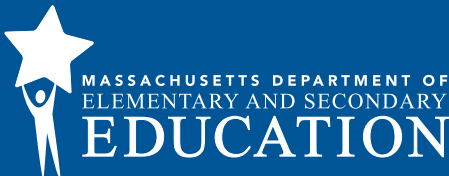


2021

HEALTH & RISK BEHAVIORS OF MASSACHUSETTS YOUTH



Massachusetts Department of Public Health

The Health and Risk Behaviors of Massachusetts Youth 2021 report focuses on effective strategies to utilize and disseminate the data obtained from the 2021 administration of the [Massachusetts Youth Risk Behavior Survey \(MYRBS\)](#) and [Massachusetts Youth Health Survey \(MYHS\)](#). Collected in Massachusetts middle and high schools during the 2021-2022 school year, the surveys gather reliable and accurate data about the health-related behaviors of adolescents across the Commonwealth as part of the long-standing collaboration between the Massachusetts Department of Elementary and Secondary Education (DESE or Department) and Department of Public Health (DPH). The goal of these surveys is to provide data that can help sustain positive momentum of existing efforts to address longstanding problems, and identify emerging issues that additional local and statewide efforts can help mitigate.

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BACKGROUND

The Massachusetts Youth Risk Behavior Survey (MYRBS) and **Massachusetts Youth Health Survey (MYHS)** are the most comprehensive and reliable tools available to monitor and evaluate progress across the Commonwealth of Massachusetts related to preventing or reducing behaviors that endanger the health and academic attainment of youth. These surveys are conducted in odd-numbered years. They are designed to monitor health indicators, behaviors, and risk factors contributing to the leading causes of illness, injury, mortality, and social and academic problems among adolescents, including:



Protective factors and positive childhood experiences that foster resilience and promote safe, stable, and nurturing relationships or environments



Tobacco use including electronic vaping device use



Behaviors that contribute to unintentional injuries and violence



Unhealthy dietary behaviors



Sexual behaviors related to unintended pregnancy and sexually transmitted infections (STIs), including HIV



Adverse childhood experiences (ACEs) that contribute to chronic stress and negative health outcomes in adulthood



Alcohol, marijuana, and other drug use



Experiences of racial and social inequity

Data collected through the MYRBS and MYHS enable DESE and DPH to provide estimates for various health indicators, behaviors, and risk factors for Massachusetts youth overall, and group them by certain characteristics (gender, grade, race and ethnicity). These analyses can highlight inequities in health within and across population sub-groups. In interpreting these results, it is critical to recognize that the social, economic, behavioral, and physical factors experienced by youth have a profound impact on their health and educational attainment. Disparities in outcomes by race, for example, are much more often due to social factors and the legacy of racial discrimination than biologic causes. The social determinants of health (SDOH) are rooted in systems; therefore, actions to reduce and prevent health inequities must be directed at systems changes¹.

The surveys have historically been conducted during the spring of odd-numbered years. However, the 2021 administration was delayed until the fall because of disruptions caused by the COVID-19

¹ Source: [RESULTS OF THE MASSACHUSETTS YOUTH HEALTH SURVEY 2021 \(DPH\)](#) More information about these Social Determinants of Health can be found on the [DPH Population Health Information Tool \(PHIT\) website](#)

global pandemic. In the year prior, Massachusetts school districts used a variety of approaches for schooling including, in-person, hybrid, and online learning – with students returning in-person to school by mandate in the late spring. In the fall of the 2021-2022 academic year, students returned to full-time in-person schooling. Between September and December 2021, a total of 8,685 students at 60 high schools and 79 middle schools participated in the 2021 Massachusetts Youth Risk Behavior Survey and/or Massachusetts Youth Health Surveys (see Figure 1 for participation by survey). Results are weighted to be representative of all Massachusetts public middle and high school students and to compensate for absenteeism and incomplete surveys, as well as those few schools that chose not to participate.



METHODOLOGY

The Department and DPH worked with the Center for Disease Control and Prevention (CDC) and ICF International Inc. (ICF) to conduct three coordinated surveys. The MYRBS and MYHS are conducted among high school students in grades 9 through 12; and the MYHS is conducted among middle school students in grades 6 through 8. These surveys are conducted as a representative sample of public, charter, and vocational schools in Massachusetts. Students in private schools or other educational settings are not represented.

SAMPLE & PARTICIPATION

For the high school surveys (MYRBS and MYHS), the CDC used a two-stage sampling method to produce representative samples of students in grades 9 through 12; all public schools having at least one of grades 9 through 12 were included in the sampling frame. In the first sampling stage, schools were selected with probability proportional to school enrollment size. In the second sampling stage, intact classes of a required subject or intact classes during a required period (e.g., second period) were selected randomly. All students in sampled classes are eligible to participate. Individual classes were assigned randomly to either the MYRBS or the MYHS using a multiple-class sampling approach. Including both surveys, usable data were collected from high school students in 60 schools. The overall response rates (i.e., the school response rate multiplied by the student response rate) were 59% for the MYRBS and 62% for the MYHS.

For the middle school survey (MYHS), similar scientific procedures are used by ICF to select a representative random sample of middle schools and classrooms within those schools. Data were collected from middle school students in grades 6 through 8 in 79 schools. The overall response rate was 58.6%.

Data are weighted to be representative of all students in grades 9-12 and grades 6-8. Students who have severe limitations or disabilities, or who are often absent from school may be underrepresented.

SURVEY QUESTIONNAIRES

While the MYRBS and MYHS cover many similar topics, they do differ slightly. For the high school surveys differences are seen in the proportion of questions dedicated to certain topic areas. The MYRBS has a larger proportion of questions related to behaviors and experiences occurring on school property and sexual health; while the MYHS has more questions looking at substance (alcohol, tobacco, marijuana, and other drugs) use (including ease of access, and perception of use). In 2021, both surveys included new questions designed to help better understand the experiences of youth. For MYRBS, this includes questions about experiences of racial and social inequity, more questions about protective factors, positive and adverse childhood experiences, and some COVID-specific questions. For MYHS, this includes more questions about protective

factors, and positive & adverse childhood experiences. The middle school YHS survey is designed for a younger audience and does not include questions about sexual behavior, sexual orientation, or gender identity. Copies of the 2021 surveys as well as previous questionnaires can be found online at: [Massachusetts Youth Risk Behavior Survey](#) and [Massachusetts Youth Health Survey](#).

DATA & DATA COLLECTION

All data collected for the MYRBS and the MYHS are based on self-report from Massachusetts public school students. New in 2021, high school students completed the MYRBS and MYHS online using a unique, random login code to access the survey. The middle school survey remained paper based. All students were read a standard set of directions and are given one class period to independently complete the questionnaire. Survey procedures were designed to protect the privacy of students by allowing for anonymous and voluntary participation. Local parental permission procedures were followed before survey administration.

The 2021 administration was delayed until the fall as a result of disruptions caused by the COVID-19 global pandemic and widespread remote learning. Moving the survey to the fall could have impacted results, as developmental changes and social connections that progress over the course of the school year are just beginning to forge. For more information on how the COVID-19 pandemic potentially impacted results, please see the understanding and interpreting results section of this report.

DEMOGRAPHIC CHARACTERISTICS

Figure 1: Demographic Characteristics of the 2021 MYHS and MYRBS ^{a,b}

	Middle School	High School	
	MYHS (N=2,876)	MYHS (N=2,645)	MYRBS (N= 3,164)
Sex			
Female	1,320 (48.8%)	1,341 (49.0%)	1,564 (49.8%)
Male	1,425 (51.2%)	1,265 (51.0%)	1,568 (50.2%)
Unknown	131	39	32
Grade			
6th grade	779 (31.9%)	-	-
7th grade	1,049 (34.0%)	-	-
8th grade	1,024 (34.1%)	-	-
9th grade	-	724 (25.5%)	970 (26.3%)
10th grade	-	737 (25.3%)	782 (24.7%)
11th grade	-	494 (24.8%)	750 (24.2%)
12th grade	-	681 (24.5%)	643 (24.3%)
Ungraded or Other	2	3	13
Unknown	22	6	6
Race/Ethnicity ^b			
White, non-Hispanic	1,257 (56.4%)	1,379 (58.9%)	1,481 (57.8%)
Black, non-Hispanic	240 (9.6%)	226 (9.3%)	530 (9.4%)
Hispanic or Latino	712 (22.8%)	667 (21.2%)	730 (22.1%)
Asian, non-Hispanic	141 (5.1%)	178 (5.7%)	228 (6.5%)
Other or Multiple Ethnicity, non-Hispanic	159 (6.1%)	149 (4.9%)	152 (4.0%)
Unknown	367	46	43

(a) N = number of students with a valid response for the question. Percent (%) = weighted percent of all students with a valid response for the question. The weighted percents are used because they account for slight variations between Massachusetts Middle/High School populations and the MYRBS/MYHS samples.

(b) Students could indicate multiple racial/ethnic categories. If Hispanic/Latinx was indicated as an ethnic identification, whether alone or in combination with other ethnic categories, the student was categorized as Hispanic/Latinx. The Other or Multiple Ethnicity category includes American Indian, Alaskan Natives or Pacific Islander and youth who indicated several ethnicities that did not include Hispanic/Latinx.

USING THE MYRBS AND MYHS RESULTS

MYRBS and MYHS results offer information that can be of great interest to many people. Students, parents, school administrators, public health professionals, policymakers, and the general public can all find the results relevant and useful.

The following provides a compilation of strategies and examples of how MYRBS and MYHS data has been and can be used. Effective data use helps to sustain positive momentum and strengthen existing efforts in promoting adolescent health and wellbeing.



DESCRIBE STUDENT HEALTH BEHAVIORS, RISKS, & EXPERIENCES

Data collected by the MYRBS and MYHS is used to determine the prevalence of health-related behaviors and experiences. The indicators captured provide important information about the health, safety, and well-being of youth across the state. The data can detect changes in risk behaviors over time, provide insights into new behavioral patterns among adolescents, identify differences among subpopulations of youth, and indicate the presence of health promoting factors. Effectively describing and communicating the findings assists in identifying the need for youth programs, interventions, and education and health policies, and supports recommendations being made in the development of these efforts.

Strategy in Action: Data briefs or highlights are one tool used to describe and summarize survey results in an easily understood and concise way. For MYRBS and MYHS these are often structured as followed:

- **The Presence of Protective Factors and Positive Childhood Experiences:** While epidemiology often focuses on factors that increase risk of illness, death, or other poor health outcomes, there are also protective factors that promote health and wellbeing. Factors such as academic goals and successes, school-connectedness, and a close relationship with a parent or caregiver have long been recognized as potential protective factors because they promote resiliency in youth. E.g.:
 - » In 2021, many high school students have adults they can talk to:
 - › 76.1% reported having a teacher in school they could talk to about a problem
 - › 64.2% reported having a parent or adult family member they could talk to about things important to them.
- **General Trend Patterns (improvements, worsening, and/or static):** Looking at trends in priority risk behaviors helps to better understand prevalence estimates derived in a given survey year, gives greater insight into understanding the associated factors and co-occurrence of risks, and assists with evaluating the contribution of broad education and prevention efforts in schools and other settings toward helping to reduce health risk behaviors among youth.

» **Risk behaviors and health-related factors showing significant improvements. In 2021, indicators related to marijuana and electronic vapor product use among high school students show significant declines.**

- › Current rates of marijuana use reported among high school students have been significantly declining since 1997. In 2021, 16.6% of high school students reported using marijuana in the past 30 days (down from 30.9% in 1997).
- › Fewer youth are trying electronic vapor products. In 2015², nearly 45% of youth reported ever using electronic vapor products. This has decreased to just over 30% in 2021.

» **Risk behaviors and health-related factors worsening significantly. Some indicators, specifically those related to poor mental health and sexual violence are of growing concern.**

- › In 2021, 50% of females reported they felt persistently sad or hopeless which has increased from 29.2% in 2013³. In 2021, 25% of females seriously considered attempting suicide; a 56% increase from 2011 (16.1%)⁴.
- › Almost 17% of high school girls in Massachusetts experienced sexual violence (up 15% since the measurement started in 2017) and 11% were forced to have sex (up 47% since the measurement started in MA in 2017).

» **Risk behaviors and health-related factors remaining statistically unchanged.**

- › Important indicators for risks for chronic disease later in life, have seen small fluctuations but no significant change. In 2021, 15.2% of high school students were overweight and 13.6% were obese (based on self-reported height and weight).
- › There has been no significant change in the percentage of high school students reporting they were physically active for at least 60 minutes, five or more days a week (43.3% in 2011 vs. 45% in 2021).

- **Identifying Disparities:** Disparities are significant differences in the outcomes between populations by which inequities are manifested. Highlighting disparities aims to assess the association between certain behaviors and the demographic structure of student populations. Identifying disparities seen within the data is one step on the road to promoting health & educational equity and is necessary to identify needs for youth centered programs, interventions, and policies. E.g.:

² YRBS began measuring electronic vapor product usage in 2015.

³ Trend analysis showed significant decreases in this measure among females from 1999 -2013 with significant increases since 2013.

⁴ Trend analysis showed significant decreases in this measure among females from 1993 -2011 with significant increases since 2011.

- › In 2021, Female Hispanic/Latinx students (60.1%) reported a significant higher prevalence of feeling sad and hopeless, not only when compared to female students overall (50.1%), but also when compared within their racial/ethnic subgroup (Male Hispanic/Latinx students: 30.7%).
- › More than 65% of LGB⁵ students experienced persistent feelings of sadness or hopelessness during the past year and more than 44% reported seriously considered attempting suicide. Rates among those identifying as heterosexual were almost 30% and 11%, respectively, for these measures.
- **New and changing influences on behavioral patterns among youth:** As influences on adolescent health and social wellbeing change, keeping abreast of the impact on behaviors is crucial. Adding new questions can help to inform potential new areas for targeted educational and public health initiatives for adolescents. With repeated administrations, true behavioral patterns begin to emerge and needs for sustained prevention efforts become evident. E.g.:
 - › In 2021, high school students were asked about their experiences being the victim of teasing or name calling because of their race or ethnic background in the past 12 months; 12.9% reported that they had.
 - › In 2021, seventy percent (70%) of high school students agreed that their school has clear rules and consequences.



CELEBRATE GOOD NEWS

There is a lot of positive news in the data that shouldn't be overlooked. While prevention efforts often focus on the prevalence of risk behaviors and the disproportion of risks among subpopulations, it is important to not forget about the percentage of adolescents who are NOT engaging in these behaviors. Social norming⁶ has similar risk behavior mitigating effects as has been shown with promoting and enhancing protective factors among youth. Data shows that most high school students in Massachusetts are NOT engaging in risky behaviors measured by MYRBS and MYHS. Highlight the positive results and celebrate the fact that many students are increasingly abstaining from behaviors that endanger their health and their ability to succeed.

Strategy in Action: The 84 is a statewide movement of youth fighting tobacco use in Massachusetts. The 84 represents the 84% of Massachusetts youth who did NOT smoke when the movement began. Now, 93.4% of youth do NOT smoke.

⁵ Data is presented as LGB and not LGBTQ+ because students were asked sexual orientation and gender identity in separate questions. Further analyses are needed to combine these groups into one category (LGBTQ+) and derive comparative estimates.

⁶ Social norming is a behavioral change approach that focuses on educating on the positive healthy behaviors that are typical of peers to influence adoption of those behaviors. Social norming can be thought of as "positive peer pressure".



LISTEN TO YOUTH

Youth are active participants in their own well-being and their voice can inform how MYRBS/MYHS data is interpreted. School administrators, teachers, and families can use the MYRBS/MYHS findings to start a conversation and spark action with teens about their personal choices and decisions they see other teens making.

Strategy in Action: Getting To 'Y' is an example of an opportunity for students to bring meaning to Youth Risk Behavior Survey data. Through youth leadership, partnerships with adults, participatory action research, and peer and community engagement, participants not only experience personal growth and build their capacity for future civic engagement, but also effect sustainable change in youth behavior, community, and school culture. The Department launched Getting to 'Y' in Massachusetts in 2022 as a pilot program, with the goal of expanding across the state in the coming years.



ACADEMIC INTEGRATION

Many teachers incorporate MYRBS and MYHS data into curricular units. Academic integration of health data can be an effective way to:

- Help students see the importance of the surveys they are taking
- Help students see and make authentic connections between multiple disciplines
- Capture student's attention by comparing their perceptions of their peer's behavior to the actual statistics
- Create a framework to introduce sensitive topics
- Create opportunities to tap and empower students' senses of agency, boost students' collaborative skills, and spark students' interest to take action by engaging in opportunities like service-learning and civic work.

Strategy in Action:

- Priority 2A under DESE'S Integrating Social and Emotional Learning into Academic Learning grant opportunity (Fund Code 151) is designed to support middle and high school teachers in the integration of health topics into curricular units. Educators from funded districts are developing service-learning based units that engage students in using social and collaborative skills to: investigate and grapple with health topics (through multiple disciplines); analyze and interpret student provided data (e.g., state and/or local YRBS) to identify topics of interest and need to them and their peers; investigate to understand multiple points of view on the problem; research possible solutions; decide on a project that will make an impact on the need and is feasible to implement; and plan, implement, and evaluate their projects.

- Boston Public Schools (BPS) has created several health education lessons that integrate the use of YRBS data. The Health Equity, Advocacy and You unit, presented during a [Youth Risk Behavior Data Collection Community of Practice](#) convening in 2022, explores the social and systemic factors that create barriers to student health and well-being, examines how these factors affect populations differently and stress the importance of health equity and literacy. This classroom unit uses YRBS data to focus on public health and culminates in a gallery presentation of ideas to advance health equity. To learn more about BPS’s Academic Integration approach, please contact their Director of [Health Education: Health and Wellness / Health Education \(bostonpublicschools.org\)](#).



FAMILY & COMMUNITY ENGAGEMENT

MYRBS/MYHS findings can be used to build stronger partnerships with adults in the community by dispelling myths and correcting misinformation about adolescent development and typical adolescent behaviors. This can include starting a conversation with families about the personal choices’ teens are actually making. The MYRBS/MYHS results can help parents and caregivers better understand the challenges their children face and start discussions about how to promote healthy behaviors and minimize unhealthy ones with their children.

The primary goal of family engagement is to facilitate shared responsibility that contributes to the healthy development, learning, and growth of children—from the earliest ages into young adulthood. Schools and districts can use MYRBS/MYHS data to connect, engage, and sustain family involvement in school health and health-related activities.

Strategy in Action:

- The CDC’s Division of Adolescent and School Health provides resources and guidance on data-driven strategies to promote parent engagement in school health ([Parent Engagement in Schools | DASH | CDC](#)). The fact sheet, [“Promoting Parent Engagement in Schools to Prevent HIV and other STDs Among Teens,”](#) presents information that links parent engagement in schools to HIV/STD prevention.
- [Strengthening Partnerships: A Framework for Prenatal through Young Adulthood Family Engagement in Massachusetts](#) provides guidance on effectively developing meaningful partnerships between families, schools, and communities. MYRBS/MYHS data can support and be used to strengthen activities implemented to achieve the goals of the various elements of the framework.



UNDERSTAND & COMPARE STATE & LOCALLY COLLECTED RISK & HEALTH BEHAVIOR DATA

Many schools and districts choose to conduct or participate in local surveys (school, district, or regional efforts) to gather data about the risks and health behaviors of their own students. State level data contextualizes local data through understanding how those students compare with all students across the Commonwealth. If local school districts are seeing different outcomes in their data compared to the state, the community and youth can be engaged to discuss what it means and how to address it.

Strategy in Action: The Communities that Care Coalition has been conducting youth surveys in Franklin County and the North Quabbin using three different survey instruments, including the YRBS, in a three-year cycle. The Coalition provides reports to the community about substance abuse and mental health, as well comparisons between the participating communities, across Massachusetts, and nationally.



INFORM SCHOOL POLICIES & PRACTICES & EDUCATOR PROFESSIONAL DEVELOPMENT

MYRBS/MYHS data can be used to determine what outcomes to work towards and to identify a list of indicators to monitor progress towards improving outcomes and achieving goals. Additionally, the data can be used to inform teacher and staff professional development offerings. While YRBS monitors priority health risk behaviors, the companion School Health Profiles (Profiles) survey that is administered in even numbered years, monitors implementation of supportive school health and health related policies, programs, and practices. Profiles also includes a professional development needs matrix detailing topic and skills areas where educators are looking for greater support. The YRBS and Profiles are both valuable surveillance tools in themselves, and when used in conjunction with one another they provide an even richer picture into the understanding and prevention of adolescent risk and the important role schools play in reducing identified risk behaviors and promoting healthy decision making and living. Independently and collectively, these surveys support making recommendations and decisions for implementation and or changes in school policies and practices as well as the provision of professional development for educators.

Strategy in Action: The Safe and Supportive Schools Commission was created as part of the Safe and Supportive Schools Framework Law (Massachusetts General Laws, chapter 69, section 1P). The Commission is tasked with collaborating with and advising DESE on the feasibility of state-wide implementation of the Safe and Supportive Schools framework. Annually, the Commission releases a report outlining their activities and recommendations to help schools become safer and more supportive as defined by the law. MYRBS/MYHS data is used to support recommendations being made.



ADDRESS & IMPROVE EDUCATIONAL & HEALTH INEQUITIES

While youth in Massachusetts overall make fewer risky decisions than youth in other parts of the United States, it is important to recognize that not all subpopulations fare as well across the board. The MYRBS and MYHS data show significant disparities within the Commonwealth and reinforce the fact that opportunities and resources are not equitable across all demographic groups. The data can be used to support principles, strategies, and policies that inform the way health and educational initiatives are designed and delivered so that everyone can attain their full academic and health potential.

Strategy in Action:

- DPH's [Racial Equity Data Road Map: Data as a Tool Towards Ending Structural Racism](#) is a resource that provides a number of steps for using data to advance racial equity.
- DESE's Racial Equity Decision Making Tool (REDT) outlines a set of specific guiding questions to determine if existing and proposed initiatives, policies, budgetary allocations, programs, and practices are likely to advance equity, and to serve as a checkpoint in decision-making processes along the way. The REDT outlines a six-step process with guiding questions to consider at each step. Step 2 in the process is to Analyze Data and Historical Context: MYRBS/MYHS data gives invaluable insight into existing and perpetual inequities and about assets and strengths of students across the Commonwealth to be considered and used to advance equity in educational opportunities.



PLAN, MONITOR, & EVALUATE

MYRBS and MYHS data can serve as part of a community needs assessment. Program leaders and other decision makers can use these results to identify strengths and weaknesses in their communities and inform strategies to address those weaknesses and further bolster strengths. The data can then support monitoring progress toward achieving objectives

UNDERSTANDING AND INTERPRETING THE RESULTS

All data collected for the MYRBS and the MYHS are based on self-report from Massachusetts public-school students. Students in private schools or other educational settings are not represented. Students who have severe limitations or disabilities⁷, or who are often absent from school may be underrepresented. Self-reported data may be subject to error for several reasons, including inaccurate recall of events. The data presented are univariate, descriptive percentages; no multivariate analysis was performed on these data. In addition, all data presented here are voluntary and cross-sectional, and thus should not be used to assess causality.

Percent estimates are weighted (i.e., adjusted for nonresponse and distribution of students by grade, sex, and race/ethnicity) in order to be representative of Massachusetts high school and middle school students as a whole. Estimates are not presented if the underlying sample size is less than 100 respondents. Additionally, data are not presented if a ratio of standard error to the estimate itself exceeds 30% (relative standard error of greater than 30%). Standard error of the estimate is a measure of its variability.

Due to restrictions in CDC's data processing systems around weighting⁸, male and female are currently the only response options for **sex** on the survey. We acknowledge that male and female are insufficient options for students who do not identify as either and thus may be mis-represented or included in "missing/unknown."

Students were asked **sexual orientation and gender identity** in separate questions. A detailed table on the demographic (grade, sex, race/ethnicity) characteristics of these students are presented here but comparative risks estimates are not. More comprehensive reporting on disparities in risk for LGBTQ+ youth is pending and is being conducted by the Safe School Program for LGBTQ students.

Race-ethnicity categories in the data tables include White, Black, Hispanic/Latinx, Asian, and Other/Multiracial. When referring to White, Black, Asian, or Other/Multiracial, these categories include only non-Hispanic/non-Latinx respondents. All respondents reporting Hispanic/Latinx

⁷ To protect students and maintain their privacy, students must be able to independently complete the questionnaire in order to participate.

⁸ Since its inception in 1991, YRBS weighting procedures (used to provide representative student data) are based on male/female in the vast majority of locations around the country. MA is among only a minority of sites that have population-level data on non-binary students, and this information is not available at a national level. Consequently, if YRBS were to modify this question, students choosing a non-binary response option would be excluded from the weighting process in places that do not allow this category for student records. For the 2023 survey, MA has added an inclusive question on gender identity. CDC is currently exploring options to update their weighting methodology and whether the gender identity question could be used instead of the sex question for weighting purposes, but as this is a massive effort changes may not be seen until after several cycles of the survey in which these questions have been added.

ethnicity are included in the Hispanic/Latinx category regardless of race. Due to small sample sizes, data on American Indian/Alaska Natives and Native Hawaiians/Other Pacific Islanders are collapsed into the Other/Multiple Race category.

Statistical significance refers to differences in data that do not occur by chance, but because an actual difference exists. The size of the difference is not indicative of its significance. Although the difference between some numbers may seem large, these differences should not be considered statistically significant unless they are explicitly noted as such or their 95% confidence intervals are nonoverlapping. All estimates were calculated at the 95% confidence interval; meaning the change or difference observed is more likely to represent real change (95% likelihood) than it is to represent chance (5% likelihood).

2011 – 2021 MASSACHUSETTS YRBS PREVALENCE TRENDS REPORT DESCRIPTION

The following describes the 2011-2021 trend data report for the MYRBS, which is a separate appendix (Appendix A) and can be found here: <https://www.doe.mass.edu/sfs/yrbs/>.

The trend tables describe whether the prevalence of each behavior has increased, decreased, or stayed the same over time overall and by sex and race/ethnicity.

The Trend Tables contain the following columns:

Columns	Content
Health Risk Behavior and Percentage	<p>Results are grouped by risk behavior categories based on CDC YRBS standard questions. Results derived from MA added questions are grouped together and listed after the results based on the standard questions.</p> <p>Percentages in the trend tables represents prevalence estimates for each question for each year. Percent estimates are weighted (i.e., adjusted for nonresponse and distribution of students by grade, sex and race/ethnicity) in order to be representative of Massachusetts high school students as a whole.</p> <p>Note: A blank in this column signifies that weighted data were not available, that the question was not asked, or that fewer than our minimal threshold of 30 students responded or were included in the analysis.</p>
Linear Change	<p>Indicates whether there was a statistically significant* linear change in the prevalence over time and the years during which the linear change occurred. That is, did the prevalence increase, decrease, or stay the same? At least two years of data are required to test for a linear change.</p>
Quadratic Change	<p>Indicates whether there was a statistically significant quadratic change in prevalence over time and the years when both components of the quadratic change occurred. At least 6 years of data are needed to test for a quadratic change. "Not available" in this column indicates there are less than 6 years of data.</p>
Change from 2019-2021	<p>Indicates whether there was a statistically significant increase or decrease in prevalence between 2019 and 2021. That is, did the prevalence increase, decrease, or stay the same?</p>

Linear and quadratic changes occur independently of each other. It is possible to have one, both, or neither. One is not better or worse than the other. There are four possible combinations of linear and quadratic changes.

A. Linear change = YES; Quadratic change = NO: If there is a linear change but no quadratic change, then the prevalence either increased linearly or decreased linearly significantly over time. A graph of the trend line will be relatively straight.

B. Linear change = NO; Quadratic change = YES: If there is no linear change but there is a quadratic change, then the prevalence increased or decreased slightly over time, but not enough to be a significant linear change, and then leveled off; the prevalence increased or decreased and then went in the opposite direction; or the prevalence started out level and then increased or decreased over time, but not enough to be a significant linear change. A graph of the trend line will have a bend in it; the year when the bend occurs is the “inflection point.”

C. Linear change = YES; Quadratic change = YES: If there is a linear change and a quadratic change, then while there was an overall significant increase or decrease in prevalence over time, the prevalence has either leveled off or begun to move in the opposite direction. A graph of the trend line will have a bend in it.

D. Linear change = NO; Quadratic change = NO: If there is neither a linear change nor a quadratic change, then there was no significant change in the prevalence over time. A graph of the trend line will be relatively flat.

2021 MASSACHUSETTS YRBS AND YHS COMBINED DATA TABLES REPORT DESCRIPTION

The following describes the combined data tables report, which is a separate appendix (Appendix B) and can be found here: <https://www.doe.mass.edu/sfs/yrbs/>. The data tables contain data from the 2021 Massachusetts Youth Risk Behaviors Survey (MYRBS) and the Massachusetts Youth Health Surveys (MYHS). Results for high school students are from the MYRBS except for a few instances where the data are derived from the MYHS and are indicated with (^). All middle school results are from the MYHS.

Percent estimates and 95% confidence intervals are presented. Since survey estimates are based on a random sample of public-school students, not a complete census, ninety-five percent (95%) confidence intervals provide a range of values that most likely contain the true percent estimates for the population and are noted throughout. The width of the interval indicates the precision of a calculation; the wider the interval the less precision in the estimate.

Estimates and their 95% confidence intervals are not presented if the underlying sample size is less than 100 respondents. Additionally, data are not presented if a ratio of standard error to the estimate itself exceeds 30% (relative standard error of greater than 30%). Standard error of the estimate is a measure of its variability.

The difference between some numbers may seem large, these differences should not be considered statistically significant unless they are explicitly noted as such or their 95% confidence intervals are nonoverlapping. Selected statistically significant differences between subgroups have been highlighted throughout the data tables with details on the difference noted in the table footnotes.

Note: These examples of differences are highlighted to illustrate significant differences by nonoverlapping confidence intervals and do not reflect all significant disparities seen within the data.

FURTHER INFORMATION AND ACCESSING SURVEY DATA

Massachusetts and National Youth Risk Behavior Survey:

For further information and resources on the Youth Risk Behavior Survey, please visit the Centers for Disease Control and Prevention website: <https://www.cdc.gov/healthyyouth/data/yrbs/index.htm>

For questions and inquiries specific to the MYRBS please contact:

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Telephone: (781) 338-6307
Email: OSFS.SchoolBasedSurveys@mass.gov
Website: <http://www.doe.mass.edu/sfs/yrbs/>

To access MYRBS and National YRBS data:

The CDC has created a web-based YRBS surveillance data exploration system, [Youth Online](#). Youth Online allows individuals to analyze national, state, and local Youth Risk Behavior Surveillance System (YRBSS) data from all years YRBS has been administered. Individuals can filter and sort based on race/ethnicity, sex, grade, or site; create customized tables and graphs; and perform statistical tests by site and health topic. Data from high school and middle school surveys are included (Massachusetts does not conduct a YRBS in middle schools). CDC does not include results of any questions that were added or modified for the state survey. Additionally, [YRBS Explorer](#), allows users to explore YRBS national, state and local school district data via tables and graphs.⁹

For individual researchers and organizations who wish to access the raw MYRBS data, please read and complete the data use agreement form found on our MYRBS webpage: <http://www.doe.mass.edu/sfs/yrbs/>

For further information about the MYHS, please contact:

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<https://www.mass.gov/lists/massachusetts-youth-health-survey-myhs>

For researchers interested in the raw MYHS data, please visit DPH's [Apply for access to MDPH confidential records data webpage](#).

⁹ For Youth Online and YRBS Explorer, local references local education agencies funded directly by CDC to collect YRBS data in their jurisdiction.