Results of the Statewide

2017-18

California Student Tobacco Survey

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CALIFORNIA STUDENT TOBACCO SURVEY

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EXECUTIVE SUMMARY

This report summarizes the main results from the 2017-18 California Student Tobacco Survey (CSTS), which was administered to 8th, 10th, and 12th grade students from September 2017 to June 2018. Schools were randomly selected from California middle and high schools. In 2017-18,333 schools and 151,404 students participated in the survey. The survey was conducted by the University of California, San Diego.

This survey was the first statewide survey of school children in California since the passage of Proposition 56 in 2016, which raised the tax for all tobacco products. The tax took effect on April 1, 2017 for cigarettes and July 1, 2017 for all other tobacco products, including e-cigarettes.[1]

The survey was designed to assess use of, knowledge of, and attitudes towards tobacco products, including cigarettes, e-cigarettes, little cigars or cigarillos (LCC), big cigars, hookah, and smokeless tobacco. The survey also assessed social and environmental exposure to various tobacco products. Marijuana was included in the survey since co-use of marijuana and tobacco products is common.

This report focuses on high school students (i.e., 10th and 12th graders; 130,387 students). The results for 8th graders are presented in Appendix A.

Appendix B provides a brief overview of the survey methodology. Additional details about the sampling strategy, survey administration, and statistical analysis can be found in the *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2017-18, by Zhu et al.*[2]

The following key findings are presented in this report:

Tobacco Use Behavior

- In 2017-18, only 2.0% of high school students reported currently using cigarettes.
- Use of other combustible tobacco products among high school students was also very low. In 2017-18, the prevalence was 2.3%, 1.7%, and 0.7%, for little cigars or cigarillos (LCC), hookah, and big cigars, respectively.
- E-cigarettes were the most commonly used tobacco product among California high school students (10.9%). This was true across gender, race/ethnicity, and grade.
- Overall tobacco use remains relatively high (12.7%), driven mainly by the high rate of e-cigarette use.
- Use of multiple tobacco products was common among high school students. Approximately one quarter of high school tobacco product users reported using two or more products.
- The majority of current tobacco users reported using a flavored tobacco product (86.4%). Flavored tobacco product use was high across all genders, race/ethnicities, and

grades. *Mint* was the most popular flavor among cigarette (100%) and smokeless tobacco (62.7%) users, while *fruit or sweet* was the most popular flavor among all other tobacco product users.

Trends in Tobacco Use Behavior

- Cigarette smoking among California high school students reached a historic low and decreased from 4.3% in 2015-16 to 2.0% in 2017-18. Use of other combustible tobacco products was also significantly lower in 2017-18.
- E-cigarette use among California high school students increased from 8.6% in 2015-16 to 10.9% in 2017-18.
- Overall tobacco use did not significantly change between 2015-16 and 2017-18 (13.6% and 12.7%, respectively).

Cognitive and Environmental Risk Factors for Tobacco Use

- Among high school students who had never used a tobacco product, two in five were susceptible to future use if offered by a best friend (40.1%). Susceptibility was even higher among those who reported greater loneliness, depressive symptoms, and who had friends that used tobacco products.
- Approximately one quarter of high school students reported being offered e-cigarettes, cigarettes, LCC, or hookah in the last 30 days. One in eight (12.4%) students who never used these products reported being offered a tobacco product in the last 30 days.
- Over half of e-cigarette users and cigarette smokers reported obtaining e-cigarettes (57.6%) and cigarettes (55.4%) through social sources.
- Two in five (42.4%) e-cigarette users reported usually paying for their own e-cigarettes. Out of those who pay for e-cigarettes, 30.6% reported buying them from the store and 8.8% reported buying them on the Internet. Of those who reported buying from the store, the majority (54.5%) bought from vape shops.
- Two in five (44.6%) cigarette smokers reported usually paying for their own cigarettes. Out of those who pay for cigarettes, 37.3% reported buying them from the store and 2.1% reported buying them on the Internet. Of those who reported buying from the store, 40.8% bought from gas stations or convenience stores.

Exposure to Tobacco Use

- The vast majority of high school students reported having a complete home ban on vaping (79.1%) and smoking (85.8%). However, the rate of exposure to secondhand vapor and smoke was still high: almost one third of high school students were exposed to secondhand vapor (30.3%) or smoke (30.6%) in a room in the last 30 days.
- Many students reported seeing ads perceived to be pro- e-cigarette (13.4%), pro-cigarette (11.1%), and pro-LCC (5.4%).

- Among those who had seen pro-tobacco ads in the last 30 days, many had seen those ads on the Internet or social media (40.2%, 26.8%, and 27.2% for e-cigarettes, cigarettes, and LCC respectively).

Marijuana Use and Marijuana-Tobacco Co-use

- Marijuana was the most popular product, used by more high school students than all tobacco products combined (14.7% vs. 12.7%).
- Among marijuana users (14.7%), a greater proportion of them reported also using tobacco (53.7%) than using marijuana alone (46.3%).

LIST OF TERMS

Tobacco Products

E-cigarettes (vapes, e-hookah, hookah pen): Also called e-cigs, vape pens, tanks, or mods. Some come with liquid inside and others you fill yourself. Popular names are Blu, NJOY, MarkTen, Juul, Suorin, Imperial, and Fantasia.*

Cigarettes: Sold in packs and cartons. Popular brands include Marlboro, Newport, Pall Mall, Camel, and Winston.

Little cigars of cigarillos (LCC): Wrapped in tobacco leaf or brown paper containing tobacco. May be flavored. Popular brands are Swisher Sweets, White Owl, and Black & Mild.

Big cigars: Tobacco wrapped in a tobacco leaf. Popular brands are Romeo Y Julieta, Cohiba, Davidoff, and Ashton.

Hookah: Water pipe used to smoke flavored tobacco (shisha). Popular brands are Starbuzz, Al-Fakher, Samba and Social Smoke.

Smokeless tobacco (chew, dip, snuff or snus): Loose leaf or ground tobacco leaves. It comes in a large pouch (bag) or in tins. Popular brands are Red Man, Copenhagen, Grizzly, Skoal, Swedish Match, and Klondike. Snus comes in a small pouch (like a tea bag). Popular brands are General, Marlboro, and Camel.

*Note: Suorin was added to the e-cigarette description in February 2018. It was not originally listed since the 2017-18 CSTS was developed before Suorin use became widespread.

Definitions of Product Use

Ever use: Use within a lifetime

Current use: Use within the last 30 days

Poly use: Use of two or more tobacco products in the last 30 days

Flavored tobacco product use: Use of a flavored tobacco product within the last 30 days

Co-use: Use of marijuana and at least one tobacco product (e.g., e-cigarettes, cigarettes, LCC, hookah) within the last 30 days

Never user: A student that reports never using the tobacco product(s)

Former user: A student that reports ever using the tobacco product(s), but not within the last 30 days (this includes those who have quit using or are non-current users)

Current user: A student that reports using the tobacco product(s) within the last 30 days

Other Terms*

LGBTQ Community Affiliation: Responded *yes* or *no* to the question: "Do you identify yourself as LGBTQ?"

Loneliness: Indicated agreement (*strongly agree* or *agree*) or disagreement (*strongly disagree* or *disagree*) with the statement: "A lot of times I feel lonely."

Depressive symptoms: Responded *yes* or *no* to the question: "In the last 12 months did you ever feel sad and hopeless EVERY DAY for 2 weeks or more?"

Susceptible to future tobacco product use: Responded *definitely yes*, *probably yes*, or *probably not* to the question: "If one of your BEST FRIENDS offered you [tobacco products], would you use it?"

Not susceptible to future tobacco product use: Responded *definitely not* to the question: "If one of your BEST FRIENDS offered you [tobacco product], would you use it?"

Complete home ban on vaping: Indicated that *vaping e-cigarettes is not allowed inside my home* when asked about the rules about vaping e-cigarettes inside their home.

Complete home ban on smoking: Indicated that *smoking is not allowed inside my home* when asked about the rules about smoking cigarettes or other tobacco products inside their home.

Exposure to secondhand vapor in a room: Indicated being in a room *when someone was using e-cigarettes (including e-hookah and hookah pens)* in the last 30 days.

Exposure to secondhand vapor in a car: Indicated being in a car *when someone was using e-cigarettes (including e-hookah and hookah pens)* in the last 30 days.

Exposure to secondhand smoke in a room: Indicated being in a room *when someone was smoking a cigarette, little cigar, or cigarillo* in the last 30 days.

Exposure to secondhand smoke in a room: Indicated being in a car *when someone was smoking a cigarette, little cigar, or cigarillo* in the last 30 days.

Offers of tobacco products: Responded *yes* to the question: "In the last 30 days, has ANYONE offered you" tobacco products (e.g., e-cigarettes, cigarettes, LCC, hookah).

Exposure to tobacco ads: Indicated having seen ads that either promoted or discouraged the use of a tobacco product (e.g., e-cigarettes, cigarettes, LCC) in the last 30 days.

*Note: *I prefer not to answer* was included as a response option for all survey questions.

CHAPTER 1 – Tobacco Use Behavior

This chapter presents high school tobacco use behavior data from the 2017-18 California Student Tobacco Survey (CSTS), including both ever use and current use of various tobacco products. *Ever use* is defined as use within a lifetime and *current use* is defined as use within the last 30 days. This chapter also provides overall prevalence rates of tobacco products, the use of products across various demographics (e.g., race/ethnicity, gender), and the frequency of current use of products. It also presents the use of multiple tobacco products (i.e., *poly use*). For tobacco use among middle school students, please see Appendix A.

Tobacco Product Use among High School Students

Table 1 presents ever and current use of tobacco products among high school students. The first row of Table 1 indicates the use of any of the listed products. Current use of any tobacco product was 12.7%, with most usage being attributable to e-cigarette use (10.9%). Rates of current use for all other tobacco products were less than 3%. If all combustible tobacco products (cigarettes, little cigars or cigarillos [LCC], big cigars, and hookah) are combined into a single category, the rate is 4.7%.

Table 1. Prevalence of ever and current use of tobacco products among high school students

	Ever use N=129494 % (95% CI)	**Current use N=129437 % (95% CI)**
Any of the below	34.5 (33.4-35.6)	12.7 (11.9-13.4)
E-cigarettes	30.0 (28.9-31.1)	10.9 (10.1-11.7)
Cigarettes	9.7 (9.1-10.3)	2.0 (1.8-2.2)
LCC	7.4 (7.0-7.9)	2.3 (2.1-2.4)
Big cigars	3.6 (3.2-3.9)	0.7 (0.6-0.8)
Hookah	9.2 (8.6-9.7)	1.7 (1.6-1.9)
Smokeless	2.9 (2.5-3.2)	0.8 (0.6-0.9)

Abbreviations: LCC = little cigars or cigarillos.

Compared to national estimates, current use of any tobacco product is much lower among high school students in California. The National Youth Tobacco Survey reported that 19.6% of U.S. high school students currently used at least one tobacco product in 2017.[3] The rate for the use of tobacco products increased further to 27.1% in 2018.[4] Similar to the California results, e-cigarettes were the most commonly used tobacco product nationally.

Demographic Categories

2017-18 was the first time the CSTS provided students with the gender identity response option, *I identify my gender in another way*, in addition to *Male* and *Female*. It was also the first time students could select *I prefer not to answer* to questions throughout the survey. Approximately 2.9% of all students indicated that they identified their gender in a way other than *Male* or *Female* and 7.1% declined to answer the gender identity question. Rates of declining to answer this type of question are comparable to those in other surveys of California's middle and high school population (i.e., the California Student Survey and the California Healthy Kids Survey).[5]

For race/ethnicity, participants were asked whether they were of Spanish or Hispanic (Latino) origin (i.e., ethnicity). Those who indicated *Yes* were classified as *Hispanic*. Students who selected *No* were classified as *Non-Hispanic* and were asked to select all races they identify with. If respondents selected more than one race, they were classified as *Multiple* race. There was also an option for *Other* race. Approximately 14.5% of students declined to answer either the race or ethnicity questions.

Throughout the survey, students' endorsement of *I prefer not to answer* ranged from 0.0-20.9%. Results from this group are presented when endorsement of this response option was considered meaningful and most likely non-random (e.g., gender/ethnicity) and/or where the group was deemed sizeable. When the proportion for the decline to answer group was small, they were treated as missing and excluded from analysis in order to keep the tables readable. For more information about sample demographics and survey methodology, please see Appendix B.

Overall Prevalence of Tobacco Use by Demographics

Table 2 presents high school student tobacco use prevalence, both ever and current use, by participant demographics. Males had slightly higher rates of tobacco use than female students. Notably, students who identified their gender another way or declined to answer had significantly higher rates of ever and current tobacco use.

There were racial/ethnic differences in tobacco use. White students and those who declined to answer had high rates of current use (18.2% and 19.4%, respectively). Black, Hispanic, and Asian students all had lower rates of current use, with Asian students being the lowest (7.0%). American Indian or Alaska Native (AI/AN) and Native Hawaiian or Other Pacific Islander (NHOPI) students also had high rates of current use (19.7% and 17.1%, respectively): they were higher than Hispanic, Black, and Asian students, but statistically no different from White students. As expected, use of tobacco was higher among 12th graders than 10th graders.

Table 2. Prevalence of tobacco use by gender, race/ethnicity, and grade among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	129494	34.5 (33.4-35.6)	12.7 (11.9-13.4)
Gender			
Male	55471	33.8 (32.4-35.1)	12.2 (11.4-13.0)
Female	60293	32.4 (31.3-33.6)	11.1 (10.3-11.9)
Identified in Another Way	3479	46.6 (44.2-48.9)	21.8 (19.7-23.8)
Declined to Answer	9022	45.9 (44.1-47.8)	20.7 (19.1-22.3)
Race/Ethnicity			
White	24326	36.8 (35.3-38.3)	18.2 (17.0-19.4)
Black	3246	31.9 (29.6-34.3)	9.9 (8.3-11.5)
Hispanic	61609	35.1 (33.7-36.4)	10.3 (9.6-11.0)
Asian	14218	19.0 (17.5-20.4)	7.0 (6.3-7.8)
AI/AN	383	42.5 (35.2-49.8)	19.7 (14.3-25.1)
NHOPI	805	43.8 (39.5-48.1)	17.1 (14.2-19.9)
Other	2033	37.1 (33.9-40.3)	14.9 (12.9-16.9)
Multiple	10930	35.8 (33.9-37.7)	14.4 (13.1-15.6)
Declined to Answer	9415	43.1 (41.4-44.8)	19.4 (17.8-20.9)
Grade			
Grade 10	70267	29.3 (27.9-30.6)	10.0 (9.3-10.6)
Grade 12	59227	40.7 (39.4-41.9)	15.9 (14.8-16.9)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Use of Specific Tobacco Products by Demographics

The following section (Tables 3-5) examines use of specific tobacco products across various participant demographics.

Table 3 indicates that among high school students, males had slightly higher current use rates than females. E-cigarettes and hookah were the exceptions to this, with there being no difference in the prevalence of use of these products between males and females. The largest differences were seen between male and female students and those who identified their gender another way or declined to answer. Across all products, those who identified their gender another way or declined to answer had significantly higher rates of current use than males or females.

Table 3. Prevalence of current tobacco product use by gender among high school students

	Male N=55459 % (95% CI)	Female N=60287 % (95% CI)	Identified in Another Way N=3471 % (95% CI)	Declined to Answer N=8993 % (95% CI)
Any of the below	12.2 (11.4-13.0)	11.1 (10.3-11.9)	21.8 (19.7-23.8)	20.7 (19.1-22.3)
E-cigarettes	10.2 (9.4-11.1)	9.9 (9.0-10.7)	18.4 (16.4-20.3)	18.5 (16.9-20.2)
Cigarettes	2.0 (1.8-2.3)	1.3 (1.1-1.5)	7.6 (6.5-8.8)	4.2 (3.6-4.8)
LCC	2.6 (2.4-2.8)	1.2 (1.1-1.4)	6.9 (5.9-8.0)	4.8 (4.2-5.4)
Big cigars	0.8 (0.7-0.9)	0.2 (0.1-0.2)	4.8 (3.9-5.6)	1.8 (1.4-2.2)
Hookah	1.4 (1.2-1.5)	1.4 (1.2-1.6)	6.0 (4.9-7.0)	4.4 (3.7-5.1)
Smokeless	1.1 (0.8-1.3)	0.1 (0.1-0.2)	4.9 (3.9-5.8)	1.5 (1.2-1.9)

Abbreviations: LCC = little cigars or cigarillos.

Table 4a presents current use of tobacco products by race/ethnicity for the 2017-18 CSTS. Differences in the use of tobacco products tended to replicate differences in the overall rates of use, with some notable exceptions. For example, the prevalence of use of cigarettes, LCC, big cigars, and smokeless tobacco among White students was not significantly different than that of students reporting Other and Multiple races. Additionally, there was no difference in current use of big cigars, LCC, and hookah between White and Black students. AI/AN and NHOPI students had high rates of use of all tobacco products, although their small sample sizes and wide confidence intervals limit our ability to determine whether the differences between AI/AN and NHOPI and other ethnic groups were due to chance.

Participants who identified their race as Asian were asked to specify their racial background. Table 4b presents current use of tobacco products by Asian subgroups. Only participants who identified a single Asian subgroup category are presented (i.e., those that identified Asian and another race are excluded). Those who indicated Chinese or Taiwanese were combined in this table. Overall, Filipino students had the highest rate of use (10.5%) and Chinese students had the lowest rate (4.7%). Korean, Japanese, and Other Asian students (which was a combination of many groups, each of which had a small sample size) also had relatively high rates of overall use (9.0%, 8.9%, and 7.3%, respectively). Across groups, overall use was primarily attributable to the use of e-cigarettes. Use of other tobacco products was low (generally under 2.0%) for all groups.

Table 4a. Prevalence of current tobacco product use by race/ethnicity among high school students

	White N=24323 % (95% CI)	Black N=3242 % (95% CI)	Hispanic N=61593 % (95% CI)	Asian N=14217 % (95% CI)	AI/AN N=383 % (95% CI)	NHOPI N=805 % (95% CI)	Other N=2033 % (95% CI)	Multiple N=10928 % (95% CI)	Declined to Answer N=9386 % (95% CI)
Overall	18.2 (17.0-19.4)	9.9 (8.3-11.5)	10.3 (9.6-11.0)	7.0 (6.3-7.8)	19.7 (14.3-25.1)	17.1 (14.2-19.9)	14.9 (12.9-16.9)	14.4 (13.1-15.6)	19.4 (17.8-20.9)
E-cigarettes	16.3 (15.0-17.7)	7.6 (6.1-9.1)	8.6 (7.9-9.3)	6.6 (5.8-7.4)	15.1 (9.7-20.5)	15.1 (12.1-18.0)	11.3 (9.5-13.1)	12.8 (11.6-14.1)	16.8 (15.3-18.4)
Cigarettes	2.9 (2.5-3.3)	1.2 (0.7-1.8)	1.6 (1.4-1.7)	0.8 (0.6-1.0)	4.7 (2.3-7.1)	2.6 (1.4-3.9)	2.0 (1.1-2.8)	2.3 (1.9-2.8)	4.3 (3.6-5.0)
LCC	2.6 (2.2-2.9)	2.5 (1.9-3.2)	2.0 (1.8-2.2)	0.6 (0.4-0.8)	6.7 (3.3-10.2)	4.4 (2.4-6.4)	2.2 (1.5-2.9)	2.6 (2.0-3.1)	4.7 (4.0-5.3)
Big cigars	0.8 (0.7-1.0)	0.5 (0.2-0.8)	0.5 (0.4-0.6)	0.1 (0.1-0.2)	1.5 (0.3-2.7)	1.2 (0.4-2.1)	0.8 (0.4-1.2)	0.8 (0.6-1.1)	2.0 (1.5-2.5)
Hookah	1.9 (1.5-2.2)	1.4 (0.9-1.9)	1.4 (1.2-1.6)	0.5 (0.4-0.7)	2.3 (0.7-3.9)	2.2 (0.8-3.5)	5.0 (3.9-6.2)	1.5 (1.3-1.8)	4.5 (3.8-5.2)
Smokeless	1.6 (1.2-1.9)	0.2 (0.0-0.3)	0.5 (0.4-0.5)	0.1 (0.0-0.1)	2.0 (0.7-3.4)	0.4 (0.1-0.7)	1.3 (0.6-2.1)	1.1 (0.8-1.5)	1.5 (1.2-1.8)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition; LCC = little cigars or cigarillos.

Table 4b. Prevalence of current tobacco product use by Asian race among high school students

	Chinese N=3514 % (95% CI)	Filipino N=2862 % (95% CI)	Indian N=1696 % (95% CI)	Japanese N=337 % (95% CI)	Korean N=1220 % (95% CI)	Vietnamese N=2459 % (95% CI)	Other N=1874 % (95% CI)
Overall	4.7 (3.6-5.8)	10.5 (8.8-12.3)	5.1 (3.8-6.4)	8.9 (4.8-12.9)	9.0 (6.9-11.1)	6.0 (4.8-7.3)	7.3 (5.6-9.1)
E-cigarettes	4.3 (3.2-5.4)	10.4 (8.5-12.2)	4.7 (3.4-6.1)	6.9 (3.3-10.5)	8.9 (6.8-11.0)	5.8 (4.5-7.1)	5.9 (4.2-7.5)
Cigarettes	0.7 (0.4-1.0)	0.7 (0.4-1.1)	0.4 (0.1-0.8)	2.1 (0.0-4.3)	1.3 (0.6-2.0)	0.5 (0.1-0.8)	1.2 (0.5-1.9)
LCC	0.4 (0.2-0.6)	0.6 (0.3-0.9)	0.6 (0.1-1.2)	0.3 (0.0-0.8)	0.9 (0.3-1.5)	0.4 (0.1-0.6)	1.2 (0.5-1.9)
Big cigars*	0.1 (0.0-0.1)	0.0 (0.0-0.1)	0.0 (0.0-0.1)	--	0.1 (0.0-0.3)	0.1 (0.0-0.2)	0.4 (0.1-0.7)
Hookah	0.3 (0.1-0.5)	0.3 (0.1-0.6)	0.6 (0.1-1.0)	0.5 (0.0-1.2)	0.5 (0.0-1.0)	0.1 (0.0-0.2)	1.8 (1.1-2.6)
Smokeless*	0.0 (0.0-0.1)	0.0 (0.0-0.1)	--	0.8 (0.0-2.2)	0.1 (0.0-0.2)	0.0 (0.0-0.1)	0.2 (0.0-0.4)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: Other: see Appendix B for definition; LCC = little cigars or cigarillos.

*Indian and Japanese respondents did not report current use of smokeless tobacco and big cigars, respectively.

Table 5 presents tobacco product use by grade among high school students. As expected, current use of all tobacco products increased with grade. E-cigarettes were consistently the most popular product used by both 10th grade and 12th grade students, and the prevalence of use of other tobacco products was low.

Table 5. Prevalence of current tobacco product use by grade among high school students

	Grade 10 N=70232 % (95% CI)	Grade 12 N=59205 % (95% CI)
Overall	10.0 (9.3-10.6)	15.9 (14.8-16.9)
E-cigarettes	8.8 (8.0-9.5)	13.4 (12.4-14.5)
Cigarettes	1.4 (1.2-1.6)	2.8 (2.5-3.1)
LCC	1.7 (1.5-1.9)	2.9 (2.6-3.1)
Big cigars	0.6 (0.4-0.7)	0.9 (0.7-1.0)
Hookah	1.3 (1.1-1.4)	2.3 (2.0-2.5)
Smokeless	0.5 (0.4-0.7)	1.0 (0.8-1.2)

Abbreviations: LCC = little cigars or cigarillos.

Use of Specific Tobacco Products by LGBTQ Community Affiliation

Students were asked whether they identify themselves as LGBTQ. Table 6 presents tobacco product use by reported LGBTQ community affiliation. Students who identified as LGBTQ had higher rates of overall use (15.0%) than those who did not identify with this group (12.0%) and similar rates to those who declined to answer (14.3%). E-cigarettes were the most commonly used product across all groups.

Table 6. Prevalence of current tobacco product use by LGBTQ community affiliation among high school students

	Identified as LGBTQ N=11933 % (95% CI)	Did not Identify as LGBTQ N=99953 % (95% CI)	Declined to Answer N=16257 % (95% CI)
Any of the below	15.0 (14.0-16.1)	12.0 (11.2-12.8)	14.3 (13.2-15.5)
E-cigarettes	12.4 (11.5-13.4)	10.5 (9.6-11.3)	11.8 (10.7-12.9)
Cigarettes	4.0 (3.5-4.5)	1.6 (1.4-1.8)	2.8 (2.3-3.2)
LCC	3.4 (2.9-3.8)	1.9 (1.8-2.1)	3.3 (2.8-3.7)
Big cigars	1.3 (1.0-1.6)	0.5 (0.4-0.6)	1.2 (0.9-1.5)
Hookah	2.5 (2.1-3.0)	1.4 (1.2-1.6)	2.9 (2.5-3.3)
Smokeless	1.1 (0.9-1.4)	0.7 (0.5-0.8)	1.0 (0.8-1.2)

Abbreviations: LCC = little cigars or cigarillos.

Frequency of Current Tobacco Product Use

The 2017-18 CSTS asked current users of a tobacco product to indicate how many days they used the product within the last 30 days. Table 7 presents the frequency of use among current users of a product. Overall, 23.1% of students used a product most of the time (20+ days). More than half of students (37.1% + 17.1%) reported infrequent usage (defined as using products either 1-2 days or 3-5 days in a given month). Infrequent use on 1 to 5 days was most common for hookah, LCC, and cigarettes. Frequent use (20-30 days) was most common for smokeless tobacco.

Table 7. Frequency of current use among those high school students who are current users of a given tobacco product

	N*	1 or 2 days % (95% CI)	3-5 days % (95% CI)	6-19 days % (95% CI)	20-30 days % (95% CI)
Overall	15764	37.1 (35.5-38.7)	17.1 (16.3-17.9)	22.7 (21.6-23.8)	23.1 (21.6-24.7)
E-cigarettes	13334	36.8 (35.0-38.5)	17.6 (16.7-18.6)	23.3 (22.3-24.3)	22.3 (20.5-24.1)
Cigarettes	2393	45.4 (42.7-48.0)	16.0 (14.2-17.8)	16.4 (14.4-18.4)	22.2 (19.9-24.5)
LCC	2539	41.9 (38.4-45.4)	19.0 (16.3-21.6)	20.0 (18.0-22.0)	19.2 (17.2-21.1)
Big cigars	849	42.3 (38.3-46.2)	13.1 (9.4-16.7)	13.7 (9.9-17.4)	31.0 (25.3-36.7)
Hookah	1945	47.6 (44.1-51.2)	16.5 (14.3-18.8)	18.2 (16.0-20.5)	17.6 (15.2-19.9)
Smokeless	861	29.1 (24.7-33.4)	12.9 (10.1-15.7)	21.1 (16.7-25.5)	37.0 (31.8-42.1)

Abbreviations: LCC = little cigars or cigarillos.
*As some participants used more than one tobacco product, the sum of sample sizes for each product is greater than the overall sample size.

Multiple Tobacco Product Use

Table 8 presents current use of multiple products, often referred to as poly use. Overall, 3.3% of students reported using two or more tobacco products, representing about one quarter of current users (12.7%). Differences in poly use by demographic characteristics varied in ways one would expect based on tobacco use behavior (e.g., those who had higher rates of using specific products were also the ones that had higher rates of poly use). For example, those who identified their gender another way or declined to answer had higher rates of poly use than males and females.

Table 8. Prevalence of current use of at least one product and of multiple tobacco products by gender, race/ethnicity, and grade among high school students

	N	Used at least one product % (95% CI)	Used two or more products % (95% CI)
Overall	129437	12.7 (11.9-13.4)	3.3 (3.0-3.6)
Gender			
Male	55459	12.2 (11.4-13.0)	3.6 (3.2-3.9)
Female	60287	11.1 (10.3-11.9)	2.1 (1.8-2.3)
Identified in Another Way	3471	21.8 (19.7-23.8)	9.6 (8.2-10.9)
Declined to Answer	8993	20.7 (19.1-22.3)	6.9 (6.1-7.7)
Race/Ethnicity			
White	24323	18.2 (17.0-19.4)	4.9 (4.4-5.3)
Black	3242	9.9 (8.3-11.5)	2.1 (1.5-2.8)
Hispanic	61593	10.3 (9.6-11.0)	2.5 (2.2-2.8)
Asian	14217	7.0 (6.3-7.8)	1.0 (0.8-1.3)
AI/AN	383	19.7 (14.3-25.1)	7.2 (3.5-10.8)
NHOPI	805	17.1 (14.2-19.9)	4.7 (2.8-6.6)
Other	2033	14.9 (12.9-16.9)	4.3 (3.2-5.3)
Multiple	10928	14.4 (13.1-15.6)	4.0 (3.3-4.6)
Declined to Answer	9386	19.4 (17.8-20.9)	6.6 (5.9-7.4)
Grade			
Grade 10	70232	10.0 (9.3-10.6)	2.3 (2.1-2.6)
Grade 12	59205	15.9 (14.8-16.9)	4.5 (4.1-4.8)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Multiple Tobacco Product Use by LGBTQ Community Affiliation

Table 9 presents current use of multiple products by reported LGBTQ community affiliation. Students who identified as LGBTQ reported using two or more tobacco products at a higher rate (4.9%) than those who did not identify as LGBTQ (2.9%). Those who declined to answer also had a high poly use rate (4.4%).

Table 9. Prevalence of current use of at least one product and of multiple tobacco products by LGBTQ community affiliation among high school students

	N	Used at least one product % (95% CI)	Used two or more products % (95% CI)
Overall	129437	12.7 (11.9-13.4)	3.3 (3.0-3.6)
Identified as LGBTQ	11933	15.0 (14.0-16.1)	4.9 (4.4-5.5)
Did not Identify as LGBTQ	99953	12.0 (11.2-12.8)	2.9 (2.6-3.1)
Declined to Answer	16257	14.3 (13.2-15.5)	4.4 (4.0-4.9)

Tobacco Use by Personal Characteristics

Table 10 presents students' reported loneliness and depression according to tobacco ever and current use. Students were asked to indicate their agreement or disagreement with the following statement, "a lot of times I feel lonely." For analysis, the response options were dichotomized into Agree (*strongly agree* or *agree*) and Disagree (*strongly disagree* or *disagree*). Participants were also asked, "In the last 12 months did you ever feel sad and hopeless EVERY DAY for 2 weeks or more?" Students who declined to answer either of these questions had the highest rates of current tobacco use (16.7% and 16.6%, respectively), followed by those who often felt lonely or reported depressive symptoms in the last 12 months (13.2% and 14.7%, respectively).

Table 10. Prevalence of tobacco use by feelings of loneliness and depressive symptoms among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	129494	34.5 (33.4-35.6)	12.7 (11.9-13.4)
Often feel lonely			
Agree	47638	36.3 (35.0-37.5)	13.2 (12.4-14.0)
Disagree	64626	31.4 (30.2-32.5)	10.9 (10.2-11.7)
Declined to Answer	15609	40.4 (38.8-42.0)	16.7 (15.5-18.0)
Depressive symptoms			
Yes	35122	39.3 (38.1-40.5)	14.7 (13.8-15.6)
No	76153	30.8 (29.6-31.9)	10.6 (9.8-11.3)
Declined to Answer	16482	39.6 (38.0-41.2)	16.6 (15.3-18.0)

Summary

In 2017-18, the most frequently used tobacco product among California high school students was e-cigarettes (10.9%). Current use of other tobacco products, including cigarettes, big cigars, LCC, hookah, and smokeless tobacco, were all less than 3%. Tobacco use was higher among certain race/ethnicities (e.g., White students), those who identified their gender in another way, and older students. Students who identified with the LGBTQ community had higher rates of use of all tobacco products than those who did not identify with this community. Overall, about half of current users (54.2%) reported infrequent use (between 1 to 5 days in the past 30). Poly use was less common, with approximately one quarter of all current users reporting use of at least two tobacco products. Students reporting feelings of loneliness and depressive symptoms had higher tobacco use rates than those who did not report these symptoms.

CHAPTER 2 – Tobacco Use Behavior: Comparisons from 2015-16 to 2017-18

This chapter compares rates of current tobacco use for high school students between the 2015-16 and 2017-18 CSTS.[6] This chapter also compares prevalence rates of specific tobacco products and the use of any tobacco product across various demographic characteristics. Comparisons of tobacco use for middle school students between 2015-16 and 2017-18 can be found in Appendix A.

The 2015-16 CSTS was conducted before the tobacco tax initiative, The California Healthcare, Research and Prevention Tobacco Tax Act of 2016 (commonly known as Proposition 56), was passed (in November 2016).[1] The 2017-18 CSTS was conducted after the new tobacco tax took effect, in April 2017. It is beyond the scope of this report to provide a detailed examination of how the changes in tobacco use behavior of high school students may have been influenced by the tobacco tax increase resulting from Propositon 56 and its implementation. This chapter limits itself to an examination of the change between the two surveys. The effects of Proposition 56 will need to be examined in a larger context of tobacco use trends over a longer time period.

Tobacco Product Use among High School Students

Table 11 shows that the overall tobacco use prevalence declined from 13.6% in 2015-16 to 12.7% in 2017-18, but the change is not statistically significant (p=0.18). However, the use of e-cigarettes increased significantly, from 8.6% to 10.9%. In contrast, the rate of cigarette smoking and that of all other tobacco products decreased significantly from 2015-16 to 2017-18. If all combustible tobacco products (cigarettes, little cigars or cigarillos [LCC], big cigars, and hookah) are combined into a single category, the rate also dropped significantly, from 9.5% to 4.7% (p<.001).

Table 11. Prevalence of current tobacco product use by year among high school students

	2015-16 N=41796 % (95% CI)	2017-18 N=129437 % (95% CI)
Any of the below*	13.6 (12.4-14.7)	12.7 (11.9-13.4)
E-cigarettes	8.6 (7.6-9.6)	10.9 (10.1-11.7)
Cigarettes	4.3 (3.8-4.8)	2.0 (1.8-2.2)
LCC	4.3 (3.9-4.7)	2.3 (2.1-2.4)
Big cigars	1.6 (1.3-1.8)	0.7 (0.6-0.8)
Hookah	4.8 (4.2-5.3)	1.7 (1.6-1.9)
Smokeless	1.7 (1.3-2.1)	0.8 (0.6-0.9)

Abbreviations: LCC = little cigars or cigarillos.
*Any tobacco use in 2015-16 includes kreteks. Use of kreteks was not asked in 2017-18 due to the low prevalence.

Tobacco Use by Demographics

Table 12 presents the prevalence of current tobacco use for the 2015-16 CSTS and 2017-18 CSTS by gender and race/ethnicity. Due to the differences in response options for gender and race/ethnicity between the 2015-16 and 2017-18 CSTS, it is somewhat difficult to interpret these results. The 2017-18 CSTS added two options for gender: it allowed students to identify themselves as neither male nor female or simply decline to identify a particular gender. Because this option was not in the 2015-16 CSTS, it is not certain whether students who identified their gender in another way also experienced a significant drop in tobacco use (even though this group most likely did, just as other groups of students did). Similarly, the race/ethnicity questions allowed students to decline to answer. This resulted in a significant proportion of students choosing this option. It should be noted that the majority of those who declined to answer race also declined to answer ethnicity (i.e., “Are you of Spanish or Hispanic [Latino] origin?”).

Table 12. Prevalence of current tobacco use by year and by gender and race/ethnicity among high school students

	2015-16		2017-18	
	N	% (95% CI)	N	% (95% CI)
Overall	41796	13.6 (12.4-14.7)	129437	12.7 (11.9-13.4)
Gender				
Male	20842	16.0 (14.6-17.4)	55459	12.2 (11.4-13.0)
Female	20842	11.2 (10.0-12.4)	60287	11.1 (10.3-11.9)
Identified in Another Way	--	--	3471	21.8 (19.7-23.8)
Declined to Answer	--	--	8993	20.7 (19.1-22.3)
Race/Ethnicity				
White	7691	18.9 (16.6-21.3)	24323	18.2 (17.0-19.4)
Black	1301	10.6 (8.0-13.2)	3242	9.9 (8.3-11.5)
Hispanic	22393	13.5 (12.5-14.5)	61593	10.3 (9.6-11.0)
Asian	5153	5.6 (3.8-7.5)	14217	7.0 (6.3-7.8)
AI/AN	110	23.9 (10.4-37.4)	383	19.7 (14.3-25.1)
NHOPI	387	12.3 (8.0-16.6)	805	17.1 (14.2-19.9)
Other	917	18.8 (14.8-22.8)	2033	14.9 (12.9-16.9)
Multiple	3597	15.8 (14.0-17.6)	10928	14.4 (13.1-15.6)
Declined to Answer	--	13.6 (12.4-14.7)	9386	19.4 (17.8-20.9)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Tobacco Product Use by Grade

Table 13 compares the prevalence of current tobacco product use between 2015-16 and 2017-18 by grade. Between 2015-16 and 2017-18, overall tobacco use declined among 10th (10.3% vs 10.0%) and 12th graders (17.2% vs 15.9%), but none of the changes were statistically significant. Overall, the prevalence of use of e-cigarettes increased significantly among both 10th and 12th graders between 2015-16 and 2017-18, while the prevalence of use of all other tobacco products decreased significantly.

Table 13. Prevalence of current tobacco product use by year and by grade among high school students

	Grade 10		Grade 12	
	2015-16 N=22151 % (95% CI)	2017-18 N=70232 % (95% CI)	2015-16 N=19645 % (95% CI)	2017-18 N=59205 % (95%CI)
Overall*	10.3 (9.2-11.4)	10.0 (9.3-10.6)	17.2 (15.7-18.6)	15.9 (14.8-16.9)
E-cigarettes	6.7 (5.8-7.7)	8.8 (8.0-9.5)	10.7 (9.4-12.0)	13.4 (12.4-14.5)
Cigarettes	3.2 (2.7-3.7)	1.4 (1.2-1.6)	5.6 (4.9-6.3)	2.8 (2.5-3.1)
LCC	2.7 (2.4-3.1)	1.7 (1.5-1.9)	6.0 (5.4-6.7)	2.9 (2.6-3.1)
Big cigars	1.2 (0.9-1.4)	0.6 (0.4-0.7)	2.0 (1.6-2.4)	0.9 (0.7-1.0)
Hookah	3.7 (3.2-4.2)	1.3 (1.1-1.4)	5.9 (5.1-6.8)	2.3 (2.0-2.5)
Smokeless	1.4 (1.1-1.7)	0.5 (0.4-0.7)	2.1 (1.5-2.6)	1.0 (0.8-1.2)

Abbreviations: LCC = little cigars or cigarillos.
*Overall tobacco use in 2015-16 includes kreteks. Use of kreteks was not asked in 2017-18 due to the low prevalence.

Summary

Between 2015-16 and 2017-18, the overall prevalence of use of any tobacco product declined (13.6% to 12.7%), but the change was not statistically significant. The use of e-cigarettes increased significantly and the use of all other tobacco products decreased significantly. This pattern was observed across demographic categories.

CHAPTER 3 – Use and Opinions of Flavored Tobacco Products

This chapter presents the proportion of current tobacco users that used flavored products. This chapter also presents the use of specific flavors. Finally, it summarizes high school students' opinions of flavored tobacco products. For flavored tobacco use among middle school students, please see Appendix A.

Flavored Tobacco Product Use among High School Students

The 2017-18 CSTS asked current users of a tobacco product to indicate whether any of the products they used in the last 30 days were flavored. Table 14 indicates that the majority of tobacco users reported using a flavored tobacco product, with the use of flavored e-cigarettes (86.4%), little cigars or cigarillos (LCC; 86.6%), and hookah (88.9%) being most prevalent. Of note, approximately half of cigarette smokers (56.7%) reported using flavored cigarettes in the last 30 days, where menthol is the only flavor available.

Table 14. Proportion using flavored products among those high school students who are current users of a given tobacco product

	N*	Flavored product use % (95% CI)
Any product	16180	86.4 (85.3-87.4)
E-cigarettes	13678	86.4 (85.1-87.7)
Cigarettes	2420	56.7 (53.3-60.0)
LCC	2642	86.6 (84.8-88.5)
Big cigars	861	64.2 (60.5-68.0)
Hookah	1998	88.9 (86.6-91.2)
Smokeless	864	68.6 (64.3-72.9)

Abbreviations: LCC = little cigars or cigarillos.
*As some participants used more than one tobacco product, the sum of sample sizes for each product is greater than the overall sample size.

It should be noted that the 2017-18 CSTS also included a separate question about students' usual use of flavored cigarettes (i.e., menthol cigarettes). Current cigarette smokers were asked "Are the cigarettes you usually smoke menthol-flavored?", which is the same question asked in previous CSTS cycles.[6] When asked this way, the proportion of high school students currently using menthol cigarettes was 33.7%.

Flavored Tobacco Use by Demographics

Table 15 presents current use of any flavored tobacco product by participant demographics. Overall, the vast majority of tobacco users reported using flavored tobacco products across multiple demographic dimensions.

Table 15. Proportion using flavored products among those high school students who are current tobacco users by gender, race/ethnicity, and grade

	N	Current use % (95% CI)
Overall	16180	86.4 (85.3-87.4)
Gender		
Male	6736	85.6 (84.3-86.9)
Female	6637	87.9 (86.6-89.1)
Identified in Another Way	729	84.0 (79.8-88.2)
Declined to Answer	1744	84.7 (82.4-86.9)
Race/Ethnicity		
White	4347	90.7 (89.3-92.1)
Black	308	84.7 (80.2-89.2)
Hispanic	6297	82.9 (81.0-84.8)
Asian	968	89.1 (86.7-91.6)
AI/AN	73	85.1 (75.4-94.9)
NHOPI	129	82.7 (75.4-90.0)
Other	288	90.2 (86.1-94.4)
Multiple	1518	89.4 (87.4-91.4)
Declined to Answer	1720	85.2 (83.1-87.2)
Grade		
Grade 10	6894	86.3 (84.9-87.7)
Grade 12	9286	86.5 (85.2-87.8)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Flavored Tobacco Product Use by Demographics

The following section (Tables 16-19) presents current use of flavored tobacco products across various participant demographics, including gender, race/ethnicity, and grade.

Table 16 indicates that over 80% of each gender category reported using flavored tobacco products, with the use of flavored e-cigarettes, LCC, and hookah being most popular.

Table 16. Proportion using flavored tobacco product among those high school students who are current users of a given tobacco product by gender

	Male N=6736 % (95% CI)	Female N=6637 % (95% CI)	Identified in Another Way N=729 % (95% CI)	Declined to Answer N=1744 % (95% CI)
Any product	85.6 (84.3-86.9)	87.9 (86.6-89.1)	84.0 (79.8-88.2)	84.7 (82.4-86.9)
E-cigarettes	85.9 (83.8-88.1)	87.6 (86.2-89.0)	83.5 (78.7-88.4)	84.9 (82.2-87.5)
Cigarettes	53.9 (48.2-59.7)	52.7 (47.9-57.5)	68.0 (59.9-76.2)	60.8 (53.9-67.6)
LCC	86.8 (84.4-89.2)	89.6 (86.9-92.3)	86.8 (81.8-91.8)	78.3 (71.5-85.0)
Big cigars	54.3 (48.6-60.0)	65.2 (56.3-74.1)	79.9 (72.1-87.7)	70.7 (61.1-80.3)
Hookah	86.6 (81.6-91.5)	90.6 (86.3-94.8)	90.1 (85.3-95.0)	89.2 (86.0-92.5)
Smokeless	70.1 (63.5-76.6)	61.0 (51.8-70.2)	68.8 (56.5-81.0)	64.6 (54.9-74.2)

Abbreviations: LCC = little cigars or cigarillos.

As shown in Table 17, the majority of students across various races/ethnicities reported using flavored tobacco products, with the use of flavored e-cigarettes, LCC, and hookah being most prevalent. Relatively speaking, the prevalence of use of flavored cigarettes is noticeably low among Black students (35.1%, compared to 86.4% for e-cigarettes). This is also relatively low compared to results for Blacks found in other national surveys.[7]

Table 17. Proportion using flavored tobacco products among those high school students who are current users of a given tobacco product by race/ethnicity

	White N=4347 % (95% CI)	Black N=308 % (95% CI)	Hispanic N=6297 % (95% CI)	Asian N=968 % (95% CI)	AI/AN N=73 % (95% CI)	NHOPI N=129 % (95% CI)	Other N=288 % (95% CI)	Multiple N=1518 % (95% CI)	Declined to Answer N=1720 % (95% CI)
Any product	90.7 (89.3-92.1)	84.7 (80.2-89.2)	82.9 (81.0-84.8)	89.1 (86.7-91.6)	85.1 (75.4-94.9)	82.7 (75.4-90.0)	90.2 (86.1-94.4)	89.4 (87.4-91.4)	85.2 (83.1-87.2)
E-cigarettes	92.2 (90.8-93.6)	86.4 (81.9-91.0)	81.1 (79.2-82.9)	90.3 (87.8-92.7)	83.2 (71.6-94.8)	86.6 (80.2-93.0)	88.4 (84.0-92.8)	90.6 (88.4-92.9)	84.8 (82.2-87.3)
Cigarettes	47.2 (40.5-53.9)	35.1 (16.0-54.2)	60.0 (55.7-64.3)	65.0 (53.5-76.6)	54.6 (32.2-76.9)	69.1 (42.0-96.2)	62.5 (43.4-81.7)	56.5 (49.2-63.9)	61.9 (55.1-68.8)
LCC	82.8 (78.4-87.1)	81.9 (72.1-91.6)	91.3 (89.3-93.4)	83.9 (75.3-92.4)	82.6 (62.7-100.0)	86.8 (73.6-100.0)	86.5 (75.6-97.5)	82.4 (76.8-88.0)	82.6 (76.3-88.9)
Big cigars	46.9 (38.6-55.1)	90.3 (77.6-100.0)	67.4 (61.2-73.7)	81.6 (64.1-99.1)	100.0 (100.0-100.0)	62.0 (28.9-95.1)	62.8 (36.3-89.3)	54.7 (43.7-65.7)	74.0 (64.2-83.9)
Hookah	93.1 (90.1-96.1)	90.9 (82.9-98.9)	85.9 (81.3-90.6)	91.5 (83.3-99.7)	89.4 (69.4-100.0)	79.5 (56.0-100.0)	98.6 (96.6-100.0)	89.7 (83.9-95.5)	88.9 (84.5-93.2)
Smokeless	65.1 (56.6-73.6)	78.8 (51.3-100.0)	71.9 (65.6-78.2)	91.5 (74.9-100.0)	76.8 (44.7-100.0)	84.7 (56.5-100.0)	85.1 (67.7-100.0)	66.5 (53.1-79.9)	63.3 (53.2-73.3)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian and Other Pacific Islander; Other: See Appendix B for definition; LCC = little cigars or cigarillos

The results by grade show a similar pattern, where most students in either grade reported the use of flavored tobacco products (Table 18). The use of flavored e-cigarettes, LCC, and hookah were the most prevalent.

Table 18. Proportion using flavored products among those high school students who are current users of a given tobacco product by grade

	Grade 10 N=6894 % (95% CI)	Grade 12 N=9286 % (95% CI)
Any product	86.3 (84.9-87.7)	86.5 (85.2-87.8)
E-cigarettes	86.7 (85.2-88.1)	86.2 (84.7-87.7)
Cigarettes	56.1 (51.4-60.8)	57.0 (52.9-61.1)
LCC	85.9 (82.9-89.0)	87.2 (84.9-89.4)
Big cigars	69.0 (62.8-75.2)	60.6 (54.9-66.2)
Hookah	87.6 (82.9-92.4)	89.7 (86.7-92.8)
Smokeless	68.5 (62.4-74.5)	68.7 (62.4-75.0)

Abbreviations: LCC = little cigars or cigarillos.

Use of Specific Flavor Types

The 2017-18 CSTS asked students that used a flavored tobacco product in the last 30 days to indicate the flavor type they used most often. Possible flavor types included *fruit or sweet*, *liquor*, *mint*, *tobacco* (for e-cigarettes only), and *other*. As shown in Table 19, with the exception of cigarettes (where *mint* is the only flavor) and smokeless tobacco, *fruit or sweet* flavors were the most popular flavors. *Mint* was the most popular flavor among current smokeless tobacco users (62.7%). Few students reported using *tobacco* flavored e-cigarettes.

Table 19. Proportion using flavored products among those high school students who are current users of a given tobacco product by flavor type

	N	Fruit or sweet % (95% CI)	Liquor % (95% CI)	Mint % (95% CI)	Tobacco* % (95% CI)	Other % (95% CI)
E-cigarettes	11386	77.2 (75.2-79.1)	1.0 (0.8-1.3)	16.0 (14.0-17.9)	1.8 (1.5-2.1)	4.0 (3.5-4.6)
Cigarettes	1364	-	-	100.0 (100.0-100.0)	-	-
LCC	2161	81.5 (79.0-83.9)	6.1 (4.9-7.4)	5.8 (4.5-7.1)	-	6.6 (5.3-7.9)
Big cigars	518	57.8 (50.5-65.2)	23.0 (18.1-27.8)	11.2 (7.1-15.2)	-	8.0 (5.1-11.0)
Hookah	1745	72.2 (69.0-75.5)	5.8 (4.5-7.1)	17.0 (13.8-20.2)	-	5.0 (3.8-6.2)
Smokeless	580	18.3 (13.3-23.3)	9.8 (6.6-13.0)	62.7 (55.4-70.1)	-	9.2 (6.1-12.3)

*Tobacco was only included as a flavor option for e-cigarettes.

Abbreviations: LCC = little cigars or cigarillo.

Opinions of Flavored Tobacco Products

Table 20 shows the percentage of students that believe that people their age would not use a tobacco product if other flavors were not available. Overall, almost half (45.0%) of high school students believed people their age would not use a tobacco product if it only came in tobacco flavor. Not surprisingly, there were differences in opinions across tobacco use status, with generally more never and former users holding this opinion than current users. Of note, more than half of current e-cigarette users (51.1%) believed that people their age would not use e-cigarettes if they only came in tobacco flavor.

Table 20. Opinions toward flavored tobacco products by use status among high school students

People my age would…	Overall N=105319 % (95% CI)	Never users N=100859 % (95% CI)	Former users N=18107 % (95% CI)	Current users N=11632 % (95% CI)
NOT smoke cigarettes if they ONLY came in tobacco flavor	45.0 (44.3-45.6)	45.7 (45.0-46.4)	40.8 (38.8-42.8)	29.5 (26.7-32.3)
NOT smoke LCCs if they ONLY came in tobacco flavor	45.7 (45.1-46.4)	46.1 (45.5-46.8)	42.1 (39.7-44.5)	38.1 (35.5-40.7)
NOT smoke hookah if it ONLY came in tobacco flavor	49.4 (48.7-50.1)	49.3 (48.6-50.1)	51.5 (49.9-53.2)	46.0 (42.1-49.9)
NOT use e-cigarettes if they ONLY came in tobacco flavor	51.1 (50.4-51.8)	49.6 (48.9-50.4)	55.1 (54.0-56.3)	53.5 (52.1-54.9)
NOT use smokeless tobacco if it ONLY came in tobacco flavor	47.4 (46.7-48.1)	47.9 (47.1-48.6)	36.8 (33.5-40.1)	26.1 (21.8-30.3)

Note: Approximately 20% of respondents declined to indicate their opinion toward flavor tobacco products. This group was treated as missing and excluded from analysis.

Abbreviations: LCC = little cigars or cigarillos.

Summary

The majority of high school students who were current tobacco product users reported using a flavored tobacco product. The proportion using flavored products was highest among those who used e-cigarettes, LCC, and hookah. *Fruit or sweet* flavors were reported most frequently for all tobacco products except cigarettes and smokeless tobacco. More than half of high school students believed people their age would not use e-cigarettes if they only came in tobacco flavor.

CHAPTER 4 – Susceptibility to Future Tobacco Use

Research has shown that it is possible to measure adolescents' susceptibility to begin smoking and that this measure predicts future use.[8] In the 2017-18 CSTS, susceptibility was measured by asking students who did not currently use a tobacco product whether they would use it if one of their best friends offered it. Those who answered anything other than *definitely not* were considered susceptible to future tobacco use. This chapter presents high school students' susceptibility to future use of any tobacco product, as well as specific tobacco products.

Susceptibility to Tobacco Product Use among High School Students

Table 21 shows the proportion of never users' susceptibility to future tobacco use. Overall, 40.1% of never users of any tobacco product were susceptible to at least one product. Susceptibility to specific tobacco products generally varied according to product popularity, although hookah (used at lower rates than e-cigarettes) represents an anomaly. Never users of the product were most susceptible to using hookah (37.0%), followed by e-cigarettes (27.1%), and little cigars or cigarillos (LCC; 21.6%), and least susceptible to using big cigars (20.9%) or smokeless tobacco (10.2%).

Table 21. Proportion of high school never users susceptible to future tobacco use

	Never users of the product	
	N	**% (95% CI)**
E-cigarettes	83240	27.1 (26.5-27.6)
Cigarettes	110047	23.7 (23.2-24.2)
LCC	112266	21.6 (21.1-22.0)
Big cigars	117802	20.9 (20.4-21.4)
Hookah	105401	37.0 (36.2-37.7)
Smokeless	120728	10.2 (9.9-10.6)
Any of the above	84811	40.1 (39.6-40.7)

Abbreviations: LCC = little cigars or cigarillos.

Susceptibility to Tobacco Use by Demographics

Table 22 presents susceptibility to any tobacco use by participant demographics. A higher proportion of never users who were female and identified their gender another way (43.1% and 45.9%, respectively) were susceptible to future tobacco use relative to male students (36.9%) and those who declined to answer (39.0%). While it varied somewhat across racial/ethnic groups, generally more than a third of non-users were susceptible to future tobacco use. Interestingly, susceptibility to future tobacco use did not differ significantly between 10th and 12th graders.

Table 22. Proportion of high school never users susceptible to future tobacco use by gender, race/ethnicity, and grade

	Never users of any tobacco product	
	N	% (95% CI)
Overall	84811	40.1 (39.6-40.7)
Gender		
Male	36974	36.9 (36.1-37.7)
Female	40763	43.1 (42.2-43.9)
Identified in Another Way	1858	45.9 (42.9-49.0)
Declined to Answer	4654	39.0 (37.3-40.8)
Race/Ethnicity		
White	15415	38.7 (37.6-39.7)
Black	2269	37.0 (34.0-39.9)
Hispanic	40019	42.6 (41.8-43.4)
Asian	11495	35.6 (34.1-37.1)
AI/AN	218	29.7 (21.2-38.2)
NHOPI	466	43.3 (38.1-48.6)
Other	1298	35.9 (32.7-39.0)
Multiple	7108	40.3 (38.6-41.9)
Declined to Answer	5122	37.7 (35.8-39.5)
Grade		
Grade 10	49718	39.9 (39.3-40.6)
Grade 12	35093	40.4 (39.6-41.2)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Susceptibility to Tobacco Use by Personal Characteristics

Table 23 presents the proportion of never users who were susceptible to future tobacco use according to feelings of loneliness and symptoms of depression. A higher proportion of never users who reported feelings of loneliness were susceptible to future tobacco use (45.0%) relative to those who declined to answer (38.6%) or disagreed (37.1%). Similarly, a higher proportion of never users who reported depressive symptoms were susceptible to future tobacco use (47.1%) relative to those who declined to answer (40.1%) or did not report depressive symptoms (37.1%).

Table 23. Proportion of high school never users susceptible to future tobacco use by feelings of loneliness and depressive symptoms

	Never users of any tobacco product	
	N	% (95% CI)
Overall	84811	40.1 (39.6-40.7)
Often feel lonely		
Agree	30588	45.0 (44.2-45.8)
Disagree	44529	37.1 (36.4-37.8)
Declined to Answer	8938	38.6 (37.2-40.1)
Depressive symptoms		
Yes	21427	47.1 (46.2-48.1)
No	52965	37.4 (36.7-38.1)
Declined to Answer	9637	40.1 (38.8-41.4)

Susceptibility to Tobacco Use by Environmental Influences

Students indicated the proportion of their friends that used specific tobacco products. Table 24 presents never users' susceptibility to future tobacco use by the proportion of their friends that use the tobacco product. Overall, the proportion of never users who were susceptible to future tobacco use increased as the proportion of friends that used a tobacco product increased. The proportion of never users susceptible to future hookah use was highest across all categories of friend use. As mentioned earlier in this chapter, students' high rates of susceptibility to hookah represents an anomaly given its relatively low use. This anomaly may reflect the way hookah is typically used (i.e., in a hookah lounge or similar social setting).

Table 24. Proportion of high school never users susceptible to future tobacco use by friends who use

	None		Some		Most		All	
	N	% (95% CI)	N	% (95% CI)	N	% (95%)	N	% (95% CI)
Overall	38226	28.3 (27.6-29.0)	35789	47.9 (47.0-48.8)	6660	55.2 (53.4-56.9)	1009	54.2 (48.5-60.0)
E-cigarettes	48330	19.0 (18.4-19.6)	25783	38.9 (38.0-39.8)	5074	45.2 (43.2-47.1)	809	40.8 (32.6-49.1)
Cigarettes	80757	20.9 (20.4-21.4)	22637	31.6 (30.8-32.4)	1571	34.3 (31.3-37.3)	538	38.1 (32.8-43.4)
LCC	94273	19.6 (19.2-20.1)	11436	32.3 (31.1-33.4)	1290	33.8 (30.4-37.2)	527	34.6 (28.9-40.2)
Hookah	69938	28.9 (28.2-29.6)	27002	53.7 (52.8-54.7)	3424	58.7 (56.2-61.2)	755	55.9 (51.8-59.9)

Abbreviations: LCC = little cigars or cigarillos.

Summary

Students who have not used tobacco products may still be susceptible to future use. While the rate of susceptibility to different tobacco products varied across demographic dimensions, for most subgroups more than one third of never-users were susceptible to using a particular tobacco product. Overall, about two in five students (40.1%) who had never used a tobacco product were susceptible to using at least one of the tobacco products in the future. While the susceptibility measure has its limitations in predicting future use, such a high rate of susceptibility among adolescents is cause for the public health community to be very concerned.

CHAPTER 5 – Environmental Influences

This chapter focuses on environmental influences of tobacco use. It presents whether students had home bans on vaping or smoking and their exposure to secondhand vapor or smoke. It also presents the prevalence of offers of tobacco products and exposure to advertisements (ads) promoting or discouraging tobacco use in the last 30 days. The prevalence of exposure to environmental influences is compared across tobacco use status (i.e., never, former, or current users) when appropriate.

Home Bans for Vaping and Smoking among High School Students

Using two separate questions, students were asked to indicate which statement best described the rules about vaping e-cigarettes or smoking tobacco products inside their home. The answer options to describe the rules were: (a) *there are no rules about whether people can vape e-cigarettes* (or *smoke cigarettes*) *inside my home*, (b) *vaping e-cigarettes* (or *smoking cigarettes*) *is not allowed inside my home*, (c) *vaping e-cigarettes* (or *smoking cigarettes*) *is allowed in some places or at some times inside my home*, (d) *vaping e-cigarettes* (or *smoking cigarettes*) *is allowed anywhere inside my home*, (e) *I prefer not to answer*. For analysis, option b was classified as *complete home ban.* Table 25 presents the prevalence of complete home bans on vaping and smoking by vaping and smoking status. Vaping status (never, former, or current vaper) was determined by students' use of e-cigarettes and smoking status was determined by students' use of cigarettes and little cigars or cigarillos (LCC). Smoking status was limited to cigarettes and LCC to remain consistent with information presented on secondhand smoke exposure.

Overall, the vast majority of students had a complete home ban on vaping or on smoking (79.1% and 85.8%, respectively). A higher percentage of both never vapers and never smokers reported having a complete home ban relative to current vapers and smokers. Rates of home bans among former vapers and smokers fell between those for never and current users. Fewer vapers reported having a home ban than smokers. However, rates of home bans on vaping were relatively high given e-cigarettes' recent introduction to the marketplace.

Table 25. Prevalence of complete home bans on vaping or smoking by use status* among high school students

		Complete home ban
Vaping Ban	**N**	**% (95% CI)**
Overall	115708	79.1 (78.5-79.7)
Never vapers	81293	82.9 (82.4-83.5)
Former vapers	19452	73.8 (72.5-75.0)
Current vapers	11938	62.6 (61.2-63.9)
Smoking Ban	**N**	**% (95% CI)**
Overall	117061	85.8 (85.5-86.0)
Never smokers	103073	86.7 (86.3-87.0)
Former smokers	10077	81.6 (80.5-82.6)
Current smokers	3497	74.3 (72.1-76.6)

Note: 10.6% and 9.6% of students declined to answer the question about the rules about vaping or smoking in their home, respectively. These students were considered as missing and excluded from analysis.

*Smoking status was based on cigarette and LCC use.

Tables 26 and 27 provide data on the rates of complete home bans on vaping and smoking by race/ethnicity. Similar to the overall results reported in Table 25, when stratified by race/ethnicity, more students generally reported having a home ban on smoking than on vaping. Additionally, rates of home bans for former users were generally between that of never and current users.

Table 26. Prevalence of complete home bans on vaping by vaping status and by race/ethnicity among high school students

	Overall N=115708 % (95% CI)	**Never vapers N=81293 % (95% CI)**	**Former vapers N=19452 % (95% CI)**	**Current vapers N=11938 % (95% CI)**
Overall	79.1 (78.5-79.7)	82.9 (82.4-83.5)	73.8 (72.5-75.0)	62.6 (61.2-63.9)
White	76.2 (75.2-77.2)	81.2 (80.1-82.3)	69.6 (67.7-71.6)	61.7 (59.3-64.0)
Black	76.5 (73.8-79.2)	79.9 (77.1-82.8)	67.2 (61.3-73.2)	64.3 (56.1-72.5)
Hispanic	82.0 (81.3-82.6)	85.2 (84.6-85.9)	77.8 (76.3-79.2)	65.6 (64.0-67.3)
Asian	79.1 (78.1-80.1)	81.5 (80.6-82.4)	70.2 (66.6-73.8)	63.7 (60.2-67.1)
AI/AN	74.8 (68.6-81.0)	83.4 (77.6-89.3)	56.8 (41.8-71.8)	56.5 (35.5-77.4)
NHOPI	73.0 (69.5-76.5)	81.3 (77.7-84.9)	66.6 (58.8-74.3)	48.9 (38.3-59.6)
Other	74.3 (71.5-77.2)	79.9 (77.3-82.4)	64.5 (53.7-75.2)	52.2 (42.5-62.0)
Multiple	73.8 (72.3-75.4)	78.9 (77.4-80.3)	63.3 (59.6-67.0)	60.7 (57.2-64.2)
Declined to Answer	73.5 (71.6-75.3)	79.1 (77.5-80.7)	69.7 (65.6-73.7)	54.4 (49.3-59.4)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Table 27. Prevalence of complete home bans on smoking by smoking status* and by race/ethnicity among high school students

	Overall N=117061 % (95% CI)	Never smokers N=103073 % (95% CI)	Former smokers N=10077 % (95% CI)	Current smokers N=3497 % (95% CI)
Overall	85.8 (85.4-86.2)	86.7 (86.3-87.0)	81.6 (80.5-82.6)	74.3 (72.1-76.6)
White	86.1 (85.3-86.8)	86.7 (85.9-87.4)	83.6 (81.0-86.2)	80.0 (76.2-83.8)
Black	82.1 (80.1-84.1)	83.1 (81.2-85.0)	77.3 (70.3-84.4)	63.7 (48.4-78.9)
Hispanic	87.1 (86.6-87.6)	88.0 (87.6-88.4)	83.1 (81.6-84.5)	74.4 (70.9-78.0)
Asian	85.8 (85.1-86.5)	86.1 (85.4-86.8)	79.8 (75.6-84.0)	80.7 (73.3-88.1)
AI/AN	83.3 (78.2-88.4)	84.1 (78.4-89.8)	86.5 (76.6-96.3)	69.7 (45.7-93.7)
NHOPI	81.1 (78.0-84.2)	84.7 (81.9-87.6)	75.5 (65.0-86.0)	45.8 (23.5-68.1)
Other	79.0 (76.5-81.5)	79.8 (77.5-82.1)	73.1 (58.9-87.4)	75.4 (64.6-86.2)
Multiple	83.6 (82.5-84.7)	84.7 (83.6-85.8)	77.5 (74.1-80.9)	74.0 (68.1-80.0)
Declined to Answer	79.4 (77.8-81.0)	81.9 (80.3-83.5)	72.6 (68.0-77.2)	60.2 (53.0-67.4)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

*Smoking status was based on cigarette and LCC use.

Exposure to Secondhand Vapor and Smoke in the Last 30 Days among High School Students

Table 28 reports high school students' exposure to secondhand vapor or smoke. The 2017-18 CSTS asked respondents, "In the last 30 days, how many days were you in a room when someone was using an e-cigarette (including e-hookah and hookah pens)?" A second question asked about exposure to e-cigarette vapor in a car. The questions about secondhand exposure to tobacco smoke replaced the phrase *using an e-cigarette (including e-hookah and hookah pens)* with the phrase *smoking a cigarette, little cigar or cigarillo.*

Overall, secondhand exposure in a room within the last 30 days was similar for vapor and smoke (30.3% and 30.6%, respectively). Current vapers reported higher rates of exposure in a room than never and former vapers; the same was true of smokers. When comparing across vaping and smoking status, never and former users tended to report higher exposure rates to smoke than vapor, and current users tended to report higher exposure rates to vapor than smoke.

Table 28. Prevalence of last 30 day exposure to e-cigarette vapor or tobacco smoke* in a room by use status among high school students

	Vapor		Smoke	
	N	% (95% CI)	N	% (95% CI)
Overall	121622	30.3 (28.6-32.1)	121198	30.6 (29.9-31.4)
Never user	85023	20.5 (19.2-21.7)	106226	27.3 (26.7-28.0)
Former user	20654	38.6 (36.8-40.5)	10669	46.0 (44.3-47.7)
Current user	12771	79.5 (77.9-81.1)	3831	71.2 (69.4-73.0)

Abbreviations: LCC = little cigars or cigarillos.

*Two products: Cigarettes and LCC.

Tables 29 show students' exposure to secondhand vapor and smoke in a car. Rates of secondhand exposure were generally lower in a car than in a room. Current users had higher rates of exposure than never and former users. Overall, any secondhand exposure in a car within the last 30 days was higher for vapor (20.1%) than smoke (15.1%).

Table 29. Prevalence of last 30 day exposure to e-cigarette vapor or tobacco smoke* in a car by use status among high school students

	Vapor		Smoke*	
	N	% (95% CI)	N	% (95% CI)
Overall	121513	20.1 (18.9-21.3)	121880	15.1 (14.6-15.6)
Never user	85049	10.6 (10.1-11.2)	106992	11.7 (11.3-12.1)
Former user	20601	27.5 (25.9-29.2)	10642	30.2 (28.3-32.0)
Current user	12705	68.4 (66.5-70.3)	3790	60.4 (58.6-62.1)

Abbreviations: LCC = little cigars or cigarillos.

*Two products: Cigarettes and LCCs.

Exposure to Secondhand Vapor and Smoke in the Last 30 Days by Race/Ethnicity

Table 30 provides data on secondhand exposure to vapor in a room by race/ethnicity. Black, Hispanic, and Asian students had lower exposure rates (24.4%, 24.6%, and 27.6%, respectively) compared to White students (44.4%). The difference between students who were White and from other racial/ethnic groups were also significant, although of a smaller magnitude. Across racial/ethnic groups, rates of exposure to secondhand vapor in a room were highest for current users, followed by former and never users.

Table 31 shows the secondhand exposure to smoke in a room by race/ethnicity. It shows a similar pattern to that of Table 30. White students tended to have a higher exposure rate (35.9%), although the differences between the rate for White and those for Black, Hispanic, and Asian students (31.5%, 27.5%, and 29.2%, respectively) were smaller compared to those for exposure to secondhand vapor. Across racial/ethnic groups, rates of exposure to secondhand smoke in a room were highest for current users, followed by former and never users.

Table 30. Prevalence of last 30 day exposure to e-cigarette vapor in a room by vaping status and by race/ethnicity among high school students

	N	Overall % (95% CI)	Never vapers % (95% CI)	Former vapers % (95% CI)	Current vapers % (95% CI)
Overall	121622	30.3 (28.6-32.1)	20.5 (19.2-21.7)	38.6 (36.8-40.5)	79.5 (77.9-81.1)
White	23809	44.4 (41.8-47.0)	30.6 (28.5-32.7)	55.5 (52.7-58.4)	88.2 (86.6-89.7)
Black	3065	24.4 (21.6-27.2)	17.9 (15.3-20.5)	31.3 (25.5-37.0)	72.5 (63.8-81.3)
Hispanic	58757	24.6 (23.1-26.1)	16.1 (15.1-17.1)	32.2 (30.4-34.1)	72.9 (70.9-74.9)
Asian	13834	27.6 (25.4-29.7)	20.8 (18.7-22.9)	44.1 (40.8-47.4)	82.7 (79.5-85.8)
AI/AN	360	33.6 (27.6-39.6)	16.9 (11.5-22.2)	51.8 (36.3-67.4)	85.6 (72.5-98.6)
NHOPI	760	37.0 (32.4-41.6)	22.7 (18.5-26.8)	44.8 (34.0-55.6)	81.1 (71.8-90.3)
Other	1911	36.6 (33.0-40.2)	25.7 (22.4-29.0)	56.4 (47.0-65.9)	79.4 (72.7-86.0)
Multiple	10595	38.6 (36.4-40.7)	26.9 (25.0-28.7)	48.6 (44.8-52.4)	85.3 (83.0-87.6)
Declined to Answer	6599	28.6 (26.6-30.5)	16.9 (15.2-18.7)	33.4 (29.2-37.6)	72.3 (68.8-75.7)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian and Other Pacific Islander; Other: See Appendix B for definition.

Table 31. Prevalence of last 30 day exposure to tobacco smoke* in a room by smoking status and by race/ethnicity among high school students

	N	Overall % (95% CI)	Never smokers % (95% CI)	Former smokers % (95% CI)	Current smokers % (95% CI)
Overall	121198	30.6 (29.9-31.4)	27.3 (26.7-28.0)	46.0 (44.3-47.7)	71.2 (69.4-73.0)
White	23689	35.9 (34.8-37.0)	31.8 (30.7-32.8)	53.1 (50.3-55.9)	75.5 (71.8-79.3)
Black	3062	31.5 (29.1-33.9)	28.0 (25.7-30.2)	55.5 (46.0-65.0)	69.4 (58.9-79.9)
Hispanic	58435	27.5 (26.7-28.4)	24.6 (23.8-25.3)	41.5 (39.4-43.6)	66.8 (63.9-69.6)
Asian	13713	29.2 (28.0-30.4)	28.1 (26.9-29.2)	48.6 (43.9-53.2)	61.6 (53.2-70.0)
AI/AN	362	40.5 (34.6-46.4)	32.9 (25.9-39.9)	51.5 (31.2-71.9)	83.7 (69.1-98.4)
NHOPI	756	38.6 (34.3-42.8)	34.2 (29.2-39.3)	48.7 (35.0-62.4)	80.1 (66.0-94.2)
Other	1912	37.2 (34.3-40.0)	33.7 (30.7-36.7)	57.0 (46.2-67.8)	70.7 (58.0-83.4)
Multiple	10522	37.1 (35.5-38.7)	33.7 (32.1-35.3)	50.6 (45.6-55.5)	82.4 (77.5-87.3)
Declined to Answer	6761	30.9 (29.4-32.3)	25.1 (23.6-26.6)	45.7 (41.3-50.1)	72.7 (68.2-77.1)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix for definition.

*Two products: Cigarettes and LCC.

Tables 32 and 33 present data on secondhand exposure to vapor and smoke in a car by race/ethnicity. Similar to the exposure of secondhand vapor in a room, students who were White (29.2%) had a significantly higher rate of secondhand exposure to vapor in a car compared to those who were Black, Hispanic, and Asian (17.1%, 16.4%, and 16.0%, respectively). Exposure to secondhand smoke in a car also varied across race/ethnicity: students who were White (16.4%) had a significantly higher rate of secondhand exposure to smoke in a car compared to those who were Hispanic and Asian (14.0% and 10.0%, respectively), but not Black (19.7%). Similar to patterns of exposure in a room, rates of exposure to secondhand vapor and smoke in a car were highest among current users and lowest among never users.

Table 32. Prevalence of last 30 day exposure to e-cigarette vapor in a car by vaping status and by race/ethnicity among high school students

	N	Overall % (95% CI)	Never vapers % (95% CI)	Former vapers % (95% CI)	Current vapers % (95% CI)
Overall	121513	20.1 (18.9-21.3)	10.6 (10.1-11.2)	27.5 (25.9-29.2)	68.4 (66.5-70.3)
White	23785	29.2 (27.3-31.0)	14.6 (13.5-15.7)	40.0 (37.3-42.6)	77.8 (75.5-80.0)
Black	3068	17.1 (14.8-19.3)	10.8 (8.9-12.7)	23.0 (18.0-28.0)	63.9 (54.5-73.2)
Hispanic	58766	16.4 (15.3-17.5)	8.9 (8.3-9.5)	22.6 (21.0-24.2)	60.5 (58.1-62.9)
Asian	13844	16.0 (14.7-17.3)	9.1 (8.2-10.1)	32.9 (29.3-36.4)	73.0 (68.3-77.6)
AI/AN	360	27.3 (21.4-33.2)	12.7 (7.9-17.4)	38.3 (24.7-51.8)	77.3 (61.4-93.1)
NHOPI	759	28.5 (24.8-32.3)	14.3 (10.8-17.9)	36.7 (27.4-46.1)	72.6 (62.5-82.6)
Other	1906	23.0 (20.0-26.0)	12.6 (10.3-14.9)	39.1 (28.7-49.6)	66.7 (57.7-75.7)
Multiple	10571	25.4 (23.8-27.1)	13.7 (12.6-14.9)	34.9 (31.7-38.2)	74.6 (71.5-77.8)
Declined to Answer	6534	22.3 (20.5-24.0)	11.6 (10.4-12.8)	25.5 (21.9-29.2)	63.5 (58.6-68.4)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Table 33. Prevalence of last 30 day exposure to tobacco smoke* in a car by smoking status and by race/ethnicity among high school students

	N	Overall % (95% CI)	Never smokers % (95% CI)	Former smokers % (95% CI)	Current smokers % (95% CI)
Overall	121880	15.1 (14.6-15.6)	11.7 (11.3-12.1)	30.2 (28.3-32.0)	60.4 (58.6-62.1)
White	23838	16.4 (15.5-17.4)	12.4 (11.6-13.2)	31.6 (29.2-34.1)	59.6 (55.8-63.4)
Black	3072	19.7 (17.3-22.0)	16.9 (14.6-19.1)	37.1 (28.7-45.5)	57.5 (45.1-69.9)
Hispanic	58877	14.0 (13.4-14.5)	11.0 (10.6-11.4)	27.5 (24.9-30.1)	55.9 (53.0-58.9)
Asian	13838	10.0 (9.3-10.7)	8.7 (8.0-9.4)	28.4 (23.9-33.0)	60.2 (51.3-69.2)
AI/AN	357	28.7 (22.6-34.8)	18.9 (12.8-25.0)	50.3 (29.7-70.9)	79.7 (62.1-97.2)
NHOPI	760	26.2 (22.3-30.1)	20.3 (16.5-24.1)	45.1 (30.5-59.8)	74.5 (59.8-89.2)
Other	1916	20.4 (17.7-23.0)	16.8 (14.3-19.2)	35.3 (22.4-48.2)	65.4 (51.3-79.5)
Multiple	10591	18.4 (17.0-19.8)	14.2 (13.2-15.3)	36.4 (32.4-40.4)	69.2 (62.3-76.2)
Declined to Answer	6684	20.0 (18.8-21.2)	14.0 (12.8-15.2)	34.7 (30.3-39.1)	67.0 (61.9-72.1)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix for definition; LCC = little cigars or cigarillos.

*Two products: Cigarettes and LCC.

Offers of Tobacco in the Last 30 Days among High School Students

In addition to assessing use of various products, the 2017-18 CSTS assessed whether high school students were offered various tobacco products in the last 30 days by asking "In the last 30 days has anyone offered you…" followed by a list of tobacco products. Receiving offers of tobacco products is an important indicator of environmental risk factors for tobacco use uptake among adolescents.[9] As shown in Table 34, one quarter (25.6%) of students were offered a tobacco product, with significantly more current users (81.2%) reporting tobacco product offers relative to never (12.4%) or former users (34.7%). The overall prevalence of offers of specific tobacco products reflects the overall prevalence of use of each tobacco product: far more students reported being offered e-cigarettes (the most prevalent product used by high school students) than cigarettes, LCC, or hookah.

Table 34. Prevalence of offers of tobacco products in the last 30 days by use status among high school students

	Overall N=125176 % (95% CI)	Never user of the product N= 115211 % (95% CI)	Former user of the product N=25759 % (95% CI)	Current user of the product N=15303 % (95% CI)
Any of the below	25.6 (24.3-26.9)	12.4 (11.7-13.1)	34.7 (33.2-36.2)	81.2 (79.7-82.7)
E-cigarettes	21.4 (19.9-22.8)	9.6 (8.9-10.3)	30.9 (29.2-32.6)	80.6 (78.8-82.4)
Cigarettes	6.8 (6.3-7.2)	3.9 (3.6-4.1)	21.5 (20.1-22.8)	77.3 (74.9-79.7)
LCC	4.4 (4.2-4.6)	2.3 (2.1-2.4)	19.0 (17.2-20.7)	55.9 (52.5-59.2)
Hookah	8.1 (7.6-8.5)	5.4 (5.1-5.7)	24.2 (22.8-25.5)	73.9 (70.7-77.2)

Abbreviations: LCC = little cigars or cigarillos.

Offers of Tobacco Products by Demographics

Table 35 shows the prevalence of offers of tobacco products by demographics. Overall, offers of tobacco products were higher among current users (81.2%) than never (12.4%) or former users (34.7%). Offers of tobacco products according to demographic characteristics reflect the prevalence of tobacco use by gender, race/ethnicity, and grade. Offers of tobacco products were generally similar across gender. There were some differences in the prevalence of offers across race/ethnicity, with White students (33.9%) generally indicating the highest prevalence of offers and Asian students (16.8%) generally indicating the lowest prevalence of offers. Differences in offers were also apparent across grade.

Table 35. Prevalence of offers of tobacco products* in the last 30 days by use status and by gender, race/ethnicity, and grade among high school students

	N	Overall % (95% CI)	Never user of any product % (95% CI)	Former user of any product % (95% CI)	Current user of any product % (95% CI)
Overall	125176	25.6 (24.3-26.9)	12.4 (11.7-13.1)	34.7 (33.2-36.2)	81.2 (79.7-82.7)
Gender					
Male	54378	24.8 (23.5-26.1)	12.6 (11.8-13.5)	32.9 (30.9-34.9)	80.1 (77.9-82.2)
Female	59351	24.8 (23.5-26.2)	11.9 (11.1-12.6)	35.9 (34.2-37.7)	83.7 (82.0-85.4)
Identified in Another Way	3210	38.2 (35.5-40.9)	19.4 (17.2-21.7)	44.2 (38.0-50.4)	81.5 (77.8-85.1)
Declined to Answer	7307	30.4 (28.7-32.1)	12.6 (11.4-13.9)	33.4 (30.5-36.2)	75.1 (71.6-78.6)
Race/Ethnicity					
White	24076	33.9 (31.8-36.1)	15.9 (14.5-17.4)	44.1 (41.3-46.8)	89.1 (87.4-90.7)
Black	3184	20.4 (18.2-22.7)	11.1 (9.3-12.9)	26.5 (22.3-30.6)	73.3 (66.2-80.3)
Hispanic	60174	23.2 (22.0-24.5)	11.8 (11.1-12.5)	31.8 (30.4-33.3)	76.8 (75.0-78.6)
Asian	14044	16.8 (15.5-18.0)	9.0 (8.0-10.0)	33.2 (29.4-37.0)	81.0 (77.7-84.4)
AI/AN	372	28.1 (22.3-33.9)	11.4 (7.1-15.8)	29.4 (18.2-40.7)	76.4 (59.9-92.9)
NHOPI	774	31.1 (27.0-35.1)	14.3 (10.5-18.1)	41.2 (32.4-50.1)	73.7 (64.8-82.5)
Other	1966	28.8 (25.5-32.0)	12.9 (10.7-15.0)	38.8 (31.5-46.1)	83.7 (78.3-89.0)
Multiple	10776	30.5 (28.6-32.3)	15.2 (13.8-16.6)	40.6 (37.2-44.0)	86.5 (84.3-88.8)
Declined to Answer	7663	28.7 (26.9-30.6)	12.1 (10.8-13.3)	32.7 (29.7-35.7)	76.0 (72.6-79.4)
Grade					
Grade 10	67985	23.7 (22.5-25.0)	12.5 (11.7-13.3)	36.4 (34.4-38.4)	82.2 (80.4-84.0)
Grade 12	57191	27.8 (26.4-29.3)	12.3 (11.6-13.1)	33.1 (31.7-34.6)	80.5 (78.4-82.5)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.

Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

*Four products: E-cigarettes, cigarettes, LCC, and hookah.

Exposure to Tobacco Ads in the Last 30 Days among High School Students

Participants were asked whether they had seen ads that either promoted or discouraged the use of three products (e-cigarettes, cigarettes, and LCC) within the last 30 days. Those that reported having seen ads for any of these products were asked whether the ads they saw *mostly promoted*, *mostly discouraged*, or *neither promoted nor discouraged* their use. There was also a response option for *I don't know*. It should be noted that student perceptions of the types of ads they have seen may be influenced by a number of factors, such as their own product use, age, and knowledge.

Table 36 shows students' overall exposure to tobacco ads by tobacco product. Most students (71.0%) had been exposed to tobacco-related ads within the last 30 days (data not shown). Overall exposure to cigarette ads (67.0%) was higher than exposure to e-cigarette (45.3%) or LCC (26.5%) ads. Among students who had seen tobacco-related ads, ads that were perceived to be anti-tobacco were the most common type of ad seen for all products. Overall, approximately one in five students (21.2%) thought the ads were neutral or did not know whether they were for or against the respective products (data not shown).

Table 36. Exposure to perceived types of tobacco ads by tobacco product among high school students

N=121691	Overall exposure to tobacco-related ads % (95% CI)	Exposure to… Pro-tobacco ads % (95% CI)	Anti-tobacco ads % (95% CI)	Neutral ads % (95% CI)	I don't know % (95% CI)
E-cigarettes	45.3 (44.2-46.4)	13.4 (12.9-13.9)	20.3 (19.3-21.3)	3.7 (3.5-3.8)	7.0 (6.7-7.2)
Cigarettes	67.0 (66.2-67.8)	11.1 (10.7-11.5)	45.8 (44.8-46.8)	3.6 (3.5-3.8)	6.2 (5.9-6.4)
LCC	26.5 (25.7-27.2)	5.4 (5.1-5.7)	11.4 (11.0-11.8)	2.2 (2.0-2.3)	6.6(6.4-6.8)

Abbreviations: LCC = little cigars or cigarillos.

Students who had been exposed to ads for specific tobacco products (e-cigarettes, cigarettes, LCC) in the last 30 days were asked to identify where the last ad they saw for that product was. Tables 37-39 show students' overall exposure to tobacco ads by ad type and location for each of the three products. Overall, *Internet or Social Media* and *TV* were the most common places students reported last seeing an ad for any of these products. Notably, students' last reported exposure to ads they perceived to be pro-cigarette was highest for *TV*; in contrast, last reported exposure to ads they perceived to be pro-e-cigarette was highest for *Internet or Social Media*. This is contrary to what one might expect, given that pro-cigarette ads are banned from airing on television and pro-e-cigarette ads are not. This discrepancy may point to the increased use of online streaming services, which the students may have interpreted as TV or Internet. There may also be differences in student perceptions of what constitutes an ad (i.e., product placement). Further research is needed to explain these results. Also of note, a high proportion of students were exposed to LCC ads in a *gas station or convenience store* (12.9%).

Table 37. Location of last exposure to e-cigarette ads among those high school students who reported last 30 day ad exposure by perceived ad type

	Overall exposure to e-cigarette-related ads N=51733 % (95% CI)	Exposure to… Pro-e-cigarette ads N=15806 % (95% CI)	Anti-e-cigarette ads N=24699 % (95% CI)	Neutral ads N=4104 % (95% CI)	I don't know N=6700 % (95% CI)
Internet or Social Media	34.7 (33.8-35.7)	40.6 (39.2-42.0)	33.3 (32.3-34.3)	33.4 (31.2-35.6)	28.2 (26.5-30.0)
TV	42.0 (41.1-42.9)	30.2 (28.7-31.7)	55.6 (54.3-56.8)	28.0 (26.2-29.8)	31.1 (29.5-32.7)
Magazine	2.2 (1.9-2.4)	2.6 (2.2-2.9)	1.1 (0.9-1.3)	4.3 (3.4-5.2)	3.5 (2.8-4.2)
Gas station or convenience store	7.8 (7.5-8.2)	12.4 (11.7-13.1)	2.1 (1.9-2.4)	15.4 (13.5-17.4)	12.2 (11.2-13.1)
Smoke or vape shop	6.2 (5.9-6.5)	9.6 (8.9-10.3)	1.7 (1.5-2.0)	11.3 (9.8-12.7)	10.2 (9.3-11.1)
Bus stop or billboard	3.5 (3.2-3.8)	3.2 (2.8-3.6)	2.6 (2.2-3.1)	4.8 (3.9-5.7)	6.0 (5.3-6.7)
Other	3.6 (3.2-3.9)	1.4 (1.2-1.7)	3.5 (2.8-4.2)	2.8 (2.2-3.4)	8.8 (7.8-9.8)

Table 38. Location of last exposure to cigarette ads among those high school students who reported last 30 day ad exposure by perceived ad type

	Overall exposure to cigarette-related ads N=79270 % (95% CI)	Exposure to… Pro-cigarette ads N=12949 % (95% CI)	Anti-cigarette ads N=54972 % (95% CI)	Neutral ads N=4150 % (95% CI)	I don't know N=6793 % (95% CI)
Internet or Social Media	32.6 (31.8-33.3)	27.3 (26.2-28.4)	35.0 (34.1-35.9)	26.9 (24.8-29.0)	27.0 (25.3-28.6)
TV	48.3 (47.4-49.3)	38.8 (37.5-40.1)	52.5 (51.5-53.6)	37.0 (34.7-39.4)	41.0 (39.3-42.8)
Magazine	1.2 (1.1-1.3)	2.8 (2.3-3.3)	0.7 (0.6-0.8)	2.1 (1.6-2.5)	1.8 (1.4-2.1)
Gas station or convenience store	9.7 (9.3-10.0)	19.2 (17.9-20.5)	5.5 (5.3-5.8)	22.0 (20.6-23.4)	16.6 (15.4-17.9)
Smoke or vape shop	2.0 (1.8-2.1)	3.5 (3.1-4.0)	1.1 (1.0-1.2)	3.8 (3.0-4.5)	4.1 (3.5-4.6)
Bus stop or billboard	4.0 (3.8-4.3)	6.5 (5.9-7.2)	3.1 (2.7-3.4)	5.9 (4.9-6.8)	5.6 (4.8-6.4)
Other	2.2 (2.1-2.4)	1.8 (1.5-2.1)	2.1 (1.9-2.2)	2.4 (1.7-3.1)	3.9 (3.4-4.4)

Table 39. Location of last exposure to LCC ads among those high school students who reported last 30 day ad exposure by perceived ad type

	Overall exposure to LCC-related ads N=27981 % (95% CI)	Exposure to… Pro-LCC ads N=6086 % (95% CI)	Anti-LCC ads N=13140 % (95% CI)	Neutral ads N=2285 % (95% CI)	I don't know N=6122 % (95% CI)
Internet or Social Media	28.4 (27.3-29.4)	27.8 (25.5-30.1)	33.2 (32.1-34.4)	22.8 (20.3-25.3)	21.9 (20.4-23.3)
TV	42.1 (41.1-43.2)	32.7 (30.5-34.9)	53.8 (52.6-55.0)	29.3 (26.6-32.0)	32.9 (31.4-34.4)
Magazine	3.3 (2.9-3.6)	4.2 (3.5-4.9)	2.1 (1.8-2.4)	6.3 (4.6-8.1)	3.5 (2.8-4.2)
Gas station or convenience store	12.9 (12.3-13.5)	22.3 (20.7-23.9)	5.2 (4.7-5.6)	23.3 (20.7-26.0)	15.6 (14.5-16.7)
Smoke or vape shop	5.1 (4.7-5.5)	6.9 (6.0-7.9)	1.6 (1.3-1.9)	9.1 (7.7-10.5)	8.7 (7.7-9.6)
Bus stop or billboard	4.3 (3.9-4.7)	4.3 (3.6-4.9)	2.7 (2.3-3.1)	6.0 (4.8-7.3)	6.6 (5.8-7.3)
Other	3.9 (3.5-4.2)	1.8 (1.2-2.3)	1.4 (1.1-1.6)	3.1 (2.2-4.0)	11.0 (9.8-12.2)

Table 40 presents exposure to perceived pro- and anti-e-cigarette ads among never, former, and current e-cigarette users (vapers). Overall, current vapers reported the highest level of exposure to e-cigarette ads (56.6%) relative to never (43.0%) and former vapers (47.3%). This pattern was the same regardless of perceived ad type (pro, anti, neutral). In general, more students reported exposure to e-cigarette ads they perceived to be anti rather than pro.

Table 40. Exposure to types of perceived e-cigarette ads among high school students by vaping status

	Never vaper N=84671 % (95% CI)	Former vaper N=20580 % (95% CI)	Current vaper N=12600 % (95% CI)
Overall exposure to e-cigarette ads	43.0 (42.0-44.0)	47.3 (45.6-49.0)	56.6 (54.7-58.5)
Exposure to…			
Pro-e-cigarette ads	12.6 (12.2-13.0)	14.5 (13.2-15.7)	17.2 (16.2-18.2)
Anti-e-cigarette ads	19.6 (18.7-20.5)	20.7 (19.6-21.9)	25.1 (23.0-27.2)
Neutral ads	3.3 (3.1-3.5)	4.1 (3.6-4.6)	5.1 (4.6-5.6)
I don't know	6.8 (6.5-7.0)	6.8 (6.3-7.4)	7.6 (6.9-8.2)

Note: Due to missing data for perceived ad exposure type, subgroup percentages may not sum to the overall percent.

Table 41 presents exposure to perceived pro- and anti-cigarette ads among never, former, and current cigarette smokers. Overall, current smokers had the highest level of exposure to cigarette ads (77.0%) relative to never (66.4%) and former smokers (72.0%). This pattern was generally the same for exposure to cigarette ads perceived to be pro and neutral. However, there was no difference in exposure to ads perceived to be anti-cigarette between current, former, and never smokers.

Table 41. Exposure to types of perceived cigarettes ads among high school students by smoking status

	Never smoker N=109641 % (95% CI)	Former smoker N=8264 % (95% CI)	Current smoker N=2174 % (95% CI)
Overall exposure to cigarette ads	66.4 (65.6-67.2)	72.0 (70.4-73.6)	77.0 (75.0-79.1)
Exposure to…			
Pro-cigarette ads	10.8 (10.5-11.2)	12.4 (11.4-13.5)	17.5 (15.1-20.0)
Anti-cigarette ads	45.8 (44.8-46.8)	47.9 (46.1-49.7)	45.7 (42.5-48.9)
Neutral ads	3.5 (3.3-3.6)	5.0 (4.3-5.7)	5.3 (4.1-6.6)
I don't know	6.1 (5.8-6.3)	6.3 (5.5-7.2)	7.9 (6.3-9.5)

Note: Due to missing data for perceived ad exposure type, subgroup percentages may not sum to the overall percent.

Table 42 presents exposure to perceived pro- and anti-LCC ads among never, former, and current LCC smokers. While overall exposure to LCC ads followed a similar pattern as described for exposure to e-cigarette and cigarette ads, the difference between current and former users (48.3% and 40.1%, respectively) versus never users (25.1%) was more distinct, particularly for students' exposure to LCC ads they perceived to be pro.

Table 42. Exposure to types of perceived LCC ads among high school students by smoking status

	Never smoker N=112016 % (95% CI)	Former smoker N=5473 % (95% CI)	Current smoker N=2372 % (95% CI)
Overall exposure to LCC ads	25.1 (24.4-25.8)	40.1 (37.9-42.2)	48.3 (45.5-51.0)
Exposure to…			
Pro-LCC ads	4.9 (4.6-5.1)	10.5 (8.6-12.3)	16.2 (13.8-18.7)
Anti-LCC ads	11.2 (10.8-11.6)	14.2 (12.9-15.6)	15.3 (13.0-17.5)
Neutral ads	2.0 (1.9-2.1)	4.0 (3.3-4.8)	4.4 (3.4-5.4)
I don't know	6.3 (6.1-6.5)	9.9 (8.7-11.1)	10.2 (8.3-12.1)

Note: Due to missing data for perceived ad exposure type, subgroup percentages may not sum to the overall percent.
Abbreviations: LCC = little cigars or cigarillos.

Summary

Most high school students reported living in a home that had complete bans on smoking or vaping, although the rates of bans on smoking were generally higher than those for vaping. Still, over one in five never users had been exposed to vapor (20.5%) or smoke (27.4%) in a room in the last 30 days. Students also reported being offered tobacco products. Even among those who had never used the product, approximately one in eight (12.4%) had been offered a tobacco product in the last 30 days. Most students, both users and non-users, were exposed to tobacco-related ads in the last 30 days, with more students being exposed to ads they perceived to be anti-tobacco than to pro-tobacco. *Internet or Social Media and TV* were the most common places students reported last seeing a tobacco-related ad.

CHAPTER 6 – Access to E-Cigarettes and Cigarettes

The following chapter presents data on how students obtain e-cigarettes and cigarettes. Current e-cigarette and cigarettes users were first asked whether they usually pay for their own e-cigarettes (or e-liquid) or cigarettes. Students who reported paying for their own e-cigarettes or cigarettes were then asked where they usually buy their e-cigarettes (or e-liquid) or cigarettes, while students who reported not paying for their own e-cigarettes or cigarettes were asked where they usually get their e-cigarettes (or e-liquid) or cigarettes. Finally, students who reported buying e-cigarettes or cigarettes from a store were asked the type of store they usually buy their e-cigarettes (or e-liquid) or cigarettes from. The same students were also asked whether they had asked someone older to buy e-cigarettes or cigarettes for them.

Acquisition of E-Cigarettes among High School Students

Over half (57.6%) of current vapers reported not paying for their e-cigarettes, representing acquisition through a social source (data not shown). Table 43 presents how these students usually get e-cigarettes. Approximately half of students (51.4%) who did not pay for their own e-cigarettes reported being offered e-cigarettes. Of note, a high percentage of students did not report how they got e-cigarettes (16.1%).

Table 43. Acquisition of e-cigarettes (or e-liquid) among those high school students who are current e-cigarette users by social source

Did not pay for own e-cigarettes (or e-liquid)	Current e-cigarette users N=7306 % (95% CI)
Someone else offers them to me	51.4 (49.4-53.3)
I ask someone for them	17.9 (16.6-19.2)
I get them some other way	14.6 (13.0-16.2)
Declined to Answer	16.1 (14.6-17.6)

Note: data are based on a subset of current e-cigarette users who reported that they do not usually pay for their e-cigarettes (57.6%; n=12824).

Overall, 42.4% of current vapers reported paying for their own e-cigarettes. Table 44 presents how students usually buy e-cigarettes. Approximately two thirds of these students reported buying e-cigarettes from the store themselves or from someone else (30.6% and 35.9%, respectively). Only 8.8% of students reported buying e-cigarettes from the Internet (including apps). Of note, a high percentage of students did not report how they bought e-cigarettes (21.7%). Among those who paid for their own e-cigarettes, 22.4% reported asking someone that is older than them to buy e-cigarettes for them (data not shown).

Table 44. Acquisition of e-cigarettes (or e-liquid) among those high school students who are current e-cigarette users by purchase source

Paid for own e-cigarettes (or e-liquid)	Current e-cigarette users N=5510 % (95% CI)
I buy them from the store myself	30.6 (28.4-32.7)
I buy them from someone else	35.9 (34.0-37.8)
Internet (including apps)	8.8 (7.7-10.0)
Other	3.1 (2.5-3.6)
Declined to Answer	21.7 (20.1-23.2)

Note: data are based on a subset of current e-cigarette users who reported that they usually pay for their e-cigarettes (42.4%; n=12824).

Acquisition of Cigarettes among High School Students

Similar to e-cigarettes, over half (55.4%) of current smokers reported not paying for their cigarettes, representing acquisition through a social source (data not shown). Table 45 presents how students usually get cigarettes. Approximately one third of students (34.5%) who did not pay for their own cigarettes reported being offered cigarettes, while nearly one quarter (23.2%) reported asking someone for cigarettes. Of note, a high percentage of students did not report how they got cigarettes (17.1%).

Table 45. Acquisition of cigarettes among those high school students who are current smokers by social source

Did not pay for own cigarettes	Current cigarette smokers N=1288 % (95% CI)
Someone else offers them to me	34.5 (31.0-38.0)
I ask someone for them	23.2 (20.1-26.3)
I get them some other way	25.1 (21.5-28.7)
Declined to Answer	17.1 (14.4-19.8)

Note: data are based on a subset of current cigarette smokers who reported that they do not usually pay for their cigarettes (55.4% n=2291).

Overall, 44.6% of current smokers reported paying for their own cigarettes (data not shown). Table 46 presents how students usually buy cigarettes. Over two thirds of these students reported buying cigarettes from the store themselves or from someone else (37.3% and 36.0%, respectively). Few students (2.1%) reported buying cigarettes from the Internet (including apps). Of note, a high percentage of students did not report how they bought cigarettes

(20.1%). Among those who paid for their own cigarettes, 23.9% reported asking someone who is older than them to buy cigarettes for them (data not shown).

Table 46. Acquisition of cigarettes among those high school students (44.6%) who are current smokers by purchase source

Paid for own cigarettes	Current cigarette smokers N=1000 % (95% CI)
I buy them from the store myself	37.3 (32.2-42.4)
I buy them from someone else	36.0 (31.5-40.5)
Internet (including apps)	2.1 (1.0-3.3)
Other	4.4 (2.2-6.6)
Declined to Answer	20.1 (16.5-23.7)

Note: data are based on a subset of current cigarette smokers who reported that they do usually pay for their cigarettes (44.6% n=2291).

Sources of E-cigarettes and Cigarettes among High School Students Purchasing from a Store

Students who reported buying e-cigarettes or cigarettes from the store were asked the specific store type where they bought the tobacco product. As shown in Table 47, among current e-cigarette users, vape shops (54.5%) and tobacco shops (18.1%) were the most popular store types for purchasing e-cigarettes. In contrast, among current cigarette smokers, gas stations or convenience stores (40.8%) and tobacco shops (24.6%) were the most popular store types for purchasing cigarettes.

Table 47. Source of e-cigarettes and cigarettes among those high school students who buy e-cigarettes or cigarettes from a store by store type

	Bought e-cigarettes from a store N=1727 % (95% CI)	Bought cigarettes from a store N=399 % (95% CI)
Gas station or convenience store	9.5 (7.2-11.8)	40.8 (33.4-48.1)
Grocery store	1.3 (0.7-1.9)	4.3 (2.4-6.1)
Drugstore or pharmacy	2.1 (1.2-3.0)	3.8 (1.7-5.9)
Restaurant, deli, or donut shop	1.2 (0.6-1.8)	2.8 (0.8-4.7)
Tobacco shop	18.1 (14.8-21.4)	24.6 (18.4-30.8)
Vape shop	54.5 (49.9-59.1)	8.3 (5.2-11.3)
Other	2.5 (1.7-3.3)	5.1 (1.3-9.0)
Declined to Answer	10.9 (8.4-13.4)	10.4 (6.7-14.2)

Perceived Ease of Obtaining E-Cigarettes and Cigarettes

Overall, approximately two thirds (65.2%) of students thought that it would be *very easy* or *somewhat easy* to get e-cigarettes or cigarettes (data not shown). Table 48 presents the perceived ease of obtaining e-cigarettes and cigarettes among high school students by use status. Significantly more students believing that it would be easy to get e-cigarettes (58.2%) relative to cigarettes (48.7%). Perceived ease of access differed significantly according to product use status, with the highest percentage of current users perceiving that is would be *very easy* or *somewhat easy* to get e-cigarettes or cigarettes relative to never or former users.

Table 48. Perceived ease of obtaining e-cigarettes and cigarettes by use status among high school students

	E-cigarettes		Cigarettes	
	N	**% (95% CI)**	**N**	**% (95% CI)**
Overall	120000	58.2 (57.0-59.5)	119814	48.7 (47.9-49.4)
Never user	82700	49.0 (47.9-50.1)	107486	46.0 (45.4-46.7)
Former user	20657	73.2 (72.0-74.4)	8443	68.6 (66.8-70.3)
Current user	13113	88.7 (87.7-89.6)	2272	83.9 (82.0-85.8)

Summary

Although a variety of sources are available, most students obtain e-cigarettes and cigarettes through social sources, rather than retail sources. Almost one quarter of students reported asking someone that is older than them to buy e-cigarettes (22.4%) or cigarettes (23.9%) for them. Retail sources of e-cigarettes and cigarettes differed, with many students reporting purchasing e-cigarettes from vape shops and purchasing cigarettes from tobacco shops. Many students (58.2% and 48.7%, respectively) perceived that it would be easy to get e-cigarettes or cigarettes if they wanted them.

CHAPTER 7 – Geographic Differences

This chapter examines the prevalence of tobacco use by geographic location. The data may be categorized in many ways. We first explored use by geographic status, a designation assigned by the U.S. Department of Education to identify school locale as city, suburban, town, or rural. Second, we investigated 22 regions that corresponded with the 2017-18 CSTS sampling scheme. We also explored the 11 regions analogous to the Priority Populations Initiative (PPI), an effort of the California Department of Public Health that aims to reduce tobacco-related disparities. Ultimately, we categorized the State of California into four regions: North, Central, South, and Greater Bay areas to deliver stable estimates on regional differences.

It should be noted that the total number of schools in this data set is 333. The original sampling design was not set up for regional analysis except for the 22 regions that were in the original CSTS sample. However, even for the 22 regions in the original sample, the total number of participating schools in many regions did not fulfill sample requirements. Thus, the results reported in this chapter need to be interpreted with caution.

Tobacco Use by Urban Classification

Each school was assigned a locale code on a continuum of 12 concatenations ranging from *Large City* to *Rural* based on its physical address.[10] For analytic purposes, the classifications were collapsed into three groups: *City* as territories inside a principal city inside an urbanized area; *Suburban* as territories outside a principal city and inside an urbanized area; and *Rural & Town* as territories outside an urbanized area and in or out of an urban cluster.

Table 49 presents the use of products among high school students by urban classification. Overall tobacco use did not differ significantly according to school urban classification. The most noticeable difference is the use of smokeless tobacco: students at Rural & Town schools had much higher rates of smokeless tobacco (1.8%) relative to students in City or Suburban schools (0.6% for each).

Table 49. Prevalence of current use of tobacco products by urban classification among high school students

	City N=48035 % (95% CI)	Suburban N=71211 % (95% CI)	Rural & Town N=10191 % (95% CI)
Any of the below	11.6 (10.5-12.8)	13.1 (11.9-14.3)	13.3 (10.7-15.8)
E-cigarettes	10.0 (8.8-11.2)	11.5 (10.1-12.8)	11.0 (8.3-13.6)
Cigarettes	1.7 (1.5-1.9)	2.0 (1.7-2.2)	3.1 (2.2-4.0)
LCC	2.0 (1.7-2.4)	2.2 (2.0-2.5)	2.9 (2.3-3.6)
Big cigars	0.7 (0.5-0.9)	0.7 (0.6-0.8)	0.8 (0.6-1.0)
Hookah	1.6 (1.3-1.8)	1.7 (1.5-1.9)	2.1 (1.8-2.4)
Smokeless	0.6 (0.4-0.7)	0.6 (0.5-0.7)	1.8 (1.2-2.4)

Abbreviations: LCC = little cigars or cigarillos.

Tobacco Use by 22 CSTS Sampling Regions

In previous cycles, the survey utilized a sampling scheme based on 12 California regions. This survey cycle increased the number of regions from 12 to 22. Figure 1 and Table 50 present the counties included in each region, and Tables 49-50 present tobacco use prevalence data for each region.

It is important to note that many regions did not meet the sample size required for stable regional representation. As the state is divided into additional regions, the sample size within each region decreases. This results in wider confidence intervals, which generates an unstable interpretation of regional differences. Statistical adjustments were made to account for multiple comparisons, which also results in wider confidence intervals. Interpret these results with caution.

Figure 1. Identification of 22 regions used in the 2017-18 CSTS

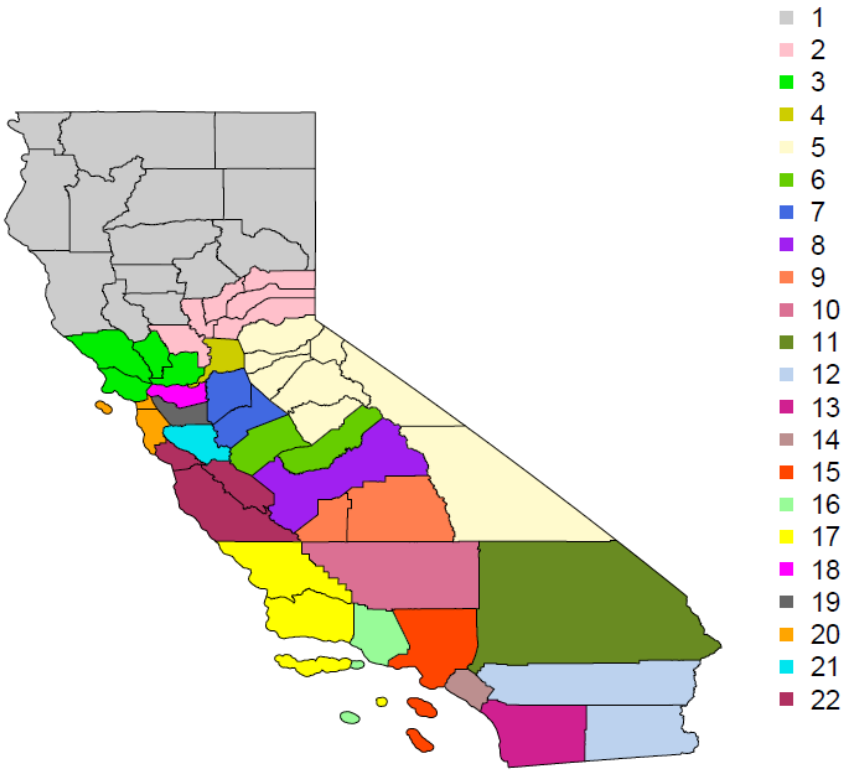

Table 50. Identification of counties within each of the CSTS 2017-18 regions

Region	Counties
1	Butte, Colusa, Del Norte, Glenn, Humbolt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity
2	Nevada, Placer, Sierra, Sutter, Yolo, Yuba
3	Marina, Napa, Solano, Sonoma
4	Sacramento
5	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Tuolumne
6	Madera, Merced
7	San Joaquin, Stanislaus
8	Fresno
9	Kings, Tulare
10	Kern
11	San Bernardino
12	Imperial, Riverside
13	San Diego
14	Orange
15	Los Angeles
16	Ventura
17	San Luis Obispo, Santa Barbara
18	Contra Costa
19	Alameda
20	San Francisco, San Mateo
21	Santa Clara
22	Monterey, San Benito, Santa Cruz

In 2017-18, current use of tobacco products by high school students ranged from 6.1% in Region 6 to 24.3% in Region 5, as shown in Table 51.

Note: Comparisons between regions need to be made with caution. Some regions had only a few schools participate in the survey. Their sample sizes were small. For example, Region 5 had only 3 schools and 421 students, and Region 6 had only 2 schools and 838 students participate in the survey. This may reduce the representativeness of participating students for all students in those regions. In other words, comparisons between these regions with small sample sizes need to be made with great caution and replications in future surveys are needed to reach any conclusion about regional differences. The wide confidence intervals in the table reflect statistical adjustments made to allow for multiple comparisons.

Table 51. Prevalence of tobacco use by CSTS region among high school students

Region	Counties	N	Ever use % (99.8% CI)	Current use % (99.8% CI)
Overall		129494	34.5 (34.1-34.8)	12.7 (12.4-12.9)
1	Butte, Colusa, Del Norte, Glenn, Humbolt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity	1980	36.8 (27.2-46.5)	12.4 (7.9-16.9)
2	Nevada, Placer, Sierra, Sutter, Yolo, Yuba	3025	38.9 (28.2-49.6)	18.7 (11.4-26.0)
3	Marina, Napa, Solano, Sonoma	4697	37.3 (26.8-47.8)	16.3 (9.8-22.8)
4	Sacramento	9913	31.8 (25.6-38.0)	12.2 (6.7-17.7)
5	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Tuolumne	421	46.0 (36.6-55.4)	24.3 (14.3-34.2)
6	Madera, Merced	838	31.3 (21.3-41.3)	6.1 (5.0-7.2)
7	San Joaquin, Stanislaus	6265	30.2 (23.5-36.9)	10.0 (4.1-16.0)
8*	Fresno	1988	35.1 (27.2-43.0)	10.0 (3.4-16.6)
9	Kings, Tulare	2447	37.3 (31.7-42.9)	10.6 (6.8-14.5)
10*	Kern	1639	33.2 (27.6-38.7)	6.9 (5.0-8.8)
11*	San Bernardino	6991	34.9 (27.7-42.1)	11.6 (6.6-16.5)
12	Imperial, Riverside	12086	35.0 (27.7-42.3)	11.2 (7.0-15.4)
13*	San Diego	8440	34.3 (28.8-39.8)	12.9 (8.2-17.5)
14	Orange	13760	32.0 (26.4-37.6)	13.3 (8.3-18.2)
15	Los Angeles	24903	35.0 (30.8-39.3)	11.6 (9.1-14.1)
16	Ventura	7226	36.8 (32.0-41.5)	15.4 (11.6-19.3)
17	San Luis Obispo, Santa Barbara	882	40.6 (34.5-46.7)	16.4 (3.9-28.9)
18	Contra Costa	7460	39.0 (33.3-44.7)	18.3 (11.5-25.1)
19	Alameda	5321	27.6 (20.0-35.2)	13.2 (7.8-18.6)
20	San Francisco, San Mateo	2618	41.0 (31.7-50.4)	22.0 (14.7-29.2)
21*	Santa Clara	3639	29.0 (18.4-39.6)	11.3 (7.4-15.3)
22	Monterey, San Benito, Santa Cruz	2955	33.7 (28.5-38.8)	9.6 (5.2-14.0)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.
*Did not meet regional sampling requirements.

Tables 52a and 52b present the prevalence of current use for each tobacco product. In line with the results presented in Chapter 1, current use of all tobacco products (except e-cigarettes) is low.

Note: Comparisons between regions need to be made with caution due to small sample sizes in some regions. The wide confidence intervals in the table reflect statistical adjustments made to allow for multiple comparisons.

Table 52a. Prevalence of current tobacco product use by CSTS region among high school students

CSTS Region	Counties	N	E-cigarettes % (99.8% CI)	Cigarettes % (99.8% CI)	LCC % (99.8% CI)
Overall		129437	10.9 (10.7-11.1)	2.0 (1.9-2.1)	2.3 (2.1-2.4)
1	Butte, Colusa, Del Norte, Glenn, Humbolt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity	1977	8.1 (2.1-14.2)	3.1 (1.5-4.7)	3.5 (1.5-5.5)
2	Nevada, Placer, Sierra, Sutter, Yolo, Yuba	3023	16.2 (6.8-25.7)	4.8 (2.5-7.1)	4.0 (1.0-7.0)
3	Marina, Napa, Solano, Sonoma	4696	15.0 (7.9-22.2)	2.0 (0.9-3.0)	2.6 (1.5-3.7)
4	Sacramento	9911	10.4 (5.0-15.7)	2.3 (1.1-3.5)	2.9 (1.5-4.3)
5	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Tuolumne	421	20.8 (11.3-30.4)	9.3 (5.9-12.7)	9.6 (6.3-12.9)
6	Madera, Merced	838	3.9 (3.2-4.6)	0.5 (0.3-0.6)	1.4 (0.9-1.9)
7	San Joaquin, Stanislaus	6260	7.4 (1.3-13.5)	1.6 (0.7-2.5)	2.5 (1.3-3.8)
8*	Fresno	1986	8.0 (3.2-12.8)	1.9 (0.8-3.1)	2.4 (0.5-4.3)
9	Kings, Tulare	2446	7.7 (5.0-10.4)	2.2 (0.9-3.6)	3.8 (2.0-5.6)
10*	Kern	1639	5.0 (1.7-8.2)	1.6 (1.3-1.9)	1.7 (0.7-2.7)
11*	San Bernardino	6990	9.8 (4.3-15.4)	1.9 (0.6-3.2)	1.9 (1.0-2.8)
12	Imperial, Riverside	12080	8.6 (5.0-12.2)	2.3 (0.5-4.1)	2.4 (0.8-3.9)
13*	San Diego	8436	10.9 (5.8-15.9)	2.5 (1.8-3.1)	1.9 (1.2-2.6)
14	Orange	13753	12.9 (7.6-18.3)	1.4 (0.7-2.0)	1.4 (0.9-1.8)
15	Los Angeles	24891	10.0 (7.3-12.7)	1.7 (1.2-2.2)	2.0 (1.5-2.6)
16	Ventura	7225	15.0 (10.8-19.2)	1.9 (1.2-2.6)	1.6 (0.9-2.3)
17	San Luis Obispo, Santa Barbara	882	13.9 (3.1-24.6)	3.9 (0.0-9.8)	2.4 (0.0-5.0)
18	Contra Costa	7452	17.2 (9.4-24.9)	1.9 (1.2-2.7)	2.9 (2.3-3.4)
19	Alameda	5320	11.9 (6.1-17.8)	1.4 (0.6-2.3)	2.1 (0.4-3.7)
20	San Francisco, San Mateo	2618	20.8 (12.9-28.8)	3.1 (1.1-5.2)	2.4 (1.6-3.3)
21*	Santa Clara	3639	10.7 (7.2-14.2)	1.1 (0.4-1.8)	1.1 (0.0-2.7)
22	Monterey, San Benito, Santa Cruz	2954	7.2 (3.6-10.8)	1.3 (0.8-1.9)	2.8 (0.6-5.0)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.

Abbreviations: LCC = little cigars or cigarillos.

*Did not meet regional sampling requirements.

Table 52b. Prevalence of current tobacco product use by CSTS region among high school students

CSTS Region	Counties	N	Big cigars % (99.8% CI)	Hookah % (99.8% CI)	Smokeless tobacco % (99.8% CI)
Overall		128172	0.7 (0.6-0.8)	1.7 (1.6-1.8)	0.8 (0.7-0.8)
1	Butte, Colusa, Del Norte, Glenn, Humbolt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Siskiyou, Tehama, Trinity	1977	1.1 (0.4-1.8)	1.5 (0.1-3.0)	2.5 (0.0-5.5)
2	Nevada, Placer, Sierra, Sutter, Yolo, Yuba	3023	1.3 (0.0-2.7)	2.0 (1.1-2.8)	2.6 (0.0-5.4)
3	Marina, Napa, Solano, Sonoma	4696	0.8 (0.4-1.3)	1.8 (0.7-3.0)	0.8 (0.1-1.4)
4	Sacramento	9911	0.7 (0.3-1.1)	1.4 (0.7-2.2)	0.7 (0.0-1.4)
5	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Tuolumne	421	1.0 (0.0-2.5)	1.2 (0.0-3.1)	5.2 (4.2-6.2)
6	Madera, Merced	838	0.3 (0.0-0.7)	2.2 (0.0-4.5)	1.1 (0.8-1.4)
7	San Joaquin, Stanislaus	6260	0.8 (0.3-1.3)	2.0 (1.1-3.0)	0.9 (0.0-1.9)
8*	Fresno	1986	0.7 (0.1-1.3)	1.8 (0.7-2.9)	0.7 (0.0-1.4)
9	Kings, Tulare	2446	0.7 (0.4-1.1)	1.9 (0.9-2.9)	1.8 (0.1-3.5)
10*	Kern	1639	0.6 (0.0-1.7)	1.6 (0.2-2.9)	0.4 (0.1-0.7)
11*	San Bernardino	6990	0.5 (0.0-1.0)	1.9 (1.1-2.7)	0.7 (0.0-1.4)
12	Imperial, Riverside	12080	0.6 (0.3-0.8)	1.7 (0.7-2.6)	0.4 (0.2-0.7)
13*	San Diego	8436	0.6 (0.3-0.9)	2.7 (1.1-4.3)	0.5 (0.1-0.8)
14	Orange	13753	0.7 (0.2-1.1)	1.0 (0.6-1.4)	0.3 (0.1-0.5)
15	Los Angeles	24891	0.7 (0.2-1.2)	1.7 (1.1-2.3)	0.4 (0.2-0.7)
16	Ventura	7225	0.7 (0.2-1.1)	1.2 (0.8-1.6)	0.5 (0.2-0.8)
17	San Luis Obispo, Santa Barbara	882	0.6 (0.0-1.3)	1.6 (0.0-3.2)	2.6 (0.0-7.7)
18	Contra Costa	7452	1.1 (0.7-1.6)	1.4 (1.1-1.8)	1.2 (0.6-1.8)
19	Alameda	5320	0.7 (0.3-1.2)	1.3 (0.9-1.7)	0.5 (0.1-0.8)
20	San Francisco, San Mateo	2618	0.6 (0.0-1.1)	2.6 (1.9-3.3)	0.8 (0.0-1.7)
21*	Santa Clara	3639	0.4 (0.1-0.7)	0.6 (0.4-0.7)	0.2 (0.0-0.5)
22	Monterey, San Benito, Santa Cruz	2954	0.6 (0.0-1.4)	1.3 (0.5-2.1)	1.3 (0.0-3.7)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.
*Did not meet regional sampling requirements.

Tobacco Use by Priority Population Initiative Regions

The California Department of Public Health's California Tobacco Control Program issued a request for applications designed to mobilize communities to reduce tobacco-related disparities among several priority populations. The Priority Population Initiative (PPI) targeted disparities among African American/Black; Asian/Pacific Islander; Hispanic/Latino; and Lesbian, Gay, Bisexual, Transgender, Queer population. California's 12 media markets were collapsed

into 11 regions, which were then coded based on whether they had a “substantial cluster” of the targeted populations.[11]

The CSTS was not sampled according to the 11 PPI regions, and the 22 CSTS regions are not perfect subsets of all PPI regions. The 2017-18 CSTS sampled according to 22 regions and weighted the data accordingly (refer to Appendix B). For this section, the only statistical weights applied were based on student response rates. Statistical adjustments were made to account for multiple comparisons, resulting in wide confidence intervals. The results in these tables must be interpreted with caution.

Table 53 indicates which counties were in each PPI region and which priority populations were identified in each region.

Table 53. Identification of counties within each Priority Population Initiative (PPI) region

PPI Region	Counties	Priority Populations*
Bay Area	Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Solano	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
Central Coast	Monterey, San Benito, Santa Cruz	Hispanic/Latino
Central Valley	Fresno, Kern, Kings, Madera, Mariposa, Merced, Tulare	African American/Black Asian/Pacific Islander Hispanic/Latino
Gold Country	Alpine, Amador, Calaveras, El Dorado, Inyo, Mono, Nevada, Placer, Sacramento, San Joaquin, Stanislaus, Sutter, Tuolumne, Yolo	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
High Country	Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	None
Los Angeles	Los Angeles	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
North Coast	Del Norte, Humboldt, Lake, Mendocino, Napa, Sonoma	Hispanic/Latino
North Valley	Butte, Colusa, Glenn, Shasta, Tehama, Yuba	Hispanic/Latino
South Coast	Orange, San Diego	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ
Tri-County	San Luis Obispo, Santa Barbara, Ventura	Hispanic/Latino
Tri-County South	Imperial, Riverside, San Bernardino	African American/Black Asian/Pacific Islander Hispanic/Latino LGBTQ

Note: Not every priority population in the region has been funded because either CDPH did not receive an application or the submission did not pass the review.

Tables 54 and 55 provide the prevalence of tobacco use by PPI region. Current tobacco use ranged from 8.5% in the Central Valley to 16.0% in the Bay Area. In line with the results presented in Chapter 1, current use of all tobacco products (except e-cigarettes) is low.

Due to the fact that CSTS was not sampled according to the 11 PPI regions, and the 22 CSTS regions are not perfect subsets of all PPI regions, these results must be interpreted with caution.

Table 54. Prevalence of tobacco use by Priority Population Initiative (PPI) region among high school students

	N	Ever use % (99.9% CI)	Current use % (99.9% CI)
Overall	129494	34.5 (34.1-34.8)	12.7 (12.4-12.9)
Bay Area	22590	34.1 (28.8-39.3)	16.0 (12.5-19.4)
Central Coast	2955	33.7 (28.1-39.2)	9.6 (4.9-14.3)
Central Valley	6912	34.3 (30.3-38.4)	8.5 (6.2-10.8)
Gold Country	19099	32.7 (28.1-37.4)	13.1 (8.8-17.3)
High Country*	0	--	--
Los Angeles	24903	35.0 (30.5-39.6)	11.6 (8.9-14.3)
North Coast	1492	37.9 (29.1-46.6)	15.5 (3.9-27.1)
North Valley	2158	40.1 (30.3-49.9)	15.1 (10.1-20.1)
South Coast	22200	33.2 (28.9-37.4)	13.1 (9.4-16.7)
Tri-County	8108	38.5 (33.6-43.4)	15.9 (9.4-22.3)
Tri-County South	19077	34.9 (29.5-40.4)	11.4 (7.9-14.8)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.
*No schools participated in the 2017-18 CSTS.

Table 55. Prevalence of current tobacco product use by Priority Population Initiative (PPI) region among high school students

	N	E-cigarettes % (99.9% CI)	Cigarettes % (99.9% CI)	LCC % (99.9% CI)	Big cigars % (99.9% CI)	Hookah % (99.9% CI)	Smokeless % (99.9% CI)
Bay Area	22580	14.9 (11.3-18.4)	1.9 (1.3-2.5)	2.1 (1.4-2.9)	0.7 (0.5-0.9)	1.5 (1.2-1.9)	0.6 (0.3-1.0)
Central Coast	2954	7.2 (3.3-11.0)	1.3 (0.7-1.9)	2.8 (0.4-5.2)	0.6 (0.0-1.4)	1.3 (0.4-2.1)	1.3 (0.0-3.9)
Central Valley	6909	6.2 (4.3-8.2)	1.6 (1.1-2.1)	2.4 (1.5-3.3)	0.6 (0.2-1.0)	1.9 (1.0-2.7)	1.0 (0.4-1.6)
Gold Country	19090	10.9 (6.4-15.4)	2.8 (1.7-3.9)	3.2 (2.1-4.3)	0.9 (0.5-1.3)	1.7 (1.2-2.3)	1.1 (0.5-1.8)
High Country*	0	--	--	--	--	--	--
Los Angeles	24891	10.0 (7.1-12.9)	1.7 (1.1-2.3)	2.0 (1.5-2.6)	0.7 (0.2-1.3)	1.7 (1.1-2.4)	0.4 (0.1-0.7)
North Coast	1491	12.7 (0.0-29.6)	2.3 (0.9-3.6)	2.6 (1.6-3.6)	0.9 (0.5-1.3)	2.3 (1.3-3.3)	2.8 (0.0-6.8)
North Valley	2156	10.9 (3.6-18.1)	4.1 (2.8-5.4)	4.3 (1.1-7.4)	1.3 (0.6-1.9)	1.5 (0.5-2.4)	2.9 (0.0-5.8)
South Coast	22189	11.9 (7.9-15.9)	1.9 (1.4-2.4)	1.6 (1.2-2.1)	0.6 (0.3-0.9)	1.9 (1.0-2.7)	0.4 (0.2-0.6)
Tri-County	8107	14.5 (9.0-20.0)	2.8 (0.0-6.0)	1.9 (0.5-3.4)	0.7 (0.3-1.1)	1.4 (0.5-2.3)	1.4 (0.0-4.2)
Tri-County South	19070	9.2 (5.7-12.7)	2.1 (0.9-3.3)	2.1 (1.2-3.1)	0.5 (0.2-0.8)	1.8 (1.1-2.5)	0.6 (0.2-1.0)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.

Abbreviations: LCC = little cigars or cigarillos.

*No schools participated in the 2017-18 CSTS.

Tobacco Use by 4 Regions

To summarize tobacco use by region, the state of California was divided into four regions: Northern, Central, Greater Bay, and Southern California. Dividing the state this way provides the most stable interpretation of regional prevalence rates. Figure 2 and Table 56 indicate which counties were represented in each region.

Figure 2. Identification of four regions in California

Table 56. Identification of counties within each of the four regions

Region	Counties
Northern	Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Sutter, Tehama, Tuolumne, Trinity, Yolo, Yuba
Central	Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, Stanislaus, Tulare
Greater Bay	Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma
Southern	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, San Luis Obispo, Santa Barbara, Ventura

The CSTS was not sampled according to the four regions, and the 22 CSTS regions are not perfect subsets of the four regions. The 2017-18 CSTS sampled according to 22 regions and weighted the data accordingly (refer to Appendix B). For this section, the only statistical weights applied were based on student response rates. Due to these reasons, these results must be interpreted with caution.

Tables 57 and 58 present the prevalence of tobacco use in each of the four regions. Current tobacco use was lowest in the Central region (8.4%) and highest in the Greater Bay region (15.2%). In line with the results presented in Chapter 1, current use of all tobacco products (except e-cigarettes) is low.

Table 57. Prevalence of tobacco use by four regions among high school students

	N	Ever use % (99.2% CI)	Current use % (99.2% CI)
Overall	129494	34.5 (33.4-35.6)	12.7 (11.9-13.4)
Northern	15303	35.9 (31.8-40.0)	14.9 (11.8-18.1)
Central	11958	33.0 (30.1-36.0)	8.4 (6.7-10.1)
Greater Bay	27945	34.1 (30.6-37.6)	15.2 (12.8-17.7)
Southern	74288	34.7 (32.6-36.8)	12.2 (10.8-13.7)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.

Table 58. Prevalence of current tobacco product use by four regions among high school students

	Overall N=129437 % (99.2% CI)	Northern N=15296 % (99.2% CI)	Central N=11951 % (99.2% CI)	Greater Bay N=27933 % (99.2% CI)	Southern N=74257 % (99.2% CI)
Any of the below	12.7 (12.4-12.9)	14.9 (11.8-18.1)	8.4 (6.7-10.1)	15.2 (12.8-17.7)	12.2 (10.8-13.7)
E-cigarettes	10.9 (10.7-11.1)	12.3 (8.6-15.9)	6.0 (4.6-7.4)	13.9 (11.3-16.5)	10.6 (9.1-12.2)
Cigarettes	2.0 (1.9-2.1)	3.6 (2.6-4.6)	1.6 (1.2-1.9)	1.9 (1.4-2.3)	1.9 (1.6-2.3)
LCC	2.3 (2.1-2.4)	3.7 (2.6-4.9)	2.3 (1.7-3.0)	2.3 (1.8-2.9)	1.9 (1.6-2.2)
Big cigars	0.7 (0.6-0.8)	1.0 (0.6-1.4)	0.6 (0.4-0.8)	0.7 (0.5-0.9)	0.6 (0.4-0.8)
Hookah	1.7 (1.6-1.8)	1.6 (1.1-2.0)	2.0 (1.4-2.5)	1.5 (1.3-1.8)	1.8 (1.4-2.1)
Smokeless	0.8 (0.7-0.8)	1.9 (0.9-2.9)	0.9 (0.5-1.3)	0.8 (0.4-1.1)	0.5 (0.3-0.7)

Note: Confidence Intervals have been adjusted to allow for multiple comparisons.

Abbreviations: LCC = little cigars or cigarillos.

Summary

This chapter presented geographic differences in tobacco use. Overall, the data confirm that cigarette, LCC, big cigar, hookah, and smokeless tobacco use are low across geographical regions. The majority of students use e-cigarettes regardless of urban classification or regional divide. Differences across regions should be interpreted with extreme caution due to the small number of schools that participated in most regions.

CHAPTER 8 – Marijuana Use

Marijuana is described in the 2017-18 CSTS as "Marijuana (including blunts and edibles): Commonly known as cannabis, weed, pot, hash, grass, THC, or CBD. It can be smoked (joint, blunt, bong), vaped, or eaten (baked goods, candies)." This chapter presents data on the prevalence of marijuana use across demographic characteristics. Current marijuana use was defined as having used it within the last 30 days. Marijuana and tobacco co-use is also examined across demographic characteristics.

Marijuana Use among High School Students

Table 59 presents the prevalence of ever and current marijuana use among high school students by demographic characteristics. The rates of ever using marijuana (31.4%) and currently using marijuana (14.7%) are higher than the rate of using all tobacco products.

Female students had higher rates of ever marijuana use compared to males (31.0% vs. 29.0%, respectively); however, there was no difference when comparing current use rates between males and females. Notably, students who identified their gender in another way (23.6%) or declined to report their gender (25.3%) had significantly higher marijuana use rates. Asian students had the lowest rates of marijuana use (5.5%) of all racial/ethnic groups. The prevalence of marijuana use was higher among 12th grade students relative to 10th grade students (18.6% vs. 11.3%, respectively).

Table 59. Prevalence of marijuana use by gender, race/ethnicity, and grade among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	124585	31.4 (30.2-32.6)	14.7 (14.1-15.3)
Gender			
Male	53826	29.0 (27.6-30.4)	13.8 (13.1-14.6)
Female	58242	31.0 (29.8-32.3)	13.3 (12.6-14.0)
Identified in Another Way	3273	42.0 (39.6-44.3)	23.6 (21.5-25.8)
Declined to Answer	8117	44.2 (42.7-45.8)	25.3 (23.8-26.8)
Race/Ethnicity			
White	23767	31.9 (30.4-33.4)	16.7 (15.5-17.8)
Black	3160	36.0 (33.3-38.6)	17.4 (15.3-19.4)
Hispanic	59176	33.4 (32.0-34.7)	14.2 (13.5-14.8)
Asian	13960	12.9 (11.8-14.1)	5.5 (4.8-6.3)
AI/AN	370	35.6 (29.0-42.3)	19.0 (13.1-24.9)
NHOPI	777	37.4 (32.8-42.0)	19.6 (15.9-23.3)
Other	1970	25.5 (22.2-28.7)	12.5 (10.0-15.0)
Multiple	10576	31.9 (30.1-33.7)	15.8 (14.6-17.1)
Declined to Answer	8481	41.4 (39.8-43.0)	23.6 (22.0-25.1)
Grade			
Grade 10	67332	25.3 (23.9-26.7)	11.3 (10.6-11.9)
Grade 12	57253	38.6 (37.4-39.8)	18.7 (17.9-19.5)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.

Marijuana and Tobacco Co-Use by Demographics

Table 60 presents current rates of marijuana and tobacco co-use by specific tobacco products (e-cigarettes, cigarettes, little cigars or cigarillos [LCC]). Current co-use of marijuana and tobacco (7.9%) was mostly reflective of co-use of marijuana and e-cigarettes (6.6%). It should noted that current polytobacco users could be included multiple times if they used more than two products.

Table 60. Prevalence of current co-use of marijuana and tobacco by tobacco product among high school students

	Current Marijuana and Tobacco Co-use N=122821 % (95% CI)
Any tobacco	7.9 (7.4-8.4)
E-cigarettes	6.6 (6.1-7.1)
Cigarettes	1.5 (1.4-1.6)
LCC	1.9 (1.8-2.1)

Abbreviations: LCC = little cigars or cigarillos.

Table 61 presents rates of current marijuana use among high school students by gender, race/ethnicity, and grade. It further categorizes current marijuana use based on whether students use marijuana only or use marijuana and any tobacco product, including e-cigarettes, cigarettes, LCC, or hookah. Overall, current use of both marijuana and tobacco (7.9%) was more common than use of marijuana only (6.8%), and this was generally consistent across gender, race/ethnicity, and grade.

Table 61. Prevalence of current marijuana use and co-use of marijuana/any tobacco product* by gender, race/ethnicity, and grade among high school students

	N	Overall marijuana use % (95% CI)	Marijuana only % (95% CI)	Marijuana and any tobacco % (95% CI)
Overall	122821	14.7 (14.0-15.3)	6.8 (6.4-7.1)	7.9 (7.4-8.4)
Gender				
Male	53239	13.8 (13.1-14.6)	6.3 (5.8-6.9)	7.5 (7.0-8.0)
Female	57482	13.3 (12.6-14.0)	6.4 (6.0-6.8)	6.9 (6.4-7.5)
Identified in Another Way	3176	23.6 (21.5-25.7)	8.6 (7.1-10.0)	15.0 (13.4-16.7)
Declined to Answer	7818	25.3 (23.8-26.8)	11.0 (10.0-12.1)	14.2 (13.0-15.4)
Race/Ethnicity				
White	23575	16.7 (15.5-17.8)	5.7 (5.1-6.3)	11.0 (10.1-11.9)
Black	3092	17.3 (15.3-19.4)	9.9 (8.4-11.4)	7.4 (6.1-8.7)
Hispanic	58240	14.2 (13.5-14.8)	7.6 (7.1-8.0)	6.6 (6.1-7.1)
Asian	13889	5.5 (4.8-6.3)	1.9 (1.6-2.2)	3.7 (3.1-4.2)
AI/AN	362	19.0 (13.1-24.9)	4.8 (1.9-7.8)	14.2 (8.9-19.4)
NHOPI	759	19.6 (15.9-23.3)	8.9 (6.2-11.6)	10.7 (8.1-13.4)
Other	1951	12.5 (10.0-15.0)	5.2 (3.1-7.3)	7.3 (5.8-8.8)
Multiple	10468	15.8 (14.6-17.1)	6.6 (5.9-7.3)	9.2 (8.2-10.1)
Declined to Answer	8196	23.5 (22.0-25.0)	10.2 (9.2-11.3)	13.3 (12.0-14.6)
Grade				
Grade 10	66295	11.3 (10.6-11.9)	5.2 (4.8-5.6)	6.1 (5.6-6.5)
Grade 12	56526	18.7 (17.9-19.5)	8.6 (8.1-9.1)	10.1 (9.4-10.8)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.
*Four products: E-cigarettes, cigarettes, LCC, hookah.

Marijuana Use by Personal Characteristics

As shown in Table 62, a higher proportion of students who reported feeling lonely or depressive symptoms also reported using marijuana (15.7% and 17.8%, respectively). Students who declined to answer exhibited the highest rates of marijuana use.

Table 62. Prevalence of marijuana use by feelings of loneliness and depressive symptoms among high school students

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	124585	31.4 (30.2-32.6)	14.7 (14.1-15.3)
Loneliness			
Yes	46164	33.7 (32.4-35.1)	15.7 (15.0-16.5)
No	62764	27.7 (26.6-28.9)	12.3 (11.7-12.9)
Declined to Answer	14169	38.2 (36.8-39.7)	20.5 (19.4-21.7)
Depressive symptoms			
Yes	33944	37.5 (36.2-38.8)	17.8 (17.0-18.6)
No	74109	26.9 (25.7-28.1)	11.9 (11.3-12.5)
Declined to Answer	14935	38.0 (36.2-39.7)	20.1 (18.8-21.4)

Summary

Over one in seven (14.7%) high school students reported currently using marijuana. The prevalence of marijuana use is greater than that of tobacco use. Among those students who use marijuana, more than half had also used a form of tobacco (e-cigarettes, cigarettes, LCC, or hookah). A higher proportion of students that reported feelings of loneliness or depressive symptoms reported using marijuana.

CONCLUSION

The 2017-18 California Student Tobacco Survey (CSTS) found that the cigarette smoking prevalence for California high school students dropped to a historic low, 2%. Moreover, the prevalence for the use of other combustible tobacco products, such as big cigars and little cigars or cigarillos (LCC), also dropped to less than 3%. The combined rate of use for all combustible tobacco products is 4.7%. This is a massive achievement for tobacco control in California. It seems that the social norms for smoking changed so much that most adolescents have totally rejected tobacco smoking. The new tax increase for tobacco products from Proposition 56, and the law that raised the minimum tobacco sales age to 21 further solidified the change of social norms against tobacco use.[12] In fact, as far as the numerical goal for tobacco control is concerned, the prevalence for adolescent use of each of the combustible tobacco products dropped to the level accepted by many as an end game number.[13]

The prevalence for e-cigarette use, however, is more worrisome. It increased from 2015-16 to 2017-18 (from 8.6% to 10.9%), as is the case at the national level.[14] It increased significantly despite the tax increase on e-cigarettes. This is clearly related to the popularity of e-cigarettes, fueled by the development and promotion of new vaping products.[15] However, even in this respect, the overall prevalence of e-cigarette use is lower in California than the rest of the nation.[4] Since the national surveys show the increase of e-cigarette use occurred mostly from 2017 to 2018, it is difficult to compare the prevalence data of annual national surveys with those of CSTS because CSTS was conducted biennially (and straddled two years in 2015-16 and 2017-18). Further research is needed to ascertain if the rate of increase in e-cigarette use in California is less than the national trend; and, if so, whether this difference in the rate of change is related to the way California conducted its tobacco control campaign.

Given that the total use of all combustible tobacco among California youth declined to less than 5%, future effort to control uptake of tobacco products among adolescents can be more focused on e-cigarettes. This might require new intervention strategies, as the popularity of vaping is on the rise and new products continue to be introduced into market. The social norm approach has worked well in California.[16] What is needed is to develop new intervention strategies that can denormalize vaping among youth so as to reduce its uptake in future generations.

The 2017-18 CSTS shows that many adolescents are still susceptible to future tobacco use, even though they have not experimented with any of the products yet. This susceptibility does not exist at the cognitive level alone. Many adolescents still come into contact with tobacco users. Many of them are exposed to secondhand smoke either at home or in the car. Many of them have been offered a chance to experiment with various tobacco products. Many of them are exposed to aggressive marketing and social influencer campaigns conducted by tobacco or e-cigarette companies.

An area of particular concern is the use of LCC. Of all the combustible products, there are more adolescents smoking LCC than cigarettes. This is driven, in part, by the fact that there is overlap in the use of LCC and marijuana, with marijuana being wrapped in the tobacco leaves of the LCC. Given that the CSTS found that marijuana is the most commonly used product, more than all tobacco products combined, the co-use of marijuana and tobacco has to be a key focus in future tobacco control campaigns.

In summary, the 2017-18 CSTS findings have provided much to celebrate, while raising new questions about how to conduct the next phase of the campaign. The new tobacco control strategies for adolescents will have to focus on reducing the use of e-cigarettes while maintaining the momentum driving the use of combustible tobacco products closer to zero.

APPENDIX A – 8th Grade Tobacco Use

The following section summarizes key tobacco use data for 8th grade students. Due to differences in prevalence of use of tobacco products and the sampling approach between middle schools and high schools (8th grade students sampled in a smaller number), data for 8th grade students has been separated from that of 10th and 12th grade students.

Tobacco Product Use among 8th Grade Students

Table 63 presents the prevalence of ever and current use of tobacco products among 8th grade students. As expected, overall tobacco use rates are much lower than those of high school students (4.1% vs. 12.7%, respectively). Similar to the results in Chapter 1, e-cigarettes were the most commonly tried product among ever users (13.8%), followed by cigarettes (4.1%), and little cigars or cigarillos (LCC; 2.5%).

Table 63. Prevalence of tobacco product use among 8th grade students

	Ever use N=21254 % (95% CI)	Current use N=21236 % (95% CI)
Any of the below	16.1 (14.5-17.8)	4.1 (3.3-4.9)
E-cigarettes	13.8 (12.2-15.4)	3.5 (2.8-4.3)
Cigarettes	4.1 (3.5-4.7)	0.7 (0.5-0.9)
LCC	2.5 (2.0-3.0)	0.7 (0.5-0.9)
Big cigars	1.3 (1.0-1.6)	0.3 (0.2-0.4)
Hookah	2.4 (2.0-2.8)	0.7 (0.5-0.8)
Smokeless	1.2 (0.9-1.4)	0.2 (0.1-0.2)

Abbreviations: LCC = little cigars or cigarillos.

Flavored Tobacco Product Use among 8th Grade Students

Table 64 presents the prevalence of flavored tobacco product use among current users. Similar to results in Chapter 2, flavored tobacco use was high (87.1% among 8th students vs. 86.4% among 10th and 12th grade students). Use of flavored e-cigarettes (89.1%), LCC (84.8%), and hookah (88.2%) were also the most prevalent. Approximately half of cigarette smokers (54.8%) reported using flavored cigarettes, where menthol is the only flavor available.

Table 64. Proportion using flavored tobacco products among those 8th grade students who are current users of a given tobacco product

	N	Flavored product use % (95% CI)
Overall	861	87.1 (84.0-90.3)
E-cigarettes	704	89.1 (86.3-92.0)
Cigarettes	144	54.8 (45.7-64.0)
LCC	146	84.8 (79.7-89.9)
Big cigars	62	69.4 (59.1-79.7)
Hookah	140	88.2 (83.0-93.3)
Smokeless	43	82.0 (63.9-100.0)

Abbreviations: LCC = little cigars or cigarillos.

Susceptibility to Tobacco Product Use among 8th Grade Students

Table 65 presents the proportion of never users who were susceptible to future tobacco product use among 8th grade students who have not tried a tobacco product . Overall, a lower percentage of 8th grade students who never used any tobacco products were susceptible to future tobacco product use relative to high school students (34.7% vs 40.1%, respectively). Similar to the results in Chapter 3, a higher percentage of 8th graders were susceptible to e-cigarettes (23.8%), hookah (23.0%), and LCC (17.5%).

Table 65. Proportion of 8th grade never users susceptible to future tobacco use

	N	Never users of the product % (95% CI)
Any of the below	17757	34.7 (33.1-36.2)
E-cigarettes	16289	23.8 (22.4-25.1)
Cigarettes	18486	20.9 (19.6-22.3)
LCC	18812	17.5 (16.3-18.8)
Big cigars	19460	14.5 (13.3-15.7)
Hookah	18394	23.0 (21.1-24.9)
Smokeless	19708	9.9 (9.2-10.6)

Abbreviations: LCC = little cigars or cigarillos.

Comparisons from 2015-16 to 2017-18 among 8th Grade Students

Table 66 compares the prevalence of current tobacco product use between 2015-16 and 2017-18 for 8th grade students. Overall, the prevalence of current tobacco product use changed very little among 8th grade students, owing to the fact that current tobacco use is already quite low in this population.

Table 66. Prevalence of current tobacco product use by year among 8th grade students

	2015-16 N=6159 % (95% CI)	2017-18 N=21236 % (95% CI)
Any of the below	4.5 (3.6-5.4)	4.1 (3.3-4.9)
E-cigarettes	3.2 (2.5-3.9)	3.5 (2.8-4.3)
Cigarettes	1.2 (0.8-1.5)	0.7 (0.5-0.9)
LCC	0.7 (0.4-1.0)	0.7 (0.5-0.9)
Big cigars	0.4 (0.2-0.6)	0.3 (0.2-0.4)
Hookah	2.2 (1.5-2.9)	0.7 (0.5-0.8)
Smokeless	0.5 (0.2-0.8)	0.2 (0.1-0.2)

Abbreviations: LCC = little cigars or cigarillos.

*Any tobacco use in 2015-16 includes kreteks. Use of kreteks was not asked in 2017-18 due to the low prevalence.

APPENDIX B – Survey Methodology of the 2017-18 California Student Tobacco Survey

Survey Administration

The California Student Tobacco Survey (CSTS) is funded by the California Department of Public Health (CDPH) and has been conducted biennially since 2001-02. The survey was administered by WestEd until 2011-12. The 2015-16 CSTS was the first to be administered by the University of California, San Diego (UCSD). Due to delays in awarding the contract, no survey was conducted in 2013-14. This Appendix provides a brief overview of survey methodology for the 2017-18 CSTS. Additional detail of survey methods can be found in the *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2017-18* by S-H. Zhu, et al.[2]

Sampling Strategy

This survey used a two-stage sampling design, in which stage 1 was the random sampling of schools within regions and stage 2 was the sampling of classrooms within schools. The state was divided into 22 regions based on contiguity and socioeconomic similarity. From 2015-16 to 2017-18 administrations, the number of regions was increased from 12 to 22 to provide greater sensitivity to regional differences, while ensuring accurate statewide representation. Sampling used the probability proportional to size (PPS) method and stratified by region with oversampling of less densely populated regions, African American students, and schools that received Tobacco-Use Prevention Education program funding.

Participating schools were encouraged to have all students in a grade take the survey. For the minority of schools that chose not to survey all students in the selected grades (8% of schools), classrooms within a grade were randomly sampled for participation.

Participation

To increase participation in the CSTS, schools were provided a $500 gift card for administering the survey. Participating schools also received a brief report highlighting their school's results. Teachers primarily acted as proctors for the survey. In some cases, other school staff proctored. UCSD provided proctors for schools that required additional support. Teachers and proctors were provided with directions for administering the survey. UCSD staff were available to answer questions from teachers and proctors.

The 2017-18 CSTS was administered online. The online survey included programmed skip logic to reduce participant burden and took between 15-25 minutes to complete. Survey questions were not mandatory, although, an error message of "Oops, you didn't answer" appeared if the question was unanswered. The student could move forward and skip the question. The 2017-18 CSTS also included the response option *I prefer not to answer* for all questions.

Student participation was voluntary and anonymous. Consent procedures were consistent with school district guidelines. Most districts accept passive parental consent, while some require active parental consent. In a passive consent protocol, parents can opt their child out of the survey if they do not want them to participate. In an active consent protocol, only students who return a consent form signed by the parent can participate in the survey. Consent forms were distributed to parents via the students one week before the survey. Spanish forms were available as needed. The vast majority of participating schools (98.9%) accepted passive consent. In addition to obtaining consent from parents, students were also asked to give their assent to participate in the survey.

Analysis

Data are weighted to account for the study's sampling design. The weighting procedure is described elsewhere.[2] Estimates include 95% confidence intervals. As previously mentioned, the 2017-18 CSTS was the first time the response option, *I prefer not to answer*, was included for all questions. Rates of endorsement varied considerably (from 0.0% to 20.9%). It is important to note that it appears as though selection of this response option was not random – questions that were difficult to understand or more personal in nature (such as gender identity) tended to have higher endorsement of this response option. Respondents that declined to answer also tended to have high rates of tobacco use.

The CSTS survey was conducted to provide stable state prevalence rates using stratified random sampling and proper weighting. The study design does not allow for county- or district-level data since most have an insufficient sample size to provide stable estimates. Therefore, caution needs to be used when interpreting geographical estimations that are not accounted for by the study's design (i.e., estimations by Priority Population Initiative Region). Future surveys could use a different sampling scheme and a larger number of schools in order to obtain local estimates. Although we were unable to examine county- or district-level data, we did examine tobacco use across what is termed *urban classification* in which schools are classified into city, suburb, town, and rural using the U.S. Department of Education's Common Core of Data.[10] For the analyses, we combined town and rural due to the small numbers of schools in these classifications.

Survey Sample 2017-18 CSTS

Table 67 provides information about the number of schools and students that participated in the 2017-18 survey for each of the three grades. The total sample included 151,404 students from 333 schools. Grades 10 and 12 are considered high school and grade 8 is considered middle school. A more detailed description of the survey sample is provided elsewhere.[2]

Table 67. Numbers of schools and students participating, middle school vs. high school

	Middle School (8th)	High School (10th & 12th)	Total
Number of schools	77	256	333
Number of students	21356	130048	151404

Survey Content

The survey questionnaire was designed to assess use of, knowledge of, and attitudes toward cigarettes and emerging tobacco products (e.g., e-cigarettes, hookah, cigarillos). It also included questions about use of and attitudes toward marijuana and alcohol. The survey contained 134 questions, including topics such as: awareness of and use of different tobacco products; history and patterns of tobacco use; tobacco purchasing patterns; knowledge of and participation in school tobacco prevention or cessation programs; perceptions of tobacco use (i.e. social norms); awareness of advertising; and susceptibility to future tobacco use. Surveys were available in English and Spanish, administered online, and used programmed skip logic to reduce participant burden.

Race/Ethnicity

The racial/ethnic background of students was determined using two primary questions. The first asked about Spanish or Hispanic (Latino) origin (i.e., ethnicity) and the second asked participants to indicate how they describe themselves (i.e., race) by marking all that apply: *American Indian or Alaska Native*, *Asian*, *Black or African American*, *Native Hawaiian or Other Pacific Islander*, *White*, or *Other*. The *Other* ethnic category included non-standard entries (such as Middle Eastern or Italian). The response option *I prefer not to answer* was also provided for both questions. In the 2017-18 CSTS, participants who endorsed *Asian* were asked to indicate their specific Asian background (see Table 4b). Only those that endorsed a single Asian background were presented in Table 4b. Due to small sample sizes, the following Asian ethnicities were combined as *Other* for analysis: *Bangladeshi*, *Burmese*, *Cambodian*, *Hmong*, *Indonesian*, *Iu Mien*, *Laotian*, *Malaysian*, *Nepalese*, *Pakistani*, *Srilankan*, *Thai*, and *Other*. In line with other surveys, students identifying as *Hispanic* are labeled as such regardless of the other races selected. Students selecting multiple races were grouped as *Multiple*.

With the exception of the *I prefer not to* answer response option, race/ethnicity categories of the CSTS are similar to those used by the California Department of Education (CDE), allowing us to compare the prevalence of each race/ethnicity (Table 68). In many cases, the prevalence of each race/ethnicity is similar between the CSTS and CDE Enrollment data. Of note, the prevalence of *Multiple* race is far higher in the CSTS than reported by CDE (9.0% vs. 3.0%). One possible reason for the difference is that CSTS is based on student self-report whereas the CDE is based on parent report of the child's race/ethnicity. Students and parents may not have the same perspective regarding multi-racial identification. Because of the differences in how race/ethnicity was asked between the CSTS and CDE, student responses were not weighted by

race/ethnicity. Given the ethnic diversity of California, and the increasing number of people who identify themselves as two or more races,[17] the issue of how to analyze race/ethnicity data will continue to be relevant for the CSTS.

Table 68. Prevalence of race/ethnicity categories in the CSTS and CDE Enrollment data

	N=148323	Race/Ethnicity (%)	CDE Enrollment (%)
NH-White	27470	18.5	23.9
NH-Black	3768	2.5	5.7
Hispanic	71839	48.4	53.3
NH-Asian	16680	11.2	12.2
NH-AI/AN	484	0.3	0.6
NH-NHOPI	926	0.6	0.5
NH-Other	2583	1.7	0.8
NH-Multiple	13321	9.0	3.0
Declined to Answer	11252	7.6	--

Abbreviations: NH = Non-Hispanic; AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.

There are limitations with this method of classifying race/ethnicity. To provide a greater understanding of the impact of this classification of race/ethnicity, Table 69 compares how individuals are labelled using usual methods to whether they endorse a given race at all. It is clear that students tend to select multiple responses, and in particular, underrepresented races. For example, under the usual classification, the number of Black students is 3,768 (i.e., non-Hispanic Black who did not endorse any other racial identity). However, there were more than three times as many students who indicated their race was Black (including those who also indicated they were Hispanic or who selected at least one other racial category). This phenomenon is even more striking for NHOPI (n=926 vs 6,819, depending on the categorization strategy) and for AI/AN (n=484 vs 10,072).

Table 69. Prevalence of labeled and endorsed race/ethnicity

	Labeled		Endorsed	
	N=148323	**(%)**	**N=148323**	**(%)**
White	27470	18.5	56688	38.4
Black	3768	2.5	12280	8.3
Hispanic	71839	48.4	71839	48.5
Asian	16680	11.2	27200	18.5
AI/AN	484	0.3	10072	6.8
NHOPI	926	0.6	6819	4.6
Other	2583	1.7	50511	34.3
Multiple	13321	9.0	0	--
Declined to Answer	11252	7.6	21465	14.5

Note: The percent in endorsed does not add up to 100% because students could select more than one response.

Abbreviations: NH = Non-Hispanic; AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander.

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