Brief Report: Adolescent tobacco use and exposure: 2008 & 2013

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Objective

This report describes changes in tobacco use indicators from 2008 to 2013 and highlights disparities in tobacco use behaviors and exposure to secondhand smoke in 2013.

Background

The 2008 data for this report come from the Healthy Kids Colorado Survey on Tobacco and Health (HKCS-TH). The survey was first conducted in 2001 and repeated in the fall of 2006 and 2008. In each year, students in a stratified random sample of Colorado public schools were randomly chosen to represent the statewide student population of middle school and high school students. The survey included questions on cigarette and non-cigarette tobacco use, quitting, access to cigarettes, secondhand smoke exposure and susceptibility to smoking initiation.

The 2013 data for this report come from the Healthy Kids Colorado Survey (HKCS). A unified version of the survey was launched in 2013, incorporating the HKCS-TH, and will be repeated in odd-numbered years, with the next administration in fall 2015.

The HKCS is supported by the Colorado Department of Public Health and Environment, Colorado Department of Education, and Colorado Department of Human Services. The Community Epidemiology & Program Evaluation Group at the University of Colorado Anschutz Medical Campus implemented the HKCS in 2013. The HKCS is a voluntary survey that collects self-reported health information from Colorado middle and high school students, grades 6-12. The survey includes the Centers for Disease Control and Prevention's Youth Risk Behavior Surveillance (YRBS) core questions and collects anonymous student information on multiple health topics, as well as student attitudes and perceptions that address prevention and risk and protective behaviors. Topics include weight, nutrition, physical activity, suicide, bullying, mental health, tobacco, alcohol, marijuana, drugs, sexual health (high school only), other health topics and youth engagement in school and their community. The 2013 HKCS results represent Colorado's middle and high school populations both statewide and for twenty-one health statistics regions.

Schools, local public health agencies, community partners, researchers, state agencies, foundations and students use the HKCS results to assess the status of youth health and behaviors. The primary use is to identify health priorities in order to better implement school- and community-based strategies to improve and maintain the health of youth across Colorado. Research consistently demonstrates that health affects students' ability to learn and succeed in school.

Methods

Surveys were completed by students from a random sample of selected schools and randomly selected classrooms. More than 21,000 students from 140 schools participated in 2008, and 224 schools and more than 40,000 randomly students participated in 2013. Results are weighted to represent the state population as well categories of sex, grade, and health statistics region.

The current report compares tobacco use indicators from 2008 to 2013 for middle school and high school. The report also highlights findings from 2013 including gender and ethnic/racial disparities. Findings do not include alternative schools unless specifically noted. Significant differences are noted and appear in bold typeface. Non-overlapping 95% confidence intervals denote a significant difference but there can be a significant difference even with slightly overlapping confidence intervals. Thus, significant differences between groups, and between estimates over time, were tested using a Rao-Scott chi-square test and value of p <.05. Confidence intervals are reported (see Appendix for more information about confidence intervals).

Indicators of Tobacco Use, Access, and Exposure, 2008 to 2013

High School Students, 2008 to 2013

High school students were significantly less likely in 2013 than in 2008 to have ever smoked a whole cigarette or to have smoked a cigar or little cigar in the past month (Table 1). Other tobacco use measures [current (past-30-day) cigarette use, current smokeless tobacco use, and current cigar use] were statistically unchanged during the period. The proportion of students currently smoking cigarettes who tried to quit in the past year also remained unchanged.

Table 1. Indicators of Tobacco Use Among High School Students, 2008 to 2013, Colorado			
	2008 % (95% CI)	**2013** % (95% CI)	**Significant change?**
Ever smoked a whole cigarette	30.8 (29.2-32.3)	**21.8** (20.6-23.0)	yes, decline
Current cigarette use (past 30 days)	11.9 (10.6-13.2)	10.7 (9.8-11.6)	No
Current smokeless tobacco use (past 30 days)	7.4 (6.3-8.5)	6.4 (5.8-7.1)	No
Current cigar/little cigar use (past 30 days)	15.0 (13.5-16.5)	**9.9** (8.9-10.9)	yes, decline
Tried to quit in the past year (among current smokers)[a]	51.7 (48.8-54.6)	50.8 (47.4-54.3)	No
Easy or very easy to get cigarettes (only among those 17 years old and younger) [a]	76.8 (75.2-78.5)	**58.6** (56.7-60.4)	yes, decline

[a] Slight variation in question wording from 2008 to 2013; question is limited those 17 years old and younger
CI: confidence interval

Middle School Students, 2008 to 2013

Several tobacco use indicators significantly declined between 2008 and 2013 among middle school students (Table 2). Ever smoking a cigarette declined from 14.4% in 2008 to **9.6%** in 2013. Current smokeless tobacco use and current cigar/little cigar also significantly declined. Although the prevalence estimate of current cigarette smoking is lower in 2013, the change is not statistically significant.

Table 2. Indicators of Tobacco Use Among Middle School Students, 2008 to 2013, Colorado			
	2008 % (95% CI)	**2013** % (95% CI)	**Significant change?**
Ever smoked a cigarette	14.4 (11.5-17.3)	**9.6** (8.3-10.9)	yes, decline
Current cigarette use (past 30 days)	2.7 (1.9-3.4)	2.2 (1.6-2.8)	no
Current smokeless tobacco use (past 30 days)	2.3 (1.5-3.1)	**1.2** (.9-1.6)	yes, decline
Current cigar/little cigar use (past 30 days)	3.5 (2.4-4.5)	**1.6** (1.2-2.0)	yes, decline

Exposure to Secondhand Smoke among High School Students, 2008 to 2013

Adolescents may be exposed to secondhand smoke (SHS) by family members or friends. In 2013, high school students were significantly less likely than in 2008 to report having been exposed to SHS at home or by a parent in a car. There were changes to the question wording from 2008 to 2013; in 2008, the indoor question asked about being "inside a room with a parent or guardian who was smoking …," while in 2013 the question asked about being "inside your home while someone was smoking …" Both indoor and car exposure questions asked only about cigarettes in 2008 but asked in 2013 about cigarettes, cigars and pipes. Thus, the questions were more inclusive in 2013 which might lead to a higher report of secondhand smoke exposure, yet there were significant declines in both indicators.

Table 3. Secondhand Smoke Exposure among High School Students, 2008 to 2013, Colorado			
	2008 % (95% CI)	**2013** % (95% CI)	**significant change?**
Been home while someone smoked 1+ days past 7 days [a]	20.3 (18.3-22.4)	**15.5** (14.4-16.6)	Yes, decline
Been in car while parent smoked 1+ days past 7 days [a]	20.0 (17.9-22.0)	**13.2** (12.1-14.3)	Yes, decline

[a] Variation in question wording from 2008 to 2013

Tobacco Use and Exposure among High School Students, 2013
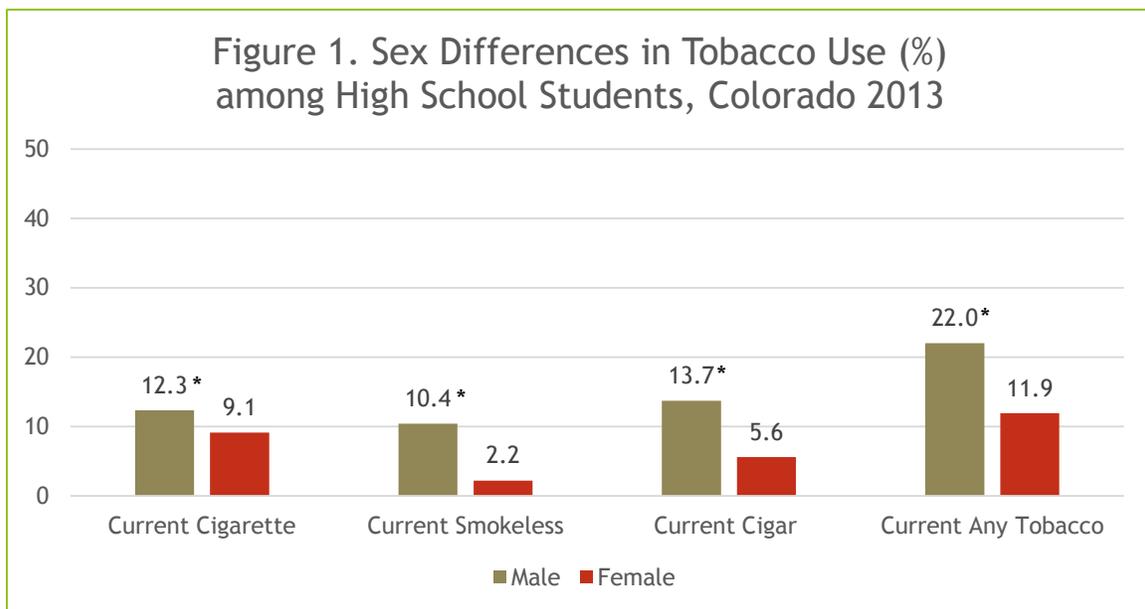
Indicators of Tobacco Use, 2013

In 2013, 21.8% of high school student reported they had ever smoked a whole cigarette and 10.7% had smoked on one or more of the past 30 days. Past month use of smokeless tobacco products was 6.4% and 9.7% reported past month use of a cigar cigarillo, or little cigar.

Use of electronic cigarettes was asked for the first time in 2013 and 15.1% of high school students reported ever trying e-cigarettes. Almost half, 46.8% reported they had never tried other tobacco products (i.e., hookah, snus, dissolvables, e-cigarettes, and bidis).

Sex Differences in Tobacco Use, 2013

In 2013, a significantly higher proportion of high school males than females reported current cigarette use, smokeless tobacco use, and cigar use (Figure 1.) The most striking sex difference between males and females was in smokeless tobacco use, where **10.4**% of males and 2.2% of females reported past month use.

In 2013, a total of 15.1% of high school student reported having ever tired an e-cigarette, which was significantly higher among males (**17.6**%) than females (12.4%). More females (48.4%) than males (45.5%) have never tried other tobacco products including hookah, snus, dissolvables, e-cigarettes, or bidis.

Figure 1. Sex Differences in Tobacco Use (%) among High School Students, Colorado 2013

Category	Male	Female
Current Cigarette	12.3*	9.1
Current Smokeless	10.4*	2.2
Current Cigar	13.7*	5.6
Current Any Tobacco	22.0*	11.9

* indicates significant difference between males and females

Sexual Orientation Differences in Tobacco Use, 2013

High school students who reported their sexual orientation as gay, lesbian or bisexual were significantly more likely to report current cigarette use (**30.8%**) than students who reported their sexual orientation as heterosexual or straight (9.1%). Gay, lesbian or bisexual high school students were also more likely to report currently using smokeless tobacco (**9.4%** vs. 6.1%), current cigar use (**19.9%** vs. 9.2%), and having ever tried an e-cigarette (**30.5%** vs. 14.8%).

Racial and Ethnic Differences in Tobacco Use, 2013

American Indian/Alaska Native high school students had the highest rates of current cigarette use and smokeless tobacco use in 2013, which was significantly higher than White students (Figure 2). High schools students of multiple race/ethnicity ("other") had significantly higher user of cigarettes, smokeless tobacco, and current cigar use compared to White students. Asian American and Hispanic high school students had significantly lower rates of smokeless tobacco use than White students.

Figure 2. Racial and Ethnic Differences in Tobacco Use among High School Students, Colorado 2013
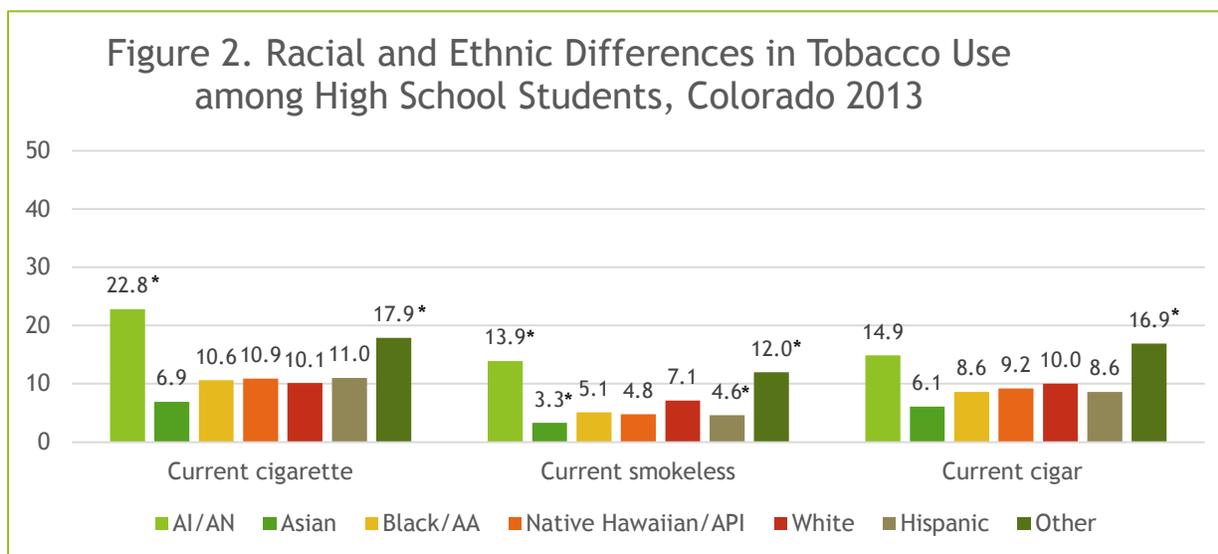
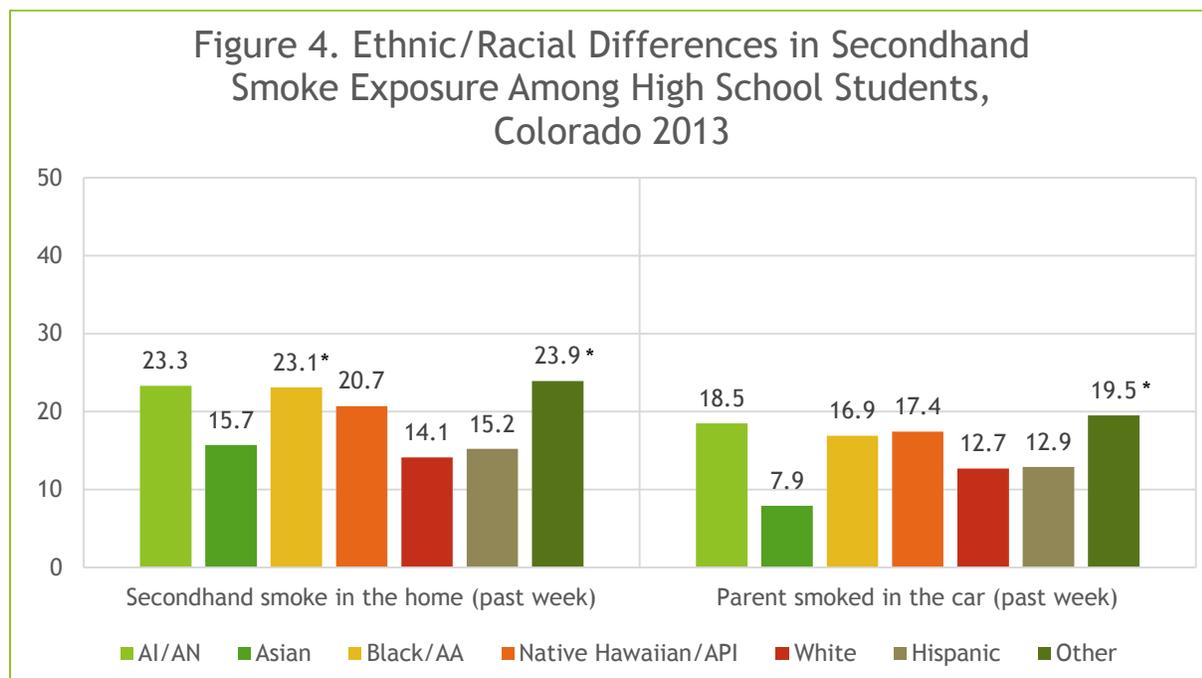* indicates significant difference compared to White students

As compared to White students, American Indian/Alaska Native and "other" race/ethnicity high school students had significantly higher rates of having ever tried e-cigarettes (Figure 3). Asian and Black/African American high school students had significantly lower rates than White students of having ever tried e-cigarettes.

Figure 3. Racial and Ethnic Differences In E-Cigarette Use among High School Students, Colorado 2013
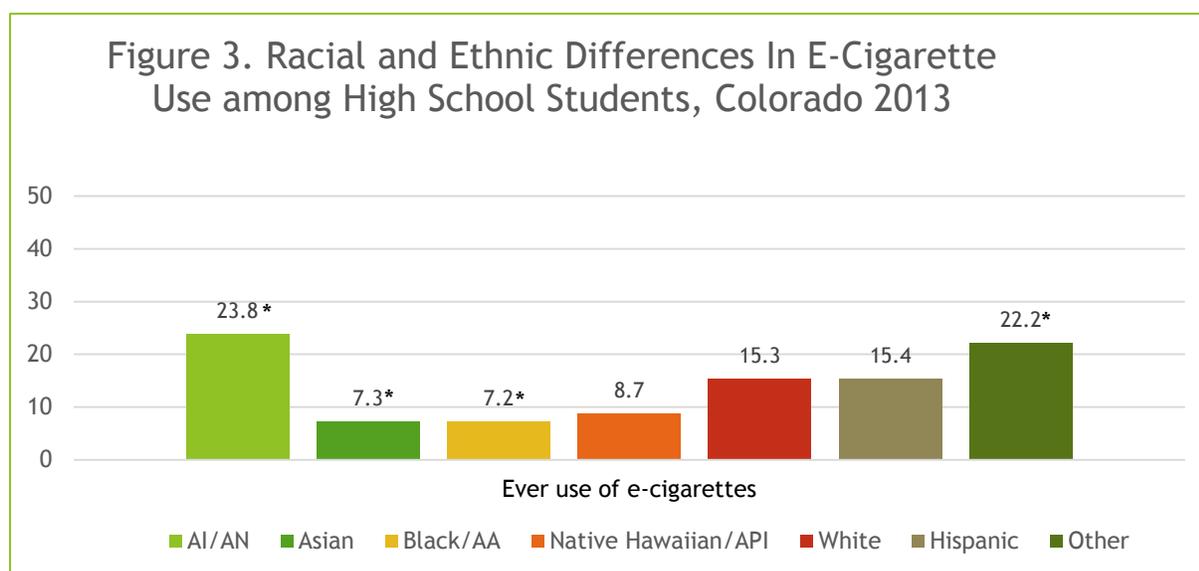
* indicates significant difference compared to White students

Secondhand Smoke Exposure, 2013

About 1 in 6 (15.5%) high school students have been exposed to secondhand smoke in their home in the past week from someone smoking a cigarette, cigar or pipe. Nearly the same proportion (13.2%) were exposed to secondhand smoke in a car while their parent was smoking in the past seven days. Three-quarters of high school students (76.2%) think breathing secondhand smoke is a moderate or great risk. Black/African American high school students and "other" race/ethnicity high school students had significantly higher rates of exposure to secondhand smoke at home than White students in 2013. Those students with "other" race/ethnicity also had significantly higher rates of exposure to secondhand smoke at from a parent in a car than White students.

Figure 4. Ethnic/Racial Differences in Secondhand Smoke Exposure Among High School Students, Colorado 2013

*indicates significant difference with White students

Tobacco Use among Alternative High School Students, 2013

Students who attend an alternative high school reported high rates of ever smoking (**50.6**%), current cigarette smoking (**34.6%**), and current cigar, cigarillo or little cigar use (**20.8%**). Current use of smokeless tobacco use (10.5%) and ever use of electronic cigarettes (28.9%) among alternative high schools students is not statistically different from the general student population. The rates of exposure to secondhand smoke in the home (**26.8**%) and in the car with a parent (**23.7**%) are significantly higher than the general student population. Among alternative high school students who reported current cigarette use, **68.7**% reported trying to quit in the past year, significantly higher than the general student population.

Discussion

Tobacco use indicators showed encouraging declines between 2008 and 2013 among both high school and middle school students. Consistent declines in three of the four indicators among middle school

students are encouraging that there may be future declines in the prevalence of tobacco use in high school as the middle school cohort ages into high school. Parents as well as students are showing progress as indicated by declines in secondhand smoke exposure in the home and car among high school students.

Despite the progress, disparities remain in patterns of use by gender and race/ethnicity and among alternative high school students. When all tobacco products are considered together, **22.0**% of high school males reported using any tobacco product in the past 30 days, almost double the rate of 11.9% among females. American Indian/Alaska Native high school students have the highest rates of tobacco use for cigarettes and smokeless tobacco products, followed closely by students reporting multiple race categories. Current use of cigars is highest among student reporting multiple race categories, followed by American Indian/Alaska Native high school students. There were less dramatic ethnicity/racial differences in secondhand smoke but these indicators suggest that students who identify as Black/African American or multiple race categories may be at increased risk of exposure to secondhand smoke. Students who attend alternative high schools are over three times as likely to be a current cigarette smoker and twice as likely to report current cigar smoking as the general high school student population.

Funding Acknowledgment

Appendix: Measures and Data Interpretation

Measures

Ever smoked cigarettes or other tobacco product: reported having ever smoked a cigarette (or other tobacco product, as applicable). "How old were you when you smoked a cigarette for the first time?" and "Have you ever tried any of these kinds of tobacco? … "Electronic cigarette, also called an e-cigarette"

Current tobacco use: smoked at least 1 cigarette (or other tobacco product as applicable) in the past 30 days. "During the past 30 days, on how many days did you smoke cigarettes?" "During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip, such as Redman, Levi Garrett, Beechnut, Skoal, Skoal Bandits, or Copenhagen?" "During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?" "During the past 30 days, on how many days did you smoke cigars, cigarillos, or little cigars?"

Tried to quit in the past year: Among students who reported current cigarette use, the percentage who ever tried to quit smoking cigarettes during the past 12 months. "During the past 12 months, did you ever try to quit smoking cigarettes?"

Never tried other tobacco products: Percentage of students who have never tried any of these types of tobacco: hookah, snus, dissolvables, e-cigs, bidis. "Have you ever tried any of these kinds of tobacco? Mark each kind of tobacco that you have tried. (Multiple answers are allowed.) Hookah or sheesha (tobacco in a waterpipe); snus (powered tobacco in a small pouch) or other spitless tobacco, such as Taboka, Revel or Skoal Dry; Dissolvable tobacco product, such as strips, sticks or orbs; Electonic cigarette, also called e-cigarette; Bidis (beedees) or Kreteks; I have never tried any of these kinds of tobacco; I don't know what any of these are"

Ease of Access: Percent of students who feel it would be sort of easy or very easy to get cigarettes if they wanted. "If you wanted to get some cigarettes, how easy would it be for you to get some?"

Access to Cigarettes: Among those students less than 18 years old who reported current cigarette use, the percentage who usually got their own cigarettes by buying them in a store or gas station in the past month. "During the past 30 days, how did you usually get your own cigarettes? (Select only one response.) … I bought them in a store such as a convenience store, supermarket, discount store, or gas station."

Secondhand smoke exposure: The percentage of students who reported someone smoked in their home, or parent smoked in the car, while the student was in the home or car in the past 7 days. "During the past 7 days, on how many days were you inside your home while someone was smoking a cigarette, cigar, or pipe?" "During the past 7 days, on how many days were you in a car with a parent or guardian who was smoking a cigarette, cigar, or pipe?"

Confidence intervals

Confidence intervals are used to describe the possible margin of error of an estimated prevalence. This report uses 95 percent confidence intervals. This means that 95 out of 100 times, the "true" prevalence estimate will be contained between the upper and lower limits of that confidence interval. Confidence intervals are directly affected by sample size. If the sample size is small, the confidence interval will be wider (less precise). Conversely, if the sample size is large, the confidence interval will be narrower (more precise). When confidence intervals do not overlap this suggests that a statistically

significant difference does exist between the two prevalence estimates. When confidence intervals overlap this suggests that there is no statistically significant difference between the two prevalence estimates. However, if confidence intervals slightly overlap, there may be a statistical difference between the two populations, but more testing is needed to see if there is a difference.