Examining the Association Between Perceived School Safety and Adolescent Electronic Cigarette Use in Washington State High School Students: 2023 Washington State Healthy Youth Survey

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Abstract

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Background: In the United States, adolescent substance use continues to be an important factor in negative health outcomes in adolescents. While previous research has established an association between school climate and adolescent use of alcohol, marijuana, and tobacco, minimal research has been conducted on the influences of school safety on adolescent electronic cigarette (e-cigarette) use in school settings. We assessed the association between perceived school safety and current e-cigarette use amongst 10^{th} and 12^{th} grade students in Washington State, and whether this association was different in migrant adolescents compared to other students.

Methods: This study used cross-sectional data from the 2023 Healthy Youth Survey. The study sample included grade 10^{th} and 12^{th} adolescents. Survey-weighted Poisson regression models adjusting for race, ethnicity, sexual orientation, experienced bullying, and socioeconomic status were used to determine the association between perceived school safety and current e-cigarette use in the past 30 days. A second model was fit with an interaction term between school safety

and adolescent migrant status to determine if there was a difference in burden between migrant adolescents and all other students.

Results: 8,499 10th and 12th-grade students from the 2023 HYS were included in the analyses, with 9.0% reporting current e-cigarette use and 91.0% reporting no current e-cigarette use. The adjusted prevalence ratio of current e-cigarette use was 1.38 (95% CI: 1.18, 1.60) in students who perceived feeling unsafe at school compared to students who felt safe at school. When stratified by migrant status, the observed adjusted prevalence ratio for the association between feeling unsafe at school and current e-cigarette use in both migrant adolescents and non-migrant adolescents was 1.38 ($p = 0.89$).

Conclusion: Feeling unsafe at school was associated with current e-cigarette use in the past 30 days. There was no significant difference in the prevalence of current e-cigarette use when stratified by migrant adolescent status. Future research in Washington state should determine what established factors of safety cause students to perceive feeling unsafe at school, and the influence this has on e-cigarette use in students. While there was no difference in observed adjusted prevalence ratios between migrant and non-migrant adolescents, migrant adolescents should still be considered a high-priority population due to their high-risk status from frequent mobility and discrimination faced in the school system.

Background and Significance

With their relatively recent introduction into the United States (U.S.) marketplace, electronic cigarette (e-cigarette) use among adolescents is a public health concern.[1] E-cigarettes are battery-powered devices that are a common substitution for traditional tobacco forms, allowing users to ingest nicotine, Tetrahydrocannabinol (THC), and other harmful chemicals.[2] The prevalence of adolescent e-cigarette use has fluctuated in the last decade.[3,4] Due to this, it is important to study what drives adolescent e-cigarette use and how to intervene in upstream factors that result in use. Washington state has followed similar fluctuations; from 2012-2014, current e-cigarette use rose amongst grade 10 students from 3.9% to 18.0%, lowered to 12.7% in 2016, and rose to 21.2% in 2018.[5] There was a continued decrease to 7.6% in 2021[6]; however, the cause of these trends is difficult to ascertain as events such as the COVID-19 pandemic and the e-cigarette, or vaping, product use-associated lung injury (EVALI) outbreak impacted substance use behaviors during this time.[7] While more research needs to be conducted on the long-term health impacts of e-cigarettes, adolescent e-cigarette use may be associated with poor health outcomes such as respiratory issues, and other adverse adolescent health behaviors, such as polysubstance use, weapon-carrying, early sexual activity, and mental health distress.[2,8,9] These previously observed associations highlight the need for continued research on factors resulting in adolescents starting e-cigarette use.

Prior research has established that positive school climates, largely defined by the quality of academic achievement, prosocial relationships, physical and emotional safety, and structural environment, are essential for healthy adolescent development.[10] School climates that nurture students can serve as protective barriers to decrease the likelihood of adverse health behaviors and outcomes, such as substance use.[11] One component of school climate, safety, has been defined inconsistently across existing research. Some research defines safety as school violence incidence, access to supportive adults and school support systems, and higher academic achievement; other research defines safety as access to weapons and firearms, and/or

perceptions of peer substance use.[12.13,14] While some studies have investigated the association between school safety and adolescent substance use, minimal research has been conducted between perceived school safety and e-cigarette use. Some research has shown a positive perception of school safety can be associated with reduced cigarette use; however, this study was only limited to one substance, leaving it difficult to determine if these results can be generalized to other substances.[15]

Further, minimal research has been conducted on how school safety can be associated with e-cigarette use in adolescents from agricultural families, also referred to as migrant adolescents. Falling under the Washington State Office of Superintendent of Public Instruction definition, migrant adolescents are considered those that move within 36 months as part of a migratory agricultural family and for economic necessity.[17] Existing research has focused on structural barriers to academic success among migrant adolescents such as high mobility, being stereotyped, and discrimination, but not perceptions of school safety.[18,19] There has also been past emphasis on other substances used by migrant adolescents without a focus on e-cigarette use, which showed migrant adolescents at a higher odds of using alcohol and marijuana.[20] The last decade has continued to see public instances of xenophobia in conjunction with structural racism enabled through policies exclusive of positive immigration reform, all of which can also impact non-immigrant migrants.[21] These experiences and policies can result in how migrant adolescents are discriminated against in the school system, leading to the previously observed trends of higher substance use.[20] Due to these factors, it is crucial to understand the migrant adolescent schooling experience since all youth in the U.S. education system should be guaranteed equal access to educational opportunities by law.[22]

Previous research has established that factors of school safety, such as perceptions of peer substance use[14], can influence personal use.[16] Thus, the primary aim of this study was to determine if e-cigarette use may follow a similar association pattern between perceived school safety and personal substance use. Additionally, the discrimination faced by migrant adolescents

in schools coupled with higher trends in substance use among migrant adolescents led this study to explore current e-cigarette use among migrant adolescents as a potential priority area for the Washington state educational system to address as a secondary aim.

Methods

Study Design and Setting

This study employed a secondary analysis of data from the Washington State Healthy Youth Survey (HYS), a cross-sectional, self-administered survey of adolescents. Administered collaboratively by the Washington State Health Care Authority, Department of Health, Office of Superintendent of Public Instruction, and the Liquor and Cannabis Board, the HYS collects information on various adolescent health behaviors, attitudes and beliefs, and social factors. The results from this survey help guide local and state decisions on policies and programs that promote healthy youth development. Study participation took place throughout Washington state in October and November 2023. The survey was administered by participating schools during a class period through an online survey platform.

Study Participants

The 2023 HYS state sample consisted of a simple random sample of eligible schools and grades that implemented the HYS.[23] The state sample is composed of schools and students that are part of the public school system. The HYS is implemented to students that are in grades six, eight, ten, and twelve. As this study is focusing on high school students, participants from the state sample were included in the study population if they reported being in grade ten or twelve.

Data Collection and Sources

Eligible schools first registered for the 2023 HYS between March through late summer of 2023. Prior to survey implementation in fall 2023, schools provided at least a two-week notice to parents informing them of the survey administration; this allowed parents to opt their youth out of survey participation if desired. Before and throughout the survey, participating students were informed that their responses were anonymous and they could skip survey questions for any

reason. Once the survey implementation window closed, the data were reviewed and cleaned in the winter of 2024 in partnership with Looking Glass Analytics, Inc. The state sample data for this study was obtained through a data-sharing agreement between the University of Washington and the Washington State Department of Health, mediated by Dr. Maayan Simckes, the primary investigator for the HYS. As this is was a de-identified state sample of the full participation of the 2023 HYS, approval through the Washington State Institutional Review Board or the University of Washington Institutional Review Board was not required. However, the overall HYS and all related activities were reviewed and approved by the Washington State Institutional Review Board prior to survey implementation.

During the data review and cleaning process, the state sample goes through a variety of validity checks to ensure the quality of the state sample, several but not all of which are as follows: first, survey responses for each individual survey were assessed for inconsistent answering patterns; as an example, this may include answering to using a specific substance in one survey section, but then answering no substance use of that kind in a different survey section. Second, a metric was included that included a fake substance response option, “brexipentin”. If students answered to using “brexipentin”, their survey submission was removed. Finally, a survey metric is included at the end of the survey which stated “How honest were you in filling out this survey?”. If students responded “Not truthful”, their survey was removed.

Data Measures

Exposure

The exposure of interest for both aims of this study was perceived school safety. Perceived school safety was defined using the HYS metric “I feel safe during school”. Respondents answered either “YES!”, “yes”, “no”, “NO!”. The exposure was dichotomized, with those who did not feel safe at school (answer options “NO!” and “no”) as those in the exposure group.

Outcome

The primary outcome of this study, current e-cigarette use, was measured using the HYS metric “During the past 30 days, on how many days did you use an electronic cigarette, also called e-cigs, device pens, or vape pens?” Respondents selected one option from a range of options that from 0 days to 30 days. Current e-cigarette use was dichotomized to no use vs. any days of use.

Effect Modifier

For the secondary aim, migrant adolescent status was used as an effect modifier using the HYS metric, “Have you or your family moved in the past 3 years to another school district for temporary or season work in agriculture, dairy, or fishing?” Response options consisted of “No”, “Yes”, and “I don’t know”. Those that selected “I don’t know” were considered to not be a migrant adolescent.

Covariates

Potential confounding variables were selected a priori and included self-reported race[24,25], ethnicity,[24,25] sexual orientation,[26,27] experienced bullying,[12,28] and socioeconomic status.[29] These variables were considered as potential confounders due to existing research showing that they were associated with student safety at school and e-cigarette use among adolescents. All potential confounders were tested for collinearity to ensure model stability, and none was found, with all variance inflation factor (VIF) scores below 2.0. All variables were considered “core” questions in the HYS survey, meaning they were asked to all students.

Race categories were not mutually exclusive, meaning respondents could select all options that applied; “American Indian/Alaskan Native”, “Asian”, “Black or African American”, “Middle Eastern”, “Native Hawaiian/Pacific Islander”, “White”, or “Other”. Ethnicity response options consisted of “, “Not Of Hispanic/Latio/Spanish Origin”, and “Not sure”. Those that selected “Not sure” were considered not Hispanic. Sexual orientation categories were also not mutually exclusive and included the following: “Heterosexual/Straight”, “Gay or lesbian”, “Bisexual”,

“Questioning/not sure of my sexual orientation”, “Something else fits better”, and “I don’t know what this question is asking”. Experienced bullying was based on any form of bullying a respondent had experienced in the past 30 days from the time they were taking the survey. Response options included “I have not been bullied”, “Once”, “2-3 times”, “About once a week”, and “Several times a week”. The categories “2-3 times”, “About once a week”, and “Several times a week” were collapsed into a single category, “More Than Once”. Socioeconomic status was measured indirectly using the HYS metric, “*How often in the past 12 months did you or your family have to cut meal size or skip meals because there wasn’t enough money for food?”* Response options consisted of “Almost every month”, “Some months but not every month”, “Only 1-2 months”, and “Did not have to skip or cut the size of meals”. Response options were collapsed to binary categories, “Did not skip a meal” and “Skipped at least one meal”.

Data Analysis

All analyses were computed using RStudio statistical software, version 4.3.2. All participants who provided responses to the exposure, outcome, and identified covariates were part of the study sample. All other students were dropped from the study population due to missing information. Participant demographic characteristics were summarized using study sample counts and survey-weighted percentages for the following variables: race, ethnicity, sexual orientation, gender, experienced bullying, and socioeconomic status. All demographic characteristics are categorical and stratified by the exposure, perceived school safety status. Since two grades are being combined for this analysis, survey weights by grade were applied to account for the difference in grade sizes. The analyses performed in this study used weighted Poisson multivariable regression models to summarize the association between perceived school safety and current e-cigarette use. The primary aim included an unadjusted model to determine the crude association between perceived school safety and current e-cigarette use. An adjusted model was then fit that adjusted for the following covariates: race, ethnicity, sexual orientation, experienced bullying, socioeconomic status, and clustered based on differences in school size.

For the secondary aim, a multivariable-adjusted model was fit stratified by migrant adolescent status with the exposure and outcome, and adjusted for race, ethnicity, sexual orientation, experienced bullying, socioeconomic status and clustered based on school size. All models reported an adjusted prevalence ratio with 95% confidence intervals. A p-value of less than 0.05 was used to indicate statistical significance.

Results

There were a total of 29,109 participants included in the 2023 HYS state sample. After limiting the study population to students in grades 10 and 12, and excluding participants who did not respond to the exposure, outcome, and covariate metrics, the sample size total was 8,499 students, representing 75.5% of grade 10 and 12 students in the HYS state sample. The majority of participants identified as white (68.7%), non-Hispanic (79.8%), straight sexual orientation (72.5%), reported their gender identity as “boy” (48.5%), had not experienced any type of bullying in the past 30 days (84.5%), and reported not having skipped a meal during any month in the previous year (91.2%) (Table 1). 17.6% of study participants reported feeling unsafe at school while the remainder of participants reported feeling safe at school. Of the students who felt unsafe at school, the students had similar demographic characteristics compared to the total study population with the only difference being that this group of students more often reported their gender identity as “girl”. 6.4% of participants fell under the study definition of being a migrant adolescent.

Across the study sample, 9.0% of students combined across grades 10 and 12 reported e-cigarette use in the past 30 days. Of students who felt unsafe at school, 14.7% of students reported current e-cigarette use in the past 30 days, compared to 7.8% of students who felt safe at school. In the full study sample, the prevalence of current e-cigarette use was 1.88 times greater (95% CI: 1.61-2.21) among students who felt unsafe at school compared to those who felt safe at school (Table 2). After adjustment for race, ethnicity, sexual orientation, experienced bullying, and socioeconomic status, the prevalence of current e-cigarette use was 1.38 times

greater (95% CI: 1.18-1.60) among students who felt unsafe at school compared to students who felt safe at school.

For migrant students, 21.4% reported feeling unsafe at school compared to 17.4% of non-migrant students. Among migrant students who felt unsafe at school, 32.9% reported current e-cigarette use in the past 30 days compared to 67.1% of migrant students who felt safe at school (Table 3). In analyses stratified by migrant adolescent status, the adjusted prevalence ratio of current e-cigarette use among migrant adolescents was 1.38 (95% CI: 1.18-1.61) for those who perceived feeling unsafe at school compared to those who felt safe at school. Similarly, the non-migrant adolescent prevalence ratio of current e-cigarette use was 1.38 (95% CI 1.22-1.54) among students who felt unsafe at school compared to students who felt safe at school. When comparing the migrant adolescent prevalence ratio of current e-cigarette use to the non-migrant adolescent prevalence ratio of e-cigarette use, there was no statistical difference between both groups of students at the 95% significance level ($p = 0.89$).

Discussion

The primary aim of this study was to determine the association between perceived school safety and current e-cigarette use in Washington state students in grades ten and twelve. Results from the 2023 HYS indicate that the prevalence of current e-cigarette use in the past 30 days was 34% higher among students who perceived feeling unsafe at school compared to students who perceived feeling safe at school. When stratified by migrant adolescent status, there was no statistically significant difference in the prevalence ratios between migrant adolescents and non-migrant adolescents, with both groups reporting an adjusted prevalence ratio of 1.38 ($p=0.89$).

While not the primary objective of this study, the results of this study also indicate that similar to previous years, the rate of e-cigarette use is on a downward trend as the main effects of the COVID-19 pandemic plateaued. While the 2023 rates amongst grade 10 and 12 students in our study were higher than the state prevalence of 7.6% in 2021, these rates are still lower than

the reported prevalences of current e-cigarette use before the COVID-19 pandemic and the EVALI outbreak of 2021.[5,7]

The findings from this study are consistent with existing research on school climate and adolescent substance use. When students reported attending school in positive school climates defined by factors such as supportive teachers and peers that had positive perspectives on health behaviors, these factors were associated with lower levels of personal substance use.[11] Additionally, another factor of school safety that has been previously researched, positive peer perceptions of substance use, found that students were more likely to report substance use if they also reported having peers who held positive perceptions of substance use.[30] With this existing research, the use of a subjective measure of school safety in this study addressed a gap in research to show that subjective measures of school safety are important to study. Studying subjective measures of school safety in students is an important first step to determine how students feel in an academic environment. If students do report a high prevalence of unsafety, this can lead to determining what are the objective factors resulting in unsafe feelings and if different groups of students report a higher burden. Finally, once identified, programming and policy efforts that can be explored to create positive learning environments for all students. Results from our study and previous research suggest that when students that have the opportunity to grow up in safe school environments may develop positive healthy behaviors and have a lower likelihood of early initiation of substance use.[10,11]

When stratified by migrant adolescent status, our results were contrary to what was hypothesized as an outcome of this study. Migrant adolescents face unique challenges in their formative years of development such as high mobility and discrimination from peers and adult figures, placing them at higher risk of adverse behaviors such as substance use[18,19] Previous research such as that conducted by Cooper et al. found that in Texas, rural migrant adolescent farmworkers were more likely to report frequent substance use compared to other students.[20] Additionally, research conducted by Rhew, Hawkins, and Oesterle in 2011 compared differences

in risk factors between rural and urban-dwelling adolescents in small towns throughout the U.S and found that rural-dwelling adolescents reported higher rates of substance use.[31] While Rhew's study does not focus on migrant adolescents, Rhew's study provides a basis to support our original hypothesis by using a similar group since many agricultural workers tend to live in rural communities.[32] However, this association was not observed in our results as the adjusted prevalence ratios were the same between migrant adolescents to other grade 10 and 12 students in Washington state. There could be several explanations for why this relationship was not observed for e-cigarette use. First, if a migrant adolescent is in fact a member of an undocumented household, there may be an influence to not participate in risky or illegal behaviors, or report participation in those behaviors, for fear of interaction with law enforcement and possible deportation.[33] Next, regardless of documentation status, there may be protective factors that positively influence migrant adolescent health, such as strong family connectedness or a sense of community that were not considered in the context of this study; however, research on this is limited, and future research should determine if there are unique protective factors among migrant adolescents in Washington state compared to other parts of the country.

Study Limitations

There were several limitations throughout this study. First, results could have been affected by social desirability bias; when taking the HYS, students may not have responded honestly about survey items for various reasons, such as receiving punitive action for their responses or being discriminated against. Second, as this survey concurrently collected exposure and outcome information, temporality between perceived school safety and current e-cigarette use could not be established. It cannot be determined if current e-cigarette use influenced perceived school safety, or if perceived school safety influenced current e-cigarette use. Next, there is a level of unmeasured confounding that could have influenced the results. The association between perceived school safety and e-cigarette use is complex and influenced by all levels of the social determinants of health, many of which could not be considered due to the limitations of

this study. Finally, based on prior research, there is no singular definition for perceived school safety; perceptions of safety may vary not only between different student groups but between each student based on their unique experiences with school climate and behaviors that can influence e-cigarette use.[12,13,14]

Conclusion

To our knowledge, this is one of the first studies looking at perceived school safety and e-cigarette use in Washington state high school students, providing context to the current landscape of adolescent substance use. Additionally, this study also had a focus on growing the body of research on the lived experience of migrant adolescents in Washington state and their rates of e-cigarette use, which is a group not historically researched as much as other student groups. The results of this study show that perceived safety in a school setting may have an influence on current e-cigarette use rates among Washington State adolescents. Now that this study showed that perceived school safety has a positive association with current e-cigarette use, future research should identify what previously researched objective metrics of safety are associated with e-cigarette use in Washington state. This will help determine if these factors previously used to define student safety and current substance use in other parts of the country are also observed in Washington, which can used to guide intervention efforts to support students. Additionally, while there was no significant difference between migrant adolescents and other students in the prevalence of current e-cigarette use among students who felt unsafe to students who felt safe at school, it is important to recognize that there were factors not considered in the context of this study that may impact migrant adolescent behavior in the school district. Thus, migrant adolescents should still be a priority focus for school district administrations to support migrant adolescents in their unique experiences in navigating Washington state school systems.

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Table 1: Demographics and Characteristics of Grade 10 and 12 Adolescents Stratified by Perceived School Safety Status, Washington State HYS, 2023;

	Feel Safe at School[a] (N=6,999)		Feel Unsafe at School (N=1,500)		Total Population (N=8,499)	
Demographics and Characteristics	Count n	Weighted %	Count n	Weighted %	Count n	Weighted %
Race[b]						
AI/AN	362	5.2%	128	8.6%	490	5.8%
Asian	1,014	14.8%	161	11.0%	1,175	14.1%
Black/African American	547	7.9%	147	9.9%	694	8.2%
Middle Eastern	85	1.3%	25	1.6%	110	1.3%
NH/PI	219	3.2%	59	3.9%	278	3.3%
White	4,828	68.7%	1,033	68.5%	5,861	68.7%
A different race listed	1,159	16.7%	288	19.3%	1,447	17.2%
Ethnicity						
Hispanic	1,412	19.9%	327	21.4%	1,739	20.2%
No/Unsure	5,587	80.1%	1,173	78.6%	6,760	79.8%
Sexual Orientation[b]						
Heterosexual	5,231	75.1%	903	60.3%	6,134	72.5%
Gay or Lesbian	314	4.5%	115	7.5%	429	5.0%
Bisexual	906	12.6%	309	20.7%	1,215	14.0%
Questioning	342	4.9%	108	7.4%	450	5.3%
Something Else	417	6.0%	152	10.0%	569	6.7%
Don’t understand the question	308	4.6%	99	6.8%	407	4.9%
Gender[b]						
Boy/Man	3,505	50.1%	618	41.1%	4,123	48.5%
Girl/Woman	3,172	45.5%	750	50.2%	3,922	46.3%
Transgender boy/man	163	2.3%	85	5.6%	248	2.9%
Transgender girl/woman	86	1.2%	31	2.1%	117	1.4%
Questioning	186	2.7%	80	5.5%	266	3.2%

Something else	274	3.8%	103	6.8%	377	4.3%
Don't understand the question	170	2.6%	64	4.3%	234	2.9%
Missing	11	0.15%	3	0.17%	14	0.15%
Experienced Bullying						
Never	6,211	88.4%	1,002	66.0%	7,213	84.5%
Once	399	5.9%	172	11.5%	571	6.9%
More Than Once	389	5.7%	326	22.5%	715	8.6%
Socioeconomic Status[c]						
Did not skip a meal	6,494	93.0%	1,241	82.7%	7,735	91.2%
Skipped at least one meal	505	7.0%	259	17.3%	764	8.8%
Migrant Adolescent[d]						
Yes	414	6.1%	113	7.7%	527	6.4%
No/Unsure	6,585	93.9%	1,387	92.3%	7,972	93.6%
Current E-Cigarette Use						
No use	6,409	92.2%	1,269	85.3%	7,678	91.0%
Any use	590	7.8%	231	14.7%	821	9.0%

Note: AI/AN = American Indian/Alaskan Native, NH/OPI = Native Hawaiian/Other Pacific Islander, HYS = Healthy Youth Survey

[a]School safety status defined using the HYS metric, "*I feel safe during school.*"
[b]Respondents allowed to select multiple options, leading to column counts and percentages greater than 8,499 and 100%, respectively.
[c]Socioeconomic status measured using the HYS metric, "*How often in the past 12 months did you or your family have to cut meal size or skip meals because there wasn't enough money for food?"*
[d]Migrant adolescents defined using the HYS metric, "*Have you or your family moved in the past 3 years to another school district for temporary or seasonal work in agriculture, dairy, or fishing?*"

Table 2. Weighted Prevalence Ratios for Current E-Cigarette Use by Weighted Prevalence of Feeling Unsafe at School in Washington State, HYS 2023 (N=8,499)

	E-Cigarette Use[a] (N=821)		No E-Cigarette Use (N=7,678)		Crude PR (95% CI)	aPR[b] (95% CI)	p-value
	Count n	Weighted %	Count n	Weighted %			
Feel unsafe at school[c]	231	28.7%	1,269	16.5%	1.88 (1.61, 2.21)	1.38 (1.18, 1.60)	Adjusted: <0.001
Feel safe at school	590	71.3%	6,409	83.5%	1.00 (referent)	1.00 (referent)	-

Note: HYS = Healthy Youth Survey, PR = Prevalence Ratio, aPR = Adjusted Prevalence Ratio, CI = Confidence Interval

[a]Current E-Cigarette use defined by any reported use during the past 30 calendar days.
[b]Survey Weighted Poisson Regression PR adjusted for race, ethnicity, sexual orientation, experienced bullying, socioeconomic status, and clustered around school size.
[c]Perceived School Safety measured using the HYS metric, "*I feel safe during school.*"

Table 3. Weighted Adjusted[a] Prevalence Ratios of the Association Between Perceived School Safety and Current E-Cigarette Use Stratified by Migrant Adolescent Status, HYS 2023 (N=8,499)

	E-Cigarette Use Count (%)		No E-Cigarette Use Count (%)		Crude PR (95% CI)	aPR[a] (95% CI)	Interaction term p-value
Migrant Youth[b] (n=527)							
	n=79	%	n=448	%			
Feel unsafe at school[c]	26	32.9%	87	19.4%	1.87 (1.59, 2.19)	1.38 (1.18, 1.61)	Crude: 0.93 Adjusted: 0.89
Feel safe at school	53	67.1%	361	80.6%	1.00 (referent)	1.00 (referent)	-
Non-Migrant Youth (n=7,972)							
	n=742	%	n=7,226	%			
Feel unsafe at school	205	27.6%	1,182	16.4%	1.87 (1.71, 2.02)	1.38 (1.22, 1.54)	-
Feel safe at school	537	72.4%	6,048	83.6%	1.00 (referent)	1.00 (referent)	-

Note: CI = Confidence Interval, PR = Prevalence Ratio, aPR = Adjusted Prevalence Ratio

[a]Survey Weighted Poisson Regression PR adjusted for, race, ethnicity, sexual orientation, experienced bullying, socioeconomic status, and clustered around school size.
[b]Migrant adolescents defined using the HYS metric, "*Have you or your family moved in the past 3 years to another school district for temporary or seasonal work in agriculture, dairy, or fishing?*"
[c]Perceived School Safety measured using the HYS metric, "*I feel safe during school.*"