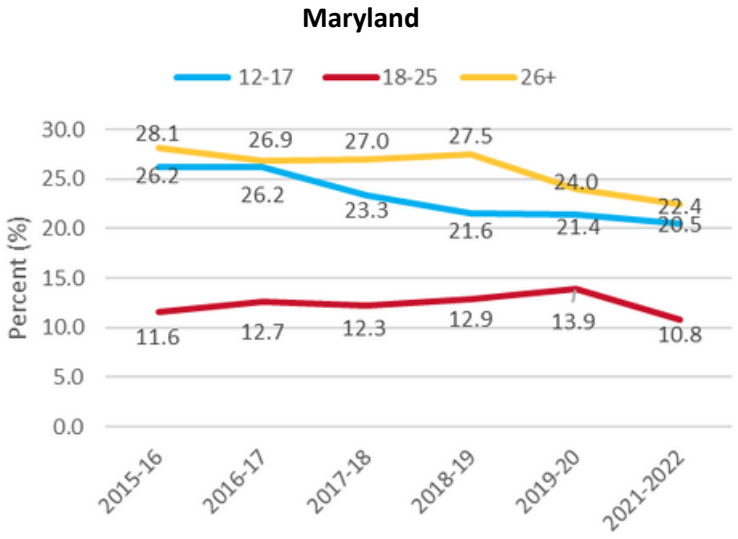
Figure 32: Perceptions of "Great Risk" from Smoking Cannabis Monthly Among U.S. Residents and Marylanders Ages 12+ (2015-2022)



[50] L. Montanari et al. Cannabis use among people entering drug treatment in Europe: A growing phenomenon?Eur. Addict. Res. 2017;23:113–121. https://doi.org/10.1159/000475810.

[51] M. Parker et al., Population-level predictions from cannabis risk perceptions to active cannabis use prevalence in the United States, 1991–2014. Addict. Behav. 2018; 82:101–104. https://doi.org/10.1016/j.addbeh.2018.02.030.

Figure 32 (Cont.): Perceptions of "Great Risk" from Smoking Cannabis Monthly Among U.S. Residents and Marylanders Ages 12+ (2015-2022)



Source: NSDUH 2015-2022
The second figure with age bands (12-17, 18-25, 26+) refers to Maryland residents only
Question: How much do people risk harming themselves physically and in other ways when they smoke marijuana once a month?

- The perception of 'great risk' has continued to decrease in Maryland and the U.S. from 2015 to 2022 among both youth and adults.
- In 2021-2022, the perception of 'great risk' from smoking cannabis once a month among Marylanders was approximately the same as the nationwide perception of risk (roughly 21 percent).
- The perception of 'great risk' of smoking cannabis once a month has remained lowest among 18 to 25-year-olds and is trending down among those 12 to 17. These findings are concerning given that the risk of physical and mental health harms from cannabis use are greater for youth and young adults, especially with frequent or heavy use.

Figure 33: Perception of "Great Risk" from Use of Various Substances Among Marylanders by Age Groupings (2019-2020 and 2021-2022)

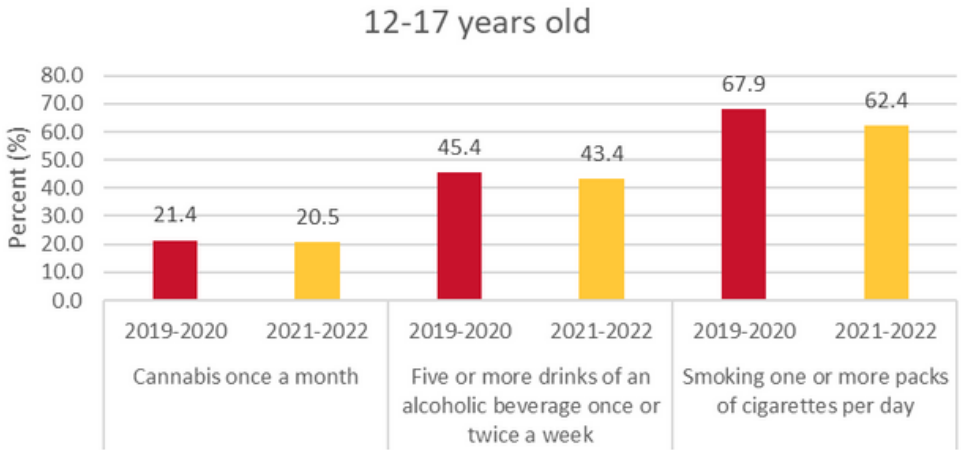
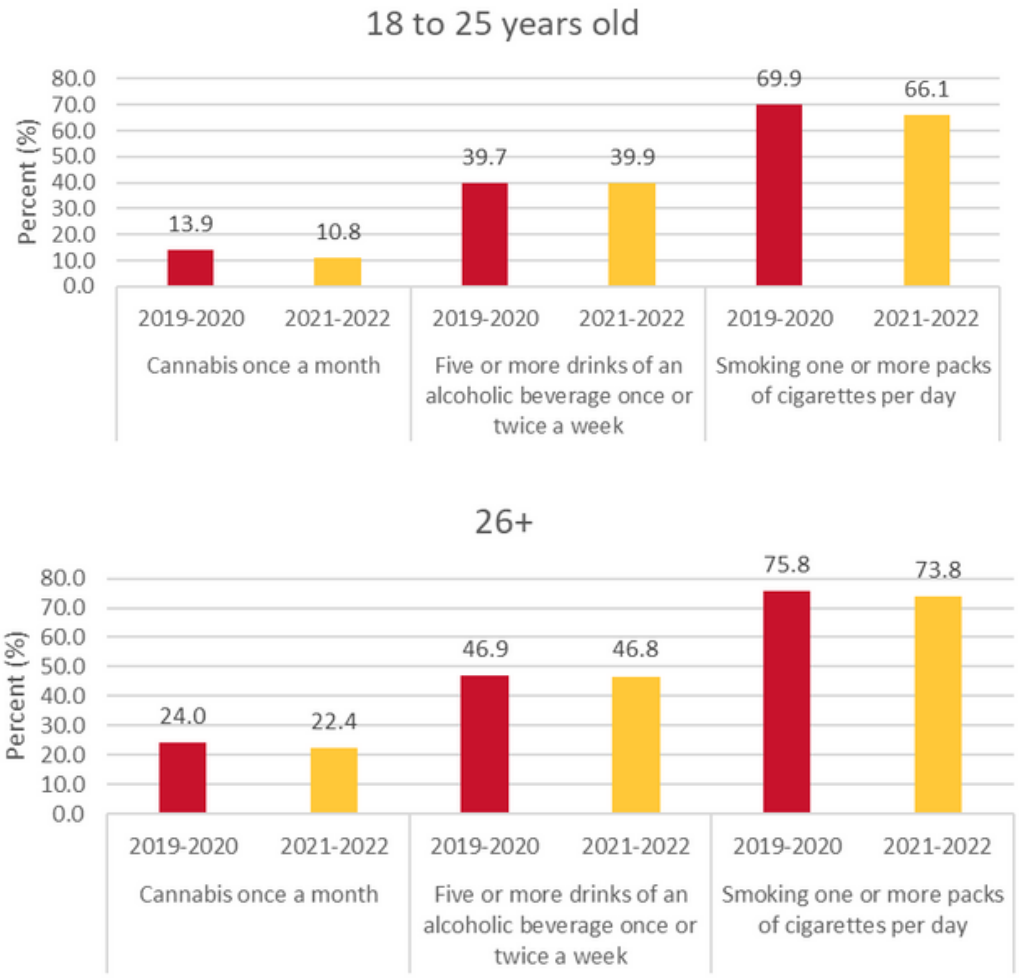


Figure 33 (Cont.): Perception of "Great Risk" from Use of Various Substances Among Marylanders by Age Groupings (2019-2020 and 2021-2022)



Source: NSDUH 2019-2020, 2021-2022

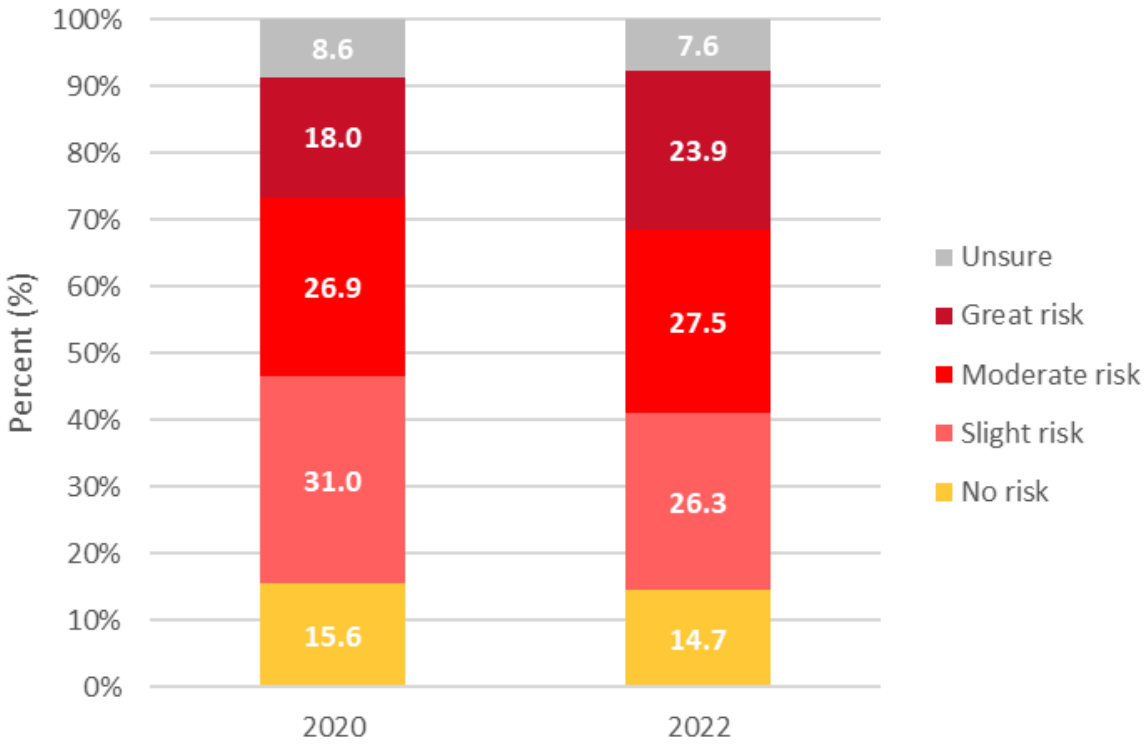
Question: How much do people risk harming themselves physically and in other ways when they… smoke marijuana once a month… have five or more drinks of an alcoholic beverage once or twice a week… smoke one or more packs of cigarettes per day?

- Risk perceptions for all substances dropped slightly between 2019-2020 and 2021-2022 in each age group.
- All age groups perceived a lower risk with monthly cannabis use compared to smoking and regular alcohol use. Smoking was associated with the highest risk perception in each age group.
- Among young adults aged 18-25, cannabis was seen as the least risky, with only about 11 percent perceiving it as a "great risk" in 2021-2022, compared to 66 percent for smoking cigarettes.
- Results should be interpreted with some caution given the serving size or "dose" in each response option may not be directly comparable (e.g., a pack a day of cigarettes or binge drinking compared to one cannabis joint per month).

Data Note

The Maryland Young Adult Survey on Alcohol (MYSA) includes questions on cannabis-related risk perceptions; however, these results do not reflect the period after adult-use legalization. MYSA data was last collected and published in 2022.

Figure 34: Perception of Risk of Physical or Other Harm When Drinking Alcohol in Combination with Cannabis Among Young Adults (Age 18-25) (2020-2022)



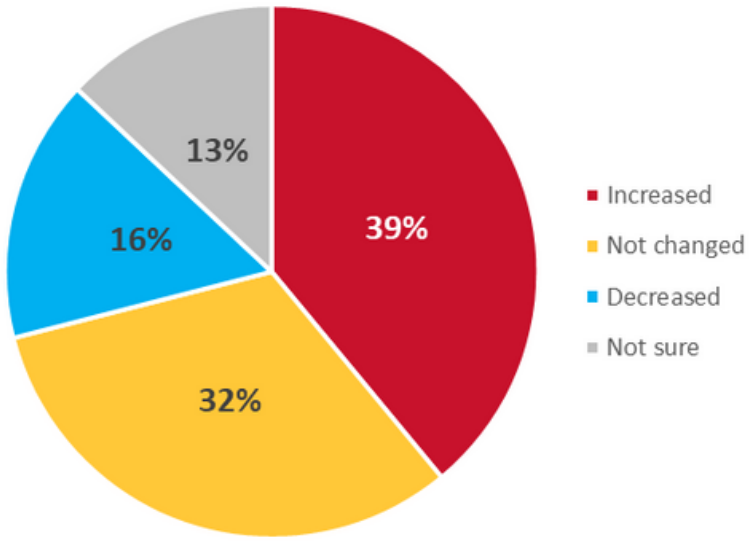
Source: MYSA 2020, 2022
Question: How much do people risk harming themselves physically and in other ways when they drink alcohol in combination with marijuana?

- The percentage of young adults (age 18-25) who felt that there is "great risk" of physical or other harm when drinking alcohol in combination with cannabis has increased from about 18 to 24 percent between 2020 to 2022. This is a positive finding.
- Additionally, the percentage who felt there is "no risk" or "slight risk" dropped from about 47 to 41 percent from 2020 to 2022. Efforts to educate young adults on risks associated with polysubstance use should continue.

Data Note

The Youth Pandemic Behaviors Survey 2023 (YPBS-23) was conducted online with youth ages 14-19 approximately six months after expanded legalization, providing initial insights into impacts of the policy change on youth perceptions.

Figure 35: Perceived Change in Teen Cannabis Use Since Adult-Use Legalization in Maryland (2023)



Source: MYSA 2020, 2022
Question: Compared to last school year, does it appear marijuana use among teens in Maryland…

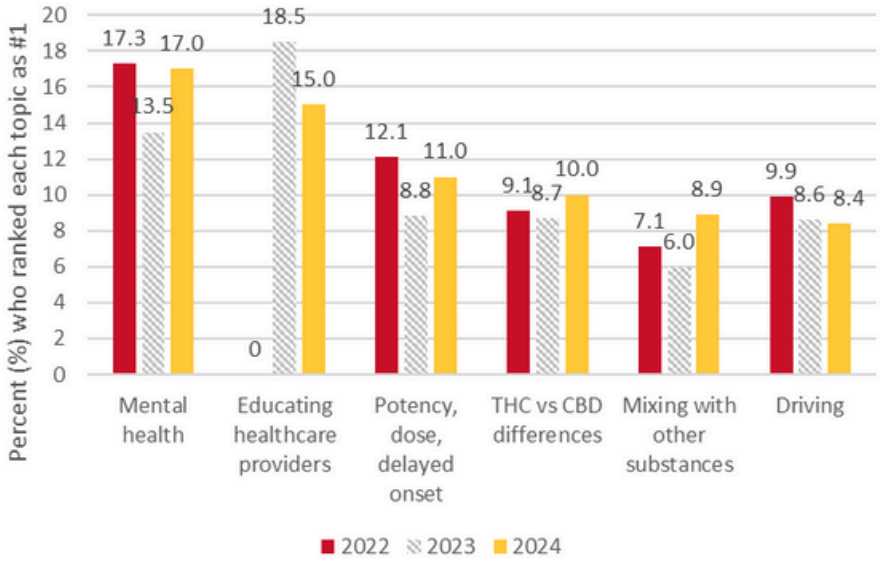
- Most students (39 percent) think there is more cannabis use among teens this school year compared to the previous school year, while slightly fewer (32 percent) think it hasn't changed. Only 16 percent think cannabis use decreased.
- This question was assessed approximately six months after the start of adult-use cannabis sales to assess perceived changes in teen use following expanded legalization.

Education Priorities

Data Note

Each year, the Maryland Medical Cannabis Patient Survey (MMCPS) has asked medical patients to think about adult-use cannabis and important topics on which to educate the public. Survey participants were asked to choose from a list of approximately 12 educational topics. Due to space limitations, only the top selected priorities from each year are listed below. See Appendix F to access to the MMCPS reports with full details.

Figure 36: Top Public Education Priorities Related to Adult-Use Cannabis, Ranked by Medical Cannabis Patients (2022-2024)



Source: MMCPS-22, MMCPS-23, MMCPS-24
Question: In thinking about adult-use (recreational) cannabis in Maryland, what do you find are the most important topics on which to educate the public? Please rank the topics in order of importance where the most important topic is #1.

- Mental health was the leading interest area for public education in 2022 and 2024. In 2024, patients were asked for the first time whether they were interested in "benefits" or "harms" to mental health, and the majority expressed interest in "benefits." (See details in Appendix F). Given the potential for harms to mental health documented in the literature, there may be a need to balance existing perceptions through public education efforts.
- Educating healthcare providers was asked for the first time in 2023 and was the top priority that year. It remains important to patients in 2024.
- Continued interest in education on potency, dose, delayed onset of effects, and differences between THC versus CBD indicate an opportunity to provide education, particularly at the point of sale (dispensaries), on content including cannabis “dose” and reading product labels.

Chapter Summary

Youth think more of their peers are using cannabis and risk perceptions related to cannabis use have continued to fall.

- About forty percent of teens think there is more cannabis use among their peers this school year compared to last (i.e., since adult-use legalization); slightly less think it stayed the same (32 percent) or were unsure (13 percent).[52]
- The perception of "great risk" from smoking cannabis once a month has trended down since 2015 among both adolescents (ages 12 to 17) and adults (26 years and older) and was lowest among young adults (18 to 25 years).[53] Data on risk perceptions since adult-use legalization is not yet available.

There may be potentially harmful misperceptions related to cannabis and mental health.

- Medical cannabis patients ranked "mental health" and "mental health benefits" as a top public education priority with adult-use legalization, although they may not be considering potential harms documented in the literature.

Perceptions of risk related to polysubstance use with cannabis may be improving; however, more rigorous data on cannabis-related risk perceptions is needed.

- Specific to polysubstance use, there were some encouraging findings with more young adults believing there is a "great risk" of physical or other harm when drinking alcohol in combination with cannabis, increasing from 18 to 24 percent between 2020 and 2022; and fewer who felt there is "no risk" or only a "slight risk" with co-use, dropping from about 47 to 41 percent across the same period.
- State-level data on risk perceptions, knowledge, and attitudes about cannabis is currently limited. However, plans for enhanced data collection with state-level surveys including YRBS/YTS, BRFSS, and ICPS will help close this data gap.

[52] Maryland Youth Pandemic Behavior Survey 2023 (YPBS-23) available at https://health.maryland.gov/phpa/ohpetup/Pages/YPB-Survey.aspx

[53] National Survey on Drug Use and Health (NSDUH) Maryland State Data 2015-2022 available at https://www.samhsa.gov/data/nsduh/state-reports-NSDUH-2022. The NSDUH survey only assesses the perceived risk of smoking cannabis once a month; other frequencies are not measured.

Chapter III: Public Health and Safety

Introduction

This chapter covers public health and safety measures related to cannabis use, including impaired driving and calls to poison centers.

Impaired Driving

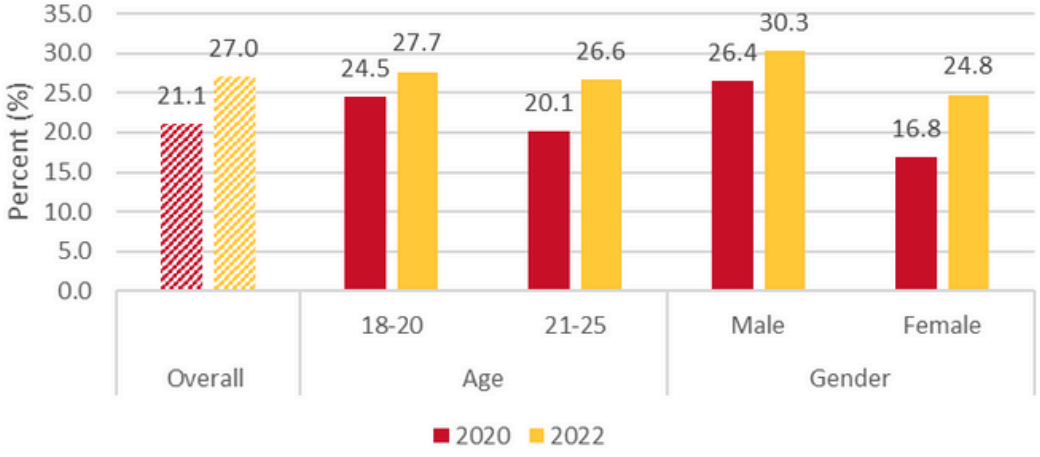
Smoking/consuming cannabis while driving and driving while impaired is illegal in Maryland. Citations can be issued by law enforcement for driving under the influence of cannabis. This has always been the case (i.e., impaired driving laws did not change with adult-use legalization).

Recent guidance suggests waiting at least six hours after using cannabis to drive.[54] It may not be easy for consumers to recognize impairment, the effects of cannabis consumption can be delayed, especially with edible products, and intoxication levels can vary during each usage, even if the amount used remains constant.

Data Note

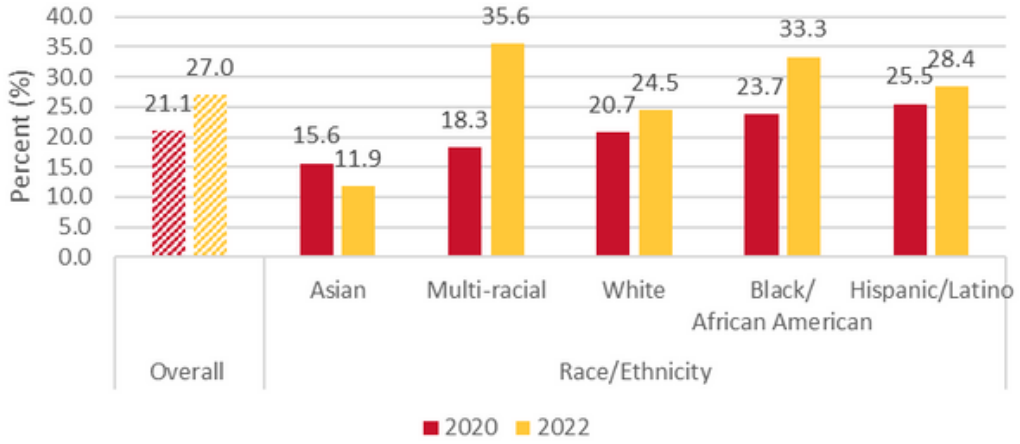
The Maryland Young Adult Survey on Alcohol (MYSA) includes data on cannabis-related driving behaviors; however, these data do not reflect the period after adult-use legalization. MYSA data was last collected and published in 2022.

Figure 37: Percent of Young Adults Who Drove within Three Hours of Using Cannabis in the Past Month by Age, Gender, and Race/Ethnicity (2020-2022)



[54] B Fischer et al. Lower-Risk Cannabis Use Guidelines: A comprehensive update of evidence and recommendations. Am J. of Public Health 2017;107(8): e1-e12. https://doi.org/10.2105/AJPH.2017.303818 .

Figure 37 (Cont.): Percent of Young Adults Who Drove within Three Hours of Using Cannabis in the Past Month by Age, Gender, and Race/Ethnicity (2020-2022)



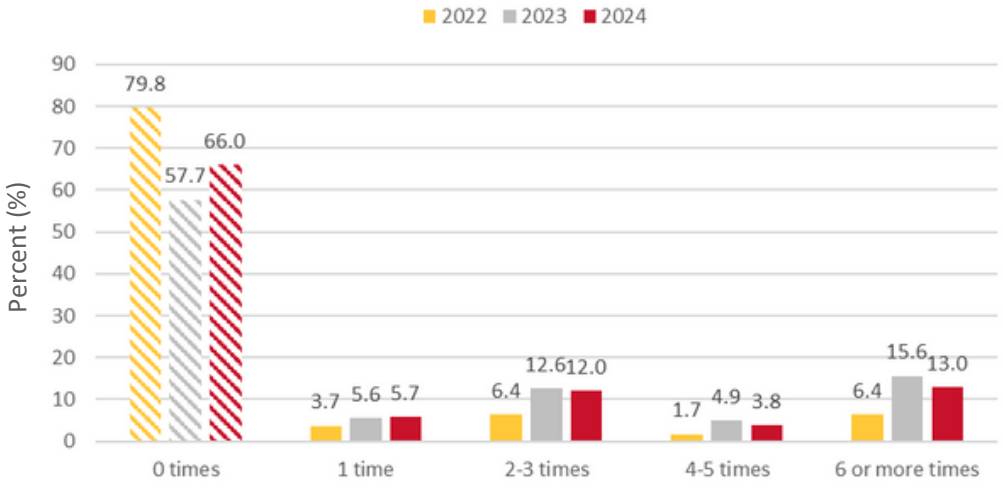
Source: MYSA 2020, MYSA 2022
Question: Out of the past 30 days, on about how many days did you drive a motor vehicle within three hours after using marijuana?
Notes: (1) Data is reported as any driving within three hours of using marijuana in the past month (i.e., prevalence). (2)Data for "other race" were suppressed and excluded from this graph.

- More young adults (ages 18 to 25) reported driving within three hours after using cannabis in the past month in 2022 compared to 2020, about 21 versus 27 percent respectively.
- Notable increases between 2020 and 2022 were seen among the 21-to-25-year age group, females, and Multi-racial adults. The only decrease was among Asian adults.

Data Note

The Maryland Medical Cannabis Patient Survey (MMCPS) assessed the frequency of driving within three hours of consuming cannabis or when under the influence of cannabis ("DUIC") among medical patients. To assess DUIC in a broader context, population-level data collection is planned with BRFSS and ICPS, with results expected in the next biannual report.

Figure 38: Frequency of Past-Month Driving within Three Hours of Consuming or While Under the Influence of Cannabis Among Medical Cannabis Patients (2022-2024)



Source: MMCPS-22, MMCPS-23, MMCPS-24
Question: During the past month, how many times did you drive/operate a car or other motor vehicle within three hours of consuming cannabis and/or when you were under the influence of cannabis?
Note: Totals do not add to 100 since not all patients reported use of cannabis in the past 30 days.

- The percentage of medical cannabis patients who reported driving within three hours of consuming cannabis or while under the influence of cannabis (DUIC) has changed across the three survey waves. In 2022, prior to adult-use legalization, about 18 percent reported DUIC in the past month. In 2023, three months after adult-use legalization, the rate of DUIC doubled to 39 percent. It fell slightly in 2024, more than a year after adult-use legalization, to 34 percent.
- Of those who reported DUIC, most drove six or more times in the past month.
- Following the increase in DUIC reported by patients in 2023, a statewide drugged driving public education campaign was launched. Continued public and point-of-sale education as well as monitoring of DUIC is needed.

Measurement Limitations

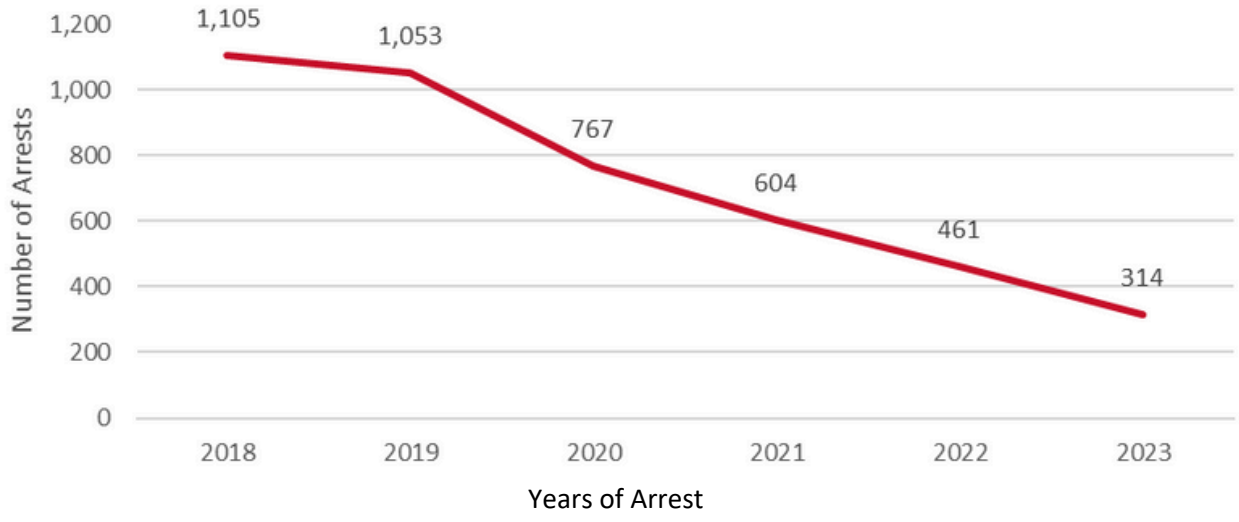
Blood and saliva tests can be used to measure levels of THC, the main intoxicating compound in cannabis. However, false positive results are possible since THC can stay in the body for weeks, long after intoxicating effects dissipate. Furthermore, Maryland does not have a standard for how much THC must be present to issue a citation for impaired driving. Some states set a specific amount of THC in the driver's blood as evidence of impaired driving, although these thresholds vary from 2 to 5 nanograms per milliliter of blood. Other states use a zero-tolerance approach.

Impaired Driving Traffic Arrests

Data Note

Data on drug-involved traffic arrests were obtained from District Court of Maryland Arrest Report. Drug or controlled substance arrests include all arrests with code TA-21-902-C and TA-21-902-D, as defined by Maryland Transportation Section 21-902. Code TA-21-902 C includes impaired driving due to drugs or drugs and alcohol, while TA-21-902D refers to impaired driving due to a controlled dangerous substance. The District Court of Maryland's traffic-related arrest data does not differentiate cannabis from other drugs or controlled substances, due to limitations in verifying whether impairment was due to cannabis.

Figure 39: Number of Arrests for Impaired Driving Due to Drugs/Controlled Dangerous Substances in Maryland (2018-2023)



Source: District Court of Maryland Arrest Report

- Arrests for drugged driving have dropped by over 70 percent since 2018, when there were 1,105 arrests, highlighting a continued downward trend through 2023.
- The decrease in overall drug-impaired driving arrests has many contributors, including law enforcement shortages, the COVID-19 pandemic, and policy changes such as the prohibition of traffic stops based solely on cannabis odor (effective July 1, 2023 with adult-use legalization). Drugged driving arrests likely underrepresent the true incidence of DUIC since drivers also under the influence of alcohol may only be charged for alcohol impairment, and drug impairment is not documented.

Cannabis-Positive Impaired Driving Evaluations

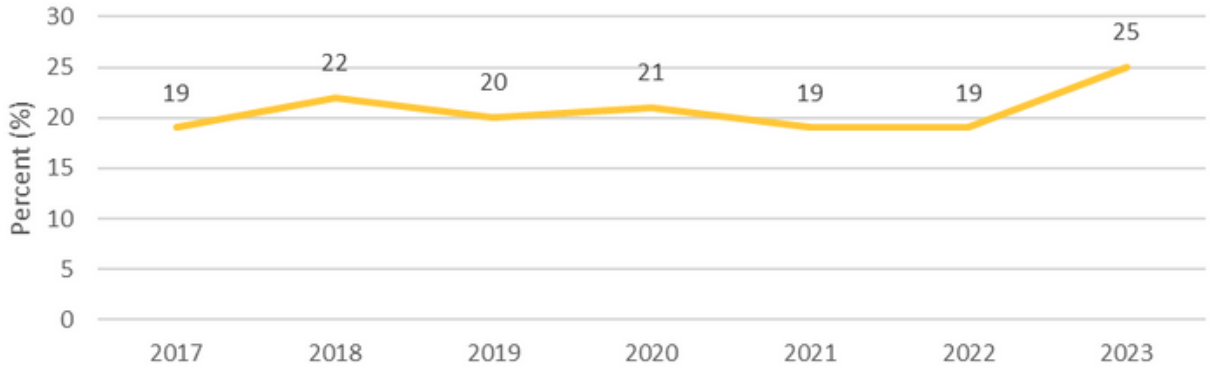
Note

Drug Recognition Experts (DREs) are specially trained law enforcement officers who evaluate drivers for impairment due to drugs other than alcohol. A DRE evaluation typically occurs following an impaired driving arrest by a non-DRE officer who suspects drug impairment. Drug impairment is usually suspected when the impairment is not consistent with the driver's alcohol level as determined by a chemical test (i.e., breathalyzer or blood alcohol measurement). If the DRE evaluation is positive for drugs, the DRE will identify the category(s) of drug(s), based on shared patterns of effects, causing the impairment.

DRE evaluations are not always conducted when a non-DRE officer suspects cannabis use. The number of DREs in the State varies over time and there may not be a DRE-certified officer available in that location or at the time to conduct an evaluation. Since future increases or decreases in the number of DRE officers statewide influences the numbers of completed DRE evaluations, percentages of assessments are reported here to help make data comparable over time.

Cannabis-positive DRE evaluations cannot be directly identified within the District Court Arrest Report, but it is presumed that many of them are included in the annual arrest counts. However, there are inconsistencies across Maryland as to when, if, and how DRE evaluations are used as evidence and accepted by judges in related cases (i.e., not all judges qualify DRE witness testimony as expert testimony).

Figure 40: Number and Percent of Cannabis-Positive Impaired Driving Evaluations by DREs in Maryland (2017-2023)

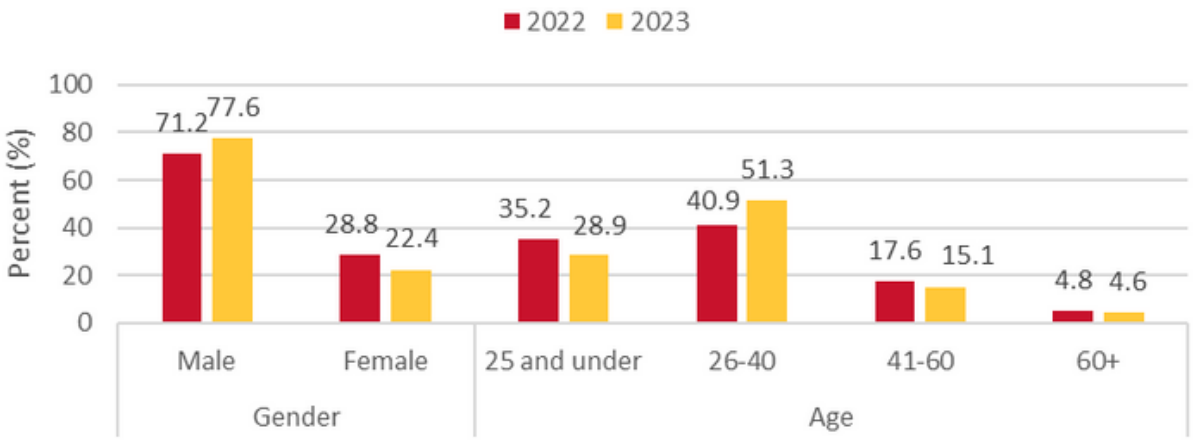


	2017	2018	2019	2020	2021	2022	2023
Total DRE evaluations	695	863	1192	1124	1035	642	618
Cannabis-positive evaluations	134	186	244	231	201	125	152
% cannabis-positive evaluations	19	22	20	21	19	19	25

Source: Drug Recognition Expert (DRE) Evaluations 2017-2023

- The total number of DRE evaluations has decreased each year since 2019, therefore cannabis-positive evaluations are reported as a percent of total evaluations.
- The percent of cannabis-positive impaired driving evaluations had been steady through 2022, but increased in 2023 to 25 percent. Continued monitoring will help determine trends since expanded legalization as 2023 represented just a partial year with adult-use cannabis sales.

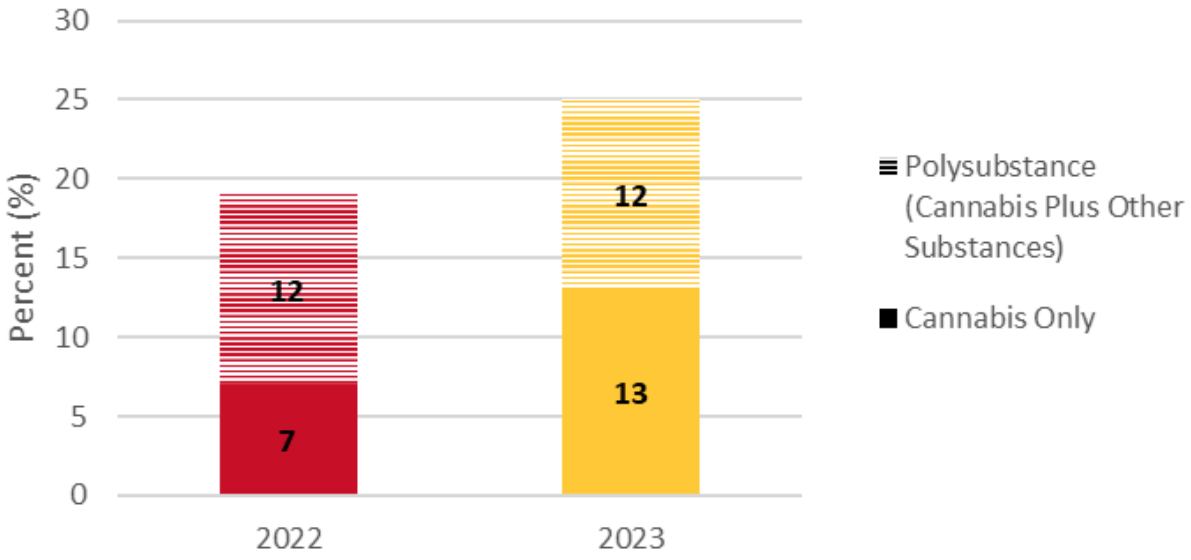
Figure 41: Percent of Cannabis-Positive Impaired Driving Evaluations by DREs by Gender and Age (2022-2023)



Source: Maryland State Police Drug Recognition Expert (DRE) Evaluations
Demographic data was not requested for all years (2018-2023) due to space limitations.

- In 2022 and 2023, about three-quarters of all cannabis-positive evaluations were among males and adults under age 40. This finding helps reinforce priority audience selection for cannabis-impaired driving outreach and education.

Figure 42: Percent of Cannabis-Positive Impaired Driving Evaluations by DREs that Involved Additional Substances (Polysubstance Use)



Source: Drug Recognition Expert (DRE) Evaluations

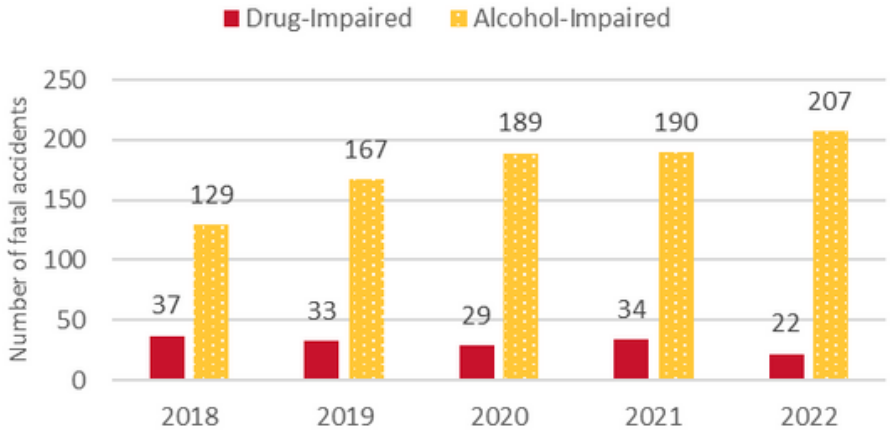
- The percent of cannabis-only positive evaluations nearly doubled from 2022 to 2023. This increase may reflect expanded legalization in the second half of 2023.
- About half of all cannabis-positive evaluations included other substances in 2022 and 2023. This finding is important since polysubstance use can result in greater impairment than use of any one substance on its own and is a public safety risk.

Fatal Traffic Crashes

Data Note

Data on fatal traffic crashes were obtained from Maryland State Police as reported to the Fatality Analysis Reporting System (FARS). FARS provides data on the presence of cannabis in fatal crashes when testing for THC was conducted. The most recent FARS data available for publication is from 2022, prior to adult-use legalization.

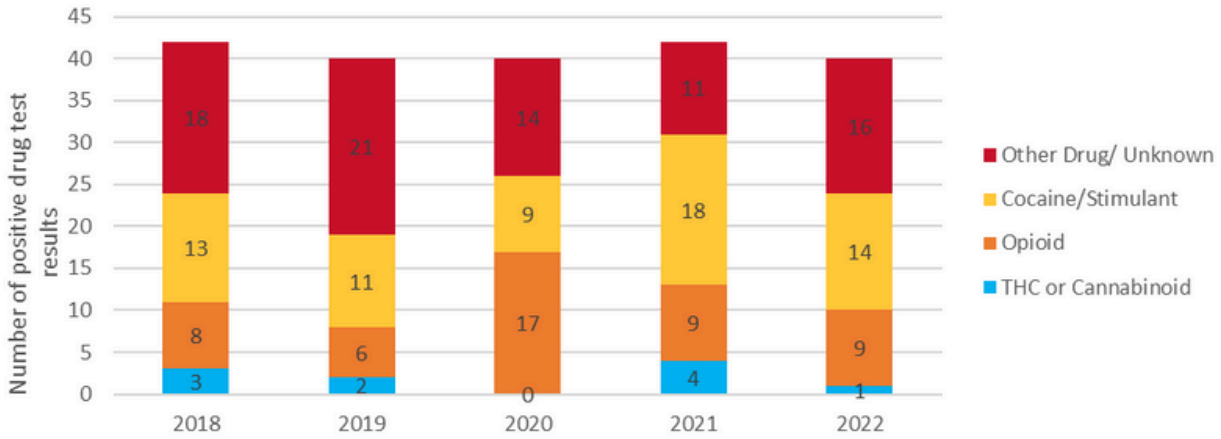
Figure 43: Number of Alcohol and Drug-Impaired Fatal Traffic Crashes in Maryland by Year (2018-2022)



Source: FARS 2018-2022
Since publication of the baseline study, the 2020 and 2021 alcohol-impaired crashes have been updated with finalized counts reflected here. Similarly, 2022 estimates are considered preliminary and subject to change.

- Each year from 2018 to 2022, traffic fatalities attributed to alcohol far outnumbered those attributed to drug impairment.
- In 2022, there were ten times as many fatalities attributed to alcohol than drugs.
- The number of drug-impaired fatalities was similar from 2018 to 2022, with the lowest number occurring in 2022.

Figure 44: Drug Test Results from Drug-Impaired Fatal Traffic Crashes in Maryland (2018-2022)



Source: FARS 2018-2022; Note: Drug test results are for at-fault drivers. Drug testing is required for at-fault drivers involved in fatal traffic crashes. Drivers may test positive for multiple substances.

- Positive drug tests for "THC or cannabinoid" among at-fault drivers were lower than other tested substances from 2018 to 2022, averaging two cases each year.
- In 2022, there was a single fatal crash involving an at-fault driver who tested positive for "THC or cannabinoid", a slight decrease from four cases in 2021.
- While the number of fatal traffic crashes with positive "THC or cannabinoid" results is low, toxicology testing does not always include cannabis.[55] A positive THC/cannabinoid result does not prove impairment by that substance at the time of the crash.

[55] All persons killed in traffic crashes are examined by the Office of the Chief Medical Examiner; however, standard toxicology testing does not include cannabis.

Accidental Poisonings

Children, adults, and pets can mistake cannabis products, particularly edibles, for regular food or candy. Accidental consumption of cannabis can result in serious illness, especially for children. Symptoms of cannabis-related poisoning in small children can include problems walking and sitting up as well as difficulty breathing.[56] Accidental ingestions in children often require medical treatment or observation in the emergency department or hospital.

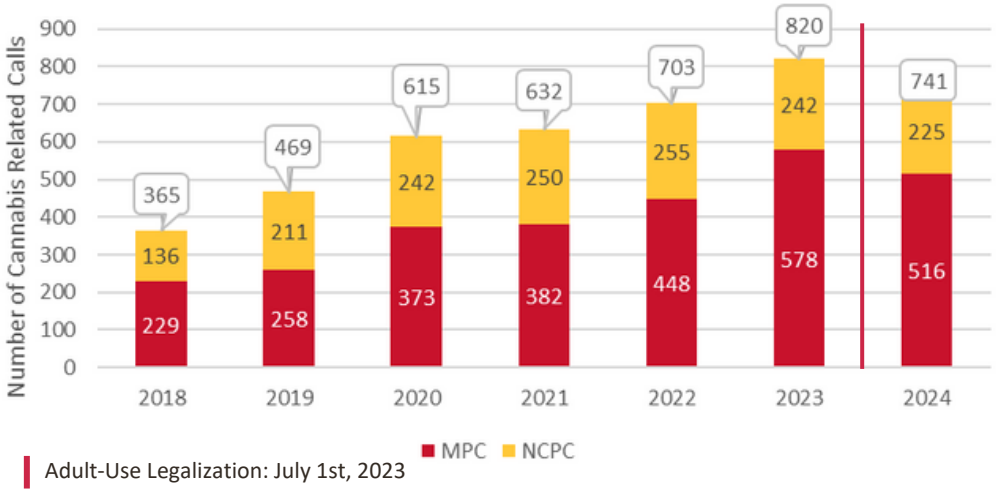
PSA

Especially if there are children in the home, cannabis should always be stored up, away, and out of sight. Keeping cannabis in a locked container or safe is best.

Note

The Maryland Poison Center (MPC) and National Capital Poison Center (NCPC) code cannabis-related calls by product type, reason for exposure, age of exposed person, and outcome. Health-General Article, Title 13, Subtitle 44 requests data on calls to MPC in individuals under age 21. However, data in this report are presented for individuals under age 20 due to the existing age bands established by the National Poison Center (i.e., 0-5 years, 6-12 years, 13-19 years, 20-29 years, etc.)

Figure 45: Number of Cannabis-Related Calls to Maryland Poison Centers (2018-2024)

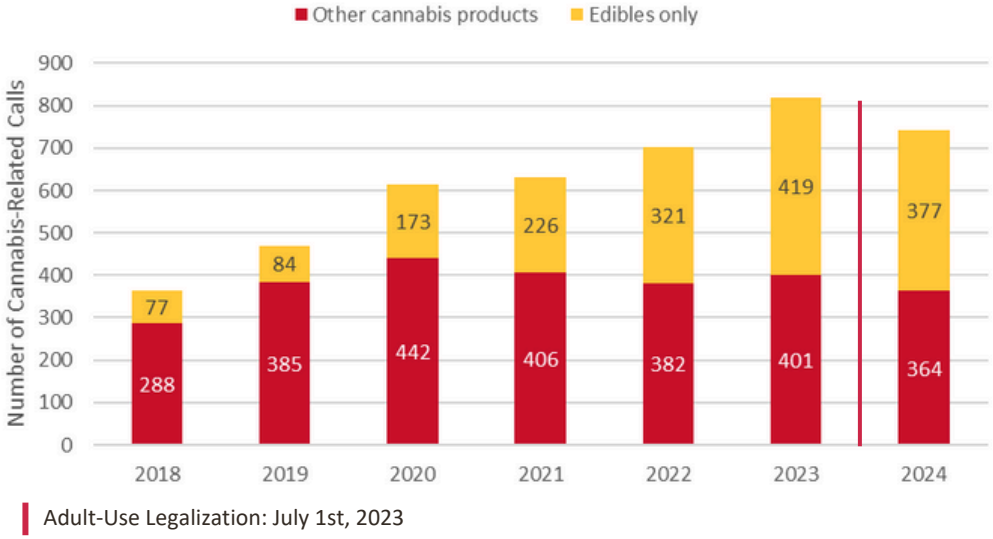


Source: Maryland Poison Center (MPC) and National Capital Poison Center (NCPC) 2018-2024
Note: NCPC includes Prince George's and Montgomery Counties. MPC covers Maryland's other 22 counties.

- While the number of cannabis-related calls has trended upward over the period from 2018 to 2023, calls decreased for the first time in 2024, falling about 10 percent between 2023 to 2024.
- The total number of cannabis-related calls in 2024 was 741, which is about 60 calls per month or two per day.

[56]Centers for Disease Control and Prevention (CDC). Cannabis and Poisoning., Retrieved January 14, 2025, https://www.cdc.gov/cannabis/health-effects/poisoning.html

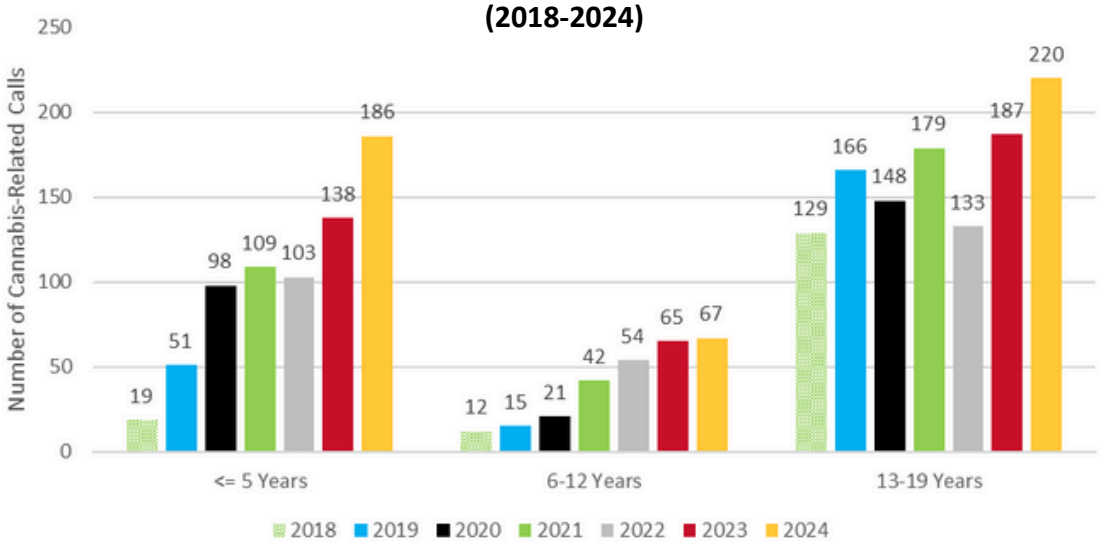
Figure 46: Total Number of Cannabis Related Calls to Maryland Poison Centers by Product Type (2018-2024)



Source: Maryland Poison Center (MPC) and National Capital Poison Center (NCPC) 2018-2024
Other cannabis products include CBD, e-cigarettes, marijuana, concentrated extract, edibles, oral capsules or pills, other or unknown preparation, topical, undried plant, synthetic cannabinoids (includes precursors and analogs), minor cannabinoids, THC pharmaceuticals.

- The number of cannabis-related calls for edibles products increased each year from 2018 to 2023, dropping slightly for the first time between 2023 to 2024, from 419 to 377.
- In 2023 and 2024, edibles accounted for approximately half of all cannabis-related calls.

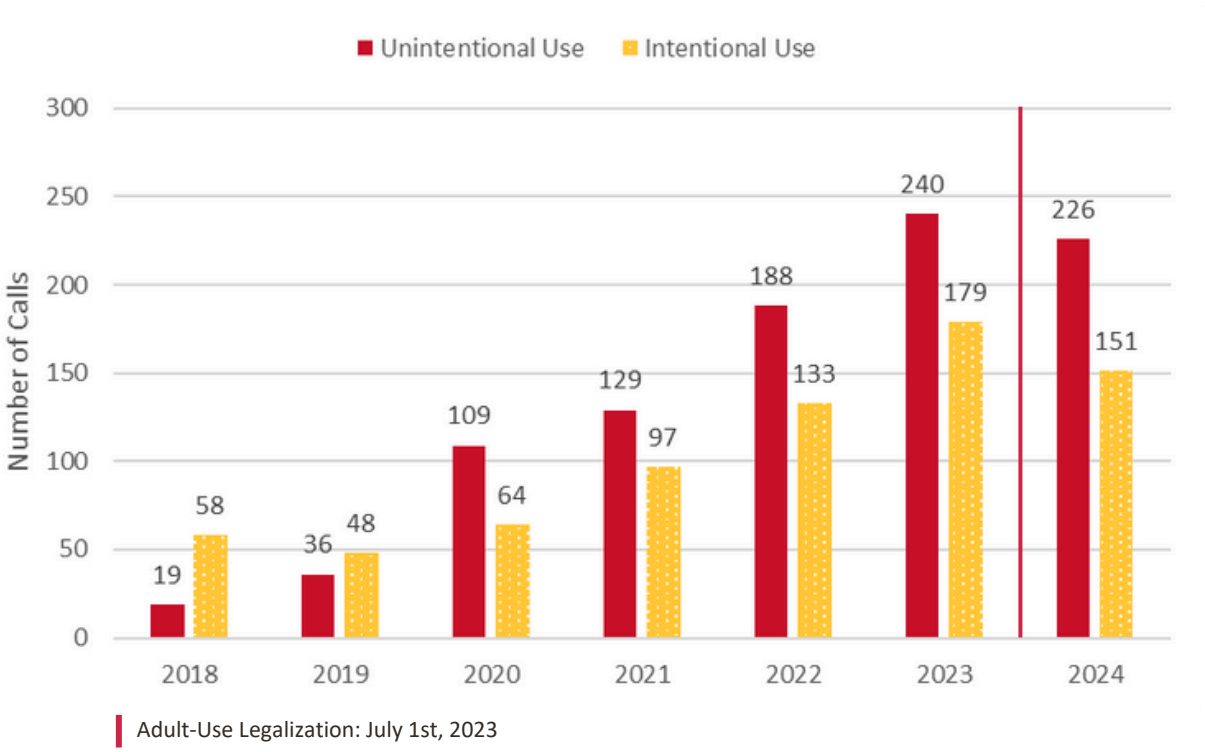
Figure 47: Comparison of Cannabis-Related Calls to Maryland Poison Centers for Youth Under Age 20 (2018-2024)



Source: Maryland Poison Center (MPC) and National Capital Poison Center (NCPC) 2018-2023
Note: Maryland Poison Center follows national data collection standards, which specify categories including age bands. Age 20 is included in the 20-29-year age band. Youth data reported here is for youth 19 and under.

- From 2023 to 2024, cannabis-related calls increased in all age groupings, although the increase was smallest in those 6-12. The largest increase was in children aged 5 and under, increasing about 35 percent in 2022 to 2023 and again in 2023 to 2024.
- This increase in cannabis-related calls among youth, particularly in children age 5 and under warrants continued point-of-sale and public education on keeping cannabis up, away, and out of reach, preferably in a locked container or safe.

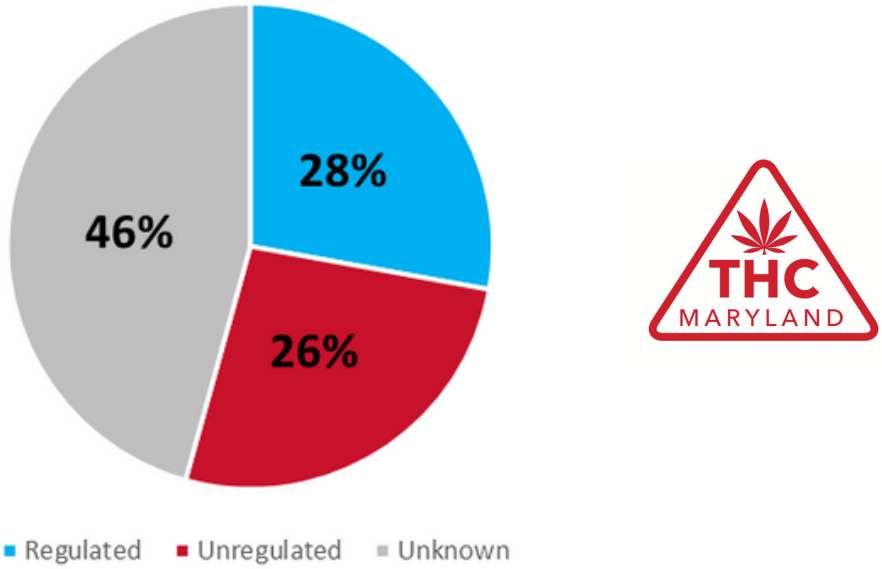
Figure 48: Number of Cannabis-Related Calls for Edible Products by Exposure Type, All Ages (2018-2024)



Source: Maryland Poison Center (MPC) and National Capital Poison Center (NCPC) 2018-2024
Note: Intentional use includes all codes with intentional plus malicious. Unintentional codes include adverse reaction/drug and other, contamination/tampering, unintentional (general, misuse, therapeutic, unknown) and unknown reason. within the MPC and NCPC dataset.

- Both unintentional and intentional edible exposures decreased between 2023 to 2024, after several years of steady increases. This decrease makes sense given the observed decline in edible-related calls over this period.
- Calls related to unintentional exposures are typically associated with youth ingestions, whereas intentional exposures are more common in adults, and are often due to overconsumption (i.e., taking too much), which is a greater risk with edible cannabis products as the onset of effects is delayed. Continued point-of-sale education on starting with a low dose and going slow (waiting at least an hour or two before consuming more edibles) may help further reduce these types of incidents.

Figure 49: Percent of Cannabis-Related Calls to Maryland Poison Centers by Product Source (February – December 2024)



Source: Maryland Poison Center (MPC) and National Capital Poison Center (NCPC)
This Enhanced Surveillance Project with MPC and NCPC started in February 2024, so a complete year of data collection is not available (i.e., January 2024 is not included).

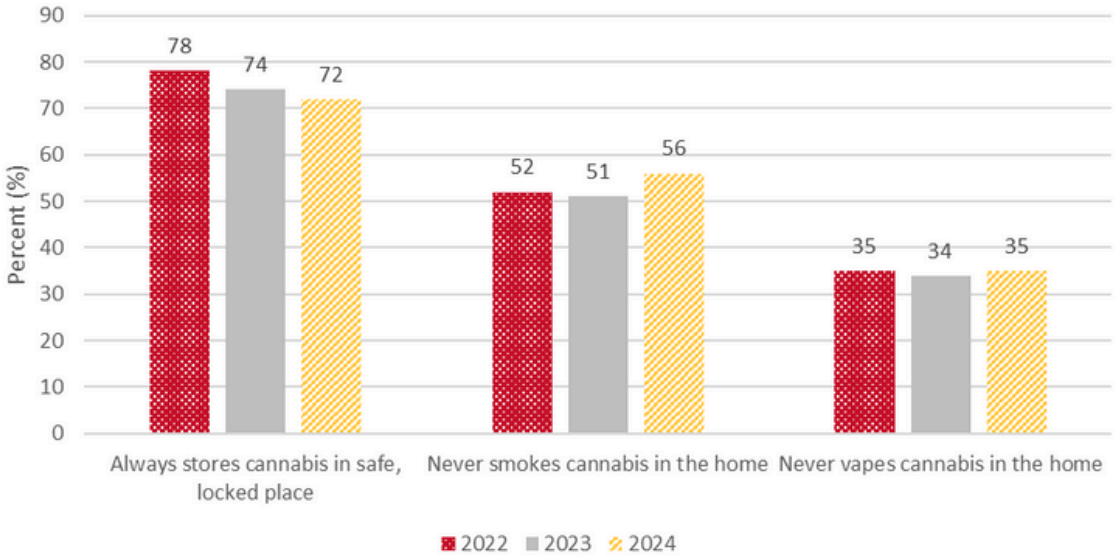
- From February to December 2024, 28 percent of cannabis-related calls to Maryland Poison Centers were attributed to regulated products (i.e., purchased from a licensed dispensary). Seventy-two percent were attributed to unregulated products or products where the source was unknown (e.g., from a friend).
- Product status was ascertained by asking (1) where the product was purchased (i.e., name or location of the retail store) and/or (2) from a review of the product packaging. Regulated products include certain identifiers like the Maryland THC symbol and can be looked up in MCA's inventory system. The large proportion on unknown products indicates that many consumers are unaware or unable to differentiate regulated from unregulated cannabis products. It highlights an opportunity to educate consumers about the differences so they can make informed choices.
- Enhanced surveillance will continue to understand the trends and contribution of unregulated products to cannabis-related poisonings.

PSA

Cannabis smoke contains some of the same harmful chemicals as cigarettes.[57] Both smoking and vaping cannabis can be harmful to the lungs and cause short- and long-term health problems.[58] Adults with children in the household should avoid smoking or vaping in the home.

[57] D Moir et al. A comparison of mainstream and sidestream marijuana and tobacco cigarette smoke produced under two machine smoking conditions. Chem Res Toxicol. 2008; 21(2):494-502. doi: 10.1021/tx700275p.
[58] C Boyd. Cannabis, vaping, and respiratory symptoms in a probability sample of U.S. Youth. J Adolesc Med. 2021; 69(1) P149-152: https://doi.org/10.1016/j.jadohealth.2021.01.019

Figure 50: Safe Storage and Use of Cannabis at Home Among Maryland Medical Cannabis Patients with Children at Home (2022 to 2024)



Source: MMCPS-22, MMCPS-23, MMCPS-24
Question: Survey respondents were asked, in the past year, how often did you engage in each of the following? (1) I smoked cannabis inside my house, (2) I vaped cannabis inside my house, (3) I stored cannabis in a locked, safe location.

- The percent of medical patients who have children in the home and always store cannabis in a safe, locked place decreased from 78 to 72 percent between 2022 to 2024. This observation calls for continued messaging on safe storage and the use of lockable containers.
- The percent of medical patients with children who never smoke cannabis in the home has increased from 52 to 56 percent between 2022 to 2024. This is a positive trend, but continued education efforts may result in further improvements.
- About a third of medical patients with children report never vaping in the home; this has been consistent from 2022 to 2024.

Adverse Reactions

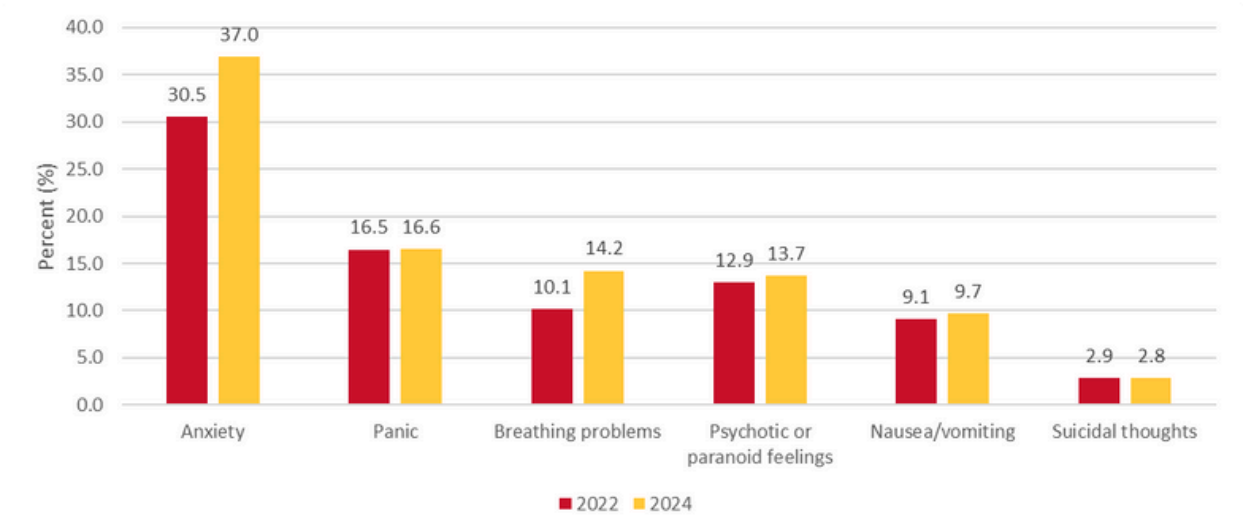
Potential adverse reactions associated with cannabis consumption include anxiety, panic, paranoia, nausea/vomiting, and breathing problems. These reactions are often associated with overconsumption (i.e., consuming more than intended, especially with edibles, which have a delayed onset of effects) or use of high THC products. The Administration has an online portal for submitting adverse experiences related cannabis products.[59] The Administration's adverse event data is not presented in this report as the overall number of submissions remains low (under 10 per year).

Data Note

Adverse reactions were collected from medical cannabis patients in the 2022 and 2024 Maryland Medical Cannabis Patient Surveys (MMCPS-22, MMCPS-24). Adverse reaction questions were not included in MMCPS-23 due to survey length and question cycle.

[59] Adverse Event/Incident Reporting Portal, [Maryland Cannabis Administration (MCA)] Report an Incident

Figure 51: Adverse Reactions to Cannabis Consumption in the Past Year Among Medical Cannabis Patients (2022-2024)



Source: MMCPS-22, MMCPS-23, MMCPS-24

Question: During the past year, have you experienced any of the following conditions when consuming cannabis?

- Anxiety was the most reported adverse reaction among medical patients; anxiety increased from 30 to 37 percent between 2022 to 2024.
- Breathing problems also increased from about 10 to 14 percent between 2022 to 2024.
- Specific to nausea/vomiting, rates were similar in 2022 and 2024.
- In 2024, respondents were also asked if they ever experienced cannabis hyperemesis syndrome (CHS), a condition characterized by cyclical nausea, vomiting, and abdominal pain after consuming cannabis, usually over a long period of time. Fewer than two percent of medical cannabis patients said they had CHS in their lifetime (see links to the MMCPS reports in Appendix F for full details).

Chapter Summary

Driving after consuming cannabis remains a public safety concern.

- More young adults (age 18-25) reported driving within three hours of consuming cannabis in the past month between 2020 to 2022; rates increased from about 21 to 27 percent, respectively.[60]
- Medical cannabis patients reported an increase in driving within three hours of consuming cannabis or under the influence after legalization ("DUIC"): DUIC increased from 18 to 39 percent between 2022 and 2023 (measured after adult-use sales), then declined slightly to 34 percent in 2024.[61] Population-level data on cannabis and driving behaviors will be available for the next biannual report.
- Cannabis-positive DRE evaluations increased from 19 to 25 percent from 2022 to 2023. Since adult-use legalization took effect part-way through 2023, it may play a role in this observed increase.[62]
- Drug-impaired traffic fatalities did not increase from 2018 to 2022. Data since adult-use legalization is not available.[63]

Cannabis-related calls to Poison Centers decreased for the first time in 2024, following a several years of increases.

- Cannabis-related calls to the Maryland Poison Center decreased approximately 10 percent since adult-use legalization. There was also a drop in calls related to edible cannabis products from 2023 to 2024.
- Despite this positive finding, cannabis-related calls continued to rise for youth exposures, especially for youth aged 5 and under. Relatedly, the percent of medical patients who have children in the home and always store cannabis in a safe, locked place decreased from 78 to 72 percent between 2022 and 2024.
- Continued point-of-sale and public education on safe storage and the use of lockable containers is warranted.

Adverse reactions related to cannabis use among medical cannabis patients are relatively uncommon.

- Anxiety was the most commonly reported adverse reaction among medical patients in both 2022 and 2024, and there was an increase in patients who reported anxiety related to their cannabis use in the past year, up from 30 to 37 percent between 2022 and 2024.
- In 2024, fewer than two percent of medical cannabis patients said they had experienced cannabis hyperemesis syndrome (CHS) in their lifetime.

[60]Maryland Young Adult Survey on Alcohol (MYSA) 2020 and 2022.
[61] Maryland Medical Cannabis Patient Survey (MMCPS) 2022, 2023, 2024 available at https://cannabis.maryland.gov/Pages/Reports.aspx
[62] Maryland State Police Cannabis-Positive Driving Evaluations by Drug Recognition Experts (DRE) 2018-2023.
[63] Maryland State Police, Fatal Accident Reporting System (FARS) 2018-2022.

Chapter IV: Health Service Utilization

Introduction

This chapter covers health-care service utilization (e.g., hospitalizations, ED visits) and problematic cannabis use. These data help inform the short and long-term risks associated with cannabis use.

Hospitalizations and Emergency Department (ED) Visits

Adverse reactions to cannabis and cannabis intoxication can be serious enough to warrant emergency care and/or hospitalization. Reactions can include panic, paranoia,[64] memory problems, altered sense of perception time,[65] and severe vomiting or gastrointestinal symptoms.[66]

Data Note

Cannabis-related emergency department (ED) visits and hospitalizations are based on diagnostic codes (known as ICD-10 codes) assigned by providers following each healthcare visit or encounter. Multiple codes can be assigned per visit. For consistency with the baseline study, data are shown as "primary cannabis" ED visits and hospitalizations when a cannabis code was listed as the primary diagnosis code and "cannabis-related" visits when cannabis appears anywhere in the encounter details.[67] Emerging best practices suggest using all diagnosis codes and reporting results as "cannabis-related" because (1) cannabis is often a contributor rather than the direct cause of a healthcare visit and (2) health systems have different coding practices (i.e., they may position specific codes differently) and cases could be missed.[68] "Cannabis-related" visits are presented in figures in solid gold lines.

New in this report, data are reported as rates per 100,000 hospitalizations or ED visits to standardize reporting over time and account for variability in healthcare utilization, especially related to COVID-19. See Appendix C for the listing of ICD-10 codes used to identify cannabis-related hospitalization and ED visits.

Measurement Limitations

Data based on ICD-10 codes is limited by the completeness and quality of coding and may vary by healthcare system, region, and over time. Additionally, cannabis product type and mode of administration are not specified within these codes (e.g., smoked flower, edible, concentrate). They also don't distinguish regulated cannabis products from unregulated products including intoxicating hemp products that can be purchased in gas stations, convenience stores, vape and smoke shops, and online. The contribution of these products to outcomes like cannabis-related ED visits and hospitalizations is unknown but potentially significant since (1) these products are widely available including at stores frequented by youth like gas stations and and convenience stores (2) products are not required to follow the same precautions as regulated cannabis such as lab testing to verify that THC potency matches the label (3) product packaging is unregulated so products may be more easily mistaken for candy, treats, or snack foods, potentially resulting in overconsumption or serious illness, especially in smaller children.

[64] M. Arendtet al. Testing the self-medication hypothesis of depression and aggression in cannabis-dependent subjects. Psychol Med 2007; 37(7): 935-945. https://doi.org/10.1017/S0033291706009688 .

[65] M. Sexton et al. A survey of cannabis acute effects and withdrawal symptoms: differential responses across user types and age. J Altern Complement Med. 2019;326-335.http://doi.org/10.1089/acm.2018.0319.

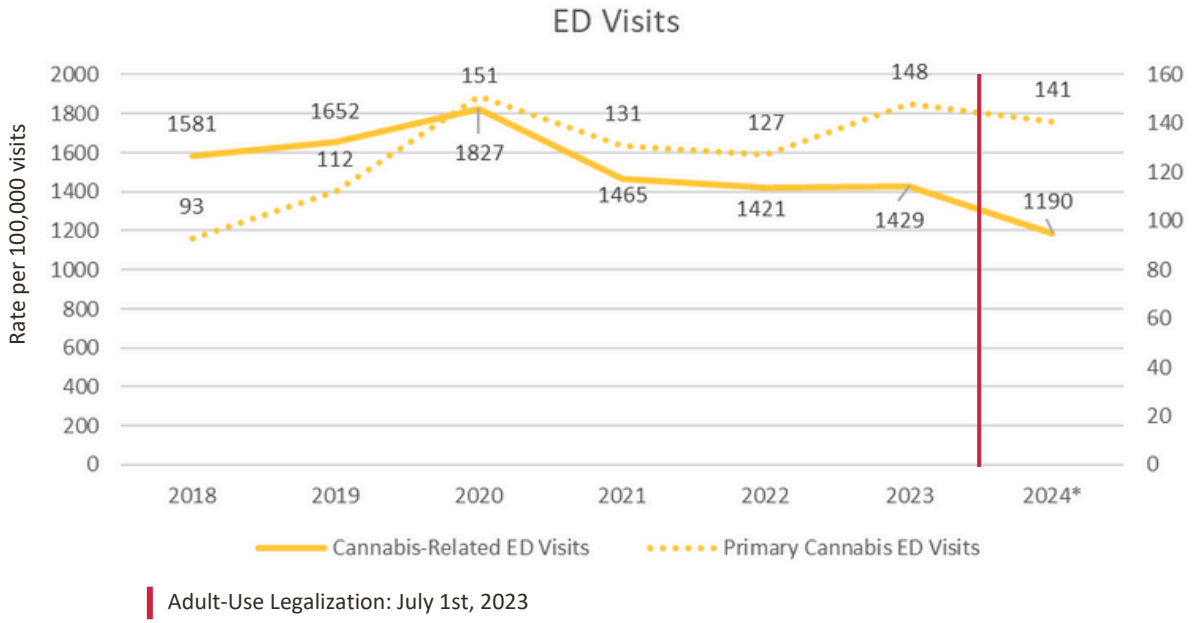
[66] N. Khattar et al., Emergency department treatment of cannabinoid hyperemesis syndrome: a review. Am J Ther2018;25(3): e357-e361. https://doi.org/10.1097/MJT.0000000000000655 .

[67] See Appendix C for the listing of ICD-10 codes used to identify cannabis-related hospitalizations and ED visits.

[68] Council of State and Territorial Epidemiologists. Cannabis-related healthcare visits: guidance for indicators using ICD-10-CM coded administrative data. Published April 28, 2021. Accessed December 10, 2024, https://www.cste.org/members/group.aspx?id=150877&hhSearchTerms=%2522marijuana%2522

Table 2/Figure 52: Comparison of "Cannabis-Related" and "Primary Cannabis" ED Visits (2018-2024*)

		Cannabis-Related			Primary Cannabis		
Year	Total Number of ED Visits	Number of ED Visits	Rate of ED Visits	% change in rate from previous year	Number of ED Visits	Rate of ED Visits	% change in rate from prior year
2018	2,012,074	31,817	1581	N/A	1,880	93	N/A
2019	1,968,048	32,520	1652	4%	2,203	112	20%
2020	1,470,130	26,861	1827	11%	2,213	151	35%
2021	1,630,675	23,894	1465	-20%	2,140	131	-13%
2022	1,690,585	24,029	1421	-3%	2,151	127	-3%
2023	1,774,802	25,354	1429	1%	2,635	148	17%
2024*	1,797,158	21,380	1190	-17%	2,540	141	-5%

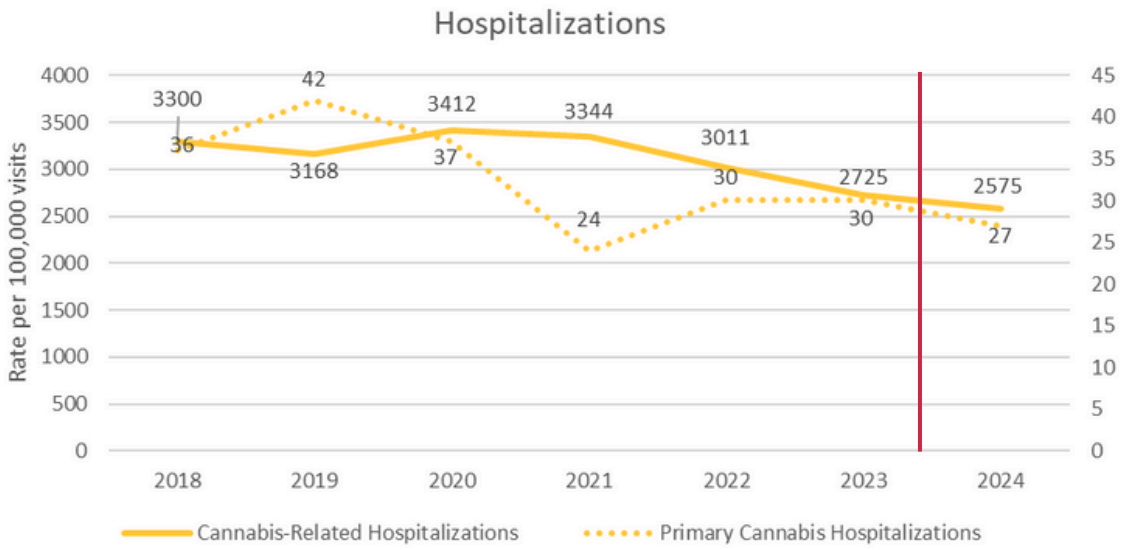


Source: HSCRC Case Mix
Rates are calculated using denominator of 100,000 ED Visits.
**2024 is annualized since complete data was not available at the time this report was prepared.2023 data that was annualized at the same time point accurately predicted final 2023 counts.*
ED visits that result in hospital admissions are removed from the ED dataset to avoid duplications.

- The rate of "cannabis-related" ED visits has trended down since its peak in 2020 of 1,827 ED visits per 100,000. "Cannabis-related" visits include those where cannabis likely caused or contributed to the encounter and is a larger dataset. "Primary" cannabis visits refer to just those visits where a cannabis-related code was listed as the first or primary code ("complaint") and is a smaller dataset.
- In contrast, the rate of "primary cannabis" ED visits has trended upward, although the highest rate was observed in 2020 with 151 ED visits per 100,000, followed by 148 ED visits per 100,000 in 2023.
- Both "cannabis-related" and "primary cannabis" ED visits increased from 2022 and 2023, although to different extents during the period of adult-use legalization. Both dropped the following year between 2023 to 2024.

Table 3/Figure 53: Comparison of "Cannabis-Related" and "Primary Cannabis" Hospitalizations (2018-2024*)

		Cannabis-Related			Primary Cannabis		
Year	**Total Number of Hospitalizations**	**Total Number of Hospitalizations**	**Rate of Hospitalizations**	**% change in rate from previous year**	**Total Number of Hospitalizations**	**Rate of Hospitalizations**	**% change in rate from previous year**
2018	598,753	19,760	3300	N/A	218	36	N/A
2019	582,029	18,437	3168	-4%	246	42	17%
2020	522,200	17,815	3412	8%	191	37	-12%
2021	532,189	17,797	3344	-2%	129	24	-35%
2022	518,294	15,608	3011	-10%	155	30	25%
2023	526,396	14,343	2725	-9%	156	30	0%
2024	268,166	6,904	2575	-6%	72	27	-10%



Adult-Use Legalization: July 1st, 2023

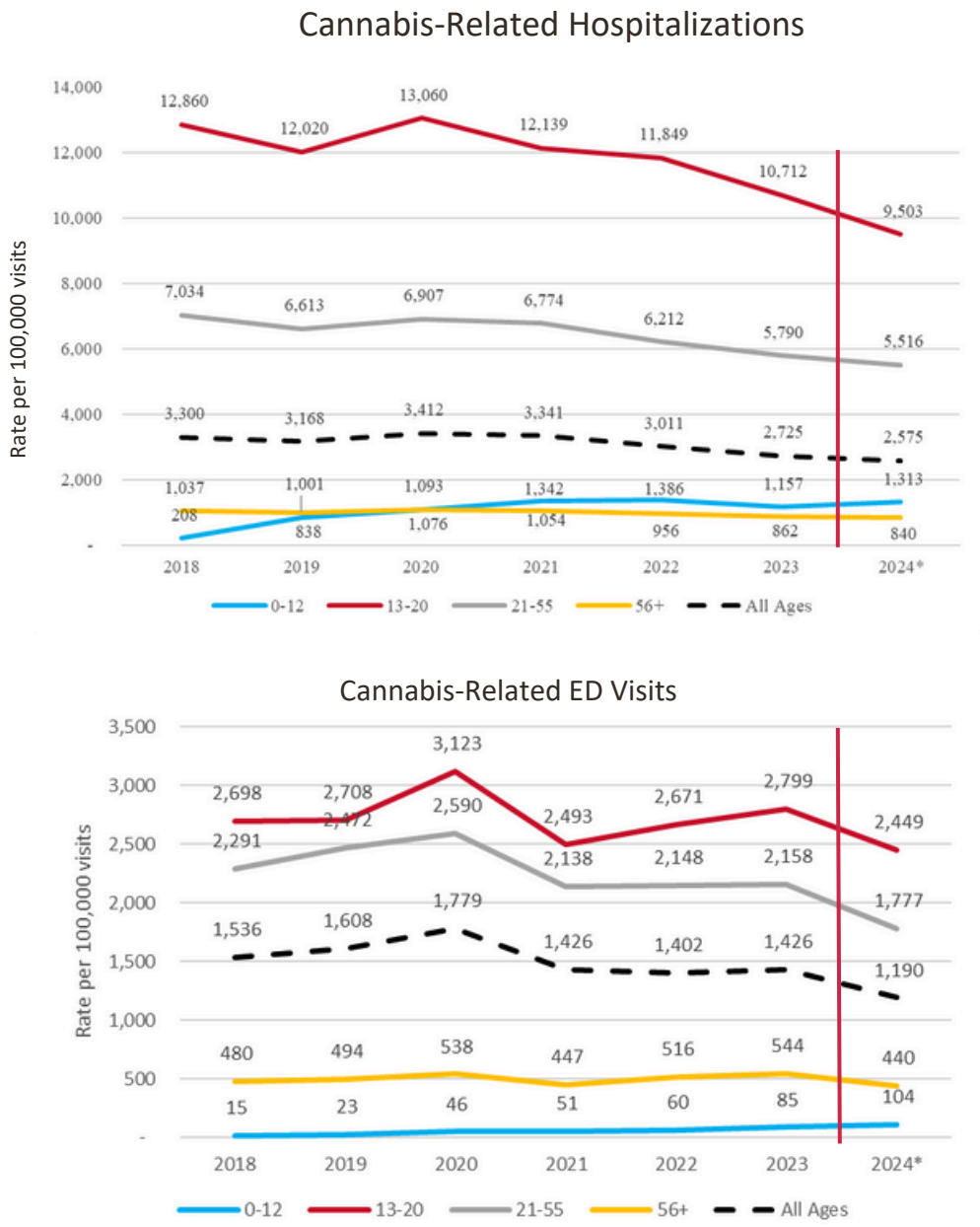
Source: HSCRC Case Mix
Rates are calculated using denominator of 100,000 Hospitalizations.
**2024 is annualized since only six months of data was available at the time this report was prepared. Annualized data has accurately represented final counts in 2023.*

- The rate of "cannabis-related" hospitalizations has trended down with its peak in 2020 at 3,412 per 100,000 hospitalizations.
- The rate of "primary cannabis" hospitalizations has also followed a downward trend, with rates in 2021-2024 lower than 2018-2020.
- Both "cannabis-related" and "primary cannabis" hospitalizations decreased since adult-use legalization.

Data Note

Due to the volume of data, demographic variables are only presented for cannabis-related hospitalizations and ED visits. See Appendix C for full details.

Figure 54: Rates of Cannabis-Related Hospitalizations and ED Visits by Age Group, 2018-2024*

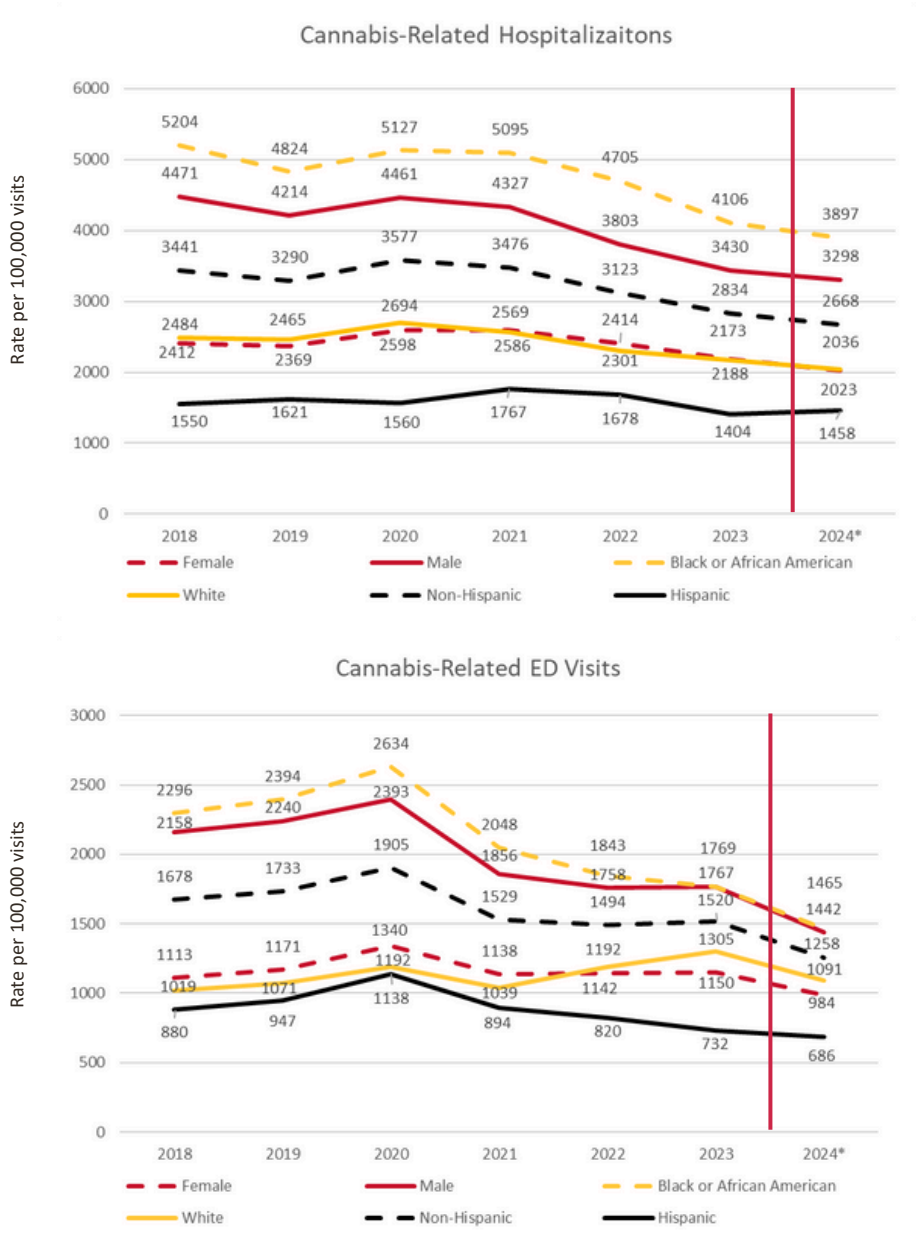


Adult-Use Legalization: July 1st, 2023

Source: HSCRC Case Mix
Rates are calculated using denominator of 100,000 ED Visits and Hospitalizations.
**2024 is annualized since only six months of data was available at the time this report was prepared.*
ED visits that result in hospital admissions are removed from the ED dataset to avoid duplications.

- The rate of cannabis-related hospitalizations and ED visits was highest among those aged 13-20 from 2018-2024*. It was stable among those age 56+.
- The rate of cannabis-related hospitalizations and ED visits has trended upward for those aged 0-12 since 2018.

Figure 55: Rates of Cannabis-Related Hospitalizations and ED Visits by Demographics (2021-2024*)



Adult-Use Legalization: July 1st, 2023

Source: HSCRC Case Mix
Rates are calculated using denominator of 100,000 Visits.
**2024 is annualized since only six months of data was available at the time this report was prepared.*
ED visits that result in hospital admissions are removed from the ED dataset to avoid duplications.

- Males continue to account for more cannabis-related hospitalizations and ED visits than females each year from 2018 to 2024.
- Black/African American adults had the highest rate of cannabis-related hospitalizations and ED visits, though the rate has decreased from 2020 to 2024.
- Hispanic adults had the lowest rates of cannabis-related hospitalizations and ED visits.

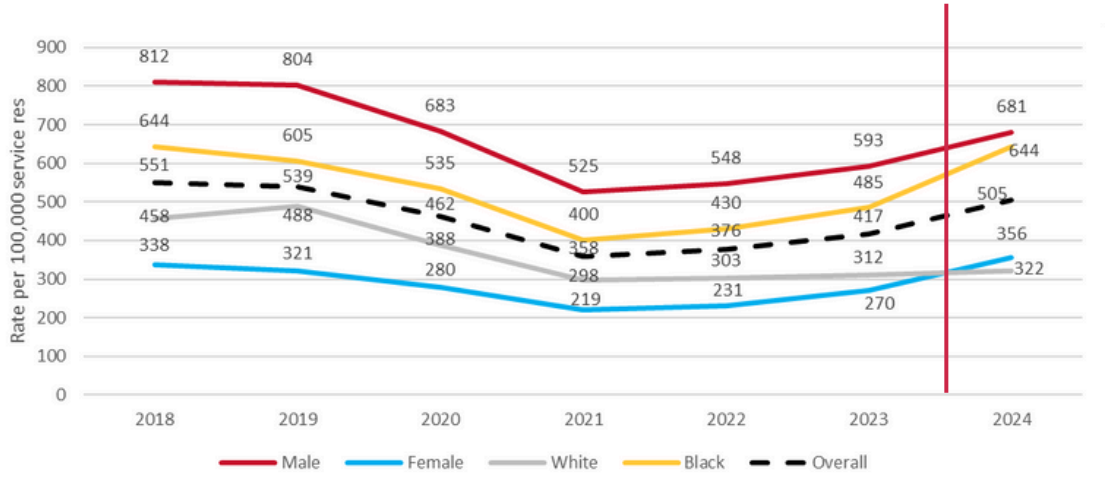
Problem Cannabis Use

Problem cannabis use refers to the continued use of cannabis despite it having negative consequences such as problems at work, school, or with relationships. While problem use is sometimes used interchangeably with cannabis use disorder (CUD), the latter is a psychiatric disorder defined in the Diagnostic and Statistical Manual (DSM).[69] In its most severe form, CUD can lead to cannabis addiction. The risk of developing CUD is greater in people who start using cannabis during youth or adolescence and who use cannabis more frequently. Behavioral therapies (i.e., cognitive behavioral therapy) can help treat cannabis addiction.

Data Note

Data on cannabis-related disorder treatment services were obtained from the Public Behavioral Health Services Reporting System (PBHS). Similar to hospitalization and ED data, cannabis-related disorder services in the PBHS were identified through ICD-10 diagnosis codes. Consistent with ED and hospital data, cannabis-related disorder service data are reported as rates to account for changes over time, such as during the COVID-19 pandemic. Data are reported by fiscal year and include results from the 12 months after adult-use legalization took effect.

Figure 56: Rate of Individuals Receiving Treatment Services in the PBHS for Cannabis-Related Disorders, by Demographics (FY2018-2024)



Adult-Use Legalization: July 1st, 2023

Source: PBHS Service Data FY2018-2024
Data are limited to individuals who participate in public behavioral health services system (PBHS) and do not represent all possible service recipients in the State. Most services were outpatient in all years. Rates are reported as fiscal year (July 1- June 30).

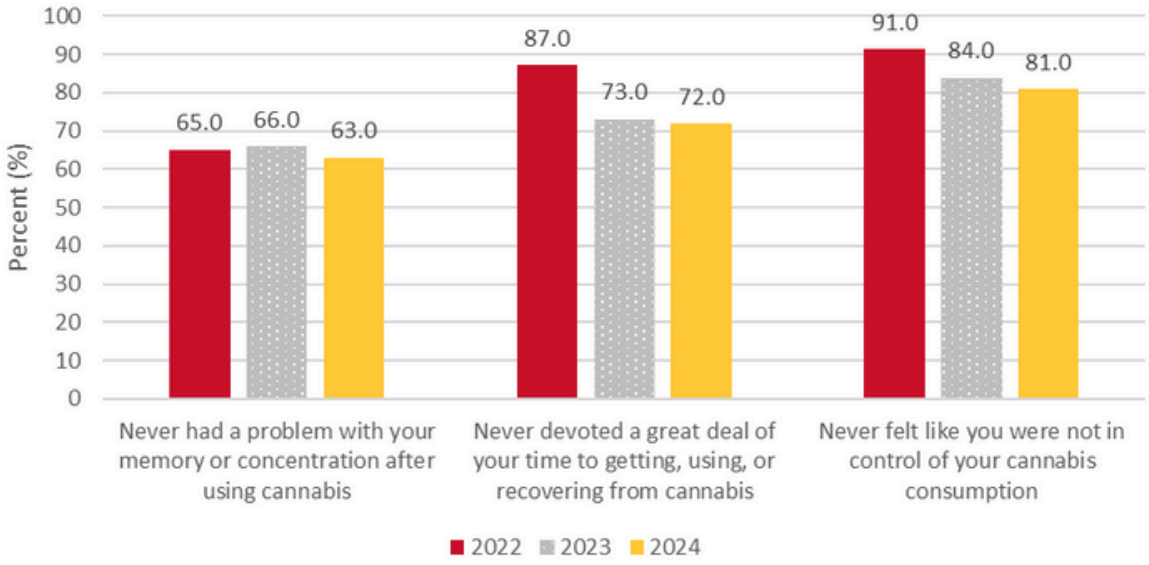
- The rate of individuals in the public behavioral health system receiving cannabis-related disorder treatment services has been increasing since 2021, although the 2024 rate is still lower than 2018 and 2019 (505 versus 551 and 539 per 100,000 admissions, respectively).
- Even when displaying the data as rates versus counts, the COVID-19 pandemic may have played a role in the observed dip in 2020 and 2021.
- From 2018 to 2024, males and Black residents received the most cannabis-related disorder services.

[69] CUD diagnostic criteria include meeting two or more of the following over a 12 month period: Continuing to use cannabis despite physical or psychological problems; continuing to use cannabis despite social or relationship problems; craving cannabis; difficulty controlling or cutting down cannabis use; giving up or reducing other activities in favor of cannabis use; problems at work, school, and home as a result of cannabis use; spending a lot of time on cannabis use; taking cannabis in high-risk situations; taking more cannabis than intended; tolerance to cannabis; withdrawal symptoms when discontinuing cannabis.

Data Note

In recent years, a short form tool knowns as the Cannabis Use Disorder Identification Test (CUDIT) has been developed for clinical applications to screen CUD.[70] Questions adapted from the CUDIT were incorporated into the Maryland Medical Cannabis Patient Survey (MMCPS) and are presented in this section.

Figure 57: Medical Cannabis Patients with Problematic Cannabis Use Behaviors (2022-2024)



Source: MMCPS-22, MMCPS-23, MMCPS-24
Questions: How often in the past 6 months have you had a problem with your memory or concentration after using cannabis? …devoted a great deal of your time to getting, using, or recovering from cannabis? … find that you were not able to stop using cannabis once you had started?

- Most participants indicated "never" on all three of the problem use questions from 2022 to 2024. However, from 2022 to 2024, those never experiencing these CUD indicators has decreased.
- Because this survey measured only three potential indicators of problematic use, definitive conclusions about the prevalence of cannabis use disorders among medical patients cannot be made.

[70] M.O. Bonn-Miller et al. Preliminary Development of a Brief Cannabis Use Disorder Screening Tool: The Cannabis Use Disorder Identification Test Short-Form. Cannabis and Cannabinoid Research. (2016) 252-261. https://doi.org/10.1089/can.2016.0022. Test: https://adai.uw.edu/instruments/pdf/Cannabis_Use_Disorders_Identification_Test_59.pdf.

Chapter Summary

Hospitalizations have not increased since adult-use legalization; the trend with ED visits is more nuanced.

- "Cannabis-related" hospitalizations have trended down over the period 2018 to 2024. A downward trend was also observed for "primary cannabis" hospitalizations, although to a lesser extent.
- Over the period 2018 to 2024, "cannabis-related" ED visits have trended down while "primary cannabis" ED visits (i.e., where cannabis was the primary reason for the encounter) have trended upward.
- In the first year after adult-use legalization, 2023 to 2024, both "cannabis-related" and "primary cannabis" ED visits decreased.
- The rate of cannabis-related hospitalizations and ED visits was highest among those aged 13-20 from 2018 to 2024.
- The rate of cannabis-related hospitalizations and ED visits has trended upward since 2018 for those aged 0-12.

Data on problem cannabis use is limited.

- Since 2021, there has been an increase in individuals receiving treatment services for a cannabis-related disorder through the state's public behavioral health system. Males and Black residents received the most cannabis-related disorder services over the period 2018 to 2024.[71]
- Most medical patients report "never" having experienced symptoms of cannabis use disorder (CUD); however, those never experiencing CUD symptoms decreased from 2022 to 2024.[72] The MMCPS does not measure the full panel of CUD indicators so definitive conclusions about the true rate of problematic use among medical patients cannot be made.
- Additional measures of problem cannabis use are planned for future reports, including use of population-based surveys like BRFSS and ICPS. These data will shed additional light on the scope and trends with problem use.

[71] Maryland Public Behavioral Health Services Treatment Admission Data Fiscal Year 2018-2024.
[72] Maryland Medical Cannabis Patient Survey (MMCPS) 2022, 2023, 2024 available at https://cannabis.maryland.gov/Pages/Reports.aspx

Appendices

Appendices A through E provide key indicators specified in Health-General Article, Title 13, Subtitle 44.

Appendix A: Patterns of Use (Frequency, Dosing, Methods, Perceptions)

Patterns of use are reported for individuals in specified age groups (under 18, 18 to 20, 21 to 55, 55+), as well as among pregnant and breastfeeding persons, where data is available.

Percent of Current (Past 30 Day) and Ever Use of Cannabis by Maryland Youth (Middle and High School); Maryland YRBS/YTS (2021-2022 and 2022-2023)

	2021-2022				2022-2023			
	Current Use		Ever Use		Current Use		Ever Use	
	MS	HS	MS	HS	MS	HS	MS	HS
Jurisdiction								
Maryland	3.8	15.0	5.1	26.0	3.2	14.4	4.6	23.0
Allegany County	4.5	15.8	5.9	28.9	4.1	14.6	5.4	25.5
Anne Arundel County	3.4	15.9	4.3	26.2	2.5	14.0	3.2	22.6
Baltimore County	4.3	17.4	6.1	29.7	4.5	18.0	5.6	28.9
Calvert County	2.8	13.2	3.9	23.2	3.1	15.6	5.2	25.0
Caroline County	4.6	18.7	7.0	29.4	6.8	16.8	7.4	26.7
Carroll County	1.9	18.9	3.0	28.3	2.1	15.4	2.7	24.4
Cecil County	5.5	19.1	6.9	31.4	5.4	15.5	7.3	25.2
Charles County	3.8	14.7	5.8	25.5	3.1	13.9	5.7	23.3
Dorchester County	7.7	20.8	10.4	30.9	5.7	19.7	7.8	27.8
Frederick County	2.9	13.6	3.5	23.0	1.6	13.4	3.0	22.1
Garrett County	2.2	19.5	3.0	28.8	2.0	13.6	4.4	22.2
Harford County	3.3	16.2	4.4	25.8	2.9	13.4	4.1	21.8
Howard County	1.7	10.2	2.0	19.6	1.1	8.4	2.0	13.9
Kent County	4.0	21.6	7.1	34.8	4.0	23.3	6.8	36.8
Montgomery County	2.1	11.9	3.0	22.7	1.9	11.2	2.8	16.8
Prince Georges County	5.6	14.1	7.2	25.0	4.1	14.5	5.4	23.6
Queen Anne's County	1.7	20.3	3.3	29.5	2.0	19.7	4.0	28.6
St. Mary's County	3.8	13.0	5.8	22.7	4.0	12.9	6.0	21.9

	2021-2022				2022-2023			
	Current Use		Ever Use		Current Use		Ever Use	
	MS	HS	MS	HS	MS	HS	MS	HS
Jurisdiction								
Somerset County	9.5	20.8	11.0	32.8	8.3	21.2	10.9	30.7
Talbot County	5.4	18.1	4.2	29.1	3.0	16.9	4.4	26.9
Washington County	4.3	17.3	5.9	27.1	4.1	13.1	5.9	24.1
Wicomico County	5.4	17.1	8.1	30.4	6.1	17.8	9.3	26.1
Worcester County	6.3	16.8	7.4	27.9	3.9	18.2	6.7	27.3
Baltimore City	6.2	*	8.6	*	4.9	20.6	7.9	30.9
Gender								
Female	4.1	16.2	6.1	28.5	3.9	17.2	5.8	27.2
Male	3.4	13.6	4.2	23.2	2.6	11.7	3.4	18.8
Sexual Identity								
Heterosexual	*	13.3	*	23.8	*	12.3	*	19.6
Gay, Lesbian, Bisexual	*	24.6	*	35.2	*	24.7	*	32.6
Other/Questioning	*	14.8	*	40.4	*	16.4	*	35.7
Race/Ethnicity								
Black/African American	4.6	15.9	6.7	27.5	4.1	17.0	6.2	26.6
Asian	0.9	5.7	0.9	9.8	1.1	3.5	1.0	5.5
White	2.5	15.2	3.7	26.3	2.3	14.6	3.3	23.9
Hispanic/Latino	4.7	14.1	5.9	25.8	3.9	12.2	5.1	19.8
Multiracial	5.9	20.2	8.5	32.9	4.4	20.6	6.8	30.3
Native American/ Alaska Native, Native Hawaiian/Other Pacific Islander	2.7	20.3	2.6	30.8	3.9	17.4	2.9	20.0
Grade								
6	2.2	*	2.1	*	1.1	*	1.4	*
7	3.4	*	4	*	2.5	*	3.4	*
8	5.5	*	8.8	*	5.7	*	8.5	*
9	*	8.2	*	13.8	*	9.1	*	13.9
10	*	12.7	*	22.7	*	12.6	*	20.1
11	*	18.2	*	30.7	*	16.4	*	26.3
12	*	22.4	*	39	*	21.4	*	34.7

*Data not collected or suppressed.
MS refers to Middle School; HS refers to High School

Percent of Current (Past 30 Day) Cannabis Use Among Maryland Adults; Maryland BRFSS 2018-2023

	2018	2019	2020	2021	2022	2023
Jurisdiction						
Maryland	7.9	9.6	9.2	9.0	11.7	13.2
Allegany County	7.8	7.1	*	7.8	15	*
Anne Arundel County	8.2	8.6	9.6	7.8	11.7	10.1
Baltimore County	8.9	11.3	11.9	10.5	13.4	15.3
Calvert County	*	9.3	*	*	*	24.5
Caroline County	*	*	*	*	*	*
Carroll County	*	8.2	9	*	*	*
Cecil County	9.8	6.9	5.9	9.7	*	*
Charles County	6.7	10.6	5.9	6.8	*	14.7
Dorchester County	*	*	*	*	*	*
Frederick County	9.8	9.6	8.7	9	8.6	13.1
Garrett County	*	*	10.9	*	*	*
Harford County	8.7	9.8	6.9	9.8	*	*
Howard County	3.7	8.4	4.2	6.1	*	*
Kent County	*	*	*	*	*	*
Montgomery County	6.2	6.4	6.5	7.1	9.6	9.6
Prince Georges County	7.8	7.7	8.1	8.7	10.5	14.7
Queen Anne's County	5.4	12.1	8.7	7.8	*	17.8
St. Mary's County	5.3	9.7	6.2	*	*	*
Somerset County	*	*	*	*	*	*
Talbot County	7.8	*	7.6	*	*	*
Washington County	5.7	7.4	10.1	10.6	11.8	14.2
Wicomico County	8.2	17.9	14.6	10.9	10.8	8.1
Worcester County	*	*	14.1	11.7	18.4	*
Baltimore City	11.8	18.2	17.0	14.7	19.0	22.1
Age						
18-20	21.8	16.3	17.4	16.7	*	29.5
21-25	16.9	21.5	17.1	19.4	25.8	22.8
26-54	8.5	11.4	11.1	10.6	15.2	15.8
55+	3.7	4.5	4.4	4.4	5.6	6.6

	2018	2019	2020	2021	2022	2023
Gender						
Male	9.7	11.6	12	10.1	14	14.3
Female	6.3	7.8	6.8	8	9.7	12.5
Race/Ethnicity						
White	7.7	9.2	8.4	9.7	12.3	14.4
Black	10.1	12.5	11.7	10.9	14.4	14.1
Asian	3.5	4.3	4.7	*	*	*
Hispanic	4.7	5.9	7.7	5.8	5.1	7.3
Other	9.9	13.3	7.4	13.0	19.3	20.1
Education						
High School or Less	9.9	11.3	11.4	10.7	13.3	16.6
At least some college/technical	6.8	8.8	8.1	8.2	11.1	11.8

*Data suppressed due to sample size.

Percent of Cannabis Use During Most Recent Pregnancy; Maryland PRAMS 2019-2020 and 2021-2022

		2019-2020	2021-2022
	Overall	4.2	4.2
Age	20-24 years	6.0	10.8
	25-29 years	6.8	5.3
	30-34 years	2.0	2.1
	35+ years	2.1	1.7
Race/Ethnicity	White NH	3.8	5.2
	Black NH	7.0	4.4
	Hispanic	1.5	1.3
Education Level	<=12 years	5.0	6.3
	13+ years	3.4	3.1

Estimated Dose (mg/THC) per Sitting Among Medical Cannabis Patients by Product Type; MMCPS 2022-2024

Product Type	2022	2023	2024
Edible	8.0	8.0	8.0
Vape	19.2	16.0	16.0
Flower	45.0	47.3	47.2
Concentrate	42.3	49.7	42.2

Primary Method of Cannabis Consumption Among High School Students Who Currently Use Cannabis (percent); Maryland YRBS/YTS 2021-2022 and 2022-2023

	2021-2022	2022-2023
Smoked it	59.6	58.6
Ate it	14.9	13.2
Vaporized it	14.0	19.4
Drank it	2.9	1.3
Dabbed it	4.7	3.5
Some other way	3.9	3.9

Methods of Cannabis Consumption Among Maryland Adults Who Currently Use Cannabis (percent); Maryland BRFSS 2018-2023

	2018	2019	2020	2021	2022	2023
Smoke it	79.2	71.8	72.0	67.3	79.7	79.6
Eat it	6.4	9.1	15.1	16.4	36.5	46.3
Vaporize it	10.2	14.3	7.4	10.9	26.5	34.7
Dab it	*	*	*	*	10.3	7.8
Some Other Way	*	2.6	*	*	8.3	9.0

Note: Response options changed in the 2022 and 2023 survey so findings are not directly comparable across years.

Perceptions of "Great Risk" from Smoking Cannabis Monthly Among Marylanders Ages 12+; (percent) Maryland NSDUH 2015-2021

	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Youth (under 18)	26.2	26.2	23.3	21.6	21.4	20.5
Young adult (18-25)	11.6	12.7	12.3	12.9	13.9	10.8
Adult (26+)	28.1	26.9	27.0	27.5	24.0	22.4
All ages (12+)	25.9	25.1	24.9	25.3	22.6	20.9

Appendix B: Impaired Driving

Number of Drug and Alcohol-Impaired Fatal Traffic Crashes in Maryland by Year; FARS (2018-2022)

	2018	2019	2020	2021	2022
Drug-impaired	37	33	29	34	22
Alcohol-impaired	129	167	189	190	207

Number of Arrests for Impaired Driving Due to Drugs/Controlled Dangerous Substances in Maryland; District Court of Maryland Arrest Report (2018-2023)

	2018	2019	2020	2021	2022	2023
Number of Arrests	1,105	1,053	767	604	461	314

Number and Percent of Cannabis-Positive Driving Evaluations by DREs in Maryland; Maryland State Police DRE program data (2017-2023)

	2017	2018	2019	2020	2021	2022	2023
Number of DRE evaluations	695	863	1,192	1,124	1,035	642	618
Number of cannabis-positive evaluations	134	186	244	231	201	125	152
Percent of cannabis-positive evaluations	19	22	20	21	19	19	25

Appendix C: Hospitalizations Related to Cannabis Use

Number of Cannabis-Related Hospitalizations by Demographics; HSCRC 2018-2024**

	2018	2019	2020	2021	2022	2023	2024**
Jurisdiction							
Maryland	19,760	18,437	17,815	17,797	15,608	14,343	6,904
Allegany	544	491	478	397	294	330	147
Anne Arundel	1,196	884	844	927	852	704	387
Baltimore	2,579	2,674	2,650	2,680	2,364	2,162	1,064
Baltimore City	5,363	4,944	4,730	4,327	3,805	3,427	1,700
Calvert	249	224	234	191	174	257	133
Caroline	80	41	41	59	62	74	31

	2018	2019	2020	2021	2022	2023	2024**
Carroll	341	319	361	368	378	398	157
Cecil	310	300	285	293	236	320	151
Charles	209	248	208	222	197	168	67
Dorchester	109	93	69	86	99	102	64
Frederick	686	623	620	441	406	405	198
Garrett	70	49	55	67	48	36	25
Harford	713	714	646	749	756	642	229
Howard	437	439	461	440	360	325	171
Kent	45	52	28	42	36	32	21
Montgomery	1,314	1,431	1,488	1,537	1,290	1,105	489
Prince George's	2,355	1,872	1,793	2,012	1,636	1,324	621
Queen Annes	88	58	56	55	46	38	21
St. Mary's	160	169	189	228	151	125	63
Somerset	71	91	64	86	87	69	41
Talbot	84	40	40	51	45	43	18
Washington	728	802	783	770	605	653	322
Wicomico	469	432	335	366	372	315	148
Worcester	165	131	107	136	126	134	52
Gender							
Female	8,208	7,821	7,650	7,774	7,140	6,545	3,076
Male	11,552	10,615	10,161	10,021	8,463	7,794	3,828
Unknown	*	*	*	*	*	*	*
Age							
0-12	163	644	787	960	1,025	831	459
13-20	1,893	1,719	1,640	1,557	1,483	1,322	5,98
21-55	14,614	13,151	12,651	12,500	10,603	9,845	4,648
56+	3,090	2,923	2,737	2,780	2,497	2,345	1,199
Payer							
Charity/Self-Pay	542	591	538	437	359	350	207
Commercial	4,129	4,069	3,881	4,175	3,924	2,990	1,343
Medicaid	11,175	9,952	9,688	9,586	8,158	8,115	3,978
Medicare	3,195	2,947	2,819	2,748	2,504	2,317	1,149
Other	719	878	889	851	663	571	227

	2018	2019	2020	2021	2022	2023	2024**
Race							
American Indian or Alaska Native	41	36	24	36	29	30	11
Asian	128	131	104	108	96	94	56
Black or African American	10,341	9,342	9,061	9,197	8,015	7,103	3,427
Declined to Answer	110	124	237	237	175	164	65
Other	647	675	722	773	768	697	354
Two or More	165	163	168	162	177	190	109
Unknown	132	146	118	91	71	70	27
White	8,196	7,820	7,381	7,193	6,277	5,995	2,855
Ethnicity							
Declined to Answer	42	87	237	249	216	235	91
Non-Hispanic Origin	18,643	17,388	16,750	16,709	14,588	13,385	6,417
Spanish/Hispanic Origin	613	665	683	759	734	645	346
Unknown	462	297	145	80	70	78	50

* Cell size =< 10 is suppressed. Jurisdiction level data does not include visits with out-of-state/ invalid or missing zip codes.

**2024 reflects a partial year (Jan 1 2024-June 30, 2024)

Note: Data reflect any/all cannabis diagnoses rather than primary cannabis diagnosis

Number of Cannabis-Related ED Visits by Demographics; HSCRC 2018-2024**

	2018	2019	2020	2021	2022	2023	2024**
Jurisdiction							
Maryland	31,817	32,520	26,861	23,894	24,029	25,354	10,690
Allegany	243	314	414	295	394	529	291
Anne Arundel	1,815	1,130	1,015	945	1,352	1,439	648
Baltimore	2,769	2,774	2,619	2,349	2,493	2,924	1,250
Baltimore City	10,809	10,422	7,615	6,038	4,885	5,213	2,114
Calvert	413	645	533	825	248	276	152
Caroline	52	77	85	103	136	145	93
Carroll	231	407	294	245	270	313	152
Cecil	372	350	254	244	266	331	121
Charles	317	633	255	388	560	547	222
Dorchester	125	215	182	173	349	352	189

	2018	2019	2020	2021	2022	2023	2024**
Frederick	337	328	309	299	401	409	224
Garrett	27	19	29	77	55	62	50
Harford	855	715	519	543	713	968	547
Howard	893	1,529	664	416	405	441	171
Kent	45	58	399	120	111	140	49
Montgomery	2,563	2,740	2,597	2,352	2,068	1,941	896
Prince George's	4,904	4,935	4,508	3,406	2,488	2,349	1,136
Queen Annes	103	133	152	147	202	188	108
St. Mary's	448	440	300	310	189	230	79
Somerset	131	139	81	186	442	252	134
Talbot	88	97	92	84	121	139	60
Washington	658	610	774	697	1,472	1,928	265
Wicomico	738	628	455	952	1,713	1,013	476
Worcester	179	174	124	276	399	730	258
Gender							
Female	12,365	12,677	10,586	10,091	10,546	11,204	4,866
Male	19,451	19,843	16,274	13,800	13,476	14,139	5,819
Unknown	*	*	*	*	*	11	*
Age							
0-12	42	62	68	95	143	201	119
13-20	4,847	4,659	3,674	3,402	3,741	4,017	1,756
21-55	24,272	24,995	20,723	18,143	17,455	18,101	7,551
56+	2,656	2,804	2,396	2,254	2,690	3,035	1,264
Payer							
Charity/Self-Pay	3,464	3,570	3,195	1,995	1,922	1,850	876
Commercial	6,245	6,545	5,527	5,392	5,780	6,229	2,780
Medicaid	18,174	17,905	14,173	13,030	12,861	13,555	5,560
Medicare	2,992	3,048	2,354	2,078	2,290	2,595	1,028
Other	942	1,452	1,612	1,399	1,176	1,125	446

	2018	2019	2020	2021	2022	2023	2024**
Race							
American Indian or Alaska Native	61	58	73	45	44	48	21
Asian	162	225	172	162	178	186	81
Black or African American	20,590	20,856	16,932	14,545	13,441	13,508	5,689
Declined to Answer	71	55	133	145	143	145	88
Other	1,502	1,557	1,377	1,232	1,087	1,173	573
Two or More	220	301	267	209	283	340	125
Unknown	101	138	106	80	92	63	27
White	9,110	9,330	7,801	7,476	8,761	9,891	4,086
Ethnicity							
Declined to Answer	96	58	151	141	138	133	73
Non-Hispanic Origin	30,053	30,657	25,155	22,295	22,365	23,714	9,881
Spanish/Hispanic Origin	1,350	1,570	1,443	1,305	1,398	1,401	693
Unknown	318	235	112	153	128	106	43

Source: HSCRC; * Cell size =< 10 is suppressed . Jurisdiction level data does not include visits with out-of-state/ invalid or missing zip codes.

**2024 reflects a partial year (Jan 1, 2024-June 30, 2024)

Cannabis-Related ICD-10 Diagnostic Codes

Substance	Codes
Cannabis-related diagnostic codes	F12: Cannabis-related disorder*T40.7: Poisoning by, adverse effect of and underdosing of cannabis (derivatives)P04.81: Newborn affected by maternal use of cannabis

*All F12 codes

Where applicable, the same codes were used for hospitalization, ED, cannabis-related disorder treatment service (PBHS) data requests

Appendix D: Calls to Poison Center

Number of Cannabis-Related Calls to Maryland Poison Centers; 2018-2024

	2018	2019	2020	2021	2022	2023	2024
All	365	469	615	632	703	820	741
Edibles	77	84	173	226	321	419	377
Other cannabis products	288	385	442	406	382	401	364

Calls have been recalculated with the addition of National Capital Poison Center data for Maryland counties for all years 2018 to 2024.

Number of Cannabis-Related Calls to Maryland Poison Centers for Youth Under Age 20; 2018-2024

	2018	2019	2020	2021	2022	2023	2024
<5 years and under	19	51	98	109	103	138	186
6-12 years	12	15	21	42	54	65	67
13-19 years	129	166	148	179	133	187	220

Calls have been recalculated with the addition of National Capital Poison Center data for Maryland counties for all years 2018 to 2024.

Appendix E: Diagnoses of Problem Cannabis Use

Number of Individuals Receiving Treatment Services in the PBHS for Cannabis-Related Disorder by Demographics; PBHS FY2018-2024

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Jurisdiction							
Maryland	8,873	8,680	7,495	5,992	6,708	7,882	9,906
Allegany	192	147	115	100	112	92	99
Anne Arundel	691	732	560	440	441	465	550
Baltimore City	2,540	2,242	2,253	1,821	2,185	2,679	4,115
Baltimore County	736	756	569	481	605	941	1,321
Calvert	190	215	150	101	113	114	104
Caroline	55	87	64	58	46	46	58
Carroll	103	129	80	56	74	108	104
Cecil	230	214	155	153	177	143	145

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Charles	272	216	156	130	156	145	175
Dorchester	180	232	238	144	135	140	153
Frederick	366	370	291	214	237	269	241
Garrett	51	53	43	42	41	30	34
Harford	332	422	355	267	278	303	344
Howard	200	162	156	128	104	126	173
Kent	37	41	54	45	63	41	51
Montgomery	619	543	445	378	382	465	479
Prince George's	873	788	618	510	541	628	718
Maryland	8,873	8,680	7,495	5,992	6,708	7,882	9,906
Allegany	192	147	115	100	112	92	99
Anne Arundel	691	732	560	440	441	465	550
Baltimore City	2,540	2,242	2,253	1,821	2,185	2,679	4,115
Baltimore County	736	756	569	481	605	941	1,321
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Caroline	55	87	64	58	46	46	58
Carroll	103	129	80	56	74	108	104
Cecil	230	214	155	153	177	143	145
Charles	272	216	156	130	156	145	175
Dorchester	180	232	238	144	135	140	153
Frederick	366	370	291	214	237	269	241
Garrett	51	53	43	42	41	30	34
Queen Anne's	48	47	39	32	40	39	44
Somerset	91	143	105	82	113	136	160
St. Mary's	210	197	172	127	136	128	131
Talbot	73	93	73	32	46	63	73
Washington	306	309	269	204	232	223	220
Wicomico	420	491	490	340	356	420	368
Worcester	195	186	165	139	140	129	103

	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Gender							
Female	2,990	2,838	2,481	2,003	2,251	2,774	3,781
Male	5,883	5,842	5,014	3,989	4,457	5,107	6,124
Race							
Asian	115	135	172	155	169	188	225
Black	4,551	4,269	3,778	2,927	3,337	3,962	5,430
Hispanic	27	20	35	35	34	65	76
Multi-racial	0	0	<11	<11	0	0	0
Native American	62	51	37	23	36	45	51
Native Hawaiian/ Pacific Islander	<11	<11	<11	<11	10	9	9
White	2,182	2,267	1,770	1,387	1,474	1,577	1,656
Unknown	1,929	1,929	1,692	1,458	1,648	2,036	2,459
Ethnicity							
Not Hispanic	2,985	3,420	4,133	4,127	4,588	5,356	6,543
Hispanic	138	184	209	252	291	372	405
Unknown	5,750	5,076	3,153	1,613	1,829	2,154	2,958

Note: County totals are not equal to statewide totals as individuals may have resided in multiple counties across the period. State totals are unduplicated.

Appendix F: Maryland Medical Cannabis Patient Survey (MMCPS)

To view the survey reports, visit MCA's website, cannabis.maryland.gov, and navigate to "Reports". Direct link: https://cannabis.maryland.gov/Pages/Reports.aspx