Results of the Statewide

2019-20

California Student Tobacco Survey

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2019-20 California Student Tobacco Survey

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EXECUTIVE SUMMARY

This report summarizes the main results from the 2019-20 California Student Tobacco Survey (CSTS), which was administered to 8th, 10th, and 12th grade students from September 2019 to March 2020. Schools were randomly selected from California middle and high schools. Survey administration was planned to end in April 2020 but ended in March 2020 as schools across the state began to close due to the COVID-19 pandemic. While closures occurred on different dates, most schools closed between March 13-18, 2020.[1] Despite school closures, administration of the survey was considered complete as the majority of schools sampled for the survey had completed it prior to the closures. In 2019-20, 358 schools and 162,675 students participated in the survey. The survey was administered online during the school day at each of the schools by the University of California San Diego.

The survey was designed to assess the use of, knowledge of, and attitudes towards tobacco products, including cigarettes, vapes, little cigars or cigarillos (LCC), big cigars, hookah, smokeless tobacco, and heated tobacco products (HTP). The survey also examined the social and environmental exposure to various tobacco products. Marijuana was included in the survey since the co-use of marijuana and tobacco products is common. This report focuses on high school students (10th and 12th graders; 150,634 students). Key results for 8th graders (12,041 students) 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 2019-20*, by S-H. Zhu et al.[2]

Key Findings

Tobacco Use Behavior

- In 2019-20, 28.6% of California high school students had ever used any tobacco product and 9.7% currently used tobacco in the last 30 days.
- The current cigarette smoking prevalence rate was low, as only 1.2% of high school students reported currently smoking in the last 30 days.
- The use of other combustible tobacco products among high school students was also very low. In 2019-20, the prevalence was 2.2%, 0.6%, and 0.5%, for little cigars or cigarillos (LCC), hookah, and big cigars, respectively.
- Vapes were the most commonly used tobacco product among high school students (8.2%). This was true across gender, race/ethnicity, and grade.
- Overall tobacco use (9.7%) was mainly driven by the rate of vape use (8.2%).
- Use of heated tobacco products (HTP), an emerging product, was low (0.2%).
- Use of multiple tobacco products was common, representing about one quarter (24.7%) of current high school tobacco product users.

- Students who rated their mental health as poor had a higher current tobacco use prevalence (16.1%) compared to those who rated their mental health as good to excellent (9.7%).
- The vast majority of current tobacco product users reported using flavored tobacco products (91.6%), with the use of flavored vapes being the highest (96.2%). Of note, half of current cigarette smokers (49.4%) reported using menthol cigarettes. Use of flavored tobacco products was high across all genders, races/ethnicities, and grades. *Fruit* was the most popular flavor among vape (63.9%), LCC (51.7%), and hookah (48.8%) users, while *mint/menthol* was the most popular flavor among smokeless tobacco users (51.4%). *Fruit* and *alcohol or liquor* were similarly popular among those who currently used big cigars.

Cognitive and Environmental Risk Factors for Tobacco Use

- Among high school students who had never used a tobacco product, over one in three (37.1%) were susceptible to future use if offered a tobacco product by a best friend. Susceptibility was even higher among those who had fair or poor mental health (45.3% and 47.6%, respectively) and reported that some or most/all of their friends used vapes (38.6% and 40.2%, respectively).
- The majority of students (84.2%) believed that the reason people their age used vapes with nicotine or just flavoring was because their friends used them.
- Almost all students believed adults who were important to them viewed vaping and smoking cigarettes negatively.
- While most students believed that their close friends and other students at school viewed smoking cigarettes negatively (91.7% and 80.9%, respectively), fewer students believed vaping was viewed negatively by close friends and other students (74.9% and 46.4%, respectively). Among students who had never vaped, half (50.0%) thought other students at school viewed vaping negatively.

Secondhand Exposure and Other Environmental Influences

- The vast majority of high school students reported having a complete home ban on vaping (83.6%) and tobacco smoking (83.8%).
- Despite high rates of home bans, the rate of exposure to secondhand vapor was still high: one quarter of high school students (24.9%) were exposed to secondhand vapor in a room in the last 2 weeks. The rate of exposure to secondhand smoke in a room was lower (8.9%).
- A substantial percentage of students were exposed to advertisements that were related to vapes (67.3%) and cigarettes (51.8%) in the last 30 days. About one in five of those ads were perceived by students as promoting the use of vapes or cigarettes and about three in five were perceived as discouraging their use.

Access to Vapes and Cigarettes

- Among current vapers, 48.8% reported not paying for their vapes and 51.2% reported paying for them.
- Out of those who did not pay for their vapes, about half (52.7%) reported being given vapes. Out of those who did pay for their vapes, 36.1% reported buying them from someone and 27.1% reported buying them from the store.
- Among current cigarette smokers, 55.8% did not pay for their cigarettes and 44.2% did.
- Out of those who did not pay for their cigarettes, 44.0% reported being given cigarettes. Out of those who did pay for their cigarettes, 39.5% reported buying them from the store and 23.3% reported asking someone to buy them.
- Among those who reported buying vapes from the store, *tobacco or smoke shops* (40.1%) and *vape shops* (33.9%) were the most popular store types for purchasing vapes. Among those who reported buying cigarettes from the store, *gas stations or convenience stores* (30.2%) and *tobacco or smoke shops* (29.1%) were the most popular store types for purchasing cigarettes.
- Over one quarter (26.9%) of high school students reported being offered vapes in the last 30 days. A much smaller percentage of students (4.6%) reported being offered cigarettes. Almost one in five (18.5%) students who had never vaped reported being offered vapes in the last 30 days.

Marijuana Use and Tobacco Co-Use

- Almost one third (31.2%) of high school students reported having ever used marijuana, while 15.0% reported using it in the last 30 days.
- Marijuana was the most popular product, used by more high school students than all tobacco products combined (15.0% vs. 9.7%).
- The prevalence of using marijuana alone (7.8%) in the past 30 days was similar to that of co-using marijuana and any tobacco product (7.1%).
- Close to one in six high school students were exposed to marijuana smoke in a room (15.9%) in the last 2 weeks.
- Among current marijuana users, about half (49.7%) reported not paying for their marijuana and half (50.3%) reported paying for it.
- Out of those who did not pay for their marijuana, about two thirds (65.9%) reported being given marijuana. Out of those who did pay for their marijuana, 55.1% reported buying marijuana from someone and 16.2% reported buying it from the store or dispensary.

LIST OF TERMS

Tobacco Products and Marijuana

Vapes: Electronic devices like vape pens, e-cigarettes, e-hookah, hookah pens, e-vaporizers, tanks, pods, or mods used to inhale a vapor. Can be used to vape many things like nicotine, marijuana, or just flavoring. Popular brands are Juul, Suorin, SMOK, Starbuzz E-Hookah, Zodiac Constellation, Stiiizy, Brass Knuckles, and Heavy Hitters. Questions about hookah pens were asked separately to ensure that students who reported using a hookah pen, but not a vape were captured. For prevalence estimates in this report, vape use included students who reported vaping or using a hookah pen with nicotine or just flavoring (not vaping marijuana).

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

Little cigars or cigarillos (LCC): Tobacco wrapped in tobacco leaf or brown paper. May be flavored. Popular brands are Swisher Sweets, Backwoods, Dutch Masters, Captain Black, Prime Time, White Owl, and Black & Mild. Little cigars or cigarillos were abbreviated to LCC throughout this report.

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

Hookah: Water pipe used to smoke tobacco (shisha) or something else. Popular brands are Starbuzz, Al Fakher, Samba, Fumari, Nakhla, and Social Smoke.

Smokeless tobacco (chew, dip, snuff, or snus): Loose leaf or ground tobacco leaves that come 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. Smokeless tobacco was abbreviated to smokeless throughout this report.

Heated tobacco products (HTP; also known as heat-not-burn tobacco products): Tobacco in the form of heat-sticks or capsules that is heated, instead of being combusted or burned, using an electronic device. These are different from vapes because they include tobacco. Popular brands include IQOS, glo, and Ploom Tech. For prevalence estimates in this report, HTP use was limited to students who reported the use of a known HTP brand because of the 1) possible confusion among respondents in differentiating HTP from vapes; and 2) limited and identifiable number of HTP brands at the time of survey administration. Heated tobacco products were abbreviated to HTP throughout this report.

Marijuana (including joints, blunts, vapes, and edibles): Commonly known as cannabis, weed, pot, hash, grass, THC, or CBD. It can be smoked (joint, blunt, bong), vaped, eaten (baked goods, candies), drank (tea, cola, alcohol), or dabbed. The term marijuana (instead of cannabis) is used throughout this report, as youth were asked specifically about their marijuana use in the survey

instrument. For prevalence estimates in this report, marijuana use included students who reported using marijuana in any of these ways. It also included those who reported using marijuana “in some other way.”

Product Use

Ever use: Used within a lifetime.

Current use: Used within the last 30 days.

Poly use: Used two or more tobacco products within the last 30 days.

Flavored tobacco product use: Used a flavored tobacco product within the last 30 days.

Mint/menthol flavored product use: Used any menthol-flavored cigarettes (the only flavor available for cigarettes) or used a mint flavor most often when using any other flavored tobacco product within the last 30 days.

Co-use: Used marijuana and at least one tobacco product within the last 30 days. For this report, co-use was not limited to the simultaneous use of products.

Never user: A student who reported never using the tobacco product(s).

Former user: A student who reported ever using the tobacco product(s), but not within the last 30 days (this includes those who have quit using).

Current user: A student who reported using the tobacco product(s) within the last 30 days.

Other Terms

Identified in another way: Respondents who reported their gender identity as:

- *female-to-male (FTM)/transgender male/trans man*;
- *male-to-female (MTF)/transgender female/trans woman*;
- *genderqueer, neither exclusively male nor female*; or
- *additional gender category or other*.

Sexual and/or gender minority (SGM): Respondents who were categorized as identifying their gender in another way (see above definition) and/or reported their sexual orientation as:

- *lesbian, gay, or homosexual*;
- *bisexual*;
- *something else*; or
- did not know their sexual orientation.

Non-SGM: Respondents who reported:

- their gender identity as *male* / *female;* and
- their sexual orientation as *straight or heterosexual*.

Unclear SGM status: Respondents who did not provide enough information about their gender identity and/or sexual orientation to classify their SGM status. This included those who:

- identified as binary (*male* / *female*) / chose not to disclose their gender identity, and did not know / chose not to disclose their sexual orientation; or

- chose not to disclose their gender identity and identified their sexual orientation as *straight or heterosexual*.

Hispanic: Responded *yes* to the ethnicity question: "Are you of Spanish or Hispanic (Latino or Latina) origin?", regardless of race(s) reported.

Non-Hispanic single race (American Indian or Alaska Native [AI/AN]; Asian; African American/Black; Native Hawaiian or Other Pacific Islander [NHOPI]; White): Responded *no* to the ethnicity question (see above definition) and reported one of the following races: *American Indian or Alaska Native*; *Asian*; *Black or African American*; *Native Hawaiian or Other Pacific Islander*; or *White*, when asked "How do you describe yourself?"

Multiple race: Responded *no* to the ethnicity question and reported two or more races.

Other race: Responded *no* to the ethnicity question and reported *Other* race.

General mental health: Responded good to excellent (*good*, *very good*, or *excellent*), *fair*, or *poor* to the question: "In general, how would you rate your mental health?"

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 [a tobacco product never used by the respondent], 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 [a tobacco product never used by the respondent], would you use it?"

Complete home ban on vaping: Indicated that *vaping is not allowed anywhere or at any time inside my home* when asked about the rules about vaping inside their home.

Complete home ban on tobacco smoking: Indicated that *smoking cigarettes or other tobacco products is not allowed anywhere or at any time 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 a vape* in the last 2 weeks.

Exposure to secondhand vapor in a car: Indicated being in a car *when someone was using a vape* in the last 2 weeks.

Exposure to secondhand tobacco smoke in a room: Indicated being in a room *when someone was smoking a cigarette, little cigar, or cigarillo* in the last 2 weeks.

Exposure to secondhand tobacco smoke in a car: Indicated being in a car *when someone was smoking a cigarette, little cigar, or cigarillo* in the last 2 weeks.

Offers of tobacco products: Responded *yes* to the question: “In the last 30 days, has ANYONE offered you” tobacco products (vapes or cigarettes).

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

CHAPTER 1 – Tobacco Use Behavior

This chapter presents high school tobacco use behavior data from the 2019-20 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 the overall prevalence rates of tobacco products, the use of products across various demographics (e.g., gender, race/ethnicity), 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 Categories

Since the previous survey in 2017-18, e-cigarette devices and the language used to refer to these devices changed rapidly. To increase the validity of these questions, the term "e-cigarette" was replaced with "vape" in the 2019-20 CSTS. The accompanying images and definition of vapes were also updated to include common devices and brands. Since these devices can be used to vape different substances, the survey included separate questions on vaping nicotine, marijuana, and just flavoring to determine prevalence estimates. Some questions asked about vapes more generally (e.g., questions about perceptions, exposure to secondhand vapor). Questions about hookah pens were asked separately to ensure that students who reported using a hookah pen, but not a vape, were captured. For the prevalence estimates included in this report, vape use included students who reported vaping or using a hookah pen with nicotine or just flavoring. Due to the changes to this measure, vape data presented in this report are not directly comparable to e-cigarette data from earlier CSTS cycles.

Heated tobacco products (HTP), new to the U.S. market in 2019, were included in the 2019-20 CSTS for the first time.[3] Only those users who reported the use of a known HTP brand were defined as HTP users because of the 1) possible confusion among respondents in differentiating HTP from vapes; and 2) limited and identifiable number of HTP brands at the time of survey administration. For more information about survey content and methodology, please see Appendix B.

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 9.7%, with most usage being attributable to vapes (8.2%). Rates of current use for any other tobacco product were less than 2.5%, with little cigars or cigarillos (LCC) being the most prevalent combustible tobacco product (2.2%). If all combustible tobacco products (cigarettes, LCC, big cigars, and hookah) were combined into a single category, the rate was 3.4% (data not shown in table).

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

	Ever use N=150609 % (95% CI)	Current use N=150608 % (95% CI)
Any of the below	28.6 (27.7-29.6)	9.7 (9.1-10.3)
Vapes	24.3 (23.4-25.3)	8.2 (7.6-8.8)
Cigarettes	6.5 (6.1-6.9)	1.2 (1.1-1.4)
LCC	8.0 (7.6-8.4)	2.2 (2.1-2.4)
Big cigars	2.4 (2.2-2.6)	0.5 (0.5-0.6)
Hookah	4.6 (4.3-4.9)	0.6 (0.6-0.7)
Smokeless	2.1 (1.9-2.3)	0.6 (0.6-0.7)
HTP	0.7 (0.6-0.7)	0.2 (0.2-0.2)

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Demographic Categories

In addition to *male* and *female*, the 2019-20 CSTS provided students with the following gender identity response options: *female-to-male (FTM)/transgender male/trans man*; *male-to-female (MTF)/transgender female/trans woman*; *genderqueer, neither exclusively male nor female;* and *additional gender category or other*. Students could also select *choose not to disclose*. For this report, response options other than *male*, *female*, and *choose not to disclose* were combined and classified as *identified in another way* due to small sample sizes. Approximately 2.9% of all students indicated that they identified their gender in a way other than *male* or *female* and 2.6% declined to answer the gender-identity question.

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* regardless of race(s) reported. Students who selected *no* to the ethnicity question were classified as *Non-Hispanic* and were asked to select all races they identified with. If respondents selected more than one race, they were classified as *Multiple* race. There was also an option for *Other* race.

It should be noted that the previous 2017-18 CSTS included a response option of *I prefer not to answer* throughout the survey, with the percentages of students endorsing this option ranging from 0.0-20.9%. In the 2019-20 CSTS, this response option was removed from all questions except those asking about students' gender identity and sexual orientation. As a result, data on demographic subgroups presented in this report may not be directly comparable to those from the 2017-18 CSTS. For more information about sample demographics, please see Appendix B.

Prevalence of Tobacco Use by Demographics

Table 2 presents the high school student tobacco use prevalence, both ever and current use, by participant demographics. Male and female students had similar rates of current tobacco use.

Notably, students who identified their gender in another way or declined to answer had significantly higher rates of current tobacco use.

There were racial/ethnic differences in tobacco use. White students had a high rate of current use (14.3%). American Indian or Alaska Native (AI/AN) and Native Hawaiian or Other Pacific Islander (NHOPI) students also had high rates of current use (13.9% and 14.6%, respectively) but they were not statistically different from White students. Current use rates of students who reported Other and Multiple races were also statistically no different from Whites. African American/Black, Hispanic, and Asian students had lower rates of current use, with Asian students being the lowest (5.7%). 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	150609	28.6 (27.7-29.6)	9.7 (9.1-10.3)
Gender			
Male	67804	26.8 (25.9-27.8)	8.9 (8.3-9.6)
Female	72728	29.0 (28.0-30.0)	9.0 (8.4-9.6)
Identified in Another Way	4316	39.2 (37.2-41.1)	19.3 (17.8-20.9)
Declined to Answer	3723	32.0 (29.8-34.3)	15.1 (13.6-16.5)
Race/Ethnicity			
White	30453	33.3 (31.5-35.0)	14.3 (13.2-15.5)
African American/Black	3986	26.7 (24.3-29.2)	10.2 (8.4-12.0)
Hispanic	78516	28.5 (27.6-29.4)	8.0 (7.5-8.5)
Asian	18390	17.3 (16.0-18.7)	5.7 (5.0-6.4)
AI/AN	661	34.1 (28.6-39.6)	13.9 (11.2-16.5)
NHOPI	1023	39.6 (35.2-44.1)	14.6 (12.3-16.9)
Other	3469	32.0 (29.8-34.2)	12.5 (11.3-13.8)
Multiple	12048	31.0 (29.5-32.5)	12.4 (11.3-13.4)
Grade			
Grade 10	81645	24.1 (23.1-25.1)	7.8 (7.3-8.4)
Grade 12	68964	33.6 (32.4-34.7)	11.7 (10.9-12.4)

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.
*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.

Use of Specific Tobacco Products by Demographics

The following section (Tables 3-5) examines the use of specific tobacco products across various participant demographics. Table 3 shows that among high school students, males had higher use rates of cigarettes, LCC, big cigars, and smokeless tobacco than females. Whereas females had a higher rate of vape use than males (8.1% vs. 7.3%, $p<0.01$). Notably, across all products those who identified their gender another way or declined to answer had significantly higher rates of current use than either males or females.

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

	Male N=67803 % (95% CI)	Female N=72728 % (95% CI)	Identified in Another Way N=4316 % (95% CI)	Declined to Answer N=3723 % (95% CI)
Any of the below	8.9 (8.3-9.6)	9.0 (8.4-9.6)	19.3 (17.8-20.9)	15.1 (13.6-16.5)
Vapes	7.3 (6.7-8.0)	8.1 (7.4-8.7)	14.6 (13.3-15.9)	10.9 (9.6-12.2)
Cigarettes	1.3 (1.2-1.4)	0.8 (0.6-0.9)	5.0 (4.2-5.8)	3.0 (2.3-3.7)
LCC	2.2 (2.0-2.4)	1.5 (1.4-1.7)	7.5 (6.6-8.4)	5.9 (4.9-6.9)
Big cigars	0.5 (0.5-0.6)	0.1 (0.1-0.1)	3.8 (3.1-4.5)	2.5 (2.0-3.1)
Hookah	0.5 (0.4-0.6)	0.4 (0.3-0.5)	3.9 (3.3-4.6)	2.4 (1.8-3.0)
Smokeless	0.8 (0.7-1.0)	0.1 (0.1-0.2)	4.1 (3.3-4.8)	1.9 (1.5-2.4)
HTP	0.1 (0.1-0.2)	0.1 (0.1-0.1)	1.9 (1.5-2.3)	0.9 (0.6-1.2)

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Table 4 presents the current use of tobacco products by race/ethnicity for the 2019-20 CSTS. Differences in the use of tobacco products tended to replicate differences in the overall rates of use, with some notable exceptions. For example, LCC use was significantly higher among African American/Black students (4.9%) than White, Hispanic, and Asian students (2.0%, 2.2%, and 0.8%, respectively). AI/AN and NHOPI students had relatively high rates of use of some tobacco products (e.g., vapes, LCC), although their small sample sizes and wide confidence intervals limit the ability to determine whether the differences between AI/AN and NHOPI and other ethnic groups were due to chance.

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

	White N=30453 % (95% CI)	African American/ Black N=3986 % (95% CI)	Hispanic N=78515 % (95% CI)	Asian N=18390 % (95% CI)	AI/AN N=661 % (95% CI)	NHOPI N=1023 % (95% CI)	Other N=3469 % (95% CI)	Multiple N=12048 % (95% CI)
Any of the below	14.3 (13.2-15.5)	10.2 (8.4-12.0)	8.0 (7.5-8.5)	5.7 (5.0-6.4)	13.9 (11.2-16.5)	14.6 (12.3-16.9)	12.5 (11.3-13.8)	12.4 (11.3-13.4)
Vapes	13.1 (12.0-14.2)	6.3 (5.0-7.5)	6.5 (6.0-7.0)	5.3 (4.6-5.9)	11.2 (8.7-13.8)	11.2 (9.3-13.1)	9.7 (8.5-10.8)	10.7 (9.7-11.7)
Cigarettes	2.0 (1.7-2.3)	1.0 (0.5-1.5)	1.0 (0.9-1.1)	0.5 (0.4-0.6)	2.4 (1.4-3.4)	1.9 (0.6-3.1)†	2.4 (1.8-3.0)	1.4 (1.1-1.6)
LCC	2.0 (1.7-2.3)	4.9 (3.8-6.1)	2.2 (2.0-2.3)	0.8 (0.6-0.9)	3.5 (2.1-4.9)	3.8 (2.5-5.0)	3.7 (3.1-4.4)	2.5 (2.1-2.8)
Big cigars	0.6 (0.5-0.7)	0.6 (0.3-0.9)	0.4 (0.3-0.5)	0.1 (0.1-0.2)	0.8 (0.3-1.4)†	0.7 (0.2-1.1)†	1.6 (1.2-2.1)	0.7 (0.6-0.9)
Hookah	0.5 (0.4-0.6)	0.9 (0.6-1.2)	0.5 (0.4-0.6)	0.3 (0.2-0.4)	1.6 (0.6-2.6)†	0.9 (0.4-1.5)	3.0 (2.3-3.7)	1.0 (0.6-1.4)
Smokeless	1.2 (1.0-1.5)	0.6 (0.3-0.8)	0.4 (0.4-0.5)	0.1 (0.1-0.2)	1.6 (0.7-2.4)	0.7 (0.2-1.2)†	1.4 (1.1-1.8)	0.9 (0.7-1.2)
HTP	0.1 (0.1-0.2)	0.3 (0.2-0.5)	0.2 (0.2-0.3)	0.1 (0.0-0.1)	0.6 (0.1-1.2)†	0.2 (0.0-0.4)†	0.5 (0.3-0.7)	0.3 (0.2-0.3)

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

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

†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 5 presents tobacco product use by grade among high school students. As expected, current use of most tobacco products increased with grade. Vapes 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=81644 % (95% CI)	Grade 12 N=68964 % (95% CI)
Any of the below	7.8 (7.3-8.4)	11.7 (10.9-12.4)
Vapes	6.8 (6.3-7.3)	9.7 (9.0-10.5)
Cigarettes	0.9 (0.8-1.0)	1.6 (1.4-1.8)
LCC	1.7 (1.6-1.9)	2.8 (2.5-3.0)
Big cigars	0.4 (0.3-0.5)	0.6 (0.6-0.7)
Hookah	0.5 (0.5-0.6)	0.7 (0.6-0.8)
Smokeless	0.5 (0.4-0.6)	0.8 (0.7-0.9)
HTP	0.2 (0.1-0.2)	0.2 (0.2-0.3)

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Use of Specific Tobacco Products by Sexual and/or Gender Minority Status

Students were asked to indicate their sexual orientation and gender identity in two separate questions. Using responses from these questions, three groups were created. A Sexual and/or Gender Minority (SGM) group included those who were categorized as identifying their gender in another way (see List of Terms) and/or reported their sexual orientation as *lesbian, gay, or homosexual*; *bisexual*; *something else*; or did not know their sexual orientation. A non-SGM group included those who reported their gender identity as *male* or *female* and their sexual orientation as *straight or heterosexual.* An Unclear SGM Status group included those who did not provide enough information about their gender identity and/or sexual orientation to classify their SGM status. This included those who identified as binary (*male* or *female*) or chose not to disclose their gender identity and did not know or chose not to disclose their sexual orientation. This group also included those who chose not to disclose their gender identity and identified their sexual orientation as *straight or heterosexual*.

Table 6 presents tobacco product use by SGM status. SGM students had higher rates of overall use (14.1%) than non-SGM students (8.9%) and those of unclear SGM status (7.3%). Vapes were the most commonly used product across all groups. Current use for all products was the highest among SGM students.

Table 6. Prevalence of current tobacco product use by SGM status among high school students

	SGM N=19628 % (95% CI)	Non-SGM N=112987 % (95% CI)	Unclear SGM Status N=15388 % (95% CI)
Any of the below	14.1 (13.1-15.1)	8.9 (8.3-9.6)	7.3 (6.6-8.0)
Vapes	11.6 (10.6-12.5)	7.7 (7.1-8.3)	5.7 (5.1-6.3)
Cigarettes	2.9 (2.5-3.2)	0.9 (0.8-1.0)	1.2 (1.0-1.4)
LCC	4.0 (3.6-4.4)	1.8 (1.7-2.0)	2.0 (1.7-2.3)
Big cigars	1.2 (1.0-1.4)	0.3 (0.3-0.4)	0.6 (0.4-0.7)
Hookah	1.6 (1.2-1.9)	0.4 (0.4-0.5)	0.7 (0.5-0.9)
Smokeless	1.2 (1.0-1.4)	0.5 (0.4-0.6)	0.6 (0.4-0.7)
HTP	0.7 (0.5-0.8)	0.1 (0.1-0.1)	0.3 (0.2-0.3)

Abbreviations: SGM = sexual and/or gender minority; LCC = little cigars or cigarillos; HTP = heated tobacco products.

Frequency of Current Tobacco Product Use

The 2019-20 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. HTP were excluded from the analysis due to the small sample size. For vapes, cigarettes, LCC, and hookah infrequent use (using the product either 1 or 2 days or 3-5 days in the last 30 days) was the most common response. Frequent use (use 20 or more days in the past month) was the most common response for users of big cigars and smokeless tobacco.

Table 7. Frequency of current use among those high school students who were 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)
Vapes	13168	37.7 (36.3-39.2)	15.9 (15.1-16.7)	22.1 (21.3-23.0)	24.3 (22.8-25.8)
Cigarettes	1895	45.5 (42.3-48.6)	16.2 (14.2-18.2)	14.7 (12.6-16.8)	23.7 (21.1-26.2)
LCC	3357	43.9 (41.2-46.6)	17.3 (15.6-19.1)	19.4 (17.4-21.5)	19.4 (17.4-21.3)
Big cigars	800	35.7 (31.6-39.8)	7.7 (5.4-10.0)	15.0 (11.6-18.4)	41.6 (37.2-46.0)
Hookah	930	38.8 (33.8-43.7)	12.1 (9.8-14.5)	13.5 (10.7-16.4)	35.6 (31.1-40.1)
Smokeless	1034	27.3 (23.7-30.9)	15.5 (13.0-18.0)	18.4 (14.9-21.8)	38.8 (34.7-43.0)

Abbreviations: LCC = little cigars or cigarillos.

Multiple Tobacco Product Use

Table 8 presents the current use of multiple products, often referred to as poly use. Overall, 2.4% of students reported using two or more tobacco products, representing about one quarter (24.7%) of current users. Differences in poly use by demographic characteristics varied in ways one would expect based on tobacco use behavior (i.e., 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 in another way or declined to answer had higher rates of poly use than both 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	150608	9.7 (9.1-10.3)	2.4 (2.2-2.6)
Gender			
Male	67803	8.9 (8.3-9.6)	2.5 (2.2-2.7)
Female	72728	9.0 (8.4-9.6)	1.6 (1.4-1.8)
Identified in Another Way	4316	19.3 (17.8-20.9)	8.3 (7.4-9.3)
Declined to Answer	3723	15.1 (13.6-16.5)	5.4 (4.5-6.4)
Race/Ethnicity			
White	30453	14.3 (13.2-15.5)	3.5 (3.1-3.8)
African American/Black	3986	10.2 (8.4-12.0)	2.4 (1.7-3.0)
Hispanic	78515	8.0 (7.5-8.5)	2.0 (1.8-2.1)
Asian	18390	5.7 (5.0-6.4)	1.0 (0.8-1.1)
AI/AN	661	13.9 (11.2-16.5)	4.5 (3.0-6.1)
NHOPI	1023	14.6 (12.3-16.9)	2.7 (1.7-3.7)
Other	3469	12.5 (11.3-13.8)	4.7 (3.9-5.5)
Multiple	12048	12.4 (11.3-13.4)	3.0 (2.5-3.6)
Grade			
Grade 10	81644	7.8 (7.3-8.4)	1.8 (1.7-2.0)
Grade 12	68964	11.7 (10.9-12.4)	3.0 (2.7-3.3)

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

Multiple Tobacco Product Use by Sexual and/or Gender Minority Status

Table 9 presents the current use of multiple products by SGM status. SGM students reported currently using two or more tobacco products at a higher rate (4.6%) than non-SGM students (1.9%) and those of unclear SGM status (1.9%).

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

	N	Used at least one product % (95% CI)	Used two or more products % (95% CI)
Overall	150608	9.7 (9.1-10.3)	2.4 (2.2-2.6)
SGM	19628	14.1 (13.1-15.1)	4.6 (4.1-5.2)
Non-SGM	112987	8.9 (8.3-9.6)	1.9 (1.7-2.1)
Unclear SGM Status	15388	7.3 (6.6-8.0)	1.9 (1.6-2.2)

Abbreviations: SGM = sexual and/or gender minority.

Tobacco Use by General Mental Health

Table 10 presents students' ever and current tobacco use according to reported general mental health (see List of Terms). Students who rated their mental health as poor had the highest rate of current tobacco use (16.1%), followed by those who rated their mental health as fair (10.6%). Students who rated their mental health as good to excellent had the lowest current use rate (7.9%).

Table 10. Prevalence of tobacco use by general mental health among high school students

	N*	Ever use % (95% CI)	Current use % (95% CI)
Overall	150609	28.6 (27.7-29.6)	9.7 (9.1-10.3)
Good to excellent	98650	25.2 (24.3-26.1)	7.9 (7.3-8.4)
Fair	31950	32.1 (30.9-33.3)	10.6 (9.9-11.3)
Poor	18429	39.2 (37.8-40.7)	16.1 (15.0-17.1)

*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.

Summary

In 2019-20, the most frequently used tobacco product among California high school students was vapes (8.2%). Current use rates of any other tobacco product, including cigarettes, LCC, big cigars, hookah, smokeless tobacco, and HTP, were each less than 2.5%. Tobacco use was higher among students who identified their gender in another way, were of certain races/ethnicities (e.g., White students), and were older. Students who were classified as SGM had higher rates of use of all tobacco products compared with non-SGM students. Many students reported using tobacco products infrequently (five or fewer days in the last month). Poly use was common, with about one quarter of all current users reporting use of at least two tobacco products. Students who rated their general mental health as poor or fair had higher tobacco use rates than those who considered their mental health to be good to excellent.

CHAPTER 2 – Use of Flavored Tobacco Products

This chapter presents the proportion of current tobacco users who used flavored products. It also presents the use of specific flavors. It should be noted that the flavored cigarette use reported in this chapter reflects the use of menthol-flavored cigarettes (the only flavor available). Flavored vape use included students who reported using flavored vapes with nicotine or vapes with just flavoring. Additionally, HTP were excluded from this chapter due to the small sample size. For flavored tobacco use among middle school students, please see Appendix A.

Flavored Tobacco Product Use

The 2019-20 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 11 indicates that the majority of tobacco users reported using a flavored tobacco product, with the use of flavored vapes (96.2%) and hookah (82.5%) being the most prevalent. Of note, approximately half of cigarette smokers (49.4%) reported using menthol-flavored cigarettes in the last 30 days, where menthol is the only flavor available.

Table 11. Proportion using flavored products among those high school students who were current users of a given tobacco product

	N*	Flavored product use % (95% CI)
Any of the below	15283	91.6 (90.9-92.3)
Vapes	13192	96.2 (95.7-96.7)
Cigarettes**	1896	49.4 (46.0-52.9)
LCC	3357	74.1 (71.7-76.6)
Big cigars	802	58.4 (53.7-63.0)
Hookah	931	82.5 (79.4-85.6)
Smokeless	1032	75.4 (71.8-79.0)

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 sample size for *Any of the below* [product].
***Menthol* was the only available flavor for cigarettes.

It should be noted that the 2019-20 CSTS also included a separate question about students' usual use of menthol-flavored cigarettes. Current cigarette smokers were asked "Are the cigarettes you usually smoke menthol-flavored?", which is the same question asked in previous CSTS cycles.[4,5] When asked this way, the proportion of high school students who currently used menthol cigarettes was 36.2%.

Flavored Tobacco Use by Demographics

Table 12 presents the current use of any flavored tobacco product by participant demographics. Overall, the vast majority of tobacco users reported using a flavored tobacco product across multiple demographics.

Table 12. Proportion using flavored products among those high school students who were current tobacco users by gender, race/ethnicity, and grade

	N	Current use % (95% CI)
Overall	15283	91.6 (90.9-92.3)
Gender		
Male	6355	89.2 (88.0-90.5)
Female	6898	94.3 (93.6-95.1)
Identified in Another Way	860	92.1 (90.3-94.0)
Declined to Answer	583	86.8 (82.6-91.1)
Race/Ethnicity		
White	4228	93.1 (92.0-94.3)
African American/Black	398	83.9 (78.2-89.6)
Hispanic	6820	90.5 (89.5-91.6)
Asian	1034	95.7 (94.2-97.1)
AI/AN	109	87.3 (80.0-94.5)
NHOPI	146	95.3 (92.1-98.6)†
Other	480	91.1 (87.9-94.3)
Multiple	1498	93.1 (91.7-94.6)
Grade		
Grade 10	6763	92.1 (91.2-93.1)
Grade 12	8520	91.2 (90.3-92.1)

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 B for definition.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Use of Specific Flavored Tobacco Products by Demographics

The following section (Tables 13-15) presents the current use of flavored tobacco products among current tobacco users across various participant demographics, including gender, race/ethnicity, and grade.

Table 13 indicates that over 85% of each gender category reported using flavored tobacco products, with the use of flavored vapes and hookah generally being the most popular. Of note, students who identified their gender in another way (77.3%) or declined to answer (73.2%) had significantly higher rates of menthol cigarette use than those who identified as male (44.5%) or female (40.2%).

Table 13. Proportion using flavored tobacco product among those high school students who were current users of a given tobacco product by gender

	Male N=6355 % (95% CI)	Female N=6898 % (95% CI)	Identified in Another Way N=860 % (95% CI)	Declined to Answer N=583 % (95% CI)
Any of the below*	89.2 (88.0-90.5)	94.3 (93.6-95.1)	92.1 (90.3-94.0)	86.8 (82.6-91.1)
Vapes	94.8 (93.9-95.8)	97.6 (97.2-98.0)	96.9 (95.6-98.2)	96.8 (95.2-98.4)
Cigarettes**	44.5 (40.1-48.9)	40.2 (33.9-46.4)	77.3 (71.6-83.0)	73.2 (65.0-81.4)
LCC	72.7 (69.0-76.3)	73.7 (68.5-78.8)	78.9 (73.9-83.8)	72.2 (63.0-81.4)
Big cigars	44.6 (37.1-52.2)	61.1 (50.3-72.0)	72.3 (64.7-80.0)	75.3 (63.2-87.4)
Hookah	84.3 (80.3-88.2)	83.6 (77.6-89.5)	81.4 (74.8-88.0)	76.2 (64.0-88.4)
Smokeless	72.6 (67.2-78.1)	78.5 (70.7-86.2)	78.2 (70.6-85.9)	83.1 (74.1-92.0)

Abbreviations: LCC = little cigars or cigarillos.
*The sample size for each subgroup is not shown. As the sample size for the subgroup for each product varies, the estimates for each product may be greater than that of *Any of the below* [product].
***Menthol* was the only available flavor for cigarettes.

As shown in Table 14, the majority of students across various races/ethnicities reported using flavored tobacco products, with the use of flavored vapes and hookah being the most prevalent.

Table 14. Proportion using flavored tobacco products among those high school students who were current users of a given tobacco product by race/ethnicity

	White N=4228 % (95% CI)	African American/ Black N=398 % (95% CI)	Hispanic N=6820 % (95% CI)	Asian N=1034 % (95% CI)	AI/AN N=109 % (95% CI)	NHOPI N=146 % (95% CI)	Other N=480 % (95% CI)	Multiple N=1498 % (95% CI)
Any of the below*	93.1 (92.0-94.3)	83.9 (78.2-89.6)	90.5 (89.5-91.6)	95.7 (94.2-97.1)	87.3 (80.0-94.5)	95.3 (92.1-98.6)†	91.1 (87.9-94.3)	93.1 (91.7-94.6)
Vapes	96.2 (95.1-97.2)	94.7 (91.1-98.3)†	96.0 (95.3-96.6)	97.8 (96.8-98.8)	97.2 (94.1-100.0)†	98.6 (96.8-100.0)†	96.7 (95.2-98.2)	97.5 (96.6-98.4)
Cigarettes**	38.4 (31.9-44.9)	79.6 (65.8-93.4)†	53.8 (49.4-58.2)	49.6 (39.7-59.6)	40.1 (18.3-62.0)	72.7 (47.2-98.2)†	57.6 (49.2-66.0)	47.2 (39.9-54.4)
LCC	72.2 (68.0-76.3)	66.2 (57.1-75.3)	74.7 (70.9-78.5)	66.4 (56.9-76.0)	73.9 (58.3-89.4)†	80.3 (67.3-93.2)	74.6 (65.3-83.9)	77.3 (72.3-82.2)
Big cigars	33.0 (25.7-40.3)	75.5 (50.1-100.0)†	63.9 (57.2-70.6)	55.2 (36.2-74.1)	88.0 (76.1-99.8)†	33.1 (0.0-68.2)†	69.5 (56.5-82.5)	64.1 (53.7-74.5)
Hookah	81.9 (74.5-89.3)	73.1 (51.5-94.7)†	84.2 (80.0-88.5)	77.0 (61.8-92.1)†	55.5 (21.8-89.3)†	88.3 (69.0-100.0)†	86.0 (77.5-94.4)†	83.6 (74.2-93.0)
Smokeless	73.8 (67.0-80.7)	81.7 (68.4-94.9)†	78.1 (73.0-83.3)	73.5 (58.7-88.3)	51.6 (25.3-77.9)	59.2 (29.9-88.4)	72.1 (59.3-85.0)	75.9 (66.6-85.2)

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; LCC = little cigars or cigarillos.

*The sample size for each subgroup is not shown. As the sample size for the subgroup for each product varies, the estimates for each product may be greater than that of *Any of the below* [product].

***Menthol* was the only available flavor for cigarettes.

†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

The results by grade showed a similar pattern, where most students in either grade reported the use of flavored tobacco products (Table 15). Similar to the overall results, the use of flavored vapes and hookah were the most prevalent.

Table 15. Proportion using flavored products among those high school students who were current users of a given tobacco product by grade

	Grade 10 N=6763 % (95% CI)	Grade 12 N=8520 % (95% CI)
Any of the below*	92.1 (91.2-93.1)	91.2 (90.3-92.1)
Vapes	95.9 (95.1-96.8)	96.4 (95.9-96.9)
Cigarettes**	55.1 (51.1-59.1)	46.0 (41.7-50.2)
LCC	75.8 (72.7-78.8)	73.0 (70.0-76.0)
Big cigars	66.4 (59.4-73.3)	52.8 (46.7-58.9)
Hookah	82.0 (77.7-86.4)	82.9 (78.6-87.2)
Smokeless	77.8 (72.9-82.7)	73.8 (68.9-78.8)

Abbreviations: LCC = little cigars or cigarillos.
*The sample size for each subgroup is not shown. As the sample size for the subgroup for each product varies, the estimates for each product may be greater than that of *Any of the below* [product].
***Menthol* was the only available flavor for cigarettes.

Use of Specific Flavor Types

The 2019-20 CSTS asked students who used a flavored tobacco product in the last 30 days to indicate the flavor type they used most often. Possible flavor types included *fruit*, *candy or sweet*, *alcohol or liquor*, *mint/menthol*, *tobacco* (for vapes only), and *other*. As shown in Table 16, flavor popularity varied by product. *Fruit* was the most popular flavor among current vape (63.9%), LCC (51.7%), and hookah users (48.8%). *Mint/menthol* was the most popular flavor reported among smokeless tobacco users (51.4%). *Fruit* and *alcohol or liquor* were similarly popular among current big cigar users. Few students reported using *tobacco* flavored vapes.

Table 16. Proportion using flavored products among those high school students who were current users of a given tobacco product by flavor type

	N	Fruit % (95% CI)	Candy or sweet % (95% CI)	Alcohol or liquor % (95% CI)	Mint/ menthol % (95% CI)	Tobacco* % (95% CI)	Other % (95% CI)
Vapes	12677	63.9 (62.8-65.1)	13.0 (12.0-14.0)	1.7 (1.4-2.1)	14.7 (13.3-16.0)	1.9 (1.6-2.3)	4.8 (4.3-5.3)
Cigarettes	932	--	--	--	100.0**	--	--
LCC	2543	51.7 (48.8-54.7)	9.4 (7.9-10.9)	22.8 (19.7-25.8)	6.5 (5.3-7.6)	--	9.6 (8.0-11.3)
Big cigars	470	30.6 (24.6-36.6)	12.1 (8.8-15.3)	35.6 (29.0-42.2)	13.6 (10.2-17.0)	--	8.1 (5.1-11.1)
Hookah	763	48.8 (43.6-54.0)	17.6 (14.4-20.7)	14.5 (10.1-18.9)	12.0 (9.2-14.8)	--	7.1 (5.1-9.2)
Smokeless	767	17.8 (13.6-22.1)	10.0 (7.5-12.4)	14.3 (9.6-19.0)	51.4 (45.0-57.7)	--	6.5 (4.8-8.3)

Note: Students who (1) vaped just flavoring, (2) vaped nicotine, or (3) used a hookah pen with nicotine or just flavoring, were asked about their use of flavor for each product. If students used at least two of the above, their flavor type was considered in the following order: the flavor type they used when they (1) vaped just flavoring, (2) vaped nicotine, (3) used a hookah pen with nicotine or just flavoring.
Abbreviations: LCC = little cigars or cigarillos.
**Tobacco* was only included as a flavor option for vapes.
***Menthol* was the only available flavor for cigarettes.

Summary

The majority of high school students who were current tobacco product users reported using a flavored tobacco product. This was true across the demographic categories of gender, race/ethnicity, and grade. The proportion using flavored products was highest among those who used vapes and hookah. Approximately half of cigarette smokers reported using menthol-flavored cigarettes in the last 30 days, where menthol is the only flavor available. The popularity of flavor types varied by product, with *fruit* flavors being the most popular among vape, LCC, and hookah users; *mint/menthol* being the most popular among smokeless users; and *alcohol or liquor* and *fruit* flavors being similarly popular among big cigar users.

CHAPTER 3 – 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.[6] In the 2019-20 CSTS, susceptibility was measured by asking students who had never used 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. It should be noted that students who never used a vape with nicotine or just flavoring were asked separately about their susceptibility to future use of a vape with either substance. Susceptibility to future vape use reported in this chapter combined responses regarding vapes with nicotine and just flavoring, where those who were not susceptible to both types of vapes are considered not susceptible to future vape use; all other combinations were considered susceptible to future vape use.

Susceptibility to Tobacco Product Use

Table 17 shows the proportion of never users who were susceptible to future tobacco use. Over one in three (37.1%) 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 LCC) represents an anomaly. Never users of the product were most susceptible to using vapes (31.0%), hookah (26.4%), and LCC (20.3%), and least susceptible to using big cigars (17.4%) or smokeless tobacco (11.4%).

Table 17. Proportion of high school never users susceptible to future tobacco use

	Never users of the product	
	N	% (95% CI)
Any of the below	107238	37.1 (36.4-37.8)
Vapes	113107	31.0 (30.4-31.6)
Cigarettes	141158	19.6 (19.2-20.0)
LCC	138521	20.3 (19.9-20.7)
Big cigars	146793	17.4 (16.9-17.8)
Hookah	143764	26.4 (25.8-27.0)
Smokeless	146960	11.4 (11.1-11.7)
HTP	149463	18.3 (17.9-18.8)

Note: Students who never used vapes with nicotine or just flavoring were asked about their susceptibility to future vape use for each substance type. For analysis, susceptibility to vapes combined vapes with nicotine and just flavoring.
Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Susceptibility to Tobacco Use by Demographics

Table 18 presents susceptibility to any tobacco use by participant demographics. A higher proportion of never users who identified their gender in another way (44.0%) were susceptible to future tobacco use relative to male (34.3%) and female (39.4%) students. While it varied

somewhat across racial/ethnic groups, generally 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 18. 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	107238	37.1 (36.4-37.8)
Gender		
Male	49455	34.3 (33.6-35.0)
Female	51611	39.4 (38.6-40.3)
Identified in Another Way	2624	44.0 (41.5-46.4)
Declined to Answer	2478	37.2 (34.5-39.8)
Race/Ethnicity		
White	20573	37.0 (36.0-37.9)
African American/Black	2895	32.2 (29.3-35.1)
Hispanic	55642	38.8 (37.9-39.6)
Asian	15274	32.5 (31.2-33.7)
AI/AN	428	32.3 (26.9-37.7)
NHOPI	636	34.3 (30.1-38.5)
Other	2357	29.7 (27.6-31.8)
Multiple	8302	38.5 (37.1-40.0)
Grade		
Grade 10	61884	36.8 (36.1-37.6)
Grade 12	45354	37.5 (36.6-38.3)

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

Susceptibility to Tobacco Use by General Mental Health

Table 19 presents the proportion of never users who were susceptible to future tobacco use according to their self-rated general mental health. Susceptibility to future tobacco use was highest among never users who rated their mental health as poor (47.6%) and fair (45.3%). It was the lowest among those who reported good to excellent mental health (33.2%).

Table 19. Proportion of high school never users susceptible to future tobacco use by general mental health

	Never users of any tobacco product	
	N	% (95% CI)
Overall	107238	37.1 (36.4-37.8)
Good to excellent	73673	33.2 (32.5-33.8)
Fair	21601	45.3 (44.3-46.3)
Poor	11121	47.6 (46.4-48.9)

Susceptibility to Vape and Cigarette Use by Environmental Influences

Students indicated the proportion of their friends who used vapes or smoked cigarettes. It should be noted that this question asked about vapes generally and did not specify the substance in the vape (e.g., nicotine, marijuana, or just flavoring). As a result, responses could include friends who used vapes with marijuana.

Table 20 presents never users' susceptibility to future vape or cigarette use by the proportion of their friends who used the tobacco product. The proportion of never vapers who were susceptible to future vape use increased as the proportion of friends who vaped increased. Similar to vape susceptibility, never smokers who reported having some friends who smoked (30.3%) were more likely to be susceptible to cigarette use relative to those who did not have friends who smoked (17.8%). However, there was no difference in susceptibility between those with greater proportions of friends who smoked cigarettes (30.3% for some vs. 28.9% for most/all).

Table 20. Proportion of high school never users susceptible to future vape and cigarette use by friends who used

	Never users of vapes		Never smokers of cigarettes	
	N	**% (95% CI)**	**N**	**% (95% CI)**
None	52029	22.1 (21.4-22.7)	121094	17.8 (17.5-18.2)
Some	49142	38.6 (37.9-39.4)	15860	30.3 (29.2-31.4)
Most/All	10949	40.2 (39.0-41.5)	2875	28.9 (26.8-31.0)

Note: Students who never used vapes with nicotine or just flavoring were asked about their susceptibility to future vape use for each substance type. For analysis, susceptibility to vapes combined vapes with nicotine and just flavoring.

Summary

Students who have not used tobacco products may still be susceptible to future use. Overall, 37.1% of students who had never used a tobacco product were susceptible to using at least one of the tobacco products in the future. While the rate of susceptibility to different tobacco products varied across demographic dimensions, for most subgroups about one third of never users were susceptible to using a particular tobacco product. The susceptibility measure has limitations in predicting future use. However, these high rates among adolescents are cause for the public health community to be concerned, especially if new tobacco products continue to be introduced into the market.

CHAPTER 4 – Perceptions of Vaping and Smoking

Social norms have an important influence on tobacco use behavior. The following chapter presents data on the perceived reasons for vaping among students' peers. It also presents data on how students believed adults, peers or classmates, and friends perceived vaping and smoking cigarettes. Finally, students' opinions of the tobacco industry are reported. These perceptions are compared across tobacco use status (i.e., never, former, or current users) or demographics, when appropriate. It should be noted that the questions about vapes reported in this chapter specified the type of substance in the vape (e.g., nicotine or just flavoring).

Perceived Reasons for Vaping

Students were asked about their level of agreement with four reasons why people their age used vapes with nicotine or just flavoring. Table 21 shows the percentage of students who *strongly agreed* or *somewhat agreed* with each reason. Overall, the majority of students (84.2%) agreed that people their age vaped because their friends did. Many students also agreed that people their age used vapes because they came in lots of flavors (72.1%) or looked interesting and cool (70.6%). Just over half (56.3%) agreed that people their age used vapes because they were healthier than cigarettes.

When comparing across tobacco use status, perceived reasons endorsed by never and former vapers had a similar pattern but were different from current vapers. The majority of current vapers (83.5%) also agreed that friends' use of vapes was an important reason for vaping but had lower rates of agreeing that people used vapes because they came in lots of flavors (66.6%) or looked interesting and cool (64.1%). Current vapers also had lower rates of agreeing that people their age used vapes because they were healthier than cigarettes (61.8%).

Table 21. Perceived reasons for vaping by vaping status among high school students

People my age use vapes with nicotine or just flavoring because…	Overall N=149250 % (95% CI)	Never vapers N=112184 % (95% CI)	Former vapers N=24115 % (95% CI)	Current vapers N=12946 % (95% CI)
their friends use them	84.2 (83.5-85.0)	83.8 (82.9-84.6)	86.9 (86.2-87.5)	83.5 (82.7-84.2)
they come in lots of flavors	72.1 (71.6-72.6)	72.2 (71.6-72.9)	74.2 (73.4-74.9)	66.6 (65.5-67.7)
they look interesting and cool	70.6 (70.0-71.3)	71.0 (70.3-71.8)	72.1 (71.2-73.0)	64.1 (62.9-65.2)
they are healthier than cigarettes	56.3 (55.7-56.9)	55.3 (54.7-56.0)	58.2 (57.3-59.2)	61.8 (60.8-62.7)

Perceptions of Adults' Views on Vaping and Smoking

Students were asked how adults who were important to them (such as parents, teachers, coaches, or relatives) would feel about the student vaping nicotine. They were also asked how

the same adults would feel about another adult vaping nicotine. Response options included *very positive*, *positive*, *negative*, and *very negative*. The same questions were asked about smoking cigarettes.

Table 22 presents the percentage of students who reported that adults important to them would feel negatively (*negative* and *very negative*) about the student and another adult vaping. Overall, almost all students (96.2%) believed that adults important to them would feel negatively about the student vaping. Most students (88.9%) also believed these adults would feel negatively about another adult vaping.

The percentage of students who believed that adults would feel negatively about vaping was high across all demographic dimensions. When comparing perceptions by gender, female students had the highest rates of believing that adults would feel negatively about their own (97.8%) or another adult's (90.5%) vape use. Students who identified their gender in another way had lower rates of believing that adults would feel negatively about vaping relative to males and females. Across racial/ethnic groups, Asian, Hispanic, and White students had the highest rates of believing that adults would feel negatively about their own or another adult's vape use. Perceptions among 10th graders and 12th graders were similar.

Table 22. Percentage of high school students who believed that adults would feel negatively about them and another adult if they vaped nicotine by demographics

	Adults would feel negatively about vaping nicotine by…			
	the student		another adult	
	N	% (95% CI)	N	% (95% CI)
Overall	149066	96.2 (96.0-96.3)	148330	88.9 (88.6-89.2)
Gender				
Male	67306	96.2 (96.0-96.4)	66978	88.9 (88.5-89.3)
Female	72355	97.8 (97.7-98.0)	72122	90.5 (90.1-90.9)
Identified in Another Way	4245	81.0 (79.3-82.8)	4203	73.2 (71.4-75.0)
Declined to Answer	3651	85.2 (83.7-86.6)	3626	79.3 (77.7-81.0)
Race/Ethnicity				
White	30302	97.4 (97.1-97.7)	30186	88.1 (87.3-89.0)
African American/Black	3925	93.2 (91.9-94.4)	3909	83.7 (81.9-85.6)
Hispanic	77900	96.2 (96.0-96.4)	77528	89.6 (89.3-90.0)
Asian	18311	97.6 (97.3-97.9)	18259	92.6 (92.0-93.2)
AI/AN	657	90.3 (87.7-92.9)	655	81.3 (77.9-84.6)
NHOPI	1009	91.2 (89.1-93.3)	1008	80.7 (77.3-84.1)
Other	3418	90.7 (89.7-91.8)	3399	84.0 (82.6-85.5)
Multiple	11983	95.6 (95.1-96.1)	11927	85.5 (84.6-86.4)
Grade				
Grade 10	80719	96.2 (96.0-96.5)	80236	88.8 (88.3-89.2)
Grade 12	68347	96.1 (95.8-96.3)	68094	89.0 (88.7-89.4)

Table 23 presents the percentage of student who reported that adults important to them would feel negatively about the student and another adult smoking cigarettes. Similar to the results for vaping, almost all students (96.6%) believed that adults important to them would feel negatively about the student smoking cigarettes. Most students (88.5%) also believed that adults would feel negatively about another adult smoking cigarettes.

Again, the percentage of students who believed that adults would feel negatively about smoking cigarettes was high across all demographic dimensions. Like the results presented in Table 22, females had the highest rates of believing that adults would feel negatively about the student (98.3%) or another adult (89.9%) smoking cigarettes. Students who identified their gender in another way also had lower rates of believing that adults would feel negatively about smoking cigarettes relative to males and females. Asian and White students had the highest rates of believing that adults would feel negatively about the student or another adult smoking cigarettes. Perceptions among 10th graders and 12th graders were similar.

Table 23. Percentage of high school students who believed that adults would feel negatively about them and another adult if they smoked cigarettes by demographics

	Adults would feel negatively about smoking cigarettes by…			
	the student		another adult	
	N	% (95% CI)	N	% (95% CI)
Overall	149145	96.6 (96.4-96.8)	148364	88.5 (88.2-88.9)
Gender				
Male	67338	96.6 (96.4-96.8)	66988	88.8 (88.4-89.2)
Female	72388	98.3 (98.2-98.5)	72141	89.9 (89.5-90.3)
Identified in Another Way	4251	81.9 (80.4-83.5)	4201	72.4 (70.6-74.1)
Declined to Answer	3656	85.3 (83.9-86.7)	3629	78.2 (76.4-80.1)
Race/Ethnicity				
White	30313	98.1 (97.9-98.3)	30193	89.1 (88.3-90.0)
African American/Black	3927	93.6 (92.4-94.7)	3908	84.2 (82.6-85.8)
Hispanic	77940	96.6 (96.5-96.8)	77541	88.8 (88.5-89.1)
Asian	18320	97.7 (97.4-98.0)	18263	91.4 (90.7-92.1)
AI/AN	658	89.2 (85.8-92.5)	655	79.4 (75.0-83.7)
NHOPI	1011	90.9 (88.8-93.1)	1006	80.1 (76.1-84.1)
Other	3422	91.4 (90.4-92.5)	3405	84.1 (82.7-85.6)
Multiple	11990	96.3 (95.8-96.8)	11930	86.1 (85.2-87.0)
Grade				
Grade 10	80755	96.6 (96.4-96.8)	80251	88.2 (87.8-88.6)
Grade 12	68390	96.6 (96.3-96.8)	68113	88.9 (88.6-89.3)

Perceptions of Peers' Views on Vaping and Smoking

Students were asked how they would describe their close friends' views on using vapes with nicotine. They were also asked to describe the views of students at their school. Response options included: *very positive*, *positive*, *negative*, and *very negative*. The same questions were asked about smoking cigarettes.

Table 24 presents the percentage of students who believed that their close friends and other students at their school would view vaping nicotine negatively (*negative* and *very negative*). Overall, three quarters of students (74.9%) believed that their close friends viewed vaping negatively. However, less than half (46.4%) thought other students at their school viewed vaping negatively. Never vapers had higher rates of believing that their close friends (81.6%) and other students at their school (50.0%) viewed vaping negatively compared to current vapers (36.8% and 31.4%, respectively).

Table 24. Percentage of high school students who believed that their close friends and other students at their school would view vaping negatively by vaping status

Negative views of vaping nicotine among…	Overall N=148847 % (95% CI)	Never vapers N=111983 % (95% CI)	Former vapers N=24021 % (95% CI)	Current vapers N=12838 % (95% CI)
close friends	74.9 (74.1-75.7)	81.6 (81.1-82.1)	62.4 (61.3-63.6)	36.8 (35.4-38.2)
other students at school	46.4 (45.0-47.7)	50.0 (48.7-51.4)	36.7 (35.2-38.1)	31.4 (30.1-32.8)

Table 25 shows students' beliefs that their close friends and other students at their school would view smoking cigarettes negatively. Overall, greater percentages of students thought that their close friends (91.7%) and other students at their school (80.9%) viewed smoking cigarettes negatively compared to vaping (74.9% and 46.4%, respectively, shown in Table 24). As with vapers, never smokers had higher rates of believing that their close friends (92.7%) and other students at their school (81.4%) viewed smoking negatively compared to current smokers (54.3% and 62.4%, respectively).

Table 25. Percentage of high school students who believed that their close friends and other students at their school would view smoking negatively by smoking status

Negative views of smoking cigarettes among…	Overall N=148879 % (95% CI)	Never smokers N=139715 % (95% CI)	Former smokers N=7321 % (95% CI)	Current smokers N=1811 % (95% CI)
close friends	91.7 (91.4-92.0)	92.7 (92.5-93.0)	80.7 (79.6-81.8)	54.3 (51.1-57.5)
other students at school	80.9 (80.3-81.4)	81.4 (80.9-82.0)	74.8 (73.7-76.0)	62.4 (59.5-65.3)

Opinions of the Tobacco Industry

Table 26 shows the percentage of students who *strongly agreed* or *somewhat agreed* with three statements about the tobacco industry. Overall, three quarters of students believed that vaping companies were part of the tobacco industry (75.8%) and that tobacco companies targeted people their age by advertising flavored tobacco products in stores and on social media (74.0%). Many students (60.0%) believed that tobacco companies targeted people their age by selling tobacco products near schools. There were differences across tobacco use status, with never and former users having higher rates of these opinions of the tobacco industry than current users.

Table 26. Opinions of the tobacco industry by use status among high school students

	Overall N=148652 % (95% CI)	Never users of any product N=106145 % (95% CI)	Former users of any product N=27729 % (95% CI)	Current users of any product N=14778 % (95% CI)
Vaping companies are part of the tobacco industry	75.8 (75.0-76.6)	76.6 (75.7-77.5)	75.3 (74.3-76.4)	70.6 (69.6-71.7)
Tobacco companies target people my age by advertising flavored cigarettes, LCC, or vapes in stores and on social media	74.0 (73.3-74.6)	75.5 (74.7-76.3)	73.6 (72.6-74.5)	62.9 (61.9-63.9)
Tobacco companies target people my age by selling cigarettes, LCC, or vapes in stores near schools	60.0 (59.3-60.7)	61.7 (60.9-62.5)	58.3 (57.3-59.2)	50.6 (49.4-51.9)

Summary

The majority of students (84.2%) believed that, among those reasons presented, people their age used vapes with nicotine or just flavoring because their friends did. A high percentage of students also agreed that people their age used vapes because they came in lots of flavors (72.1%) and looked interesting and cool (70.6%). Students believed that adults who were important to them held overwhelmingly negative views on vaping and smoking cigarettes. While the majority of students perceived that their close friends and other students at school viewed smoking cigarettes negatively, less than half of the students believed their peers viewed vaping negatively. In other words, the social norm for smoking cigarettes was overwhelmingly negative among high school students, but the majority of them did not view the social norm for vaping to be negative. Three quarters of high school students believed that vaping companies were part of the tobacco industry and that tobacco companies targeted their age group by advertising flavored tobacco products in stores and on social media.

CHAPTER 5 – Secondhand Exposure and Other Environmental Influences

This chapter focuses on environmental influences of tobacco use. It presents student exposure to secondhand vapor and tobacco smoke and whether students had home bans on vaping and tobacco smoking. It also presents the prevalence of exposure to advertisements (ads) promoting or discouraging vape and cigarette use in the last 30 days. The prevalence of exposure to environmental influences is compared across tobacco use status when appropriate. It should be noted that the questions about vapes reported in this chapter asked about vapes generally and did not specify the substance in the vape (e.g., nicotine, marijuana, or just flavoring). As a result, responses could include exposure to vapes with marijuana.

Exposure to Secondhand Vapor and Tobacco Smoke in the Last 2 Weeks

The 2019-20 CSTS asked respondents, "In the last 2 weeks, were you in a room when someone was using a vape?" A similar question asked about exposure to vapor in a car in the last 2 weeks. Two similar questions asked about secondhand exposure to tobacco smoke in a room and in a car by replacing the phrase *using a vape* with the phrase *smoking a cigarette, little cigar, or cigarillo.* It should be noted that the timeframe referenced in the question was changed in 2019-20, from "in the last 30 days" to the "in last 2 weeks." As a result, rates of secondhand exposure are not directly comparable to those of earlier CSTS surveys.

Table 27 reports high school students' exposure to secondhand vapor and tobacco smoke in a room. Overall, secondhand exposure to vapor in a room within the last 2 weeks was more than double that of tobacco smoke (24.9% and 8.9%, respectively). Current vapers reported higher rates of exposure in a room than never and former vapers; the same was true of tobacco smokers. When comparing across vaping and smoking status, all use categories reported higher exposure rates to vapor than to tobacco smoke.

Table 27. Prevalence of last 2-week exposure to vapor and tobacco smoke* in a room by use status among high school students

	Vapor		Tobacco smoke*	
	N	**% (95% CI)**	**N**	**% (95% CI)**
Overall	148981	24.9 (23.5-26.3)	149012	8.9 (8.5-9.2)
Never users	112190	18.2 (17.2-19.2)	132823	7.3 (7.0-7.5)
Former users	24028	33.9 (32.1-35.7)	11970	15.1 (14.1-16.1)
Current users	12757	70.2 (68.1-72.2)	4212	40.9 (38.3-43.5)

*Two products: Cigarettes and little cigars or cigarillos (LCC).

Table 28 show students' exposure to secondhand vapor and tobacco 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 2 weeks was higher for vapor (15.6%) than tobacco smoke (7.0%).

Table 28. Prevalence of last 2-week exposure to vapor and tobacco smoke* in a car by use status among high school students

	Vapor		Tobacco smoke*	
	N	% (95% CI)	N	% (95% CI)
Overall	149183	15.6 (14.6-16.5)	149399	7.0 (6.6-7.4)
Never users	112332	9.1 (8.6-9.5)	133138	5.4 (5.1-5.7)
Former users	24056	23.9 (22.5-25.3)	12024	14.3 (13.2-15.4)
Current users	12788	60.5 (58.2-62.8)	4230	36.7 (34.3-39.1)

*Two products: Cigarettes and little cigars or cigarillos (LCC).

Exposure to Secondhand Vapor and Tobacco Smoke in the Last 2 Weeks by Race/Ethnicity

Table 29 provides data on secondhand exposure to vapor in a room by race/ethnicity. White students had higher secondhand exposure rates than all other racial/ethnic groups. 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 29. Prevalence of last 2-week exposure to 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	148981	24.9 (23.5-26.3)	18.2 (17.2-19.2)	33.9 (32.1-35.7)	70.2 (68.1-72.2)
White	30336	41.1 (39.2-43.0)	29.8 (28.2-31.3)	54.5 (52.6-56.4)	84.0 (82.2-85.8)
African American/Black	3952	18.3 (16.2-20.5)	14.1 (12.3-16.0)	25.9 (21.2-30.6)	56.1 (49.1-63.1)
Hispanic	78116	19.6 (18.5-20.8)	14.6 (13.8-15.4)	26.2 (24.9-27.6)	61.7 (59.4-64.0)
Asian	18332	21.4 (19.5-23.3)	16.9 (15.3-18.5)	33.5 (30.5-36.5)	70.7 (66.8-74.6)
AI/AN	655	22.5 (18.2-26.8)	14.2 (10.0-18.4)	31.6 (18.2-44.9)	63.4 (50.2-76.6)
NHOPI	1012	26.5 (23.4-29.6)	18.9 (15.7-22.1)	34.6 (26.9-42.3)	58.4 (47.7-69.0)
Other	3422	22.7 (20.4-24.9)	14.9 (13.0-16.8)	36.6 (30.7-42.5)	63.7 (58.2-69.3)
Multiple	11988	34.0 (32.3-35.7)	25.7 (24.1-27.2)	44.6 (41.7-47.5)	75.5 (72.8-78.3)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition
*The sample size for each subgroup is not shown.

Table 30 shows the secondhand exposure to tobacco smoke in a room by race/ethnicity. It showed a different pattern than that of Table 32. White students had a higher exposure rate (11.1%) than those of Hispanic and Asian students (7.5% and 7.7%, respectively), but a similar rate compared to students who were African American/Black (12.3%) and of other racial/ethnic groups. Across racial/ethnic groups, rates of exposure to secondhand tobacco smoke in a room were highest for current users, followed by former and never users.

Table 30. Prevalence of last 2-week 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	149012	8.9 (8.5-9.2)	7.3 (7.0-7.5)	15.1 (14.1-16.1)	40.9 (38.3-43.5)
White	30337	11.1 (10.4-11.8)	9.2 (8.7-9.7)	17.9 (15.7-20.1)	42.7 (38.6-46.8)
African American/Black	3936	12.3 (10.8-13.9)	10.2 (8.9-11.5)	16.1 (11.6-20.5)	42.3 (33.8-50.8)
Hispanic	78082	7.5 (7.1-7.9)	5.9 (5.6-6.2)	13.1 (11.8-14.3)	39.7 (35.9-43.5)
Asian	18338	7.7 (7.1-8.4)	7.0 (6.4-7.6)	17.4 (10.8-24.0)	38.3 (30.6-46.0)
AI/AN	654	11.2 (8.7-13.7)	8.6 (6.1-11.0)	21.5 (12.4-30.5)	33.3 (18.8-47.8)
NHOPI	1013	12.6 (9.9-15.2)	9.6 (7.5-11.8)	21.8 (9.8-33.9)	35.6 (16.9-54.4)
Other	3437	12.0 (10.6-13.4)	9.3 (8.2-10.5)	21.1 (15.3-26.9)	41.4 (32.9-49.8)
Multiple	11994	12.6 (11.7-13.6)	10.8 (9.9-11.6)	18.6 (15.8-21.4)	47.7 (41.9-53.4)

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 for definition.
*Two products: Cigarettes and little cigars or cigarillos (LCC).
**The sample size for each subgroup is not shown.

Tables 31 and 32 present data on secondhand exposure to vapor and tobacco smoke in a car by race/ethnicity. Similar to the exposure of secondhand vapor in a room, students who were White (26.3%) had a significantly higher rate of secondhand exposure to vapor in a car compared to all other racial/ethnic groups. Exposure to secondhand tobacco smoke in a car also varied across race/ethnicity. For example, students who were White (7.4%) had a significantly higher rate of secondhand exposure to tobacco smoke in a car compared to those who were Asian (5.5%), but not African American/Black (10.9%). Similar to patterns of exposure in a room, rates of secondhand vapor and tobacco smoke exposure in a car were highest among current users and lowest among never users.

Table 31. Prevalence of last 2-week exposure to 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	149183	15.6 (14.6-16.5)	9.1 (8.6-9.5)	23.9 (22.5-25.3)	60.5 (58.2-62.8)
White	30375	26.3 (24.6-28.0)	13.9 (13.0-14.7)	38.4 (36.2-40.6)	76.4 (74.5-78.2)
African American/Black	3954	10.2 (8.5-11.8)	7.1 (5.7-8.4)	15.1 (11.6-18.6)	39.5 (31.2-47.7)
Hispanic	78181	12.2 (11.5-13.0)	7.7 (7.3-8.1)	18.1 (17.0-19.2)	50.3 (47.9-52.7)
Asian	18351	12.3 (11.2-13.3)	7.4 (6.8-8.1)	26.5 (24.2-28.8)	63.2 (59.3-67.0)
AI/AN	657	17.1 (14.1-20.0)	8.9 (6.5-11.3)	24.6 (14.0-35.1)	60.0 (46.0-74.1)
NHOPI	1017	18.5 (16.0-21.0)	10.6 (8.1-13.0)	26.1 (19.6-32.7)	53.9 (43.1-64.6)
Other	3435	15.5 (13.8-17.3)	8.2 (6.9-9.5)	27.8 (22.6-33.0)	55.8 (50.7-60.9)
Multiple	12008	21.5 (20.2-22.8)	13.0 (11.9-14.1)	30.8 (28.4-33.1)	66.3 (62.8-69.8)

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.
*The sample size for each subgroup is not shown.

Table 32. Prevalence of last 2-week 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	149399	7.0 (6.6-7.4)	5.4 (5.1-5.7)	14.3 (13.2-15.4)	36.7 (34.3-39.1)
White	30389	7.4 (6.6-8.2)	5.6 (5.0-6.2)	14.2 (12.1-16.3)	35.7 (30.7-40.7)
African American/Black	3958	10.9 (9.2-12.6)	8.4 (7.0-9.8)	20.7 (15.2-26.3)	39.1 (30.3-47.9)
Hispanic	78267	6.5 (6.1-6.9)	4.9 (4.6-5.2)	13.2 (12.1-14.3)	37.2 (34.4-40.0)
Asian	18368	5.5 (5.0-6.1)	4.9 (4.4-5.5)	13.6 (10.1-17.1)	33.1 (27.0-39.1)
AI/AN	657	11.6 (8.9-14.3)	9.1 (6.6-11.7)	22.3 (12.0-32.6)	30.0 (16.0-44.1)
NHOPI	1018	11.3 (8.8-13.9)	9.1 (6.6-11.7)	13.6 (6.4-20.8)	43.1 (28.4-57.7)
Other	3445	9.4 (8.2-10.5)	7.1 (6.0-8.2)	16.9 (11.4-22.4)	34.6 (26.9-42.4)
Multiple	12012	9.0 (8.1-9.8)	6.9 (6.2-7.5)	19.3 (15.6-23.0)	38.8 (32.8-44.9)

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 for definition.
*Two products: Cigarettes and little cigars or cigarillos (LCC).
**The sample size for each subgroup is not shown.

Home Bans on Vaping and Tobacco Smoking

Using two separate questions, students were asked to indicate which statement best described the rules about 1) vaping and 2) smoking cigarettes or other tobacco products inside their home. The answer options to describe the rules were: (a) *vaping* (or *smoking cigarettes or other tobacco products*) *is not allowed anywhere or at any time inside my home*; (b) *vaping* (or *smoking cigarettes or other tobacco products*) *is allowed in some places or at some times inside my home*; (c) *vaping* (or *smoking cigarettes or other tobacco products*) *is allowed anywhere and at any time inside my home*; (d) *there are no rules about whether people can vape* (or *smoke cigarettes or other tobacco products*) *inside my home*. Students who indicated vaping (or smoking cigarettes or other tobacco products) was not allowed anywhere or at any time inside their home were classified as having a *complete home ban.*

Table 33 presents the prevalence of complete home bans on vaping and tobacco smoking by vaping and tobacco smoking status. Vaping status (never, former, or current vaper) was

determined by students' use of vapes and tobacco smoking status was determined by students' use of cigarettes and little cigars or cigarillos (LCC). Tobacco smoking status was restricted to cigarettes and LCC to remain consistent with the definition presented for secondhand tobacco smoke exposure.

The vast majority of students had a complete home ban on vaping and tobacco smoking (83.6% and 83.8%, 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. The rates of home bans on vaping and tobacco smoking were similar.

Table 33. Prevalence of complete home bans on vaping and tobacco smoking by use status* among high school students

		Complete home ban
Vaping ban	**N**	**% (95% CI)**
Overall	148631	83.6 (83.1-84.1)
Never vapers	111940	86.3 (85.8-86.7)
Former vapers	23970	78.4 (77.6-79.2)
Current vapers	12713	69.0 (67.7-70.3)
Tobacco smoking ban		
Overall	148604	83.8 (83.3-84.3)
Never smokers	132458	85.2 (84.7-85.7)
Former smokers	11938	75.7 (74.3-77.0)
Current smokers	4197	64.1 (61.8-66.5)

*Smoking status was based on cigarette and little cigar or cigarillo (LCC) use.

Tables 34 and 35 provide data on the rates of complete home bans on vaping and tobacco smoking by race/ethnicity. There were significant differences across racial/ethnic groups. The rates of complete home bans on vaping were higher for students who were White, Hispanic, and Asian than those for students who were African American/Black, AI/AN, and NHOPI (Table 34). A similar pattern of differences by racial/ethnic group was found for home bans on tobacco smoking (Table 35). Additionally, rates of home bans for former users were generally between that of never and current users for both vaping and tobacco smoking.

Table 34. Prevalence of complete home bans on vaping by vaping status and by race/ethnicity* among high school students

	Overall N=148631 % (95% CI)	Never vapers N=111940 % (95% CI)	Former vapers N=23970 % (95% CI)	Current vapers N=12713 % (95% CI)
Overall	83.6 (83.1-84.1)	86.3 (85.8-86.7)	78.4 (77.6-79.2)	69.0 (67.7-70.3)
White	84.2 (83.3-85.2)	87.4 (86.5-88.3)	79.6 (78.0-81.3)	73.5 (71.4-75.6)
African American/Black	74.5 (72.2-76.7)	78.2 (76.0-80.5)	61.4 (56.0-66.9)	54.4 (47.9-60.8)
Hispanic	85.1 (84.7-85.5)	87.4 (87.0-87.8)	80.7 (79.8-81.6)	69.2 (67.5-70.8)
Asian	85.0 (83.6-86.4)	87.3 (86.0-88.5)	74.4 (71.5-77.3)	69.5 (65.7-73.3)
AI/AN	67.4 (63.3-71.4)	70.9 (65.6-76.2)	63.2 (49.0-77.4)	50.4 (35.4-65.5)
NHOPI	67.6 (63.3-71.9)	69.6 (64.3-74.9)	63.4 (54.8-71.9)	63.4 (54.0-72.7)
Other	72.4 (70.4-74.4)	75.6 (73.4-77.9)	66.7 (61.3-72.0)	55.4 (49.7-61.0)
Multiple	79.6 (78.4-80.8)	83.1 (81.9-84.3)	73.5 (71.0-76.0)	64.9 (61.1-68.6)

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.
*The sample size for each subgroup is not shown.

Table 35. Prevalence of complete home bans on tobacco smoking by smoking status* and by race/ethnicity among high school students**

	Overall N=148604 % (95% CI)	Never smokers N=132458 % (95% CI)	Former smokers N=11938 % (95% CI)	Current smokers N=4197 % (95% CI)
Overall	83.8 (83.3-84.3)	85.2 (84.7-85.7)	75.7 (74.3-77.0)	64.1 (61.8-66.5)
White	85.8 (84.9-86.8)	87.2 (86.4-88.1)	77.6 (75.5-79.7)	70.8 (67.3-74.2)
African American/Black	73.1 (70.7-75.5)	75.4 (73.3-77.5)	64.0 (57.6-70.4)	47.8 (35.9-59.7)
Hispanic	84.8 (84.4-85.3)	86.1 (85.7-86.5)	77.5 (75.8-79.2)	67.6 (65.1-70.1)
Asian	85.2 (84.0-86.3)	85.9 (84.8-86.9)	72.0 (65.4-78.6)	65.6 (58.4-72.8)
AI/AN	68.0 (63.6-72.3)	70.1 (64.5-75.7)	63.8 (51.1-76.5)	40.5 (25.4-55.6)
NHOPI	68.3 (64.8-71.9)	70.4 (66.3-74.5)	63.3 (54.0-72.6)	46.8 (26.9-66.7)
Other	70.6 (68.6-72.6)	73.4 (71.3-75.5)	60.6 (54.0-67.3)	40.2 (32.7-47.7)
Multiple	81.8 (80.7-82.9)	83.3 (82.2-84.5)	74.3 (70.7-78.0)	59.7 (54.0-65.4)

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 little cigar or cigarillo (LCC) use.
**The sample size for each subgroup is not shown.

Exposure to Vape and Cigarette Ads in the Last 30 Days

Participants were asked whether they had seen advertisements (ads) that either promoted or discouraged the use of vapes or cigarettes within the last 30 days. Those who reported having seen ads for either 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*.

Table 36 shows students' overall exposure to vape and cigarette ads and perceived ad type. Most students (71.4%) had been exposed to any type of vape or cigarette-related ad within the last 30 days (data not shown in table). Overall exposure to vape ads (67.3%) was higher than exposure to cigarette ads (51.8%). Ads that were perceived to be discouraging the use of the product were the most common type of ad seen for both products. A greater percentage of students reported seeing ads that were perceived to be discouraging use of the product for vapes (40.5%) than for cigarettes (31.4%). Similarly, a greater percentage of students reported

seeing ads that were perceived to be promoting the use of the product for vapes (15.1%) than for cigarettes (10.2%).

Proportionally, about one in five vape-related ads were perceived to promote vape use (15.1% / 67.3% = 22.4%), while three in five were perceived to be discouraging their use (40.5% / 67.3% = 60.2%). The rest of the ads were not clearly perceived as either promoting or discouraging vapes. Similarly, about one in five cigarette-related ads were perceived to promote cigarette smoking (10.2% / 51.8% = 19.7%), while three in five were perceived to be discouraging their use (31.4% / 51.8% = 60.7%).

Table 36. Exposure to perceived types of vape and cigarette ads among high school students

	Overall exposure to tobacco-related ads	Exposure to…			
		Ads promoting use	Ads discouraging use	Neutral ads	I don't know
N=148838	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Vapes	67.3 (66.2-68.3)	15.1 (14.7-15.5)	40.5 (39.5-41.5)	3.9 (3.7-4.0)	7.8 (7.5-8.0)
Cigarettes	51.8 (51.2-52.4)	10.2 (9.9-10.5)	31.4 (30.6-32.1)	3.5 (3.4-3.6)	6.7 (6.5-6.9)

Table 37 presents exposure to perceived ad types for vapes among never, former, and current vapers. The exposure to vaping-related ads was high regardless of use status. Moreover, more students reported exposure to ads they perceived to discourage rather than promote vape use. There was no difference in exposure to ads perceived to be discouraging vape use between current, former, and never vapers.

Table 37. Exposure to types of perceived vape ads among high school students by vaping status

	Never vapers N=112147 % (95% CI)	Former vapers N=23997 % (95% CI)	Current vapers N=12686 % (95% CI)
Overall exposure to vape ads	66.1 (65.0-67.2)	70.5 (69.3-71.6)	71.6 (70.3-72.9)
Exposure to…			
Ads promoting use	14.9 (14.5-15.4)	16.5 (15.8-17.2)	13.8 (13.0-14.7)
Ads discouraging use	40.0 (39.0-41.0)	41.1 (39.8-42.5)	44.1 (42.5-45.8)
Neutral ads	3.6 (3.4-3.8)	4.4 (4.0-4.8)	5.3 (4.8-5.8)
I don't know	7.6 (7.3-7.8)	8.4 (7.9-8.9)	8.2 (7.4-9.0)

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

Table 38 presents exposure to perceived ad types for cigarettes among never, former, and current cigarette smokers. Current smokers had a higher level of exposure to cigarette ads

(65.5%) relative to former (55.6%) and never (51.5%) smokers. Again, more students reported exposure to ads they perceived to discourage rather than promote cigarette smoking. There was no difference in exposure to ads perceived to be discouraging cigarette smoking between current, former, and never smokers.

Table 38. Exposure to types of perceived cigarette ads among high school students by smoking status

	Never smokers N=139761 % (95% CI)	Former smokers N=7260 % (95% CI)	Current smokers N=1759 % (95% CI)
Overall exposure to cigarette ads	51.5 (50.8-52.1)	55.6 (54.1-57.0)	65.5 (62.6-68.5)
Exposure to…			
Ads promoting use	10.0 (9.8-10.3)	12.9 (11.7-14.2)	14.6 (12.2-17.0)
Ads discouraging use	31.4 (30.6-32.1)	31.4 (29.8-32.9)	32.5 (29.1-35.9)
Neutral ads	3.4 (3.2-3.5)	4.7 (4.1-5.3)	7.3 (4.7-9.8)
I don't know	6.7 (6.4-6.9)	6.5 (5.7-7.3)	11.0 (9.1-12.9)

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

Summary

Most high school students reported living in a home that had a complete home ban on tobacco smoking (83.8%) and vaping (83.6%). Still, nearly one in five never vapers had been exposed to vapor in a room (18.2%) in the last two weeks. Never smokers' exposure to secondhand tobacco smoke in a room (7.3%) was much lower than never vapers' exposure to secondhand vapor (18.2%). Most students were exposed to vape and cigarette ads in the last 30 days, with more students being exposed to ads they perceived to be discouraging rather than promoting the use of the products.

CHAPTER 6 – Access to Vapes and Cigarettes

Age restrictions are intended to make it difficult for students to access tobacco products. The minimum legal age to purchase tobacco products, including vapes, in California is 21 years old. Because of this, it is important to monitor how underage students acquire tobacco products, particularly through social sources. The following chapter presents data on how students acquired vapes and cigarettes. Current vapers and cigarette smokers were first asked whether they usually paid for their own *vapes (or pods or e-liquid)* or *cigarettes*, respectively. Students who reported paying for their own vapes or cigarettes were then asked where they usually bought their *vapes (or pods or e-liquid)* or *cigarettes*, while students who reported not paying for their own vapes or cigarettes were asked where they usually got their *vapes (or pods or e-liquid)* or *cigarettes*. Students who reported buying vapes or cigarettes from the store were asked the type of store they usually bought their *vapes (or pods or e-liquid)* or *cigarettes* from. Students who reported paying for their own vapes or cigarettes were also asked whether they had asked someone older to buy *vapes (or pods or e-liquid)* or *cigarettes* for them in the last 30 days. This chapter also presents the prevalence of offers of vapes and cigarettes by demographics and tobacco use status.

It should be noted that the questions about the acquisition and sources of vapes reported in this chapter asked about vapes with nicotine or just flavoring specifically, whereas the question about offers asked about vapes generally. As a result, responses to the question on offers could include vapes with marijuana.

Acquisition of Vapes

Of current vapers, 48.8% reported not paying for their vapes (or pods or e-liquid) and 51.2% reported paying for them (data not shown in table). Current vapers in 10th grade were significantly more likely to report not paying for their vapes than those in 12th grade (51.9% vs. 46.4%, data not shown in table).

Table 39 presents the way vapes (or pods or e-liquid) were acquired among those students who did not pay for their vapes (48.8%). Overall, approximately half (52.7%) of these students reported being given vapes. About one quarter (26.5%) of them reported asking someone for vapes. The distribution of social sources was consistent across grades, with a slightly higher percentage of 12th grade students reporting being given vapes relative to those in 10th grade.

Table 39. Acquisition of vapes (or pods or e-liquid) among those high school students who were current vapers by social source

Did not pay for own vapes (or pods or e-liquid)	Overall N=6296 % (95% CI)	Current vapers Grade 10 N=2989 % (95% CI)	Grade 12 N=3307 % (95% CI)
Someone gives them to me	52.7 (51.2-54.1)	50.6 (48.5-52.7)	54.4 (52.4-56.5)
I ask someone for them	26.5 (25.0-28.0)	27.2 (25.2-29.1)	25.9 (24.0-27.8)
I take them from someone	7.5 (6.8-8.3)	8.0 (6.7-9.3)	7.2 (6.2-8.1)
I get them some other way	13.3 (12.3-14.4)	14.3 (12.7-15.9)	12.5 (11.2-13.8)

Table 40 presents the methods of purchase among those 51.2% of students who did pay for their own vapes (or pods or e-liquid). Over one third (36.1%) of them reported buying vapes from someone and 27.1% reported buying vapes from the store. Another 22.5% reported asking someone to buy vapes for them. Only 4.3% reported buying them from the Internet (including apps). Among those who paid for their own vapes, 34.4% reported asking someone who was older than them to buy vapes for them in the last 30 days (data not shown in table).

Table 40. Acquisition of vapes (or pods or e-liquid) among those high school students who were current vapers by purchase source

Paid for own vapes (or pods or e-liquid)	Current vapers N=6688 % (95% CI)
I buy them from the store myself	27.1 (24.9-29.4)
I buy them from someone	36.1 (34.0-38.2)
I ask someone to buy them for me	22.5 (20.3-24.7)
I buy them from the Internet (including apps)	4.3 (3.7-4.9)
I buy them some other way	9.9 (9.0-10.9)

Acquisition of Cigarettes

Of current cigarette smokers, 55.8% reported not paying for their own cigarettes and 44.2% did (data not shown in table). Similar proportions of 10th and 12th grade students reported not paying for their cigarettes (58.7% and 54.1%, respectively, data not shown in table).

Table 41 shows the way cigarettes were acquired among those students who did not pay for their cigarettes (55.8%). Over two in five (44.0%) reported being given cigarettes and one in five (19.4%) reported asking someone for cigarettes. Another 20.0% reported getting cigarettes by taking them from someone. The distribution of social sources was consistent across grades, with a slightly higher percentage of 10th grade students reporting taking cigarettes from someone relative to those in 12th grade, while the reverse was true for students who reported being given cigarettes.

Table 41. Acquisition of cigarettes among those high school students who were current smokers by social source

	Current cigarette smokers		
	Overall N=1053	Grade 10 N=455	Grade 12 N=598
Did not pay for own cigarettes	% (95% CI)	% (95% CI)	% (95% CI)
Someone gives them to me	44.0 (39.7-48.3)	38.8 (33.6-44.0)	47.5 (42.5-52.5)
I ask someone for them	19.4 (16.3-22.5)	17.8 (11.6-24.0)	20.4 (16.9-24.0)
I take them from someone	20.0 (16.5-23.6)	26.4 (22.1-30.6)	15.8 (11.6-20.0)
I get them some other way	16.6 (14.1-19.0)	17.0 (12.9-21.2)	16.3 (12.4-20.1)

Table 42 presents the methods of purchase among those 44.2% of students who usually paid for cigarettes. About two in five (39.5%) of them reported buying cigarettes from the store and over one in five (23.3%) reported asking someone to buy them. About one in six (17.2%) reported buying them from someone. As with vape purchase sources, few students (6.7%) reported buying cigarettes from the Internet (including apps). Among those who paid for their own cigarettes, 42.8% reported asking someone who was older than them to buy cigarettes for them in the last 30 days (data not shown in table).

Table 42. Acquisition of cigarettes among those high school students who were current smokers by purchase source

	Current cigarette smokers N=807
Paid for own cigarettes	% (95% CI)
I buy them from the store myself	39.5 (34.2-44.8)
I buy them from someone	17.2 (14.3-20.2)
I ask someone to buy them for me	23.3 (19.4-27.1)
I buy them on the Internet (including apps)	6.7 (3.9-9.5)
I buy them some other way	13.3 (10.5-16.2)

Retail Sources of Vapes and Cigarettes Among High School Students Purchasing from a Store

Students who reported buying vapes or cigarettes from the store themselves were asked the specific store type where they usually bought the tobacco product. As shown in Table 43, among current vapers, *tobacco or smoke shops* (40.1%) and *vape shops* (33.9%) were the most popular store types for purchasing vapes. In contrast, among current cigarette smokers, *gas stations or convenience stores* (30.2%) and *tobacco or smoke shops* (29.1%) were the most popular store types for purchasing cigarettes.

Table 43. Retail source of vapes and cigarettes among those high school students who bought vapes or cigarettes from a store by store type

	Bought vapes from a store N=1724 % (95% CI)	Bought cigarettes from a store N=318 % (95% CI)
Gas station or convenience store	8.2 (6.7-9.7)	30.2 (23.0-37.5)
Grocery store	2.2 (0.4-4.0)†	5.1 (2.7-7.4)
Drugstore or pharmacy	3.0 (1.0-5.1)†	9.2 (0.0-19.1)†
Liquor store	4.0 (3.0-5.0)	11.5 (7.2-15.8)
Tobacco or smoke shop	40.1 (36.8-43.3)	29.1 (22.8-35.4)
Vape shop	33.9 (30.7-37.2)	4.5 (2.4-6.7)
A mall or shopping center kiosk/stand*	2.7 (1.4-4.1)	--
Other	5.8 (4.6-7.1)	10.3 (5.9-14.8)

**A mall or shopping center kiosk/stand* was only included as a store option for vapes.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Offers of Vapes and Cigarettes in the Last 30 Days

The 2019-20 CSTS assessed whether high school students were offered tobacco products in the last 30 days by asking "In the last 30 days has anyone offered you…" followed by *vapes* and *cigarettes*. Receiving offers of tobacco products may be an important risk factor for tobacco use uptake among adolescents.[7]

As shown in Table 44, over one quarter (27.4%) of students were offered either vapes or cigarettes in the last 30 days, with significantly more current users (79.8%) reporting product offers relative to never (18.7%) or former users (39.7%). The overall prevalence of offers of vapes and cigarettes reflected their respective prevalence: far more students reported being offered vapes (26.9%; the most prevalent product used by high school students) than cigarettes (4.6%).

Table 44. Prevalence of offers of vapes or cigarettes in the last 30 days among high school students by use status

	Overall N=149270 % (95% CI)	Never users of the product N=140107 % (95% CI)	Former users of the product N=25366 % (95% CI)	Current users of the product N=13288 % (95% CI)
Any of the below*	27.4 (26.4-28.4)	18.7 (18.1-19.3)	39.7 (38.3-41.0)	79.8 (78.5-81.1)
Vapes	26.9 (25.9-27.9)	18.5 (17.9-19.0)	40.0 (38.7-41.3)	79.9 (78.6-81.2)
Cigarettes	4.6 (4.4-4.9)	3.2 (3.1-3.4)	16.3 (14.9-17.6)	64.8 (61.9-67.8)

*As the sample size for the subgroup for each product varies, the estimates for each product may be greater than that of *Any of the below* [product].

Offers of Vapes and Cigarettes by Demographics

Table 45 shows the prevalence of offers of vapes and cigarettes by demographics. Offers of vapes and cigarettes according to demographic characteristics reflected the prevalence of use of each product according to gender and race/ethnicity. Offers of vapes and cigarettes were highest among students who identified their gender another way (36.9%). There were some differences in the prevalence of offers across race/ethnicity, with White students (36.3%) generally indicating the highest prevalence of offers and Asian students (18.5%) indicating the lowest prevalence of offers. Prevalence of offers by grade level, however, were similar for 10th (26.7%) and 12th (28.1%) graders, even though the lower grade level tended to have a lower prevalence of use.

Table 45. Prevalence of offers of vapes or cigarettes in the last 30 days by use status and by gender, race/ethnicity, and grade among high school students

	N	Overall % (95% CI)	Never users of the product % (95% CI)	Former users of the product % (95% CI)	Current users of the product % (95% CI)
Overall	149270	27.4 (26.4-28.4)	18.7 (18.1-19.3)	39.7 (38.3-41.0)	79.8 (78.5-81.1)
Gender					
Male	67567	26.3 (25.2-27.3)	18.6 (17.9-19.2)	37.8 (36.2-39.5)	78.9 (77.4-80.5)
Female	72568	27.7 (26.6-28.8)	18.4 (17.7-19.0)	40.9 (39.2-42.5)	82.0 (80.4-83.5)
Identified in Another Way	4261	36.9 (34.8-39.0)	25.8 (23.6-28.0)	42.3 (37.5-47.1)	77.0 (73.4-80.7)
Declined to Answer	3672	28.0 (25.8-30.2)	18.2 (16.3-20.0)	42.9 (38.0-47.9)	69.9 (64.9-74.9)
Race/Ethnicity					
White	30379	36.3 (34.5-38.0)	22.1 (21.1-23.1)	52.0 (49.9-54.1)	88.2 (86.6-89.7)
African American/Black	3956	22.7 (20.0-25.5)	16.2 (14.0-18.4)	33.3 (28.1-38.5)	78.1 (72.3-83.8)
Hispanic	78167	25.7 (24.7-26.6)	18.7 (18.0-19.4)	35.8 (34.5-37.2)	74.5 (72.7-76.3)
Asian	18362	18.5 (17.2-19.7)	12.3 (11.5-13.1)	34.9 (32.1-37.6)	81.3 (78.8-83.8)
AI/AN	658	32.2 (28.5-36.0)	19.9 (15.7-24.0)	51.4 (35.0-67.8)	79.0 (68.3-89.8)
NHOPI	1012	31.8 (28.7-34.9)	20.1 (17.0-23.2)	41.2 (34.7-47.6)	76.2 (68.4-84.1)
Other	3439	27.8 (25.9-29.8)	19.0 (17.1-21.0)	39.8 (35.1-44.5)	74.8 (70.1-79.4)
Multiple	12010	33.1 (31.6-34.6)	22.7 (21.3-24.1)	45.3 (42.8-47.8)	82.7 (80.5-84.9)
Grade					
Grade 10	80845	26.7 (25.7-27.8)	19.3 (18.6-20.0)	41.9 (40.3-43.5)	79.4 (77.7-81.1)
Grade 12	68425	28.1 (26.9-29.3)	17.9 (17.3-18.6)	37.9 (36.3-39.4)	80.1 (78.6-81.6)

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.

Summary

High school students who were current vapers had a higher rate of purchasing vapes (51.2%) than obtaining them through social sources (48.8%). On the other hand, students who were current smokers had a lower rate of purchasing cigarettes (44.2%) than obtaining them through social sources (55.8%). Among those who purchased the products, a similar percentage of vapers and smokers reported asking someone to buy the product for them (22.5% for vapers and 23.3% for smokers). Vapers had a lower rate of purchasing the products from the store themselves than smokers (27.1% and 39.5%, respectively). Among those who did purchase the products from the store, *tobacco or smoke shops* and *vape shops* were the most popular store types for purchasing vapes, while *gas stations or convenience stores* and *tobacco or smoke shops* were the most popular store types for purchasing cigarettes. Many students reported being offered vapes. Even among those who never used vapes, close to one in five (18.5%) had been offered a vape in the last 30 days. Fewer students reported offers of cigarettes. A much smaller proportion of students who never used cigarettes reported being offered them (3.2%) relative to vapes.

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 the 35 regions that corresponded with the 2019-20 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. Finally, we categorized the State of California into four regions: Northern, Central, Greater Bay, and Southern areas to provide more stable estimates for regional comparisons.

It should be noted that the total number of schools in this data set is 358. The original sampling design was not set up for regional analysis except for the 35 regions that were in the original CSTS sample. However, even for the 35 regions in the original sample, the total number of participating schools in some regions did not fulfill sample requirements. Thus, the results reported in this chapter must 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.[8] 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 46 presents the use of products among high school students by urban classification. Overall tobacco use was higher among students in Rural & Town schools (12.6%) than those in City schools (8.5%). The rate of overall tobacco use among students in Suburban schools (10.0%) was in between those in Rural & Town and City schools. Use of specific tobacco products generally followed the same pattern. The most noticeable difference was the use of smokeless tobacco: students in Rural & Town schools had much higher rates of smokeless tobacco (1.4%) relative to students in City or Suburban schools (0.4% and 0.6%, respectively).

Table 46. Prevalence of current use of tobacco products by urban classification among high school students

	City N=65544 % (95% CI)	Suburban N=63404 % (95% CI)	Rural & Town N=21660 % (95% CI)
Any of the below	8.5 (7.7-9.2)	10.0 (9.1-10.9)	12.6 (10.5-14.7)
Vapes	6.9 (6.2-7.7)	8.7 (7.8-9.7)	10.7 (8.6-12.7)
Cigarettes	1.1 (1.0-1.3)	1.2 (1.0-1.4)	1.7 (1.2-2.1)
LCC	2.2 (2.0-2.5)	1.9 (1.7-2.1)	3.3 (2.8-3.8)
Big cigars	0.5 (0.4-0.5)	0.5 (0.4-0.6)	0.8 (0.6-1.0)
Hookah	0.6 (0.5-0.7)	0.6 (0.5-0.7)	0.9 (0.7-1.1)
Smokeless	0.4 (0.4-0.5)	0.6 (0.5-0.7)	1.4 (1.0-1.8)
HTP	0.2 (0.1-0.2)	0.2 (0.2-0.2)	0.3 (0.2-0.4)

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Tobacco Use by 35 CSTS Sampling Regions

In previous cycles, the survey utilized a sampling scheme based on 12 California regions in the 2015-16 CSTS and 22 in the 2017-18 CSTS. This survey cycle increased the number of regions from 22 to 35. Figure 1 and Table 47 present the counties included in each region, and Tables 48 and 49 present tobacco use prevalence data for each region.

It is important to note that some 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 the regional estimates to account for multiple comparisons, which also results in wider confidence intervals. Interpret these results with caution.

Figure 1. Identification of 35 regions used in the 2019-20 CSTS

Table 47. Identification of counties within each of the CSTS 2019-20 regions

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

*Alpine and Sierra counties had no eligible schools.

In 2019-20, the current use of tobacco products by high school students ranged from 6.3% in Region 5 to 24.0% in Region 18, as shown in Table 48.

Note: Comparisons between regions must be made with caution. Some regions had only a few schools participate in the survey. Their sample sizes were small. For example, Region 10 had only four schools and 1163 students, and Region 18 had only three schools and 1509 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 must 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 the regional estimates to allow for multiple comparisons.

Table 48. Prevalence of ever and current tobacco use by CSTS region among high school students

Region	Counties	N*	Ever use % (99.8% CI)	Current use % (99.8% CI)
1	Del Norte, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Siskiyou, Tehama, Trinity	1886	46.2 (38.3-54.1)	20.9 (15.5-26.2)
2	Colusa, Glenn, Sutter, Yuba	2930	32.1 (24.1-40.2)	12.8 (8.3-17.4)
3	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Nevada, Sierra, Tuolumne	2319	44.7 (35.6-53.8)	23.4 (16.8-30.0)
4	Marin, Napa	2312	32.4 (25.0-39.7)	11.8 (8.9-14.7)
5**	Monterey, San Benito	2061	27.3 (21.8-32.9)	6.3 (2.7-9.8)
6	Imperial	2688	33.8 (26.9-40.6)	15.4 (8.7-22.0)
7	Madera	2554	29.5 (24.9-34.0)	7.9 (4.2-11.5)
8	Yolo	1929	33.5 (30.4-36.7)	12.4 (8.8-15.9)
9	Kings	1429	28.6 (21.8-35.4)	7.0 (3.8-10.1)
10	Shasta	1163	37.1 (35.3-38.9)	14.6 (11.2-17.9)
11	Butte	1756	37.3 (35.0-39.6)	18.7 (15.4-21.9)
12	San Luis Obispo	2534	38.2 (33.1-43.3)	16.6 (13.5-19.7)
13	Santa Cruz	1847	31.0 (25.6-36.5)	10.4 (6.0-14.8)
14	Santa Barbara	3583	31.7 (25.4-38.0)	11.6 (7.7-15.5)
15	Merced	2264	30.0 (23.3-36.7)	7.6 (4.3-10.9)
16	Solano	1694	29.2 (22.1-36.2)	9.1 (7.2-11.1)
17**	San Francisco	2371	20.0 (9.1-30.9)	8.2 (3.2-13.2)†
18**	Sonoma	1509	48.5 (44.4-52.5)	24.0 (22.6-25.5)
19	Placer	5606	26.0 (20.8-31.2)	10.2 (7.7-12.7)
20	Stanislaus	4561	28.2 (23.3-33.2)	9.8 (6.9-12.7)
21	San Mateo	2776	26.4 (19.6-33.2)	9.7 (3.2-16.2)†
22	Ventura	3967	28.9 (21.9-35.8)	10.2 (5.0-15.4)
23	Tulare	5874	27.2 (22.7-31.7)	8.3 (5.8-10.7)
24	Kern	4253	33.2 (24.8-41.5)	10.7 (4.5-16.9)
25	San Joaquin	3954	25.6 (21.5-29.7)	8.1 (5.6-10.6)
26**	Contra Costa	4086	32.5 (24.6-40.4)	14.3 (8.6-20.0)
27	Fresno	2980	27.4 (20.4-34.3)	7.7 (4.8-10.6)
28	Alameda	4221	24.8 (16.6-32.9)	8.7 (5.7-11.6)
29	Santa Clara	7713	25.3 (19.1-31.5)	8.6 (6.2-11.0)
30	Sacramento	5520	28.2 (20.5-35.9)	10.1 (4.6-15.5)
31	Riverside	8492	27.4 (21.9-32.9)	7.9 (4.4-11.3)
32	San Bernardino	7863	31.4 (19.7-43.1)	10.2 (3.4-17.0)†
33	Orange	11417	25.8 (21.1-30.5)	9.0 (4.8-13.1)
34	San Diego	10058	28.1 (20.9-35.2)	11.1 (6.4-15.7)
35	Los Angeles	18439	27.4 (24.1-30.6)	7.7 (5.7-9.7)

Note: Confidence intervals for the 35 regions were adjusted to allow for multiple comparisons.

*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.

**Did not meet regional sampling requirements.

†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 49a and b 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 vapes) was 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 the regional estimates to allow for multiple comparisons.

Table 49a. Prevalence of current tobacco product use by CSTS region among high school students

CSTS Region	Counties	N	Vapes % (99.8% CI)	Cigarettes % (99.8% CI)	LCC % (99.8% CI)
1	Del Norte, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Siskiyou, Tehama, Trinity	1886	18.6 (13.2-24.1)	2.2 (1.0-3.4)	5.2 (3.0-7.4)
2	Colusa, Glenn, Sutter, Yuba	2930	11.1 (6.7-15.4)	1.5 (1.0-2.1)	3.5 (2.0-5.0)
3	Alpine, Amador, Calaveras, El Dorado, Inyo, Mariposa, Mono, Nevada, Sierra, Tuolumne	2319	20.6 (15.4-25.9)	3.9 (0.4-7.4)†	4.2 (2.3-6.2)
4	Marin, Napa	2312	10.7 (7.8-13.6)	1.3 (0.6-1.9)	1.9 (0.8-3.0)
5*	Monterey, San Benito	2061	5.2 (1.7-8.8)†	1.3 (0.6-1.9)	1.9 (0.4-3.4)†
6	Imperial	2688	13.5 (6.9-20.2)	2.8 (1.7-4.0)	2.7 (1.7-3.6)
7	Madera	2554	6.0 (2.3-9.7)†	1.0 (0.7-1.3)	1.7 (1.3-2.1)
8	Yolo	1929	10.5 (7.7-13.3)	1.4 (0.6-2.2)	4.3 (2.8-5.8)
9	Kings	1429	5.1 (2.1-8.1)†	0.7 (0.0-1.6)†	2.4 (0.4-4.4)†
10	Shasta	1163	13.5 (10.3-16.8)	1.7 (0.9-2.4)	2.3 (0.7-4.0)†
11	Butte	1756	17.4 (13.9-20.9)	1.8 (0.9-2.8)	3.3 (2.2-4.3)
12	San Luis Obispo	2534	15.3 (12.3-18.3)	1.7 (1.0-2.4)	2.6 (1.6-3.5)
13	Santa Cruz	1847	8.8 (5.1-12.6)	2.7 (0.9-4.4)†	2.5 (1.8-3.2)
14	Santa Barbara	3583	10.0 (6.5-13.6)	2.2 (0.5-3.8)†	2.2 (1.2-3.1)
15	Merced	2264	5.9 (2.6-9.1)	0.8 (0.2-1.3)†	2.7 (1.5-3.9)
16	Solano	1694	7.5 (6.3-8.6)	0.4 (0.0-0.9)†	2.7 (0.6-4.7)†
17*	San Francisco	2371	6.7 (1.7-11.7)†	1.6 (0.1-3.2)†	1.9 (0.5-3.2)†
18*	Sonoma	1509	21.6 18.6-24.6)	4.2 (0.4-8.0)†	3.7 (3.2-4.2)
19	Placer	5606	9.5 (7.1-11.8)	1.0 (0.6-1.4)	1.8 (1.2-2.5)
20	Stanislaus	4561	8.5 (5.7-11.2)	0.7 (0.2-1.2)†	2.7 (1.7-3.8)
21	San Mateo	2776	8.7 (2.2-15.2)†	1.2 (0.4-1.9)†	1.6 (1.1-2.2)
22	Ventura	3966	9.3 (4.1-14.5)	1.4 (0.1-2.7)†	1.8 (0.7-2.9)†
23	Tulare	5874	6.4 (4.1-8.8)	0.7 (0.4-1.1)	2.6 (1.9-3.3)
24	Kern	4253	8.0 (2.2-13.8)†	1.1 (0.5-1.6)	3.3 (1.0-5.6)†
25	San Joaquin	3954	6.2 (4.0-8.3)	0.8 (0.3-1.2)†	2.9 (1.5-4.2)
26*	Contra Costa	4086	12.8 (6.4-19.1)	1.3 (0.6-1.9)	2.7 (1.2-4.2)
27	Fresno	2980	6.0 (3.7-8.2)	1.1 (0.3-1.8)†	2.9 (1.3-4.5)
28	Alameda	4221	6.0 (3.6-8.5)	1.2 (0.1-2.4)†	3.3 (0.8-5.8)†
29	Santa Clara	7713	7.7 (5.5-10.0)	1.0 (0.6-1.4)	1.5 (0.7-2.3)
30	Sacramento	5520	8.2 (2.9-13.5)†	1.4 (0.2-2.6)†	3.2 (1.8-4.6)
31	Riverside	8492	6.7 (3.3-10.1)	0.8 (0.4-1.3)	1.6 (1.0-2.3)
32	San Bernardino	7863	8.8 (2.2-15.5)†	1.4 (0.1-2.7)†	2.6 (1.3-3.8)
33	Orange	11417	8.3 (4.2-12.5)	1.1 (0.3-1.8)†	1.1 (0.5-1.8)
34	San Diego	10058	9.8 (5.2-14.5)	1.8 (0.7-2.9)†	1.8 (0.9-2.6)
35	Los Angeles	18439	6.1 (4.1-8.1)	1.0 (0.5-1.4)	2.0 (1.4-2.6)

Note: Confidence intervals for the 35 regions were adjusted to allow for multiple comparisons.
Abbreviations: LCC = little cigars or cigarillos.
*Did not meet regional sampling requirements.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 49b. 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 % (99.8% CI)	HTP % (99.8% CI)
1	See Table 49a	1886	1.4 (0.9-1.9)	1.1 (0.7-1.5)	2.7 (1.4-4.1)	0.3 (0.0-0.7)†
2	See Table 49a	2930	0.9 (0.5-1.3)	0.6 (0.3-0.8)	1.8 (1.1-2.5)	0.2 (0.0-0.3)†
3	See Table 49a	2319	1.3 (0.6-2.0)	1.0 (0.0-2.3)†	3.5 (0.4-6.6)†	0.1 (0.0-0.2)†
4	See Table 49a	2312	0.6 (0.0-1.4)†	0.5 (0.1-0.8)†	0.6 (0.0-1.1)†	0.1 (0.0-0.2)†
5*	See Table 49a	2061	0.3 (0.2-0.5)	0.4 (0.0-0.9)†	0.3 (0.0-1.1)†	0.2 (0.0-0.6)†
6	Imperial	2688	0.7 (0.1-1.3)†	0.9 (0.6-1.2)	0.4 (0.2-0.6)	0.3 (0.0-0.6)†
7	Madera	2554	0.4 (0.2-0.7)	0.6 (0.2-1.0)†	1.0 (0.1-1.8)†	0.1 (0.0-0.3)†
8	Yolo	1929	0.6 (0.3-0.8)	0.7 (0.1-1.2)†	0.6 (0.2-1.0)†	0.3 (0.1-0.6)†
9	Kings	1429	0.6 (0.1-1.2)†	0.4 (0.0-0.9)†	0.6 (0.3-0.9)	0.1 (0.0-0.4)†
10	Shasta	1163	0.6 (0.0-1.1)†	0.4 (0.0-1.3)†	1.9 (0.0-4.2)†	0.1 (0.0-0.4)†
11	Butte	1756	1.5 (1.1-1.8)	0.7 (0.2-1.2)†	2.4 (1.3-3.4)	0.6 (0.2-1.0)†
12	San Luis Obispo	2534	0.8 (0.4-1.2)	0.8 (0.3-1.3)†	1.5 (0.5-2.5)†	0.2 (0.0-0.3)†
13	Santa Cruz	1847	0.8 (0.4-1.1)	0.6 (0.3-0.9)	0.8 (0.5-1.2)	0.1 (0.0-0.2)†
14	Santa Barbara	3583	0.4 (0.2-0.6)	0.6 (0.4-0.8)	0.9 (0.0-1.7)†	0.3 (0.0-0.5)†
15	Merced	2264	0.6 (0.0-1.2)†	0.9 (0.0-1.8)†	0.8 (0.1-1.4)†	0.1 (0.0-0.2)†
16	Solano	1694	0.5 (0.0-0.9)†	0.5 (0.2-0.8)†	0.3 (0.0-0.5)†	0.3 (0.0-0.5)†
17*	San Francisco	2371	0.4 (0.0-1.0)†	0.5 (0.2-0.8)†	0.2 (0.0-0.4)†	0.0
18*	Sonoma	1509	1.9 (0.7-3.1)†	1.8 (0.6-2.9)†	3.5 (1.6-5.4)	0.5 (0.2-0.8)
19	Placer	5606	0.6 (0.2-0.9)	0.6 (0.2-1.1)†	0.9 (0.5-1.3)	0.3 (0.1-0.5)†
20	Stanislaus	4561	0.5 (0.2-0.8)	0.8 (0.5-1.2)	0.5 (0.1-0.9)†	0.2 (0.0-0.4)†
21	San Mateo	2776	0.4 (0.0-0.7)†	0.5 (0.1-0.8)†	0.5 (0.2-0.9)†	0.2 (0.0-0.6)†
22	Ventura	3966	0.8 (0.3-1.2)†	0.5 (0.2-0.8)†	0.5 (0.1-0.9)†	0.3 (0.1-0.5)†
23	Tulare	5874	0.4 (0.2-0.6)	0.4 (0.2-0.7)†	0.6 (0.3-0.9)	0.2 (0.1-0.4)†
24	Kern	4253	0.9 (0.0-1.8)†	0.9 (0.5-1.4)	0.7 (0.0-1.4)†	0.2 (0.0-0.4)†
25	San Joaquin	3954	0.3 (0.1-0.5)†	0.6 (0.2-1.0)†	0.3 (0.1-0.5)†	0.2 (0.0-0.4)†
26*	Contra Costa	4086	0.7 (0.0-1.4)†	0.8 (0.5-1.2)	1.5 (0.0-3.4)†	0.2 (0.0-0.6)†
27	Fresno	2980	0.6 (0.0-1.2)†	1.1 (0.0-2.3)†	0.9 (0.0-2.1)†	0.3 (0.0-0.7)†
28	Alameda	4221	0.6 (0.3-1.0)	0.8 (0.0-1.7)†	0.3 (0.0-0.6)†	0.1 (0.0-0.2)†
29	Santa Clara	7713	0.4 (0.2-0.6)	0.5 (0.3-0.7)	0.4 (0.2-0.6)	0.2 (0.0-0.4)†
30	Sacramento	5520	0.6 (0.2-1.0)†	0.7 (0.3-1.1)†	0.7 (0.2-1.3)†	0.2 (0.0-0.4)†
31	Riverside	8492	0.5 (0.1-0.8)†	0.5 (0.1-0.9)†	0.4 (0.0-0.7)†	0.3 (0.1-0.5)†
32	San Bernardino	7863	0.3 (0.1-0.5)†	0.5 (0.2-0.7)	0.7 (0.0-1.6)†	0.2 (0.0-0.4)†
33	Orange	11417	0.3 (0.0-0.5)†	0.4 (0.2-0.6)	0.4 (0.0-0.9)†	0.1 (0.0-0.2)†
34	San Diego	10058	0.5 (0.2-0.8)†	0.7 (0.3-1.0)	0.6 (0.1-1.1)†	0.1 (0.0-0.2)†
35	Los Angeles	18439	0.4 (0.2-0.7)	0.6 (0.4-0.9)	0.4 (0.2-0.6)	0.2 (0.0-0.4)†

Note: Confidence intervals for the 35 regions were adjusted to allow for multiple comparisons.

Abbreviations: HTP = heated tobacco products.

*Did not meet regional sampling requirements.

†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Tobacco Use by Priority Population Initiative Regions

The California Department of Public Health's California Tobacco Control Program (CDPH/CTCP) issued requests 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; Lesbian, Gay, Bisexual, Transgender, Queer; and Rural populations. 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.[9,10]

The CSTS was not sampled according to the 11 PPI regions, and the 35 CSTS regions are not perfect subsets of all PPI regions. The 2019-20 CSTS sampled according to 35 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 the regional estimates to account for multiple comparisons, resulting in wide confidence intervals. The results in these tables must be interpreted with caution.

Table 50 indicates which counties were in each PPI region and which priority populations were identified in each region, as well as which priority population projects were funded.[11]

Table 50. 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* Rural*
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* Rural*
High Country	Lassen, Modoc, Plumas, Sierra, Siskiyou, Trinity	Rural*
Los Angeles	Los Angeles	African American/Black* Asian/Pacific Islander* Hispanic/Latino* LGBTQ*
North Coast	Del Norte, Humboldt, Lake, Mendocino, Napa, Sonoma	Hispanic/Latino Rural*
North Valley	Butte, Colusa, Glenn, Shasta, Tehama, Yuba	Hispanic/Latino* Rural*
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 the CDPH/CTCP did not receive an application or the submission did not pass the review.
*CDPH/CTCP-funded priority population project(s).

Table 51 provides the prevalence of overall tobacco use by PPI region. Current tobacco use ranged from 7.6% in the Central Coast to 19.9% in the North Coast. Table 52 provides the prevalence of current use for specific tobacco products by PPI region. In line with results presented in Chapter 1, current use of all tobacco products (except vapes) was low.

Since the CSTS was not sampled according to the 11 PPI regions, and the 35 CSTS regions are not perfect subsets of all PPI regions, these results must be interpreted with caution.

Table 51. Prevalence of ever and current tobacco use by Priority Population Initiative (PPI) region among high school students

	N*	Ever use % (99.9% CI)	Current use % (99.9% CI)
Bay Area	23301	26.8 (23.1-30.4)	10.0 (7.9-12.0)
Central Coast	3908	28.5 (24.0-32.9)	7.6 (4.5-10.6)
Central Valley	19354	29.6 (25.8-33.3)	8.7 (6.4-11.0)
Gold Country	25257	29.4 (26.1-32.7)	11.2 (8.9-13.5)
High Country**	80	49.9 (34.2-65.6)	16.2 (4.6-27.7)†
Los Angeles	18439	27.4 (24.0-30.8)	7.7 (5.6-9.8)
North Coast	4767	43.4 (38.8-48.1)	19.9 (17.2-22.6)
North Valley	4901	38.7 (35.0-42.4)	17.1 (14.7-19.5)
South Coast	21475	26.9 (22.5-31.3)	10.0 (6.8-13.2)
Tri-County	10084	31.0 (26.3-35.7)	11.5 (8.1-14.9)
Tri-County South	19043	29.5 (23.2-35.9)	9.3 (5.5-13.0)

Note: Confidence intervals for the 11 PPI regions were adjusted to allow for multiple comparisons.
*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.
**Only one school participated in the 2019-20 CSTS. No adjustment for clustering effect was made for this region.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 52. Prevalence of current tobacco product use by Priority Population Initiative (PPI) region among high school students

	N	Vapes % (99.9% CI)	Cigarettes % (99.9% CI)	LCC % (99.9% CI)	Big cigars % (99.9% CI)	Hookah % (99.9% CI)	Smokeless % (99.9% CI)	HTP % (99.9% CI)
Bay Area	23301	8.4 (6.4-10.5)	1.1 (0.8-1.5)	2.3 (1.5-3.1)	0.5 (0.3-0.7)	0.6 (0.3-0.9)	0.6 (0.1-1.1)†	0.2 (0.1-0.3)†
Central Coast	3908	6.4 (3.4-9.3)	1.7 (0.9-2.5)	2.1 (1.0-3.2)	0.5 (0.3-0.7)	0.5 (0.1-0.8)†	0.5 (0.0-1.0)†	0.2 (0.0-0.5)†
Central Valley	19354	6.6 (4.5-8.7)	1.0 (0.6-1.3)	2.9 (1.9-3.8)	0.6 (0.3-1.0)	0.9 (0.4-1.3)	0.8 (0.3-1.3)†	0.2 (0.1-0.4)
Gold Country	25257	9.4 (7.2-11.6)	1.4 (0.8-2.0)	3.0 (2.4-3.7)	0.6 (0.4-0.8)	0.7 (0.5-1.0)	1.0 (0.6-1.3)	0.2 (0.1-0.3)
High Country*	80	16.2 (4.6-27.7)†	3.8 (0.0-9.8)†	3.8 (0.0-9.8)†	1.2 (0.0-4.6)†	1.2 (0.0-4.6)†	1.2 (0.0-4.6)†	1.2 (0.0-4.6)†
Los Angeles	18439	6.1 (4.0-8.2)	1.0 (0.5-1.4)	2.0 (1.4-2.7)	0.4 (0.2-0.7)	0.6 (0.3-0.9)	0.4 (0.1-0.6)†	0.2 (0.0-0.4)†
North Coast	4767	17.7 (14.9-20.5)	2.8 (0.9-4.8)†	3.9 (3.1-4.8)	1.5 (0.7-2.2)	1.2 (0.7-1.8)	2.6 (1.4-3.7)	0.3 (0.2-0.5)
North Valley	4901	15.8 (13.3-18.2)	1.9 (1.4-2.3)	3.2 (2.4-4.1)	1.0 (0.8-1.3)	0.6 (0.3-1.0)	2.1 (1.3-2.9)	0.3 (0.1-0.5)
South Coast	21475	9.1 (5.9-12.3)	1.4 (0.8-2.1)	1.5 (0.9-2.0)	0.4 (0.2-0.6)	0.5 (0.3-0.7)	0.5 (0.2-0.9)†	0.1 (0.1-0.2)†
Tri-County	10083	10.3 (7.0-13.7)	1.7 (0.7-2.6)	2.0 (1.3-2.8)	0.7 (0.4-1.0)	0.6 (0.4-0.8)	0.7 (0.3-1.1)	0.3 (0.1-0.4)
Tri-County South	19043	7.9 (4.3-11.6)	1.2 (0.5-1.8)	2.1 (1.4-2.8)	0.4 (0.2-0.6)	0.5 (0.3-0.7)	0.5 (0.0-1.0)†	0.2 (0.1-0.4)

Note: Confidence intervals for the 11 PPI regions were adjusted to allow for multiple comparisons.

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

*Only one school participated in the 2019-20 CSTS. No adjustment for clustering effect was made for this region.

†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Tobacco Use by Four Regions

Figure 2 divides California into four larger regions: Northern, Central, Greater Bay, and Southern. Dividing the state in this way provides more stable estimates for each region. Table 53 indicate which counties were represented in each region.

Figure 2. Identification of four regions in California

Table 53. 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

Tables 54 and 55 present the prevalence of tobacco use in each of the four regions. Current tobacco use was lowest in the Central and Southern regions (8.9% and 9.0%, respectively) and highest in the Northern region (13.8%). In line with results presented in Chapter 1, the current use of all tobacco products (except vapes) was low.

The CSTS was not sampled according to the four regions, and the 35 CSTS regions are not perfect subsets of the four regions. The 2019-20 CSTS sampled according to 35 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.

Table 54. Prevalence of tobacco use by four regions among high school students

		Ever use	Current use
	N*	**% (99.2% CI)**	**% (99.2% CI)**
Northern	23109	33.1 (30.1-36.1)	13.8 (11.7-15.9)
Central	23915	29.4 (26.8-31.9)	8.9 (7.3-10.4)
Greater Bay	34544	28.1 (26.0-30.3)	10.3 (9.1-11.5)
Southern	69041	28.0 (26.1-29.9)	9.0 (7.7-10.2)

Note: Confidence intervals for the four regions were adjusted to allow for multiple comparisons.
*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.

Table 55. Prevalence of current tobacco product use by four regions among high school students

	N	Any product % (99.2% CI)	Vapes % (99.2% CI)	Cigarettes % (99.2% CI)	LCC % (99.2% CI)	Big cigars % (99.2% CI)	Hookah % (99.2% CI)	Smokeless % (99.2% CI)	HTP % (99.2% CI)
Northern	23109	13.8 (11.7-15.9)	12.0 (10.0-14.0)	1.8 (1.2-2.4)	3.4 (2.8-4.0)	0.8 (0.6-1.0)	0.7 (0.5-1.0)	1.5 (1.1-1.9)	0.2 (0.2-0.3)
Central	23915	8.9 (7.3-10.4)	6.9 (5.5-8.4)	0.9 (0.7-1.1)	2.9 (2.2-3.5)	0.6 (0.4-0.9)	0.9 (0.6-1.2)	0.7 (0.4-1.1)	0.2 (0.1-0.3)
Greater Bay	34544	10.3 (9.1-11.5)	8.7 (7.5-9.9)	1.3 (1.0-1.6)	2.4 (1.9-2.9)	0.6 (0.4-0.7)	0.7 (0.5-0.8)	0.7 (0.4-1.0)	0.2 (0.1-0.3)
Southern	69040	9.0 (7.7-10.2)	7.7 (6.4-8.9)	1.2 (0.9-1.4)	1.9 (1.6-2.2)	0.4 (0.3-0.5)	0.6 (0.5-0.7)	0.5 (0.3-0.6)	0.2 (0.1-0.3)

Note: Confidence intervals for the four regions were adjusted to allow for multiple comparisons.
Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Summary

The geographic differences in tobacco use presented in this chapter confirm that cigarette, LCC, big cigar, hookah, smokeless, and HTP use were low across the state of California. The majority of students who currently used a tobacco product were using vapes regardless of urban classification or regional divide. Regional differences can be informative when considering the differences in student population or even local tobacco control policies. However, the differences across smaller regions shown in Tables 48-52 should be interpreted with extreme caution because the sampling design for CSTS 2019-20 was not originally designed to account for these regional divisions and some regions in those tables had only a small number of schools participate.

CHAPTER 8 – Marijuana Use

This chapter presents data on the prevalence of ever and current marijuana use across demographic characteristics. It also examines the usual mode of marijuana use among students who were current users of multiple marijuana products, as well as current marijuana and tobacco co-use (i.e., use of both marijuana and tobacco in the last 30 days). Finally, this chapter presents data on secondhand exposure to marijuana smoke by demographics and how students acquired marijuana.

Marijuana Use

Table 56 presents the prevalence of ever and current marijuana use among high school students by demographic characteristics. The rates of ever using marijuana (31.2%) and currently using marijuana (15.0%) were higher than the rates of using all tobacco products (28.6% and 9.7%, respectively).

Female students had a higher rate of marijuana ever use compared to males (32.3% vs. 28.5%, respectively); however, there was no difference when comparing current use rates between males and females. Students who identified their gender in another way (26.4%) or declined to report their gender (20.1%) had significantly higher current marijuana use rates. Asian students had the lowest rate of marijuana use (6.6%) of all racial/ethnic groups. The prevalence of marijuana use was higher among 12th grade students relative to 10th grade students (18.0% vs. 12.1%, respectively).

Table 56. Prevalence of marijuana use by gender, race/ethnicity, and grade among high school students

	N*	Ever use % (95% CI)	Current use % (95% CI)
Overall	150597	31.2 (30.3-32.1)	15.0 (14.4-15.5)
Gender			
Male	67805	28.5 (27.6-29.5)	13.8 (13.1-14.4)
Female	72728	32.3 (31.3-33.3)	14.5 (13.9-15.1)
Identified in Another Way	4316	43.5 (41.3-45.6)	26.4 (24.7-28.2)
Declined to Answer	3723	33.8 (31.7-36.0)	20.1 (18.5-21.8)
Race/Ethnicity			
White	30453	33.2 (31.5-34.9)	17.1 (16.0-18.3)
African American/Black	3986	35.2 (33.0-37.5)	19.6 (17.6-21.6)
Hispanic	78514	33.1 (32.2-34.1)	14.9 (14.3-15.5)
Asian	18390	15.1 (13.9-16.2)	6.6 (6.0-7.1)
AI/AN	661	37.1 (32.9-41.2)	22.4 (19.1-25.6)
NHOPI	1023	39.9 (35.6-44.1)	21.5 (18.2-24.8)
Other	3469	25.9 (24.2-27.7)	14.4 (13.1-15.8)
Multiple	12047	32.6 (31.0-34.1)	16.2 (15.3-17.2)
Grade			
Grade 10	81636	25.5 (24.6-26.4)	12.1 (11.6-12.7)
Grade 12	68961	37.4 (36.3-38.5)	18.0 (17.3-18.8)

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.
*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.

Students who reported currently using more than one type of marijuana product were asked "During the last 30 days, how did you USUALLY use marijuana?" Table 57 presents the usual mode of marijuana use among these students. Smoking (50.6%) was the most common mode of use, followed by vaping marijuana (32.6%). Less than one in ten reported that they usually dabbed (8.1%) or ate (6.6%) marijuana. Few students reported that they usually drank (0.9%) or used marijuana some other way (1.2%).

Table 57. Usual use of marijuana among those high school students who were current users of multiple marijuana products

	Usual mode of use N=14351 % (95% CI)
Smoked	50.6 (48.9-52.2)
Vaped	32.6 (31.1-34.0)
Ate	6.6 (6.0-7.3)
Drank	0.9 (0.7-1.1)
Dabbed	8.1 (7.4-8.8)
Used in some other way	1.2 (1.0-1.4)

Marijuana Use and Tobacco Co-Use

Table 58 further categorizes current marijuana use based on whether students used marijuana only or co-used marijuana and any tobacco product. Overall, the prevalence for current use of marijuana only (7.8%) was similar to that for using both marijuana and tobacco (7.1%). However, there were some differences by demographics. For example, among students who identified their gender in another way or declined to answer, current tobacco co-use was higher (15.6% and 11.9%, respectively) than the use of marijuana only (10.8% and 8.2%, respectively). On the other hand, the prevalence of marijuana only (7.6%) was lower than that of co-use (9.6%) among White students, while the reverse was true for African American/Black students (11.1% and 8.5%, respectively).

Table 58. Prevalence of current marijuana only use and co-use of marijuana/any tobacco product by gender, race/ethnicity, and grade among high school students

	N	Marijuana only use % (95% CI)	Co-use of marijuana and any tobacco product % (95% CI)
Overall	150595	7.8 (7.5-8.1)	7.1 (6.7-7.6)
Gender			
Male	67803	7.4 (7.0-7.8)	6.3 (5.9-6.8)
Female	72728	7.8 (7.5-8.2)	6.7 (6.2-7.1)
Identified in Another Way	4316	10.8 (9.5-12.2)	15.6 (14.3-16.8)
Declined to Answer	3723	8.2 (7.0-9.3)	11.9 (10.7-13.2)
Race/Ethnicity			
White	30453	7.6 (6.9-8.2)	9.6 (8.8-10.3)
African American/Black	3986	11.1 (9.6-12.6)	8.5 (6.9-10.1)
Hispanic	78513	8.7 (8.3-9.1)	6.2 (5.8-6.6)
Asian	18390	2.8 (2.5-3.1)	3.8 (3.3-4.2)
AI/AN	661	12.1 (9.1-15.1)	10.3 (7.9-12.6)
NHOPI	1023	11.0 (8.4-13.5)	10.5 (8.6-12.3)
Other	3469	5.9 (5.0-6.8)	8.5 (7.5-9.5)
Multiple	12047	7.3 (6.7-7.9)	8.9 (8.2-9.7)
Grade			
Grade 10	81635	6.3 (6.0-6.6)	5.8 (5.4-6.2)
Grade 12	68960	9.4 (9.0-9.9)	8.6 (8.0-9.1)

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 B for definition.

Table 59 presents the prevalence of current marijuana and tobacco co-use by specific tobacco product (vapes, cigarettes, and little cigars or cigarillos [LCC]). Current tobacco co-use (7.1% in Table 58) was mostly reflective of the co-use of marijuana and vapes (6.0%). It should be noted that current polytobacco users could be included multiple times in the prevalence calculation if they used more than two products (e.g., used marijuana and both vapes and cigarettes).

Table 59. Prevalence of current co-use of marijuana and tobacco by tobacco product among high school students

	Co-use of marijuana and tobacco N=150595 % (95% CI)
Vapes	6.0 (5.6-6.5)
Cigarettes	1.0 (0.9-1.1)
LCC	2.0 (1.9-2.2)

Abbreviations: LCC = little cigars or cigarillos.

Exposure to Secondhand Marijuana Smoke in the Last 2 Weeks

Table 60 reports high school students' exposure to secondhand marijuana smoke in a room and in a car in the last 2 weeks. Overall, a higher percentage of students reported being exposed to marijuana smoke in a room within the last 2 weeks than in a car (15.9% and 10.3%, respectively). Current marijuana users reported higher rates of exposure in a room and in a car, relative to former and never users.

Table 60. Prevalence of last 2-week exposure to marijuana smoke in a room and car by use status among high school students

	Exposure in a room		Exposure in a car	
	N	% (95% CI)	N	% (95% CI)
Overall	148939	15.9 (15.2-16.5)	149068	10.3 (9.9-10.7)
Never users	103378	6.9 (6.6-7.2)	103460	3.4 (3.3-3.6)
Former users	23794	19.8 (18.9-20.7)	23810	12.0 (11.4-12.7)
Current users	21763	53.8 (52.2-55.3)	21794	40.4 (39.2-41.6)

Table 61 presents data on secondhand exposure to marijuana smoke in a room by race/ethnicity. Overall, the rates of exposure to marijuana smoke in a room in the last 2 weeks among White, African American/Black, AI/AN, and Multiple race students were similar (about 20%). Asian students had the lowest overall exposure rate (7.5%). Across racial/ethnic groups, rates of exposure to secondhand marijuana in a room were highest for current users, followed by former and never users.

Table 61. Prevalence of last 2-week exposure to marijuana smoke in a room by use status and by race/ethnicity among high school students

	N*	Overall % (95% CI)	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	148939	15.9 (15.2-16.5)	6.9 (6.6-7.2)	19.8 (18.9-20.7)	53.8 (52.2-55.3)
White	30348	22.6 (21.4-23.9)	9.6 (8.9-10.2)	29.4 (27.4-31.3)	67.5 (65.8-69.2)
African American/Black	3945	19.5 (17.4-21.6)	8.8 (7.2-10.4)	21.2 (17.3-25.1)	53.9 (48.7-59.2)
Hispanic	78092	14.5 (13.9-15.1)	6.4 (6.0-6.7)	16.8 (15.9-17.6)	48.6 (47.1-50.1)
Asian	18339	7.5 (6.8-8.1)	3.6 (3.2-4.0)	14.8 (12.7-16.9)	48.3 (45.1-51.5)
AI/AN	657	20.9 (17.8-24.1)	9.2 (5.2-13.2)	23.1 (12.6-33.5)	52.6 (42.2-63.0)
NHOPI	1010	16.5 (13.7-19.2)	8.1 (4.8-11.3)	14.5 (8.8-20.2)	42.6 (35.2-49.9)
Other	3431	13.8 (12.1-15.4)	5.9 (4.7-7.0)	20.0 (16.2-23.9)	49.8 (44.7-54.9)
Multiple	11996	20.9 (19.6-22.1)	9.9 (8.9-11.0)	26.7 (24.5-28.8)	60.8 (58.0-63.6)

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.
*The sample size for each subgroup is not shown.

Table 62 presents data on secondhand exposure to marijuana smoke in a car in the last 2 weeks by race/ethnicity. It showed a different pattern than that of Table 61. Overall, rates of exposure to secondhand marijuana smoke in a car were highest among AI/AN, African American/Black, and NHOPI students (17.0%, 14.7%, and 13.6%, respectively), whereas White and Multiple race students tended to have relatively lower rates. Again, Asian students had the lowest overall exposure rate (4.5%). Similar to patterns of exposure in a room, rates of exposure to secondhand marijuana smoke in a car were highest for current users, followed by former and never users.

Table 62. Prevalence of last 2-week exposure to marijuana smoke in a car by use status and by race/ethnicity among high school students

	N*	Overall % (95% CI)	Never users % (95% CI)	Former users % (95% CI)	Current users % (95% CI)
Overall	149068	10.3 (9.9-10.7)	3.4 (3.3-3.6)	12.0 (11.4-12.7)	40.4 (39.2-41.6)
White	30362	12.3 (11.4-13.2)	3.4 (3.0-3.7)	14.1 (12.8-15.3)	45.5 (43.5-47.5)
African American/Black	3950	14.7 (13.3-16.1)	6.0 (4.9-7.1)	16.3 (13.6-19.0)	42.6 (37.2-48.1)
Hispanic	78147	10.3 (9.8-10.7)	3.7 (3.5-3.9)	11.4 (10.6-12.2)	38.4 (37.1-39.7)
Asian	18340	4.5 (4.1-5.0)	1.6 (1.3-1.8)	8.1 (6.8-9.5)	38.5 (35.4-41.7)
AI/AN	658	17.0 (13.7-20.2)	5.0 (2.7-7.3)	17.8 (8.2-27.5)	50.1 (40.1-60.2)
NHOPI	1016	13.6 (10.5-16.7)	5.7 (2.5-8.9)	11.3 (6.3-16.4)	38.5 (29.8-47.3)
Other	3438	9.1 (7.9-10.4)	3.1 (2.1-4.1)	12.3 (9.3-15.4)	38.1 (33.5-42.6)
Multiple	12003	11.7 (10.9-12.5)	4.0 (3.4-4.5)	13.8 (12.1-15.5)	41.7 (38.9-44.5)

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.
*The sample size for each subgroup is not shown.

Acquisition of Marijuana

Of current marijuana users, 49.7% reported not paying for their marijuana and 50.3% reported paying for it (data not shown in table). Table 63 presents how those 49.7% students usually got marijuana. Approximately two in three (65.9%) of these students reported being given marijuana, and more than one in six (17.5%) reported asking someone for it. Few students (3.7%) reported growing their own marijuana.

Table 63. Acquisition of marijuana among those high school students who were current users by social source

Did not pay for own marijuana	Current users N=10990 % (95% CI)
Someone gives it to me	65.9 (64.6-67.1)
I ask someone for it	17.5 (16.4-18.6)
I take it from someone	4.1 (3.6-4.6)
I grow my own	3.7 (3.3-4.2)
I get it some other way	8.8 (8.2-9.5)

Table 64 presents the methods of purchase among those 50.3% students who did pay for their marijuana. More than half (55.1%) of them bought marijuana from someone. About one in six (16.2%) bought marijuana from the store or dispensary themselves and 13.1% asked someone to buy marijuana for them. Few students bought marijuana from a delivery service or from the Internet (4.3% and 1.6%, respectively).

Table 64. Acquisition of marijuana among those high school students who were current users by purchase source

Paid for own marijuana	Current users N=10971 % (95% CI)
I buy it from the store or dispensary myself	16.2 (14.9-17.5)
I buy it from someone	55.1 (53.6-56.5)
I ask someone to buy it for me	13.1 (11.9-14.2)
I buy it from the Internet (including apps)	1.6 (1.2-1.9)
I buy it from a delivery service	4.3 (3.7-4.8)
I buy it some other way	9.8 (9.0-10.6)

Summary

Over one in seven (15.0%) high school students reported currently using marijuana. The two most common modes of marijuana use were smoking and vaping. The prevalence of current marijuana use (15.0%) was greater than that of any tobacco use (9.7%). Among those students who currently used marijuana, almost half also currently used any form of tobacco. More than one in ten high school students had been exposed to marijuana in a room or in a car in the last 2 weeks (15.9% and 10.3%, respectively). High school students who were current marijuana users had similar rates of purchasing marijuana (50.3%) and obtaining it through social sources (49.7%). Among those who did purchase marijuana, about half (55.1%) bought it from someone. Among those who did not purchase marijuana, about two thirds (65.9%) reported being given marijuana.

CHAPTER 9 – Comparisons of Tobacco Use from 2015-16 to 2019-20

This chapter compares the prevalence of current tobacco use for high school students between the 2015-16, 2017-18, and 2019-20 CSTS. Over the four-year period, the use patterns of various tobacco products changed significantly. Overall, there was a general decline in tobacco use. However, vape use presents a more complicated picture. There are difficulties in comparing the prevalence of vape use over the three surveys because the questions used to measure this behavior changed between the 2017-18 and the 2019-20 CSTS. Given the continued evolution of terminology adolescents use to describe vaping devices and their own behavior, changes to the survey questions were necessary to increase their validity. However, these changes make it difficult to directly compare the prevalence of vape use across surveys. For this reason, the tables presented in this chapter are limited to those products for which survey questions have not changed, with special focus on the use of combustible tobacco products.

Tobacco Product Use

Table 65 presents the prevalence of use for the five tobacco products consistently measured across the three surveys: cigarettes, LCC, big cigars, hookah, and smokeless tobacco. From 2015-16 to 2017-18, the use of each of these tobacco products decreased significantly: cigarette smoking declined from 4.3% to 2.0%; LCC use declined at a similar rate, 4.3% to 2.2%; big cigar use declined from 1.6% to 0.7%; hookah use dropped from 4.8% to 1.7%; and smokeless tobacco use declined (from 1.7% to 0.7%) in this two-year period.

From 2017-18 to 2019-20, cigarette smoking continued to decline. This is remarkable given that the prevalence had already dropped dramatically to a historic low of 2.0% by 2017-18. Table 65 shows that cigarette smoking continued to decline significantly in 2019-20, to 1.2%.

From 2017-18 to 2019-20, the use of big cigars and hookah also continue to decline significantly. The use of smokeless tobacco dropped, but the change was not statistically significant. LCC was the only tobacco product that did not demonstrate any decline from 2017-18 to 2019-20 (2.2% in both surveys), despite there being a significant drop from 2015-16 to 2017-18.

Table 65. Prevalence of current tobacco product use by year among high school students

	2015-16 N=41606 % (95% CI)	2017-18 N=124904 % (95% CI)	2019-20 N=150591 % (95% CI)
Cigarettes	4.3 (3.8-4.8)	2.0 (1.8-2.2)	1.2 (1.1-1.4)
LCC	4.3 (3.9-4.7)	2.2 (2.0-2.3)	2.2 (2.1-2.4)
Big cigars	1.6 (1.3-1.8)	0.7 (0.6-0.8)	0.5 (0.5-0.6)
Hookah	4.8 (4.2-5.3)	1.7 (1.5-1.8)	0.6 (0.6-0.7)
Smokeless	1.7 (1.3-2.1)	0.7 (0.6-0.8)	0.6 (0.6-0.7)

Abbreviations: LCC = little cigars or cigarillos.

Combustible Tobacco Use by Demographics

Table 66 presents the combined prevalence for all combustible tobacco products: cigarettes, LCC, big cigars, and hookah. There was a significant drop in the overall prevalence of combustible tobacco use from 9.5% in 2015-16 to 4.5% in 2017-18. It continued to decrease significantly to 3.4% in 2019-20.

Table 66 also shows that the decline in combustible tobacco use occurred across gender. The drop in prevalence from 2017-18 to 2019-20 for both male (from 4.6% to 3.4%) and female (from 3.2% to 2.4%) students was statistically significant. It should be noted that the 2015-16 CSTS only included two response options for the gender-identity question (male and female), as was the case in most school-based population surveys at that time. Thus, the prevalence for students who may have identified their gender in categories other than male or female was unknown for the 2015-16 CSTS. However, the change in the overall prevalence of combustible tobacco use from 2015-16 to 2017-18 was so large (from 9.5% to 4.5%) that it is reasonable to conclude that the decline would have remained significant for males and females if the other two categories (*Identified in Another Way* and *Declined to Answer*) were included in the 2015-16 CSTS and their proportions factored out.

The 2017-18 and 2019-20 surveys showed that there was also a decline in combustible tobacco use among those who identified their gender in another way. The change was not statistically significant across these two surveys. Since response options other than male or female were not included in the 2015-16 survey, the prevalence for students who may have identified themselves in another way in 2015-16 is unknown.

Table 66. Prevalence of combustible tobacco use by year and by gender among high school students

	2015-16 N=41794 % (95% CI)	2017-18 N=129306 % (95% CI)	2019-20 N=150605 % (95% CI)
Overall*	9.5 (8.7-10.2)	4.5 (4.3-4.8)	3.4 (3.1-3.6)
Gender			
Male	11.3 (10.3-12.3)	4.6 (4.3-5.0)	3.4 (3.2-3.7)
Female	7.7 (6.9-8.5)	3.2 (2.9-3.4)	2.4 (2.1-2.6)
Identified in Another Way	--	11.7 (10.3-13.1)	10.6 (9.5-11.7)
Declined to Answer	--	9.2 (8.3-10.0)	8.1 (7.0-9.2)

*Kreteks were included in combustible tobacco use in 2015-16, but not assessed in 2017-18 and 2019-20 due to extremely low prevalence.

Table 67 shows that the decline in combustible tobacco use occurred across all racial/ethnic groups over the three surveys. It should be noted that the 2017-18 CSTS allowed students to decline to identify their race/ethnicity (as an *I prefer not to answer* response option was included for questions throughout the survey). This resulted in about 7.2% of all respondents

choosing this option. Thus, it is most appropriate to compare the prevalence in 2015-16 to that in 2019-20 when assessing the change in combustible tobacco use for each racial/ethnic group.

From 2015-16 to 2019-20, combustible tobacco use dropped significantly for students who identified as White (from 12.2% to 3.8%), African American/Black (8.7% to 5.8%, $p<0.05$), Hispanic (9.7% to 3.0%), Asian (3.0% to 1.3%), AI/AN (22.5% to 6.2%), Other (16.3% to 6.7%), and Multiple race (11.2% to 4.0%). The decline was also seen in NHOPI (8.7% to 5.5%) students, but it was only marginally significant statistically ($p=0.09$), due to a small sample size for this group in the 2015-16 survey.

Table 67. Prevalence of combustible tobacco use by year and by race/ethnicity among high school students

	2015-16 N=41794 % (95% CI)	2017-18 N=129306 % (95% CI)	2019-20 N=150605 % (95% CI)
Overall*	9.5 (8.7-10.2)	4.5 (4.3-4.8)	3.4 (3.1-3.6)
Race/Ethnicity			
White	12.2 (10.8-13.5)	5.8 (5.3-6.3)	3.8 (3.4-4.2)
African American/Black	8.7 (6.3-11.0)	3.9 (3.1-4.7)	5.8 (4.5-7.1)
Hispanic	9.7 (8.8-10.5)	3.8 (3.5-4.0)	3.0 (2.8-3.2)†
Asian	3.0 (1.9-4.2)	1.5 (1.3-1.8)	1.3 (1.1-1.5)
AI/AN	22.5 (9.1-35.9)†	9.7 (6.3-13.0)	6.2 (4.3-8.1)
NHOPI	8.7 (5.3-12.2)	6.4 (4.5-8.2)	5.5 (3.9-7.1)
Other	16.3 (12.3-20.2)	6.8 (5.6-8.0)	6.7 (5.8-7.7)
Multiple	11.2 (9.6-12.8)	4.9 (4.2-5.5)	4.0 (3.4-4.5)
Declined to Answer	--	9.1 (8.3-9.9)	--

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.
*Kreteks were included in combustible tobacco use in 2015-16, but not assessed in 2017-18 and 2019-20 due to its extremely low prevalence.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 68 shows that the decline in combustible tobacco use was consistent for both 10th and 12th graders from 2015-16, to 2017-18, and to 2019-20. By 2019-20, the combined use of all combustible tobacco products was 2.5% for 10th graders and less than 5% for high school seniors (12th graders).

Table 68. Prevalence of combustible tobacco use by year and by grade among high school students

	2015-16 N=41794 % (95% CI)	2017-18 N=129306 % (95% CI)	2019-20 N=150605 % (95% CI)
Overall*	9.5 (8.7-10.2)	4.5 (4.3-4.8)	3.4 (3.1-3.6)
Grade			
Grade 10	6.9 (6.1-7.6)	3.2 (3.0-3.5)	2.5 (2.3-2.7)
Grade 12	12.4 (11.3-13.4)	6.0 (5.6-6.3)	4.3 (4.0-4.6)

*Kreteks were included in combustible tobacco use in 2015-16, but not assessed in 2017-18 and 2019-20 due to its extremely low prevalence.

Combustible Tobacco Use by Four Regions

Table 69 shows the prevalence of combustible tobacco use by four regions. It should be noted that the CSTS was not sampled by these four regions. However, the number of schools that participated in each survey was sufficiently large to allow for their grouping into the four regions for trend analysis. From 2015-16 to 2019-20, the prevalence for each region more than halved. Even for the region with the highest prevalence, the Northern Region, the combined use of all combustible tobacco products in 2019-20 was less than 5%.

Table 69. Prevalence of combustible tobacco use by year and by four regions among high school students

	2015-16 N=41794 % (95% CI)	2017-18 N=129306 % (95% CI)	2019-20 N=150605 % (95% CI)
Overall*	9.5 (8.7-10.2)	4.5 (4.3-4.8)	3.4 (3.1-3.6)
Region			
Northern	13.3 (8.3-18.4)	6.4 (5.1-7.8)	4.6 (3.8-5.4)
Central	10.6 (9.1-12.1)	4.7 (3.4-5.9)	3.7 (3.0-4.4)
Greater Bay	9.2 (7.3-11.1)	4.3 (3.7-5.0)	3.6 (3.1-4.2)
Southern	9.0 (7.5-10.4)	4.3 (3.8-4.8)	3.0 (2.6-3.4)

Note: Confidence intervals for the four regions were adjusted to allow for multiple comparisons.
*Kreteks were included in combustible tobacco use in 2015-16, but not assessed in 2017-18 and 2019-20 due to its extremely low prevalence.

CONCLUSION

The 2019-20 CSTS is the second statewide tobacco survey of California high school students since 2016. The year 2016 is an important reference point for tobacco control in California in recent years. A series of changes were made through legislation that took effect in June 2016. These included increasing the age of legal tobacco purchase to 21, classifying e-cigarettes (i.e., vapes) as a tobacco product, including vape products in all secondhand smoke laws, and strengthening tobacco retail licensing requirements. Most importantly, California voters passed Proposition 56 in November 2016. The proposition dramatically increased the tax for all tobacco products (taking effect in April 2017) and allocated a significant portion of the tax dollars to support tobacco control activities.[13] A statewide California Student Tobacco Survey was conducted in 2015-16, before these changes took place. The four-year interval from the 2015-16 to the 2019-20 CSTS provides an opportunity to track the trends in tobacco use among California adolescents and to assess the impact of these tobacco control measures.

The most striking result from the 2019-20 CSTS is that cigarette smoking among California high school students declined from an already low rate of 4.3% in 2015-16 to an almost negligible level of 1.2%.[4,5] This rate is lower than any record of adolescent smoking prevalence in recent years.[14] It is a level that few in the tobacco control community would have thought possible 10 years ago. Thirty years of campaigning against cigarette smoking in California since Proposition 99 have succeeded in changing the social norms so much that an overwhelming percentage of high school students (>90%) in the 2019-20 CSTS believed that their close friends viewed smoking cigarettes negatively. Current high school students may be the first generation of California youth who will be essentially smoke-free when they reach adulthood, as smoking is primarily initiated and established during adolescence.[15]

The decline of tobacco use among California adolescents is not limited to cigarette smoking. The prevalence of all combustible tobacco products has significantly declined from 9.5% in 2015-16 to 3.4% in 2019-20. Moreover, the reduction has occurred across all the regions of California. Even in the Northern Region, which has a large rural population, the overall prevalence of combustible tobacco use was less than 5% in 2019-20.

As cigarette smoking declined, however, vapes have replaced cigarettes as the number one tobacco product used by adolescents. From the 2015-16 to the 2017-18 CSTS, vape use increased from 8.6% to 10.5%. But even with regard to vape use, there are signs of progress found in the 2019-20 CSTS.

These signs of progress in the efforts to reduce vape use among adolescents can be found in student perception and behavior related to vaping. In terms of perception, three-quarters of high school students believed that vaping companies were part of the tobacco industry and that tobacco companies targeted their age group by advertising flavored tobacco products in stores and on social media. The perception of vaping companies as part of the tobacco industry may mobilize youth against the use of their products because of the negativity associated with the

latter, as an industry that manipulates the facts to addict young people.[16,17] In terms of behavior, it seems that the prevalence of vape use did not increase from the 2017-18 to the 2019-20 CSTS, although the changes in the survey questions for assessing vape use between these two surveys make it difficult to directly compare the two.[4,5] It appears, therefore, that tobacco control measures, such as the statewide media campaign against vaping, the age restriction on the sale and the environmental restriction on the use of vapes, and the tobacco-use prevention education programs conducted at schools across California have contributed to arresting the increase in vaping among California adolescents. It should be mentioned, however, that the negative news associated with the e-cigarette, or vaping, product use-associated lung injury (EVALI) may have also contributed to preventing the expected increase in vape use from the 2017-18 to the 2019-20 CSTS.[18]

Vapes remain the most popular tobacco product used among adolescents and the prevalence of vape use was still relatively high in 2019-20 (8.2%). This was especially true for the Northern Region, where vape use was 12.0%. In addition, the overlap between vaping nicotine and vaping marijuana makes it more difficult for tobacco control interventions. Collaboration between different segments of the public health community is essential to prevent the use of both marijuana and tobacco among California youth.

The 2019-20 CSTS also found, as has been reported in other research, that certain personal characteristics were associated with higher use of tobacco products. For example, the sexual and/or gender minority (SGM) group was consistently more likely to use each tobacco product than the non-SGM group. Students who reported poor mental health were significantly more likely to use tobacco than students who reported excellent to good mental health. By race/ethnicity, the decline in combustible tobacco use over the four-year span was smaller in some groups than in others. Disparities exist along multiple dimensions and remain a challenge for the design of future tobacco control activities.

While tobacco control programs need to address disparities, it is important to note that the overall decline in tobacco use among California youth from 2015-16 to 2019-20 has been remarkable and that the change in the overall social norm regarding tobacco use is key to its success.[19] That this decline occurred for most tobacco products and across most demographic dimensions suggests that the social norms for tobacco use among California youth generally trend negative. It is critical, therefore, that the tobacco control community remains focused on driving down the social norms for tobacco use. The change in social norms is also an effective way to help change the health behavior among vulnerable populations.[20]

The social norm approach to tobacco control, however, needs to be especially vigilant when it comes to product replacement. Vapes are a good example. As the norms for cigarettes changed to be negative (i.e., unacceptable), adolescents switched to vapes, whose norm remains positive. If a tobacco control program succeeds in changing the norm for vapes to the negative, it is critical there is no new product to take the place of vapes. Two types of products are potential replacements for vapes. One is heated tobacco products (HTP), which have been

popular in several Asian countries. These products are beginning to attract the attention of Americans.[3,21-23] In July 2020, the U.S. Food and Drug Administration (FDA) authorized iQOS, the leading HTP brand, to be sold as a modified risk tobacco product (MRTP). A new product with a slick design, which is also considered by the FDA to be less risky, is likely to attract adolescent attention. Studies of HTP have shown that its early adoption resembled that of vapes, when the latter first gained the interest of Americans in the early 2010s.[23] Another potential replacement for tobacco is marijuana. Marijuana is currently more popular than any tobacco product among adolescents. Many California high school students have already used both tobacco and marijuana, and new marijuana products continue to come into the market. The challenge for the tobacco control community, therefore, is to drive the social norm for tobacco products to be increasingly unacceptable without allowing new products to replace the old.

Challenges for future tobacco control notwithstanding, the data from the 2015-16 CSTS to the 2019 CSTS show that great strides have been made in preventing tobacco use among adolescents in California. The passage of Proposition 56 and the ensuing tobacco control efforts have allowed, for the first time, a realistic contemplation of an end-game for tobacco control.[24] The use of combustible tobacco products among adolescents has already reached the recognized end-game low level of less than 5%. Reduction of vaping among adolescents will be the focus of the tobacco control in coming years.

APPENDIX A – 8th Grade Tobacco Use

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

Tobacco Product Use Among 8th Grade Students

Table 70 presents the prevalence of ever and current use of tobacco products among 8th grade students. As expected, the current tobacco use rate was much lower than that of high school students (4.7% vs. 9.7%, respectively). Similar to the results in Chapter 1, vapes were the most prevalent product among ever users (12.4%), followed by LCC (3.4%), and cigarettes (3.0%).

Table 70. Prevalence of tobacco product use among 8th grade students

	Ever use N=12039 % (95% CI)	Current use N=12039 % (95% CI)
Any of the below	14.6 (12.1-17.1)	4.7 (3.6-5.9)
Vapes	12.4 (10.1-14.8)	4.1 (3.0-5.2)
Cigarettes	3.0 (2.1-3.8)	0.7 (0.5-0.9)
LCC	3.4 (2.7-4.2)	1.0 (0.8-1.3)
Big cigars	1.1 (0.8-1.4)	0.5 (0.3-0.6)
Hookah	2.0 (1.4-2.5)	0.5 (0.3-0.7)
Smokeless	1.7 (1.3-2.1)	0.5 (0.3-0.7)
HTP	0.4 (0.2-0.5)	0.2 (0.1-0.3)

Abbreviations: LCC = little cigars or cigarillos; HTP = heated tobacco products.

Table 71 presents 8th grade student tobacco use prevalence, both ever and current use, by participant demographics. Male and female students had similar rates of current tobacco use. Students who identified their gender in another way had the highest rate of current tobacco use.

In general, the racial/ethnic differences in current use rates were not statistically significant. Although the current use rate of AI/AN students appears to be the highest (13.8%), the small sample size and wide confidence interval limit the ability to determine whether there were differences between AI/AN students and those of other racial/ethnic groups.

Table 71. Prevalence of tobacco use by gender and race/ethnicity among 8th grade students

	N*	Ever use % (95% CI)	Current use % (95% CI)
Overall	12039	14.6 (12.1-17.1)	4.7 (3.6-5.9)
Gender			
Male	5526	12.3 (10.1-14.4)	3.5 (2.5-4.5)
Female	5596	15.5 (12.5-18.6)	5.1 (3.6-6.6)
Identified in Another Way	377	26.5 (19.2-33.8)	11.6 (6.5-16.6)
Declined to Answer	345	20.1 (11.8-28.5)	7.1 (3.3-10.9)
Race/Ethnicity			
White	2058	10.5 (6.0-15.0)	4.2 (1.6-6.9)†
African American/Black	380	17.2 (9.1-25.3)	5.0 (2.3-7.7)
Hispanic	5962	16.9 (14.6-19.3)	5.2 (4.2-6.1)
Asian	1537	5.0 (2.6-7.4)	1.3 (0.6-2.1)
AI/AN	52	15.9 (4.4-27.5)†	13.8 (3.1-24.6)†
NHOPI	73	13.8 (4.0-23.7)†	4.4 (0.0-9.4)†
Other	463	17.5 (13.6-21.5)	5.6 (2.7-8.4)
Multiple	1316	16.6 (12.6-20.6)	4.8 (3.0-6.7)

Note: With the exception of Hispanic, all ethnicities are classified as Non-Hispanic.
Abbreviations: AI/AN = American Indian or Alaska Native; NHOPI = Native Hawaiian or Other Pacific Islander; Other: See Appendix B for definition.
*Reflects the sample size for *ever use*. Some respondents answered *ever use*, but not *current use*. These were treated as missing at random in analysis.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Flavored Tobacco Product Use Among 8th Grade Students

Table 72 presents the prevalence of flavored tobacco product use among current users. HTP were excluded from this table due to the small sample size. Similar to the results in Chapter 2, flavored tobacco use was high: 90.7% among 8th grade students vs. 91.6% among 10th and 12th grade students. Use of flavored vapes (93.4%) and hookah (89.7%) were also the most prevalent. Nearly two thirds of cigarette smokers (63.3%) reported using menthol cigarettes in the last 30 days, where menthol is the only flavor available.

Table 72. Proportion using flavored tobacco products among those 8th grade students who were current users of a given tobacco product

	N*	Flavored product use % (95% CI)
Any of the below	453	90.7 (87.0-94.4)
Vapes	376	93.4 (90.1-96.7)
Cigarettes**	69	63.3 (47.1-79.6)
LCC	107	78.7 (68.1-89.2)
Big cigars	48	80.3 (64.4-96.2)†
Hookah	49	89.7 (78.0-100.0)†
Smokeless	52	81.8 (68.8-94.8)†

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 sample size for *Any of the below* [product].
***Menthol* was the only available flavor for cigarettes.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Exposure to Secondhand Vapor and Tobacco Smoke in the Last 2 Weeks Among 8th Grade Students

Table 73 reports 8th grade students' exposure to secondhand vapor and tobacco smoke in a room and in a car. At least one out of ten 8th grade students had been exposed to vapor or tobacco smoke in a room in the last 2 weeks (13.5% and 10.0%, respectively). Rates of secondhand exposure to vapor and tobacco smoke in a car tended to be lower. Eighth grade students had lower rates of exposure to vapor in a room or in a car (13.5% and 8.0%, respectively) compared to high school students (24.9% and 15.6%, respectively; see Chapter 5). However, 8th grade students' exposure to secondhand tobacco smoke in a room or in a car (10.0% and 8.0%) was similar to that of high school students (8.9% and 7.0%, respectively; see Chapter 5).

Table 73. Prevalence of last 2-week exposure to vapor and tobacco smoke* in a room and car among 8th grade students

	Vapor		Tobacco smoke*	
	N	% (95% CI)	N	% (95% CI)
Exposure in a room	11867	13.5 (11.5-15.4)	11870	10.0 (8.7-11.2)
Exposure in a car	11900	8.0 (7.2-8.8)	11912	8.0 (6.9-9.1)

*Two products: Cigarettes and little cigars or cigarillos (LCC).

Access to Vapes and Cigarettes Among 8th Grade Students

Table 74 presents whether 8th grade students who were current vapers reported paying or not paying for their own vapes (or pods or e-liquid). More than half (55.8%) of them did not pay for their own vapes and 44.2% did. Rates of not paying for their vapes were similar among 8th grade and high school students (55.8% vs. 48.8%, respectively; see Chapter 6).

Table 74. Access to vapes (or pods or e-liquid) among those 8th grade students who were current vapers

	Current vapers N=370 % (95% CI)
Did not pay for own vapes (or pods or e-liquid)	55.8 (48.7-62.9)
Paid for own vapes (or pods or e-liquid)	44.2 (37.1-51.3)

Table 75 presents whether 8th grade students who were current cigarette smokers reported paying or not paying for their cigarettes. More than half (53.5%) of them did not pay for their own cigarettes and 46.5% did. Rates of not paying for cigarettes were similar among 8th grade and high school students (53.5% vs. 55.8%, respectively; see Chapter 6).

Table 75. Access to cigarettes among those 8th grade students who were current cigarette smokers

	Current cigarette smokers N=66 % (95% CI)
Did not pay for own cigarettes	53.5 (37.3-69.8)
Paid for own cigarettes	46.5 (30.2-62.7)

APPENDIX B – Survey Methodology of the 2019-20 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 (UC San Diego). Due to delays in awarding the contract, no survey was conducted in 2013-14. The main goal of the survey is to obtain statewide prevalence estimates for various tobacco products used by middle and high school students in California. The survey samples students from 8th, 10th, and 12th grades, similar to the well-known Monitoring the Future Survey. However, the CSTS focuses mainly on high school students, with 8th grade students sampled in smaller numbers. This Appendix provides a brief overview of survey methodology for the 2019-20 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 2019-20* 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. Middle schools were sampled using simple statewide random sampling without stratification by region. High schools were stratified by region. For high schools, the state was divided into 35 regions based on contiguity and cultural similarity. From 2017-18 to 2019-20 administrations, the number of regions was increased from 22 to 35 to improve the ability to estimate county-specific prevalence for various tobacco products, while ensuring accurate statewide representation. Sampling used the probability proportional to size (PPS) method and stratified by region with oversampling of schools in less densely populated (and more rural) regions, with higher African American enrollment, and with funding from the California Tobacco-Use Prevention Education (TUPE) program.

Participating schools were encouraged to have all students in eligible grades take the survey. For the minority of schools that chose not to survey all students in the eligible grades (6% of schools), five class sections per 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. Teachers and proctors were provided with directions for administering the survey. UC San Diego staff were available to answer questions from teachers and proctors.

The 2019-20 CSTS was administered online during the school day. The online survey included programmed skip logic to reduce participant burden and took a median of 21 minutes to complete. A few questions in the survey were mandatory, these asked about the respondents' 1) willingness to participate in the survey; 2) school verification; and 3) grade level. The remaining 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.

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 could opt their child out of the survey if they did not want them to participate. In an active consent protocol, only students who returned a consent form signed by the parent could participate in the survey. Consent forms were distributed to parents via the students one week before the survey. Spanish forms were available as needed. Only one school that fielded the survey required active consent; all others used passive consent protocol. In addition to obtaining consent from parents, students were also asked to give their assent to participate in the survey.

Survey Sample 2019-20 CSTS

Table 76 provides information about the number of schools and students that participated in the 2019-20 survey for each of the three grades. The total sample included 162,675 students from 358 schools. Grades 10 and 12 were considered high school and grade 8 was considered middle school. A more detailed description of the survey sample is provided elsewhere.[2]

Table 76. Numbers of schools and students, middle school vs. high school, that participated in the 2019-20 CSTS

	Middle school (8^{th})	High school (10^{th} & 12^{th})	Total
Number of schools	47	311	358
Number of students	12,041	150,634	162,675

Survey Content

The survey was designed to assess the use of, knowledge of, and attitudes toward cigarettes and emerging tobacco products (e.g., vapes, hookah, little cigars or cigarillos [LCC]). It also included questions about the use of and attitudes toward marijuana and alcohol. The survey contained 160 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.

Similar to previous years, the 2019-20 CSTS included images and product definitions with examples of common brands of tobacco products. The 2019-20 survey also referred to "e-cigarettes" as "vapes" to be consistent with changes in devices and the language used by youth to refer to these devices. The survey included separate questions on vaping nicotine, marijuana, and just flavoring to determine prevalence estimates; although, some questions asked about vapes more generally. Questions about hookah pens were also asked separately to ensure that students who reported using a hookah pen, but not a vape were captured.

Another major change in the 2019-20 survey was the removal of the *I prefer not to answer* response option. This response option was removed for all questions except for those that asked about students' gender identity or sexual orientation.

Analysis

Data are weighted to account for the study's sampling design (including stratification and primary sampling unit [PSU]). The weighting procedure is described elsewhere.[2] Estimates include 95% confidence intervals in the report. A difference test was performed for two estimates with overlapping confidence intervals to determine a significant difference (i.e., $p<0.05$) as needed.

Due to significant changes made to the survey in 2019-20 (e.g., *vape* vs. *e-cigarette*, removal of the *I prefer not to answer* response option), caution should be used when comparing CSTS data from 2019-20 to that of 2017-18.

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 must 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.[8] For the analyses, we combined town and rural due to the small numbers of schools in these classifications.

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* category included non-standard entries (such as Middle Eastern or Italian).

Race/ethnicity categories of the CSTS are similar to those used by the California Department of Education (CDE), allowing us to compare the percentage of each race/ethnicity (Table 77). In many cases, the percentage of each race/ethnicity was similar between the CSTS and CDE enrollment data. Of note, the percentage of *Multiple* race was far higher in the CSTS than reported by the CDE (8.3% vs. 2.9%). One possible reason for the difference is that the 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, the issue of how to analyze race/ethnicity data will continue to be relevant for the CSTS.[25]

Table 77. Percentage of race/ethnicity categories in the CSTS and CDE enrollment data

	CSTS		CDE Enrollment	
	N=160394	**(%)**	**N=1320971**	**(%)**
NH-White	32514	20.3	313105	23.7
NH-African American/Black	4366	2.7	72114	5.5
Hispanic	84482	52.7	703957	53.3
NH-Asian	19927	12.4	170751	12.9
NH-AI/AN	713	0.4	6477	0.5
NH-NHOPI	1096	0.7	6657	0.5
NH-Other	3932	2.5	9311	0.7
NH-Multiple	13364	8.3	38599	2.9

Note: CDE enrollment data were restricted to schools that were considered eligible to participate in the CSTS. Race/ethnicity data above are unweighted and should not be compared with weighted estimates throughout this report.
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 78 compares how individuals were labelled using usual methods to whether they endorsed a given race at all. It is clear that students tended to select multiple responses, and in particular, selected underrepresented races. For example, under the usual classification, the number of African American/Black students was 4,366 (i.e., non-Hispanic African American/Black who did not endorse any other racial identity). However, there were almost three times as many students who indicated their race was African American/Black (including those who also indicated they were Hispanic or who selected at least one other racial category). This phenomenon was even more striking for NHOPI (n=1,096 vs. 6,611, depending on the categorization strategy) and for AI/AN (n=713 vs. 11,009).

Table 78. Percentage of labeled and endorsed race/ethnicity

	Labeled		Endorsed	
	N=160394	(%)	N=160394	(%)
White	32514	20.3	70100	44.9
African American/Black	4366	2.7	12568	8.1
Hispanic	84482	52.7	84482	52.7
Asian	19927	12.4	30232	19.4
AI/AN	713	0.4	11009	7.1
NHOPI	1096	0.7	6611	4.2
Other	3932	2.5	53458	34.3
Multiple	13364	8.3	--	--

Note: The percent in endorsed does not add up to 100% because students could select more than one response. Race/ethnicity data above are unweighted and should not be compared with weighted estimates throughout this report.

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

REFERENCES

1. Johnson S. List of California K-12 districts closed for in-person instruction due to coronavirus. EdSource. Accessed November 16, 2020. https://edsource.org/2020/california-k-12-schools-closed-due-to-the-coronavirus/624984

2. Zhu S-H, Gamst A, Zhuang Y-L, et al. *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2019-20.* San Diego, California: Center for Research and Intervention in Tobacco Control (CRITC), University of California San Diego; 2021.

3. Churchill V, Weaver SR, Spears CA, et al. IQOS debut in the USA: Philip Morris International's heated tobacco device introduced in Atlanta, Georgia. *Tob Control*. Published online February 5, 2020:tobaccocontrol-2019-055488. doi:10.1136/tobaccocontrol-2019-055488

4. Zhu S-H, Cummins S, Zhuang YL, et. al. *California Student Tobacco Survey 2015-2016: Results of the Statewide Student Survey, Grades 8, 10, and 12.* San Diego, California: Center for Research and Intervention in Tobacco Control (CRITC), University of California, San Diego; 2017.

5. Zhu S-H, Zhuang Y-L, Braden K, et al. *Results of the Statewide 2017-18 California Student Tobacco Survey*. San Diego, California: Center for Research and Intervention in Tobacco Control (CRITC), University of California San Diego; 2020.

6. Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Merritt RK. Validation of susceptibility as a predictor of which adolescents take up smoking in the United States. *Health Psychol*. 1996;15(5):355-361. doi:10.1037/0278-6133.15.5.355

7. Cole AG, Cummins SE, Zhu S-H. Offers of cigarettes and e-cigarettes among high school students: a population study from California. *Int J Environ Res Public Health*. 2019;16(7):1143. doi:10.3390/ijerph16071143

8. *Common Core of Data (CCD), Public Elementary/Secondary School Locale Code File, 2017-18*. U.S. Department of Education, National Center for Education Statistics

9. California Department of Public Health. 2017 Request for Application #17-10569. Published October 9, 2017. https://tcfor.catcp.org/index.cfm?fuseaction=opportunities.fileFetch&docID=1152

10. California Department of Public Health. 2018 Request for Applications #18-10122. Published June 28, 2018. https://tcfor.catcp.org/index.cfm?fuseaction=opportunities.fileFetch&docID=1418

11. California Tobacco Education and Research Oversight Committee. *New Challenges-New Promise for All: Master Plan 2018-2020*. Sacramento, CA: California Tobacco Education and Research Oversight Committee; 2018.

12. Monitoring the Future (MTF) Public-Use Cross-Sectional Datasets. Accessed February 12, 2021. https://www.icpsr.umich.edu/web/NAHDAP/series/35

13. California Department of Public Health. Legislative Mandate for Tobacco Control - Proposition 99 and Proposition 56. https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CTCB/CDPH%20Document%20Library/AboutUS/LegislativeMandate/LegislativeMandateforTobaccoControl7717.pdf. Accessed August 6, 2021.

14. Ma C, Xi B, Li Z, et al. Prevalence and trends in tobacco use among adolescents aged 13–15 years in 143 countries, 1999–2018: findings from the Global Youth Tobacco Surveys. *Lancet Child Adolesc Health*. 2021;0(0). doi:10.1016/S2352-4642(20)30390-4

15. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, U.S.: Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2012.

16. Niederdeppe J, Farrelly MC, Haviland ML. Confirming "truth": More Evidence of a Successful Tobacco Countermarketing Campaign in Florida. *Am J Public Health*. 2004;94(2):255-257.

17. Sutfin EL, Szykman LR, Moore MC. Adolescents' Responses to Anti-tobacco Advertising: Exploring the Role of Adolescents' Smoking Status and Advertisement Theme. *J Health Commun*. 2008;13(5):480-500. doi:10.1080/10810730802198961

18. Krishnasamy VP, Hallowell BD, Ko JY, et al. Update: Characteristics of a Nationwide Outbreak of E-cigarette, or Vaping, Product Use–Associated Lung Injury — United States, August 2019–January 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(3):90-94. doi:10.15585/mmwr.mm6903e2

19. Roeseler A, Burns D. The quarter that changed the world. *Tob Control*. 2010;19 Suppl 1(Suppl_1):i3-i15. doi:10.1136/tc.2009.030809

20. Zhu S-H, Hebert K, Wong S, Cummins S, Gamst A. Disparity in smoking prevalence by education: can we reduce it? *Global Health Promotion*. 2010;17(1_suppl):29-39. doi:10.1177/1757975909358361

21. Tabuchi T, Gallus S, Shinozaki T, Nakaya T, Kunugita N, Colwell B. Heat-not-burn tobacco product use in Japan: its prevalence, predictors and perceived symptoms from exposure to secondhand heat-not-burn tobacco aerosol. *Tob Control*. 2018;27(e1):e25-e33. doi:10.1136/tobaccocontrol-2017-053947

22. Kim M. Philip Morris International introduces new heat-not-burn product, IQOS, in South Korea. *Tob Control*. 2018;27(e1):e76-e78. doi:10.1136/tobaccocontrol-2017-053965

23. Zhu S-H, Ong J, Wong S, Cole A, Zhuang Y-L, Shi Y. Early adoption of heated tobacco products resembles that of e-cigarettes. *Tob Control*. Published online February 4, 2021. doi:10.1136/tobaccocontrol-2020-056089

24. California Department of Public Health. *Local Lead Agency Campaign to End Commercial Tobacco*. Sacramento, CA: California Department of Public Health, California Tobacco Control Program; 2021.

25. Jones N, Bullock J. *The Two or More Races Population: 2010*. U.S. Department of Commerce, Economics and Statistics, Administration, U.S. Census Bureau; 2012. Accessed May 10, 2019. https://www.census.gov/prod/cen2010/briefs/c2010br-13.pdf