



South Dakota 2019 Youth Tobacco Survey (SD YTS)

South Dakota Department of Health
Tobacco Control Program
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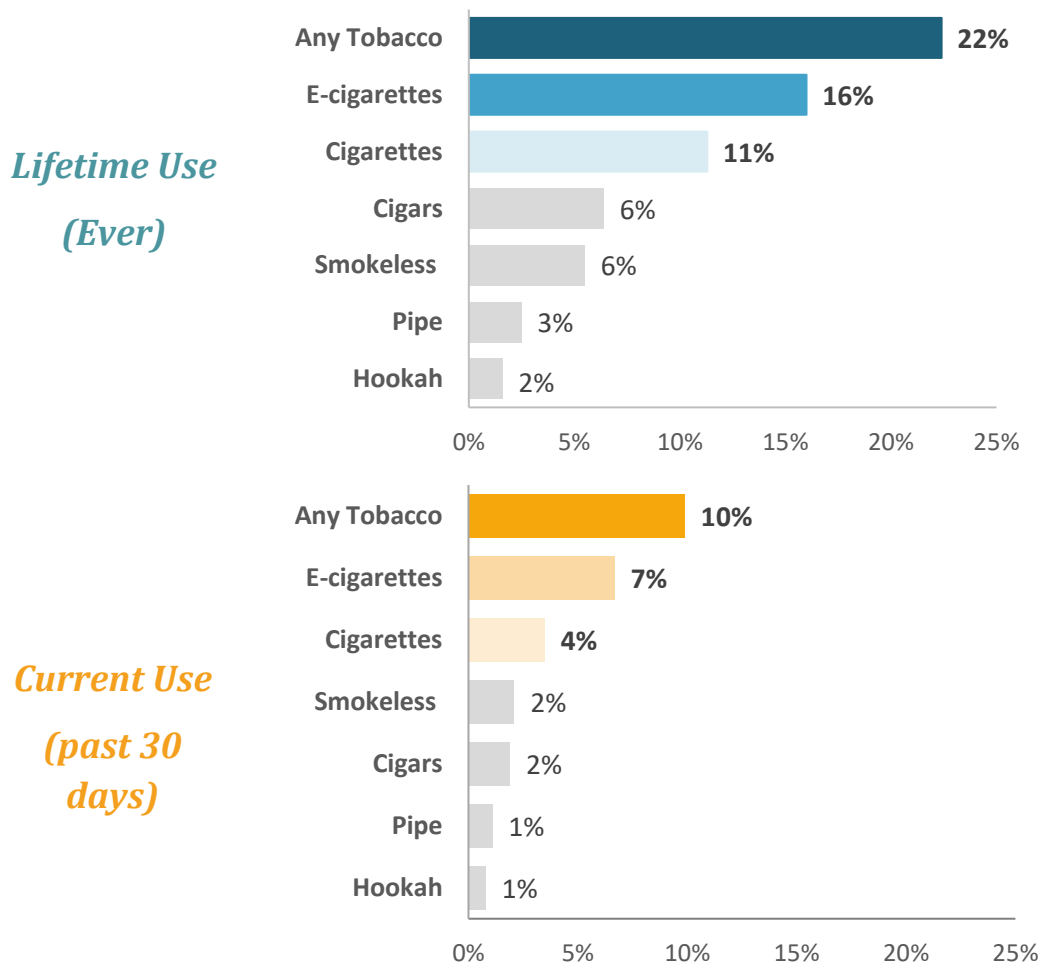
Executive Summary

In the United States (U.S.), close to one in five deaths are smoking related.¹ In 2019, about 13 of every 100 U.S middle school students reported current use of tobacco product.² The 2019 South Dakota Youth Tobacco Survey (SD YTS) results continue to reflect the changing landscape of tobacco use among youth nationwide. Rates of ever use of alternative forms of tobacco and nicotine, such as electronic cigarettes, increased significantly over 2017 rates. The following key findings are presented with an associated call to action to continue monitoring all forms of tobacco use among the youth of South Dakota (SD) and understanding the risk factors associated with it.

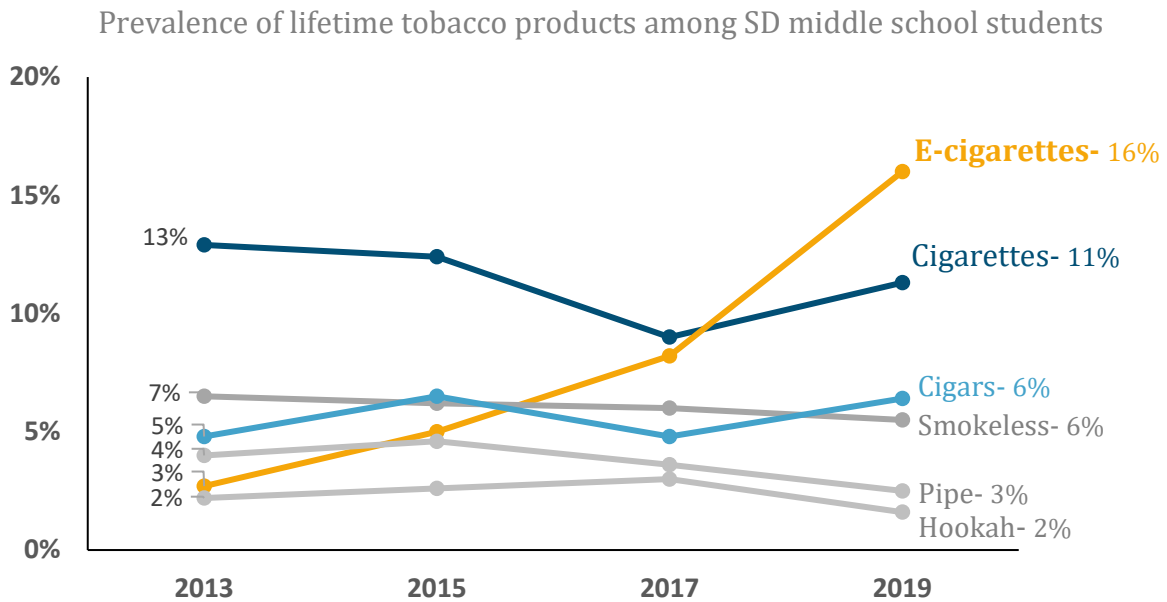
KEY FINDINGS

In 2019, e-cigarettes were the most commonly used tobacco product.

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

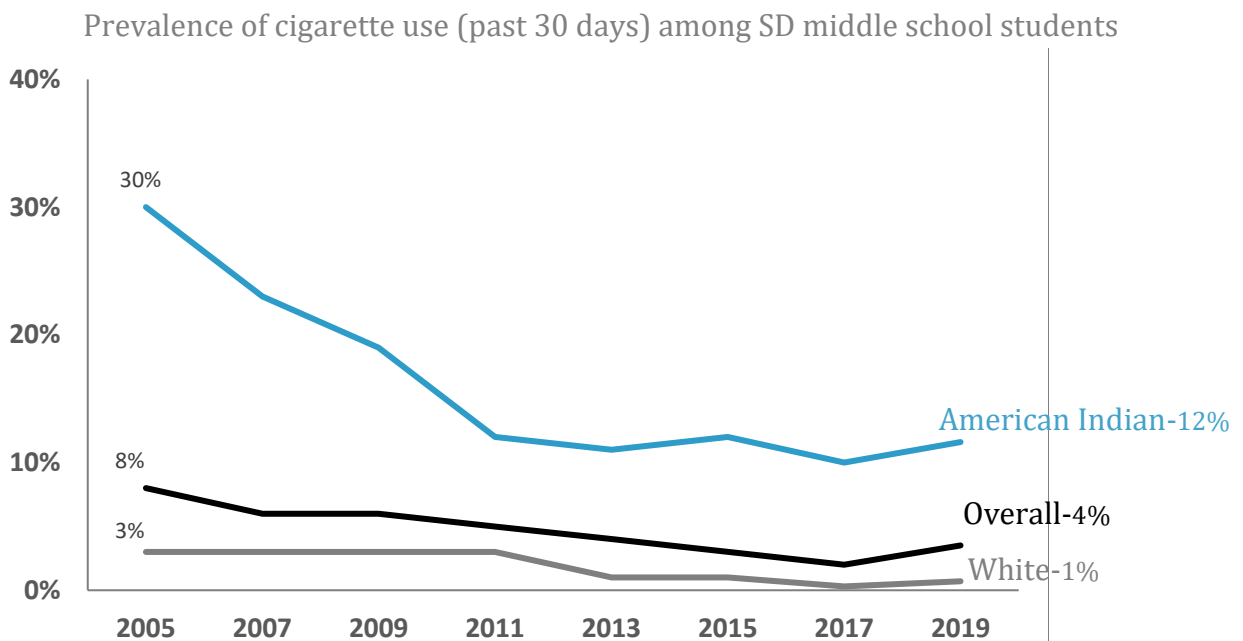


Prevalence of **e-cigarette** use among SD middle school students had a **six-fold increase** since 2013.



e-cigarettes = electronic cigarettes

Prevalence of **cigarette** use remains **higher** among **American Indian** students.



Ever Tobacco Use

- In 2019, one in five middle school students (22.3%) had tried a tobacco product.
- For the first time, e-cigarettes were the most commonly used tobacco product among SD middle school students.
- Nearly one in six students (16.0%) reported ever using an e-cigarette - a nearly 100% increase from 2017 YTS findings (8.2%).
- About one in every 10 students (11.3%) reported they had tried cigarettes - an increase from 9.0% in 2017 YTS.
- Smokeless tobacco (5.5%), pipe (2.5%) and hookah (1.9%) were the least common tobacco products used among respondents.
- The prevalence of lifetime tobacco use was significantly higher among American Indian students (35.3%) when compared to Whites (18.7%).

Current Tobacco Use

- About one in 10 students (9.8%) had used a tobacco product in the past 30 days.
- Among current tobacco users, 38.7% used multiple tobacco products.
- Nearly seven of every 100 middle school students (6.7%) reported use of an e-cigarette in the past 30 days, an increase from 2.5% in 2017.
- Current cigarette use was at 3.5% in 2019, an increase from 2.0% in 2017.
- Prevalence of other tobacco products were smokeless tobacco (2.1%), cigars (1.9%), pipe (1.1%) and hookah (0.8%).
- About 12 of every 100 American Indian students (11.6%) reported current use of cigarettes, 17 times higher than White students' prevalence (0.7%).
- However, the prevalence of smokeless tobacco use among American Indian middle school students decreased approximately 60% from 2017 (17.0%) to 2019 (7.1%).

Reasons and Sources of E-Cigarettes

- The most common reported reason for e-cigarette use was having friends/family members that use them (49.6%), and nearly one in five students (18.6%) reported the availability of flavors.
- E-cigarette users obtained e-cigarettes predominantly through social sources, such as friends and peers.

Advertising

- Middle school students reported seeing advertisements of e-cigarettes in convenience stores (59.0%) and the internet (48.7%).

Antitobacco Messaging

- Most students (93.5%) reported hearing an anti-tobacco message from at least one source, with nearly half of students (47.0%) seeing the “Rethink It. Seriously.” slogan.
- More than seven in 10 students (73.9%) received anti-tobacco messages at school, a substantial increase from the 2017 findings at 43.0%.

Secondhand Exposure

- Nearly three in 10 reported being in the same room or car as someone smoking.

Quitting Tobacco Products

- Among current tobacco users only, 79.9% reported at least one attempt in quitting tobacco products in the past 12 months.

Youth Tobacco Survey

The **Youth Tobacco Survey (YTS)** began in 1997 to assess the prevalence of tobacco use and examine environmental 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 in 2005, 2007, 2009, 2011, 2013, 2015, 2017 and 2019.

Repeating the survey on every other year basis provides valuable data that is used to track tobacco use trends, behaviors and perceptions among youth in the state.

Background

In the United States (U.S.), tobacco use is the leading cause of preventable death, disease and disabilities, costing \$170 billion in adults medical expenses per year.³ Annually, the estimated smoking caused health cost is \$373 million dollars in South Dakota (SD).³ Efforts to monitor tobacco use among youth and prevent youth from tobacco use initiation and consumption is imperative to reduce the public health burden that tobacco dependency entails.

In preliminary findings from the 2019 National Youth Tobacco Survey (NYTS), the prevalence of e-cigarette use nearly doubled from 2018, with 10.5% of middle school students reporting e-cigarette use in the past 30 days.² The significant increase in e-cigarette usage among middle schoolers raises alarm, considering the negative life-altering health effects nicotine and general smoking present to youth and adolescents. Little knowledge on other potential lasting consequences of e-cigarette use also poses concern for the 1.2 million middle school students currently using e-cigarettes in the U.S.² While the largest concern for youth centers around e-cigarette use, monitoring and prevention efforts are also necessary to combat other tobacco product use among youth, considering 24.3% of middle school students (nearly 3 million students) in the nation report ever using any tobacco product.²

Understanding the factors influencing the increase in e-cigarette use and continued use of other tobacco products such as cigarettes and smokeless tobacco will assist health officials implement evidence-based interventions to decrease the prevalence of tobacco use and improve future health outcomes for a large population of youth in SD.

TOBACCO HEALTH EFFECTS IN YOUTH

Tobacco use among youth and adolescents poses major threats to the health and longevity of life.¹

- Addiction to nicotine
- Reduce lung growth
- Early cardiovascular damage
- Reduce lung function

Youth Tobacco Survey

Lifetime Tobacco Use

Defined as ever used tobacco products. Provides information on the prevalence of lifetime tobacco use.

Current Use

Defined as use of tobacco product on one or more days within the past 30 days. Provides information on the prevalence of recent tobacco use, which may indicate regular use.

Frequent Smokers

Defined as use of cigarettes on ≥ 20 days of the past 30 days.

Urban Status

Metropolitan areas: U.S. Census definition as core urban area population of 50,000 or more.

Rural Status

Micropolitan areas: U.S. Census definition as urban cluster populations of 10,000 to 50,000.

Noncore counties: U.S. Census definition of all counties that lack an urban core.

Prevalence and Trends of Tobacco Use

The following section shows lifetime (ever) and past 30-day (current) tobacco use prevalence among South Dakota (SD) middle school students in 2019. The assessment of tobacco use includes cigarettes, smokeless tobacco, electronic nicotine products (e-cigarettes), cigars, other conventional tobacco (e.g., bidis, roll your own cigarettes), and all tobacco products. In addition to overall (all middle school students) estimates, data is also presented by gender, grade (6th, 7th, and 8th grade) and race/ethnicity (White, American Indian and others).

Cigarettes

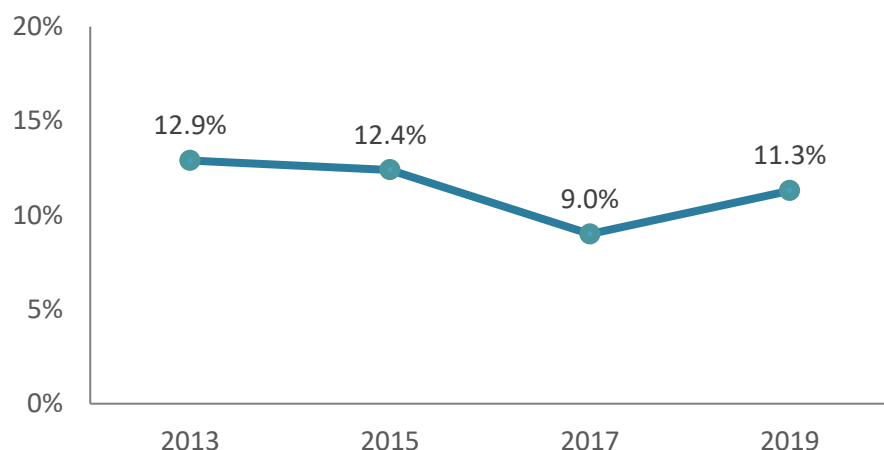
Lifetime Use (Ever)

The harmful effects of cigarettes are substantial. Nearly 20% of all death in the U.S. is smoking related¹ and “on average, smokers die at least 10 years sooner than non-smokers”.⁴ Evidence exists that long-term tobacco users start using tobacco at a young age.¹ Middle school students were asked if they had ever tried a conventional cigarette on at least one occasion.

Trends

Overall, 11.3% of SD middle school students had tried cigarettes on at least one occasion, which is an upward trend from the 2017 results⁵ at 9% (Figure 1).

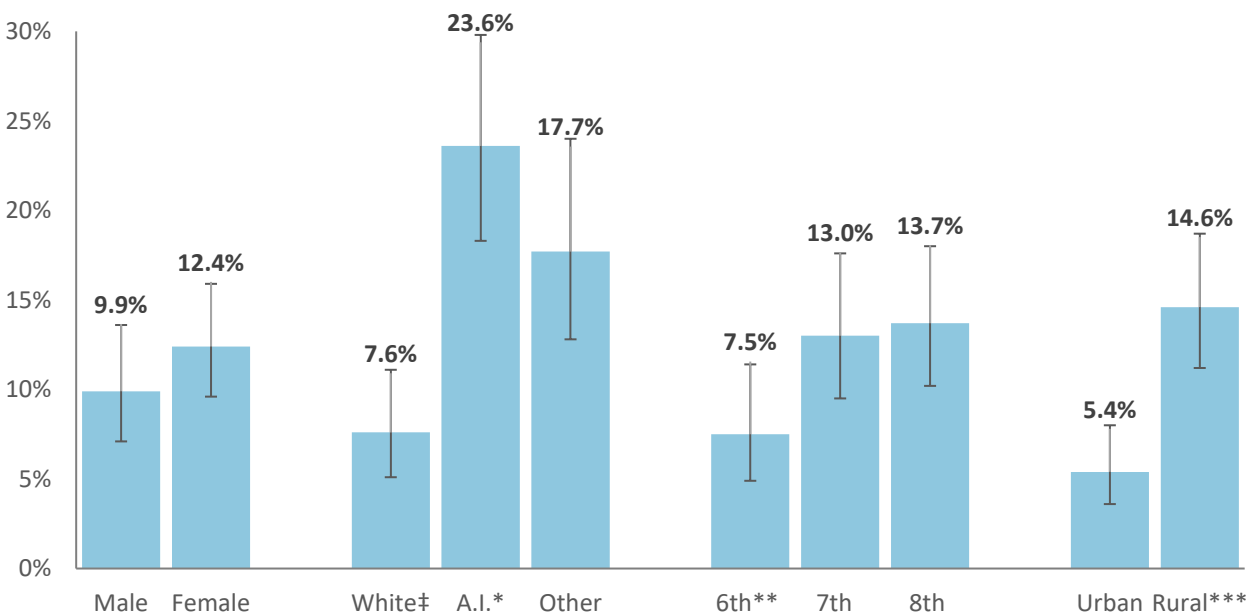
Figure 1. Trends in Lifetime Cigarette Use - SD YTS, 2013-2019



Demographics

- Prevalence of lifetime use of conventional cigarettes did not vary by gender. Female prevalence was at 12.4% and male students at 9.9% (p=0.136) (Figure 2).
- Significant differences existed by race, with White students having significantly lower rate (7.6%) than American Indian (A.I.) students (23.6%) (p<.0001).
- Rates of ever cigarette use were similar between seventh and eighth grade students, but significantly lower for sixth grade students (p=0.010).
- The rate of lifetime cigarette smoking was significantly higher among schools in rural areas (14.6%) compared to urban (5.4%) (p<0.01).
- Almost half of the middle school students (46.5%) ever using cigarettes, reported first trying a whole cigarette before age 11.
- Among all students ever smoking cigarettes, 3.7% have smoked 100 or more cigarettes in their lifetime.

Figure 2. Estimated Prevalence of Lifetime Cigarette Use by Demographics - SD YTS, 2019



Note. ‡Non-Hispanic White, A.I.- American Indian

*Significantly greater than the rates for Whites

**Significantly lower than rates for 7th and 8th grades

*** Significantly greater than rates for students in urban schools

Current Use

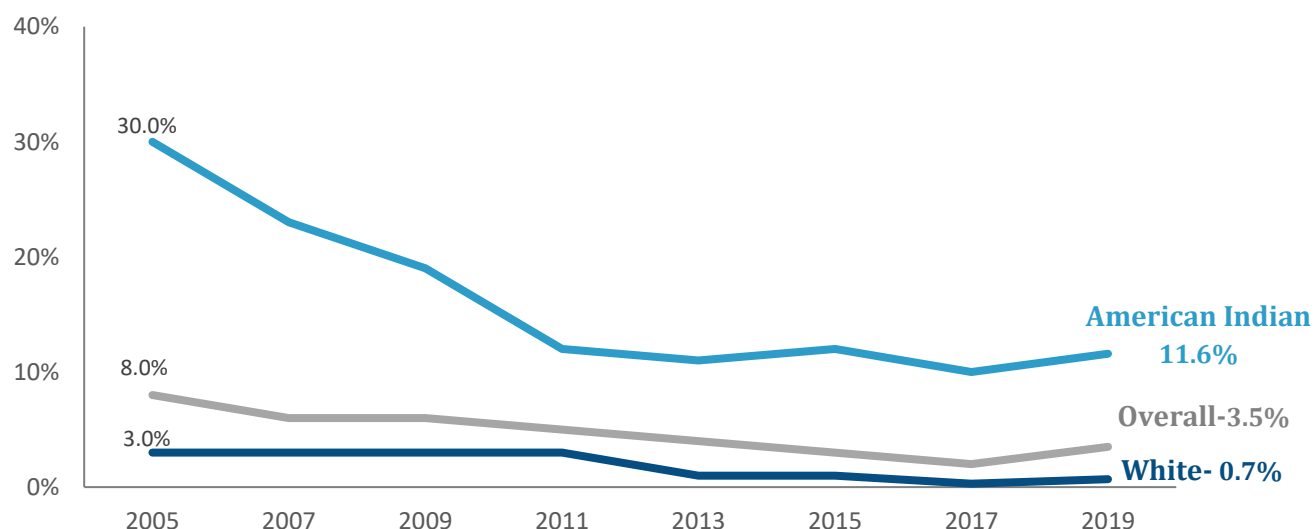
Middle school students in SD were asked if they had used conventional cigarettes in the past 30 days.

Trends

After significant anti-tobacco efforts such as smoke-free laws and policies, additional tobacco taxes and restrictions to tobacco advertisements, the rates of current cigarette use among middle school students has declined in the U.S. The national prevalence decreased from 4.3% current use in 2011 to 2.3% in 2019.²

In SD, current cigarette use (past 30-day) among middle school students had a downward trend from 2005 (8.0%) to 2017 (2.0%).⁵ However, in 2019, the current point prevalence of cigarette smoking was at 3.5%, a slight increase from the 2017 findings (Figure 3).

Figure 3. Trends in Prevalence of Current Cigarette Use* by Race/Ethnicity - SD YTS, 2005-2019



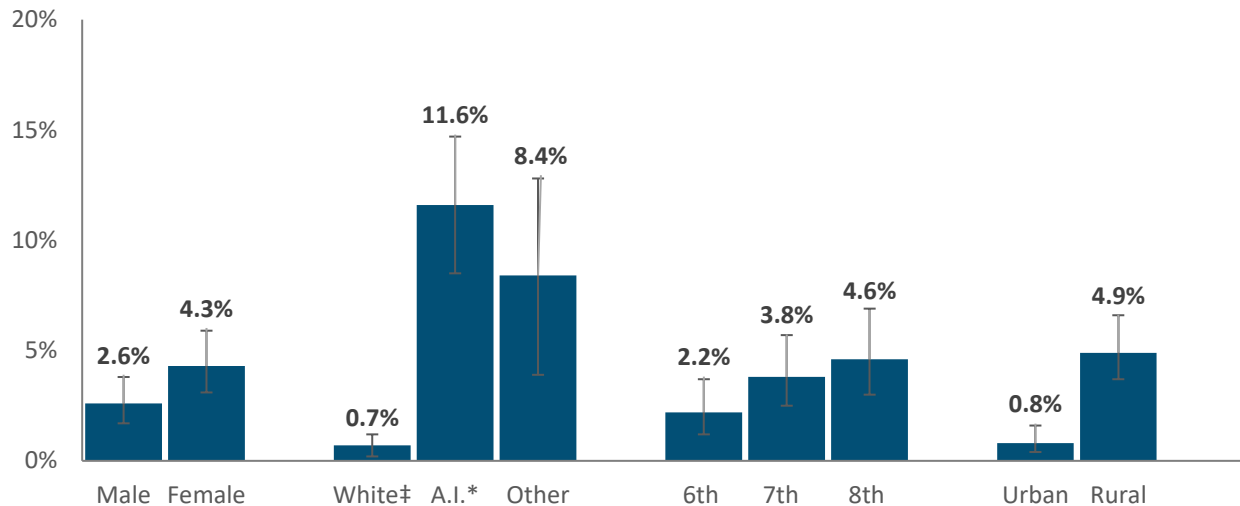
* Past 30-day use of cigarettes was determined by asking, "During the past 30 days, on how many days did you use cigarettes?"

Demographics

- Current cigarette smoking varies by gender. The rate of current smoking was significantly higher among females than males (4.3% versus 2.6%, respectively, $p=0.03$) (Figure 4). This finding represents a similar trend found in the 2017 SD YTS; however, both rates were lower with females at 2.3% and males at 1.8%.
- Although the percentage of American Indian middle school students who currently smoke conventional cigarettes decreased by almost 3-fold since 2005, American Indians (11.6%) reported significantly higher rates (approximately 17 times higher) than non-Hispanic White middle school students (0.7%) ($p<0.001$) in 2019.
- No significant difference in current cigarette smoking was found by school grade.

- Among current smokers, 57.2% smoked first whole cigarette before age 11.

Figure 4. Estimated Prevalence of Current Cigarette Use by Demographics - SD YTS, 2019



Note. A.I.- American Indian, ‡ Non-Hispanic White
 *Significantly greater than the rates for Whites

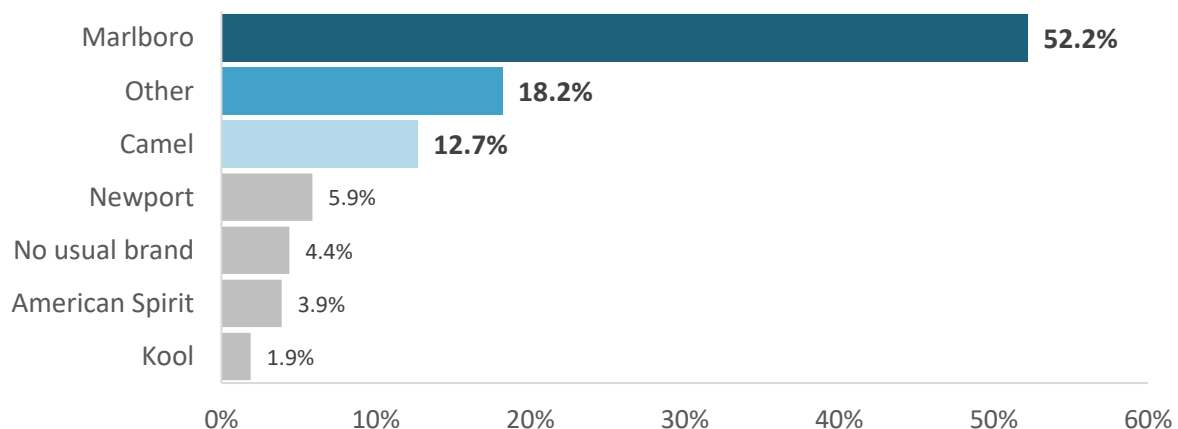
Frequency

- Among current smokers (3.5%), the prevalence of frequent (≥ 20 days of the past 30 days) cigarette use was 7.4%.
- Most current cigarette users (72.5%) reported smoking one to five days of the past 30 days.
- Nearly one in 10 (9.4%) current cigarette users smoked 100 cigarettes or more in their entire life.

Brand

Current cigarette users were asked what brand of cigarette was used. The main brand preferences are displayed in Figure 5. Marlboro (52.2%), other brands not listed (18.2%), and Camel (12.7%) were the most commonly used.

Figure 5. Usual Cigarette Brand Used by Current Middle School Smokers - SD YTS, 2019



Smokeless Tobacco

Lifetime Use (Ever)

Middle school students were asked if they had ever tried chewing tobacco, snuff, or dip such as Redman, Levi Garret, Beechnut, Skoal, Skoal Bandits, or Copenhagen on at least one occasion.

Trends

- Overall, 5.5% of middle school students have ever used smokeless tobacco on at least one occasion, a slight decrease from 2017 findings at 6.0%.

Demographics

- Males (7.4%) were significantly more likely to report using smokeless tobacco than females (3.3%) ($p < 0.001$), consistent with 2017 findings.
- Differences in ever use of smokeless tobacco existed by grade level, with rates of use similar between seventh (6.0%) and eighth (7.3%) grade students, but significantly lower for sixth grade students (3.4%) ($p = 0.038$).
- American Indian students (11.6%) were significantly more likely to report using smokeless tobacco than White students (4.2%) ($p = 0.003$). The prevalence among student of all other races was at 5.4%.
- Of the 5.5% of SD middle school students who had ever tried smokeless tobacco, 31.8% reported they did so before age 11, a decline from 35.5% in 2017.

Current Use

Trends

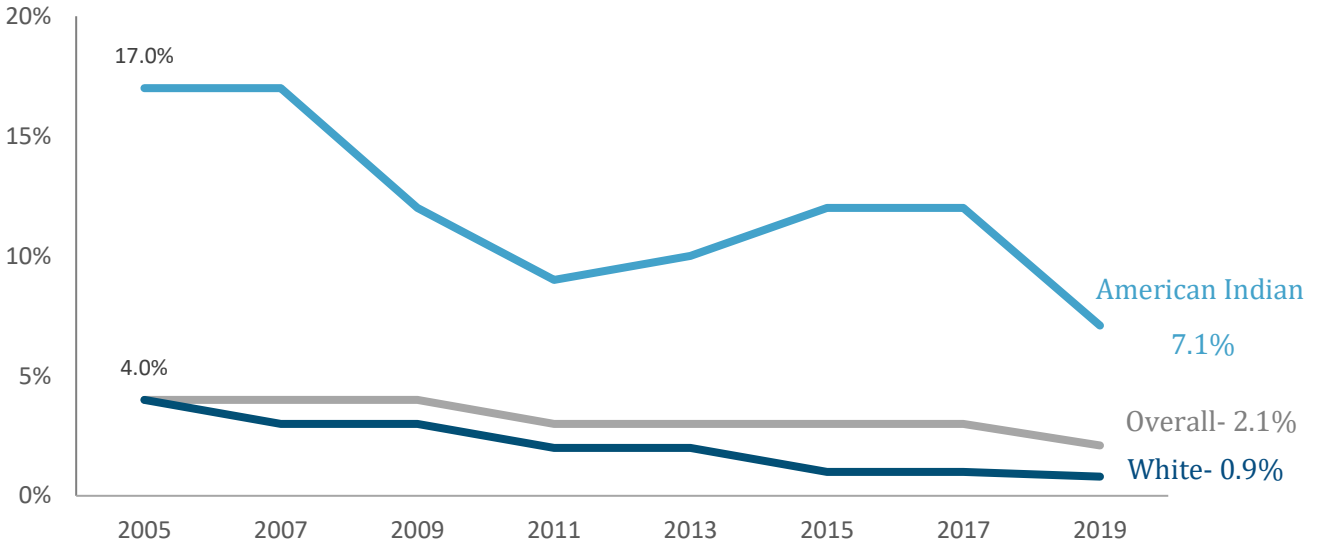
Current smokeless tobacco use among middle school students was 2.1% in 2019, compared to 2.6% in 2017. As shown in Figure 6, the prevalence of current smokeless tobacco use decreased by 60% among American Indian middle school students (17.0% in 2005 compared to 7.1% in 2019 findings).

Demographics

- No significant differences were found among males (2.3%) and females (1.7%) in smokeless tobacco use rates.
- While there was a pattern in increased use of smokeless tobacco by grade level (6th-1.3%, 7th-1.9%, 8th-3.2%), rates were not significantly different.
- American Indian students (7.1%) were more likely to report use of smokeless tobacco than White students (0.8%) ($p < 0.001$).
- Of the 2.1% of SD middle school students who current use smokeless tobacco, 37.0% reported they did so before age 11.

- Among the students who reported using smokeless tobacco, most were non-daily users, with just 2.4% reporting using smokeless tobacco on 20 days or more of the past 30 days.

Figure 6. Trends in Prevalence of Current Smokeless Tobacco Use by Race, SD YTS, 2005-2019



E-cigarettes

Lifetime Use (Ever)

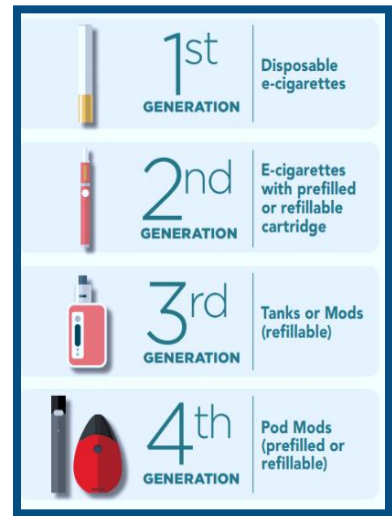
Electronic cigarettes (e-cigarettes) are the most popular alternative to conventional cigarettes. This nicotine delivery device has been available in the U.S. market since 2006.⁶ It is reported that each 200-puff pod delivers as much nicotine as a pack of 20 cigarettes.⁷ Additionally, recent research studies show that a significant amount of cancer-related chemicals⁸ that are inhaled when vaping increase potential health risks of e-cigarette users.⁹

In the YTS, middle school students were asked if they had ever tried smoking an e-cigarette on at least one occasion.

Trends

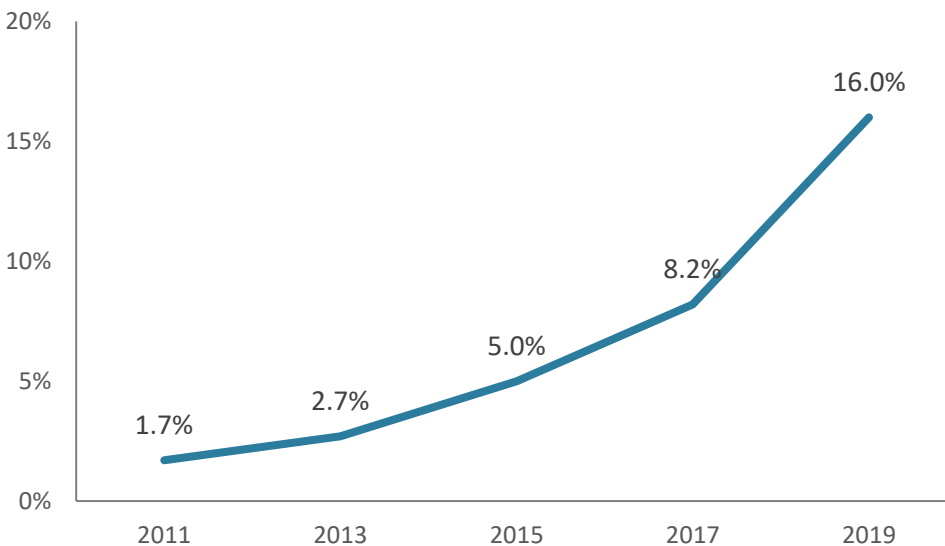
- Overall, nearly one in six middle school students (16.0%) had ever tried e-cigarettes.
- A substantial increase in e-cigarette use was observed from 2011 to 2019 findings (from 2.0% to 16.0%) (Figure 7).

Evolution of E-cigarettes



CDC. E-Cigarette, Or Vaping, Products Visual Dictionary¹⁰

Figure 7. Trends in Lifetime E-cigarettes Use - SD YTS, 2011-2019

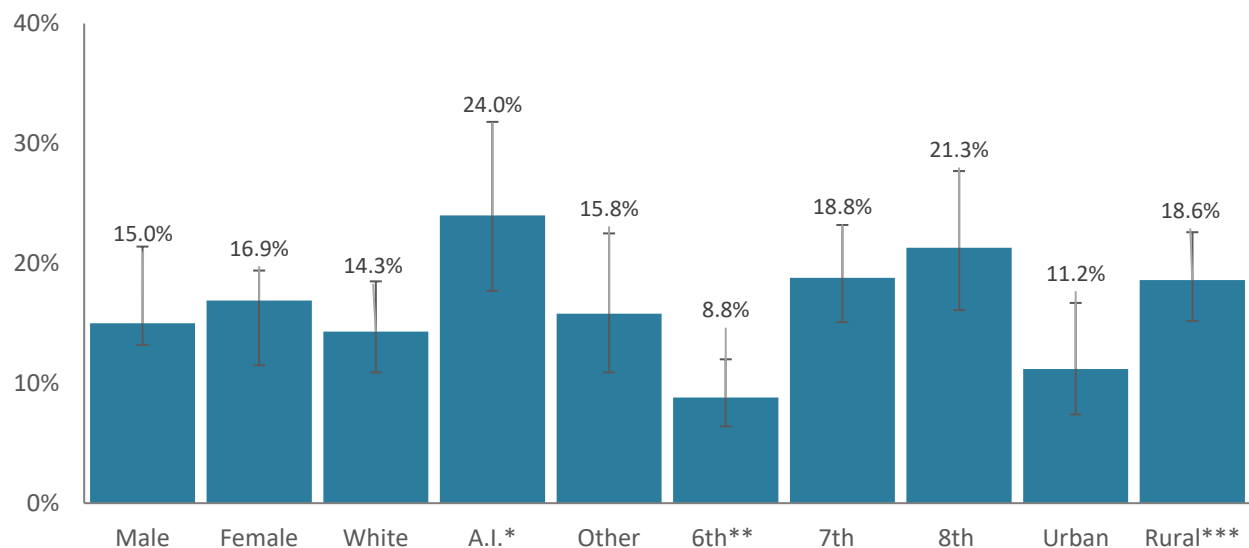


Use of e-cigarettes by middle school students has increased eight-fold from 2011 to 2019 in South Dakota.

Demographics

- Rates of lifetime e-cigarette use were higher among females (16.9%) than males (15.0%), however the difference was not statistically significant (Figure 8).
- Prevalence of e-cigarette use was significantly higher among middle school American Indian students (24.0%) when compared to White students (14.3%) ($p=0.012$).
- Rates of lifetime e-cigarette use significantly increased by grade level ($p<0.001$).
- Lifetime e-cigarette use varies by school rural status. In 2019, the rate of lifetime e-cigarette use was significantly higher among rural middle school students (18.6%), compared to urban middle school students (11.2%) ($p=0.011$).
- Among SD middle school students who had ever tried e-cigarettes (16.0%), nearly one in five students (18.9%) reported they did so before age 11.

Figure 8. Estimated Prevalence of Lifetime E- Cigarettes Use by Demographics - SD YTS, 2019



Note. A.I.- American Indian, ‡ Non-Hispanic White

*Significantly higher than the rates for Whites

** Significantly lower than the rates for 7th and 8th grade

*** Significantly higher than the rates for Urban

Current Use

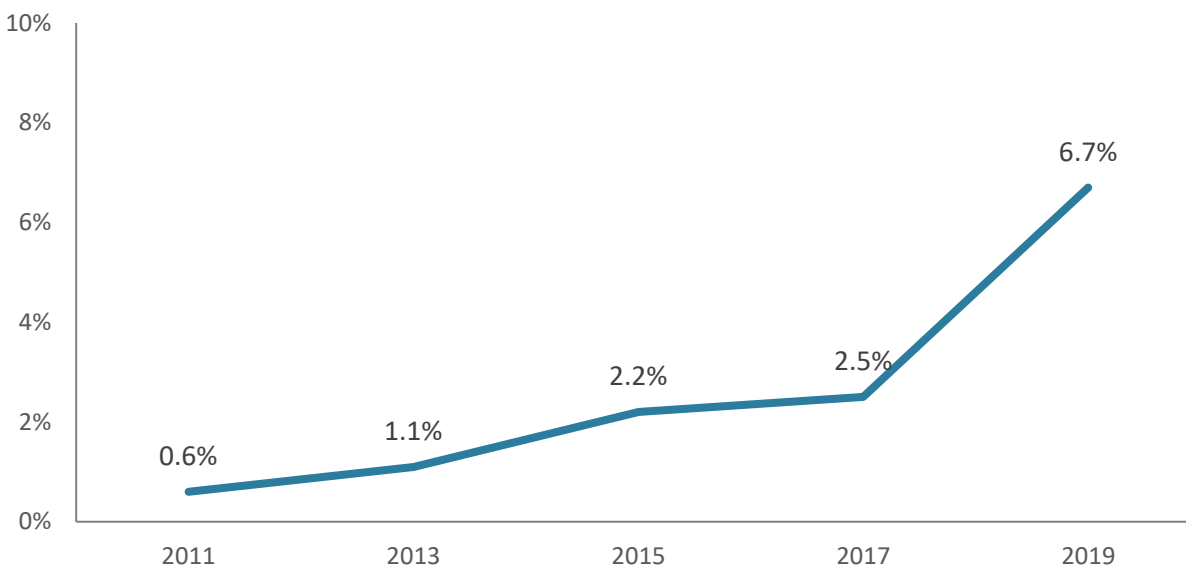
Trends

In 2019, data shows that current (past 30-day) use of e-cigarettes is also strikingly increasing in SD.

- The current rate of e-cigarette use among middle school youth in SD nearly tripled from 2.5% in 2017 to 6.7% in 2019 (Figure 9).

- However, the prevalence of current e-cigarette use (6.7%) among SD middle school students was lower than the national rate at 10.5%.²

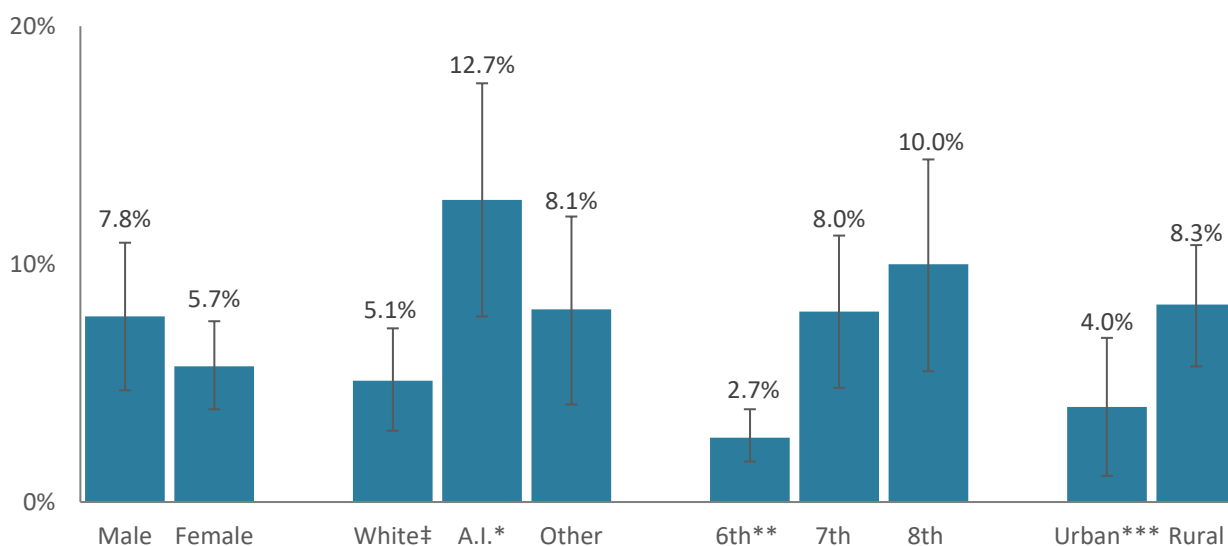
Figure 9. Trends in Current E-cigarettes Use - SD YTS, 2011-2019



Demographics

- Rates of e-cigarette use was higher among females (7.8%) than males (5.7%), however, the difference was not statistically significant (Figure 10).
- Prevalence of e-cigarette use was significantly higher among middle school American Indian students (12.7%) when compared to Whites (5.1%) ($p=0.002$).
- Prevalence of e-cigarettes use increased as school grades increased ($p<0.001$).
- Current e-cigarette use also varies by school rural status. The rate of current e-cigarette use was significantly higher among rural middle school students (8.3%), compared to urban middle school students (4.0%) ($p=0.043$).
- Of the 6.5% middle school students who currently use e-cigarettes, 16.0% reported they did so before age 11.

*In 2019, more than half of the middle school students (51%) who had ever tried a tobacco product, reported that an **e-cigarette** was their **FIRST** tobacco product, followed by cigarettes (29%), smokeless tobacco (6.6%) and cigars (4.4%).*

Figure 10. Estimated Prevalence of Current E-Cigarettes Use by Demographics - SD YTS, 2019

Note. A.I.- American Indian

‡ Non-Hispanic White

*Significantly higher than the rates for Whites.

** Significantly lower than the rates for 7th and 8th grade.

*** Significantly higher than the rates for urban.

Susceptibility

Susceptibility to using e-cigarettes assesses a lack of commitment to continue to be smoke-free. The variable was defined as an answer other than ‘definitely not’ for the following question: “If one of your best friends were to offer you an e-cigarette, would you use it?”

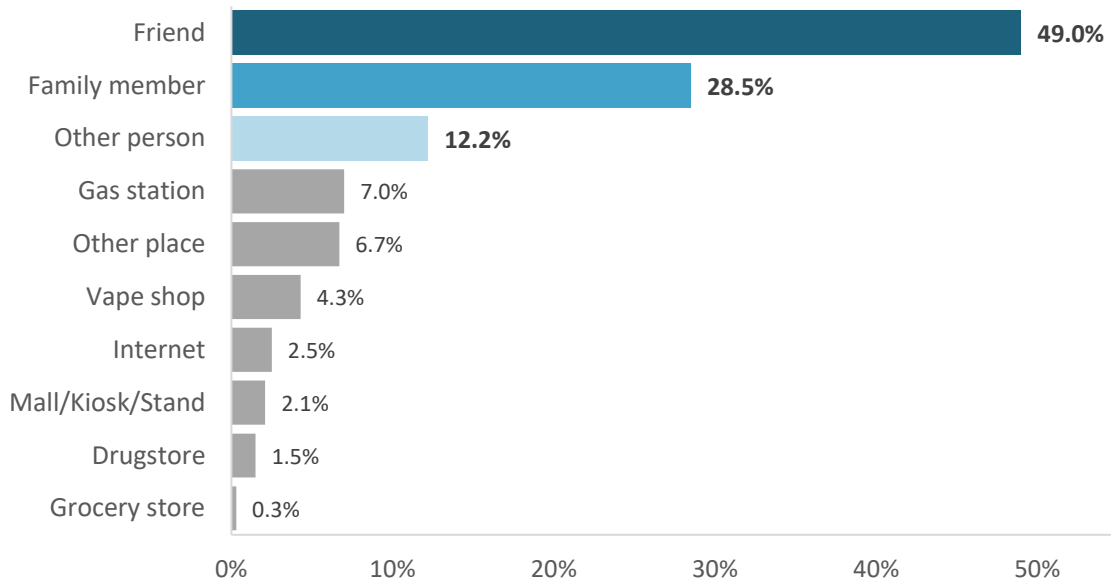
- Susceptibility among youth who were not currently e-cigarette users was 21.2%.
- No significant differences were found by gender and race.

Access

In the 2019 SD Youth Tobacco Survey, students were asked in the following multiple-choice question “During the past 30 days, where did you get or buy the e-cigarettes that you have used?”

- The most common sources of e-cigarettes were friends and family (Figure 11).
- Places reported by students where they buy e-cigarettes were gas station (7%), another place (6.7%), vape shop (4.3%) or internet (2.5%).

Figure 11. Source of E-Cigarettes for SD Middle School Students - SD YTS, 2019

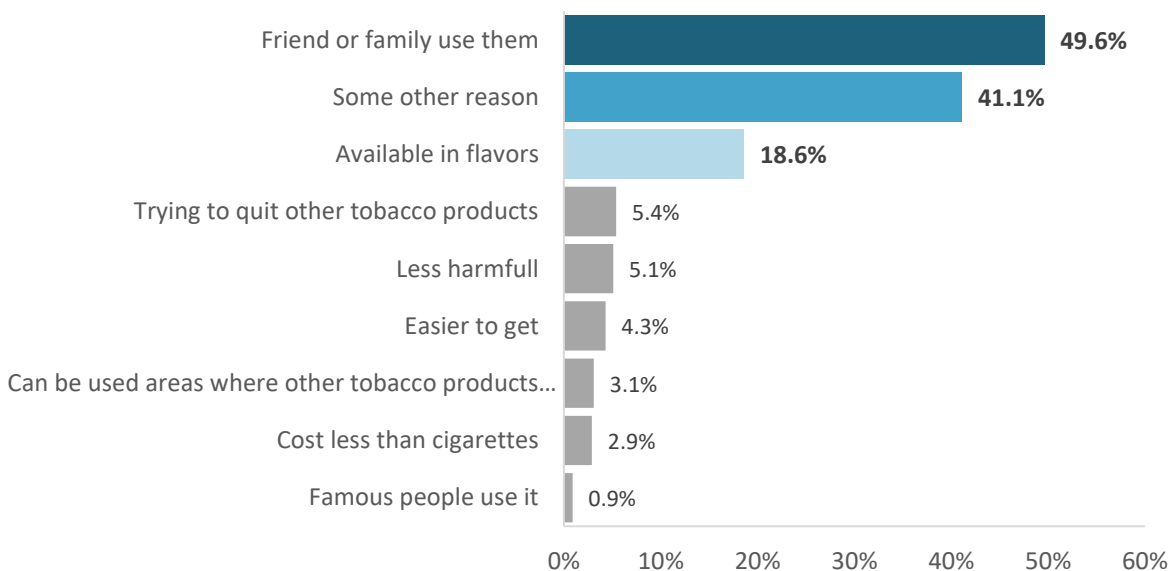


Reasons to Use E-cigarettes

In the 2019 SD YTS, students were asked a multiple-choice question: “What are the reasons you have used e-cigarettes?” Among middle school students who have ever tried or currently use e-cigarettes, the most common reasons for e-cigarette use were:

- Because “friend or family member used them” (49.6%), followed by “some other reason” (41.1%), and the “availability in flavors” (18.6%) (Figure 12).
- Some of the least reported reasons for using e-cigarettes were to quit tobacco products, less harmful, cheaper and famous people used.

Figure 12. Reasons for E-Cigarette Use by Youth - SD YTS, 2019

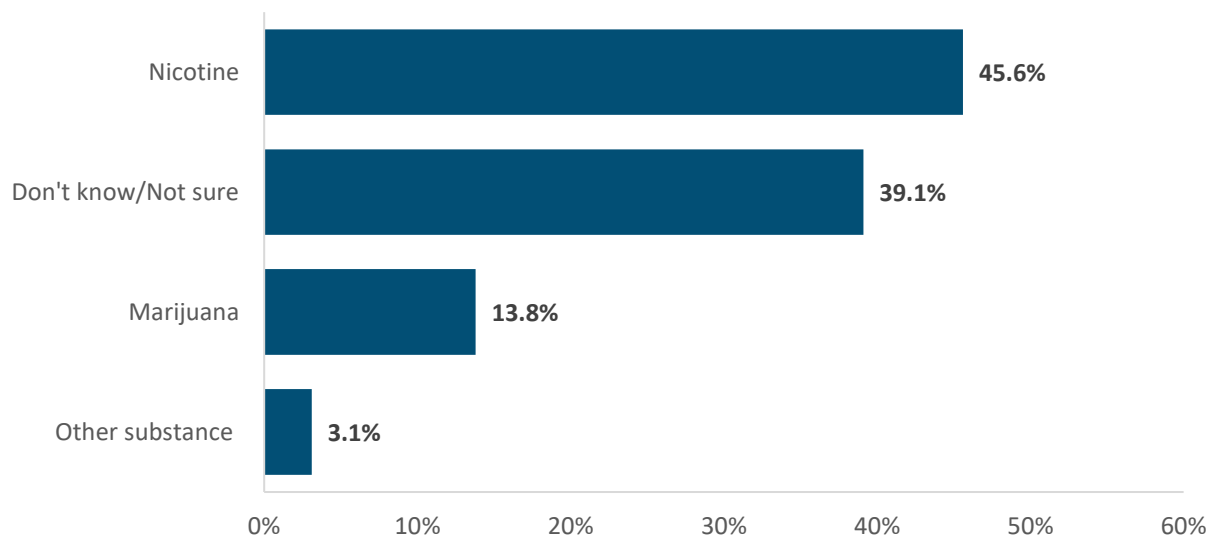


Reasons to Use E-cigarette Device for Other Substances

Students also responded to the following question: “Have you ever used an e-cigarette device with a substance besides nicotine?”

- The main reasons to use an e-cigarette device were nicotine (45.6%), followed by “don’t know/not sure” (39.1%).
- Use of an e-electronic cigarette device with marijuana was reported by 13.8% of the students.

Figure 13. Reasons for E-Cigarette Device Use with Substances– SD YTS, 2019



Cigars, Pipes and Hookah

Lifetime Use (Ever)

Cigars

- The prevalence of cigar use among middle school youth was 6.4%, compared to 4.8% in 2017.
- No significant differences were found by gender (Table 1).
- American Indian students (13.7%) were more likely to use cigars than White (4.6%) or other race students (7.6%) ($p < 0.01$).
- Students in the 6th grade were less likely to use cigars when compared to 8th grade.
- Students in rural areas (7.8%) were more likely to report use of cigars than their urban counterparts (3.8%).

Pipe

- The prevalence of pipe use among middle school youth was 2.5% compared to 3.6% in 2017.
- No differences in current pipe use were found by gender and school grade (Table 1).
- Again, American Indian students were more likely to use a pipe than White middle school students ($p < 0.001$). It is important to note that ceremonial tobacco use was not explicitly excluded in the YTS questions.

Hookah

- Use of hookah in 2019 was at 1.6%, compared to 3.0% in 2017.
- Female students were more likely to report use of hookah than males ($p = 0.002$).

Table 1. Estimated Prevalence of Lifetime Use of Cigars, Pipe and Hookah, by Gender, School Level, and Race/Ethnicity† - SD YTS, 2019

| | | Cigars | Pipes | Hookah |
|---------------------|--------------------|--------------------------|--------------------------|--------------------------|
| | | % (95% CI ^a) | % (95% CI ^a) | % (95% CI ^a) |
| Gender | Female | 6.2 (4.8-7.7) | 3.1 (1.7-4.4) | 2.3 (1.4-3.6)* |
| | Male | 6.4 (4.5-8.3) | 2.0 (1.2-2.8) | 0.9 (0.6-1.5) |
| Race | White [‡] | 4.6 (3.2-6.1) | 1.4 (0.7-2.1) | 1.0 (0.5-1.9) |
| | American Indian | 13.7 (10.4-17.0)* | 7.2 (4.1-10.3) * | 3.6 (2.0-6.3) |
| | Other | 7.6 (3.9-11.4) | 3.2 (1.4-4.9) | 2.3 (1.1-4.7) |
| Grade | 6 | 4.4 (2.9-5.8)** | 1.3 (0.6-1.9) | 0.7 (0.2-0.4) |
| | 7 | 7.0 (4.3-9.7) | 2.7 (1.4-3.9) | 1.7 (0.9-3.2) |
| | 8 | 8.1 (5.6-10.6) | 3.7 (2.1-5.4) | 2.4 (1.4-4.2%) |
| Urban Status | Urban | 3.8 (2.6-5.6) | 1.5 (0.8-2.8) | 0.8 (0.3-2.1) |
| | Rural | 7.8 (6.1-10.0) *** | 3.1 (2.2-4.3) | 2.0 (1.3-3.0) |
| Overall | | 6.4 (5.1-7.7) | 2.5 (1.8-3.3) | 1.6 (1.1-2.3) |

†Non-Hispanic White ^aCI = confidence interval

*Significantly higher than White rates.

** Significantly lower than 7th and 8th grade.

***Significantly higher than students in urban schools.

Current Use

Cigars

- The 30-day point prevalence of cigar use among middle school youth overall was 1.9% (Table 2).
- No differences in current pipe use were found by gender.
- American Indian and other race students were more likely to use cigars than White middle school students ($p < 0.001$).

Pipe

- The 30-day point prevalence of pipe use among middle school youth was 1.1% (Table 2).
- No differences in current pipe use were found by gender.
- Significantly higher rates by race existed Whites (0.4%) and American Indians (3.5%) ($p < 0.001$). As noted earlier in the report, ceremonial tobacco use is not explicitly excluded in the YTS questions.

Hookah

The 30-day point prevalence of hookah among middle school youth was 0.8% (Table 2). Findings should be interpreted with caution due to small sample size.

Table 2. Estimated Prevalence of Current Use (past 30 days) of Cigars, Pipe and Hookah by Gender, School Level, and Race/Ethnicity — SD YTS, 2019

| | | Cigars | Pipes | Hookah |
|---------------------|--------------------|--------------------------|--------------------------|--------------------------|
| | | % (95% CI ^a) | % (95% CI ^a) | % (95% CI ^a) |
| Gender | Female | 2.0 (1.3-3.0) | 1.3 (0.8-2.1) | 1.0 (0.2-0.6) |
| | Male | 1.8 (1.2-2.8) | 0.9 (0.5-1.5) | 0.6 (0.4-1.2)- |
| Race | White [‡] | 0.8 (0.4-1.3) | 0.4 (0.2-0.9) | 0.4 (0.1-0.2) |
| | American Indian | 5.9 (4.0-8.6)* | 3.5 (2.4-5.1) | 2.4 (1.5-4.0)* |
| | Other | 2.9 (1.6-5.3) | 1.6 (0.7-3.4) | 1.4 (0.6-3.4)- |
| Grade | 6 | 1.6 (0.9-2.8) | 0.7 (0.4-1.3) | 0.3 (0.1-0.2) |
| | 7 | 2.0 (1.2-3.4) | 3.5 (2.4-5.1) | 1.2 (0.4-0.6) |
| | 8 | 2.2 (1.3-3.9) | 1.0 (0.5-2.0) | 0.9 (0.5-1.8) |
| Urban Status | Urban | 0.3 (0.1-1.1) | 0.3 (0.1-0.6) | - |
| | Rural | 2.9 (2.1-3.9)*** | 1.5 (1.0-2.4) | - |
| Overall | | 1.9 (1.5-2.6) | 1.1 (0.7-1.6) | 0.8 (0.6-1.2) |

‡Non-Hispanic White Abbreviations: ^aCI = confidence interval.

- Results not reported due to small sample size

*Significantly higher than White rates.

***Significantly higher rate than students in urban schools.

Other Tobacco Products

Lifetime Use (Ever)

Flavored cigars, snus and roll-your-own cigarettes were the top three alternative tobacco or nicotine products used by SD middle school students at least one time in their lifetime (Table 3).

Current Use

Use of alternative forms of tobacco and nicotine products in the past 30 days was also examined. Table 3 indicates that, roll-your-own cigarettes, and snus or pipe filled with tobacco were the top three other tobacco products currently used by SD middle school students.

Table 3. Lifetime and Current Prevalence of Other Tobacco Product Use Among Middle School Students — SD YTS, 2019

| Product | Prevalence (%) (95% CI) ^a Ever | Prevalence (%) (95% CI) ^a Current |
|------------------------------------------------------------------------|-------------------------------------------------|----------------------------------------------------|
| Flavored cigars, cigarillos, little cigars (e.g., mint, clove etc.) | 3.2 (2.5-4.2) | - |
| Snus such as Camel or Marlboro, or general Snus | 2.3 (1.7-3.2) | 0.8 (0.6-1.2) |
| Roll-your-own cigarettes | 2.2 (1.6-3.0) | 1.4 (1.0-2.1) |
| Smoking tobacco from hookah or water pipe | 1.3 (0.6-1.9) | 0.4 (0.2-0.6) |
| Dissolvable tobacco products | 1.0 (0.6-1.5) | 0.6 (0.3-1.1) |
| Pipe filled with tobacco | 0.7 (0.5-1.0) | 0.8 (0.6-1.2) |
| Bidis | 0.3 (0.2-0.6) | 0.3 (0.1-0.6) |

^a CI = confidence interval.

- Data not available since flavor cigars were not asked on this question.

Any Tobacco Product

Lifetime Use (Ever)

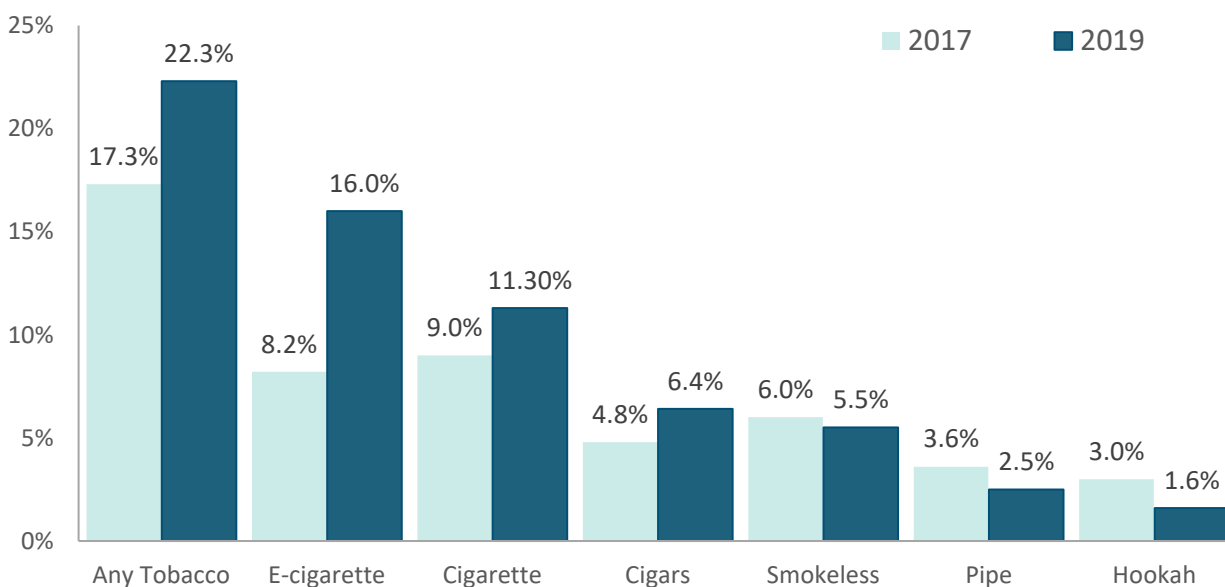
Ever tobacco use is defined as use of tobacco products of any kind, including cigarettes (including roll-your-own), cigars, smokeless tobacco (including chewing tobacco, snuff, dip, snus, and dissolvable tobacco), tobacco pipes, bidis, hookah, and electronic cigarettes on at least one occasion. Since most youth who use tobacco are multi-product users, this measurement provides information on the prevalence of all types of tobacco use among middle school students.

Overall, about one in five SD middle school students (22.3%) reported ever using a tobacco product of any kind on at least one occasion, an increase from 17.3% in 2017 (Figure 14).

Trends

- Among the middle school students, e-cigarettes were the most commonly used tobacco product in 2019, followed by cigarettes, cigars, smokeless tobacco, pipe and hookah.
- An overview of the trend of tobacco use by each product is presented on Figure 15. A downtrend was observed for smokeless, pipe and hookah use.

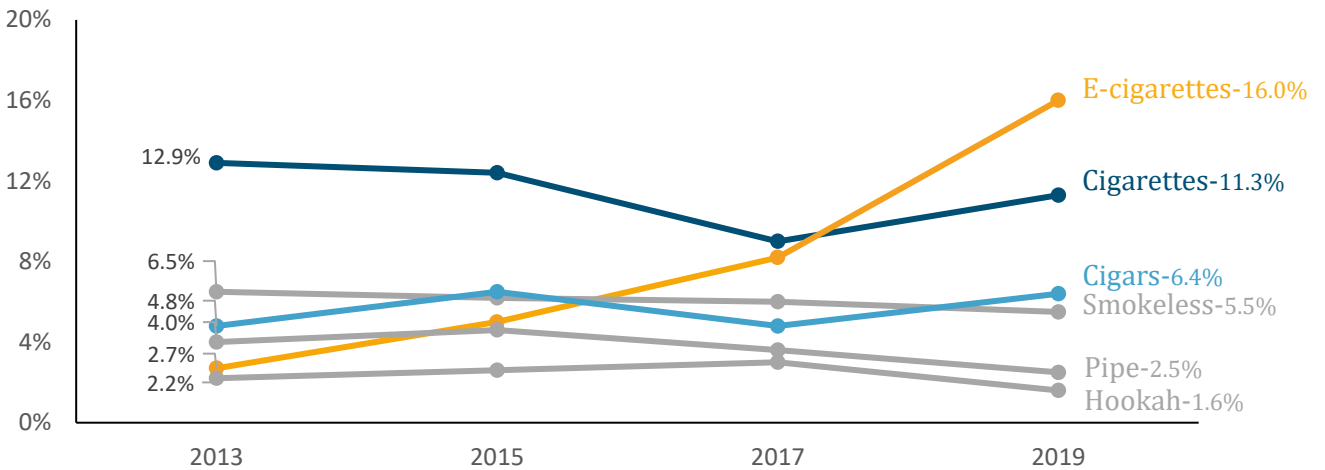
Figure 14. Prevalence of Lifetime Tobacco Use by Tobacco Products - SD YTS, 2017 versus 2019



Note 1. The variable *Any tobacco use* was recalculated using 2017 YTS data to allow comparison between 2017 and 2019.

Note 2. *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.

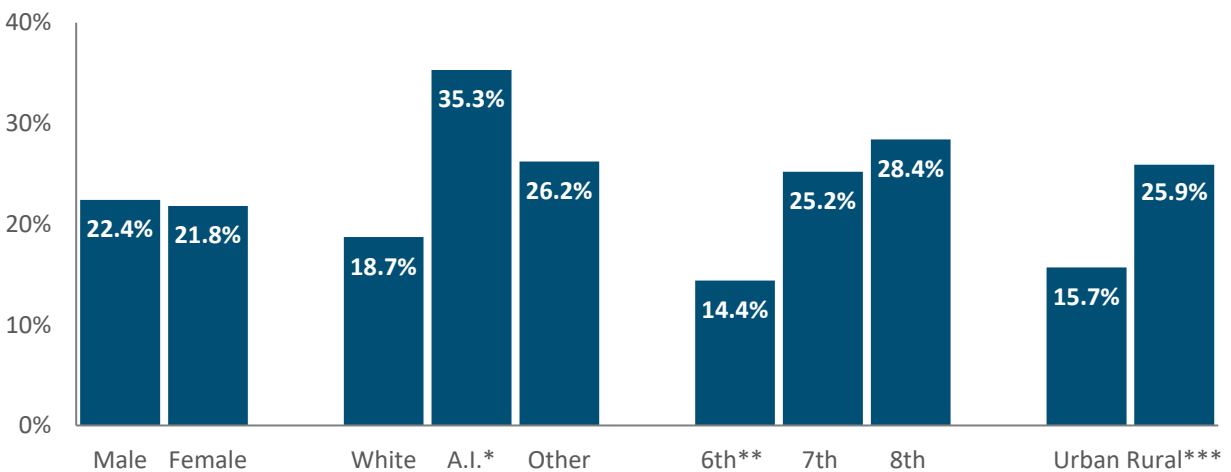
Figure 15. Trends in Prevalence of Lifetime Tobacco Products Use on at Least One Occasion - SD YTS, 2013- 2019



Demographics

- The percentage of middle school students who have ever tried a tobacco product was not significantly different between males and females (Figure 16).
- Lifetime use of any tobacco product varied by race. American Indian students (35.3%) were more likely to have ever used any tobacco product than White students (18.7%).
- Sixth grade students were less likely to have used any type of tobacco than both seventh and eighth grade students ($p < 0.001$). However, the percentage of students ever using any tobacco product was roughly the same among seventh and eighth grade students.
- Students enrolled in rural schools were significantly more likely to have ever used at least one tobacco product when compared to their counterparts ($p = 0.004$).

Figure 16. Prevalence of Lifetime Tobacco Products Use by Demographics – SD YTS, 2019



*Significantly higher than Whites.

** Significantly lower than 7th and 8th grade.

***Significantly higher than Urban rates.

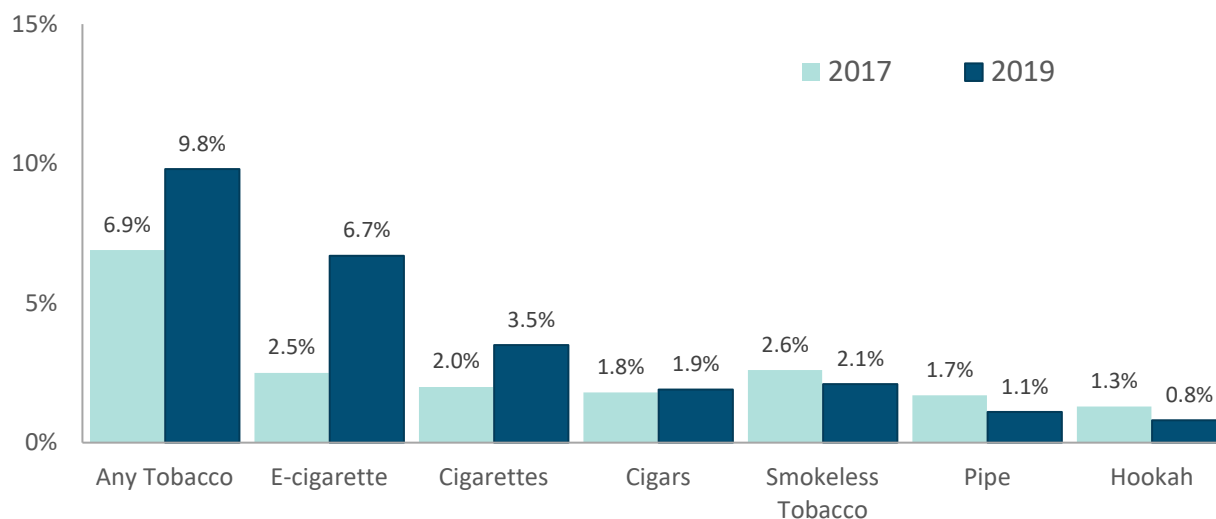
Current Use

Middle school students in SD were asked if they had used various types of tobacco, including cigarettes, cigars, smokeless tobacco (including chewing tobacco, snuff, dip, snus, and dissolvable tobacco), tobacco pipes, bidis, hookah, and electronic cigarettes, in the past 30 days. Current tobacco use was defined using a 30-day point prevalence rate, or use of any tobacco product, even a puff or a pinch, on at least one occasion in the past 30 days.

- Nearly one in 10 middle school students (9.8%) reported current use of a tobacco product of any kind on at least one of the last 30 days, an increase from 6.9% in 2017.
- A downtrend was observed for smokeless tobacco, pipe and hookah use. An overview of the trends of tobacco use by each product is presented in Figure 17.
- Among current tobacco product users, 38.7% currently used two or more tobacco product types.

*Included in the definition of two or more tobacco products on at least one day in the past 30 days were electronic cigarettes, cigarettes, cigars, smokeless tobacco, hookahs, pipe tobacco, and bidis. The denominator included no tobacco users and use of one tobacco product only.)

Figure 17. Prevalence of Current Tobacco Use by Tobacco Products - SD YTS, 2017 versus 2019



Note 1. The variable *Any tobacco use* was recalculated using the 2017 YTS data to allow comparison between 2017 and 2019.

Note 2. *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 in the past 30 days.

Demographics

- No significant difference in current tobacco use was found by gender.
- Current use of any tobacco product varied by race with higher use among American Indian (21.3%) than White students (6.1%) ($p < 0.001$).
- The rate of current tobacco use increased significantly across progressive grade levels (6th grade at 5.1%, 7th grade at 11.3% and 8th grade at 13.5%) ($p < 0.001$).
- Significantly higher rates of tobacco use were found among rural schools (5.3%) than urban schools (12.2%) ($p = 0.015$).

Obtaining Tobacco Products

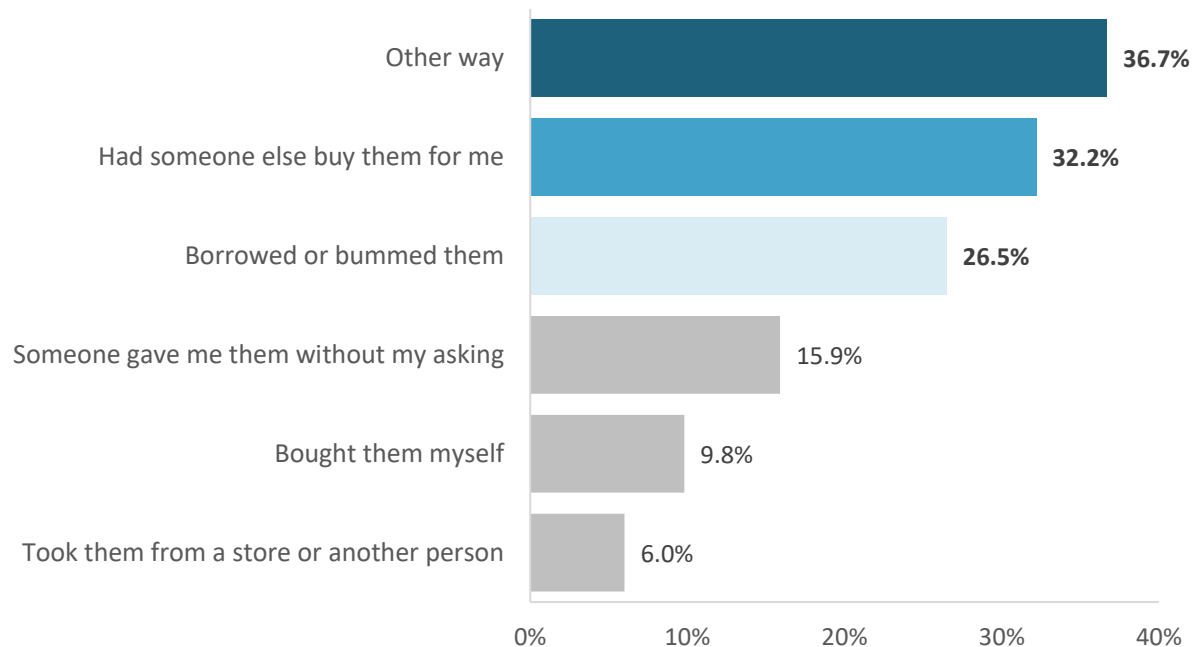
The entire sample for the SD YTS was under age 21, which is the legal age in SD to purchase or use tobacco products. A reduction in the odds of smoking of up to 20.0% has been attributed to a better compliance with underage tobacco regulations.¹¹

- Overall, 82.8% of the middle school students did not attempt to buy any tobacco products during the past 30 days.
- Among those who tried (17.2%) during the past 30 days, only 4.2% of the students reported they were refused when attempting to purchase any tobacco product because of their age.

Middle school students were asked how they got their own tobacco product (other than e-cigarettes). Figure 18 shows how tobacco products were obtained.

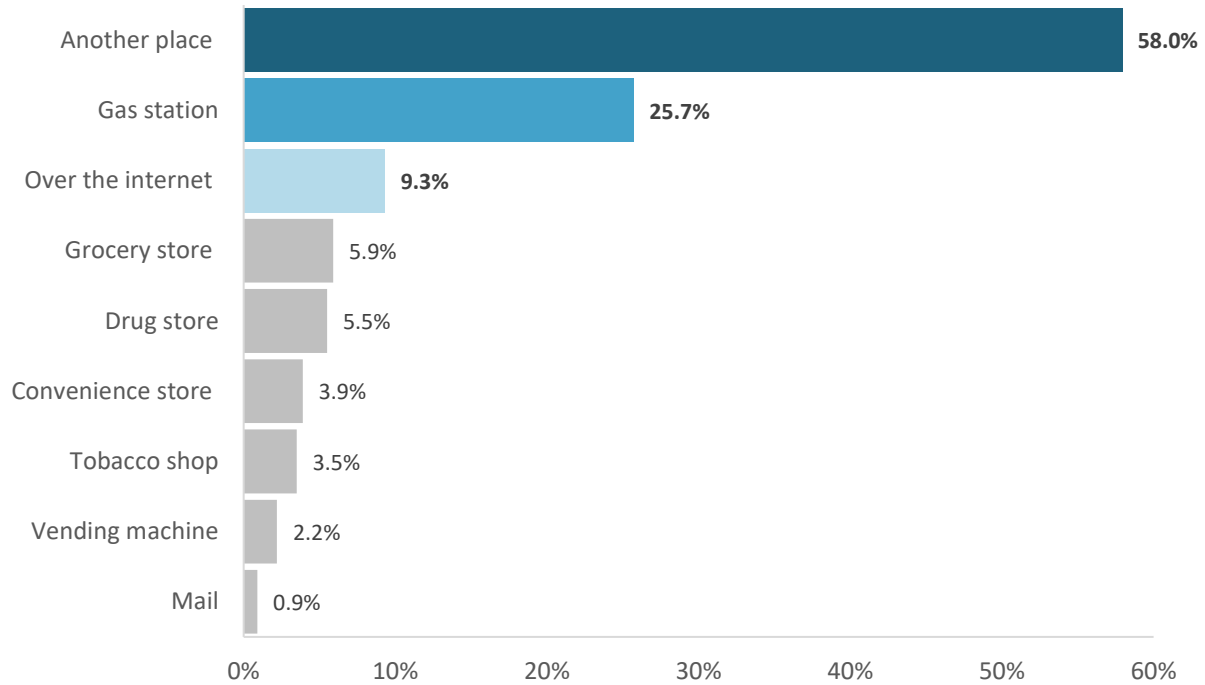
- Nearly one in three students (32.2%) reported having someone buy tobacco products for them.
- One in four students (26.5%) reported borrowing their products from somebody else.

Figure 18. How SD Middle School Students Obtained Tobacco Products - SD YTS, 2019



Among students who reported buying tobacco products, the most common places were another place that was not listed (58.0%), followed by gas station and internet (Figure 19).

Figure 19. Location of Youth Tobacco Product Purchase, SD YTS, 2019



Tobacco Cessation

Current tobacco users were asked about their past tobacco quit attempts (all tobacco products) for one day or longer in the past 12 months. Students reporting no tobacco use in the past 12 months were not included in the analysis.

- Among current tobacco users, most (79.9%) reported at least one attempt to quit tobacco for good. Among current cigarette users, 74.7% reported at least one attempt.
- In SD, among current middle school tobacco users only, one-quarter (26.5%) reported 10 or more attempts in quitting tobacco in the last year.
- Due to changes in the tobacco cessation question, trends in quit attempts are not presented. (Previous years included cigarette only (2015) and in the SD YTS 2017 the question excluded e-cigarette products).

Students were also asked about type of resource(s) utilized in the past year to assist with quitting tobacco. The most commonly reported method of quitting tobacco among current tobacco users and smokers was “cold turkey”, followed by nicotine gum and help from family and friends (Table 4).

Table 4. Quit Intent, Middle School Current Tobacco and Cigarette Users – SD YTS, 2019

| Statement | Current tobacco users (%) | Current cigarette users (%) |
|-----------------------------------------------------|---------------------------|-----------------------------|
| Tried to quit on my own or quit “cold turkey” | 50.9 | 45.3 |
| Used nicotine gum | 7.9 | 10.8 |
| Got help from family or friends | 7.2 | 10.5 |
| Attended a program at my school | 5.5 | 9.0 |
| Used nicotine patch | 2.0 | 2.4 |
| Attended a program in the community | 1.7 | 1.7 |
| Used any medicine | 0.7 | 1.8 |
| Internet quit site | 1.8 | 2.3 |
| Use another method as hypnosis/acupuncture | 0.5 | 0.9 |
| Called a telephone help line or telephone quit line | 0.3 | 0.7 |

Perceptions of Tobacco Products

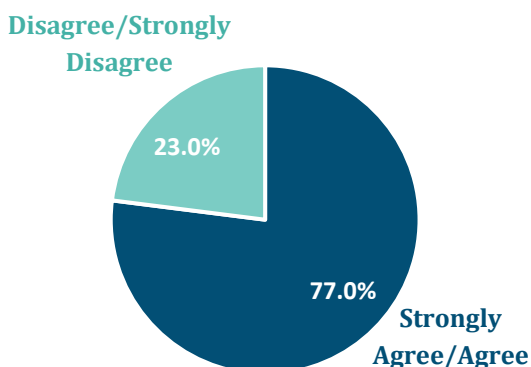
In the 2019 SD YTS, questions to assess middle school student's harm perception of tobacco products and nicotine included: "How strongly do you agree with the statement, *All tobacco products are dangerous?*" and "*Do you think nicotine is harmful to your health?*" Results are shown in Figure 20.

Harm Perceptions

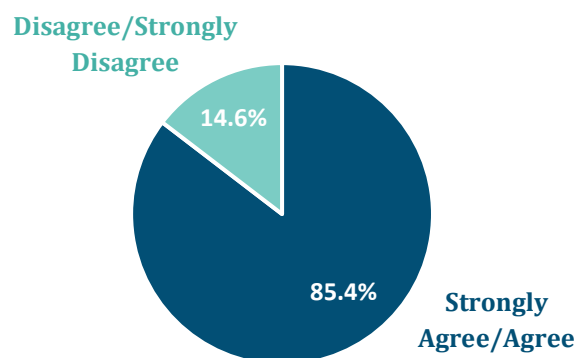
- Among all respondents, most students (93.2%) reported that all tobacco products are dangerous. Among current tobacco users, the agreement was significantly lower (77.0%) than non-tobacco users (95.0%) ($p < 0.001$) (Figure 20A).
- Similarly, most of students (95.6%) agreed with the statement "*Nicotine is harmful to your health*". However, among current tobacco users, the agreement was significantly lower 85.4% than non-tobacco users (96.7%) ($p < 0.001$) (Figure 20B).

Figure 20. Tobacco Users 's Perception on of Harm Regarding Tobacco Products (A) and Nicotine (B) - SD YTS, 2019

"All tobacco products are dangerous." (A)



"Nicotine is harmful to your health." (B)



Perception of E-cigarettes

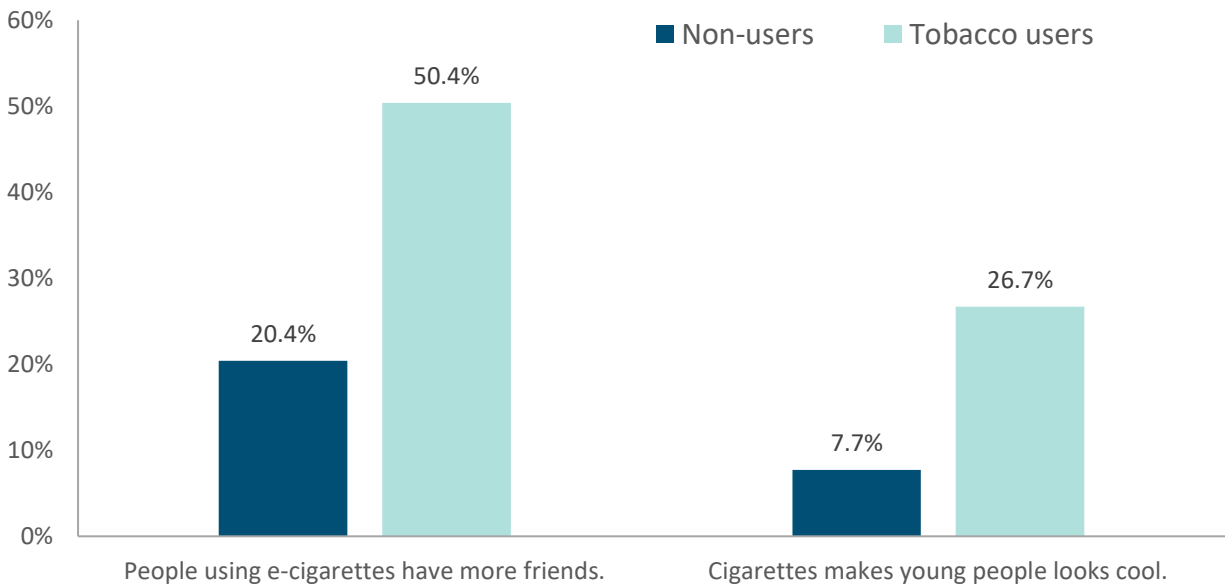
- More than half (55.6%) of the students reported that e-cigarettes are equally or more harmful than regular cigarettes.
- Nearly one in three (27.3%) reported not having enough information about it.

Social perception

Social acceptance of e-cigarettes was assessed by the following questions: “Do you think young people who use electronic cigarettes or e-cigarettes have more friends?” and “Do you think smoking cigarettes makes young people look cool or fit in?” Response options included: “Definitely yes”, “Probably yes”, “Probably not”, “Definitely not” and are presented in Figure 21.

- Overall, social acceptance of cigarette use is lower than e-cigarettes.
- Among tobacco users, five in 10 students (50.4%) reported that people who use e-cigarettes ‘definitely’ or ‘probably’ have more friends. Among non-tobacco users, the rate was two in 10 (20.4%) (Figure 21).

Figure 21. SD Middle School Student’s Perception on E-Cigarettes and Cigarettes - SD YTS, 2019



Secondhand Smoke Exposure

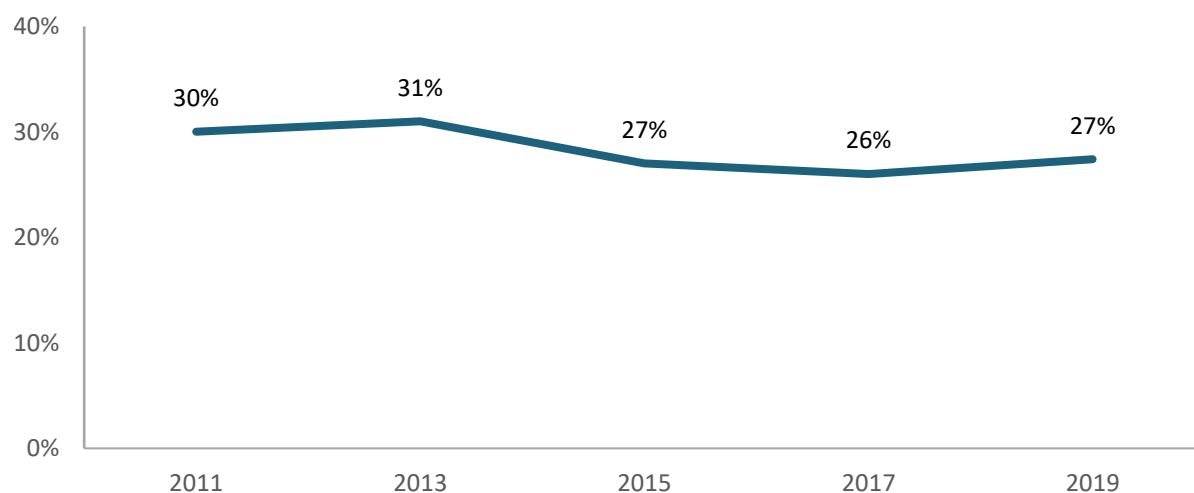
Secondhand smoke exposure is an attributable factor in the occurrence of numerous diseases, particularly cardiovascular and respiratory diseases in children.¹² Exposure, even without direct use of tobacco, can lead to death and the development of chronic diseases.¹¹ Middle school students were asked about exposure to secondhand smoke.

Involuntary Exposure to Tobacco Smoke

Middle school students were asked how often they were exposed to secondhand smoke at home and in vehicles.

- Overall, 27.4% reported being exposed to tobacco at home OR in vehicles.
- Following a decrease in the rate of secondhand exposure at home OR in vehicles in 2015, the secondhand exposure rates remained stable over the past years (Figure 22).
- Combining home AND vehicle exposure, 12.1% of middle school students reported exposure to secondhand smoke both at home AND in a vehicle for at least one day of the past week.

Figure 22. Exposure to Secondhand Smoke at Least One Day of the Past Week at Home OR in a Vehicle - SD YTS, 2011-2019



- Significant differences were found by secondhand exposure at home by race. Among American Indian students, 30.1% reported exposure to secondhand smoke at home on at least one day in the past week, compared to 17.1% of other race students and 17.1% of White students reporting the same ($p < 0.0001$).
- Exposure in a vehicle also differed significantly by race with 34.3% of American Indian students reporting exposure in a vehicle compared to 17.6% of White students and 19.8% of other race students ($p < 0.0001$).

- Significant differences were found by secondhand exposure and tobacco use. Of current tobacco users, 68% were at home OR in a vehicle while someone else smoked a tobacco product at least one time in the past week versus 23.3% among non-tobacco users ($p < 0.0001$).

Students were also asked about other places where secondhand smoke exposure could occur.

- When asked about breathing smoke from someone else smoking a tobacco product in a public indoor or outdoor area, 26.1% stated this had occurred on at least one day of the past week, and 5.2% stated it occurred daily.
- Among students who work (excluding those who do not have a job and those who did not work in the past seven days), exposure to cigarette smoke at workplaces, on at least one day in the past week, was reported by 18.6% of middle school students.
- Interestingly, over 13.9% of students stated they had breathed smoke from someone else's tobacco product on school property in the past week, compared to 9.7% in 2017.

Environmental Factors Promoting Tobacco Use

Household Tobacco Use

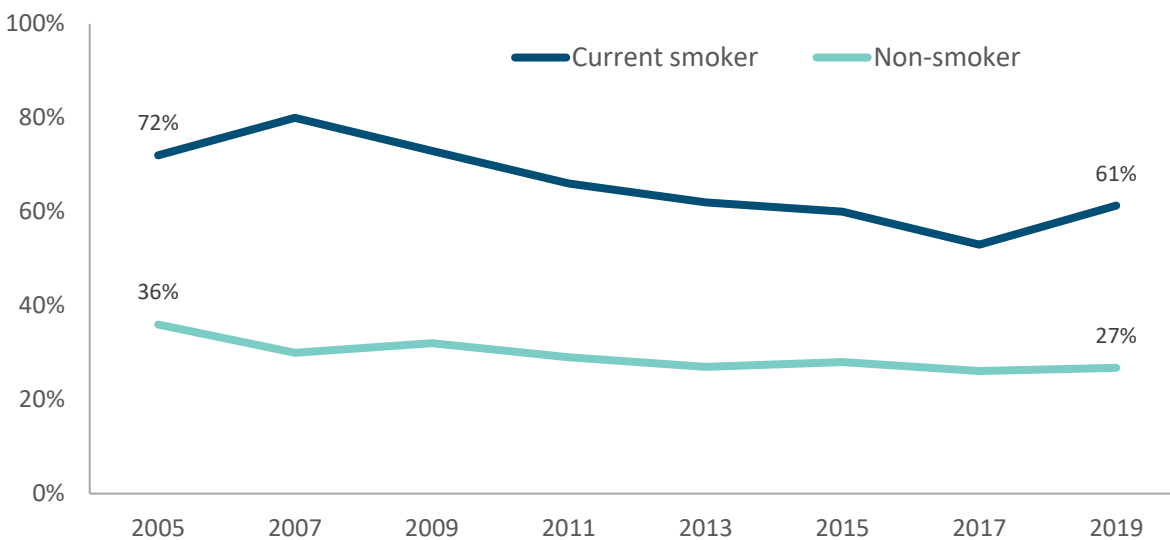
Observation of others using tobacco is a promoting factor in initiation of tobacco use among youth.

Among middle school non-cigarette smokers, 27% reported living with someone who smokes cigarettes.

Among students living with tobacco users, cigarettes were reported as the most common tobacco product used in the student's house.

- Among all middle school students, four in 10 (40.1%) reported someone in their household using at least one tobacco product.
- The four most common tobacco products used by household members as reported by middle school students were cigarettes (27.8%), followed by smokeless tobacco (9.7%), e-cigarettes (9.3%), and cigars (3.4%).
- Differences existed by gender, with males (36.7%) less likely than females (43.7%) ($p=0.002$) to report someone in the household using tobacco products.
- Significant differences also existed by race. Among White students, 38.4% reported someone in the household using tobacco. Rates were higher among American Indian students, with 53.9% reporting someone using at least one tobacco product at home ($p<0.001$).
- Important differences were found in student cigarette use status by household member use. Among those not using cigarettes, 26.8% reported living with a cigarette smoker in the household, compared to 61.3% of students using cigarettes who reported living with a cigarette smoker in their household ($p<0.0001$) (Figure 23).
- Among non-tobacco users, 7.3% reported living with a household member using e-cigarette, compared to 28.6% of students using e-cigarettes who reported living with an e-cigarette user in their household.

Figure 23. Trends in Household Member Smoking, by Student Current Smoking Status – SD YTS, 2005-2019



Tobacco Use at School and Among Peers

Tobacco Use at School

Students were asked about smoking, or observing someone smoking, on school property in the past 30 days.

- In 2019, 13.5% of middle school students reported smoking or observing someone smoking on school property, an increase from 6.3% in 2017.
- No statistical differences were found by gender and race.
- Sixth grade students were less likely to report smoking or observing smoking than seventh or eighth grade students ($p < 0.05$).
- Other tobacco use (not cigarettes) was reported on school property by 7.6% of middle school students in the past 30 days, compared to 4.5% in 2017.
- Rates did not vary by gender or grade level.

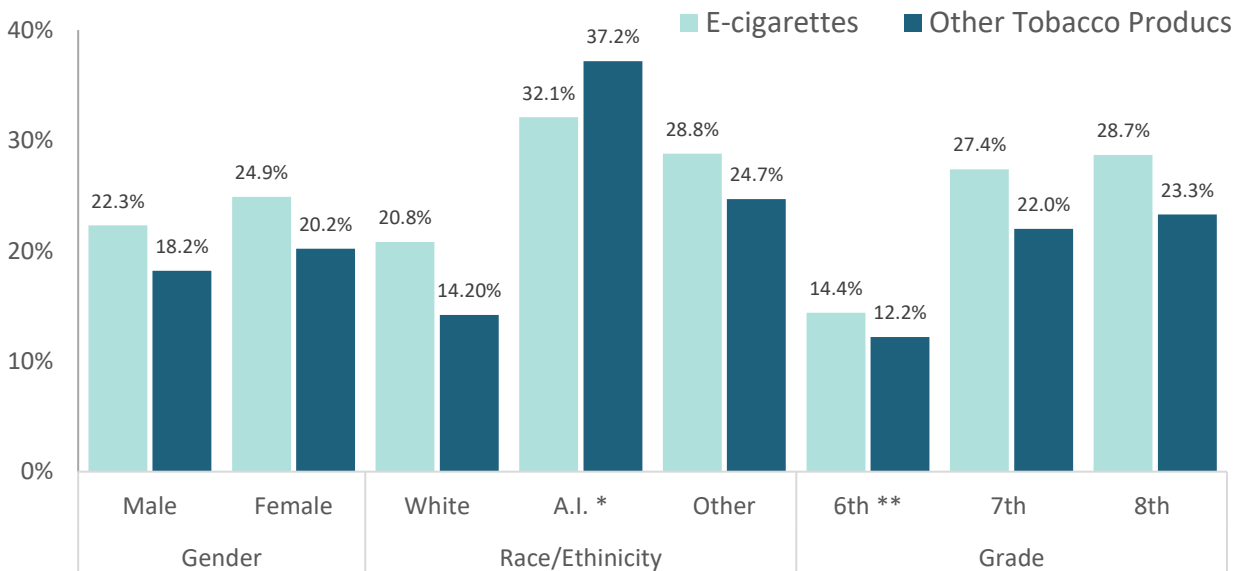
Over 13% of middle school students reported smoking or observing someone smoking on school property in the past 30 days.

Peer Tobacco Use

Middle school students were asked about peer use of tobacco products.

- Among the overall sample, most (80.7%) did not have close friends that used tobacco products (not including e-cigarettes) and most did not have close friends that used e-cigarettes (76.4%). In 2017, students without close friends using e-cigarettes was reported at 88.0%.
- Variations in peer tobacco use existed by race and grade. For instance, American Indian students had the highest rates of reporting close friends who used conventional tobacco products or who used e-cigarettes at 37.2% and 32.1%, respectively (Figure 24).

Figure 24. Peer Tobacco Use (E-cigarettes and Other Tobacco Product) by Demographics - SD YTS 2019



Note. A.I.- American Indian

*Significantly higher than Whites

**Significantly lower than 7th and 8th grade

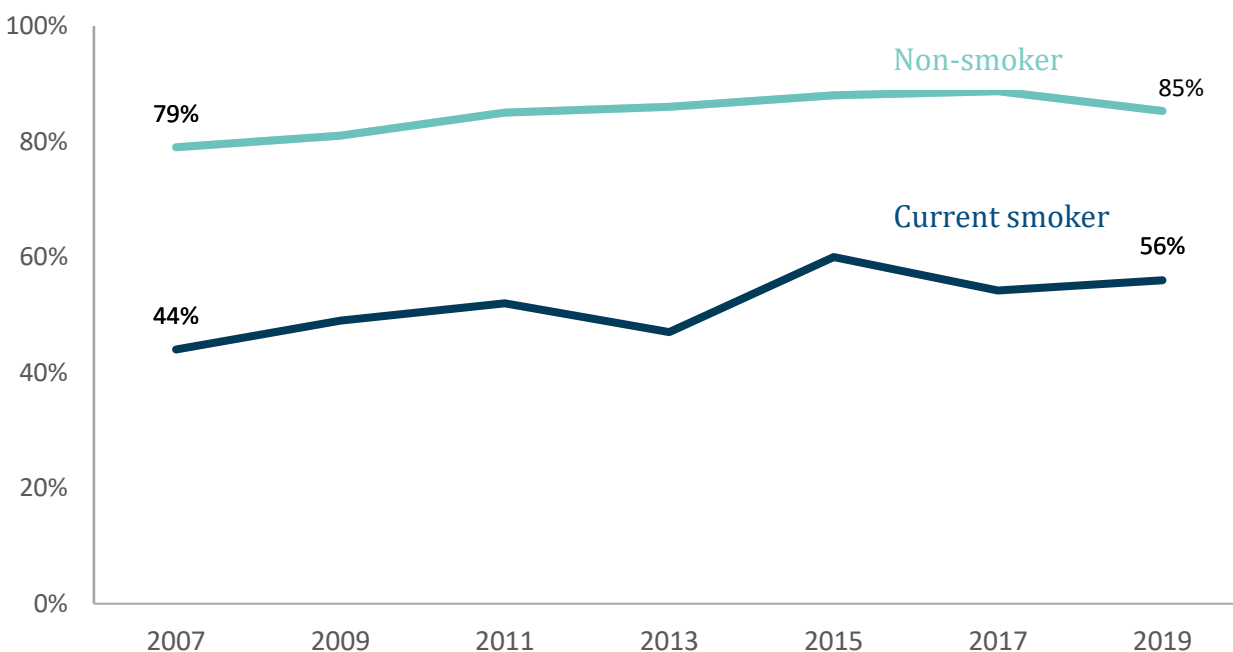
Household Indoor Smoking Rules

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

- The weighted sample of middle school students surveyed indicated that nearly nine in 10 students (87.1%) lived in a home where smoking was never allowed inside, a similar finding from 2017 data (87.9%).
- Differences in home smoking rules existed by gender. Females (84.8%) were less likely to report smoking was never allowed than males (89.5%) ($p=0.004$).
- Results did vary significantly by race ($p<0.0001$). Among American Indian students, only 71.1% reported home rules prohibiting smoking indoors, followed by other race students of which 87.2% reported home rules ($p<0.001$). Among White students, 90.7% reported home rules prohibiting smoking indoors ($p<0.0001$).
- Notably, differences also existed by current smoking status (cigarette smokers), with home rules reported by only 55.8% of students who smoke compared to 88.1% of non-smokers ($p<0.001$) (Figure 25).

Figure 25. Trends in Home Rules Prohibiting Smoking Indoors, by Smoking Status – SD YTS, 2007-2019



Rules about Smoking Inside Vehicles

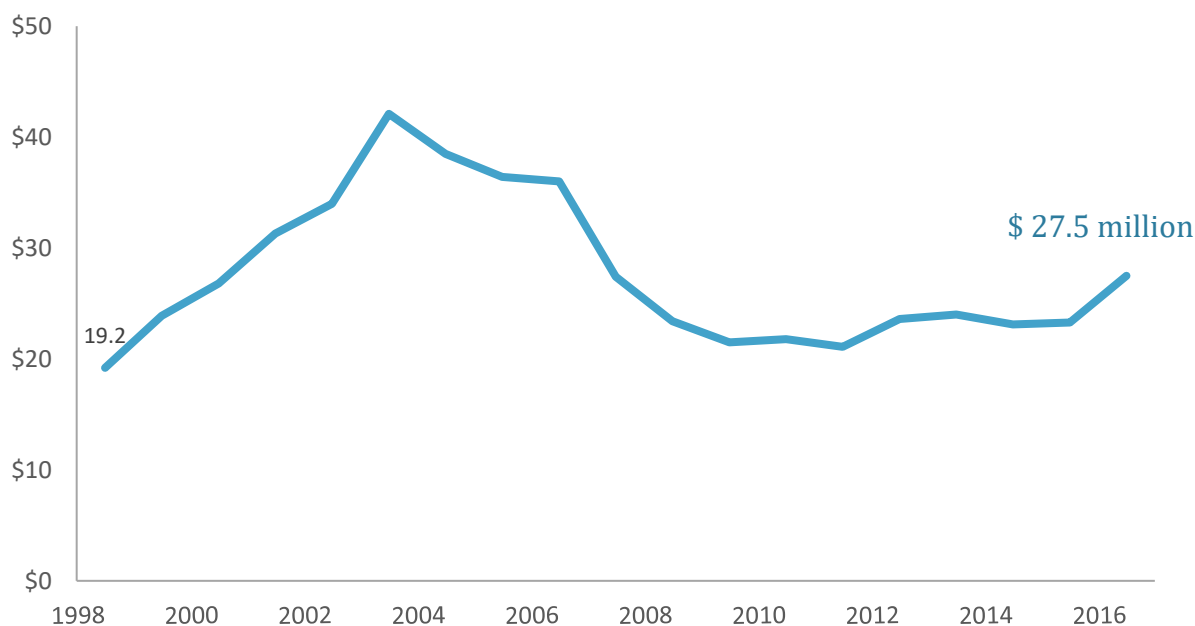
- Overall, 77.7% of middle school students reported a rule that prohibited smoking inside vehicles.
- Males reported significantly higher rates of rules prohibiting smoking in vehicles at 81.0% compared to females at 74.2% ($p<0.0001$).

- Rules about smoking inside vehicles varied significantly by race. American Indian students (58.7%) reported significantly lower rates of rules prohibiting smoking in vehicles compared to White students (81.8%) and other race students (79.2%) ($p < 0.0001$).

Tobacco Product Marketing

Tobacco product marketing aimed at youth continues, and marketing influences contribute to initiation of use among youth. In 2016, the most recent year of available data, it is estimated that the tobacco industry spent \$9.5 billion in marketing products nationwide, with \$27.5 million/ year in marketing expenditures in South Dakota alone, a rising trend since 2008.³ In the state, the tobacco industry is outspending tobacco prevention funding 6.1 to 1, nationally the ratio is even higher at 14.5 to 1. Figure 26 shows the annual tobacco marketing expenditures in SD from 1998-2016.

Figure 26. Trends in Tobacco Marketing Expenditures (in Millions) by Tobacco Industry in South Dakota, 1998-2016



Tobacco Advertisements Targeting Youth

Middle school students were asked if they believed tobacco companies marketed products to young people. Overall, 72.9% of students agreed that tobacco companies target youth. This rate increased from 69.6% of students agreeing in 2017.

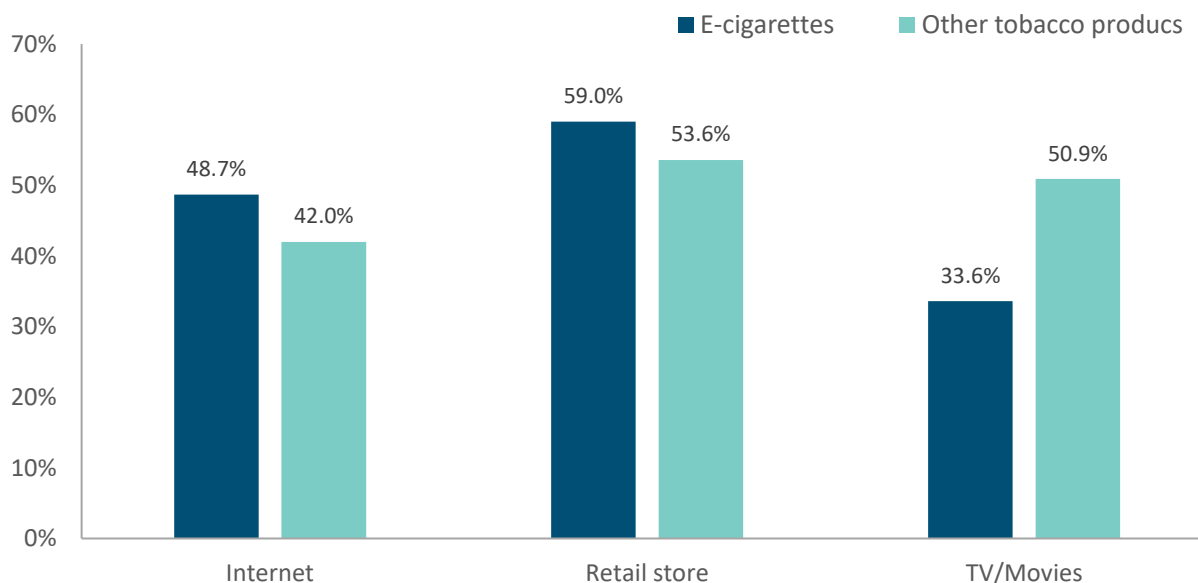
- Agreement varied by gender (females at 75.7% and males at 70.4%, $p = 0.032$).

- Agreement also varied by race (Whites at 76.1% and American Indians at 62.7%, $p=0.001$). Other races of students were at 67.4%.
- Agreement by tobacco use status varied as well, with 62.0% of current tobacco users agreeing versus non-tobacco users at 75.0% ($p<0.001$).

Students were also asked where, if anywhere, they had seen various types of tobacco product marketing. Potential sources of tobacco product marketing were going to a convenience store, supermarket, or gas station; using the Internet; watching television or streaming services or going to the movies.

- The prevalence of exposure was 59.0% (e-cigarettes) and 53.6% (other tobacco products) among students who reported going to retail stores (e.g., convenience stores, supermarket or gas station).
- The internet was the second most common marketing source reported by middle school students for both e-cigarettes and other tobacco marketing (Figure 27).
- The prevalence of seeing promotion of tobacco among actors/actresses on TV was higher for other tobacco than e-cigarettes.

Figure 27. Tobacco Product Advertising Viewed by Middle School Students, by Location and Type of Tobacco - SD YTS 2019



Prevention

Strong media and community-based messaging about the dangers of tobacco use are included as best practice guidelines to effectively reduce tobacco initiation among youth.¹³

Prevention among youth is critical, and a publication from the Surgeon General specifically points to parents, schools, and mass media as key sources of information on the dangers of tobacco use for our youth.

Anti-tobacco strategies to include in a comprehensive, sustained, multi-component program include mass media campaigns, higher tobacco prices, smoke-free laws and policies, evidence-based school programs, and sustained community-wide efforts.¹⁴

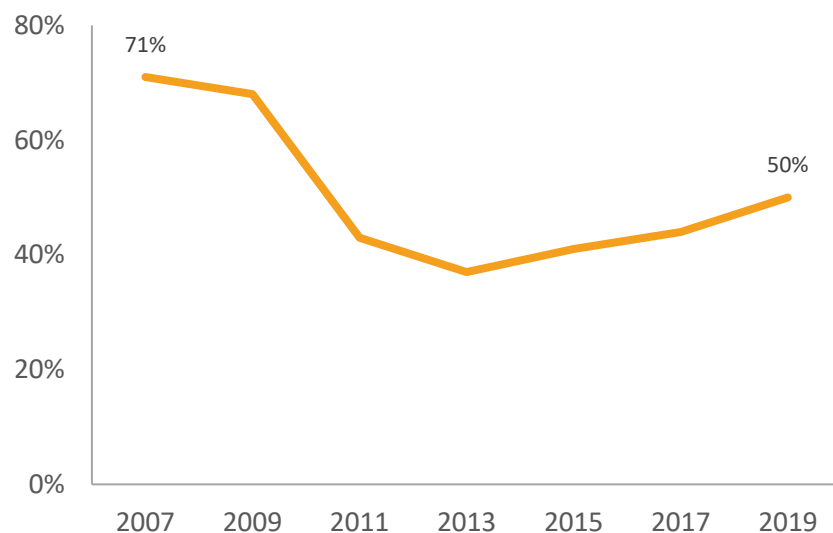
Anti-Tobacco Education and Messaging

SD middle school students were asked if they received anti-tobacco messages from a variety of sources: parents, healthcare provider (doctor, nurse, dentist), school, organized activity, or ReThink It media. Survey findings show that 93.5% reported hearing an anti-tobacco message from at least one source, compared to 87.7% in 2017.

Parental Messaging About Tobacco Use

- Among middle school students, 50.2% reported a parent had talked with them about not using tobacco in the past year, a rising trend compared to 44.0% in 2017.
- After a drastic decrease in parental discussion on the dangers of tobacco use from 2007 to 2013, an upward trend is observed from 2013 to 2019 (Figure 28).
- No statistical differences were found by gender and race.

Figure 28. Trends in Parent(s) Discussing the Dangers of Tobacco Use - SD YTS 2007-2019

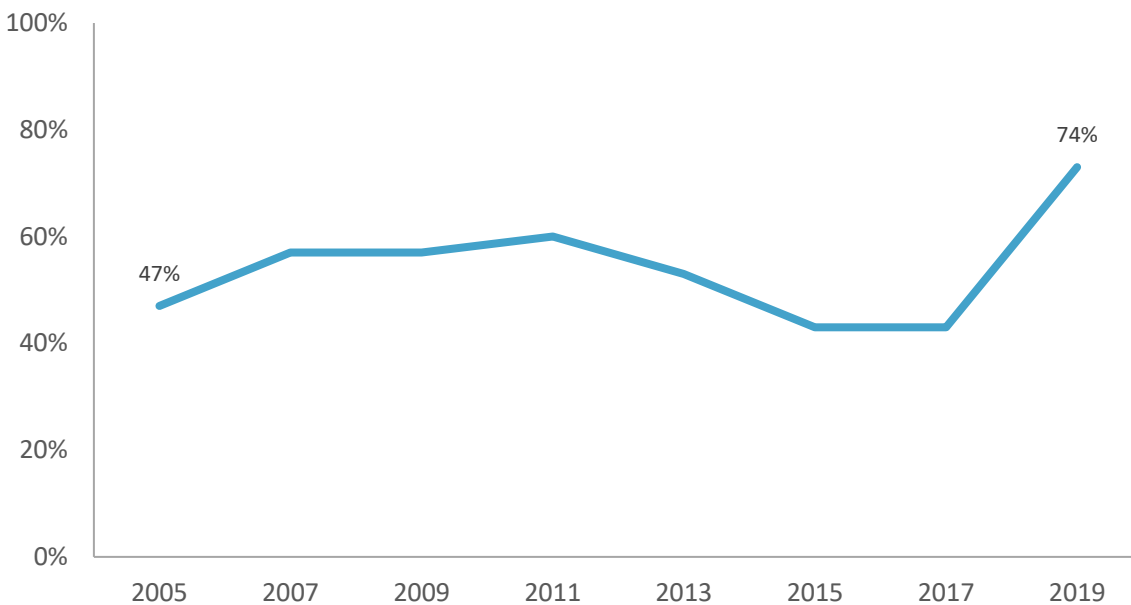


Tobacco Education at School

An increase was noted in the number of middle school students receiving education on not using tobacco while at school.

- In 2019, 73.9% reported anti-tobacco education at school, a substantial increase from 2017 findings (42.7%). Figure 29 displays the trends of anti-tobacco education in schools over the past decade, with 2015 and 2017 showing the lowest rate of school-based anti-tobacco education.
- No significant difference was found in receiving education in school by gender or tobacco use.
- A significant difference was found by race. More White students (77.2%) reported anti-tobacco education at school compared to American Indian students (65.8%) and other race students (68.1%) ($p=0.009$).

Figure 29. Trends in Number of Students Receiving School-based Education about the Dangers of Tobacco Use - SD YTS, 2005-2019



“For every thousand kids kept from smoking by a state program, future health care costs in the state decline by roughly \$21 million.”

[Tobacco Free Kids](#)

Organized Activities Discouraging Tobacco Use

Examples of anti-tobacco organized activities in SD include Teens against Tobacco Use (TATU) groups and groups organized at local Boys and Girls Clubs.

- Involvement in an organized activity to keep young people away from tobacco use was reported by 19.8% of middle school students, a similar rate from the 2017 findings at 19.2%.
- No differences were found by gender, race and current tobacco use.

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.¹⁵ This recommendation is further expanded by the requirements of Stage 1 Meaningful Use, mandating that smoking status be recorded for all patients 13 years or older.¹⁵

Students were asked about discussions with healthcare professionals (including doctors, dentists or nurses) regarding use of tobacco products.

- Most students (86%) reported seeing a healthcare professional in the past year.
- Among those who had seen a healthcare professional, 29.9% said this provider asked about use of tobacco products, a similar percentage observed in 2017 (29.8%).
- This did not vary by gender and tobacco use status.
- Differences were found by race. More American Indian students (41.0%) were asked about use of tobacco products compared to White (28.4%) and other race students (26.6%) (p=0.014).

Students were also asked if a healthcare professional had advised them not to use tobacco.

- Among those who had seen a healthcare professional in the past year, 31.9% reported this person advised against the use of tobacco products.
- This did not vary by gender and by tobacco use status.
- Differences were found by race. More American Indians (42.1%) compared to White (29.6%) and other race (33.6%) were advised about use of tobacco products by a healthcare provider about tobacco use (p=0.004).

Anti-Tobacco Media

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. This media is available at <http://rethinktobacco.com>.

- Among all SD middle school students, 47.0% reported hearing the “Rethink It. Seriously.” slogan compared to 41.6% in 2017.
- No statistical differences in hearing the slogan were found by gender.
- Other race students at 38.3% reported significantly lower rates of hearing the “Rethink It. Seriously.” slogan compared to White students at 49.5% and American Indian students at 46.5% (p=0.024).
- Differences were also found in awareness of “Rethink It. Seriously.” slogan by tobacco use status. Current tobacco users were more likely to report hearing about the slogan (54.8%) than non-tobacco users (46.1%) (p=0.01).



Highlights

The 2019 South Dakota Youth Tobacco Survey (**SD YTS**) is a comprehensive and representative survey of South Dakota middle school students on tobacco use, behavior and environmental factors.

Findings from the SD YTS shows that in 2019, lifetime and current use of tobacco use among SD middle school students remain a public health concern.

Despite a significant decrease in the smokeless tobacco rate among American Indians (A.I.), racial disparities in tobacco use persist. Prevalence of tobacco use (e.g., cigarettes and e-cigarettes) was significantly higher among A.I. students compared to White students. In addition, A.I. students were less likely to receive anti-tobacco education in schools than White students and more likely to be exposed to tobacco smoke in a vehicle or at home.

One in four current smokers reported they had tried to quit using all tobacco products at least 10 times over the past 12 months.

Misperception of harm remained prevalent. Education on the harm effects of tobacco products, including e-cigarettes, to students, educators, parents and health professionals needs to continue.

Conclusions

Based on results of the 2019 SD YTS, lifetime and current use of any tobacco product among SD middle school students remain a public health concern. Approximately one in four students (22.3%) had used, at least one time, a tobacco product in their lifetime. One in 10 middle school students report current use of a tobacco product (9.8%).

E-cigarettes are now the most commonly used tobacco product among SD middle school students, followed by conventional cigarettes. Lifetime and current use of e-cigarettes has dramatically increased over the years among middle school students.

A downward trend in conventional cigarette use among students was not observed in the 2019 SD YTS data, despite a 75% overall reduction in its prevalence from 8.0% in 2011 to 2.0% in 2017. In 2019, the rate was at 3.5% (Table 5). However, a downward trend was observed for use of smokeless tobacco, pipe and hookah.

Table 5. Current Tobacco Use among Middle School Youth, SD YTS, 2017 and 2019

| Tobacco Product | 2017 (%) | 2019 (%) | Change |
|-------------------|----------|----------|------------------|
| E-cigarettes | 2.5 | 6.7 | Increased |
| Cigarettes | 2.0 | 3.5 | Increased |
| Smokeless tobacco | 2.6 | 2.1 | Decreased |
| Cigars | 1.8 | 1.9 | Increased |
| Pipe | 1.7 | 1.1 | Decreased |
| Hookah | 1.3 | 0.8 | Decreased |

Comparison with National Findings

The prevalence of youth tobacco use in South Dakota is in line with national rates (Table 6). The South Dakota Youth Tobacco Survey (SD YTS) uses mostly the same questions, sampling methods, and editing procedures as the National Youth Tobacco Survey (NYTS) which is also sponsored by the U.S. Centers for Disease Control and Prevention (CDC). The state survey and the national surveys are not always conducted during the same year, and the most recent national data available is from 2019.²

- A comparison of the prevalence of tobacco use between the 2019 SD YTS and the 2019 NYTS is shown in Table 6.
- Despite a significant increase in e-cigarette use among SD middle school students, the SD rate (6.7%) was lower than the national rate (10.5%).
- However, the prevalence of conventional cigarette use of middle school students using cigarettes (3.5%) was higher than the national rate (2.3%).
- Current use of hookah (0.8%) was also lower than the national rate (1.6%).

Table 6. Prevalence of Current Tobacco Use Among Youth (grades 6-8) in the Past 30 Days, by Product in SD (SD YTS 2019) and U.S. (NYTS, United States, 2019)

| | South Dakota | | United States | |
|------------------------------------------------------|----------------|----------|----------------|-----------|
| | Prevalence (%) | 95% CI | Prevalence (%) | 95% CI |
| E-cigarettes | 6.7 | 4.9-9.2 | 10.5 | 9.4-11.8 |
| Cigarettes | 3.5 | 2.7-4.5 | 2.3 | 1.8-2.9 |
| Cigars | 1.9 | 1.5-2.6 | 2.3 | 1.9-2.9 |
| Smokeless tobacco[†] | 2.1 | 1.2-3.5 | 1.8 | 1.4-2.2 |
| Hookah | 0.8 | 0.6-1.2 | 1.6 | 1.2-2.1 |
| Pipe tobacco | 1.1 | 0.7-1.6 | - | - |
| Any tobacco product | 9.8 | 7.5-12.6 | 12.5 | 11.2-13.9 |
| ≥ 2 tobacco products^{**} | 3.8 | 2.8-5.1 | 4.0 | 3.3-4.7 |
| Any combustible tobacco product^{***} | 4.5 | 3.5-5.7 | 4.8 | 4.0-5.7 |

Abbreviation: CI= Confidence Interval

[†]Smokeless tobacco was defined as use of chewing tobacco, snuff, dip, snus, and/or dissolvable tobacco products.

"In the past 30 days, which of the following products did you use on at least one day: snus, dissolvable tobacco products?" Responses from these questions were combined to derive overall smokeless tobacco use. Past 30-day use of pipe tobacco and bidis were determined by asking, "In the past 30 days, which of the following products have you used on at least one day: pipe filled with tobacco (not water pipe), bidis (small brown cigarettes wrapped in a leaf)?"

*Any tobacco product is defined as use of any tobacco product (electronic cigarettes, cigarettes, cigars, smokeless tobacco, snuff, dip, snus, and/or dissolvable tobacco products, roll your own cigarette, hookahs, pipe tobacco, and/or bidis) on at least one day in the past 30 days.

**≥2 tobacco products is defined as use of two or more tobacco products (electronic cigarettes, cigarettes, cigars, smokeless tobacco, hookahs, pipe tobacco, and/or bidis) on at least one day in the past 30 days.

***Any Combustible tobacco product is defined as use of cigarettes, cigars, hookahs, pipe tobacco, and/or bidis on at least one day in the past 30 days.

2019 Youth Tobacco Survey Recommendations

Based on results of the 2019 SD YTS, the following recommendations are offered towards reducing the health risks associated with tobacco use and secondhand smoke exposure among the youth of South Dakota:

1) *Continue monitoring all forms of tobacco use among youth, including e-cigarettes and poly-tobacco users.*

The prevalence of tobacco use continues to be a growing trend among youth nationwide and in SD. In 2019, e-cigarettes were the most used tobacco product among SD middle school students. The prevalence of *ever* e-cigarette use increased from 1.7% in 2011 to 16.0% in 2019. Current use of e-cigarettes by middle school students has also more than doubled since 2017 and is now at a rate of 6.5%. Continued efforts to monitor and reduce e-cigarette use among youth are needed. Research studies have shown that e-cigarettes are not harmless. The majority contain nicotine products which negatively impacts brain development and contributes to addiction.⁶

Moreover, among students using tobacco products in the past 30 days, 38.7% had used multiple types of tobacco, a higher rate than the national (32%).² Research suggests that youth who use multiple tobacco products are at higher risk for developing nicotine dependence and might be more likely to continue using tobacco into adulthood.¹

2) *Offer prevention and cessation education on alternative tobacco products, including e-cigarettes among students, parents and health professionals.*

The majority of middle school e-cigarette users have access to e-cigarettes from peers and family members. Educating youth and family members on the harmful effects of nicotine and e-cigarette toxic components may assist in the reduction of access to an e-cigarette among youth. In addition, among tobacco users, more than two in 10 students disagreed that all tobacco products are dangerous and 14% reported that nicotine is not harmful. Regarding e-cigarettes, nearly three in 10 reported not having enough information about the harmful effects of e-cigarettes. Thus, misperceptions about harm from tobacco product use needs to be addressed among youth.

3) *Encourage implementation of the Tobacco Control Program's K-12 School Tobacco-Free Model Policy.*

Display, promote, and encourage implementation of the Tobacco Control Program's [K-12 School Tobacco-Free Model Policy](#) among administrators and school boards. Approximately, 13.5% report using or observing someone using an e-cigarette on school property in the past 30 days, a two-fold increase from the 2017 findings at 6.3%.⁵ Tobacco use needs to be eliminated on all school property, at all school events, at all times.

4) *Eliminate tobacco sales to underage youth.*

The legal age in SD to purchase tobacco products is 21 years. Among middle school students (ages 11-14) who attempted to purchase tobacco products on their own, the majority reported they were

not refused to purchase due to their age. The primary location of purchase was *other place that was not listed*, followed by gas stations. More efforts are needed to enforce consequences for owners or employees who sell tobacco products to minors.

5) *Decrease tobacco use and secondhand smoke exposure among American Indian youth.*

Rates of current tobacco use continue to be higher among American Indian middle school students. American Indian students also reported higher secondhand smoke exposure at home and in vehicles. Efforts to reduce initiation and access to cessation service need to continue for this population. Encouraging findings were noted for this population, as American Indian students were more likely to report to receive advising from a healthcare professional against tobacco use, but not by parents. In addition, American Indians were more likely to report the use of tobacco products at home (28.9% versus 9.3%) and in vehicles (41.3% versus 18.2%) when compared to White students.

6) *Target healthcare providers for education on assessment of tobacco use for youth patients, including assessment of tobacco use in the household.*

Clinical practice guidelines recommend that all healthcare professionals ask pediatric and adolescent patients about the use of, and exposure to, tobacco products. E-cigarettes are the most common product of choice among this age group⁶ and should be included in the tobacco use assessment.¹⁶ The dangers of e-cigarette use, and secondhand smoke exposure should also be discussed with the family during patient visits. Of middle school students, who had seen a healthcare professional in the last year, only 29.9% were asked about use of tobacco products.

7) *Target parents for cessation.*

Among middle school students using tobacco, 40.1% had a household member that used tobacco. Parental cessation should continue to be a focus in order to improve health outcomes for families.

8) *Continue to support tobacco education in schools.*

Among SD middle school students, 73.9% report receiving anti-tobacco education in school, a substantial increase from the 2017 findings at 43.0%. However, a lower percentage of American Indian students (65.8%) reported receiving anti-tobacco education when compared to White students (77.2%). Tobacco use increases significantly between sixth and seventh grades. Anti-tobacco messaging to students grade six and younger may prove helpful.

9) *Promote the SD QuitLine in schools.*

An interest in quitting tobacco use at least one day was reported by 79.9% of current middle school tobacco users. Unfortunately, the majority of students who made a quit attempt in the past year did so without assistance. Promotion of the SD QuitLine among school counselors, nurses, and staff is needed in order to help youth quit before tobacco causes long-term health consequences.

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APPENDIX A: Methods

I. Questionnaire

The 2019 SD YTS survey included 66 questions about tobacco use prevalence, access to tobacco, knowledge and attitudes about tobacco, cessation, exposure to secondhand tobacco smoke, future intent to use tobacco products and exposure to pro- and anti-tobacco media messages. It also included additional questions related to use of e-cigarettes. The findings of the 2019 SD YTS are representative of all 6th through 8th grade public, non-public, and tribal school students in SD. The 2019 SD YTS Report summarizes current tobacco use patterns among SD youth using results from the most recent SD YTS. These results are compared with data collected from previous SD YTS administrations as well as national trends.

II. Sampling Design

(This section was provided by the Centers for Disease Control Office of Smoking and Health.)

All regular public schools in SD containing grades six, seven and eight were included in the sampling frame. A two-stage cluster sample design was used to produce a representative sample of students in grades 6-8.

School Level - The first-stage sampling frame consisted of all public schools containing any of grades 6-8. Schools were selected with probability proportional to school enrollment size.

Class Level - The second sampling stage consisted of systematic equal probability sampling (with a random start) of classes from each school that participated in the survey. All 2nd period classes in the selected schools were included in the sampling frame. All students in the selected classes were eligible to participate in the survey.

School and Student Response Rates

A total of 69 middle schools were randomly selected to participate in the South Dakota Youth Tobacco Survey. Among these 69 schools, 58 schools agreed to administer the survey, resulting in 84.1% school response rate. The survey was then administered to 2,862 middle school students (grades 6-8) in these 58 participating schools, of which 2,346 students completed the questionnaires during the fall of 2019, resulting in a student response rate of 82.0%. The overall response rate for the SD YTS was 69.0%.

Schools: 84.1% 58 of the 69 sampled schools participated.

Students: 82.0% 2,346 of the 2,862 sampled students completed usable questionnaires.

Overall response rate: $84.1\% * 82.0\% = 69.0\%$

III. Data Collection

Data collection took place from September to December 2019 and was supported by school superintendents, principals and teachers.

Survey procedures were designed to protect student's privacy by allowing for anonymous and voluntary participation. The questionnaire was self-administered in the classroom. Students recorded their answers directly on the questionnaire that could be scanned by a computer.

IV. Data Analysis

A weighting factor has been associated with each student's questionnaire to reflect the likelihood of sampling each student and to reduce bias by compensating for differing patterns of nonresponse. The weight used for estimation is given by:

$$W = W1 * W2 * f1 * f2 * f3 * f4$$

W1 = the inverse of the probability of selecting the school.

W2 = the inverse of the probability of selecting the classroom within the school.

f1 = a school-level nonresponse adjustment factor calculated by school size category (small, medium, large).

f2 = a class adjustment factor calculated by school.

f3 = a student-level nonresponse adjustment factor calculated by class.

f4 = a post stratification adjustment factor calculated by gender, race and grade.

Weighed data was carried to calculate prevalence estimates and standard errors (SE) of the estimates (95% confidence intervals [CI] were calculated from the SEs) using SAS 9.4 to account and SPSS 25.0 for the complex survey design.

Statistical tests to determine differences in prevalence estimates included: 95% confidence intervals to detect large differences, and chi-square analysis p-values <0.05 to detect smaller differences. In addition, point estimates with an unweighted denominator less than 50 or a relative standard error >30% were considered unreliable and not presented.

V. Additional Notes on Methodology Outside of CDC OSH Analysis

Race/Ethnicity

The classification of students by race and ethnicity was conducted using methodology from the NYTS. First, ethnicity was classified by response to the Hispanic or Latino ethnicity question. All respondent answering "yes" to Hispanic/Latino were classified as such regardless of selection on the race question that followed. For the remaining students, if only one of the races available were selected, students were classified into that race. If the student selected two or more races, then the following hierarchy was followed:

"If a respondent selected multiple races and they selected "White" as one of those races, then they are categorized as "White". If a respondent selected multiple races but did NOT select

“White” and they selected “Black or African American” as one of those races, then they are categorized as “Black or African American”. If a respondent selected multiple races but did NOT select “White” or “Black or African American” and they selected “Asian” as one of those races, then they are categorized as “Asian”. If a respondents selected multiple races but did NOT select “White”, “Black or African American”, or “Asian”, and they selected “American Indian or Alaska Native” as one of those races, then they are categorized as “American Indian or Alaska Native”. If a respondent selected “Native Hawaiian or Other Pacific Islander” and any other race category, the respondent would be categorized as that other race.”¹⁶

To reflect the population demographics of SD, a three level race/ethnicity categorization (“White”, “American Indian”, and “all other races”) was created by merging Latino, Black or African American, Asian, and Native Hawaiian or Other Pacific Islander into a single category. Throughout the report, race/ethnicity that does not fall within the “White” or “American Indian” categorization will be referred to as “other races”.

Any Tobacco Product

At various points throughout the report, multiple tobacco product use was combined together to form a single category “any tobacco”. This category was created using the 2019 NYTS methodology.

| Definitions of Youth Tobacco Use | |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ever tobacco use | Ever trying a tobacco product, even a puff or a pinch, on one occasion. |
| Current tobacco use | Trying a tobacco product at least one day during the past 30 days before the survey. |
| Any tobacco | Defined as e-cigarettes, cigarettes, cigars, smokeless tobacco (chewing tobacco, snuff, dip, snus, or dissolvable tobacco products), hookah, pipe tobacco, or bidis (small brown cigarettes wrapped in a leaf) |

Rural/Urban Status

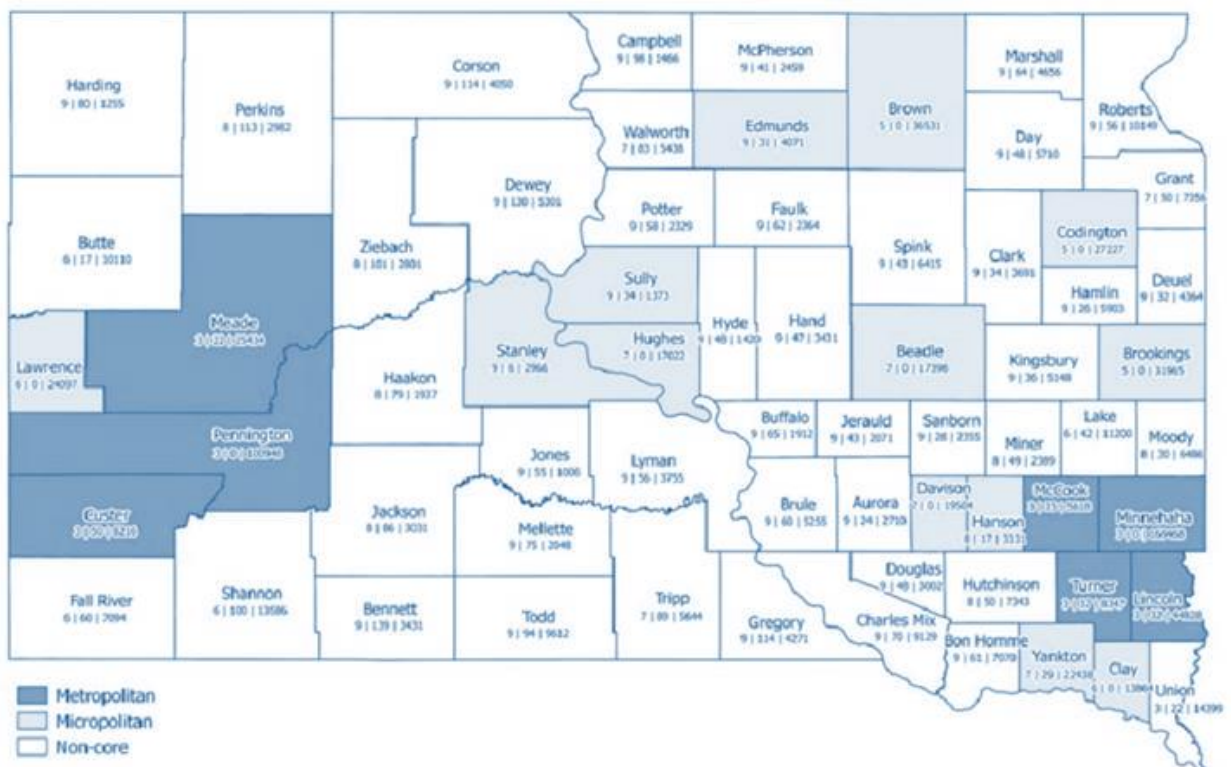
The estimates reported by rural and urban status followed county-level classification scheme: Metro, micro and noncore.¹⁷

Metropolitan areas contain a core urban area population of 50,000 or more.

Micropolitan areas, with urban cluster populations of 10,000 to 50,000, and

Noncore counties- all counties that lack an urban core

Figure 1. Map showing the County-level Classification Scheme: Metro, Micro and Noncore in South Dakota¹⁸



VI. Limitations

This report has limitations. First, this report is based on self-reported information, hence, it may have recall and response bias. However, results were consistent with the national NYTS. Second, it does not represent all students in South Dakota, only public and private schools. Thus, alternative school or kids that are homeschooled may be underrepresented. Nonetheless, approximately 90% of SD youth age nine-16 years old were enrolled in a traditional school in 2018.

In addition, throughout this report, historical data is provided from survey years 2005, 2007, 2009, 2011, 2013, 2015 and 2017. Except where noted, all of this data is drawn from printed reports.^{5,19-20} The actual data was not reanalyzed, so the authors rely on the accuracy of previous reports for this information.

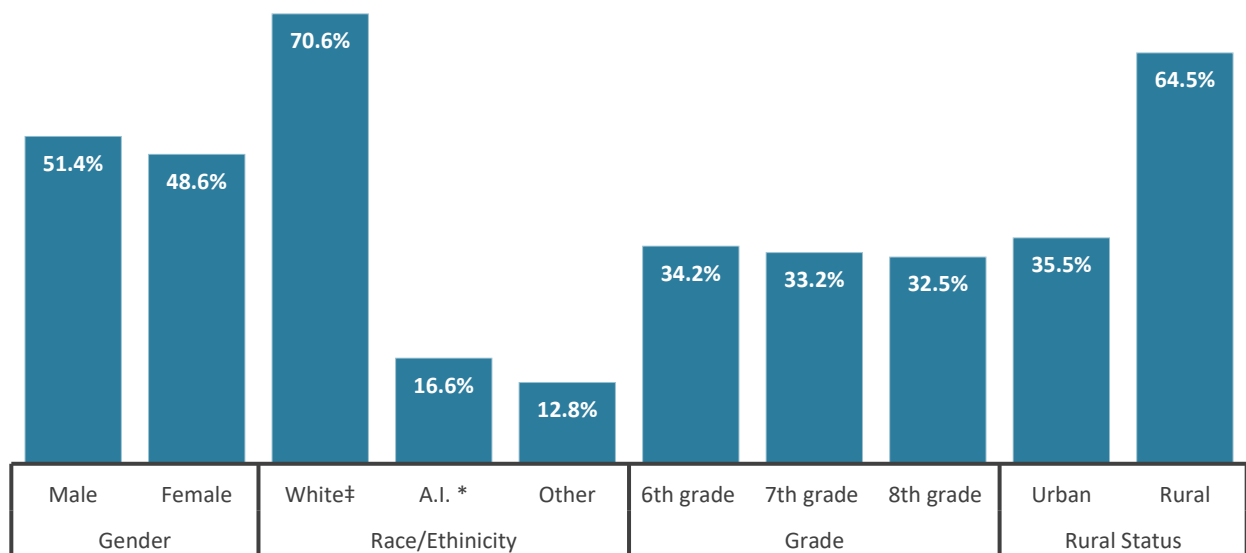
The small sample size places limitations on the data. All interpretations involving American Indian and other racial group should be reviewed with caution. Prevalence estimates among minorities are high due to the small sample size. This will affect statistical significance when comparing prevalence estimates by racial category; for instance, a large difference may exist between estimates, but the small sample size among other races limits the ability to find a significant difference. While limitations exist, it is important for the reader to identify the large burden among other races, even if a statistical test determines no significant difference between racial groups. Thus, estimates for minorities should be interpreted with caution.

A full list of the 2019 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.

VII. Participants' Characteristics

Demographical information collected in the 2019 SD YTS included gender, age, race/ethnicity, and grade level. The SD YTS is conducted only with middle school students; therefore, 99.2% of the sample was between the ages of 11 and 14. More demographic information is presented in Figure 1. Participation in the survey by grade was similar with approximately one-third of the students from each of the three grades (six, seven and eight).

Figure 2. Middle School Participation by Gender, Race/Ethnicity and Grade level, SD YTS, 2019.



‡Non-Hispanic White
*American Indian

APPENDIX B: Status of SD Tobacco Control Program Strategic Plan Goals

Status: **Improved** The current rate of change is 5% or greater over baseline, moving in the right direction.
Unchanged The current rate remained largely unchanged (less than 5% change over baseline)

Reduce Current Use of Tobacco among Young People

OBJECTIVE:

- Reduce the percentage of youth grades 6-8 that currently smoke from 3.5% to 3.0% by 2020.
- Reduce the percentage of youth grades 6-8 that currently use spit tobacco from 3.3% to 2.0% by 2020.

STATUS:

- **UNCHANGED**— In 2019, 3.5% of middle school youth reported current use of cigarettes, compared to 3.5% in 2013.
- **IMPROVED**— In 2019, 2.1% of middle school youth reported current use of spit tobacco, compared to 3.3% in 2013.

Decrease Initiation of Tobacco Use among Young People

OBJECTIVE:

- Decrease the percentage of youth grades 6-8 who report ever smoking cigarettes from 12.9% to 11.0% by 2020.
- Decrease the percentage of American Indian youth grades 6-8 who report ever smoking cigarettes from 33.4% to 32.0% by 2020.

STATUS:

- **IMPROVED**— In 2019, 11.3% of middle school youth reported ever smoking a cigarette, compared to 12.9% in 2013.
- **IMPROVED**— In 2019, 23.6% of American Indian middle school youth reported ever smoking a cigarette, compared to 33.4% in 2013.

Eliminate Non-Smokers' Exposure to Secondhand Smoke

OBJECTIVE:

- Reduce the percentage of youth grades 6-8 that were in the same room or car as someone smoking from 31.1% to 27.0% by 2020.

STATUS:

- **IMPROVED**— In 2019, 27.4% of middle school youth reported exposure to secondhand smoke at home or in a vehicle during the past week, compared to 31.1% in 2013.

Electronic Cigarette Use

STATUS:

The use of electronic cigarettes among middle school youth continues to increase at an alarming rate. In 2019, 16.0% of South Dakota middle school students reported trying an electronic cigarette at least once in their lifetime, an increase from 2.3% in 2013. Current use of an electronic cigarette, or use in the last 30 days, was reported by 6.7% of SD youth in 2019, compared to 1.1% in 2013.