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Classification of Students by Race and Hispanic/Latino/a/x Ethnicity Impacts Estimates of the Prevalence of Substance Use

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Abstract

Multiracial and Hispanic/Latino/a/x youth are rapidly growing populations in the United States. When considered in substance use studies, they are often treated as homogeneous groups despite important demographic and cultural differences. The current study explores how substance use prevalence may differ depending on how precisely race and ethnicity groups are categorized. Data are from the 2018 high school Maryland Youth Risk Behavior Survey ($n = 41,091$, 48.44% female). We estimate prevalence of past 30-day substance use (i.e., alcohol, combustible tobacco, e-cigarettes, and marijuana) for all combinations of race and Hispanic/Latino/a/x ethnicity. Substance use prevalence across the specific Multiracial and Hispanic/Latino/a/x categories showed a wider range of estimates than within the traditional CDC racial and ethnic categories. Findings from this study suggest that state- and national-level surveillance of adolescent risk

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Author Contributions

Lindsey Webb, Trenette C. Goings, Nicole R. Tuitt, Ursula Running Bear, and Renee M. Johnson contributed to the study conception and design and writing the first manuscript draft. Material preparation and data analysis was conducted by Lindsey Webb. All authors commented on and edited previous versions of the manuscript. All authors read and approved the final manuscript.

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Ethics Approval

This is a secondary data analysis of publicly available surveillance data. The Institutional Review Board of Johns Hopkins University has confirmed that the current study would not be considered human subjects research and did not require review.

Consent to Participate

Parents of all Youth Risk Behavior Survey participants provide informed consent.

Consent to Publish

Parents of all Youth Risk Behavior Survey participants provide informed consent for their data to be included in future publications.

behavior should add further measures of race and ethnic identity to improve researchers' ability to increase precision of substance use prevalence estimates.

Keywords

adolescence; surveillance data; substance use; Multiracial; Hispanic and Latino/a/x

A critical goal of public health research is to identify race-based inequities in health and develop programs, policies, and structural interventions to enhance equity. Achievement of this goal requires an understanding of race as a social construct, as well as a clear understanding of differences in health and health behaviors across groups. Unfortunately, the current scientific literature on adolescent substance use is largely limited by an adherence to previously established approaches to classification of race and ethnicity. Multiracial and Hispanic/Latino/a/x populations have been some of the fastest growing segments of the U.S. populations over the last few decades [1–2]. However, they are frequently categorized into heterogeneous groups that make it impossible to investigate within-group differences [3]. We know little about patterns of adolescent substance use among these two groups because conclusions about racial differences are dependent upon how people are classified [4], which varies across studies. In the present study, we estimate within-group variation in the prevalence of substance use among Multiracial and Hispanic/Latino/a/x youth. Given that adolescent health surveillance systems are key resources for assessing health behaviors, we use data from a state-wide program, the Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (MD YRBS/YTS), as the data source for the current study. Findings from this study represent a progression in identifying social and structural factors that shape risk for substance use and associated problems among these two marginalized groups.

Most adolescent health surveillance programs follow the 1997 Office of Management and Budget (OMB) federal guidelines [5] for assessment of race and ethnicity. For example, surveillance programs conducted in association with CDC's Youth Risk Behavior Survey (YRBS) program include an item on Hispanic ethnicity (yes, no), followed by a check-all-that-apply question on race that lists the OMB's five major categories (i.e., American Indian/Alaska Native, Asian, Black/African American, Native Hawaiian/Pacific Islander, White). Analyses of YRBS data routinely combine responses to items on race and Hispanic ethnicity into a single "race/ethnicity" variable with the following 7 categories: Non-Hispanic White, Non-Hispanic Black, Hispanic/Latino/a/x (any race), Asian, Native Hawaiian or Other Pacific Islander (NHOPI), American Indian or Alaska Native (AIAN), or Multiracial (i.e., any combination of races). As seen here, youth who identify as more than one race are collapsed into the Multiracial category, and those who identify as Hispanic or Latino/a/x, despite their racial identification, are collapsed into a single Hispanic/Latino/a/x group. This is not unique to YRBS data. In substance use research, those who identify as two or more races and/or ethnicities are commonly grouped together in a monolithic "Multiracial" category [6]. This grouping, as demonstrated by Clark and colleagues, ignores the heterogeneity within subgroups and their unique risk factors for substance use, produces misleading results [7–10]. In a recent editorial, updated guidelines were provided for the

reporting of race and ethnicity in medical research, citing that the reporting of specific racial and ethnic categories is preferred, including specific multiracial and multiethnic groups [11].

YRBS data have been used to generate critical information about prevalence of substance use among adolescents using the 7-category measure of race and ethnicity. The National YRBS indicates that, among U.S. high school students in 2021, Multiracial youth have some of the highest past 30-day prevalence of cigarette (5.1%), marijuana (20.1%) and e-cigarette use (17.1%) compared to youth in many other monoracial categories. Hispanic/Latino/a/x alcohol use in the past 30 days (22.9%) is lower than some monoracial groups like AIAN (32.0%) and White (25.9%) youth; however, it is higher than other monoracial groups like Asian (10.6%) or Black (13.2%) youth [12]. This trend is similar in use of cigarettes (3.1%), marijuana (16.7%) and e-cigarettes (17.8%) among Hispanic/Latino/a/x youth, where their use is higher than some monoracial groups, but not others.

Beyond estimates provided directly by the YRBS, there is a substantial body of literature examining the epidemiology of adolescent substance use using the standard CDC race/ethnicity categories. Within this research, White youth have typically had a relatively higher prevalence of substance use in comparison to other racial and ethnic groups, particularly for alcohol and cigarettes [13–14]. However, more studies have started to show high prevalence of substance use among Multiracial adolescents, including alcohol, marijuana, and illicit substance use (e.g., heroin, cocaine) [13,15]. In comparison, Asian youth typically have the lowest use of most substances, while Hispanic/Latino/a/x youth estimates fall in between [13,15–16]. Although estimates of the prevalence of adolescent substance use across the seven race/ethnicity categories informs patterns of use among monoracial non-Hispanic youth, the classification schema has limited usefulness for understanding differences within groups of adolescents who identify as Hispanic/Latino/a/x and/or who select two or more race groups.

In addition to the significant growth of the Multiracial and Hispanic/Latino/a/x populations in the U.S., there may also be key risk factors contributing to substance use that further increase the need to understand prevalence within these groups. Hispanic/Latino/a/x youth face minority stressors associated with persistent structural inequities such as immigration, lack of adequate bilingual education and health services in Spanish (e.g., language barriers), poverty, and community violence that are associated with substance use [17–18]. Evidence suggests that chronic or repeated exposure to minority stress can have longstanding adverse health outcomes for youth into adulthood, including early school dropout, negative mental health outcomes, and substance abuse [19]. Moreover, prior work shows Multiracial youth might use substances as a coping measure for stress around rejection from peers and family [6]. Compared to White youth, Multiracial youth experience more discrimination and lowered mental health due to being bullied [20]. Gaining peer acceptance may also be difficult because of their perceived ambiguous racial status and greater risk of exclusion from monoracial groups (e.g., White or Black youth) [18]. Given these minority stressors experienced by Hispanic/Latino/a/x and Multiracial youth increase general risk of using substances, it is imperative to deepen our understanding of substance use within these groups.

Current Study

The purpose of this study is to examine the prevalence estimates of four substances among adolescents and how they may vary based on Multiracial identity and Hispanic/Latino/a/x ethnicity. To address this, the current study aims to describe the within-group heterogeneity for the Multiracial and Hispanic/Latino/a/x groups for prevalence of any past 30-day use in alcohol, marijuana, combustible tobacco (e.g., cigarettes, cigars), and e-cigarettes. Given variation in the racial composition across states, we opted to focus our investigation on a single state. We used data from the MD YRBS/YTS. Maryland has a population of over 6 million that is 58.5% monoracial White, 31.1% monoracial Black, 10.6% Hispanic/Latino/a/x, and 2.9% Biracial or Multiracial [21]. Findings from the current study will potentially guide new approaches for classifying students by Multiracial identity and Hispanic/Latino/a/x ethnicity in substance use research. Moreover, examining within-group differences is an important step toward identifying structural determinants of risk behaviors among Multiracial and Hispanic/Latino/a/x youth, two marginalized groups.

Methods

Data comes from the 2018 Maryland Youth Risk Behavior Survey/Youth Tobacco Survey (MD YRBS/YTS) [22,23], which is conducted biennially in conjunction with the CDC surveillance systems. The Maryland dataset offers the largest YRBS sample of all states participating in the YRBS and is designed to yield prevalence estimates at the county-level for all 24 counties in the state. The 2018 MD YRBS/YTS is a subset of the nationwide YRBS survey combined with the Youth Tobacco Survey (YTS). For each county-level public school system, the MD YRBS/YTS implemented a two-stage cluster design with first stage sampling on the school-level and second-stage sampling of classrooms within schools [22]. YRBS/YTS developed sampling weights for individual students based on student race and ethnicity, sex, and grade to account for school, student nonresponse, and oversampling of Black and Hispanic students [22]. Use of the sampling weights in the MD YRBS/YTS dataset produces estimates for the high school student population in the state of Maryland. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board concluded that the current study is not considered human subjects research and did not require review.

Measures

Students were first asked to identify their Hispanic/Latino/a/x ethnicity with a binary yes/no item, and then to identify their race by selecting all categories that apply. Categories included American Indian or Alaska Native (AIAN), Asian, Black or African American, Native Hawaiian or Other Pacific Islander (NHOPI), and White. Participating students were asked to report the number of days over the past 30 days that they used alcohol, cigarettes, other combustible tobacco (such as cigars), and e-cigarettes (e.g., “During the past 30 days, on how many days did you have at least one drink of alcohol?”). Items were rated on a 7-point scale (0 days, 1 or 2 days, 3 to 5 days, 6 to 9 days, 10 to 19 days, 20 to 29 days, all 30 days). Participants were also asked to report the number of times that they used marijuana over the past 30 days (e.g., “During the past 30 days, how many times did you

use marijuana?”). This item was rated on a 6-point scale (0 times, 1 or 2 times, 3 to 9 times, 10 to 19 times, 20 to 39 times, 40 or more times). We combined use of cigarettes and other combustible tobacco (e.g., cigars) into a single binary item addressing past 30-day use of combustible tobacco (0 = no use in the past 30 days, 1 = any use in the past 30 days). Additionally, we created and used binary versions of the alcohol, marijuana, and e-cigarette items in analyses (0 = no use in the past 30 days, 1 = any use in the past 30 days) [22]. The four binary items (i.e., combustible tobacco, alcohol, marijuana, and e-cigarettes) were analyzed separately.

Statistical Analyses

All analyses were adjusted for the multistage sampling design of the MD YRBS using the “svy” package within Stata 14 [23]. Weighted descriptive statistics were generated for the overall sample to calculate population estimates. To explore heterogeneity of Biracial and Multiracial youth in the population, all combinations of race were explored for both Hispanic/Latino/a/x and non-Hispanic/Latino/a/x youth. Weighted frequencies and percentages of Biracial (i.e., endorsed two racial categories) and Multiracial (i.e., endorsed three or more racial categories) youth were generated by Hispanic/Latino/a/x ethnicity. Only groups with at least 100 youth in the sample were reported in our analysis to protect student privacy. Weighted prevalence estimates and linearized standard errors of past 30-day use of alcohol, marijuana, combustible tobacco, and e-cigarettes were generated for the total population and across the seven CDC race/ethnicity categories. Weighted prevalence estimates of past 30-day use of alcohol, marijuana, combustible tobacco, and e-cigarettes were also calculated for the more precise racial categories within the CDC categories of Hispanic/Latino/a/x and non-Hispanic multiple race youth (e.g., Black-White biracial youth who identify as Hispanic/Latino/a/x). This was done to see the range of prevalence estimates within these collapsed CDC race/ethnicity categories. The amount of missing data within the four substance use variables ranged from approximately 2% to 8%. Given the low amount of missing data, analyses were conducted without further imputation.

Results

Demographics

The overall sample included 41,091 9th-12th grade students. Weighted descriptive statistics established that approximately 46% of the population were 15 years or younger, and 53% were 16 years or older. Approximately half of the population (50.4%) were male. Additionally, the overall population was evenly distributed across ninth (27.1%), tenth (25.7%), eleventh (22.9%), and twelfth grades (22.7%).

Race and Hispanic or Latino/a/x Ethnicity

Overall, 15.6% reported Hispanic or Latino/a/x ethnicity on the YRBS/YTS ethnicity item regardless of race (see Table 1). When examining the population using CDC standard race and ethnicity classifications provided by the YRBS, about 37.6% are non-Hispanic White, 31.9% are non-Hispanic Black, and 15.5% are Hispanic or Latino/a/x. Moreover, 4.1% of the population are classified as non-Hispanic multiple races. Overall, approximately 86% of the population reported a single race, while approximately 5% reported two or more races

and approximately 9% did not report a race or had nonsensical responses (i.e., race groups were coded as A through E, and student marked F, G, or H on the survey). Weighted logistic regressions found that those who did not report a race or had nonsensical responses had lower use of alcohol (OR = .74, $p = .01$), electronic cigarettes (OR = .61, $p < .001$), and marijuana (OR = .72, $p = .02$) than youth who reported any race.

Table 2 displays a more precise racial and ethnic categorization of the population by reported Hispanic or Latino/a/x ethnicity among monoracial, Biracial, and Multiracial youth. Among youth who reported Hispanic or Latino/a/x ethnicity, 50% reported one race, 44% reported no race category, and approximately 5% reported two or more races. Among Hispanic/Latino/a/x monoracial youth, the most common races were White (47%), Black (22%), and AIAN (13%). Among non-Hispanic/Latino/a/x monoracial youth, the most common races were White (49%), Black (42%), and Asian (8%). The most common races of Biracial youth in the sample were Black-White (43%), Asian-White (20%), and AIAN-Black (13%). Among both Hispanic/Latino/a/x and non-Hispanic/Latino/a/x Biracial youth, the most common races were Black-White (39% and 43% respectively). Finally, the most common Multiracial group in the population were AIAN-Black-White youth (35%), the majority of which were not Hispanic or Latino/a/x.

Substance Use Prevalence Estimates

Regarding past 30-day substance use, approximately 22% of the population reported using alcohol and 21% reported use of e-cigarettes, whereas 16% and 8% reported using marijuana and combustible tobacco respectively (see Figure 1).

Standard CDC Race/Ethnicity Classification—Prevalence estimates of past 30-day substance use for the total population and across the seven standard CDC race/ethnicity categories can be seen in Figure 1. Examining prevalence of past 30-day substance use showed some differences across the standard CDC race/ethnicity categories. Past 30-day alcohol use was highest amongst non-Hispanic White (31.3%), non-Hispanic multiple race (26.6%), and non-Hispanic NHOPI youth (22.2%). Marijuana use was highest amongst non-Hispanic multiple race (20.3%), non-Hispanic NHOPI (20.1%), and non-Hispanic AIAN youth (19.3%). For combustible tobacco use, the highest prevalence was reported amongst non-Hispanic NHOPI (16.8%), non-Hispanic AIAN (11.8%), and Hispanic/Latino/a/x youth (10.1%). Finally, use of e-cigarettes had the highest prevalence amongst non-Hispanic White (31.1%), non-Hispanic NHOPI (29.5%), and non-Hispanic multiple race youth (23.7%). Overall, substance use prevalence estimates were lowest among non-Hispanic Asian and non-Hispanic Black youth. Among Hispanic/Latino/a/x youth, use of alcohol, marijuana, and e-cigarettes was lower than the prevalence estimates in the total population.

Hispanic or Latino/a/x Youth—Prevalence estimates of past 30-day substance use for the CDC category of Hispanic or Latino/a/x youth were 17.7% for alcohol, 14.9% for marijuana, 10.1% for combustible tobacco, and 17.7% for e-cigarettes (see Table 3). Examining more precise subgroups showed a wider range of substance use prevalence among youth of Hispanic or Latino/a/x ethnicity. Alcohol use prevalence estimates ranged from 15.4% among NHOPI Hispanic/Latino/a/x youth to 33.1% among Multiracial

Hispanic/Latino/a/x youth. For marijuana use, estimates ranged from 10.4% among Asian Hispanic/Latino/a/x youth to 43.9% among Multiracial Hispanic/Latino/a/x youth. For combustible tobacco use, prevalence estimates ranged from 10.2% among White Hispanic/Latino/a/x youth to 25.6% among Multiracial Hispanic/Latino/a/x youth. Finally, e-cigarette prevalence estimates ranged from 17.2% among AIAN Hispanic/Latino/a/x youth to 38.4% among Multiracial Hispanic/Latino/a/x youth.

Multiracial Youth—While overall prevalence of substance use among the CDC category of non-Hispanic multiple race youth was relatively high compared to the other CDC race/ethnicity categories, refined categories of Biracial and Multiracial youth showed greater variation in substance use. Among non-Hispanic Biracial categories, past 30-day alcohol use prevalence estimates ranged from 18.2% among AIAN-Black youth to 29.2% among AIAN-White youth, while 32.8% of non-Hispanic Multiracial (i.e., those who identified as three or more races) reported past 30-day alcohol use. For marijuana use, prevalence estimates ranged from 14.0% among Asian-White youth to 24.3% among Black-White youth. Combustible tobacco use prevalence ranged from 4.0% among AIAN-Black youth to 8.1% among AIAN-White youth, with 13.3% of non-Hispanic Multiracial youth reporting past 30-day combustible tobacco use. Finally, e-cigarette use prevalence ranged from 11.9% among AIAN-Black youth to 29.7% among Multiracial youth.

Discussion

The aim of the current paper was to explore how categorizations of race by Hispanic/Latino/a/x ethnicity impacts prevalence estimates of substance use in adolescents. Our exploration of the Maryland YRBS/YTS sample showed heterogeneity in the racial composition of Hispanic/Latino/a/x, and Biracial and Multiracial youth. Moreover, prevalence estimates of substance use among Hispanic/Latino/a/x and Multiracial youth showed a wider range than estimates using the CDC's standard classifications of race/ethnicity. These findings demonstrate the importance of estimating substance use with a more precise racial and ethnic classifications.

As previously described, the U.S. population is becoming increasingly diverse with growing Hispanic or Latino/a/x, Biracial and Multiracial populations. Findings from the current study demonstrate that these populations have heterogeneous substance use rates, and the current use of multiple race categories may be under- or over-estimating substance use prevalence. A central implication is the need for future research to take these varying racial and ethnic identities into account. Thus, researchers in the field of substance use epidemiology should incorporate analyses and explorations of substance use among various Biracial and Multiracial groups.

Findings from the current study also highlight the need to address racial identity among Hispanic or Latino/a/x populations when using health behavior surveys. Many Hispanic or Latino/a/x youth in our sample did not identify as any of the five race categories, perhaps because they did not identify with any of the standard OMB racial categories. Examining race with Hispanic/Latino/a/x populations comes with unique and complex challenges due to conflicting conceptualizations between policymakers, researchers, and

within the Hispanic/Latino/a/x population itself [25–26]. Given that the Hispanic/Latino/a/x population is often treated as a monolithic racial group in U.S. society and in health research [27], youths' nonidentification with the standard OMB racial categories may reflect a more racialized panethnic identity [28–29]. The lack of congruence between some Hispanic/Latino/a/x youth's subjective understanding of their racial identity, in combination with current measurement of race in research methodology, may elicit responses to questions of race that do not speak to their lived identity and have no significant meaning for them [26, 30]. Nevertheless, similar to Biracial/Multiracial youth, the collapsing of all races under a single "Hispanic/Latino/a/x" category ignores a significant amount of heterogeneity and diversity that can impact substance use prevalence estimates. Currently, the YRBS does not include measurement of nationality, further limiting our understanding of the diversity among Hispanic and Latino/a/x youth in the survey.

The current study expands upon prior research with substance use among Biracial/Multiracial and Hispanic/Latino/a/x youth by exploring more precise racial categorizations within each of these groups. While there is a growing literature showing high prevalence of substance use among the monolithic group of Multiracial youth [13,15], findings from the current study show that there is a greater variation within Biracial and Multiracial youth. For example, Non-Hispanic Asian-White youth tended to have lower substance use compared to the CDC Multiracial category. Similarly for Hispanic/Latino/a/x youth, whose substance use estimates in previous studies have been moderate compared to other racial and ethnic groups, findings from the current study show some groups with much higher substance use prevalence (e.g., Black Hispanic/Latino/a/x youth) and other with much lower use (e.g., Asian Hispanic/Latino/a/x youth marijuana use). Moreover, the study estimates the use of several substances, including e-cigarettes, among these different racial categorizations. Studies of e-cigarette use are increasingly important given their high prevalence of use among adolescents and increasing evidence that e-cigarette use increases the risk of future combustible tobacco use and negative health effects [31]. Indeed, e-cigarette use among youth has grown so great that recent federal legislation was passed to eliminate the sale of flavored e-cigarette cartridges to reduce their appeal to youth [32]. Results from the current study show that difficulties in youth health and substance use surveillance are partly attributable to imprecise measurements of race among Biracial/Multiracial and Hispanic or Latino/a/x youth.

Although the current study makes a significant contribution to the literature, our findings should be considered in light of their limitations. Though we selected the Maryland YRBS dataset due to its large sample size, there were still subgroups of Biracial and Multiracial youth with small sample sizes, limiting our ability to estimate their substance use with any statistical rigor. Additionally, the use of Maryland data limits the generalizability of results. However, similar analyses conducted with the current sample could be replicated using YRBS data from other states. Moreover, as previously mentioned, the YRBS does not include measurement of nationality to further describe subgroups of Hispanic or Latino/a/x youth (i.e., Mexican, Puerto Rican, Guatemalan, etc.), nor does it include other terms that may be more descriptive of how Hispanic or Latino/a/x youth identify (e.g., "mestizo", "mulatto") [33]. Additionally, the YRBS does not measure other contextual factors that might impact stress and substance use among Hispanic or Latino/a/x youth (e.g.,

acculturation stress, religious affiliation, immigration status). Further, the YRBS does not measure skin tone, which could be a useful measure of Hispanic/Latino/a/x and Multiracial youths' lived experiences of race and racial discrimination [34]. A further limitation of this research is that some people may report on distant heritage, particularly American Indian heritage. Based on the way race is currently measured, it is a challenge to differentiate those with distant American Indian heritage from those who have a direct cultural affiliation. This difficulty could be addressed by asking about parental race when measuring adolescent race. Additionally, researchers need to conduct qualitative research with adolescents to learn how and why they answer questions on race to aid in the formulation of race measures. Youth-led participatory action research (YPAR) focused on the expertise, lived experiences, and voices of Hispanic/Latino/a/x and Multiracial youth would be key in creating relevant measurement of race and ethnicity that is representative of youths' racial and ethnic identities [35]. Finally, the current study did not incorporate information on sex, gender identity, or sexual orientation; however, future work is necessary to examine how these factors intersect with race and ethnicity to better understand their contextual influences on adolescent substance use, including experienced homophobia and transphobia as further sources of minority stress.

The current study demonstrates the need for future measurements of race and ethnicity in substance use epidemiology studies to make specific changes. Substance use studies at state and local levels must be mindful about how best to assess race and ethnicity, given the complexity of racial and ethnic identity and population dynamics. Findings from this type of research can help bring to light structural and cultural risk and protective factors for substance use, as well as other health behaviors, that are salient to Hispanic/Latino/a/x and Multiracial adolescents.

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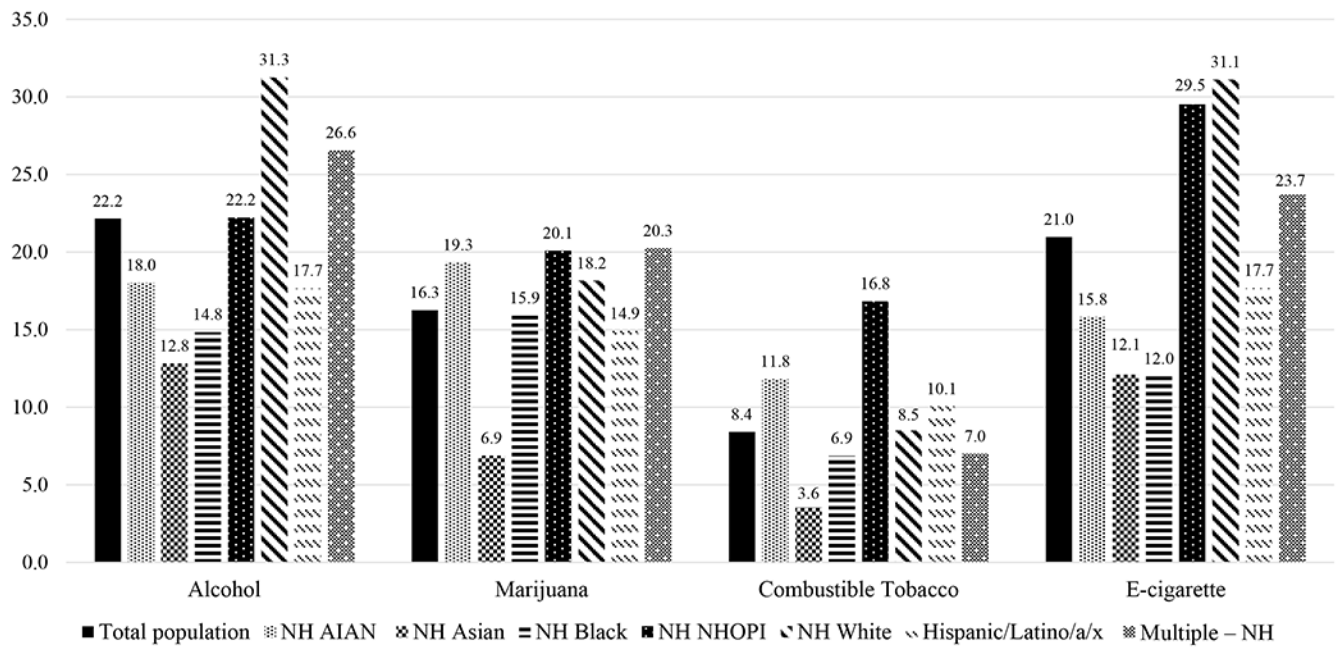


Figure 1. Weighted past 30-day prevalence of substance use in total 2018 Maryland high school population and by CDC race and ethnicity categories
 *Note: NH = Non-Hispanic or Latino/a/x, AIAN = American Indian/Alaska Native, NHOPI = Native Hawaiian/Pacific Islander

Table 1.Race and Hispanic/Latino/a/x ethnicity classifications of Maryland high school students ($n = 41,091$)

	n	(%)
Standard CDC Race/Ethnicity Classification		
NH AIAN	413	(0.59)
NH Asian	1,690	(6.12)
NH Black	7,925	(31.93)
NH NHOPI	258	(0.44)
NH White	21,500	(37.57)
Hispanic/Latino/a/x	5,075	(15.47)
Multiple – NH	2,798	(4.05)
Hispanic or Latino/a/x Ethnicity		
Yes	5,118	(15.62)
No	34,992	(81.87)
Missing	981	(2.51)
Number of Reported Races, All Students		
One	35,429	(85.96)
Two	2,759	(4.13)
Three	389	(0.60)
Four	60	(0.09)
Five	72	(0.14)
Missing/Unspecified	2,382	(9.08)
Number of Reported Races among Hispanic/Latino/a/x Students		
One	3,061	(50.42)
Two	313	(3.70)
Three	75	(0.79)
Four	18	(0.18)
Five	38	(0.50)
Missing/Unspecified	1,613	(44.41)

Note: Percentages reported are weighted. Numbers may not sum to total due to missing data.

NH = Non-Hispanic or Latino/a/x, AIAN = American Indian/Alaska Native, NHOPI = Native Hawaiian/Other Pacific Islander.

Table 2.Hispanic or Latino/a/x ethnicity among monoracial, Biracial, and Multiracial youth (weighted $n = 232,185$)

	Total N	Hispanic/Latino/a/x		Not Hispanic/Latino/a/x	
		Frequency	Percent	Frequency	Percent
Monoracial					
AIAN	4,524	2,720	60.13	1,515	33.49
Asian	17,447	1,012	5.80	15,741	90.22
Black	87,906	4,373	4.98	82,083	93.38
NHOPI	3,953	2,574	65.11	1,135	28.71
White	107,166	9,574	8.93	96,593	90.13
Biracial					
AIAN-Black	1,326	237	17.88	1,084	81.74
AIAN-White	1,157	220	19.01	929	80.23
Asian-Black	866	95.2	10.99	710	82.00
Asian-White	1,964	169	8.59	1,786	90.92
Black-White	4,198	504	12.00	3,566	84.93
NHOPI-White	347	52.6	15.17	289	83.46
Multiracial					
≥ 3 race groups	2,131	589	27.64	1,496	70.20

Note: AIAN = American Indian/Alaska Native, NHOPI = Native Hawaiian/Other Pacific Islander.

Frequencies and percentages are reported for groups with an overall frequency ≥ 100 youth in the sample. All percentages are row percentages.

Table 3.

Within-group prevalence estimates among Hispanic/Latino/a/x and Multiracial Maryland high school students

	Alcohol	Marijuana	Combustible Tobacco	E-cigarette
	% (se)	% (se)	% (se)	% (se)
Hispanic/Latino/a/x	17.67 (.01)	14.91 (.01)	10.06 (.01)	17.68 (.01)
AIAN	16.78 (.03)	13.82 (.04)	12.76 (.03)	17.15 (.03)
Asian	19.48 (.05)	10.36 (.03)	20.18 (.06)	22.17 (.05)
Black	18.25 (.03)	23.14 (.02)	13.14 (.02)	17.70 (.02)
NHOPI	15.40 (.03)	17.27 (.03)	10.86 (.03)	17.26 (.03)
White	21.68 (.02)	15.48 (.01)	10.23 (.01)	24.85 (.02)
Black-White *	20.38 (.06)	31.35 (.08)	10.34 (.05)	37.52 (.09)
Multiracial *	33.09 (.07)	43.92 (.07)	25.60 (.06)	38.39 (.07)
Range	15.40 – 33.09	10.36 – 43.92	10.23 – 25.60	17.15 – 38.39
NH Multiple Races	26.55 (.02)	20.25 (.01)	7.00 (.01)	23.69 (.02)
NH AIAN-Black	18.21 (.05)	21.89 (.05)	4.00 (.01)	11.89 (.03)
NH AIAN-White	29.24 (.03)	15.21 (.02)	8.05 (.01)	27.09 (.03)
NH Asian-Black	22.32 (.06)	15.14 (.05)	6.53 (.02)	17.37 (.04)
NH Asian-White	24.43 (.04)	14.03 (.03)	4.91 (.02)	20.65 (.03)
NH Black-White	29.22 (.03)	24.34 (.03)	6.34 (.01)	27.65 (.02)
NH Multiracial	32.77 (.04)	24.17 (.04)	13.27 (.04)	29.72 (.04)
Range	18.21 – 32.77	14.03 – 24.34	4.00 – 13.27	11.89 – 29.72

Note:

* Students endorsed multiple races and Hispanic/Latino/a/x ethnicity. Past 30-day substance use prevalence is provided for groups with a sample size of $n \geq 100$. Shaded rows are CDC categories.

se = linearized standard error, NH = Non-Hispanic or Latino/a/x, AIAN = American Indian/Alaska Native, NHOPI = Native Hawaiian/Pacific Islander.