Tobacco Use among High School Students in Los Angeles County: Findings from the 2017–18 California Student Tobacco Survey

Shu-Hong Zhu, Ph.D.
Yue-Lin Zhuang, Ph.D.
Joan Lee, B.S.
Adam Cole, Ph.D.
Katherine Braden, M.P.H.
Tanya Wolfson, M.A.
Anthony Gamst, Ph.D.

Principal Investigator: Shu-Hong Zhu, Ph.D.
Institution: Regents of the University of California, San Diego
Address: 9500 Gilman Drive #0905
La Jolla, CA 92093-0905
Phone: (858) 300-1056
Fax: (858) 300-1099
E-mail: szhu@ucsd.edu

Contract #: PH-18324207-1
Contract Period: 06/12/2018 – 6/30/2019

Suggested citation: Zhu S-H, Zhuang YL, Lee J, Cole A, Braden K, Wolfson T, Gamst A (2019). *Tobacco use among high school students in Los Angeles County: Findings from the 2017-18 California Student Tobacco Survey*. San Diego, California: Center for Research and Intervention in Tobacco Control (CRITC), University of California, San Diego

Made possible by funds received from the California Department of Public Health-California Tobacco Control Program, contract #CDPH-16-10109, and funds from the Los Angeles Tobacco Control and Prevention Program

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Los Angeles County is the most populous county in California. With approximately 10 million residents, it consists of about 27% of the state's population.[1] The county has a rich culture with diverse ethnic groups. The four largest racial/ethnic groups are Hispanic or Latino (48.6%), White (26.2%), Asian (15.3%), and African American (9.0%).[1]

A little over 20% of Los Angeles County's population is under the age of 18. In the 2017–2018 school year, more than one million middle and high school students were attending 1,360 public schools from 88 districts.[2] The ethnic composition of these middle and high school student populations is also diverse. Again, the four largest ethnic groups are: Hispanic (64.4%), White (14.0%), Asian (8.0%), and African American (7.5%).[2]

This report presents the main results from a school-based survey: the 2017–2018 California Student Tobacco Survey (CSTS). It reports findings from the 2017–18 CSTS that are specific to Los Angeles County, including results based on the statewide survey questionnaire as well as the additional questions specifically requested by the Los Angeles Tobacco Control and Prevention Program. The report is intended to serve a broad spectrum of the tobacco-control community. It aims to facilitate the understanding of adolescent tobacco use behavior in the current, rapidly changing tobacco landscape—and to assist the development of tobacco-control interventions to reduce tobacco use among youth in Los Angeles County.

EXECUTIVE SUMMARY

This report summarizes the main findings from the 2017–18 California Student Tobacco Survey (CSTS) for Los Angeles County. The survey was administered to 8th, 10th, and 12th grade students from September 2017 to June 2018. Schools were randomly selected within Los Angeles County. The project was conducted by the University of California, San Diego. Throughout the 2017–18 academic year, 28,071 students from 75 schools in Los Angeles County participated in the survey.

The survey was designed to assess use of, knowledge of, and attitudes towards cigarettes and other tobacco products, including e-cigarettes, big cigars, little cigars or cigarillos (LCC), hookah, and smokeless tobacco. The survey included questions that assessed use of each tobacco product, susceptibility to future use, social and environmental exposure to products, and known covariates of use. The survey also included a few questions on marijuana use.

This report focuses on high school students (10th and 12th graders; 25,068 students). The results for 8th graders, who were sampled separately from 10th and 12th graders, are presented in Appendix A, and basic results for marijuana use among high school students are presented in Appendix B.

The following key findings are presented in this report:

Key Findings

Tobacco Use Behavior

- The smoking prevalence for high school students in Los Angeles has reached a historical low. In 2017–18, only 1.7% of high school students in Los Angeles County reported currently using cigarettes. Use of other combustible tobacco products, like little cigars or cigarillos (LCC) and hookah, was also very low (2.0% and 1.7%, respectively).
- E-cigarettes were the most commonly used tobacco product among high school students in Los Angeles County (10.0%).
- Overall tobacco use was still relatively high among students in Los Angeles County (11.6%), which was driven mainly by the high rate of e-cigarette use.
- From 2015–16 to 2017–18, the overall tobacco use among high school students in Los Angeles increased from 10.6% to 11.6%. This increase in overall tobacco use is not statistically significant. However, the increase in the use of e-cigarettes, from 6.4% to 10.0%, is statistically significant. The use of all other tobacco products combined has decreased significantly, from 7.6% to 4.5%.
- Use of multiple tobacco products was common. Approximately one-quarter of tobacco product users reported using two or more products.
- The majority of current tobacco users reported using a flavored tobacco product (83.0%). Flavored tobacco product use was high across all genders, races/ethnicities, and grades. *Fruit or sweet* was the most popular reported flavor for most tobacco products.

Risk Factors for Tobacco Use

- Among high school students in Los Angeles County who had never used a tobacco product, two in five were susceptible to future use if offered by a best friend (40.4%). Susceptibility was even

higher among those who reported greater loneliness and/or depressive symptoms, and who had friends who used tobacco products.

- One-quarter of high school students in Los Angeles County reported being offered e-cigarettes, cigarettes, LCC, or hookah in the last 30 days. Over one in eight (13.3%) students who had never used these products reported being offered one in the last 30 days.
- Less than half of high school students in Los Angeles County who used tobacco products reported paying for their own e-cigarettes (38.6%) and cigarettes (45.4%). Social sources were more common. Many high school students perceived that it would be easy to get e-cigarettes (57.3%) or cigarettes (48.4%) if they wanted them.

Exposure to Tobacco Use

- The vast majority of high school students in Los Angeles County reported having a complete home ban on vaping (79.4%) and smoking (85.9%).
- Despite home bans on smoking and vaping, the rate of exposure to secondhand vapor and smoke was still high: almost one-third of high school students were exposed to secondhand vapor (29.5%) and smoke (30.9%) in a room in the last 30 days.
- Exposure to secondhand vapor and smoke did not differ by home type. However, more students who lived in multi-unit housing reported smelling tobacco smoke drifting into their home in the last week (55.5%) relative to those who lived in detached houses (39.2%).

DEFINITIONS USED IN THIS REPORT

Tobacco Products

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

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

Little cigars or cigarillos: Wrapped in tobacco leaf or brown paper containing tobacco. May be flavored. Popular brands are Swisher Sweets, White Owl, and Black & Mild. Little cigars or cigarillos is 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 flavored tobacco (shisha). Popular brands are Starbuzz, Al-Fakher, Samba, and Social Smoke.

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

Definitions of Product Use

Ever use: Having used within a lifetime

Current use: Use within the last 30 days

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

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

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

Former user: A student that reports having used the tobacco product(s), but not within the last 30 days

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

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

Other Terms*

LGBTQ Community Affiliation: Responded *yes* to the question: "Do you identify yourself as LGBTQ?"

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

Depressive symptoms: Responded *yes* to the question: "In the last 12 months did you ever feel sad and hopeless EVERY DAY for 2 weeks or more?"

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

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

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

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

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

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

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

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

Offers of tobacco products: Responded *yes* to the question: "In the last 30 days, has ANYONE offered you [tobacco product‡]?"

*These terms are based on student responses to the questions in the 2017–18 CSTS. *I prefer not to answer* was included as a response option for all survey questions.

†Tobacco products the respondent had never used.

‡Tobacco products included e-cigarettes, cigarettes, little cigars or cigarillos (LCC), and hookah only.

A Word of Caution on Interpreting Rates and Proportions

All estimates of rates and proportions should be interpreted in reference to their 95% confidence intervals. Although estimates are roughly the median of this interval, the range of the confidence interval is the best descriptive measure for statistical accuracy. Therefore, estimates with wide confidence intervals should be interpreted with caution. Data that are statistically unreliable because the coefficient of variation (also known as relative variance) is greater than 30% are marked with a dagger symbol (†) in the tables. Please pay special attention when estimates are based on small sample sizes.

CHAPTER 1 – Tobacco Use Behavior

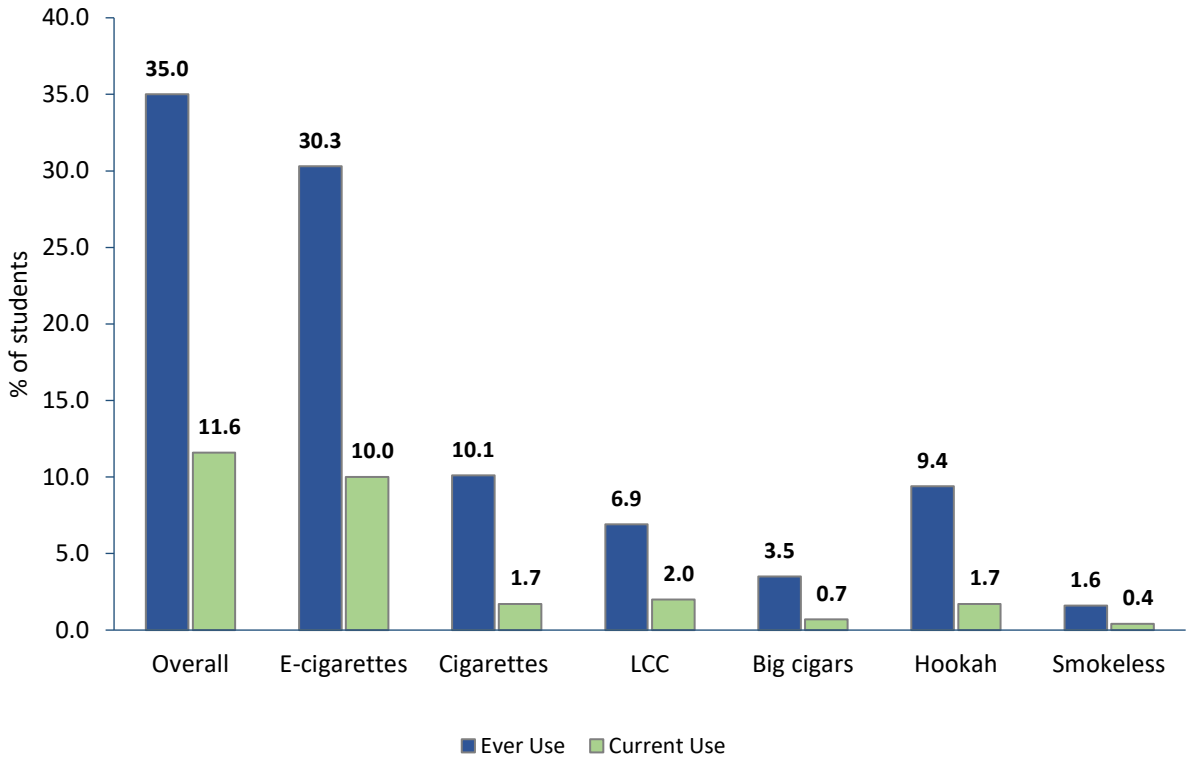
Highlights

- 11.6% of high school students in Los Angeles County reported using any tobacco product.
- E-cigarettes were the most popular tobacco product, with one in ten high school students currently using them.
- Only 1.7% of high school students in Los Angeles County reported smoking cigarettes.
- Current use of all combustible tobacco products was very low. This was true across gender, race/ethnicity, and grade.
- Most of the students used tobacco products infrequently.
- About one-quarter of current users reported using more than one tobacco product.

Tobacco Product Use among High School Students

In Los Angeles County, 35.0% of high school students have tried any tobacco product, while 11.6% reported currently using a tobacco product (Figure 1). In both cases, the majority of use was attributed to e-cigarettes, with 10.0% of students reporting currently using the product. By contrast, current use rates for all combustible tobacco products were less than 2%.

Figure 1. Prevalence of ever and current use of tobacco products



Note: Refer to Table A in Appendix E – Supplementary Tables to view estimates with confidence intervals.

Demographic Categories

For race/ethnicity, survey participants were first grouped by whether they were of Hispanic (Latino) origin (ethnicity). For those who classified as *non-Hispanic*, they were further divided into specific races that they identified with. If respondents selected more than one race, they were classified as *Multiple* race. There was also an option for *Other* race. Due to the small sample sizes for some of the racial/ethnic groups in the survey, Native Hawaiian and other Pacific Islander, American Indian or Alaska Native, and non-standard entries were all combined into the Other category in this report. Approximately 8.8% of students declined to answer either race/ethnicity question.

For the question on gender, there is a response option *I identify my gender in another way* in addition to *Male* and *Female*. Approximately 2.3% of participating students in Los Angeles County indicated that they identified their gender another way, and 8.1% declined to answer the gender-identity question. Rates of declining to answer this type of question are comparable to those in other surveys of California's middle and high school population (e.g., the California Student Survey and the California Healthy Kids Survey).[3]

Throughout the survey, students were given the option of *I prefer not to answer*. Results from this group are presented when endorsement of this response option was considered meaningful and most likely non-random (e.g., gender/ethnicity) and/or where the group was deemed sizeable. When the proportion for the declined-to-answer group was small, they were treated as missing and excluded from analysis in order to keep the tables readable.

Overall Prevalence of Tobacco Use by Demographics

Tobacco use among high school students in Los Angeles County was examined across participant demographics, as presented in Table 1.

Table 1 shows that there are no significant differences in use behavior between male and female students, with roughly one out of ten male and female students currently using any tobacco product. Students who identified their gender in another way or declined to answer had significantly higher rates of ever and current tobacco use.

By racial/ethnic demographics, White students in Los Angeles County had the highest rates of current use of tobacco products compared to all other racial/ethnic subgroups (20.3%). Those who declined to answer, which is the third-largest race category, had the second-highest rates of current use (18.1%). Black, Asian, and Hispanic students had the lowest rates of current use (8.0%, 8.1%, and 9.5%, respectively).

Not surprisingly, tobacco use was higher among 12th graders (13.8%) compared to 10th graders (9.7%). The increase in tobacco use by age is statistically significant.

Table 1. Prevalence of tobacco use by gender, race/ethnicity, and grade

	N	Ever use % (95% CI)	Current use % (95% CI)
Overall	24903	35.0 (32.5-37.6)	11.6 (10.1-13.1)
Gender			
Male	10651	33.9 (30.4-37.3)	10.5 (8.9-12.1)
Female	11164	33.6 (30.8-36.4)	10.4 (8.6-12.2)
Identified in Another Way	663	48.5 (44.6-52.4)	21.6 (17.7-25.5)
Declined to Answer	2180	44.1 (40.8-47.3)	19.5 (16.6-22.4)
Race/Ethnicity			
White	2283	39.4 (36.7-42.0)	20.3 (17.5-23.1)
Black	791	32.8 (29.3-36.3)	8.0 (6.0-10.1)
Hispanic	15092	35.0 (31.5-38.4)	9.5 (8.2-10.9)
Asian	2098	19.3 (15.5-23.1)	8.1 (6.4-9.7)
Other	584	37.9 (31.7-44.2)	15.8 (11.6-20.1)
Multiple	1298	38.5 (34.0-43.1)	14.7 (12.1-17.3)
Declined to Answer	2250	41.4 (38.7-44.1)	18.1 (15.2-20.9)
Grade			
Grade 10	13474	31.3 (27.7-35.0)	9.7 (8.5-11.0)
Grade 12	11429	39.5 (37.2-41.8)	13.8 (11.6-16.1)

Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

Use of Specific Tobacco Products by Demographics

Table 2 shows the use of specific tobacco products, in addition to the rate of overall tobacco use. Among high school students, males and females had no difference in current use for overall tobacco use (10.5% and 10.4%, respectively). However, gender differences are evident between specific tobacco products. For example, male students had higher rates of big cigar (0.9%), LCC (2.2%), and smokeless tobacco use (0.5%) compared to female students (0.1%, 1.2%, and 0.0%, respectively). Those who declined to answer or identified their gender in another way reported using all tobacco products at significantly higher rates compared to male or female students.

Table 2. Prevalence of current tobacco product use by gender

	Male N=10649 % (95% CI)	Female N=11163 % (95% CI)	Identified in Another Way N=662 % (95% CI)	Declined to Answer N=2173 % (95% CI)
Overall	10.5 (8.9-12.1)	10.4 (8.6-12.2)	21.6 (17.7-25.5)	19.5 (16.6-22.4)
E-cigarettes	8.9 (7.2-10.6)	9.3 (7.5-11.2)	17.5 (13.4-21.6)	17.3 (14.2-20.3)
Cigarettes	1.7 (1.3-2.1)	1.0 (0.7-1.4)	7.2 (4.6-9.8)	3.0 (2.2-3.9)
LCC	2.2 (1.8-2.6)	1.2 (0.9-1.4)	5.7 (3.9-7.6)	4.3 (3.4-5.3)
Big cigars	0.9 (0.4-1.3)	0.1 (0.1-0.2)	3.5 (2.0-5.0)	1.9 (1.1-2.6)
Hookah	1.5 (1.2-1.8)	1.5 (0.9-2.1)	5.3 (3.4-7.2)	3.7 (2.6-4.8)
Smokeless	0.5 (0.2-0.8)	0.0 (0.0-0.1)	3.9 (1.4-6.5)†	1.4 (0.8-2.1)

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

Table 3 presents current use of tobacco products by race/ethnicity. Differences in the use of specific tobacco products replicate differences in the overall rates of use, with some notable exceptions. For example, although Black students had the lowest current use rates across all subgroups, they reported having one of the highest use rates of LCC (2.4%). Another notable difference is shown in current hookah use, where students reporting other races had the highest rates of use (6.1%).

Table 3. Prevalence of current tobacco product use by race/ethnicity

	White N=2282 % (95% CI)	Black N=790 % (95% CI)	Hispanic N=15090 % (95% CI)	Asian N=2098 % (95% CI)	Other N=584 % (95% CI)	Multiple N=1298 % (95% CI)	Declined to Answer N=2243 % (95% CI)
Overall	20.3 (17.5-23.1)	8.0 (6.0-10.1)	9.5 (8.2-10.9)	8.1 (6.4-9.7)	15.8 (11.6-20.1)	14.7 (12.1-17.3)	18.1 (15.2-20.9)
E-cigarettes	18.9 (15.7-22.2)	5.8 (3.8-7.8)	8.2 (6.9-9.5)	7.6 (5.9-9.3)	11.8 (7.0-16.6)	13.3 (10.5-16.1)	14.7 (12.4-17.0)
Cigarettes	3.5 (2.6-4.4)	0.7 (0.0-1.6)†	1.2 (0.9-1.5)	1.1 (0.6-1.6)	2.9 (1.7-4.1)	2.5 (1.3-3.8)	3.8 (2.2-5.3)
LCC	1.8 (1.4-2.2)	2.4 (1.5-3.4)	1.8 (1.4-2.2)	0.9 (0.5-1.2)	2.8 (1.5-4.1)	2.2 (0.9-3.4)	4.8 (3.3-6.3)
Big cigars	1.1 (0.7-1.5)	0.6 (0.0-1.2)†	0.5 (0.2-0.8)	0.2 (0.0-0.3)†	1.8 (0.8-2.7)	0.9 (0.3-1.4)†	2.3 (0.8-3.8)†
Hookah	3.2 (1.9-4.6)	1.5 (0.4-2.6)†	1.3 (0.9-1.7)	0.6 (0.3-0.9)	6.1 (3.6-8.5)	2.0 (1.0-3.0)	3.4 (2.5-4.4)
Smokeless	0.9 (0.2-1.7)†	0.0	0.2 (0.1-0.3)	0.0 (0.0-0.1)†	0.8 (0.1-1.6)†	1.7 (0.4-2.9)†	1.2 (0.5-1.8)

Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

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

Table 4 presents tobacco product use by grade among high school students. As expected, current use of all tobacco products increased with grade. E-cigarettes were consistently the most popular product used by both 10th grade and 12th grade students, and the prevalence of use of other tobacco products was low.

Table 4. Prevalence of current tobacco product use by grade

	Grade 10 N=13466 % (95% CI)	Grade 12 N=11425 % (95% CI)
Overall	9.7 (8.5-11.0)	13.8 (11.6-16.1)
E-cigarettes	8.6 (7.3-9.9)	11.7 (9.3-14.0)
Cigarettes	1.3 (1.1-1.6)	2.2 (1.6-2.7)
LCC	1.8 (1.4-2.3)	2.3 (1.9-2.7)
Big cigars	0.7 (0.4-1.1)	0.7 (0.4-1.0)
Hookah	1.3 (1.0-1.6)	2.3 (1.8-2.9)
Smokeless	0.4 (0.2-0.5)	0.5 (0.2-0.8)

Use of Specific Tobacco Products by LGBTQ Community Affiliation

Table 5 presents tobacco product use by reported LGBTQ Community affiliation. Students who identified as LGBTQ had higher rates of overall tobacco use (14.4%) than those who did not identify with this group (10.6%) and the same rate as those who declined to answer (14.4%). Consistent with previous results, e-cigarettes were the most commonly used product across all respondents.

Table 5. Prevalence of current tobacco product use by LGBTQ Community affiliation

	Identified as LGBTQ N=2205 % (95% CI)	Did not Identify as LGBTQ N=18806 % (95% CI)	Declined to Answer N=3622 % (95% CI)
Overall	14.4 (12.1-16.7)	10.6 (9.0-12.3)	14.4 (12.3-16.5)
E-cigarettes	12.7 (10.5-14.9)	9.3 (7.5-11.2)	11.6 (9.7-13.5)
Cigarettes	2.8 (1.9-3.7)	1.4 (1.1-1.7)	2.7 (1.8-3.5)
LCC	2.8 (1.7-4.0)	1.7 (1.5-1.9)	3.4 (2.5-4.2)
Big cigars	0.9 (0.5-1.3)	0.6 (0.3-0.8)	1.5 (0.7-2.4)
Hookah	2.1 (1.4-2.8)	1.5 (1.1-2.0)	2.6 (1.9-3.4)
Smokeless	0.7 (0.3-1.1)	0.3 (0.1-0.5)†	0.8 (0.4-1.2)

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

Frequency of Current Tobacco Product Use

Overall, more than half of students reported infrequent usage: 57.6% of current users reported using a product on either 1–2 days or 3–5 days (38.4% + 19.2% = 57.6%). Approximately one in five (19.4%) students used a product on 20 or more days of the past 30 days.

Table 6. Frequency of use among current users of a given tobacco product

	N*	1 or 2 days % (95% CI)	3-5 days % (95% CI)	6-19 days % (95% CI)	20-30 days % (95% CI)
Overall	2740	38.4 (34.1-42.6)	19.2 (17.0-21.3)	23.1 (19.7-26.5)	19.4 (16.1-22.7)
E-cigarettes	2274	38.9 (34.3-43.5)	19.4 (16.9-21.9)	23.1 (20.2-25.9)	18.6 (14.7-22.5)
Cigarettes	408	48.5 (42.8-54.2)	11.9 (8.5-15.3)	14.0 (8.8-19.1)	25.6 (20.1-31.2)
LCC	421	35.6 (24.9-46.3)	24.8 (16.7-33.0)	20.5 (16.6-24.3)	19.1 (15.3-23.0)
Big cigars	138	36.5 (29.5-43.5)	18.6 (8.8-28.3)	20.5 (11.9-29.0)	24.5 (9.2-39.7)†
Hookah	416	49.9 (43.3-56.6)	19.4 (14.2-24.7)	19.5 (14.3-24.7)	11.2 (6.9-15.5)
Smokeless	93	37.7 (21.6-53.7)	5.9 (1.9-9.8)†	26.8 (8.5-45.0)†	29.7 (14.6-44.9)

*As some participants used more than one tobacco product, the sum of sample sizes for each product is greater than the overall sample size.

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

Multiple Tobacco Product Use

Table 7 presents current use of multiple products, referred to as poly use, by participant demographics. Overall, 3.0% of students reported using two or more tobacco products, representing about one-quarter 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 who had higher rates of poly use). For example, those who identified their gender another way or declined to answer had higher rates of poly use than males or females.

Table 7. Prevalence of current use of at least one product and of multiple tobacco products

	N	Used at least one product % (95% CI)	Used two or more products % (95% CI)
Overall	24891	11.6 (10.1-13.1)	3.0 (2.5-3.6)
Gender			
Male	10649	10.5 (8.9-12.1)	3.2 (2.3-4.0)
Female	11163	10.4 (8.6-12.2)	2.0 (1.4-2.5)
Identified in Another Way	662	21.6 (17.7-25.5)	8.2 (5.6-10.9)
Declined to Answer	2173	19.5 (16.6-22.4)	5.8 (4.7-7.0)
Race/Ethnicity			
White	2282	20.3 (17.5-23.1)	5.8 (4.6-7.1)
Black	790	8.0 (6.0-10.1)	1.6 (0.5-2.8)†
Hispanic	15090	9.5 (8.2-10.9)	2.4 (1.7-3.0)
Asian	2098	8.1 (6.4-9.7)	1.2 (0.8-1.7)
Other	584	15.8 (11.6-20.1)	5.2 (3.4-6.9)
Multiple	1298	14.7 (12.1-17.3)	4.8 (3.3-6.3)
Declined to Answer	2243	18.1 (15.2-20.9)	5.7 (4.2-7.2)
Grade			
Grade 10	13466	9.7 (8.5-11.0)	2.5 (1.9-3.1)
Grade 12	11425	13.8 (11.6-16.1)	3.7 (2.9-4.5)

Note: Race/ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

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

CHAPTER 2 – Use of Flavored Tobacco Products

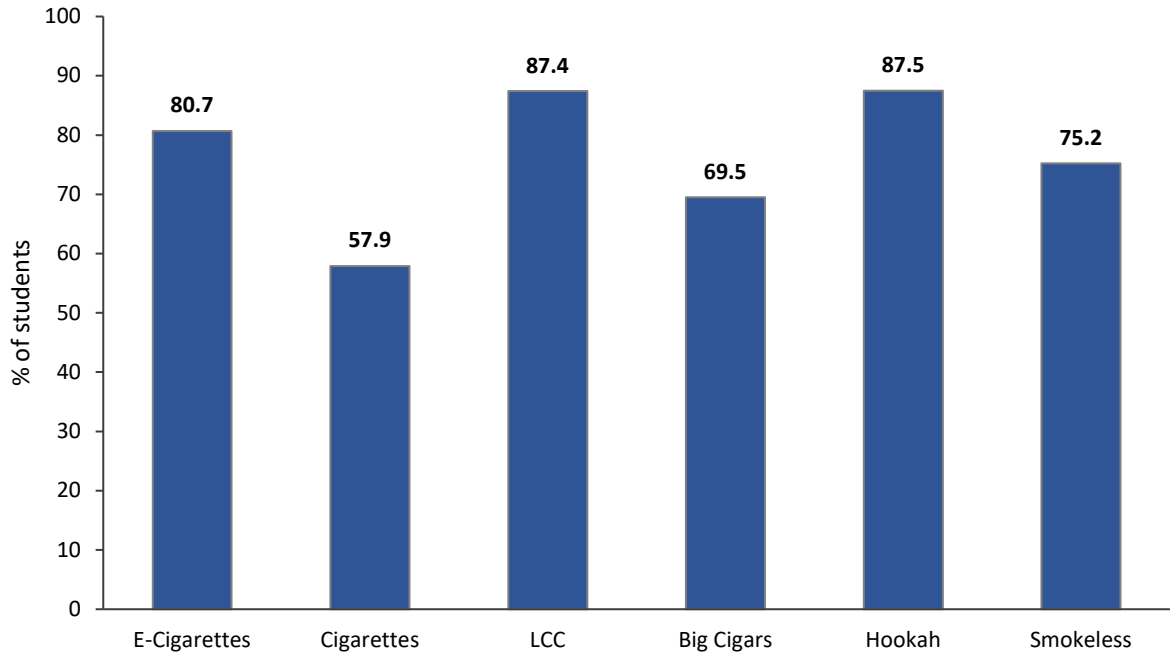
Highlights

- The vast majority (83.0%) of high school students in Los Angeles County who were current tobacco users reported using a flavored tobacco product.
- The highest use of flavored products was among current hookah users (87.5%), LCC users (87.4%), and e-cigarette users (80.7%).
- Over half of current cigarette smokers (57.9%) reported using menthol/mint cigarettes in the last 30 days.
- *Fruit or sweet* flavors were reported most frequently for all tobacco products except cigarettes and smokeless tobacco.

Flavored Tobacco Product Use among High School Students

Overall, 83.0% of students in Los Angeles County who were current tobacco users reported using flavored tobacco products in the last 30 days (data not shown). Use of flavored products was widespread across *all* tobacco products, even cigarettes, for which only menthol/mint flavor is available (Figure 2). The most prevalent flavored tobacco products were hookah (87.5%), LCC (87.4%), and e-cigarettes (80.7%). Of note, more than half of cigarette smokers (57.9%) reported using flavored cigarettes in the last 30 days.

Figure 2. Proportion using flavored products among current users of a given tobacco product



Note: Refer to Table B in Appendix E – Supplementary Tables to view estimates with confidence intervals.

Flavored Tobacco Use by Demographics

Table 8 presents current use of any flavored tobacco product by participant demographics. Across gender, race/ethnicity, and grade, the majority of students reported using flavored tobacco products in the last 30 days.

Table 8. Proportion using flavored tobacco among current tobacco users by gender, race/ethnicity, and grade

	N	Current use % (95% CI)
Overall	2806	83.0 (80.3-85.7)
Gender		
Male	1095	83.6 (80.7-86.5)
Female	1114	83.0 (79.0-87.0)
Identified in Another Way	129	78.6 (67.9-89.4)
Declined to Answer	405	81.8 (77.3-86.3)
Race/Ethnicity		
White	443	87.0 (80.5-93.5)
Black	65	72.8 (60.5-85.1)
Hispanic	1392	81.1 (76.2-86.1)
Asian	160	85.5 (77.5-93.4)
Other	79	89.7 (81.3-98.2)†
Multiple	190	88.4 (81.2-95.5)†
Declined to Answer	380	81.9 (77.2-86.5)
Grade		
Grade 10	1305	83.2 (78.7-87.7)
Grade 12	1501	82.8 (80.6-85.1)

Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

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

Use of Specific Flavor Types

Students who used a flavored tobacco product in the last 30 days were asked to indicate the flavor type they used most often. Possible flavor types included *fruit or sweet*, *mint*, *liquor, tobacco* (for e-cigarettes only), and *other*. Due to the small sample size, *liquor* and *other* flavors were combined. As shown in Table 9, with the exception of cigarettes (where *mint* is the only flavor) and smokeless tobacco, *fruit or sweet* flavors were by far the most popular. In fact, 81.7% of e-cigarette users in Los Angeles County indicated preferring to use fruit or sweet flavored e-liquid over other flavors. Furthermore, the majority of students who used LCC and hookah reported using *fruit or sweet* flavors (84.4% and 76.2%, respectively). Mint was the most popular flavor among current smokeless tobacco users (43.3%). Furthermore, all current smokers used mint/menthol flavored cigarettes (100%). Few students reported using *tobacco* flavored e-cigarettes (2.1%).

Table 9. Proportion using flavored tobacco products among current users by flavor type

	N	Fruit or sweet % (95% CI)	Mint % (95% CI)	Tobacco* % (95% CI)	Other % (95% CI)
E-cigarettes	1802	81.7 (78.4-84.9)	10.2 (7.9-12.4)	2.1 (1.2-2.9)	6.1 (4.3-8.0)
Cigarettes	230	--	100.0	--	--
LCC	364	84.8 (79.6-90.1)	4.3 (2.1-6.5)	--	10.8 (6.6-15.1)
Big cigars	91	67.7 (48.8-86.7)	11.4 (0.4-22.4)†	--	20.9 (8.1-33.6)†
Hookah	374	76.2 (70.3-82.0)	15.2 (10.2-20.3)	--	8.6 (5.0-12.2)
Smokeless	73	34.2 (17.6-50.8)	43.3 (22.3-64.4)	--	22.5 (9.0-35.9)†

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

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

CHAPTER 3 – Susceptibility to Future Tobacco Use

Highlights

- Two in five high school students (40.4%) in Los Angeles County who had never used a tobacco product were susceptible to using at least one tobacco product in the future.
- Rates of susceptibility to different tobacco products varied across demographic variables, but more than one-third of never users in all subgroups were susceptible to using a tobacco product.
- Overall, a higher proportion of never users were susceptible to future tobacco use when they had more friends who used a tobacco product.

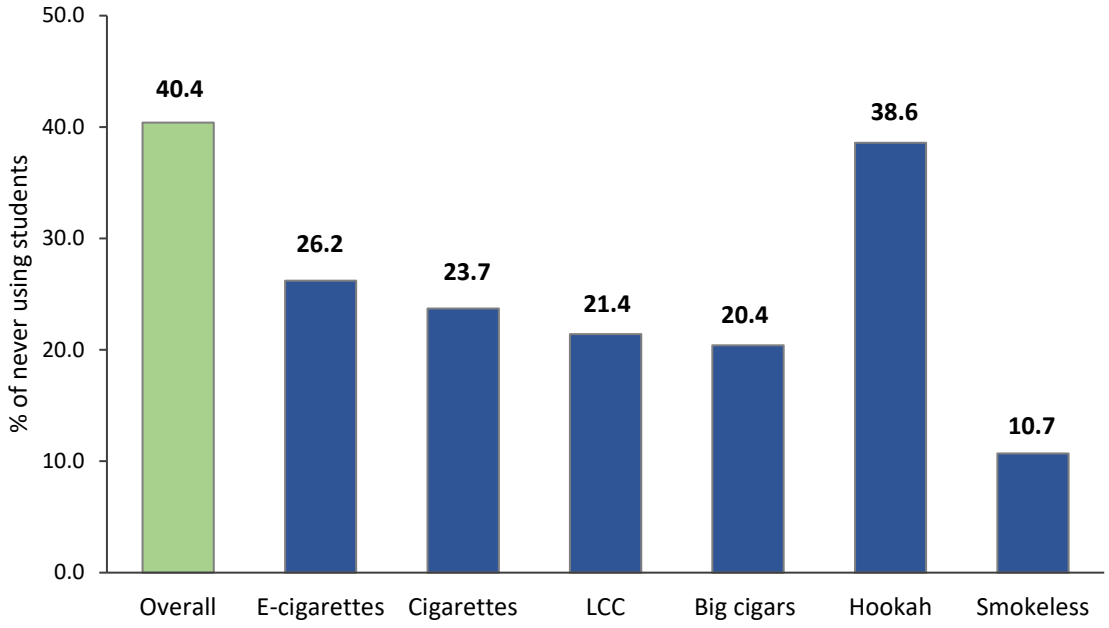
Susceptibility and Tobacco Use Behavior

Intention is a strong predictor of performing a behavior.[4] Research has shown that it is possible to identify students who are at risk of using tobacco products in the future based on their level of intention to use a tobacco product in the future.[5] In the 2017–18 CSTS, Los Angeles County students who had never used a particular tobacco product were asked whether they would use it if one of their best friends offered it to them (see Definitions Used in this Report). Those who answered anything other than *definitely not* and *I don't know* were considered susceptible to future tobacco use. This chapter presents Los Angeles County high school students' susceptibility to future use of any tobacco product, as well as to specific tobacco products.

Susceptibility to Tobacco Product Use among High School Students

Figure 3 shows the proportion of never using high school students' susceptibility to future tobacco use. Overall, 40.4% of never users of any tobacco product were susceptible to at least one product. Susceptibility to specific tobacco products generally varied according to product popularity, although hookah (used at lower rates than e-cigarettes) represents an anomaly. Never users of the product in Los Angeles County were most susceptible to using hookah (38.6%), followed by e-cigarettes (26.2%) and cigarettes (23.7%), and least susceptible to using big cigars (20.4%) or smokeless tobacco (10.7%).

Figure 3. Susceptibility to future tobacco use among never users



Note: Refer to Table C in Appendix E – Supplementary Tables to view estimates with confidence intervals.

Susceptibility to Tobacco Use by Demographics

When comparing susceptibility among never using students, a higher proportion of never using female students and those who identified their gender another way (44.4% and 49.6%, respectively) were susceptible to future tobacco use relative to male students (36.2%).

While susceptibility varied somewhat across racial/ethnic groups, generally more than a third of non-users were susceptible to future tobacco use for each subgroup. Despite significant differences in overall and current use between 10th and 12th grade students, susceptibility to future tobacco use was approximately the same for both grade levels (40.6% vs. 40.1%, respectively).

Table 10. Proportion of never users who are susceptible to future tobacco use by gender, race/ethnicity, and grade

	Never users of any tobacco product	
	N	% (95% CI)
Overall	16299	40.4 (39.3-41.5)
Gender		
Male	7206	36.2 (34.3-38.1)
Female	7501	44.4 (42.2-46.5)
Identified in Another Way	345	49.6 (42.7-56.6)
Declined to Answer	1132	41.1 (37.1-45.1)
Race/Ethnicity		
White	1399	35.6 (32.3-38.9)
Black	543	36.0 (30.6-41.4)
Hispanic	9949	42.3 (41.1-43.5)
Asian	1688	36.2 (34.0-38.5)
Other	376	34.7 (28.5-40.9)
Multiple	823	38.9 (33.6-44.1)
Declined to Answer	1239	40.5 (36.6-44.4)
Grade		
Grade 10	9417	40.6 (39.4-41.8)
Grade 12	6882	40.1 (38.5-41.7)

Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

Susceptibility to Tobacco Use by Personal Characteristics

Table 11 shows that a higher proportion of never using students who reported feelings of loneliness were susceptible to future tobacco use (45.0%) relative to those who declined to answer (39.2%) or disagreed (37.9%). Similarly, a higher proportion of never using students who reported depressive symptoms were susceptible to future tobacco use (46.8%) relative to those who declined to answer (40.4%) or did not report depressive symptoms (38.1%).

Table 11. Proportion of never users who are susceptible to future tobacco use by loneliness and depressive symptoms

	Never users of any tobacco product	
	N	% (95% CI)
Overall	16299	40.4 (39.3-41.5)
Often feel lonely		
Agree	5505	45.0 (43.3-46.6)
Disagree	8416	37.9 (36.5-39.2)
Declined to Answer	2232	39.2 (35.9-42.5)
Depressive symptoms		
Yes	3904	46.8 (44.8-48.8)
No	9891	38.1 (36.6-39.5)
Declined to Answer	2346	40.4 (37.5-43.4)

Susceptibility to Tobacco Use by Environmental Influences

Students indicated the proportion of their friends that used specific tobacco products. Table 12 presents never users' susceptibility to future tobacco use by the proportion of their friends that use the tobacco product. Overall, a higher proportion of never users were susceptible to future tobacco use when they had more friends who used a tobacco product.

The proportion of never users susceptible to future hookah use was highest across all tobacco products and categories of friend use. As mentioned earlier in this chapter, students' high rates of susceptibility to hookah represents an anomaly given its relatively low use. This anomaly may reflect the way hookah is typically used (i.e., in a hookah lounge or similar social setting), which may increase its allure as both a social and perhaps an exotic activity to try.

Table 12. Proportion of never users who are susceptible to future tobacco use by the number of tobacco-using friends

	None N=17661 % (95% CI)	Some N=5548 % (95% CI)	Most N=1020 % (95%)	All N=204 % (95% CI)
E-cigarettes	18.5 (17.1-19.9)	37.6 (35.4-39.7)	40.0 (35.9-44.1)	57.1 (39.5-74.8)
Cigarettes	20.7 (19.7-21.7)	32.7 (31.0-34.4)	29.8 (24.1-35.5)	34.2 (25.0-43.4)
LCC	19.6 (18.8-20.3)	31.4 (29.4-33.5)	28.1 (21.6-34.6)	30.6 (22.6-38.6)
Hookah	30.1 (28.8-31.3)	54.1 (52.2-55.9)	58.0 (54.1-61.9)	60.5 (51.6-69.3)

CHAPTER 4 – Environmental Influences

Highlights

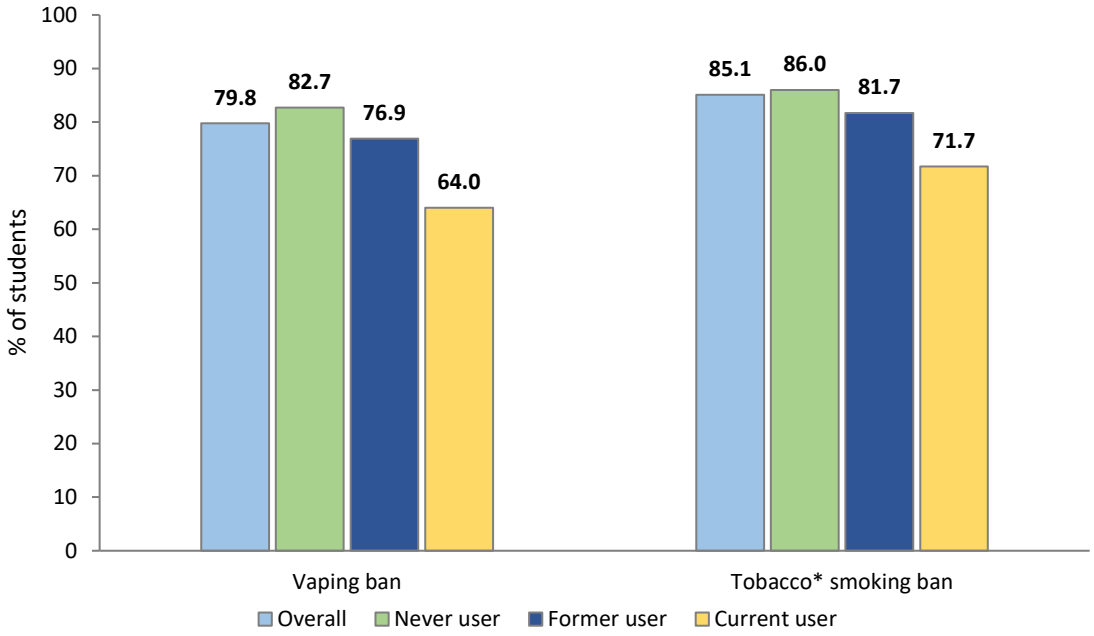
- Most high school students reported living in a home that had complete bans on smoking (85.1%) and vaping (79.8%).
- The prevalence of tobacco use and the proportion of current users who vaped and smoked inside their homes did not significantly differ between students who lived in detached houses and those in multi-unit housing.
- Some Los Angeles County students reported being exposed to secondhand vapor (18.5%) or smoke (14.9%) in a car in the last 30 days.
- More students reported being exposed to secondhand vapor (29.5%) or smoke (30.9%) in a room than in a car. The proportion of students exposed did not significantly differ according to home type.
- Almost half of students (45.7%) in Los Angeles County reported smelling tobacco smoke drifting in from the neighborhood. Those who lived in multi-unit housing had the highest rate of exposure (55.5%).

Home Bans for Vaping and Smoking among High School Students

Home bans indicate whether the student's home environment explicitly discourages smoking tobacco (cigarettes and LCC) and vaping e-cigarettes. Using two separate questions, students were asked to indicate which statement best described the rules about vaping e-cigarettes or smoking tobacco products in their home (see Definitions Used in this Report). Overall, the vast majority of students had a complete home ban on vaping and on smoking (79.8% and 85.1%, respectively).

Figure 4 presents the prevalence of complete home bans on vaping and smoking by vaping and smoking status. Vaping status (never, former, or current vaper) was determined by students' use of e-cigarettes, while smoking status was determined by students' use of cigarettes and LCC. Smoking status was limited to cigarettes and LCC to remain consistent with information presented on secondhand smoke exposure. Figure 4 shows that more never vapers and never smokers reported having a complete home ban relative to current vapers and smokers. Rates of home bans among former vapers and smokers fell between those for never and current users. Fewer vapers reported having a home ban compared to smokers. However, rates of home bans on vaping were relatively high given e-cigarettes' recent introduction to the marketplace.

Figure 4. Prevalence of complete home bans on e-cigarette vaping and tobacco* smoking by use status



Note: Refer to Table D in Appendix E – Supplementary Tables to view estimates with confidence intervals.
*Tobacco smoke and corresponding use status were based on two products: cigarettes and LCC.

Table 13 provides data on the rates of complete home bans on vaping and smoking by race/ethnicity. Similar to the overall results reported in Figure 4, across racial/ethnic groups, more students generally reported having a home ban on smoking than on vaping.

Table 13. Prevalence of complete home bans on e-cigarette vaping and tobacco* smoking by race/ethnicity

	Vaping ban		Smoking ban	
		Overall		Overall
	N	% (95% CI)	N	% (95% CI)
Overall	21569	79.8 (78.6-80.9)	21861	85.1 (84.1-86.1)
White	2160	75.9 (73.2-78.5)	2156	84.6 (81.0-88.1)
Black	692	76.5 (72.9-80.1)	705	81.5 (79.1-83.9)
Hispanic	13592	82.3 (81.2-83.5)	13770	86.5 (85.6-87.4)
Asian	1973	74.9 (73.0-76.8)	1990	83.4 (81.9-84.9)
Other	495	70.2 (65.1-75.4)	505	79.7 (75.4-83.9)
Multiple	1185	72.9 (68.4-77.4)	1205	80.3 (76.0-84.6)
Declined to Answer	1164	74.7 (71.3-78.1)	1213	79.5 (76.4-82.6)

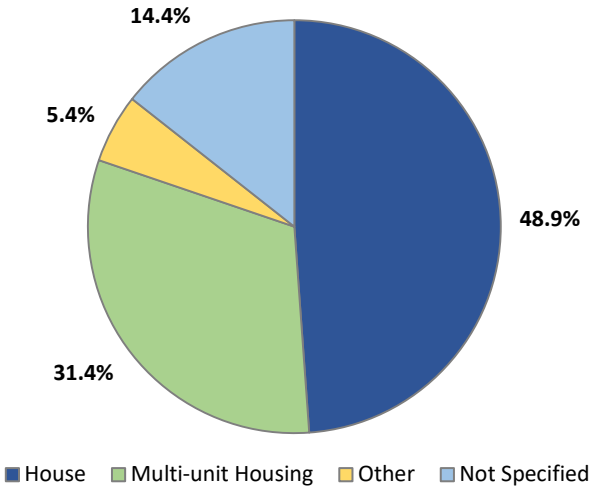
Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.
*Two products: cigarettes and LCC

Home Type

Students are predisposed to environmental influences that may affect tobacco use behavior and vulnerability to secondhand exposure to smoke and vapor. Research shows that secondhand smoke exposure can vary according to home type, which Los Angeles County was interested in exploring.[6] Therefore, students were asked what type of home they currently live in. There were five answer categories: *a house that is not attached to another house*; *an apartment, condominium, or townhouse that shares a wall with another unit*; *some other type of housing*; *I don't know*; and *I prefer not to answer*. For reporting purposes, we abbreviated the five response choices as "House" (*a house that is not attached to another house)*, "Multi-unit housing" (*an apartment, condominium, or townhouse that shares a wall with another unit*), and "Other" (*some other type of housing*). The options *I don't know* and *I prefer not to answer* were combined under "Not specified."

Figure 5 presents the prevalence of students who reported each home type. Overall, the majority of students lived in a house or in multi-unit housing (48.9% and 31.4%, respectively).

Figure 5. Prevalence of housing types in Los Angeles County



Notes: Not specified = "I prefer not to answer" and "I don't know" answer choices.
Refer to Table E in Appendix E – Supplementary Tables to view estimates with confidence intervals

Table 14 presents the prevalence of current use of a given tobacco product based on the type of home students reported they lived in. Consistent with the main findings, across home type, e-cigarettes were the most prevalent product used by students, while combustible tobacco product use was low. Generally, the prevalence of tobacco use did not significantly differ across home type, except for those who did not identify their home type (which tend to have higher use rates).

Table 14. Proportion of current tobacco product use by home type

	House N=11505 % (95% CI)	Multi-unit housing N=7536 % (95% CI)	Other N=1149 % (95% CI)	Not specified N=3574 % (95% CI)
Overall	11.8 (9.8-13.9)	9.5 (7.9-11.1)	10.3 (7.6-13.1)	15.6 (12.9-18.4)
E-cigarettes	10.6 (8.4-12.7)	8.3 (6.8-9.8)	8.7 (6.0-11.5)	12.0 (9.7-14.3)
Cigarettes	1.4 (1.0-1.9)	1.3 (0.9-1.8)	3.7 (1.5-5.8)	2.9 (1.9-3.9)
LCC	1.7 (1.3-2.2)	1.3 (1.0-1.7)	3.0 (1.6-4.3)	4.5 (2.8-6.2)
Big cigars	0.6 (0.3-0.9)	0.5 (0.2-0.9)†	0.9 (0.3-1.5)†	1.7 (0.8-2.6)
Hookah	1.7 (1.2-2.3)	1.2 (0.8-1.6)	0.8 (0.2-1.4)†	3.4 (2.3-4.6)
Smokeless	0.5 (0.2-0.7)	0.2 (0.1-0.3)	0.4 (0.1-0.7)†	0.9 (0.5-1.3)

Note: Not specified = "I prefer not to answer" and "I don't know" answer choices.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

Table 15 provides data on whether current users vape e-cigarettes or smoke cigarettes inside their home based on their home type. Overall, there were no significant differences in the proportion of current e-cigarette users who vaped inside their home across home types. Similarly, there were no significant differences in the proportion of current cigarette users who smoked inside their home across home types.

Table 15. Proportion of e-cigarette or cigarette use inside home, by home type

		Vapes inside home		Smokes inside home
	N	% (95% CI)	N	% (95% CI)
Overall	1830	35.2 (30.3-40.1)	308	30.5 (22.2-38.7)
House	1078	35.0 (28.3-41.7)	148	25.1 (15.2-35.1)
Multi-unit housing	577	32.1 (26.1-38.2)	112	25.1 (16.8-33.4)
Other	82	49.4 (31.7-67.1)	28	62.3 (30.7-94.0)†
Not specified	89	42.6 (32.6-52.6)	20	32.1 (10.2-54.0)†

Note: Not specified = "I prefer not to answer" and "I don't know" answer choices.
†Data are statistically unreliable because relative variance is greater than 30%. Interpret with caution.

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

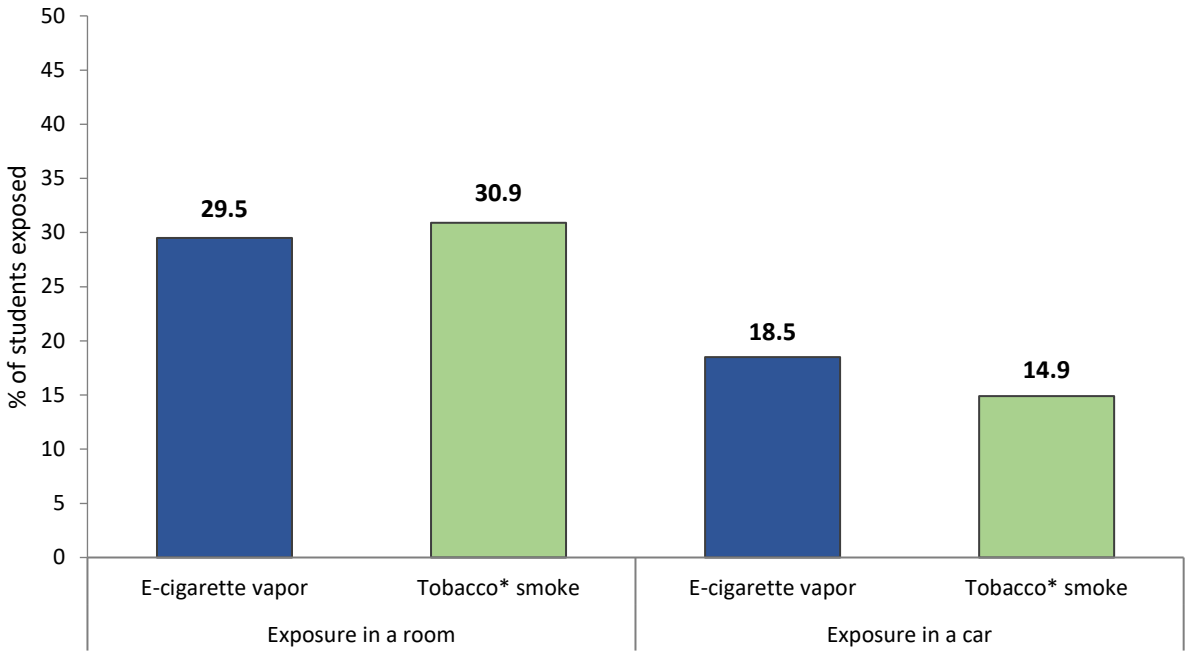
Secondhand exposure to tobacco products is a priority issue in Los Angeles County, especially as smoke and vapor have been shown to contain chemicals that are identified by the State as carcinogens and can affect developing youth.[6] Los Angeles County has taken precautionary steps to restrict tobacco sales and tobacco smoking behavior in areas that may increase youth risk to secondhand smoke exposure. However, 45.9% of students had still been exposed to secondhand e-cigarette vapor or tobacco smoke, in a room or in a car, within the last 30 days (data not shown).

The 2017–18 CSTS asked students about secondhand exposure to vapor in a room: "In the last 30 days, how many days were you in a room when someone was using an e-cigarette (including e-hookah and hookah pens)?" Another question asked about secondhand exposure to tobacco smoke in a room: "In the last 30 days, how many days were you in a room when someone was smoking a cigarette, little cigar or cigarillo?" Students were asked whether they have been exposed in a car in the same way.

As shown in Figure 6, students reported being exposed to e-cigarette vapor and tobacco smoke in a room at higher rates compared to in a car. Secondhand exposure in a room within the last 30 days was similar

for vapor and smoke (29.5% and 30.9%, respectively). However, students reported being exposed to vapor at a higher rate compared to tobacco smoke in a car (18.5% vs. 14.9%, respectively).

Figure 6. Prevalence of exposure in the last 30 days to e-cigarette vapor and tobacco* smoke in a room and car



Note: Refer to Table F in Appendix E – Supplementary Tables to view estimates with confidence intervals.
*Two products: cigarettes and LCC

Table 16 shows students' exposure to e-cigarette vapor and tobacco smoke in a room based on their home type. There were no significant differences in exposure to secondhand vapor or smoke in a room according to home type.

Table 16. Prevalence of exposure in the last 30 days to e-cigarette vapor and tobacco* smoke in a room by home type

	E-cigarette vapor		Tobacco* smoke	
	N	% (95% CI)	N	% (95% CI)
Overall	22981	29.5 (25.9-33.0)	22871	30.9 (29.1-32.7)
House	11083	32.0 (27.3-36.8)	10982	31.6 (29.4-33.8)
Multi-unit housing	7203	27.8 (24.2-31.3)	7134	29.9 (27.7-32.1)
Other	1092	24.0 (19.5-28.6)	1090	33.3 (29.1-37.5)
Not specified	2640	25.6 (22.1-29.1)	2692	30.0 (27.1-32.8)

*Two products: cigarettes and LCC

Students in Los Angeles County were asked, "On how many of the past 7 days did you smell tobacco smoke from someone else's cigarette, cigar, or pipe drifting into your home from nearby apartments or from outside?" Overall, 45.7% of students in Los Angeles County reported being exposed to secondhand smoke in the last seven days (Table 17). Most students reported being exposed 1 to 2 days during the past week regardless of home type, with the exception of those who did not specify their home type, who reported

being exposed 3 to 5 days during the past week. Most notably, students who lived in multi-unit housing had the highest rate of exposure in the last seven days (55.5%).

Table 17. Prevalence of reported tobacco smoke drifting into home within the last 7 days

	N	Any in the last 7 days % (95% CI)	1-2 days % (95% CI)	3-5 days % (95% CI)	6-7 days % (95% CI)
Overall	20176	45.7 (43.7-47.6)	21.6 (20.6-22.5)	15.0 (14.0-16.0)	9.1 (8.1-10.0)
House	10858	39.2 (37.0-41.4)	19.8 (18.8-20.8)	12.2 (10.9-13.6)	7.1 (5.9-8.4)
Multi-unit housing	7015	55.5 (53.3-57.6)	25.0 (23.7-26.3)	18.4 (17.2-19.6)	12.1 (10.8-13.4)
Other	1068	50.6 (46.8-54.5)	26.5 (20.8-32.2)	16.5 (12.9-20.0)	7.7 (5.6-9.8)
Not specified	1198	42.5 (36.2-48.8)	12.5 (10.1-14.9)	19.2 (15.2-23.1)	10.9 (8.0-13.8)

Note: Not specified = “I prefer not to answer” and “I don’t know” answer choices.

Secondhand exposure may change due to Los Angeles County’s recent strengthening of its Smoke-free Ordinance. Data from future waves of the CSTS will help to monitor changes in exposure. However, it is concerning that students have been exposed to secondhand e-cigarette vapor and tobacco smoke in their own homes, inside rooms and in cars, and from outside tobacco smoke drifting into their homes.

CHAPTER 5 – Access to Tobacco Products

Highlights

- More students obtain e-cigarettes and cigarettes through social sources than purchase them through retail sources.
- Many students believed that it would be easy to get e-cigarettes (57.3%) or cigarettes (48.4%) if they wanted them.
- One in eight (13.3%) high school students who had never used any tobacco product had nevertheless been offered a tobacco product in the last 30 days.

Access to and Offers of Tobacco Products

Age restrictions are intended to make it difficult for students to access tobacco products. The legal age to purchase tobacco products in California is 21 years old. Because of this, it is important to monitor how underage students obtain tobacco products, particularly through social sources. This chapter presents data on how students access e-cigarettes and cigarettes and on student offers of tobacco products. Students who were current users of e-cigarettes or cigarettes were asked whether they pay for their own e-cigarettes (or e-liquid) or cigarettes. They were then asked subsequent questions on how they obtained the product. Offers were measured by use status (e.g., never, former, and current users) and across demographics based on tobacco product.

Acquisition of E-Cigarettes and Cigarettes among High School Students

Table 18 presents how students usually get e-cigarettes (or e-liquid) from social sources. Of current e-cigarette users, 61.4% reported not paying for their own e-cigarettes; approximately half of these students reported being offered e-cigarettes.

Table 18. Acquisition of e-cigarettes (or e-liquid) among current e-cigarette users by social source

Did not pay for own e-cigarettes (or e-liquid)	Current e-cigarette users N=1301 % (95% CI)
Someone else offers them to me	49.1 (43.1-55.1)
I ask someone for them	17.9 (14.7-21.1)
I get them some other way	18.5 (13.9-23.2)
Declined to Answer	14.5 (11.0-17.9)

Note: Data are based on a subset of current e-cigarette users who reported that they do not usually pay for their own e-cigarettes (61.4%; n=2172).

Table 19 shows how students usually buy e-cigarettes (or e-liquid). Overall, only 38.6% of current vapers reported paying for their own e-cigarettes. Three-fifths of those students reported buying e-cigarettes from the store themselves or from someone else. Few students (3.3%) reported buying e-cigarettes from the Internet (including apps). Of note, a high percentage of students did not report how they bought or obtained e-cigarettes (10.1% and 8.9%, respectively).

Table 19. Acquisition of e-cigarettes (or e-liquid) among current e-cigarette users by purchase source

Paid for own e-cigarettes (or e-liquid)	Current e-cigarette users N=867 % (95% CI)
I buy them from the store myself	27.3 (22.8-31.7)
I buy them from someone else	34.3 (29.4-39.2)
Internet (including apps)	8.6 (6.0-11.2)
Other	3.8 (1.7-5.9)
Declined to Answer	26.1 (22.4-29.8)

Note: Data are based on a subset of current e-cigarette users who reported that they do usually pay for their own e-cigarettes (38.6%; n=2172).

Table 20 shows how students usually get their cigarettes from social sources. Of current cigarette smokers, 54.6% reported not paying for their own cigarettes, with approximately one-third of these students reporting being offered cigarettes and nearly one-fifth reporting asking someone for cigarettes.

Table 20. Acquisition of cigarettes among current cigarette users by social source

Did not pay for own cigarettes	Current cigarette users N=205 % (95% CI)
Someone else offers them to me	33.9 (25.9-41.9)
I ask someone for them	21.8 (16.3-27.3)
I get them some other way	30.4 (19.0-41.8)
Declined to Answer	13.9 (8.4-19.5)

Note: Data are based on a subset of current cigarette users who reported that they do not usually pay for their own cigarettes (54.6%; n=383).

Table 21 presents how students usually purchase their cigarettes. Overall, almost half of current smokers (45.4%) reported paying for their own cigarettes. Approximately 80% of those students reported buying cigarettes from the store themselves or from someone else. Very few students (0.5%) reported buying cigarettes from the Internet (including apps). Of note, just as with e-cigarette users, a high percentage of students did not report how they bought or got cigarettes (7.8% and 7.6%, respectively).

Table 21. Acquisition of cigarettes among current cigarette users by purchase source

Paid for own cigarettes	Current cigarette users N=178 % (95% CI)
I buy them from the store myself	38.9 (29.2-48.5)
I buy them from someone else	40.9 (27.5-54.4)
Internet (including apps)	1.0 (0.0-2.5)†
Other	2.1 (0.2-3.9)†
Declined to Answer	17.1 (9.7-24.5)

Note: Data are based on a subset of current cigarette users who reported that they do usually pay for their own cigarettes (45.4%; n=383).

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

Students who reported buying e-cigarettes or cigarettes from the store were asked the specific store type where they bought the tobacco product. As shown in Table 22, among current e-cigarette users, vape shops (60.5 %) and tobacco shops (16.8%) were the most popular store types for purchasing e-cigarettes. By contrast, among current cigarette smokers, gas stations or convenience stores (31.3%) and tobacco shops (27.5%) were the most popular store types for purchasing cigarettes.

Table 22. Acquisition of e-cigarettes and cigarettes among current users who buy e-cigarettes or cigarettes from a store by store type

	Bought e-cigarettes from a store N=252 % (95% CI)	Bought cigarettes from a store N=74 % (95% CI)
Gas station or convenience store	8.4 (4.4-12.5)	31.3 (17.0-45.7)
Grocery store	2.5 (0.4-4.7)†	9.3 (3.4-15.2)†
Drugstore or pharmacy	2.0 (0.3-3.6)†	3.8 (0.0-8.2)†
Restaurant, deli, or donut shop	0.8 (0.0-1.9)†	0.9 (0.0-2.7)†
Tobacco shop	16.8 (9.1-24.5)	27.5 (14.7-40.3)
Vape shop	60.5 (47.4-73.6)	8.0 (1.2-14.7)†
Other	1.8 (0.1-3.5)†	10.8 (0.0-26.0)†
Declined to Answer	7.2 (3.6-10.8)	8.3 (2.7-14.0)†

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

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

The 2017–18 CSTS assessed whether high school students were offered various tobacco products in the last 30 days by asking, "In the last 30 days, has anyone offered you… ?" followed by a list of tobacco products. Overall, one-quarter of students (25.1%) in Los Angeles County were offered a tobacco product in the last month (Table 23). Significantly more current users (77.7%) reported tobacco product offers relative to never (13.3%) or former users (33.1%). The overall prevalence of offers of specific tobacco products reflects the overall prevalence of use of each tobacco product: more students reported being offered e-cigarettes (the most prevalent product used by high school students) relative to cigarettes, LCC, or hookah.

Table 23. Prevalence of offers of tobacco products in the last 30 days by use status

	Overall N=23847 % (95% CI)	Never user of the product N= 22030 % (95% CI)	Former user of the product N=5155 % (95% CI)	Current user of the product N=2638 % (95% CI)
Any of the below	25.1 (22.9-27.4)	13.3 (12.1-14.6)	33.1 (30.5-35.7)	77.7 (74.2-81.3)
E-cigarettes	20.5 (17.9-23.1)	10.1 (8.8-11.4)	29.5 (26.5-32.6)	76.1 (71.4-80.8)
Cigarettes	6.6 (5.8-7.4)	3.9 (3.5-4.2)	19.5 (17.5-21.6)	78.5 (72.8-84.2)
LCC	4.1 (3.6-4.5)	2.5 (2.1-2.8)	13.5 (9.7-17.4)	50.4 (44.5-56.4)
Hookah	8.9 (7.8-10.0)	6.2 (5.5-7.0)	25.0 (22.0-27.9)	66.6 (57.7-75.6)

Offers of Tobacco Products by Demographics

Table 24 shows the prevalence of offers of tobacco products by demographics. Overall, offers of tobacco products according to demographic characteristics reflect the prevalence of tobacco use by gender, race/ethnicity, and grade. Offers of tobacco products were generally similar across gender. There were

some differences in the prevalence of offers across race/ethnicity, with White students (37.2%) generally indicating the highest prevalence of offers and Asian students (17.1%) generally indicating the lowest prevalence of offers. There were no significant differences in offers across grade levels.

Table 24. Prevalence of offers of tobacco products* in the last 30 days by gender, race/ethnicity, and grade

		Overall
	N	**% (95% CI)**
Overall	23847	25.1 (22.9-27.4)
Gender		
Male	10383	23.6 (21.3-26.0)
Female	10937	25.5 (22.6-28.3)
Identified in Another Way	598	32.2 (27.9-36.5)
Declined to Answer	1740	29.2 (26.3-32.1)
Race/Ethnicity		
White	2247	37.2 (32.5-42.0)
Black	774	19.8 (16.5-23.1)
Hispanic	14692	23.6 (21.4-25.7)
Asian	2068	17.1 (14.4-19.7)
Other	560	30.4 (24.9-35.8)
Multiple	1268	32.5 (28.6-36.4)
Declined to Answer	1807	27.8 (24.8-30.8)
Grade		
Grade 10	12928	24.7 (22.5-26.9)
Grade 12	10919	25.6 (22.8-28.4)

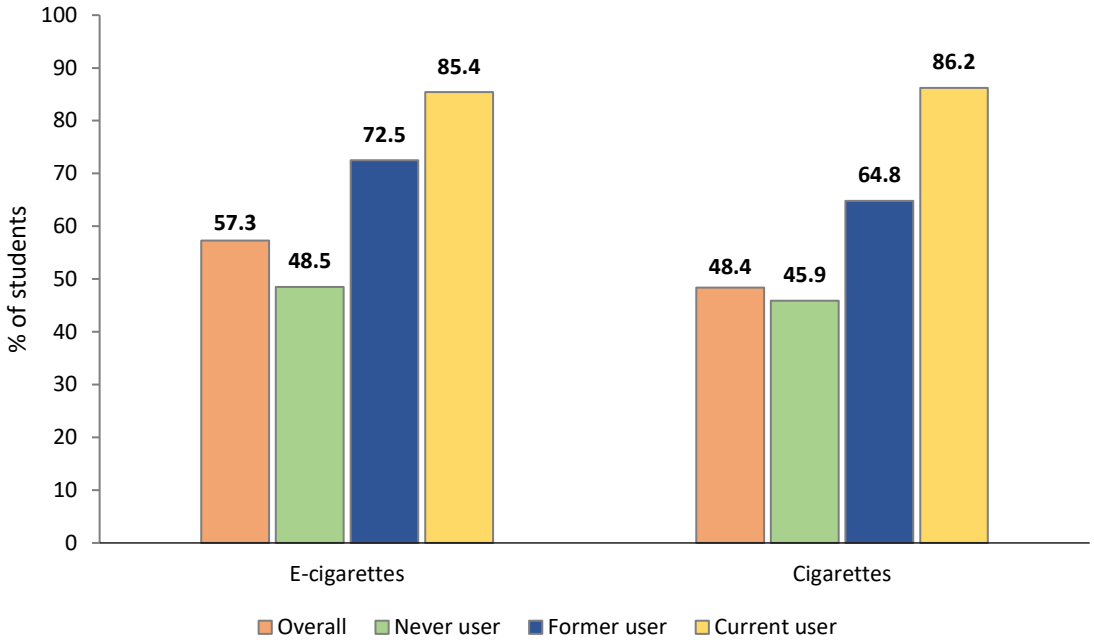
Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.
*Four products: e-cigarettes, cigarettes, LCC, and hookah.

Perceived Ease of Acquiring E-Cigarettes and Cigarettes among High School Students

Figure 7 presents the perceived ease of acquiring e-cigarettes and cigarettes among high school students. Overall, 57.3% of students believed that it would be *very easy* or *somewhat easy* to get e-cigarettes, which is significantly more than those who believed it would be very easy or somewhat to get cigarettes (48.4%).

Perceived ease of access differed significantly according to product use status, with the highest percentage of current users perceiving that is would be *very easy* or *somewhat easy* to get e-cigarettes or cigarettes relative to never or former users of those products.

Figure 7. Perceived ease of acquiring e-cigarettes and cigarettes by use status



Note: Please refer to Table G in Appendix E – Supplementary Tables to view estimates with confidence intervals

CHAPTER 6 – Tobacco Use Behavior: Comparisons from 2015–16 to 2017–18

Highlights

- From 2015–16 to 2017–18, the use of e-cigarettes among high school students in Los Angeles has increased significantly, from 6.4% to 10.0%.
- The use of all other tobacco products, not including e-cigarettes, decreased significantly from 7.6% in 2015–16 to 4.5% in 2017–18.
- Overall tobacco use, including e-cigarettes, did not change significantly (10.6% to 11.6%).

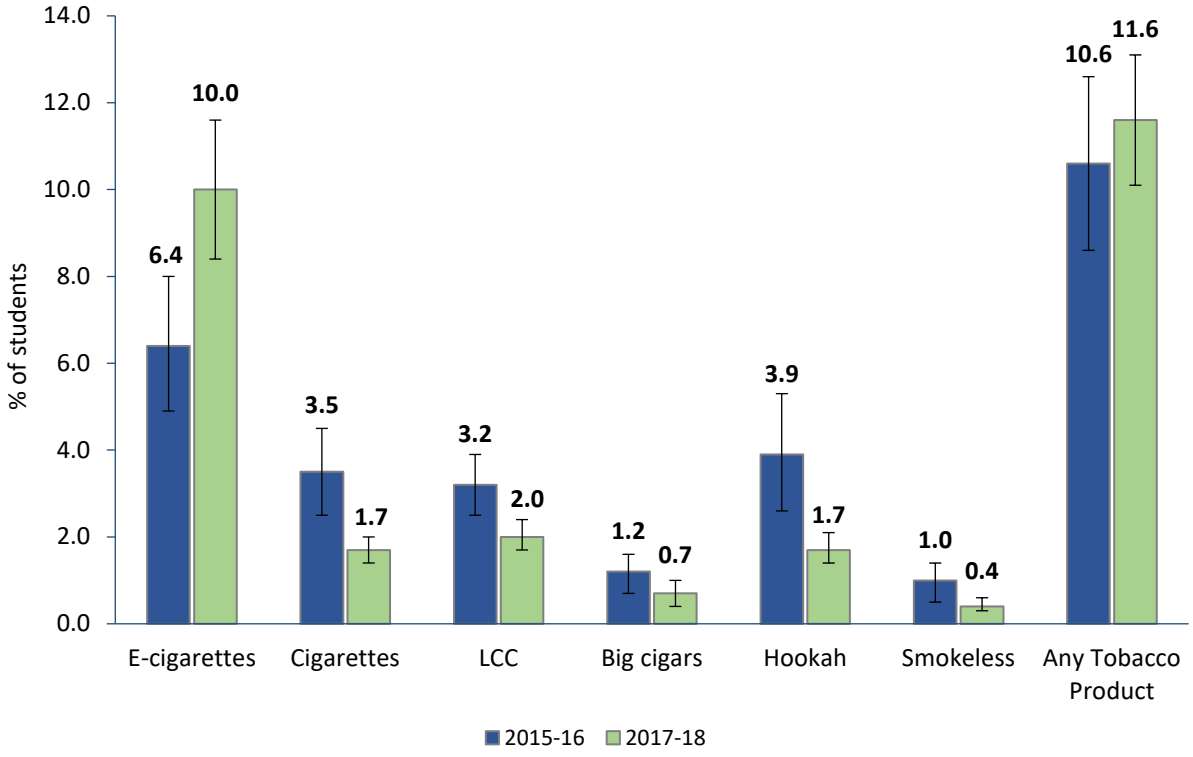
There was a sufficiently large number of Los Angeles County schools that participated in the CSTS in 2015–16 and more so in 2017–18 that a comparison of results from 2015–16 with those from 2017–18 is feasible. For this comparison, we assume that the demographic composition of students between the two surveys has not changed significantly; thus, no adjustment was made with regard to demographics.

Tobacco Product Use among High School Students

Figure 8 shows that the use of e-cigarettes increased significantly from 2015–16 to 2017–18 (6.4% to 10.0%, $p<0.002$). By contrast, cigarette smoking significantly decreased, 3.5% to 1.7% ($p<0.001$). In fact, the use of all other forms of tobacco decreased during this period: 1.2% to 0.7% for big cigars, 3.2% to 2.0% for LCC, 3.9% to 1.7% for hookah, and 1.0% to 0.4% for smokeless tobacco.

Despite the fact that the use of all tobacco products other than e-cigarettes significantly decreased, overall tobacco use in Los Angeles County from 2015–16 to 2017–18 did not reduce due to the dramatic increase in e-cigarette use. If cigarettes, big cigars, LCC, hookah, and smokeless are combined into one category, then the prevalence for using these products significantly decreased from 7.6% to 4.5% ($p<0.001$). However, the overall tobacco use (including e-cigarettes) in Los Angeles County did not decrease. Rather, it increased from 10.6% to 11.6% during this period, although the change is not statistically significant ($p=0.44$).

Figure 8. Prevalence of current tobacco use by survey cycle



The decline in tobacco product use, with the exception of e-cigarettes, is notable in two aspects. First, it continues the trend that has been observed previously on the statewide level. The 2015–16 CSTS found that the use of all forms of tobacco other than e-cigarettes declined dramatically in California from 2011–12 to 2015–16.[7] The rate of decline shown in Figure 8 is very substantial and similar to what has been observed in earlier trends. Second, the absolute prevalence for each of those products in 2017–18 is very low. In fact, none were greater than 2%. This makes it obvious that the next phase of tobacco control should focus on e-cigarettes, the only product that has attracted more students to use in 2017–18 than in 2015–16.

CONCLUSION

The smoking prevalence for Los Angeles youth, like the rest of California, has reached a historical low. Only 1.7% of high school students in Los Angeles smoked cigarettes in 2017–18. Few would have imagined such a low prevalence only a few years ago. In fact, the rate of using any one of the combustible tobacco products was very low (none is higher than 2%). As far as the numerical goal for tobacco control is concerned, the prevalence for each of the combustible tobacco products among high school students in Los Angeles had dropped to the level accepted by many as an end-game number.[8] There is cause for celebration.

The low prevalence suggests that the social norm for cigarette smoking among teens has collapsed. Smoking is simply no longer a cool thing to do. The anti-smoking campaign in California, both at the statewide level and at the Los Angeles County level, has been very successful in this regard.

We still have to be vigilant in that many students who have not used tobacco remain susceptible to future use. Many adults in California are still smokers, which contributes to the fact that almost a third of high school students reported being exposed to secondhand smoke. Many of the students were offered tobacco products even though they were not users themselves. A majority of students considered it easy to acquire tobacco products, if they wanted them.

The biggest concern, of course, is the rising popularity of e-cigarettes among adolescents. Current e-cigarette use among high school students in Los Angeles in 2017–18 was 10%, which accounts for the majority of all tobacco use (11.6%). Moreover, a significant proportion of high school students, most of whom were not current users, reported that someone had offered e-cigarettes to them in the last 30 days. Being offered these products through a youth's social framework could increase the rate of experimentation or the rate of transition from experimentation to regular use. The social norm for vaping is clearly different from that of cigarette smoking. Vaping is popular. The novel devices and plethora of flavors that come with these new products are attractive to teens. Many have experimented with these devices, and many who have not are susceptible to trying them in the future.

The campaign against the use of tobacco products, therefore, should focus on vaping. New interventions must be developed to counter the influence that comes from students' immediate environment as well as the influences from the tobacco and vaping industry. The social-norm approach, which has been so successfully employed in anti-smoking campaigns, may be useful in reducing vaping among teens as well. New strategies may also be necessary given that the products and the industry itself continues to evolve.

Of special concern is the intersection of vaping nicotine and vaping marijuana. The marijuana use prevalence is currently even higher than that for e-cigarettes for high school students in Los Angeles. Even though most of the teens who currently use marijuana are smoking it, this rate can change quickly given the appeal of new vaping devices for youth. The public health community has to be particularly vigilant in monitoring the impact of new vaping devices on the use of both nicotine and marijuana among school children.

In summary, findings from the 2017–18 CSTS offer much reason for celebration, while also raising new questions about the next phase of the public health campaign. The very low prevalence for all combustible tobacco products shows that it is possible to reduce tobacco use closer to nearly zero, even though it took

many years. Vaping does present a new challenge, and the public health community will have to be creative in developing new strategies in order to succeed in the next phase of tobacco control.

RESOURCES

- Find the *California Student Tobacco Survey Biennial Report 2017-2018* on the California Department of Public Health, California Tobacco Control Branch's website: https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CTCB/Pages/Reports.aspx.
- Contact Los Angeles County's Tobacco Use Prevention Education (TUPE) Coordinator for local resources: www.cde.ca.gov/ls/he/at/countycoordinators.asp.
- View anti-tobacco commercials at www.tobaccofreeca.com/resources.
- Connect students to the California Smokers' Helpline (1-800-NO-BUTTS) for free, evidence-based telephone counseling. Help is available for tobacco users and the people who care about them. Visit www.nobutts.org for more information.
- Download free, print-ready tobacco education materials through the Tobacco Education Clearinghouse of California at: www.tecc.org.

APPENDIX A – 8th Grade Tobacco Use

Highlights

- Few 8th grade students (5.1%) reported using a tobacco product in the last 30 days.
- E-cigarettes were the most prevalent product used (4.5%). The use of all other tobacco products was very low (<1%).
- Over one-third (37.0%) of never using 8th grade students were susceptible to using a tobacco product in the future.
- Eighth grade students reported higher rates of exposure to tobacco smoke in a car compared to exposure to e-cigarette vapor.

The following section summarizes key tobacco use data for 8th grade students in Los Angeles County. Due to different sampling approaches between middle and high school students, where fewer 8th grade students were sampled, data for 8th grade students have been separated from that of high school students.

Tobacco Product Use among 8th Grade Students

Current tobacco use rates are significantly lower than those of high school students; overall, 5.1% of 8th grade students in Los Angeles County reported currently using a tobacco product (compared with 11.6% of high school students). Similar to high school students, e-cigarettes were the most commonly used product (4.5%) among 8th graders, followed by cigarettes, LCC, and hookah (each 0.8%).

Table 25. Prevalence of current tobacco product use among 8th grade students

	Current use N=3042 % (95% CI)
Overall	5.1 (3.4-6.7)
E-cigarettes	4.5 (2.9-6.1)
Cigarettes	0.8 (0.1-1.5)†
LCC	0.8 (0.3-1.3)†
Big cigars	0.4 (0.0-0.7)†
Hookah	0.8 (0.4-1.2)
Smokeless	0.1 (0.0-0.2)†

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

Susceptibility to Tobacco Product Use among 8th Grade Students

Table 26 shows that over one-third (37.0%) of 8th grade students who have not tried a tobacco product were susceptible to trying one in the future (see Definitions Used in this Report). Similar to high school students, a higher percentage of 8th graders were most susceptible to hookah (27.7%), e-cigarettes (25.9%), and cigarettes (22.0%).

Table 26. Prevalence of susceptibility to future product use among never using 8th grade students

	Never users of the product	
	N	% (95% CI)
Overall	2420	37.0 (34.8-39.3)
E-cigarettes	2224	25.9 (23.6-28.3)
Cigarettes	2614	22.0 (19.9-24.0)
LCC	2656	19.9 (17.4-22.3)
Big cigars	2760	15.6 (12.6-18.6)
Hookah	2605	27.7 (23.5-32.0)
Smokeless	2797	9.9 (8.4-11.4)

Secondhand Exposure to Vapor and Smoke among 8th Grade Students

Table 27 reports 8th grade students' exposure to secondhand vapor or smoke in a room (see Definitions Used in this Report). Similar to high school students, 8th grade students reported greater exposure to cigarette and LCC smoke compared to e-cigarette vapor (30.9% vs. 20.4%, respectively). However, middle school students were significantly less likely to be exposed to overall e-cigarette vapor, compared to high school students (20.4% vs. 31.5%, respectively). Eighth grade students were more likely to be exposed in a room than in a car.

Table 27. Prevalence of exposure in the last 30 days to e-cigarette vapor or tobacco* smoke by location among 8th grade students

		Any in the last 30 days
Exposure to e-cigarette vapor	**N**	**% (95% CI)**
Overall	2903	20.4 (16.2-24.6)
Room	2875	19.2 (15.0-23.3)
Car	2875	10.3 (8.4-12.3)
Exposure to tobacco* smoke		
Overall	2924	30.9 (27.7-34.2)
Room	2853	27.9 (24.7-31.1)
Car	2874	13.0 (10.4-15.5)

*Two products: cigarettes and LCC

Table 28 presents students' exposure to e-cigarette vapor or tobacco smoke in a room based on their home type. There were no significant differences in exposure to secondhand vapor or smoke in a room according to home type.

Table 28. Prevalence of exposure in the last 30 days to e-cigarette vapor and tobacco* smoke in a room by home type among 8th grade students

		E-cigarette vapor		Tobacco* smoke
	N	% (95% CI)	N	% (95% CI)
Overall	2875	19.2 (15.0-23.3)	2853	27.9 (24.7-31.1)
House	1353	22.0 (16.6-27.4)	1342	29.4 (25.0-33.9)
Multi-unit housing	941	18.1 (13.8-22.4)	930	28.4 (25.3-31.5)
Other	158	18.3 (11.9-24.6)	151	26.6 (18.7-34.5)
Not specified	274	13.5 (6.6-20.5)	279	23.0 (16.3-29.6)

*Two products: cigarettes and LCC

APPENDIX B – Marijuana

Highlights

- One-third (33.6%) of high school students in Los Angeles County reported having tried marijuana, while 15.0% reported using it in the last 30 days.

Marijuana Use among High School Students

Marijuana is described in the 2017-18 CSTS as "Marijuana (including blunts and edibles): Commonly known as cannabis, weed, pot, hash, grass, THC, or CBD. It can be smoked (joint, blunt, bong), vaped, or eaten (baked goods, candies)." Table 25 presents the prevalence of ever and current marijuana use among high school students by demographic characteristics.

In Los Angeles County, the rate of currently using marijuana (15.0%) is higher than the current use rates for all tobacco products. There is no difference when comparing current use rates of marijuana between females and males. Notably, students who identified their gender in another way or declined to report their gender had significantly higher marijuana use rates (23.3% and 25.4%, respectively). Asian students had the lowest rates of marijuana use (6.2%) of all racial/ethnic groups. The prevalence of marijuana use was higher among 12th grade students relative to 10th grade students (18.5% vs. 12.1%, respectively).

Table 29. Prevalence of marijuana use by gender, race/ethnicity, and grade

		Ever use	Current use
	N	% (95% CI)	% (95% CI)
Overall	23890	33.6 (31.0-36.2)	15.0 (13.8-16.2)
Gender			
Male	10319	30.6 (27.0-34.2)	13.8 (12.3-15.3)
Female	10756	33.8 (30.9-36.6)	13.9 (12.4-15.4)
Identified in Another Way	629	44.7 (39.9-49.5)	23.3 (19.3-27.2)
Declined to Answer	1963	45.4 (42.5-48.3)	25.4 (21.7-29.0)
Race/Ethnicity			
White	2228	32.5 (28.8-36.3)	19.8 (15.9-23.7)
Black	768	40.7 (35.5-46.0)	19.3 (14.7-23.9)
Hispanic	14497	34.6 (31.3-37.9)	13.8 (12.6-14.9)
Asian	2058	13.7 (11.8-15.5)	6.2 (4.9-7.5)
Other	569	28.5 (22.2-34.9)	15.3 (10.0-20.7)
Multiple	1257	34.9 (31.5-38.3)	17.6 (14.3-20.8)
Declined to Answer	2043	42.2 (39.0-45.4)	23.5 (19.8-27.2)
Grade			
Grade 10	12857	29.3 (25.8-32.9)	12.1 (11.0-13.2)
Grade 12	11033	38.7 (36.3-41.1)	18.5 (16.8-20.2)

Note: Race/Ethnicity category Other includes Native Hawaiian and Other Pacific Islander, American Indian or Alaska Native, and other non-standard entries.

APPENDIX C – Survey Methodology

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 2015–16 CSTS was the first to be administered by the University of California, San Diego (UCSD). For this 2017–18 CSTS, Local Lead Agencies (LLA) of the California Tobacco Control Program (CTCP) were given the opportunity to subcontract with UCSD to analyze survey data within the LLA's health jurisdiction.

This appendix provides a brief overview of survey methodology for the 2017–18 CSTS specific to Los Angeles County. Additional details of the statewide report can be found in the *2017–18 California Student Tobacco Survey* Report by SH. Zhu, et al.[9] Statewide survey methods can be found in the *Technical Report on Analytical Methods and Approaches Used in the California Student Tobacco Survey 2017–18* by SH. Zhu, et al.[10]

Survey Content

The survey questionnaire was designed to assess use of, knowledge of, and attitudes toward cigarettes and emerging tobacco products (e.g., e-cigarettes, hookah, cigarillos). It also included questions about use of and attitudes toward marijuana and alcohol. The survey contained 134 questions, including topics such as: awareness of and use of different tobacco products; history and patterns of tobacco use; tobacco purchasing patterns; knowledge of and participation in school tobacco prevention or cessation programs; perceptions of tobacco use (i.e., social norms); awareness of advertising; and susceptibility to future tobacco use. Los Angeles County augmented the survey with additional county-specific questions (see Appendix E).

Participation

To increase participation in the CSTS, schools were provided a $500 Amazon 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, and, in some cases, other school staff proctored. UCSD provided proctors for schools that required additional support. Teachers and proctors were provided with directions for administering the survey. UCSD staff were available to answer questions from teachers and proctors.

The 2017–18 CSTS was administered online and took between 15 and 25 minutes to complete. The online survey included programmed skip logic to reduce participant burden. In other words, students were only asked survey questions based on their previous answers, allowing them to skip questions not relevant to their experiences. Answers were not mandatory, although an error message of "Oops, you didn't answer" appeared if the question was unanswered. The student was allowed to move forward and skip the question if desired. The 2017–18 CSTS also included the response option *I prefer not to answer* for all questions.

Student participation was voluntary and anonymous. Consent procedures were consistent with school district guidelines. In a passive consent protocol, parents can opt their children out of the survey if they do not want them to participate. In an active consent protocol, only students who return a consent form signed by the parent can participate in the survey. All participating districts accepted passive consent.

Consent forms were distributed to parents via the students one week before the survey. Spanish forms were available as needed. In addition to obtaining consent from parents, students were also asked to give their assent to participate in the survey.

Survey Sample 2017–18 CSTS

Table 30 provides information about the number of schools and students that participated in the 2017–18 survey for each of the three grades. The total sample included 28,071 students from 75 schools. Grades 10 and 12 are considered high school, and grade 8 is considered middle school.

Table 30. Numbers of schools and students participating, Los Angeles County middle schools vs. high schools

	Middle schools (8th)	High schools (10th & 12th)	Total
Number of schools	13	62	75
Number of students	3003	25068	28071

Sampling Strategy

Los Angeles County deferred to the statewide CSTS sample for this report. The statewide sampling strategy 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. Los Angeles County was considered its own region (Region 15) in the 2017–18 CSTS. Sampling used the probability proportional to size (PPS) method and stratified by region with oversampling of less densely populated regions, African American students, and schools that received Tobacco-Use Prevention Education program funding.

Participating middle schools were encouraged to survey all 8th graders, while high schools were encouraged to survey all 10th and 12th graders. For the minority of schools that chose not to survey all students in the selected grades (10.7% of schools), classrooms within a grade were randomly sampled for participation.

Analysis

Los Angeles County surveyed an adequate sample size to allow for county-level data. All estimates include 95% confidence intervals. The 2017–18 CSTS provided the option *I prefer not to answer* for all questions. Rates of endorsement varied considerably. It is important to note that it appears as though selection of this response option was not random; questions that were difficult to understand or more personal in nature tended to have higher endorsement of this response option. Respondents that declined to answer also tended to have high rates of tobacco use.

The CSTS design utilized stratified random sampling and proper weighting to provide stable statewide prevalence rates. Data are weighted to account for the study's sampling design, and the weighting procedure is described elsewhere.[10] Los Angeles County's Tobacco Control and Prevention Program deferred to the statewide sampling strategy. In addition, as more than 5% of California's students participated in the survey, a finite population correction was applied in the analyses. This correction will reduce the variance, resulting in narrower confidence intervals for all estimates.

Race/Ethnicity

The racial/ethnic background of students was determined using two primary questions. The first asked about Spanish or Hispanic (Latino) origin (i.e., ethnicity), and the second asked participants to indicate how they describe themselves (i.e., race) by marking all that apply: *American Indian or Alaska Native*, *Asian*, *Black or African American*, *Native Hawaiian or Other Pacific Islander*, *White*, or *Other*. The *Other* ethnic category included non-standard entries (such as Middle Eastern or Italian). Due to the small sample size of Native Hawaiian or Other Pacific Islander, American Indian or Alaska Native, and Other groups, they were combined to form the *Other* category. The response option *I prefer not to answer* was also provided for both questions. In line with other surveys, students identifying as *Hispanic* are labeled as such regardless of the other races selected. Students selecting multiple races were grouped as *Multiple* in tables that include racial/ethnic categories.

With the exception of the *I prefer not to* answer response option, race/ethnicity categories of the CSTS are similar to those used by the California Department of Education (CDE), allowing us to compare the prevalence of each race/ethnicity (Table 31). In many cases, the prevalence of each race/ethnicity is similar between the CSTS and CDE enrollment data. Of note, the prevalence of *Multiple* race is far higher in the CSTS than reported by CDE (5.7% vs. 1.9%, respectively). One possible reason for the difference is that CSTS is based on student self-reporting, whereas the CDE is based on parent reporting 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 identified between the CSTS and CDE, student responses were not weighted by race/ethnicity. Given the ethnic diversity of Los Angeles County, and the increasing number of people who identify themselves as two or more races,[11] the issue of how to analyze race/ethnicity data will continue to be relevant for the CSTS.

Table 31. Prevalence of race/ethnicity categories in the CSTS and CDE enrollment data

	N=27513	CSTS Sample (%)	CDE Enrollment (%)
NH-White	2591	9.4	14.1
NH-Black	876	3.2	7.6
Hispanic	16873	61.3	64.1
NH-Asian	2356	8.6	10.8
NH-AI/AN	48	0.2	0.3
NH-NHOPI	119	0.4	0.4
NH-Other	557	2.0	0.9
NH-Multiple	1573	5.7	1.9
Declined to Answer	2520	9.2	--

Note: Race/ethnicity data above are unweighted and should not be compared with weighted estimates throughout the 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 32 compares how individuals are labeled using usual methods as to whether they endorse a given race at all. It is clear that students tend to endorse multiple responses, and in particular, underrepresented races. For example, under the usual classification of labeling, the number of Black students is 876 (i.e., non-Hispanic Black who did not endorse any other racial identity). However, there were more than three times as many students who indicated their race was Black (including those who also indicated they were Hispanic or who selected at least one other racial

category). This phenomenon is even more striking for Native Hawaiian or Other Pacific Islanders (n=119 vs. 982, depending on the categorization strategy) and for American Indian or Alaska Natives (n=48 vs. 1,424).

Table 32. Prevalence of labeled and endorsed race/ethnicity

	Labeled		Endorsed	
	N=27513	**(%)**	**N=27513**	**(%)**
White	2591	9.4	6861	25.1
Black	876	3.2	2442	8.9
Hispanic	16873	61.3	16873	61.4
Asian	2356	8.6	3845	14.1
AI/AN	48	0.2	1424	5.2
NHOPI	119	0.4	982	3.6
Other	557	2.0	11785	43.2
Multiple	1573	5.7	0	--
Declined to Answer	2520	9.2	5487	20.2

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

APPENDIX D – County-specific Questions

Participation

Los Angeles County was given the opportunity to augment the 2017–18 CSTS with additional questions at the end of the survey (see *Los Angeles County–specific Questions* below). Five questions on environmental influences and tobacco use behavior specifically for the county's students were included. Respondents were asked about their home type and, if they had used in the past 30 days, whether they had used inside their home. All students were asked whether they were exposed to outside smoke drifting into their homes. Surveys were available in English and Spanish, administered online, and used programmed skip logic to reduce participant burden.

Out of the 75 Los Angeles County schools that participated, 73 schools (61 high schools and 12 middle schools) provided students with the county-specific questions; two schools (one high and one middle) had surveyed before the additional questions were programmed. This was due to the delay of receiving the county-specific questions. Only students from those schools who were asked the county-specific questions were included in the analysis, and the sample size was still large enough to provide county-specific estimates for those questions.

Table 33. Numbers of schools and students that received county-specific questions, Los Angeles County middle schools vs. high schools

	Middle schools (8th)	High schools (10th & 12th)	Total
Number of schools	12	61	73
Number of students	2858	24307	27165

Los Angeles County-specific Questions

Students from Los Angeles County schools received the following additional questions after the last question in the CSTS survey:

LAC1. Do you currently live in...

A. A house that is not attached to another house
B. An apartment, condominium, or townhouse that shares a wall with another unit
C. Some other type of housing
D. I don't know
E. I prefer not to answer

LAC2. On how many of the past 7 days did you smell tobacco smoke from someone else's cigarette, cigar, or pipe drifting into your home from nearby apartments or from outside?

A. 0 days
B. 1 days
C. 2 days
D. 3 days
E. 4 days
F. 5 days
G. 6 days
H. All 7 days
I. I prefer not to answer

LAC3. You mentioned earlier that you smoke cigarettes. In the last 30 days, have you smoked in your home?

A. Yes
B. No
C. I prefer not to answer

LAC4. You mentioned earlier that you vape e-cigarettes (vapes, e-hookah, hookah pen). In the last 30 days, have you vaped e-cigarettes in your home?

A. Yes
B. No
C. I prefer not to answer

LAC5. You mentioned earlier that you use marijuana. In the last 30 days, have you smoked or vaped marijuana in your home?

A. Yes
B. No
C. I prefer not to answer

APPENDIX E – Supplementary Tables

Table A. Prevalence of ever and current use of tobacco products

	Ever use N=24903 % (95% CI)	Current use N=24891 % (95% CI)
Overall	35.0 (32.5-37.6)	11.6 (10.1-13.1)
E-cigarettes	30.3 (27.5-33.1)	10.0 (8.4-11.6)
Cigarettes	10.1 (8.6-11.6)	1.7 (1.4-2.0)
LCC	6.9 (6.1-7.8)	2.0 (1.7-2.4)
Big cigars	3.5 (2.6-4.4)	0.7 (0.4-1.0)
Hookah	9.4 (8.3-10.5)	1.7 (1.4-2.1)
Smokeless	1.6 (1.2-2.0)	0.4 (0.3-0.6)

Table B. Proportion using flavored tobacco products among current users of a given tobacco product

		Flavored product use
	N*	% (95% CI)
E-cigarettes	2318	80.7 (77.3-84.1)
Cigarettes	412	57.9 (50.1-65.7)
LCC	435	87.4 (82.4-92.4)
Big cigars	143	69.5 (64.0-75.1)
Hookah	431	87.5 (81.3-93.8)
Smokeless	93	75.2 (66.3-84.0)

*As some participants used more than one tobacco product, the sum of sample sizes for each product is greater than the overall sample size.

Table C. Susceptibility to future tobacco use among never users

	Never users of the product	
	N	% (95% CI)
Overall	16299	40.4 (39.3-41.5)
E-cigarettes	16081	26.2 (25.1-27.4)
Cigarettes	20887	23.7 (22.8-24.7)
LCC	21531	21.4 (20.6-22.2)
Big cigars	22565	20.4 (19.4-21.4)
Hookah	20118	38.6 (37.2-39.9)
Smokeless	23292	10.7 (10.1-11.3)

Table D. Prevalence of complete home bans on e-cigarette vaping or tobacco* smoking by use status

		Complete home ban
Vaping Ban	**N**	**% (95% CI)**
Overall	21569	79.8 (78.6-80.9)
Never vapers	15362	82.7 (81.5-84.0)
Former vapers	3640	76.9 (73.6-80.2)
Current vapers	1938	64.0 (61.5-66.4)
Smoking Ban	**N**	**% (95% CI)**
Overall	21861	85.1 (84.1-86.1)
Never smokers	19277	86.0 (85.2-86.8)
Former smokers	1914	81.7 (79.4-83.9)
Current smokers	569	71.7 (65.1-78.3)

*Tobacco smoke and corresponding use status were based on two products: cigarettes and LCC.

Table E. Prevalence of housing types in Los Angeles County

		House	Multi-unit housing	Other	Not specified
	N	**% (95% CI)**	**% (95% CI)**	**% (95% CI)**	**% (95% CI)**
Overall	23878	48.9 (44.4-53.3)	31.4 (27.2-35.6)	5.4 (4.7-6.0)	14.4 (12.6-16.2)

Abbreviations: Not specified = “I prefer not to answer” and “I don’t know” answer choices.

Table F. Prevalence of exposure in the last 30 days to e-cigarette vapor and tobacco* smoke in a room and car

	E-cigarette vapor		Tobacco* smoke	
	N	**% (95% CI)**	**N**	**% (95% CI)**
Exposure in a room	22981	29.5 (25.9-33.0)	22871	30.9 (29.1-32.7)
Exposure in a car	22958	18.5 (16.3-20.8)	23026	14.9 (14.0-15.8)

*Tobacco smoke and corresponding use status were based on two products: cigarettes and LCC.

Table G. Perceived ease of acquiring e-cigarettes and cigarettes by use status

	Overall		Never user of the product		Former user of the product		Current user of the product	
	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)	N	% (95% CI)
Any of the below	22795	64.2 (62.1-66.3)	15784	56.8 (54.7-58.9)	4547	75.9 (73.6-78.1)	2352	88.5 (86.6-90.5)
E-cigarettes	22596	57.3 (54.8-59.8)	15715	48.5 (46.1-50.9)	3928	72.5 (70.3-74.8)	2209	85.4 (82.5-88.4)
Cigarettes	22557	48.4 (46.8-50.1)	20162	45.9 (44.4-47.5)	1670	64.8 (61.5-68.1)	375	86.2 (81.6-90.8)

REFERENCES

1. U.S. Census Bureau QuickFacts: Los Angeles County, California. https://www.census.gov/quickfacts/fact/table/losangelescountycalifornia/PST045218. Accessed June 17, 2019.

2. California Department of Education. Enrollment by Schoolâ??Student & School Data Files (Downloadable). http://www.cde.ca.gov/ds/sd/sd/filesenr.asp. Published May 17, 2016. Accessed October 17, 2016.

3. Choi SK, Baams L, Wilson BDM. *LGBTQ Youth in California's Public Schools: Differences Across the State*. Los Angeles, CA: The Williams Institute; 2017.

4. Ajzen I. The theory of planned behavior. *Organ Behav Hum Decis Process*. 1991;50(2):179-211. doi:10.1016/0749-5978(91)90020-T

5. 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.

6. Health Effects of Outdoor SHS. Los. http://publichealth.lacounty.gov/tob/pdf/SHS%20Flyer.pdf. Accessed May 10, 2019.

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

8. McDaniel PA, Smith EA, Malone RE. The tobacco endgame: A qualitative review and synthesis. *Tob Control*. August 2015:tobaccocontrol-2015-052356. doi:10.1136/tobaccocontrol-2015-052356

9. Zhu S-H, Cummins S, Zhuang Y, et. al. *California Student Tobacco Survey 2017-2018: Results of the Statewide Student Survey, Grades 8, 10, and 12.* San Diego, CA: Center for Research and Intervention in Tobacco Control (CRITIC), University of California, San Diego; 2019.

10. Zhu S-H, Gamst A, Zhuang Y-L, et al. *Technical Report on Analytic Methods and Approaches Used in the California Student Tobacco Survey 2017-2018*. San Diego, CA: Center for Research and Intervention in Tobacco Control (CRITIC)

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