

Influence of Peer Perception and Survey Location on E-cigarette use in 2021 and 2022 High School Students

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Introduction

- In 2018, over 4.04 million high schoolers (27.1%) in the United States reported e-cigarette use (i.e., any forms of electronic nicotine delivery devices).¹
- E-cigarette exposure can harm brain development and cause cancer and adverse lung health in adolescents, which may lead to asthma and chronic obstructive pulmonary disease.²
- Additionally, e-cigarettes expose users to harmful metals, compounds, and particles through lung inhalation.²
- Adolescent use of nicotine and tobacco products can increase the risk of other drug addiction.²
- During the COVID-19 pandemic (2021), high school students surveyed about e-cigarette use at school self-reported higher levels of use (15.0%) than those surveyed at home (8.2%), which may have resulted from differing impacts of peer pressure on students at school versus home.³
- This study analyzes the association between self-reported high school e-cigarette use, location of survey completion, and perception of friends' acceptance of e-cigarette use.

Figure 1: Various e-cigarette brands have become popular among adolescents



Methods

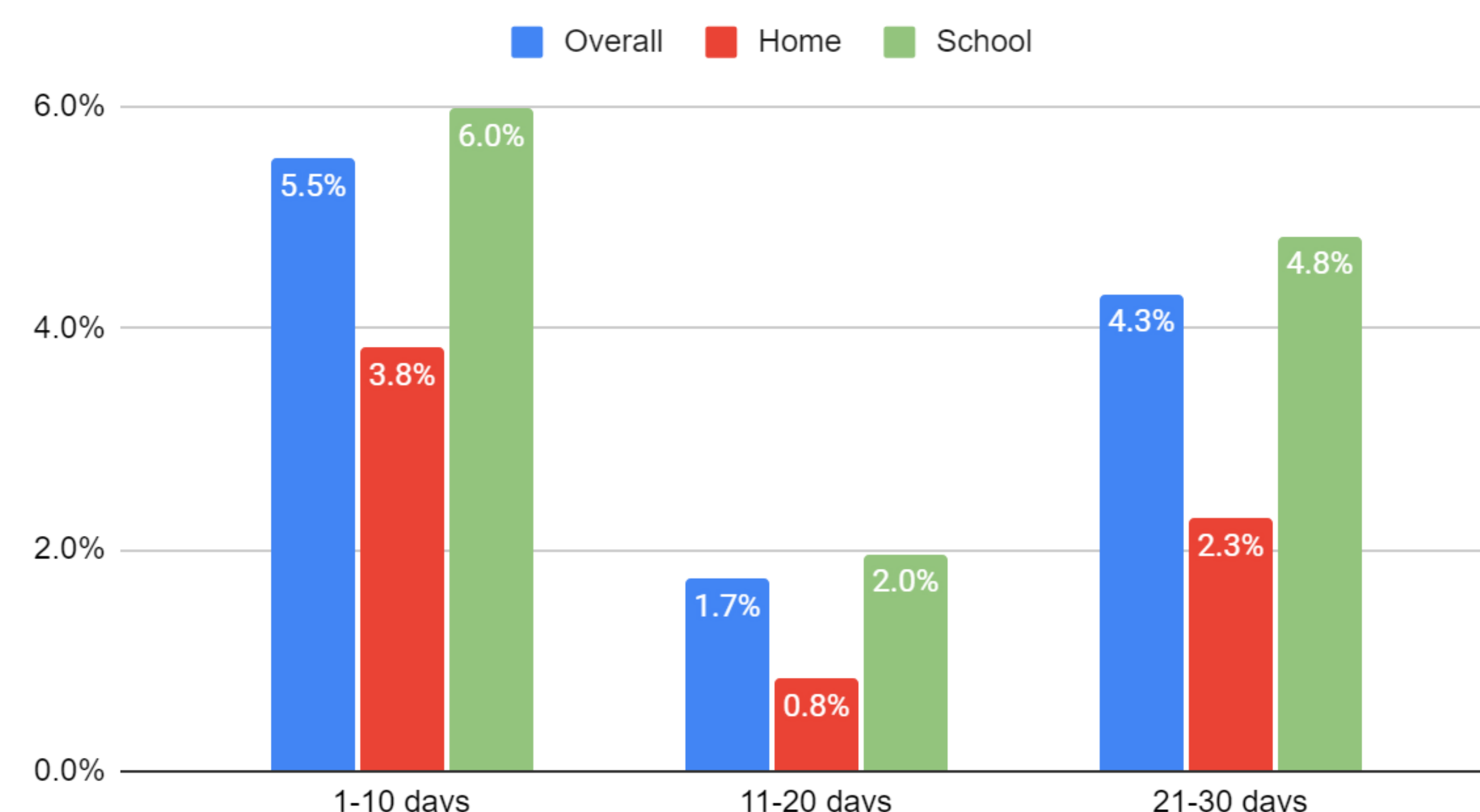
- The sample data includes a combined set of the 2021 and 2022 National Youth Tobacco Survey (NYTS) (N=48,704).
- NYTS is a cross-sectional, nationally-represented youth survey that was completed by students at home and up to 341 schools across the country via computer as of 2021.
- We included measures such as sex, grade, survey location, e-cigarette use, and friend's perception of e-cigarette use in our data analysis.
- Using weighted data, we performed descriptive statistics in Microsoft Excel to characterize the sample and linear regression analysis in SAS to determine the relationship among the measures.

Results

Table 1: Characteristics of the study sample

	Overall n=23,719		Home n=4,870		School n=18,849	
Sex						
Male	50.8%	12,040	46.3%	2,257	51.9%	9,783
Female	48.9%	11,603	53.3%	2,597	47.8%	9,006
Missing	0.3%	76	0.3%	16	0.3%	60
Race/Ethnicity						
Non-Hispanic White	45.8%	10,865	33.5%	1,631	49.0%	9,234
Non-Hispanic Black	13.0%	3,094	19.9%	967	11.3%	2,127
Hispanic	24.8%	5,883	34.9%	1,701	22.2%	4,182
Non-Hispanic Asian	5.8%	1,364	5.2%	251	5.9%	1,113
Non-Hispanic American Indian or Alaska Native	2.6%	615	0.4%	21	3.2%	594
Non-Hispanic Native Hawaiian or Other Pacific Islander	0.4%	105	0.3%	15	0.5%	90
Multiple Races	6.4%	1,529	5.0%	243	6.8%	1,286
Missing	1.1%	264	0.8%	41	1.2%	223
School Grade						
9th	28.8%	6,841	27.5%	1,337	29.2%	5,504
10th	25.2%	5,979	23.4%	1,139	25.7%	4,840
11th	24.4%	5,777	25.3%	1,230	24.1%	4,547
12th	21.6%	5,122	23.9%	1,164	21.0%	3,958
Have you ever used an e-cigarette, even once or twice?						
Yes	27.02%	6,408	22.65%	1,103	28.14%	5,305
No	72.98%	17,311	77.35%	3,767	71.86%	13,544
Friend Perception of E-cigarette Use						
Acceptable	40.7%	9,658	36.3%	1,768	41.9%	7,890

Figure 2: Percentage of students' e-cigarette use frequency by survey location



- The majority of the final sample (n=23,719) reported as male (50.8%), Non-Hispanic White (45.8%), in the 9th grade (28.8%), and non-current smokers (88.4%).
- Of the students that completed the survey at school (n=18,849), the majority of the sample reported as male (51.9%), Non-Hispanic White (49.0%), in the 9th grade (29.2%) and non-current smokers (87.2%).

Results (cont.)

- Of the students that completed the survey at home (n=4,870), the majority of the sample reported as female (53.3%), Hispanic (34.9%), in the 9th grade (27.5%), and non-current smokers (93.1%).
- Linear regression analysis revealed that when taking the survey at home, students whose friends had an acceptable perception of e-cigarette use on average used 1.80 more e-cigarettes (p-value = <0.001) compared to students whose friends did not have an acceptable perception of use.
- When taking the survey at school, students whose friends had an acceptable perception of e-cigarette use on average used 3.01 more e-cigarettes (p-value = <0.001) than those whose friends did not.
- Peer perception has a greater influence on students taking the survey at school, contributing to 1.21 more e-cigarettes used, than students taking the survey at home (p-value = <0.001).

Table 2: Linear regression analysis of current smoking based on sample characteristics

R-Square = 0.074		
	Parameter Estimate	p-value
Non-Hispanic Black	-1.32	<0.001
Hispanic	-0.82	<0.001
Non-Hispanic Asian	-1.32	<0.001
Non-Hispanic American Indian or Alaska Native	0.13	0.617
Non-Hispanic Native Hawaiian or Other Pacific Islander	-0.25	0.673
Multiple Races	-0.31	0.063
Sex	0.19	0.015
Grade	0.5	<0.001
Friend Perception	1.8	<0.001
Location	0.26	0.042
Location * Perception	1.21	<0.001

Discussion

- This study examined the relationship between self-reported high school e-cigarette use, location of survey completion, and perception of friends' acceptance of e-cigarette use.
- Results indicated that overall, peer perception of e-cigarette use had a significant effect on the number of e-cigarettes used for high school students, with acceptable peer perception leading to higher levels of use.
- The findings from this study confirmed Morgane's (Bennet et al, 2023) previous speculation that friend perception of e-cigarette use has a significant influence on high school students' self-reported e-cigarette use.³
- Cessation interventions targeting e-cigarette use in high school students should focus attention on peer reinforcement and peer support groups to help decrease use.
- Future survey administrations should consider how the delivery method affects self-reported responses on peer influence in their survey methodology.