Tobacco Use Among Youth in South Dakota

2021 South Dakota Youth Tobacco Survey

Technical Report

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This report is available at: http://doh.sd.gov/statistics

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SECTION ONE: BACKGROUND

The landscape of youth tobacco use has changed in recent years. Use of cigarettes among United States (U.S.) youth has declined, yet the use of alternative tobacco products, including electronic cigarettes (e-cigarettes) and hookahs, has increased among middle school students. National data from 2021 shows 1.0% of middle school students reported smoking cigarettes in the past 30 days, while 2.8% reported use of an e-cigarette in the past 30 days.[1] Overall, in 2021, 4.0% of middle school students reported current use of a tobacco product, and 11.3% reported they had used a tobacco product at least once in their lifetime.[1]

Nationally, current use of two or more tobacco products in the past 30 days was reported by 1.3% of middle school students , and 4.0% of middle school student reported they had ever tried two or more tobacco products.[1] Poly-tobacco use in youth has been shown to increase symptoms of nicotine dependence, increasing the likelihood nicotine use will continue into adulthood.[2] Initiation of tobacco use during adolescence is a primary indicator for adult smoking status, as nearly 90% of cigarette smokers report having first tried smoking by age 18.[3-4] Various factors within an adolescents' social and physical environment, biological and genetics factors, mental health, personal perceptions, and other influences are associated with the initiation and maintenance of tobacco use among youth.[5]

The Youth Tobacco Survey (YTS) began in 1997 to assess the prevalence of tobacco use and examine factors that contribute to tobacco use among school-age youth. Data from the YTS serves to enhance the capacity of state agencies and organizations to design, implement, and evaluate tobacco prevention and control programs. South Dakota (SD) began statewide youth tobacco surveillance in 2003 using the South Dakota Youth Tobacco Survey (SD YTS). The SD YTS is an adaptation of the national YTS and includes state-added questions specific to programming and youth tobacco use trends in SD. After the 2003 baseline survey, the SD YTS was repeated bi-annually from 2005 to 2019, providing valuable data to track tobacco use trends among youth.

This section (section one) outlines the sampling, data collection and data weighting procedures, along with a description of the SD middle school survey population for 2021. Sections two through six of this report summarize current tobacco use patterns among SD youth and provides trend data from previous SD YTS administrations, as well as comparison with national trends.

Sample Selection and Weighting Procedures

(The information in this section was provided by Research Triangle Institute, Inc. who conducted the school and classroom sampling for the project, as well as the response weighting.)

Description of the South Dakota Sample

All regular public, private, and tribal schools in SD offering grades 6, 7, or 8, and reporting 30 or more eligible students were included in the sampling frame. Schools with fewer than 30 eligible

students were not sampled and removed from the sampling frame prior to sample selection. The advantage of removing small schools is to increase the precision of the estimates. The disadvantage is a small amount of coverage error, which was calculated to be less than 2%. Schools were stratified into two groups to over-sample the latter, increasing the size of the target sub-population and improve the reliability of the data in a small population: (1) Lower American Indian density and (2) High American Indian density. High American Indian density schools were defined as those schools where 25% or more of all the students in the school were American Indian, a definition obtained from the National Center for Education Statistics.[7] Fall 2020 school enrollment data was obtained from the SD Department of Education for use in the 2021 SD YTS.[8]

A three-stage cluster sample design was used to produce a representative sample of students in grades 6-8. A sample was drawn using a three-stage cluster sample design:

1) Within each stratum, schools were selected with probability proportional to school enrollment size using a systematic selection procedure. (School Level)
2) Classes within schools were selected randomly, also using a systematic selection procedure, so that the overall probability of selection of each student is equal. Every eligible student in schools on the sampling frame with 30 or more eligible students has a chance of being selected. (Class Level)
3) All students were selected in each selected class. (Student Level)

Overall Response Rates

Schools - 79.71% 55 of the 69 sampled schools participated.

Students - 77.26% 2,826 of the 3,658 sampled students completed usable questionnaires.

Overall response rate - 79.71% * 77.26% = 61.58%

Weighting and Final Data Preparation

A weight was associated with each sample unit to reflect the likelihood of sampling each student and reduce the potential bias by compensating for differing patterns of nonresponse. The weight used for estimation is given by:

$$\mathbf{W = W1 * W2 * f1 * f2 * f3 * f4}.$$

W1 (school selection weight) = the inverse of the probability of selecting the school
W2 (class selection weight) = the inverse of the probability of selecting a classroom within the selected school
f1 = a school-level nonresponse adjustment factor calculated by school size category (small, medium, large).
f2 = a nonresponse class adjustment factor calculated by school
f3 = a student-level nonresponse adjustment factor calculated by class
f4 = a post-stratification adjustment factor calculated by grade—OR—adjustment factor calculated by grade and race

A nonresponse adjustment factor for a unit is the inverse of the estimated probability of the unit's response.

The weighted results can be used to make important inferences concerning tobacco use risk behaviors of all regular public-school students in grades six through eight in South Dakota.

Additional Methodology Notes

Data Collection

The SD YTS was conducted entirely online for the first time in 2021. Prior to 2021, the survey was conducted exclusively using a mailed paper survey. The online survey was conducted through a custom, web-based application. Identified school staff administered the survey for each classroom. On the date of the survey, the school staff person generated a unique survey link and emailed the unique link to each student in the selected classroom to complete the survey during the specified class period. The student email address was only used as part of the survey distribution, and no link of student email to the survey response data was possible. No IP address information was collected. The data file exported from the survey system contained survey question responses, school code, and classroom code. No personally identifying information was included.

2021 SD Survey Questions

The SD YTS questions included topics of tobacco use prevalence, access to tobacco, knowledge and attitudes about tobacco, cessation, advertisements, exposure to secondhand tobacco smoke and vapor, and experiences at home and school. New questions added in 2021 addressed emerging products (heated tobacco and nicotine pouches), perceptions on vaping and media observations of vaping, with a total of 86 survey questions. Also new to the 2021 SD YTS were write-in specification options for seven questions when 'other' was the response chosen by the student. A full list of the 2021 YTS questions including the unweighted frequencies for each response is available as a separate document, by submitting a request to the South Dakota Department of Health Tobacco Control Program.

Key Data Definitions

Categorization of Race/Ethnicity

The classification of students by race and ethnicity was conducted using modified methodology from the National Youth Tobacco Survey.[6] First, ethnicity was classified by response to the Hispanic or Latino ethnicity question. If only one of the races available was selected, students were classified into that race. If a student selected multiple races (or Hispanic/Latino was "yes" and a race selected), they were categorized using a minority prioritization hierarchy reflective of the minority populations of South Dakota: American Indian/Alaskan Native, Hispanic, Native Hawaiian/Pacific Islander, Asian, Black, and White. This prioritization order is different from the National Youth Tobacco Survey: Hispanic, White, Black, Asian, American Indian/Alaskan Native, and Native Hawaiian/Pacific Islander. [6] Comparisons by race to national data should consider the differences in prioritization.

To reflect the population demographics of South Dakota, a four-level race/ethnicity categorization ("White", "American Indian", "Hispanic" and "Non-Hispanic all other races") was created by merging Black, Asian, and Native Hawaiian and other Pacific Islander into a single category. Throughout the report, race/ethnicity that does not fall within the "White" or "American Indian" or "Hispanic" categorization is referred to as "other races". The 2021 SD YTS is the first time the Hispanic population was delineated as a separate race/ethnicity category in the report. Prior SD YTS included Hispanic in the other race category. Trend comparisons by race using SD YTS data should be carefully done due to the differences in categorization of the Hispanic population.

Categorization of Any Tobacco Product

When specified throughout the report, the various tobacco products are at times combined to form a single dichotomous category, "any tobacco". This category was created using the National Youth Tobacco Survey methodology. [2] Any tobacco use was defined as use of electronic cigarettes (e-cigarettes/ vapes), cigarettes, cigars (cigars, cigarillos, and little cigars), smokeless tobacco (chewing tobacco, snuff, dip, snus, and dissolvable tobacco products), hookahs, pipe tobacco, bidis (small brown cigarettes wrapped in a leaf), heated tobacco products (HTPs), and nicotine pouches at least on one occasion past 30 days.[2]

Categorization of Ever and Current Tobacco Use

Tobacco product use among middle school students was classified as either 'ever tobacco use' or 'current tobacco use'. Ever tobacco use is defined as use of a tobacco product, in any amount, on one occasion or more at any point in the past. Ever tobacco use is an indicator of the level of tobacco product experimentation among youth. Current tobacco use is defined as the use of a tobacco product on one or more days in the past 30 days. Current tobacco use is an indicator of the presence of recent use, which may indicate regular or ongoing use of tobacco products.

Data Analysis

To account for the complex survey design, weighted prevalence estimates and 95% confidence intervals were computed for all measures. Statistical analyses were conducted using SAS version 9.4. We performed significance tests at the $p<0.05$ level. In addition, results with unweighted denominator less than 50 or a relative standard error (RSE) >30% were considered unreliable and not reported, as notated in the report, following the guidance provided by RTI International who conducted the data weighting for this project.[9]

As noted above, the survey included seven optional write-in response specifications this year. The student responses are included throughout the report for these seven questions. Write-in responses were not analyzed for re-classification into the existing response categories; responses were provided as the student selected.

Historical South Dakota Youth Tobacco Survey Data

Throughout this report, historical data is provided from past survey years, biannually from 2005 to 2019. Except where noted, all this data is drawn from printed reports.[10] The actual data was not reanalyzed, so the authors rely on the accuracy of previous reports for this information.

Description of the Middle School Population

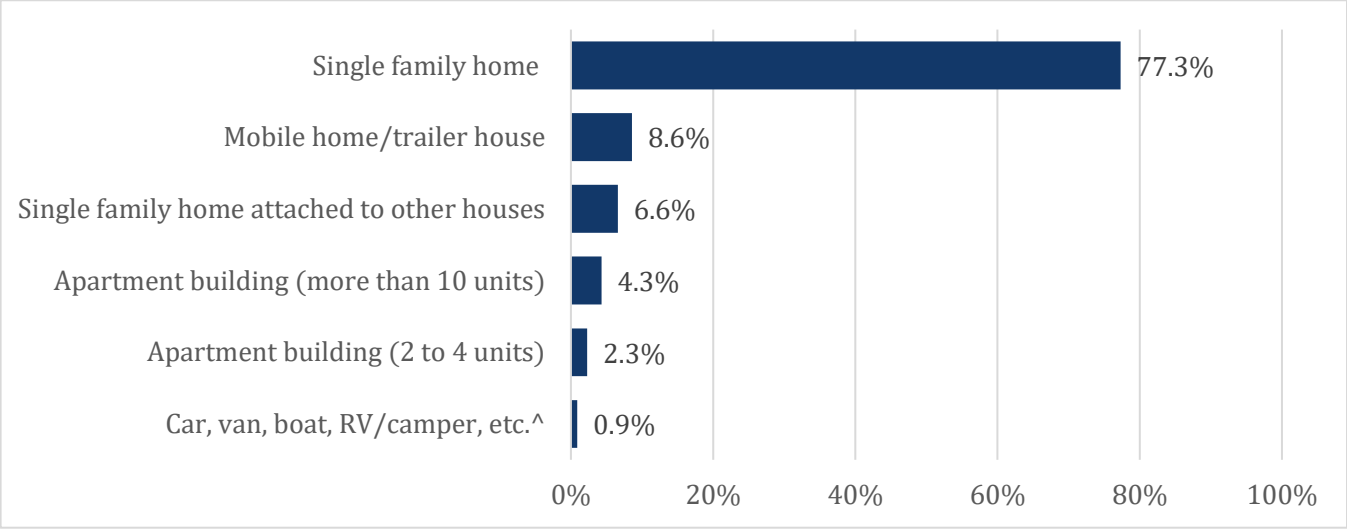
The 2021 SD YTS was administered to 3,658 middle school students (grades 6-8) in 55 schools during the spring of 2022, with 2,826 students completing valid questionnaires, for an overall response rate of 61.6%. Demographic information collected in the 2021 SD YTS included gender, race/ethnicity, and grade level, presented in Table 1. The SD YTS is conducted only with middle school students; therefore, 97.9% of the sample was between the ages of 11 and 14. Findings of the 2021 SD YTS were weighted to represent of all sixth through eighth grade public, non-public, and tribal school students in SD.

Table 1. Demographic Characteristics of the Weighted Middle School Sample, 2021

	Respondents %
Gender	
Male	51.8%
Female	48.2%
Race/Ethnicity	
White	69.7%
American Indian	18.9%
Hispanic	5.5%
Other	5.9%
Grade	
6th	32.9%
7th	33.2%
8th	33.9%

New in 2021, SD middle school students were asked about language spoke at home, with 12.9% of the population reporting a language other than English. Students were also asked about their type of residence, as shown in Figure 1, with 77.3% of middle school students reporting residence as a single-family home, followed by mobile home at 8.6%, and attached single family home at 6.6%.

Figure 1. Type of Residence Reported by SD YTS Survey Respondents, 2021



^ Rates should be interpreted with caution due to the small number of students/respondents (<50).

SECTION TWO: PREVALENCE AND TRENDS IN TOBACCO USE

E-cigarette/Vape Use among Middle School Students

Electronic cigarettes (e-cigarettes) were the most commonly used tobacco product in the 2021 National Youth Tobacco Survey.[1] These battery-powered devices heat the "juice" to an aerosol that is then inhaled. E-cigarettes are considered harmful to youth since most products contain nicotine, which is highly addictive, and often other toxic substances.[11] Nicotine use in adolescence has been shown to negatively impact brain development, and damage areas of the brain important for attention and learning.[11] Moreover, according to the Center for Disease Control and Prevention (CDC), e-cigarettes have been associated with 2,807 lung injury cases and 68 deaths.[12]

Key Findings

- Over one in 10 middle school students (11.6%) reported ever using an e-cigarette/vape.
- Current (past 30-day) use of e-cigarettes was reported by 4.0% of middle school students.
- Most current e-cigarettes users reported using flavored e-cigarettes (81.6%), most commonly fruit and menthol flavors.
- Disparities in use by race remain, with American Indian students over twice as likely to report ever use of e-cigarettes/vapes.

Rate of E-Cigarette/Vape Use

Middle school students were asked if they had ever tried using an e-cigarette/vape on at least one occasion. Trends in ever e-cigarette/vape use from 2011 to 2021 are presented in Figure 2. Overall, 11.6% of middle school students reported use of an e-cigarette/vape on at least one occasion in 2021, a decrease from 2019 YTS data (16.0%).

Current use is defined as having used the tobacco product one or more days in the last 30 days. Overall, 4.0% of middle school students reported current use of e-cigarettes/vapes in 2021, a decrease from 6.7% in 2019 as shown in Figure 2. This decline in e-cigarettes/vapes was also observed in national data, with current e-cigarette/vape use declining from 27.5% in 2019 to 19.6% in 2020.[13]

Figure 2. Trends in Ever and Current E-cigarettes Use in SD, 2011-2021

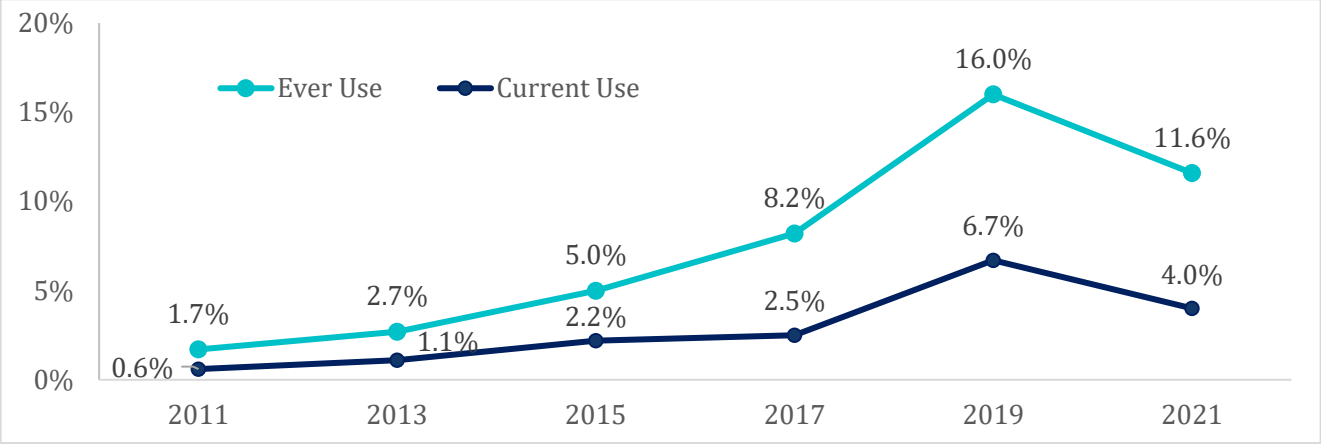


Table 2 shows rates of ever and current e-cigarette/vape use by gender, race/ethnicity, and grade. Both ever and current use of e-cigarettes/vapes were statistically higher among American Indian students than White students ($p<0.001$). Over one in five American Indian students report ever using an e-cigarette/vape. The prevalence of ever e-cigarette/vape use was also significantly higher among eighth grade students (15.8%) when compared to seventh (10.8%) and sixth grade students (7.8%) ($p<0.05$). No statistical differences were found in ever or current use by gender ($p>0.05$).

Table 2. Ever and Current Use of E-cigarettes/Vapes by Gender, Race/Ethnicity, and Grade, SD YTS 2021

	Ever Use % (95% CI)	Current Use % (95% CI)
Gender		
Male	11.7 (9.1-14.3)	3.5 (2.3-4.6)
Female	10.0 (6.7-13.4)	4.6 (1.6-7.6)
Race/Ethnicity		
White	8.9 (5.6-12.2) ***	--
American Indian	22.2 (16.9-27.5) ***	9.9 (7.2-12.7) ***
Hispanic	--	--
Other	--	--
Grade		
6th	7.8 (5.3-10.2) *	--
7th	10.8 (6.0-15.5) *	--
8th	15.8 (8.9-22.7) *	4.7 (2.9-6.5)
Overall	**11.6 (8.4-14.7)**	**4.0 (2.3-5.7)**

*p-value < 0.05, ***p<0.001 based on Rao-Scott chi-square test. CI =confidence interval
-- Data suppressed as fewer than 50 respondents.

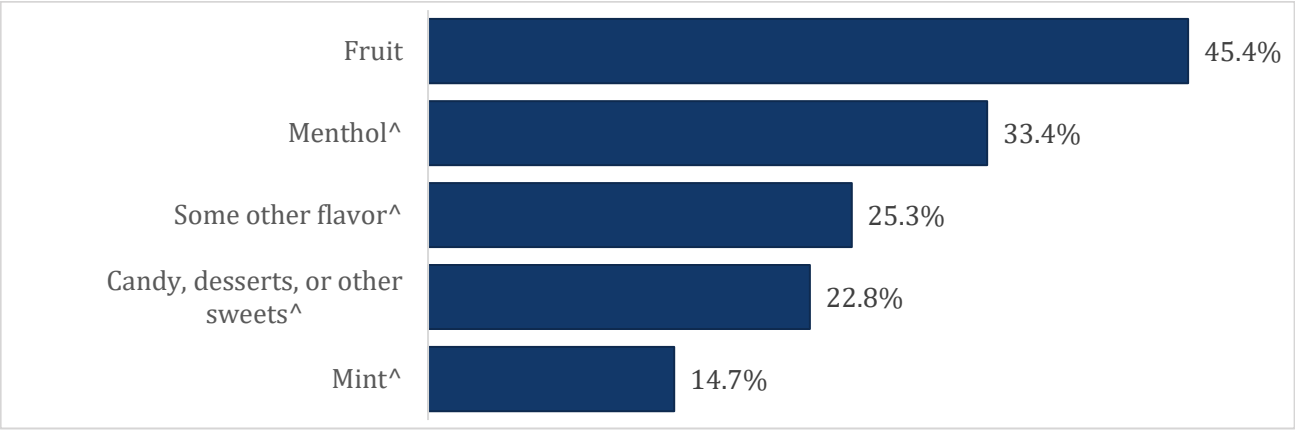
Frequency of E-Cigarette/Vape Use

Among students who report ever using an e-cigarette/vape, the majority (86.8%) reported 20 or fewer days of use. Due to low numbers, no further categorization is reported for the number of days of use in the past 30 days.

Use of Flavored E-Cigarettes/Vapes

Of the 4.0% of middle school students who currently use e-cigarettes, most (81.6%) report use of flavored e-cigarettes/vapes. Overall, the most used flavor types were fruit and menthol (Figure 3). Some flavor types are not reported due to low response rate.

Figure 3. E-cigarette/Vape Flavors Used by Current Users, SD YTS 2021*

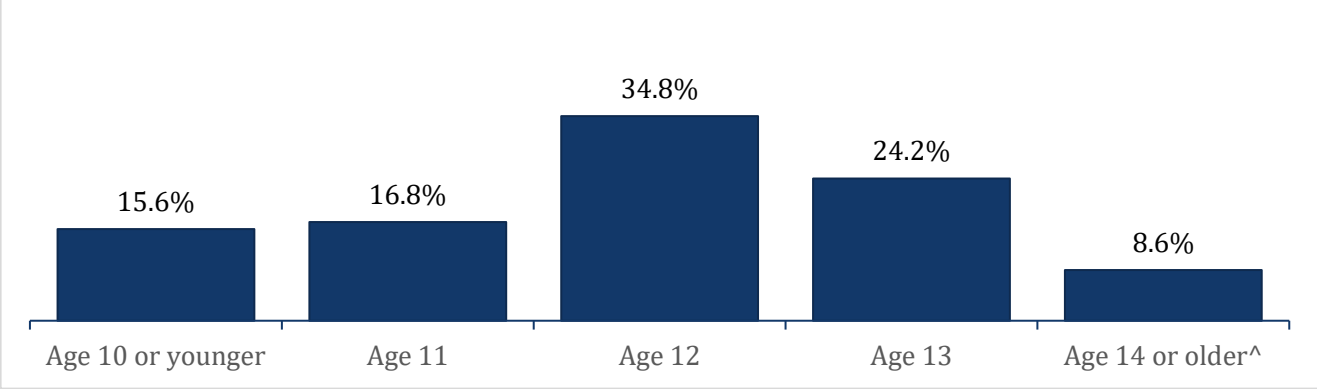


*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Age of First Use of E-Cigarettes/Vapes

The most common age of first use among middle school students who had ever used e-cigarettes/ vapes was age 12, with 32.5% reporting first use before age 12, and 32.8% after age 12 (Figure 4).

Figure 4. Age of First Use among Ever E-cigarette/Vape Users, SD YTS 2021

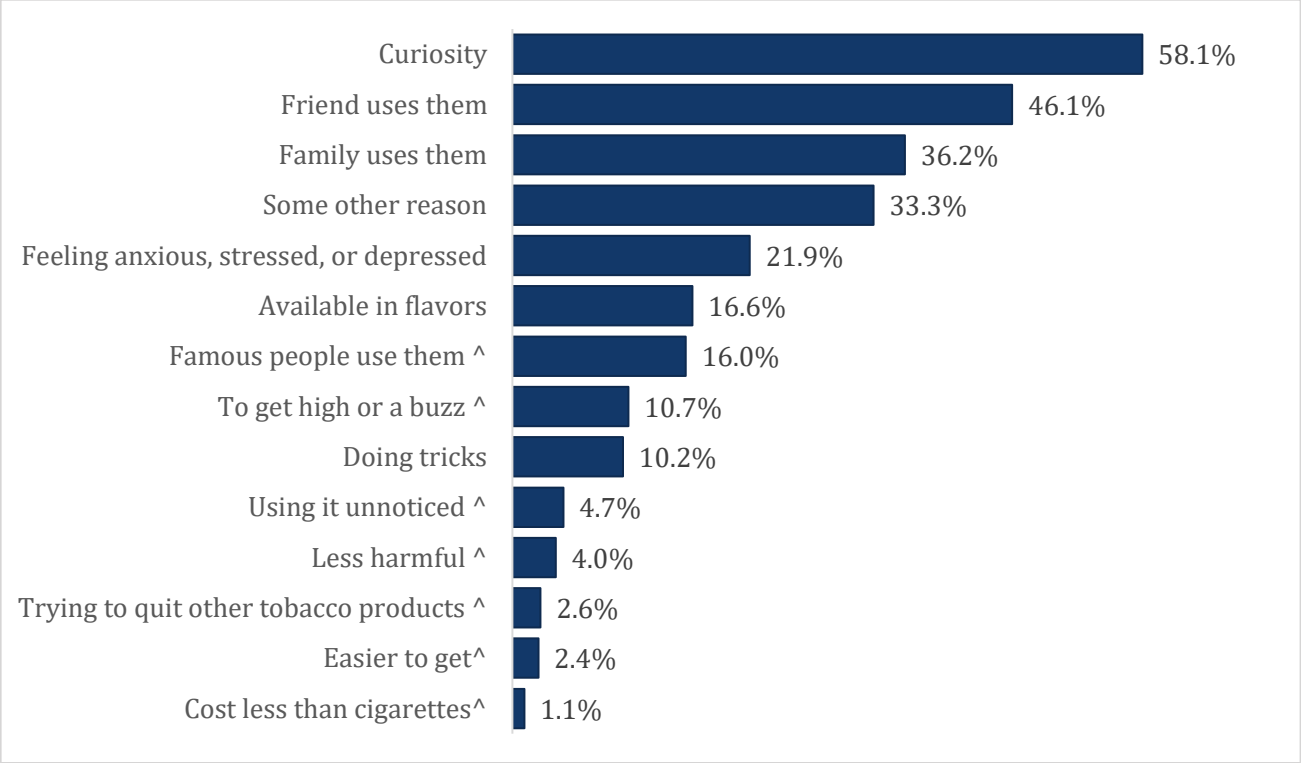


^Rates should be interpreted with caution due to small number of students/respondents (<50). Age of the sample was predominantly age 11 to 14.

Reasons for E-cigarette/Vape Use

Middle school students who reported ever using e-cigarettes/vapes, were asked to share their reasons for using (Figure 5). The most common reasons were curiosity (58.1%), friend (46.1%) or family member (36.2%) use, and feelings of anxiety, stress, or depression (21.9%). Nearly one-third of the respondents selected another reason, with write-in responses including: peer/family pressure, coping with stress or negative feelings, experimenting, "to feel better", "take pain away", "school", "personal reasons", "My life is not it atm [at the moment]", "it helps me stay on the right path", "idk [I don't know]", "I was bored", "I found it on a table", "I don't wanna say", "first time for everything man", "ceremony", "cause people died", "btw [by the way] you can't get high off nicotine", and "because I felt like it".

Figure 5. Reasons for E-cigarette/Vape Use among Ever Users, SD YTS 2021*

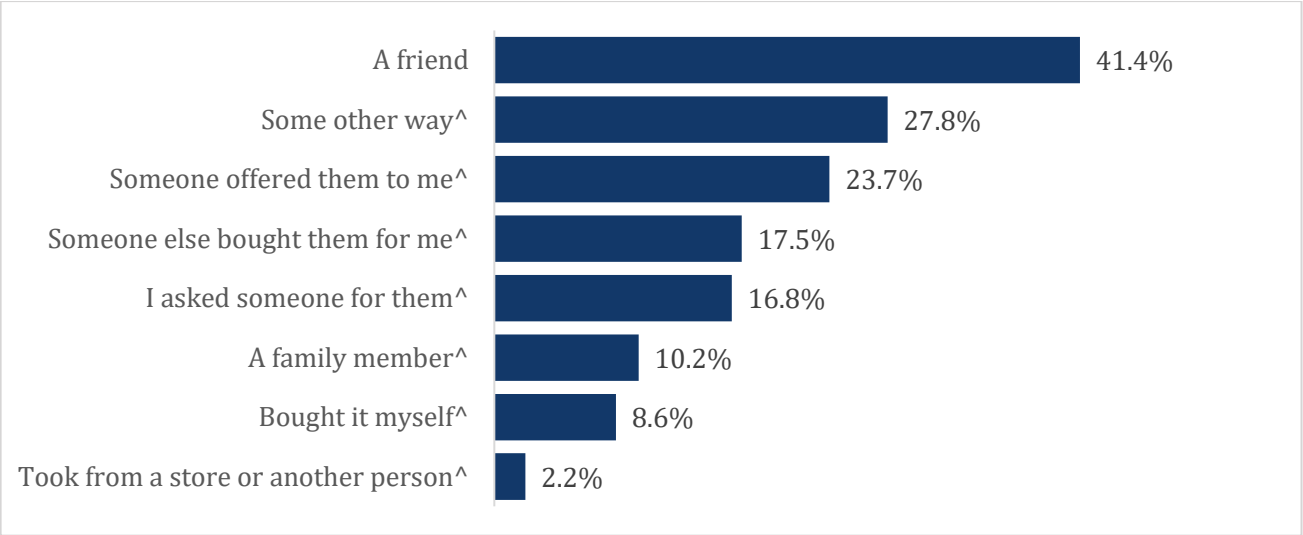


*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Obtaining E-cigarettes/Vapes

Current middle school e-cigarette/vape users were asked to indicate how they got the e-cigarette/vape and refills (Figure 6). Most reported they obtained the product from a friend (41.4%) followed by someone else offering (23.7%) and someone else purchasing for them (17.5%). Nearly one-third of the respondents selected another way of obtaining, with write-in responses including: using other people's e-cigarette/vape, purchased for others, found the e-cigarette/vape, "robbed", "took them from my mom's room", "unknown", "school", "they were on my kitchen counter", "laying around house", "I have my ways", "I found them on my bed", "can't say", and "an old friend sold them to me".

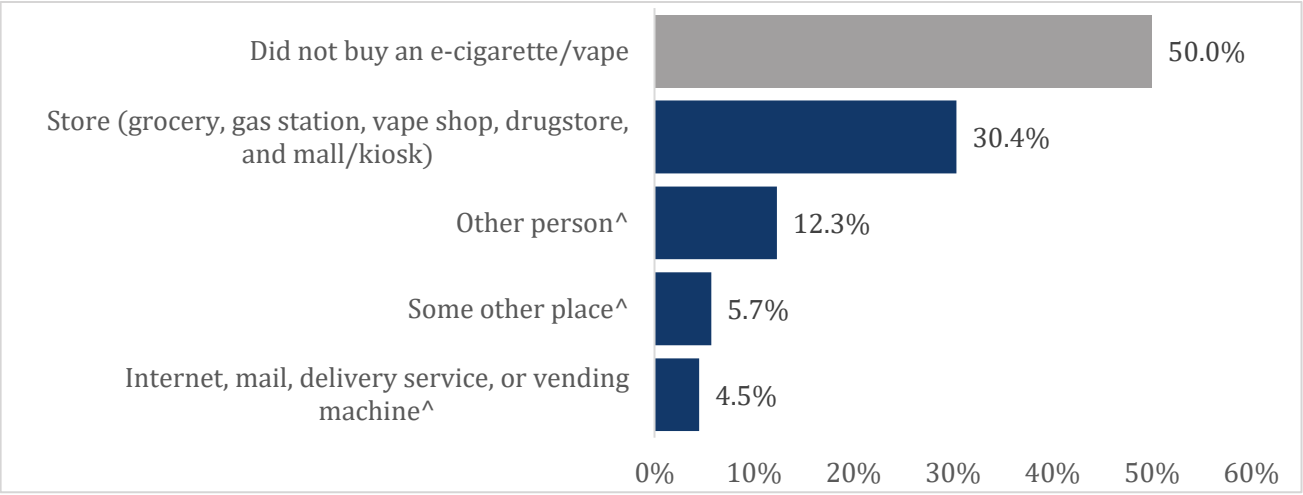
Figure 6. Path of Accessing E-cigarettes/Vapes for Current Users, SD YTS 2021



*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Almost 1 in 10 current e-cigarette/vape users in middle school reported purchasing the products themselves. As shown in Figure 7, the most common location of purchase was a store (30.4%), followed by another person (12.3%). Open responses for the other place of purchase included: only use others' vapes, from a friend or family, "somewhere", "weed store", "the trap", "my dealer", "a store", and "don't have to tell you bruh".

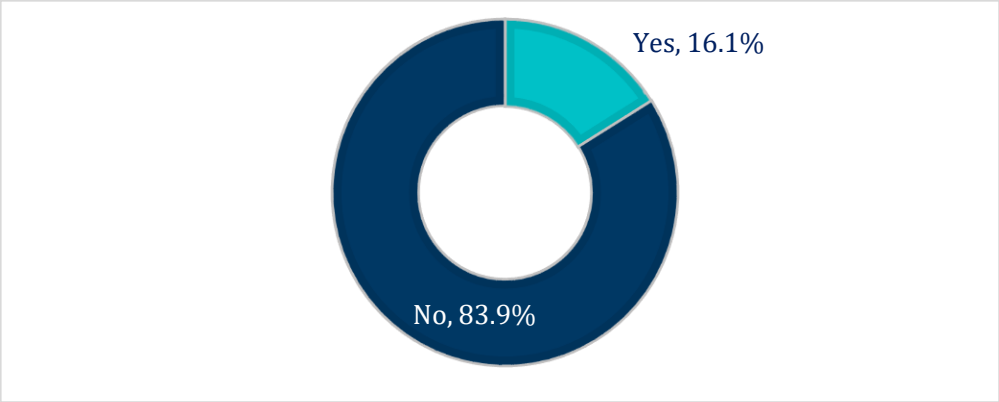
Figure 7. Purchase Locations of E-cigarettes/Vapes among Current Users, SD YTS 2021*



*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Current e-cigarette/vape users were also asked if they have ever purchased an e-cigarette/vape device (including disposable devices), pod, cartridge, single hit, or e-liquid refill while at school or on school property with 16.1% of students reported they had (Figure 8).

Figure 8. Current E-cigarette/Vape Users who Report Purchasing E-cigarettes/Vapes at School or on School Property, SD YTS 2021^

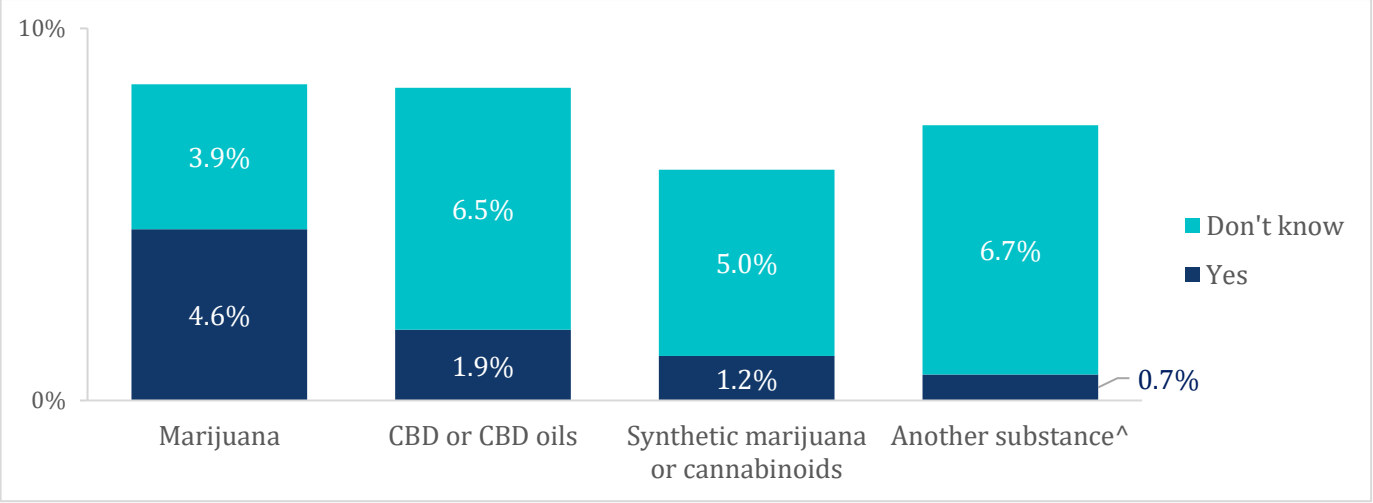


^Interpret rates with caution as fewer than 50 students responded yes.

Using E-cigarette/Vape Device for Other Substances

Nationally, an increase in vaping marijuana has been identified. In a 2019 national sample of eighth grade students, 3.9% reported past 30-day use of marijuana by vaping.[14] A question was added to the 2021 SD YTS to assess use of the e-cigarette/vape device for other substances. Figure 9 shows that 4.6% of middle school students reported ever vaping marijuana, with an additional 3.9% responding "don't know". Vaping other substances was less common with 1.9% of students indicating they had vaped CBD or CBD oils, 1.2% synthetic marijuana and 0.7% another substance. Write-in responses for another substance included: weed, nicotine, tobacco, alcohol, "wax", "do smarties count?", "dip" "cigarettes", "alcohol, bennys [benzodiazepines], and xanys [Xanax]".

Figure 9. Other Substance Use Via E-cigarette/Vape Device, SD Middle School Students, SD YTS 2021



^Interpret rate with caution as fewer than 50 students responded yes.

Cigarette Use among Middle School Students

In the 2021 National Youth Tobacco Survey, cigarettes were the second most commonly ever and currently used tobacco product, following e-cigarettes/vapes. Among middle school students nationally, 4.1% reported ever use of cigarettes and 1.0% reported current use of cigarettes.[1] In 2021 SD YTS, middle school students were asked if they had ever smoked a cigarette, even one or two puffs, and asked how many days they smoked cigarettes during the past 30 days.

Key Findings

- A continued downward trend in cigarette use among middle school students was observed. Ever use of cigarettes declined to 6.5% – the lowest rate in the past ten years.
- Current (past 30-day) use of cigarettes also declined from 3.5% in 2019 to 1.2% in 2021.
- American Indian students had higher rates of ever cigarette use at 17.4% than White students at 3.4%.
- Over half of middle school students who report ever smoking first used a cigarette at age 10 or younger.

Rate of Cigarette Use

Overall, 6.5% of middle school students reported ever smoking a cigarette, a downward trend from 2019 SD YTS rate at 11.3% (Figure 10). Current (past 30-day use) of cigarettes among middle school students was 1.2%. Using data reported in previous SD YTS reports, a downward trend in the use of cigarettes among middle school students continued in 2021 (Figure 10).

Figure 10. Trends in Ever and Current Cigarette Use, SD YTS 2011-2021

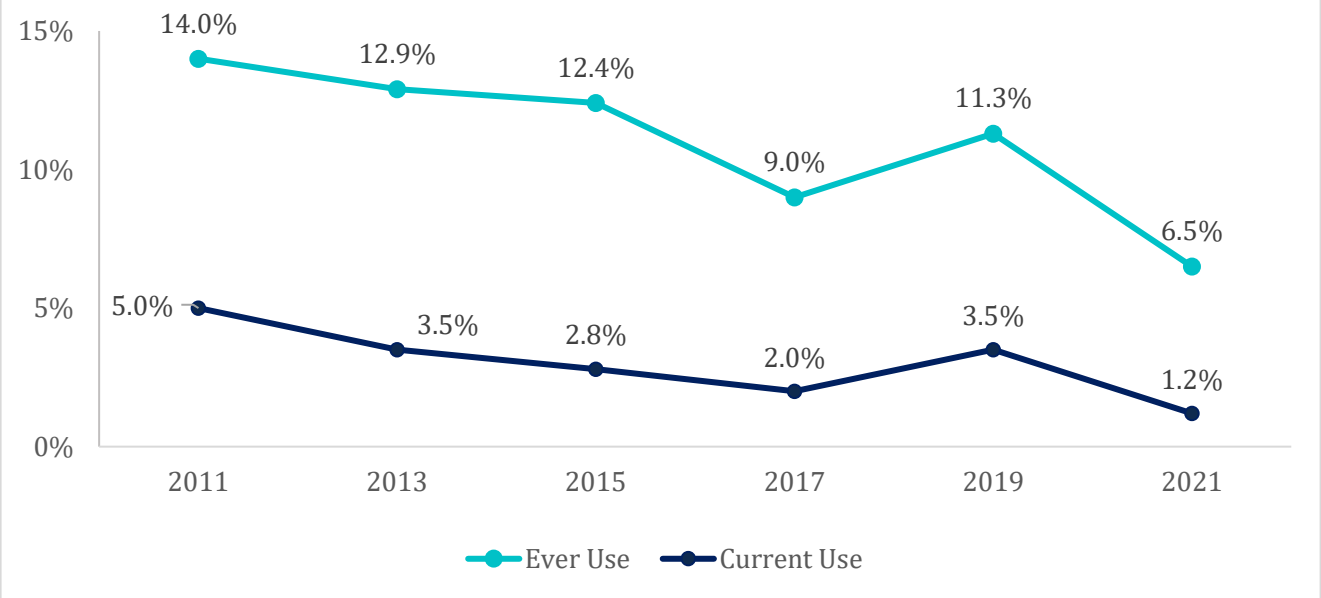


Table 3 shows rates of ever and current cigarette use by gender, race/ethnicity, and grade. No significant differences were found in cigarette use by gender among ever cigarette users (p>0.05). Ever cigarette use was similar between sixth (4.6%) and seventh grade students (4.4%), but significantly higher for eighth grade students (10.5%) (p<0.01).

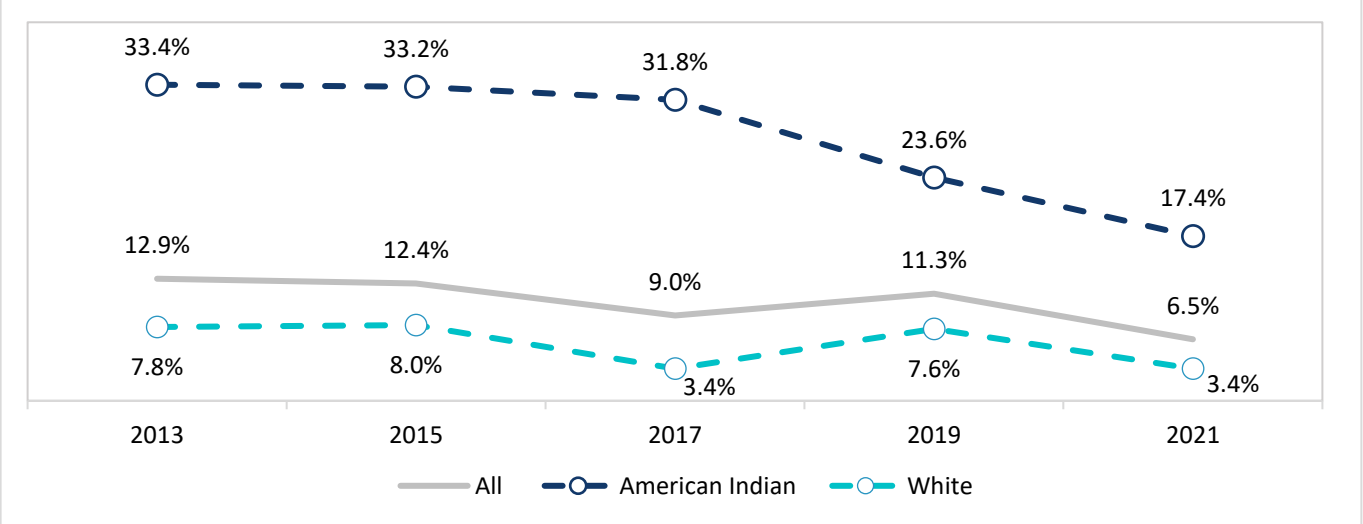
Table 3. Ever Use and Current Use of Cigarettes by Gender, Race/Ethnicity, and Grade, SD YTS 2021

	Ever Use % (95% CI)	Current Use % (95% CI)
Gender		
Male	6.0 (4.1-7.9)	--
Female	5.5 (3.9-7.0)	--
Race/Ethnicity		
White	3.4 (1.2-5.5) ***	--
American Indian	17.4 (11.5-23.4) ***	--
Hispanic	--	--
Other	--	--
Grade		
6th	4.6 (2.8-6.4) **	--
7th	4.4 (2.8-6.0) **	--
8th	10.5 (3.8-17.2) **	--
Overall	**6.5 (4.0-9.1)**	**1.2 (0.7-1.7)**

**p-value < 0.01, ***p<0.001 based on Rao-Scott chi-square test. CI =confidence interval
-- Data suppressed as fewer than 50 respondents.

Significant differences in rate of cigarette use were also found by race, with White students having the lowest rate and American Indian students having the highest rates of ever cigarette use (p<0.001). Figure 11 shows the trend in rate of ever cigarette use by race. Although a disparity remains for American Indian students, the gap is closing, with 17.4% of American Indian students reporting ever cigarette use in 2021.

Figure 11. Trends in Ever Cigarette Use by Race, SD YTS 2013-2021



Frequency of Cigarette Use

Among students who report ever using cigarettes, only 4.9% report smoking 100 or more cigarettes in their lifetime. Due to low numbers of students reporting current use of cigarettes, number of days of use in the past 30 days is not reported.

Use of Menthol Cigarettes

Current cigarette users (1.2% of the SD middle school population) were asked if they smoked menthol cigarettes. Most (70.1%) reported they did not or were not sure if they used menthol cigarettes.

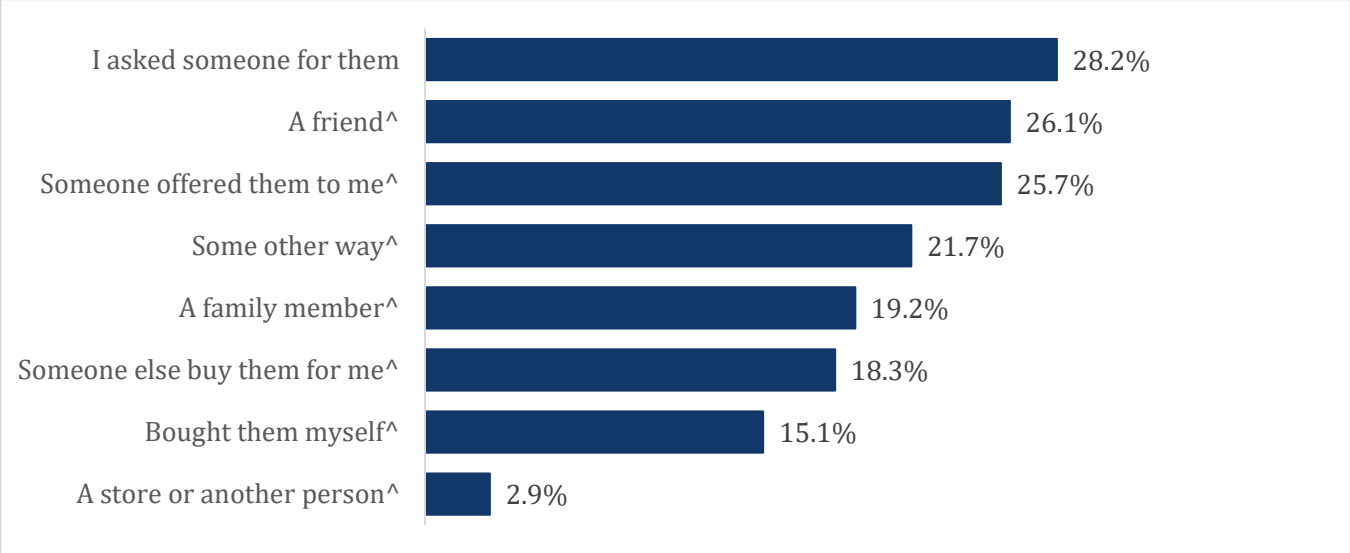
Age of First Use of Cigarettes

Half of current cigarette users reported first use at age 10 or younger. Due to low numbers, no further categorization is reported age of first use.

Obtaining Cigarettes

Current cigarette users were also asked to indicate how they got their cigarettes (Figure 12). The main paths reported were asking someone for cigarettes (28.2%), a friend (26.1%), and someone offering cigarettes (25.7%). Other ways of obtaining, a write-in response, included: "used ones", "somehow", "only I can know", "on the sidewalk", "my sister", "just around the house", I found in a car", and "I found them on the streets and thought it was empty".

Figure 12. Paths of Accessing Cigarettes among Current Cigarette Smokers, SD YTS 2021*



*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Current cigarette users also reported where they bought cigarettes, with 46.8% reporting they did not buy themselves. Due to low numbers, no further categorization of cigarette purchase location is reported. Other routes of purchasing, a write-in response, included: "from a friend" and "I took them out of my mom's bag." Due to low numbers of students reporting current use of cigarettes, number of days of use in the past 30 days is not reported.

Smokeless Tobacco Use among Middle School Students

In the 2021 National Youth Tobacco Survey, 2.2% of middle school students reported ever use of smokeless tobacco.[1] Current use of smokeless tobacco was reported by 0.6% of middle school students.[1] In the 2021 SD YTS, middle school students were asked if they had ever used chewing tobacco, snuff, or dip, even just a small amount, and asked how many days they used chewing tobacco, snuff, or dip during the past 30 days.

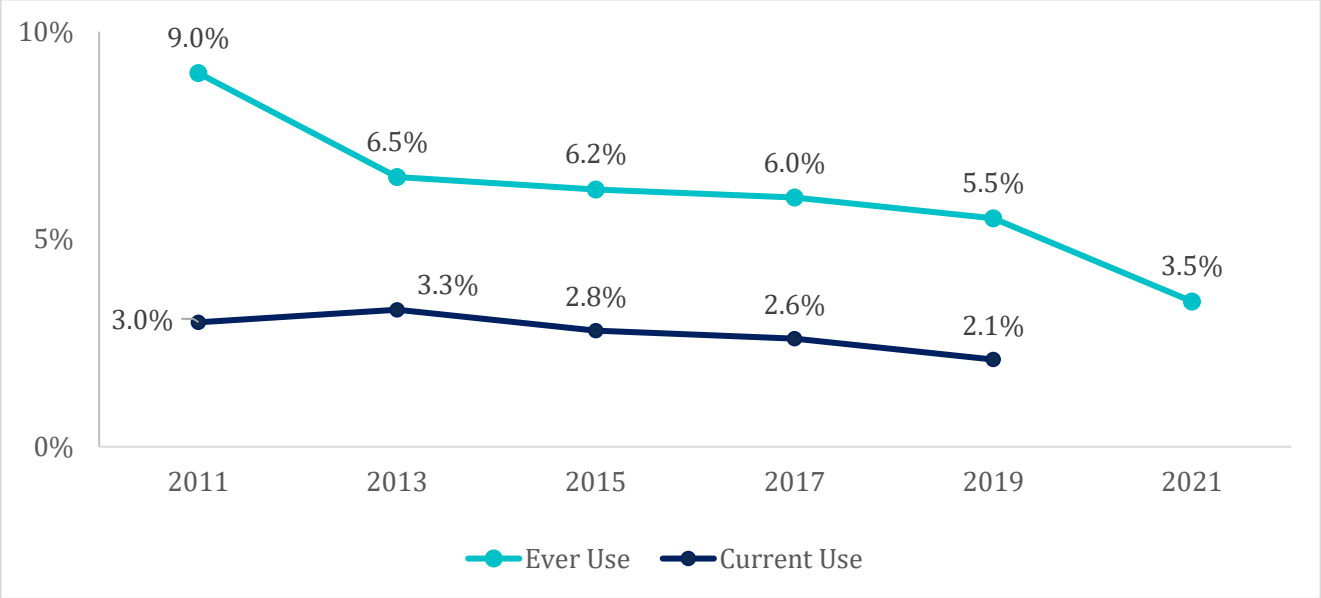
Key Finding

- A significant decrease in ever use of smokeless tobacco by middle school students was observed at 3.5% of students in 2021.

Rate of Smokeless Tobacco Use

Overall, 3.5% of middle school students report ever using smokeless tobacco, a decrease from 2019 findings at 5.5%. Current use (past 30-day) is not reported due to fewer than 50 raw responses. A downward trend in ever use of smokeless tobacco among middle school students continued in 2021 (Figure 13).

Figure 13. Trends in Ever and Current Smokeless Tobacco Use, SD YTS 2011-2021



Age of First Use of Smokeless Tobacco

Of the 3.5% of SD middle school students who had ever tried smokeless tobacco, 27.0% reported they did so before age 11, a decline from 31.8% in 2019.

Heated Tobacco Products

The 2021 SD YTS added new questions to assess awareness and use of heated tobacco products. Heated tobacco products are relatively new to the market. Similar to e-cigarettes/vapes, the device uses heat to produce vapor, but use tobacco sticks instead of a liquid. Brand names of heated tobacco products include iQOS, glo and Eclipse.

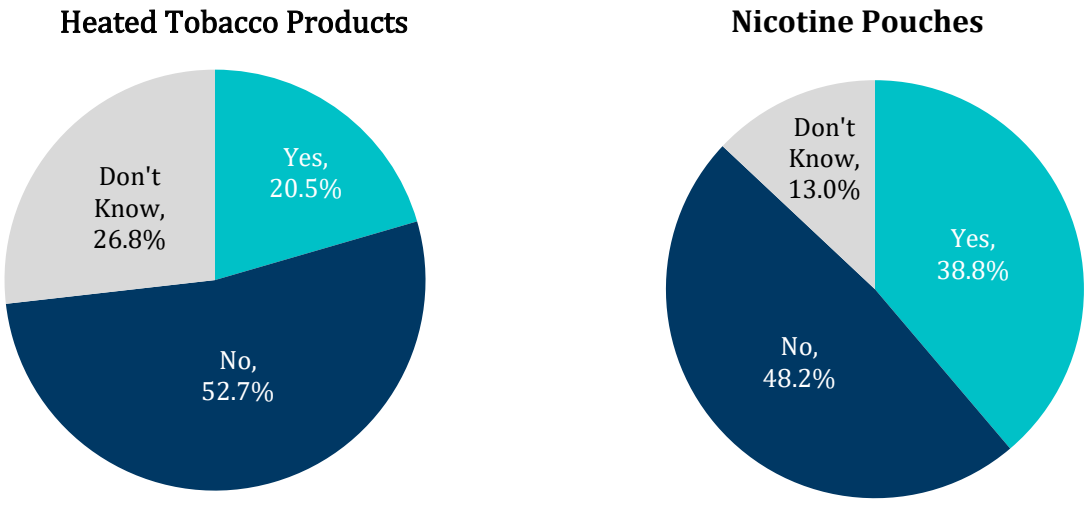
One in five middle school students reported awareness of heated tobacco products (Figure 17). Students were also asked if they had ever used a heated tobacco product. Less than 1 percent of students reported ever using a heated tobacco product. Given the small sample size, no additional sub-group could be weighted so demographic characteristics are not reported.

Nicotine Pouches

Also new to the 2021 SD YTS was a series of questions assessing awareness and use of nicotine pouches. Nicotine pouches are small pouches used similar to snus, but do not contain any nicotine leaf. These products do contain nicotine derived from tobacco, but no part of the leaf itself. Brand names of nicotine pouches include ZYN, on!, or Velo.

Awareness of nicotine pouches was higher, at over one in three students reporting they had heard of the product (Figure 14). Students were also asked if they had ever used nicotine pouches, with less than one percent of students responding yes to this question. No additional sub-group could be weighted given the small sample size, so demographic characteristics are not reported.

Figure 14. Middle School Students' Awareness of Heated Tobacco Products and Nicotine Pouches, SD YTS 2021



Other Tobacco Products

Cigars, cigarillos, or little cigars were the most reported other tobacco product used by SD middle school students, with 2.5% reporting ever use of cigars, cigarillos, or little cigars, a decrease from 3.5% in 2019 (Table 5). Most other types of tobacco had fewer than 50 raw responses for ever use of tobacco, and current use had fewer than 50 raw responses for all types, so data is not reported (Table 4).

Table 4. Ever and Current Prevalence of Other Tobacco Product Use, 2021

	Ever Use % (95% CI)	Current use % (95% CI)
Cigars, cigarillos, or little cigars	2.5 (1.6 - 3.5)	--
Roll-your-own cigarettes	2.1 (0.7 - 3.6)	--
Pipes filled with tobacco (not hookah, waterpipe, or traditional American Indian pipe)	1.7 (0.6 - 2.9)	--
Hookah or waterpipe	--	--
Snus, such Camel Snus, Marlboro Snus, or General Snus	--	--
Dissolvable nicotine or tobacco products such as Velo, Ariva, or Camel orbs/sticks	--	--
Bidis (small brown cigarettes wrapped in a leaf)	--	--

CI =confidence interval
-- Data suppressed as fewer than 50 respondents.

Any Tobacco Product Use among Middle School Students

The 2021 National Youth Tobacco Survey defined 'any tobacco use' as use of e-cigarettes/vapes, cigarettes, cigars (cigars, cigarillos, and little cigars), smokeless tobacco (chewing tobacco, snuff, dip, snus, and dissolvable tobacco products), hookahs, pipe tobacco, bidis (small brown cigarettes wrapped in a leaf), heated tobacco products, and nicotine pouches at least on one occasion (ever) and in the past 30 days (current).[1] Any tobacco use, therefore, assesses the extent of tobacco use among middle school students, accounting for youth that are multi-product users. The 2021 SD YTS uses the national definition. Definitions of any tobacco use have varied, see footnote presented in Figure 18, to be inclusive of new products marketed to youth, and is considered reflective of product availability rather than a change in measure.

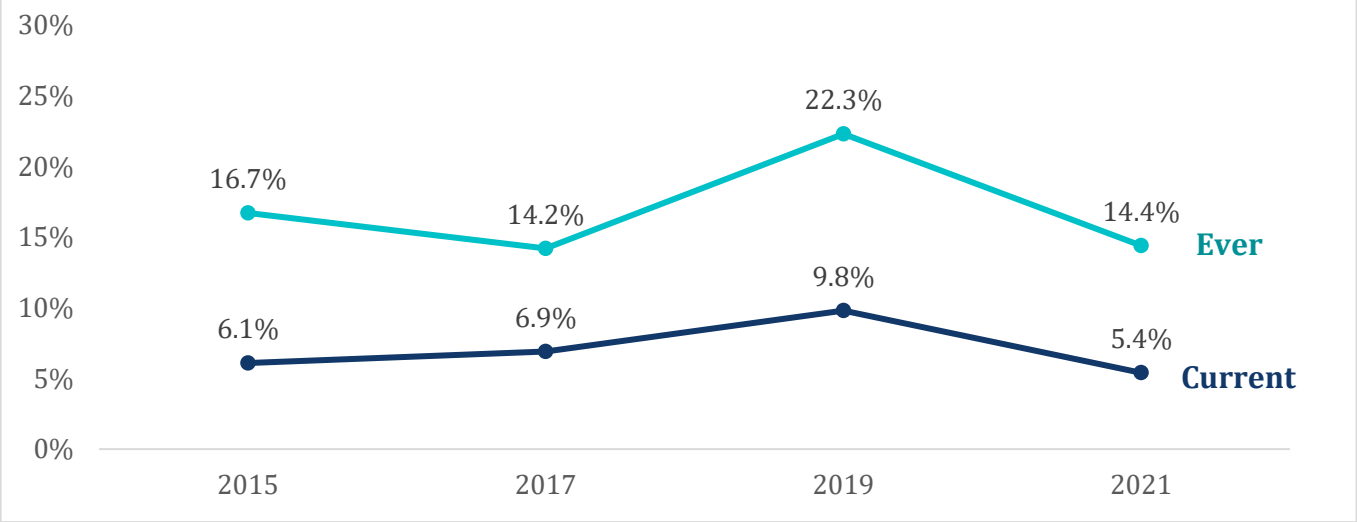
Key Findings

- Current use of any tobacco among middle school students declined to 5.4% in 2021, almost half of the rate in 2019 at 9.8%.
- American Indian students showed significantly higher rates of ever use of any tobacco at 30.4% compared to White students (10.2%).

Rate of Any Tobacco Use

Overall, 14.4% of middle school students in 2021 reported ever using any type of tobacco product on at least one occasion, a substantial decrease from 22.3% in 2019. Current use also declined from 9.8% among SD middle school youth in 2019 to 5.4% in 2021 (Figure 15). Middle school student use of tobacco products in SD is at the lowest rate in the past 10 years.

Figure 15. Trends in Ever and Current Any Tobacco Use, SD YTS 2015-2021



a. 2015: Any tobacco use was defined as use of cigarettes, smokeless tobacco, cigars, pipe, bidis, and kreteks at least on one occasion past 30 days.
b. 2017 & 2019: Any tobacco use was defined as use of cigarettes (including roll-your-own), cigars, smokeless tobacco (including chewing tobacco, snuff, dip, snus, and dissolvable tobacco), tobacco pipes, bidis, hookah, and electronic cigarettes at least on one occasion past 30 days.
c. 2021: Any tobacco use was defined as use of electronic cigarettes (e-cigarettes), cigarettes, cigars (cigars, cigarillos, and little cigars), smokeless tobacco (chewing tobacco, snuff, dip, snus, and dissolvable tobacco products), hookahs, pipe tobacco, bidis (small brown cigarettes wrapped in a leaf), heated tobacco products (HTPs), and nicotine pouches at least on one occasion past 30 days.

Table 5 shows rates of any tobacco use by gender, race/ethnicity, and grade. Eighth grade students (19.4%) were more likely to have ever used any type of tobacco product than both seventh (13.2%) and sixth grade (10.4%) students ($p<0.05$). White students had the lowest rate of ever use of any tobacco product, and American Indian students had the highest rate of ever use ($p<0.0001$). There were no differences by gender ($p>0.05$).

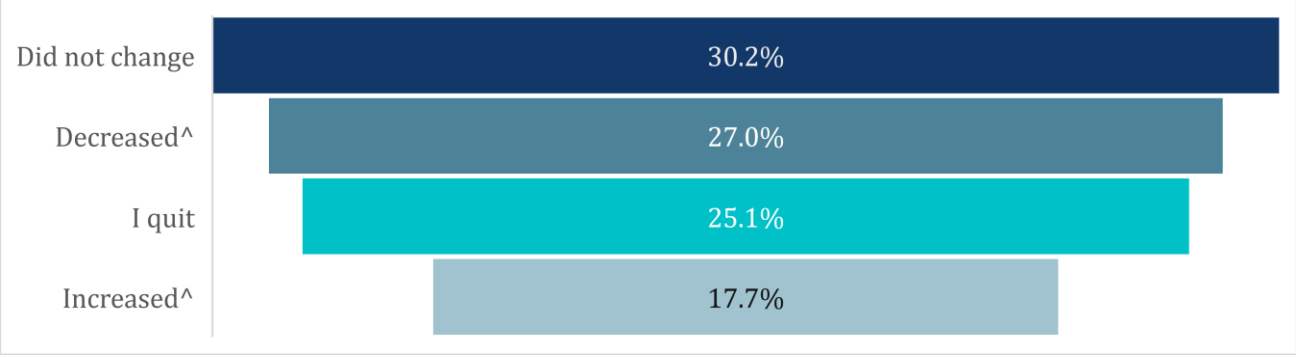
Table 5. Prevalence of Ever and Current Use of Any Tobacco Product by Gender, Race/Ethnicity, and Grade, SD YTS 2021

	Ever Use % (95% CI)	Current Use % (95% CI)
Gender		
Male	15.0 (12.2-17.8)	5.3 (4.0-6.6)
Female	12.5 (9.0-16.1)	5.6 (2.5-8.7)
Race/Ethnicity		
White	10.2 (6.9-13.5) ***	--
American Indian	30.4 (24.5-36.5) ***	13.9 (10.4-17.5) ***
Hispanic	--	--
Other	--	--
Grade		
6th	10.4 (7.3-13.5) *	3.6 (2.0-5.1)
7th	13.2 (8.1-18.2) *	6.3 (1.7-10.9)
8th	19.4 (12.4-26.3) *	6.3 (4.1-8.4)
Overall	**14.4 (11.1-17.7)**	**5.4 (3.7-7.1)**

*p-value< 0.05, ***p-value<0.001 based on Rao-Scott Chi-Square Test.
-- Data suppressed as fewer than 50 respondents.

Students using any tobacco products in the past 30 days were asked additional questions to further characterize their use. First, students were asked if the COVID-19 pandemic had any effect on the frequency of their tobacco or vaping product use. As shown in Figure 16, over half of middle schools students reported quitting or decreasing their use during the pandemic.

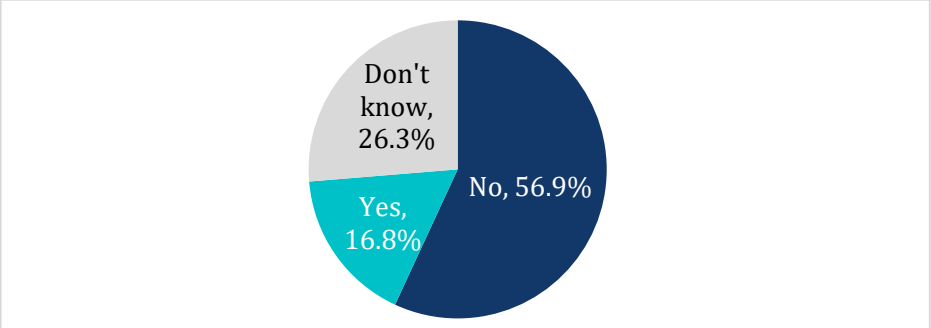
Figure 16. Frequency of Tobacco or Vaping Products Use During the COVID-19 Pandemic, SD YTS 2021



^Rates should be interpreted with caution due to small number of students/respondents (<50).

Students reporting current use of any tobacco product were also asked about cravings, using the question, "During the past 30 days, have you had a strong craving or felt like you really needed to use a tobacco product of any kind?" Craving can be a sign of nicotine dependence.[15] Among current any tobacco users, 16.8% reporting experiencing a craving for nicotine (Figure 17). Most (81.5%) of those experiencing a craving reported current use of e-cigarettes/vapes.

Figure 17. Portion of Current Any Tobacco Users Reporting Cravings in the Past 30 days, SD YTS 2021^



^Rates should be interpreted with caution due to small number of students/respondents (<50).

Poly-tobacco Product Use among Middle School Students

In the 2021 National Youth Tobacco Survey, 4.0% of middle school students reported ever use of more than one type of tobacco (poly-tobacco use).[1] Current use of two or more types of tobacco was reported by 1.3% of middle school students nationally.[1] Using the SD YTS data, we examined the number of middle school youth who reported ever and current use of more than one type of tobacco. Poly-tobacco use has been shown to increase risk for nicotine dependence.[1]

Key Findings

- Ever use of more than one type of tobacco product was reported by 7.1% of middle school students, and 2.0% of middle school students reported current use of two or more types of tobacco products.
- American Indian students (18.2%) were more likely to report ever poly-tobacco use compared to White students (3.8%).
- E-cigarettes/vapes is most common type of tobacco first tried among current poly-tobacco users.

Rate of Poly-Tobacco Use

Overall, 7.1% of middle school students reported ever use of two or more types of tobacco products. Current use (past 30-day use) of two of more types of tobacco was 2.0%. Table 6 shows rates of ever and current poly-tobacco use by gender, race/ethnicity, and grade. Eighth grade students (11.9%) were more likely to report ever poly-tobacco use compared to sixth grade students (4.7%) and seventh grade students (4.7%) ($p<0.001$). American Indian students (18.2%) were more likely to report ever poly-tobacco use compared to White students (3.8%) ($p<0.001$).

Table 6. Ever and Current Poly-Tobacco Use by Gender, Race/Ethnicity, and Grade, SD YTS 2021

	Ever Use % (95% CI)	Current Use % (95% CI)
Gender		
Male	7.5% (5.1-9.8)	2.5 (1.5-3.5)
Female	5.2% (3.5-7.0)	--
Race/Ethnicity		
White	3.8 (1.5-6.2) ***	--
American Indian	18.2 (12.3-24.1) ***	6.3 (3.5-9.0) ***
Hispanic	--	--
Other	--	--
Grade		
6th	4.7 (2.8-6.5) ***	--
7th	4.7 (3.0-6.3) ***	--
8th	11.9 (4.9-18.9) ***	--
Overall	**7.1 (4.3-9.8)**	**2.0 (1.3-2.7)**

***p-value < 0.001 based on Rao-Scott chi-square test. CI =confidence interval
-- Data suppressed as fewer than 50 raw responses.

Frequency of Tobacco Use among Current Poly-Tobacco Users

Poly-tobacco users were asked to report on how many of the past 30 days they used any type of tobacco, which accounts for use of different products on different days. Due to low numbers of students reporting poly-tobacco use, the number of days of use in the past 30 days is not reported.

Type of Product First Used among Poly-Tobacco Users

Students using two or more types of tobacco in the past 30 days were also asked to report what type of tobacco they first tried. Due to low numbers of students reporting poly-tobacco use, the frequency of product first used is not reported.

Tobacco Use among Middle School Students in SD Compared to the U.S.

Rate of tobacco use among middle school students in SD were compared to national rates, for both ever use and current use by product type. Figure 18 displays ever use rates, with SD students reporting higher rates of use for every type of tobacco assessed as compared to the US rates.[1] Table 7 provides the rate and confidence intervals for each type of tobacco, in SD and the US, both ever and current use.

Figure 18. Prevalence of Ever Tobacco Use Among Youth Grades 6 to 8, by Product Type, SD (SD YTS 2021) and U.S.[1]

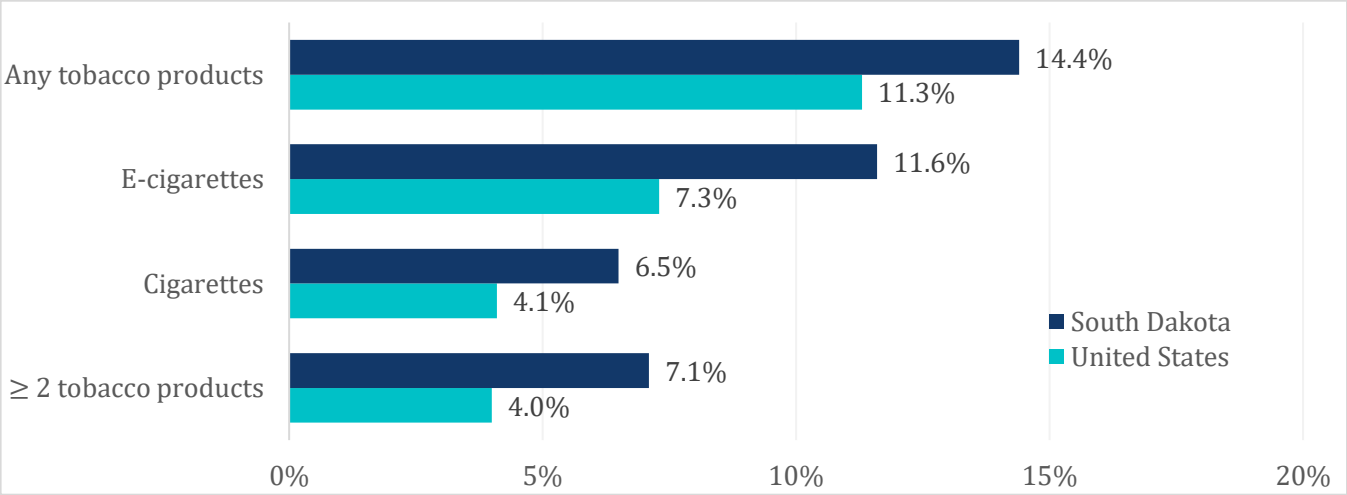


Table 7. Prevalence of Tobacco Use Among Youth Grades 6 to 8, by Product Type, SD (SD YTS 2021) and U.S.[1]

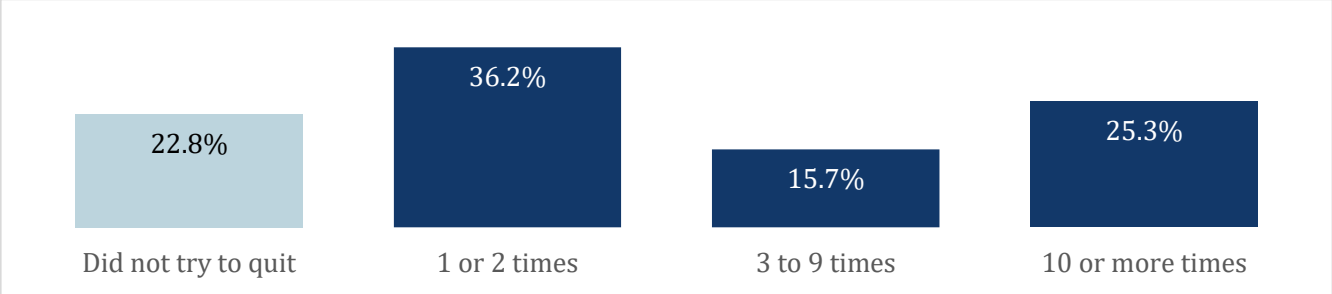
Ever Use				
	South Dakota		United States	
	Prevalence (%)	95% CI	Prevalence (%)	95% CI
E-cigarettes	11.6	8.4-14.7	7.3	6.2-8.6
Cigarettes	6.5	4.0-9.1	4.1	3.2-5.1
Any tobacco products	14.4	11.1-17.7	11.3	9.8-13.0
Smokeless tobacco	3.5	1.0-6.0	2.2	1.6-3.0
Cigars	2.5	1.6-3.5	2.1	1.7-2.6
Pipe tobacco	1.7	0.6-2.9	0.5	0.3-0.7
≥ 2 tobacco products	7.1	4.3-9.8	4.0	3.2-5.1
Current Use				
E-cigarettes	4.0	2.3-5.7	2.8	2.2-3.4
Cigarettes	1.2	0.7-1.7	1.0	0.8-1.4
Any tobacco products	5.4	3.7-7.1	4.0	3.3-4.8
Smokeless tobacco	--	--	0.6	0.4-0.9
Cigars	--	--	0.6	0.4-0.8
Pipe tobacco	--	--	0.2	0.1-0.3
≥ 2 tobacco products	2.0	1.3-2.7	1.3	0.9-1.7

-- data suppressed as fewer than 50 respondents.

Tobacco Cessation

Current users of any tobacco product were asked about their past year quit attempts. Figure 19 shows responses, with 22.8% reporting no quit attempt in the past year. Among current tobacco users, 25.3% reported 10 or more attempts to quit tobacco, similar to 2019 findings at 26.5%.

Figure 19. Number of Past Year Quit Attempts among Current Tobacco Users, SD YTS 2021



Students were also asked about resource(s) utilized in the past 12 months to assist with quitting tobacco. Of those that did make a quit attempt, the most frequently reported resource used to quit tobacco was help from peer or friends, followed by quitting on their own (Table 8). Other ways of quitting (write-in responses) included: stopped because could no longer access, chewed gum, just stopped, "tastes ugly and made me sick", "my mom told me no", it's not good and I seen what it do", "It tasted really bad so I stopped", "I'm not addicted to any tobacco", "I felt it was illegal for a kid so I stopped", "I don't need to quit, I'm not addicted", "I don't know", "I don't care for it", and "did not get addicted to smoking".

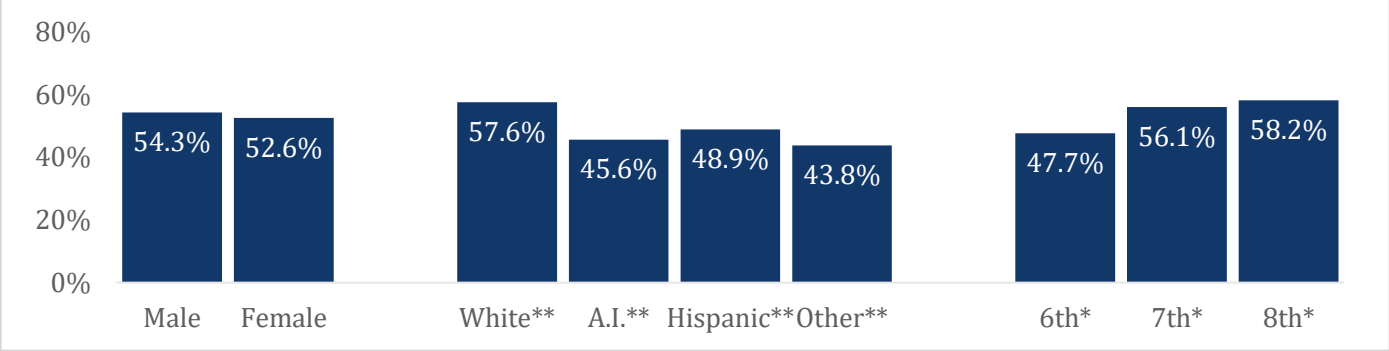
Table 8. Type of Quit Resources Utilized with a Past Year Quit Attempt, SD YTS 2021*

Resource	Current Tobacco Users % (CI)
Help or advice from a friend or peer^	29.3 (10.7-47.9)
Tried to quit on my own or quit "cold turkey"^	21.6 (13.0-30.1)
Help or advice from a parent or caregiver^	20.6 (0.3-41.0)
Other^	16.0 (10.5-21.5)
Help or advice found on the internet^	7.3 (4.0-10.6)
Help or advice from a teacher or coach^	5.1 (2.1-8.1)
Used nicotine gum or patch^	3.4 (1.6-5.2)
A mobile app or texting program^	2.9 (0.4-5.4)
Help, advice, or counseling from a doctor or healthcare provider^	2.8 (0.9-4.7)
Called a telephone line or quitline^	1.6 (0.0-3.4)
Used medicine to help quit^	0.9 (0.0-2.0)
Treatment from a hospital, medical center, or some other facility^	0.8 (0.0-1.7)

*Not equal to 100% as student could select more than one. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

All students were asked if they had heard of the South Dakota QuitLine, a Department of Health Program that offers free services designed to help a person quit tobacco or e-cigarettes/vapes. Overall, about half of the middle school students (53.9%) reported awareness of the SD Quitline. Awareness of the SD QuitLine by demographic characteristics are shown in Figure 20. Significantly fewer American Indian (45.6%) and other race students (43.8%) reported hearing about the SD QuitLine compared to White race students ($p<0.01$).

Figure 20. Percentage of Middle School Students Aware of the SD Quitline by Gender, Race/Ethnicity and Grade, SD YTS 2021

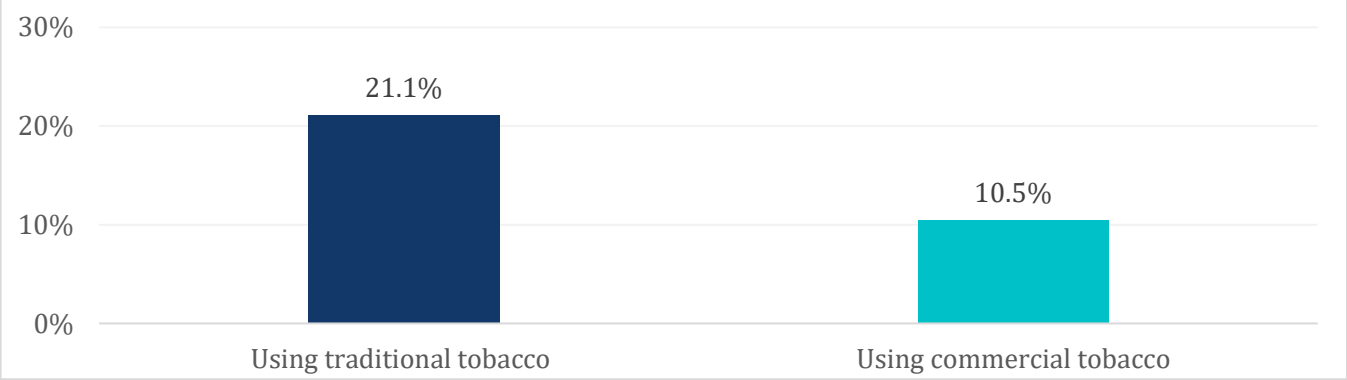


*p-value<0.05, **p-value < 0.01 based on Rao-Scott chi-square test

Tobacco Use for Ceremonial Purposes among American Indian Students

Two questions were added to the 2021 YTS survey specifically asked of American Indian students. The questions assessed the use of tobacco as an offering or during prayer or ceremony. The purpose of these questions was two-fold. The first was to explicitly outline that use of commercial tobacco for ceremonial purposes should not be included when responding to the survey questions. Students indicating the use of traditional tobacco were shown a message within the online survey explaining this. The second purpose was to gather information on the portion of American Indian students using traditional or commercial tobacco for ceremonial purposes, as shown in Figure 21. Among students that reported using traditional tobacco, 53.4% were male and 46.6% were female. Among those using commercial tobacco, 56.8% were male and 43.2% were female.

Figure 21. Percentage of American Indian Students Who Reported Use of Tobacco as an Offering, or During Prayer and Ceremony, SD YTS 2021



SECTION THREE: FACTORS PROMOTING TOBACCO USE

Key Findings

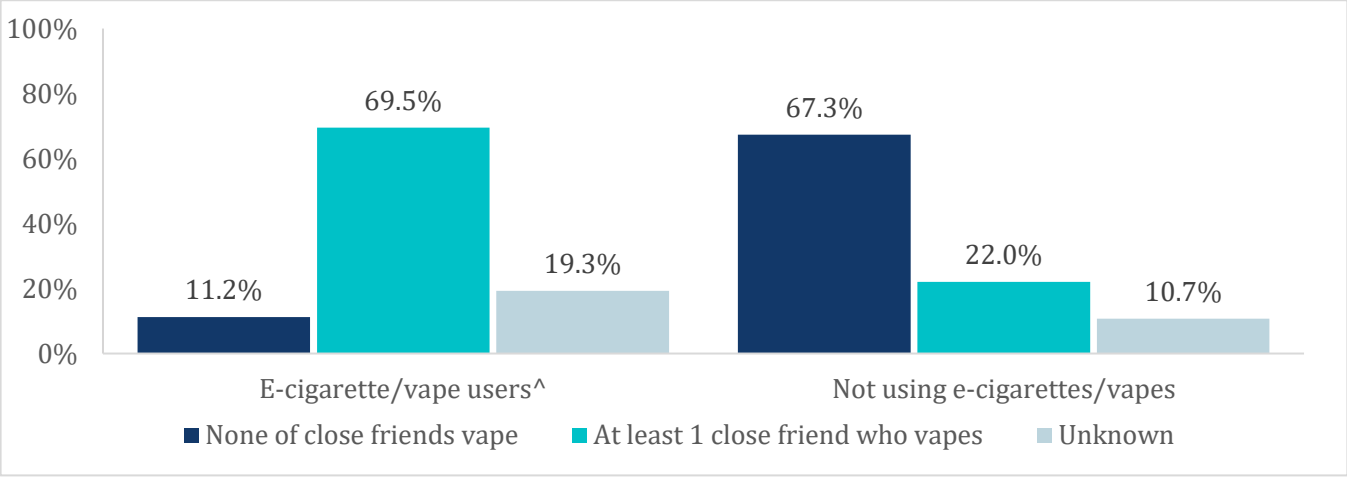
- Peer use was more common among current e-cigarette/vape users with 69.5% reporting one or more of their closest friends vapes, compared to non-users with only 22.0% reporting the same.
- TikTok (59.4%), YouTube (48.1%), and Snapchat (45.0%) were the top three social media sites where middle school students reported viewing posts or contents related to e-cigarettes/vapes.

Peer Tobacco Use

Experimentation and use of tobacco products has been linked to peer use and influence.[3] Middle school students were asked how many of their four closest friends use e-cigarettes/vapes and how many smoke cigarettes. Among the overall sample, most reported no close friends using an e-cigarette/vape (65.2%). However, this is lower than the rate of non-use among friends at 76.4% in 2021, showing that use may be perceived as more prevalent. Most students also reported they did not have a close friend who smokes cigarettes (77.5%).

Among current e-cigarette/vape users, the vast majority (88.0%) had at least one close friend that vapes. Among non-users, only 22.0% had at least one friend who vapes. Figure 22 shows a comparison of peer use by the responding student's own use status. Among those using e-cigarettes, 27.0% reported all four of their four closest friends vaped.

Figure 22. Rates of Peer E-Cigarette/Vape Use by Current Use Status, SD YTS 2021



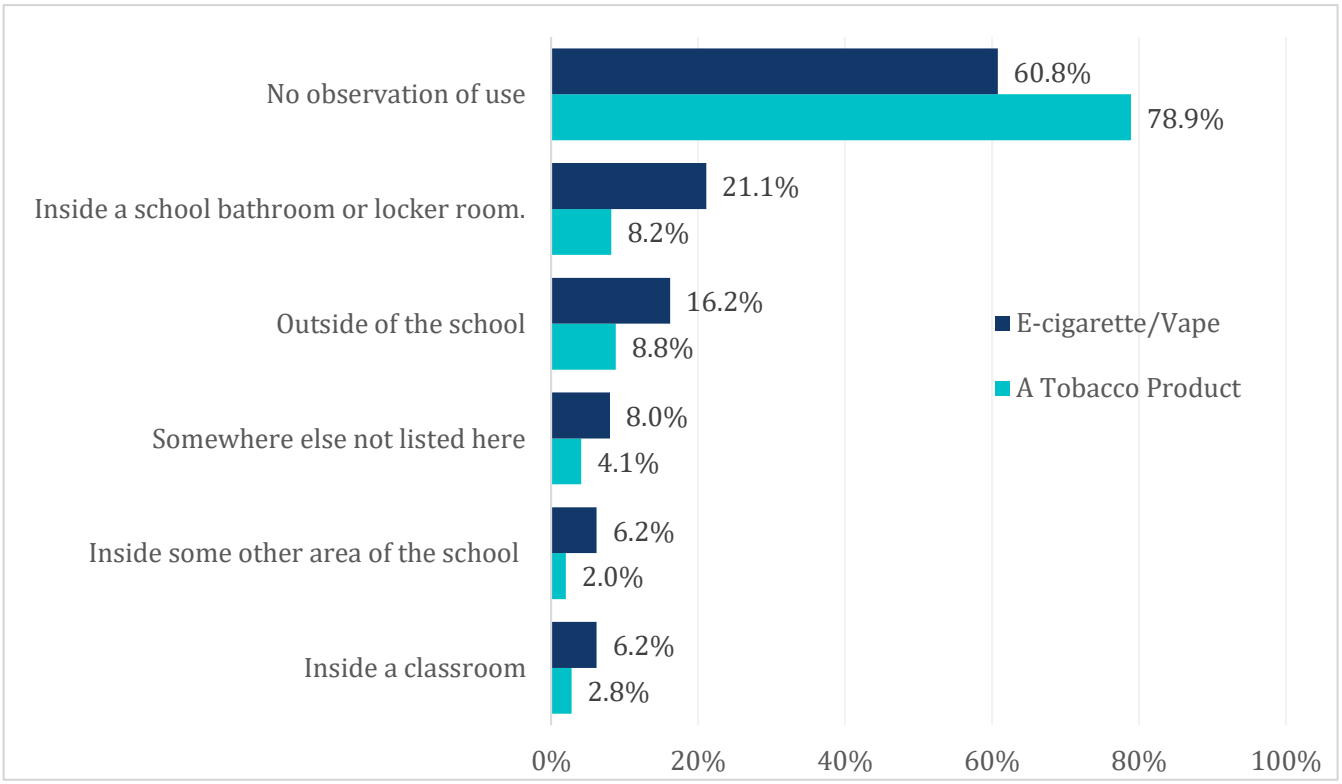
^Rates should be interpreted with caution due to small number of students/respondents (<50).

Findings were similar among cigarette users with 72.6% of current cigarette users indicating one or more of their four closest friends smoked, and 12.1% of non-users indicating the same. Among current smokers, 21.7% reported all four of their closest friends smoked cigarettes, and 14.3% of current cigarette users reported three of their four closest friends smoked cigarettes.

Observation of Use at School

Middle school students were asked if they had ever seen anyone using: 1) an e-cigarette/vape or 2) another tobacco product (not e-cigarette or vape), in any location in or around their school. More than one in three students (39.2%) reported seeing someone using an e-cigarette/vape and 21.1% reported observing someone using a tobacco product in or around school grounds, despite most school districts banning the use of tobacco products onsite. The most common locations where students report seeing e-cigarette/vape and/or tobacco product use was in a school bathroom or locker room, followed by outside of the school (Figure 23). Other areas specified by respondents for e-cigarette/vape use (write-in) included: bus [frequent write-in response], sidewalks, recess, park, playground, parking lots, in cars, gym, outside [frequent write-in response], "pool", "dorm room", "walking", "lobby", "in math classroom", "not bathrooms, we have detect[ors]", "during homecoming parade", and "everywhere" [multiple write-in responses]. Write-in responses for tobacco product use in other places included: sidewalks, school bus, parking lots, park, sports field, outside, in cars, "everywhere", "pool", "dorm room", "a house that is really close to the school", and "[Facility name] field house locker rooms".

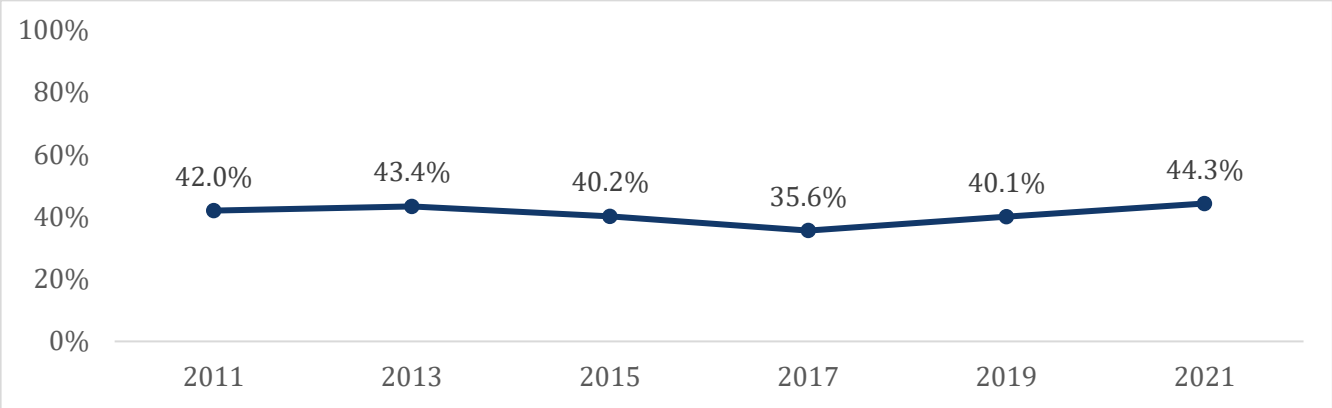
Figure 23. Students' Observation of E-cigarette/Vape and Tobacco Product Use at School, SD YTS 2021



Household Tobacco Use

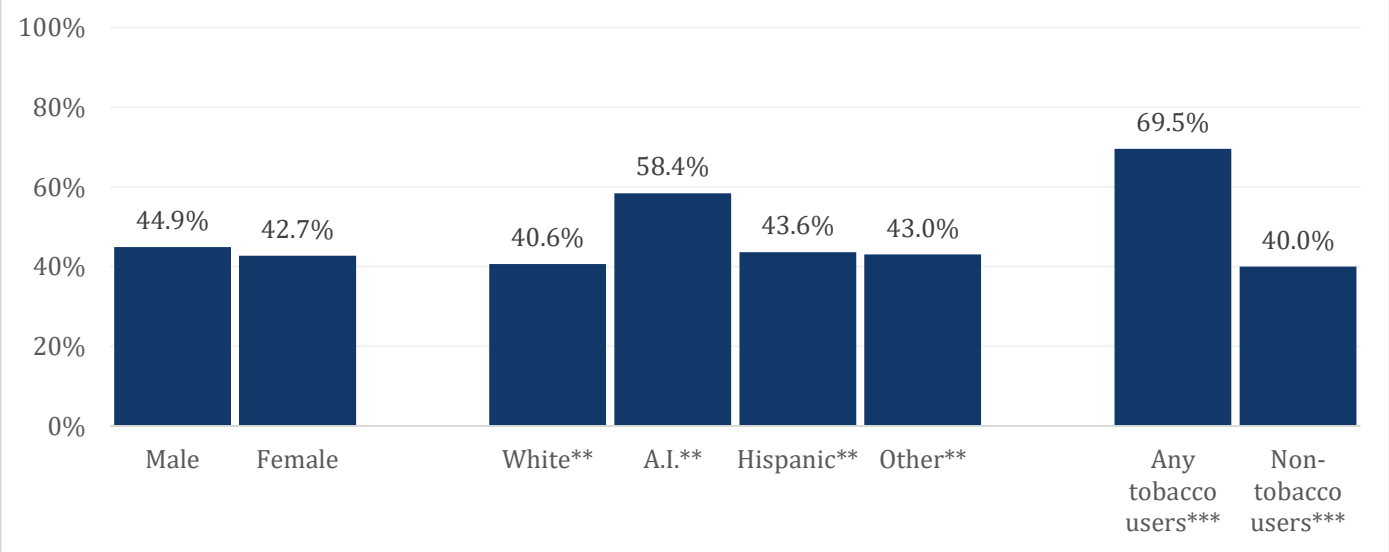
Over half (55.7%) of middle school students in 2021 reported no one in their household using a tobacco product. The rate of reported household use has remained mostly unchanged over the past ten years (Figure 24).

Figure 24. Reported Household Tobacco Use Rate, SD YTS 2011-2021



Rates of household use were examined by gender, race/ethnicity and tobacco use status. Students who reported any tobacco use were significantly more likely to report a household member using tobacco, compared to non-tobacco users ($p<0.001$). American Indian students were also more likely to report a household member using tobacco compared to students of all other races ($p<0.001$) (Figure 25).

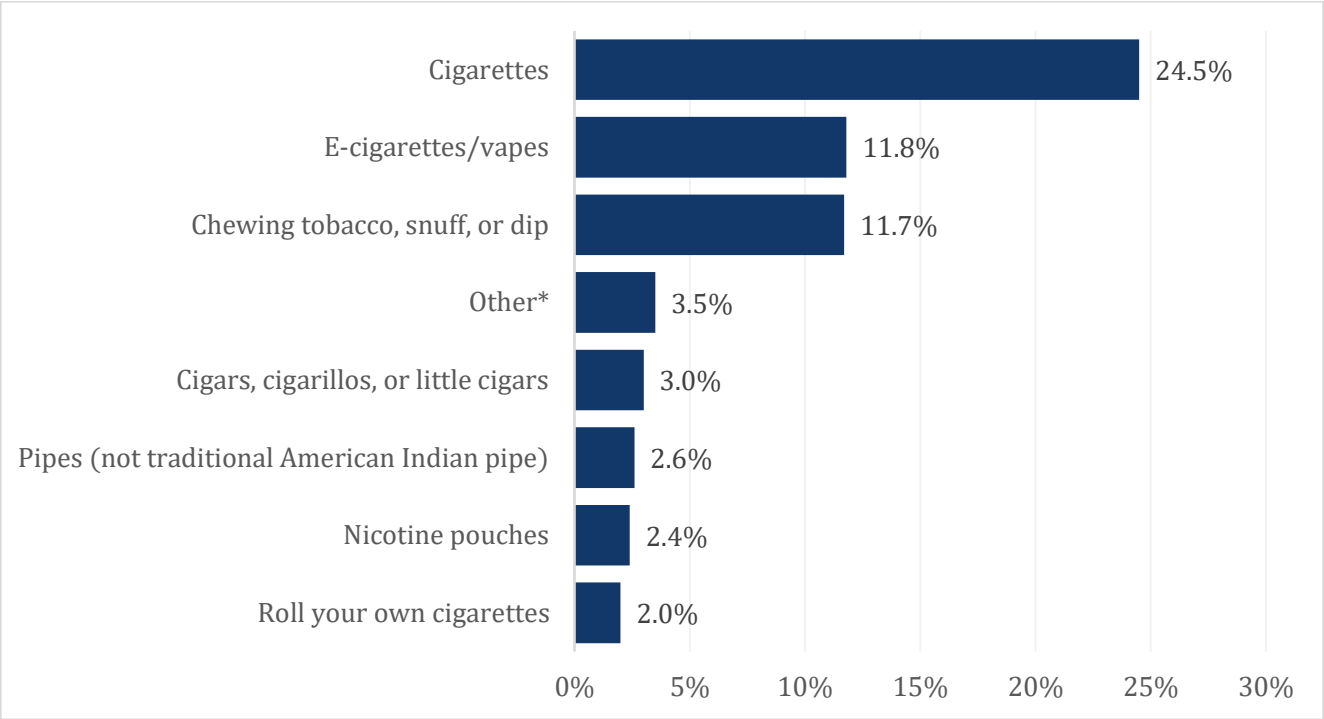
Figure 25. Reported Household Tobacco Use Rate by Gender, Race/Ethnicity, and Ever Any Tobacco Use Status, SD YTS 2021



*p-value<0.05, **p-value < 0.01, ***p-value < 0.001, based on Rao-Scott chi-square test

Approximately one out of four middle school students reported someone who lives with them smokes cigarettes, 11.8% reported someone uses e-cigarettes/vapes, and 11.7% reported someone uses chewing tobacco, snuff or dip (Figure 26).

Figure 26. Household Tobacco Use, by Product Type, SD YTS 2021†



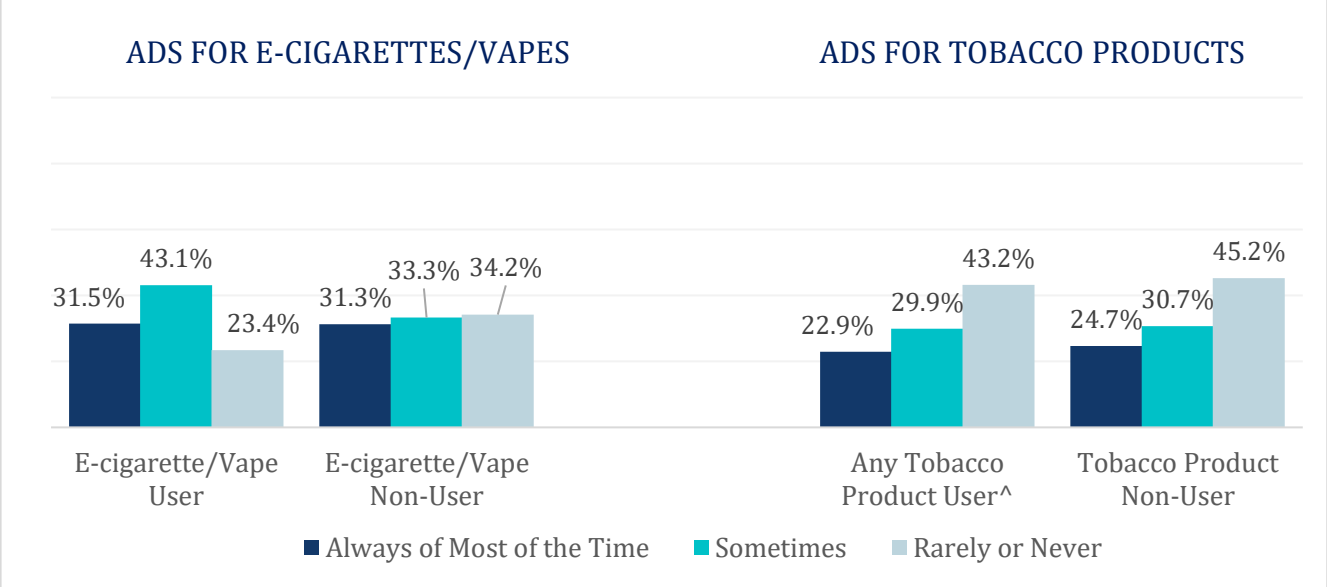
*Other included hookah or waterpipe, dissolvable tobacco products, heated tobacco products, snus, and bidis.
†Not equal to 100% as student could select more than one.

Tobacco Product Marketing

Students were also asked where, if anywhere, they had seen various types of tobacco product marketing. Potential sources of tobacco product marketing included convenience stores, supermarkets, or gas stations, television or streaming services, and movies.

Overall, 65.0% of middle school students reported viewing e-cigarette/vape advertising at least sometimes in convenience stores, supermarkets, or gas stations (Figure 27). Viewing tobacco products in these locations was less common at 55.2% reporting at least sometimes seeing these ads. No differences were noted between current users and non-users in reported observation of tobacco marketing in stores.

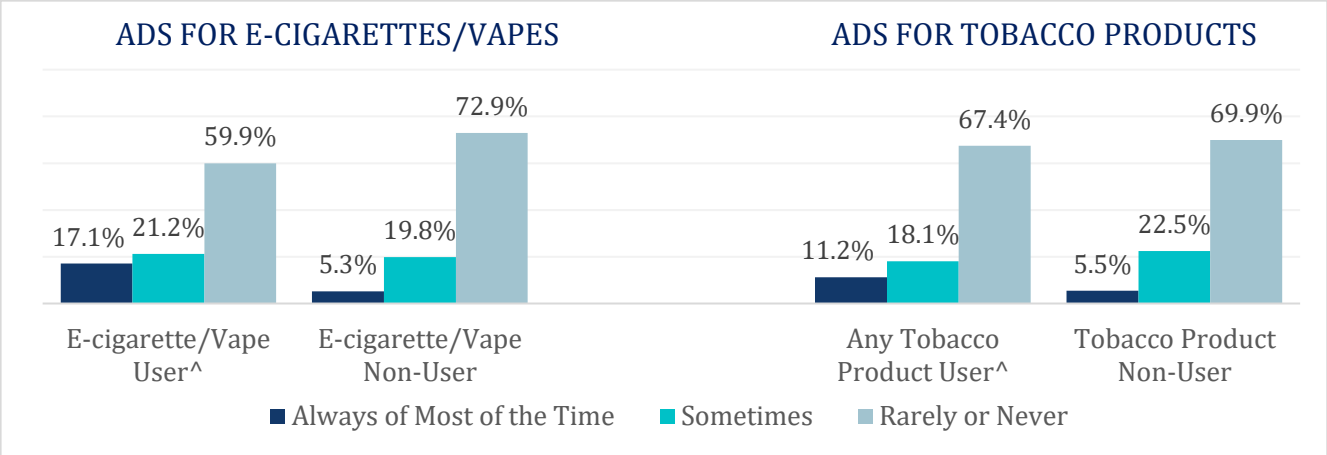
Figure 27. Frequency of Viewing Tobacco Product Promotion in Convenience Stores, Supermarkets, or Gas Stations, by E-cigarette and Tobacco Product Use Status, SD YTS 2021*



*1.2% of non-current e-cigarette users and 1.5% of non-current any tobacco product users reported never going to a convenience store, supermarket, or gas station. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Viewing of tobacco products ads on TV or steaming services, or at the movies was less frequent than observation at retail environments, with 28.1% of students reporting sometimes or more often seeing ads for e-cigarettes/vapes, and 25.6% sometimes or more often viewing ads for tobacco products (Figure 29). Statistically significant differences were noted between current e-cigarette/vape users and non-users ($p<0.05$), as well as current any tobacco products users and non-users ($p<0.001$) in viewing tobacco marketing on TV, while streaming, or at the movies. Figure 28 shows frequency of viewing tobacco product advertising when watching TV or streaming services or going to the movies by current e-cigarette use status and current any tobacco products use status.

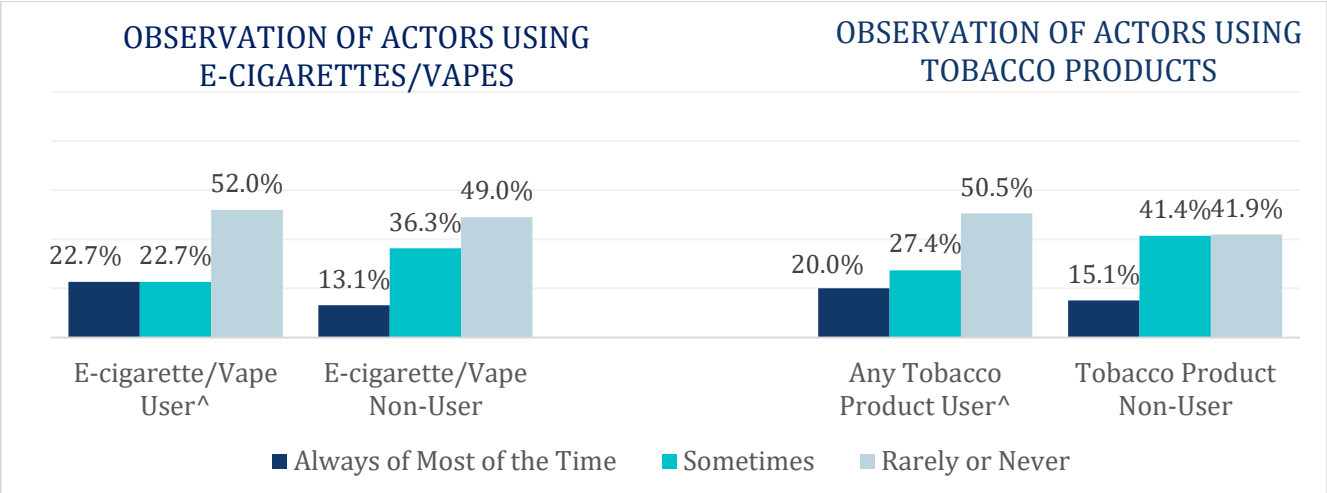
Figure 28. Frequency of Viewing Tobacco Product Advertising when Watching TV/Streaming or Going to the Movies, by E-cigarette and Tobacco Product Use Status, SD YTS 2021*



*1.9% of non-current e-cigarette users and 2.1% of non-current any tobacco product users reported never watching or streaming TV or going to the movies. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Students were also asked to report how frequently they saw people using e-cigarettes/vapes or tobacco products while watching TV, streaming or at the movies. Overall, 49.3% of middle school students report seeing viewing e-cigarette/vape use at least sometimes when watching TV, steaming, or at the movies. Reported observation of tobacco use was slightly higher at 55.9% of students reporting at least sometimes. Figure 29 shows frequency of viewing actors using tobacco products by current e-cigarette use status and current any tobacco products use status. No statistically significant differences were noted between current e-cigarette/vape users and non-users in reported observation of product use by actors on TV or in movies ($p>0.05$). Non-tobacco users were significantly more likely to report seeing people using tobacco products on TV or in the movies than those currently using any tobacco product ($p<0.05$).

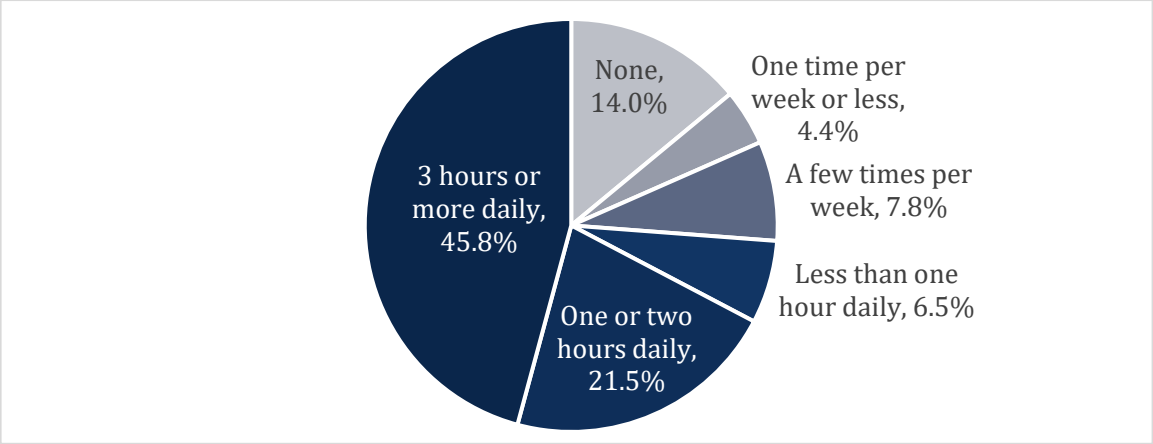
Figure 29. Frequency of Viewing Actors Using Tobacco Products when Watching TV/Streaming or Going to the Movies by E-cigarette and Tobacco Products Status, SD YTS 2021*



*1.7% of non-current e-cigarette users and 1.9% of non-current any tobacco product users reported never watching or streaming TV or going to the movies. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

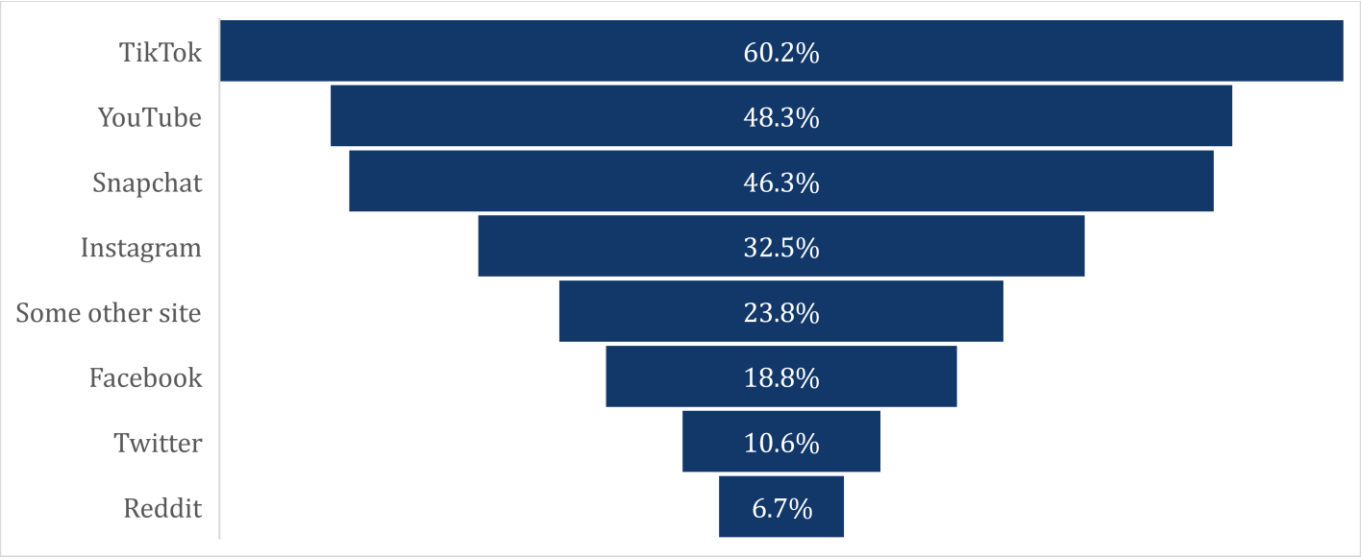
To assess the extent of pro-tobacco promotion and content on social media, middle school students were first asked to report their frequency of social media use. Among middle school students, 73.8% report using social media daily (Figure 30).

Figure 30. Frequency of Social Media Use among SD Middle School Students, SD YTS 2021



Next, reported exposure to tobacco promotion (ads, posts, or other content) was assessed among those who reported using social media at least a few times per week or more (81.6% of the overall population). Among middle school social media users, 29.8% of students reported never seeing posts or content related to e-cigarettes/vapes, 39.7% report seeing posts less than monthly, 21.4% weekly, and 9.1% daily. Middle school students were also asked on which social media sites they have seen posts or content related to e-cigarettes/vapes. TikTok (60.2%), YouTube (48.3%), and Snapchat (46.3%) were the most reported social media platforms for e-cigarette/vape posts or content (Figure 31).

Figure 31. Portion of Middle School Social Media Users Who Report Seeing Posts or Content for E-cigarettes/Vapes by Social Media Platform, SD YTS 2021*



*Not equal to 100% as student could select more than one.

SECTION FOUR: PERCEPTIONS OF TOBACCO USE

Middle school students were asked questions about their view on the dangers of all tobacco products. Questions were designed to examine any potential differences in perceptions between tobacco products and e-cigarettes/vapes, as well as to assess the perception of nicotine use.

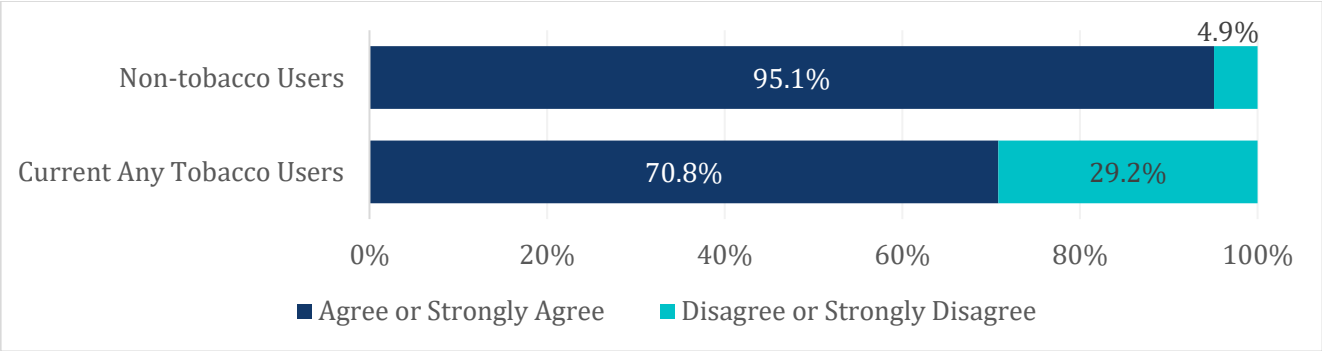
Key Findings

- Overall, 9 in 10 students (93.8%) reported agreement that all tobacco products are dangerous.
- Among current tobacco users, the agreement that tobacco products are dangerous was significantly lower (70.8%) than the level of agreement among non-tobacco users (95.1%).
- Significant differences in perception of tobacco products were observed by race, with White students (64.1%) more likely to report agreement that tobacco products are dangerous compared to American Indian students (44.6%).

Perception of Harm of Tobacco Use

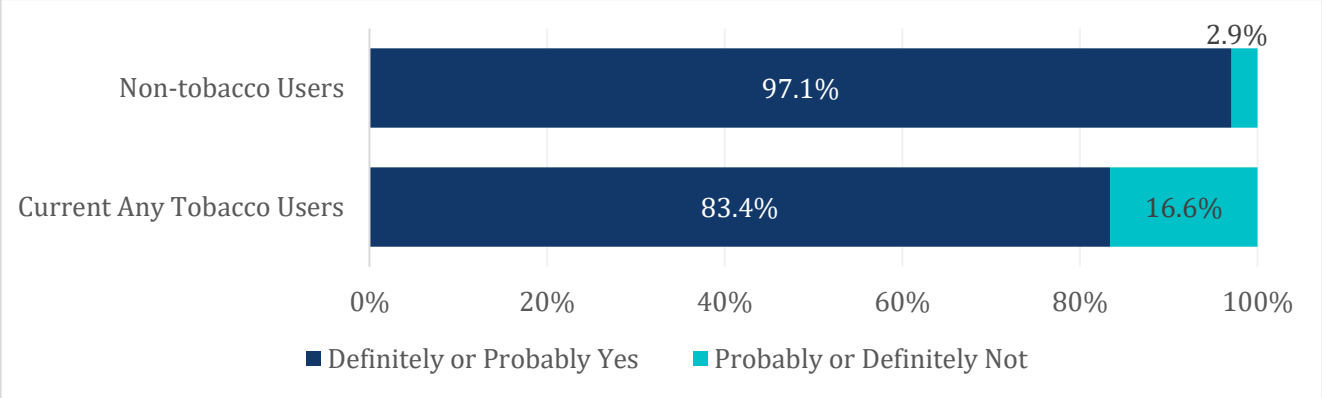
Middle school students were asked questions about their perception of harm related to tobacco use. Most middle school students (93.8%) agreed with the statement "All tobacco products are dangerous". This perception was not significantly different by gender and varied slightly across grade level with 92.6% of sixth grade students reporting agreement compared to 94.9% of seventh grade students and 93.9% of eighth grade students ($p<0.05$). There was significant difference by race/ethnicity with the highest rates of agreement among White students at 95.9% and the lowest rates among American Indian students at 87.2% ($p<0.001$). As shown in Figure 32, rates also varied significantly by current any tobacco use status, with 95.1% of non-tobacco users reporting agreement that all tobacco products are dangerous compared to only 70.8% of current any tobacco users ($p<0.01$).

Figure 32. Agreement that Tobacco Products are Dangerous, by Tobacco Use Status, SD YTS 2021



Similarly, students were asked if they believed nicotine is harmful to health, with 96.2% of middle school students reporting "definitely yes" or "probably yes". There was no statistical difference by gender. However, a significant difference by grade was observed. Sixth grade students less frequently reported agreement that nicotine is harmful to health at 95.1%, compared to 97.5% of seventh grade students and 96.5% of eighth grade students ($p<0.05$). Statistical differences were also found by race/ethnicity with a higher number of White students reporting agreement (97.8%) compared to American Indian students (91.8%), Hispanic students (92.8%), and other race students (96.8%) ($p<0.001$). Current any tobacco users were less likely to agreement with the statement that nicotine is harmful to health (83.4%) compared to non-tobacco users at 97.1% ($p<0.001$) (Figure 33).

Figure 33. Perceptions of Nicotine Harm to Health, by Tobacco Use Status, SD YTS 2021

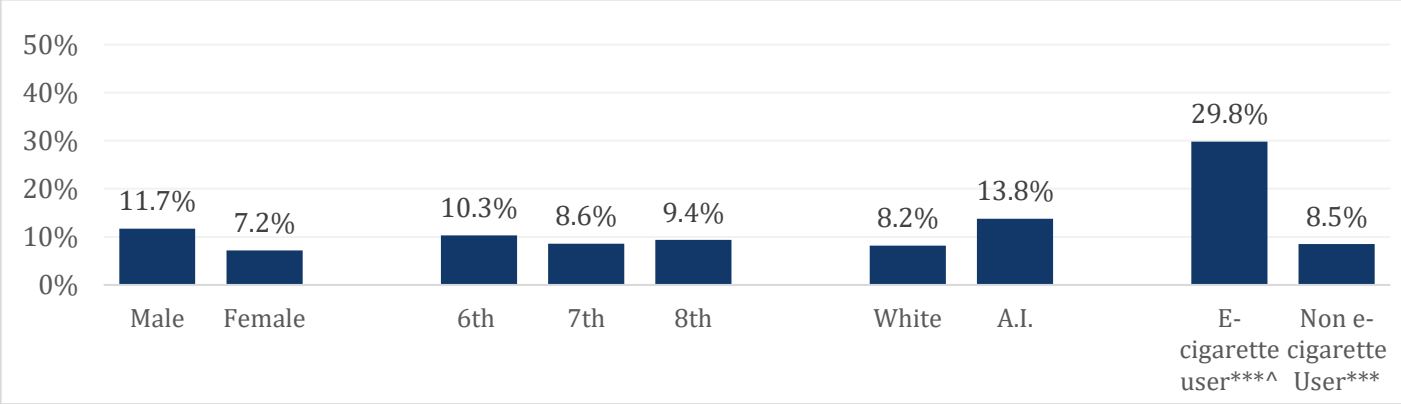


Comparison of E-cigarette/Vape and Cigarette Use Harm Perceptions

Middle school students were asked to report their perception of harm between use of e-cigarettes/vapes and cigarettes (less, same, or more harmful), with 20.9% of students indicating they had not heard of or did not know enough about the products to respond. These students were excluded from the analysis for this question.

Agreement that e-cigarettes/vapes are less harmful than cigarettes was reported by 9.5% of middle school students; 52.6% reported the products were equally harmful and 37.9% reported e-cigarettes/vapes were more harmful than cigarettes. This perception was not significantly different by grade or gender. No differences were found in harm perception between e-cigarettes/vapes and cigarettes by race/ethnicity. Not surprisingly, rates also varied significantly by use status, with 29.8% of current users reporting that e-cigarettes/vapes are less harmful as compared to only 8.5% of non-users ($p<0.001$) (Figure 34).

Figure 34. Portion of Middle School Students Reporting E-cigarettes/Vapes are Less Harmful than Cigarettes, by Select Characteristics, SD YTS 2021

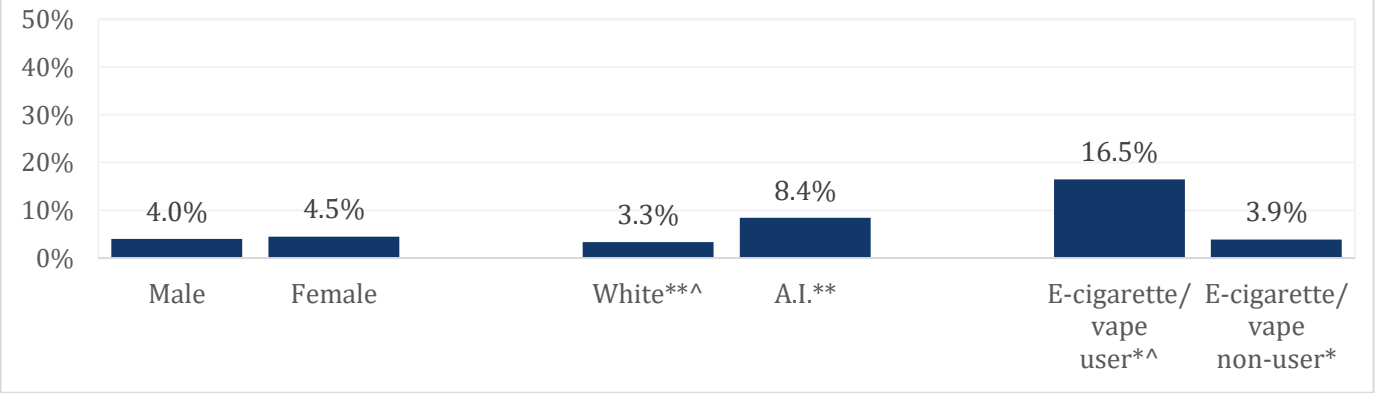


*p-value<0.05, , **p-value < 0.01, ***p-value < 0.001, based on Rao-Scott chi-square test. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Similarly, students were also asked if they believed that that e-cigarettes/vapes were less, equally, or more addictive than cigarettes, with 22.8% of students indicating they had not heard of or did not know enough about the products to respond. These students were excluded from the analysis for this question.

Nearly three out of four students (73.7%) reported that e-cigarettes/vapes are equally or more addictive than cigarettes. This did not significantly vary by gender or grade. White students (3.3%) less frequently reported e-cigarettes/vapes as less addictive than cigarettes than American Indian students (8.4%) (p<0.01). E-cigarette/vape users were slightly more likely to report that e-cigarettes/vapes are less addictive than cigarettes at 16.5% compared to e-cigarette/vape non-users at 3.9% (p<0.01) (Figure 35).

Figure 35. Portion of Middle School Students Who Reported E-cigarettes/Vapes are Less Addictive than Cigarettes, by Select Characteristics, SD YTS 2021

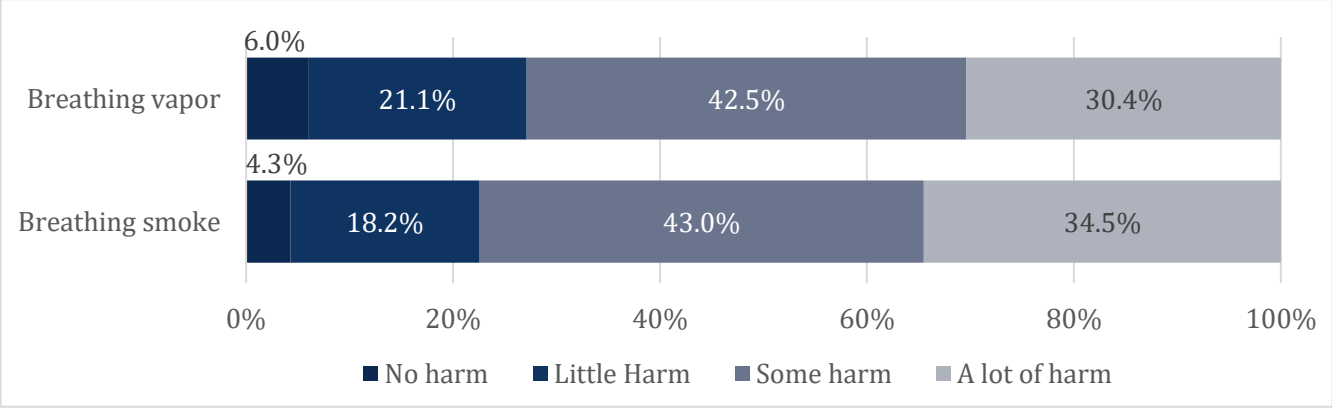


*p-value<0.05, **p-value < 0.01, ***p-value < 0.0001, based on Rao-Scott chi-square test. ^Rates should be interpreted with caution due to small number of students/respondents (<50).

Students were also asked questions about second-hand exposure to cigarette smoke and e-cigarette/vape vapor. Most students perceived breathing vapor as harmful, with 30.4% of middle school students reporting 'a lot of harm' from breathing vapor. Similarly, most students reported

breathing smoke as harmful, with 34.5% of middle school students reporting 'a lot of harm' from breathing smoke (Figure 36). Middle school students currently using e-cigarettes/vapes were less likely to report that breathing vapor from others causes "a lot of harm" at 14.5% compared to non-users at 31.1% (p<0.001).

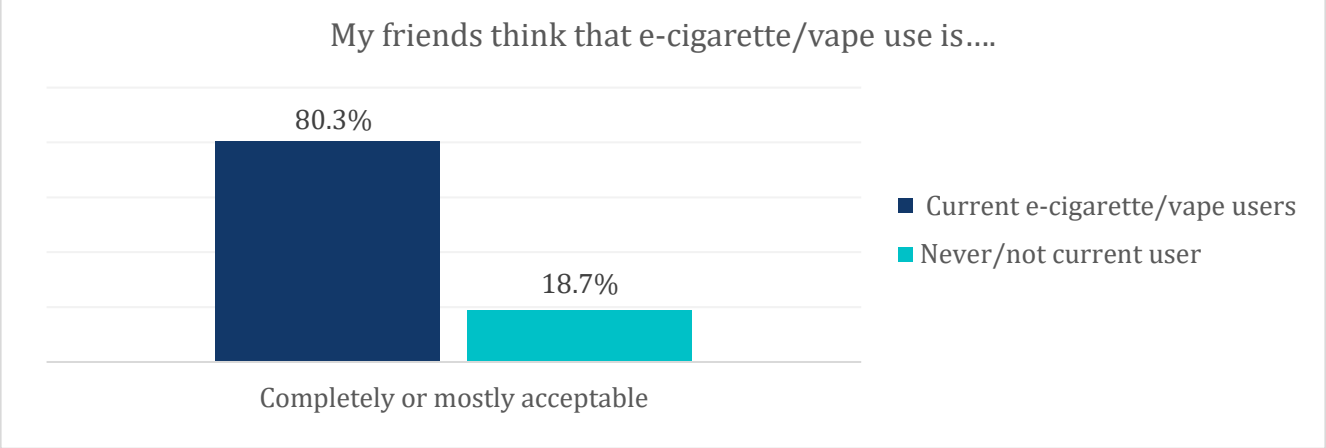
Figure 36. Reported Harm Level of Breathing Smoke and Vapor, All Students, SD YTS 2021



Perceptions of Peer Tobacco Use

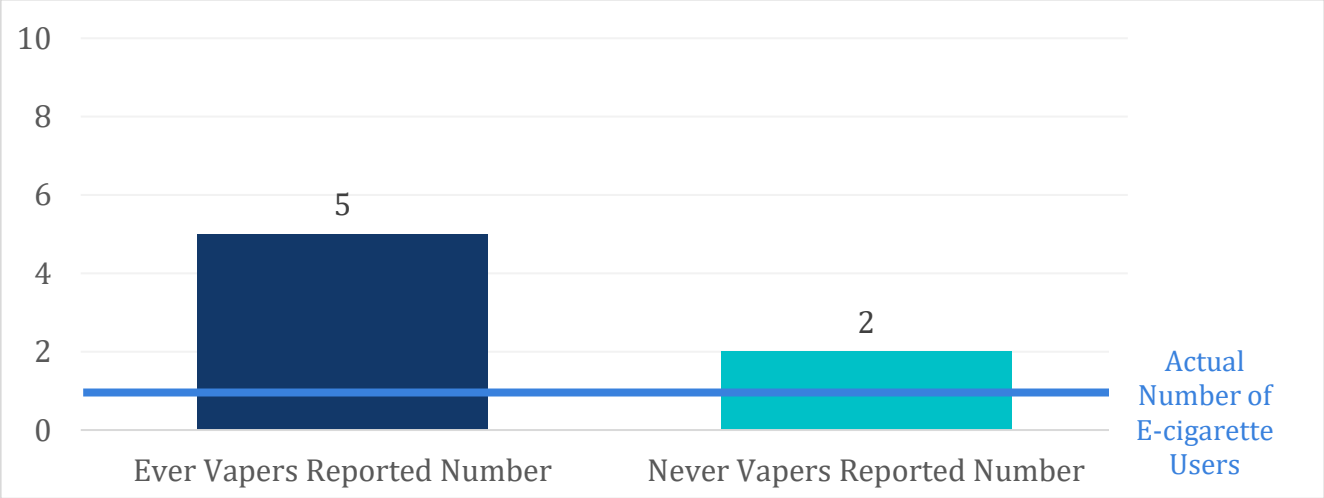
Students were asked about their friends' acceptance of e-cigarette/vape use. Overall, 60.3% of middle school students reported that their friends viewed vaping as not acceptable. This did not significantly vary by gender but did significantly vary by grade level (p<0.05) with 62.3% of sixth grade students, 59.0% of seventh grade students, and 48.2% of eighth grade students reporting their friends think vaping is not acceptable (higher acceptance of e-cigarette/vape use as grade increased). There were also significant differences found by race/ethnicity. A higher number of White students (62.0%) reported that their friends viewed vaping as not acceptable compared to American Indian students (39.6%), Hispanic students (31.9%), and other race students (57.8%) (p<0.001). Students not using e-cigarettes/vapes were far more likely to report that their friends view vaping as not acceptable at 81.3% compared current e-cigarette/ vape users at just 19.7% (Figure 37).

Figure 37. Acceptance of E-Cigarette/Vape Use among Friends, by Use Status, SD YTS 2021



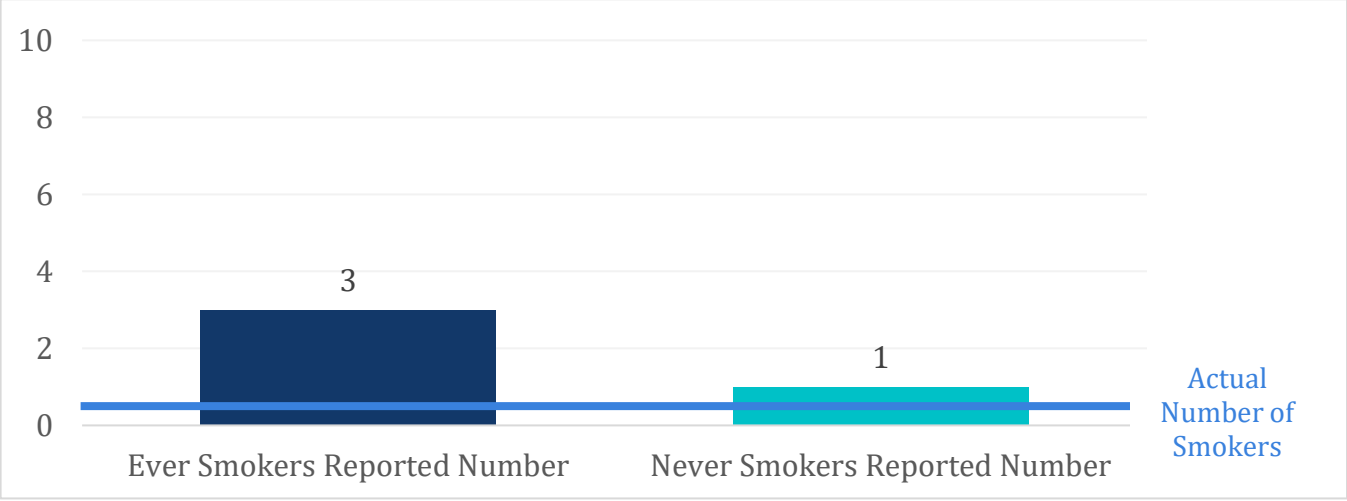
When asked how many of 10 students in their grade use e-cigarette/vapes, ever vapers reported that they thought five of every 10 students in their grade at school used e-cigarettes/vapes, and never vapers reported that they thought 2 of every 10 students in their grade at school used e-cigarettes/vapes. Based on the overall prevalence, the actual number of users is estimated to be 1 of every 10 middle school students ever using e-cigarettes/vapes (Figure 38). Ever users of vaping products report far more students are using vapes than non-user or the actual number of vaping users in middle school.

Figure 38. SD Middle School Students Perception of the Number of Student Using E-cigarettes/Vapes, SD YTS 2021



When asked how many of 10 students in their grade smoke cigarettes, ever smokers reported that they thought 3 of every 10 students in their grade at school smoked cigarettes, and never smokers reported that they thought 1 of every 10 students in their grade at school smoked. Based on the overall prevalence, the actual number of users is estimated at 6.5%, or less than 1 of every 10 middle school students smoking cigarettes (Figure 39). Ever smokers report more students are smoking than non-user or the actual number of smokers in middle school.

Figure 39. SD Middle School Student's Perception on Smoking Cigarettes, SD YTS 2021



SECTION FIVE: ANTI-TOBACCO EDUCATION AND MESSAGING

Key Findings

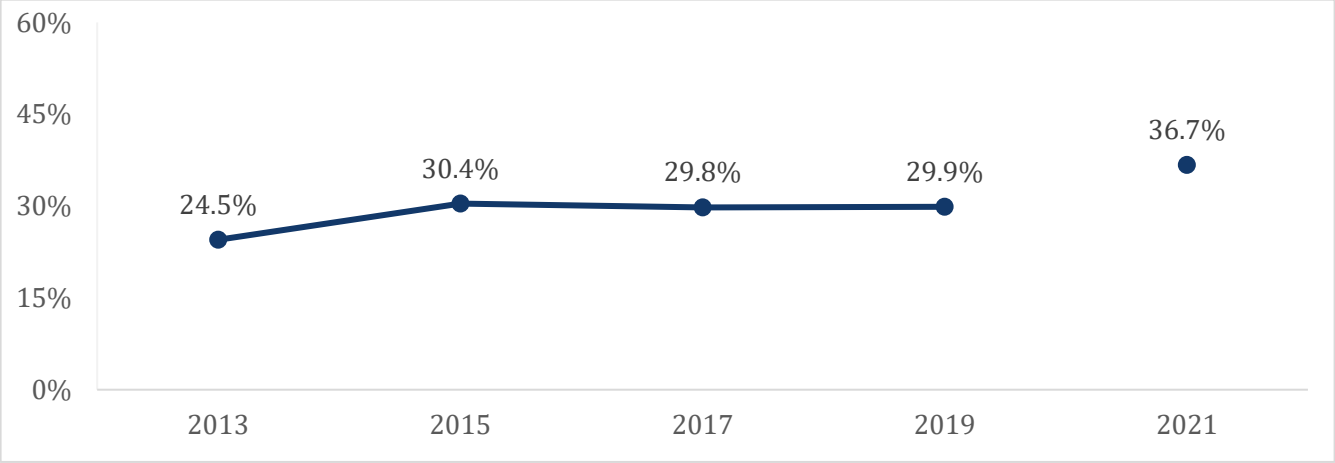
- Among those who had seen a healthcare professional, only 36.7% said the provider asked about use of tobacco products and 31.0% reported being advised against using tobacco.
- Anti-tobacco education at school in 2021 showed the highest rate since the survey began, with 75.4% of middle school students reporting receipt of education.
- More than half (55%) reported discussing dangers of tobacco with their parent(s), a continued upward trend (2013 to 2022).

Healthcare Professional Messaging about Tobacco Use

Clinical practice guidelines recommend that clinicians ask both pediatric and adolescent patients about tobacco use and provide abstinence advice.[16] Students were asked about discussions with healthcare providers (including doctors, dentists, nurses, or other health professionals) regarding tobacco. This year the question had added language to include all types of 'health professionals', which could have influenced the response, making past data not comparable.

Most students (85.6%) reported seeing a healthcare provider in the past year. Among those who had seen a healthcare professional, only 36.7% said this provider asked about use of tobacco products (Figure 40).

Figure 40. Trend in Number of Students Asked about Use of Tobacco Products by a Health Professional, SD YTS 2013-2021*

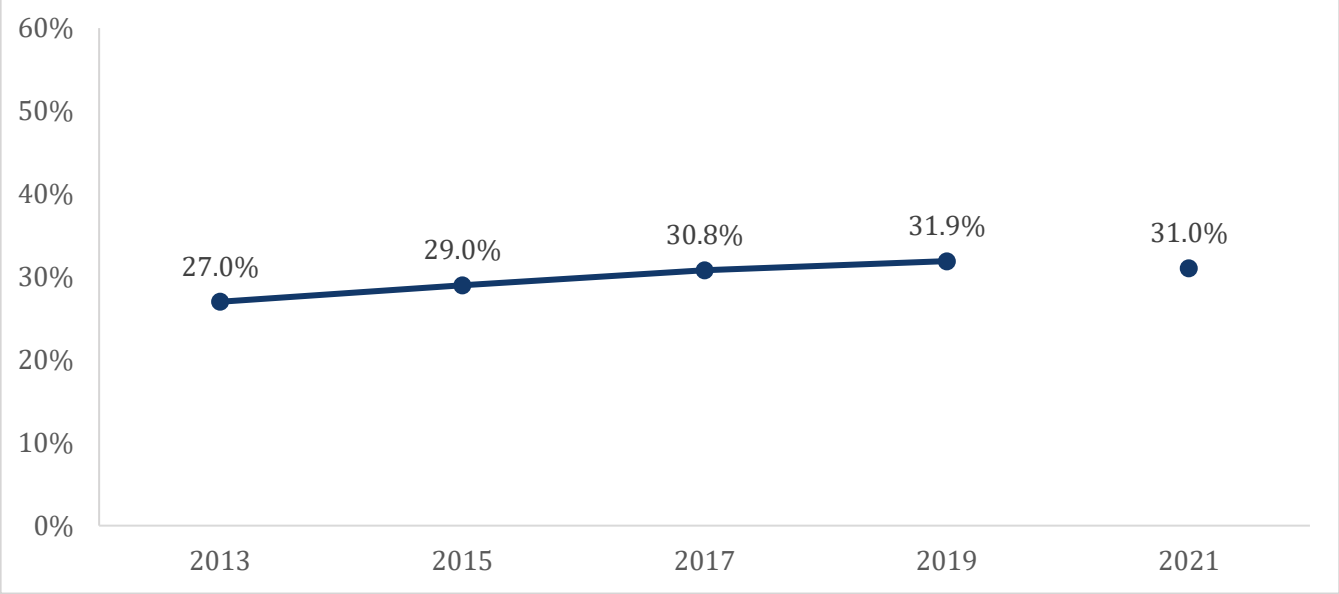


* 2013-2019 "doctor, dentist or nurse"; 2021, "doctor, dentist, nurse or other health professional"

Assessment of tobacco use by healthcare providers did not vary by gender or race/ethnicity (p>0.05). However, significant differences were found by grade with 51.0% of eighth grade students asked versus only 32.1% of seventh grade students and 26.7% of sixth grade students (p<0.001). There were no significant differences found by tobacco use status with 40.4% of current tobacco users asked versus only 36.5% of non-users (p>0.05).

Students were also asked if a healthcare professional had advised them not to use tobacco or vaping products. Among those who had seen a healthcare professional in the past year, 31.0% reported this person advised against the use of tobacco products (Figure 41). Advice against tobacco did not vary by gender or by race/ethnicity (p>0.05). There were also no significant differences found by tobacco use status with 29.8% of current tobacco users asked and 31.0% of non-users (p>0.05).

Figure 41. Trend in Number of Students Advised Against the Use of Tobacco Products by A Health Professional, SD YTS 2013-2021*



* 2013-2019 "doctor, dentist or nurse"; 2021, "doctor, dentist, nurse or other health professional"

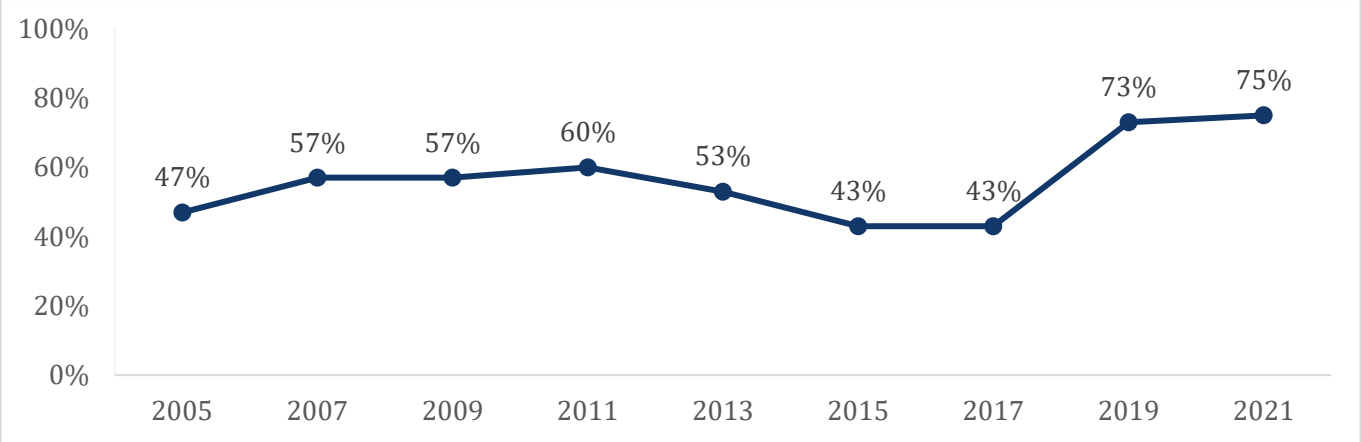
Tobacco Education at School

An increase was noted in the number of middle school students receiving education at school on the dangers of tobacco use. In 2021, 75.4% of students reported anti-tobacco education at school, similar to 2019 at 73.9%, and significantly higher than previous years ranging from 43% to 60% (Figure 42). The highest rate to date of school-based anti-tobacco education was achieved in 2021.

Anti-tobacco education did not vary by gender or grade (sixth grade at 71.9%, seventh grade at 77.5%, and eighth grade at 76.8%) (p>0.05). Significant differences by race/ethnicity were found with more White students reporting receipt of anti-tobacco education at 79.9% compared to American Indian students at 59.0%, and Hispanic students at 70.4% (p<0.001). No significant

difference was found in receiving education in school by those currently using tobacco (70.1%) and those not using tobacco (75.6%).

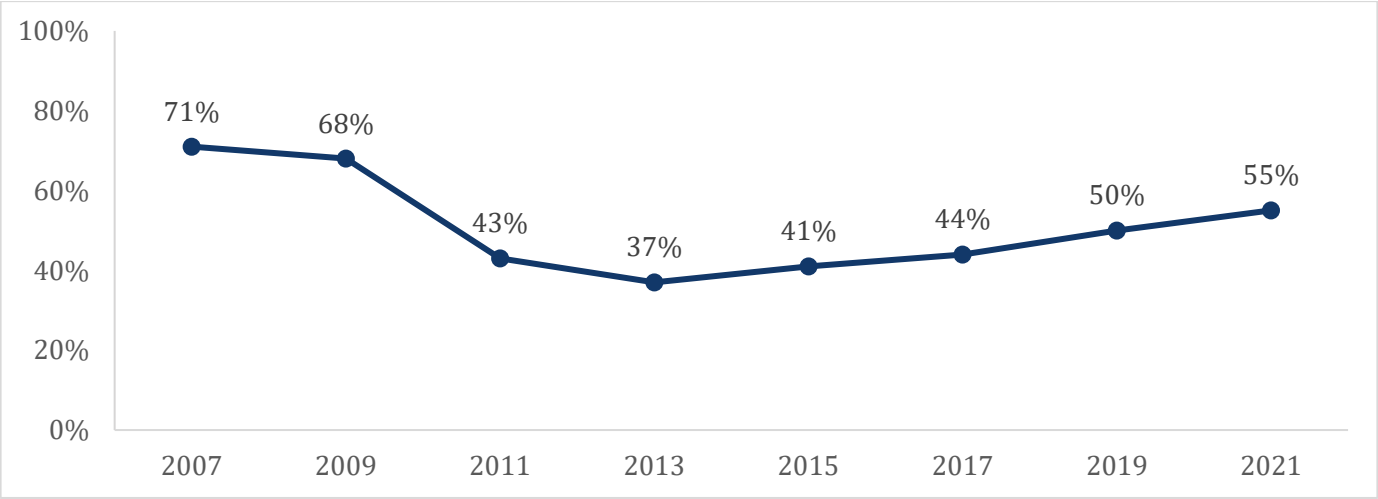
Figure 42. Trends in Number of Students Receiving School-based Education about the Dangers of Tobacco Use, SD YTS 2005-2021



Parental Messaging about Tobacco Use

Among middle school students, 55.1% reported a parent had talked with them about not using tobacco in the past year, an increase from the 2019 YTS data (50.2%). After a substantial decrease in parental discussion on the dangers of tobacco use from 2007 to 2013, an upward trend of students reporting discussing dangers of tobacco with parents has been observed from 2013 to 2021 (Figure 43). No statistically significant differences in parental discussion of tobacco use were found by gender or race/ethnicity ($p>0.05$). There were no statistically significant differences found in parental messaging by current cigarette use with 54.8% of current smokers reported versus only 55.1% of non-smokers.

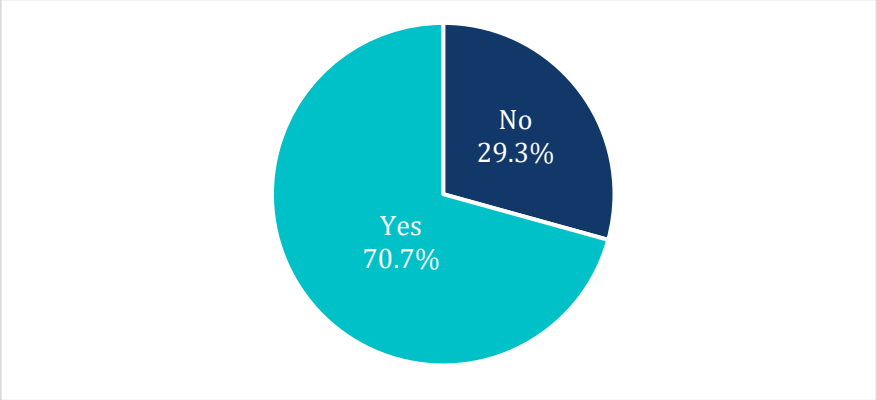
Figure 43. Trends in Parent(s) Discussing the Dangers of Tobacco Use, SD YTS 2007-2021



Anti-Tobacco Media

Middle school students were asked if they believed that tobacco companies (including e-cigarettes/vape companies) try to get young people under 18 to use tobacco products. The frequencies of the responses from students are shown in Figure 44.

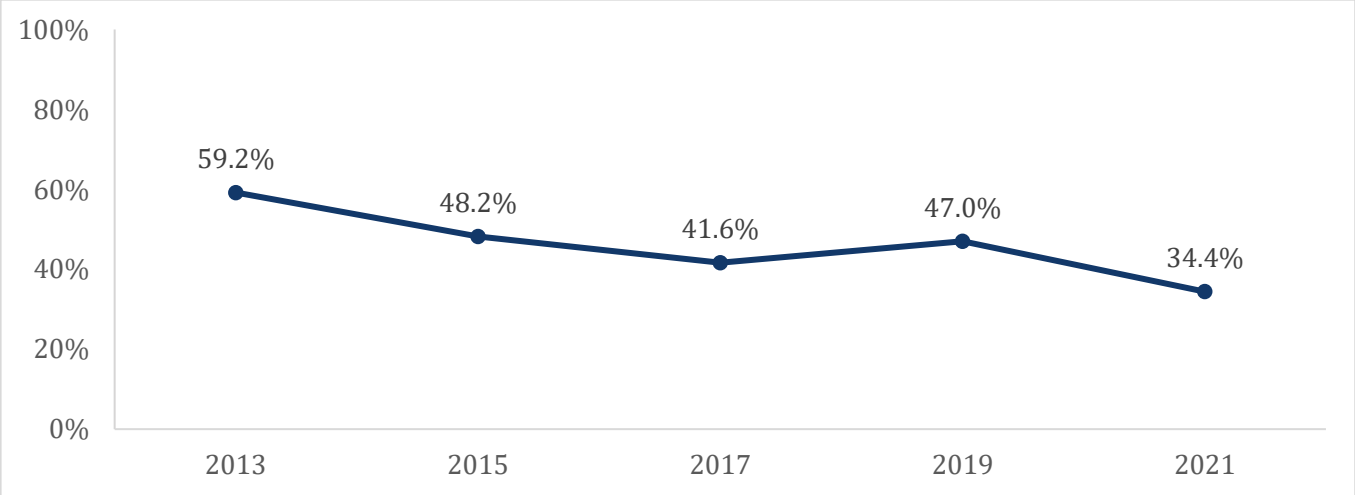
Figure 44. Middle School Student's Agreement that Tobacco Companies Target Youth, SD YTS 2021



The SD Department of Health Tobacco Control Program has designed media aimed at providing information about the dangers of tobacco use, cessation information, and how tobacco companies target youth. At the time of this report, this media is available online at http://rethinktobacco.com.

Among all SD middle school students, 34.4% reported hearing the "Rethink It. Seriously." Slogan, a decline from 47.0% in 2019. There were no statistically significant differences found by gender or race/ethnicity ($p>0.05$). No statistically significant difference was found in awareness of "Rethink It. Seriously." slogan by tobacco use status ($p>0.05$), with 44.4% of current tobacco users reporting awareness of the slogan and 33.9% of non-tobacco users. A downward trend of the percent of students reporting hearing "Rethink It. Seriously." is observed from 2013 to 2021 (Figure 45).

Figure 45. Trends in Student Awareness of the "Rethink It. Seriously." Slogan, SD YTS 2013-2021



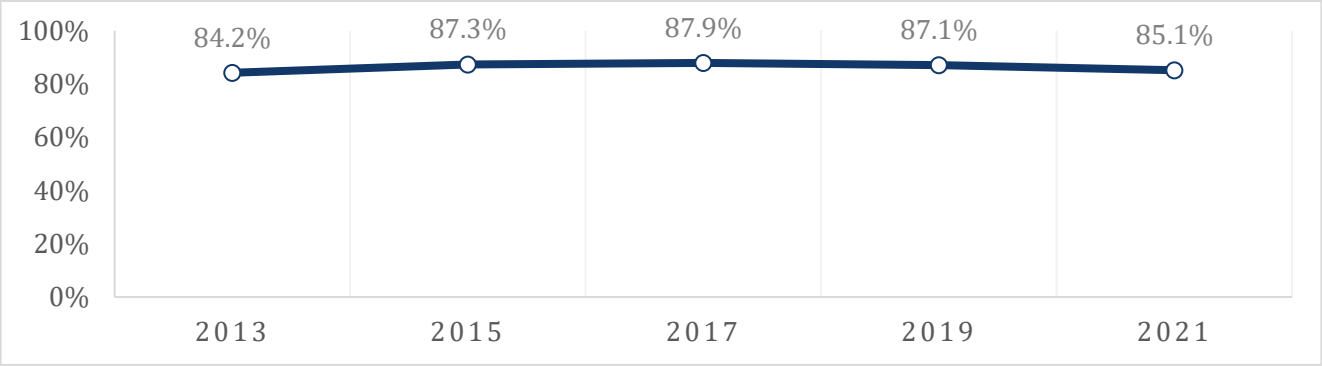
Indoor Smoking Rules

Home rules that prohibit smoking tobacco products indoors and in vehicles aid in reducing, but do not eliminate, the health impact to youth. Home rules about smoking indoors were assessed as both a protective factor in secondhand smoke exposure, and as a message against smoking.

Home Rules about Smoking Indoors

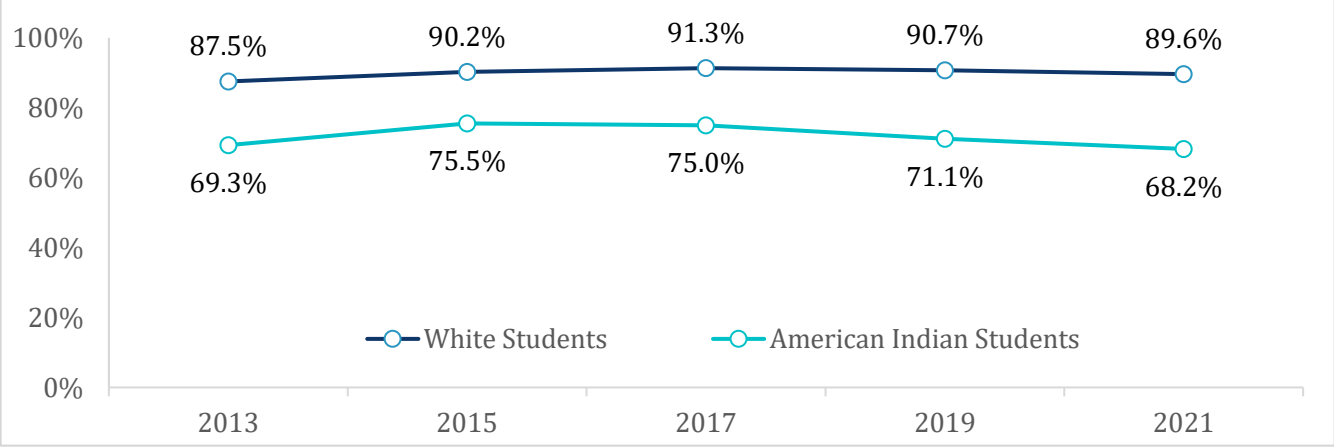
Among all middle school students, most (85.1%) reported that they lived in a home where smoking was never allowed inside, a slight decrease compared with 2019 data (87.1%). The trends in home rules prohibiting smoking indoors by year from 2013 to 2021 are presented in Figure 46.

Figure 46. Trends in Home Rules Prohibiting Smoking Indoors, by Year, SD YTS 2013-2021



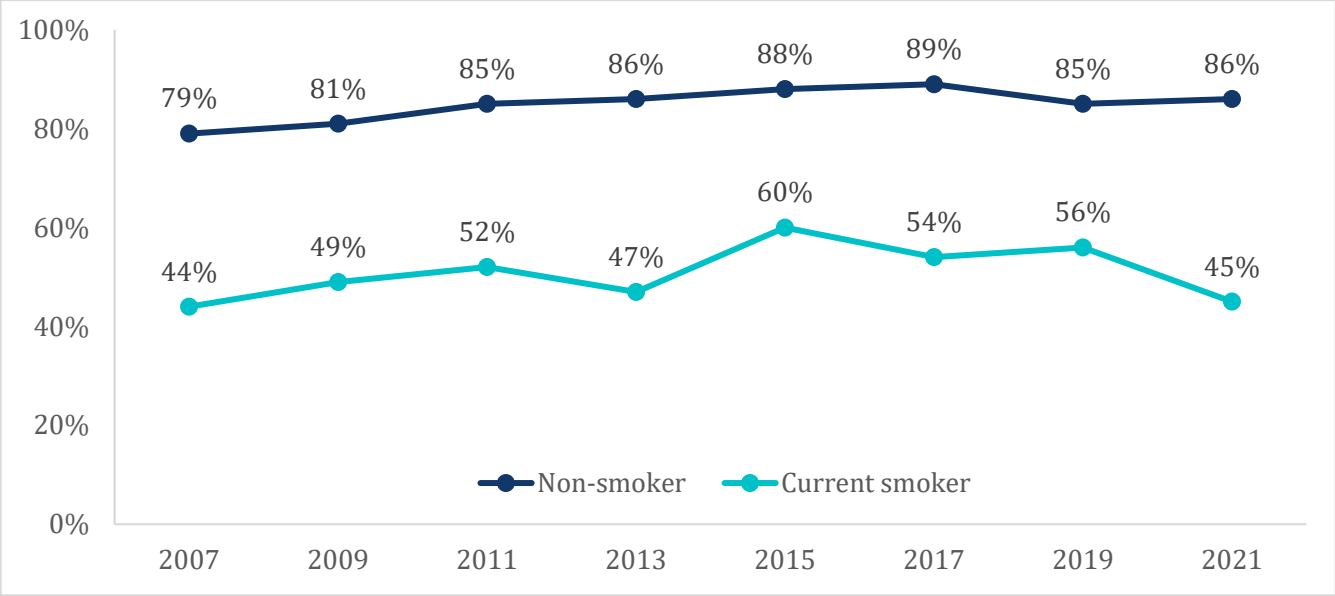
There were no statistically significant differences in home smoking rules by gender or grade ($p>0.05$), but statistically significant differences existed by race/ethnicity ($p<0.001$). Among American Indian students, just 68.2% reported home rules prohibiting smoking indoors, followed by other race students at 84.3% reporting a home rule, Hispanic students at 85.8%, and White students at 89.6%. The trends in home rules prohibiting smoking indoor by race from 2013 to 2021 are presented in Figure 47.

Figure 47. Trends in Home Rules Prohibiting Smoking Indoors, by Race, SD YTS 2013-2021



Notably, significant differences also existed by current cigarette use status, with home rules reported by only 45% of students who smoke cigarettes compared to 86% of non-smokers ($p<0.001$). The trends in home rules prohibiting smoking indoors by current smoking status (cigarette smokers) from 2007 to 2021 are presented in Figure 48.

Figure 48. Trends in Home Rules Prohibiting Smoking Indoors, by Current Cigarette Use Status, SD YTS 2007-2021^

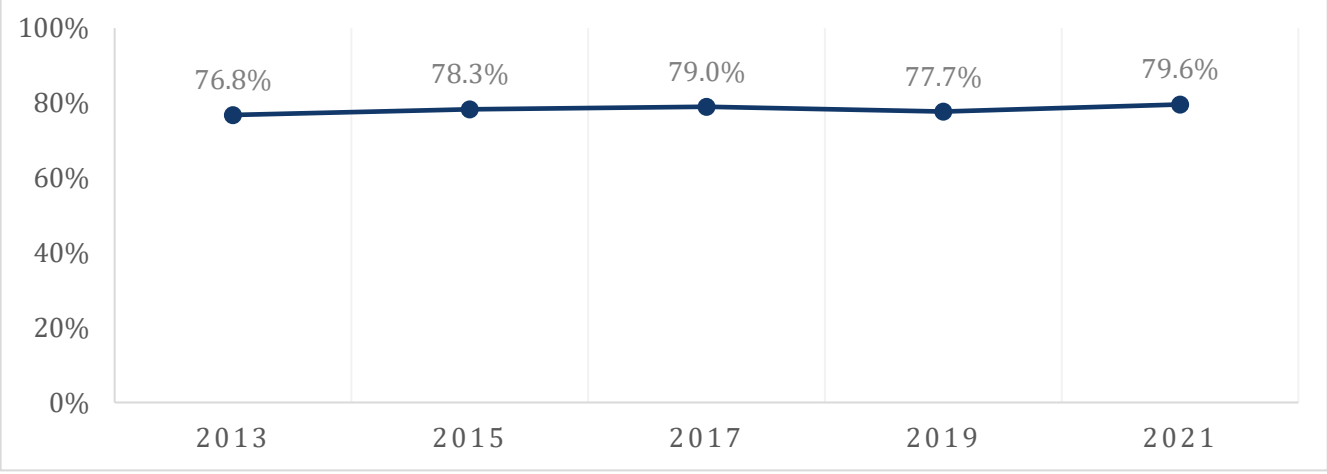


^Fewer than 50 current smokers indicated smoking was never allowed indoors so interpret with caution.

Rules about Smoking Inside Vehicles

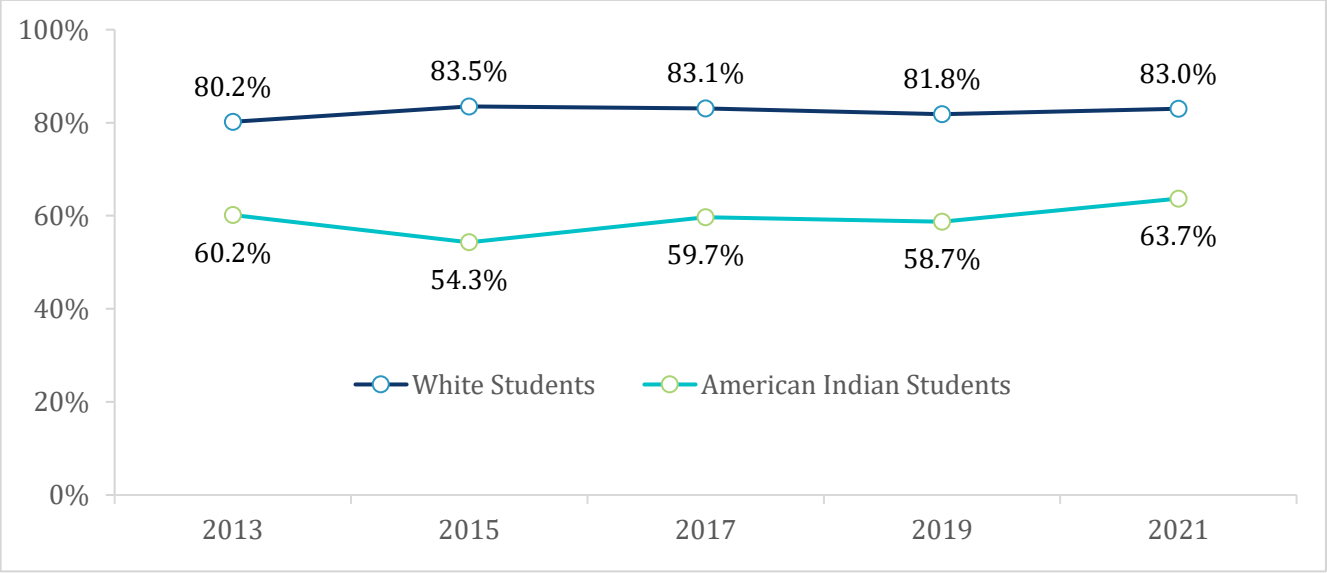
Overall, 79.6% of middle school students reported a rule that prohibited smoking inside vehicles. The trends in rules prohibiting smoking inside vehicles by year were investigated and presented in Figure 49.

Figure 49. Trends in Rules Prohibiting Smoking Inside Vehicles, by Year, SD YTS 2013-2021



Again, there were no statistically significant differences in rules prohibiting smoking inside vehicles by gender or grade, but there were statistically significant differences in smoking inside vehicles by race/ethnicity ($p<0.001$). Among American Indian students, only 63.7% reported rules prohibiting smoking inside vehicles, followed by 81.6% of other race students, 83.0% of White students, and 86.5% of Hispanic students. The trends in rules of prohibiting smoking inside vehicles by race from 2013 to 2021 are presented in Figure 50. Notably, differences also existed by current cigarette use status, with prohibiting smoking inside vehicles reported by only 42.7% of students who smoke cigarettes compared to 80.1% of non-smokers ($p<0.001$).

Figure 50. Trends in Rules Prohibiting Smoking Inside Vehicles, by Race, SD YTS 2013-2021*



*Trend data not available for other races.

SECTION SIX: SECOND-HAND SMOKE AND VAPOR EXPOSURE

Key Findings

- Significant differences in secondhand smoke and vape exposure at home and in vehicle was found by race with almost twice as many American Indian students reporting exposure than White students.
- Six percent of middle school students reported exposure to secondhand smoke on school property in the past week, and 5.9% reported exposure to secondhand vapor.

Secondhand smoke exposure is an attributable factor in the occurrence of numerous diseases, particularly cardiovascular and respiratory diseases in children.[17] Exposure, even without direct use of tobacco, can lead to death and the development of chronic diseases.[17] Middle school students were asked about exposure to secondhand smoke.

Involuntary Exposure to Tobacco Smoke

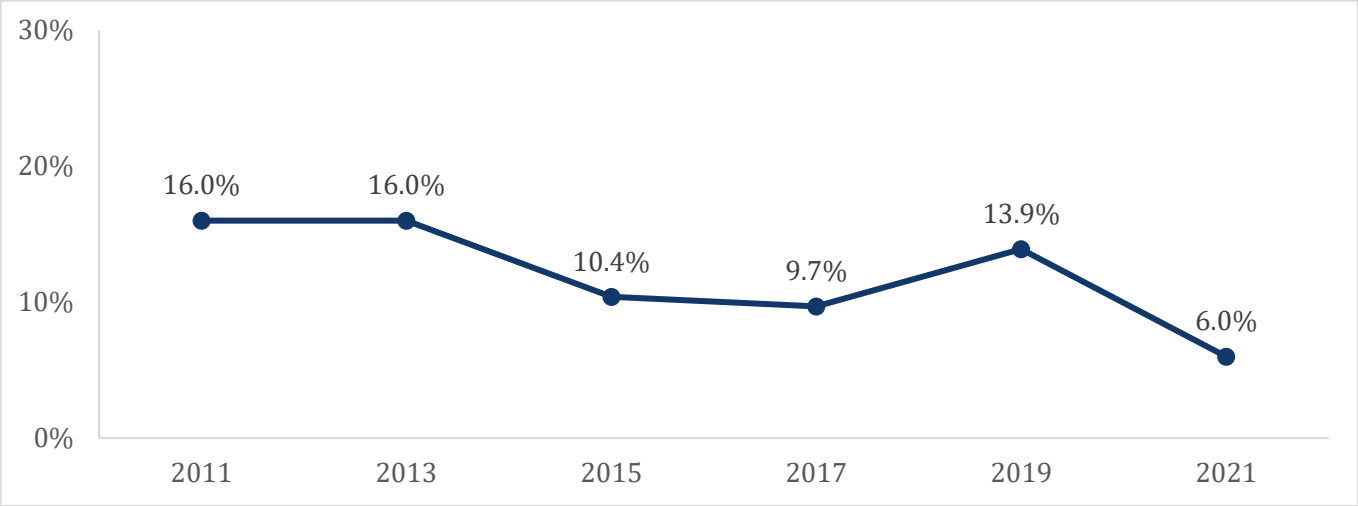
Middle school students in SD were asked about exposure to secondhand smoke, and the places of exposure to secondhand smoke. One in five (19.5%) middle school students reported exposure to secondhand smoke at home in the past week. Secondhand smoke exposure in vehicles (15.5%) was reported slightly less frequently than exposure at home. Overall, 24.1% of middle school students reported exposure to secondhand smoke at home or in vehicles, a decline from 2019 at 27.4%. Current any tobacco users more frequently reported secondhand exposure in the past week at home or in a vehicle at 55.8% compared to non-users at 22.4% ($p<0.001$).

Among middle school students in South Dakota, 19.5% were exposed to secondhand smoke at home in the past week.

Significant differences were found by secondhand smoke exposure at home by race/ethnicity. Among American Indian students, 29.2% reported exposure to secondhand smoke at home in the past week, compared to 17.5% of White students ($p<0.001$). Exposure in a vehicle also differed significantly by race/ethnicity with 25.0% of American Indian students reporting exposure in a vehicle compared to 13.1% of White students ($p<0.001$).

Middle school students in SD were also asked about other places where secondhand smoke exposure could occur, starting with school, including school buildings, school grounds, and school parking lots. Six percent of middle school students indicated they were exposed to secondhand smoke on school property in the past week (Figure 51), a decreasing trend over prior years.

Figure 51. Exposure to Secondhand Smoke on School Property in the Past Week, SD YTS 2011-2021



Significant differences were found in secondhand smoke exposure on school property by race/ethnicity. Among American Indian students, 10.5% reported exposure to secondhand smoke at the school property in the past week, compared to 4.8% of White students ($p<0.001$).

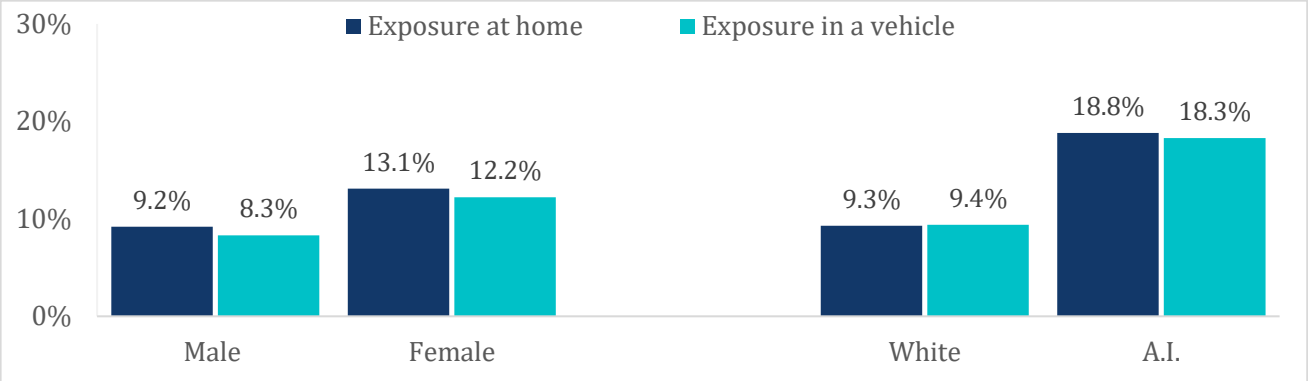
Students were also asked about breathing smoke from someone else smoking a tobacco product in a park or other outdoor recreation facility, with 12.3% of middle school students reporting exposure in these locations over the past week. Significant differences were found by gender in secondhand smoke exposure at a park or other outdoor recreation facility in the past week. Among female students, 15.1% reported exposure to secondhand smoke at a park or other outdoor recreation facility in the past week, compared to 9.0% of male students ($p<0.05$).

Involuntary Exposure to E-cigarette/Vape Vapor

Middle school students were asked about exposure to secondhand vapor from an e-cigarette/vape for the first time in 2021. Overall, 11.3% of middle school students reported exposure to secondhand vapor at home in the past week. Secondhand vapor exposure in vehicles was similar at 11.2%.

Significant differences were found in secondhand vapor exposure at home by gender and race/ethnicity (Figure 52) with more female students reporting secondhand vapor exposure at home in the past week compared to male students reporting the same ($p<0.05$). American Indian students (18.8%) were more likely to report secondhand vapor exposure at home, compared to 9.3% of White students ($p<0.001$).

Figure 52. Exposure to Secondhand Vapor at Home and in a Vehicle in the Past Week, by Gender and Race/Ethnicity*, SD YTS 2021

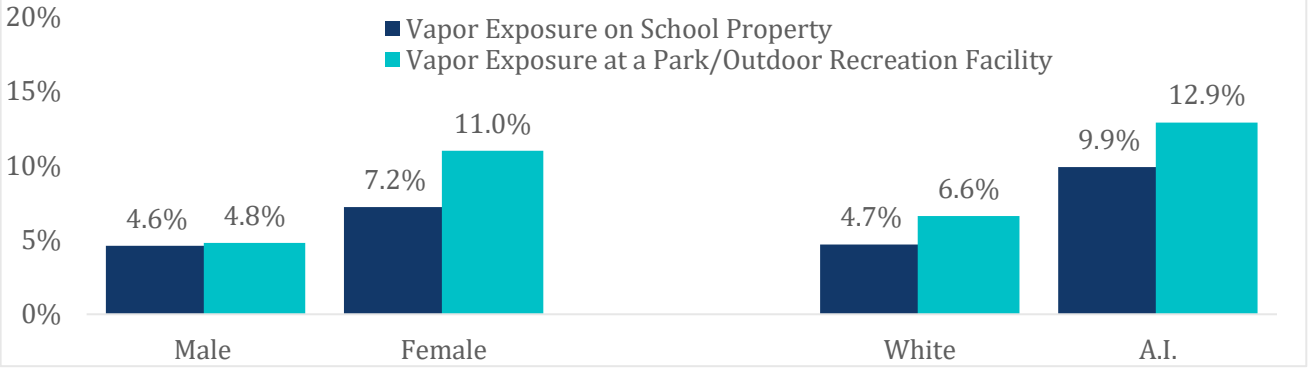


*Hispanic and other race data suppressed as fewer than 50 respondents.

Middle school students were also asked about other places where secondhand vapor exposure occurred starting with school property, including school buildings, grounds and parking lots. Six percent (5.9%) reported secondhand vapor exposure at school. Significant differences were found in secondhand vapor exposure on school property by gender, grade, and race/ethnicity as presented in Figure 53. More female students reported breathing secondhand vapor on school property compared to male students ($p<0.05$), and more eighth grade students reported secondhand vapor exposure on the school property than sixth or seventh grade students ($p<0.05$). White students were less likely to report secondhand vapor exposure at school than American Indian ($p<0.05$).

Students were then asked about secondhand vapor exposure in a park or other outdoor recreation facility, with 8.0% of middle school students reporting exposure in these locations in the past week. Similarly, significant differences were found in secondhand vapor exposure at parks or other outdoor recreation facilities by gender and race/ethnicity as shown in Figure 53. More female students reported secondhand vapor exposure in these locations compared to male students ($p<0.001$), and American Indian students were more likely than White students to report secondhand vapor exposure at a park or other recreation facility ($p<0.05$).

Figure 53. Exposure to Secondhand Vapor at School or at a Park/Outdoor Recreation Facility, by Gender and Race/Ethnicity*, SD YTS 2021



*Hispanic and other race data suppressed as fewer than 50 respondents.

SUMMARY:
KEY FINDINGS AND RECOMMENDATIONS

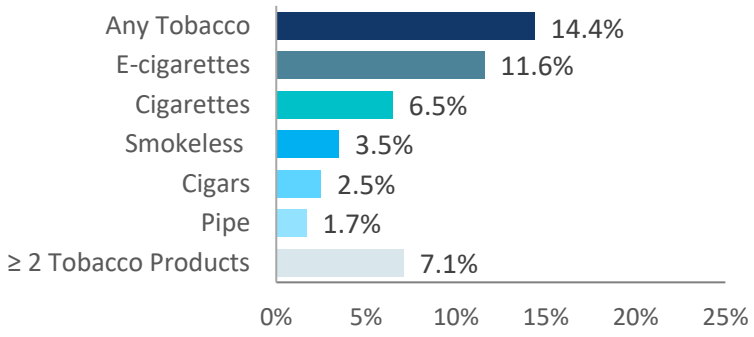
Youth Tobacco Use Prevalence

In 2021, e-cigarettes were the most commonly used tobacco product among middle school students.

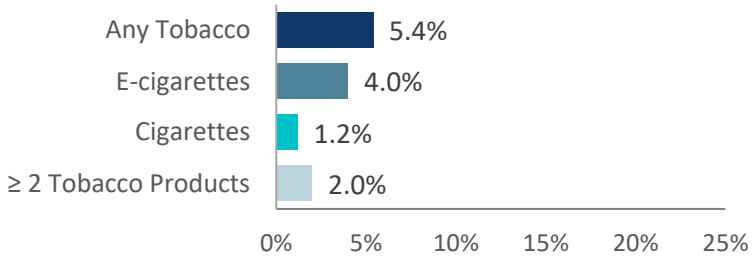
Following the national trend in which declines in e-cigarette/vape use among youth during the Covid-19 pandemic were observed, the number of middle school students in SD that have ever used e-cigarettes/vapes decreased from 16.0% in 2019 to 11.6%, and current use of e-cigarettes/vapes decreased to from 6.7% to 4.0%.

Prevalence of tobacco use (lifetime use/current) among SD middle school students

Lifetime Use (Ever)



Current Use (past 30 days)



RECOMMENDATION: Continued efforts to prohibit and inhibit access to and marketing of e-cigarettes and cigarettes among youth are needed.

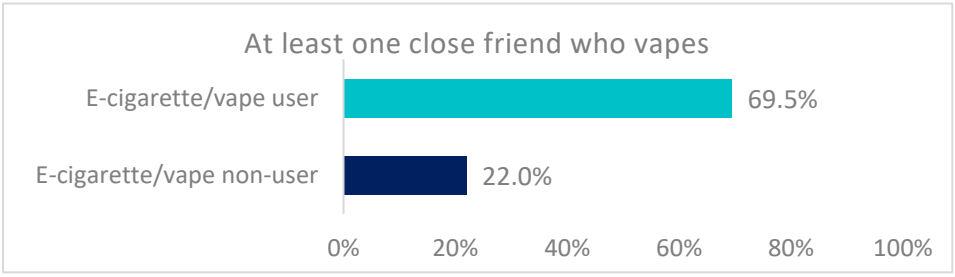
- Monitor and address rapidly changing marketing methods aimed at promoting use of e-cigarettes and new tobacco products to youth, including influencers on social media, advertising at youth events, and discounts.

Factors Promoting Tobacco Use

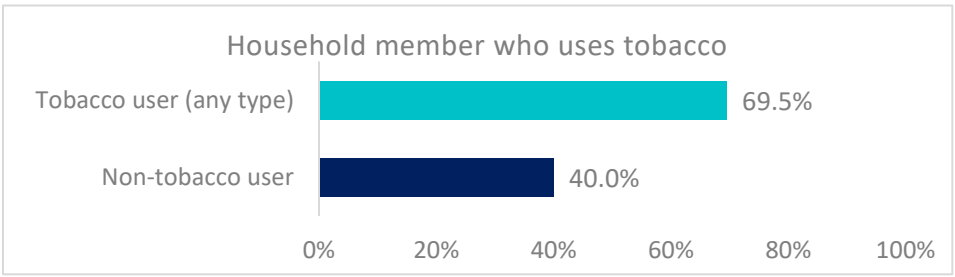
In 2021, more than one in three students reported seeing someone using an e-cigarette/vape on school property in the past week.

Youth who reported use of e-cigarettes/vapes were more likely to also report having a close friend that vapes and living with someone who uses a tobacco product. Stores (convenience, grocery, or gas stations) continue to be the most common place students report seeing advertising for tobacco and e-cigarette/vape products.

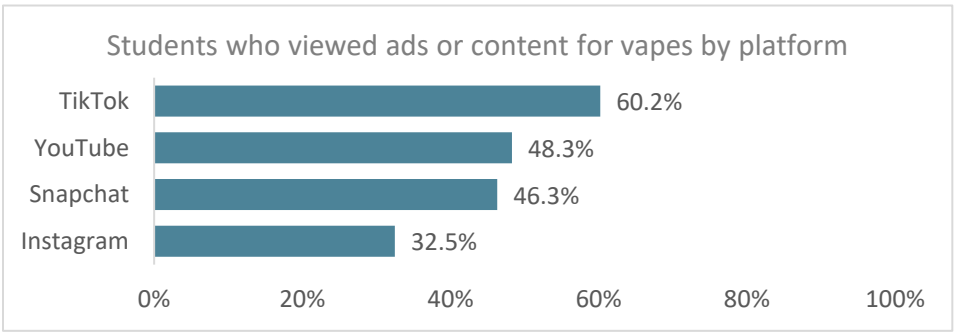
Peer Use



Household Member Use



Social Media Users



RECOMMENDATIONS: Normalization of tobacco use is a factor in the initiation and maintenance of use among youth.

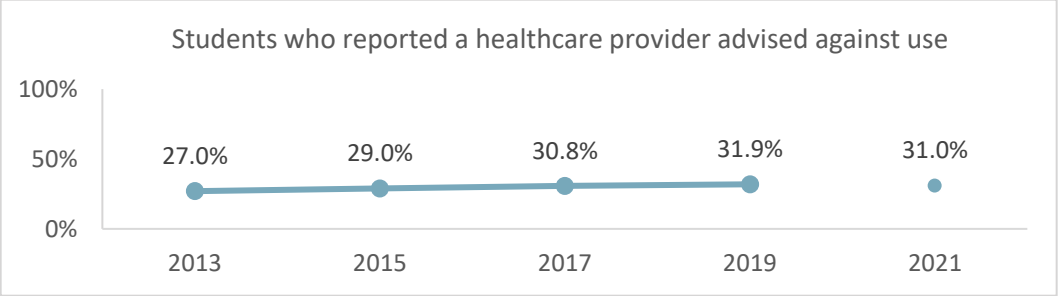
- Stronger school policies prohibiting use of e-cigarettes and tobacco products are needed. Almost 40% of students reported seeing someone using an e-cigarette on school property.
- Promoting parental cessation should continue to be a focus. Among middle school students using tobacco, 44.3% had a household member that used tobacco.
- Anti-tobacco content on social media is needed. Seventy percent of middle school students reported seeing pro-tobacco content on social media.

Tobacco Education and Messaging

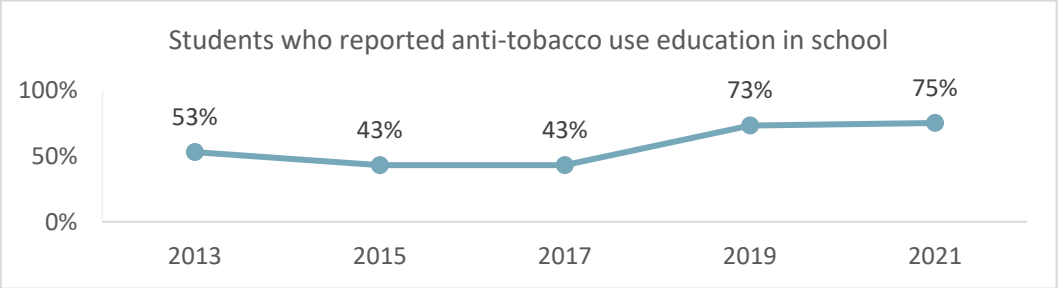
In 2021, less than one in three students reported a health practitioner asked about the use of tobacco or advising against tobacco use.

School-based education increased again in 2021 as did the number of students who reported their parents talked with them about not using tobacco products. Healthcare provider advice against use remained low at just 31% of students who saw a healthcare provider reporting they were advised against using tobacco.

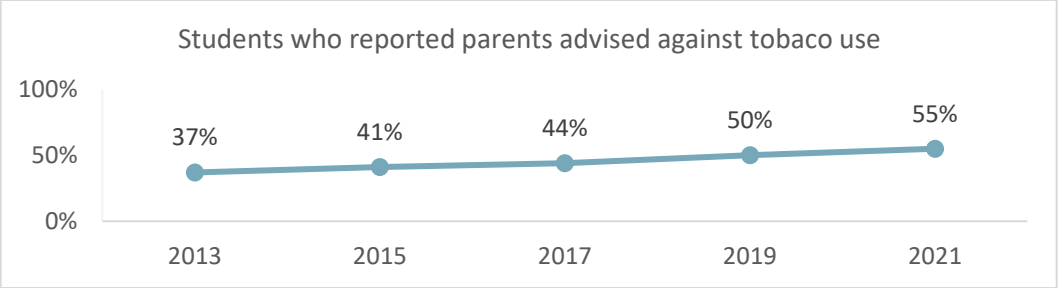
Healthcare Provider Advice



School-based Education



Parental Advice



RECOMMENDATIONS: Assessment or tobacco use and education on the dangers or use aid in tobacco use prevention.

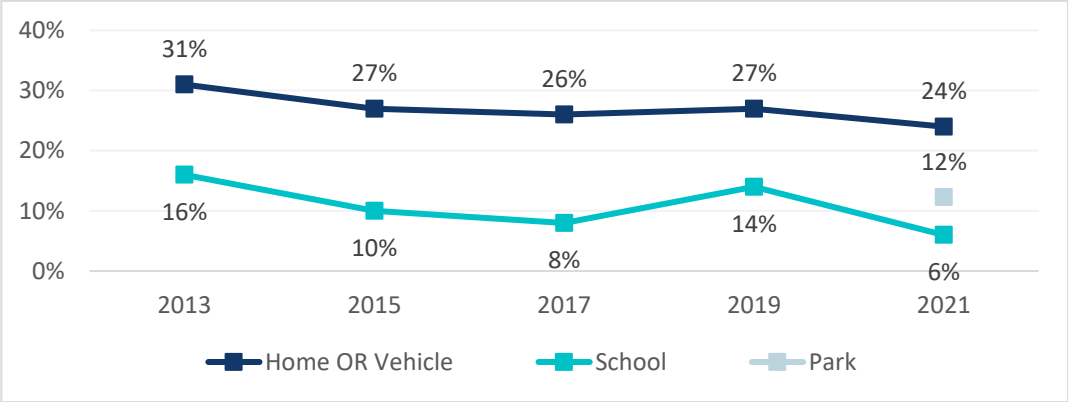
- Target healthcare providers for education on assessment of tobacco use for youth patients, including assessment of tobacco use in the household.
- Continue support for school-based anti-tobacco education programs.
- Continue to provide resources to parents about how to talk to their children about not using tobacco.

Secondhand Smoke Exposure

In 2021, close to one in four of middle school students reported exposure to secondhand smoke at home or in vehicles.

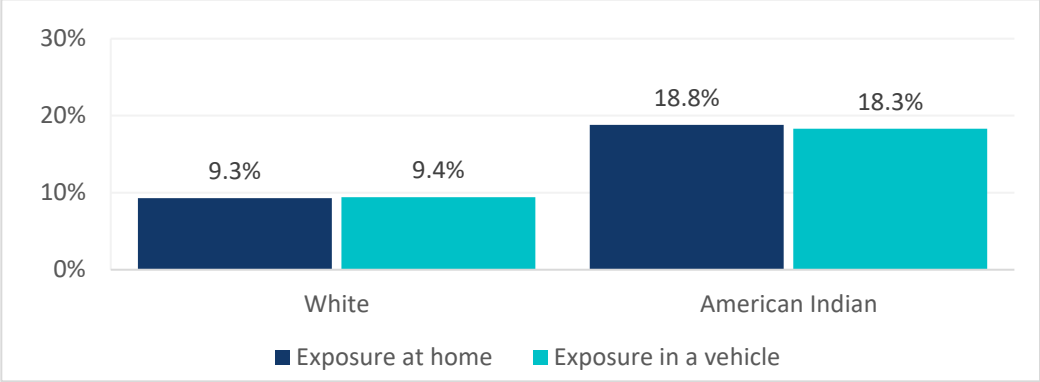
In 2021, the number of students reporting secondhand smoke exposure overall decreased, in all locations assessed. Significant differences were identified by race, with American Indian students more frequently reporting exposure to secondhand smoke.

Secondhand Smoke Exposure



American Indian students more commonly reported secondhand smoke exposure at home and in vehicles.

Secondhand Smoke Exposure by Race



RECOMMENDATIONS: Secondhand smoke exposure is an attributable factor in the occurrence of numerous diseases, particularly cardiovascular and respiratory diseases in children. Exposure, even without direct use of tobacco, can lead to death and the development of chronic diseases.

- Educate parents on the harms of secondhand exposure for youth and provide support for tobacco cessation.
- Strengthen school and outdoor recreation policies prohibiting use of e-cigarettes and tobacco products on school property.

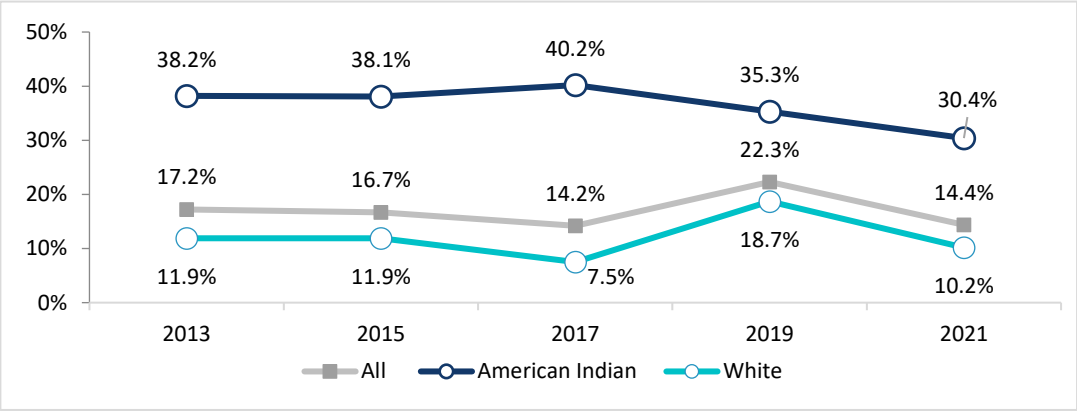
Racial disparities in tobacco use remain.

American Indian students were more likely to report, as compared to White students:

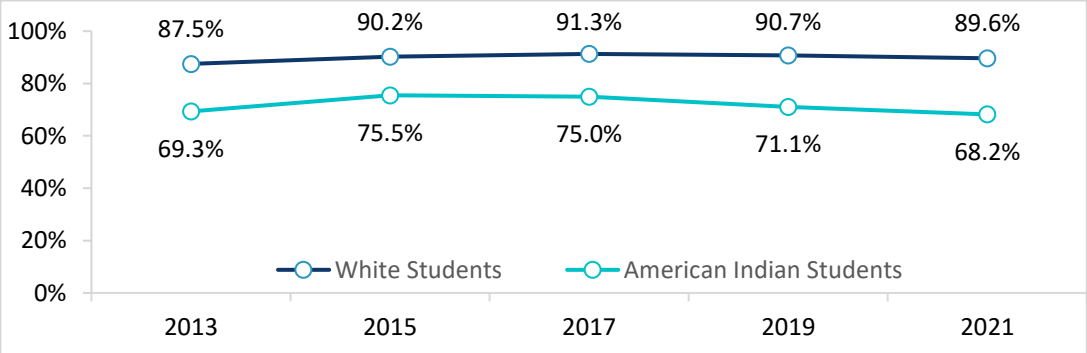
- Ever use of e-cigarettes, cigarettes, any tobacco product, and use of more than one tobacco product;
- Secondhand smoke exposure at home, in a vehicle or at school;
- Household tobacco use.

American Indian students were also less likely to report awareness of the SD QuitLine and receipt of anti-tobacco education at school.

Ever Use of Any Tobacco Product



Indoor Home Smoking Ban



RECOMMENDATIONS: Tobacco use is a preventable cause of morbidity and mortality in youth. Racial disparities in tobacco use are well documented suggesting that some racial groups may be more vulnerable to tobacco use initiation and addiction.

- Tailored strategies to address racial disparities in tobacco use among youth are needed.
- Support anti-tobacco education in schools with high American Indian student enrollment. A clear disparity exists in access to anti-tobacco education.
- Target American Indian parents for education on the harms of secondhand exposure for youth and provide support for smoking cessation.

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